CORRESPONDENCE/MEMORANDUM *State of Wisconsin*

Date: *July 8, 2015*

To: *Beth Cannestra, P.E.*
Director, Bureau of Project Development
Attn: Don Greuel, P.E. – Project Services Chief

From: *Mark Hughes, P.E.*
Project Development Section Chief
Northwest Region

Subject: *DESIGN STUDY REPORT*

Project I.D. 1540-04-03 (Design)
Project I.D. 1540-04-73 (Construction)
River Falls – New Richmond
STH 65 Expansion/70TH Avenue Intersection
STH 65
St. Croix 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 approval of the attached design study report.

for _____ 7/8/15
Region Project Development Chief *Date*

Concur:

_____ _____
Bureau of Project Development, *Date*
Project Services Chief

DESIGN STUDY REPORT
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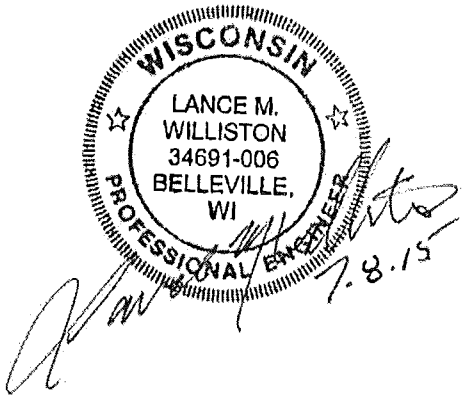


Prepared By:

KL Engineering
[A] Better Experience

July 2015

1.0 PROJECT DESCRIPTION AND NEED

The project limits include the STH 65 & 70th Avenue intersection and approaches. STH 65 is a 2-lane minor arterial with a posted speed limit between 45-50 mph. 70th Avenue is a 2-lane local road with a posted speed limit between 35-45 mph.

The STH 65 & 70th Avenue intersection was partially reconstructed to add turn lanes and a traffic signal in 2012 as part of a private development project. The additional turn lanes and traffic signals was required to facilitate traffic generated by a truck stop on the west leg of 70th Avenue. In 2013 the south leg of the intersection was partially reconstructed as part of the adjacent IH-94 interchange reconstruction project.

This project would reconstruct the existing roadways to improve the capacity and operations of the STH 65 and 70th Avenue intersection including the expansion from 1 to 2 lanes in each direction along STH 65 and additional lanes for turning-vehicle storage. Specific construction activities would include:

- Removing the existing pavement
- Re-grading for a wider roadway footprint and adjusting ditch lines
- Placing new aggregate base course
- Placing new concrete pavement on STH 65
- Placing new asphalt pavement on 70th Avenue and the park and ride lot
- Install new drainage pipes and storm water inlets
- Install new street lighting and traffic signals

1.1 Federal Oversight Project (Yes or No): No

1.2 Project Length & Termini

Project Length: 0.502 miles (Station 56+18 to Station 82+70)

Termini/Limits: I94 WB interchange terminal to Wagner Drive

See Attachment 7.1 – Project Location Map

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)
STH 65	Minor Arterial	Rural	No	No	State	2B	No	No

1.4 Need for the Project

The project is needed due to:

- A projected increase in traffic volumes from future land development along 70th Avenue to the east and west of STH 65
- Failing Level-of Service (LOS F) expected in the design year (2036) for the 70th Avenue westbound approach.
- Reduce the expected year 2036 queuing on northbound STH 65.
- A lack of northbound left turn storage on STH 65 that results in vehicles backing into the single through travel lane.
- Accommodate oversize loads (bridge girders) turning left from the 70th Avenue east leg.
- A lack of pedestrian and bicycle facilities.

2.0 PRESENT FACILITY

All stationing provided in this section is based on as-built plan stationing as shown in Attachment 7.2 – As-Built Plan Sheets

2.1 Posted Speed

Roadway or Roadway Segment	Posted Speed (MPH)	Advisory Speed (MPH)
STH 65 NB	45 (from IH 94 to 1,000' north of 70th Ave.) 50 (starts 1,000' north of 70th Ave.)	None
STH 65 SB	45 (from IH 94 to 1,000' north of 70th Ave.) 50 (starts 1,000' north of 70th Ave.)	15 MPH for I94 WB interchange terminal (roundabout)
70th Avenue (east approach)	45	None
70th Avenue (west approach)	35	None

2.2 Geometrics

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

The following curves have a superelevation rates less than desirable for a 50 mph design speed.

*Horizontal Feature (Curve, P.I. Deflection, etc)	Location	*Radius (ft)	Superelevation Actual	Rated Design Speed (mph)	*Superelevation Required
Curve	56+99 to 62+61 STH 65 NB	2427.32	2.9%	40	3.9%
Curve	62+61 to 63+73 STH 65 NB	2026.21	3.9%	45	4.3%

**Controlling Criteria*

For the purpose of this project, the design speed of the section of STH 65 from the westbound IH 94 ramp to 70th Avenue is rated to progressively increase from 40 mph to 50 mph. This design speed is based on the matching into the existing geometry and superelevation that was constructed as part of the IH 94 interchange reconstruction project that included roundabouts at the ramp terminals; instead of the posted speed of 45 mph (50 mph design speed).

This is an appropriate design speed given that this short section (1,000') is located between a roundabout (I 94 westbound ramp) and a signalized intersection (70th Avenue). Roundabout entry/exit speeds are considerably lower than the posted speed (15 - 25 mph) and the development of signalized intersection elements within a short distance results in a lower-speed roadway environment.

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

Location	Curve Type	K Value	Grades	*SSD Met (Y/N) /Length	DSD Met (Yes or No/Length)
70TH Avenue (west approach) 8+50 to 10+00	CREST	54.25	1.77% IN -1.00% OUT	Y/464' (+/- 485' EXISTING)	N/464' (+/- 275' EXISTING)

**Controlling Criteria*
SSD = Stopping Sight Distance
DSD = Decision Sight Distance

K Value is greater than minimum value of 44 but less than desirable value of 70 for 40 mph design speed (category1).

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

Location	*%Grade	*Vertical Clearance
56+99 to 62+61 STH 65 NB	-4.84	--

Controlling Criteria

This existing grade is greater than the 4% maximum for a 50 mph design speed (level terrain) noted in FDM 11-10-5.3. Based on the application of a 40 mph design speed of this section of STH 65 (controlled by existing geometric features noted in section 2.2.1), this grade is less than the 5% maximum allowed by GDHS 2004, Exhibit 7-2 for level terrain. This criterion corresponds to the 40 mph design speed of this section.

See Attachment 7.2 – As-Built Plan Sheets for existing plan and profiles.

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)
70th Avenue (east approach)	Local	45	2,980 (2013)	3.98%	No	No
70th Avenue (west approach)	Local	35	1,340 (2013)	1.58%	No	No

See 3.1.1 for discussion on existing ADT determination.

2.3.2 Intersections

Intersecting Roadway Name	Intersection Type	Intersection Angle	Traffic Control	*SSD Met (Y/N) /Length	Left ISD Met [(Y/N)/ Length]	Right ISD Met [(Y/N)/ Length]	DSD Met [(Y/N) /Length]	Vision Triangle Yes/No	Corner Clear to Dwy Present (Y/N)
70th Avenue (west approach)	Rural B2	72°	Signal	Y/>360'	Y>795'	Y>665'	Y/>800'	Yes	Yes
70th Avenue (east approach)	Rural B2	72°	Signal	Y/>250'	Y>620'	Y>515'	Y/>590'	Yes	Yes

Controlling Criteria

SSD = Stopping Sight Distance
ISD = Intersection Sight Distance
DSD = Decision Sight Distance

Intersection angles are less than desirable value of 75°

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

2.3.3 Interchanges

A diamond interchange with IH 94 exists 300 feet south of the project limits. Terminals are dual lane roundabouts.

2.4 Cross Section

See Attachment 7.3 – Existing Typical Sections

	STH 65	70th Avenue
Number of Roadways	1-2	1
Number of Lanes	2-4	2
Median Width	Varies (0' north of 70th Avenue to 24' maximum south of 70th Avenue)	None
*** Lane Width**	12'	12'
***Shoulder Width (Total/Paved)**	Median Shoulder: 3' total / 2' paved south of 70th Avenue only Outside Shoulder: Varies (3' north of 70th Avenue to 10' south of 70th Avenue total / 3' paved on both sections)	8' / 6' (west approach) 4' / 8' (east approach)
Bicycle Facility Type	None	None
Sidewalk and Curb Ramps	None	None
***Cross Slope**	2%	2%
***Super Elevation**	6%	Normal Crown
***Horizontal Clearance**	9.5' min	N/A
Clear Zone	Varies (15'-28')	N/A
***Vertical Clearance**	18' 3" min	N/A
Side Slopes and Ditch Sections	4:1 – 6:1 (in clear zone) 3:1 max.	Varies

**Controlling Criteria*

2.5 Pavement Structure/Condition

See Attachment 7.3 - Existing Typical Sections

Roadway	Pavement Types & Thicknesses	Physical Description
STH 65	*** 10" Concrete Pavement over 6" Base Aggregate Dense (56+18 - 60+36) *** *** 6" HMA Pavement over 12" Base Aggregate Dense (60+36 – 65+80) *** *** 6" – 9" HMA Pavement over 5.5-12" Base Aggregate Dense (65+80 – 80+51) *** *** 5" HMA Pavement over 12" Base Aggregate Dense over 12" Select Borrow (80+51 – 82+70) ***	STH 65 from the IH 94 interchange to 70th Ave. was reconstructed in 2013. STH 65 north of the intersection with 70th Ave. was surveyed to have Pavement Distress Index (PDI) values of 6-32 and International Roughness Index (IRI) values of 1.53-1.77 in 2007
70th Avenue (west approach)	6" HMA Pavement over 8" Base Aggregate Dense over 12" Granular Subbase (14+47 – 21+65)	Pavement is in good condition
70th Avenue (east approach)	2.5" HMA Pavement over 6.5" Base Aggregate Dense (21+65 – 26+50)	Pavement is in fair condition
Park and Ride	5" HMA Pavement over 12" Base Aggregate Dense	Pavement is in good condition

2.6 Right Of Way

2.6.1 Encroachments

No encroachments exist along the project.

2.6.2 Unique Right of Way Issues:

There are no unique right of way issues for this project.

2.7 Structures

Structure I.D.	Location	Structure Type	Length	*Clear Width	*Vertical Clearance	*Horizontal Clearance
S-55-46	Sta. 56+00 STH 65 SB	Full-Span Overhead Sign Support	41.5'	41.5'	18' 3" (min.)	6' Left 6.13' Right

**Controlling Criteria*

2.8 Utilities

Utility	Type	General Location	Underground/Overhead/Both
AT&T Wisconsin	Communication Line	South of 70th Avenue headed east crossing STH 65 at Sta. 64+33, and then headed east. 3 lines east of STH 65 NB crossing 70th Avenue at approximately Sta. 20+77 and Sta. 21+49. 2 lines cross 70th Avenue at Sta. 22+63.13 and end just north of 70th Avenue on the east side of STH 65.	Underground
Baldwin Telecom, Inc.	Communication Line	Line begins just south of Sta. 15+19 and heads east along 70th Avenue, crossing STH 65 at Sta. 63+22. Line extends north and south along STH 65, crossing 70th Avenue at Sta. 20+62. Line extends to the north on the east side and crosses STH 65 at Sta. 67+46 and continues north on the west side of STH 65.	Underground
Midwest Natural Gas, Inc.	Gas/Petroleum	Underground west of STH 65 SB, crossing intersection; and north of 70th Avenue EB. West of intersection, line crosses 70th Avenue at Sta. 15+32	Underground
Qwest Communications	Communication Line	Underground along STH 65 SB, crossing 70th Avenue at Sta. 18+10 then south along STH 65 SB.	Underground
Village of Roberts	Water & Sewer	West of STH 65 & 70th Avenue intersection, North and South of 70th Avenue	Underground
St. Croix Electric Cooperative	Electricity	Overhead along 70th Avenue WB and STH 65 NB Underground crossing 70th Avenue at 15+19, then east towards STH 65 crossing at Sta. 63+17, then north on the east side of STH 65 crossing 70th Avenue at Sta. 21+29	Both

2.9 Railroad Crossings

There are no railroads within the project area.

2.10 Special Soils Conditions

Marsh excavation will be required along STH 65 near the north project terminus. Deep topsoil (2 feet depth) is present in undisturbed areas of the project. Pending soil investigations will define limits so the material can be removed from the structural portion of the roadway.

2.11 Unique Project Features

The STH 65 & 70th Avenue intersection accommodates a high-volume of large trucks both east and west of STH 65 due to adjacent developments. The intersection is also used by an adjacent manufacturing plant that routinely hauls oversized loads along the east leg of 70th Avenue and along STH 65 towards the IH 94 interchange. The oversize loads of pre-stressed concrete girders can be in excess of 250' in length.

3.0 TRAFFIC

3.1 Traffic Volumes/Conditions

3.1.1 Traffic Forecast Report

See Attachment 7.4 – Traffic Forecast Report

There is no AADT data forecasted for 70th Avenue; however based on the hourly forecast an estimation of ADT values were computed to be:

Location	Existing ADT (2013)	Design Year ADT (2037)
70th Avenue (west approach)	2,980	9,480
70th Avenue (east approach)	1,340	6,710

3.1.2 Highway Capacity Analysis

Location	Existing Intersection Level of Service	Design Year Level of Service Under Existing Roadway	Design Year Level of Service Under Proposed Roadway
STH 65 & 70th Avenue	B (AM) B (PM)	C (AM) D (PM)	B (AM) C (PM)

Under typical operating conditions, there is adequate capacity for STH 65 movements at the intersection for existing and design year traffic volumes. By the design year, several 70th Avenue movements are level of service E or worse, however the overall intersection level of service is D or better. This intersection routinely accommodates a high volume of truck traffic which has resulted in queuing beyond existing turn storage lengths, blocking through-traffic.

3.2 Crash Analysis

3.2.1 Project Crash Information

Roadway	Crash Rate (1) (2010-2014)	Statewide Crash Rate (1) (2009-2013)	Number & Severity of Crashes			
			Fatal	Injury	Property Damage	Total No. Crashes
STH 65	22	75	0	0	2	2
70th Ave	88	78	0	0	1	1

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

Of the 0.45-mile segment along STH 65, from about 400' south of Wagner Dr. to just north of the I-94 interchange EB terminus, not including the intersection with 70th Ave, only two crashes were reported. Both crashes were property damage only and may have been a result of snowy weather conditions.

Of the 0.15-mile segment along 70th Ave surrounding but not including the intersection of STH 60 and 70th, only one crash was reported. The single crash was property damage only and may have been a result of icy 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		
STH 65 & 70th Ave (Stop Controlled)	Jan-2010 – Nov-2012	0	2	0	2	0.08	One of the crashes was angle, the other was sideswipe. Both crashes resulted in injury. Weather may have been a factor in one of the crashes.
STH 65 & 70th Ave (Signal Controlled)	Nov-2012 – Dec-2014	0	0	4	4	0.16	Of the four crashes recorded at this intersection since its signalization, none resulted in injury. Weather may have been a factor in half of the total crashes.

(2) Crash rate based on 1 Million entering vehicles (MEV)

The crash data for this intersection does not indicate a significant or unique pattern. The data included in the table above is presented to identify the intersection crash rate both with and without the traffic signals that were installed in late 2012.

4.0 PROPOSED DESIGN CRITERIA

4.1 Design Class

Roadway or Roadway Segment	Design Class
STH 65 (project beginning thru 70th Ave. intersection)	UA3
STH 65 (70th Ave. intersection to project terminus)	A2
70th Avenue	L5

The scope of this project is to reconstruct the intersection of STH 65 and 70th Ave. The UA3 (transitional, undeveloped) design class is being applied to the first portion of STH 65. This will extend the existing 4-lane divided section that has been partially developed from the IH 94 interchange roundabout ramp terminal, through the reconstructed intersection. The A2 design class is being applied to the remaining portion of STH 65 to match the existing roadway typical section.

4.2 Design Speed

Roadway	*Design Speed (mph)	Posted Speed (mph)
STH 65	50	45
70th Avenue (west approach)	40	35
70th Avenue (east approach)	50	45

**Controlling Criteria*

4.3 Design Criteria Outside Of Desirable Standards

Minimum shoulder widths are being used at the following areas:

- Inside shoulder in the UA3 section is being reduced to 4 feet to minimize impacts to adjacent properties and to reduce the amount of re-alignment of STH 65 as it intersects with 70TH Ave.
- Outside shoulder, north of the intersection and in the A2 portion, is being reduced to 8 feet to minimize impacts to wetlands on both sides of STH 65. In addition to the narrowed shoulder, guardrail is also being proposed to further reduce wetland impacts.

4.4 Exceptions to Standards

No exceptions to standards are required for this project.

4.5 Typical Cross Section Elements Considered

The intersection control evaluation (ICE) provided the number of driving and turn lanes required for the intersection improvement. Desirable lane and shoulder widths were applied to the roadways under reconstruction. Use of guardrail to protect steeper slopes along the project wetlands is proposed to reduce marsh excavation.

Due to the anticipated development along the west approach of 70th Ave. and high truck volumes using the adjacent travel plaza, the intersection is being designed for a dual northbound left turn from STH 65. Since 70th Ave does not currently have 2 receiving lanes, the construction of the ultimate dual left will be staged. This project will build the inner turn lane and receiving lane on 70th Ave.

5.0 PROPOSED DESIGN IMPROVEMENT

5.1 Improvement Type

303 State Highway Rehabilitation (*Reconstruction)*

5.2 Geometrics

5.2.1 *Horizontal alignment

The horizontal alignments for STH 65 will be re-aligned to provide the ultimate footprint for a northbound dual left turn to 70th Ave. The horizontal alignments meet desirable criteria for a 50 mph design speed.

5.2.2 *Vertical alignment/Stopping sight distance

The vertical alignments of STH 65 meet desirable criteria for a Category 1, 50 mph design speed.

5.2.3 *Grades

The proposed grades along STH 65 and 70th Avenue meet the controlling criteria for the design speed of each roadway and segment. The proposed profile on STH 65 in the segment from the IH 94 westbound ramp terminal to 70th Avenue matches into the existing profile that was established with the 2013 reconstruction. The design speed of this short section of STH 65 is rated to progressively increase from 40 mph to 50 mph (refer to discussions in sections 2.2.1 and 2.2.3). Proposed grades are less than the 5% maximum (GDHS 2004, Exhibit 7-2) for level terrain with a design speed of 40 mph.

See Attachment 7.5 – Preliminary Plan Sheets

** Controlling Criteria*

5.3 Side Roads/Intersections/Interchanges

5.3.1 Side-roads

Roadway Name	Functional Class	Design Speed (MPH)	Design Year (2037) Traffic (AADT)	Design Class	Approach Grades	Ped. Facilities (Y / N)	Bike Facilities (Y / N)
70th Avenue (west approach)	Local	40	9,480	L5	0.38 to 1.85%	Y	Y
70th Avenue (east approach)	Local	50	6,710	L5	0.3 to 2.0%	N	Y

The westbound alignment of 70th Ave. will remain unchanged.

The eastbound alignment of 70th Ave will be re-aligned to accommodate a northbound dual left intersection design.

Horizontal and vertical alignments meet desirable standards for the respective design speeds.

A sidewalk will be constructed along the south side of the west approach and from the intersection to a relocated bus stop with-in the Park and Ride. Grading for a future sidewalk along the north side of the east approach will be provided.

Access Points

Travel Plaza

There are three access points along 70th Avenue, with the closest one located approximately 200 ft west of the STH 65 intersection. No changes to these locations are proposed.

Park and Ride Lot

The single access point on 70th Ave. is approximately 200 ft to the east of STH 65. This access point will be relocated 180 feet easterly to facilitate the revised intersection design.

Concrete Beam Manufacturing Plant

Primary access on 70th Ave. is approximately 900 ft east of STH 65, and a secondary access opposite the existing Park and Ride entrance. No changes to these locations are required.

5.3.2 Intersections

Roadway Name	Intersection Type (Design Vehicle)	Intersection Angle	Traffic Control	*SSD Met (Y/N) /Length	①Left ISD, Met [(Y/N)/ Length]	①Right ISD, Met [(Y/N)/ Length]	②DSD Met(Y/N) /Length	Vision Triangle (Yes/No)	Corner Clear. to Dwy Present
70th Avenue (west approach)	Urban (WB-67)	103°48'14"	Signal	Y/>305'	Y/>565'	Y/>501'	Y>330'	Yes	Yes
70th Avenue (east approach)	Urban (WB-67 &165' Beam modified)	79°18'8"	Signal	Y/>425'	Y/>704'	Y/>626'	Y>465'	Yes	Yes

** Controlling Criteria*

①ISD = Intersection Sight Distance for stop condition on a side road

② DSD = Decision Sight Distance. Avoidance maneuver A at 40 mph design speed and 50 mph design speed; see FDM 11-10 Attachment 5.1

Turn bay storage for the following were computed as required in FDM 11-25-2.3 using signalized intersection criteria:

- The STH 65 northbound left turn lane length was designed using a queue of 356' with a 50 mph design speed which resulted in a 581' minimum length. This turn lane was designed to include the maximum available length (650') to provide additional storage to accommodate to concentrated truck arrivals that often occur.
- The STH 65 northbound right turn lane length was designed using a queue of 119' with a 50 mph design speed which resulted in a 344' minimum length (designed as 350').

- The STH 65 southbound left turn lane length was designed using a queue of 51' with a 55 mph design speed which resulted in a 276' minimum length (designed as 400').
- The STH 65 southbound right turn lane length was designed using a queue of 33' with a 55 mph design speed which resulted in a 258' minimum (designed as 350').

Intersection geometrics are controlled by providing simultaneous design truck movements using the future northbound dual left lanes and the OSOW truck movements from the concrete beam plant. Based on coordination with the beam manufacturer, longer loads are anticipated in the future. A modified (longer) beam truck was used as the design vehicle for left turns from 70th to STH 65.

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

5.3.3 Interchanges

No work is proposed within the diamond interchange with IH94. Temporary cross overs and lane reductions will be used for traffic control staging.

5.4 Roundabouts

Roundabouts were evaluated as part of the Intersection Control Evaluation and eliminated based on difficulty in accommodating OSOW vehicles from the concrete beam plant on 70th Avenue, analysis of traffic movements and complex staging.

5.5 Cross Section/Pavement Structure

See Attachment 7.6 – Proposed Typical Cross Sections for lane widths curb types, border widths and cross slope information.

5.6 Street Lighting

Location	Type	Breakaway Requirements
STH 65/70th Ave. intersection	Type 6 Lighting (35' mounting height) between IH 94 WB Ramp and 70th Avenue and signalized intersection lighting	All lighting will be placed on breakaway supports, unless located on monotube signal structures

5.7 Structures

5.7.1 Bridge Structures

There are no bridge structures on this project.

5.7.2 Box Culverts and Multiple Pipe Structures

There are no box culverts on this project.

5.7.3 Retaining Walls and Noise Barrier Structures

There will be no retaining walls or noise barrier structures proposed on this project.

5.7.4 Sign Bridge Structures

Structure I.D.	Location	Type	Length	*Clear Width	*Vertical Clearance	*Horizontal Clearance
S-55-46	Sta. 56+00 STH 65 SB	Existing Full-Span Overhead Sign Support	41.5'	41.5'	18' 3" (min.)	6' Left 6.13' Right

Proposed Improvement: Sign Plate Modification

S-55-053	Sta. 60+56 STH 65 SB	Full-Span Overhead Sign Support	50.0'	50'	18'3" (min.)	9.5' Left 5.5' Right

Proposed Improvement: Install new sign support. Bases to be protected with guard rail in both directions of STH 65.

S-55-054	Sta. 73+24 STH 65 SB	Full-Span Overhead Sign Support	50.0'	50'	18'3" (min.)	9.5' Left 5.5' Right

Proposed Improvement: Install new sign support. Bases to be protected with guard rail in both directions of STH 65.

**Controlling Criteria*

5.7.5 Tunnel Structures

There are no tunnel structures on this project.

5.8 Permanent Traffic Control

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

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

5.9 Transportation Management Plan

See Attachment 7.8 – Transportation Management Plan

5.10 Safety Enhancements/Mitigation Measures

Additional turn lane lengths to provide storage for vehicles will decrease the likelihood of queuing into through-lanes. Additional intersection capacity will allow for efficient operations and less congestion. A sidewalk will be constructed from the Park and Ride to the Flying J Travel Plaza providing safer access for pedestrians.

5.11 Real Estate

5.11.1 Real Estate Acquisition

Relocations		Land (Acres)	Permanent Easements	Temporary Easements	Construction Permits
Type	Number				
0	0	3.71	0	1.34	0

5.11.2 Encroachment Actions

No encroachments exist along the project.

5.12 Utilities

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

Describe any special design features to accommodate utilities: None required for this project.

Major Utility Agreements: None required for this project.

5.13 Railroads

There are no railroads within the project limits.

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)
		% Federal	% State	% Local			
1540-04-73	$2,500,000.00	80	20	0	2017	No	No

Describe Incentive/Disincentive Clauses: There are no incentive/disincentive clauses included in this project.

Non-participating Work: There is no non-participating work in this project.

Deferred Construction Work (Preventative Maintenance projects): None.

5.15 Unique or Non-standard Features

5.15.1 Hazardous Waste

A Phase I Hazardous Materials Assessment was completed on February 25, 2015. No sites were identified as having the potential for environmental concern.

5.15.2 Environmental Commitments

Wetland fill will require compensatory mitigation pursuant to the DNR/DOT cooperative agreement. It is estimated that 0.25 wetland acres will be impacted by the project. Coordination between WisDOT, WDNR and USACE is ongoing; wetland mitigation ratios and location will be determined when wetland impacts are finalized during final design.

See Attachment 7.7 – Environmental Commitments Basic Sheet

5.15.3 Community Sensitive Design/Public Involvement

A public informational meeting was held October 28, 2014.

5.15.4 Value Engineering

Value engineering is not required for this project.

6.0 SYNOPSIS

	Completion/Approval Dates	Status of Coordination or Other Information as Needed
Concept Definition Report	2/17/12	---
Scoping Document	Scoping completed with CDR (2/17/12) Document Not Completed	---
Public Involvement Plan	None Completed	---
Final Aesthetic & Visual Level of Impact Worksheet	None Completed	---
Speed Limit Change Declaration	Not Required	---
Environmental Document (Type: ER)	Final submitted July 7/0715	---
Public Hearing/Public Information Meetings	10/28/2014	---
SHPO Involvement (Section 106)	Approved 4/24/14	---
DNR Involvement	Initial Concurrence 1/28/15	---
Agricultural Impact Statement	Not Required	---
Pavement Design Report	3/22/13	---
Roundabout Review	Not Required	---
Transportation Management Plan (Type: 2)	Approved 7/02/15	---
Permits Required (Types: 401 & 404)	To be submitted prior to PS&E	To be completed prior to the PS&E
Local Project Agreements	Not Required	---
Value Engineering Study	Not Required	---
Status of Statutory Actions	None	---

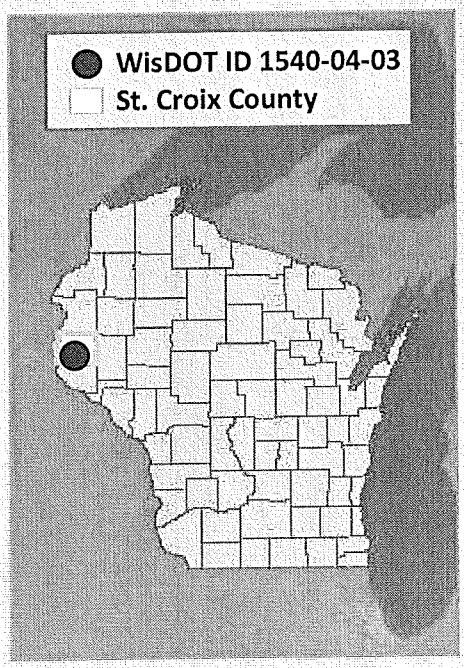
7.0 ATTACHMENTS

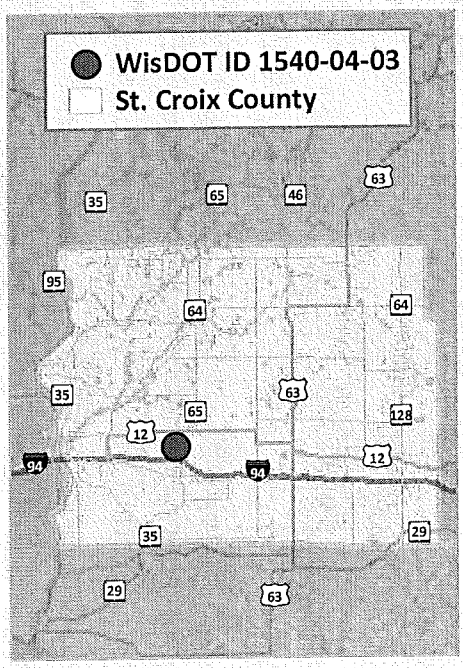
1. Project Location/Overview Map
2. As-built Plan Sheets
3. Existing Typical Cross Sections
4. Traffic Forecast
5. Preliminary Plan Sheets
6. Proposed Typical Cross Sections
7. Environmental Commitments Basic Sheet
8. Transportation Management Plan Documentation and Request for Approval Form
9. Roadside Hazard Analysis

