CORRESPONDENCE/MEMORANDUM **State of Wisconsin**

Date: September 27, 2019

To: Beth Cannestra
Director, Bureau of Project Development
Attn: David Stertz, Design Standards and Oversight Section

From: Matt Bronson, PE
North Central Region

Subject: ABBREVIATED DESIGN STUDY REPORT
Project I.D. 6300-00-03
Wautoma - Waupaca
Portage County Line to USH 10 Ramps
STH 22
Waupaca 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.

Region Project Development Chief — Date: 11/25/2019

Concur:

for Bureau of Project Development
Design Standards and Oversight Chief — Date: 11/26/2019

DESIGN STUDY REPORT FOR PERPETUATION PROJECT

Project I.D. 6300-00-03
Wautoma – Waupaca
Portage County Line to USH 10 Ramps
STH 22
Waupaca County

CONSULTANT'S SEAL

Prepared By:

Foth Infrastructure & Environment, LLC
5117 West Terrace Drive, Suite 401
Madison, WI 53718

ABBREVIATED DESIGN STUDY REPORT

1.0 Project Description and Need

1.1 Federal Oversight Project (Yes or No): No

1.2 Project Length and Termini

Project Length: 10.45 miles

Termini/Limits: Portage/Waupaca County line in southwestern Waupaca County to the asphalt/concrete joint approximately 100 feet west of the EB USH 10/STH 22 off ramp near Waupaca (Sta 0+00 to 551+50)

See Attachment A – Project Location Map

This proposed resurfacing project is located on WIS 22 in the southwestern portion of Waupaca County. The project begins at the Portage/Waupaca County line and runs northeasterly for approximately 10.45 miles to approximately 100 feet west of the EB USH 10/STH 22 off ramp outside the city of Waupaca, where the existing asphalt pavement transitions to concrete pavement. This rural project begins in the Town of Dayton and extends northerly through the unincorporated community of Rural, the Town of Farmington and Town of Waupaca. The City of Waupaca is located just beyond the northerly limits of the project. The Wisconsin Veterans Home at King is located near the project. The Waupaca Area High School property is adjacent to the project. WIS 22 is classified as a minor arterial highway that runs from WIS 60 near the Village of Arlington in Columbia County to the City of Oconto in Oconto County. It carries both regional and local traffic. The primary city south of the project is Wautoma. The north end of the project is within the Waupaca city limits. North of the project, WIS 22 goes through Waupaca and continues northerly to Clintonville. WIS 22 is considered a state long haul truck route but is not designated as an oversize/overweight (OSOW) route. WIS 22 is not part of the National Highway System.

1.3 Functional Classification/Access Control

Roadway Name	Functional Class (Principal or Minor Arterial, Collector or Local)	Surrounding Development Type? (Rural, Urban or Transitional)	Corridors 2030 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 22	Minor Arterial (Portage Cty Line to Rural Road) Principal Arterial (Rural Road to USH 10)	Rural	No	No	State	Tier 3	Yes	Yes

Comments:

The portion of STH 22 from CTH K/King Road to USH 10 is part of the Waupaca Bicycle and Pedestrian Plan 2018. There is an existing multi-use path on the north side of STH 22 in this location. The route than goes onto CTH K and heads south. The County is looking at widening the paved shoulders along CTH K in the future to improve the bicycle accommodations.

1.4 Need for Project

The WIS 22 pavement is showing signs of distress with extensive longitudinal and transverse cracking. These cracks allow water to enter the pavement and deteriorate the base course below the asphalt. The current IRI is 0.855 and the PCI is 74.456. The estimated PCI in the proposed construction year of 2020 is 63. To prolong the life of the pavement in accordance with Theme X' it is proposed to mill 2 inches of existing asphaltic pavement and overlay with 2 new inches of asphaltic pavement.

All main side road intersections along the corridor have existing concrete curb and gutter along the radius of the intersection. Small portions of the curb and gutter are damaged at each of the side road intersections and need replacement. Curb and gutter replacement is proposed at West Road, Testin Road, Tarr Road,

Crystal Lake Road, Lauritzen Lane, Radley Road, Suhs Road, Holmnlane Road, Mynard Road, W Stratton Road, Speer Road, Dayton Road, Stratton Lake Road, Rural Road, Cleghorn Road, CTH QQ, CTH K/King Road, and Western Avenue.

The existing multi-use path adjacent to WIS 22 from near the Waupaca Area High School up to USH 10 crosses CTH K, Western Avenue and the USH 10 eastbound exit ramp. These crossings are not American's with Disabilities Act (ADA) compliant. They lack raised detectable warning fields and some have grades that are greater than current design standards. As part of the project, raised detectable warning fields will be added at all existing curb ramps. Portions of the ramps that have steep grades outside of current design standards have been identified and will be reconstructed to meet current ADA standards.

There are three (3) cross culverts along the route that have deteriorated and require replacement, each are rusted corrugated steel. The first is located on the south side of the WIS 22/Cleghorn Road intersection. The second is approximately 3,400 feet southwest of the WIS 22/CTH K/King Road intersection and the third approximately 1,950 feet southwesterly of the WIS 22/CTH K/King Road intersection.

Existing structure B-68-032 over the Crystal River is a 57 foot long prestressed concrete girder structure that was constructed in 1982. There is a steel thrie beam structure approach, steel plate beam guard class A, and energy absorbing terminal off each corner of the structure. The beam guard was inspected for adherence to current design standards and it was determined that all beam guard will be left in place. The existing end treatments meet current standards. No work is planned for the actual structure.

A beam guard inspection was also done on a 518' stretch of steel beam guard class A that runs along the south side of WIS 22 near the south end of Stratton Lake. A 25 foot section of beam guard was damaged. If it is not replaced prior to construction by routine maintenance, it will be replaced during construction. The beam guard was inspected for adherence to current design standards and it was determined that all beam guard will be left in place. The existing end treatments meet current standards. No work will be needed to existing posts.

2.0 Existing Facility Information

2.1 Posted Speed

Roadway or Roadway Segment	Posted Speed	Advisory Speed
STH 22 (Portage County Line to CTH K/King Road)	55 mph	None
STH 22 (CTH K/King Road to USH 10 Ramps)	45 mph	None

2.2 Existing Geometrics

2.2.3 Vertical Clearance* Outside of Design Criteria

Location (Stationing, Overpass Structures, etc.)	Vertical Clearance*
None	None

* Controlling Criteria for Design Speed ≥50 mph

Comments:

There are no vertical clearance issues on the project. There are no overpass structures on the project.

2.4 Cross Section Information – Number of Roadways (See Attachment B – Existing Typical Cross Sections)

- Number of lanes: 2
- Median width: STH 22 Median at CTH QQ (0-24 feet)
  STH 22 Median at CTH K/King Road (0-22 feet)
  STH 22 Median at USH 10 (0-26 feet)
- Lane width*: 12 feet
- Shoulder width* (Total and Paved or Curb & Gutter)

Portage County Line to Rural Road (8 foot shoulder, 3 foot paved)

Rural Road to 1,030 feet west of CTH QQ intersection (10 foot shoulder, 3 foot paved)

1,030 feet west of CTH QQ intersection to 1,980 feet east CTH QQ intersection (10 foot shoulder, 5 foot paved)

1,980 feet east of CTH QQ Intersection to 1,200 feet west of CTH K intersection (10 foot shoulder, 3 foot paved)

1,200 feet west of CTH K intersection to 950 east of CTH K intersection (10 foot shoulder, 3 foot paved)

950 feet east of CTH K intersection to USH 10 Ramps (10 foot shoulder, 3 foot paved)

- Bicycle facility type:

  STH 22 has a 3 foot paved shoulder the entire length of the project.

  There is a multi-use path on the north side of STH 22 from CTH K/King Road to USH 10
- Sidewalk and curb ramps:

  There are existing curb ramps where the multi-use patch crosses King Road, Western Avenue and the USH 10 Ramp

  There are no sidewalks within the project limits
- Cross slope*: 2% normal crown cross slope
- Super-elevation*: Super-elevation ranges from 2% normal crown to a maximum of 6%
- Horizontal clearance: 8 feet at Structure B-68-32 over the Crystal River
- Clear zone: 18 feet
- Vertical clearance*: N/A No overpass structures within the project limits
- Side-slopes and ditch sections: 4:1 normal

  * Controlling Criteria for Design Speed ≥50 mph

2.5 Pavement Structure/Condition

Roadway	Pavement Types and Thicknesses	Physical Description
STH 22 (Portage County Line to West of CTH QQ)	5.5 inches of asphaltic pavement over 8 inches base aggregate	Significant transverse and longitudinal cracking is present.
STH 22 (West and East of CTH QQ)	5 inches of asphaltic pavement over 12 inches of base aggregate	Significant transverse and longitudinal cracking is present.
STH 22 (East of CTH QQ to West of CTH K/King Road)	5.5 inches of asphaltic pavement over 8 inches base aggregate	Significant transverse and longitudinal cracking is present.
STH 22 (West and East of CTH K/King Road)	7 inches of asphaltic pavement over 11 inches of base aggregate	Significant transverse and longitudinal cracking is present.
STH 22 (East of CTH K/King Road to USH 10 Ramp)	5.5 inches of asphaltic pavement over 11 inches base aggregate	Significant transverse and longitudinal cracking is present.

See Attachment B – Existing Typical Cross Sections/Proposed Typical Cross Sections

Comments:

STH 22 from the Portage County line to CTH QQ was initially constructed in 1982.

STH 22 from CTH QQ to USH 10 was initially constructed in 1987.

STH 22/CTH K/King Road Intersection was reconfigured and reconstructed in 2000.

STH 22 from Portage County line to USH 10 was milled and overlaid in 2008.

STH 22/CTH QQ Intersection was reconfigured and reconstructed in 2012

2.7 Structures

Existing Structure I.D. #	Feature Crossed	Structure Type	Sufficiency Rating	Clear Roadway Width*	Railing Type	Structurally Deficient or Functionally Obsolete*	Inventory Load Rating*

C-68-016	Radley Creek	6'x10' Single Cell Concrete Box	N/A	N/A	N/A	No	N/A
B-68-034	Radley Creek	6'x10' Two Cell Concrete Box	94.1	N/A	N/A	No	HS-20
B-68-032	Crystal River	Single Span 36" Prestressed Girder	84.8	40'	Type "W" Thrie Beam	No	HS-21

* Controlling Criteria for Design Speed ≥50 mph

Comments:

No work is being done to any of these 3 structures as part of the project.

2.8 Utilities

Utility Name	Type of Utility	General Location	Underground /Overhead/ Both
Adams-Columbia Electric Cooperative	Electricity	Near right of way with various crossings from Portage County line to just north of Stratton Lake Road	Both
AT&T Wisconsin	Communication Line	Near right of way on both sides of STH 22 for length of project with various crossings	Underground
Century Link	Communication Line	Near right of way on both sides of STH 22 with one crossing from Portage County line to just east of West Road	Underground
Charter Communications	Communication Line	Near right of way on the south side of STH 22 from Suhs Road to USH10	Underground
Waupaca Chain of Lakes Sanitary District #1	Sewer	North shoulder of STH 22 from approximately feet west of CTH K to USH 10	Underground
WE Energies	Gas/Petroleum	Near north right of way of STH 22 between W Stratton Road and Speer Road. Along westerly right of way of STH 22 from Stratton Lake Road to Cleghorn Road. Crossings at CTH QQ, CTH K and Western Avenue	Underground
Wisconsin Public Service Corporation	Electricity	Crossings at Rural Road, Cleghorn Road, CTH QQ, CTH K and Western Avenue and approximately 1 mile east of CTH QQ	Underground

Comments:

No utility conflicts are anticipated at areas of curb and gutter replacement. Excavation at these locations is limited to 8 inches below the existing curb and gutter. Underground utilities are generally much deeper.

No utility conflicts are anticipated at areas of curb ramp removal and replacement. Proposed curb ramps will be generally replaced at the existing geometry with minor grading involved. Excavation depths in these areas anticipated to be less than 10 inches where existing curb ramps are present and less than 6 inches where grading outside the curb ramps will take place.

Station 342+49, Culvert Replacement.

- AT&T has an underground fiber optic line that is located on the west side of STH 22 and within the limits of the pipe replacement. It is not known if the line is over or under the existing pipe. This line is within construction limits of the pipe replacement and may be in conflict.
- AT&T has an underground copper telephone line that parallels Cleghorn Road north of the pipe replacement. It appears to be outside of the limits of construction. No conflict is anticipated.
- WE Energies has an underground gas line on the west side of STH 22 at this location. It appears to be outside of the limits of construction. No conflict is anticipated.

- Charter Communications has an underground fiber optic line on the east side of STH 22 at his location. It appears to be outside of the limits of construction. No conflict is anticipated.
- Charter Communications has an underground coax line that parallels Cleghorn Road north of the pipe replacement. It appears to be outside of the limits of construction. No conflict is anticipated.
- Wisconsin Public Service Corporation has an underground electric line that parallels Cleghorn Road north of the pipe replacement. It appears to be outside of the limits of construction. No conflict is anticipated.

Station 486+75, Culvert Replacement

- Waupaca Sanitary District #1 has an underground 12 inch force that is located over the top of the existing culvert pipe within the limits of construction on the north side of STH 22. This force main is in conflict.
- Charter communications has an underground fiber optic line on the south side of STH 22 at this location. It appears to be outside of the limits of construction. No conflict is anticipated.

Station 501+10

- Waupaca Sanitary District #1 has an underground 12 inch force that is located off the north end of the existing culvert pipe on the north side of STH 22. This force main is outside of the limits of construction. No conflict is anticipated.
- Charter communications has an underground fiber optic line on the south side of STH 22 at this location. It appears to be outside of the limits of construction. No conflict is anticipated.

2.9 Railroad Crossings

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

Comments:

There are no railroads within the project limits.

2.11 Unique Project Features

None

3.0 Traffic Information

3.1 Traffic Volumes/Conditions

3.1.1 Existing Average Annual Daily Traffic (AADT) Volume (See Attachment C – Traffic Forecast Report)

Roadway Segment	2015 AADT (1)	Construction Year AADT (2020)	Construction Year +10 AADT (2030)
STH 22 – Portage County Line to Rural Road	2,900	3,100	3,600
STH 22 – Rural Rad to CTH QQ	4,500	4,800	5,400
STH 22 – CTH QQ to USH 10	4,500	4,800	5.400

(1) Traffic forecast report used counts from 2015.

STH 22 has a truck percentage of 21.1%

3.1.2 Highway Capacity Analysis

Location (Roadway Segment or Intersection)	Existing Level of Service	Construction Year Level of Service	Construction Year + 10 Level of Service
STH 22 – Portage County Line to Rural Road	LOS A	LOS A	LOS A
STH 22 – Rural Rad to CTH QQ	LOS A	LOS A	LOS A
STH 22 – CTH QQ to USH 10	LOS A	LOS A	LOS A

Comments:

3.2 Crash Analysis

3.2.1 Project Crash Information

			Number and Severity of Crashes			
Roadway	Crash Rate (1) (Year)	Statewide Crash Rate (1) (Year)	Fatal	Injury	Property Damage	Total No. Crashes
STH 22	81.18 (2013)	73.87 (2013)	0	3	11	14
STH 22	57.98 (2014)	73.87 (2014)	0	4	6	10
STH 22	52.19 (2015)	74.26 (2015)	1	4	4	9
STH 22	57.98 (2016)	75.77 (2016)	0	7	3	10
STH 22	52.19 (2017)	80.94 (2017)	1	3	5	9
STH 22	63.78 (2018)	(2018)	0	2	9	11
STH 22	69.58 (2019)	(2019)	0	0	12	12

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

Comments: Crash data in table excludes deer crashes. 2019 crash rate is calculated through 9/21/19. A Safety Certification Document (SCD) was prepared for this project and is attached as Attachment D – Safety Certification Document.

4.0 Proposed Design Criteria

4.3 Design Justification

4.3.1 Controlling Criteria Design Justification

All controlling design criteria is met.

4.3.2 Non-Controlling Criteria Design Justification

All controlling design criteria is met.

5.0 Proposed Design Improvement

5.1 Improvement Type(s) (See Attachment E – Preliminary Plan Sheets)

RSRF 10 – RESURFACING

303 – STATE HIGHWAY REHABILITATION

5.5 Cross Section/Pavement Structure Information

- Number of roadways: 1
- Number of lanes: 2
- Median width/type: STH 22 Median at CTH QQ (0-24 feet)
  STH 22 Median at CTH K/King Road (0-22 feet)
  STH 22 Median at USH 10 (0-26 feet)
- Lane width/type* (Driving, Parking, Bike Lane, etc.): 12 foot driving lanes
- Shoulder width* (Total & Paved or Curb & Gutter):

  Portage County Line to Rural Road (8 foot shoulder, 3 foot paved)

  Rural Road to 1,030 feet west of CTH QQ intersection (10 foot shoulder, 3 foot paved)

  1,030 feet west of CTH QQ intersection to 1,980 feet east CTH QQ intersection (10 foot shoulder, 5 foot paved)

  1,980 feet east of CTH QQ Intersection to 1,200 feet west of CTH K intersection (10 foot shoulder, 3 foot paved)

  1,200 feet west of CTH K intersection to 950 east of CTH K intersection (10 foot shoulder, 3 foot paved)

  950 feet east of CTH K intersection to USH 10 Ramps (10 foot shoulder, 3 foot paved)
- Bike facilities:

  STH 22 has a 3 foot paved shoulder the entire length of the project.

  There is a multi-use path on the north side of STH 22 from CTH K/King Road to USH 10
- Pedestrian facilities / sidewalk:

  There are existing curb ramps where the multi-use patch crosses King Road, Western Avenue and the USH 10 Ramp

  There are no sidewalks within the project limits

- Cross slope*: 2% normal crown cross slope
- Super-elevation*: Super-elevation ranges from 2% normal crown to a maximum of 6%
- Horizontal clearance: 8 feet at Structure B-68-32 over the Crystal River
- Pavement structure:

  Perform 2 inch mill and 2 inch overlay of HMA Pavement 4 MT 58-28 S over existing asphaltic pavement and base aggregate.

  Existing Pavement Structure:

  STH 22 (Portage County Line to West of CTH QQ) – 5.5 inches of asphaltic pavement over 8 inches of base aggregate.

  STH 22 (West and East of CTH QQ) – 5 inches of asphaltic pavement over 12 inches of base aggregate

  STH 22 (East of CTH QQ to West of CTH K/King Road) – 5.5 inches of asphaltic pavement over 8 inches of base aggregate.

  STH 22 (West and East of CTH K/King Road) – 7 inches of asphaltic pavement over 11 inches of base aggregate.

  STH 22 (East of CTH K/King Road to USH 10 Ramp) – 5.5 inches of asphaltic pavement over 11 inches of base aggregate.
- Clear zone: 18 feet
- Vertical clearance*: N/A No overpass structures within the project limits
- Side-slopes and ditch sections: 4:1 normal

* Controlling Criteria for Design Speed ≥ 50 mph

5.6 Street Lighting Improvements

Location	Type	Break-away Requirements
None		

5.7 Structures Improvement Information

5.7.1 Bridge Structures

Structure I.D. #	Location	Structure Type	Length	Clear Width*	No. of Spans	Vertical Clearance*	Horizontal Clearance*
B-68-032	Sta. 333+55 – 334+10/ Over Crystal River	Single Span 36" Prestressed Girder	55'	40'	1	N/A	8'
	Proposed Improvement:			None			

* Controlling Criteria for Design Speed ≥ 50 mph

Comments: No work is proposed on structure B-68-032.

5.7.2 Box Culverts and Multiple Pipe Structures

Structure I.D. #	Location	Type	Length	No. Pipes
C-68-016	Sta 11+99	6'x10' Single Cell Concrete Box	165'	1 Cell
	Proposed Improvement:	None		
B-68-034	Sta 158+13	6'x10' Two Cell Concrete Box	84'	2 Cell
	Proposed Improvement:	None		

Comments: No work is proposed on structures C-68-016 or B-68-034.

5.7.3 Retaining Walls and Noise Barrier Structures

Structure I.D. #	Location	Type	Length	Height
	Proposed Improvement:			

Comments: There are no retaining walls or noise barrier structures within the project limits.

5.7.4 Sign Bridge Structures

Structure I.D. #	Location	Type	Length	Clear Roadway Width	Vertical Clearance*	Horizontal Clearance*	Clear Zone Under
	Proposed Improvement:						

* Controlling Criteria for Design Speed ≥ 50 mph

Comments: There are no sign bridge structures within the project limits.

5.7.5 Tunnel Structures

Structure I.D. #	Location	Type (Veh., Ped., Bicycle, etc.)	Length	Lighting Type	Vertical Clearance*	Horizontal Clearance*
	Safety Features			**Coordination with Local Emergency Responders**		
	Proposed Improvement:					

* Controlling Criteria for Design Speed ≥ 50 mph

Comments: There are no tunnels within the project limits.

5.8 Permanent Traffic Control

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

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

Comments: Existing signs are being left in place for this project. One new sign is being proposed, a night arrow near the Dayton Road intersection.

5.9 Transportation Management Plan

See Attachment F - Transportation Management Plan

5.10 Safety Enhancements/Mitigation Measures

New ADA compliant curb ramps that contain raised detectable warning fields are being constructed at the STH 22/CTH K/King Road, STH 22/Western Avenue and STH 22/USH 10 Ramp intersections to replace non-compliant ADA ramps. A new night arrow sign is being added near the Dayton Road intersection.

5.12 Utilities

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

Describe any special design features to accommodate utilities:

None

Major Utility Agreements:

None

Comments: The only potential utility conflicts are at 2 the culvert replacement locations. AT&T has a fiber optic line within the construction limits of the culvert at station 342+50. The Waupaca Chain of Lakes Sanitary District #1 has a 12-inch force main that is over the culvert at station 486+75 and near the apron endwall of the culvert at station 501+10.

5.13 Railroads

Describe improvements to Railroad Facilities:

N/A

Railroad Agreements:

N/A

Comments: There are no railroads within the limits of the project.

5.14 Financing and Scheduling

Construction I.D.	Cost Estimate	Type of Funding			Proposed Timeframe for Construction	Ties to Other Work or Projects	Incentive / Disincentive Clauses (Yes or No)
		% Fed.	% State	% Local			
6300-00-73	2,700,000	80	20	0	Spring/Summer 2020	None	No

Describe Incentive/Disincentive Clauses:

None

Non-participating Work:

None

Deferred Construction Work (Preventative Maintenance Projects):

None

5.15 Unique or Non-Standard Features

5.15.1 Hazardous Waste

None

5.15.2 Environmental Commitments

See Attachment G – Environmental Commitment Sheet

5.15.3 Community Sensitive Design/Public Involvement

6.0 Synopsis

Reports, Documents and Coordination	Completion/ Approval Dates (xx/xx/xxxx)	Status of Coordination or Other Information as Needed
Concept Definition Report (CDR)	12/22/2017	
Safety Certification Document (SCD)	3/20/2019	
Bridge or Structure Certification Documentation (BOSCD) (if needed)	*	*
Signed Pavement Design Report (PDR)	10/25/2018	
Public Involvement Plan (PIP)	5/20/19	
Structure Survey Report (SSR) (if needed)	N/A	
Public Information Meeting(s) (PIM(s))	6/11/2019	Project letters were sent to all property owners along the corridor.
Signed State Municipal Agreement(s) (SMA(s)) (if needed)	N/A	
Final Scope Certification Document (FSC)	**	**
SHPO Coordination Acceptance (Section 106, etc.) (SHPO)	3/28/2019	
DNR Coordination Acceptance (401 Cert., etc.) (DNR)	Pending	Initial review, 10/29/2018
Preliminary Plan Review Complete (PPRC)	Pending	
Preliminary Structure Plan Review Complete (PSPRC) (if needed)	N/A	
Signed Environmental Document (ED) (Type: PCE)	11/19/2019	
Transportation Management Plan (TMP(s)) (Type: 2)	11/25/2019	
Freight/OSOW Accommodations Coordination (FOAC)	None	
Roadside Hazard Analysis Sheet (RHA) (if needed)	N/A	
Drainage Design Report (DDR) (if needed)	N/A	
Status of Statutory Actions (if needed)	N/A	

Comments:

* Project achieved LC11 prior to the development of the BOSCD or BOSCD process. BOSCD will be supplanted with PMP phase report (located in project records)

** Project achieved LC 11 prior to development of FSC or FSC process. To meet FSC intent of establishing final agreement on scope, schedule, and budget; FSC document will be supplanted with the project: scoping notes, LC10 and LC11 major bid item estimates, justification document *(if available)*, PMP phase report, and LC11 revision request (located in project records)

7.0 Attachments

A - Project Location Map

B - Existing Typical Cross Sections

C - Traffic Forecast Report

D - Safety Certification Document

E - Preliminary Plan Sheets
F- Traffic Management Plan
G - Environmental Commitments Basic Sheet
H – Beam Guard Analysis Memo

Attachment A
Project Location Map

WAUPACA 68–NC

SHAWANO CO.

R–11–E

Town of Germania

R–12–E

Town of Fairbanks

89° 00'

R–13–E

Town of Grant

R–14–E

Town of Pella

88° 45'

R–15–E

Town of Belle Plaine

PORTAGE CO.

T–25–N

Town of Alban

Town of Navarino

SHAWANO CO.

T–24–N

Town of New Hope

R–15–E

OUTAGAMIE CO.

Town of Deer Creek

T–23–N

Town of Amherst

Town of Maple Creek

T–22–N

Town of Lanark

Town of Hortonia

T–21–N

Town of Belmont

Town of Dale

44° 30'

44° 15'

HARRISON

WYOMING

DUPONT

LARRABEE

MATTESON

IOLA

HELVETIA

UNION

BEAR CREEK

SCANDINAVIA

ST. LAWRENCE

LITTLE WOLF

LEBANON

FARMINGTON

WAUPACA

ROYALTON

MUKWA

DAYTON

LIND

WEYAUWEGA

FREMONT

CALEDONIA

Embarrass

Marion

Big Falls

Clintonville

Northland

Iola

Symco

Manawa

Scandinavia

Ogdensburg

Royalton

Northport

New London

Sheridan

Waupaca

Weyauwega

Rural

King

Iola

Readfield

Fremont

Town of Springwater

Town of Saxeville

Town of Bloomfield

Town of Wolf River

WAUSHARA CO.

WINNEBAGO CO.

END PROJECT
ID 6300-00-03

BEGIN PROJECT
ID 6300-00-03

ID 6300-00-03
WAUTOMA - WAUPACA
PORTAGE COUNTY LINE
TO USH 10 RAMPS
STH 22
WAUPACA COUNTY

REGIONS

NW NE NC SW SE

LEGEND

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

MILES OF HIGHWAY
as of Dec. 31, 2016

STATE	197
COUNTY	334
LOCAL ROADS	1132
OTHER ROADS	0
TOTAL FOR COUNTY	1663

Land Area (2010 Census) ..... 748 sq mi
Population (2010 Census) 52410
County Seat ..... Waupaca

WAUPACA CO.

DEPARTMENT OF TRANSPORTATION
STATE OFFICE BUILDING
Madison, Wisconsin

SCALE 0 1 2 MILES

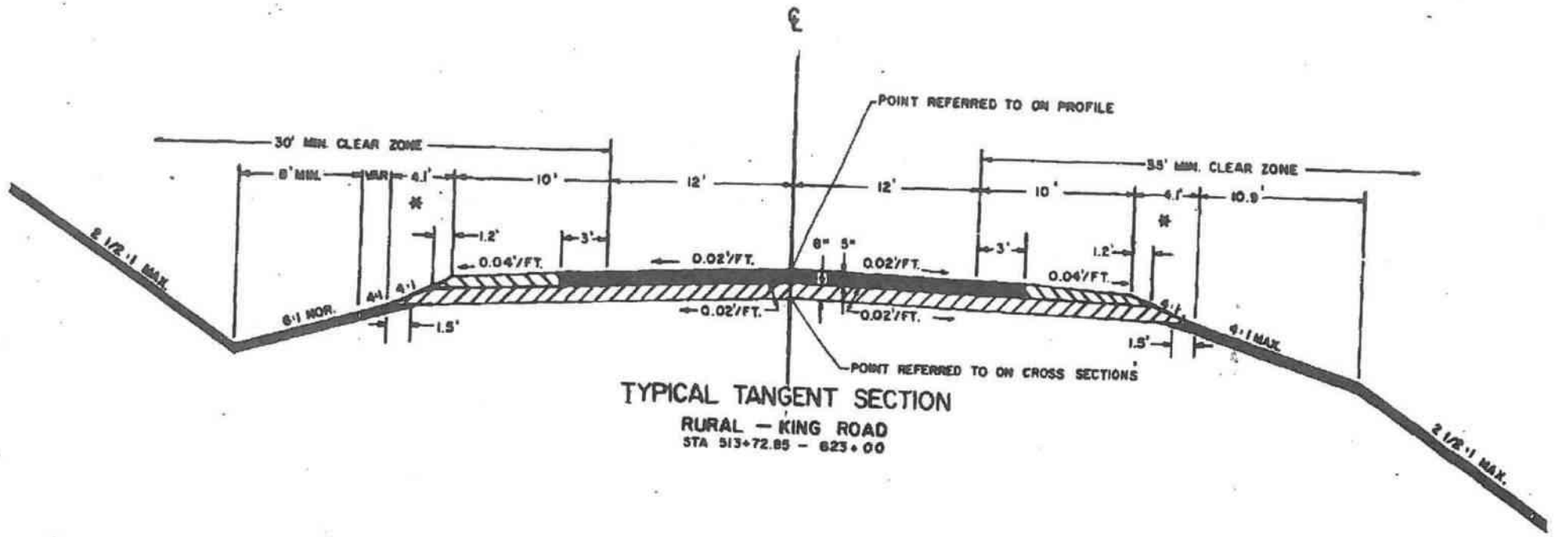
Corrected for
JAN. 2018

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

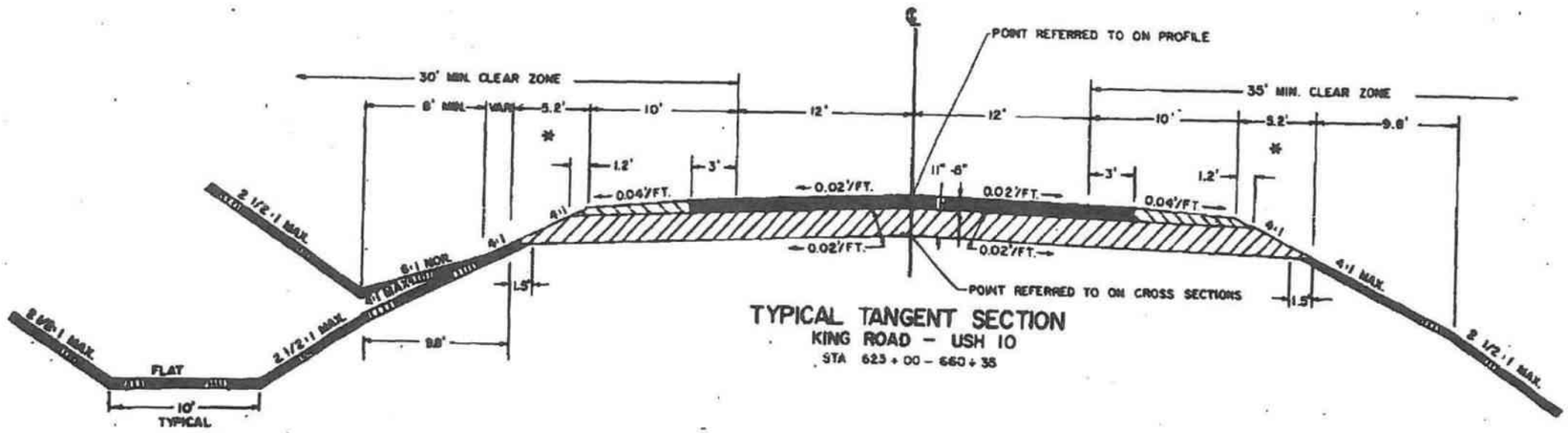
Attachment B
Existing Typical Cross Sections

STATE PROJECT NUMBER	SHEET NO.
6300-02-71	2.1

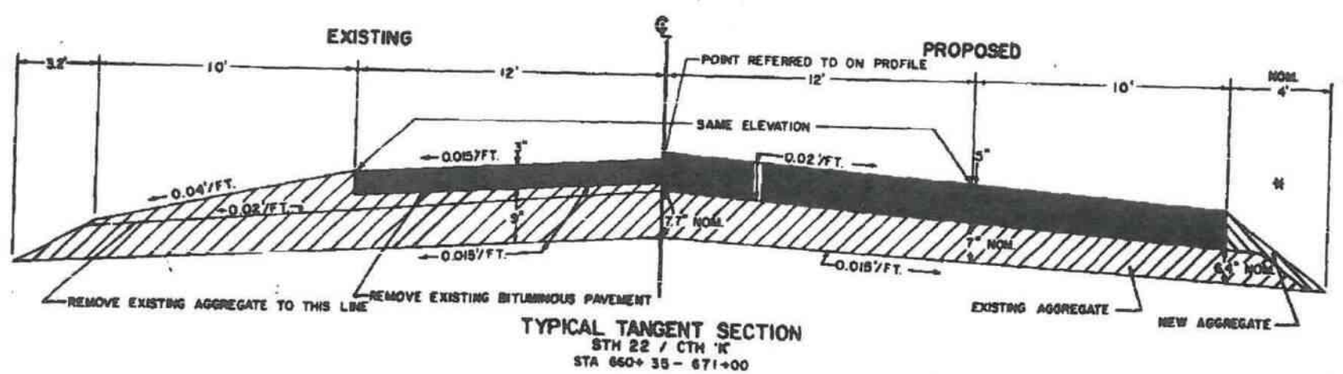
TYPICAL SECTIONS



TYPICAL TANGENT SECTION
RURAL – KING ROAD
STA 513+72.85 – 623+00



TYPICAL TANGENT SECTION
KING ROAD – USH 10
STA 623+00 – 660+35



TYPICAL TANGENT SECTION
STH 22 / CTH 'K'
STA 660+35 – 671+00

LEGEND

- CRUSHED AGGREGATE BASE COURSE
- BITUMINOUS CONCRETE PAVEMENT
- 4" SALVAGED TOPSOIL, FERTILIZE, SEED & MULCH
- CRUSHED AGGREGATE BASE COURSE (SHLD.)
- * SEED & FERTILIZE

