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

Date: March 21, 2017

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

From: Mike Banaszak, P.E.
Local Program Management Consultant

Subject: DESIGN STUDY REPORT
ID 5419-06-00
STH 80 – Richland Center
(CTH OO – USH 14)
CTH O
Richland 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:

Mike Banaszak — 3/21/17
Management Consultant — Date

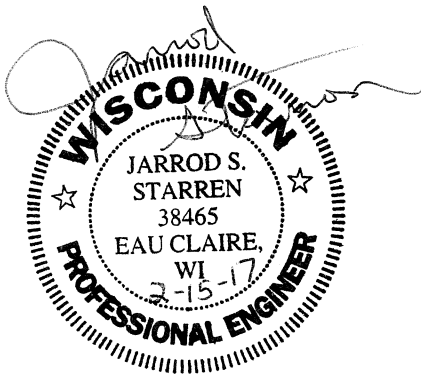
APPROVED:

[signature] — 4/5/2017
WisDOT SW Region Project Development Section — Date
Local Program Project Manager

DESIGN STUDY REPORT

Project I.D. 5419-06-00

STH 80 – Richland Center
CTH O to USH 14
CTH O
Richland County



Short Elliott Hendrickson, Inc
10 North Bridge Street
Chippewa Falls, WI 54729

DESIGN STUDY REPORT

1.0 PROJECT DESCRIPTION AND NEED

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

1.2. Project Length & Termini

Project Length: 2.874 miles (Station 505+41.95 to Station 657+15.00)

Termini/Limits:

The proposed reconstruction project begins in the Town of Orion on the south side of the intersection of CTH O, CTH OO and Santa Klaus Lane and extends northerly in to the Town of Richland and ends on the north side of the Pine River Trail, south of USH 14 for a total length of approximately 2.9 miles.

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 O	Major Collector	Rural	No	No	No	N/A	No	Yes

1.4. Need for the Project

The project need can be divided into the following components:

- Safety
- Pavement Deficiencies
- System Linkage & Route Importance
- Modal Relationships

Safety

CTH O was originally constructed in its present alignment in the 1940's. At that time the roadway side slopes were constructed much steeper than is presently allowed by current standards. Fill slopes were constructed as steep as a 2:1 slope. Many of the cut slopes have obstructions (rock outcroppings) within the clear zone. The clear zone is defined as that roadside border area which is made available for safe use by errant vehicles. It starts at the edge of the traveled way and consists of the shoulder, a recoverable slope, and any traversable but non-recoverable slope with a clear run-out area at the toe of the slope. Very few of the slopes are currently protected with guard rail and the required clear zone is not provided. The steep slopes present both a safety and a maintenance concern. Slopes steeper than 3:1 can cause a rollover if a vehicle leaves the roadway. The steepness of the slopes can also cause slope failures, creating a vertical drop adjacent to the roadway.

The existing roadway has shoulders that range from 1ft to 6 ft. The shoulder widths do not meet Wisconsin C2 or C3 Design Standard for this type of roadway and is deemed substandard.

The CTH O roadway horizontal alignment and vertical profile do not meet current standards, creating substandard Stopping Sight Distance. Stopping Sight Distance (SSD) is defined as the length of roadway ahead that is visible to the driver that is sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path.

The intersections throughout the project do not meet current design standards. Visibility at some intersections is poor. Many intersections do not provide safe turning movements either to or from CTH O.
Slow moving, large farm equipment utilize this route frequently. These vehicles need a wider roadway section with adequate Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) in order to safely travel along this portion of CTH O.

Pavement Deficiencies
The existing pavement was last resurfaced in the1970's. The existing pavement is severely distressed showing extensive longitudinal cracking, transverse cracking, rutting and differential settlement. The pavement distress appears to be caused by lack of pavement structure, and the areas of rutting indicate a potential subsurface soil problem. The current condition of the roadway is such that repairs are no longer practical and replacement of the pavement structure is needed.

System Linkage & Route Importance
CTH O has become a major route to the east side of the city of Richland Center from areas south of the city. Historic traffic volumes indicate a recent increase in traffic volume associated with the development of new businesses along USH 14 at the northern end of the project. The traffic has increased from an AADT of 420 (1979) to an AADT of 930 (2011). The forecasted AADT is anticipated to be 1,300-2,300 by 2038. The forecasted traffic volumes warrant improvement of the existing roadway to meet current design standards.

Modal Relationships
CTH O is a Richland County Bike Route. Bicycles are not accommodated appropriately from CTH OO to USH 14. The Pine River Recreation Trail, used for hiking and biking, is located at the end of the proposed project location. The 14.3 mile trail runs along the west side of US 14 and connects Richland Center and Lone Rock.

2.0 PRESENT FACILITY

2.1. Posted Speed

Roadway or Roadway Segment	Posted Speed	Advisory Speed
CTH O	55 MPH (statutory)	
CTH O Station 585+00 to Station 595+00		45 MPH
CTH O Station 565+00 to Station 585+00		40 MPH
CTH O Station 525+00 to Station 535+00		35 MPH

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
Curve	527+86 – 530+66	R=450'	7.1%	35 MPH
Curve	531+76 – 534+20	R=960'	NC	<25 MPH
Curve	538+29 – 541+36	R=1100'	3.1%	25 MPH
Curve	544+42 – 547+72	R=1200'	3.9%	35 MPH
Curve	559+03 – 559+41	R=1200'	NC	<25 MPH
Curve	567+10 – 571+02	R=710'	3.4%	<25 MPH
Curve	577+14 – 581+61	R=520'	7.2%	40 MPH
Curve	584+39 – 589+11	R=900'	4.7%	35 MPH

*Controlling Criteria

Comments: None of the existing curves meet current standards for radius and superelevation for the design speed.

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)
Curve	506+39	Crest	0.91% / 0.38%	K=140.1 VCL=73'	<25 MPH	Yes, 2072'	N/A
Curve	508+50	Sag	0.38% / 1.09%	K=117.3 VCL=83'	25 MPH	Yes, A<1.75	N/A
Curve	510+49	Crest	1.09% / -1.89%	K=75.1 VCL=224'	45 MPH	No, 474'	N/A
Curve	514+66	Sag	-1.89% / 3.13%	K=62.2 VCL=312'	35 MPH	No, 300'	N/A
Curve	518+01	Crest	3.13% / -0.58%	K=45.5 VCL=169'	40 MPH	No, 375'	N/A
Curve	526+58	Sag	-0.13% / 1.87%	K=106.0 VCL=212'	50 MPH	Yes, 1648'	N/A
Curve	529+79	Crest	1.87% / -4.92%	K=15.4 VCL=105'	25 MPH	No, 211'	N/A
Curve	532+54	Sag	-4.92% / -0.31%	K=40.9 VCL=189'	30 MPH	No, 222'	N/A
Curve	537+01	Sag	-0.31% / 3.87%	K=113.5 VCL=475'	50 MPH	No, 491'	N/A
Curve	543+87	Crest	3.87% / -3.26%	K=103.9 VCL=741'	50 MPH	No, 474'	N/A
Curve	552+62	Sag	-3.26% / -0.15%	K=90.1 VCL=280'	45 MPH	No, 467'	N/A
Curve	561+03	Crest	2.34% / -2.00%	K=34.6 VCL=150'	35 MPH	No, 323'	N/A
Curve	569+54	Crest	1.65% / -0.51%	K=77.6 VCL=168'	45 MPH	Yes, 583'	N/A
Curve	578+32	Sag	-0.51% / 6.96%	K=57.2 VCL=427'	35 MPH	No, 281'	N/A
Curve	585+84	Crest	6.96% / -1.65%	K=59.7 VCL=514'	40 MPH	No, 359'	N/A
Curve	590+94	Sag	-1.65% / 5.27%	K=54.6 VCL=378'	35 MPH	No, 271'	N/A
Curve	595+82	Crest	5.27% / -7.22%	K=33.1 VCL=413'	35 MPH	No, 267'	N/A
Curve	602+15	Sag	-7.22% / -3.07%	K=48.2 VCL=200'	30 MPH	No, 256'	N/A
Curve	613+51	Crest	-0.03% / -4.90%	K=64.5 VCL=314'	45 MPH	No, 379'	N/A
Curve	616+80	Sag	-4.90% / -0.67%	K=48.8 VCL=206'	35 MPH	No, 256'	N/A
Curve	623+06	Crest	0.44% / -1.01%	K=72.0 VCL=105'	35 MPH	Yes, 797'	N/A

Curve	637+75	Sag	0.03% / 0.44%	K=265.9 VCL=117’	35 MPH	Yes, A<1.75	N/A

*Controlling Criteria **SSD = Stopping Sight Distance

Comments: Curves did not meet at least one of the following minimum standards for a 55 mph design speeds:

Sag Curves: SSD=495’, K=115, VCL=165’

Crest Curves: SSD=495’, K=114, VCL=165’

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

Location (Stationing, Overpass Structures, etc.)	* % Grade	* Vertical Clearance
580+45 – 583+27	6.96%	N/A
597+89 – 601+15	-7.22%	N/A

*Controlling Criteria

Comments: The maximum grades did not meet the standard for Rural Collectors on Level Terrain at 55 MPH design speed (6%).

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)
CTH O	Major Collector	Unknown	>100	1.5	No	No
CTH OO	Minor Collector	Unknown	>100	-0.02	No	No
Santa Klaus Lane	Local Road	Unknown	<100	2.68	No	No
Cardinal Crest Road	Local Road	Unknown	<100	7.93	No	No
CTH TB	Minor Collector	Unknown	270	1.36	No	No
Circle View Drive (south)	Local Road	Unknown	<100	-2.6	No	No
Circle View Drive (north)	Local Road	Unknown	<100	-2.3	No	No
CTH OO	Minor Collector	Unknown	530	0.47	No	No

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

Comments:

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)
CTH O	Rural Type C Modified	89°	Thru	N/A – thru traffic	N/A – stop at other legs – Case E. Vehicles able to see other legs.	N/A	No	Yes
CTH OO	Rural Type C Modified	90°	Stop Sign	Yes, >495’	Yes. B1>770’ B2: N/A stop controlled B3>690’	N/A	No	N/A
Santa Klaus Lane	Rural Type C Modified	90°	Stop Sign	Yes, >495’	Yes. B1>770’ B2>690’ B3>690’	N/A	No	N/A
Cardinal Crest Road	Rural Type C Modified	81°	Stop Sign	No, 385’	No. B1=767’ B2>690’	N/A	Yes	N/A
CTH TB	Rural Type C Modified	80°	Stop Sign	Yes, >495’	No. B1=568’ B2>690’	N/A	Yes	N/A
Circle View Drive (south)	Rural Type C Modified	90°	One-Way In	N/A – entrance traffic only	N/A	N/A	N/A	N/A
Circle View Drive (north)	Rural Type C Modified	90°	Stop Sign/ Do Not Enter	Yes, >495’	Yes. B1>770’ B2>690’	N/A	Yes	N/A
CTH OO	Rural Type C Modified	75°	Stop Sign	Yes, >495’	Yes. B1>770’ B2>690’	N/A	Yes	N/A

*Controlling Criteria

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

Comments: The minimum intersection sight distance (ISD) requirements for Case B1 (left turn from the minor road) are 610’ for the passenger car (eye height of 3.5’) and 770’ for the SU truck (eye height of 7.6’). The minimum ISD requirements for Case B2 (right turn from the minor road) and Case B3 (crossing maneuver from the minor road) are 530’ for the passenger car and 690’ for the SU truck. The passenger car and SU truck were evaluated as the SU truck is the design vehicle. Values shown are for the SU truck. Category 1 sight distance does not required DSD to be evaluated. Corner clearance to driveways is not applicable per FDM 11-25-2.5.2 because State Trunk Highways are not present within the project limits.

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]
None								

*Controlling Criteria

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

Comments: No interchanges within the project limits.

2.4 Cross Section

Number of roadways:	1
Number of lanes:	2
Median width:	None
* Lane width:	11’ (Driving)
* Shoulder width (Total and Paved or Curb & Gutter):	1’-6’ (Gravel)
Bicycle Facility Type:	None
Sidewalk and curb ramps:	None
* Cross slope:	2%
* Super-elevation:	Varies. 7.2% Max. (See 2.2.1)
* Horizontal clearance:	3’ Min
Clear Zone:	Varies from 4’ to 30’
* Vertical clearance:	N/A
Side-slopes and Ditch sections:	Varies. 3:1 Normal. 2:1 Max. Ditches are present at various locations throughout the project limits on both sides of the roadway.

*Controlling Criteria

2.5 Pavement Structure/Condition

Roadway	Pavement Types & Thicknesses	Physical Description
CTH O	4-inches asphalt over gravel	The pavement is in poor condition, contains numerous areas of rutting, surface deterioration, and surface settlement caused by poor sub-base.

2.6 Right Of Way

The existing Right-of-Way width varies out from the existing centerline; at a distance between 31.1 feet to 82.1 feet.

2.6.1 Encroachments

Location (Station & Distance Left or Right)	Encroachment Type
507+60 to 512+10, 66’ RT	Livestock fence
531+50 to 534+30, 26’ to 33’ RT	4-strand fence
566+50, 27’ LT	Large landscape rock
608+10 to 611+00, 23’ RT	Electric fence
611+50 LT, 30’ LT	Outside light and fence
614+25 LT, 26.5’ LT	Livestock fence
627+50, 27’ RT	Landscaping rock at base of Cemetery sign
640+10 to 641+60, 18’ LT	Gate and fence
637+50 to 640+18 and 641+50 to 645+00, 33’ RT	Livestock fence
645+00 to 648+97, 33’ RT	Livestock fence

2.6.2 Unique Right of Way Issues:

One cemetery is located within the project limits. The Pine Valley Cemetery is located near Station 627+50 RT and has a sign located just off the existing right of way, with landscaping rock on the right of way.

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
B-52-15	Ash Creek	Single-span reinforced concrete slab bridge	95.2	28’	F	N/A	HS20
B-52-137	Pine River	Three-span concrete haunch slab bridge	97.4	34’	F	N/A	HS24

*Controlling Criteria

Comments:

2.8 Utilities

Utility Name	Type of Utility	General Location	Underground/ Overhead/Both
We Energies	Gas	4” plastic gas main is located along the north side of CTH TB towards CTH O then north on CTH O on the east side to about Sta 581+00. The gas main then crosses CTH O to the west side and continues north to Circle View Drive. The gas main remains on the west side of CTH O but switches to 3” steel to approximately Sta 631+00 where it crosses back to the east side of CTH O and continues north to approximate Sta 636+00 where it crosses CTH O back to the west side and switches to 3” plastic gas main where it continues north beyond the project limits. 2” plastic gas main along the south side of Circle View Drive ties into the 4” plastic gas main on CTH O. 4” plastic gas main is located on the south side of CTH OO at the north project limits and ties into the 3” plastic main on CTH O.	Underground
Alliant Energy	Electric	Overhead power is located along the west side of CTH O from the project begin to STA 569+75 where it crosses to the east side of CTH O and continues north to STA 593+75. Overhead power continues again on the east side of CTH O from approximately Sta 606+00 north to beyond the project limits. Overhead crossing occur near Sta 507+30, 508+50, 525+75, 526+75, 552+40, 593+75, 614+50, 622+50, 626+25, 630+00 and 652+50.	Overhead
Charter Communications	Communication	Underground fiber optic line located on the east side of CTH O from Sta 511+00 – 588+00 where it crosses to the west side of CTH O and continues north to Sta 630+00. Fiber optic continues from Sta 647+00 – 655+00 on the west side of CTH O. Crossings occur at Sta 511+00 & 588+00.	Underground
Frontier North	Communication	Underground lines are located in the east leg and south leg of the CTH O/CTHOO/Santa Klaus intersection. Line crosses under CTH O south of Santa Klaus Lane at Sta 506+80. Underground line along west side of CTH to STA 510+90 crosses to east side and continues along east side to the north side of CTH TB then crosses CTH O back to the west side at Sta 588+03. Line continues north to Circle View Drive crosses CTH O at Sta 622+68 and continues north on both sides of CTH O. East line crosses to west side south of CTH OO at Sta 637+16 continues on the west side to Sta 641+84 then crosses back to the	Underground

		east side of CTH O and continues to the end of the project.	
Genuine Telecom	Communication	Underground telephone line located on the west side of CTH O from Sta 595+50 – 623+00 where the line crosses CTH O and continues on both sides to Sta 630+00. The line begins again on the west side of CTH O at Sta 637+25 and continues north (crossing CTH OO) to Sta 639+50. The line continues again at Sta 646+25 to the north project limit. Crossings at Sta 623+00, 637+25, 656+75	Underground
Richland Electric CO-OP	Electric	Overhead line located on north side of Santa Klaus Lane, crosses CTH O to the west side at Sta 508+07 and continues along the west side of CTH O to Sta 569+71. Line crosses back to the east side and continues along the east side of CTH O to Sta 594+91. Overhead line crosses back to the west side and off of the project. Underground line from the overhead line on the west side of CTH O at Sta 546+05 extends west off the project. Underground line from the overhead line on the esst side of CTH O extends west under CTH O at Sta 594+91 and off the project on the west side.	Overhead and Underground

Comments:

2.9 Railroad Crossings

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

Comments: There are no railroad crossings within 1000 feet of the project.

2.10 Special Soils Conditions

None.

2.11 Unique Project Features

The project has two archeological sites within the construction limits. The Brown Knife Site (Site #47RI0464) is located from approximately STA 551+00 – 563+00 LT/RT. The Wally Site (Site #47RI0066) is located from 651+50 – 654+50 RT. As part of the Memorandum of Agreement (MOA) the sites will be excavated and a data recovery plan will be implemented prior to construction. On-site monitoring will during construction will occur for both of these archeological sites along with the Pine Valley Manor Cemetery (BRI-0023) from STA 626+00 – 627+50 RT. Grading will occur at all three locations. If any discoveries are made, construction will be stopped until further investigation can be completed. No staging shall occur in either the Brown Knife or Wally sites.

3.0 TRAFFIC

3.1 Traffic Volumes/Conditions

Santa Klaus Lane – CTH OO

2018 AADT --- 1050

2038 AADT --- 1300

CTH OO – USH 14

2018 AADT --- 1800

2038 AADT --- 2300

3.1.1 See attached Traffic Forecast Report - Attachment

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 O	B	B	B

Comments: Highway Capacity Software was used to evaluate Level of Service.

3.2 Crash Analysis

3.2.1 Project Crash Information

Roadway	Crash Rate [1] (2013-2015)	Statewide Crash Rate [1] (2010-2014)	Number & Severity of Crashes			
			Fatal	Injury	Property Damage	Total No. Crashes
CTH O	27	99.8	0	0	1	1

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

Comments: The sole crash involved adverse weather conditions.

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		
None							

[2] Crashes per million entering vehicles (MEV)

Comments: No significant crash locations or patterns are present within the project area.

4.0 PROPOSED DESIGN CRITERIA

4.1 Design Class

Roadway or Roadway Segment	Design Class
CTH O - Sta 505+41 to 638+33	C2 for County Trunk Highways
CTH O - Sta 638+33 to 657+15	C3 for County Trunk Highways

4.2 * Design Speed

Roadway or Roadway Segment	Design Speed	Posted Speed
CTH O – Sta 505+41 to 657+15	55 MPH	55 MPH

* Controlling Criteria

4.3 Design Criteria Outside Of Desirable Standards

The existing F-railing on structure B-52-15 and B-52-137 is not crash tested. Railing replacement is not proposed as part of this project. The clear zone was reduced to 20 feet (complying to 50 mph design speed standards) near the archaeological sites to minimize impacts to those sites.

4.4 Exceptions To Standards

An Exception to Standards was approved on 10/07/2013 for the horizontal alignment at the CTH O/CTH OO/Santa Klaus Lane intersection to construct a 4-way stop controlled intersection instead of creating a free flow traffic intersection meeting C3 standards for 55 mph design speeds.

4.5 Typical Cross Section Elements Considered

County Trunk Highways functionally classified as collectors. The shoulders will be paved to accommodate bicycles. Pedestrian accommodations will not be provided due to an absence of need

5.0 PROPOSED DESIGN IMPROVEMENT

5.1 Improvement Type

The proposed reconstruction project is under legislative subprogram 206 – Local Transportation Facility Improvement – Reconstruction.

5.2 Geometrics

5.2.1 * Horizontal alignment

The project proposes several areas where adjustments to the horizontal alignment are needed to meet 55 mph design standards.

5.2.2 * Vertical alignment/Stopping sight distance

The project proposes several areas where adjustments to the vertical alignment are needed to meet 55 mph design standards.

5.2.3 * Grades

The proposed grades range from -3.2% to 5.6%.

* Controlling Criteria

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)
CTH O	Major Collector	Unknown	>100	C2	1.57%	N	N
CTH OO	Minor Collector	Unknown	>100	C2	0.67%	N	N
Santa Klaus Lane	Local Road	Unknown	<100	Unknown	2.72%	N	N
Cardinal Crest Road	Local Road	Unknown	<100	Unknown	9.07%	N	N
CTH TB	Minor Collector	Unknown	270	Unknown	-2.92%	N	N
Circle View Drive (south)	Local Road	Unknown	<100	Unknown	-3.00	N	N
Circle View Drive (north)	Local Road	Unknown	<100	Unknown	-3.00	N	N
CTH OO	Minor Collector	Unknown	530	Unknown	-0.58%	N	N

Comments:

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)
CTH O	Rural Type C Modified	89°	Stop Sign	Yes, >495'	Yes – All way stop control. All vehicles can see each of the approaches when stopped. (Case E)	N/A	No	Yes
CTH OO	Rural Type C Modified	90°	Stop Sign	Yes, >495'	Yes – All way stop control. All vehicles can see each of the approaches when stopped. (Case E)	N/A	No	N/A
Santa Klaus Lane	Rural Type C Modified	90°	Stop Sign	Yes, >495'	Yes – All way stop control. All vehicles can see each of the approaches when stopped. (Case E)	N/A	No	N/A
Cardinal Crest Road	Rural Type C Modified	81°	Stop Sign	Yes, >495'	Yes, B1 >975' B2 >810'	N/A	Yes	N/A
CTH TB	Rural Type C Modified	90°	Stop Sign	Yes, >495'	Yes, B1 >975' B2 >810'	N/A	Yes	N/A
Circle View Drive (south)	Rural Type C Modified	90°	One-Way In	N/A – entrance traffic only	N/A	N/A	N/A	N/A
Circle View Drive (north)	Rural Type C Modified	90°	Stop Sign/ Do Not Enter	Yes, >495'	Yes, B1 >975' B2 >810'	N/A	Yes	N/A
CTH OO	Rural Type C Modified	75°	Stop Sign	Yes, >495'	Yes, B1 >975' B2 >810'	N/A	Yes	N/A

* Controlling Criteria

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

Comments:

The minimum intersection sight distance (ISD) requirements for Case B1 (left turn from the minor road) are 810' for the passenger car (eye height of 3.5') and 975' for the SU truck (eye height of 7.6'). The minimum ISD requirements for Case B2 (right turn from the minor road) are 650' for the passenger car and 810' for the SU

truck. The minimum ISD requirements for Case B3 (crossing maneuver from the minor road) are 570' for the passenger car and 810' for the SU truck. The passenger car and SU truck were evaluated as the SU truck is the design vehicle. Values shown are for the SU truck. Category 1 sight distance does not required DSD to be evaluated. Corner clearance to driveways is not applicable per FDM 11-25-2.5.2 because State Trunk Highways are not present within the project limits.

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							

* Controlling Criteria

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

Comments: No interchanges within the project limits.

5.4 Roundabouts

No roundabouts within the project limits.

5.5 Cross Section/Pavement Structure

Number of roadways:	1
Number of lanes:	2
Median width/Type:	None
* Lane width/Type (Driving, Parking, Bike Lane, etc.):	12' (driving)
* Shoulder width (Total & Paved or Curb & Gutter):	6' (3' Paved from Beginning of Project to Circle View Drive, 5' paved from Circle View Drive to the Pine River Trail) Sections with Curb & Gutter 6' paved with curb and gutter
Bike facilities proposed:	Shoulder paved to accommodate bicycles
Pedestrian facilities / sidewalk proposed:	None
* Cross slope:	2%
* Super-elevation:	Varies. 6% Max
* Horizontal clearance:	8' Min
* Vertical clearance:	N/A
Pavement Structure:	4-Inches of HMA Pavement (1 ¾ inches 4LT 58-28S Upper Layer, 2 ¼ inches 3LT 58-28-S lower layer, 6 inches base aggregate dense 1 ¼ inch, 6 inches base aggregate dense 3 inch)
Clear Zone:	STA 505+42 to 639+76 – 24' STA 640+97 to 657+15 – 30' 20' Clear zone at following locations within the above station ranges: STA 541+00 to 550+59 LT STA 552+00 to 564+00 LT/RT STA 558+00 to 562+00 LT STA 567+38 to 570+50 LT STA 610+48 to 615+00 RT

STA 625+50 to 627+50 RT
STA 651+75 to 654+25 RT

Side-slope / Ditch Sections: Varies. 4:1 Normal, 3:1 max
* Controlling Criteria

5.6 Street Lighting

Location	Type	Break-away Requirements
None		

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							

* Controlling Criteria

Comments: Existing structures B-52-15 and B-52-137 will remain as-is post construction.

5.7.2 Box Culverts and Multiple Pipe Structures

Structure I.D. #	Location	Type	Length	No. Pipes
None				

Comments: None within the project limits.

5.7.3 Retaining Walls and Noise Barrier Structures

Structure I.D. #	Location	Type	Length	Height
None				

Comments: None within the project limits.

5.7.4 Sign Bridge Structures

Structure I.D. #	Location	Type	Length	Clear Roadway Width	* Vertical Clearance	* Horizontal Clearance	Clear Zone Under
None							

* Controlling Criteria

Comments: None within the project limits.

5.7.5 Tunnel Structures

Structure I.D. #	Location	Type (Veh.,Ped., Bicycle, etc.)	Length	Lighting Type	* Vertical Clearance	* Horizontal Clearance
None						

* Controlling Criteria

Comments: None within the project limits.

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

A Type 2 Transportation Management plan has been completed. CTH O will be closed to through traffic during construction and a detour will be signed. The detour will follow USH 14 west to STH 80 then south to CTH O. Locals may use alternate routes.

5.10 Safety Enhancements/Mitigation Measures

Replacing the existing deteriorated pavement structure, improving the horizontal and vertical curves, as well as replacing signs and pavement markings will vastly improve the existing user conditions. Beam guard will be added where slopes warrant. Current WisDOT policy indicates that centerline rumble strips are warranted for the proposed typical section. Wider pavement and paved shoulders will allow safer travel for Implements of Husbandry.