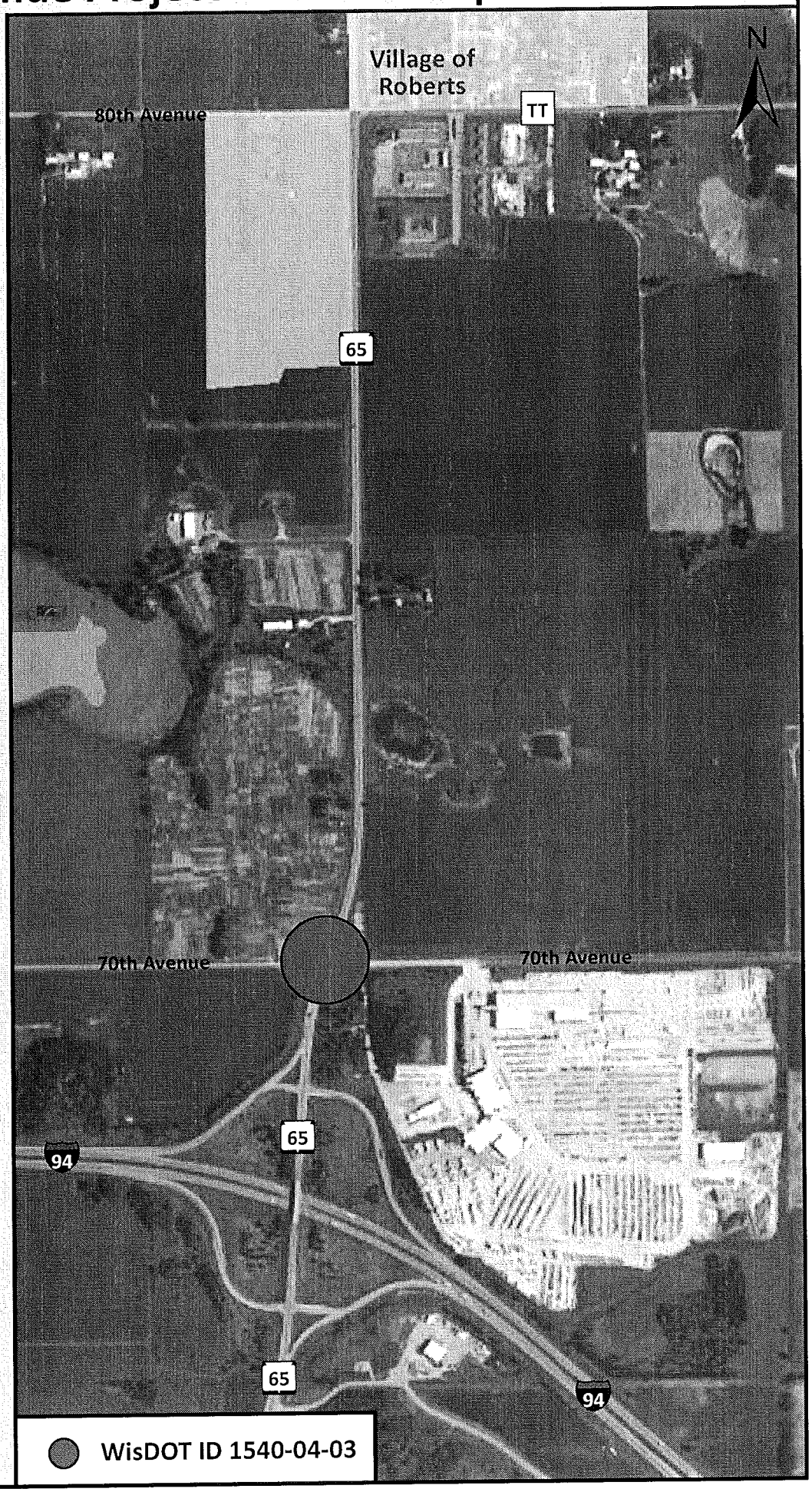
Attachment 7.1
Project Location / Overview Map

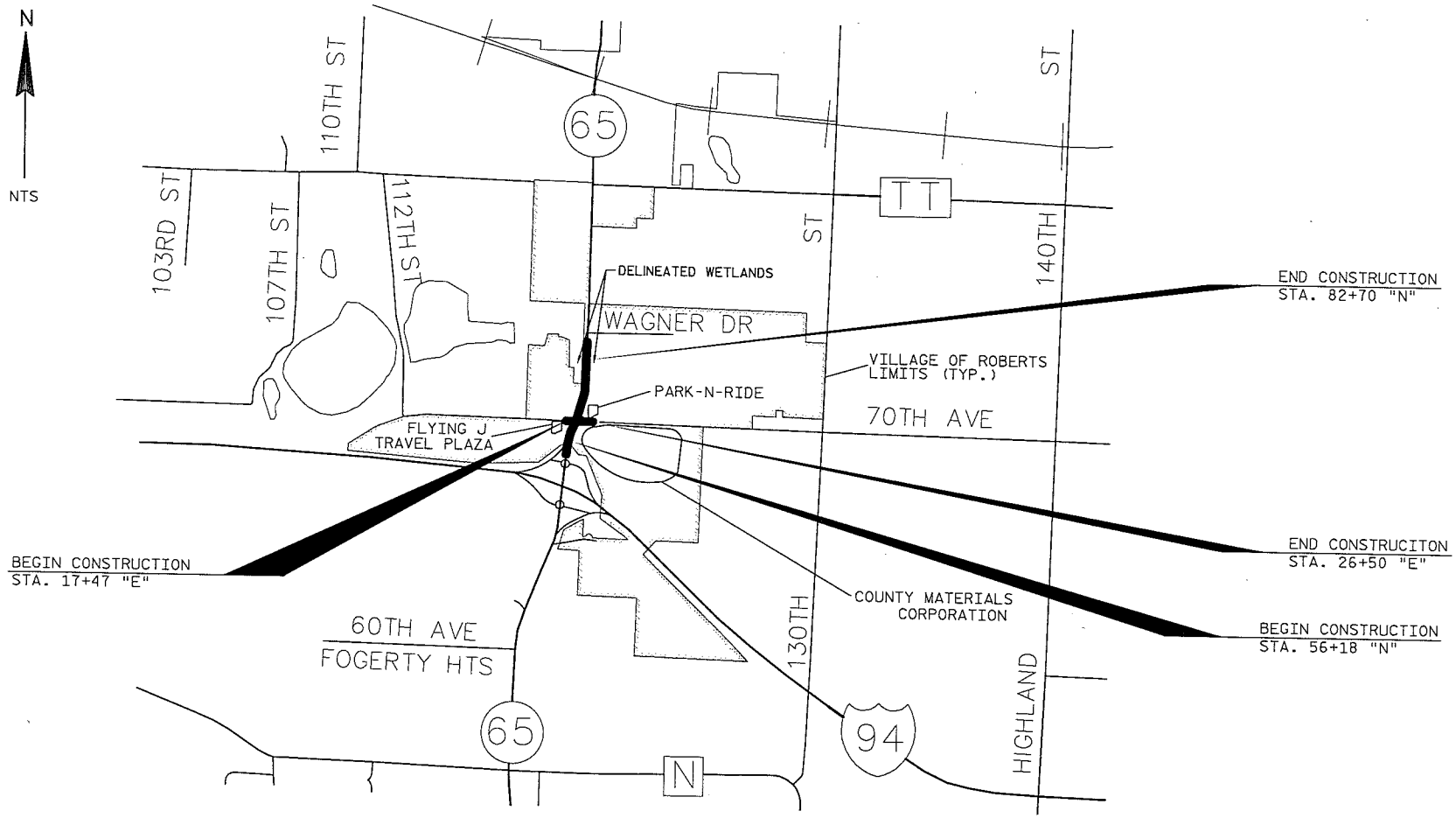
STH 65 & 70th Avenue Project Location Map

WisDOT ID 1540-04-03
STH 65 & 70th Avenue
River Falls - New Richmond
STH 65 Expansion/
70th Avenue Intersection
St. Croix County







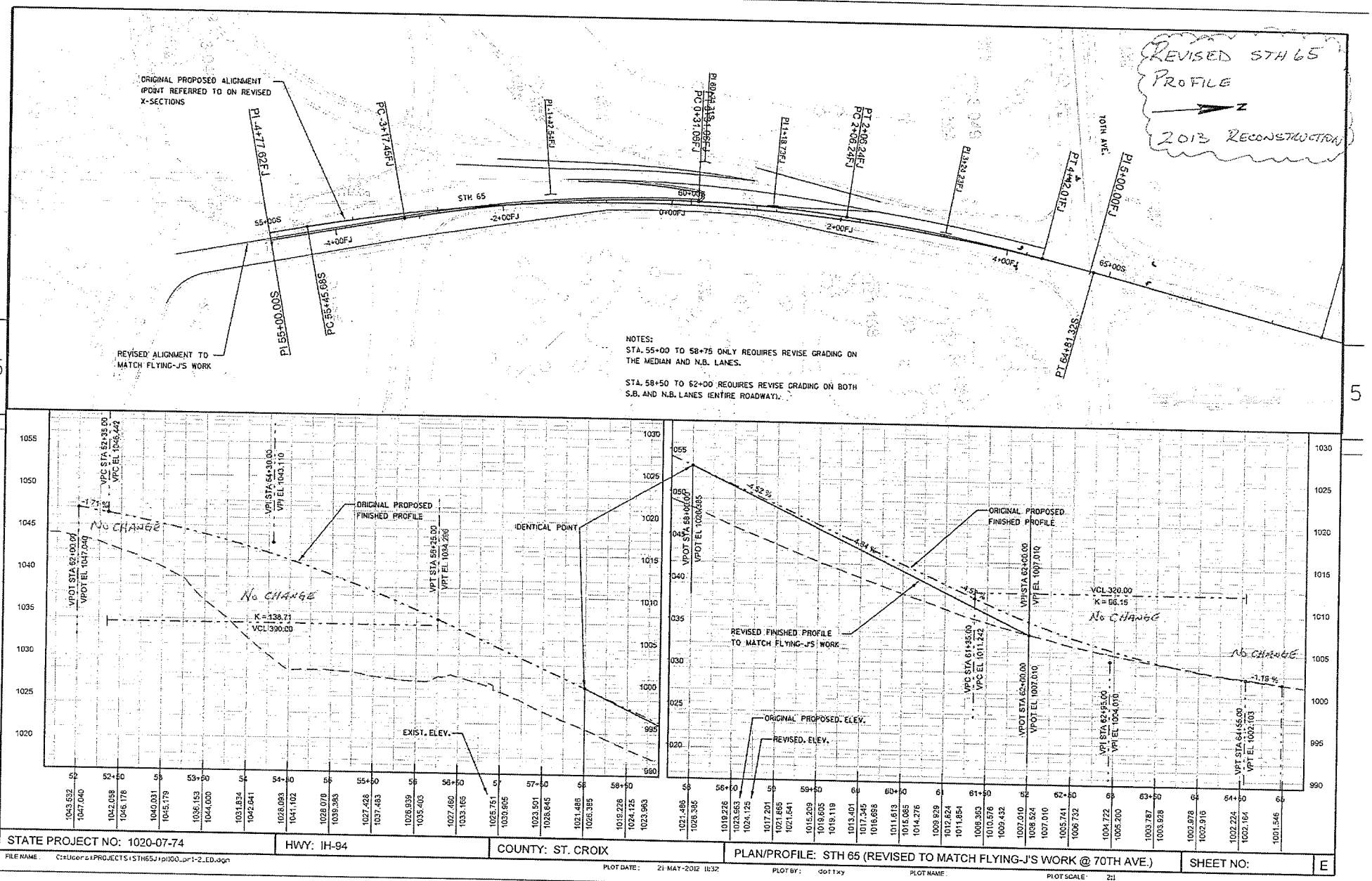


PROJECT NO: 1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PROJECT OVERVIEW	SHEET E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020201-PO.DWG
PLOT DATE : 5/27/2015
PLOT BY : KL ENGINEERING
PLOT NAME : ---------- PLOT SCALE : 0.000425

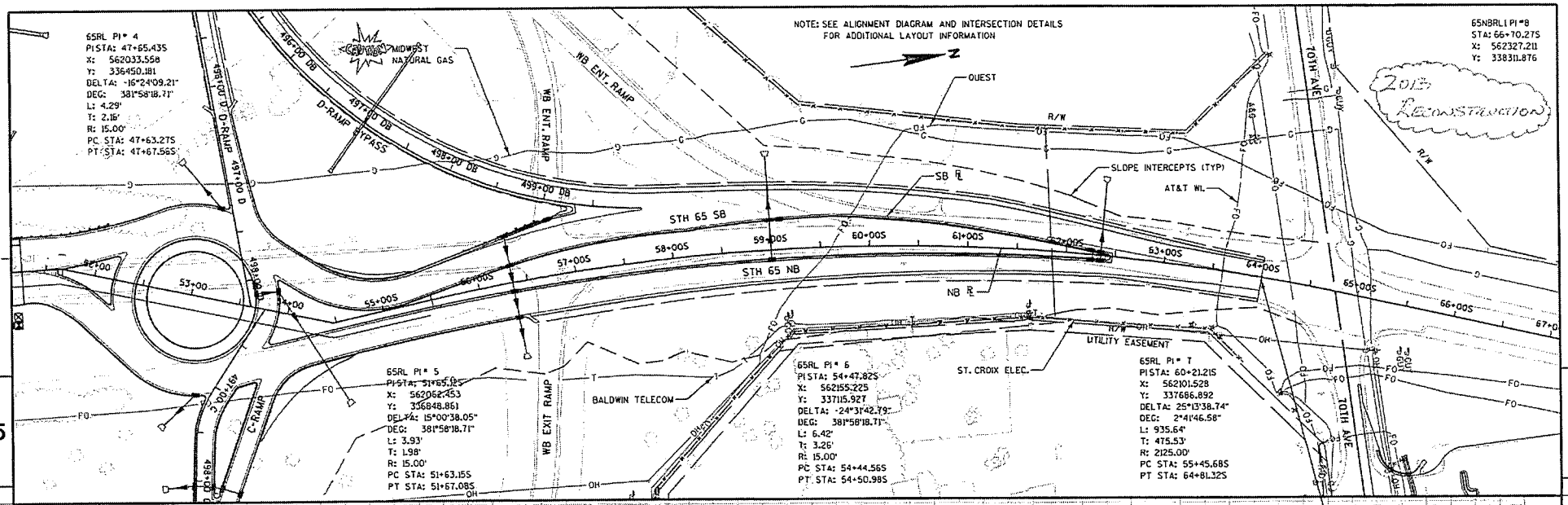
WISDOT/CADDS SHEET 42

Attachment 7.2
As-Built Plan Sheets



STATE PROJECT NO: 1020-07-74	HWY: IH-94	COUNTY: ST. CROIX	PLAN/PROFILE: STH 65 (REVISED TO MATCH FLYING-J'S WORK @ 70TH AVE.)	SHEET NO:	E

FILE NAME: C:\Users\PROJECTS\STH65J\pl100_pr1-2_ED.dgn PLOT DATE: 21-MAY-2012 11:32 PLOT BY: dottxy PLOT NAME: PLOT SCALE: 2:1



PROJECT NO: 1020-07-74	HWY: IH94	COUNTY: ST. CROIX	PLAN & PROFILE - STH 65	SHEET	E

FILE NAME : g:\strand\s100917\dgn\planprof\050102_pp.dgn PLOT DATE : 4/25/2011 PLOT BY : KL Engineering PLOT NAME : PLOT SCALE :

2

STH 65 'SB' ℄
SOUTHBOUND INSIDE EDGE OF PAVEMENT
FOR PAVEMENT GRADES & SUPERELEVATION. SEE PAVING GRADES DETAIL

'SB' PI "1
STA: 33+10.00
X: 561781.500
Y: 335044.470

'SB'PI " 2
PI STA: 33+41.40
X: 561792.616
Y: 335073.835
DELTA: -2°54'11.53"
DEG: 5°39'41.90"
L: 51.28'
T: 25.64'
R: 1012.00'
PC STA: 33+15.75
PT STA: 33+67.03

'SB'PI " 3
PI STA: 40+19.69
X: 562000.225
Y: 335719.588
DELTA: -26°40'20.06"
DEG: 5°23'31.03"
L: 494.67'
T: 251.90'
R: 1062.62'
PC STA: 37+67.79
PT STA: 42+62.46
STA BACK: 45+75.17
STA AHEAD: 55+11.46 (2)

EQUATION

'SB' PI "4
STA: 55+11.46 (2)
X: 561913.364
Y: 336277.477

'SB' PI "5
STA: 55+11.46 (2)
X: 561913.364
Y: 336277.477

'SB'PI " 6
PI STA: 55+19.91 (2)
X: 562144.716
Y: 337187.453
DELTA: -7°27'13.16"
DEG: 44°09'00.65"
L: 16.88'
T: 8.45'
R: 129.77'
PC STA: 55+11.46 (2)
PT STA: 55+28.34 (2)

'SB'PI " 7
PI STA: 57+15.40 (2)
X: 562102.969
Y: 337378.450
DELTA: 15°53'42.40"
DEG: 7°28'47.52"
L: 212.51'
T: 106.94'
R: 766.00'
PC STA: 56+08.46 (2)
PT STA: 58+20.96 (2)

'SB'PI " 8
PI STA: 58+95.97 (2)
X: 562108.253
Y: 337560.170
DELTA: 6°01'17.65"
DEG: 4°01'04.57"
L: 149.87'
T: 75.00'
R: 1426.00'
PC STA: 58+20.96 (2)
PT STA: 59+70.83 (2)

'SB'PI " 9
PI STA: 60+80.70 (2)
X: 562132.985
Y: 337743.235
DELTA: 8°44'39.11"
DEG: 3°59'13.85"
L: 219.31'
T: 109.87'
R: 1437.00'
PC STA: 59+70.83 (2)
PT STA: 61+90.14 (2)

'SB'PI " 10
PI STA: 64+56.95 (2)
X: 562251.199
Y: 338100.884
DELTA: 1°16'04.28"
DEG: 2°41'46.58"
L: 47.02'
T: 23.51'
R: 2125.00'
PC STA: 64+33.44 (2)
PT STA: 64+80.46 (2)

'SB' PI "11
STA: 64+92.27 (2)
X: 562263.030
Y: 338134.160

STH 65 'NB' ℄
NORTHBOUND INSIDE EDGE OF PAVEMENT
FOR PAVEMENT GRADES & SUPERELEVATION. SEE PAVING GRADES DETAIL

'NB'PI "1
STA: 31+15.00
X: 561712.637
Y: 334862.408

'NB'PI " 2
PI STA: 37+00.98
X: 561920.011
Y: 335410.464
DELTA: -2°49'56.90"
DEG: 4°29'37.63"
L: 63.03'
T: 31.52'
R: 1275.00'
PC STA: 36+69.46
PT STA: 37+32.49

'NB'PI " 3
PI STA: 39+09.33
X: 561982.425
Y: 335609.255
DELTA: -7°07'04.86"
DEG: 2°45'44.78"
L: 257.67'
T: 129.00'
R: 2074.10'
PC STA: 37+80.33
PT STA: 40+38.00

'NB'PI " 4
PI STA: 42+13.93
X: 562028.598
Y: 335910.606
DELTA: -19°48'14.51"
DEG: 7°37'08.83"
L: 259.93'
T: 131.27'
R: 752.00'
PC STA: 40+82.66
PT STA: 43+42.58

'NB'PI " 5
PI STA: 44+94.48
X: 561967.924
Y: 336187.196
DELTA: 45°14'17.91"
DEG: 53°03'05.93"
L: 85.27'
T: 45.00'
R: 108.00'
PC STA: 44+49.48
PT STA: 55+04.68(2)

'NB'PI "6
STA: 31+15.00
X: 561712.637
Y: 334862.408

'NB'PI "7
STA: 31+15.00
X: 561712.637
Y: 334862.408

STA BACK: 45+34.75
STA AHEAD: 55+04.68(2)

EQUATION

'NB'PI " 8
PI STA: 56+02.23(2)
X: 562149.612
Y: 337270.590
DELTA: 4°36'10.17"
DEG: 2°21'37.64"
L: 195.00'
T: 97.55'
R: 2427.32'
PC STA: 55+04.68(2)
PT STA: 56+99.68(2)

'NB'PI " 9
PI STA: 59+81.68(2)
X: 562144.513
Y: 337650.112
DELTA: 13°15'13.67"
DEG: 2°21'37.64"
L: 561.49'
T: 282.01'
R: 2427.32'
PC STA: 56+99.68(2)
PT STA: 62+61.17(2)

SE = 2.9%

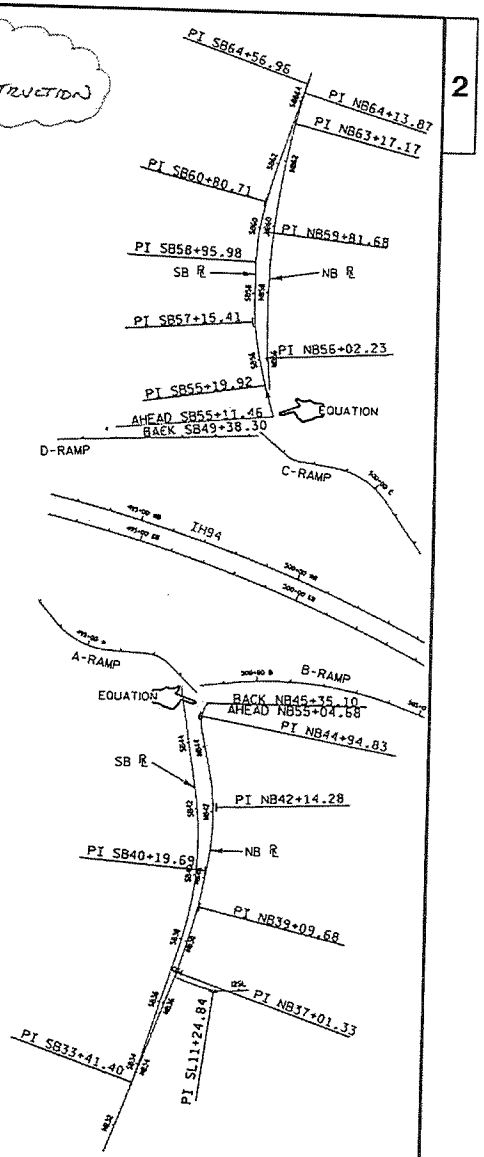
'NB'PI " 10
PI STA: 63+17.17(2)
X: 562217.578
Y: 337980.124
DELTA: 3°09'58.30"
DEG: 2°49'39.84"
L: 111.97'
T: 56.00'
R: 2026.21'
PC STA: 62+61.17(2)
PT STA: 63+73.14(2)

SE = 3.9%

'NB'PI " 11
PI STA: 64+13.87(2)
X: 562243.672
Y: 338073.268
DELTA: 2°16'11.48"
DEG: 2°49'39.84"
L: 81.45'
T: 40.73'
R: 2026.21'
PC STA: 63+73.14(2)
PT STA: 64+54.59(2)

SE = 5.5%

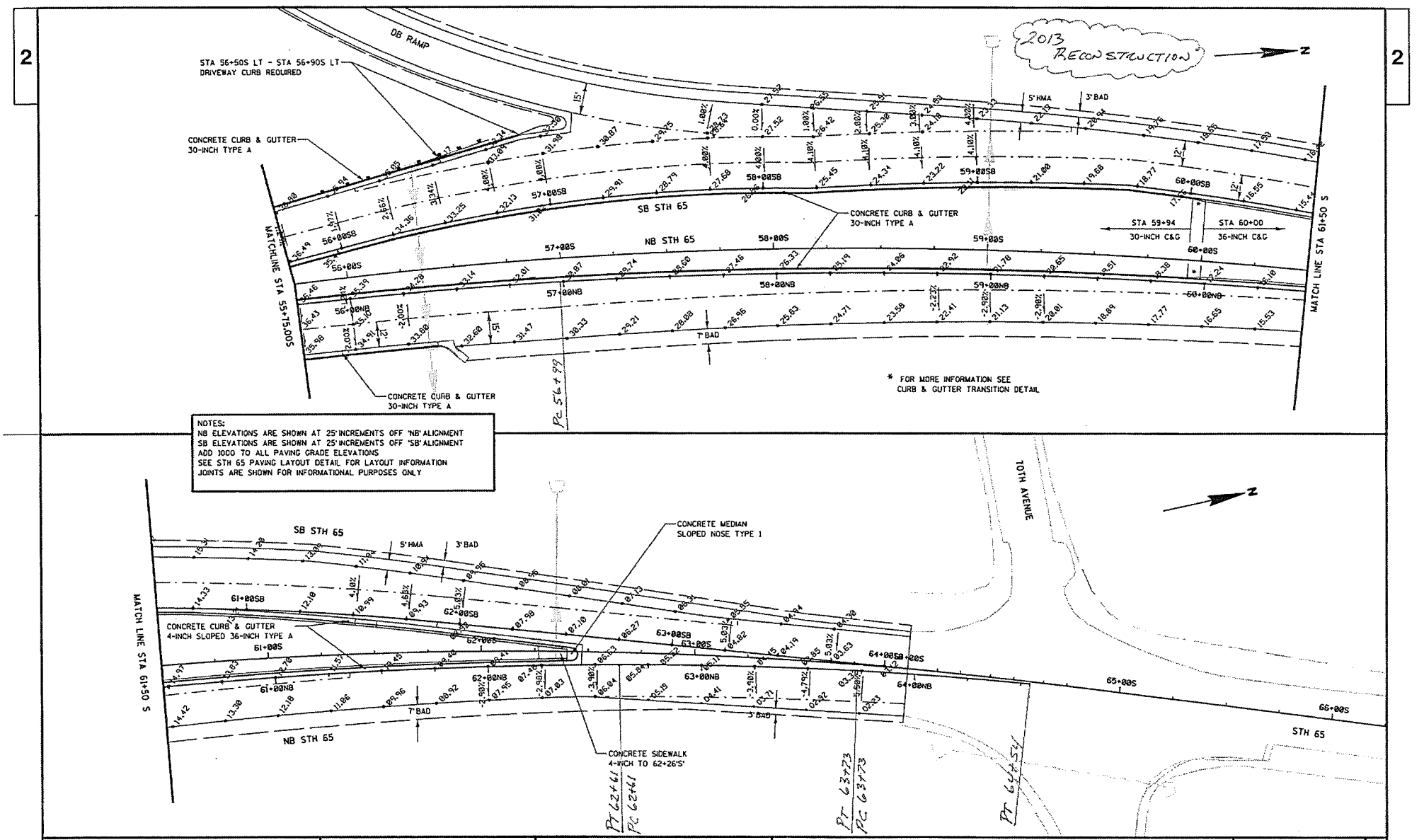
2013 RECONSTRUCTION



2

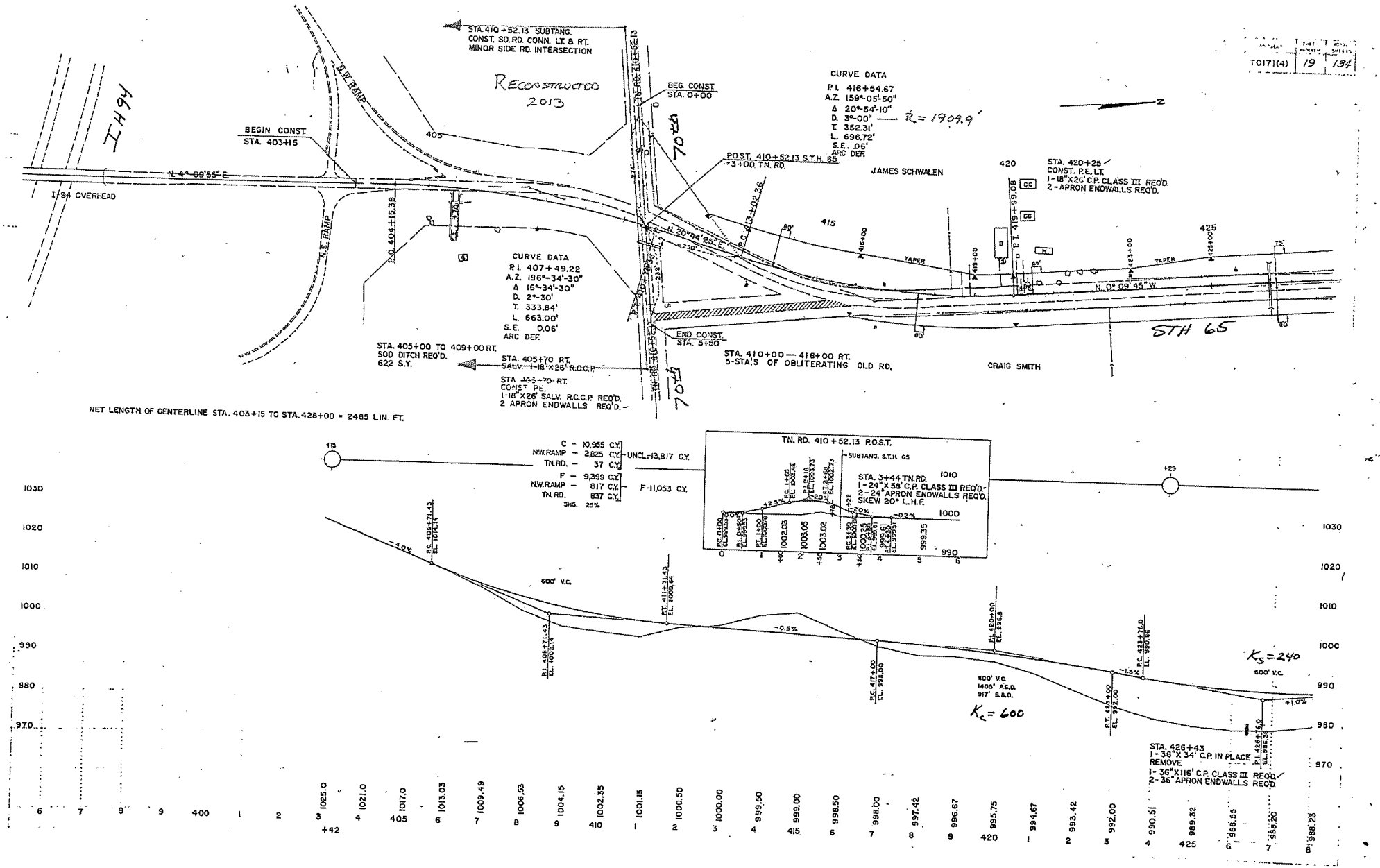
PROJECT NO:1020-07-74	HWY: IH 94	COUNTY: ST. CROIX	STH 65 NORTHBOUND & SOUTHBOUND ℄ DATA	SHEET E