1987
STH 22 - CTHQQ & USH 10

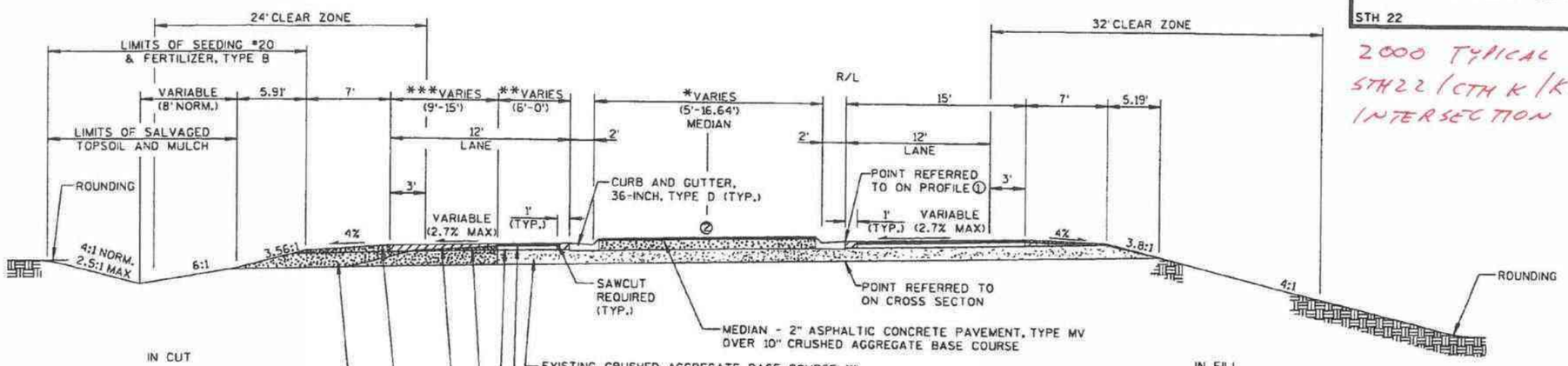
* 1982 Typical Sections from As-Builts were not available

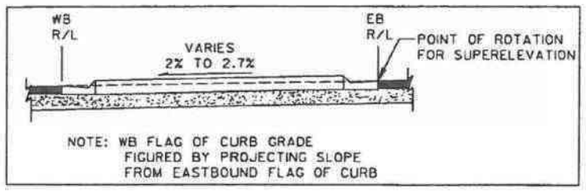
STATE PROJECT NUMBER	SHEET NO.
6300-00-72	23

TYPICAL SECTION

STH 22 — WAUPACA COUNTY

2000 TYPICAL SECTIONS
STH 22 / CTH K / KING ROAD
INTERSECTION





TYPICAL SUPERELEVATED SECTION

STH 22

STA. 621+06.73 - STA. 623+77.84

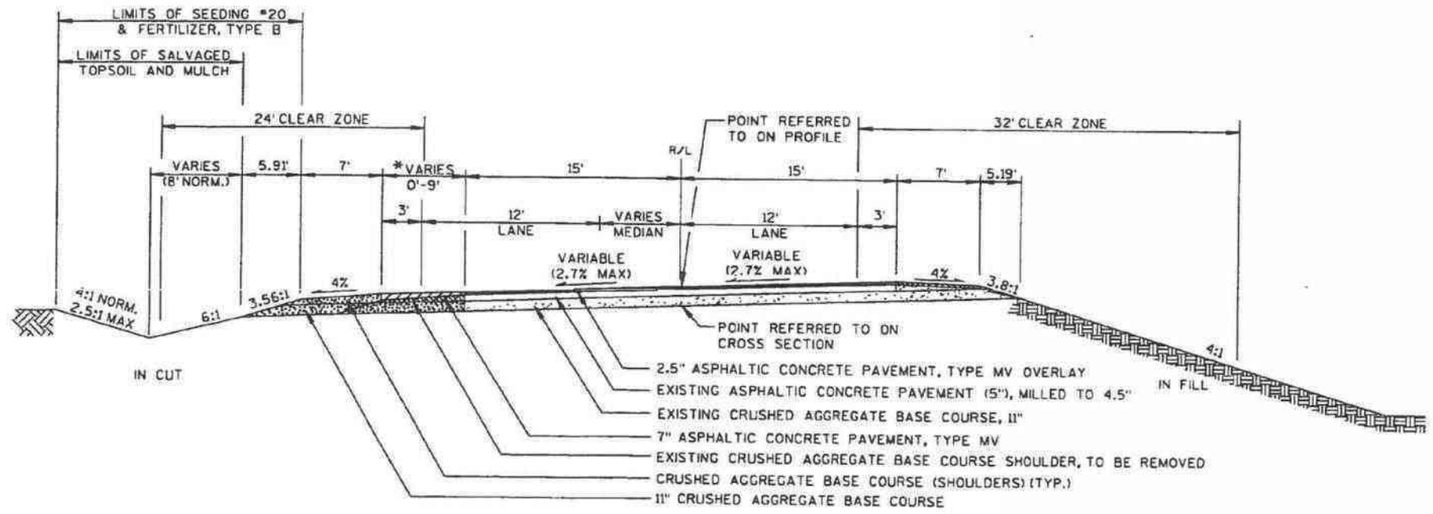
*5' - STA. 621+06.73
16.64 - STA. 623+77.84

**6' - STA. 621+06.73
0' - STA. 622+41.03

***9' - STA. 621+06.73
15' - STA. 622+41.03

① POINT OF ROTATION FOR SUPERELEVATION

② SLOPE OF MEDIAN EQUALS SLOPE OF WESTBOUND LANE



TYPICAL SECTION

STH 22

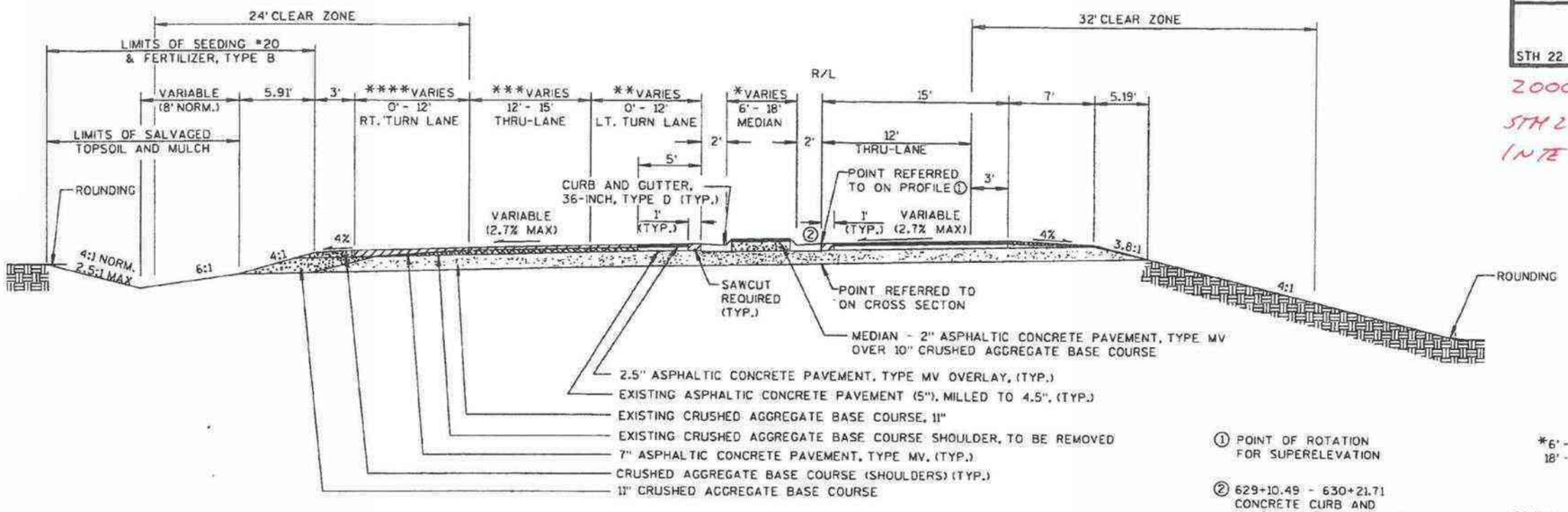
STA. 616+50 - STA. 621+06.73

*0' - STA. 616+50.00
9' - STA. 621+06.73

LEVELS ON • 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

STATE PROJECT NUMBER	SHEET NO.
6300-00-72	2.4
TYPICAL SECTION	
STH 22	WAUPACA COUNTY

2000 TYPICAL SECTION
STH 22 / CTH K / KING ROAD
INTERSECTION



TYPICAL SUPERELEVATED SECTION

STH 22

STA. 629+59.48 - STA. 633+01.97

① POINT OF ROTATION FOR SUPERELEVATION

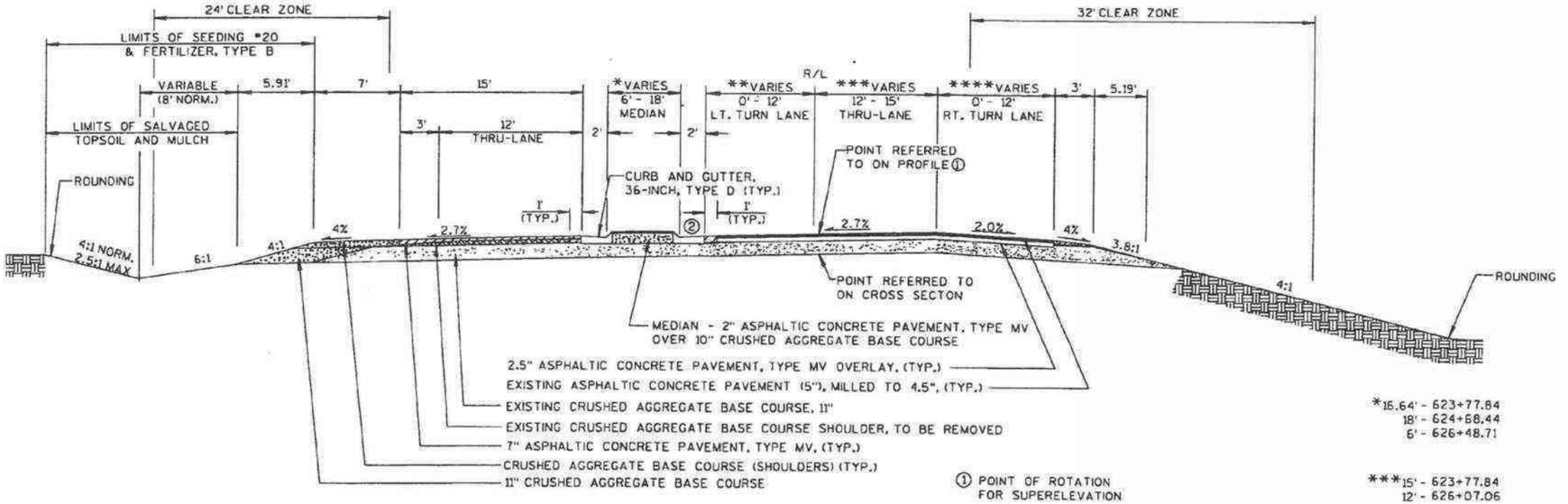
② 629+10.49 - 630+21.71 CONCRETE CURB AND GUTTER, 30-INCH, TYPE D

*6' - 630+71.71
18' - 632+51.48

**12' - 630+71.71
0' - 632+51.48

***12' - 631+52.00
15' - 633+01.97

****12' - 631+52.00
0' - 633+01.97



TYPICAL SUPERELEVATED SECTION

STH 22

STA. 623+77.84 - STA. 628+59.48

① POINT OF ROTATION FOR SUPERELEVATION

② 626+48.71 - 628+15.18 CONCRETE CURB AND GUTTER, 30-INCH, TYPE D

*16.64' - 623+77.84
18' - 624+68.44
6' - 626+48.71

**0' - 624+68.71
12' - 626+48.71

***15' - 623+77.84
12' - 626+07.06

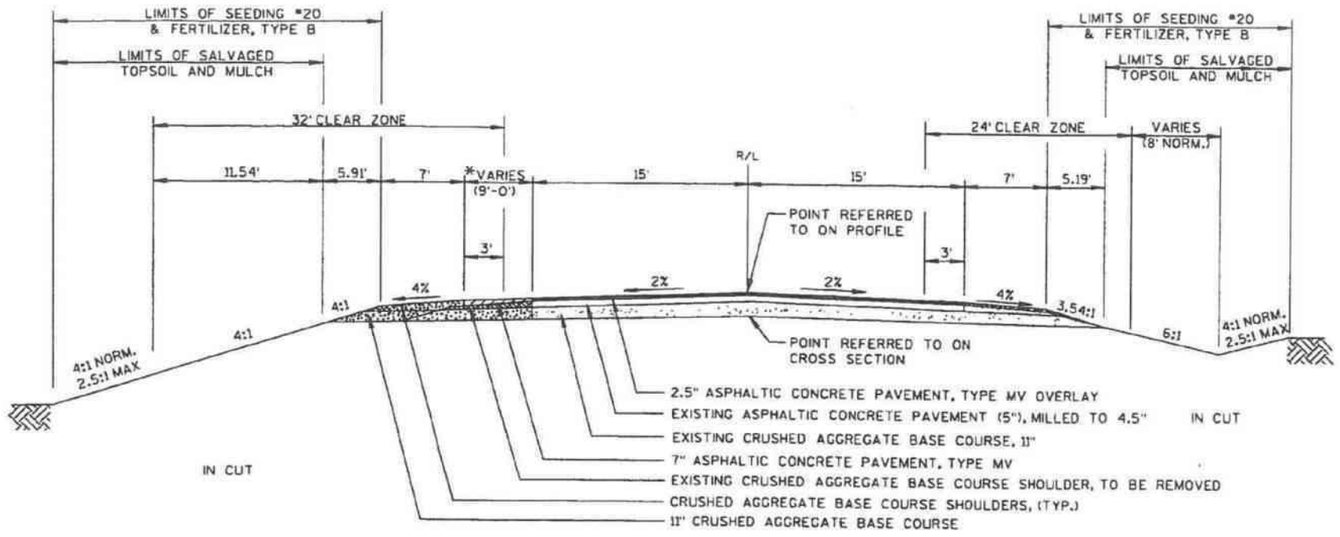
****0' - 623+77.84
12' - 626+07.06

STATE PROJECT NUMBER	SHEET NO.
6300-00-72	25

TYPICAL SECTION

STH 22 WAUPACA COUNTY

2000 TYPICAL SECTION
STH 22 / CTH K / KINGROAD
INTERSECTION

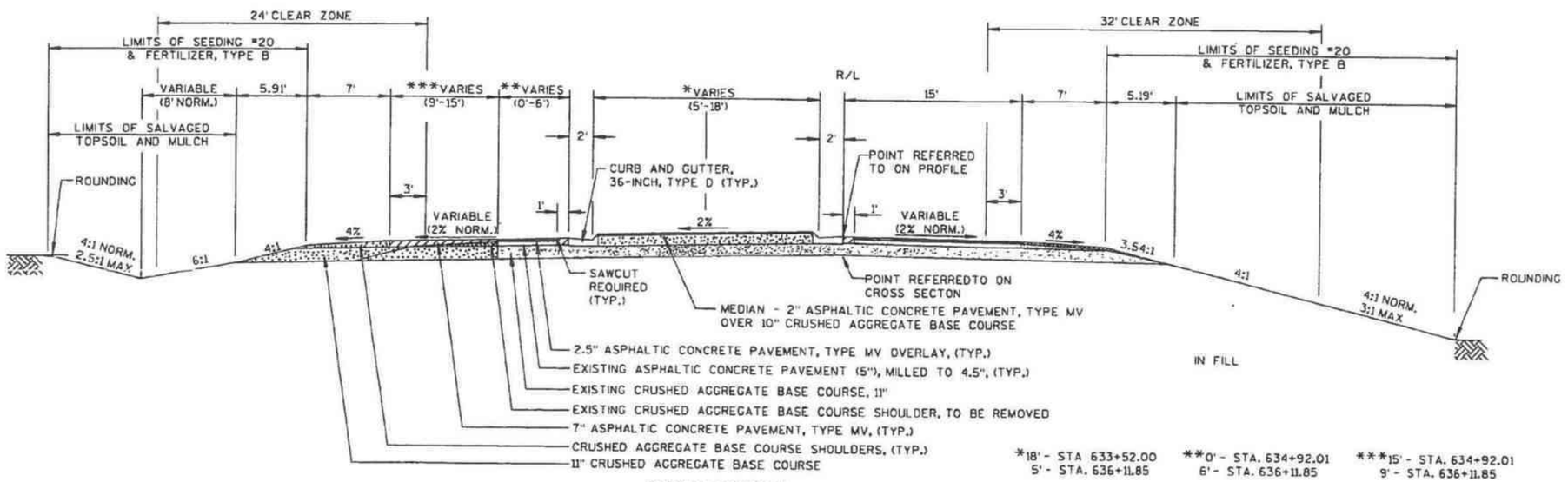


TYPICAL SECTION

STH 22

STA. 636+11.85 - STA. 638+00

*9' - STA. 636+11.85
0' - STA. 637+92.00



*18' - STA 633+52.00
5' - STA. 636+11.85

**0' - STA. 634+92.01
6' - STA. 636+11.85

***15' - STA. 634+92.01
9' - STA. 636+11.85

TYPICALSECTION

STH 22

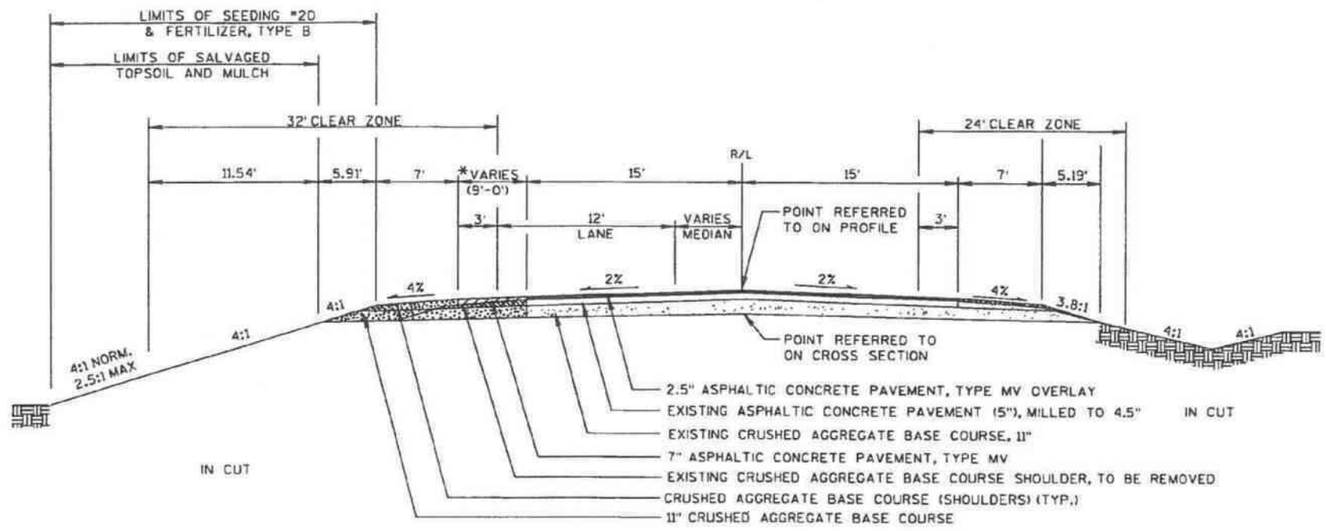
STA. 633+01.97 - STA. 636+11.85

LEVELS ON - 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

FILE NAME: s:\05a\051--100\089\509\MICROS\plans\typicals.dgn ORIGINATOR : PLOT DATE : 25 FEB 2000 PLOT SCALE : TIME: 09:20:59

STATE PROJECT NUMBER	SHEET NO.
6300-00-72	2.6
TYPICAL SECTION	
STH 22	WAUPACA COUNTY

2000 TYPICAL SECTIONS
STH 22 / CTH K / RING ROAD
INTERSECTION

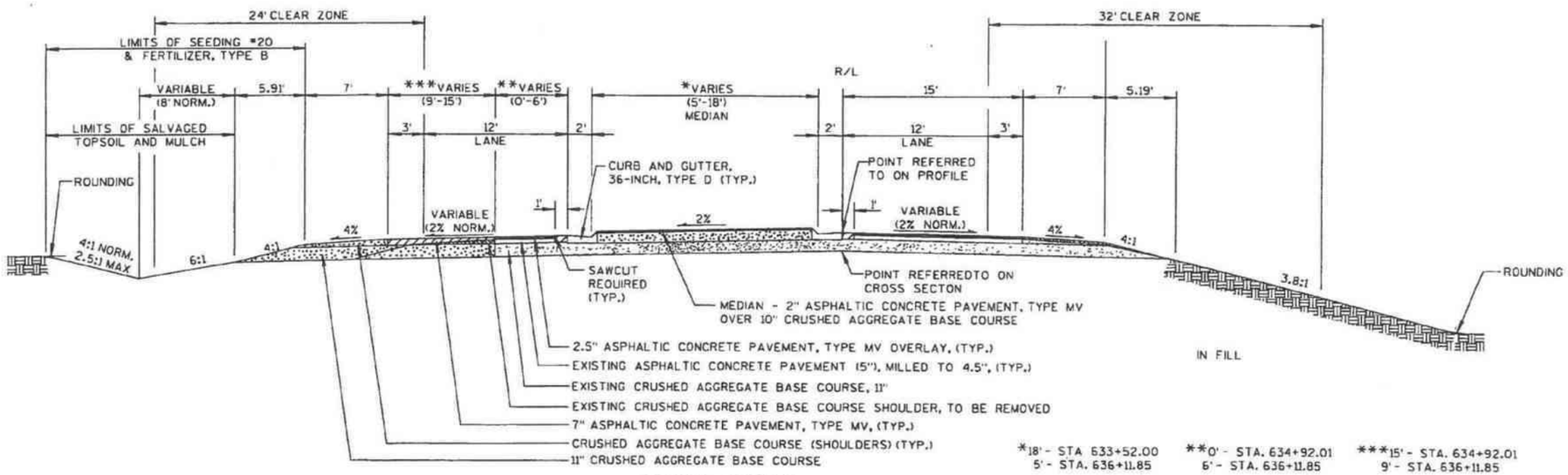


*9' - STA. 636+11.85
0' - STA. 637+92.00

TYPICAL SECTION

STH 22

STA. 636+11.85 - STA. 638+00



*18' - STA 633+52.00
5' - STA. 636+11.85

**0' - STA. 634+92.01
6' - STA. 636+11.85

***15' - STA. 634+92.01
9' - STA. 636+11.85

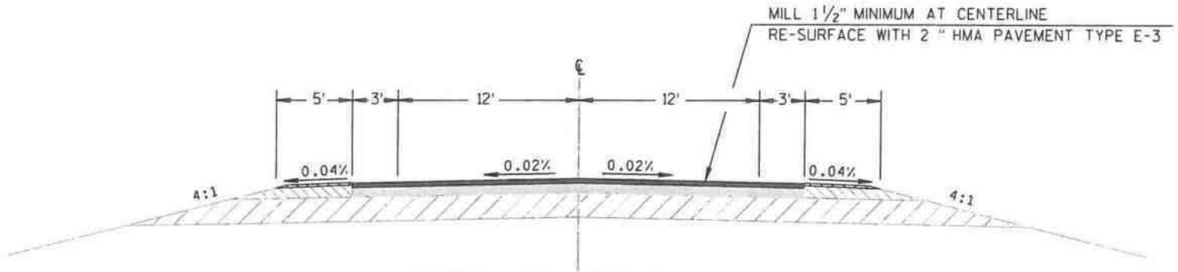
TYPICAL SECTION

STH 22

STA. 633+01.97 - STA. 636+11.85

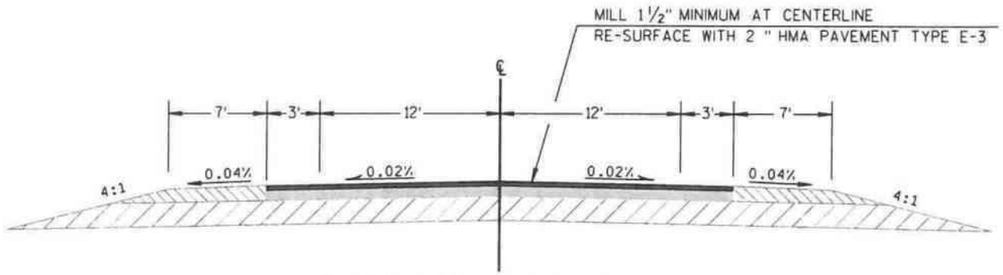
LEVELS ON - 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63

2008 TYPICAL SECTIONS
PORTAGE COUNTY LINE TO
USH 10 OVERLAY



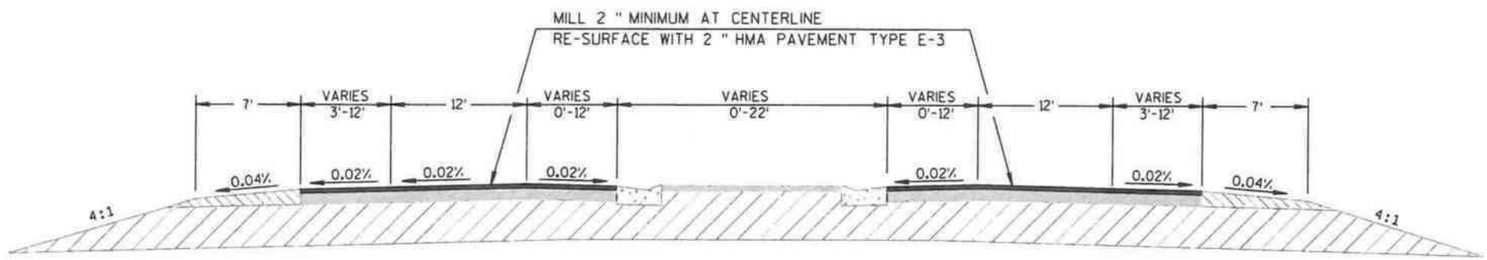
TYPICAL TANGENT SECTION

STA.13+75 - STA.406+00



TYPICAL TANGENT SECTION

STA.406+00 - STA.503+00
STA.530+00 - STA.540+00



TYPICAL TANGENT SECTION

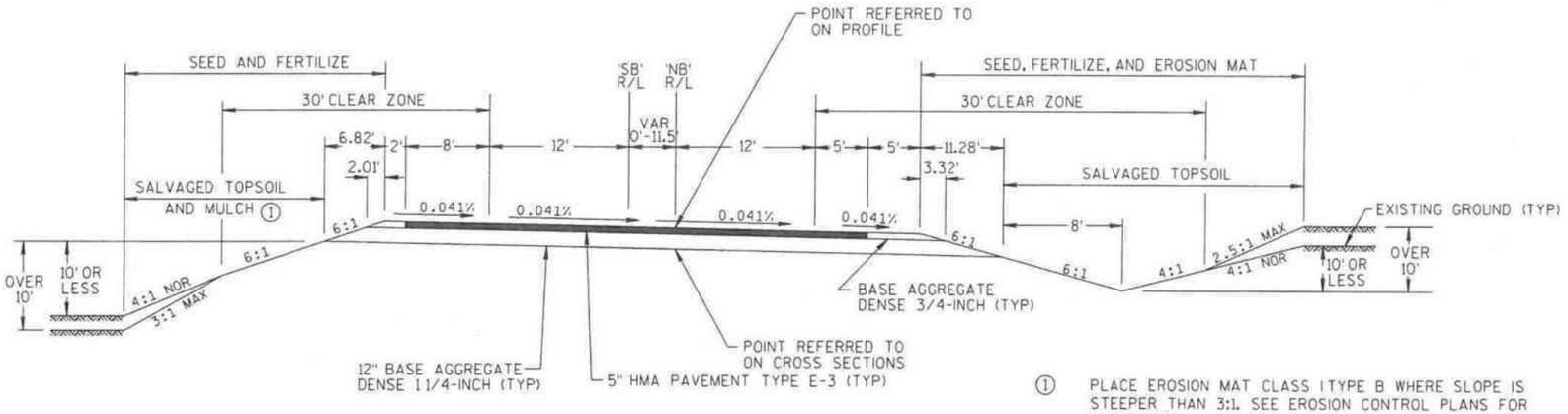
STA.503+00 - STA.530+00
STA.540+00 - STA.551+00

LEGEND

- 2 " HMA PAV'T TYPE E-3
- BASE AGGREGATE DENSE
- (EXISITNG SHOULDER) CRUSHED AGGREGATE BASE COURSE
- EXISTING CRUSHED AGGREGATE BASE COURSE
- EXISTING ASPHALTIC PAVEMENT
- EXISTING CONCRETE PAVEMENT

PROJECT NO: 6300-00-60	HWY: STH 22	COUNTY: WAUPACA	TYPICAL SECTION	SHEET	E

FILE NAME : p:\projects\D4_63000030ED\020301_ts.dgn PLOT DATE : 13-MAR-2008 14:04 PLOT BY : dotggg PLOT NAME : PLOT SCALE : 10:1



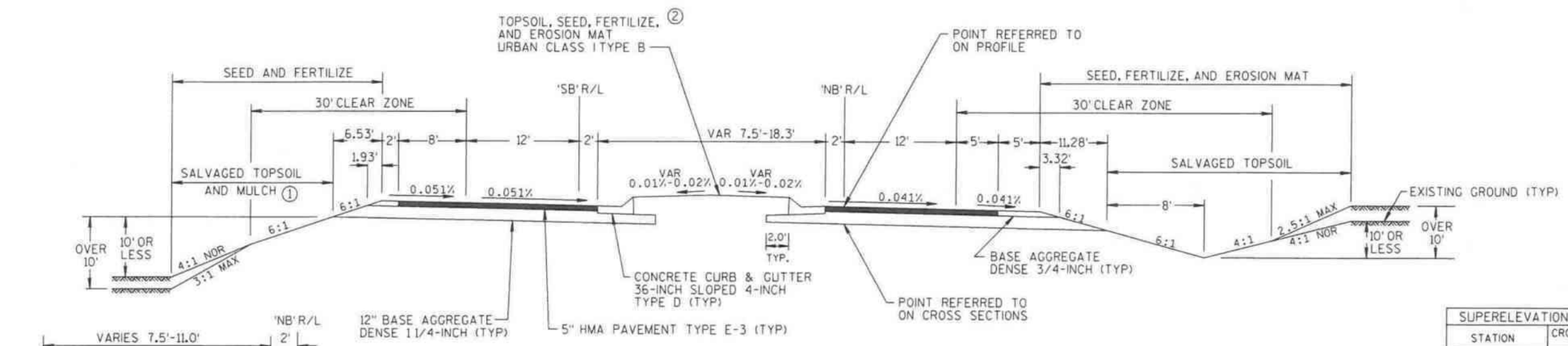
(1) PLACE EROSION MAT CLASS I TYPE B WHERE SLOPE IS STEEPER THAN 3:1. SEE EROSION CONTROL PLANS FOR LOCATIONS.

NOTE - SALVAGED ASPHALT WAS USED IN LIEU OF BASE AGGREGATE DENSE, 1 1/4-IN IN PART OF THE NORTHBOUND LANES

2012 TYPICAL SECTIONS
STH 22 / CTH QQ INTERSECTION

TYPICAL FINISHED SECTION

STA 502+43.43'NB' - STA 505+26.90'NB'



(1) PLACE EROSION MAT CLASS I TYPE B WHERE SLOPE IS STEEPER THAN 3:1. SEE EROSION CONTROL PLANS FOR LOCATIONS.