5.11 Real Estate

5.11.1 Real Estate Acquisition

Plat I.D.: 5419-06-00

Relocations		Land	Permanent	Temporary	Construction
Type	Number	(Acres)	Easements	Easements	Permits
None	N/A	16.3	None	1.9	N/A

Comments: None.

5.11.2 Encroachment Actions

Encroachment Location	Encroachment Type	What is to be Done? (Removed, Revocable Permit, etc.)
507+60 to 512+10, 66' RT	Livestock fence	Removal Ordered
531+50 to 534+30, 26' to 33' RT	4-strand fence	Removal Ordered
566+50, 27' LT	Large landscape rock	Removal Ordered
608+10 to 611+00, 23' RT	Electric fence	Removal Ordered
611+50 LT, 30' LT	Outside light and fence	Removal Ordered
614+25 LT, 26.5' LT	Livestock fence	Removal Ordered
627+50, 27' RT	Landscaping rock at Cemetery sign	Revocable Permit
640+10 to 641+60, 18' LT	Gate and fence	Removal Ordered
637+50 to 640+18 and 641+50 to 645+00, 33' RT	Livestock fence	Removal Ordered
645+00 to 648+97, 33' RT	Livestock fence	Removal Ordered

Comments: One cemetery is located within the project limits. The Pine Valley Cemetery is located near Station 627+50 RT and has a sign located just off the existing right of way, with landscaping rock on the right of way.

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: None.

5.13 Railroads

Describe improvements to Railroad Facilities:

None.

Railroad Agreements:

None.

Comments: None.

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			
5419-06-xx	$4,379,000 *	---	---	---	Unscheduled	No	No

* Includes 10% E&C.

Construction funding will be applied for in the upcoming 2017 – 2022 WisDOT STP improvement program.

Describe Incentive/Disincentive Clauses:

None

Non-participating Work:

None

Deferred Construction Work (Preventative Maintenance projects)

None

5.15 Unique Or Non-standard Features

5.15.1 Hazardous Waste

Phase 1 hazardous materials assessment site summary performed on September 20, 2016. No hazardous materials were identified.

5.15.2 Environmental Commitments

There are environmental commitments associated with this project. See the attached list.

5.15.3 Community Sensitive Design/Public Involvement

Two Public Involvement Meetings (PIM)s have been held for the project on September 13, 2005 and February 4, 2016. Minor concerns were addressed regarding drainage, manure piping, and the use of farm machinery during construction. The Documentation for Consultation indicates that one additional PIM will be held in the spring of 2017.

5.15.4 Value Engineering

None.

6.0 SYNOPSIS

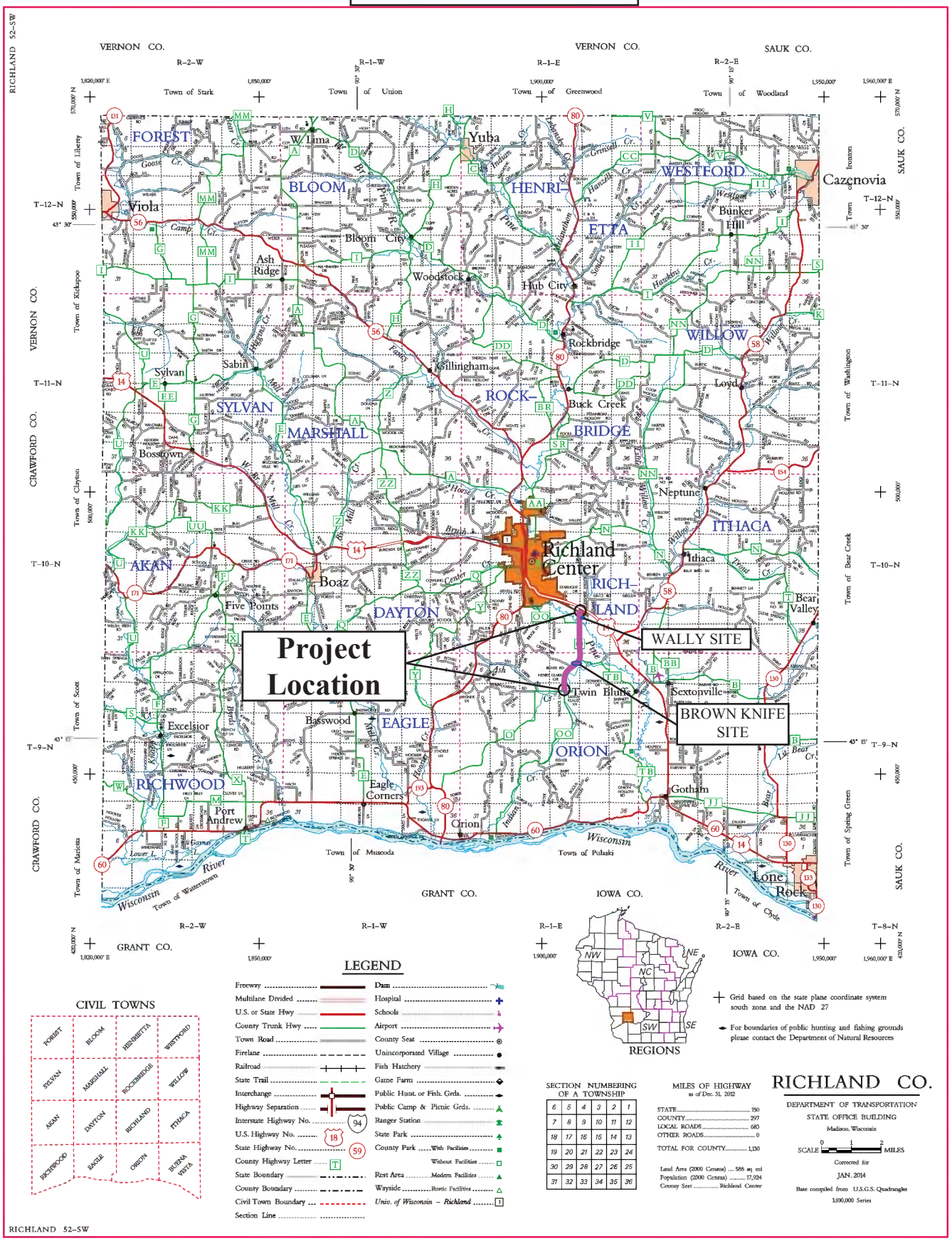
	Completion/Approval Dates	Status of Coordination or Other Information as Needed
Concept Definition Report	03/30/2004	
Scoping Document	None	
Public Involvement Plan	02/03/2017	
Final Aesthetic & Visual Level of Impact Worksheet	None	
Speed Limit Change Declaration	None	
Environmental Document (Type: 2C-ER)	03/21/2017	
Public Hearing/Public Information Meetings	09/13/05 & 02/04/16	Add meeting Spring 2017
SHPO Involvement	07/26/2016	Section 106 Approval
DNR Involvement	Initial Concurrence – 04/28/2016	Final concurrence pending final plans
Agricultural Impact Statement	None	
Pavement Design Report	04/25/16	
Roundabout Review	None	
Transportation Management Plan (Type: 2)	12/22/2016	
Exception to Design Standards Report	11/04/2013	
Permits Required (Types: 401 & 404)	Pending 02/01/2017	DNR 401 WQ Certification USCOE 404 Permit
Local Project Agreements	04/19/2006	
Value Engineering Study	None	
Status of Statutory Actions	None	

7.0 ATTACHMENTS

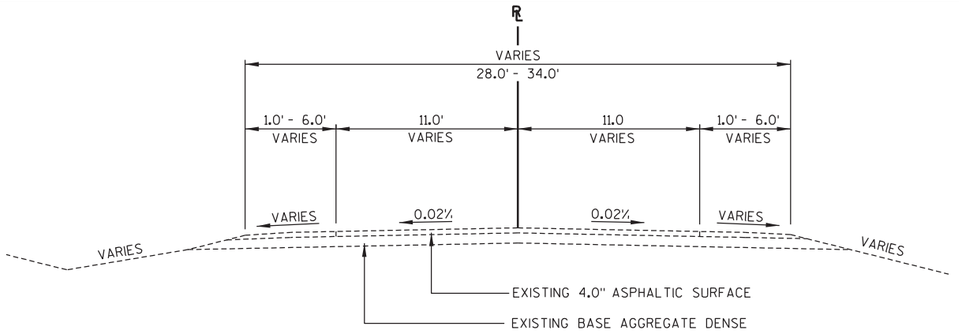
7.1 Project Location/Overview Map
7.2 Existing/Proposed Typical Cross Sections
7.3 Traffic Forecast Report
7.4 Preliminary Plan Sheets
7.5 Environmental Commitments Basic Sheet
7.6 Roadside Hazard Analysis

Attachment 7.1 - Project Location Map

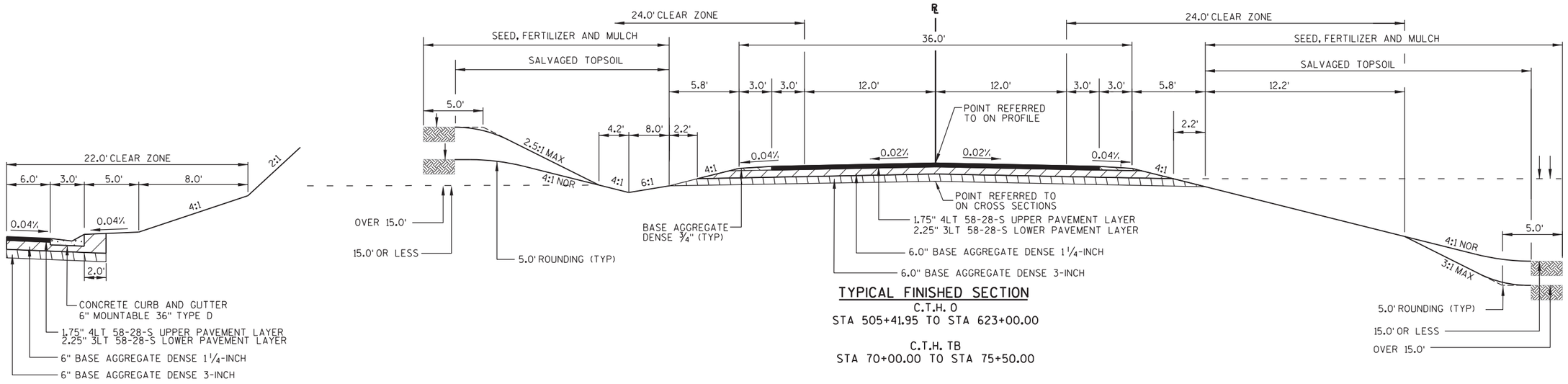
CTH O
CTH OO - USH 14
5419-06-00



Attachment 7.2 - Existing/Proposed Typical Sections



TYPICAL EXISTING SECTION

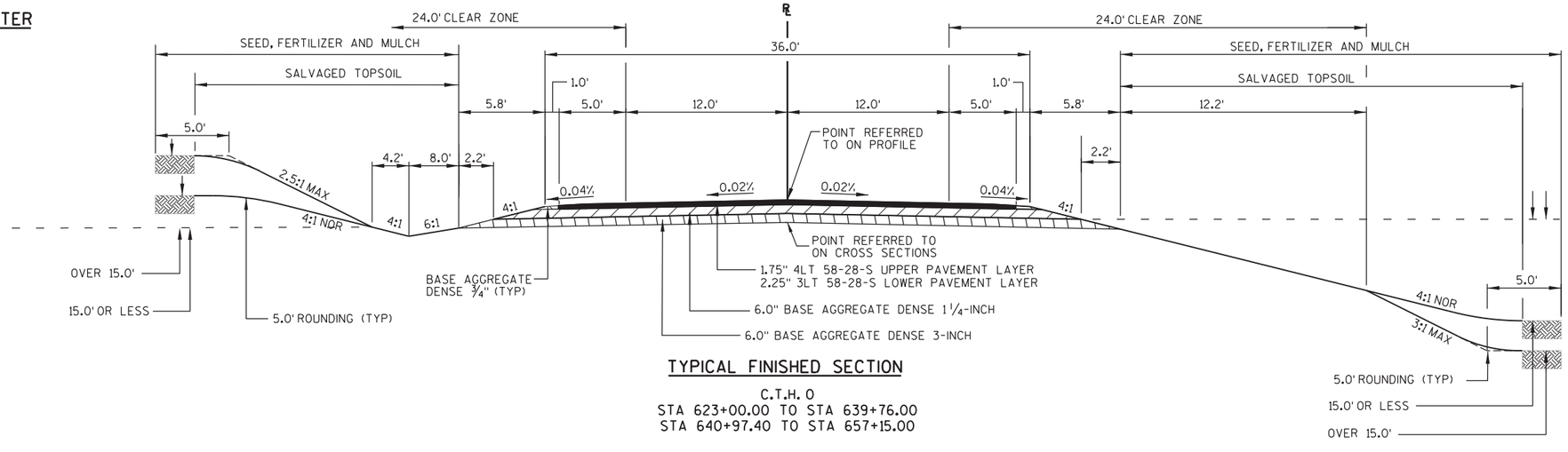


TYPICAL FINISHED SECTION
C.T.H. 0
STA 505+41.95 TO STA 623+00.00

C.T.H. TB
STA 70+00.00 TO STA 75+50.00

TYPICAL FINISHED SECTION - CURB & GUTTER

STA 541+00.00 TO STA 550+58.98 LT
STA 558+00.00 TO STA 562+00.00 LT
STA 567+37.97 TO STA 570+50.00 LT
STA 610+48.00 TO STA 615+00.00 RT
STA 625+50.00 TO STA 627+50.00 RT



TYPICAL FINISHED SECTION
C.T.H. 0
STA 623+00.00 TO STA 639+76.00
STA 640+97.40 TO STA 657+15.00

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	TYPICAL SECTIONS	SHEET	E

Attachment 7.3 - Traffic Forecast Report

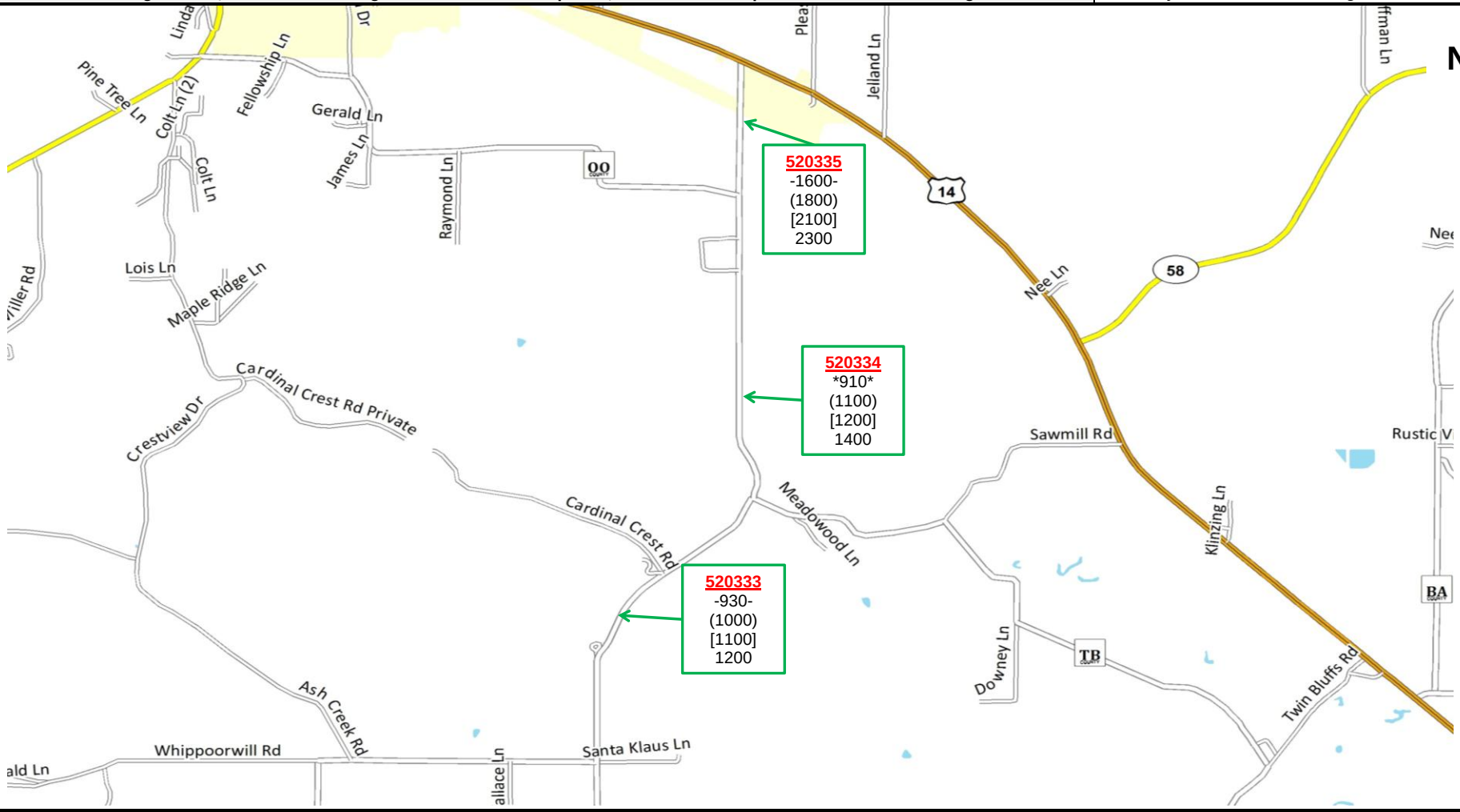
WisDOT TRAFFIC FORECAST REPORT

PROJECT ID(S): 5419-06-00
ROUTE(S): CTH O

Region/COUNTY(IES): SW / Richland
LOCATION: CTH OO to USH 14
COMPLETED: 1/27/2015

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

Developed by: Jacci Ziebert
Phone: (608) 266-9646
FAX #: (608) 267-1856
E-Mail: jacci.ziebert@dot.wi.gov



Design Values (%)			
Site(s)	520335		
Route(s)	CTH O		
Volume(s)	2320		
Site Growth %	1.67%		
K250	9.9		
K100	11.0		
K30	12.4		
P	15.9		
D(Dsgn. Hr.)	60/40		
T(DHV)	5.1		
T(PHV)	2.8		

-000- 2011 Count
000 2009 Count
(000) 2018 AADT
[000] 2028 AADT
000 2038 AADT

Site IDs are Colored, **Bolded**, and Underlined

Trucks	520335		
AADTT	100		
2D	2.3		
3AX	1.4		
2S1+2S2	1.0		
3-S2	1.3		
DBL-BTM	0.1		
Total %	6.1%		

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. CTH O 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.

MORE NOTES ON THE FORECAST:

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

Attachment 7.4 - Preliminary Plan Sheets

PROJECT ID: 5419-06-71
WITH: N/A

COUNTY: RICHLAND

ORDER OF SHEETS

TOTAL SHEETS =

DESIGN DESIGNATION			SANTA KLAUS LN-CTH 00	CTH 00-PINE RIVER TRAIL
A.A.D.T.	2018	=	1050	1800
A.A.D.T.	2038	=	1300	2300
D.H.V.		=	161	285
D.D.		=	50%	50%
T.		=	6.1% ADT	6.1% ADT
DESIGN SPEED		=	50 MPH	55 MPH
ESALS		=	160,600	270,100

CONVENTIONAL SYMBOLS

PLAN
- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE (300'EB')
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE
- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES
- ELECTRIC (E)
- OVERHEAD UTILITY (OH)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

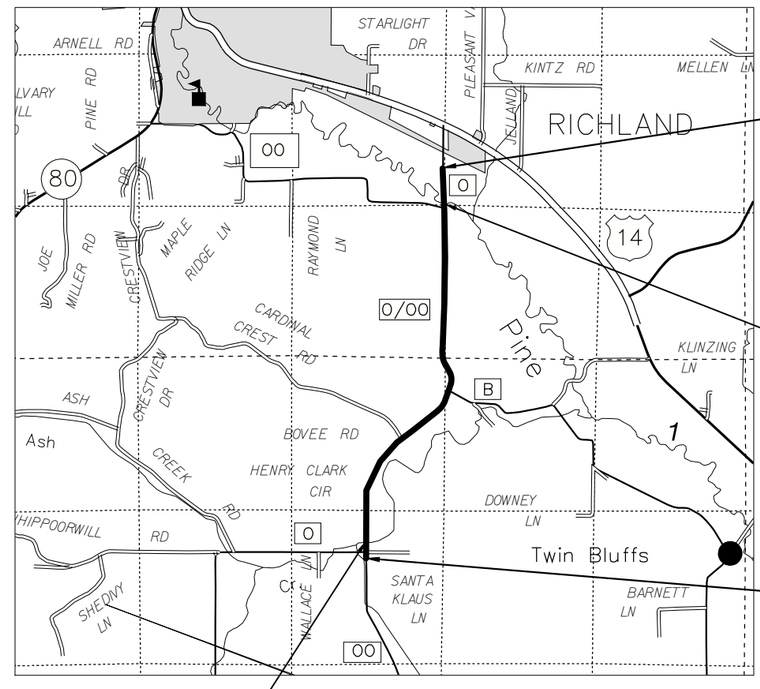
STH 80 - RICHLAND CENTER
(CTH OO TO USH 14)

CTH O
RICHLAND COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5419-06-71		

STATE PROJECT NUMBER
5419-06-71

R|W R|E



END PROJECT
STA 657+15.00
Y = 436847.280
X = 685268.184

EXCEPTION TO NET CENTERLINE LENGTH
STA 639+76.00 TO STA 640+97.40
STR B-52-137

BEGIN PROJECT
STA 505+41.95
Y = 422842.145
X = 682670.944

EXCEPTION TO NET CENTERLINE LENGTH
STA 509+70.39 TO STA 510+24.01
STR B-52-15

LAYOUT
SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 2.874 MI

COORDINATES ON THIS PLAN ARE REFERENCED TOT HE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), RICHLAND COUNTY

ACCEPTED FOR
COUNTY of RICHLAND

(Date) (Signature & Title of Official)

ORIGINAL PLANS PREPARED BY
SEH

(Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor SEH
Designer SEH
Management Consultant KL Engineering

APPROVED FOR THE DEPARTMENT
DATE:
Management Consultant Signature

E

STANDARD ABBREVIATIONS

ABUT	ABUTMENT
AC	ACRE
AGG	AGGREGATE
AECPRC	APRON ENDWALL FOR CULVERT PIPE REINFORCED CONCRETE
ASPH	ASPHALTIC
AVG	AVERAGE
ADT	AVERAGE DAILY TRAFFIC
BF	BACK FACE
BM	BENCH MARK
BR	BRIDGE
CE	COMMERCIAL ENTRANCE
CL OR C/L OR ℄	CENTER LINE CENTRAL ANGLE OR DELTA
CONC	CONCRETE
CPRC	CULVERT PIPE REINFORCED CONCRETE
CPRCHE	CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL
CR	CREEK
CY	CUBIC YARD
C & G	CURB AND GUTTER
D	DEGREE OF CURVE
DHV	DESIGN HOUR VOLUME
DISCH	DISCHARGE
DG	DITCH GRADE
DWY	DRIVEWAY
X	EAST GRID COORDINATE
EAT	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
EOR	END POINT OF RADIUS
EL	ELEVATION
ENT	ENTRANCE
ESALS	EQUIVALENT SINGLE AXLE LOADS
EXC	EXCAVATION
EBS	EXCAVATION BELOW SUBGRADE
EXIST	EXISTING
FC	FACE OF CURB
FF	FACE TO FACE
FERT	FERTILIZE
FE	FIELD ENTRANCE
FL	FLOW LINE
FO	FIBER OPTIC
CWT	HUNDREDWEIGHT
HYD	HYDRANT
ID	INSIDE DIAMETER
INV	INVERT
IP	IRON PIPE ON PIN
LHF	LEFT-HAND FORWARD
L	LENGTH OF CURVE
LF	LINEAR FOOT
LC	LONG CHORD OF CURVE
LS	LUMP SUM
MH	MANHOLE
MOR	MID POINT OF RADIUS
NC	NORMAL CROWN
NO	NUMBER
OBLIT	OBLITERATE
PAVT	PAVEMENT
PE	PRIVATE ENTRANCE
PVRC	POINT OF VERTICAL REVERSE CURVE
QOR	QUARTER POINT OF RADIUS
R	RADIUS
REQ'D	REQUIRED
RES	RESIDENCE OR RESIDENTIAL
RHF	RIGHT-HAND FORWARD
R/W	RIGHT-OF-WAY
R	RIVER
RDWY	ROADWAY
R/L OR ℞	REFERENCE LINE
SALV	SALVAGED
SAN	SANITARY SEWER
SF	SQUARE FEET
SY	SQUARE YARD
SDD	STANDARD DETAIL DRAWINGS
STA	STATION
SS	STORM SEWER
SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
SE	SUPERELEVATION RATE
TC	TOP OF CURB
T OR TN	TOWN
T	TRUCKS (PERCENT OF)
TYP	TYPICAL
VAR	VARIABLE
VC	VERTICAL CURVE
Y	NORTH GRID COORDINATE
YD	YARD

GENERAL NOTES

WHEN THE QUANTITY OF BASE AGGREGATE OR ASPHALTIC SURFACE IS MEASURED FOR PAYMENT BY THE TON OR CUBIC YARD, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

THE EXACT LOCATION OF THE EROSION CONTROL DEVICES SHALL BE DETERMINED IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE 4-INCH SALVAGED TOPSOILED, FERTILIZED, AND SEEDED AND MULCHED. FINISHED SEEDED SURFACE SHALL BE 1-INCH BELOW THE TOP OF ADJACENT CONCRETE.

BEARINGS SHOWN ON THE PLANS ARE GROUND BEARINGS TO THE NEAREST SECOND.

THE LOCATION OF ALL DRIVEWAYS WILL BE DETERMINED BY THE ENGINEER.

ALL CURB AND GUTTER RADII, PAVEMENT DIMENSIONS AND STATIONS ARE SHOWN TO THE EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.

ALL SIDE ROAD EARTHWORK QUANTITIES ARE INCLUDED IN MAINLINE EARTHWORK QUANTITIES.

A VERTICAL SAWCUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS AND PAVEMENTS AT REMOVAL LIMITS.

TOP OF CASTING ELEVATIONS SHOWN FOR INLETS REFER TO THE CASTING ELEVATION AT THE FLOWLINE OF GRATE.

ALL STORM SEWER INVERTS, ELEVATIONS, PIPE LENGTHS, AND GRADES ARE COMPUTED CENTER-TO-CENTER OF STRUCTURES.

EXCAVATION BELOW SUBGRADE (EBS) IS NOT USED TO BALANCE YARDAGE AND IS NOT SHOWN ON THE CROSS SECTIONS BUT IS MEASURED AND PAID FOR AS COMMON OR ROCK EXCAVATION.