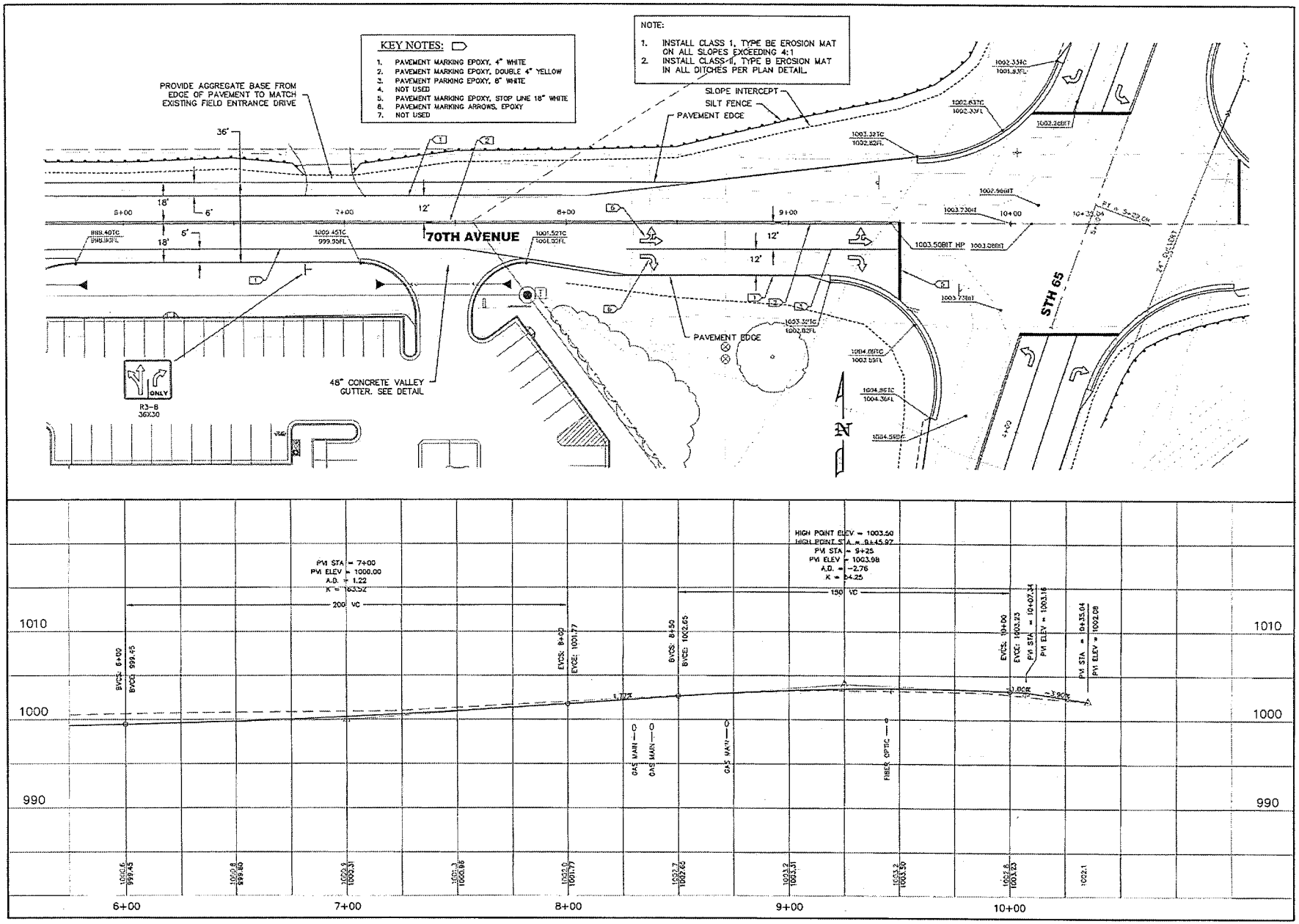
FILE NAME : G:\STRAND\S100917\DGN\DETAILS\027201_AD.dgn
PLOT DATE : 4/27/2011
PLOT BY : KL Engineering
PLOT NAME :
PLOT SCALE :



PROJECT NO: 1020-07-74	HWY: IH 94	COUNTY: ST. CROIX	STH 65 PAVING GRADES DETAIL	SHEET	E

FILE NAME : G:\STRAND\S100917\DGN\DETAILS\020602_pg.dgn PLOT DATE : 4/27/2011 PLOT BY : KL Engineering PLOT NAME : PLOT SCALE : WISDOT/CADDS SHEET 42


STA. 410+52.13 SUBTANG.
CONST. SO. RD. CONN. LT. & RT.
MINOR SIDE RD. INTERSECTION
RECONSTRUCTED 2013
BEG CONST STA. 0+00
CURVE DATA
P.I. 416+54.67
A.Z. 159°-05'-50"
Δ 20°-54'-10"
D. 3°-00" — R = 1909.9'
T. 352.31'
L. 696.72'
S.E. 0.06'
ARC DEF.
POST. 410+52.13 S.T.H. 65
+3+00 TN. RD.
JAMES SCHWALEN
STA. 420+25
CONST. P.E. LT.
1-18"X26' C.P. CLASS III REQ'D.
2-APRON ENDWALLS REQ'D.
BEGIN CONST STA. 403+15
I-94
I/94 OVERHEAD
N. 4° 09' 55" E.
N.W. RAMP
N.E. RAMP
P.C. 404+15.38
CURVE DATA
P.I. 407+49.22
A.Z. 196°-34'-30"
Δ 15°-34'-30"
D. 2°-30'
T. 333.84'
L. 663.00'
S.E. 0.06'
ARC DEF.
STA. 405+00 TO 409+00 RT.
SOD DITCH REQ'D.
622 S.Y.
STA. 405+70 RT.
SALV. 1-18"X26" R.C.C.P.
STA. 405+70 RT.
CONST. P.E.
1-18"X26' SALV. R.C.C.P. REQ'D.
2 APRON ENDWALLS REQ'D.
END CONST. STA. 5+50
STA. 410+00 — 416+00 RT.
5-STA.'S OF OBLITERATING OLD RD.
CRAIG SMITH
STH 65
70th
NET LENGTH OF CENTERLINE STA. 403+15 TO STA. 428+00 = 2485 LIN. FT.
C - 10,955 C.Y.
N.W. RAMP - 2,825 C.Y.
TN. RD. - 37 C.Y.
UNCL.-13,817 C.Y.
F - 9,398 C.Y.
N.W. RAMP - 817 C.Y.
TN. RD. - 837 C.Y.
F-11,053 C.Y.
SHG. 25%
TN. RD. 410+52.13 P.O.S.T.
SUBTANG. S.T.H. 65
STA. 3+44 TN. RD.
1-24"X58' C.P. CLASS III REQ'D.
2-24" APRON ENDWALLS REQ'D.
SKEW 20° L.H.F.
600' V.C.
1405' P.S.D.
917' S.S.D.
$K_c = 600$
$K_s = 240$
STA. 426+43
1-36"X34' C.P. IN PLACE
REMOVE
1-36"X116' C.P. CLASS III REQ'D.
2-36" APRON ENDWALLS REQ'D.



Stevens
ENGINEERS · PLANNERS · SURVEYORS

Consultants:

Project:
FLYING J TRAVEL PLAZA
ROADWAY IMPROVEMENTS

Location:
ROBERTS, WISCONSIN

Certification:

Drawn By	JRR
Checked By	JRR
Project No.	400-11-206
Date	04.23.12

Scale: 0 20 40

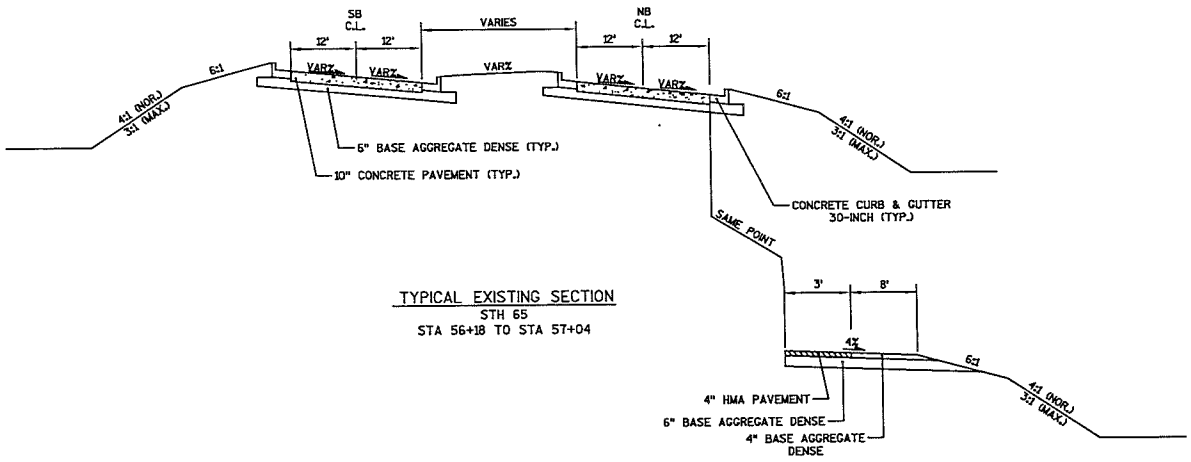
Revisions:

No.	Date	Description
1	5.24.12	Revised per DOT & Village

Sheet Title:
70TH AVENUE
PLAN / PROFILE

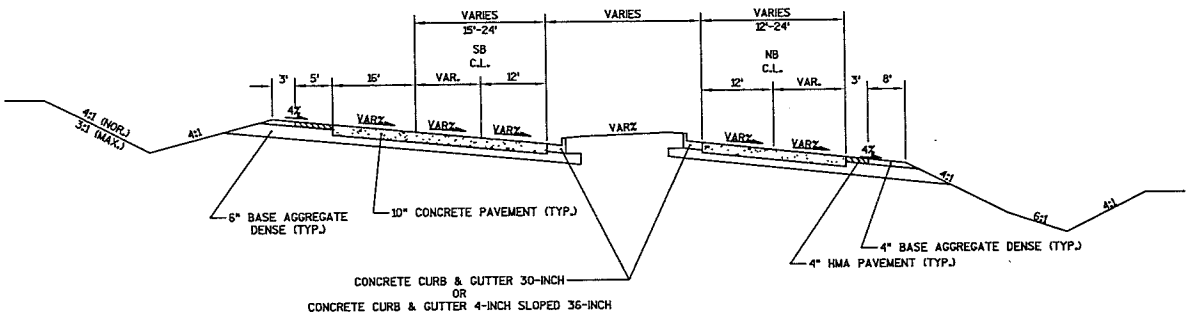
Sheet No.:
C10.2

Attachment 7.3
Existing Typical Sections



TYPICAL EXISTING SECTION
STH 65
STA 56+18 TO STA 57+04

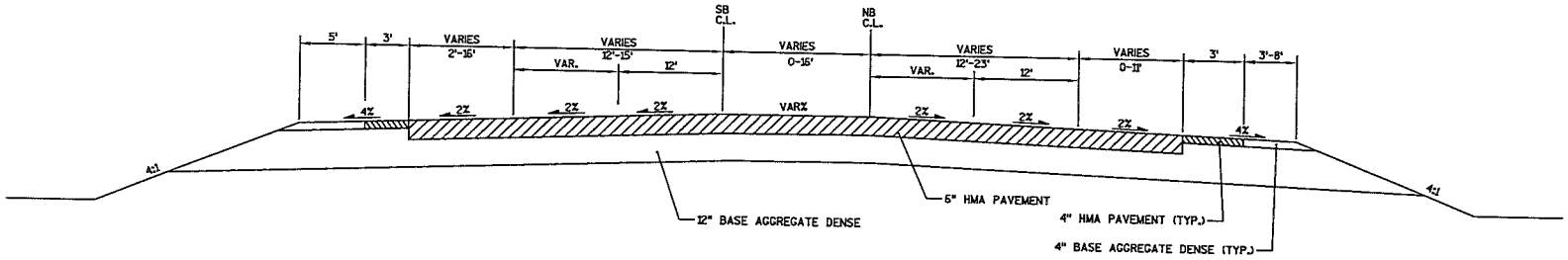
STA 56+33 TO STA 57+04



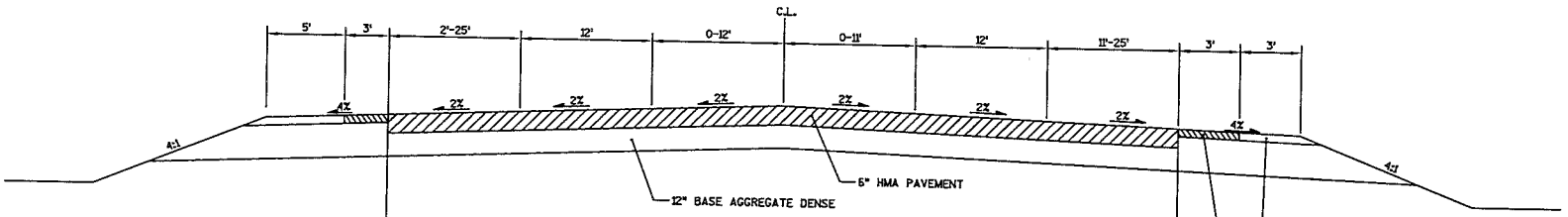
TYPICAL EXISTING SECTION
STH 65
STA 57+04 TO STA 60+36

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

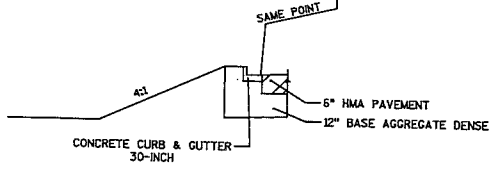
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : _____ PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42



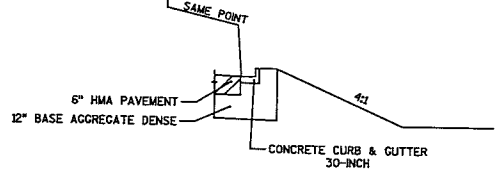
TYPICAL EXISTING SECTION
STH 65
STA 60+36 TO STA 62+35



TYPICAL EXISTING SECTION
STH 65
STA 62+35 TO STA 65+80



STA 63+84 TO STA 65+59



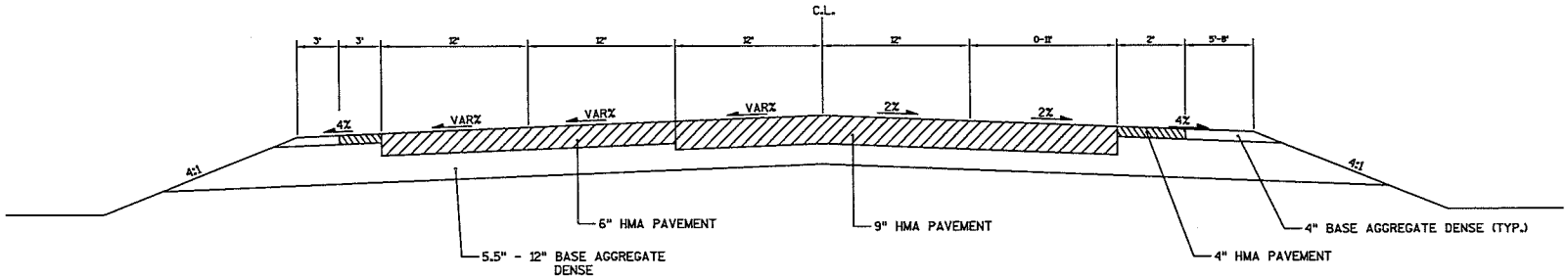
STA 64+08 TO STA 65+80

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET E

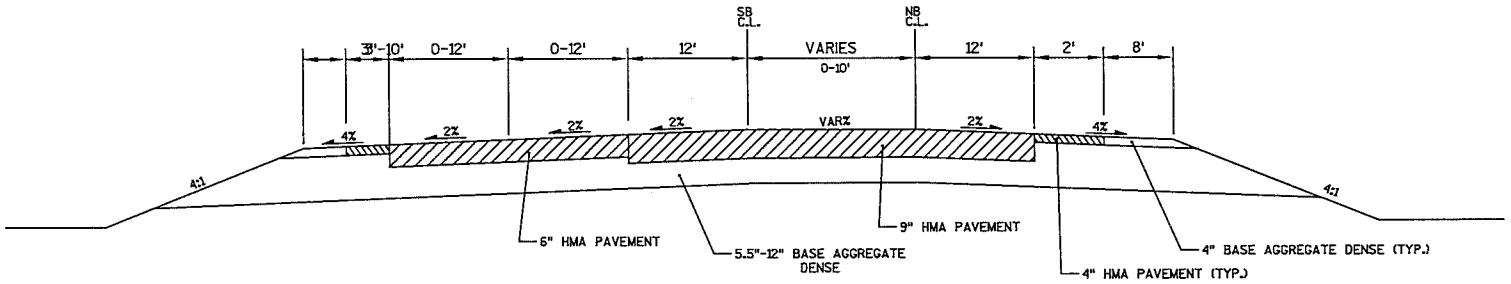
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : _____ PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42

2



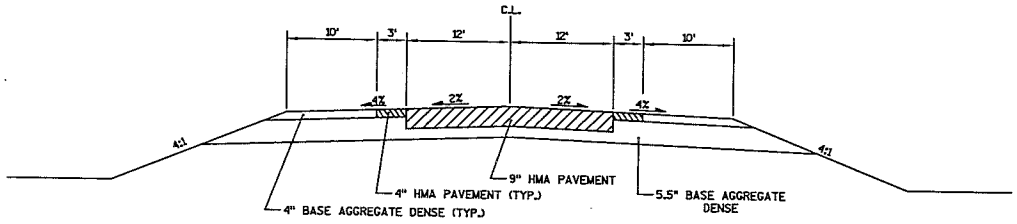
TYPICAL EXISTING SECTION
STH 65
STA 65+80 TO STA 66+52



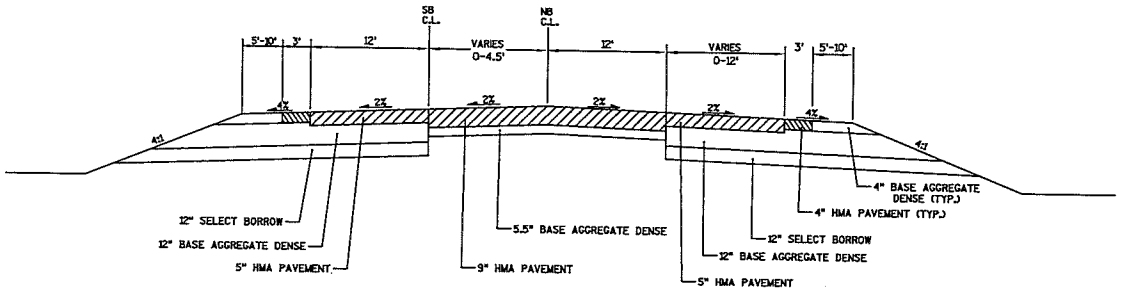
TYPICAL EXISTING SECTION
STH 65
STA 66+52 TO STA 73+79

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : 0.020941 WISDOT/CADDS SHEET 42



TYPICAL EXISTING SECTION
STH 65
STA 73+79 TO STA 80+51

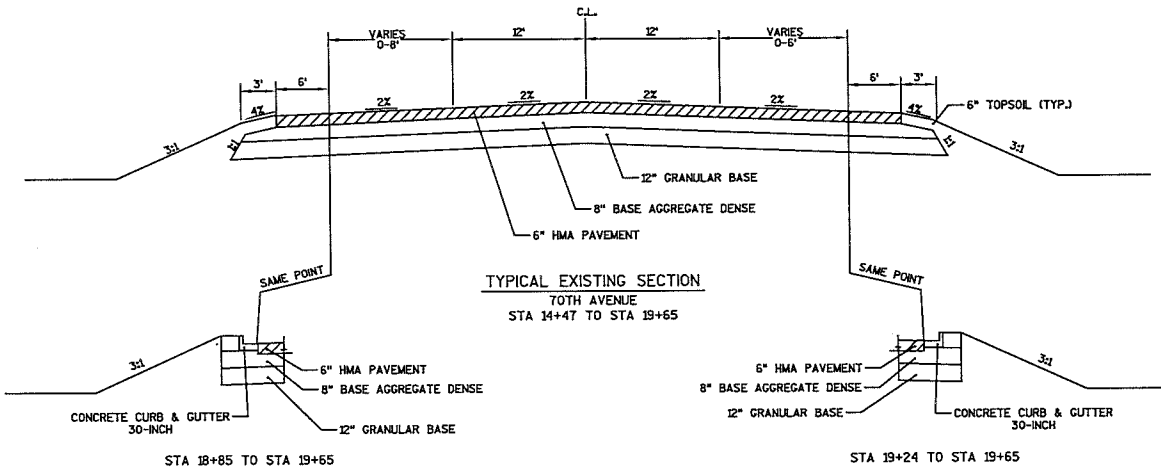


TYPICAL EXISTING SECTION
STH 65
STA 80+51 TO STA 82+70

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : C:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : ---------- PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42

2



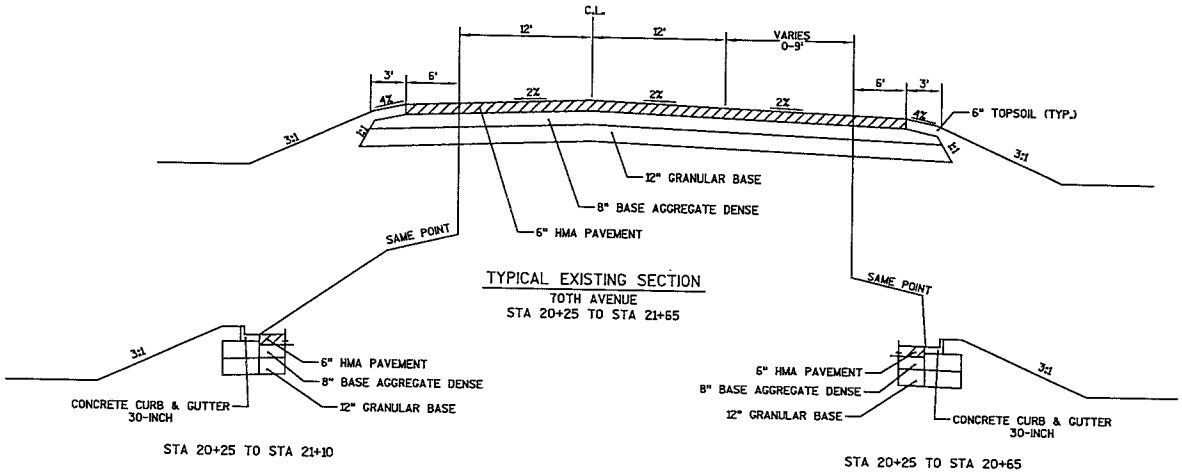
TYPICAL EXISTING SECTION
70TH AVENUE
STA 14+47 TO STA 19+65

STA 18+85 TO STA 19+65

STA 19+24 TO STA 19+65

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

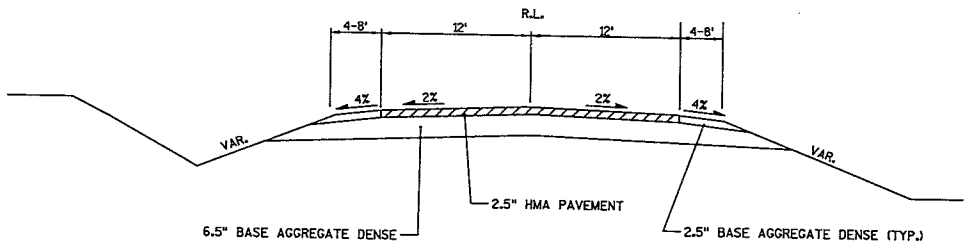
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : ******** WISDOT/CADDS SHEET 42



TYPICAL EXISTING SECTION
70TH AVENUE
STA 20+25 TO STA 21+65

STA 20+25 TO STA 21+10

STA 20+25 TO STA 20+65

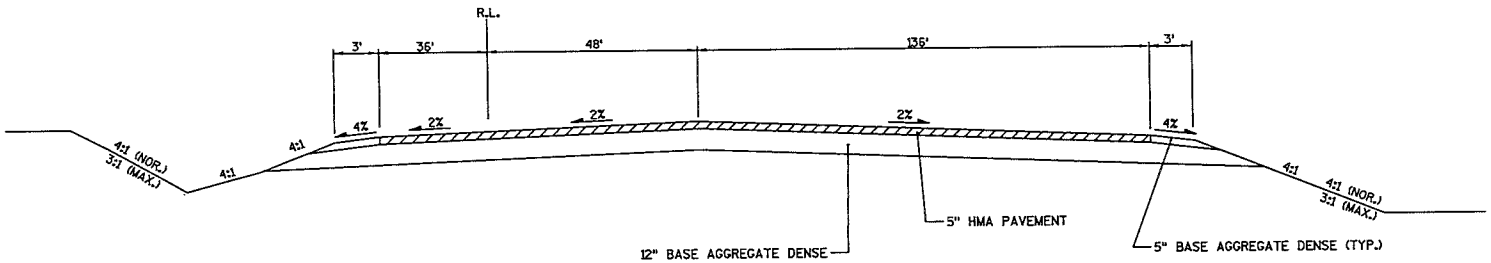


TYPICAL EXISTING SECTION
70TH AVENUE
STA 21+65 TO STA 26+50

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : ----------
PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42



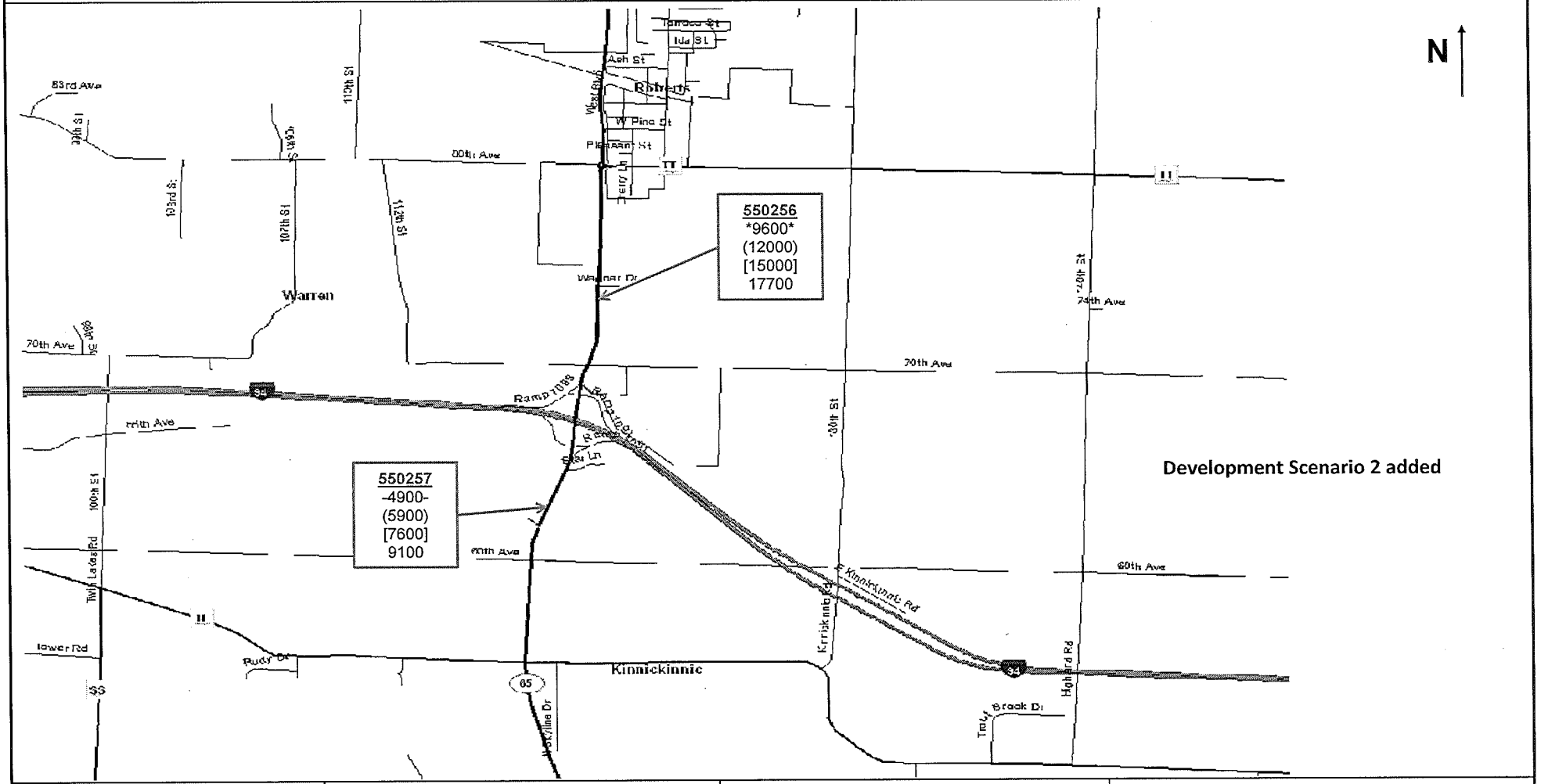
TYPICAL EXISTING SECTION
PARK AND RIDE LOT

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : C:\MDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : ---------- PLOT SCALE : ********
WISDOT/CADDS SHEET 42

Attachment 7.4
Traffic Forecast

WisDOT TRAFFIC FORECAST REPORT	Region/COUNTY(IES): NW/St. Croix	Developed by: Karl Buck
PROJECT ID(S): 1540-04-03	LOCATION: Intersection STH 65 and 70th Ave	Phone: (608) 266-1379
ROUTE(S): STH 65	COMPLETED: 9/30/13	FAX #: (608) 267-1856
Traffic Forecasting Section; Bureau of Planning and Economic Development; Division of Transportation Investment Management		E-Mail: karl.buck@dot.wi.gov



Design Values (%)			
Sites →	550256		
Routes →	STH 65		
Volume(s):	17700		
K250	9.7		
K100	10.9		
K30	11.8		
P	14.3		
D(Dsgn. Hr.)	58/42		
T(DHV)	4.5		
T(PHV)	2.4		

-000- 2012 Count (000) 2016 AADT
000 2009 Count [000] 2026 AADT
000 2036 AADT

Site IDs are Colored, Bolded, and Underlined

Truck Class Percents

Class/Site	550256		
2D	1.7		
3AX	1.0		
2S1+2S2	1.0		
3-S2	1.4		
DBL-BTM	0.2		
TOTAL	5.4%		

NOTES ON THE FORECAST:

1. This projection assumes that new major traffic generators will be developed on 70th Ave to the east and west of STH 65 over the course of the planning period. This includes a full build out on Parcels A-G by 2036.