(2) STA 505+33.92'NB' - STA 505+77.64'NB'

TYPICAL FINISHED SECTION

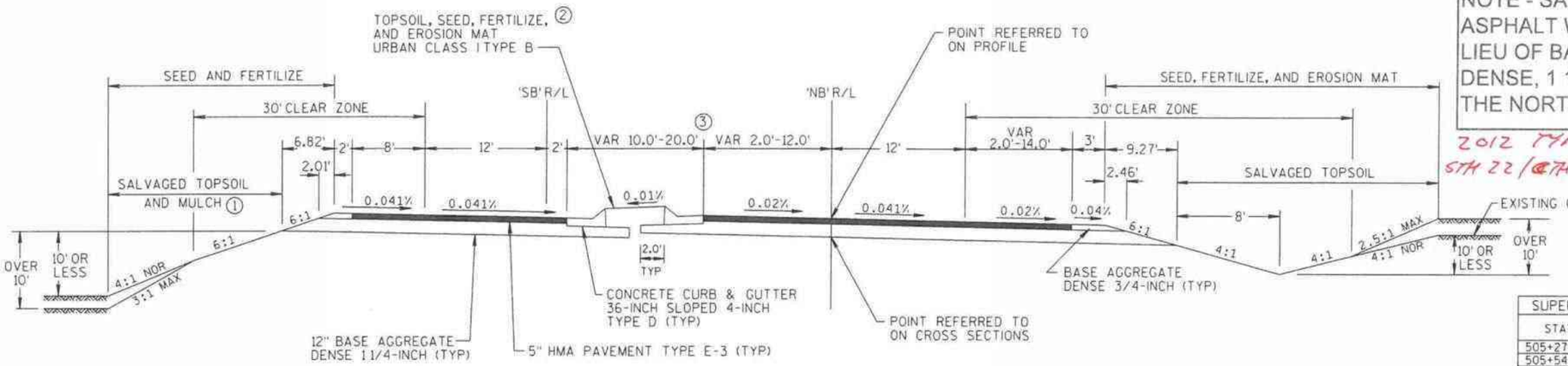
STA 505+26.90'NB' - STA 507+87.43'NB'

SUPERELEVATION TABLE	
STATION	CROSS SLOPE (%)
505+27.65'SB'	4.1
505+54.15'SB'	5.1
509+33.50'SB'	5.1
509+60.00'SB'	4.1

PROJECT NO: 6300-01-74	HWY: STH 22	COUNTY: WAUPACA	TYPICAL SECTIONS	SHEET 4	E

NOTE - SALVAGED ASPHALT WAS USED IN LIEU OF BASE AGGREGATE DENSE, 1 1/4-IN IN PART OF THE NORTHBOUND LANES

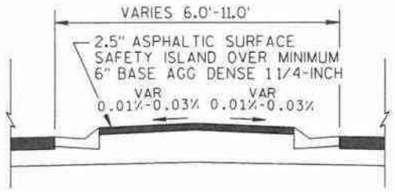
2012 TYPICAL SECTION
STH 22 / CTH QQ INTERSECTION



SUPERELEVATION TABLE	
STATION	CROSS SLOPE (%)
505+27.65'SB'	4.1
505+54.15'SB'	5.1
509+33.50'SB'	5.1
509+60.00'SB'	4.1

SUPERELEVATION TABLE	
STATION	CROSS SLOPE (%)
513+43.21'SB'	FS (4.1)
513+99.21'SB'	RC
514+52.21'SB'	0
515+05.21'SB'	NC

SUPERELEVATION TABLE	
STATION	CROSS SLOPE (%)
513+36.52'NB'	FS (4.1)
513+92.52'NB'	RC
514+45.52'NB'	0
514+98.52'NB'	NC



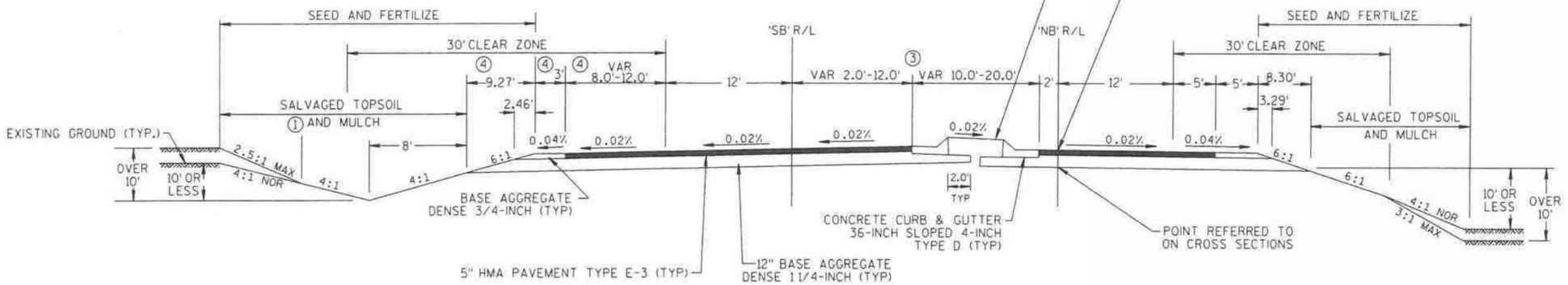
② STA 509+09.84'NB' - STA 512+14.07'NB'
STA 513+30.05'NB' - STA 513+36.52'NB'

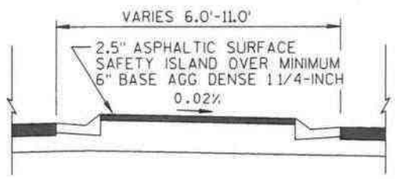
TYPICAL FINISHED SECTION

STA 507+87.43'NB' - STA 513+36.52'NB'

① PLACE EROSION MAT CLASS I TYPE B WHERE SLOPE IS STEEPER THAN 3:1. SEE EROSION CONTROL PLANS FOR LOCATIONS.

③ REFER TO PLAN AND PROFILE SHEETS FOR WIDTHS AND TAPER LENGTHS





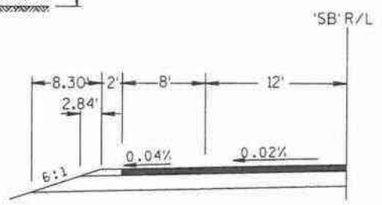
② STA 513+336.52'NB' - STA 516+71.53'NB'

TYPICAL FINISHED SECTION

STA 513+36.52'NB' - STA 517+83.85'NB'

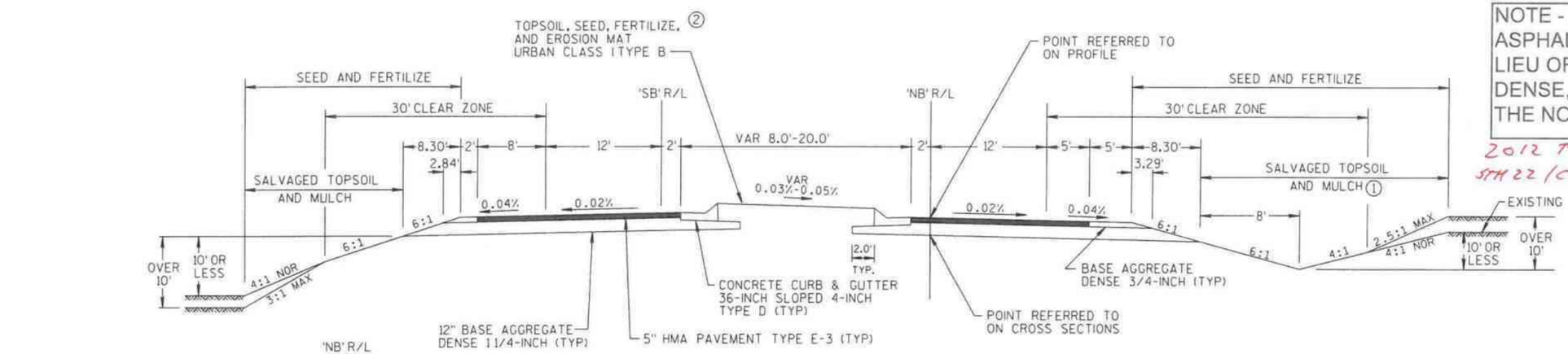
① PLACE EROSION MAT CLASS I TYPE B WHERE SLOPE IS STEEPER THAN 3:1. SEE EROSION CONTROL PLANS FOR LOCATIONS.

③ REFER TO PLAN AND PROFILE SHEETS FOR WIDTHS AND TAPER LENGTHS



④ STA 515+92.30'NB' - STA 517+83.85'NB'

PROJECT NO: 6300-01-74	HWY: STH 22	COUNTY: WAUPACA	TYPICAL SECTIONS	SHEET 5	E



TYPICAL FINISHED SECTION

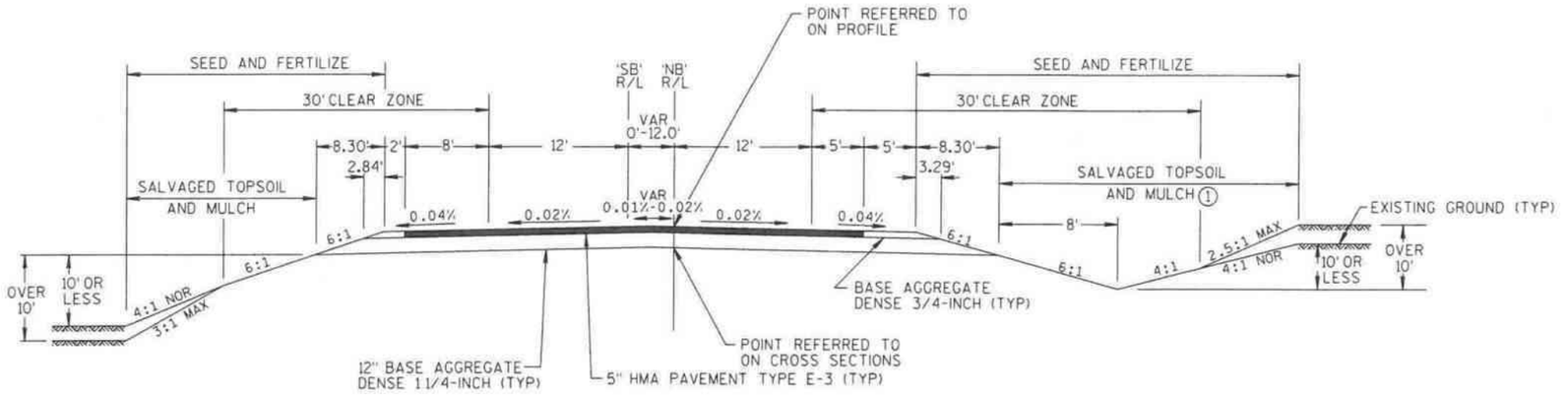
STA 517+83.85'NB' - STA 525+41.33'NB'

② STA 523+69.50'NB' - STA 525+35.33'NB'

① PLACE EROSION MAT CLASS I TYPE B WHERE SLOPE IS STEEPER THAN 3:1. SEE EROSION CONTROL PLANS FOR LOCATIONS.

NOTE - SALVAGED ASPHALT WAS USED IN LIEU OF BASE AGGREGATE DENSE, 1 1/4-IN IN PART OF THE NORTHBOUND LANES

2012 TYPICAL SECTIONS
STH 22 / CTH Q Q INTERSECTION



TYPICAL FINISHED SECTION

STA 525+41.33'NB' - STA 532+50'NB'

① PLACE EROSION MAT CLASS I TYPE B WHERE SLOPE IS STEEPER THAN 3:1. SEE EROSION CONTROL PLANS FOR LOCATIONS.

PROJECT NO: 6300-01-74	HWY: STH 22	COUNTY: WAUPACA	TYPICAL SECTIONS	SHEET 6	E

Attachment C
Traffic Forecast Report

WisDOT TRAFFIC FORECAST REPORT

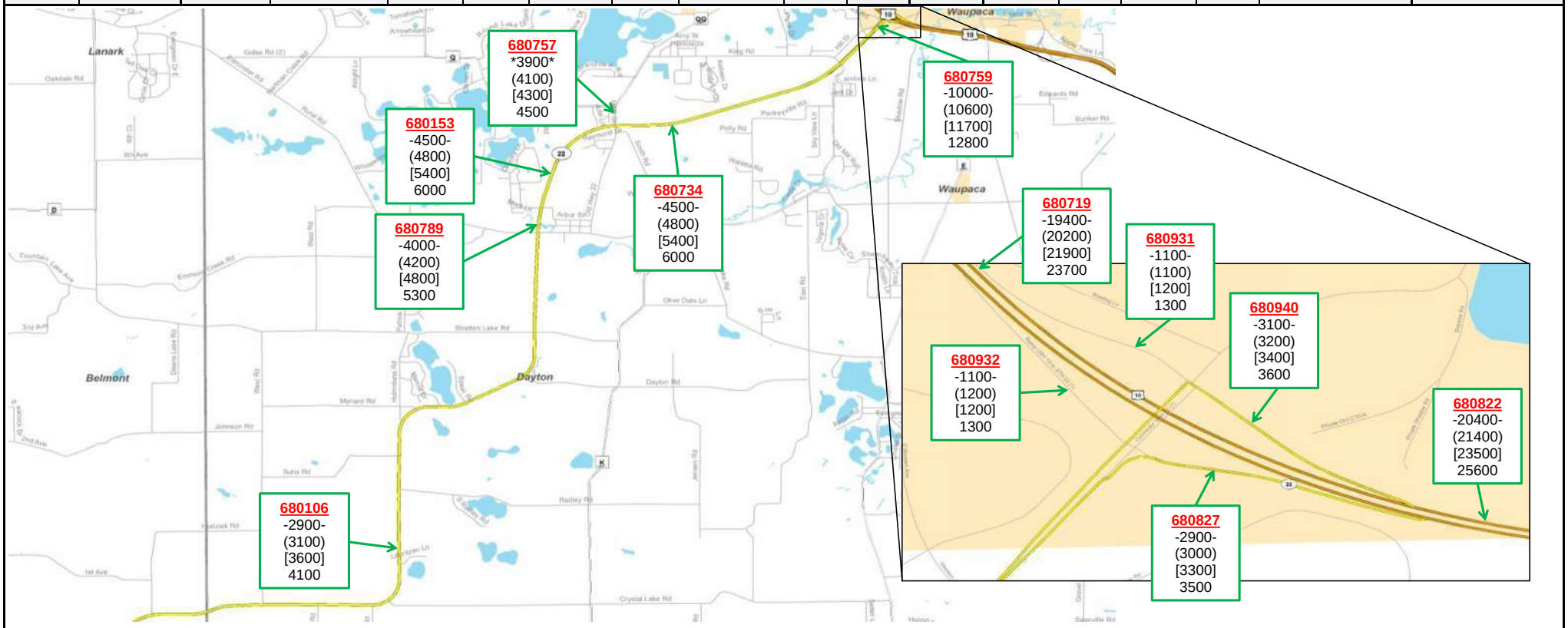
PROJECT ID(S): 6300-00-03/73
ROUTE(S): STH 22

Region/COUNTY(IES): NC / Waupaca
LOCATION: Portage Cty Ln - USH 10
COMPLETED: 1/2/2018

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

Developed by: Jacci Ziebert
Phone: (608) 266-9646
FAX #: (608) 267-0294
E-Mail: jaclyn.ziebert@dot.wi.gov

Design Values (%)											Truck Classification						
Site(s)	Route(s)	Volume(s)	Site Growth %	K250	K100	K30	P	D(Dsgn. Hr.)	T(DHV)	T(PHV)	AADTT	2D	3AX	2S1+2S2	3-S2	DBL-BTM	Total %
680734	**STH 22**	6020	1.41%	11.1	11.7	12.4	13.7	59/41	18.1	15.8	940	10.5	0.5	7.5	2.4	0.1	21.1%



Full Vehicle Classification														
Site(s)	Route(s)	MC	CARS	SU2-4	BUSES	SU2-6	SU3	SU4+	ST4-	ST5	ST6+	MU5-	MU6	MU7+
680789	**STH 22**	1.5	52.8	24.7	4.1	6.4	0.5	0.0	7.5	2.4	0.1	0.1	0.0	0.0

N

SITE ID = Colored, **bolded**, and underlined

Symbol	Count	Symbol	Forecast
-000-	2015 Count	(000)	2020 AADT
000	2012 Count	[000]	2030 AADT
		000	2040 AADT

NOTES ON THE FORECAST:

1. This projection assumes that no major new traffic generators will be added to the development already included in the 2010/2045 Northeast Regional Travel Demand Model.
2. Truck classification percentages were taken from observed short-term 2012 Wisconsin Vehicle Classification Data (Site # 680789).
3. STH 22 is a Factor Group II (Urban-Other) roadway (indicating low to moderate fluctuation in traffic from a seasonal perspective). It is functionally classified as an Urban Principal Arterial (14) for count purposes.
4. The 2010/2045 Northeast Regional Travel Demand Model was used to complete this forecast. The Traffic Analysis Forecasting Information System output was used as a comparison tool to check against the model output. Adjustments were made as needed.
5. Roadway improvements coded within the existing plus committed (E+C) network of the 2010/2045 Northeast Regional Travel Demand Model were assumed to be in place for the purposes of developing this forecast.

Wisconsin Department of Transportation

Daily % Class Distribution for 04/23/2012 through 04/25/2012 (47 hours)

Site Names:	680789, 9960, NC	Seasonal Factor Group:	2
County:	Waupaca	Daily Factor Group:	2
Funct. Class:	U Principal Arterial - Other	Axle Factor Group:	5
Location:	STH 22 BTWN RURAL & CLEGHORN RDS DAYTON TNSHP	Growth Factor Group:	1

	Roadway	Neg DIR	Pos DIR
MC	1.46	1.61	1.30
CAR	52.77	53.17	52.34
PU	24.71	24.43	25.00
BUS	4.14	4.98	3.25
2D	6.37	5.59	7.19
SU 3	0.50	0.47	0.53
SU 4+	0.01	0.03	0.00
ST 4-	7.46	8.90	5.92
ST 5	2.38	0.67	4.20
ST 6+	0.06	0.03	0.09
MT 5-	0.14	0.11	0.18
MT 6	0.00	0.00	0.00
MT 7+	0.00	0.00	0.00
Trucks	21.06	20.78	21.36
Combo Trucks	10.04	9.71	10.38
Classified	100.00	100.00	100.00
Volume	6,974	3,594	3,380

Attachment D
Safety Certification Document

Safety Certification Document
Project ID 6300-00-03

1. **Did the project have Meta-Manager Safety Flags?** Yes ☒ No ☐

   Comments: Two segments were flagged in the 2012-2016 data used for scoping.

2. **Did relevant crashes remain after initial Crash Vetting Process?** Yes ☐ No ☒

   Comments: No crashes remained after vetting. SCP concluded.

3. **Are safety improvements needed to address concerns after the CGA Process?** Yes ☐ No ☐

   Comments:

4. **Were safety mitigation alternatives analyzed in this project?** Yes ☐ No ☐

   4.1. **Provide narrative of existing geometric conditions**

   4.2. **Provide narrative of crash history that was used to begin the SMCP**

   4.3. **Provide narrative of safety mitigation alternatives analyzed in SMCP**

   4.4. **Analysis Results**

   4.5. **Provide narrative of reasonable and acceptable safety mitigation alternatives for consideration in the project improvement process**

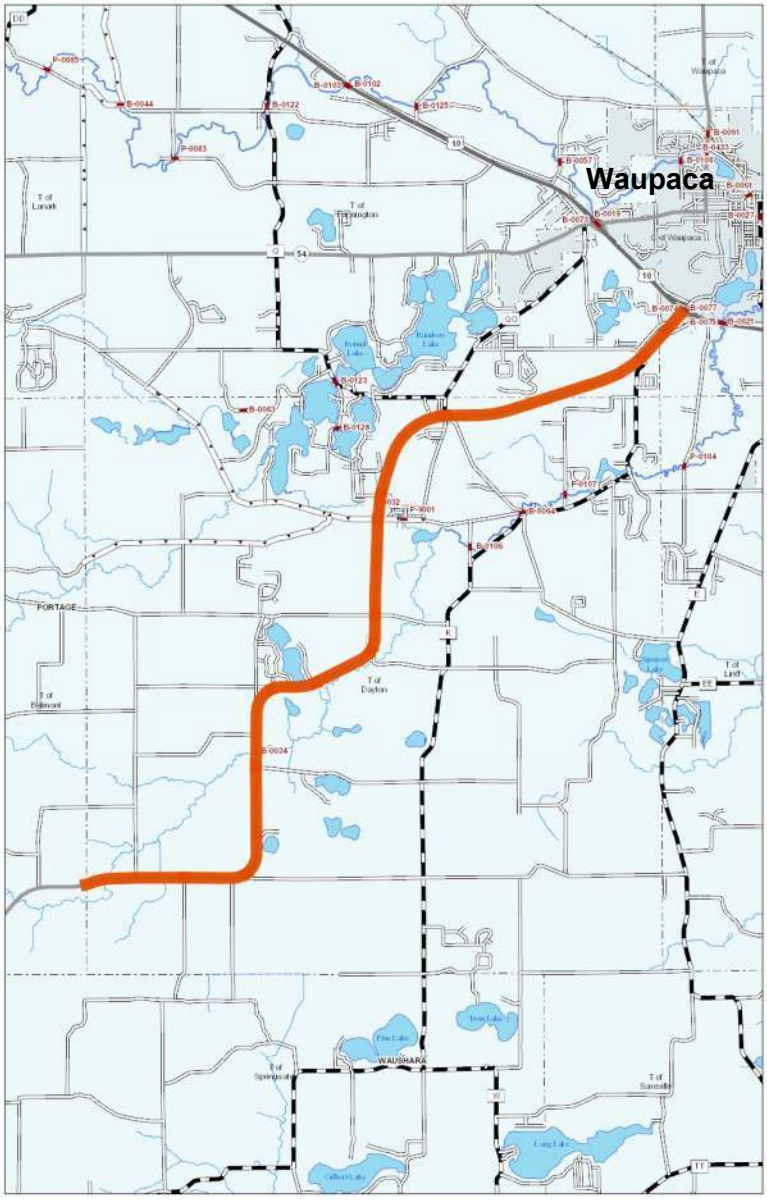
5. Approval

Michael B. Wendt	3/20/2019
Region Planning Chief	Date

ATTACHMENTS

A. Project Location/Overview Map (from CDR)
B. Project Justification/Scoping Document
C. Sites of Promise Documentation
   a. Tabular data illustrating safety flags
   b. Meta-Manager file (XLS kept in electronic file)
D. Crash Vetting Documentation
E. Safety Certification Worksheet
F. Design Criteria & SSA Worksheets

CDR Map



Scoping Document

Design ID: 6300-00-03 **Delivery:** $252,000 (9%)

Construction ID: 6300-00-73 **Amount:** $2,800,000 **Delivery:** $238,000 (8.5%)

Highway: STH 22 **County:** Waupaca **Work Type**: Resurface 10

Title: Wautoma - Waupaca

Subtitle: Portage County Line to USH 10 Ramps

Photolog: 022N_2016 **Begin Frame (PLM):** 4866 (46.95) **End Frame (PLM)**: 5910 (57.39)

Begin RP: 022N091D **End RP:** 022N102T+0.21

NHS Route: No **OSOW Route:** No **OSOW High Route:** No

State Truck Route: **Functional Classification**: Minor Arterial= County line to Rural Rd

Principal Arterial = Rural Rd to USH 10

Connections 2030: No

Existing Cross Section **Travel Lanes:** 2 **Travel Lane Width:** 12 ft

Total Shoulder Width: 8 ft **Paved Shoulder Width:** 3 ft **Existing Speed Limit:** 55 mph

Past Work Done:

- 2012: Reconstruct CTH QQ intersection
  - 12’ Lanes, 10’shoulders (improvement limits only)
- 2008: 2” mill and overlay
  - 12’ lanes, 8’ shoulders which 3’ paved
- 2000: Reconstruct CTH K intersection
  - 12’ Lanes, 10’shoulders (improvement limits only)
- 1982: Reconstructed
  - 12’ lanes, 8’ shoulders which 3’ paved

Construction Year (2020) ADT: 3100 - 4800 vehicles/day

Design Year (2040) ADT: 4100 - 6000 vehicles/day

Percent Truck Traffic: 21.1%

Bridge Number: C-68-16 **Feature Over/Under:** Radley Creek **Type:** Box Culvert

Bridge Number: B-68-34 **Feature Over/Under:** Radley Creek **Roadway Width:** NA

Deck Length: 25.1 **Sufficiency Rating:** 94.1 **Inventory Load Rating:** HS20

Bridge Number: B-68-32 **Feature Over/Under:** Crystal River **Roadway Width:** 40

Deck Length: 55 ft **Sufficiency Rating:** 91.9 **Inventory Load Rating:** HS21

- Bridge is having a concrete overlay and polymer overlay with project 6220-00-32/62 (FY 19 fast track project) EPS&E 2/1/19; Programmed PS&E 2/1/22 and Let 7/12/22
- Guardrail on the bridge will need to be evaluated with this project (6300-00-03)

Need: The existing pavement has longitudinal and transverse cracking.

Proposed Improvement: Remove the top layer of pavement and apply a new surface.

2017 PMDSS Recommendation: Do Nothing

2024 PMDSS Recommendation: Patch, Overlay (>= 2.5 in, < 4 in)

Pavement Treatment Discussion

PMDSS, which provides recommended improvements to maximize the longevity of the existing pavement structure, is recommending "Do Nothing" in 2017 and a "Patch, Overlay (>= 2.5 in, < 4 in)" in 2024 for the Low-Cost Solution.

Theme X' provides WisDOT's guiding principles for asset management, project scoping and project prioritization. Theme X' places the highest priority (after safety) on doing "Right Time Resurfaces" (thin mill & fill), defined as having a PCI greater than 70. This is based on the assumption that by keeping the pavement in "good" condition or better that it will provide the best benefit/cost ratio.

By 2020 it is anticipated the PCI will be 63 and will qualify for a "PCI > 50 and < 70" in Theme X'.

Projects in the Theme X' category "PCI > 50 and < 70" are assumed to follow the PMDSS recommendation. But this category allows for great flexibility so that all PSRS, RSRF and RCND work types will be compliant.

The Theme X' "Downshift" principle is applied to lower function roadways (Minor Arterial or below) with a PCI less than 50. The goal is to maintain a state of good repair using low cost treatments (when a Service Life Extension is projected to be greater than 4 years) in lieu of more costly improvements, thus freeing up funding to invest in other projects.

Though the proposed improvement may not always meet the PMDSS recommendation, it will still be compliant with Theme X' and will still provide a good Service Life Extension. After 2023 the proposed improvement is anticipated to meet the Downshift criteria.

EPSE: 2/1/2020 **PSE:** 5/1/2024 **Let:** 8/13/2024

Current PCI: 77.4 **Projected PCI at EPSE:** 63

Theme X' Category at EPSE: PCI > 50 and < 70 **Theme X' Compliant at EPSE:** Yes

Proposed Design Class: 3RA2-1

General Notes

- Guardrail needs will be determined per project
    - Guardrail replacement will be included in the scoping estimate but will need to be determined in design
- Expect to pave around to the back of radius on intersections or to a logical point.
- 3R project and a full DSR is needed. The scoping document should be attached to the DSR.

Traffic

- No crash flags after validation.
- Add night arrow at Dayton Rd curve.
- No work is needed at the signals. Loops are in the base course.

Proposed Traffic Control

- Daytime lane closures with flagging.

Substandard Controlling Criteria

- None

Maintenance

- No culvert cleanings with this project
- Replace culvert 680220190 36-inch
- Replace culvert 680220280 36-inch
- Replace culvert 680220290 30-inch

Environmental

- CEC checklist is anticipated. See PMP for additional information.

Access

- No access modifications are proposed for this project.

Real Estate

- No real estate anticipated for this project.

Survey and Mapping

- No survey requests by programming.

Structures

- Guardrail at B-68-32 needs to be evaluated for replacement.

Pavement

- 2" mill and overlay with no grade increases
- An abbreviated pavement report will be provided
- No cores or borings anticipated

Railroad

- There are no railroad facilities within 1,000' of this project so no rail coordination is required.

Bike-Ped

- An off-street multi-use path exists along the west side of STH 22 between King Road and USH 10. This path connects to the Waupaca High School, which is located along King Road. The path crosses the King Road and Western Avenue intersections. The curb ramps at the King Road intersection are not ADA compliant and will likely need to be replaced with new ramps. At the Western Avenue intersection, there are no curbs and the path is level with the road surface. No detectable warning fields are provided. Truncated dome warning fields should be installed at the south and north ends of the crossing.
- Three-foot paved shoulders are provided along most of the highway segment between Portage County line and USH 10. No changes recommended for the paved shoulders.

Curb Ramps

When we do a resurfacing project, or any project that is considered an ADA "alteration", ADA requires us to upgrade curb ramps "to the maximum extent feasible:"

- When there is a real estate process on a project for any reason (e.g. for culverts, access management, etc.), then it's required that any necessary ROW also be obtained to get the curb ramps up to current standards.
- However, if the project does not have a real estate process at all, then the ramps are required to be upgraded to the maximum extent feasible within the existing ROW. This could mean installing DWF's or modifying one or two stones, etc. Another way to say this is that the real estate process does not have to be initiated solely for curb ramp work.

Planning

- Traffic forecasts have been requested are in the Planning folder.

Schedule

- CTH E will be closed 2020 (until July 4)

Public Involvement

- Public involvement is expected to be a LOM with mailings. See PMP for additional notes.

Draft Limits

- Start at Portage County Line
- End project at concrete west of USH 10 ramps.

- Will stop short of curb ramp at S. Western Ave.

Agreed to Scope

- 2-inch mill and overlay, spot curb and gutter replacement, culvert replacement, upgrade curb ramps to ADA compliance to the maximum extent feasible

Action Items/Unresolved Issues

- Waiting for OPS unit to decide if signs need to be replaced.

Scoping Meeting Date: February 8, 2018

Attended: Richard Simon, Tom Krizenesky, Cole Dineen, Lindsey Heineck, Jon Motquin, Mike Kretschmer, Cheryl Simon, Kevin Garrigan, Jordan Kelbly, Dave Muerett, Wendy Arneson

Called In: Rich Handrick, Dan Tyler, Tom Nelson, Cara Abts, Kristin McHugh

SEGMENT #	PDP_ID	ISECNO	TRAF_SEG_ID	RECKEY	FOS_PROJ_ID	PDP_FRM	ACSI_INTS_NM	PDP_TO	PDP_MILE	DIVUND	HWY_DIR	CRASH RATE - formula	CRASH RATEFLAG - formula	CRASH RATE	CRASH RATE FLAG	UCL_CRSH_RT - formula	CRASHES - formula	MMGR_KAB_CRSH_RT - formula	MMGR_KAB_CRSH_RT_FL - formula	MMGR_KAB_CRSH_RT	MMGR_KAB_CRSH_RT_FL	UCL_KAB_CRSH_RT	UCL_KAB_CRSH_RT - formula	MMGR_FATAL_CRSH_TOT	MMGR_INCAP_INJ_CRSH_TOT	MMGR_NONINCAP_INJ_CRSH_TOT	CRSHSPOT	HSTL_AADT_5_YR	YRS_OTT	SEVINDX	SIREDUC	LOP	IMPFLAG	SFTY_TRVL_CLS_CD
	NOTE: As of 10/30/17																																	
	NOTE: violet shaded cells are manually input, orange cells are connecting highway																																	
1	4128	25680	4569	450648		022N090G050	FIELD DRWY	022N092M000	1.03	U	022N	27.30	0.26	27.30	0.00	106.09	2	13.65	0.42	13.65	0.00	32.99	32.85	0	0	1	0	3898	5	5				420
2	4129	25690	4569	450648		022N092M000	TESTIN RD	022N093K000	0.65	U	022N	43.25	0.38	43.25	0.00	114.33	2	21.63	0.59	21.63	0.00	37.00	36.84	0	0	1	0	3898	5	5				420
3	4130	25700	4569	450648		022N093K000	CRYSTAL LAKE RD	022N094D000	1.15	U	022N	24.45	0.23	24.45	0.00	104.39	2	0.00	0.00	0.00	0.00	32.16	32.03	0	0	0	0	3898	5	3				420
4	4131	25710	4569	450648		022N094D000	RADLEY RD	022N095G000	0.87	U	022N	16.16	0.15	16.16	0.00	108.90	1	16.16	0.47	16.16	0.00	34.36	34.21	0	0	1	0	3898	5	4				420
5	4132	25720	4569	450648		022N095G000	MAYNARD RD	022N097D000	1.15	U	022N	48.89	0.47	48.89	0.00	104.39	4	24.45	0.76	24.45	0.00	32.16	32.03	0	0	2	0	3898	5	10				420
6	4133	25730	4569	450648		022N097D000	DAYTON RD	022N099D000	1.38	U	022N	81.49	0.80	81.49	0.00	101.76	8	30.56	0.99	30.56	0.00	30.89	30.75	0	2	1	1	3898	5	26	6	14	YES	420
7	4134	25740	9960	450648		022N099D000	RURAL RD	022N100K000	0.26	U	022N	267.85	1.95	267.85	1.92	137.33	5	0.00	0.00	0.00	0.00	48.17	47.99	0	0	0	1	3934	5	6	7	4	YES	420
8	4135	25740	274	450648		022N100K000	CLEGHORN RD	022N101M000	1.16	U	022N	42.46	0.43	42.46	0.00	99.37	5	8.49	0.29	8.49	0.00	29.73	29.60	0	0	1	0	5562	5	9				420
9	4137	25750	4222	450648		022N101M000	CTH QQ	022N102M000	2.18	U	022N	47.62	0.51	47.62	0.00	93.07	10	19.05	0.72	19.05	0.00	26.66	26.54	1	1	2	1	5278	5	33				420
10	4138	25760	3167	450648		022N102M000	CTH K/KING RD	022N102T024	0.61	D	022N	250.73	1.05	228.54	0.00	237.97	15	83.58	2.02	87.90	2.14	41.04	41.29	0	1	4	1	10748	5	35	23	11	YES	310
11	4284					022S102T003		022S102M019	0.53	D	022S	0.00	0.00	0.00	0.00	128.20	0	0.00	0.00	0.00	0.00	0.00	43.56	0	0	0	0	5278	5	0				420

NOTE: As of 11/27/17

NOTE: *italics has not been determined*

NOTE: violet shaded cells are manually input, orange cells are connecting highway, gray shaded cells are manually entered ADT, green shaded cells are manually combined intersections that were split due to RP coding