ASPHALTIC SURFACE/HMA PAVEMENT SHALL BE CONSTRUCTED WITH THE FOLLOWING LAYER THICKNESSES:

PAVEMENT THICKNESS (INCH)	LOWER (INCH)	NOM AGG SIZE (mm)	MIDDLE (INCH)	NOM AGG SIZE (mm)	UPPER (INCH)	NOM AGG SIZE (mm)
4	2.25	----	----	----	1.75	----

WISDOT MONUMENTS WILL BE SUPPLIED BY THE STATE AND INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

EXISTING PIPE CULVERT AND/OR CONCRETE BOX CULVERT SIZES SHOWN ARE APPROXIMATE AND THE CONTRACTOR SHALL BASE ITS BID ON ACTUAL FIELD CONDITIONS.

WETLANDS ARE PRESENT AT:
STA 509+50 TO STA 510+50 LT AND RT
STA 533+50 TO STA 534+00 LT AND RT
STA 553+75 TO STA 555+50 LT AND RT
STA 639+50 TO STA 652+00 LT AND RT

DO NOT OPERATE MACHINERY OUTSIDE OF THE SLOPE INTERCEPTS IN THESE AREAS.

ORDER OF SECTION NO 2 SHEETS

UTILITY CONTACTS

CHARTER COMMUNICATIONS
2701 DANIELS STREET
MADISON, WI 53718
TELEPHONE: 608.576.2613
ATTENTION: STEVE HEGGE
EMAIL: STEVE.HEGGE@CHARTER.COM

FRONTIER NORTH
PORTAGE WI 53901
TELEPHONE: 608.742.8644
CELL*: 608.742.9507
ATTENTION: JERALD MOORE
EMAIL: JERALD.R.MOORE@FTR.COM

WISCONSIN POWER & LIGHT COMPANY
4902 NORTH BITMORE LANE
MADISON, WI 53718
TELEPHONE: 608.458.4871
CELL*: 608.395.7395
ATTENTION: JASON HOGAN
EMAIL: JASONHOGAN@ALLIANTENERGY.COM

GENUINE TELECOM
1027 NORTH JEFFERSON ST
RICHLAND CENTER, WI 53581
TELEPHONE: 608.647.2345
CELL*: 608.604.6062
ATTENTION: BRANDON KINNEY
EMAIL: BKINNEY@GENUINETEL.COM

RICHLAND ELECTRIC COOPERATIVE
1027 NORTH JEFFERSON ST
RICHLAND CENTER, WI 53581
TELEPHONE: 608.553.1418
ATTENTION: LARRY HALLETT
EMAIL: LHALLETT@REC.COOP

DESIGN CONTACT

SEH INC
10 NORTH BRIDGE STREET
CHIPPEWA FALLS, WI 54729
TELEPHONE: 715.720.6261
ATTENTION: JARROD STARREN
EMAIL: JSTARREN@SEHINC.COM

DNR CONTACT

DNR SOUTH CENTRAL REGION
3911 FISH HATCHERY ROAD
FITCHBURG, WI 53711
TELEPHONE: 608.275.3008
ATTENTION: ANDREW BARTA
EMAIL: ANDREW.BARTA@WISCONSIN.GOV

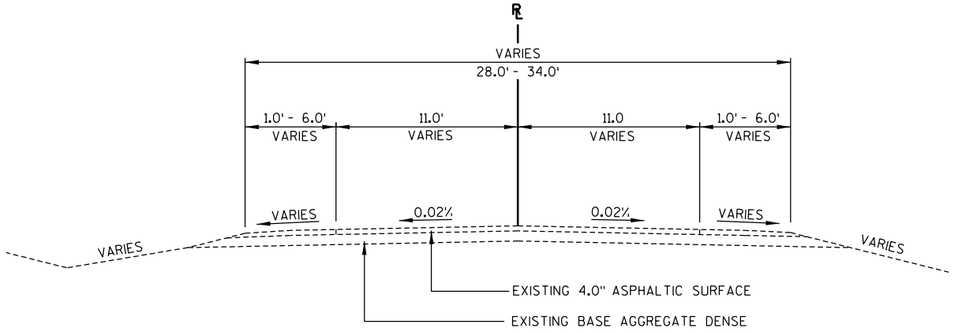
DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

**DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

2

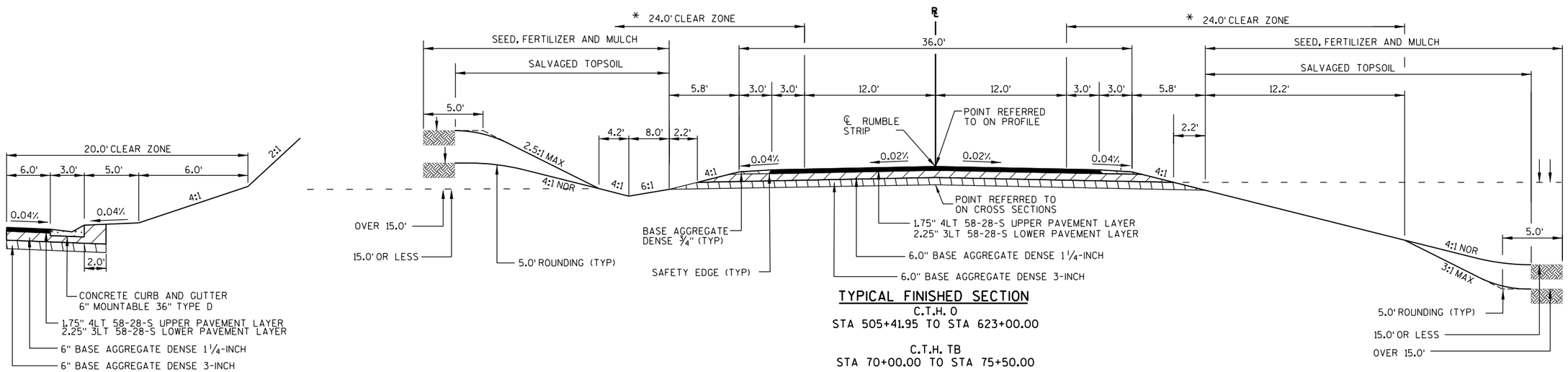
PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PROJECT OVERVIEW	SHEET -----	E

2



TYPICAL EXISTING SECTION

C.T.H. O
STA 505+41 TO STA 657+15.00



TYPICAL FINISHED SECTION

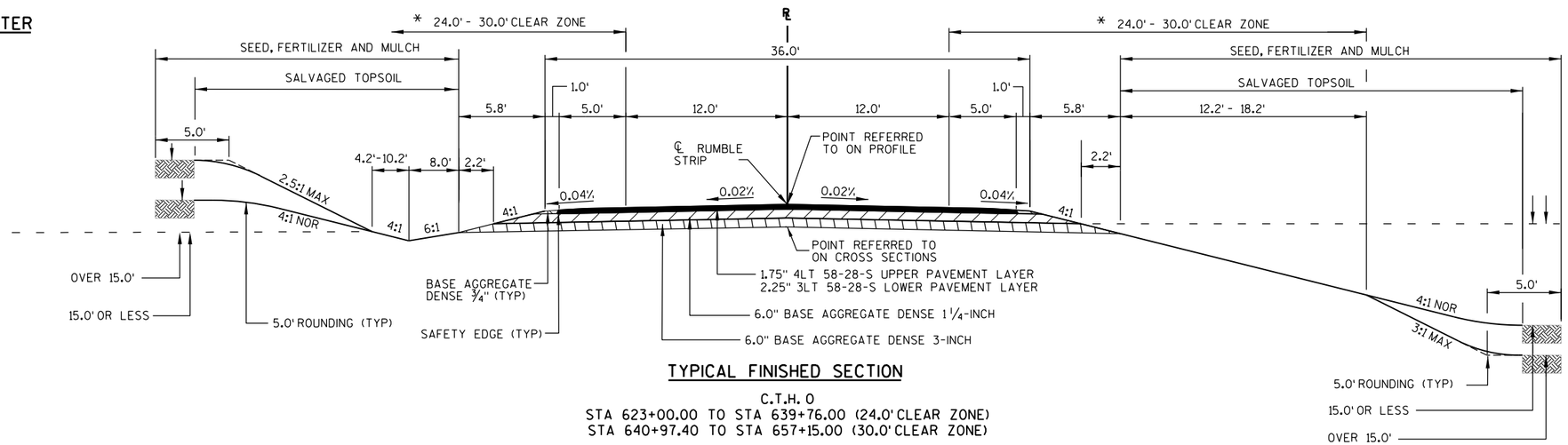
C.T.H. O
STA 505+41.95 TO STA 623+00.00

C.T.H. TB
STA 70+00.00 TO STA 75+50.00

TYPICAL FINISHED SECTION - CURB & GUTTER

STA 541+00.00 TO STA 550+58.98 LT
STA 558+00.00 TO STA 562+00.00 LT
STA 567+37.97 TO STA 570+50.00 LT
STA 610+48.00 TO STA 615+00.00 RT
STA 625+50.00 TO STA 627+50.00 RT

* 20.0' CLEAR ZONE MINIMUM
STA 552+00.00 TO STA 564+00.00 LT/RT
STA 625+50.00 TO STA 627+50.00 RT
STA 651+75.00 TO STA 654+25.00 RT



TYPICAL FINISHED SECTION

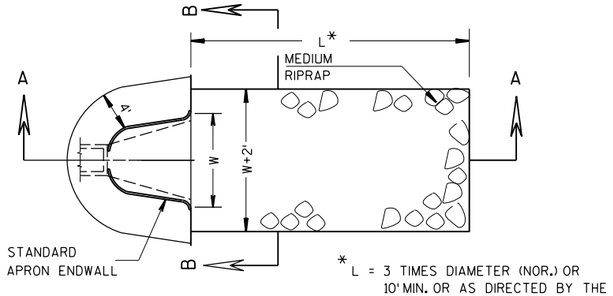
C.T.H. O
STA 623+00.00 TO STA 639+76.00 (24.0' CLEAR ZONE)
STA 640+97.40 TO STA 657+15.00 (30.0' CLEAR ZONE)

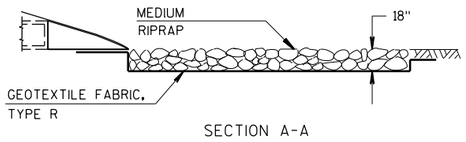
PROJECT NO: 5419-06-71	HWY: C.T.H. O	COUNTY: RICHLAND	TYPICAL SECTIONS	SHEET	E

2

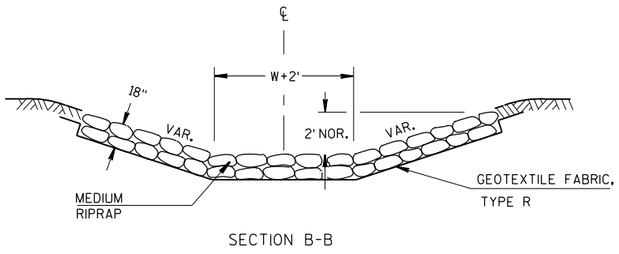
Superelevation Curve	Station	Description	Left Shlder	Left Lane	Right Shlder	Right Lane
	500+00.00'	Begin Alignment	-4.00%	-2.00%	-4.00%	-2.00%
1	522+58.42'	End Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
1	522+58.42'	End Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
1	523+11.76'	Level Crown	0.00%	0.00%	-2.00%	-2.00%
1	523+65.09'	Reverse Crown	2.00%	2.00%	-2.00%	-2.00%
1	524+71.76'	Begin Full Super	6.00%	6.00%	-6.00%	-6.00%
1	528+61.26'	End Full Super	6.00%	6.00%	-6.00%	-6.00%
1	529+67.93'	Reverse Crown	2.00%	2.00%	-2.00%	-2.00%
1	530+21.26'	Level Crown	0.00%	0.00%	-2.00%	-2.00%
1	530+74.60'	Begin Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
1	530+74.60'	Begin Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
3	534+41.73'	End Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
3	534+41.73'	End Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
3	534+95.20'	Level Crown	0.00%	0.00%	-2.00%	-2.00%
3	535+48.67'	Reverse Crown	2.00%	2.00%	-2.00%	-2.00%
3	536+26.20'	Begin Full Super	4.90%	4.90%	-4.90%	-4.90%
3	549+65.21'	End Full Super	4.90%	4.90%	-4.90%	-4.90%
3	550+42.74'	Reverse Crown	2.00%	2.00%	-2.00%	-2.00%
3	550+96.21'	Level Crown	0.00%	0.00%	-2.00%	-2.00%
3	551+49.68'	Begin Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
3	551+49.68'	Begin Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
7	563+95.28'	End Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
7	563+95.28'	End Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
7	564+48.61'	Level Crown	-2.00%	-2.00%	0.00%	0.00%
7	565+01.94'	Reverse Crown	-2.00%	-2.00%	2.00%	2.00%
7	566+08.61'	Begin Full Super	-6.00%	-6.00%	6.00%	6.00%
7	582+06.18'	End Full Super	-6.00%	-6.00%	6.00%	6.00%
7	583+12.84'	Reverse Crown	-2.00%	-2.00%	2.00%	2.00%
7	583+66.18'	Level Crown	-2.00%	-2.00%	0.00%	0.00%
7	584+19.51'	Begin Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
7	584+19.51'	Begin Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
9	584+24.53'	End Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
9	584+24.53'	End Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
9	584+77.87'	Level Crown	0.00%	0.00%	-2.00%	-2.00%
9	585+31.20'	Reverse Crown	2.00%	2.00%	-2.00%	-2.00%
9	586+37.87'	Begin Full Super	6.00%	6.00%	-6.00%	-6.00%
9	590+20.15'	End Full Super	6.00%	6.00%	-6.00%	-6.00%
9	591+26.82'	Reverse Crown	2.00%	2.00%	-2.00%	-2.00%
9	591+80.15'	Level Crown	0.00%	0.00%	-2.00%	-2.00%
9	592+33.48'	Begin Normal Crown	-2.00%	-2.00%	-2.00%	-2.00%
9	592+33.48'	Begin Normal Shoulder	-4.00%	-2.00%	-4.00%	-2.00%
	661+27.98'	End Alignment	-4.00%	-2.00%	-4.00%	-2.00%
Design Speed = 60 mph						
Normal Crown Superelevation Rate = 2 %						
Normal Shoulder Crown Superelevation Rate = 4 %						

PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	SUPERELEVATION TABLE	SHEET	E



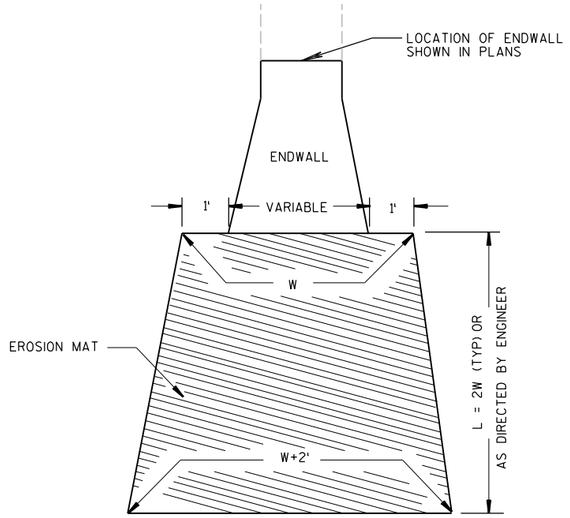


SECTION A-A

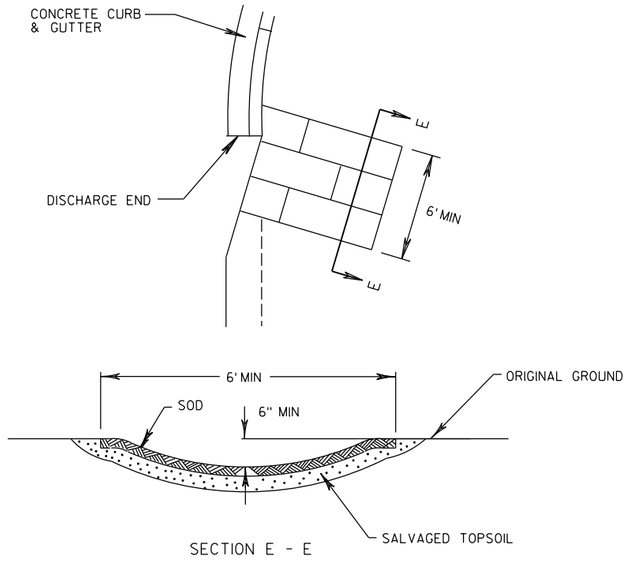


SECTION B-B

RIPRAP TREATMENT AT CULVERTS



EROSION MAT TREATMENT AT CULVERTS



SECTION E - E

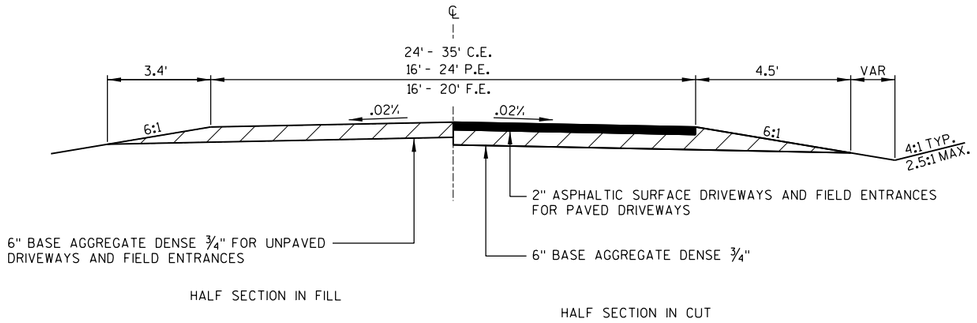
SOD FLUME DETAIL

RUNOFF COEFFICIENT TABLE

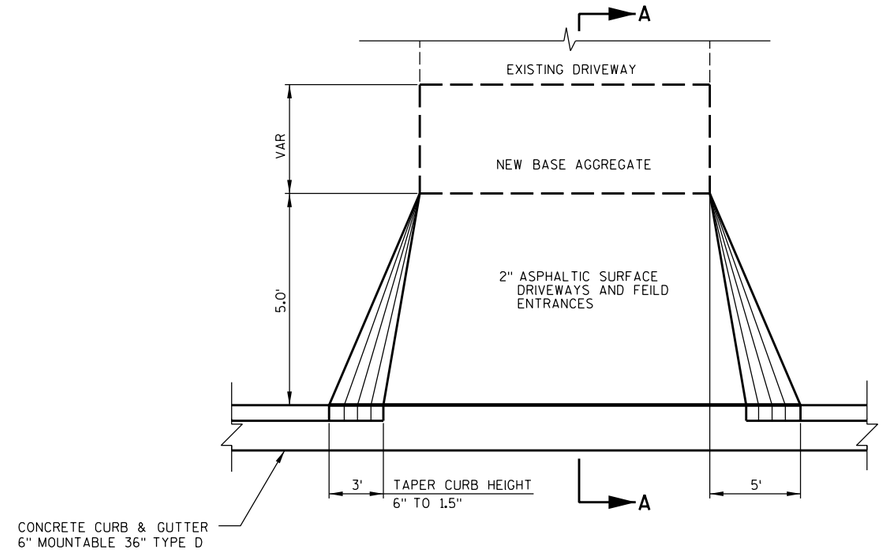
	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP- TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE- TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = 84 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = XX ACRES

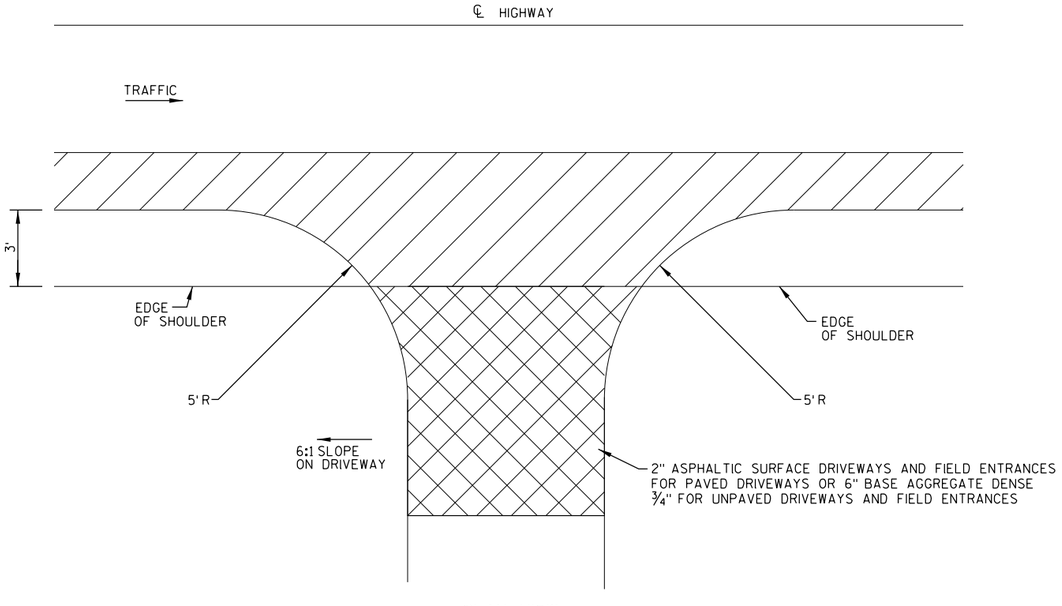
2



TYPICAL SECTION FOR PRIVATE ENTRANCES

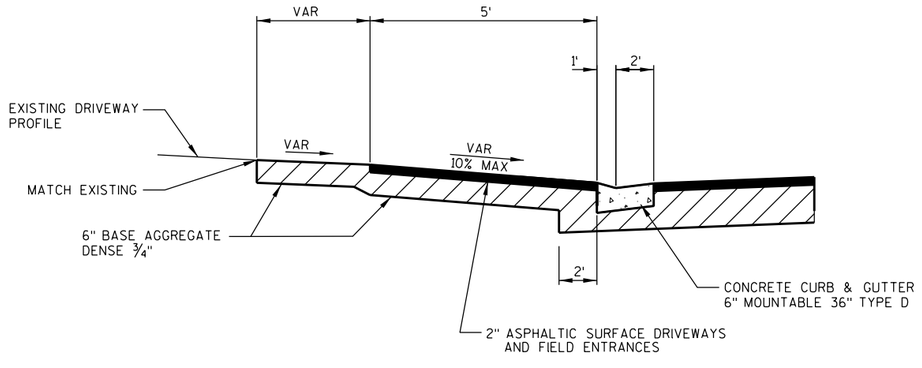


PRIVATE ENTRANCE AT CURB AND GUTTER LOCATIONS
TYPE 1



PLAN VIEW

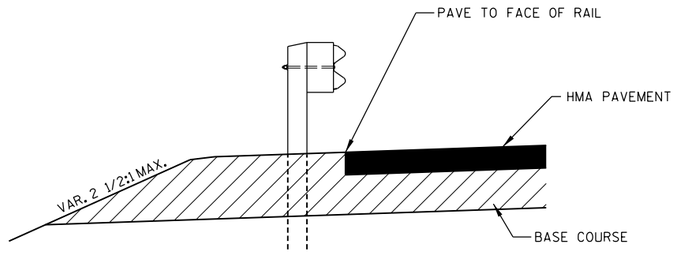
PRIVATE ENTRANCE DETAIL



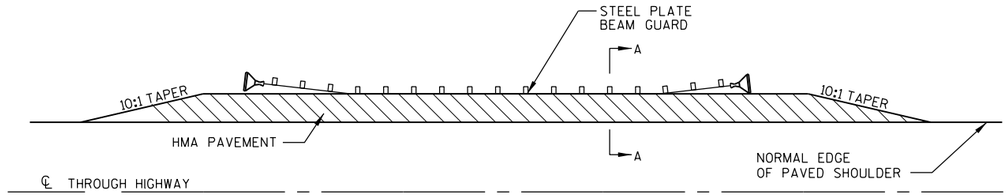
SECTION A-A

PROJECT NO: 5419-06-71	HWY: C.T.H. O	COUNTY: RICHLAND	CONSTRUCTION DETAILS	SHEET	E

2



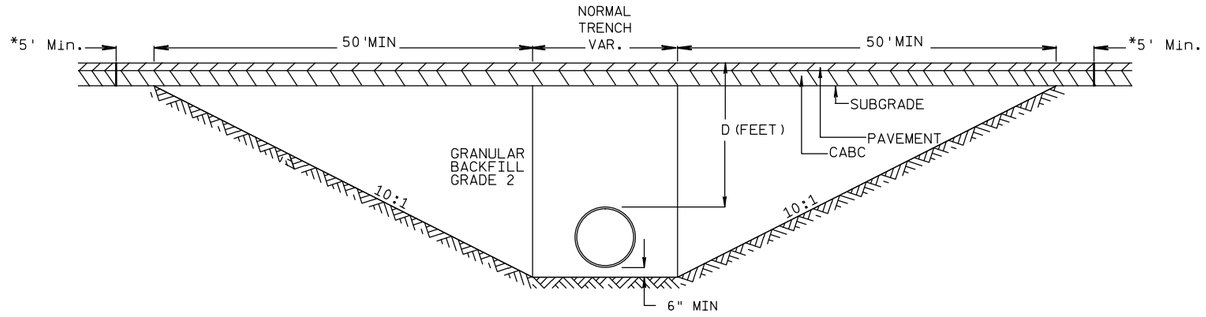
SECTION A-A
SHOULDER DETAIL AT GUARDRAIL