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

MORE NOTES ON THE FORECAST:

3. STH 65 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 minor arterial (6) for count purposes.

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

WisDOT Bureau of Planning
Traffic Forecasting Section
Forecast by: Karl Buck
Phone: 608-266-1379
Email: karl.buck@dot.wi.gov

Projected AM Design Hour Traffic Volumes

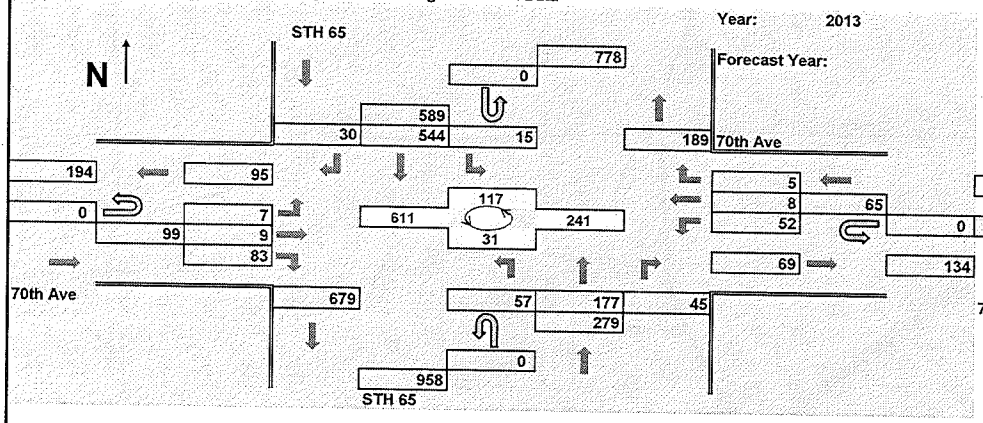
Design Hour: 6:45-7:45 am

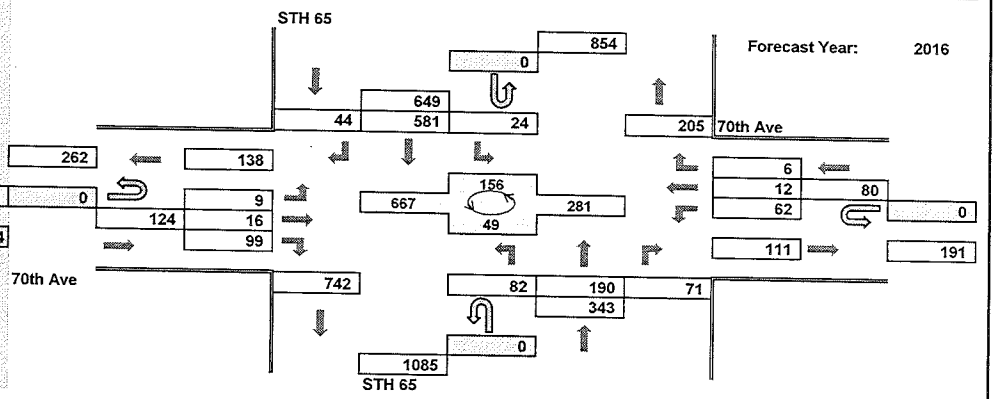
Forecast Completed: 9/30/13

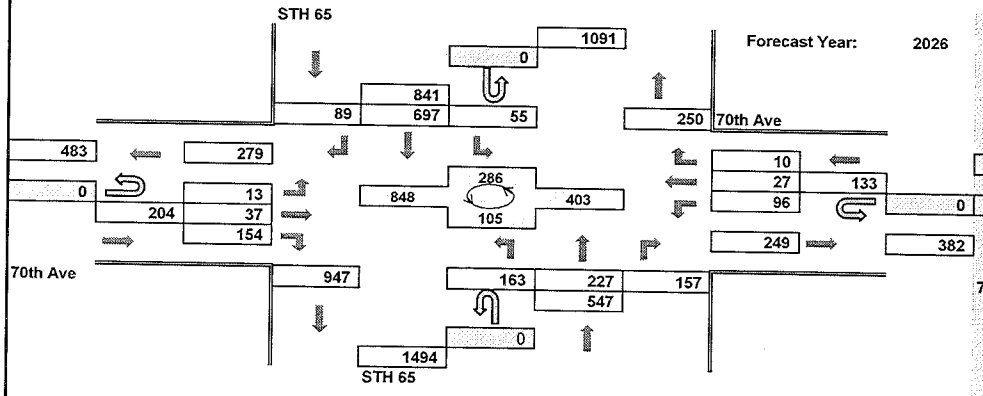
Project Description

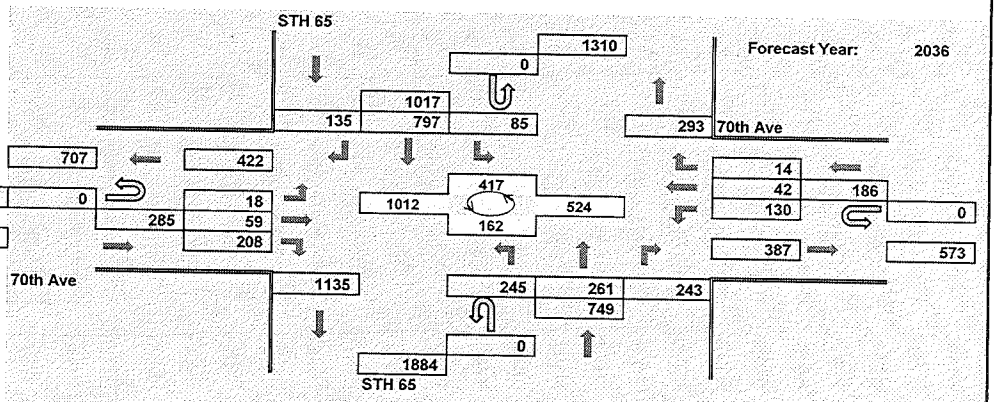
Project ID: 1540-04-03
Location: 70th Avenue "with full development"
Route: STH 65
Region/County: NW/St. Croix

Design Hour Turning Movement Data









WisDOT Bureau of Planning

Traffic Forecasting Section
Forecast by: Karl Buck
Phone: 608-266-1379
Email: karl.buck@dot.wi.gov

Projected PM Design Hour Traffic Volumes

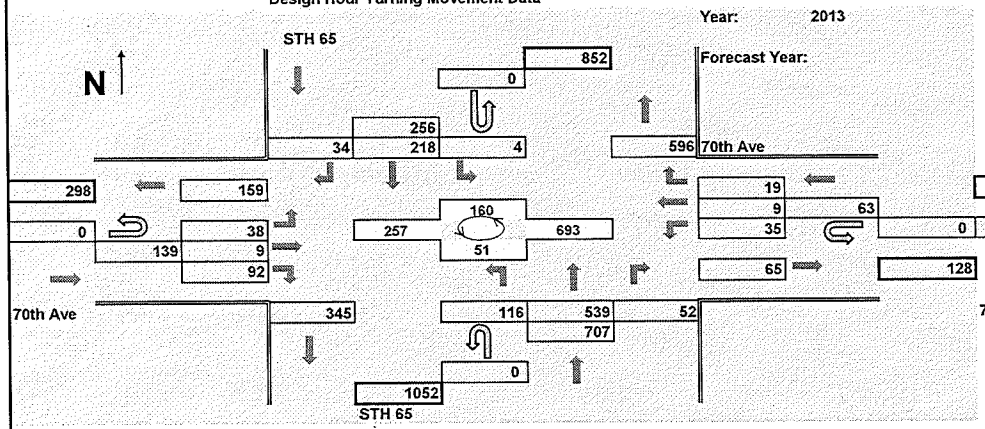
Design Hour: 4:30-5:30 pm

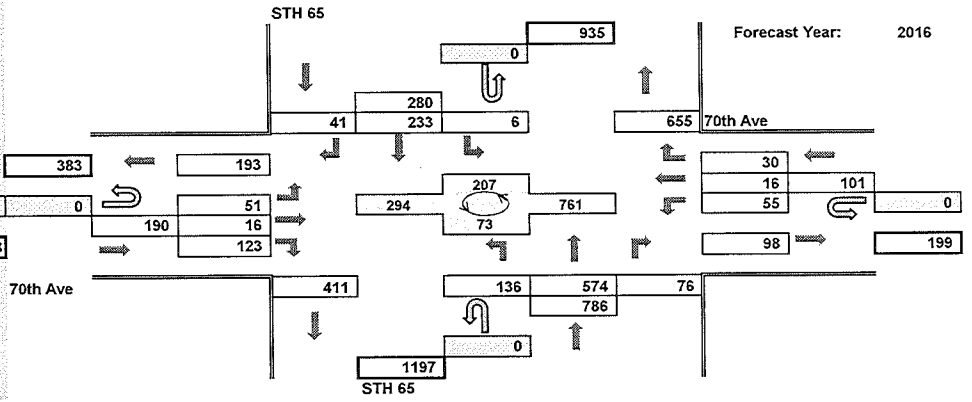
Forecast Completed: 9/30/13

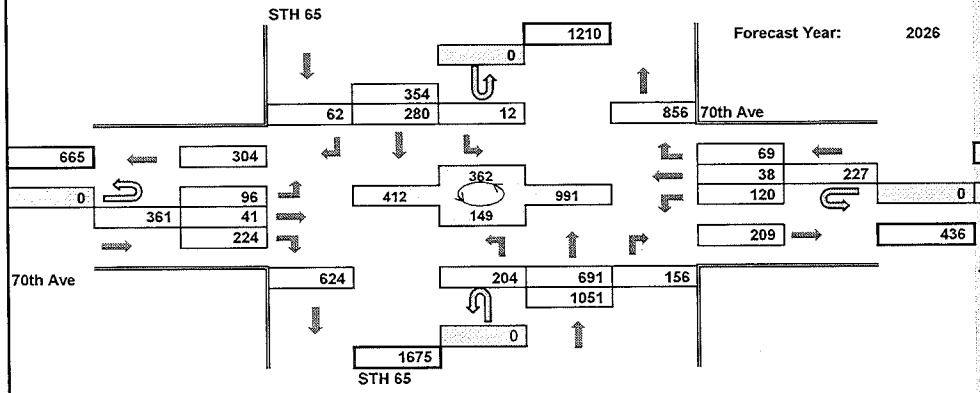
Project Description

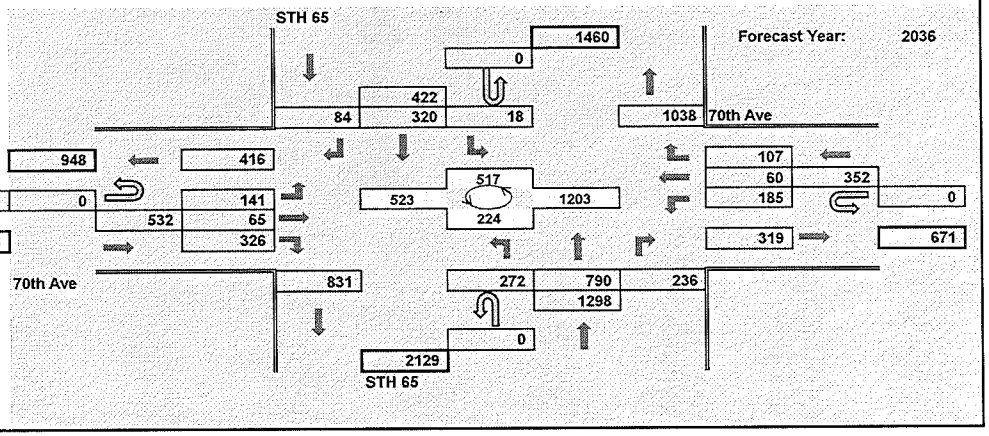
Project ID: 1540-04-03
Location: 70th Avenue "with full development"
Route: STH 65
Region/County: NW/St. Croix

Design Hour Turning Movement Data

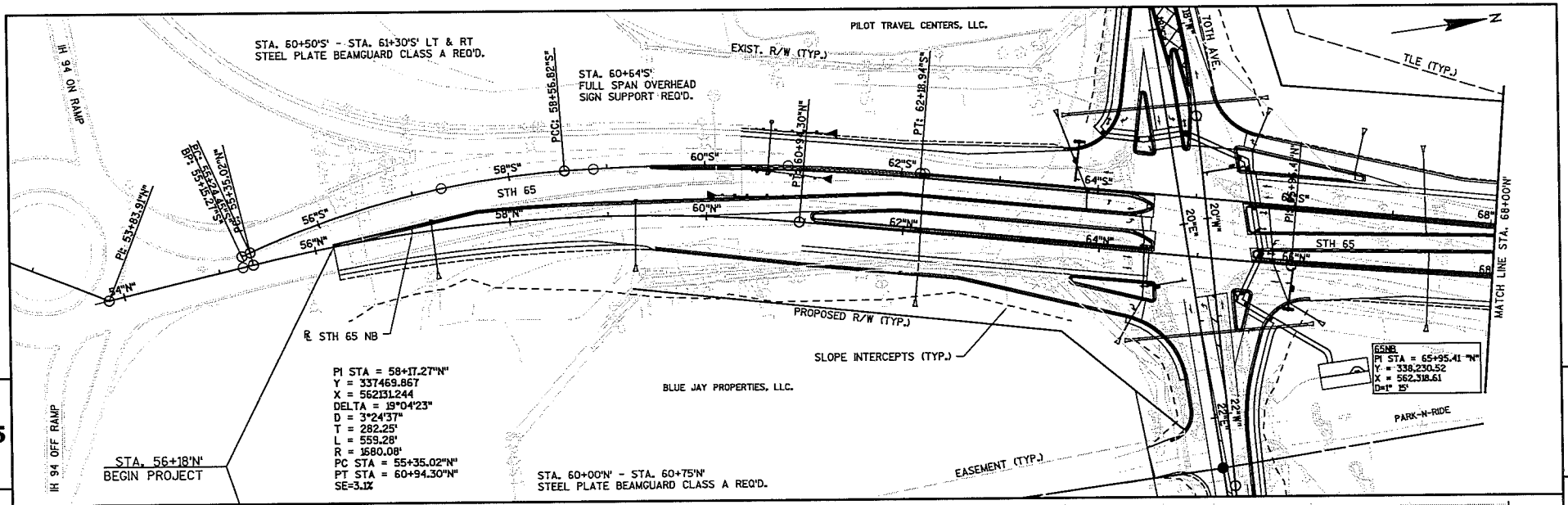


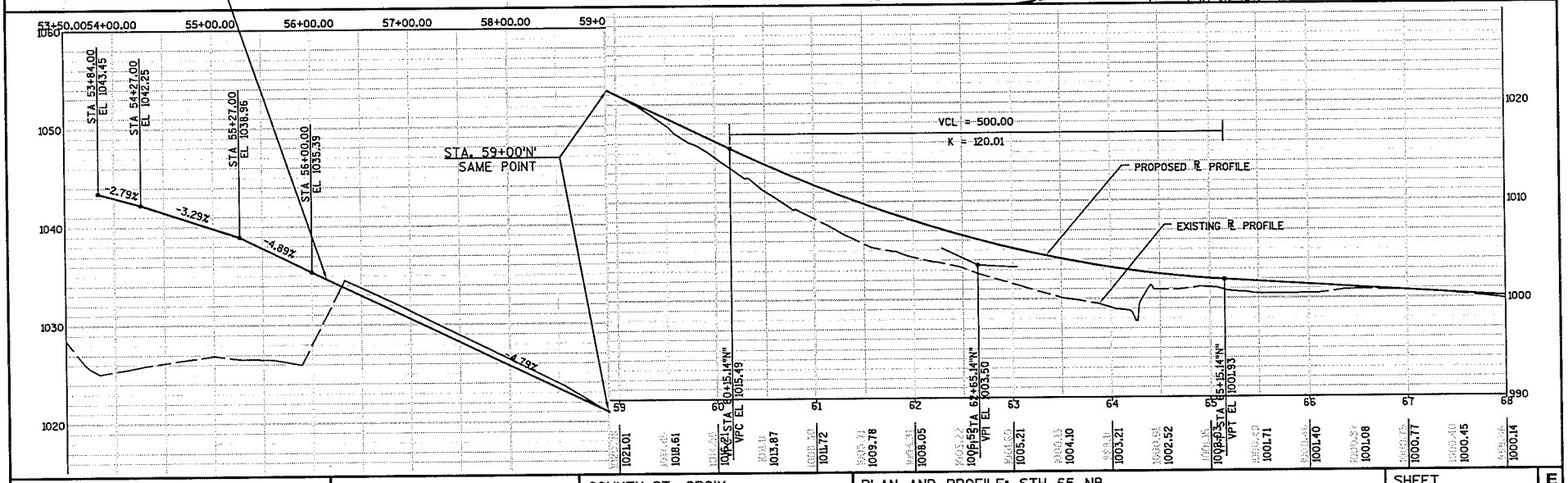






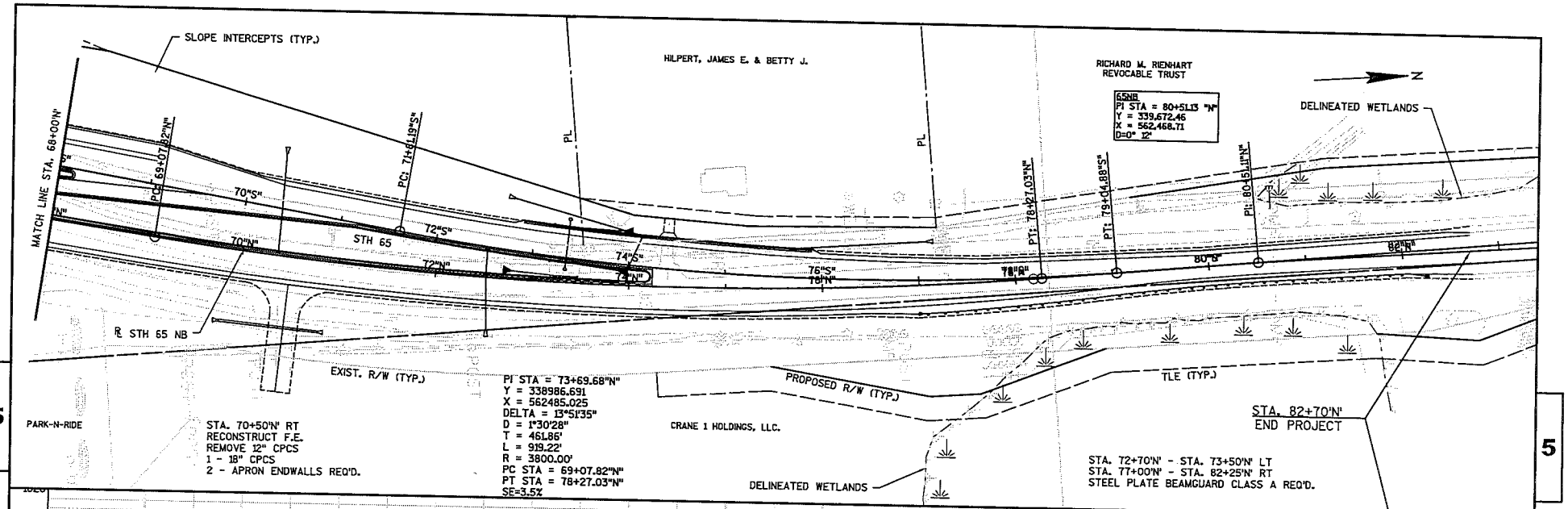
Attachment 7.5
Preliminary Plan Sheets

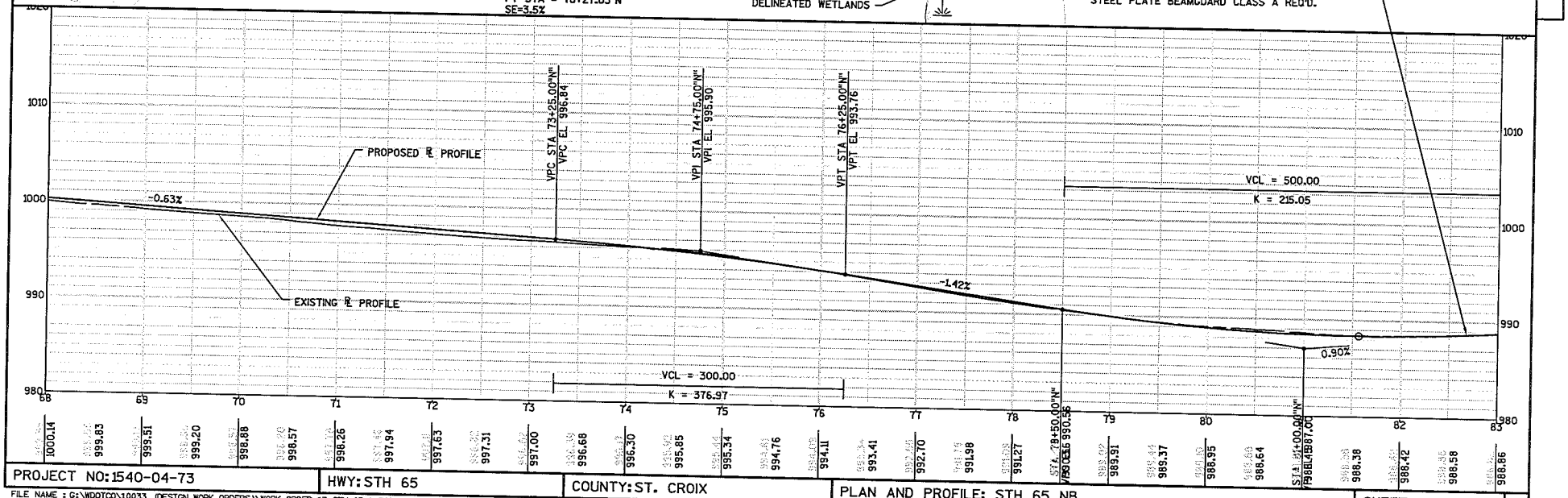




PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PLAN AND PROFILE: STH 65 NB	SHEET	E

FILE NAME : G:\WDOTCD\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050101-PP(65NB).DWG PLOT DATE : 5/29/2015 5:20 AM
LAYOUT NAME - 01- (1)
PLOT BY : LANCE WILLISTON
PLOT NAME :
PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 44

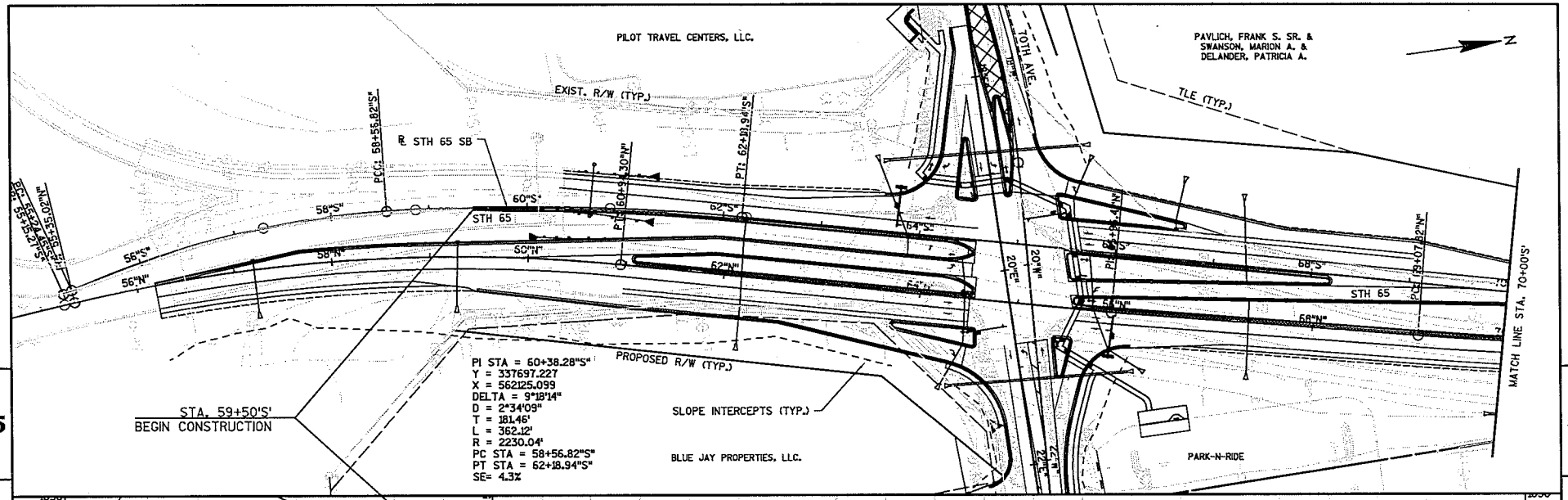


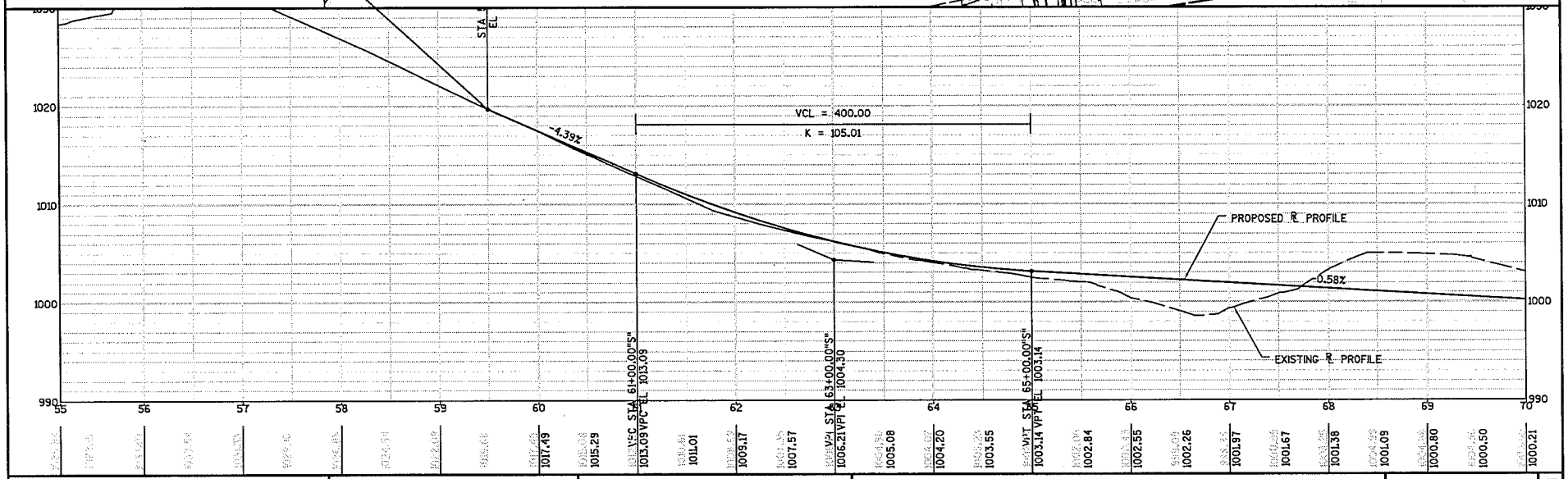


PROJECT NO:1540-04-73	HWY:STH 65	COUNTY:ST. CROIX	PLAN AND PROFILE: STH 65 NB	SHEET	E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050101-PP(65NB).DWG PLOT DATE : 5/29/2015 5:20 AM
LAYOUT NAME - 01- (2)
PLOT BY : LANCE WILLISTON PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

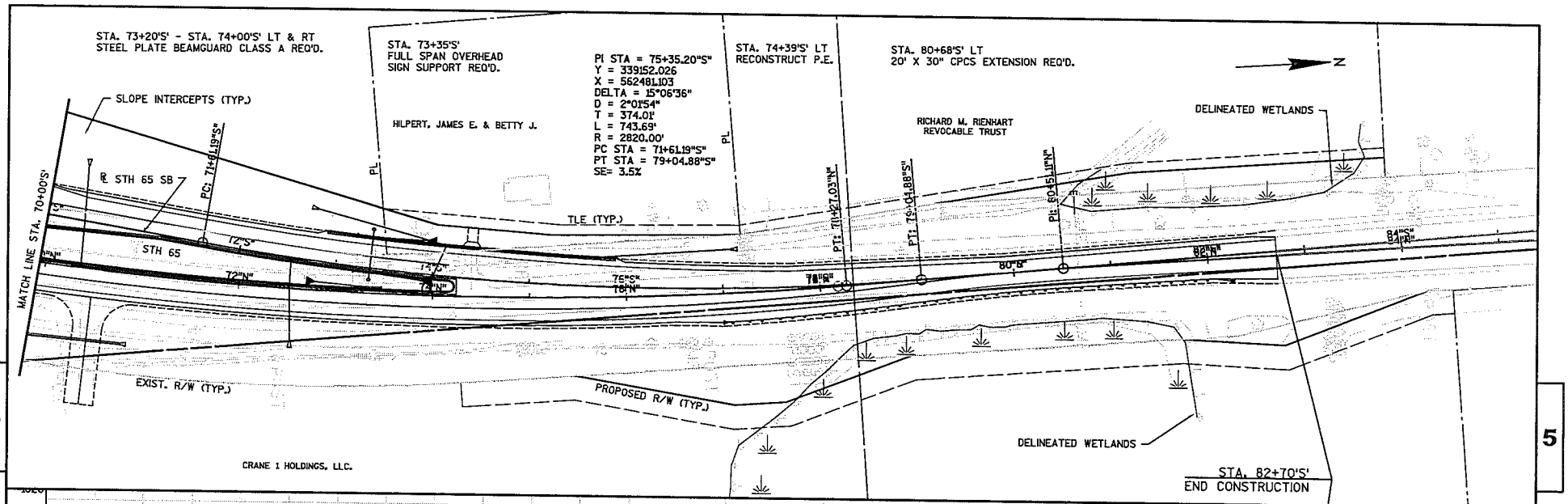


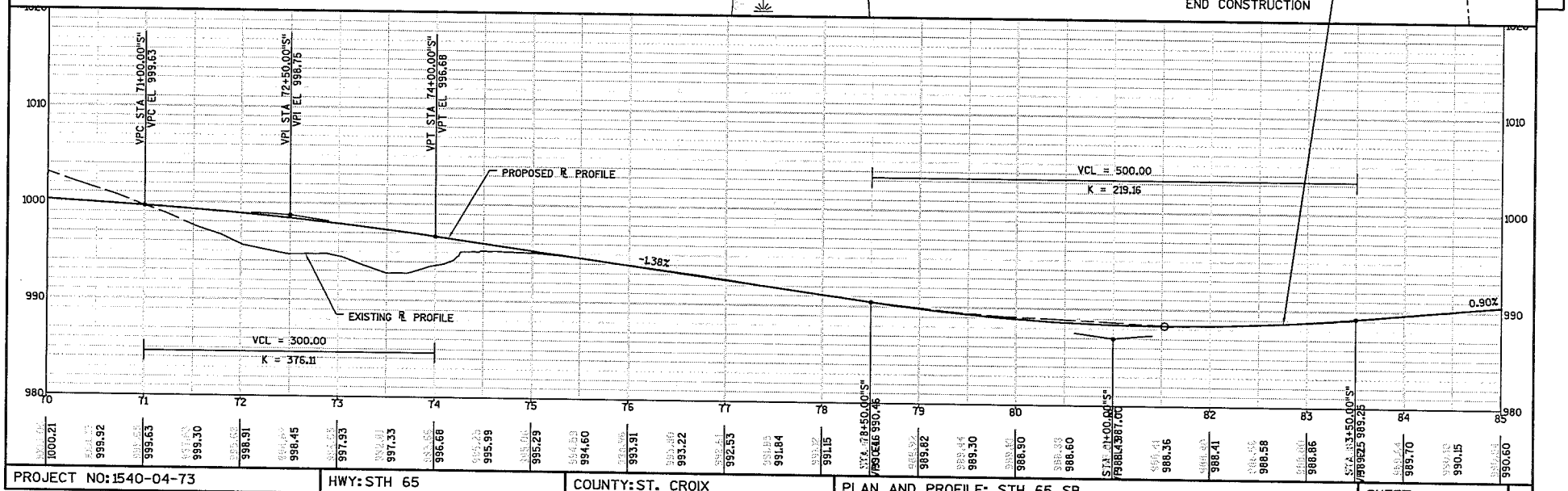


PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PLAN AND PROFILE: STH 65 SB	SHEET	E

FILE NAME : C:\WDOTCD\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050102-PP(65SB).DWG PLOT DATE : 5/29/2015 5:28 AM
LAYOUT NAME - SHEET - (1)
PLOT BY : LANCE WILLISTON
PLOT NAME :
PLOT SCALE : 1 IN:100 FT