SPOT #	PDP_ID	SPOT_RP_KY	FEATURE_NEAR	SFTY_TRVL_CLS	DOT_CNTY_CD	CMTY_TY	CMTY_NM	TIER	RTE_SORTER	SPOT_ADT_5YR_AVG	SPOT_CRSH_TOT	SPOT_FATAL_CRSH_TOT	SPOT_INCAP_INJ_CRSH_TOT	SPOT_KAB_CRSH_TOT	SPOT_ROR_TOT	SPOT_CRSH_RT_FL_ADJ	SPOT_FATAL_CRSH_RT_FL_ADJ	SPOT_INCAP_INJ_CRSH_RT_FL_ADJ	SPOT_KAB_CRSH_RT_FL_ADJ	SPOT_ROR_CRSH_RT_FL_ADJ	SPOT_INTS_TOT	SPOT_NONINTS_TOT	SPOT_WTHR_CRSH_TOT
1A	4128	022N090G080	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1770	3898	1	0	0	0	1	0.33	0.00	0.00	0.00	0.57	0	0	1
1B	4128	022N090G130		420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1771	3898	1	0	0	1	1	0.33	0.00	0.00	0.97	0.57	0	0	1
2A	4129	022N092M050	TARR RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1772	3898	1	0	0	0	0	0.33	0.00	0.00	0.00	0.00	1	0	0
3A	4130	022N093K000	CRYSTAL LAKE RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1773	3898	3	0	0	1	1	0.99	0.00	0.00	0.97	0.57	2	0	0
4A	4131	022N094M020	SUHS RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1774	3898	1	0	0	1	0	0.33	0.00	0.00	0.97	0.00	1	0	0
5A	4132	022N096K000	SPEER RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1775	3898	1	0	0	0	0	0.33	0.00	0.00	0.00	0.00	1	0	1
5B	4132	022N096K010	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1776	3898	1	0	0	0	0	0.33	0.00	0.00	0.00	0.00	0	1	0
6A	4133	022N097D000	DAYTON RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	1	1777	3898	4	0	0	3	2	1.32	0.00	0.00	2.91	1.14	2	0	1
6B	4133	022N097D010	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1778	3898	1	0	0	0	1	0.33	0.00	0.00	0.00	0.57	0	0	1
6C	4133	022N098G000	STRATTON LAKE RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1779	3898	1	0	0	0	0	0.33	0.00	0.00	0.00	0.00	1	0	0
6D	4133	022N098G020	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1780	3898	1	0	0	0	0	0.33	0.00	0.00	0.00	0.00	0	1	0
6E	4133	022N098G030	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1781	3898	1	0	0	0	1	0.33	0.00	0.00	0.00	0.57	0	0	0
6F	4133	022N098G040	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1782	3898	1	0	1	1	0	0.33	0.00	2.32	0.97	0.00	0	1	1
6G	4133	022N098G050	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1783	3898	1	0	1	1	1	0.33	0.00	2.32	0.97	0.57	0	0	0
7A	4134	022N099D000	WAUPACA UAB	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	2	1784	3934	4	0	0	0	0	1.31	0.00	0.00	0.00	0.00	4	0	2
7B	4134	022N099D010	B680032/STH 22/CRYSTAL RV	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1785	3934	1	0	0	0	1	0.33	0.00	0.00	0.00	0.57	0	0	0
8A	4135	022N100K000	CLEGHORN RD	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1786	5562	1	0	0	0	0	0.25	0.00	0.00	0.00	0.00	1	0	1
8B	4135	022N100K010	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1787	5562	1	0	0	0	0	0.25	0.00	0.00	0.00	0.00	0	1	0
8C	4135	022N100K030		420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1788	5562	1	0	0	1	1	0.25	0.00	0.00	0.76	0.44	0	0	0
8D	4135	022N100K100		420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1789	5562	1	0	0	0	1	0.25	0.00	0.00	0.00	0.44	0	0	0
9A	4137	022N101M000	OLD HWY 22	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	1	1790	5325	6	1	0	2	1	1.55	4.19	0.00	1.56	0.45	5	0	1
9B	4137	022N101M050		420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	DAYTON	3	1791	5278	1	0	0	0	1	0.26	0.00	0.00	0.00	0.46	0	0	1
9C	4137	022N101M120	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	FARMINGTON	3	1792	5278	1	0	1	1	0	0.26	0.00	1.92	0.79	0.00	0	1	0
9D	4137	022N101M150	FIELD DRWY	420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	FARMINGTON	3	1793	5278	1	0	0	1	1	0.26	0.00	0.00	0.79	0.46	0	0	1
9E	4137	022N101M200		420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	FARMINGTON	3	1794	5278	1	0	0	0	1	0.26	0.00	0.00	0.00	0.46	0	0	0
9F	4137	022N101M210		420: Rural 2-lane Highways with 2,000 < AADT = 7,000	68	T	FARMINGTON	3	1795	5278	1	0	0	0	1	0.26	0.00	0.00	0.00	0.46	0	0	1
10A	4138	022N102M000	S0799	310: Multilane Divided Highways Posted at 45 mph or higher	68	T	FARMINGTON	2	1796	5374	8	0	0	0	0	1.77	0.00	0.00	0.00	0.00	8	0	2
10B	4138	022N102M010		310: Multilane Divided Highways Posted at 45 mph or higher	68	T	FARMINGTON	3	1797	5374	1	0	0	1	0	0.22	0.00	0.00	1.04	0.00	0	1	1
10C	4138	022N102T000	WESTERN AVE	310: Multilane Divided Highways Posted at 45 mph or higher	68	T	WAUPACA	3	1798	5374	4	0	1	4	0	0.89	0.00	3.19	4.16	0.00	3	1	1

DOCTNMBR	ACCDDATE	NTFYHOUR	ONHWY	ONSTR	ATHWY	ATSTR	ATNMBR	INTDIR	INTDIS	ACCDTYPE	MNRCOLL	RLTNRDWY	ROADCOND	ACCDSVR	INJSVR	ALCFLAG	TOTVEH	TRVLDIR1	DRVRDO1	TRFCNTL1	POSTSPD1	DRVRPC1	TRVLDIR2	DRVRDO2	TRFCNTL2	POSTSPD2	DRVRPC2	LATDECDG	LONDECDG	SEGMENT	SPOT	NOTE
REMOVED																																
FMC7T4B	8/2/2013	20	22			RURAL RD		N	10	GR END	NO	SHLD		PD			1	N	GO STR	NONE	55							0	0	4134		SWERVED TO AVOID DEER
FMFBRRX	6/26/2014	10	22			RURAL RD			0		ANGL	ON		PD			2	E	GO STR	SS	35	FTY,DTC	S	GO STR	NONE	55		44.311908	-89.162666	4134		U1 (IOH w/trailer) FTY. Attempted to cross STH 22?
FMC8KLN	6/13/2015	9	22			RURAL RD			0		SSS	ON	WET	PD			2	S	RT TRN	NONE	55		S	GO STR	NONE	55		44.311908	-89.162666	4134		BROKEN BULB, U2 DIDN'T KNOW U1 TURNING RT
FMHKFRS	2/20/2016	0	22			RURAL RD			0	DITCH	NO	SHLD	ICE	INJ	C		1	S	GO STR	NONE	55							44.311908	-89.162666	4134		LOST CTRL ON ICY RD
FMHHZD7	9/15/2016	7	22	SB		RURAL RD			0		ANGL	ON		PD			2	E	GO STR	SS	35		S	GO STR	NONE	55		44.311908	-89.162666	4134		BRAKE FAILURE
FMCH76H	2/24/2012	12	K		22				0		REAR	ON		INJ	C		2	N	GO STR	TS OP	35	FTC	N	GO STR	TS OP	35		0	0	4138		FOLLOWING TOO CLOSE, REAR-END
FMCLXBQ	7/16/2012	16	22			SHADOW RD		N	1		REAR	ON		INJ	A		2	S	GO STR	NONE	45	ID	S	GO STR	NONE	45	(MOPED)	0	0	4138		INATTENTIVE DRIVING, REAR-END
FMBRQZC	6/16/2013	12	22		K				0		REAR	ON		PD			2	N	GO STR	TS OP	45	ID	N	OTHR	TS OP	45	OTHR	0	0	4138		DIDN'T GO WHEN LIGHT TURNED GREEN
FMCH72Z	9/26/2013	15	22		K				0		REAR	ON		INJ	C		2	N	GO STR	TS OP	35	FTC	N	STOPED	TS OP	35		44.336198	-89.106358	4138		FOLLOWING TOO CLOSE, REAR-END
FMCVBQ9	11/29/2013	6	22			KING RD			0	TF SIG	NO	ON		PD			1	N	LT TRN	TS OP	45	ID						44.336198	-89.106358	4138		FROST OBSCURED VIEW
FMBLKN4	6/28/2014	16	22			SHADOW RD			0		REAR	ON		INJ	B		2	N	GO STR	NONE	45	FVC	N	STOPED	NONE	45		44.340063	-89.101231	4138		INATTENTIVE DRIVING, REAR-END
FMFHZB5	8/9/2014	0	22			KING RD	E08		0	UNKN	NO	MED		PD			1	N	OTHR	TS OP	45	OTHR						44.336198	-89.106358	4138		H&R SIGNAL KNOCKDOWN
FMC99NS	11/29/2014	15	22		K			N	9		REAR	ON	WET	INJ	B		3	N	GO STR	NONE	45	ID	N	STOPED	NONE	45		44.33716	-89.105025	4138		RE VEH STOPPED FOR TURKEY XING RD
RXLG3QP	2/28/2015	16	22			KING RD			0		SSS	ON		PD			2	S	LT TRN	TS OP	25		E	LT TRN	TS OP	25	FTY	44.336198	-89.106358	4138		TURNED LT ON RED
FMHKFR4	6/28/2015	9	22			SHADOW RD			0		ANGL	ON		INJ	B		2	E	GO STR	SS	45	FTY	N	GO STR	NONE	45		44.340063	-89.101231	4138		U1 FTY, DID NOT SEE MOTORCYCLE
FMHMNGP	5/26/2016	7	22			WESTERN AVE			0		REAR	ON	WET	INJ	B		2	S	GO STR	NONE	45	ID,FTC	S	LT TRN	NONE	45		44.340063	-89.101231	4138		INATTENTIVE DRIVING, REAR-END
FMCLXL7	9/6/2016	17	22	NB	K				0		SSOP	ON	WET	INJ	C		2	S	LT TRN	OTHR	45		N	GO STR	OTHR	45	DTC	44.336167	-89.106319	4138		STORM KNOCKED OUT TS
FMFHZH6	12/11/2016	2		KING RD	22				0	TF SIG	NO	ON	SNOW	PD			1	S	RT TRN	TS OP	45	TFC						44.336245	-89.10642	4138		LOST CTRL TURNING, HIT SIGNAL

Safety Certification Worksheet

Worksheet ID: | **Highway:** STH 22

Design ID: 6300-00-03 | **Project Title:** Wautoma-Waupaca, Portage Co Line to USH 10 Ramps

Date of Analysis: 1/23/2019 | **Project Description:** Resurfacing

Meta Manager Version | **Meta Manager Crash Years** 2012-2016

System Screening - Sites of Promise									Crash Vetting - Sites of Promise	Contributing Geometric Analysis	
See FDM 11-38-10.2 for guidance									See FDM 11-38-10.3 for guidance	See FDM 11-38-10.4 for guidance	
PDP ID	**From RP**	**RP Description**	**To RP**	**Length** (PDP_Mile)	**Crash Rate Flag** (RATEFLAG) (Insert value if ≥ 1.0)	**KAB Crash Rate Flag** (MMGR_KAB_CRSH_RT) (Insert value if ≥ 1.00	**Intersection Crash Rate Flag** (MM Database Name) (Insert value if ≥ 1.0)	**Intersection KAB Crash Rate Flag** (MM Database Name) (Insert value if ≥ 1.0)	**Summarize the contributing factors for ALL crashes in the flagged segment or intersection.**	**Which geometric features contribute to the type and severity of the crashes?**	**Possible Countermeasures for Safety Mitigation Process**
4128	022N090G050	FIELD DRWY	022N092M000	1.03					N/A	N/A	
4129	022N092M000	TESTIN RD	022N093K000	0.65					N/A	N/A	
4130	022N093K000	CRYSTAL LAKE RD	022N094D000	1.15					N/A	N/A	
4131	022N094D000	RADLEY RD	022N095G000	0.87					N/A	N/A	
4132	022N095G000	MAYNARD RD	022N097D000	1.15					N/A	N/A	
4133	022N097D000	DAYTON RD	022N099D000	1.38					N/A	N/A	
4134	022N099D000	RURAL RD	022N100K000	0.26	1.95				5 of 5 crashes were removed because no engineering countermeasures exist. These included mechanical failures, poor roadway conditions, animals or driver error. No crash patterns evident.	N/A	
4135	022N100K000	CLEGHORN RD	022N101M000	1.16					N/A	N/A	
4137	022N101M000	CTH QQ	022N102M000	2.18					N/A	N/A	
4138	022N102M000	CTH K/KING RD	022N102T024	0.61	1.05	2.02			13 of 13 crashes were removed because no engineering countermeasures exist. All of these crashes were due to driver error. No crash patterns evident.	N/A	
4284	022S102T003		022S102M019	0.53					N/A	N/A	

Design Criteria Evaluation Worksheet

Project ID:	6300-00-03/73
Highway:	STH 22
Project Limits:	Portage County Line to USH 10 Ramps
Project Description:	Wautoma - Waupaca
Design Year:	

Functional Class	Minor Arterial/Principal Arterial
NHS Route?	No
FED Truck route?	
rural or urban	Rural
no. of travel lanes	2
divided or undivided	Undivided
Posted Speed	55 mph
Design Speed	
Design Year AADT	
Percent trucks	
Design Class	3RA2-1

source	MetaManager Safety Analysis	MetaManager Safety Analysis	MetaManager Safety Analysis	MetaManager Safety Analysis				See List on p.2 of Att. 4.3	See List on p.2 of Att. 4.3	See List on p.2 of Att. 4.3	See List on p.2 of Att. 4.3				FDM 11-40-6 11-20-1, 11-15-1	FDM 11-40, 11-44 11-10, 11-15		see Att. 4.1, Table A4.1		Col. 15 of SSA WORKSHEET	FDM 11-40, 11-44		
destination								Col. 11 of SSA WORKSHEET											Col. 10 of SSA WORKSHEET					
notes	Segmentation for MetaManager Safety Analysis	STN Reference Point	Physical location of STN Reference Point	STN Reference Point					Some design criteria have different standards depending on their function For example, Lane width requirements are different for travel lanes and turn lanes	Unit of measurement for design criteria - For example, lane width is measuered in feet	Is standard for design criteria a minimum (Min.) or maximum (Max.)standard? For example, lane width is a MIN standard; maximum grade is a MAX standard Some criteria have both MIN and MAX (e.g., superelevation rate)	Use if checking multiple criteria for the same geometric element For example,, max and min cross slope; curve radius and superelevation)						**Yes** = Existing is substandard based on 3R Design Standard without a PES in col (16) **No** =**PES is not Needed** - Existing meets 3R Design Standard without a PES in col (16) (Neither a PES nor an ES is needed)	**Yes** = Design Criteria is both Controlling and eligible for PES **No** = **PES cannot Apply** - Design Criteria is either non-Controlling or Design Criteria is Controlling but is not eligible for PES	SS-CC = Sub-Standard Controlling Criteria **Yes** if both col (17) and col (18) are Yes **No** if either col (17) or col (18) are No	SS-CC = Sub-Standard Controlling Criteria **Yes** = **PES Applies** - if col (19) of this worksheet is Yes and col (15) of the 'Safety Screening Analysis (SSA) Worksheet' is Yes **No** = **PES does not Apply** - if col (19) of this worksheet is Yes and col (15) of the 'Safety Screening Analysis (SSA) Worksheet' is No **NA** (not applicable) = PES is not needed or PES cannot apply * NA if col. (17 & 19) = No (PES is not needed) * NA if col. (18 & 19) = No (PES cannot apply)	Applicable only for controlling criteria that are eligible for a PES NA if col. (18) = No	**Yes** = PES applies (i.e., col. (20) ="Yes") and existing in col. (14) does not meet standard in col. (21) (Improve existing to meet standard in col. (21) unless approved ES) **No** = PES applies (i.e., col. (20) ="Yes") and existing in col. (14) meets standard in col. (21) **NA** (not applicable) = PES is not needed or PES cannot apply or PES does not apply * NA if col. (17 and 19) = No --- PES is not needed * NA if col. (18 and 19) = No --- PES cannot apply * NA if col. (20) = No --- PES does not apply (If existing in col. (14) is does not meet standard in col. (16) then improve to meet standard in col. (16) unless approved ES)	
col. No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Heading:	**PDP ID**	**From RP**	**RP Description**	**To RP**	**From Proj. Sta** (if known)	**To Proj. Sta** (if known)	**Length**	**Design Criteria**	**Design Criteria Element**	**unit**	**MIN or MAX?**	**Multiple-criteria-ID**	**Describe Existing Condition**	**Existing dimension**	**Design Class**	**3R Design Standard without a PES**	**Is Existing Dimension in col. (14) substandard compared to Design Standard in col. (16)? (Yes / No)**	**Is Design Criteria eligible for a PES? (Yes / No)**	**Are there existing SS-CC in the roadway segment that are eligible for a PES? (Yes / No)**	**Did the Safety Screening Analysis (SSA) determine that a PES applies for the eligible SS-CC? (Yes / No / NA)**	**3R Design Standard with a PES**	**Does Existing Dimension in col. (14) Need to be improved to meet Design Standard in col. (21)? (Yes / No / NA)**	**Comments**
		022N091D	Portage County Line	022N092M																			
		022N092M	Testin Rd	022N093K																			
		022N093K	Crystal Lake Rd	022N094D																			
		022N094D	Radley Rd	022N095G																			
		022N095G	Mynard Rd	022N096K																			
		022N096K	Speer Rd	022N097D																			
		022N097D	Dayton Rd	022N098G																			
		022N098G	Stratton Lake Rd	022N099D																			
		022N099D	Rural Rd	022N100K																			
		022N100K	Cleghorn Rd	022N101M																			
		022N101M	CTH QQ	022N102M				Superelevation Rate	Superelevation Rate-percent-minimum-for-R-and-speed	Percent	Min		The existing superelevation rate is 2.7% and radius of 1,377 ft	2.70%	3RA2-1	5.80%	Yes						The superelevation of the curve does not likely need to be fixed as the length of the curve is only 49 ft. This is the curve that splits the road between divided and undivided
		022N102M	CTH K	022N102T																			
		022N102T	Shadow Rd	022N103T																			

Safety Screening Analysis (SSA) Worksheet

Project ID:	
Highway:	
Project Limits:	
Project Description:	
Design Year:	

Identify Investigation Flags (IF) from MetaManager Safety Analysis (Meta-SA)

Conduct Manual Safety Analysis (Man-SA) to validate MetaManager Safety Analysis (Meta-SA)

source			(from STN Log)		PDP_Mile' in MetaManager	RATEFLAG' in MetaManager	MMGR_KAB_CRSH_RT' in MetaManager	RORFLAG' or 'INTFLAG' or 'CRSHSPOT' or 'MMGR_DRV_FL' in MetaManager		(pull from col. 19 in SS-CC worksheet)	(pull from col. 8 in SS-CC worksheet)						
destination															Col. 20 of the Design Criteria Evaluation worksheet		
notes						(Insert value if ≥ 1.0, otherwise leave blank)	(Insert value if ≥ 1.0, otherwise leave blank)	(Insert column name and value(s) if ≥ 1.0, otherwise leave blank)	**Yes** = Crash Rate Flag or KAB Crash Rate Flag ≥ 1.0	**SS-CC** = Sub-Standard Controlling Criteria		Using engineering judgement, validate the crashes that produced the Investigation Flag. If additional crashes are identified or if crashes were identified to be removed, explain why in column 13.	Identify the most likely cause(s) of the crashes including roadway, human and vehicle factors. If crashes were added or removed, explain why. This information should include a justification for how it was determined whether the existing SS-CC contributed to the Investigation Flag.	**Yes** if improving the eligible SS-CC would help to reduce the frequency or severity of the crashes that generated the IF **No** if improving the eligible SS-CC would NOT help to reduce the frequency or severity of the crashes that generated the IF **N/A** (not applicable) if there is no eligible SS-CC in the roadway segment (i.e., col. (10) = No	Yes = PES Applies * if col. (14) = No * OR, if there is an eligible SS-CC but there is no IF No = PES does not Apply * if col. (14) = Yes N/A (not applicable) * if there is no eligible SS-CC in the roadway segment (i.e., col. (10) = No	Yes * if there is no eligible SS-CC and no countermeasures have been employed to address the causes of the IF * OR,if a PES Applies and no countermeasures have been employed to address the causes of the IF * OR, if a PES does not Apply and improving the SS-CC is not sufficient to address the causes of the crashes No * if there is no IF * OR, if a PES Applies and other countermeasures have been employed to address the causes of the IF * OR, if a PES does not apply and improving the SS-CC is a sufficient countermeasure	What are proposed countermeasures for IF? Consider countermeasures such as geometric improvements, education, enforcement, other low-cost safety treatments, etc., either singly or in combination Explain if Existing Dimension in col. (14) of Design Criteria Evaluation Worksheet needs to be improved
col. No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Heading:	**PDP ID**	**From RP**	**RP Description**	**To RP**	**Length**	**Crash Rate Flag**	**KAB Crash Rate Flag**	**Possible Contributing Factors identified in MetaManager**	**Did MetaManager generate Investigation Flag? (Yes / No)**	**Are there existing SS-CC in the roadway segment that are eligible for a PES? (Yes / No)**	**Which SS-CC Exist?**	**If Crash Rate Flag or KAB Crash Rate Flag ≥ 1.0, was the flag verified? (Yes / No / N/A)**	**What are possible causes of the crash trend?**	**Does the existing eligible SS-CC contribute to the Investigation Flag (i.e. crashes)? (Yes / No / N/A)**	**Does PES Apply for eligible SS-CC? (Yes / No / N/A)**	**Does roadway segment contain un-addressed Investigation Flags? (Yes / No)**	**Proposed Recommendation from SSA**
	4128	022N090G050	FIELD DRWY	022N092M000	1.03				No	No		N/A		N/A	N/A	No	
	4129	022N092M000	TESTIN RD	022N093K000	0.65				No	No		N/A		N/A	N/A	No	
	4130	022N093K000	CRYSTAL LAKE RD	022N094D000	1.15				No	No		N/A		N/A	N/A	No	
	4131	022N094D000	RADLEY RD	022N095G000	0.87				No	No		N/A		N/A	N/A	No	
	4132	022N095G000	MAYNARD RD	022N097D000	1.15				No	No		N/A		N/A	N/A	No	
	4133	022N097D000	DAYTON RD	022N099D000	1.38				Yes	No		No		N/A	N/A	No	
	4134	022N099D000	RURAL RD	022N100K000	0.26	1.95		Segment-wide crash rate problem, with segment-wide intersection problem and at least one problem spot identified	Yes	No		No		N/A	N/A	No	
	4135	022N100K000	CLEGHORN RD	022N101M000	1.16				No	No		N/A		N/A	N/A	No	
	4137	022N101M000	CTH QQ	022N102M000	2.18				No	Yes	Superelevation	N/A		No	Yes	No	Superelevation meets programmatic exception to standards.
	4138	022N102M000	CTH K/KING RD	022N102T024	0.61	1.05	2.02	Segment-wide severe injury/fatality problem, with segment-wide intersection problem, and at least one problem spot identified	Yes	No		No		N/A	N/A	No	
	4284	022S102T003		022S102M019	0.53				No	No		N/A		N/A	N/A	No	

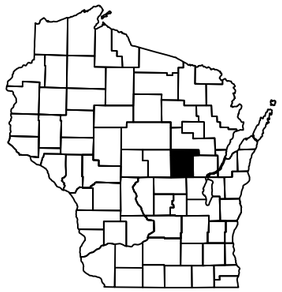
Attachment E
Preliminary Plan Sheets

PROJECT ID: 6300-00-73

COUNTY: WAUPACA

ORDER OF SHEETS

TOTAL SHEETS =



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DESIGN DESIGNATION 6300-00-73

A.A.D.T.	2020	=	4,800
A.A.D.T.	2040	=	6,000
D.H.V.	11.7%	=	702
D.D.		=	59/41
T.		=	21.1%
DESIGN SPEED		=	55 M.P.H.
ESALS		=	1,898,000

CONVENTIONAL SYMBOLS

PLAN

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

PROFILE

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

UTILITIES

- ELECTRIC
- FIBER OPTIC
- GAS
- SANITARY SEWER
- STORM SEWER
- TELEPHONE
- WATER
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

WAUTOMA - WAUPACA

PORTAGE COUNTY LINE TO USH 10

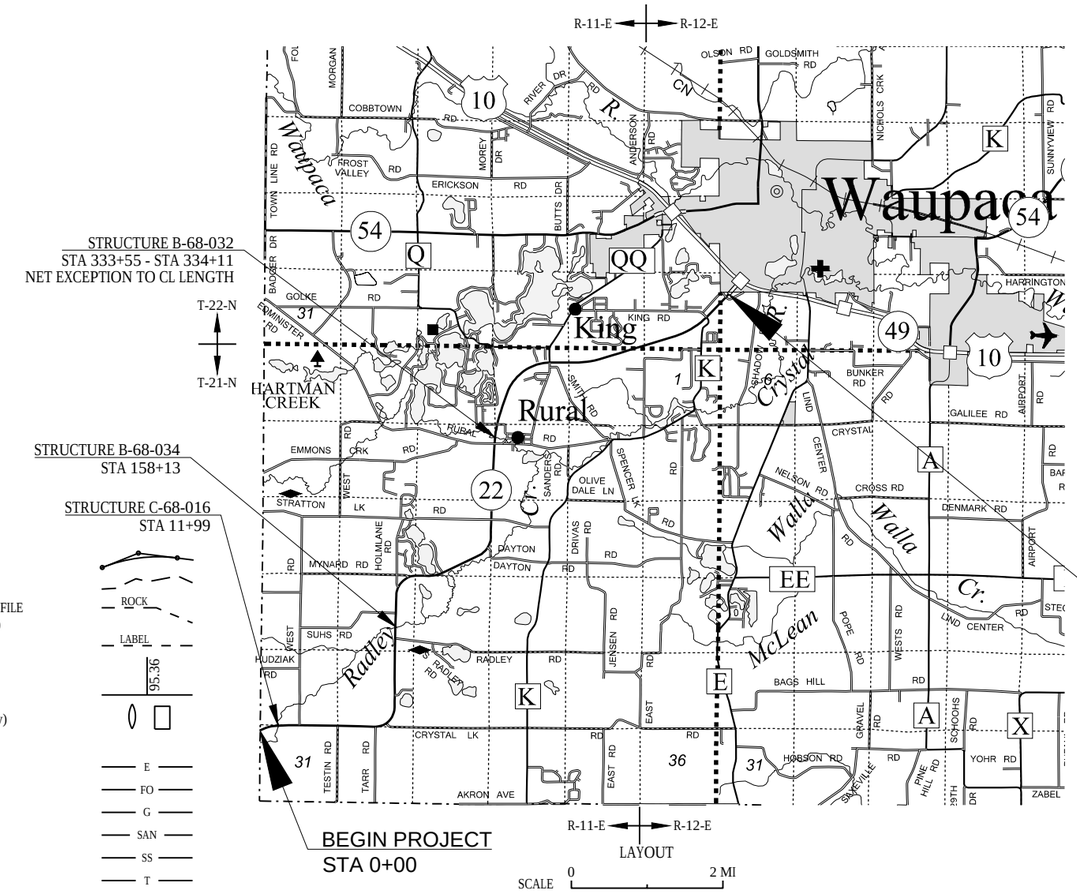
STH22

WAUPACA COUNTY

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6300-00-73		

STATE PROJECT NUMBER

6300-00-73



TOTAL NET LENGTH OF CENTERLINE = 10.5 miles

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, WAUPACA COUNTY, NAD83 (1991), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ORIGINAL PLAN PREPARED BY:

Foth Infrastructure & Environment, LLC
2414 S. 102nd Street
Suite 278, Lincoln Center II
West Allis, WI 53227
Phone: 414-336-7900 Fax: 414-336-7901

DATE: _____ _____ (Consultant)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	FOTH
Designer	FOTH
Project Manager	WENDY ARNESON
Regional Examiner	
Regional Supervisor	

APPROVED FOR THE DEPARTMENT

DATE: _____ _____ (Signature)

E

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

GENERAL NOTES

PAVING LIMITS ARE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

WASTE MATERIAL RESULTING FROM THE VARIOUS OPERATIONS UNDER THIS CONTRACT SHALL BE ENTIRELY REMOVED AND DISPOSED OF AT THE TIME OF OCCURRENCE AS DIRECTED BY THE ENGINEER.

CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY HIS OPERATION OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.

PURSUANT TO CHAPTER 59 OF THE WISCONSIN STATUTES, THE CONTRACTOR SHALL CAREFULLY MAKE A SEARCH FOR EVIDENCE OF ALL LANDMARKS, BENCHMARKS, AND OTHER CONTROL POINTS IN ALL AREAS WHERE SUCH LANDMARKS, BENCHMARKS, AND OTHER CONTROL POINTS MAY EXIST.

THE CONTRACTOR IS TO WORK WITH UTMOST CARE AND PROTECT ALL SURVEY MARKERS. REMOVAL OF ANY SURVEY MARKER IS TO BE WITH THE APPROVAL OF THE ENGINEER.

DETAILS OF CONSTRUCTION NOT SHOWN ON THE PLAN SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA. NOT ALL UTILITIES ARE MEMBERS OF DIGGERS HOTLINE.

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

EROSION CONTROL FEATURES ARE LISTED IN MISCELLANEOUS QUANTITIES BUT NOT SHOWN ON THE PLANS. LOCATIONS LISTED ARE SUGGESTED LOCATIONS. EXACT LOCATIONS WILL BE DETERMINED BY THE CONTRACTORS EROSION CONTROL IMPLEMENTATION PLAN AND APPROVED BY THE ENGINEER IN CONSULTATION WITH WISCONSIN DEPARTMENT OF NATURAL RESOURCES.

BUTT JOINTS AND AREAS OF PAVEMENT, CURB AND GUTTER AND SIDEWALK REMOVAL SHALL BE REMOVED TO AN EXISTING JOINT, SAWCUT WHERE SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

A 25% EXPANSION FACTOR WAS USED TO CALCULATE FILL QUANTITIES.

PRIVATE, FIELD AND COMMERCIAL ENTRANCES SHALL BE RESTORED IN KIND. ASPHALT APRONS SHALL BE INSTALLED AT ALL BASE COURSE ENTRANCES. ENTRANCES SHALL REMAIN OPEN DURING CONSTRUCTION.

DISTURBED RURAL AREAS WITHIN THE RIGHT-OF-WAY SHALL BE TOPSOILED, FERTILIZED, SEEDED AND EROSION MATTED.

2" HMA PAVEMENT 4 MT 58-28S SHALL BE PLACED IN ONE UPPER LAYER. HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 115 LBS/IN/SY.

IN AREAS OF FULL DEPTH PAVEMENT REPLACEMENT, 5.5" HMA PAVEMENT 4 MT 58-28S SHALL BE PLACED IN ONE 2.5 INCH LOWER LAYER AND ONE 2 INCH UPPER LAYER. HMA PAVEMENT 5 MT 58-28S MAY BE SUBSTITUTED FOR LOWER LAYERS.

WHEN THE QUANTITY OF BASE AGGREGATE DENSE 3/4 INCH, BASE AGGREGATE DENSE 1 ¼ INCH OR HMA PAVEMENT 4 MT 58-28S IS MEASURED FOR PAYMENT BY THE TON, THE DEPTH OR THICKNESS SHOWN ON PLANS IS APPROXIMATE AND THE ACTUAL DEPTH MAY VARY DEPENDING ON THE ACTUAL DISTRIBUTION OF THE MATERIAL AS APPROVED BY THE ENGINEER IN THE FIELD.