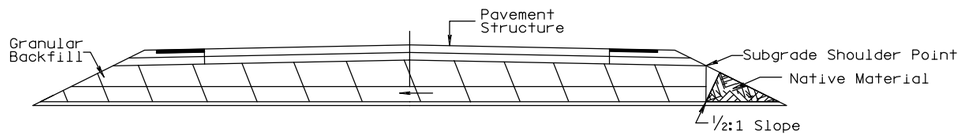


ASPHALTIC PAVING ALONG BEAM GUARD

PROJECT NO: 5419-06-71	HWY: C.T.H. O	COUNTY: RICHLAND	CONSTRUCTION DETAILS	SHEET	E

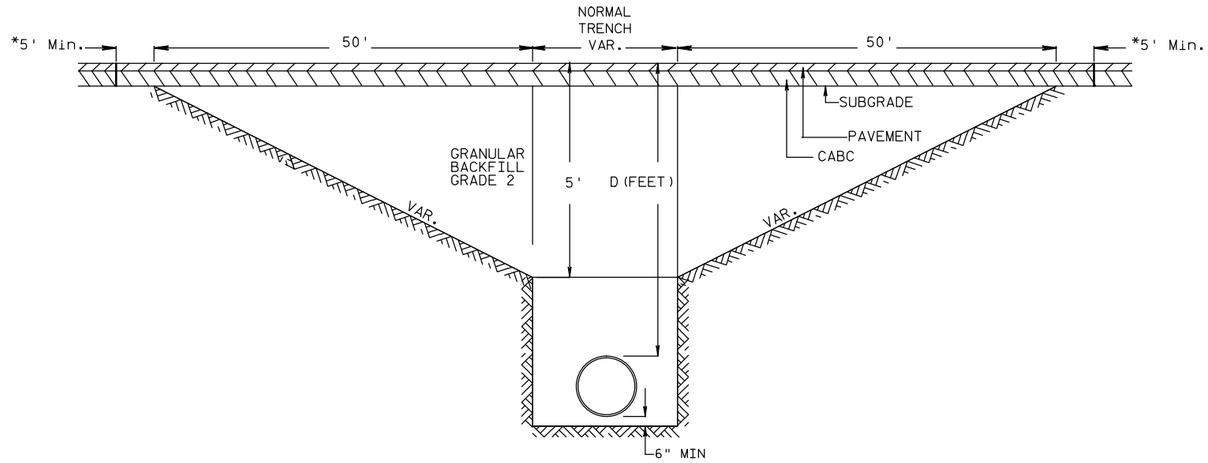
2

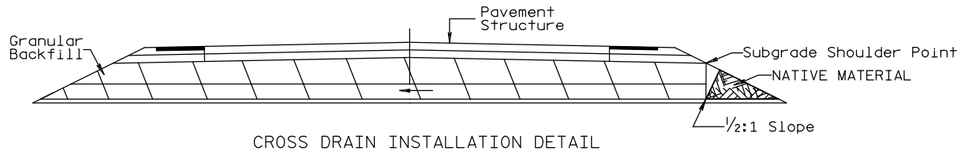




CROSS DRAIN INSTALLATION DETAIL
FOR D ≤ 5'

* Pavement Removal Limits (Typical)

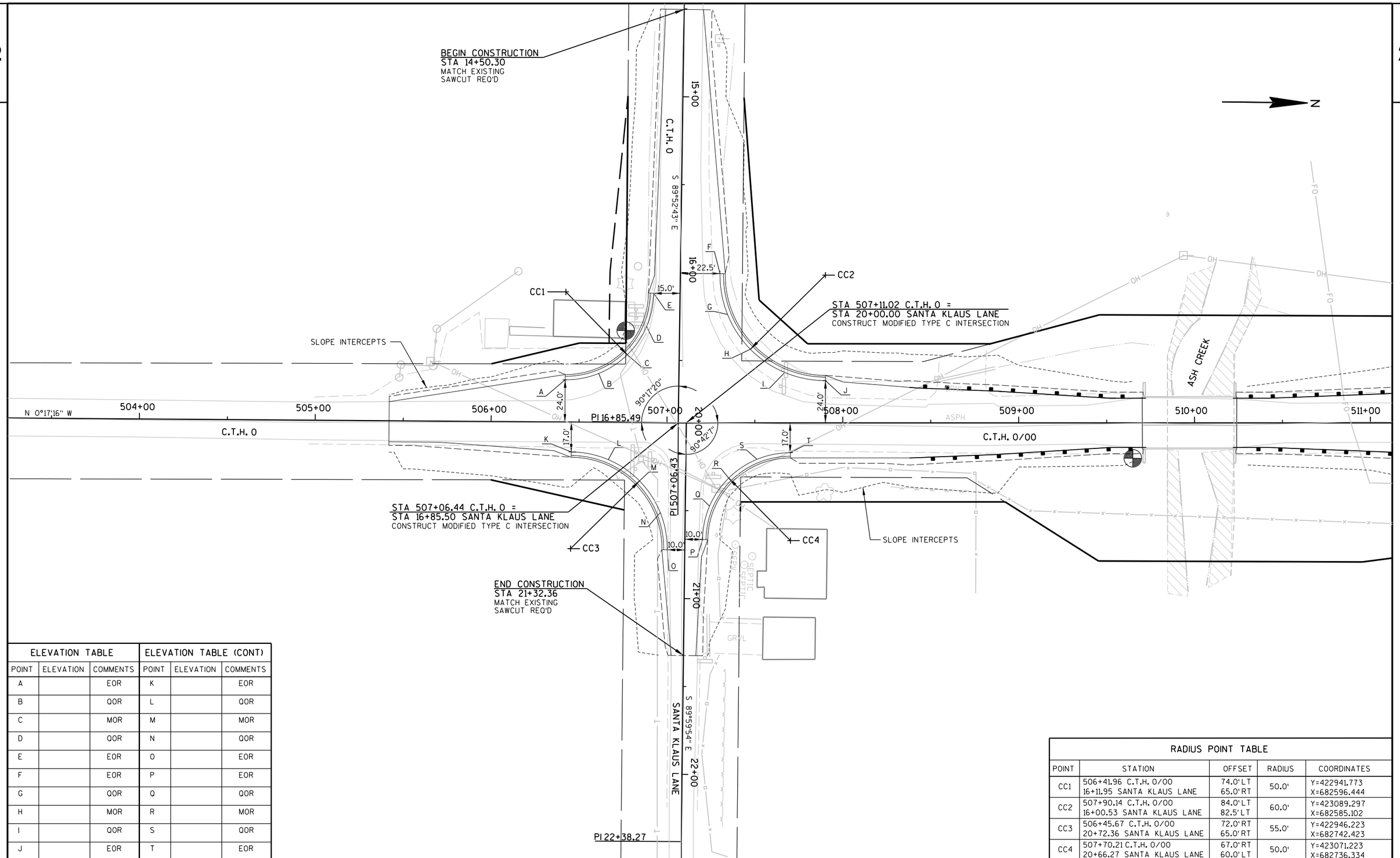




CROSS DRAIN INSTALLATION DETAIL
FOR D ≥ 5'

PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PROJECT OVERVIEW	SHEET _____	E

2

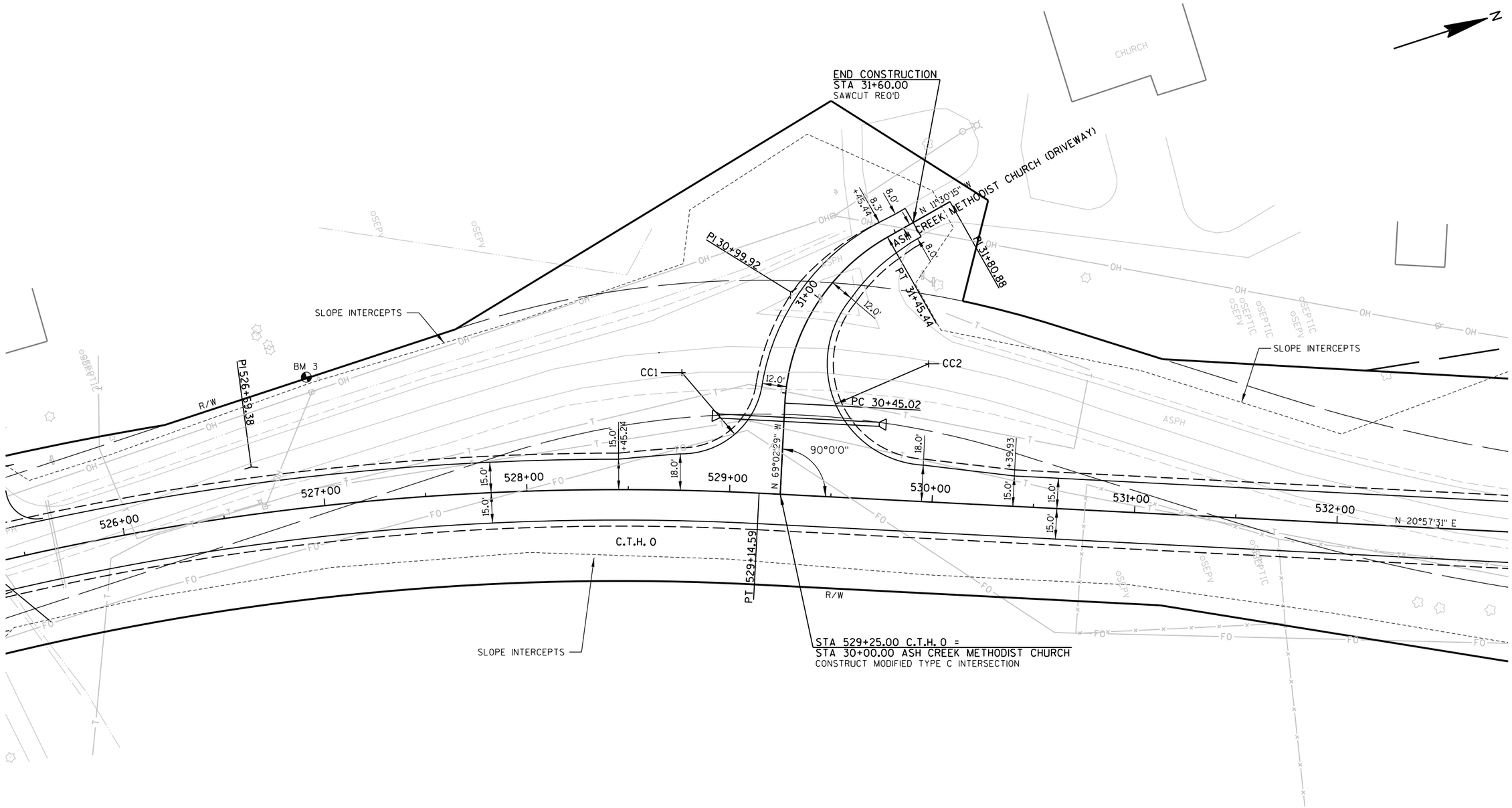


ELEVATION TABLE			ELEVATION TABLE (CONT)		
POINT	ELEVATION	COMMENTS	POINT	ELEVATION	COMMENTS
A		EOR	K		EOR
B		QOR	L		QOR
C		MOR	M		MOR
D		QOR	N		QOR
E		EOR	O		EOR
F		EOR	P		EOR
G		QOR	Q		QOR
H		MOR	R		MOR
I		QOR	S		QOR
J		EOR	T		EOR

RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC1	506+41.96 C.T.H. 0/00 16+11.95 SANTA KLAUS LANE	74.0'LT 65.0'RT	50.0'	Y=422941.773 X=682596.444
CC2	507+90.14 C.T.H. 0/00 16+00.53 SANTA KLAUS LANE	84.0'LT 82.5'LT	60.0'	Y=423089.297 X=682585.102
CC3	506+45.67 C.T.H. 0/00 20+72.36 SANTA KLAUS LANE	72.0'RT 65.0'RT	55.0'	Y=422946.223 X=682742.423
CC4	507+70.21 C.T.H. 0/00 20+66.27 SANTA KLAUS LANE	67.0'RT 60.0'LT	50.0'	Y=423071.223 X=682736.334

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET	E

2

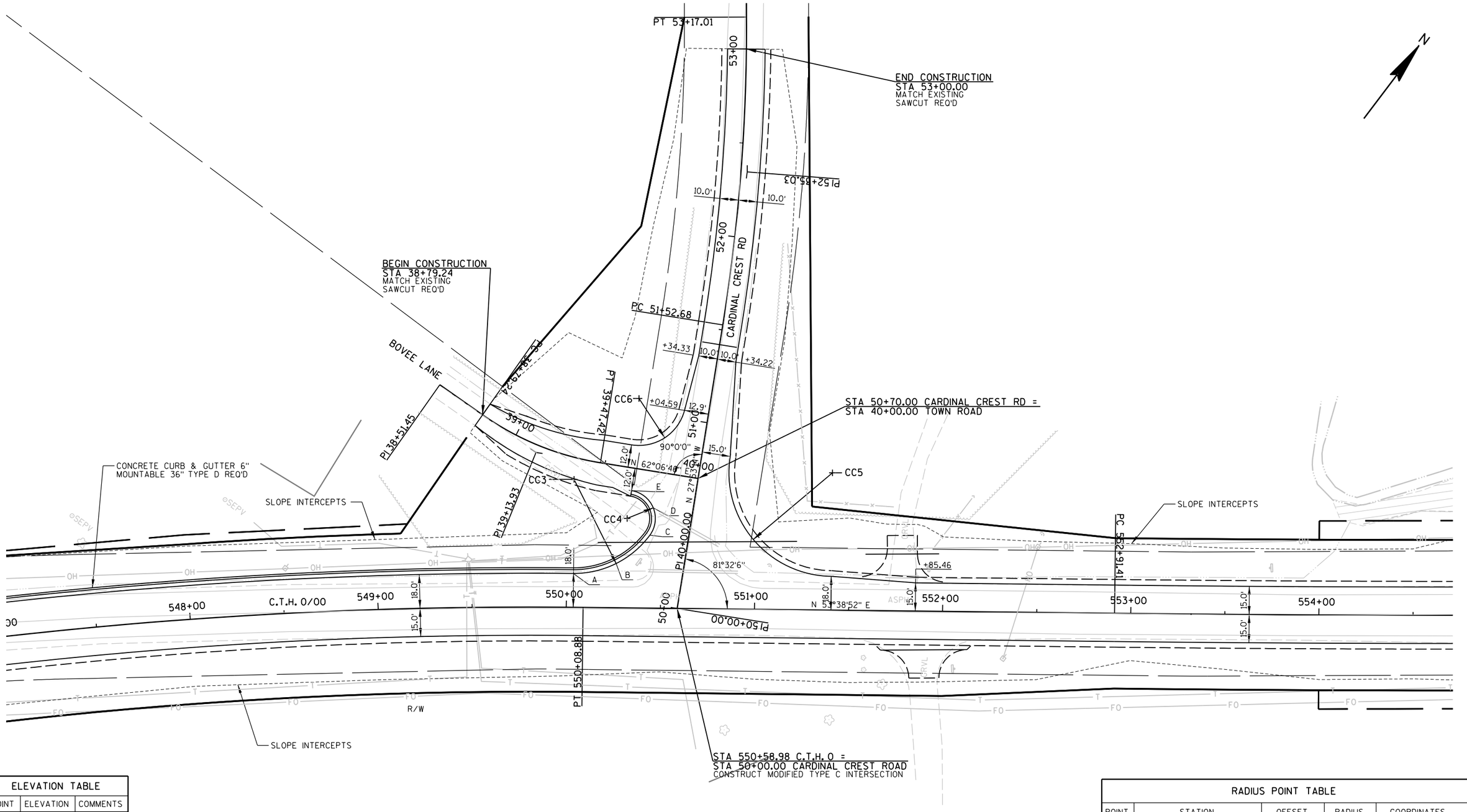


RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC1	528+75.22 C.T.H. 0/00 31+53.17 ASH CREEK METHODIST CHURCH	58.0' LT 52.0' LT	40.0'	Y = 425186.015 X = 682675.843
CC2	529+94.78 C.T.H. 0/00 31+10.05 ASH CREEK METHODIST CHURCH	68.0' LT 62.0' RT	50.0'	Y = 425303.053 X = 682709.310

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET	E

FILE NAME : P:\PT\R\Richc\040200\civil 3d\54190671\SheetsPlan\idcth002.dgn PLOT TIME : 10:19:41 AM PLOT DATE : 1/13/2017 PLOT BY : SEH PLOT NAME : PLOT SCALE : N/A

2

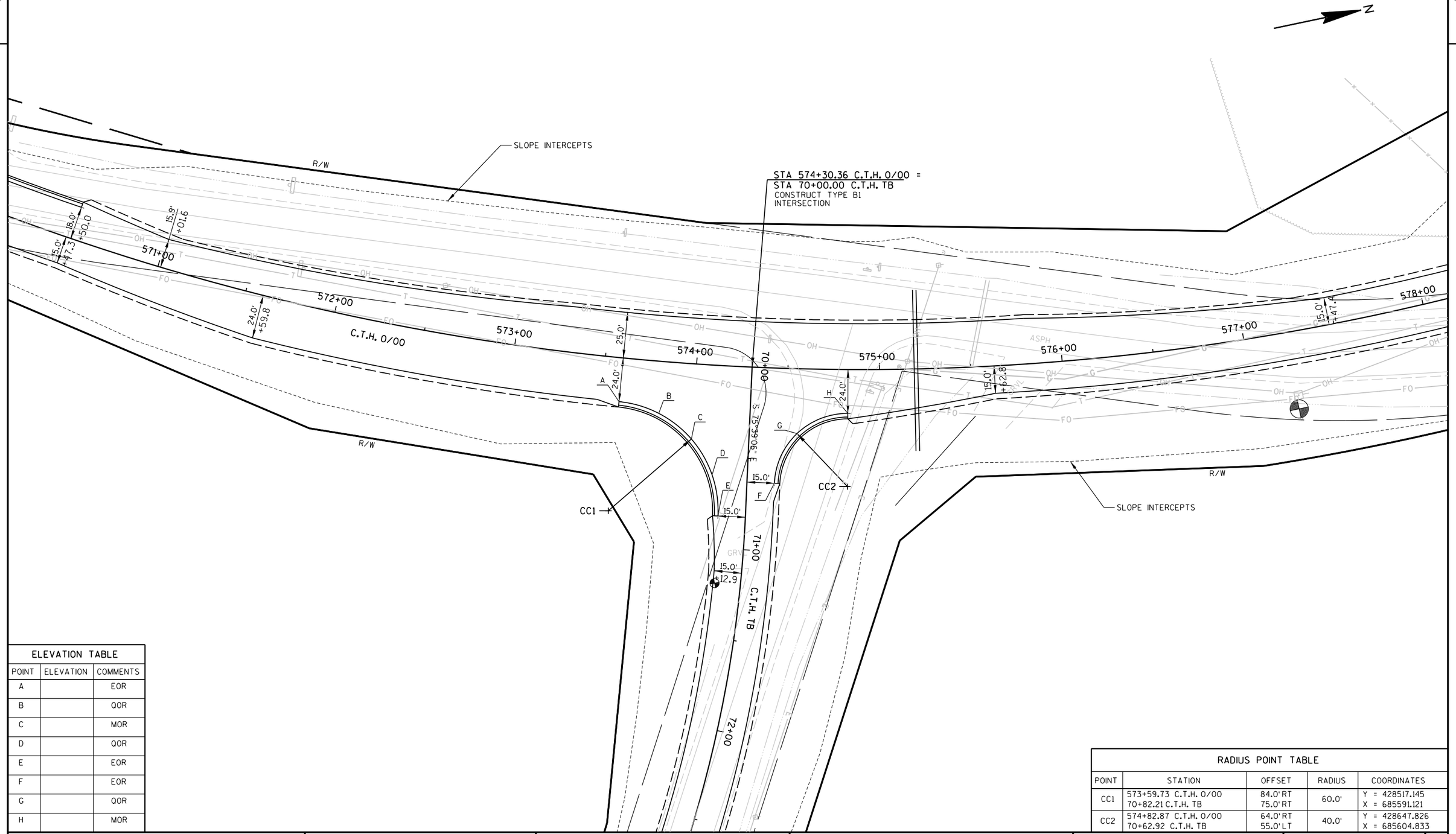


ELEVATION TABLE		
POINT	ELEVATION	COMMENTS
A		EOR
B		MOR
C		EOR
D		MOR
E		EOR

RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC3	550+03.55 C.T.H. 0/00 50+59.05 CARD'L CREST	68.0'LT 65.0'LT	50.0'	Y = 426998.344 X = 683791.063
CC4	550+31.98 C.T.H. 0/00 50+42.99 CARD'L CREST	47.5'LT 33.9'LT	15.0'	Y = 426998.692 X = 683826.061
CC5	551+84.24 C.T.H. 0/00 50+40.62 CARD'L CREST	73.0'LT 70.0'RT	55.0'	Y = 427083.725 X = 683898.618
CC6	51+06.99 CARD'L CREST 39+62.27 BOVEE LANE	37.8'LT 37.0'LT	25.0'	Y = 427053.454 X = 683792.717

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET	E

2



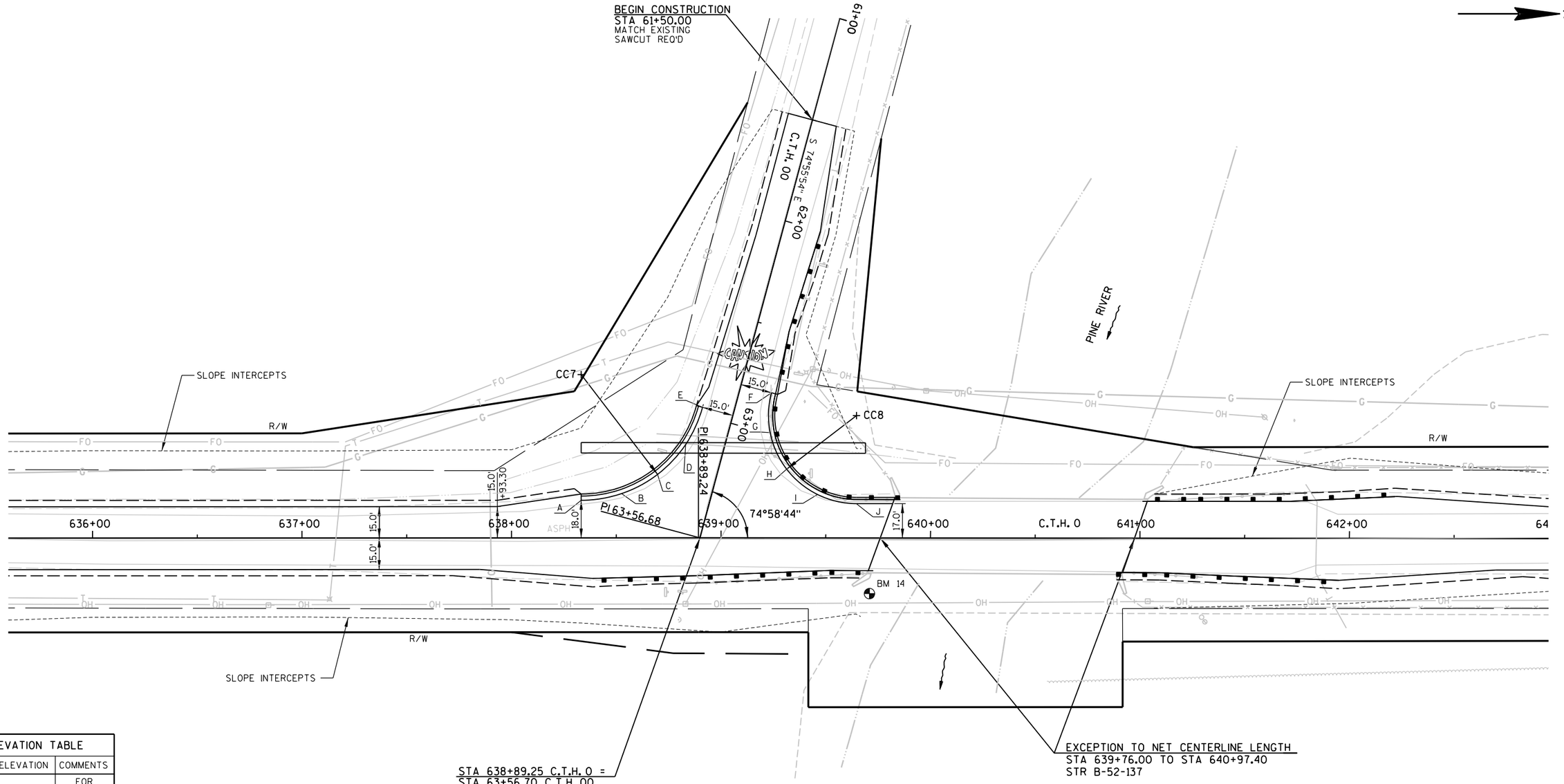
ELEVATION TABLE		
POINT	ELEVATION	COMMENTS
A		EOR
B		QOR
C		MOR
D		QOR
E		EOR
F		EOR
G		QOR
H		MOR

RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC1	573+59.73 C.T.H. 0/00 70+82.21 C.T.H. TB	84.0' RT 75.0' RT	60.0'	Y = 428517.145 X = 685591.121
CC2	574+82.87 C.T.H. 0/00 70+62.92 C.T.H. TB	64.0' RT 55.0' LT	40.0'	Y = 428647.826 X = 685604.833

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET	E

FILE NAME : P:\PT\R\Richc\040200\civil 3d\54190671\SheetsPlan\idctho04.dgn PLOT TIME : 10:19:42 AM PLOT DATE : 1/13/2017 PLOT BY : SEH PLOT NAME : PLOT SCALE : N/A

2

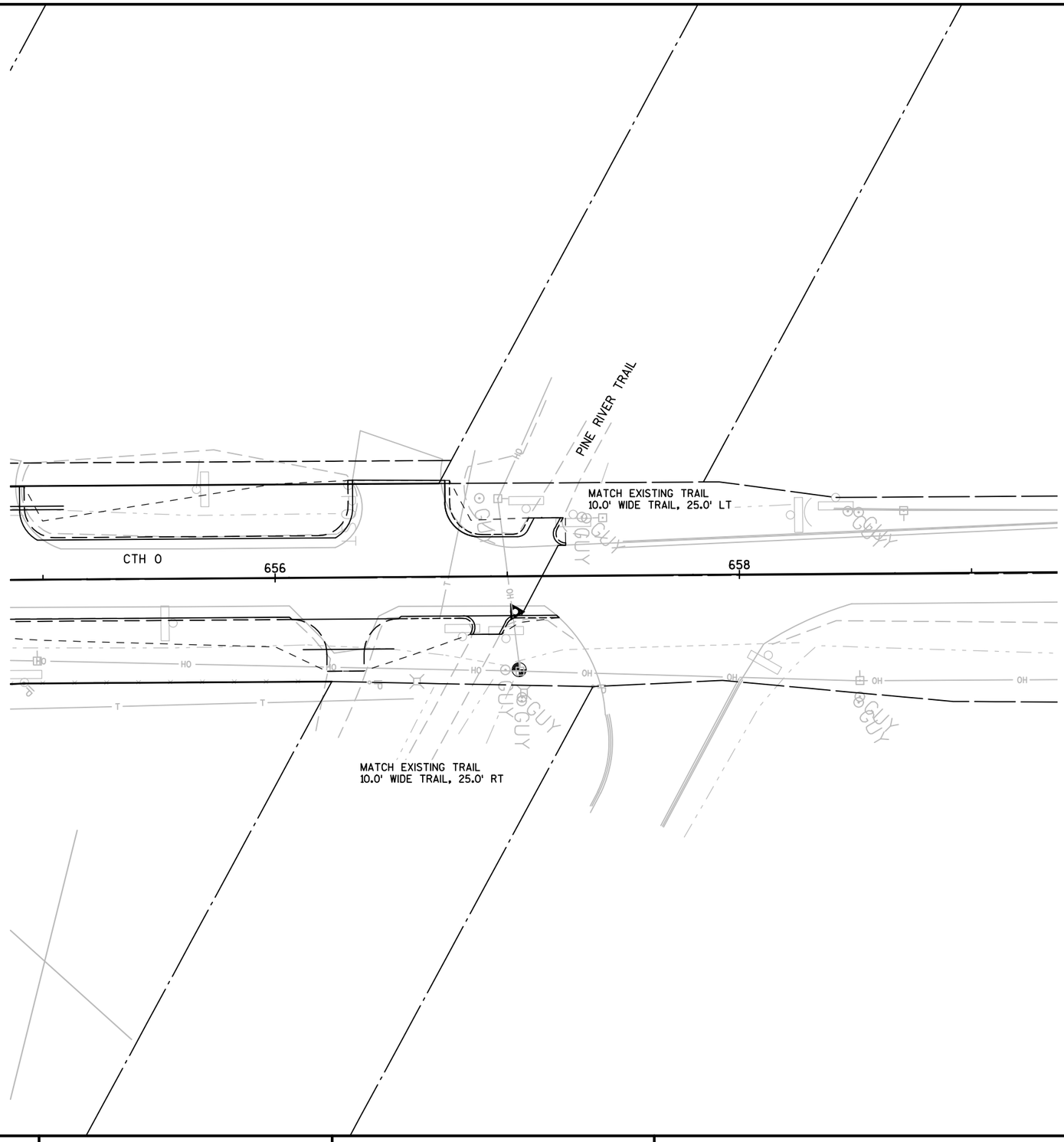


ELEVATION TABLE		
POINT	ELEVATION	COMMENTS
A		EOR
B		QOR
C		MOR
D		QOR
E		EOR
F		EOR
G		QOR
H		MOR
I		QOR
J		EOR

RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC7	638+33.30 C.T.H. 0 62+96.16 C.T.H. 00	78.0' LT 75.0' RT	60.0'	Y = 434965.547 X = 685188.730
CC8	639+64.64 C.T.H. 0 62+80.91 C.T.H. 00	58.4' LT 57.0' LT	42.0'	Y = 435096.973 X = 685208.319