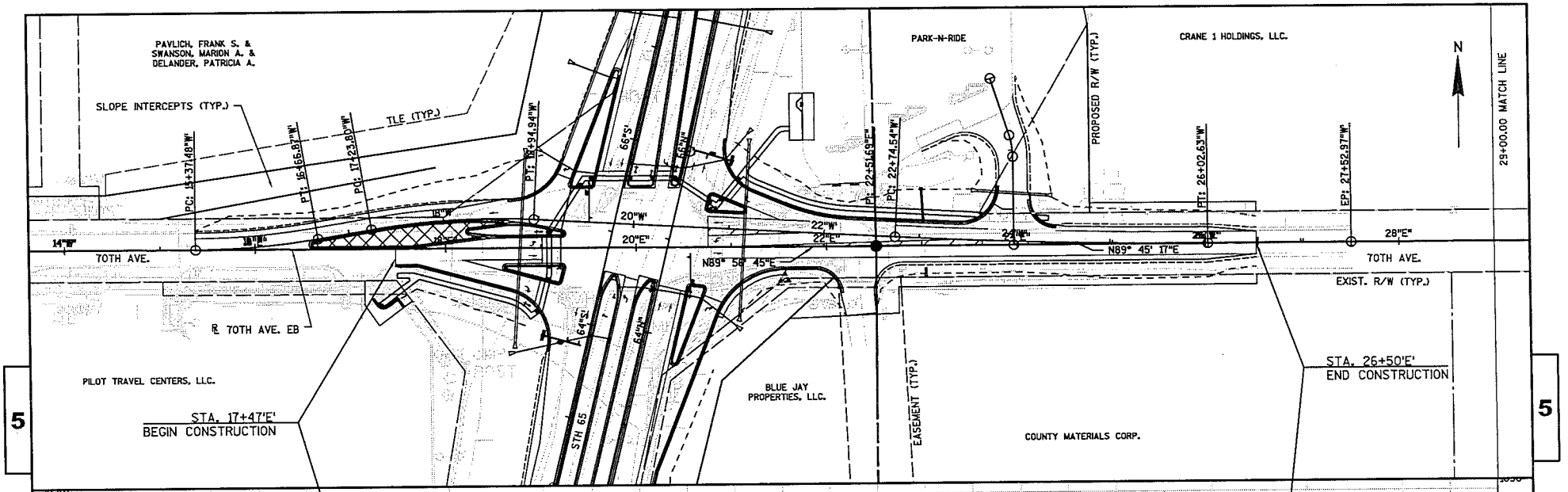
WISDOT/CADDS SHEET 44

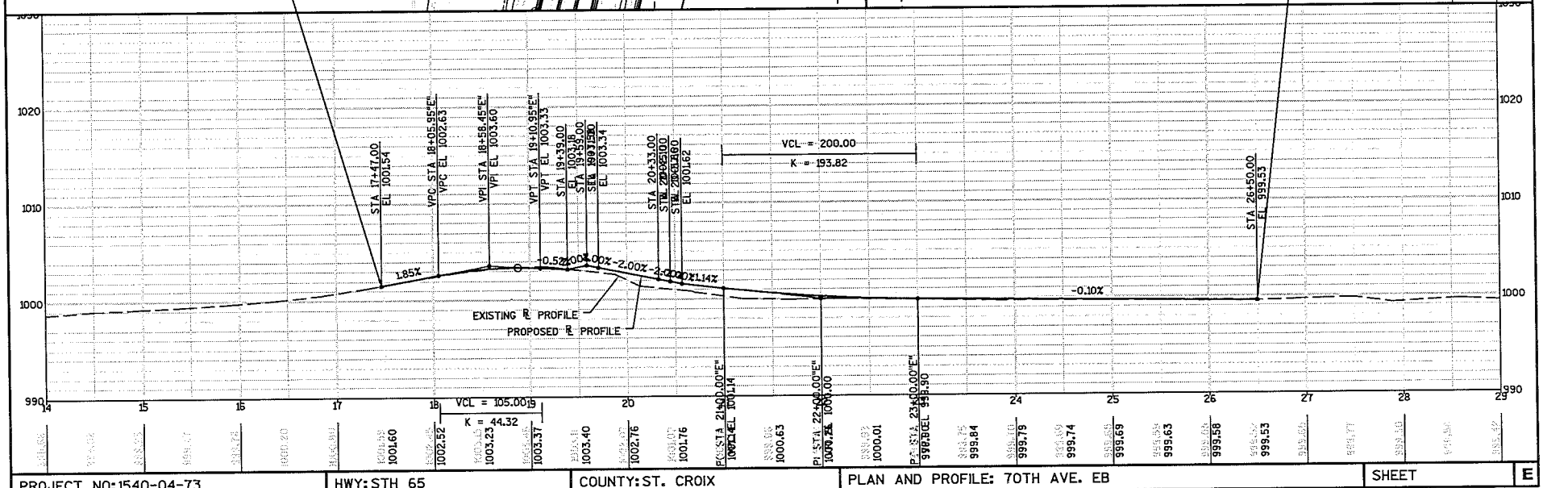




PROJECT NO: 1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PLAN AND PROFILE: STH 65 SB	SHEET	E

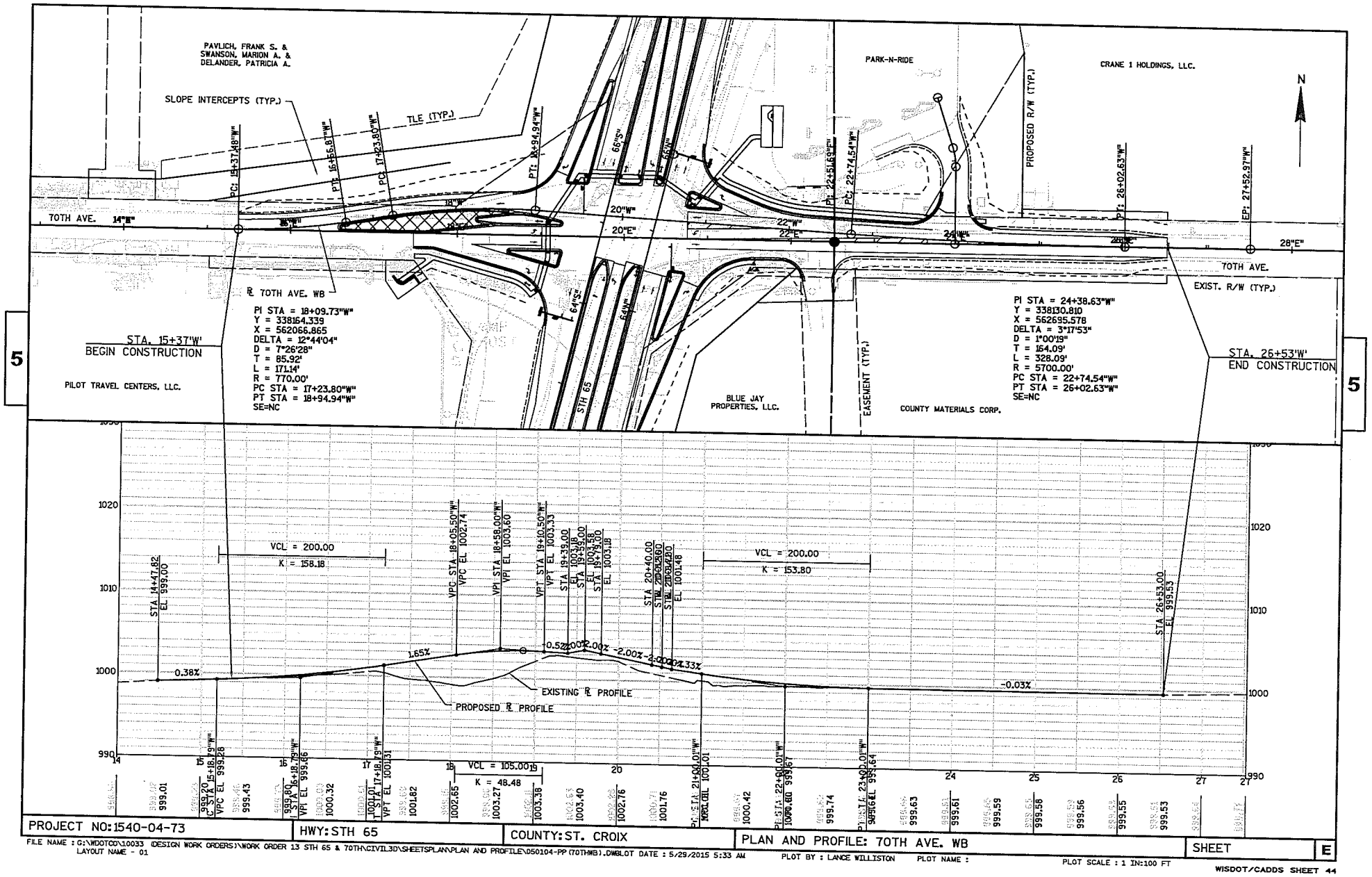
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050102-PP(65SB).DWG PLOT DATE : 5/29/2015 5:28 AM
LAYOUT NAME - SHEET - (2)
PLOT BY : LANCE WILLISTON PLOT NAME : PLOT SCALE : 1 IN:100 FT





PROJECT NO: 1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PLAN AND PROFILE: 70TH AVE. EB	SHEET E

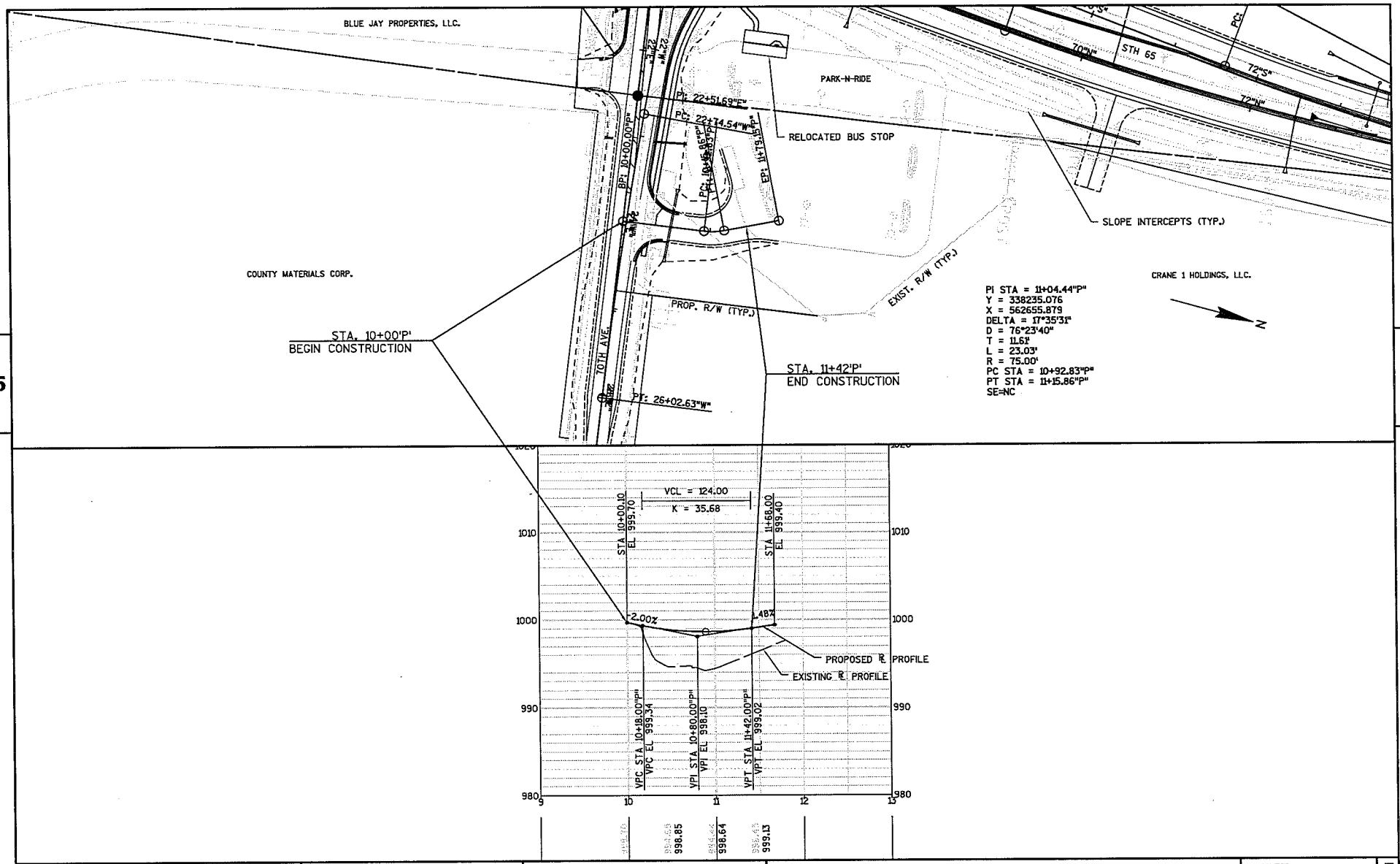
FILE NAME : G:\WDOTCD\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050103-PP(70THEB).DWG LOT DATE : 5/29/2015 5:31 AM
LAYOUT NAME - 01
PLOT BY : LANCE WILLISTON
PLOT NAME :
PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 44



PROJECT NO: 1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PLAN AND PROFILE: 70TH AVE. WB	SHEET	E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050104-PP(70THWB).DWG LOT DATE : 5/29/2015 5:33 AM
LAYOUT NAME - 01
PLOT BY : LANCE WILLISTON PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

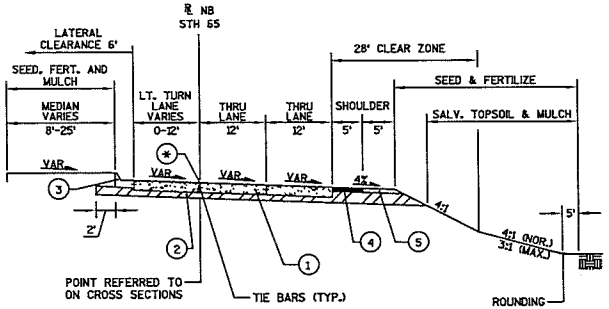


PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	PLAN AND PROFILE: PARK-N-RIDE	SHEET	E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\PLAN AND PROFILE\050105-PP (PNR).DWG PLOT DATE : 5/29/2015 5:35 AM PLOT BY : LANCE WILLISTON PLOT NAME : PLOT SCALE : 1 IN:100 FT
LAYOUT NAME - 01 - (1)

WISDOT/CADDS SHEET 44

Attachment 7.6
Proposed Typical Sections

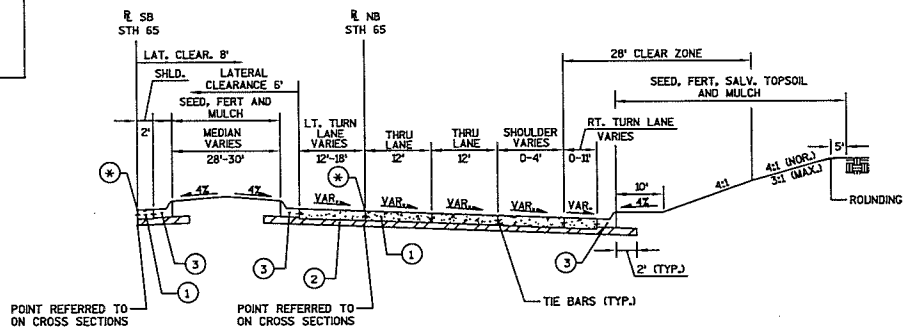


TYPICAL FINISHED SECTION
STH 65
STA 56+18 TO STA 59+48

SE = 3.1%

LEGEND

(1)	CONCRETE PAVEMENT 10-INCH SPECIAL (DOWELED AND TINED)
(2)	6-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE A
(4)	4-INCH HMA PAVEMENT TYPE E-0.3
(5)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(*)	POINT REFERRED TO ON PROFILE

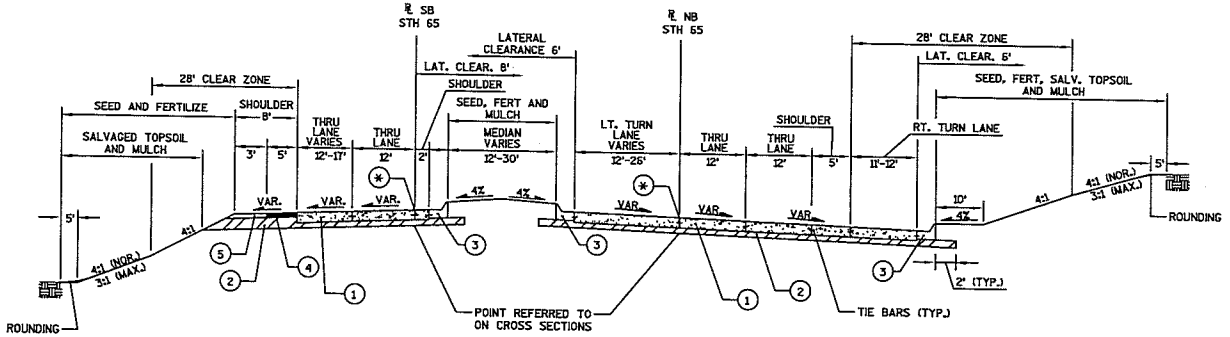


TYPICAL FINISHED SECTION
STH 65
STA 59+48 TO STA 60+32

SE = 3.1%

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & TOTH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : 1 IN:40 FT WISDOT/CADDS SHEET 42



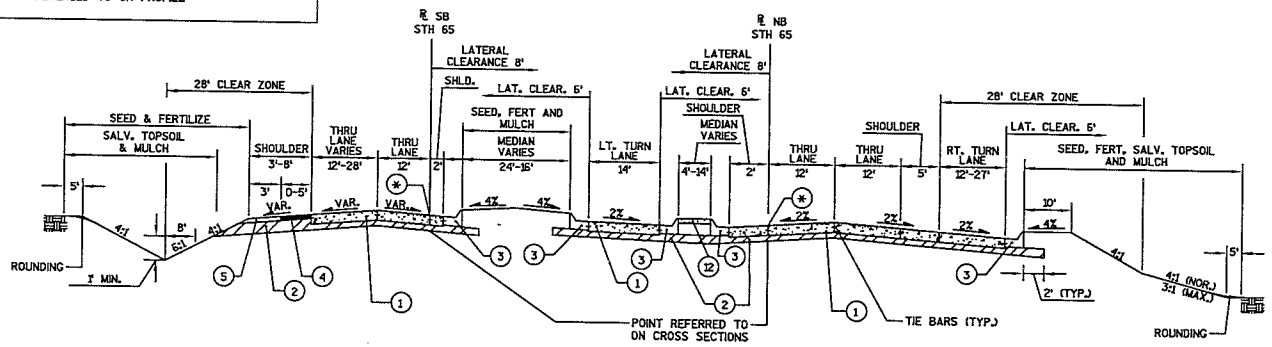
LEGEND

(1)	CONCRETE PAVEMENT 10-INCH SPECIAL (DOWELED AND TINED)
(2)	6-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE A
(4)	4-INCH HMA PAVEMENT TYPE E-0.3
(5)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(*)	POINT REFEREED TO ON PROFILE

SB STH 65
SE = 4.3%

TYPICAL FINISHED SECTION
STH 65
STA 60+32 TO STA 61+10

NB STH 65
SE = 3.1%



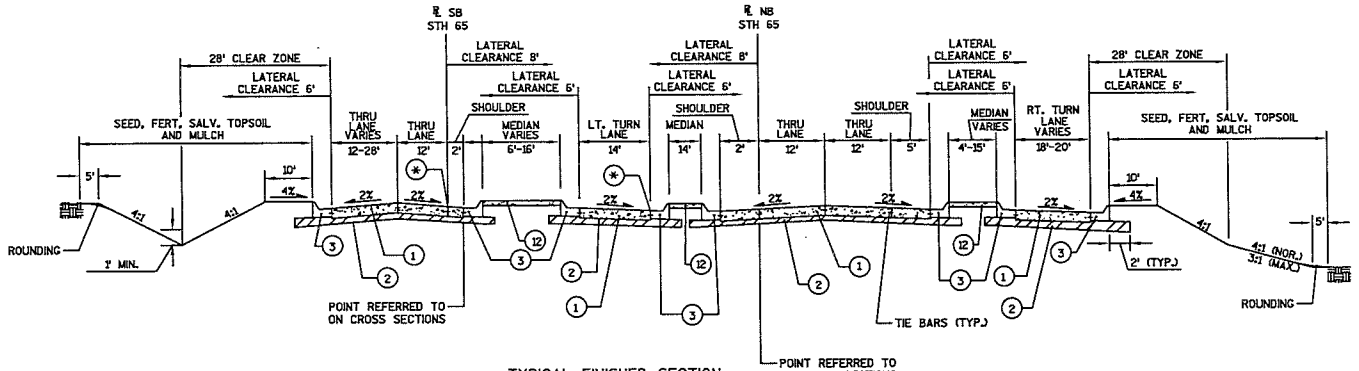
SB STH 65
SE = 4.3%

TYPICAL FINISHED SECTION
STH 65
STA 61+10 TO STA 63+77

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET E

FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : _____ PLOT SCALE : 1 IN:40 FT

WISDOT/CADDS SHEET 42



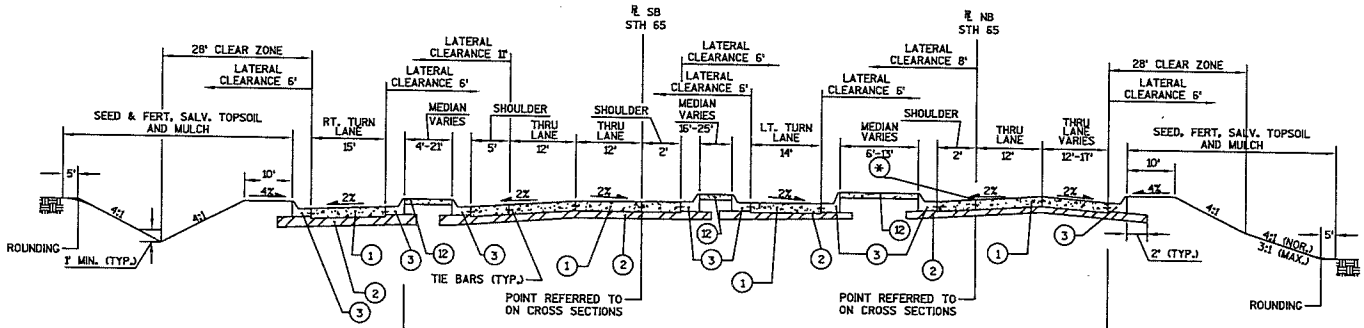
TYPICAL FINISHED SECTION
STH 65
STA 53+77 TO STA 64+56

LEGEND

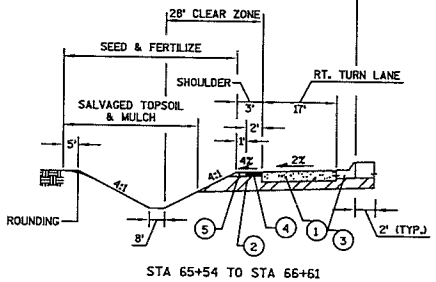
(1)	CONCRETE PAVEMENT 10-INCH SPECIAL (DOWELED AND TINED)
(2)	6-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE A
(4)	4-INCH HMA PAVEMENT TYPE E-0.3
(5)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(12)	CONCRETE SIDEWALK 5-INCH OVER 4-INCH BASE AGGREGATE DENSE 3/4-INCH
(*)	POINT REFERRED TO ON PROFILE

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

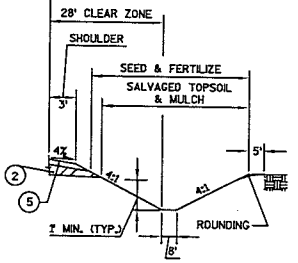
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : ********** WISDOT/CADDS SHEET 42



TYPICAL FINISHED SECTION
STH 65
STA 64+45 TO STA 66+61



STA 65+54 TO STA 66+61



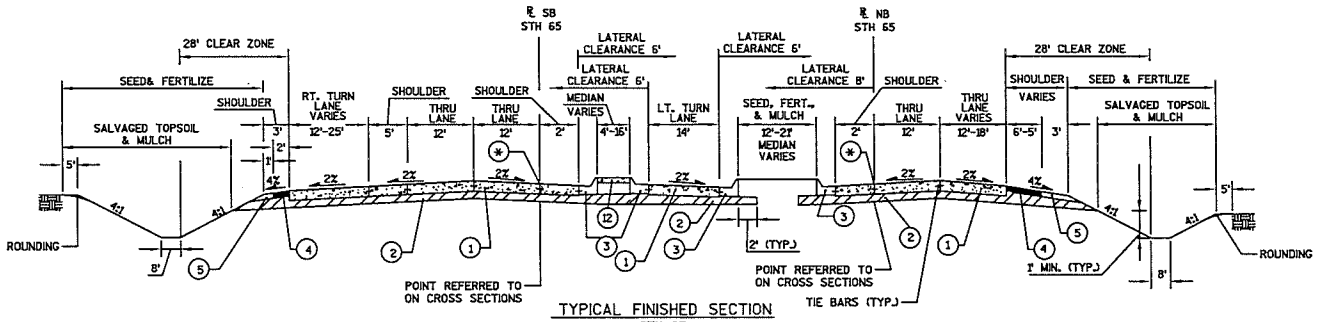
STA 66+08 TO STA 66+61

LEGEND

(1)	CONCRETE PAVEMENT 10-INCH SPECIAL (DOWELED AND TINED)
(2)	6-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE A
(4)	4-INCH HMA PAVEMENT TYPE E-0.3
(5)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(12)	CONCRETE SIDEWALK 5-INCH OVER 4-INCH BASE AGGREGATE DENSE 3/4-INCH
(*)	POINT REFERRED TO ON PROFILE

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

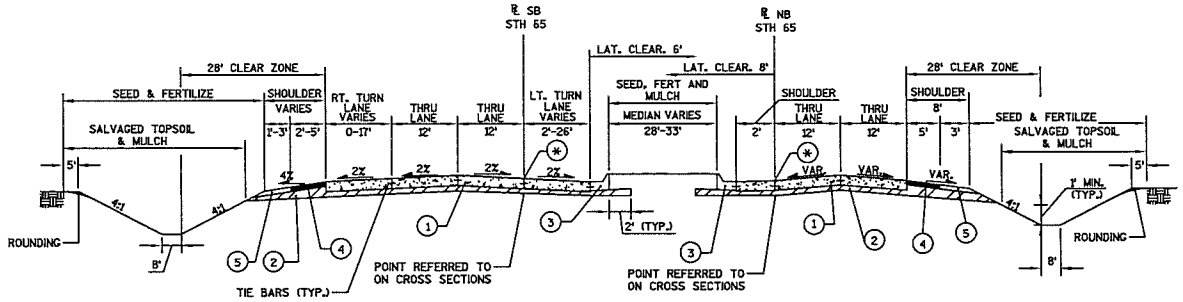
FILE NAME : G:\WDOTCO\10033 IDESIGN WORK ORDERS\WORK ORDER 13 STH 65 & TOTH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : _____ PLOT SCALE : **********
WISDOT/CADDS SHEET 42



TYPICAL FINISHED SECTION
STH 65
STA 66+61 TO STA 68+12

LEGEND

(1)	CONCRETE PAVEMENT 10-INCH SPECIAL (DOWELED AND TINED)
(2)	6-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE A
(4)	4-INCH HMA PAVEMENT TYPE E-0.3
(5)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(*)	POINT REFERRED TO ON PROFILE



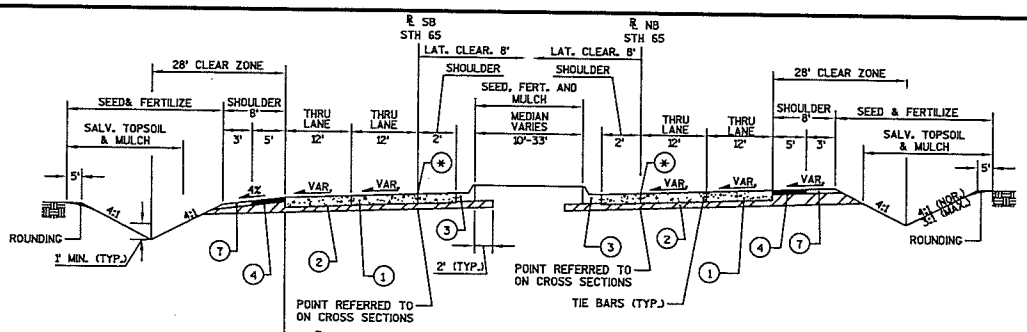
SB STH 65
SE = 3.5%

TYPICAL FINISHED SECTION
STH 65
STA 68+12 TO STA 71+12

NB STH 65
SE = 3.5%

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : G:\MDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42



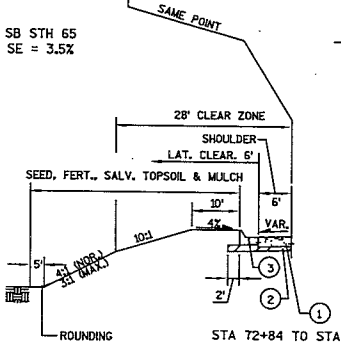
SB STH 65
SE = 3.5%

NB STH 65
SE = 3.5%

TYPICAL FINISHED SECTION
STH 65
STA 71+12 TO STA 74+25

LEGEND

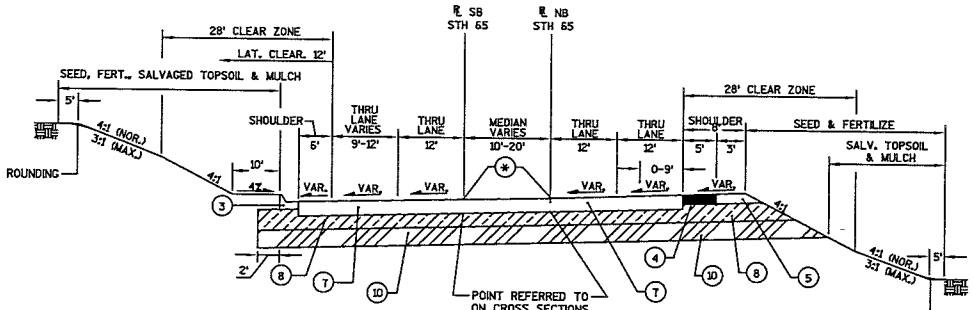
1	CONCRETE PAVEMENT 10-INCH SPECIAL (DOWELED AND TINED)
2	6-INCH BASE AGGREGATE DENSE 1 1/4-INCH
3	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE A
4	4-INCH HMA PAVEMENT TYPE E-0.3
7	6-INCH HMA PAVEMENT TYPE E-3
*	POINT REFERRED TO ON PROFILE