UTILITY LISTING

WISCONSIN PUBLIC SERVICE CORPORATION
LORI BUTRY
700 NORTH ADAMS STREET
PO BOX 19001
GREEN BAY WI 54307-9001
920-433-1703

AMERICAN TRANSMISSION COMPANY
ANDY EBERHARDT
N19W23993 RIDGEVIEW PARKWAY WEST
PO BOX 47
WAUKESHA WI 53187-0047
262-506-6864

ANR PIPELINE COMPANY
LAWRENCE HUBER
W3925 PIPELINE LANE
EDEN, WI 53019
920-477-2235

WE ENERGIES (GAS)
BILL GARSKI
1921 EIGHTH STREET
WISCONSIN RAPIDS WI 54494
715-421-7259

WISCONSIN DEPARTMENT OF TRANSPORTATION
NORTH CENTRAL REGION - WISCONSIN RAPIDS
KENNETH RADKE
1681 SECOND AVENUE SOUTH
WISCONSIN RAPIDS, WI 54495
715-421-8007

CHARTER COMMUNICATIONS
RUDI RUDIGER
5024 HEFFRON STREET
STEVENS POINT, WI 54402
715-302-1482 (MOBILE)

ADAMS COLUMBIA ELECTRIC COOPERATIVE
BRENT CORNING
N1519 HWY 22
WAUTOMA, WI 54982
920-787-3767

AT&T WISCONSIN
JAMES DREIFUERST
4TH FLOOR ENGINEERING
221 WEST WASHINGTON STREET
APPLETON WI 54911
920-735-3248

CENTURYTEL OF MIDWEST-WISCONSIN
DONALD MOAT
SOUTH 2323 EAST CAPITOL DRIVE
APPLETON, WI 54911
920-986-2009

WAUPACA CHAIN OF LAKES SANITARY DISTRICT#1
RUTH WOODFORD
P.O. BOX 71
KING, WI 54946
715-258-9200

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5117 WEST TERRACE DRIVE
MADISON, WI 53718
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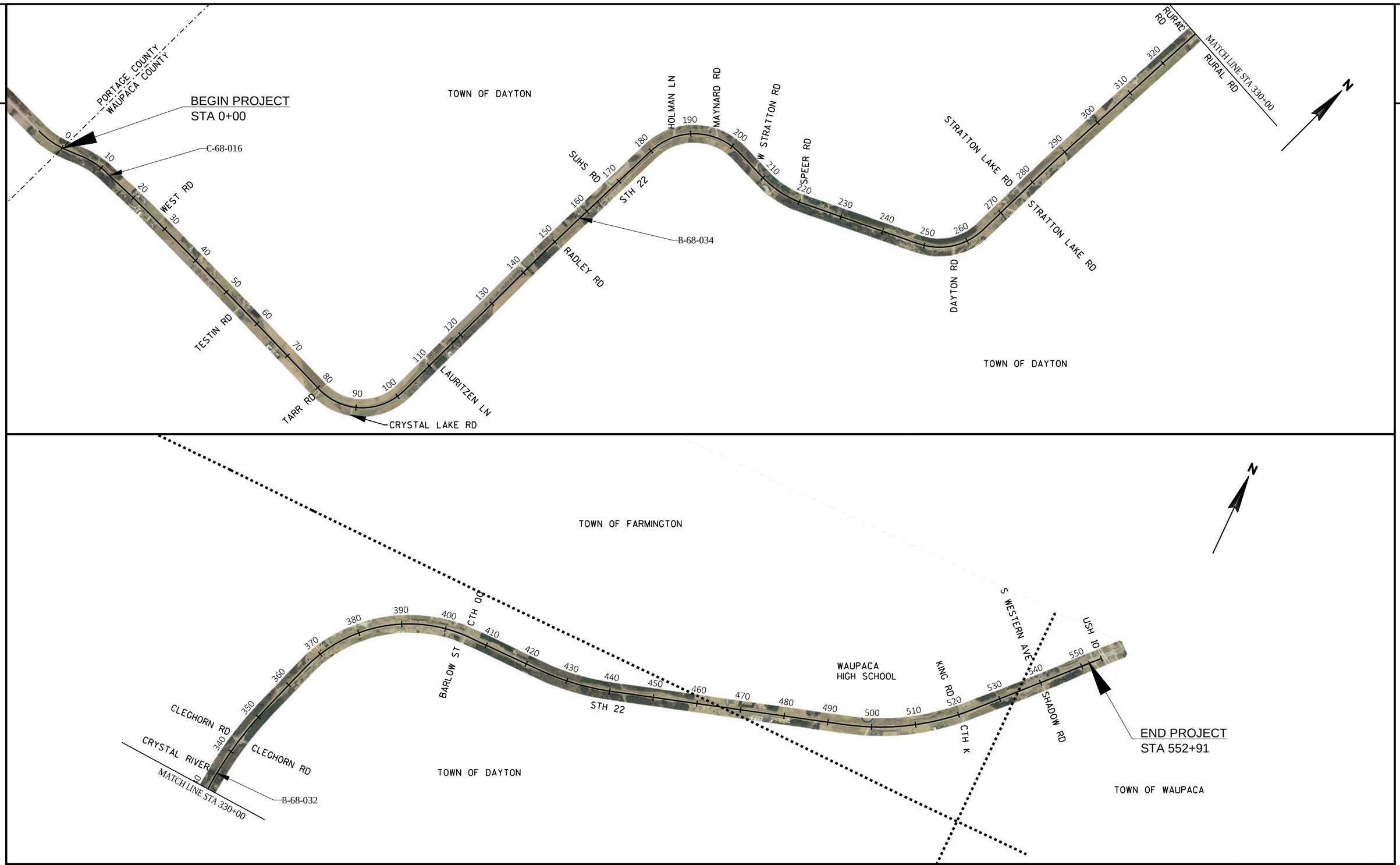
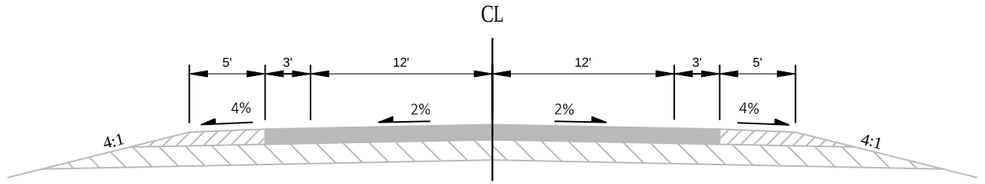


PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PROJECT OVERVIEW	SHEET	E

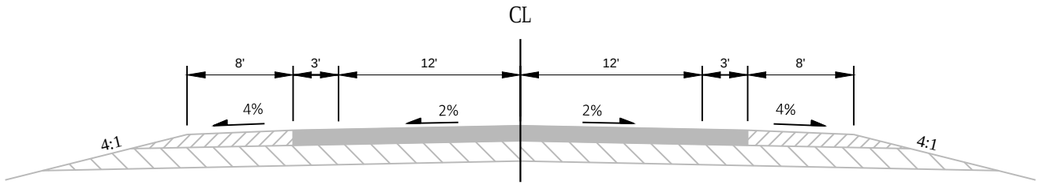
FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\020201-PO.DWG
LAYOUT NAME - 01

PLOT DATE : 9/19/2019 1:32 PM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:2000 FT

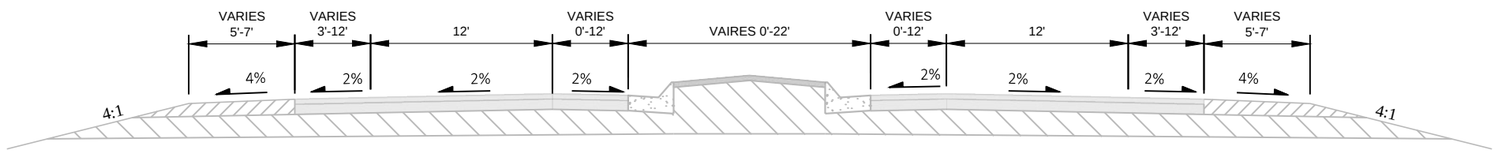
2



EXISTING TYPICAL SECTION
STA 0+00 TO 395+00



EXISTING TYPICAL SECTION
STA 424+00 TO 510+00
STA 530+00 TO 542+00

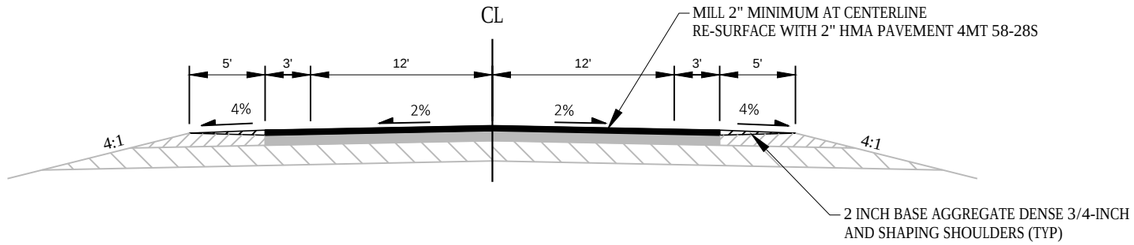


EXISTING TYPICAL SECTION
STA 395+00 TO 424+00
STA 510+00 TO 530+00
STA 542+00 TO 551+60

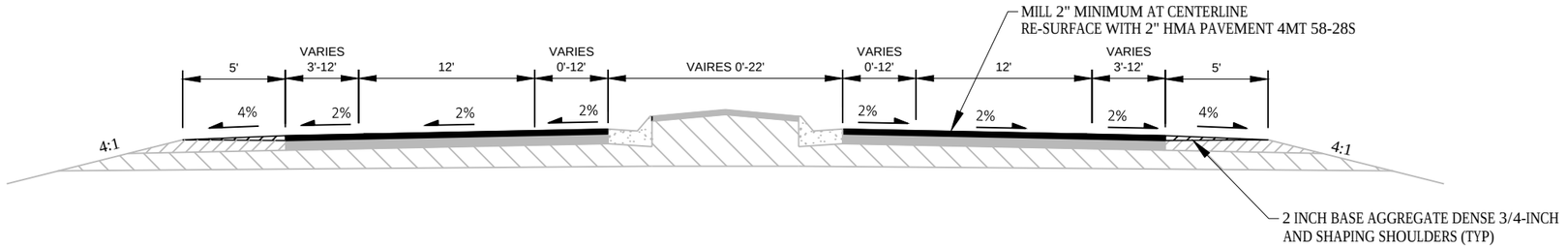
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN: TYPICAL SECTION	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\020301-TS.DWG
LAYOUT NAME - 01
PLOT DATE : 9/19/2019 12:19 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:10 FT
WISDOT/CADDS SHEET 42

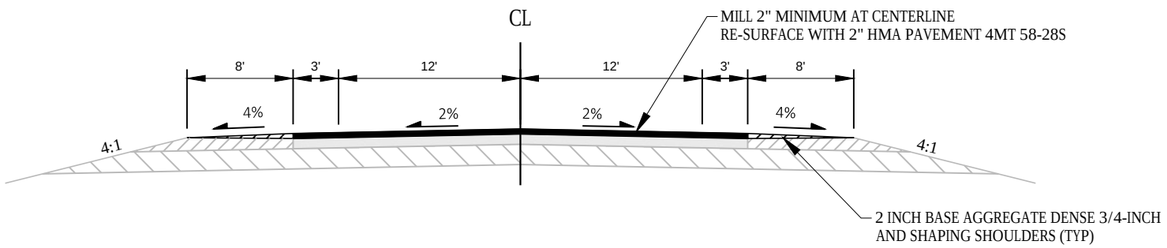
2



PROPOSED TYPICAL SECTION
STA 0+00 TO 395+00



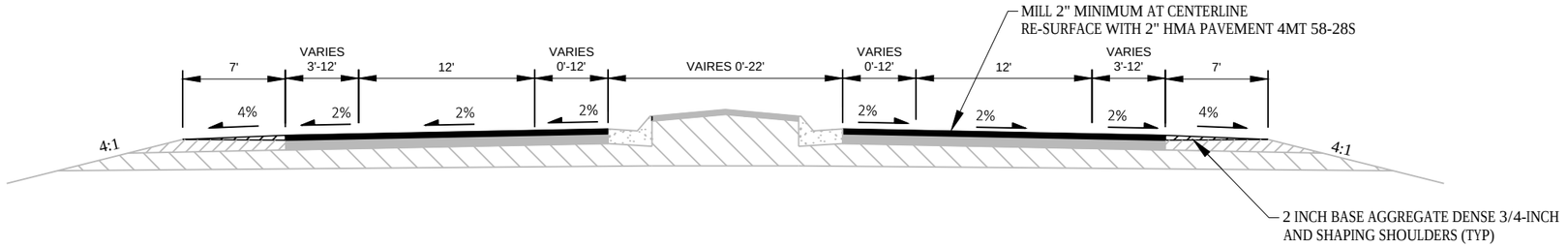
PROPOSED TYPICAL SECTION
STA 395+00 TO 424+00



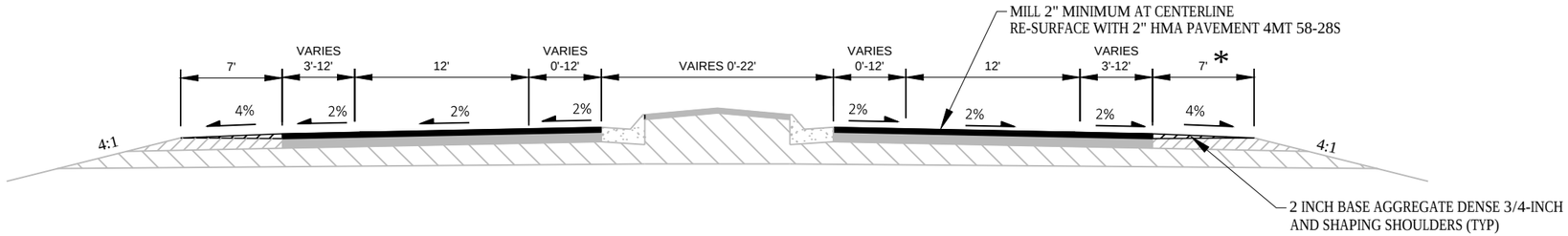
PROPOSED TYPICAL SECTION
STA 424+00 TO 510+00
STA 530+00 TO 542+00

NOTES:
IN AREAS OF CULVERT REPLACEMENT THE PAVEMENT STRUCTURE SHALL BE REPLACED TO MATCH EXISTING CONDITIONS, MINIMUM 2" HMA PAVEMENT 4MT 58-28S SURFACE COURSE OVER 5" HMA PAVEMENT 4 MT 58-28S LOWER LAYERS PLACED IN 2.5" LIFTS. LOWER LAYERS MAY BE CONSTRUCTED OF HMA PAVEMENT 3 MT 58-28S. HMA PAVEMENT OVER 11 INCHES MINIMUM OF BASE AGGREGATE DENSE 1 1/4-INCH.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN: TYPICAL SECTION	SHEET	E



PROPOSED TYPICAL SECTION
STA 510+00 TO 530+00

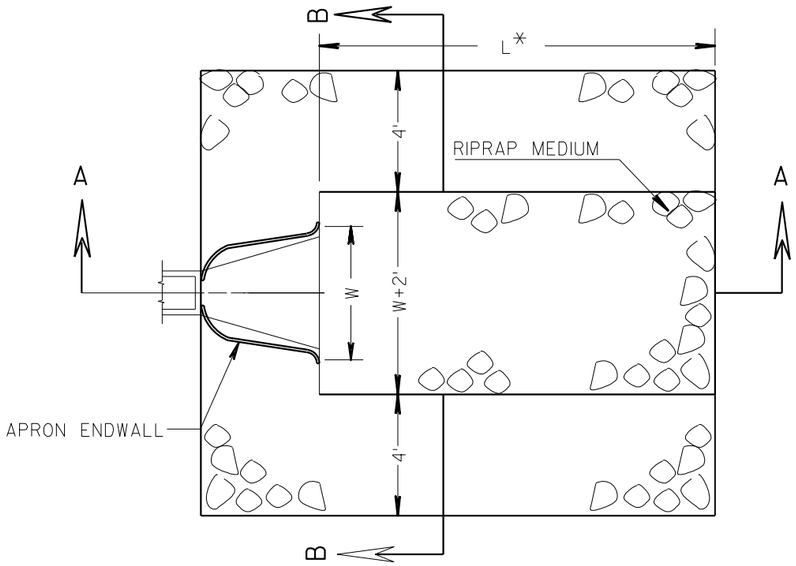


PROPOSED TYPICAL SECTION
STA 542+00 TO 551+60

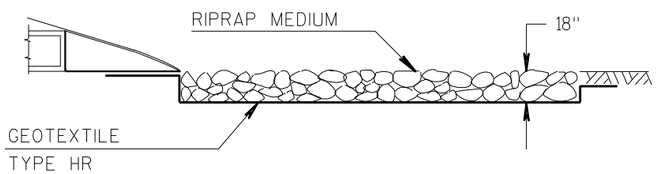
* CONCRETE CURB & GUTTER 30 - INCH TYPE D
ADJACENT TO RIGHT SHOULDER FROM STA 549+70 TO 551+60

NOTES:
IN AREAS OF CULVERT REPLACEMENT THE PAVEMENT STRUCTURE SHALL BE REPLACED TO MATCH EXISTING CONDITIONS, MINIMUM 2" HMA PAVEMENT 4MT 58-28S SURFACE COURSE OVER 5" HMA PAVEMENT 4 MT 58-28S LOWER LAYERS PLACED IN 2.5" LIFTS. LOWER LAYERS MAY BE CONSTRUCTED OF HMA PAVEMENT 3 MT 58-28S. HMA PAVEMENT OVER 11 INCHES MINIMUM OF BASE AGGREGATE DENSE 1 1/4-INCH.

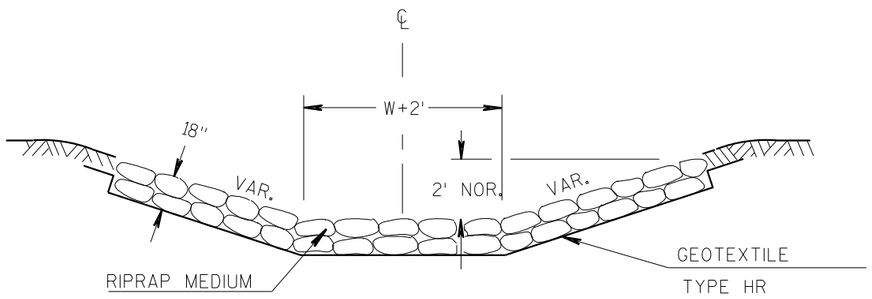
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN: TYPICAL SECTION	SHEET	E



* L = 3 TIMES DIAMETER (NOR.) OR 10' MIN. OR AS DIRECTED BY THE ENGINEER

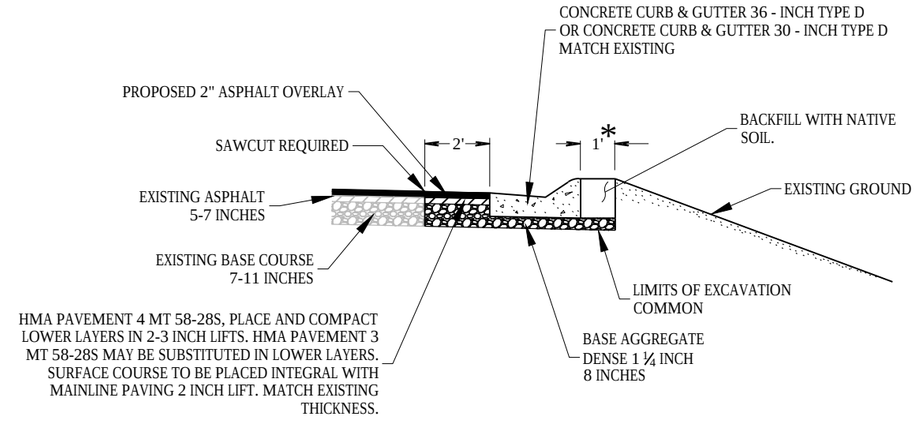


SECTION A-A



SECTION B-B

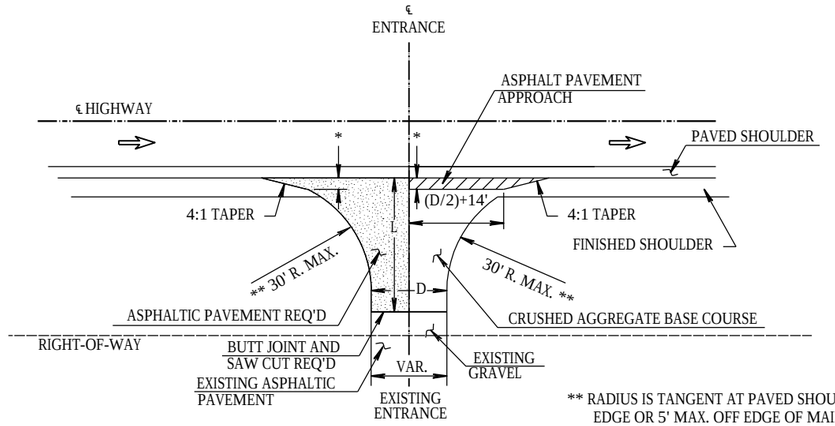
RIPRAP MEDIUM AND GEOTEXTILE TYPE HR DETAIL AT APRON ENDWALLS



* TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B, SEEDING MIXTURE NO. 30

NOTE: PLAN QUANTITIES BASED ON 7 - INCHES OF HMA PAVEMENT AND 8 - INCHES OF BASE AGGREGATE DEPTH. ACTUAL QUANTITIES TO BE BASED ON FIELD CONDITIONS.

CONCRETE CURB & GUTTER REPLACEMENT DETAIL



L=VARIABLE, EXACT LENGTH TO BE DETERMINED IN THE FIELD BY THE ENGINEER. BLEND BACK ON THE ENTRANCE FAR ENOUGH TO GET A SMOOTH PROFILE.

D=DRIVEWAY WIDTH
D=20'TYP.(PE's & FE's) (16'MIN.-24'MAX.)
D=28'TYP.(CE's & FARM ENT.) (24'MIN.-35'MAX.)

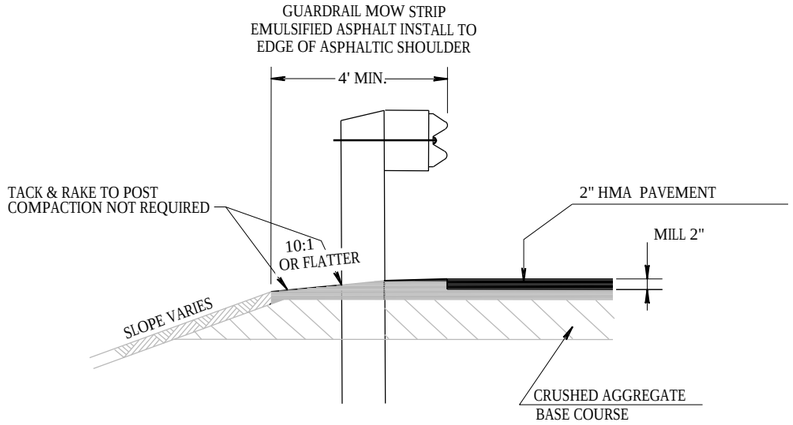
** RADIUS IS TANGENT AT PAVED SHOULDER EDGE OR 5' MAX. OFF EDGE OF MAIN LINE PAVEMENT WHICH EVER IS LESS.

* 3' MAX. OR TO FINISHED SHOULDER WHICH EVER IS LESS.

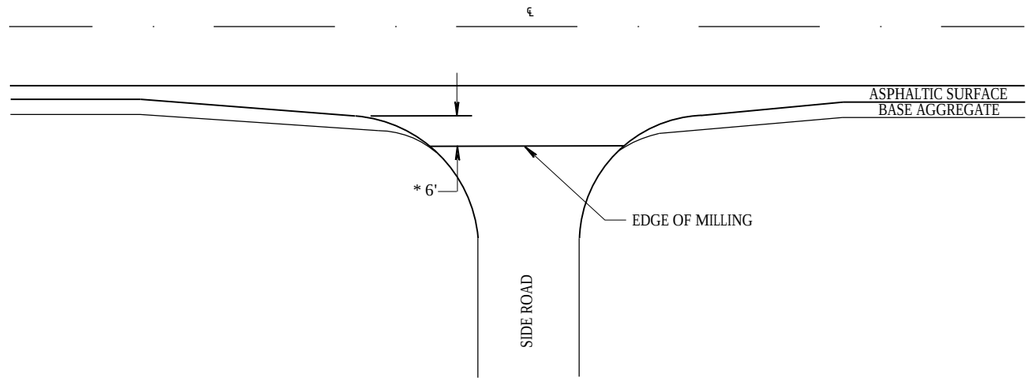
PLAN VIEW

RURAL DRIVEWAY INTERSECTION DETAIL

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CONSTRUCTION DETAILS	SHEET	E

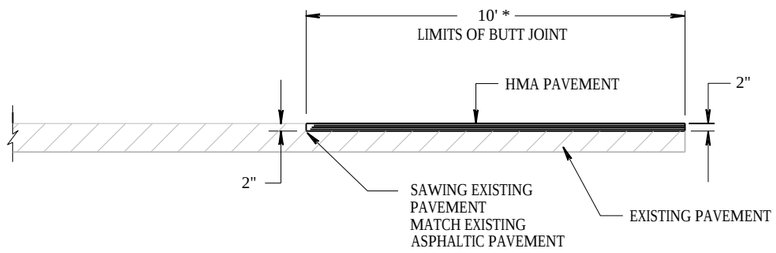


ASPHALTIC SHOULDER AT GUARD RAIL



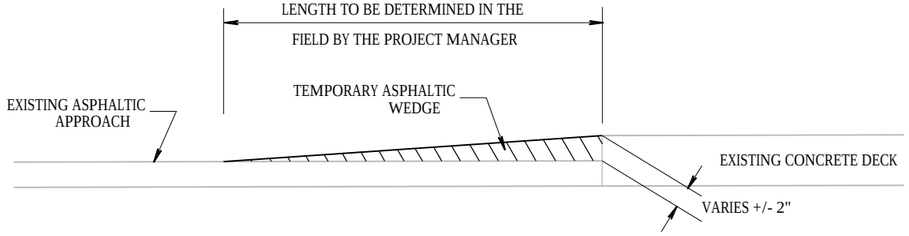
EDGE OF MILLING DETAIL

* 6' BACK FROM START OF RADIUS OR TO THE LIMITS OF CURB AND GUTTER REMOVAL. WHICHEVER IS GREATER.



TYPICAL BUTT JOINT DETAIL

* EXACT DIMENSIONS TO BE DETERMINED BY ENGINEER IN THE FIELD.



TEMPORARY ASPHALTIC WEDGE DETAIL

CRYSTAL RIVER BRIDGE

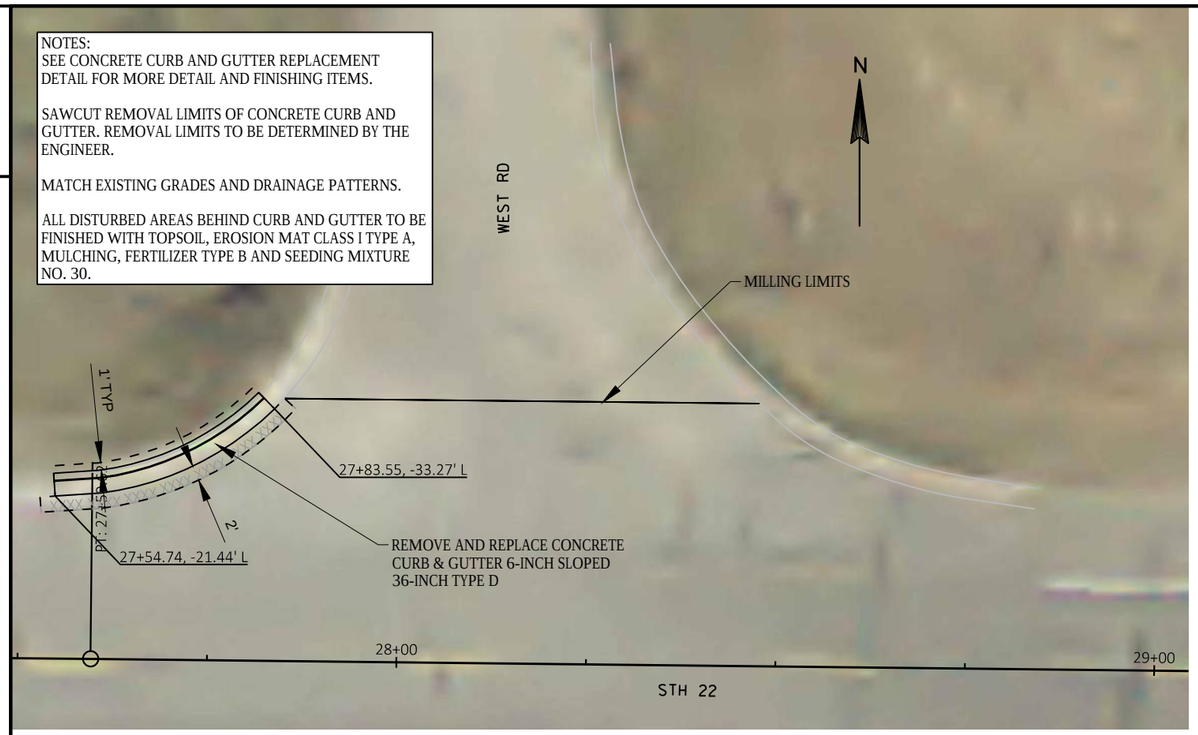
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CONSTRUCTION DETAILS	SHEET	E

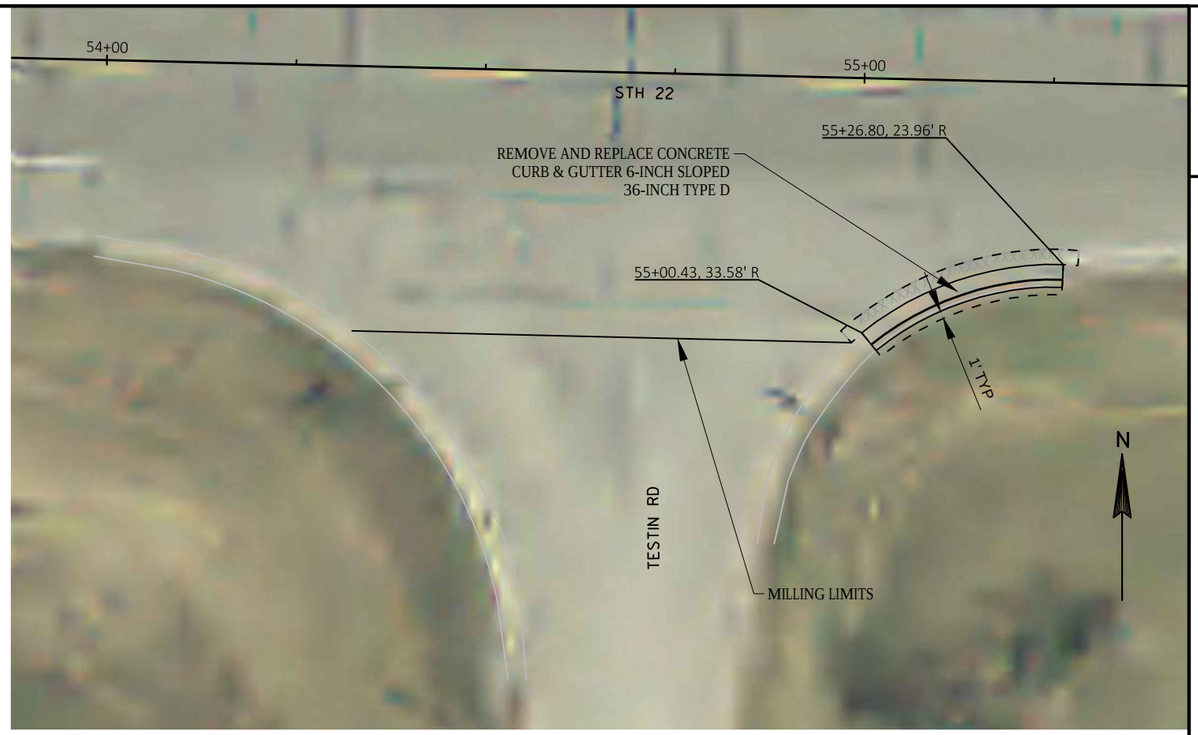
NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

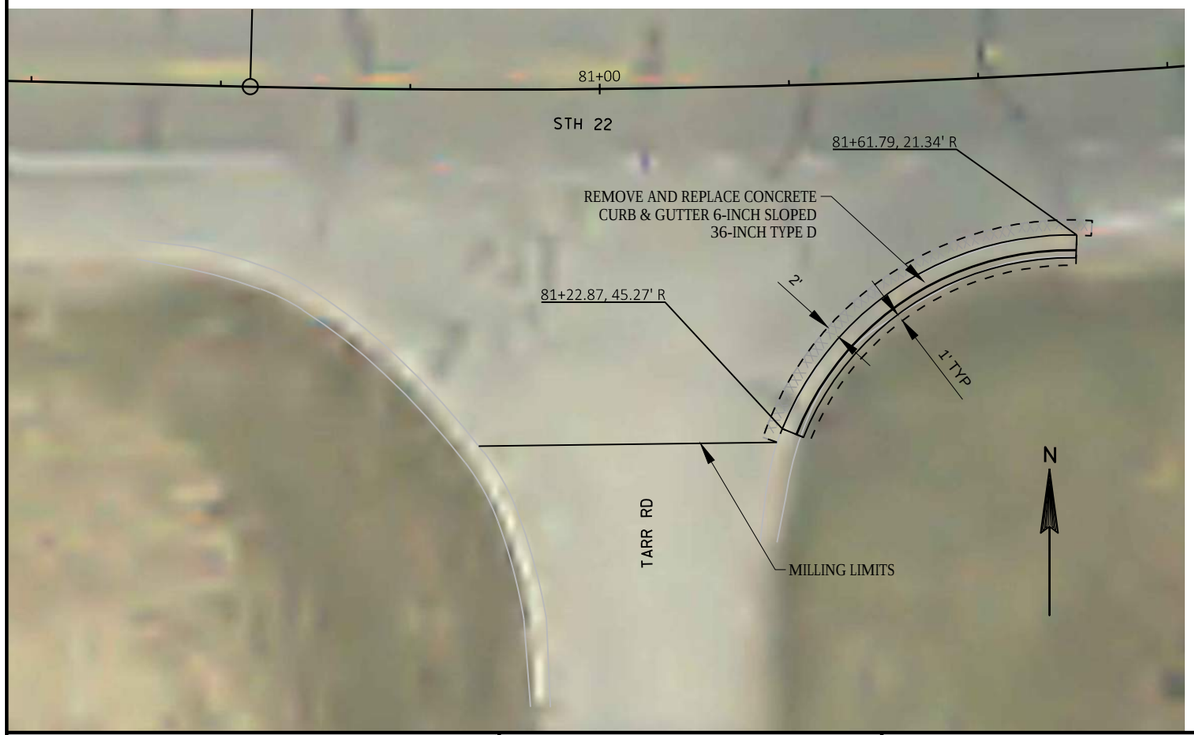
SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

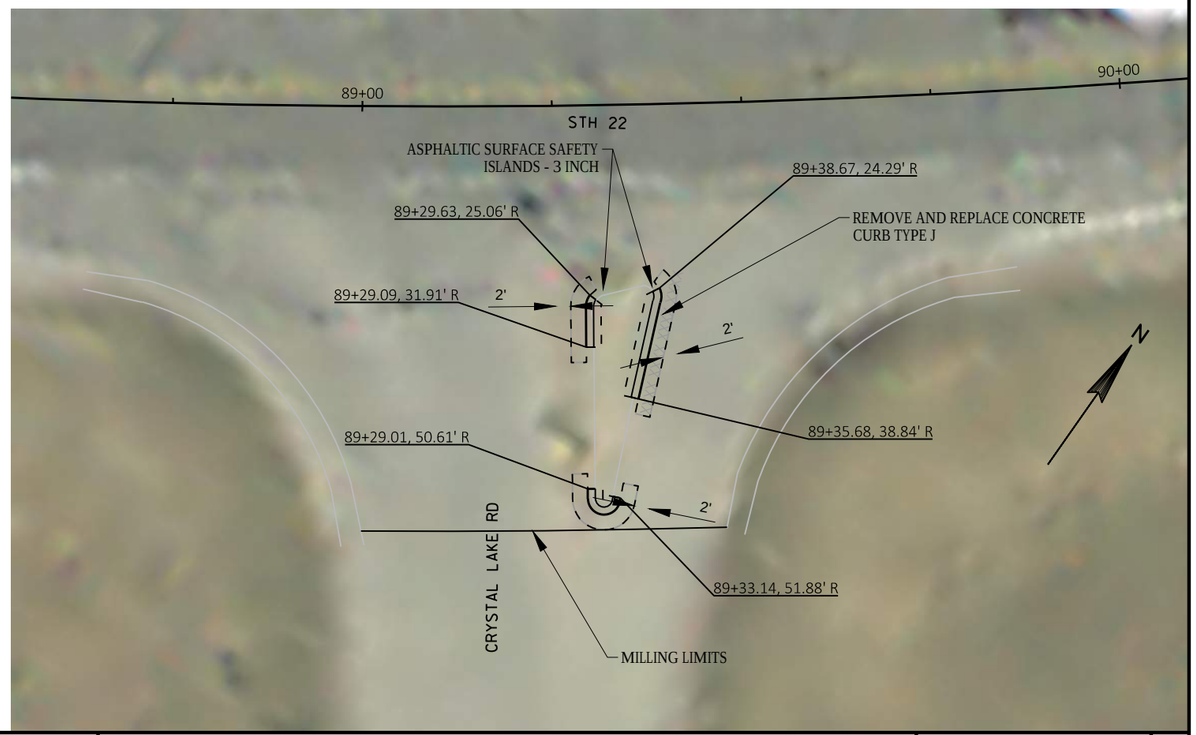
MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.