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET	E

2

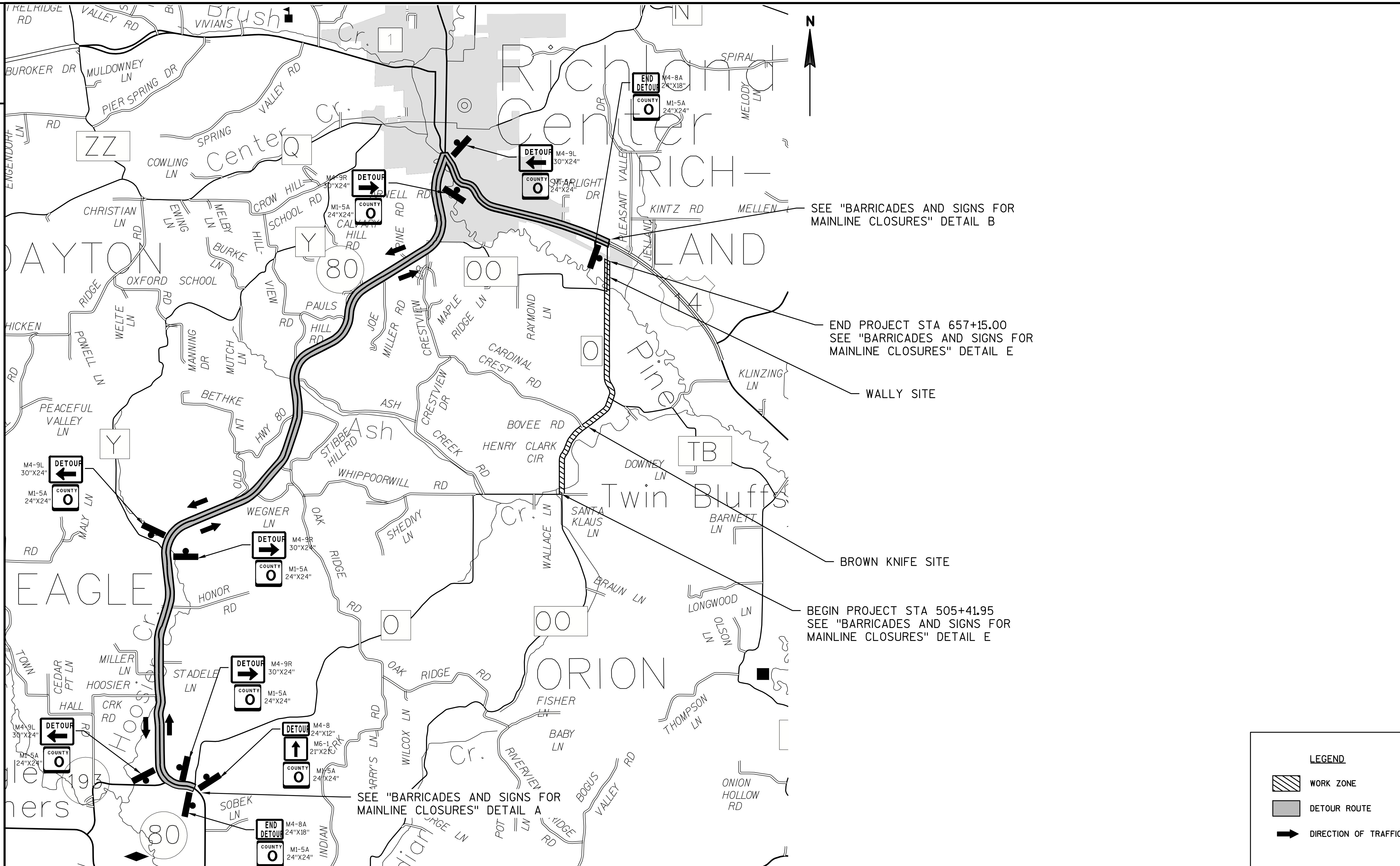


PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	INTERSECTION DETAIL	SHEET	E

FILE NAME : P:\PT\R\RICHC\040200\CIVIL 3D\54190671\SHEETSPLAN\021101-ID.DWG
LAYOUT NAME - ****

PLOT DATE : 1/13/2017 9:58 AM PLOT BY : NICK ENGH PLOT NAME : PLOT SCALE : 1 IN:50 FT

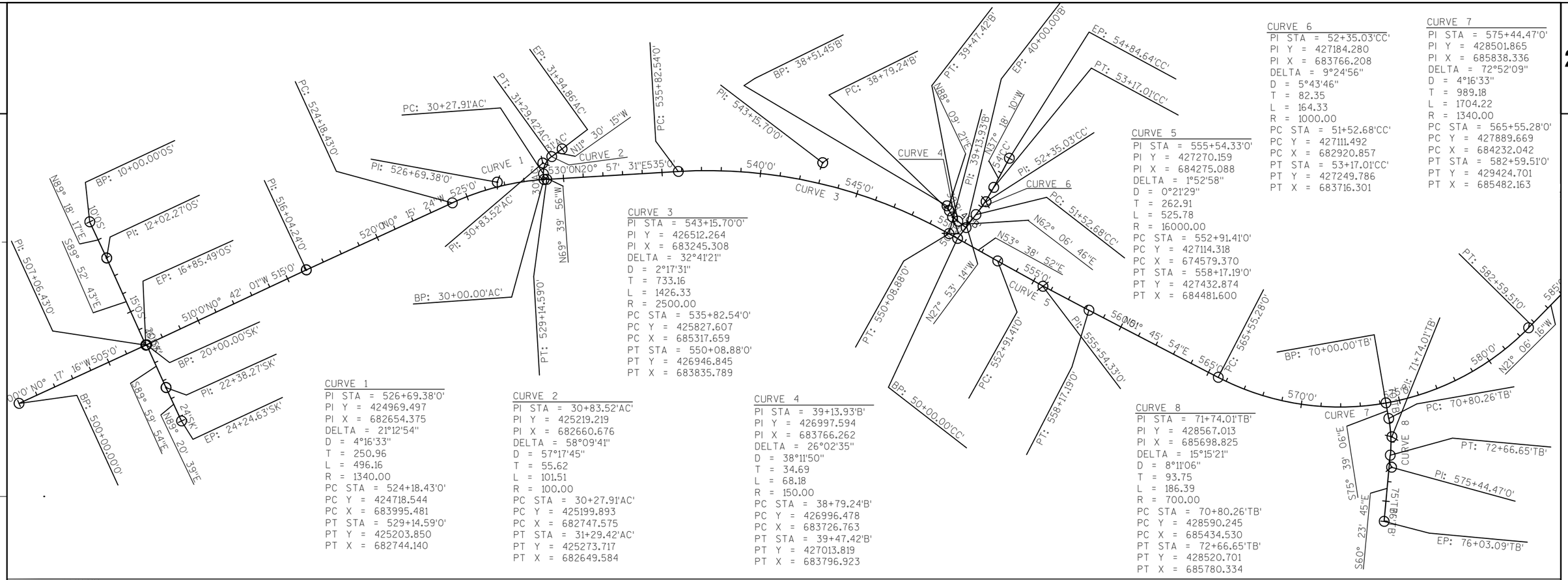
WISDOT/CADDS SHEET 42



PROJECT NO:5419-06-71	HWY:CTH O	COUNTY:RICHLAND	DETOUR ROUTE	SHEET	E

FILE NAME : P:\PT\R\RICHC\040200\CIVIL 3D\54190671\SHEETSPLAN\027001 DT.DWG
LAYOUT NAME - ####
PLOT DATE : 1/13/2017 9:58 AM PLOT BY : NICK ENGH PLOT NAME : PLOT SCALE : 1 IN:1 MI

2



CURVE 1
PI STA = 526+69.38'0'
PI Y = 424969.497
PI X = 682654.375
DELTA = 21°12'54"
D = 4°16'33"
T = 250.96
L = 496.16
R = 1340.00
PC STA = 524+18.43'0'
PC Y = 424718.544
PC X = 683995.481
PT STA = 529+14.59'0'
PT Y = 425203.850
PT X = 682744.140

CURVE 2
PI STA = 30+83.52'AC'
PI Y = 425219.219
PI X = 682660.676
DELTA = 58°09'41"
D = 57°17'45"
T = 55.62
L = 101.51
R = 100.00
PC STA = 30+27.91'AC'
PC Y = 425199.893
PC X = 682747.575
PT STA = 31+29.42'AC'
PT Y = 425273.717
PT X = 682649.584

CURVE 3
PI STA = 543+15.70'0'
PI Y = 426512.264
PI X = 683245.308
DELTA = 32°41'21"
D = 2°17'31"
T = 733.16
L = 1426.33
R = 2500.00
PC STA = 535+82.54'0'
PC Y = 425827.607
PC X = 685317.659
PT STA = 550+08.88'0'
PT Y = 426946.845
PT X = 683835.789

CURVE 4
PI STA = 39+13.93'B'
PI Y = 426997.594
PI X = 683766.262
DELTA = 26°02'35"
D = 38°11'50"
T = 34.69
L = 68.18
R = 150.00
PC STA = 38+79.24'B'
PC Y = 426996.478
PC X = 683726.763
PT STA = 39+47.42'B'
PT Y = 427013.819
PT X = 683796.923

CURVE 5
PI STA = 555+54.33'0'
PI Y = 427270.159
PI X = 684275.088
DELTA = 1°52'58"
D = 0°21'29"
T = 262.91
L = 525.78
R = 16000.00
PC STA = 552+91.41'0'
PC Y = 427114.318
PC X = 674579.370
PT STA = 558+17.19'0'
PT Y = 427432.874
PT X = 684481.600

CURVE 6
PI STA = 52+35.03'CC'
PI Y = 427184.280
PI X = 683766.208
DELTA = 9°24'56"
D = 5°43'46"
T = 82.35
L = 164.33
R = 1000.00
PC STA = 51+52.68'CC'
PC Y = 427111.492
PC X = 682920.857
PT STA = 53+17.01'CC'
PT Y = 427249.786
PT X = 683716.301

CURVE 7
PI STA = 575+44.47'0'
PI Y = 428501.865
PI X = 685838.336
DELTA = 72°52'09"
D = 4°16'33"
T = 989.18
L = 1704.22
R = 1340.00
PC STA = 565+55.28'0'
PC Y = 427889.669
PC X = 684232.042
PT STA = 582+59.51'0'
PT Y = 429424.701
PT X = 685482.163

CURVE 8
PI STA = 71+74.01'TB'
PI Y = 428567.013
PI X = 685698.825
DELTA = 15°15'21"
D = 8°11'06"
T = 93.75
L = 186.39
R = 700.00
PC STA = 70+80.26'TB'
PC Y = 428590.245
PC X = 685434.530
PT STA = 72+66.65'TB'
PT Y = 428520.701
PT X = 685780.334

CURVE 9
PI STA = 588+31.76'0'
PI Y = 429958.570
PI X = 685276.113
DELTA = 20°54'22"
D = 4°16'33"
T = 247.22
L = 488.94
R = 1340.00
PC STA = 585+84.54'0'
PC Y = 429727.933
PC X = 686615.250
PT STA = 590+73.48'0'
PT Y = 430205.788
PT X = 685275.258

PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	ALIGNMENT DETAIL	SHEET _____	E

BENCHMARK TABLE

NO.	STATION	DESCTIPTION	ELEV
1	506+76.17 52.2' LT	TOP NE COR TOP STEP CONC LANDING AREA OF TOWN HALL CTH O/CTH OO	738.63
2	509+64.93 20.2' RT	FD ALUMINUM DISC SE WINGWALL OF STRUCTURE B-52-15	739.59

KELLAND LAND LLC

CTH O

PL

TOWN OF ORION

STA 15+00 LT
CONSTRUCT 27.0' WIDE PE
(BY OTHERS)

ASH CREEK

STA 509+25
1-18"x54' CPCP REQ'D
2-AECPS REQ'D

SCHMITZ FARMLAND LLC

STA 510+75
1-18"x74' CPCP REQ'D
2-AECPS REQ'D

MGS GUARDRAIL TERMINAL EAT REQ'D
STA 508+37.86 TO STA 508+87.81 LT
STA 511+46.52 TO STA 511+96.48 LT
STA 508+37.94 TO STA 508+87.90 RT
STA 511+46.38 TO STA 511+96.34 RT

MGS GUARDRAIL 3 REQ'D
STA 508+87.81 TO STA 509+33.06 LT
STA 510+61.26 TO STA 511+46.52 LT
STA 508+87.90 TO STA 509+33.16 RT
STA 510+85.39 TO STA 511+46.38 RT

R/W

SLOPE INTERCEPT

MATCHLINE STA 514+50

500 502 504 506 508 510 512 514

CTH OO

CTH O/CTH OO

TLE

R/W

SLOPE INTERCEPT

STA 20+39
1-18"x74' CPCS REQ'D
2-AECPS REQ'D

SCHMITZ FARMLAND LLC

BEGIN PROJECT
STA 505+41.95
Y= 422842.145
X= 682670.944
MATCH EXISTING
SAWCUT REQ'D

SANTA KLAUS LANE

KELLY G. MULLARNEY

PL

DEBRA RYNES-DOWNEY

ASH CREEK

EXCEPTION TO NET CENTERLINE LENGTH
STA 509+70.39 TO STA 510+24.01
STR B-52-15

STA 513+25 RT
CONSTRUCT 24.0' WIDE PE
1-18"x52' CPCP REQ'D
2-AECPS REQ'D
REMOVE EXISTING 18"x50 CVCMP

MGS THRIE BEAM TRANSITION
STA 509+33.06 TO STA 509+72.45 LT
STA 510+21.88 TO STA 510+61.26 LT
STA 509+33.16 TO STA 509+72.54 RT
STA 510+21.79 TO STA 510+85.39 RT

5

5

VCL = 100.00
K = 184.35

VCL = 360.00
K = 137.07

VCL = 150.00
K = 682.20

VCL = 400.00
K = 191.48

STA 505+41.95 EL 736.94
VPC STA 505+91.30 VPC EL 737.27
VPI STA 506+66.30 VPI EL 737.77
VPT STA 507+41.30 VPT EL 738.11
VPC STA 508+70.00 VPC EL 739.06
VPI STA 510+70.00 VPI EL 741.05
VPT STA 512+70.00 VPT EL 738.86
VPC STA 507+50.00 VPC EL 738.14
VPI STA 508+00.00 VPI EL 738.37
VPT STA 508+50.00 VPT EL 738.87
VPC STA 513+05.00 VPC EL 738.47

0.67% 0.45% 0.99% -1.10%

FINISHED ℄ PROFILE

EXISTING ℄ PROFILE

STA 509+25
1-18"x54' CPCP REQ'D

STA 510+75
1-18"x74' CPCP REQ'D

EXISTING ℄ ELEVATION

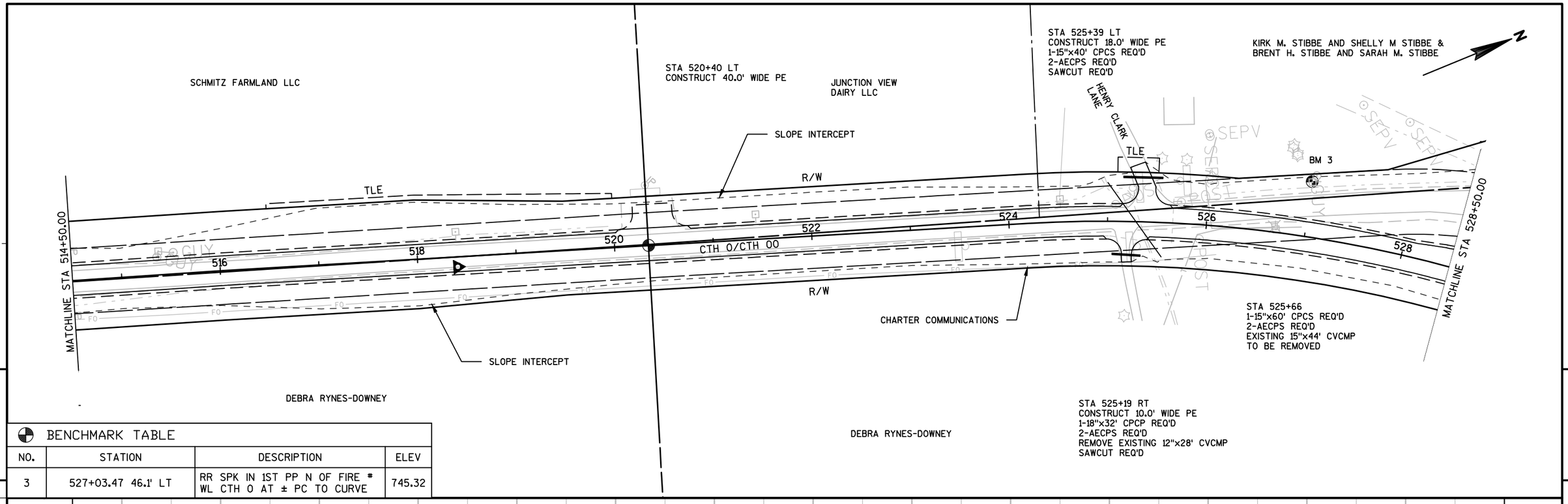
FINISHED ℄ ELEVATION

750 740 730 720

737.56 737.31 737.18 737.05 736.91 736.77 736.75 736.73 736.69 736.65 736.99 736.99 737.32 737.32 737.77 737.63 737.92 737.91 738.08 738.14 738.23 738.44 738.39 738.87 739.03 739.34 739.57 739.69 739.77 739.91 739.79 740.01 739.47 739.97 738.71 739.80 737.91 739.50 736.82 739.07 735.83 738.53 735.25 738.05 734.72 737.76 734.53 737.65

500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 514

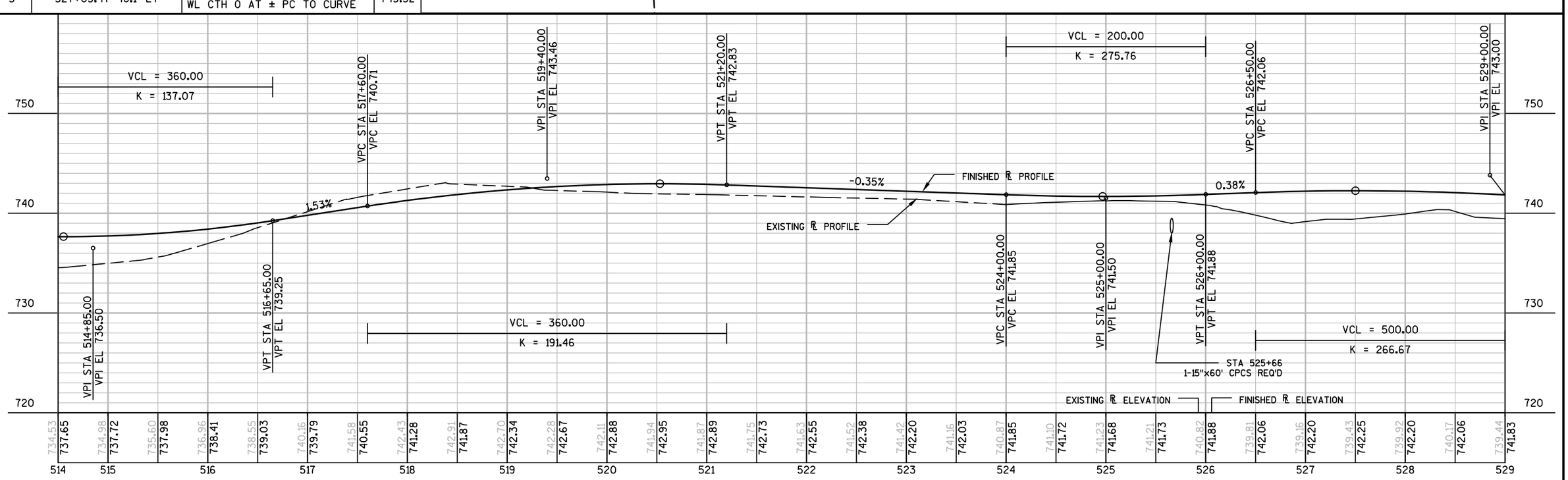
PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E



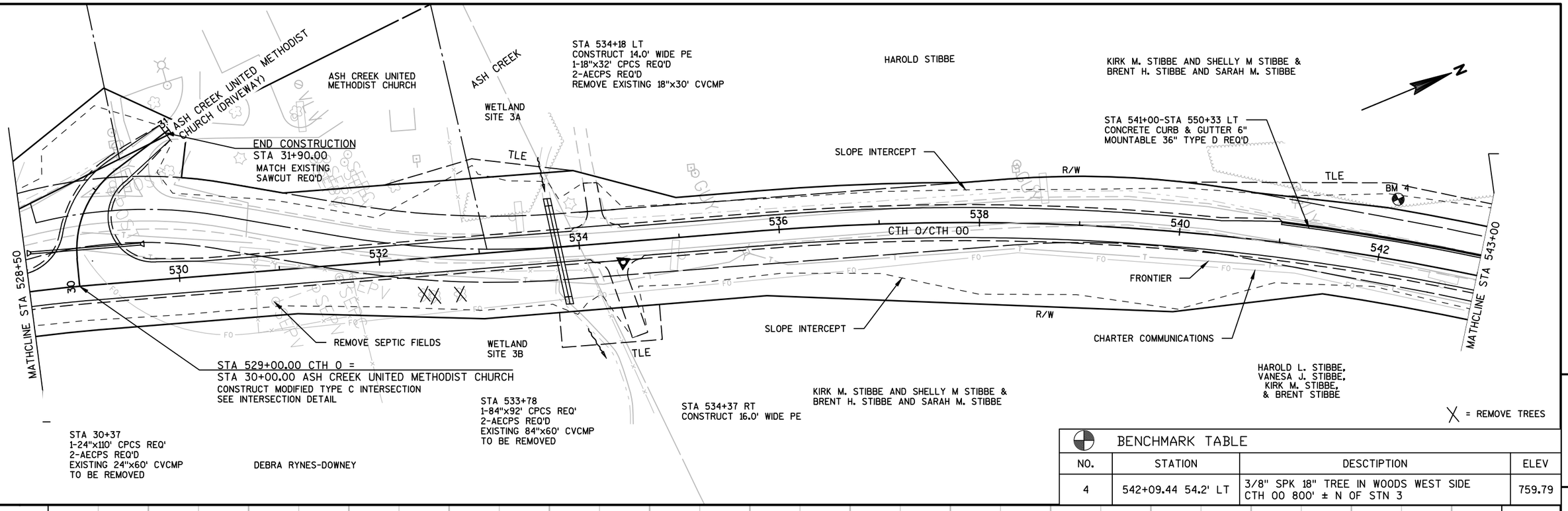
5

BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEV
3	527+03.47 46.1' LT	RR SPK IN 1ST PP N OF FIRE # WL CTH O AT ± PC TO CURVE	745.32

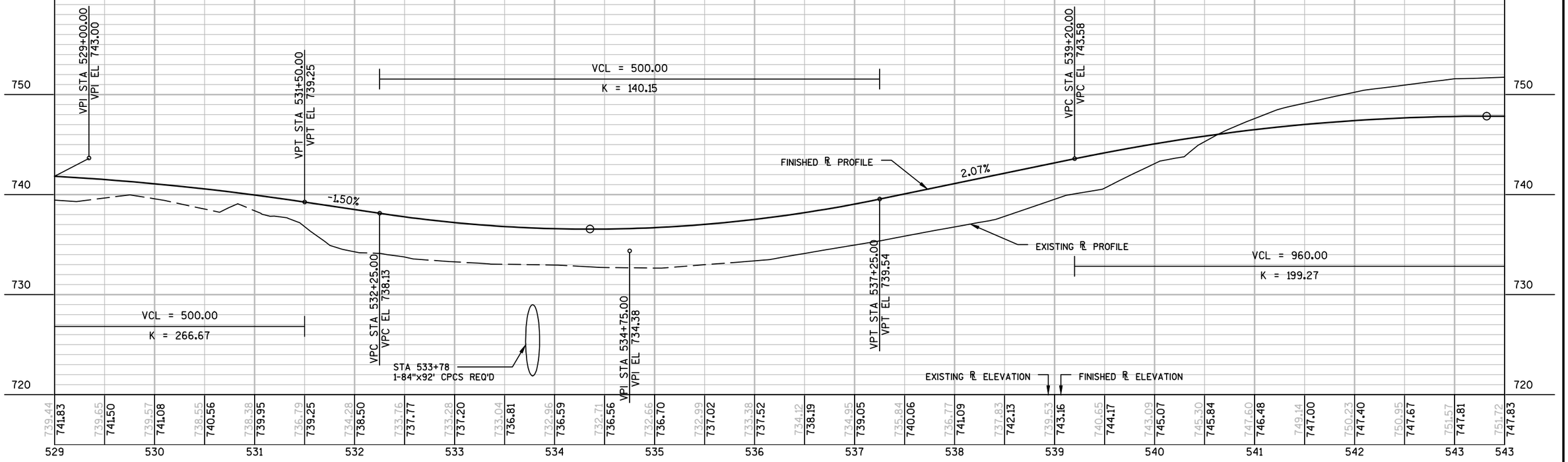
5



PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E



BENCHMARK TABLE			
NO.	STATION	DESCTIPTION	ELEV
4	542+09.44 54.2' LT	3/8" SPK 18" TREE IN WOODS WEST SIDE CTH OO 800' ± N OF STN 3	759.79



PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E

BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEV
5	557+88.67 54.8' LT	RR SPK IN 36" OAK 500'± N OF FIRE # 28515	734.48

KIRK M. STIBBE AND SHELLY M STIBBE &
BRENT H. STIBBE AND SARAH M. STIBBE

RUSSELL L. BAKKEN

CEMETERY

BOVEE LN

CARDINAL CREST RD

STA 51+05
1-18"x48' CPCS REQ'D
2-AECPS REQ'D
STA 50+43
REMOVE EXISTING 18"x36' CVCMP

BEGIN CONSTRUCTION
STA 53+00.00
MATCH EXISTING
SAWCUT REQ'D

STA 551+78 LT
CONSTRUCT 16.0' WIDE PE
1-15"x30' CPCS REQ'D
2-AECPS REQ'D
REMOVE EXISTING 15"x18' CVCMP

REGINALD A.
EMSHOFF

MGS GUARDRAIL TERMINAL EAT REQ'D
STA 554+00.15 TO STA 554+50.17 LT
STA 555+49.79 TO STA 555+99.77 LT
STA 553+99.81 TO STA 554+49.71 RT
STA 555+50.39 TO STA 556+00.29 RT

MGS LONG SPAN MGS(L) TWO-WAY TRAFFIC
STA 554+50.17 TO STA 555+49.79 LT (12'-6" CENTER SPAN LENGTH)
STA 554+49.71 TO STA 555+50.39 RT (12'-6" CENTER SPAN LENGTH)

STA 555+10
1-84"x60' REQ'D
EXISTING 84"x60' CVCMP
TO BE REMOVED

BEGIN CONSTRUCTION
STA 38+79.24
MATCH EXISTING
SAWCUT REQ'D

STA 541+00-STA 550+33 LT
CONCRETE CURB & GUTTER 6"
MOUNTABLE 36" TYPE D REQ'D

STA 50+70.00 CARDINAL CREST ROAD =
STA 40+00.00 TOWN RD

SLOPE INTERCEPT

WETLAND SITE 2A

BM 5

MATCHLINE STA 543+00

MATCHLINE STA 558+00

STA 550+58.98 CTH O =
STA 50+00.00 CARDINAL CREST ROAD
CONSTRUCT MODIFIED TYPE C INTERSECTION

STA 50+20
REMOVE EXISTING 15"x48' CVCMP

SLOPE INTERCEPT

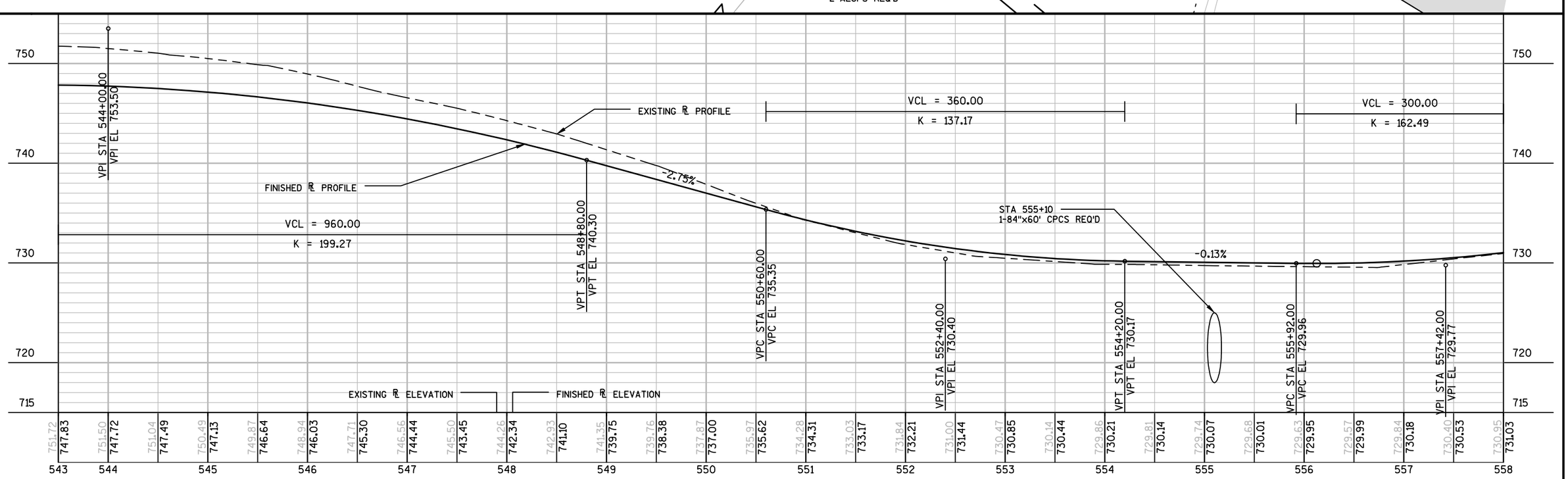
BROWN KNIFE SITE

WETLAND SITE 2B

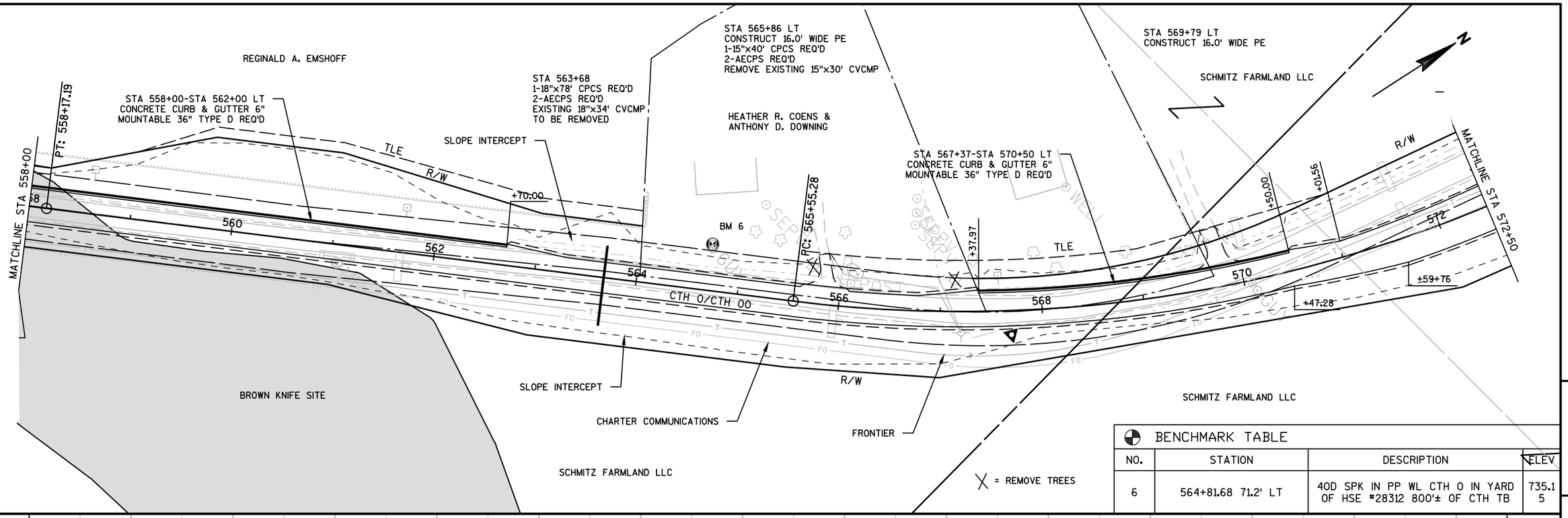
KIRK M. STIBBE AND SHELLY M STIBBE &
BRENT H. STIBBE AND SARAH M. STIBBE

STA 551+90 RT
CONSTRUCT 16.0' WIDE PE
1-18"x36' CPCP REQ'D
2-AECPS REQ'D

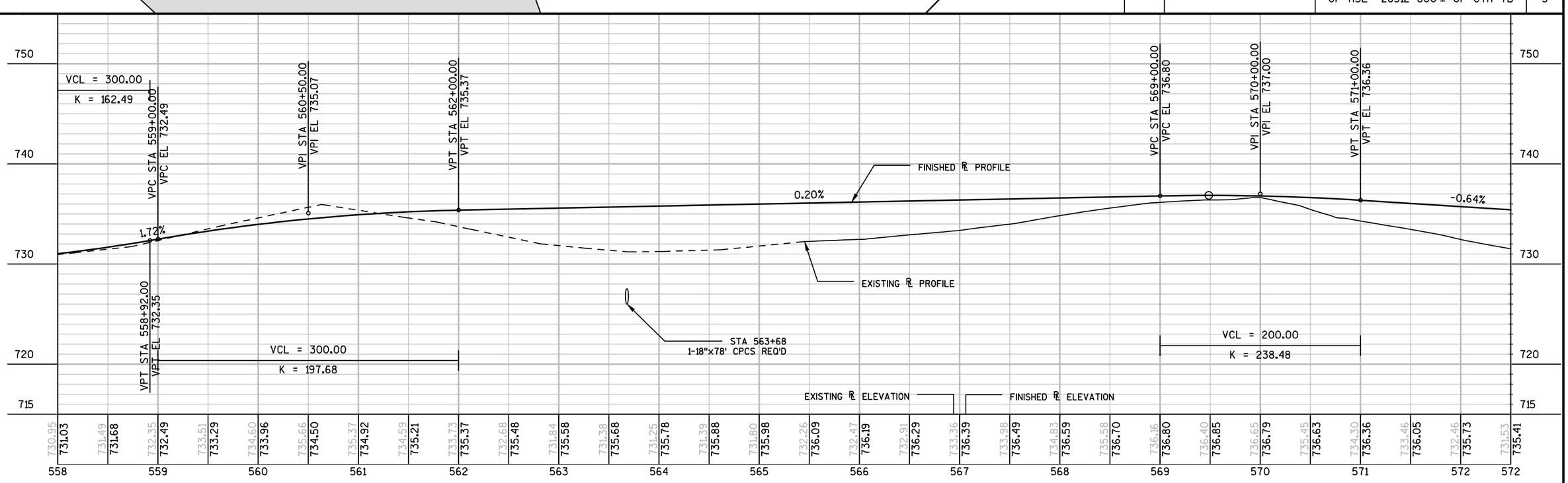
KIRK M. STIBBE AND SHELLY M STIBBE &
BRENT H. STIBBE AND SARAH M. STIBBE



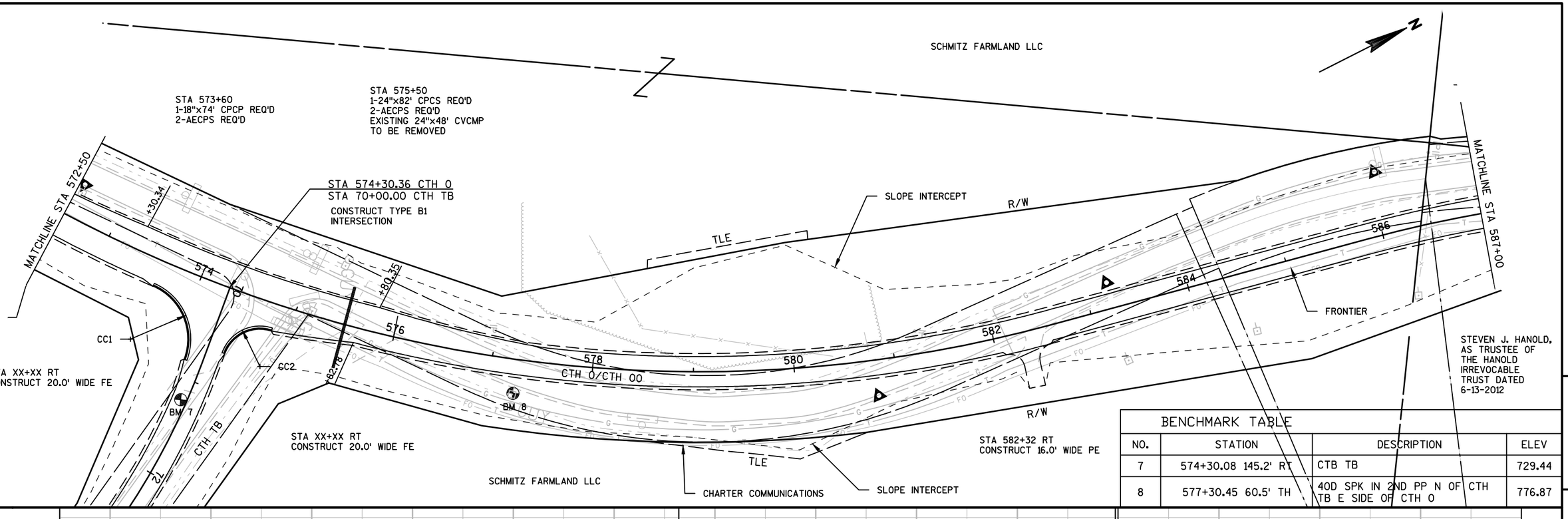
PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E



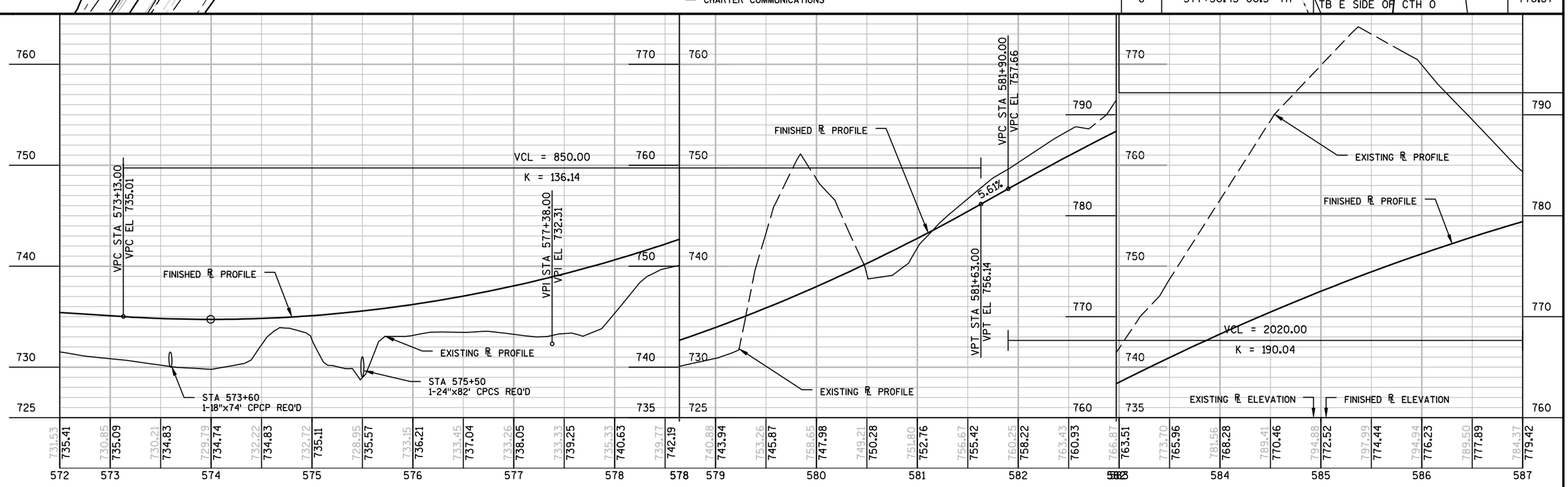
BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEV
6	564+81.68 71.2' LT	40D SPK IN PP WL CTH O IN YARD OF HSE #28312 800'± OF CTH TB	735.15



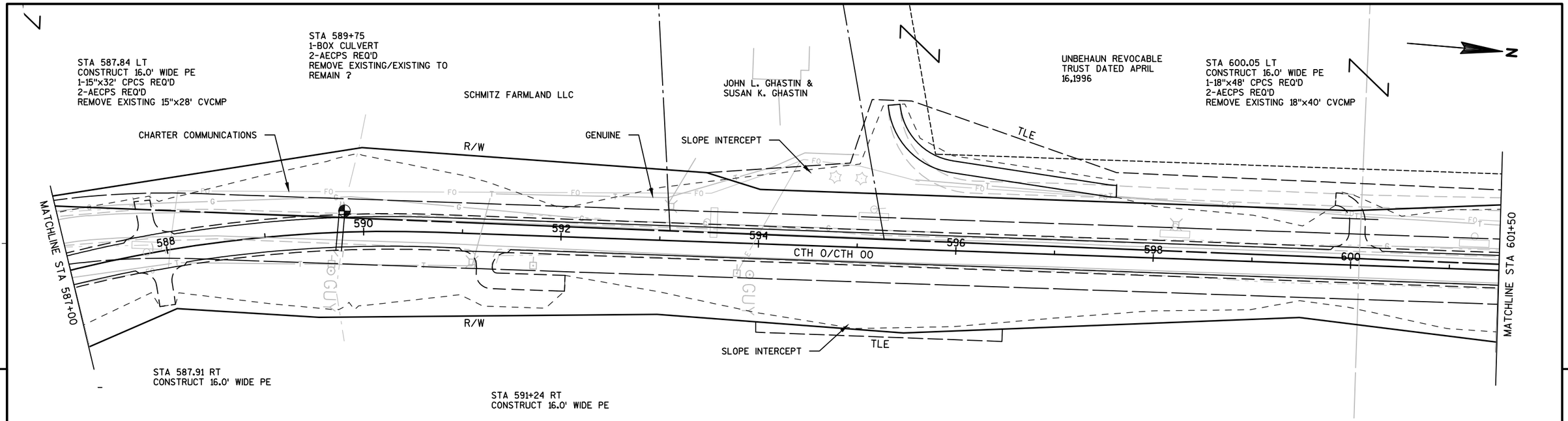
PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E



BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEV
7	574+30.08 145.2' RT	CTB TB	729.44
8	577+30.45 60.5' TH	40D SPK IN 2ND PP N OF CTH TB E SIDE OF CTH O	776.87



PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E

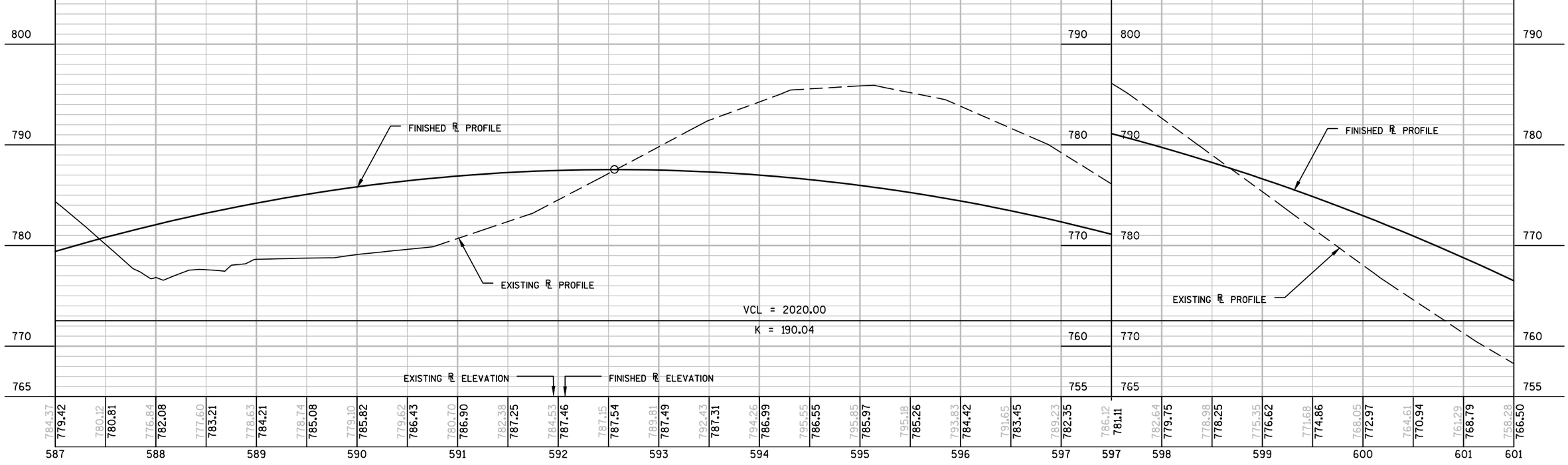


5

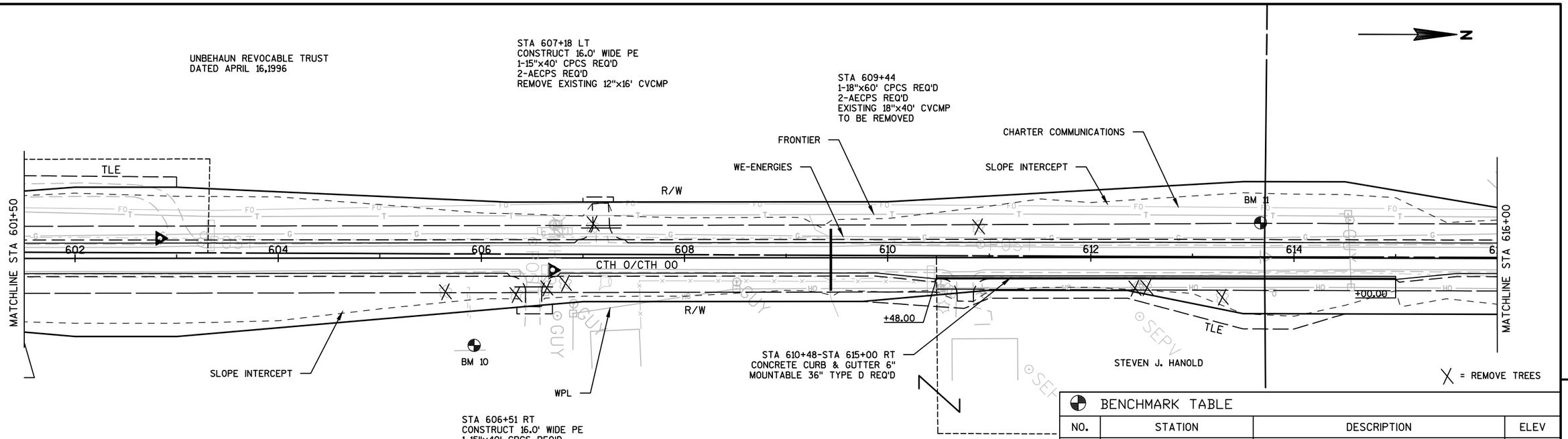
5

BENCHMARK TABLE

NO.	STATION	DESCRIPTION	ELEV
9	589+91.03 20.5' LT	TOP N CONC COR OF BOX CULVERT C-356-36 W SIDE CTH O	776.87

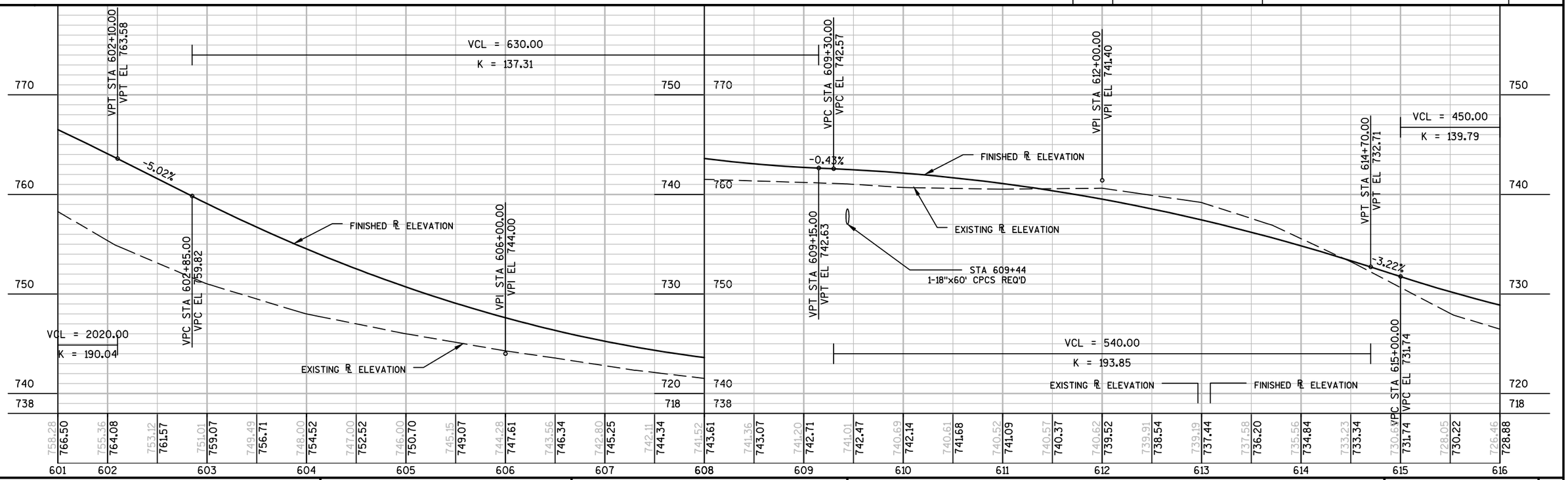


PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E



BENCHMARK TABLE

NO.	STATION	DESCRIPTION	ELEV
10	605+96.46 86.1' RT	TOP NW COR CONC RAILING @ HSE #27911	750.51
11	613+69.44 43.1' RT	RR SPK IN 60" TREE WL CTH O 500'± N OF DRIVEWAY 27611 @ 1/4 COR SEC LINE	745.46



PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E

BENCHMARK TABLE

NO.	STATION	DESCRIPTION	ELEV
12	623+16.98 35.98' RT	TNH EL CTH O @ NE COR ENTRANCE TO WATER TREATMENT PLANT @ CTH D	723.90
13	629+36.40 57.1' LT	RR SPK IN 36" TREE WL CTH O @ N ENTRANCE TO PINE VALLEY CARE CENTER	717.61

PROJECT NO:5419-06-71	HWY:CTH O	COUNTY:RICHLAND	PLAN AND PROFILE:	SHEET	E

MGS GUARDRAIL TERMINAL EAT REQ'D
STA 638+38.79 TO STA 638+89.03 RT
STA 641+70.11 TO STA 641+95.10 RT
STA 641+71.75 TO STA 642+21.72 LT
STA 647+05.50 TO STA 647+55.42 LT
STA 646+70.50 TO STA 647+20.46 RT