STA 72+84 TO STA 74+25

LEGEND

3	CONCRETE CURB & GUTTER 30-INCH TYPE A
4	4-INCH HMA PAVEMENT TYPE E-0.3
5	4-INCH BASE AGGREGATE DENSE 3/4-INCH
7	6-INCH HMA PAVEMENT TYPE E-3
8	12-INCH BASE AGGREGATE DENSE 1 1/4-INCH
10	12-INCH SELECT CRUSHED MATERIAL
*	POINT REFERRED TO ON PROFILE



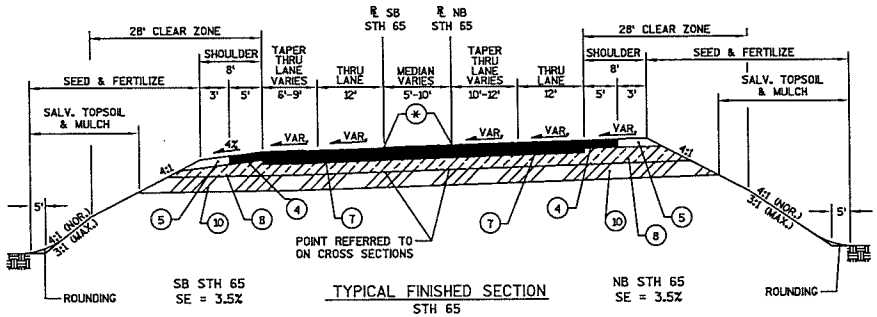
SB STH 65
SE = 3.5%

NB STH 65
SE = 3.5%

TYPICAL FINISHED SECTION
STH 65
STA 74+25 TO STA 75+89

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET E

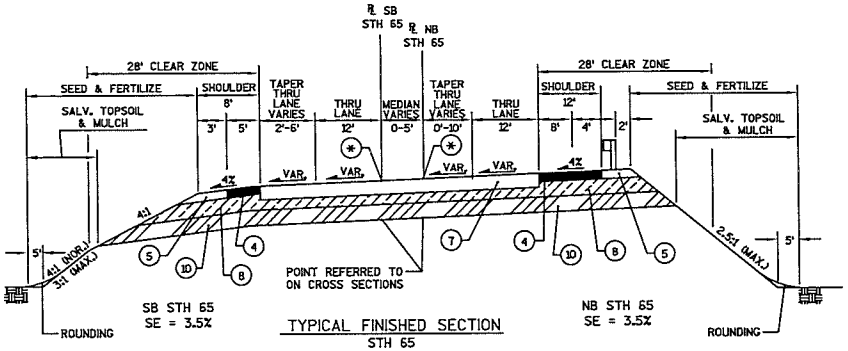
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : _____ PLOT SCALE : **********
WISDOT/CADDS SHEET 42



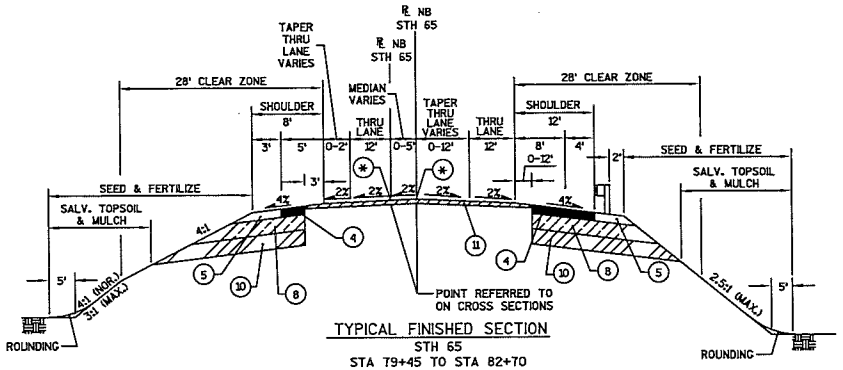
TYPICAL FINISHED SECTION
STH 65
STA 75+89 TO STA 76+99

LEGEND

(4)	4-INCH HMA PAVEMENT TYPE E-0.3
(5)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(7)	6-INCH HMA PAVEMENT TYPE E-3
(8)	12-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(10)	12-INCH SELECT CRUSHED AGGREGATE
(11)	2-INCH REMOVING ASPHALTIC SURFACE MILLING, 2-INCH HMA PAVEMENT TYPE E-3
(*)	POINT REFERRED TO ON PROFILE



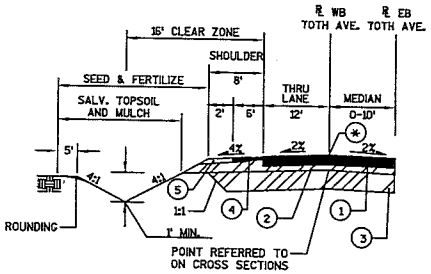
TYPICAL FINISHED SECTION
STH 65
STA 76+99 TO STA 79+45



TYPICAL FINISHED SECTION
STH 65
STA 79+45 TO STA 82+70

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

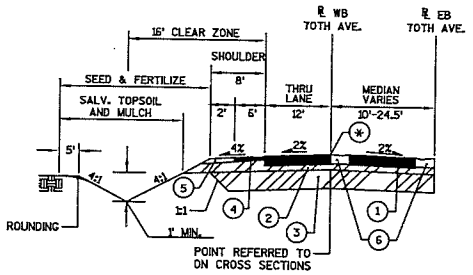
FILE NAME : C:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : PLOT SCALE : WISDOT/CADDS SHEET 42



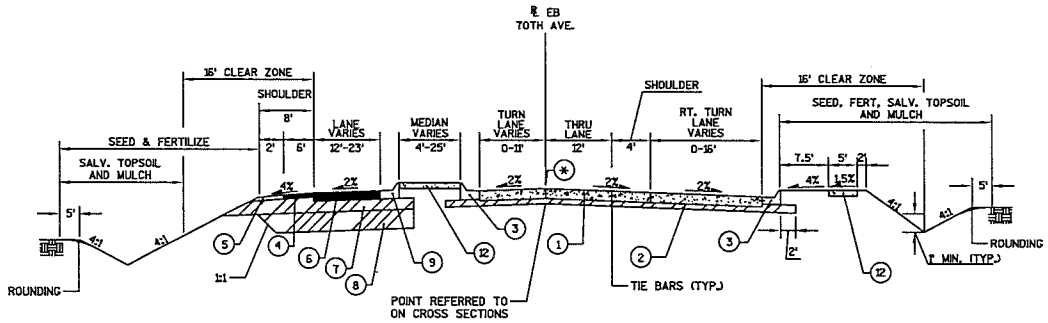
TYPICAL FINISHED SECTION
70TH AVENUE
STA 15+37"W" TO STA 16+60"W"

LEGEND

1	6-INCH HMA PAVEMENT TYPE E-3
2	8-INCH BASE AGGREGATE DENSE 1 1/4-INCH
3	12-INCH SELECT CRUSHED MATERIAL
4	4-INCH HMA PAVEMENT TYPE E-0.3
5	4-INCH BASE AGGREGATE DENSE 3/4-INCH
6	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH, TYPE D, DRIVEWAY ENTRANCE, REVERSE SLOPE
*	POINT REFERRED TO ON PROFILE



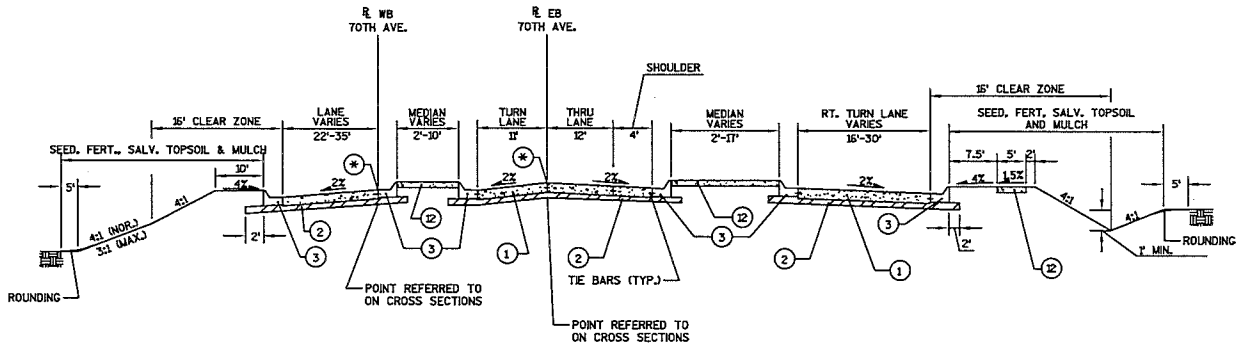
TYPICAL FINISHED SECTION
70TH AVENUE
STA 16+50"W" TO STA 17+44"W"



TYPICAL FINISHED SECTION
70TH AVENUE
STA 17+44"W" TO STA 18+65"W"

LEGEND

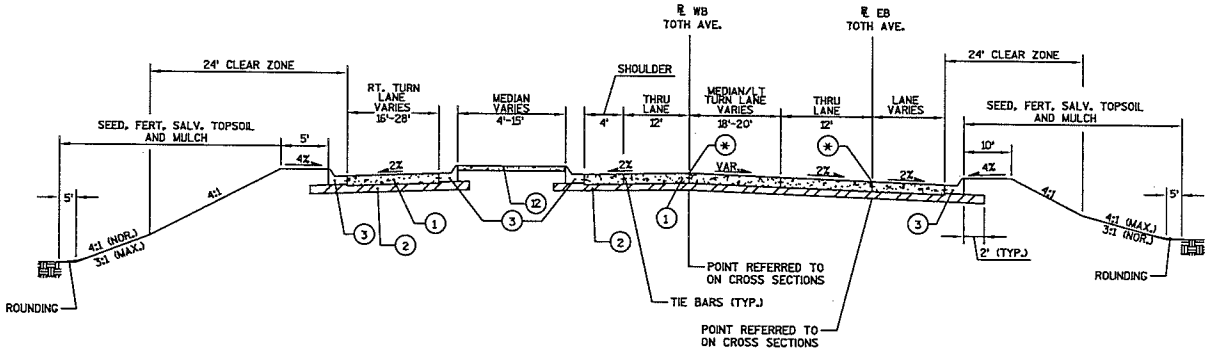
1	6-INCH HMA PAVEMENT TYPE E-3
2	8-INCH BASE AGGREGATE DENSE 1 1/4-INCH
3	12-INCH SELECT CRUSHED MATERIAL
4	4-INCH HMA PAVEMENT TYPE E-0.3
5	4-INCH BASE AGGREGATE DENSE 3/4-INCH
6	6-INCH HMA PAVEMENT TYPE E-3
7	8-INCH BASE AGGREGATE DENSE 1 1/4-INCH
8	12-INCH SELECT CRUSHED MATERIAL
9	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE D
12	CONCRETE SIDEWALK 5-INCH OVER 4-INCH BASE AGGREGATE DENSE 3/4-INCH
*	POINT REFERRED TO ON PROFILE



TYPICAL FINISHED SECTION
70TH AVENUE
STA 18+65"W" TO STA 19+22"W"

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

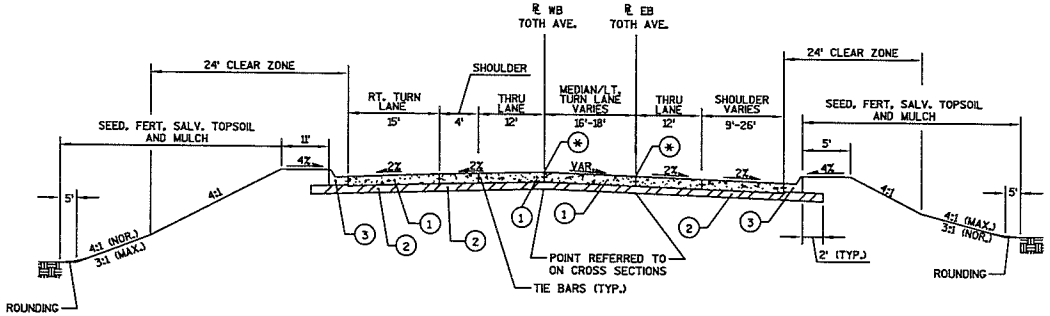
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42



TYPICAL FINISHED SECTION
70TH AVENUE
STA 20+80"W" TO STA 21+13"W"

LEGEND

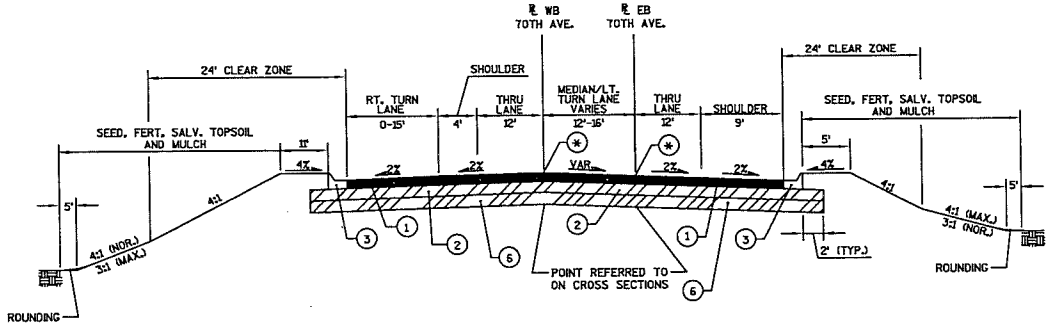
(1)	6-INCH HMA PAVEMENT TYPE E-3
(2)	8-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	12-INCH SELECT CRUSHED MATERIAL
(12)	CONCRETE SIDEWALK 5-INCH OVER 4-INCH BASE AGGREGATE DENSE 3/4-INCH
(*)	POINT REFERRED TO ON PROFILE



TYPICAL FINISHED SECTION
70TH AVENUE
STA 21+13"W" TO STA 21+58"W"

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

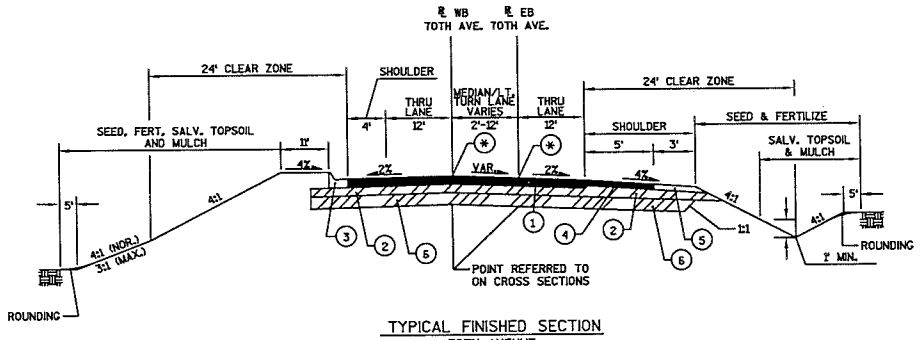
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : ---------- PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42



TYPICAL FINISHED SECTION
70TH AVENUE
STA 21+58"W" TO STA 22+25"W"

LEGEND

1	6-INCH HMA PAVEMENT TYPE E-3
2	8-INCH BASE AGGREGATE DENSE 1 1/4-INCH
3	CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE D
4	4-INCH HMA PAVEMENT TYPE E-0.3
5	4-INCH BASE AGGREGATE DENSE 3/4-INCH
6	12-INCH SELECT CRUSHED MATERIAL
*	POINT REFERRED TO ON PROFILE



TYPICAL FINISHED SECTION
70TH AVENUE
STA 22+25"W" TO STA 24+43"W"

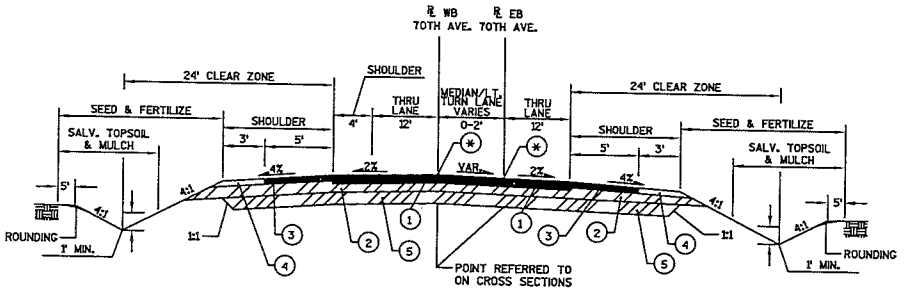
PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

2

2

LEGEND

(1)	6-INCH HMA PAVEMENT TYPE E-3
(2)	8-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(3)	4-INCH HMA PAVEMENT TYP E-0.3
(4)	4-INCH BASE AGGREGATE DENSE 3/4-INCH
(5)	12-INCH SELECT CRUSHED MATERIAL
(*)	POINT REFERRED TO ON PROFILE



TYPICAL FINISHED SECTION
70TH AVENUE
STA 24+43"W" TO STA 26+53"W"

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET E

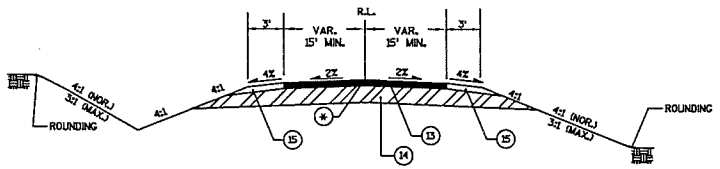
FILE NAME : G:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG
PLOT DATE : 5/29/2015
PLOT BY : KL ENGINEERING
PLOT NAME : ---------- PLOT SCALE : **********
WISDOT/CADDS SHEET 42

2

2

LEGEND

(13)	5-INCH HMA PAVEMENT TYP E-0.3
(14)	12-INCH BASE AGGREGATE DENSE 1 1/4-INCH
(15)	5-INCH BASE AGGREGATE DENSE 3/4-INCH, SHOULDER
(*)	POINT REFERRED TO ON PROFILE



TYPICAL FINISHED SECTION
PARK-N-RIDE

PROJECT NO:1540-04-73	HWY: STH 65	COUNTY: ST. CROIX	TYPICAL SECTIONS	SHEET	E

FILE NAME : C:\WDOTCO\10033 (DESIGN WORK ORDERS)\WORK ORDER 13 STH 65 & 70TH\CIVIL3D\SHEETSPLAN\020301-TS.DWG PLOT DATE : 5/29/2015 PLOT BY : KL ENGINEERING PLOT NAME : _____ PLOT SCALE : **********

WISDOT/CADDS SHEET 42

Attachment 7.7
Environmental Commitments Basic Sheet

BASIC SHEET 8 – ENVIRONMENTAL COMMITMENTS

Attach a copy of this page to the design study report and the PSE submittal package.

Factor Sheet	Comments
A-1 General Economics	Access to businesses will be maintained during construction. The Construction Supervisor will assure fulfillment of the commitment.
A-2 Business	The Transportation Management Plan will be followed; access to businesses will be maintained during construction. The Construction Supervisor will assure fulfillment of the commitment.
A-3 Agriculture	No commitments needed.
B-1 Community or Residential	The Transportation Management Plan will be followed; access to residences will be maintained during construction. Construction of individual driveways may require temporary closures. The Construction Supervisor will assure fulfillment of the commitment.
B-2 Indirect Effects	No commitments needed
B-3 Cumulative Effects	No commitments needed
B-4 Environmental Justice	No commitments needed
B-5 Historic Resources	No commitments needed
B-6 Archaeological Sites	No commitments needed
B-7 Tribal Coordination/Consultation	No commitments needed
B-8 Section 4(f) and 6(f) or Other Unique Areas	No commitments needed
B-9 Aesthetics	No commitments needed
C-1 Wetlands	Wetland fill will require compensatory mitigation pursuant to the DNR/DOT cooperative agreement. It is estimated that 0.75 wetland acres will be impacted by the project. Coordination between WisDOT, WDNR and USACE is ongoing; wetland mitigation ratios and location will be determined when wetland impacts are finalized during final design. 2.5:1 slopes and beam guard will be used along the east fill slope to minimize open water fills. WDNR concurred that turbidity barrier should be used during the open water filling/marsh excavation activities for the proposed project. The Region Environmental Coordinator and the Construction Supervisor will assure fulfillment of the commitment.
C-2 Rivers, Streams and Floodplains	No commitments needed
C-3 Lakes or other Open Water	No commitments needed
C-4 Groundwater, Wells and Springs	No commitments needed
C-5 Upland Wildlife and Habitat	No commitments needed
C-6 Coastal Zones	No commitments needed

C-7 Threatened and Endangered Species	Based a review of Natural Heritage Inventory (NHI) records by WDNR, several endangered resources have been known to occur in the project area or its vicinity and could be impacted by this project. It is recommended that disturbance in potential habitat areas be avoided from mid April through mid August. Two of the three nesting birds identified by WDNR in the July 10, 2014 preliminary concurrence letter are water birds; and one is a roadside bird. The roadside bird nests in trees and shrubs and uses roadside fences. WDNR indicated concurrence that if during construction, the trees, shrubs and fences are removed prior to Mid-April, the project can proceed without further restrictions. The Region Environmental Coordinator and the Construction Supervisor will assure fulfillment of the commitment.
D-1 Air Quality	No commitments needed
D-2 Construction Stage Sound Quality	Check all that apply: ☒ WisDOT Standard Specification 107.8(6) and 108.7.1 will apply. The Construction Supervisor will assure fulfillment of the commitment.
D-3 Traffic Noise	No commitments needed
D-4 Hazardous Substances or Contamination	No commitments needed
D-5 Storm Water	Storm water management will be implemented in accordance with standard storm water management practices and the WisDOT / DNR Cooperative Agreement. Inlet protections will be required during construction. The Construction Supervisor will fulfill this commitment.
D-6 Erosion Control	Erosion control will be implemented in accordance with standard erosion control practices and the WisDOT / DNR Cooperative Agreement. The Contractor prior to the Pre-Construction Meeting shall submit an Erosion Control Implementation Plan. The Construction Supervisor will fulfill this commitment.
E- Other	

Factor Sheets (to follow Basic Sheets)

- General Economics Evaluation (Factor Sheet A-1)
- Community or Residential Evaluation (Factor Sheet B-1)
- Wetlands Evaluation (Factor Sheet C-1)
- Threatened and Endangered Species Evaluation (Factor Sheet C-7)
- Construction Stage Sound Quality Evaluation (Factor Sheet D-2)
- Stormwater Evaluation (Factor Sheet D-5)
- Erosion Control Evaluation (Factor Sheet D-6)

Attachment 7.8
Transportation Management Plan

Wisconsin Transportation Management Plan (WisTMP) System

TMP ID: 1797 (Design ID:1540-04-03)
Current TMP Status: Approved (60%)

Modified By	Modified Date	Status	Comments
MWischhoff	07/02/2015 08:28 AM	Approved (60%)	TMP has reached a status of Approved 60%.
MWischhoff	07/02/2015 08:28 AM	Submitted for Approval (60%)	Margaret Wischhoff signed TMP towards 60% approval.
dotmbh	06/29/2015 09:52 AM	Submitted for Approval (60%)	WisTMP System has automatically routed this TMP to BPD for 60% Approval
dotmbh	06/29/2015 09:52 AM	Submitted for Approval (60%)	Mark Hughes signed TMP towards 60% approval.
dotc4h	06/26/2015 08:01 AM	Submitted for Approval (60%)	WisTMP System has automatically routed this TMP to RPDC for 60% Approval

Modified By	Modified Date	Status	Comments
dotc4h	06/26/2015 08:01 AM	Submitted for Approval (60%)	Chad Hines signed TMP towards 60% approval.
dott4s	06/25/2015 04:19 PM	Submitted for Approval (60%)	Tara Weiss routed TMP for Approval (60%)
dott4s	06/25/2015 04:18 PM	Submitted for Review (60%)	Tara Weiss routed TMP for Review (60%)
dott4s	06/25/2015 04:18 PM	PM Approved (60%)	Tara Weiss signed TMP towards 60% Approval.
dott4s	06/24/2015 07:44 AM	Submitted for PM Approval	5a) There are no transit services at the Park & Ride 5b) No - not affected 6a) Yes 6b)Expand. Off-peak timing. Prior to Memorial Day/after Labor Day 6c)What does the analysis show? What is the PHV? 3rd sentence should say "IH 94" roundabouts and talk about queuing. Should be? 7b) Add all together and either put numbers in parenthesis or say inside/outside lane widths 9. Remove Easter weekend 10) Remove first sentence. Discuss this as IH 94 roundabouts. Expand on the analysis for queuing for RB. 11)Add not greater than 15 min. 12) replace closed with modified. Route still be maintained fromExit4 to Exit19, no improvements to existing routes planned. 14. 1020-06-75 - not within limits of this project,ends at exit 4. Resurface 1020-01-77 starts at 130th to CTH T (east of project) 17) Local officials meeting and may have another PIM if warranted 18) Procedures will follow the WisDOT Emergency Transportation Operations Plan. Remove the Work Zone Incident Management Plan 19) Transit services do not use this Park & Ride. Plan sheets: Add Temporary Signals note on all sheets with them. To highlight their use.....in notes but note at intersection also. Stage 1: Is traffic on the temp shoulder widening that the County did? Confirm it will hold? Is the median work in Stage 2 as well? Don't show the temp access just north of the park and ride as it won't/shouldn't be there. Stage 3: do not like the small vehicle entrance for Flying J with the curves. Probably will not work. Can do in halves any differently? Stage 4A: Don't really like the separation between north and south on STH 65 but have to for turning movements??
LW@KLEng	06/17/2015 01:27 PM	Submitted for PM Approval	Lance Williston routed TMP for PM Approval

Modified By	Modified Date	Status	Comments
LW@KLEng	06/15/2015 01:44 PM	Under Preparation	LW@KLEng modified TOP checklist.
LW@KLEng	06/15/2015 01:43 PM	Under Preparation	LW@KLEng modified TOP checklist.
dott4s	04/27/2015 09:10 AM	Created	Tara Weiss added Preparer : Amelia Retrum (aretrum)
dott4s	04/27/2015 09:10 AM	Created	Tara Weiss added Preparer : Lance Williston (LW@KLEng)
dott4s	12/04/2014 08:34 AM	Created	A new TMP has been created.

LW@KLEng entered WisTMP as Viewer
WisTMP Version: 1.0.27 (Last updated on: 07-07-2015)
Wisconsin Traffic Operations and Safety Laboratory

WisDOT TMP Documentation and Request for Approval

TMP ID: 1797
Version: Current

This is a request for approval of the Transportation Management Plan (TMP) for the project detailed below. Impacts resulting from project activities meet the current work zone policies of the Wisconsin Department of Transportation.

1A. Project Information:

TMP Type:	Type 2
Region:	NW
Local Program:	No
Created Comment:	Created from Scratch. User comment: No FIIPS data
Design ID:	1540-04-03
Project Title:	River Falls - New Richmond
County:	ST. CROIX
Highway:	WIS 65
Construction ID:	1540-04-73
Project Type:	Reconstruction, expansion
Project Limits:	STH 65 expansion/70th Ave intersection
Project Length:	0.61 Mile(s)
Project Duration:	150 Day(s)
Engineer's Estimate:	$1M-3M
PS&E Date:	08/01/2016
LET Date:	12/13/2016
NHS Route:	No
AADT:	15110
AADT Year:	2012
Federal Oversight:	No

1B. Project Impacts:

Anticipated Begin:	04/2017
Anticipated End:	11/2017
Delay:	Minor
OSOW Route:	No

1C. Location:

Highway

Begin County:	ST. CROIX
End County:	ST. CROIX
Highway:	WIS 65 NB
Begin Landmark:	I-94 (B-55-0035 BEGIN) | WIS 65 NB | ST. CROIX

Direction From:
Distance From:
End Landmark: 80TH AVE | WIS 65 NB | ST. CROIX
Direction From:
Distance From:

Begin County: ST. CROIX
End County: ST. CROIX
Highway: WIS 65 SB
Begin Landmark: 80TH AVE | WIS 65 SB | ST. CROIX
Direction From:
Distance From:
End Landmark: I-94 (B-55-0035 BEGIN) | WIS 65 SB | ST. CROIX
Direction From:
Distance From:

Local Road

Begin County: ST. CROIX
End County: ST. CROIX
Roadway Name: 70TH AVE
Begin Landmark (LR): 112TH ST
End Landmark (LR): 130TH ST

2. Brief description of work activities.

* Reconstruct 0.5 miles of STH 65 to a semi-urban section with channelized turn lanes at the intersection with 70th Avenue

* Relocate driveway to the Park & Ride to the east side of the property

* Reconstruct a portion of 70th Avenue, providing channelized right turn lanes and a median separation on the west side of 70th Avenue

* Add pedestrian facilities along 70th Avenue

* Provide a future NB dual left turn lane option

* Add beam guard along NB STH 65 near wetland

* Install overhead sign supports on SB STH 65 north and south of 70th Ave.

Project location map is provided in Appendix A. Preliminary plan sheets are provided in Appendix B.

3. Briefly describe the staging planned for maintaining traffic.

Work on STH 65 and 70th Ave. will be completed under staged construction. A preliminary staging plan is provided in Appendix C and the four primary stages are briefly described below.

Staged construction will maintain existing intersection lane configurations at a minimum.

Stage 1

*NB & SB STH 65 & 70th Ave. traffic on existing pavements.

*Close inside lanes of IH 94 EB off-ramp and NB STH 65 thru interchange roundabouts.

*SB STH 65 approach to WB IH 94 roundabout reduced to a single lane.

*Close west half of Park & Ride once driveway is relocated.

*Build off-alignment temporary roadways, temporary Park & Ride driveway and temporary pavements on NB STH 65 north of 70th Ave. Build both STH 65 median crossovers north of the WB IH 94 roundabout.

Stage 2

*NB STH 65 traffic (south leg of intersection) uses median crossover and remains on existing pavements. SB STH 65 traffic uses existing pavements. NB & SB STH 65 traffic (north leg of intersection) remain on existing pavements and temporary pavements at the intersection. 70th Ave. traffic begins to use temporary roadway.

*Inside lanes of IH 94 EB off-ramp and NB STH 65 thru interchange roundabouts remain closed.

*Portion of Park & Ride remains closed.

*Build majority of NB STH 65 (south leg), and the east leg of 70th Ave.

Stage 2A

*NB STH 65 (south leg of intersection) uses new NB pavements. SB STH 65 traffic remains on existing pavements. NB & SB STH 65 traffic (north leg of intersection) remains on existing pavements and temporary pavements at the intersection. 70th Ave. continues to use the temporary roadway.

*Inside lanes of IH 94 EB off-ramp and NB STH 65 thru interchange roundabouts remain closed.

*Portion of Park & Ride remains closed.

*Build remaining portion NB STH 65 (south leg) at the intersection.

Stage 3

*STH 65 (south leg) traffic uses new NB pavements. SB STH 65 (south leg) uses median crossover. STH 65 (north leg) remains on existing pavements and temporary pavements at the intersection. 70th Ave. traffic remains on temporary roadway.

*Inside lanes of IH 94 EB off-ramp and NB STH 65 thru interchange roundabouts remain closed.

*Portion of Park & Ride remains closed.

*Build SB STH 65 (south leg) and the west leg of 70th Ave.

Stage 4A

*Close STH 65 north of 70th Ave. Detour in effect.

*STH 65 traffic (south leg) uses new NB & SB pavements. 70th Ave. traffic uses new pavements.

*Portion of Park & Ride remains closed.

*Inside lanes of IH 94 EB off-ramp and NB STH 65 thru interchange roundabouts remain closed.

*Build STH 65 (north leg). Remove temporary road.

Stage 4B

*Closure of STH 65 north of 70th Ave and detour remain in effect.

*STH 65 traffic (south leg) uses new NB & SB pavements. 70th Ave. traffic uses new pavements.

*Complete islands, driveway connections and finishing items on STH 65 and 70th Ave.

4. Will there be restrictions on pedestrian/bicycle access?

☐ Yes ☑ No

5. Briefly describe how access to traffic generators, businesses, school buses, garbage trucks, postal services, and transit impacts will be mitigated (alternate routes, etc.).

a) Are the strategies in compliance with ADA?

STH 65 and 70th Ave. will remain open in all directions of travel during construction except for the closure of STH 65 north of 70th Ave. during Stage 4A and Stage 4B. Staging of work may require some adjustment of driveway access points. Staging will need to accommodate OSOW trucks travelling to and from a pre-cast plant located on 70th Ave., just east of the intersection. Staging will also need to accommodate a high volume of trucks using the travel plaza on 70th Ave., just west of the intersection. Local access to residents and business's to be maintained in all stages. The Park & Ride will remain open during all stages of construction. The entrance will be relocated to the east end of the lot. Approximately half of the lot will be closed during Stages 1, 2, 3, & 4A to accommodate a temporary roadway. There are currently no transit services to the Park & Ride. There are no existing sidewalks within the project limits, therefore, compliance with ADA is not applicable.

b) Is access to bus stops affected?

☐ Yes ☑ No

6. Will the project have lane closures?

☑ Yes ☐ No

If Yes:

a) Are there restrictions on when lane closures are allowed?

☐ Yes ☑ No

b) What hours/days are lane closures permitted?

Lane closures are long-term and necessary for each stage of construction, therefore there are no restrictions in effect.

c) How were traffic counts used in determining permitted lane closure times?(For multi-lane road, indicate typical peak hour volume per direction of travel.For two-lane, two-way road indicate AADT)?

--The AADT for STH 65 south of 70th Avenue is approximately 15,000. The maximum traffic volume on STH 65 is between 745 and 785 vehicles/hour (SB - AM peak / NB - PM peak) with several movement truck percentages between 20% - 50%.

--Traffic counts were evaluated for the following construction staging criteria:

1. To determine the lane configuration to maintain during construction at the 70th Avenue intersection.

2. To determine any potential queuing and delay at the IH 94 interchange roundabouts due to the planned lane closure.

--The construction staging concept includes maintaining the same lane configuration and turn storage to match existing conditions. This is required in order to provide adequate storage and intersection capacity for the high number of turning movements made by large trucks. The 70th Avenue intersection level of service should not degrade from existing conditions given the same lane configuration will be maintained during construction.

--The construction staging concept also includes reducing northbound STH 65 (including one lane of the eastbound IH 94 off-ramp) for the duration of the project. Traffic analysis was completed using Sidra to determine whether queuing would result from the lane closure. This was evaluated under multiple scenarios of differing truck percentages due to the existing pattern of random truck arrivals. The analysis indicated that queuing and delay will increase with the lane closure, but is not anticipated to result in failed operations (LOS E or worse / excessive queuing) unless truck arrivals are at 80% or above, which is unlikely. Lane closures are anticipated to remain in place along STH 65 through the IH 94 interchange for the duration of the project and will not be restricted based on time of day or month.

--See Appendix F for a summary of the roundabout analysis.

7. Please provide the following.

a) Minimum lane width to be maintained.

STH 65: 12'

70th Avenue: 12'

b) Minimum lane width plus shoulder width to accommodate OSOW.

70th Avenue (east leg): 31' (3'+12'+12'+4')

STH 65 (NB, south leg): 19' (4'+12'+3')

STH 65 (SB, south leg): 19' (4'+12'+3')

(minimum widths shown)

c) Minimum height (if less than typically available)
Nothing less than typically available.

8. Will the project be detoured?

☑ Yes ☐ No

a) Explain length of detour, travel times, improvements required for signaltiming, surface and shoulder conditions, capacity, etc

See Project Detour Map, located in Appendix E.

All detours will start after Labor Day.

Detour from the east (heading west on IH 94): NB STH 65 traffic will exit IH 94 at USH 63. Follow USH 63 North until it intersects with USH 12. Follow USH 12 West until it intersects with STH 65. (12.6 miles)

Detour from the west (heading east on IH 94): NB STH 65 traffic will exit IH 94 at USH 12. Follow USH 12 East until it intersects with STH 65. (7.9 miles)

Detour from the south (heading north on STH 65): NB STH 65 traffic will use IH 94 West and exit at USH 12. Follow USH 12 East until it intersects with STH 65. (13.9 miles)

Detour from the north (heading south on STH 65): SB STH 65 traffic will use USH 12 West until it intersects with IH 94. Follow IH 94 East until it intersects with STH 65. (13.9 miles)

b) Are there width and height restrictions on the detour?

☐ Yes ☑ No

9. List major special events and holidays, and how traffic disruptions will be minimized.

STH 65 is required to operate as a two-lane highway during the following holiday or special event time periods. Construction work and transporting of construction materials on any portion of the highway is not permitted during these times. The entire traveled way including shoulders, temporary pavement widening, and unprotected medians shall be clear of all equipment and materials related to construction and traffic control and any other material that may reduce the capacity of the roadway to carry free flowing traffic during the holiday and special events shown below. Lane closures or rolling stops will not be allowed. Coordination with local officials and business's will be ongoing. Any additional events will be identified through this process.

- Work restrictions are listed below for the following holidays:

--Memorial Day: Noon May 26th - 6:00 AM May 30th, 2017

--Fourth of July: Noon July 3rd - 6:00 AM July 5th, 2017

--Labor Day: Noon September 1st - 6:00 AM September 5th, 2017

10. Describe the method(s) (LCAT, Quadro, FDM 11-50-30, etc.) used to estimate motorist delays or queue length? (Applicable only for freeways, expressways, and signalized corridors).

---Traffic analysis was completed using Sidra roundabout software to determine whether queuing would result from the closure of one of two northbound lanes on STH 65 through the IH 94 interchange. The analysis indicated that queuing and delay will increase with the lane closure, but is not anticipated to result in failed operations (LOS E or worse / excessive queuing) unless truck arrivals are at 80% or above, which is unlikely. No other traffic analysis was completed for the 70th Avenue intersection specifically since the existing lane configuration will be maintained throughout construction.

--See Appendix F for a summary of the roundabout analysis.

11. What is the anticipated travel delay during peak travel periods (also indicate frequency, e.g. daily and duration). Please compare the peak hour volumes per lane with the work zone capacity criteria in 11-50-30. If it exceeds the estimated capacity, a delay calculation is required. If the delay is more than 15 minutes, the TMP will be a type 3 and if less than 15 minutes, it generally will be a type 2. The Regional Work Zone Engineer can assist you in determining your delay.

To provide acceptable traffic operations during construction, temporary conditions will maintain the existing lane configuration at the intersection of STH 65 & 70th Ave., except during the detour (Stage 4) when traffic volume on STH 65 will be significantly lower. Additional delay due to construction conditions is not anticipated and will not exceed 15 minutes of delay time.

12. Identify alternate routes anticipated, and any alternate route improvements or signing planned.

STH 65 is part of the existing IH 94 alternate route. During construction, this segment of the alternate route will be modified. Route will still be maintained from USH 12 (Exit 4) to USH 63 (Exit 19), no improvements to existing routes are planned at the time.

13. Are any intersection traffic control changes proposed such as temporary signals, temporary changes to an all way stop, etc?

The current intersection of STH 65 and 70th Ave. is signalized. Temporary signals will be required during construction.

14. Are there anticipated traffic impacts from the proposed project on other

roads/routes in the region/corridor? Identify other projects in the corridor (only if delay anticipated on this project).

Project ID (1020-06-75) will construct an auxiliary lane along IH 94 to USH 12. Coordination on any ramp closures as related to the proposed detour will be required. Project ID (1020-01-77) will resurface IH 94 from 130th St to CTH T. There are no anticipated conflicts.

15. Does the project affect other regions/states?

☐ Yes ☑ No

16. Check mitigation strategies planned

STRATEGY	COMMENTS
☑ Public information campaigns	Public involvement meetings, news releases, WisDOT project web-page, local municipality web-postings, and LCS.
☐ Off-peak lane closures	
☑ Temporary widening to maintain traffic lanes	
☑ Changeable message signs (PCMS)	Advanced warning will be given prior to construction, closures and traffic pattern changes.
☐ Ramp closures	
☑ Temporary signals/timing revisions	STH 65 & 70th Ave. intersection
☑ Coordination with adjacent projects	ID (1020-06-75) IH 94 auxiliary lane project. ID (1020-01-77) IH 94 resurfacing project from 130th Street to CTH T.
☑ Innovative contracting, (lane rental, A+B, etc)	Further efforts are needed to determine if innovative contracting methods are appropriate for the project.
☐ Temporary Emergency Pullouts	
☐ Motorist service patrols	
☐ Nighttime Work	
☐ Enhanced Traffic control devices (Wet reflective pavement marking, temp concrete barrier, etc)	
☐ Reduced regulatory speed limit (requires declaration approved by Regional Traffic Engineer, & by BTO if 65-mph hwy.)	

17. Describe public information strategies planned (coordinate this activity with your Regional Communications Manager).

A public involvement meeting was held October 28, 2014. This will be supplemented by future public meetings, multiple news releases, postings on local municipality web-sites and a project-specific WisDOT web-page to keep the public informed. A local officials meeting will be scheduled for mid- July 2015 and another Public Involvement Meeting will be scheduled if warranted.

Portable changeable message signs (PCMS) will be used in advance and during the project to notify motorists of construction activities and closures.

The engineer will input lane closures into the WisDOT Lane Closure System (LCS) and the contractor will be required to provide two weeks advanced notice of any lane closures or restrictions to the project. The LCS is linked to the WisDOT 511 system and the WisDOT website.

18. Describe incident management strategies planned.

Incident management procedures will follow the WisDOT Emergency Transportation Operations Plan. Agencies including the Wisconsin State Patrol, local police, local fire department/EMS, county sheriff, schools, and post office will be invited to the preconstruction meeting and any other coordination meetings scheduled and receive weekly e-mail updates throughout the duration of the project.

19. Describe how transit impacts will be mitigated.

Transit services do not use this Park & Ride.

Attachments:

Attachments for TMP ID 1797 are listed below.

[f] Appendix A - Project Location Map.pdf
[f] Appendix D - Traffic Forecast Information.pdf
[f] Appendix F-Traffic Queuing Analysis.pdf
[f] Appendix B-Preliminary Plan Sheets.pdf
[f] Appendix E - Project Detour Map.pdf
[f] Appendix C - Preliminary Staging Plans.pdf

*** [F] represents folder and [f] represents file.**

Approvals:

Attachment 7.9
Roadside Hazard Analysis Report

KL Engineering
[A] Better Experience

5950 Seminole Centre Court
Suite 200
Madison, WI 53711
608.663.1218
Toll Free: 800.810.4012
Fax: 608.663.1226
www.klengineering.com

Roadside Hazard Analysis Memo

To: Tara Weiss
WisDOT Northwest Region

From: KL Engineering, Inc.

Date: March 10, 2015

Subject: 1540-04-03
River Falls – New Richmond
STH 65 Expansion/70th Avenue Intersection
STH 65
St. Croix County

This memo summarizes the methodology and results of the Roadside Hazard Analysis (RHA) completed for the above project (See Appendix A for Project Location Map).

The Wisconsin Department of Transportation (WisDOT) is initiating an improvement project at the STH 65/70th Avenue intersection in St. Croix County. The proposed project will reconstruct the intersection of STH 65 & 70th Avenue. The project will include expansion from 1 to 2 lanes in each direction along STH 65 through the intersection, including additional turn lanes and vehicle storage. Construction includes grading base course, pavement, drainage, and traffic signals. Construction is anticipated to begin in Spring 2017, and be completed by the fall.

The purpose of the proposed action is to improve long-term pavement conditions, accommodate projected traffic volumes, accommodate potential future project area development, provide appropriate bicycle facilities and provide updated traffic signals.

This analysis complies with FDM 11-45-3.

AREAS OF CONCERN

Areas of concern for this project were based on a review of the project geometrics, crash history and topographic features.

Traversable side slopes are of concern due to the high speed and volume of traffic and the curvilinear nature of the alignment.

One crash resulted in an overturn of the vehicle, located 2500 feet north of the intersection on STH 65 SB, just north of the wetland area.

Standing water in the wetlands in the north end of the project is of concern and will need to be properly addressed. The wetlands are located on the outside of a horizontal curve in the NB direction near slopes greater than 3:1.

AREA OF ANALYSIS

Areas of Analysis were defined by the desirable clear zone:

- STH 65: 28' clear zone
- 70th Avenue: 28' clear zone

HAZARD IDENTIFICATION METHODOLOGY

Structures

Existing sign bridge structures were reviewed for breakaway posts and guardrail protection. No sites were identified within the project limits.

Drainage Structures

Existing culvert pipes were reviewed for apron endwalls being located within the area of analysis. Several locations exist, but following FDM 11-45-2.6 (See Appendix B for Drainage Features), the diameters of these pipes are smaller than those considered hazardous.

Barrier Systems

Systems were reviewed for compliance with current standards. No barrier systems exist within the project limits.

Grading

Slopes perpendicular to the roadway were reviewed for traversability and compliance with required grading at guardrail terminals. The digital terrain model was queried to define 3 slope ranges (See Appendix C for Project Plan Sheets):

- <4:1 recoverable slopes (green)
- 4:1→3:1 traversable, non-recoverable slopes (blue)
- >3:1 critical, non-traversable slopes (red)

4:1 slopes are the maximum side slope within the clear zone.
Non-recoverable slopes were deemed acceptable within the clear zone as long as a clear runout area with recoverable slopes is provided at the toe of the slope.
>3:1 slopes need to be re-graded or shielded if located within the clear zone.

Slopes parallel to the roadway were also reviewed for traversability. The digital terrain model was used to determine slopes near driveways. Slopes greater than 10:1 were identified.

Other

Utility poles, non-breakaway sign posts, and above ground utility structures were also investigated.

The wetland located north of the intersection approximately 2500 feet, at times, can hold more than 2 feet of water. A barrier system currently does not exist along this segment of roadway.

SUMMARY

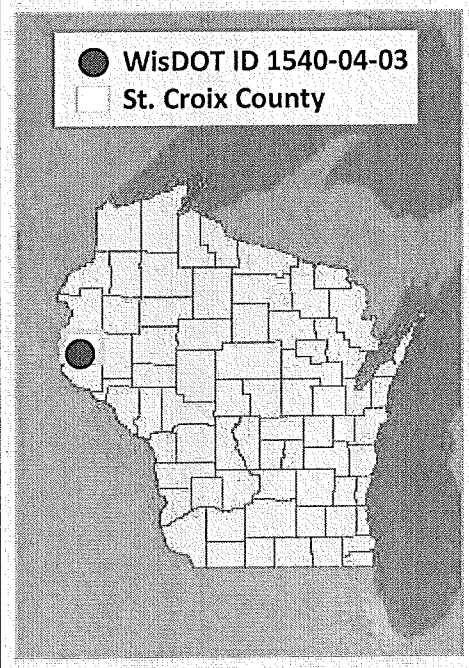
A summary of the identified roadside hazards and recommended actions are attached as Appendix E Roadside Hazard Summaries. This exhibit will also be included in the Design Study Report.

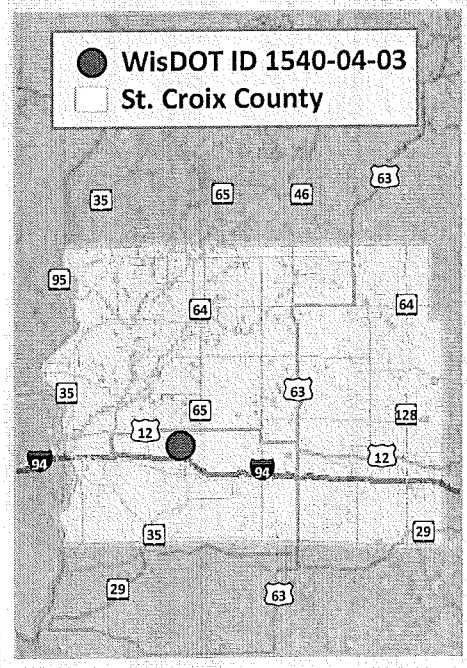
Three issues were identified along STH 65 NB, one issue was identified along STH 65 SB and two issues were found along 70th Avenue. Issues identified include substandard slopes and drainage feature hazards.

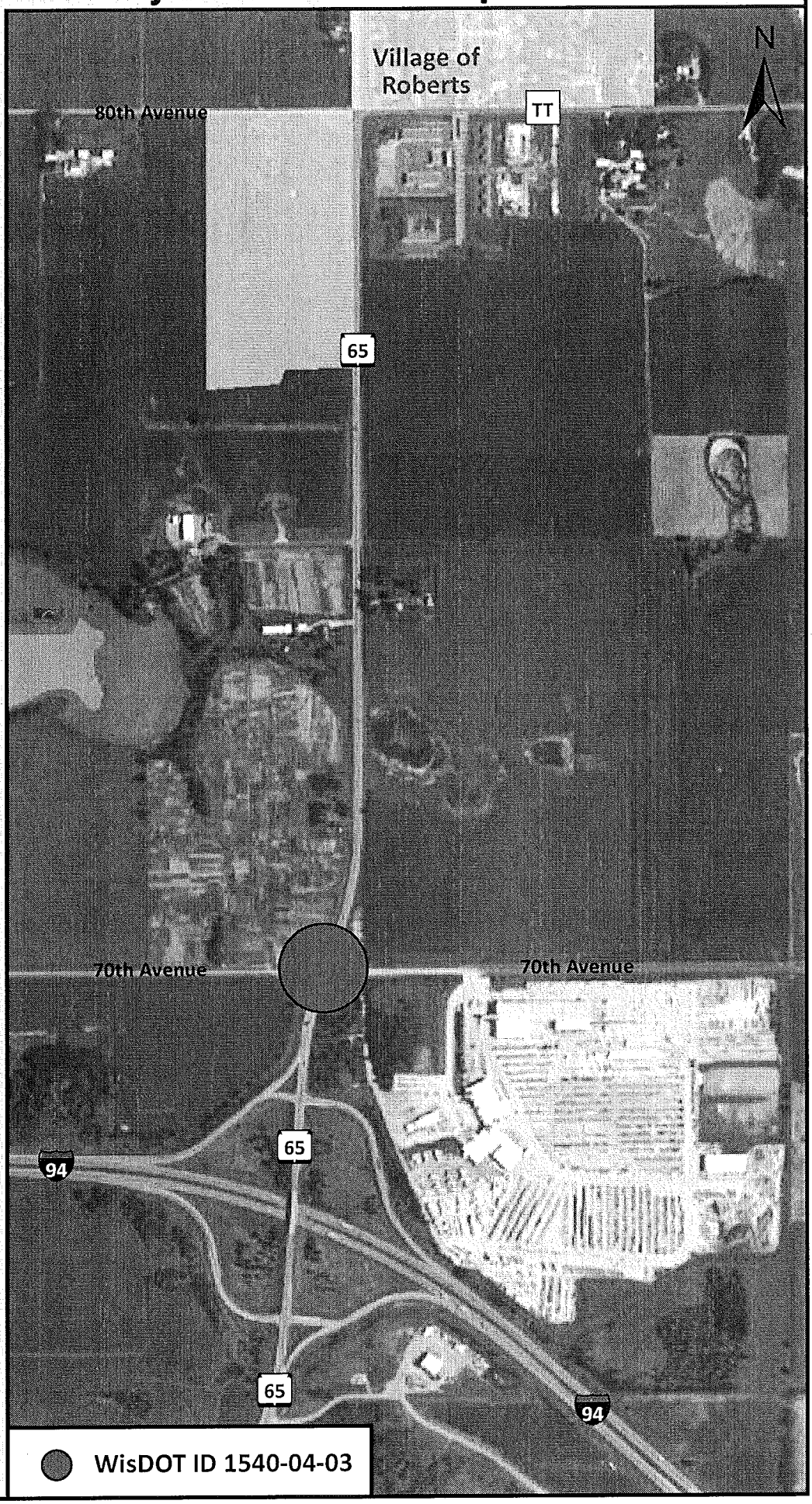
APPENDIX A
PROJECT LOCATION MAP

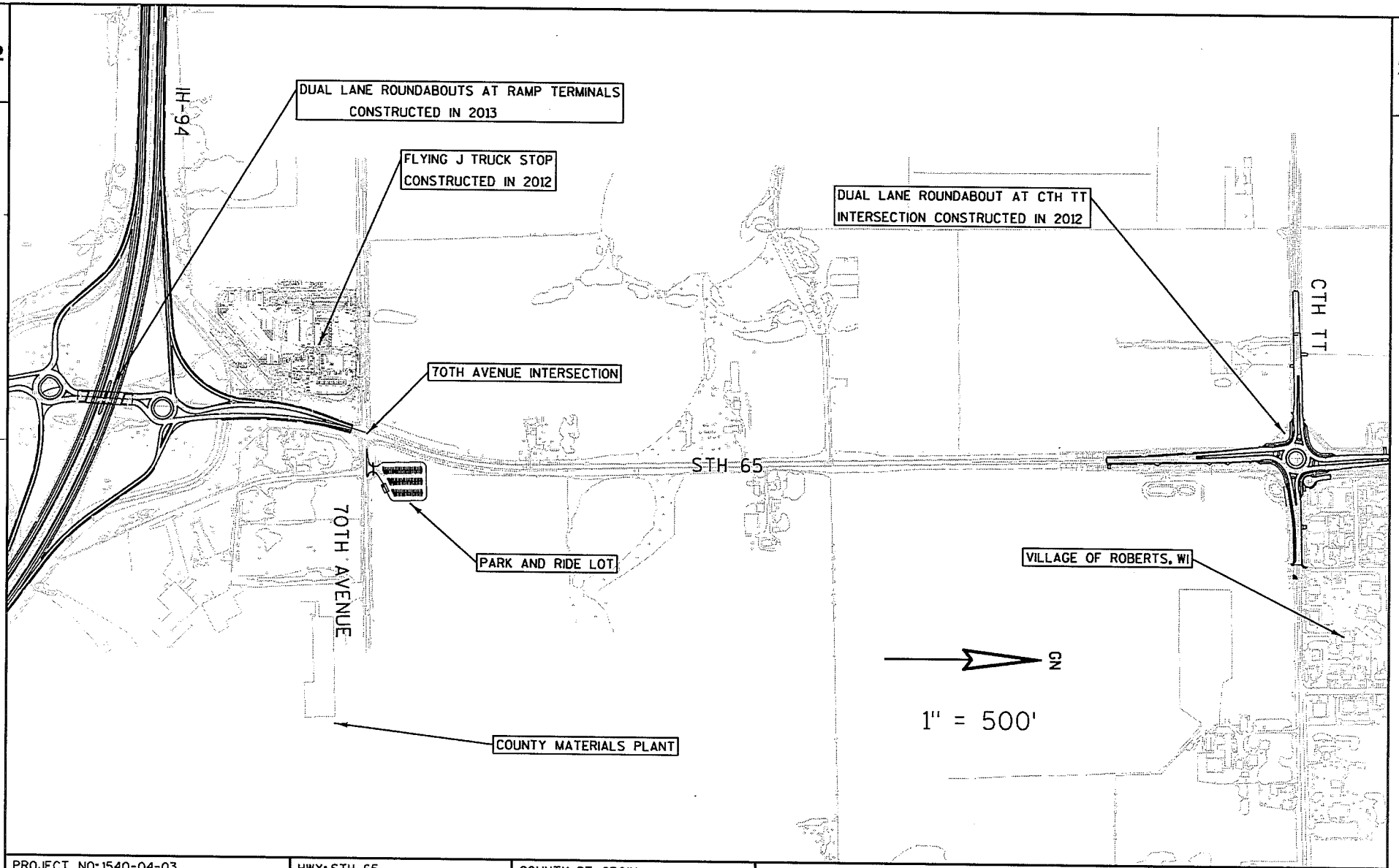
STH 65 & 70th Avenue Project Location Map

WisDOT ID 1540-04-03
STH 65 & 70th Avenue
River Falls - New Richmond
STH 65 Expansion/
70th Avenue Intersection
St. Croix County









PROJECT NO: 1540-04-03	HWY: STH 65	COUNTY: ST. CROIX	PROJECT AREA OVERVIEW	SHEET	E

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WISDOT/CADDS SHEET 42

APPENDIX B
DRAINAGE FEATURES

2.6 Drainage Features and Cattle Passes

Drainage features like (list not all inclusive): culverts, bridges, large drainage conduits have unique challenges that can make it difficult to select an appropriate roadside treatment option. Cattle passes can have many of the same roadside design issues as drainage features and will be discussed in this section.

Drainage features or cattle passes can be a hazard depending on orientation, number of drainage features and size. Drainage features or cattle passes with diameters greater than the value listed in the table below are hazards.

Table 2.17 Drainage Feature or Cattle Pass Size [lvii]

Pipe Orientation to Roadway	Number of Culverts	Culvert diameters or box culvert opening width (inches)
Perpendicular	1	36
	2 or more	30
Parallel	1	24
	2 or more	All multi-culvert runs are hazards

A drainage feature or cattle pass can become a hazard, regardless of size of drainage feature or cattle pass, if a portion a of the structure can snag the undercarriage of an errant vehicle (e.g. 4 inch object on a 5-foot chord) or the vehicle bumper can impact the structure (e.g. headwall, pipe sticks out of slope, etc.).

Drainage features that are equal to or smaller than the values listed in Table 2.17 are not considered roadside hazards. However, treatment of smaller parallel drainage features can be considered. In many cases treating smaller parallel drainage features could be considered a best practice.

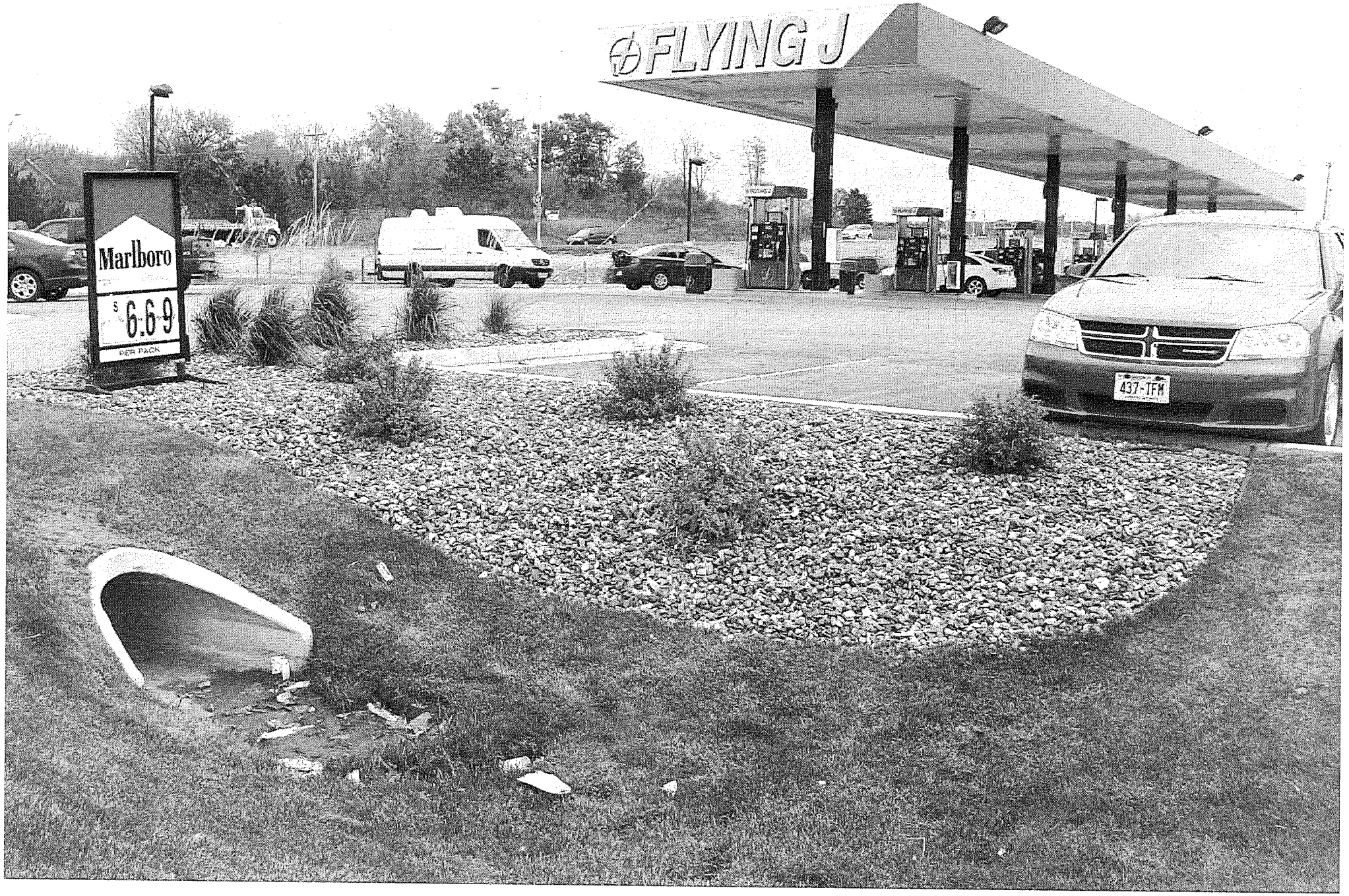
In addition, other objects near a drainage feature or cattle pass can be hazards (refer to Figures 2.56 and Figure 2.57). Some examples are:

- Water [45]
- Slopes
  - Leading to and departing from drainage feature.
  - Slopes that blend into drainage feature.
- Ditches
  - Non traversable roadway's ditches.
  - Drainage ditches' slopes (i.e. non-roadway ditches).
  - Blending slopes:
    - Roadway backslopes and drainage ditch slopes.
    - Foreslopes and drainage feature or cattle pass.
- Other fixed object hazards.
- Overall drop from structure to ditch bottom.[46]

Other hazards typical increase the traveling public's crash exposure (refer to Figure 2.55).