MGS GUARDRAIL REQ'D
STA 638+89.30 STA 639+33.36 RT
STA 641+28.29 TO STA 641+71.11 RT
STA 641+40.49 TO STA 641+71.75 LT
STA 644+55.62 TO STA 647+05.50 LT
STA 644+20.18 TO STA 647+20.46 RT

MGS THRIE BEAM TRANSTITION
STA 641+01.05 TO STA 641+40.49 LT
STA 639+33.36 TO STA 639+72.74 RT
STA 640+88.91 TO STA 641+28.29 RT

STA 643+45
1-48"x100' CPCS REQ'D
2-AECPS REQ'D
REMOVE EXISTING 48"x68' CVCMP

BEGIN CONSTRUCTION
STA 61+50.00
MATCH EXISTING
SAWCUT REQ'D

STEEL THRIE BEAM STRUCTURE APPROCH
STA 639+64.25 TO STA 639+85.52 LT

STEEL PLATE BEAM GUARD SHORT RADIUS
STA 639+25.59 STA 639+64.28 LT

STEEL PLATE BEAM GUARD
STA 62+80.87 TO STA 62+50.54 LT

STEEL PLATE BEAM GUARD
STA 62+00.45 TO STA 62+50.54 LT

STA 638+88.93 CTH O =
STA 63+56.68 CTH OO
CONSTRUCT MODIFIED
TYPE D INTERSECTION
SEE INTERSECTION DETAIL

EXCEPTION TO NET CENTERLINE
STA 639+76.00 TO STA 640+97.40
STR B-52-137

STA 643+45
1-36"x62' CPCS REQ'D
2-AECPS REQ'D
REMOVE EXISTING 36"x54' CVCMP

STA 638+00
1-18"x50' CPCP REQ'D
2-AECPS REQ'D

STA 638+00
1-18"x50' CPCP REQ'D

STA 643+45
1-36"x62' CPCS REQ'D

BENCHMARK TABLE

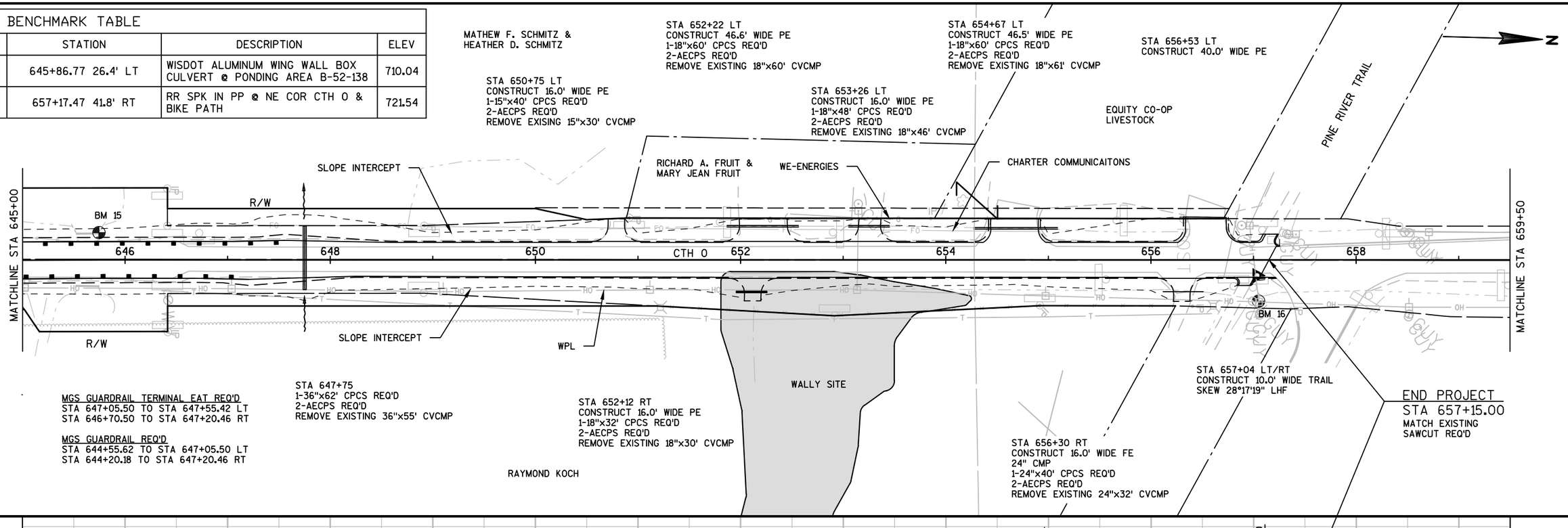
NO.	STATION	DESCRIPTION	ELEV
14	639+74.89 26.4 'RT	WISDOT ALUMINUM DISC SE WING WALL OF BRIDGE B-52-137	712.99

STATION	EXISTING ℄ ELEVATION	FINISHED ℄ ELEVATION
630	716.37	716.10
631	715.99	715.76
	715.67	715.46
632	715.40	715.20
	715.08	714.97
633	714.74	714.78
	714.51	714.63
634	714.39	714.50
	714.26	714.39
635	714.14	714.27
	714.03	714.15
636	713.90	714.03
	713.77	713.92
637	713.65	713.80
	713.46	713.68
638	713.25	713.56
	713.30	713.44
639	713.34	713.33
	713.33	713.21
640	713.18	713.15
	713.28	713.14
641	713.30	713.14
	713.20	713.19
642	713.17	713.23
	713.31	713.27
643	713.44	713.32
	713.36	713.36
644	713.27	713.41
	713.17	713.45
645	713.25	713.50

PROJECT NO:5419-06-71 | HWY:CTH O | COUNTY:RICHLAND | PLAN AND PROFILE: | SHEET | E

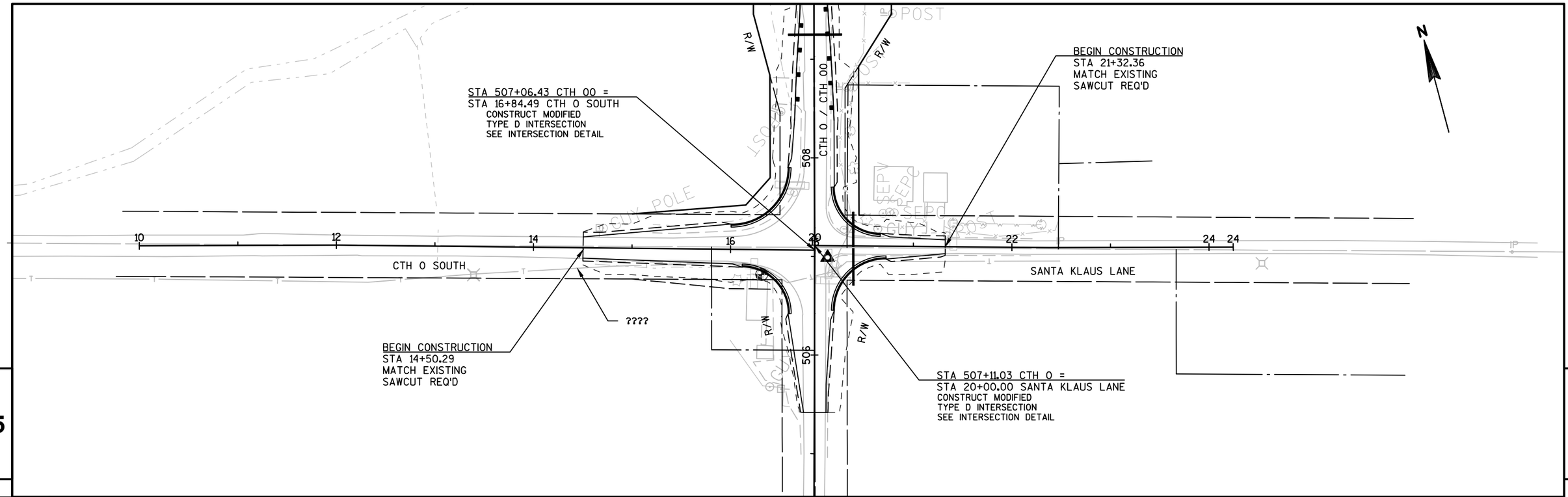
FILE NAME : P:\PT\R\RICHC\040200\CIVIL 3D\54190671\SHEETSPLAN\050110_PP.DWG
PLOT DATE : 1/13/2017 10:12 AM
PLOT BY : NICK ENGH
PLOT NAME :
PLOT SCALE : 1:100_XREF

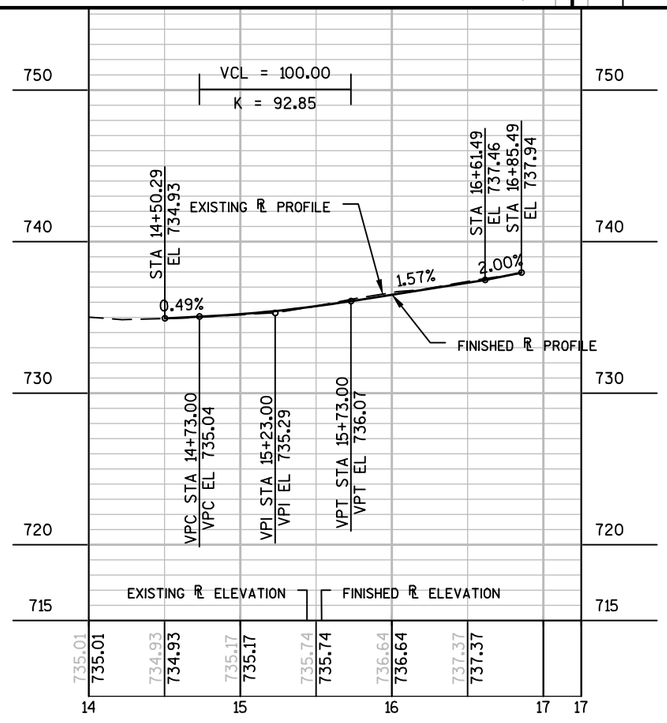
BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEV
15	645+86.77 26.4' LT	WISDOT ALUMINUM WING WALL BOX CULVERT @ PONDING AREA B-52-138	710.04
16	657+17.47 41.8' RT	RR SPK IN PP @ NE COR CTH O & BIKE PATH	721.54

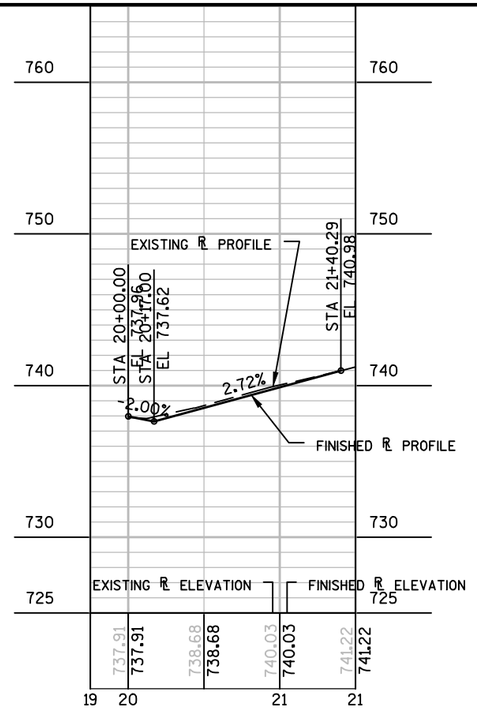


PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE:	SHEET	E

FILE NAME : P:\PT\R\RICHC\040200\CIVIL 3D\5419071\SHEETSPLAN\050111_PP.DWG PLOT DATE : 1/13/2017 10:14 AM PLOT BY : NICK ENGH PLOT NAME : PLOT SCALE : 1:100_XREF

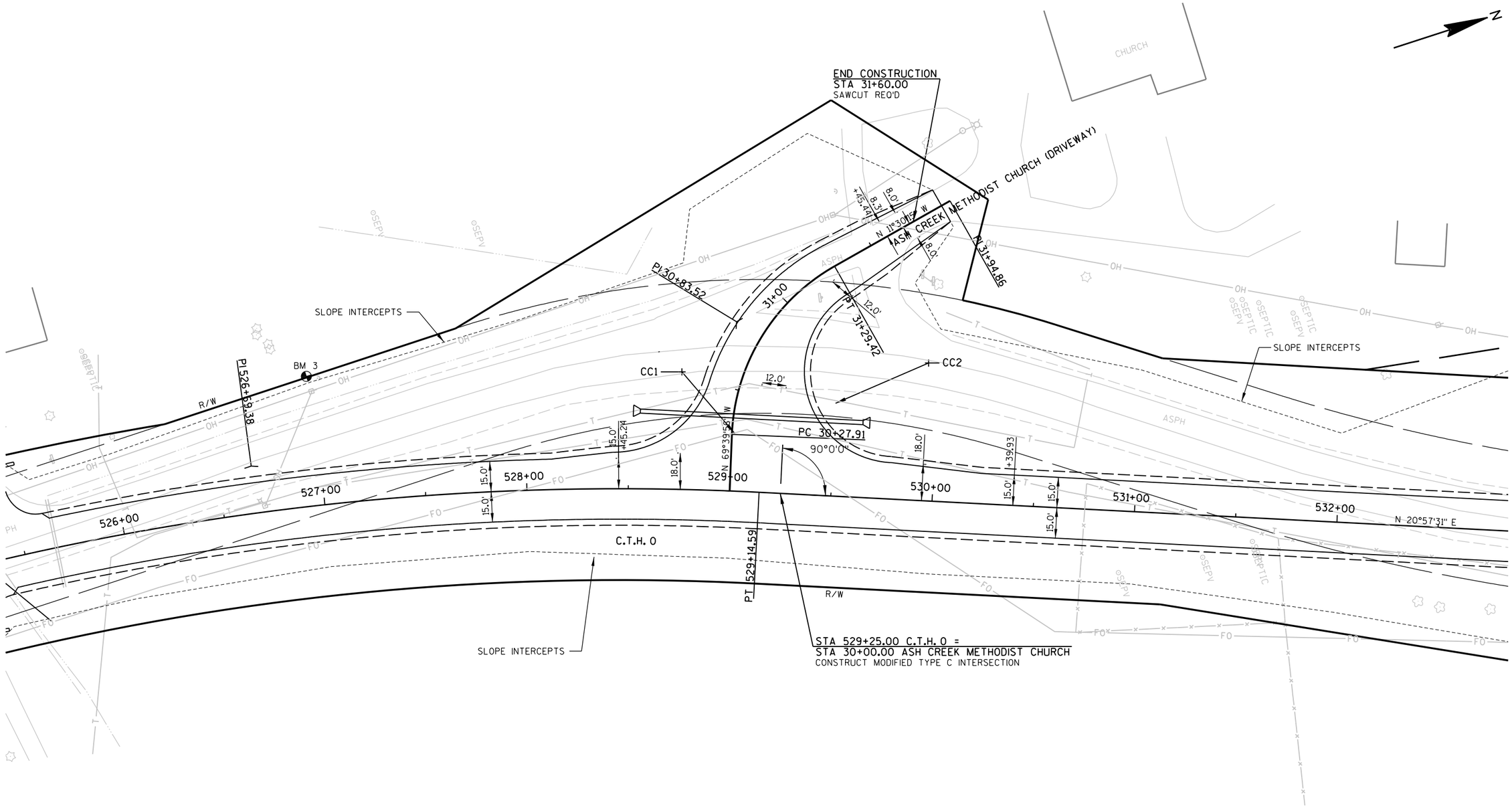






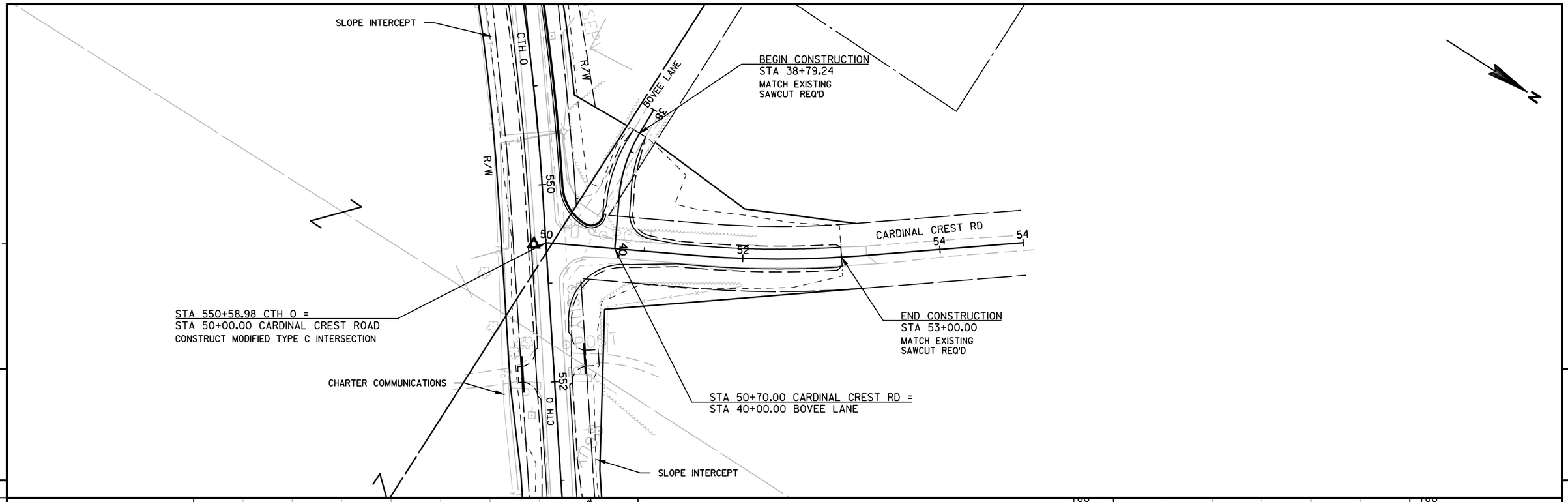
PROJECT NO: 5419-06-71	HWY: CTH 0	COUNTY: RICHLAND	PLAN AND PROFILE: CTH 00	SHEET	E

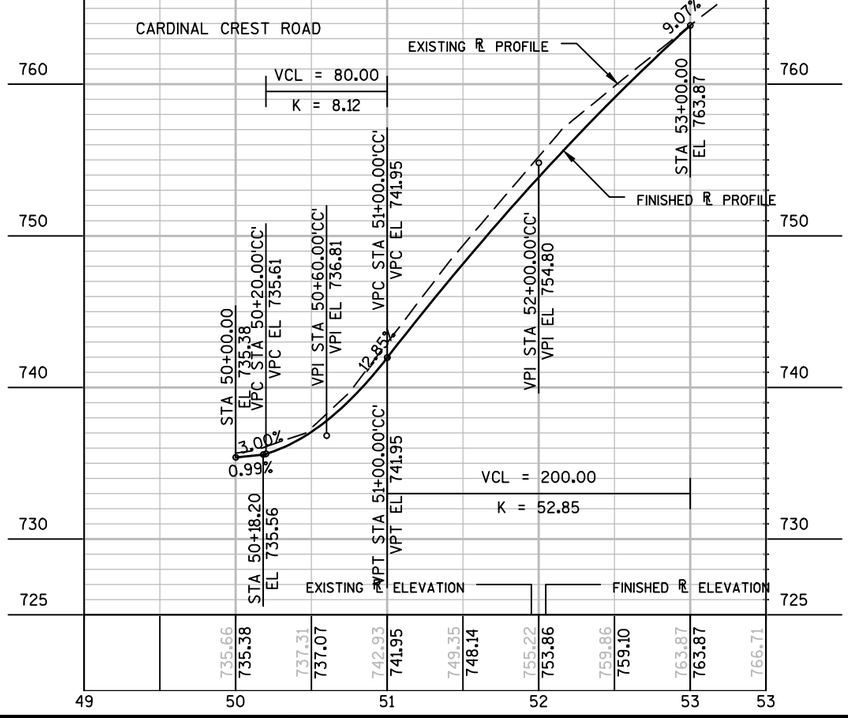
2

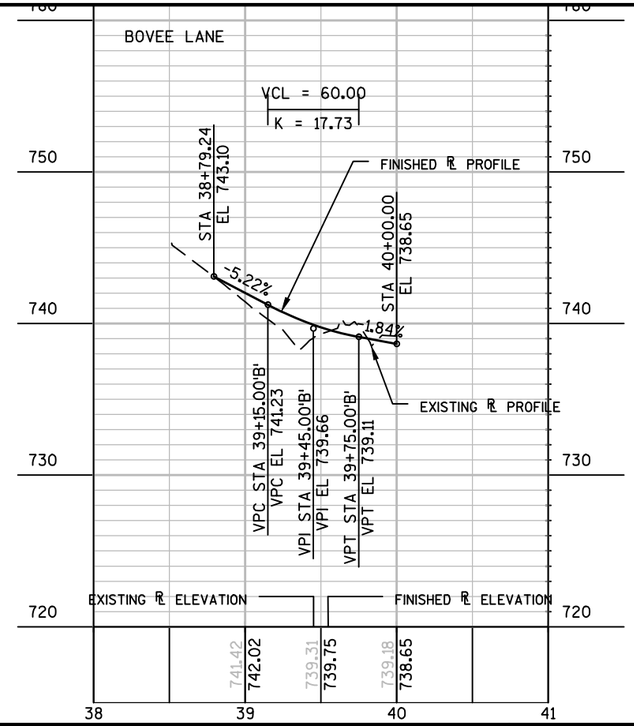


RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC1	528+75.22 C.T.H. 0/00 31+53.17 ASH CREEK METHODIST CHURCH	58.0' LT 52.0' LT	40.0'	Y = 425186.015 X = 682675.843
CC2	529+94.78 C.T.H. 0/00 31+10.05 ASH CREEK METHODIST CHURCH	68.0' LT 62.0' RT	50.0'	Y = 425303.053 X = 682709.310

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET E







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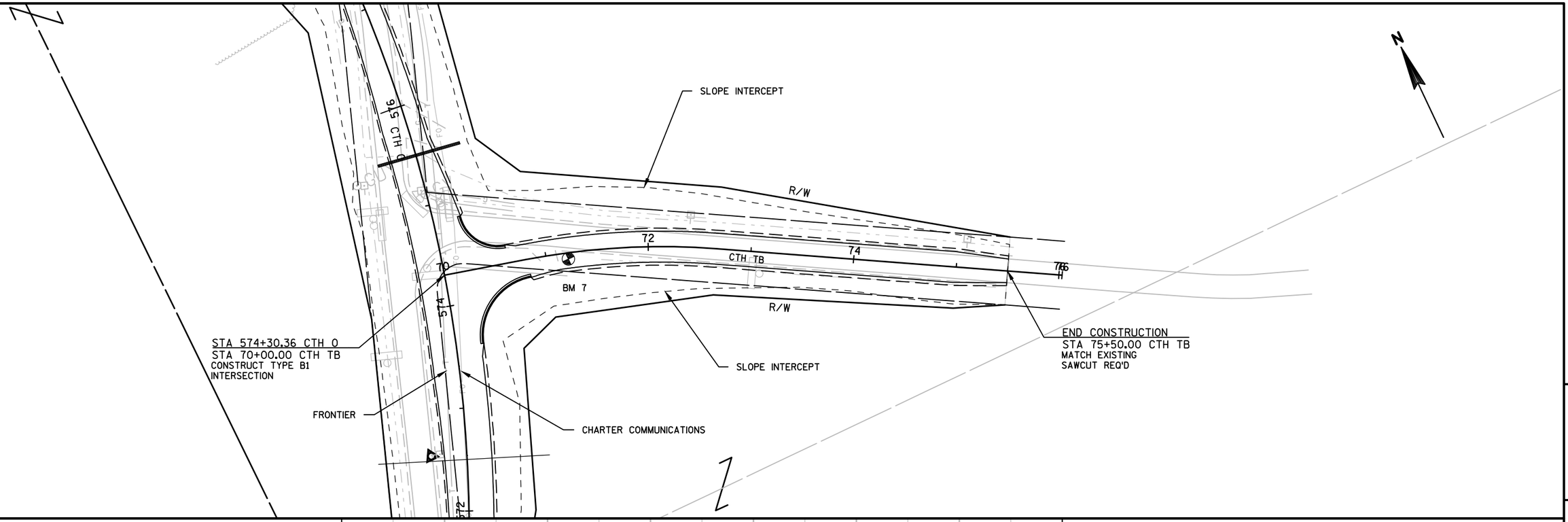
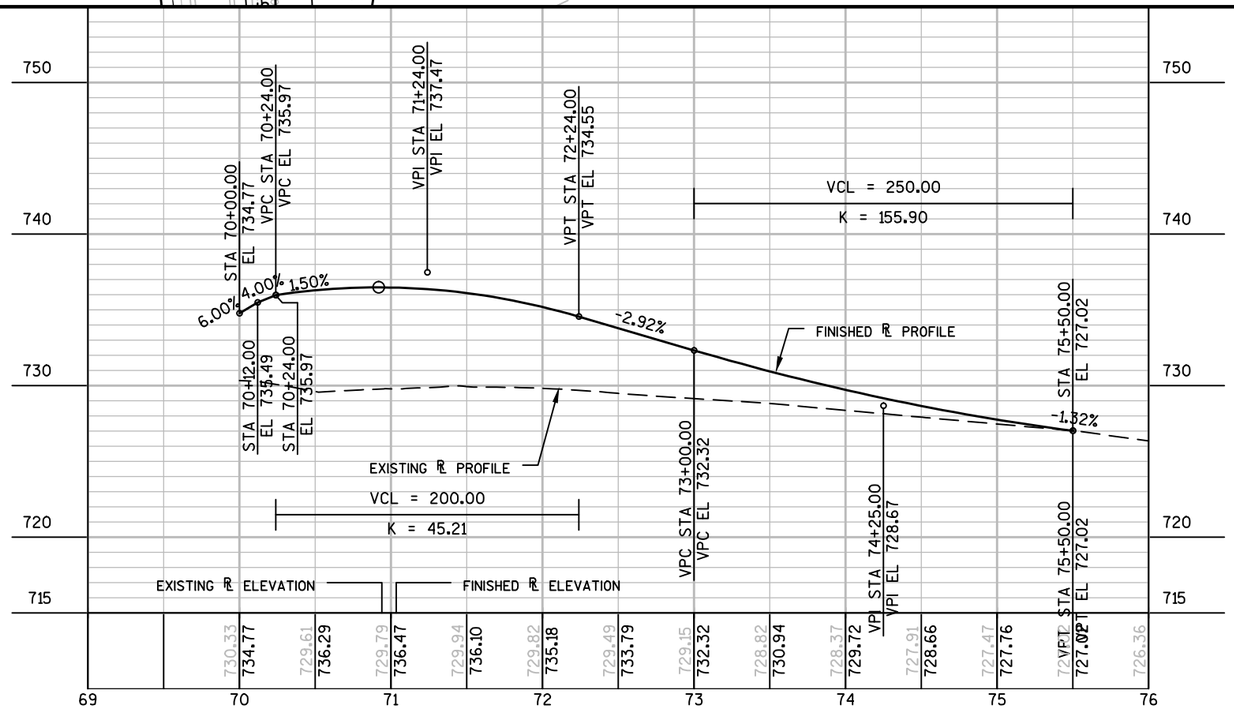
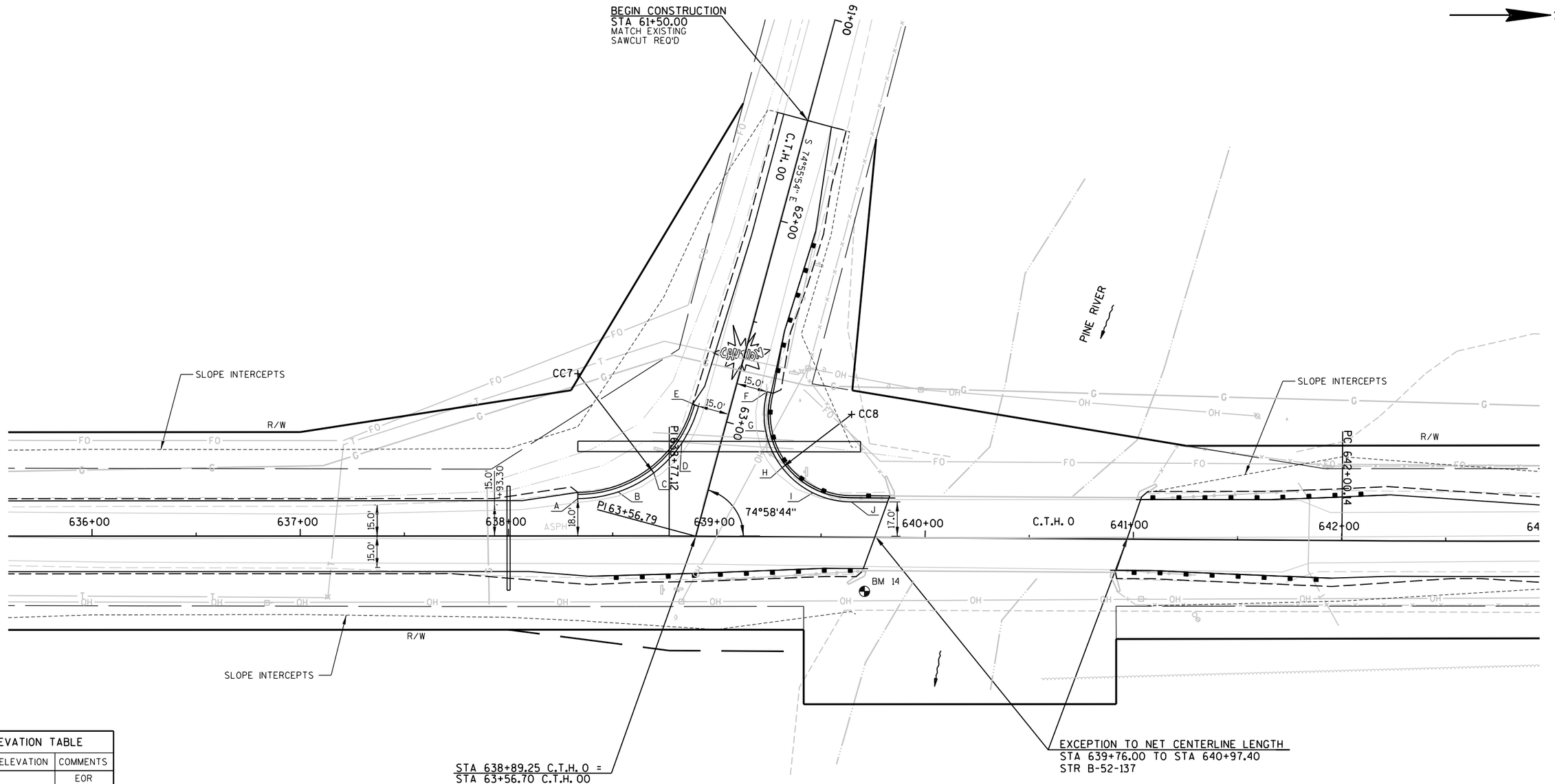




PROJECT NO: 5419-06-71	HWY: CTH O	COUNTY: RICHLAND	PLAN AND PROFILE: CTH TB	SHEET	E

2



ELEVATION TABLE		
POINT	ELEVATION	COMMENTS
A		EOR
B		QOR
C		MOR
D		QOR
E		EOR
F		EOR
G		QOR
H		MOR
I		QOR
J		EOR

RADIUS POINT TABLE				
POINT	STATION	OFFSET	RADIUS	COORDINATES
CC7	638+33.30 C.T.H. 0 62+96.16 C.T.H. 00	78.0' LT 75.0' RT	60.0'	Y = 434965.547 X = 685188.730
CC8	639+64.64 C.T.H. 0 62+80.91 C.T.H. 00	58.4' LT 57.0' LT	42.0'	Y = 435096.973 X = 685208.319

PROJECT NO: 5419-06-71	HWY: C.T.H. 0	COUNTY: RICHLAND	INTERSECTION DETAIL	SCALE, FEET 0 25 50	SHEET E

Attachment 7.5 - Environmental Commitments Basic Sheet

ENVIRONMENTAL EVALUATION OF FACILITIES DEVELOPMENT ACTIONS *(continued)* DT2094

BASIC SHEET 8 – ENVIRONMENTAL COMMITMENTS

Attach a copy of this page to the design study report and the PS&E submittal package.

Factor Sheet	**Commitment** (If none, include "No special or supplemental commitments required.")
A-1 General Economics	No special or supplemental commitments required.
A-2 Business	CTH O will be closed to through traffic, access to businesses will be maintained through the use of a detour route. The traffic control plan and detour will be defined in the plans and contract special provisions. A press release and map of the detour will be poseted on the Richland County Highway Department website notifying the community of the construction schedule. The Construction Supervisor will be responsible for fulfilling this commitment during construction.
A-3 Agriculture	CTH O will be upgraded which will make it easier to see slower moving vehicles. The road will be closed during construction, but the contractor must maintain local traffic access and provide access for farm equipment. The Construction Supervisor will be responsible for ensuring this commitment.
B-1 Community or Residential	The road will be closed to through traffic during construction. Access to local businesses and residences will be maintained during construction. The traffic control plan will be defined in the plans and contract special provisions. Timely completion of the project through enforcement of the contract working time will be fulfilled by the Construction Supervisor.
B-2 Indirect Effects	No special or supplemental commitments required.
B-3 Cumulative Effects	No special or supplemental commitments required.
B-4 Environmental Justice	No special or supplemental commitments required.
B-5 Historic Resources	No special or supplemental commitments required.
B-6 Archaeological/Burial Sites	Archaeological Data Recovery will take place in advance of the construction in accordance with the approved Section 106 Memorandum of Agreement (MOA). Refer to Appendix 6 for additional information. A special provision will be added containing language describing the potential delays to the contractor due to potential discoveries or surveys (archaeological and or burial). Archaeological surveys will be conducted for any batch plants, design refinement areas, and any waste, borrow or staging areas required for the project. The survey results will be shared with SHPO and the Consulting parties of the Section 106 Memorandum of Agreement (MOA). Significant discoveries of non-burial related archaeological properties will be handled in accordance Section 106 procedures pursuant to 36 CFR 800, or another area will be obtained for borrow, batch plants, waste sites and staging. Obtain 157.70 burial authorization from WHS one year prior to construction for sites: BR1-0024 (Pine River Cemetery) and BR1-0023 (Pine Valley Manor Cemetery). These commitments and provision of the MOA will be assured by the Construction Supervisor and regional environmental coordinator.

B-7 Tribal Coordination/Consultation	A MOA and a Data Recovery plan has been drafted to address Archaeological / Historical concerns along the project corridor. The disturbance within the current property historic boundary will be minimized as much as possible. The boundary will be marked on the plans and defined in the contract special provisions and no staging of construction equipment or stockpiling of materials will be allowed. The Construction Supervisor will be responsible for fulfilling this commitment during construction.
B-8 Section 4(f) and 6(f) or Other Unique Areas	Pine River Trail crosses CTH O at the end of the project. The Richland County Parks Commission oversees the trail. The Parks Commission will place signs on the trail and provide updates on the trail closures on their website before and during construction. The Construction Supervisor will be responsible for ensuring this commitment.
B-9 Aesthetics	No special or supplemental commitments required.
C-1 Wetlands	The construction of the roadway would require a wetland impact of 0.16 acres. This includes 0.09 acres wooded riparian wetland. The loss of these wetlands would be charged against a regional wetland bank at a 1.5:1 ratio. This also includes 0.07 acres emergent riparian wetland. The loss of these wetlands would be charged against a regional wetland bank at a 1.3:1 ratio and be coordinated as part of a WisDOT program. This commitment will be assured by the Construction Supervisor and the region environmental coordinator.
C-2 Rivers, Streams and Floodplains	Erosion and sediment transport into waterways during construction will be controlled by methods shown in the latest edition of the WisDOT's Facilities Development Manual and through consultation with the Wisconsin Department of Natural Resources pursuant to the DOT/DNR Cooperative Agreement. An erosion control plan in accordance with WisDOT and WDNR standards will be completed as part of this project and implemented during construction under the direction of the Construction Supervisor.
C-3 Lakes or other Open Water	No special or supplemental commitments required.
C-4 Groundwater, Wells and Springs	No special or supplemental commitments required.
C-5 Upland Wildlife and Habitat	No special or supplemental commitments required.
C-6 Coastal Zones	No special or supplemental commitments required.
C-7 Threatened and Endangered Species	Re-evaluation of the NLEB determination will be needed once construction funding is obtained and the project is scheduled for construction. Standard special provisions related to the NLEB will be included in the construction contract. The Construction Supervisor will be responsible for fulfilling this commitment during construction.
D-1 Air Quality	No special or supplemental commitments required.
D-2 Construction Stage Sound Quality	No special or supplemental commitments required.
D-3 Traffic Noise	No special or supplemental commitments required.
D-4 Hazardous Substances or Contamination	No special or supplemental commitments required.
D-5 Storm Water	No special or supplemental commitments required.
D-6 Erosion Control	Erosion would be controlled through the use of the methods shown in the latest edition of the WisDOT's Standard Specifications for Road Construction and through consultation with the Wisconsin Department of Natural Resources pursuant to the DOT/DNR Cooperative Agreement. This will be included in the construction contract. The Construction Supervisor will be responsible for fulfilling this commitment during construction.

E-1 Other Oak Wilt & Emerald Ash borer	Oak Wilt: The spread of oak wilt disease will be avoid cutting or pruning of oaks from April through September. This will be included in the contract special provisions. The Construction Supervisor will be responsible for fulfilling this commitment during construction. Emerald Ash Borer: Ash trees removed as part of this project, will be disposed of in accordance with Wisconsin Administrative Code regarding the invasive species, the Emerald Ash Borer. This will be included in the contract special provisions. The Construction Supervisor will be responsible for fulfilling this commitment during construction.

BASIC SHEET 9 – ENVIRONMENTAL FACTORS MATRIX *(check all that apply)*

Factors	Adverse	Benefit	None Identified	Factor Sheet Attached	Note: If the effects on the environmental factor can't be adequately summarized in several sentences, the Factor Sheet for the environmental factor must be included. Effects
A. ECONOMIC FACTORS *Factor Sheet A-1, General Economics, must be included if Factor Sheet A-2 or A-3 is completed.*					
A-1 General Economics	☒	☒	☐	☐	The Proposed Action will: Require capital investment by WisDOT and local governments that would not be able to be expended elsewhere. Cause temporary detouring of services and access to local commerce during construction. Assist in ensuring economic viability of the area by promoting safe and efficient travel and access to and through the project area. Accommodate current and planned economic growth for the area. Reduce the cost of maintaining the new roadway compared to maintaining the existing roadway. Although initial expenditure of public funds is required, long term maintence costs will be reduced.
A-2 Business	☒	☒	☐	☐	The Proposed Action will: Impact access to local businesses on a short-term basis during the construction of the improvements. Assist in ensuring economic viability of the project area by promoting safe and efficient travel and access for expected heavy truck traffic and additional local and regional traffic. Benefit commercial and industrial establishments by increasing level of service, safety, and access for employees and shipment of goods and services in the project area. Does not require any commercial or industrial acquisition or relocation.
A-3 Agriculture	☒	☒	☐	☒	The Proposed Action will: Require minor strips of right-of-way acquisition. Provide wider paved shoulders for agricultural traffic.
B. SOCIAL/CULTURAL FACTORS					
B-1 Community or Residential	☒	☒	☐	☒	The Proposed Action will: Require a temporary traffic detour during construction. Maintain but impact access to properties along the corridor during construction. Assist in ensuring economic viability of the area by promoting safe and efficient travel along the roadway. Enhance local traffic circulation. Enhance bicycle accomodations by providing paved shoulders along the project; between Santa Klaus Lane and Circle View Drive 3.0' paved shoulders are being provided. Higher traffic volumes occur and more potential use occurs between Circle View Drive and the Pine River Trail so 5.0' paved shoulders are being provided.
B-2 Indirect Effects	☐	☐	☒	☐	No indirect effects were identified as a result of this project.
B-3 Cumulative Effects	☐	☐	☒	☐	No cumulative effects were identified as a result of this project.
B-4 Environmental Justice	☐	☐	☒	☐	This document is in compliance with U.S. DOT and FHWA policies to determine whether a proposed project will have induced socioeconomic impacts or any adverse impacts on minority or low income populations; and it meets the requirements of Executive Order on Environmental Justice 12898—"Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." No minority or low-income populations were identified during the public information or design processes.

For B-5 through B-8, if any of these resources are present on the project, involve the REC early because of possible project schedule implications.					
B-5 Historic Resources	☐	☐	☒	☐	No historic resource impacts are anticipated. Section 106 review was approved on October 6, 2014.
B-6 Archaeological/Burial Sites	☒	☐	☐	☒	Section 106 documentation is complete. A Memorandum of Agreement and Data Recovery Plan have been approved for the project for the two recommended eligible sites: Site # 47RI0066 Wally Site and Site # 47RI0464 Brown Knife Site. Obtain 157.70 burial authorization from WHS one year prior to construction for sites: BR1-0024 (Pine River Cemetery) and BR1-0023 (Pine Valley Manor Cemetery). Refer to Appendix 6 for additional information.
B-7 Tribal Coordination /Consultation	☒	☐	☐	☒	No responses from American Indian Tribes have been received. Grading is proposed within the two recommended eligible sites: Site # 47RI0066 Wally Site and Site # 47RI0464 Brown Knife Site. A Section 106 Memorandum of Agreement related to the project's Archaeological impacts has been prepared and approved for the project. Coordination with the Ho-Chunk Nation and the Red Cliff Band was performed as part of the MOA approval process, neither the Ho-Chunk Nation or the Red Cliff Band chose not to attend the Section 106 consultation meeting.
B-8 Section 4(f) and 6(f) or Other Unique Areas	☐	☐	☒	☐	Pine River Trail crosses the CTH O at the end of the project. The road will be closed during construction and the trail will remain open, so section 4(f) does not apply. No right of way will be taken at the trail location and CTH O will be matching into the existing surface at the trail location.
B-9 Aesthetics	☐	☐	☒	☐	No significant aesthetic modifications will be made to the highway facility. The completed project would eliminate the deteriorated appearance of the existing roadway and provide uniform roadside slopes.
C. NATURAL RESOURCE FACTORS					
C-1 Wetlands	☒	☐	☐	☒	The Proposed Action will fill 0.16 acres of WisDOT Type RPE and RPF wetland.
C-2 Rivers, Streams and Floodplains	☒	☐	☐	☐	The Proposed Action will: Require slope improvement work to occur near the Pine River and Ash Creek. No work will take place on structures or within the stream channel.Guardrail to be installed at both sites to minimize slopes impacts.
C-3 Lakes or Other Open Water	☐	☐	☒	☐	No lakes or other open water impacts.
C-4 Groundwater, Wells, and Springs	☐	☐	☒	☐	No groundwater, wells and springs impacts.
C-5 Upland Wildlife and Habitat	☐	☐	☒	☐	No upland wildlife and habitat impacts.
C-6 Coastal Zones	☐	☐	☒	☐	No costal zone impacts.
C-7 Threatened and Endangered Species	☐	☐	☒	☐	No federally or state listed, proposed, or candidate species, or designated critical habitat is present in the project area.
D. PHYSICAL FACTORS					
D-1 Air Quality	☐	☐	☒	☐	The project is exempt from permit requirements under Wisconsin Administrative Code – Chapter NR 411. No substantial impacts to air quality are expected.
D-2 Construction Stage Sound Quality	☒	☐	☐	☐	To reduce the potential impact of construction noise, the special provisions for this project would require that motorized equipment shall be operated in compliance with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. At a minimum, the special provisions would require that motorized construction equipment shall not be operated between 9:00 p.m. and 7:00 a.m. without the prior written approval of the project engineer. All motorized construction equipment would be required to have mufflers constructed in accordance with the equipment manufacturer' specifications or a system of equivalent noise reducing capacity. It would also be required that mufflers and exhaust system be maintained in good operating condition, free from leaks and holes.

Attachment 7.6 - Roadside Hazard Analysis

Roadside Hazard Analysis

Project I.D. 5419-06-71

Entered by: Nick Engh
Checked by: Dan Gustafson

Speed (MPH) = 55
AADT = 1050/1300 1800/2300
Alignment = CTH O

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
1	16+37	31’	L	20’	Building Steps	Add Curb and Gutter	
2	16+06	31’	L	2’	Tree	Remove	
3	20+63	17’	R	+/- 1’	Pole & Guy	Move	
4	508+97	29’	L	+/- 1’	Power Pole	Move	
5	509+70	15’	L		Railings	Add Beamguard and EAT	
6	509+70	15’	R		Railings	Add Beamguard and EAT	
7	510+23	15’	L		Railings	Add Beamguard and EAT	
8	510+23	15’	R		Railings	Add Beamguard and EAT	
9	511+05	31’	L	+/- 1’	Power Pole	Add Beamguard	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
11	513+31	26	L	+/- 1’	Power Pole	Move	
12	515+38	24’	L	+/- 1’	Pole & Guy	Move	
13	516+50-519+50		L/R	300’	Back slope is greater the 4:1	Flatten Slope	
14	518+40	25’	L	+/- 1’	Power Pole	Move	
15	521+44	25’	L	+/- 1’	Power Pole	Move	
16	524+52	23’	L	+/- 1’	Power Pole	Move	
17	525+23	24’	L	+/- 1’	Culvert	Move	
17	526+50-528+50		L	200’	Back slope is greater the 4:1	Flatten Slope	
18	526+69	5’	L	+/- 1’	Telephone Ped	Move	
19	526+99	55’	L	+/- 1’	Pole & Guy	Move	
20	530+50-534+00		L	350’	Back slope is greater the 4:1	Flatten Slope	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
21	31+70	33’	L	+/- 1’	Tree	Alignment Shift	
22	533+78	26’	R	+/- 1’	Culvert	Extend Culvert	
23	533+74	34’	L	+/- 1’	Culvert	Extend Culvert	
24	534+05	28’	L	+/- 1’	Culvert	Extend Culvert	
25	534+37	24’	L	+/- 1’	Culvert	Extend Culvert	
26	535+66	20’	R	+/- 1’	Cut off Power Pole and Ped	Remove	
27	536+00-546+00		L	1000’	Back slope is greater the 4:1	Flatten Slope Add Beamgurard	
28	540+50	20’	R	+/- 1’	Ped	Move	
29	541+10	44’	L	+/- 1’	Power Pole	Move	
30	543+55	30’	L	+/- 1’	Power Pole	Move	
31	540+00-545+50		R	550’	Back slope is greater the 4:1	Flatten Slope	
32	548+52	24’	L	+/- 1’	Power Pole	Move	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
33	549+48	25’	L	+/- 1’	Ped	Move	
34	550+00-552+00		R	200’	Back slope is greater the 4:1	Flatten Slope	
35	551+07	23’	L	+/- 1’	Pole & Guy	Move	
36	552+32	25’	R	+/- 1’	Power Pole	Move	
37	552+50	35’	L	+/- 1’	Power Pole	Move	
38	555+05	31’	L	+/- 1’	Culvert	Add Beamguard and EAT	
39	555+15	27’	R	+/- 1’	Culvert	Add Beamguard and EAT	
40	558+00-564+00		L	600	Back slope is greater the 4:1	Flatten Slope	
41	565+71	36’	L	+/- 1’	Tree	Remove	
42	566+15	28’	L	+/- 1’	Rock	Remove	
43	567+00-568+00		R	100	Back slope is greater the 4:1	Flatten Slope	
44	567+14	30’	L	+/- 1’	Tree	Remove	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
45	567+20	17’	R	+/- 1’	Ped	Remove	
46	567+57	35’	L	+/- 1’	Power Pole	Remove	
47	570+07	1’	L	+/- 1’	Pole & Guy	Move	
48	572+57	26’	L	+/- 1’	Power Pole	Move	
49	574+98	8’	R	+/- 1’	Ped	Move	
50	575+00-576+00		R	100’	Back slope is greater the 4:1	Flatten Slope	
51	575+16	4’	R	+/- 1’	Power Pole	Move	
52	575+35	56’	L	+/- 1’	Pole & Guy	Move	
53	577+24	35’	R	+/- 1’	Pole & Guy	Move	
54	578+50-579+50		R	100’	Back slope is greater the 4:1	Flatten Slope	
55	578+00-581+50		L	350	Back slope is greater the 4:1	Flatten Slope	
56	580+05	30’	R	+/- 1’	Power Pole	Move	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
57	582+50-587+50		L	500’	Back slope is greater the 4:1	Flatten Slope	
58	588+50-589+50		R	150’	Back slope is greater the 4:1	Flatten Slope	
59	589+66	28’	R	+/- 1’	Pole & Guy	Alignment Shift	
60	589+74	18’	R	+/- 1’	Culvert	Extend Culvert	
61	589+78	20’	L	+/- 1’	Culvert	Extend Culvert	
62	591+50-602+50		R	1100’	Back slope is greater the 4:1	Flatten Slope	
63	591+11	26’	R	+/- 1’	Ped	Move	
64	591+73	30’	R	+/- 1’	Power Pole	Move	
65	594+50-601+50		L	700’	Back slope is greater the 4:1	Flatten Slope	
66	599+79	47’	L	+/- 1’	Culvert	Move	
67	600+26	47’	L	+/- 1’	Culvert	Move	
68	605+65	33’	R	+/- 1’	Tree	Remove	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
69	606+34	35’	R	+/- 1’	Tree	Remove	
70	606+64	29’	R	+/- 1’	Tree	Remove	
71	606+83	24’	R	+/- 1’	Tree	Remove	
72	606+76	33’	L	+/- 1’	Pole & Guy	Move	
73	607+10	31’	L	+/- 1’	Tree	Remove	
74	608+51	24’	R	+/- 1’	Pole & Guy	Move	
75	609+45	21’	R	+/- 1’	Culvert	Extend Culvert	
76	609+44	20	L	+/- 1’	Culvert	Extend Culvert	
77	610+53	30’	R	+/- 1’	Power Pole	Move	
78	610+89	31’	L	+/- 1’	Tree	Remove	
79	611+50-615+00		L	350’	Back slope is greater the 4:1	Flatten Slope	
80	612+45	30’	R	+/- 1’	Tree	Remove	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
81	612+49	30’	R	+/- 1’	Power Pole	Move	
82	612+54	30’	R	+/- 1’	Tree	Remove	
83	613+25-615+75		R	250’	Back slope is greater the 4:1	Flatten Slope	
84	614+56	29’	R	+/- 1’	Power Pole	Move	
85	614+53	43’	L	+/- 1’	Power Pole	Move	
86	616+58	30’	R	+/- 1’	Power Pole	Move	
87	617+45	22’	L	+/- 1’	Culvert	Replace	
88	617+80	22’	L	+/- 1’	Culvert	Replace	
89	618+33	27’	R	+/- 1’	Guy	Move	
90	618+58	25’	R	+/- 1’	Power Pole	Move	
91	620+60	26’	R	+/- 1’	Power Pole	Move	
92	621+74	24’	R	+/- 1’	Power Pole	Move	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
93	621+95	24’	R	+/- 1’	Power Pole	Move	
94	622+40	21’	L	+/- 1’	Culvert	Replace	
95	622+41	23’	R	+/- 1’	Culvert	Replace	
96	622+67	27’	R	+/- 1’	Power Pole	Move	
97	622+70	30’	L	+/- 1’	Ped	Move	
98	623+14	27’	R	+/- 1’	Fire Hydrant	Move	
99	623+67	23’	R	+/- 1’	Water Valve	Move	
100	624+49	27’	R	+/- 1’	Power Pole	Move	
101	626+32	27’	R	+/- 1’	Power Pole	Move	
102	627+19	27’	R	+/- 1’	Bush	Remove	
103	628+15	25’	R	+/- 1’	Power Pole	Move	
104	629+99	30’	R	+/- 1’	Power Pole	Move	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
105	632+28	30’	R	+/- 1’	Power Pole	Move	
106	634+56	31’	R	+/- 1’	Power Pole	Move	
107	636+85	32’	R	+/- 1’	Power Pole	Move	
108	637+13	27’	R	+/- 1’	Ped	Move	
109	638+58	50’	L	+/- 1’	Culvert	Replace	
110	638+83	28’	R	+/- 1’	Pole & Guy	Move	
111	643+04	27’	R	+/- 1’	Power Pole	Move	
112	645+02	27’	R	+/- 1’	Power Pole	Move	
113	647+04	28’	R	+/- 1’	Power Pole	Move	
114	649+10	31’	R	+/- 1’	Power Pole	Move	
115	651+11	29’	R	+/- 1’	Power Pole	Move	
116	650+63	30’	L	+/- 1’	Culvert	Remove	

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
117	653+14	30’	R	+/- 1’	Power Pole	Move	
118	654+97	35’	R	+/- 1’	Power Pole	Move	
119	656+96	33’	L	+/- 1’	Power Pole	Move	
120	641+79	23’	L	+/- 1’	Buried Guardrail Ends	Replace With EAT	
121	641+72	20’	R	+/- 1’	Buried Guardrail Ends	Replace with EAT	
122	638+93	22’	R	+/- 1’	Buried Guardrail Ends	Replace with EAT	
123	639+23	73’	L	+/- 1’	Buried Guardrail Ends	Replace with Eat	