[45] Water 2 feet or deeper.
[46] Vertical drops of 8 feet or more are hazardous. Vertical drops of 6 feet or more combined with other hazards (e.g. rip rap or water) are hazardous.


F12
STOP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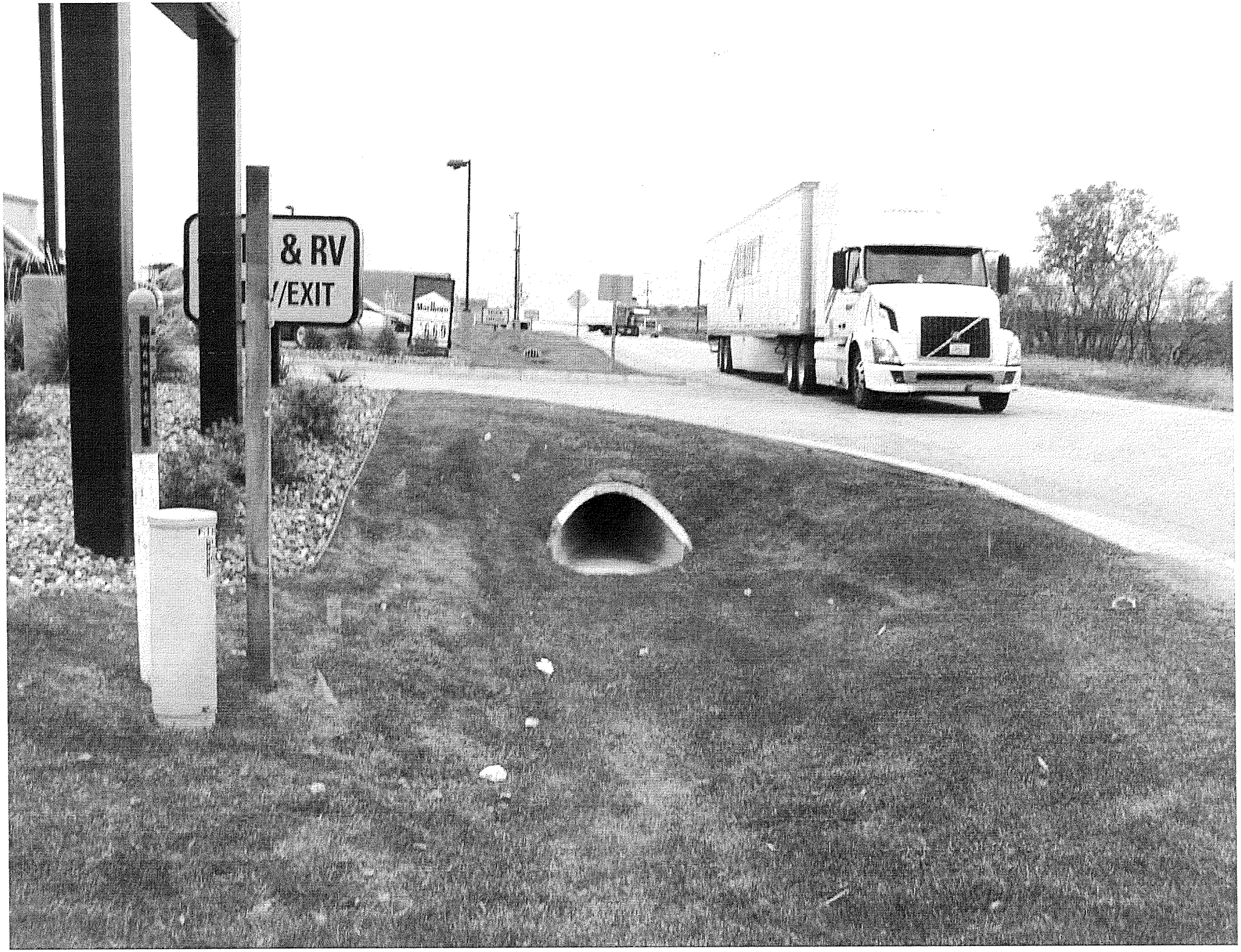
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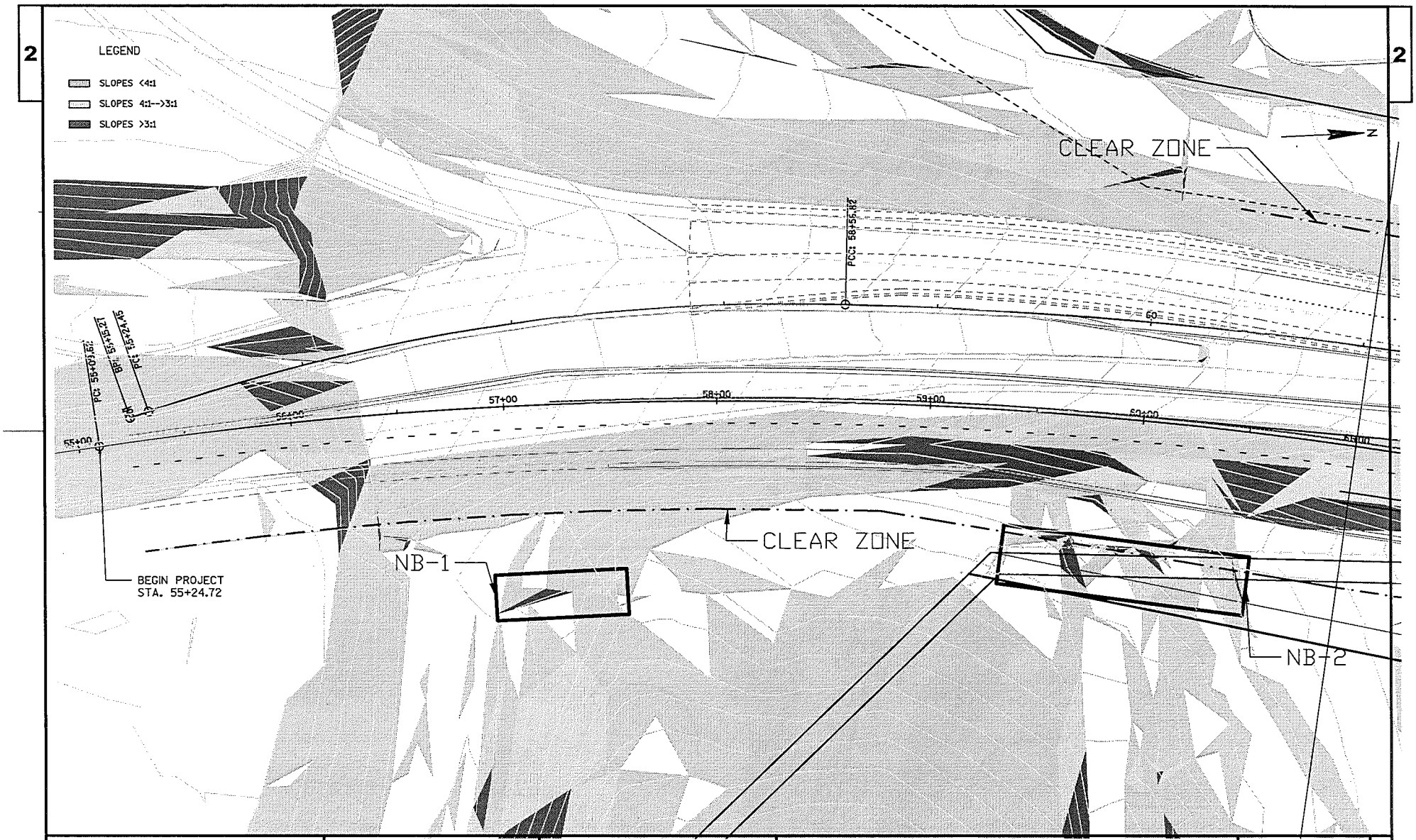
APPENDIX C
PROJECT PLAN SHEETS



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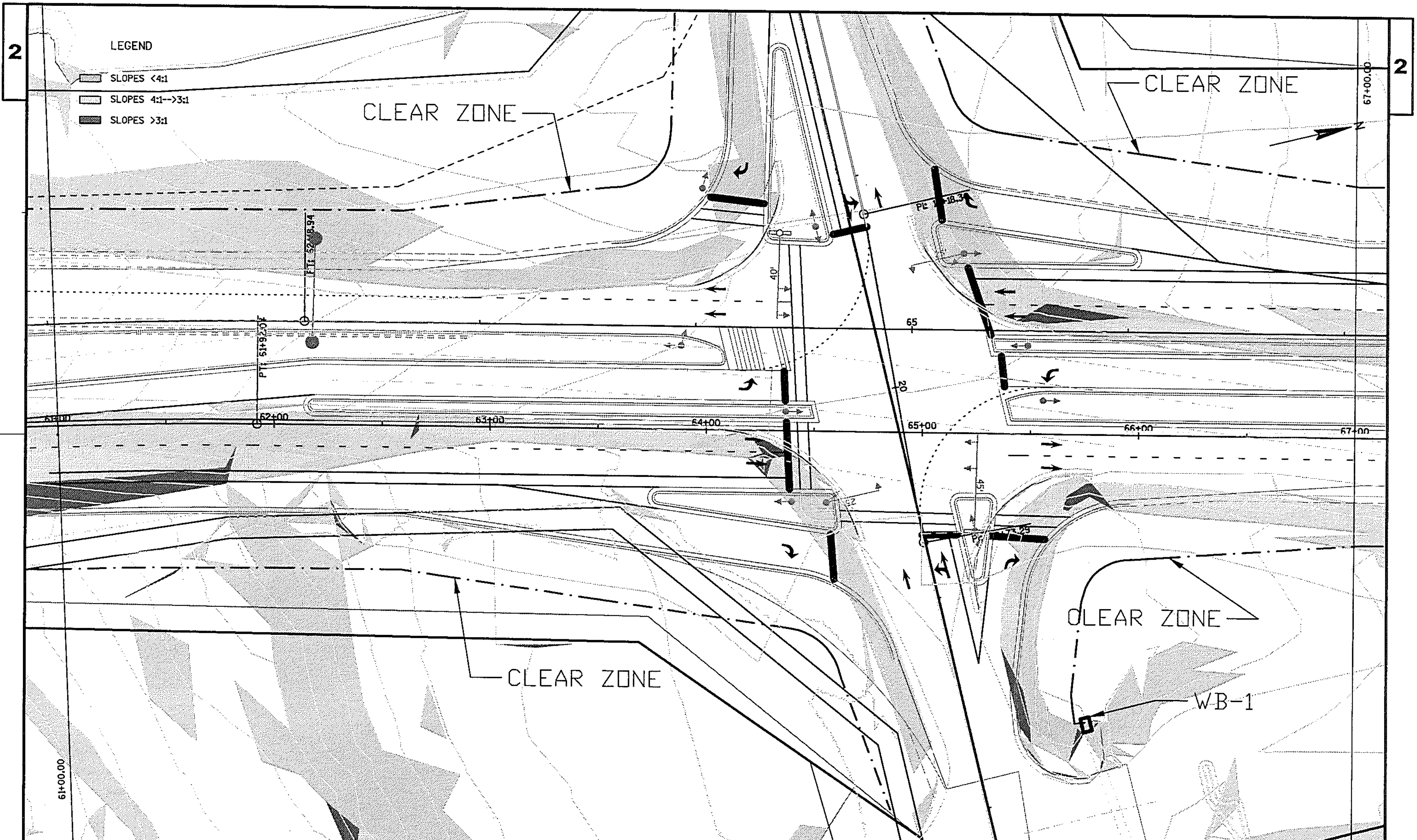

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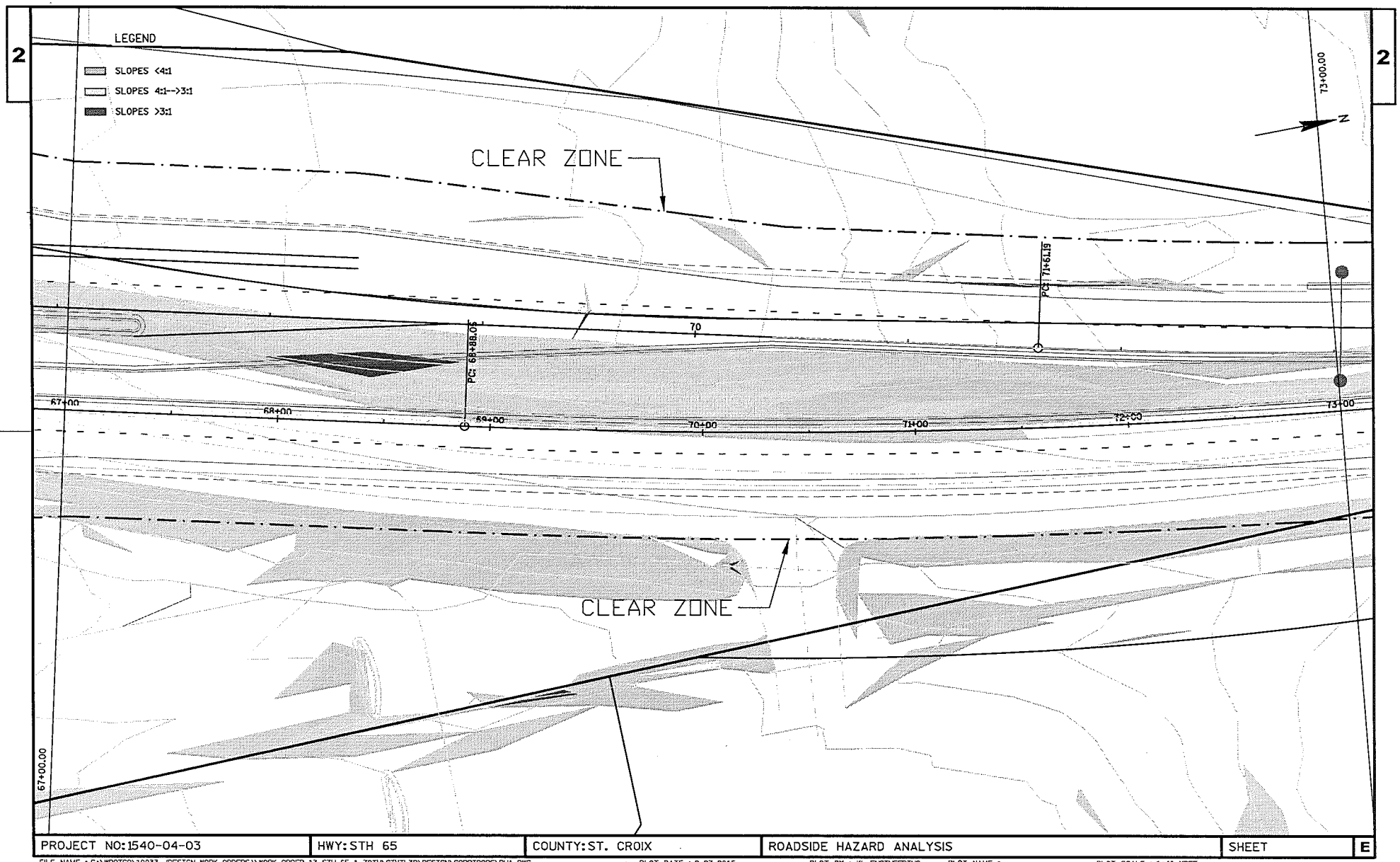

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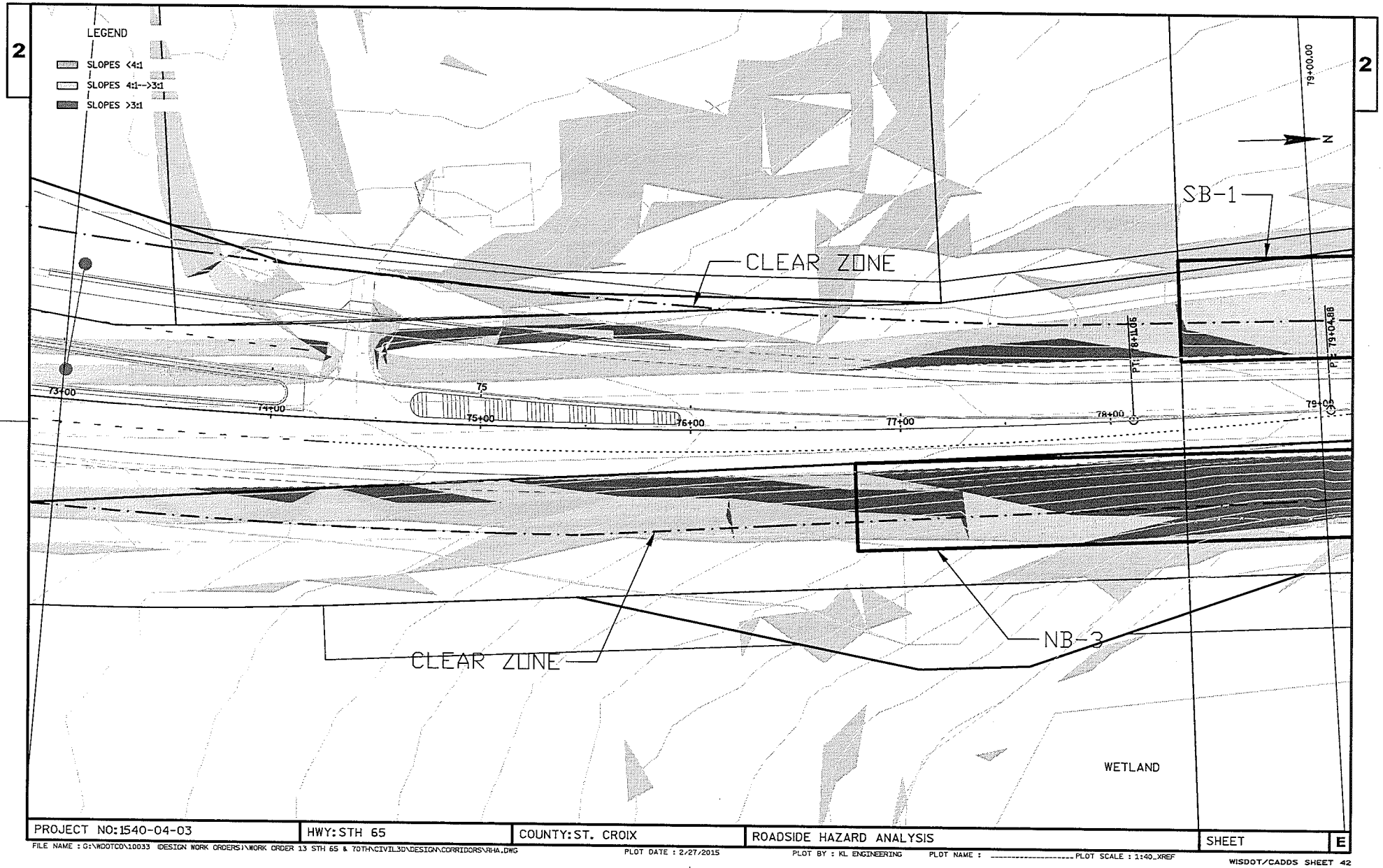

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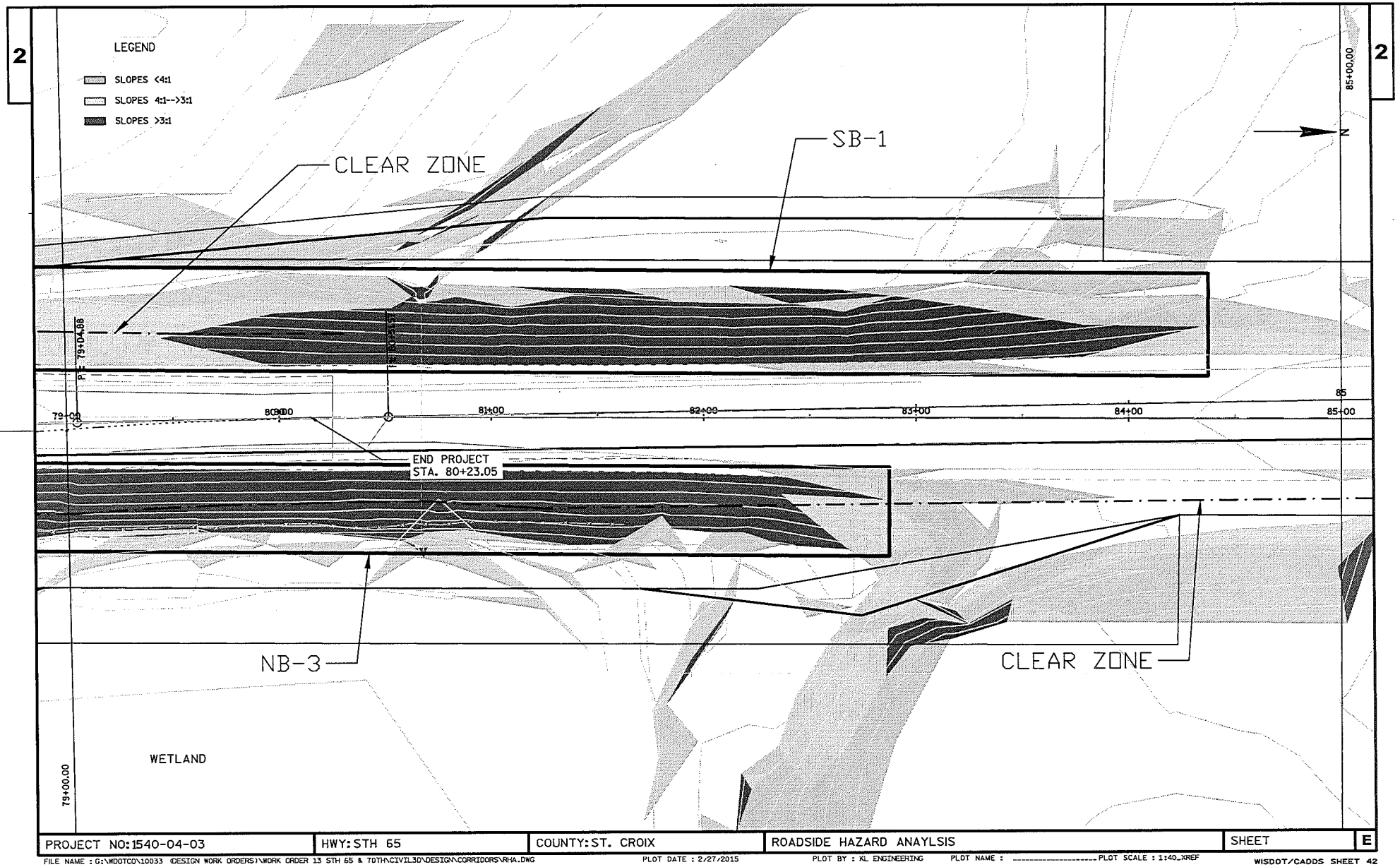

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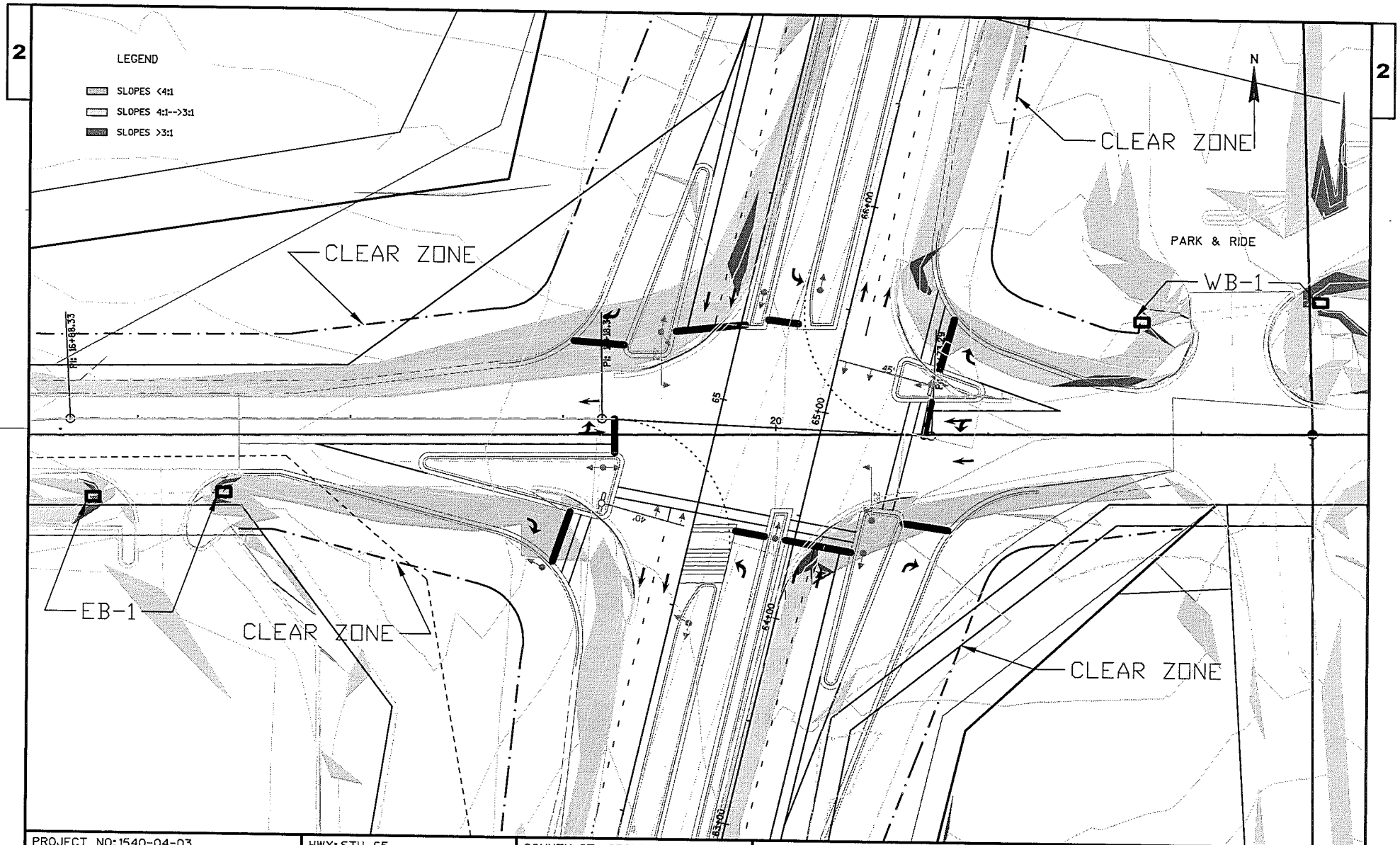

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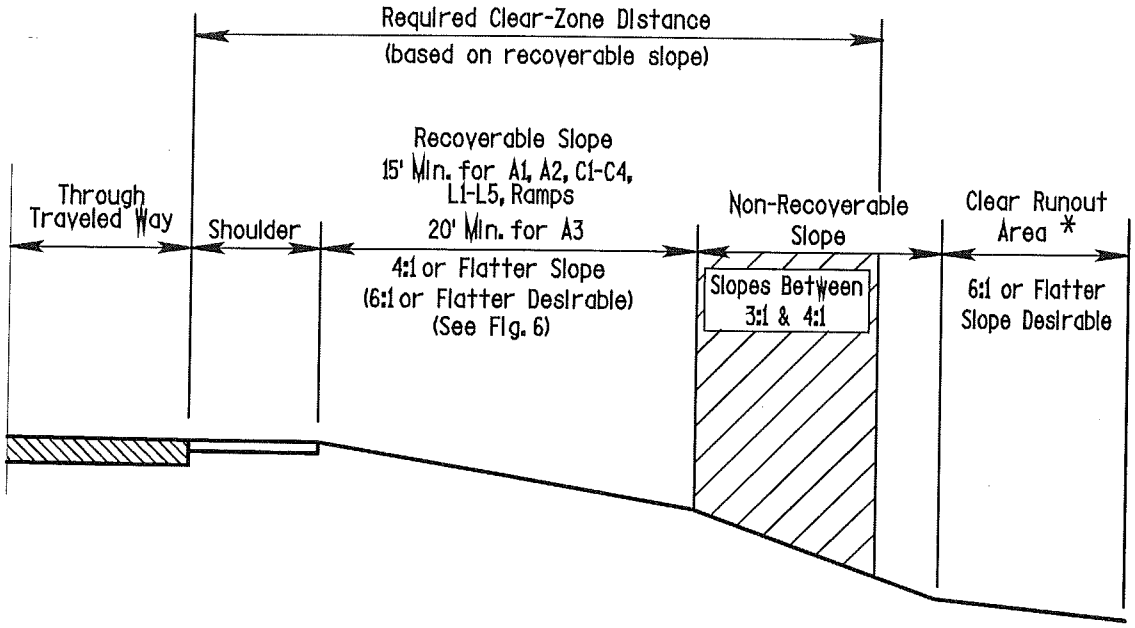
APPENDIX D
SIDE SLOPES



*The clear runout Area is additional clear-zone space that is needed because a portion of the required clear zone (shade area) falls on a non-recoverable slope. **This configuration is not desirable because of the difficulty of maintaining the clear runout area.** Provide the entire required clear zone width adjacent to the finished shoulder, if at all possible. The width of the clear runout area is equal to that portion of the clear zone distance that is located in the non-recoverable slope, or 10 feet, whichever is greater.

The clear runout area may be reduced in width based on existing conditions or site investigations. Such a variable sloped typical section is often used as a compromise between roadside safety and economics. By providing a relatively flat recovery area immediately adjacent to the roadway, most errant motorists can recover before reaching the steeper slope beyond. Round the slope break points liberally so an encroaching vehicle does not become airborne. Make the steeper slope as smooth as practical and rounded at the bottom.

APPENDIX E
ROADSIDE HAZARD SUMMARIES

Roadside Hazard Analysis

Project I.D. 1540-04-03

Entered by: AKR
Checked by: MPS

Speed (MPH) = 45 POSTED
AADT = 9600 (2016)
Alignment = STH 65

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
NB-1	56+92 – 57+49	63'	R	57'	Non-recoverable and non-traversable slopes	Re-grade slopes	Within grading limits of project
NB-2	59+37 – 60+48	26'	R	111'	Non-recoverable and non-traversable slopes in clear zone	Re-grade slopes	Within grading limits of project
NB – 3	76+77 – 82+86	4'	R	609'	Non-traversable and non-recoverable slopes	Install guardrail	Difficult to re-grade due to close proximity to wetland
SB – 1	78+35 – 84+33	24'	L	598	Non-recoverable & non-traversable slopes	Re-grade slopes and fill in wetland	---
WB-1	65+75	31'	L	4'	Multi-culvert run	Provide shielding	---
EB-1	63+79	12.5'	R	2'	Non-protected end-wall within clear zone	Add pipe grate	---