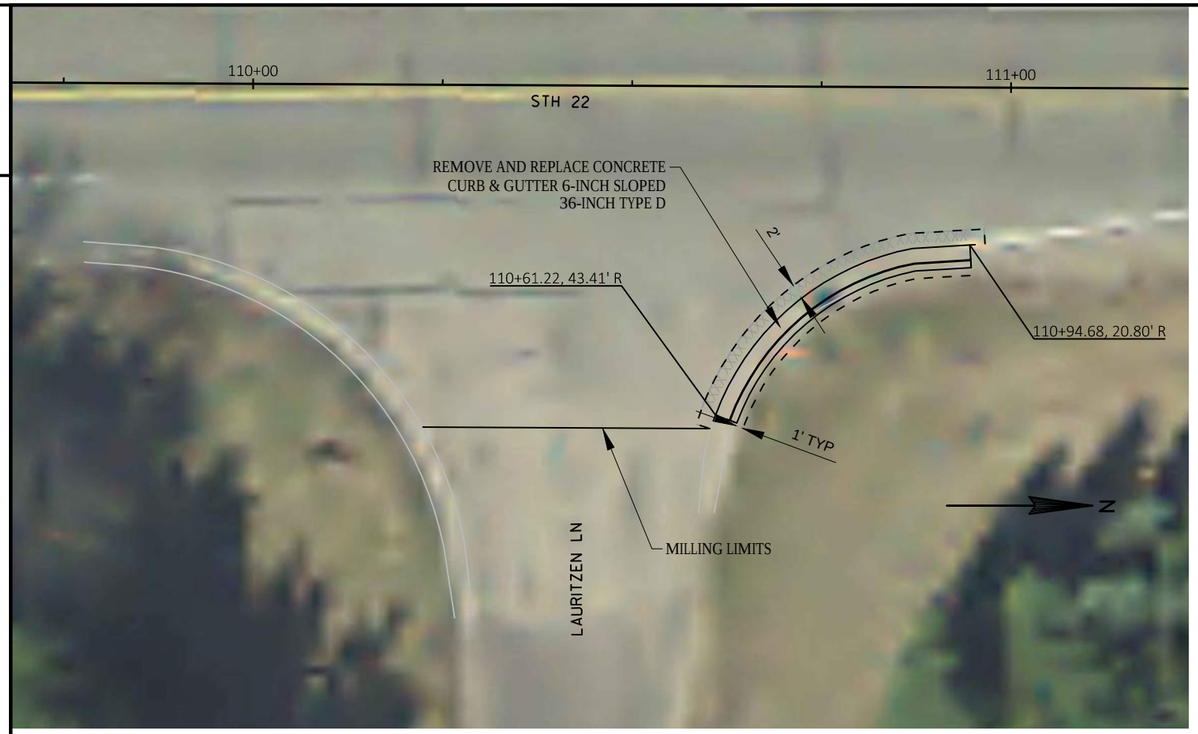


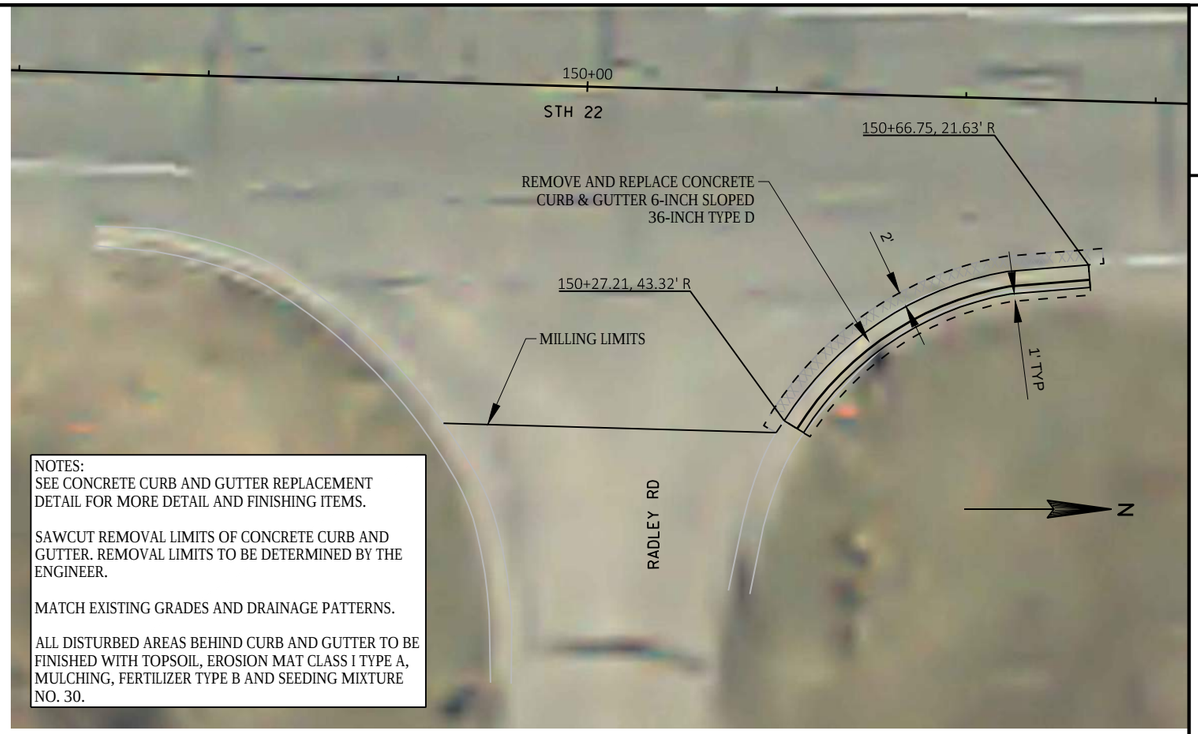




PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 01
PLOT DATE : 9/30/2019 2:33 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 44



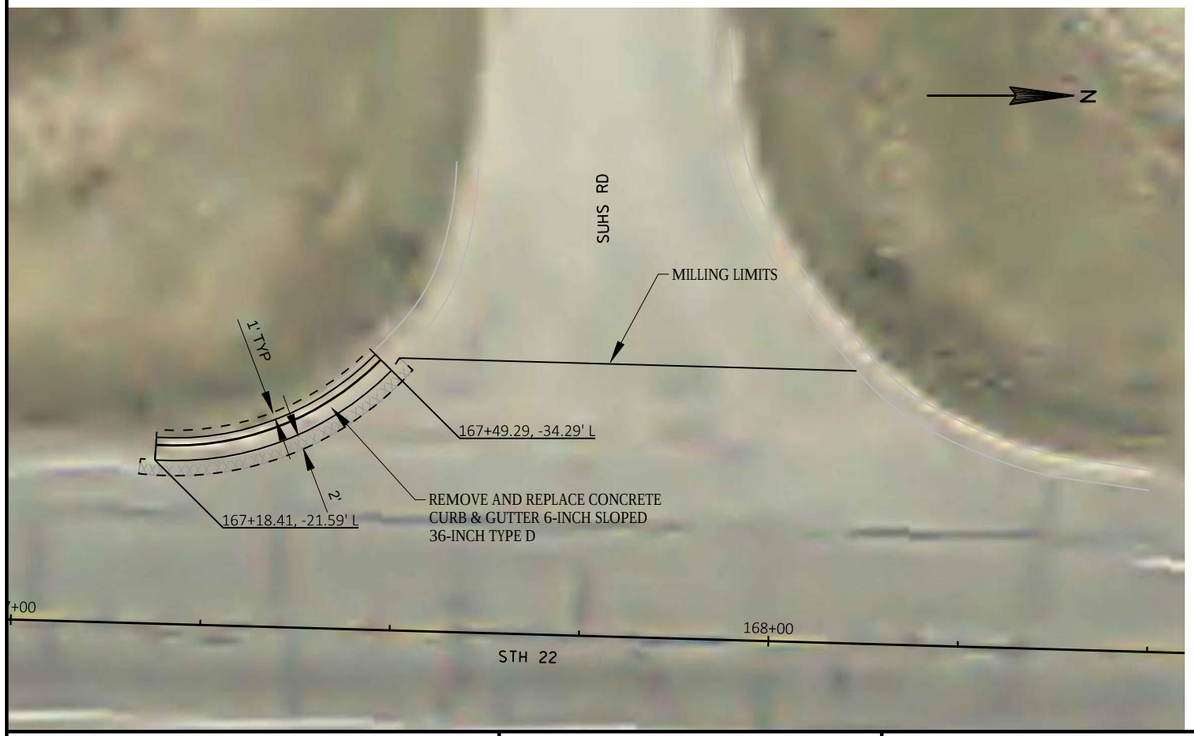


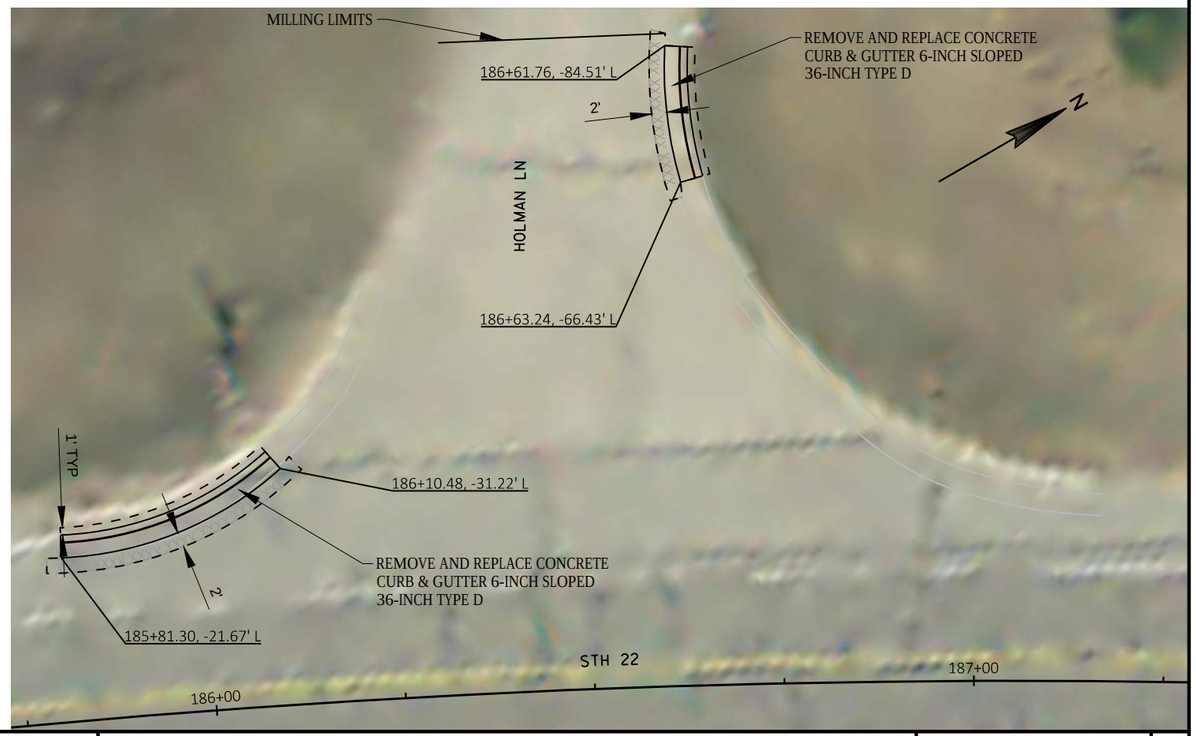
NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.





PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

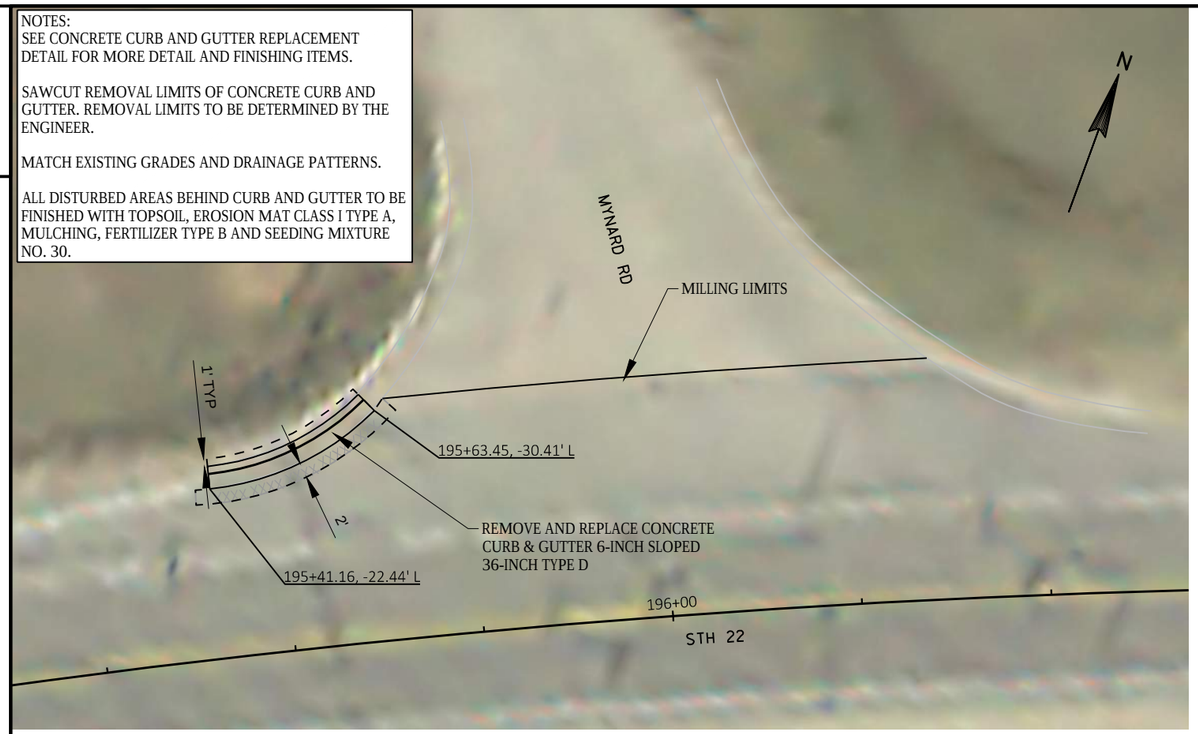
FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 02
PLOT DATE : 9/30/2019 2:33 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 44

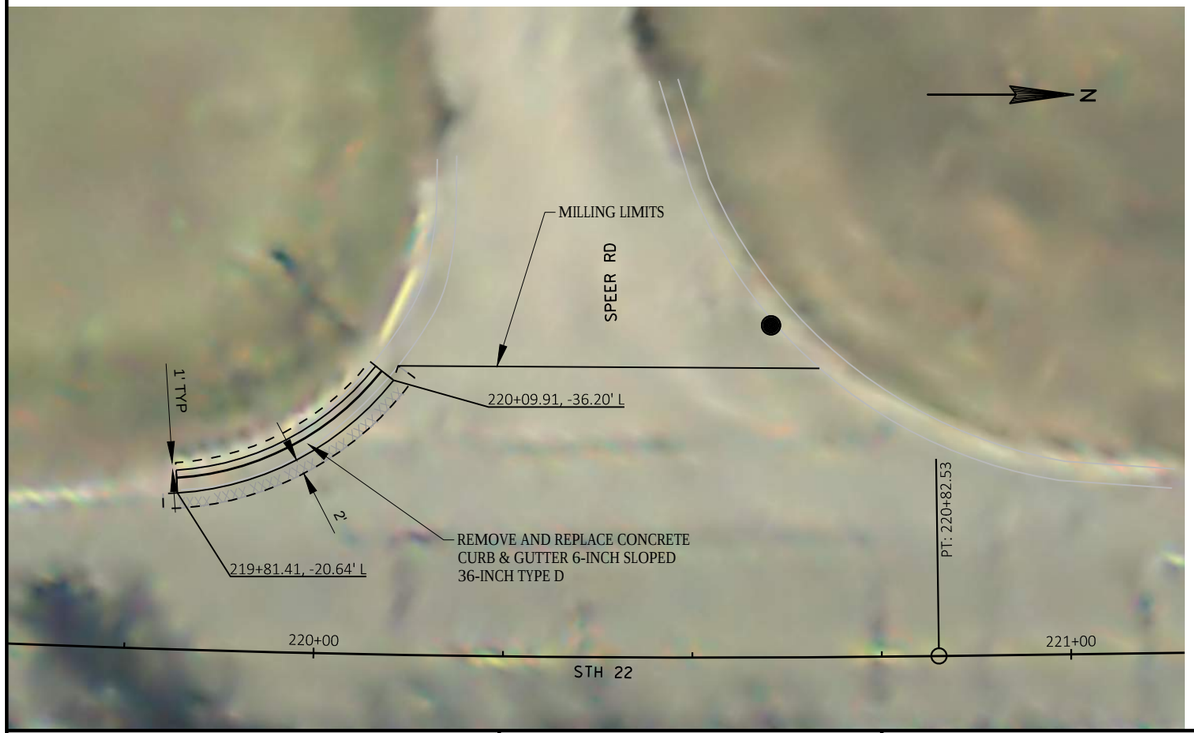
NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

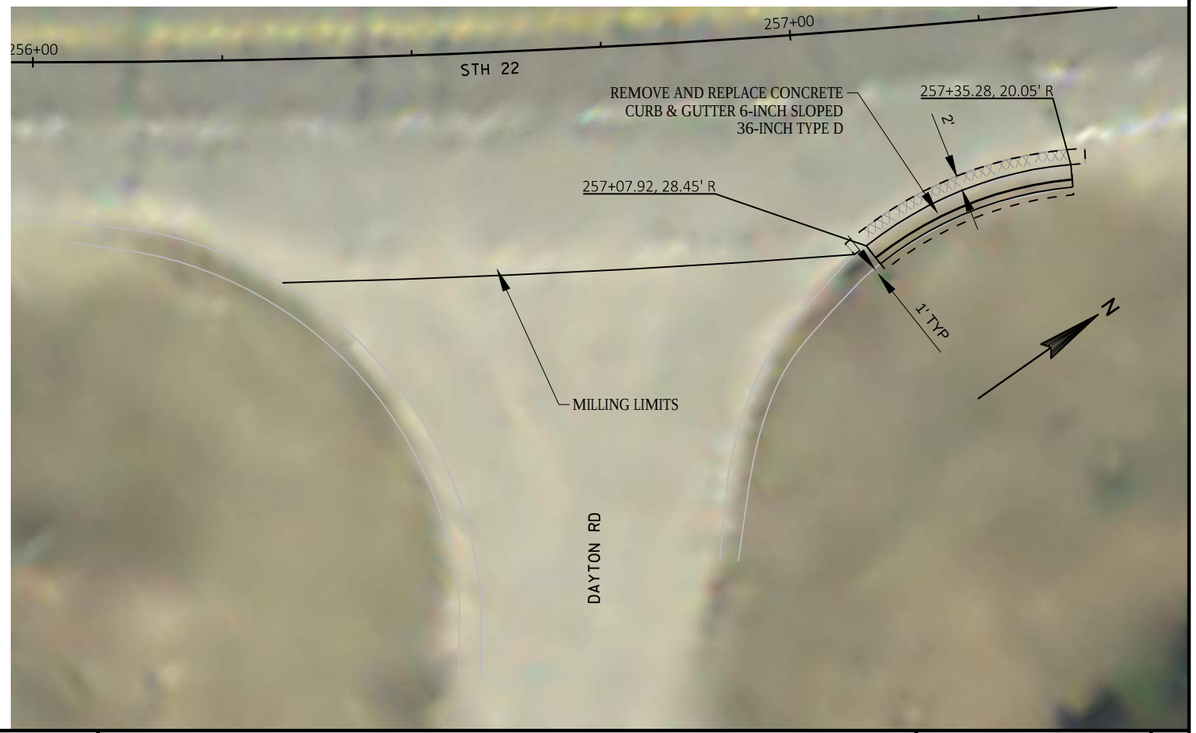
SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.



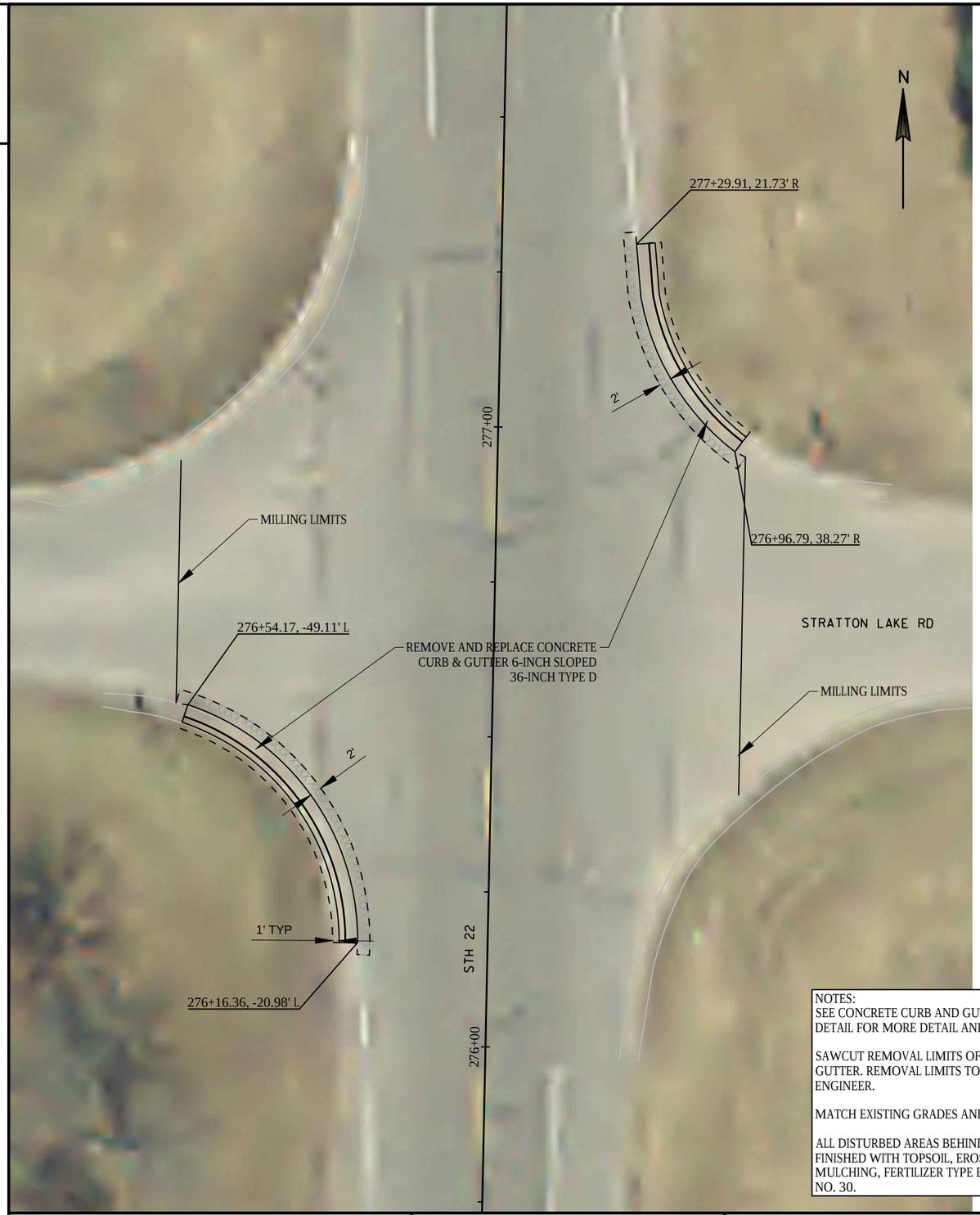




PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 03

PLOT DATE : 9/30/2019 2:32 PM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:20 FT



NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.

344+00

343+54.72, 37.20' R

2'

343+48.16, 69.31' R

CLEGHORN RD

MILLING LIMITS

MILLING LIMITS

342+83.48, -41.13' L

343+00

REMOVE AND REPLACE CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE D

1' TYP

2'

342+64.19, 21.05' R

STH 22

342+47.89, -22.50' L

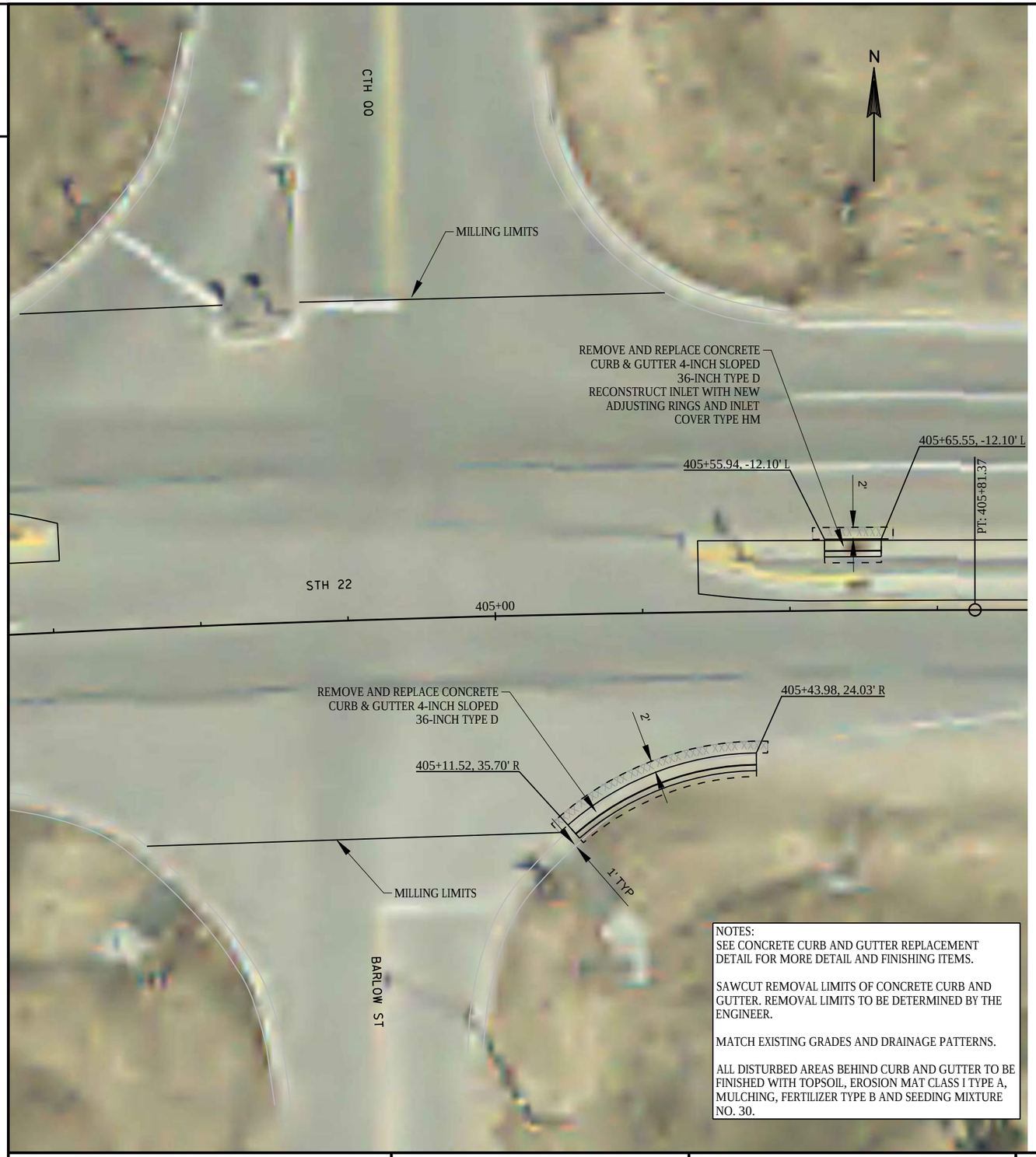
342+46.97, 19.56' R

N

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\021201-PD.DWG
LAYOUT NAME - 05

PLOT DATE : 9/30/2019 2:30 PM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:20 FT

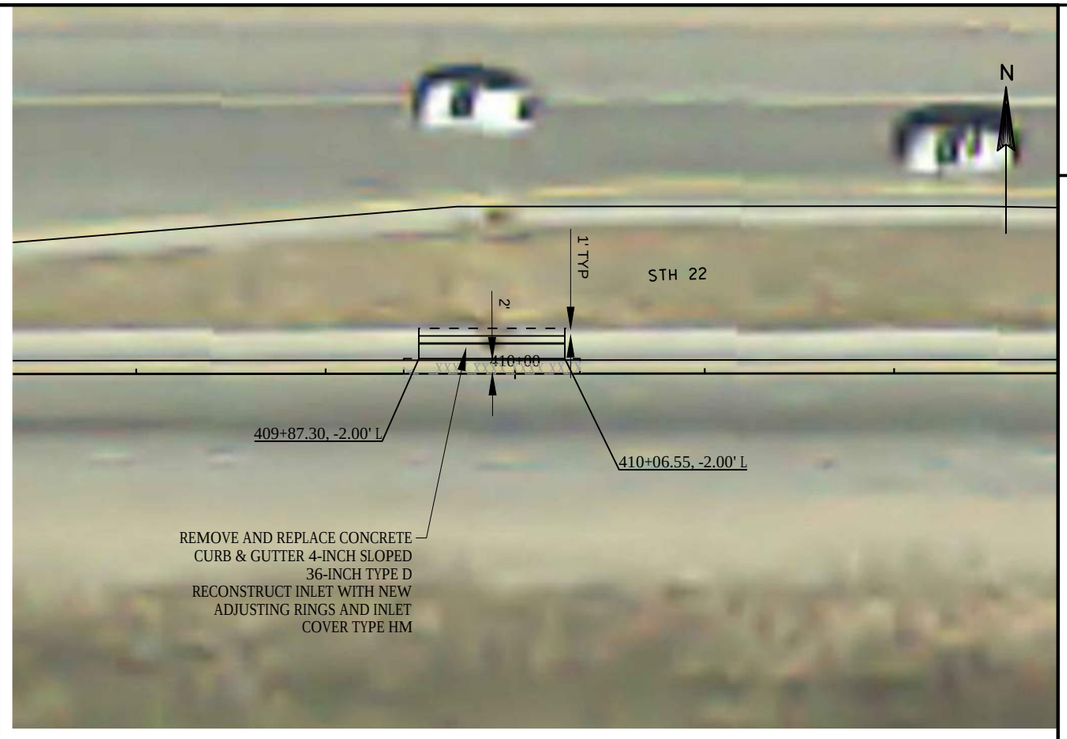


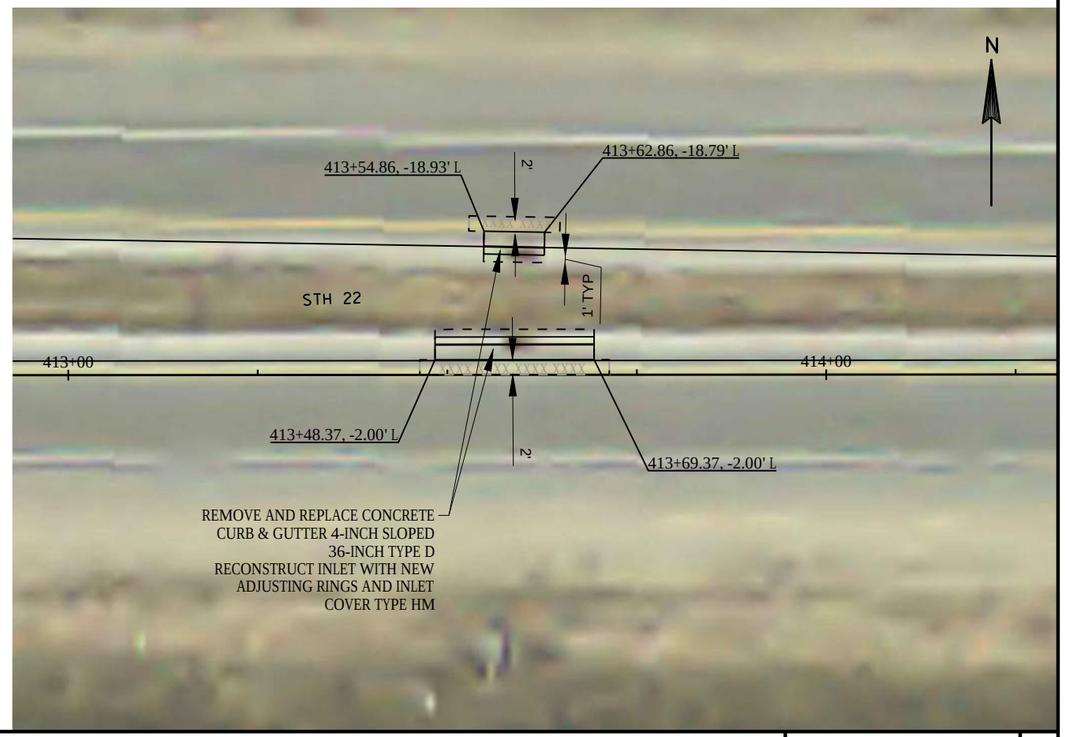
NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

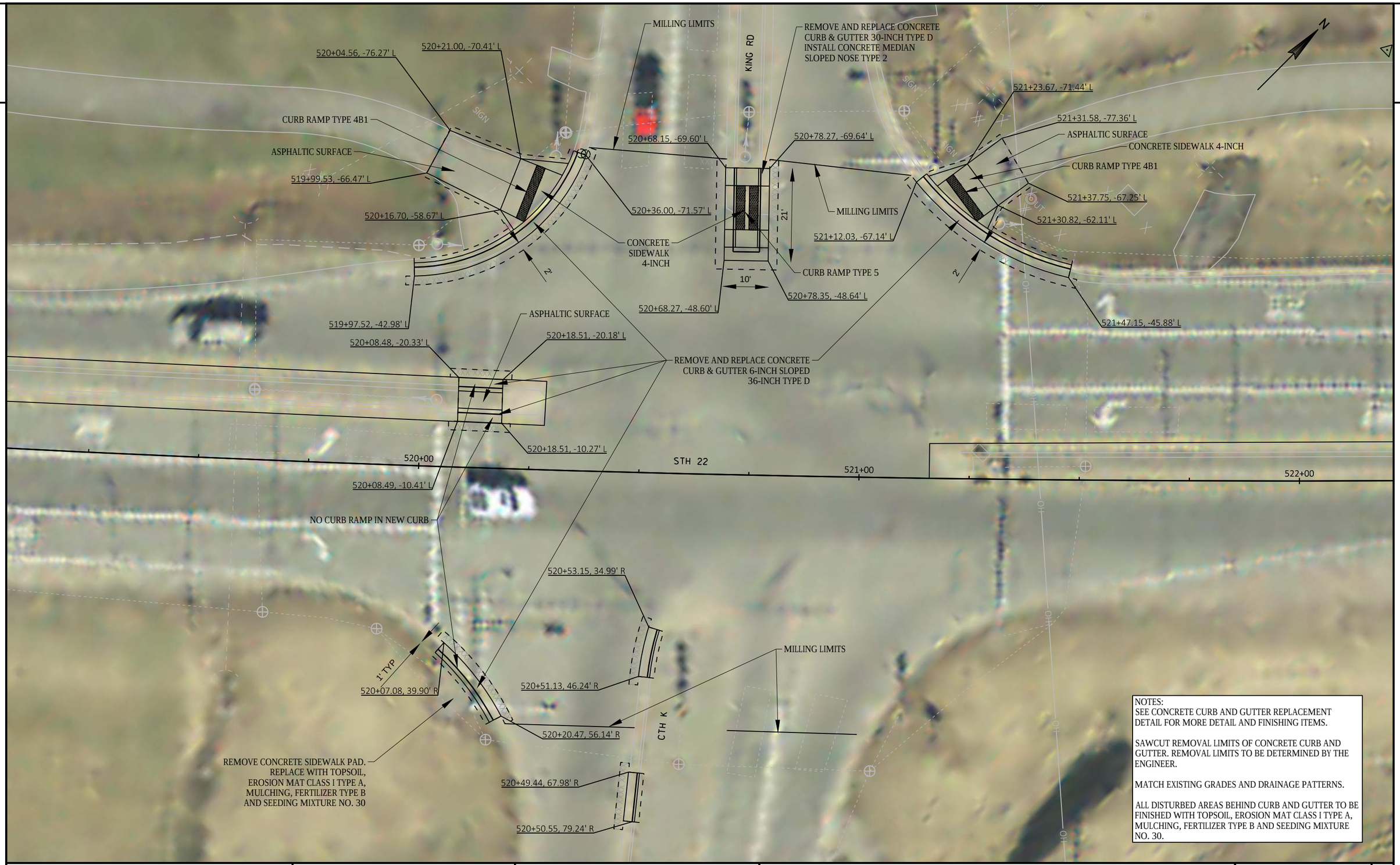
ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.





PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

2



PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

2

NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

2

NOTES:
SEE CONCRETE CURB AND GUTTER REPLACEMENT DETAIL FOR MORE DETAIL AND FINISHING ITEMS.

SAWCUT REMOVAL LIMITS OF CONCRETE CURB AND GUTTER. REMOVAL LIMITS TO BE DETERMINED BY THE ENGINEER.

MATCH EXISTING GRADES AND DRAINAGE PATTERNS.

ALL DISTURBED AREAS BEHIND CURB AND GUTTER TO BE FINISHED WITH TOPSOIL, EROSION MAT CLASS I TYPE A, MULCHING, FERTILIZER TYPE B AND SEEDING MIXTURE NO. 30.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN DETAILS - CONCRETE CURB & GUTTER AND SIDEWALK REPLACEMENT	SHEET	E

2

2

LEGEND

EROSION MAT CLASS II OR III (EXCEPT II, TYPE A)

SILT FENCE

RIP RAP MEDIUM

CULVERT PIPE DITCH CHECK

PERMANENT WETLAND DISTURBANCE
148 sf

WETLANDS

CLEGHORN RD

STH 22

341+00 342+00 343+00 344+00 345+00

STA 342+49
REMOVE EXISTING 36" CMCP & ENDWALLS
REPLACE WITH 36" CPRC CL III
& APRON ENDWALLS FOR CPRC

CAUTION

EXISTING RIP-RAP

WETLANDS

PERMANENT WETLAND DISTURBANCE
159 sf

484+00 485+00 486+00 487+00 488+00 489+00

STH 22

STA 486+69
REMOVE EXISTING 36" CMCP & ENDWALLS
REPLACE WITH 36" CPRC CL III
& APRON ENDWALLS FOR CPRC

PERMANENT WETLAND DISTURBANCE
175 sf

WETLANDS

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	EROSION CONTROL	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\022001-EC.DWG
LAYOUT NAME - 01

PLOT DATE : 9/22/2019 9:44 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : ##########

2

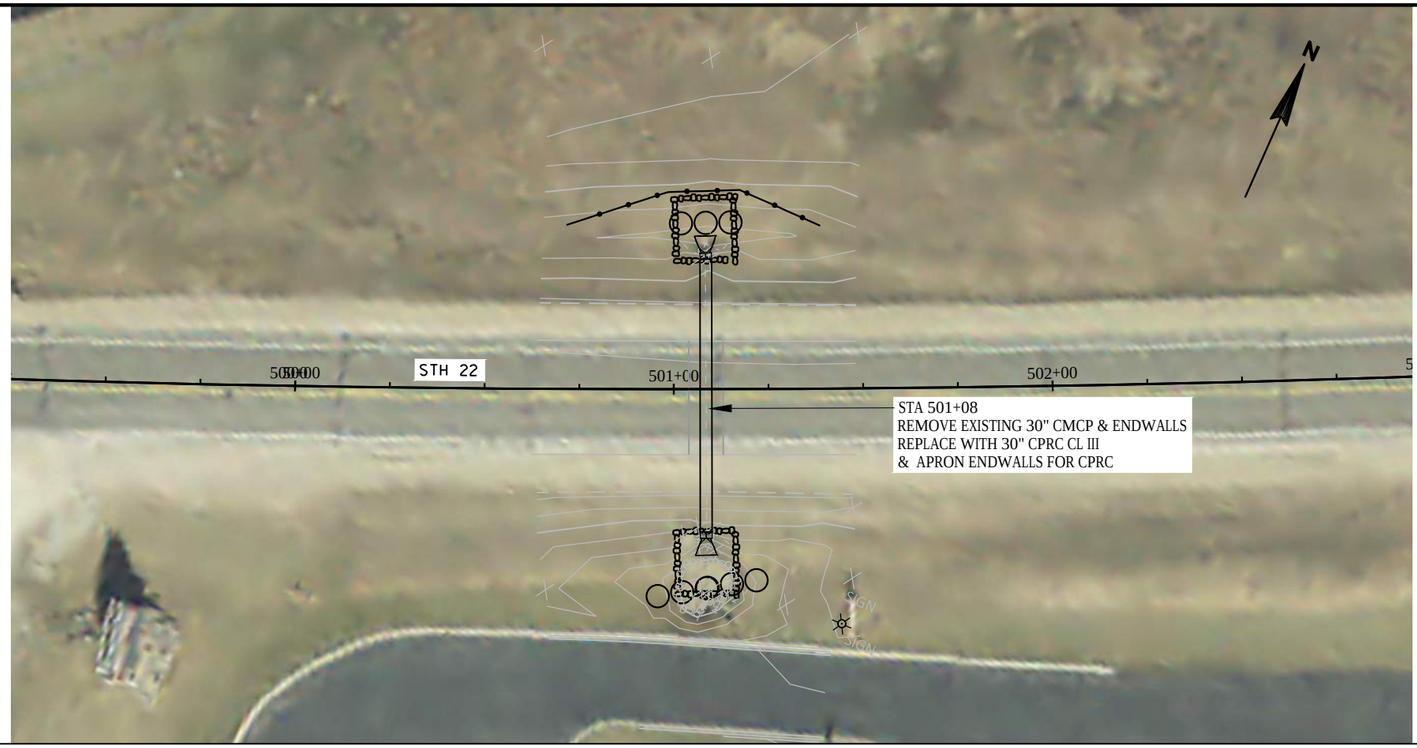
LEGEND

EROSION MAT CLASS II OR III (EXCEPT II, TYPE A)

SILT FENCE

RIP RAP MEDIUM

CULVERT PIPE DITCH CHECK

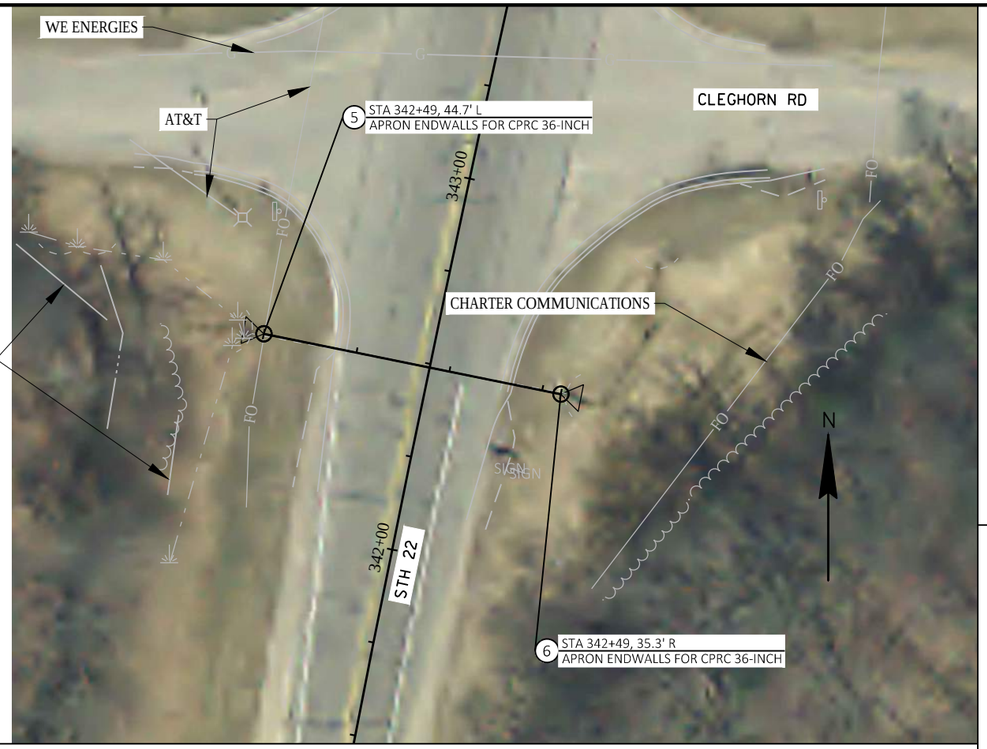


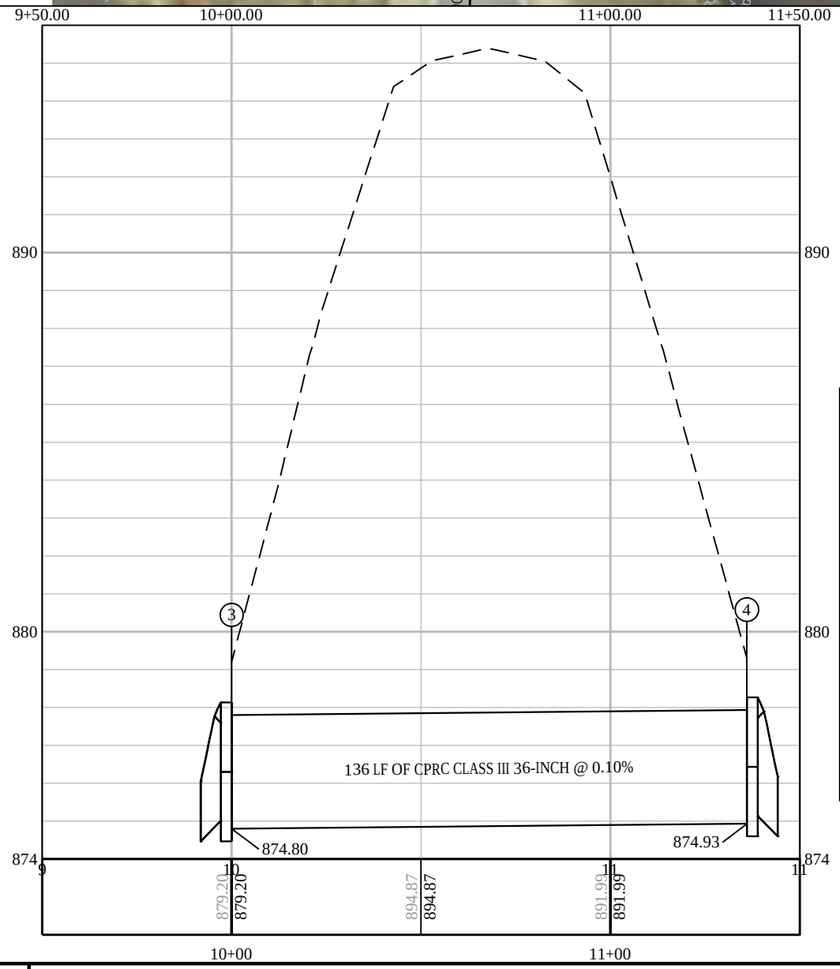
2

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	EROSION CONTROL	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\022001-EC.DWG
LAYOUT NAME - 02

PLOT DATE : 9/22/2019 9:45 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : ##########





NOTES:
CULVERTS TO BE REPLACED UNDER TRAFFIC USING FLAGGING OPERATION.

IF CULVERT REPLACEMENT TAKES MORE THAN ONE WORKING DAY, STH 22 SHALL BE OPENED TO TWO LANES OF TRAFFIC OVERNIGHT.

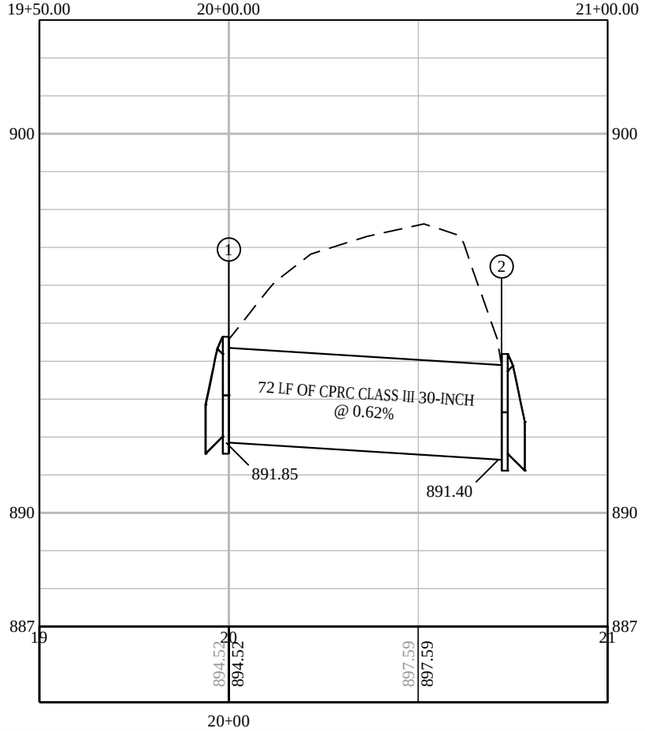
BEFORE OPENING TO TWO-WAY TRAFFIC BRING STH 22 UP TO GRADE USING BASE AGGREGATE DENSE 1 1/4-INCH AND INSTALL PROPER TRAFFIC CONTROL DEVICES.

ASPHALT PAVING PATCH TO BE PLACED IMMEDIATELY UPON COMPLETION OF CULVERT REPLACEMENT.

LIMITS OF PAVEMENT REMOVAL SHALL BE MINIMIZED, DEFINED WITH A SAWCUT AND APPROVED BY THE ENGINEER.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CULVERT REPLACEMENT	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\022501-SS.DWG
LAYOUT NAME - 01
PLOT DATE : 9/30/2019 3:31 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:40 FT
WISDOT/CADDS SHEET 42



NOTES:
CULVERTS TO BE REPLACED UNDER TRAFFIC USING FLAGGING OPERATION.

IF CULVERT REPLACEMENT TAKES MORE THAN ONE WORKING DAY, STH 22 SHALL BE OPENED TO TWO LANES OF TRAFFIC OVERNIGHT.

BEFORE OPENING TO TWO-WAY TRAFFIC BRING STH 22 UP TO GRADE USING BASE AGGREGATE DENSE 1 1/4-INCH AND INSTALL PROPER TRAFFIC CONTROL DEVICES.

ASPHALT PAVING PATCH TO BE PLACED IMMEDIATELY UPON COMPLETION OF CULVERT REPLACEMENT.

LIMITS OF PAVEMENT REMOVAL SHALL BE MINIMIZED, DEFINED WITH A SAWCUT AND APPROVED BY THE ENGINEER.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CULVERT REPLACEMENT	SHEET	E

2

CR

POINT NO.	STATION	OFFSET	ELEVATION	NORTHING	EASTING
54	520+21.68	51.79' L	894.20	334031.60	531135.90
55	520+29.50	59.74' L	894.10	334042.70	531136.08
56	520+34.80	68.50' L	894.01	334052.67	531133.89
57	520+31.98	69.61' L	894.38	334051.57	531131.09
58	520+30.67	66.93' L	894.00	334048.73	531132.00
59	520+22.22	56.15' L	894.12	334035.14	531133.30
60	520+19.90	54.22' L	894.56	334032.16	531132.95
61	520+16.70	58.67' L	894.31	334033.24	531127.59
62	520+21.00	70.41' L	894.12	334044.71	531122.65
63	520+04.56	76.27' L	893.48	334037.89	531106.81
64	519+99.53	66.47' L	893.38	334027.33	531109.86

CR

POINT NO.	STATION	OFFSET	ELEVATION	NORTHING	EASTING
65	520+78.27	69.64' L	894.37	334083.10	531164.21
66	520+78.35	48.64' L	894.62	334068.00	531178.80
67	520+68.27	48.60' L	894.55	334061.05	531171.61
68	520+68.15	69.60' L	894.11	334076.15	531157.02
69	520+70.70	65.61' L	894.13	334075.01	531161.60
70	520+70.75	55.61' L	894.37	334067.82	531168.54
71	520+75.80	55.63' L	894.48	334071.30	531172.14
72	520+75.76	65.63' L	894.34	334078.49	531165.19

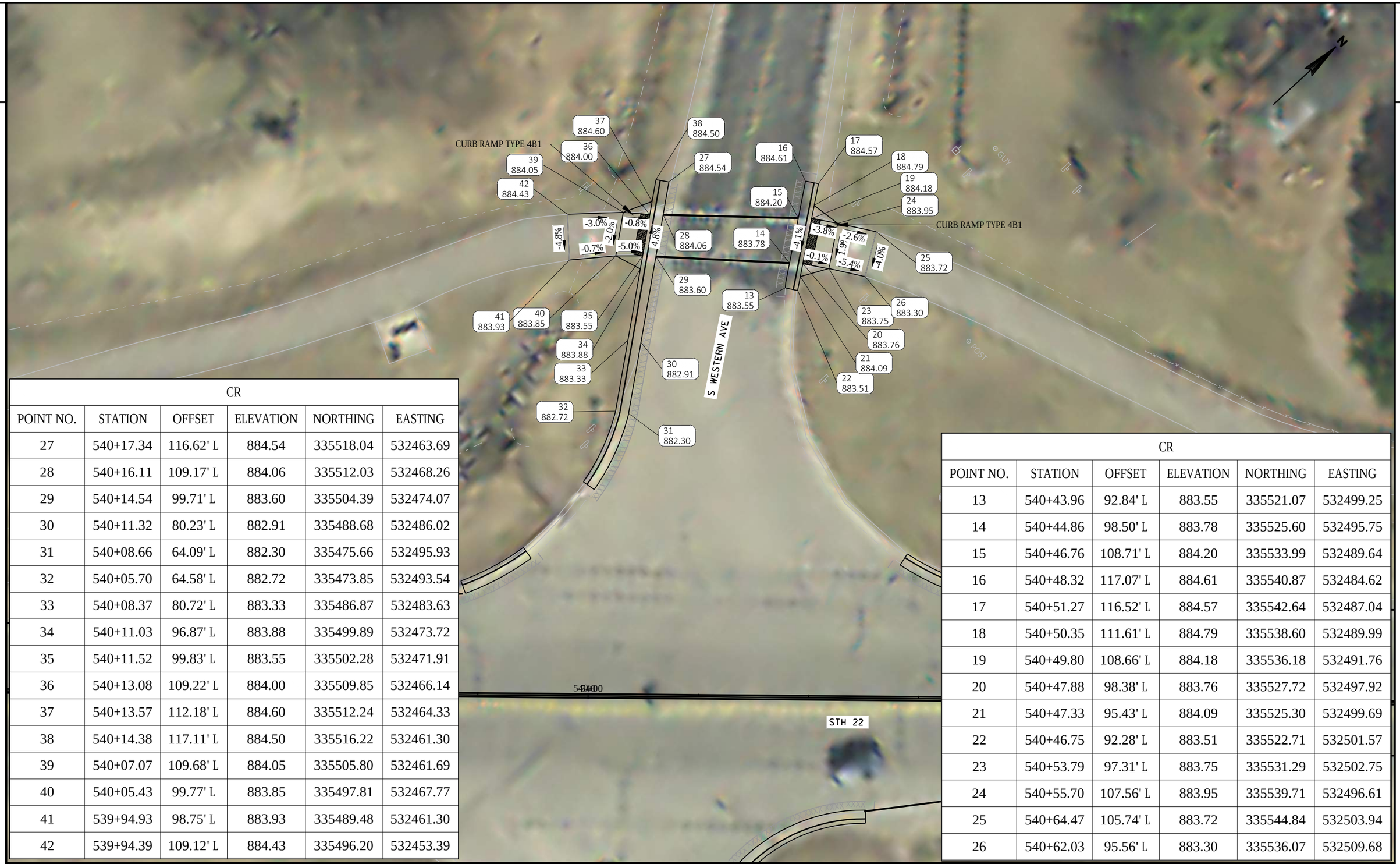
CR

POINT NO.	STATION	OFFSET	ELEVATION	NORTHING	EASTING
43	521+26.88	54.29' L	894.64	334105.49	531209.45
44	521+19.20	59.95' L	894.56	334104.24	531200.06
45	521+12.45	66.68' L	894.48	334104.41	531190.57
46	521+14.79	68.54' L	894.86	334107.36	531190.94
47	521+16.84	66.32' L	894.47	334107.18	531193.94
48	521+25.99	58.49' L	894.49	334107.88	531205.88
49	521+28.50	56.82' L	894.84	334108.42	531208.83
50	521+30.82	62.11' L	894.36	334113.81	531206.78
51	521+23.67	71.44' L	894.26	334115.56	531195.20
52	521+31.58	77.36' L	893.87	334125.24	531196.66
53	521+37.75	67.25' L	893.93	334122.27	531208.08

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CURB RAMP DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\023101-CR.DWG
LAYOUT NAME - 03
PLOT DATE : 9/23/2019 2:21 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 42

2



CR

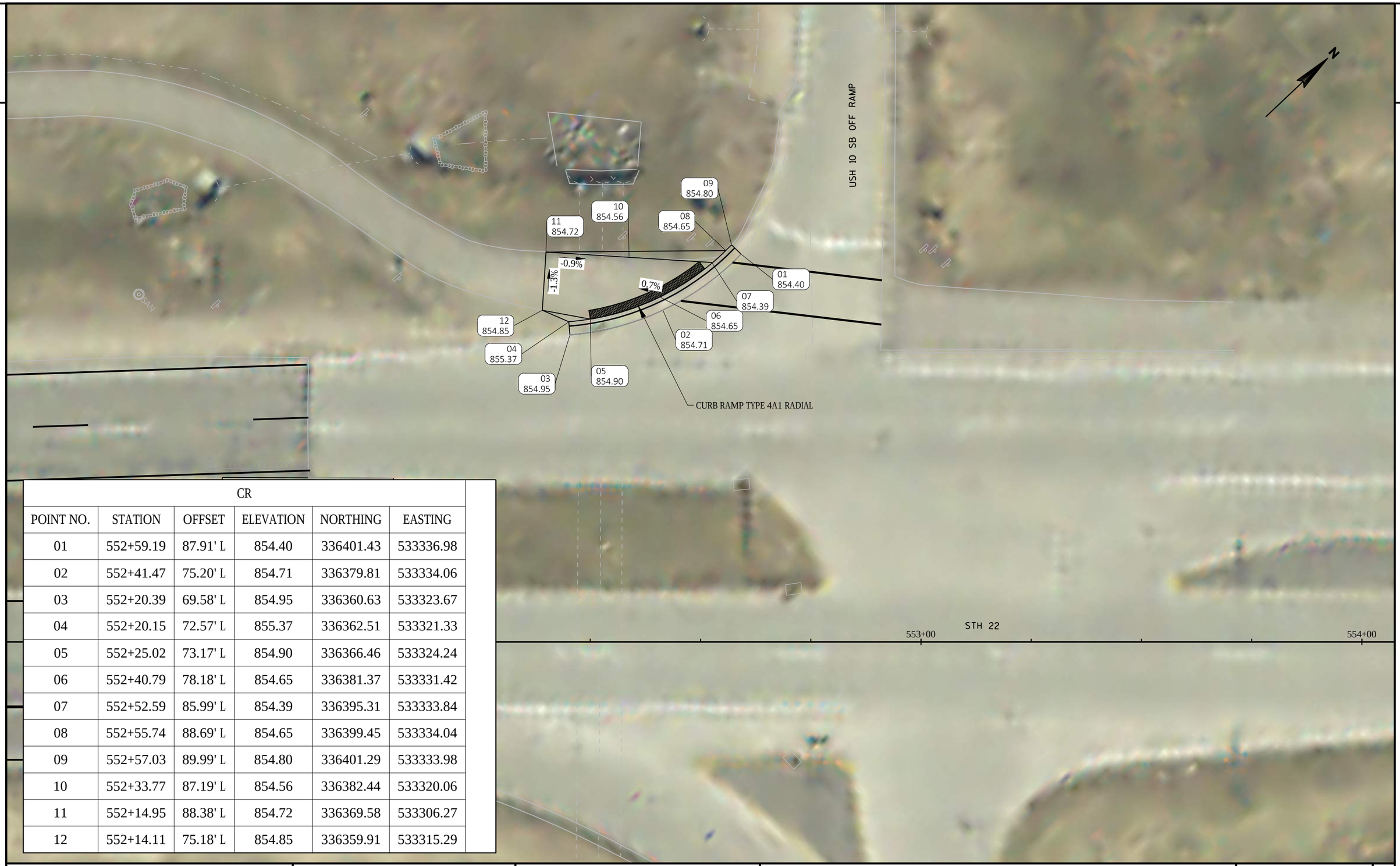
POINT NO.	STATION	OFFSET	ELEVATION	NORTHING	EASTING
27	540+17.34	116.62' L	884.54	335518.04	532463.69
28	540+16.11	109.17' L	884.06	335512.03	532468.26
29	540+14.54	99.71' L	883.60	335504.39	532474.07
30	540+11.32	80.23' L	882.91	335488.68	532486.02
31	540+08.66	64.09' L	882.30	335475.66	532495.93
32	540+05.70	64.58' L	882.72	335473.85	532493.54
33	540+08.37	80.72' L	883.33	335486.87	532483.63
34	540+11.03	96.87' L	883.88	335499.89	532473.72
35	540+11.52	99.83' L	883.55	335502.28	532471.91
36	540+13.08	109.22' L	884.00	335509.85	532466.14
37	540+13.57	112.18' L	884.60	335512.24	532464.33
38	540+14.38	117.11' L	884.50	335516.22	532461.30
39	540+07.07	109.68' L	884.05	335505.80	532461.69
40	540+05.43	99.77' L	883.85	335497.81	532467.77
41	539+94.93	98.75' L	883.93	335489.48	532461.30
42	539+94.39	109.12' L	884.43	335496.20	532453.39

CR

POINT NO.	STATION	OFFSET	ELEVATION	NORTHING	EASTING
13	540+43.96	92.84' L	883.55	335521.07	532499.25
14	540+44.86	98.50' L	883.78	335525.60	532495.75
15	540+46.76	108.71' L	884.20	335533.99	532489.64
16	540+48.32	117.07' L	884.61	335540.87	532484.62
17	540+51.27	116.52' L	884.57	335542.64	532487.04
18	540+50.35	111.61' L	884.79	335538.60	532489.99
19	540+49.80	108.66' L	884.18	335536.18	532491.76
20	540+47.88	98.38' L	883.76	335527.72	532497.92
21	540+47.33	95.43' L	884.09	335525.30	532499.69
22	540+46.75	92.28' L	883.51	335522.71	532501.57
23	540+53.79	97.31' L	883.75	335531.29	532502.75
24	540+55.70	107.56' L	883.95	335539.71	532496.61
25	540+64.47	105.74' L	883.72	335544.84	532503.94
26	540+62.03	95.56' L	883.30	335536.07	532509.68

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CURB RAMP DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\023101-CR.DWG
LAYOUT NAME - 04
PLOT DATE : 9/23/2019 2:24 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 42



CR					
POINT NO.	STATION	OFFSET	ELEVATION	NORTHING	EASTING
01	552+59.19	87.91' L	854.40	336401.43	533336.98
02	552+41.47	75.20' L	854.71	336379.81	533334.06
03	552+20.39	69.58' L	854.95	336360.63	533323.67
04	552+20.15	72.57' L	855.37	336362.51	533321.33
05	552+25.02	73.17' L	854.90	336366.46	533324.24
06	552+40.79	78.18' L	854.65	336381.37	533331.42
07	552+52.59	85.99' L	854.39	336395.31	533333.84
08	552+55.74	88.69' L	854.65	336399.45	533334.04
09	552+57.03	89.99' L	854.80	336401.29	533333.98
10	552+33.77	87.19' L	854.56	336382.44	533320.06
11	552+14.95	88.38' L	854.72	336369.58	533306.27
12	552+14.11	75.18' L	854.85	336359.91	533315.29

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	CURB RAMP DETAILS	SHEET	E

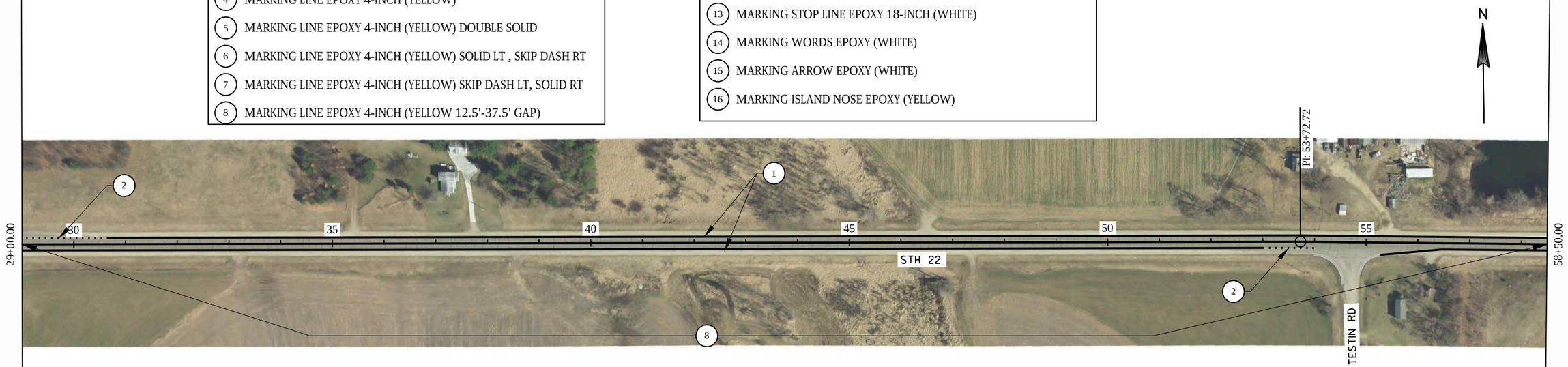
FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\023101-CR.DWG
LAYOUT NAME - 05
PLOT DATE : 9/23/2019 2:25 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 42

NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.

PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
8. MARKING LINE EPOXY 4-INCH (YELLOW 12.5'-37.5' GAP)
9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)

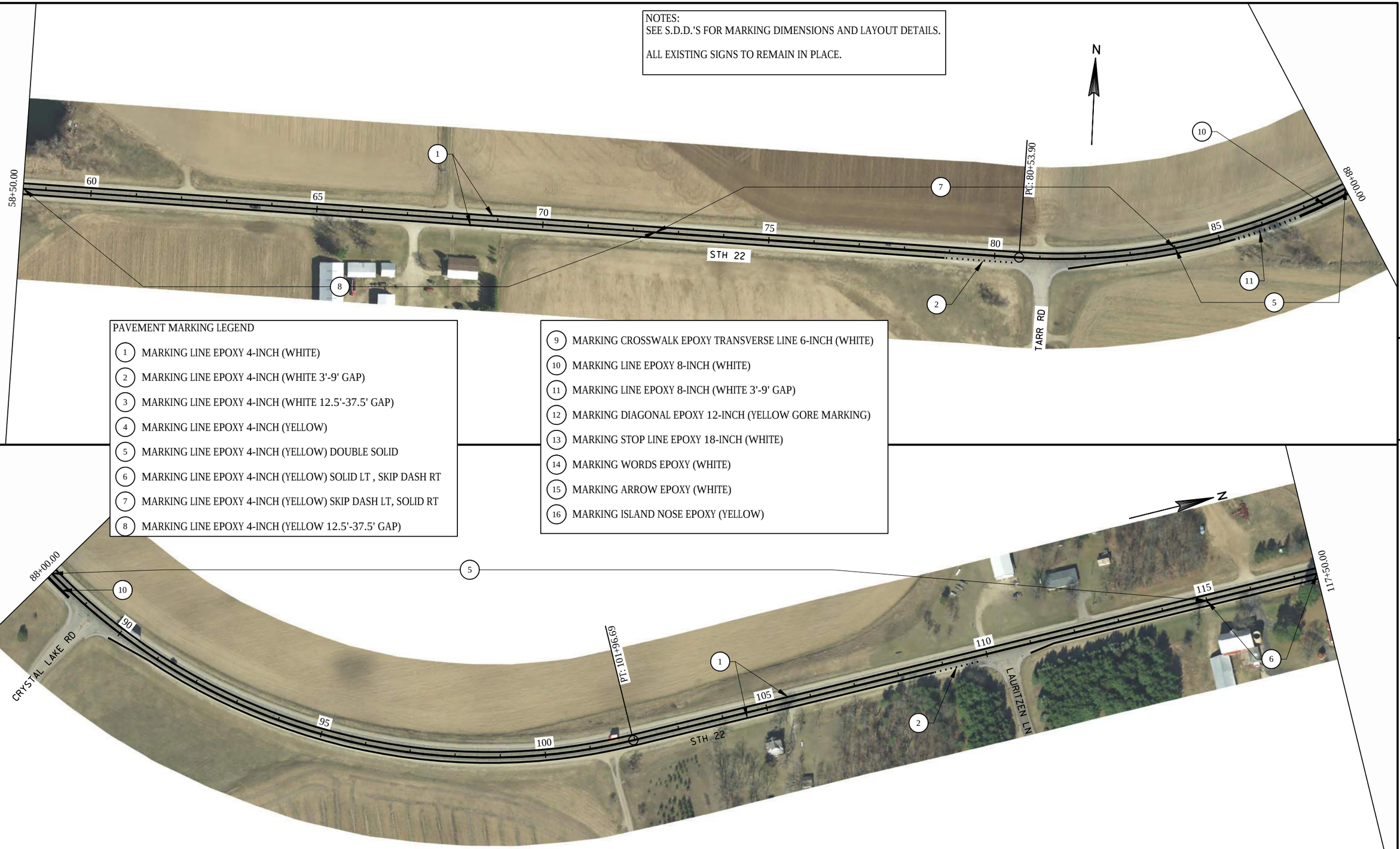


PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 01
PLOT DATE : 9/21/2019 9:13 AM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:200 FT

NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
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9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)

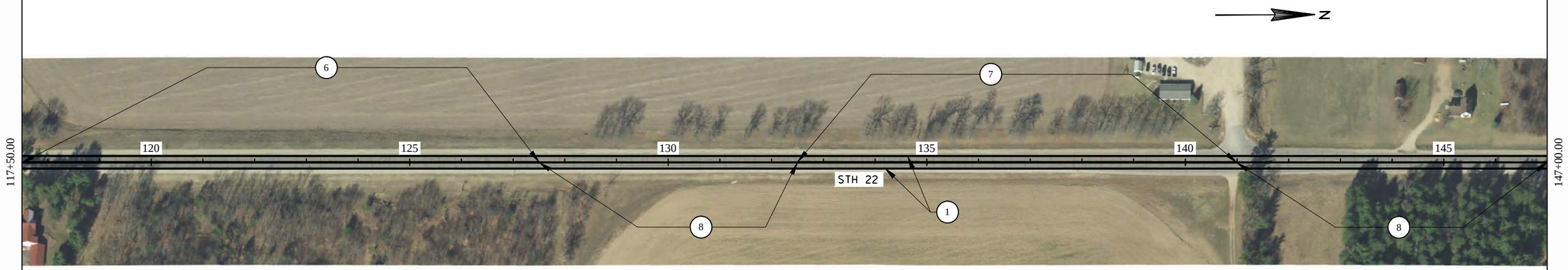
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 02

PLOT DATE : 9/21/2019 9:14 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
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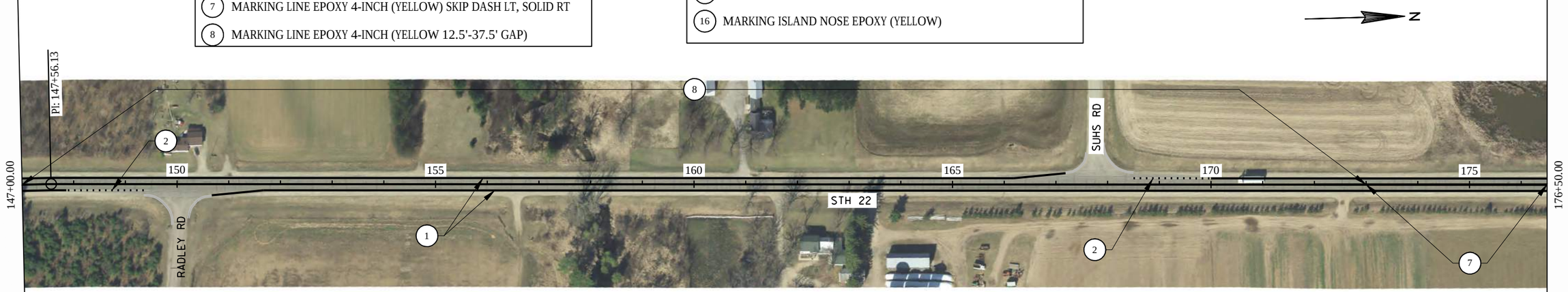
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)

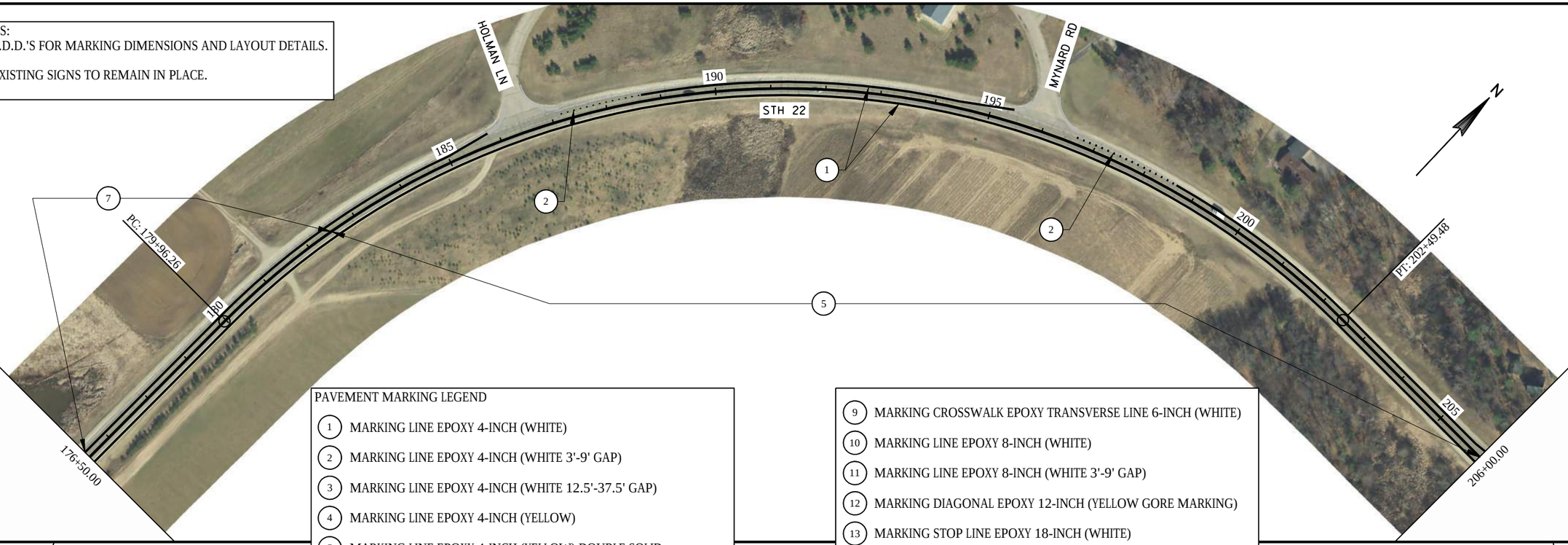


PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 03
PLOT DATE : 9/21/2019 9:15 AM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:200 FT
WISDOT/CADDS SHEET 44

NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
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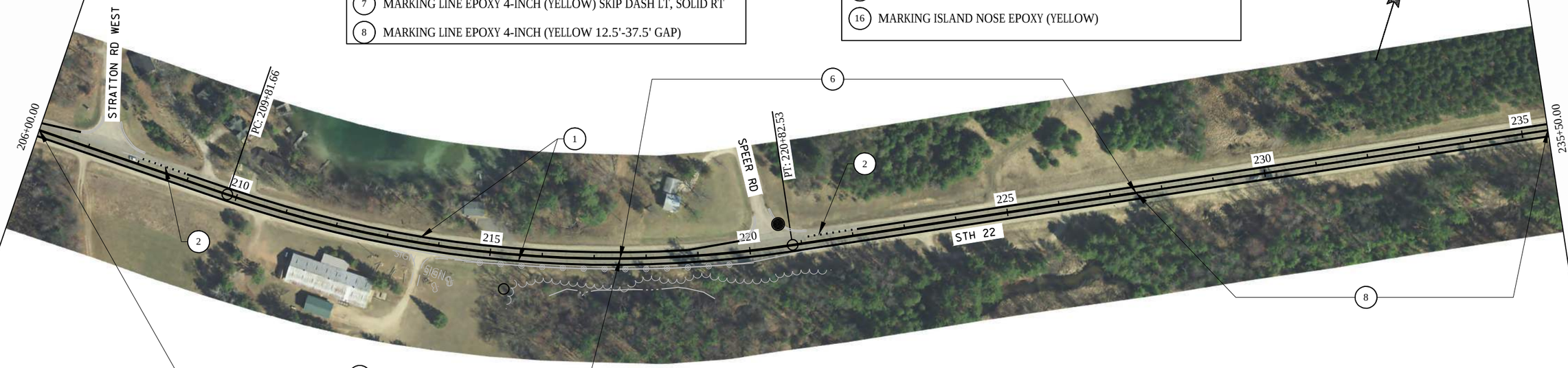
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)



PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

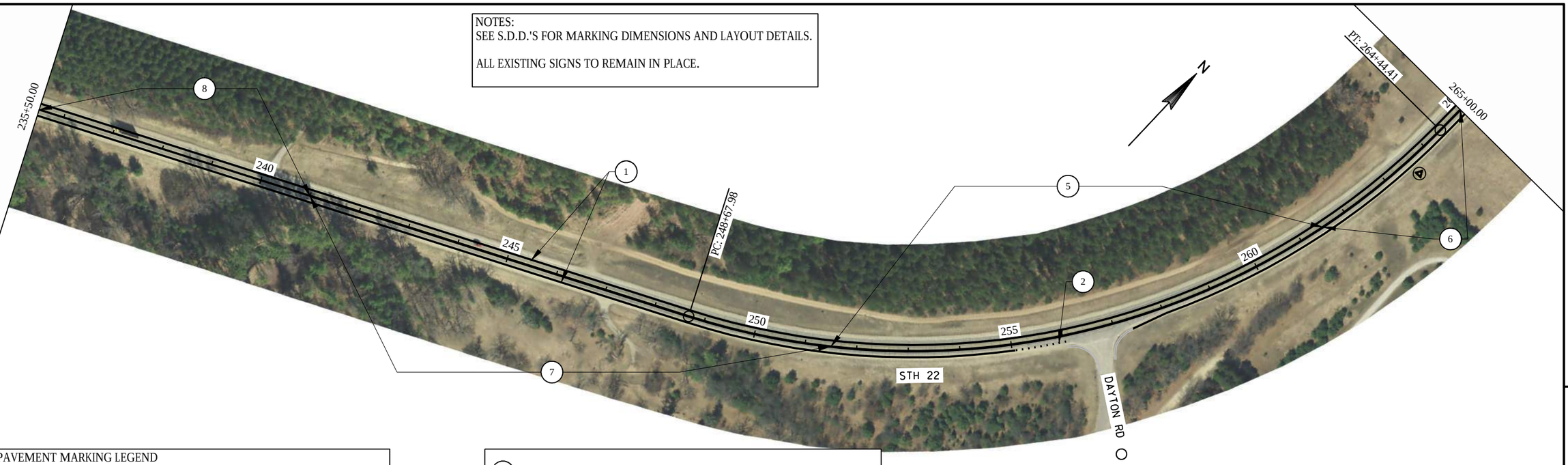
FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 04

PLOT DATE : 9/21/2019 9:17 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

WISDOT/CADDS SHEET 44

NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
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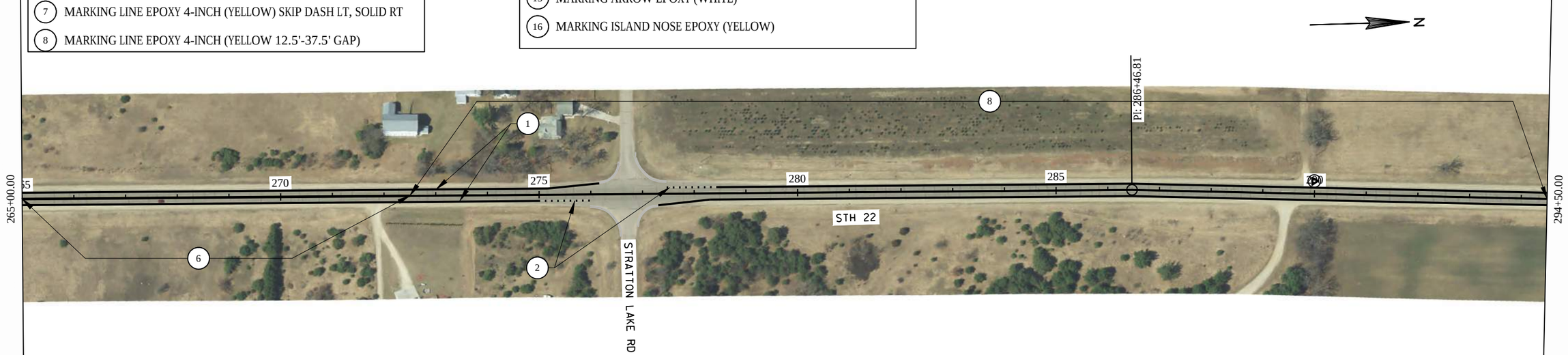
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)

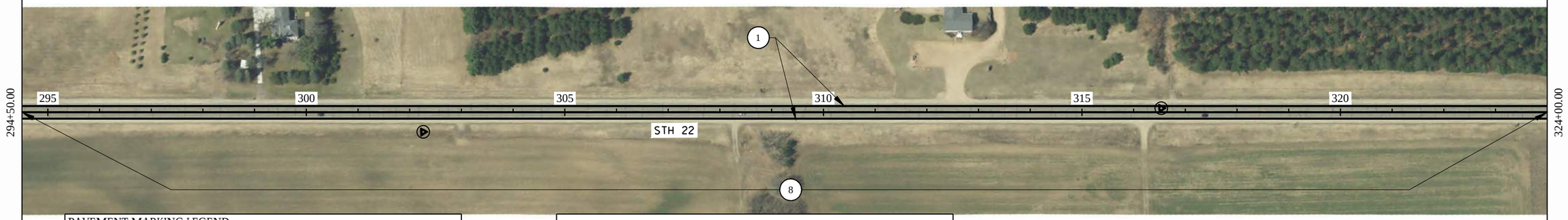


PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 05
PLOT DATE : 9/21/2019 9:19 AM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:200 FT
WISDOT/CADDS SHEET 44

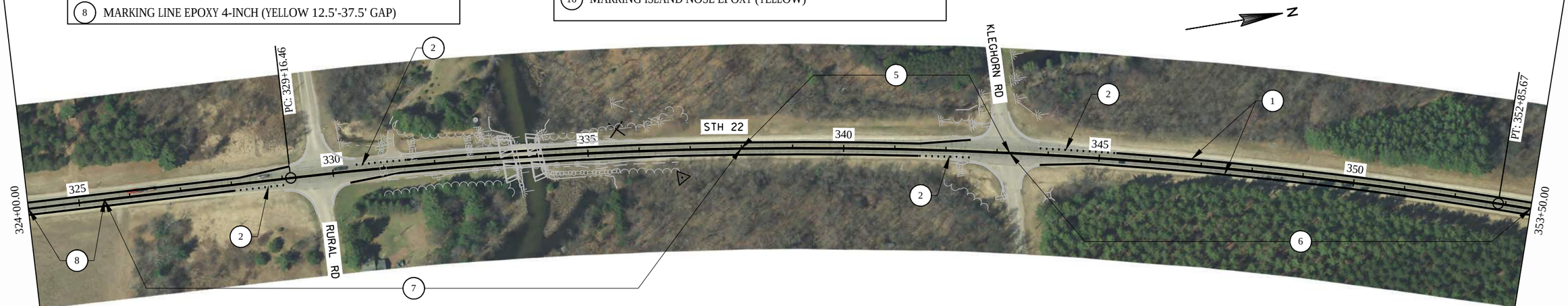
NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
8. MARKING LINE EPOXY 4-INCH (YELLOW 12.5'-37.5' GAP)
9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)



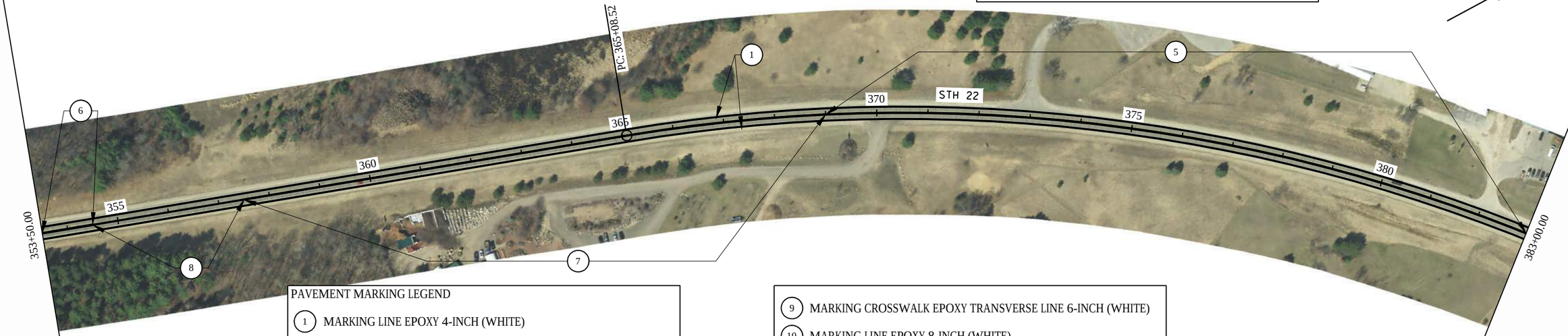
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 06

PLOT DATE : 9/21/2019 9:24 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

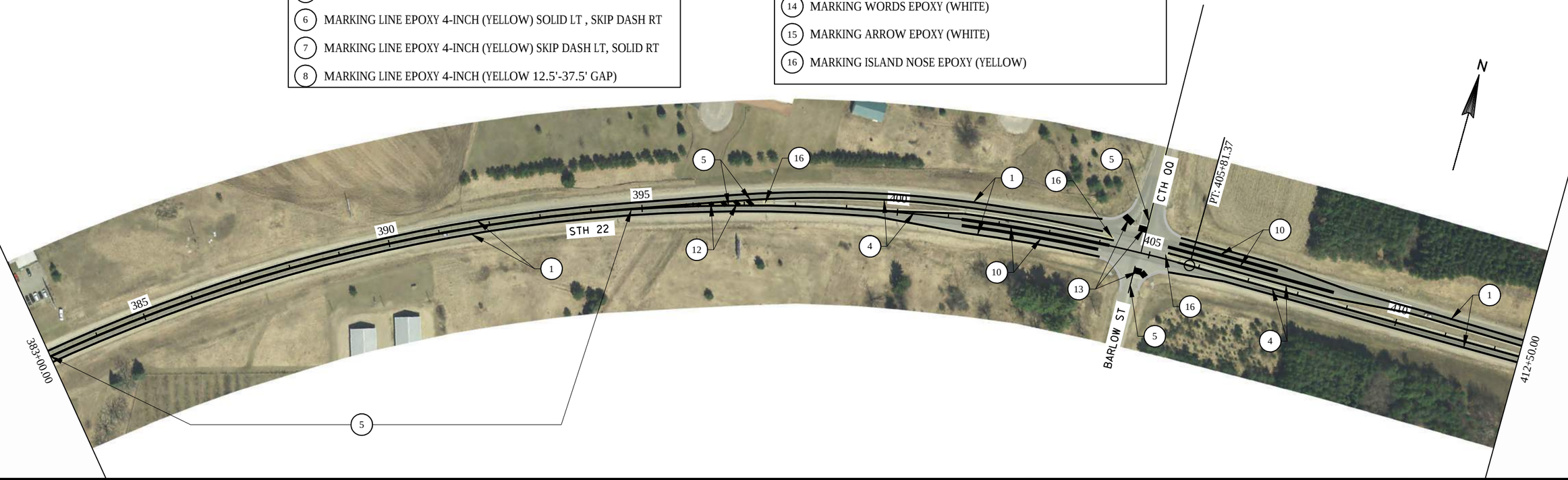
NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
8. MARKING LINE EPOXY 4-INCH (YELLOW 12.5'-37.5' GAP)
9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)



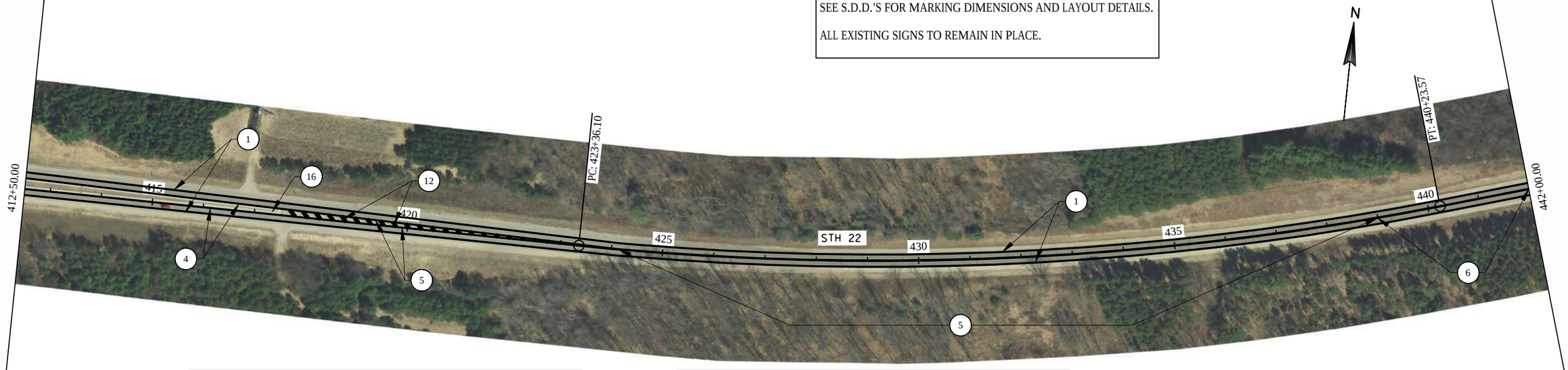
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 07

PLOT DATE : 9/21/2019 9:28 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

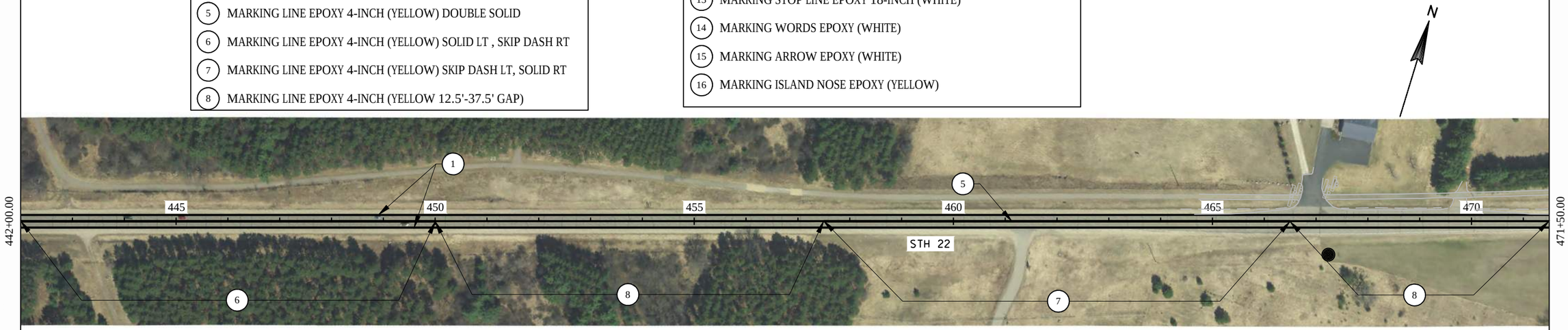
NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
8. MARKING LINE EPOXY 4-INCH (YELLOW 12.5'-37.5' GAP)
9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)



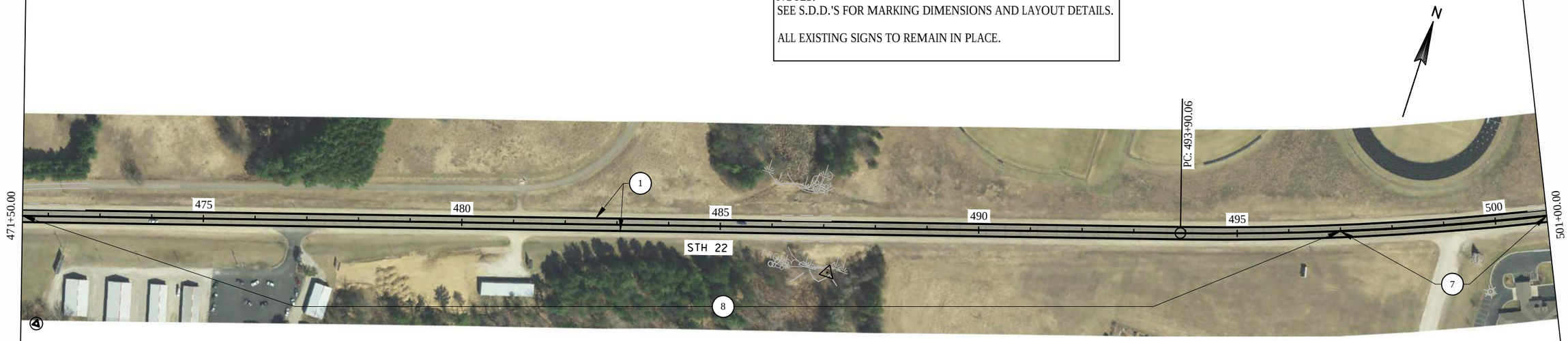
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 08

PLOT DATE : 9/21/2019 9:34 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

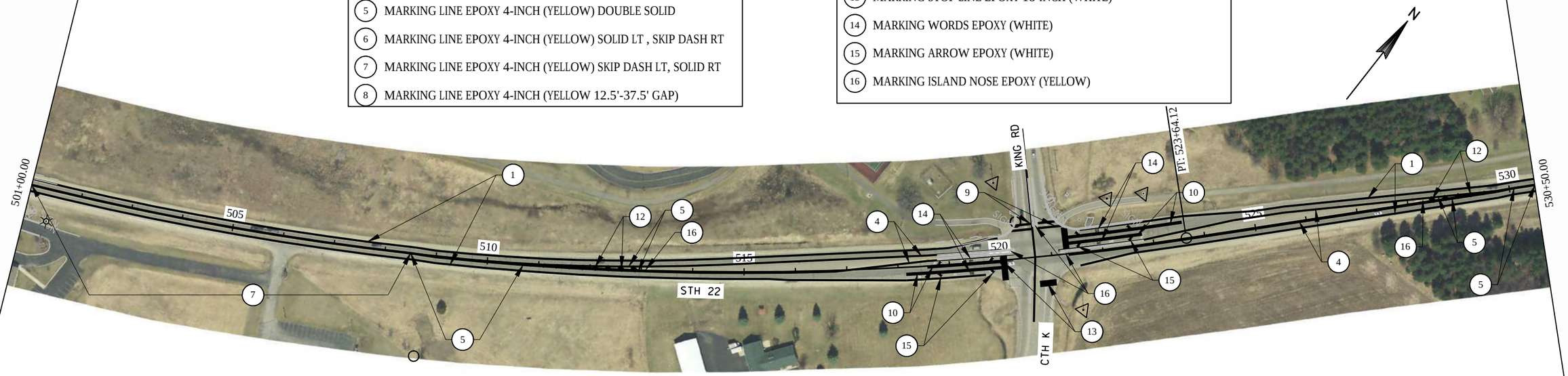
NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
8. MARKING LINE EPOXY 4-INCH (YELLOW 12.5'-37.5' GAP)
9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)



PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E

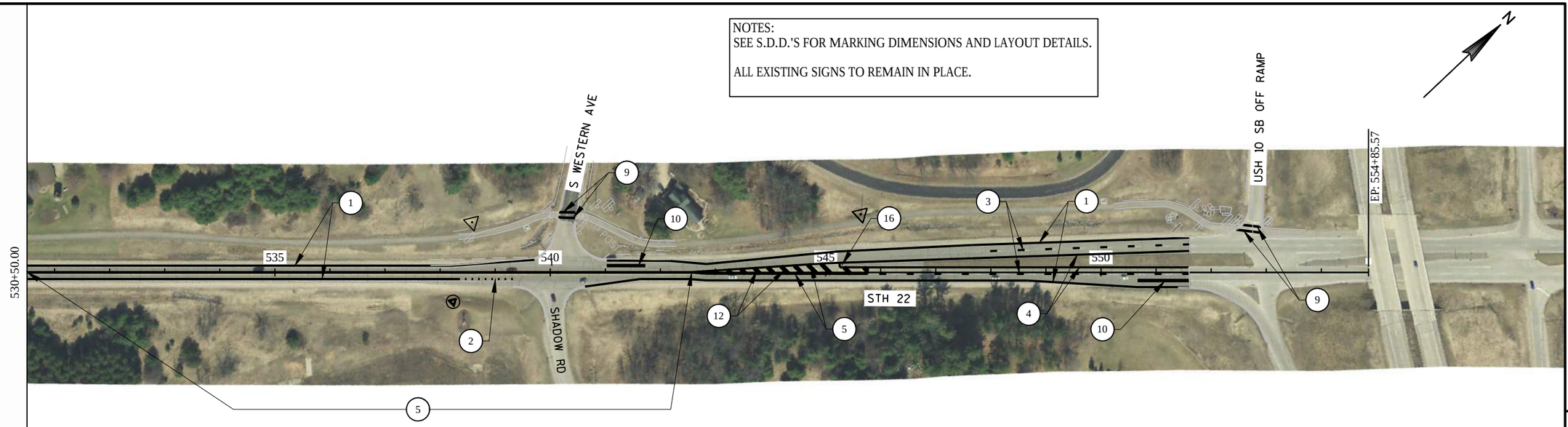
FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\024501-PM.DWG
LAYOUT NAME - 09

PLOT DATE : 9/21/2019 9:43 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

WISDOT/CADDS SHEET 44

NOTES:
SEE S.D.D.'S FOR MARKING DIMENSIONS AND LAYOUT DETAILS.

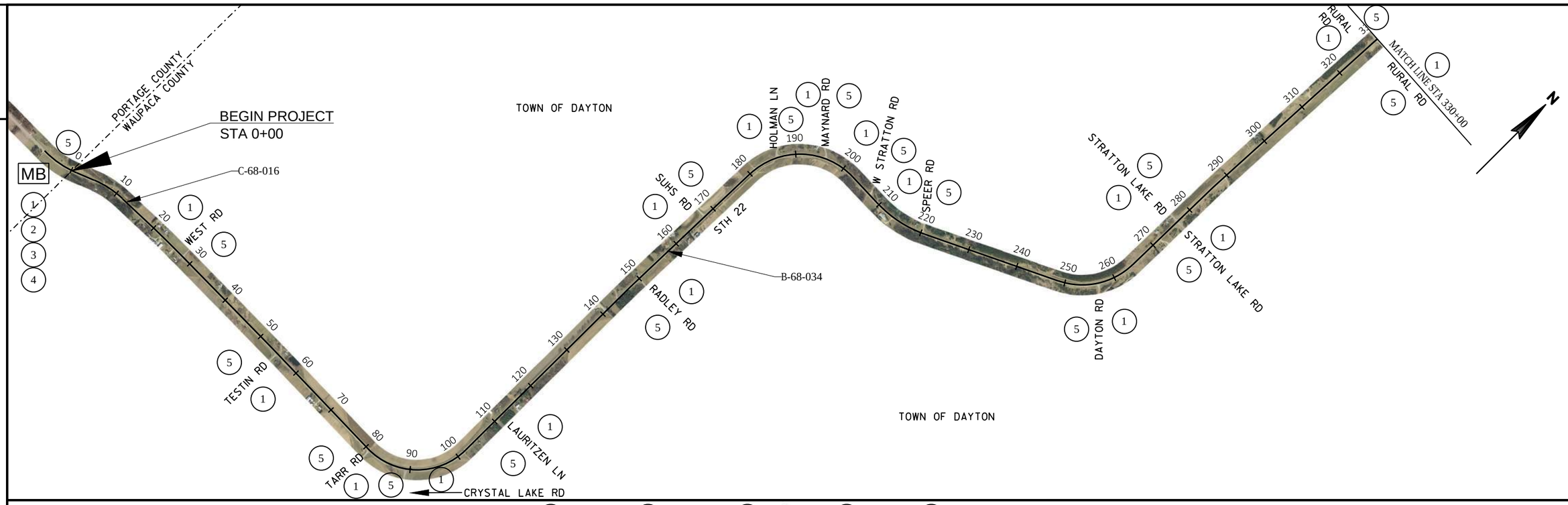
ALL EXISTING SIGNS TO REMAIN IN PLACE.



PAVEMENT MARKING LEGEND

1. MARKING LINE EPOXY 4-INCH (WHITE)
2. MARKING LINE EPOXY 4-INCH (WHITE 3'-9' GAP)
3. MARKING LINE EPOXY 4-INCH (WHITE 12.5'-37.5' GAP)
4. MARKING LINE EPOXY 4-INCH (YELLOW)
5. MARKING LINE EPOXY 4-INCH (YELLOW) DOUBLE SOLID
6. MARKING LINE EPOXY 4-INCH (YELLOW) SOLID LT , SKIP DASH RT
7. MARKING LINE EPOXY 4-INCH (YELLOW) SKIP DASH LT, SOLID RT
8. MARKING LINE EPOXY 4-INCH (YELLOW 12.5'-37.5' GAP)
9. MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
10. MARKING LINE EPOXY 8-INCH (WHITE)
11. MARKING LINE EPOXY 8-INCH (WHITE 3'-9' GAP)
12. MARKING DIAGONAL EPOXY 12-INCH (YELLOW GORE MARKING)
13. MARKING STOP LINE EPOXY 18-INCH (WHITE)
14. MARKING WORDS EPOXY (WHITE)
15. MARKING ARROW EPOXY (WHITE)
16. MARKING ISLAND NOSE EPOXY (YELLOW)

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PAVEMENT MARKING DETAILS	SHEET	E



NOTES:
SEE S.D.D.15C4-5 "TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO WAY UNDIVIDED ROAD OPEN TO TRAFFIC" FOR SIGN SPACING AND LOCATIONS.

SEE S.D.D.15D19-2 "TRAFFIC CONTROL, DROP OFF SIGNING" FOR TRAFFIC CONTROL SIGNING WHEN UNEVEN LANES ARE PRESENT IN WORK ZONE.

SEE S.D.D.15D44-01 "TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES" FOR TRAFFIC CONTROL SIGNING WHEN MILLED PAVEMENT IS PRESENT IN WORK ZONE.

SEE S.D.D.15C12-07 "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION" FOR WORK ZONE TRAFFIC CONTROL LAYOUT.

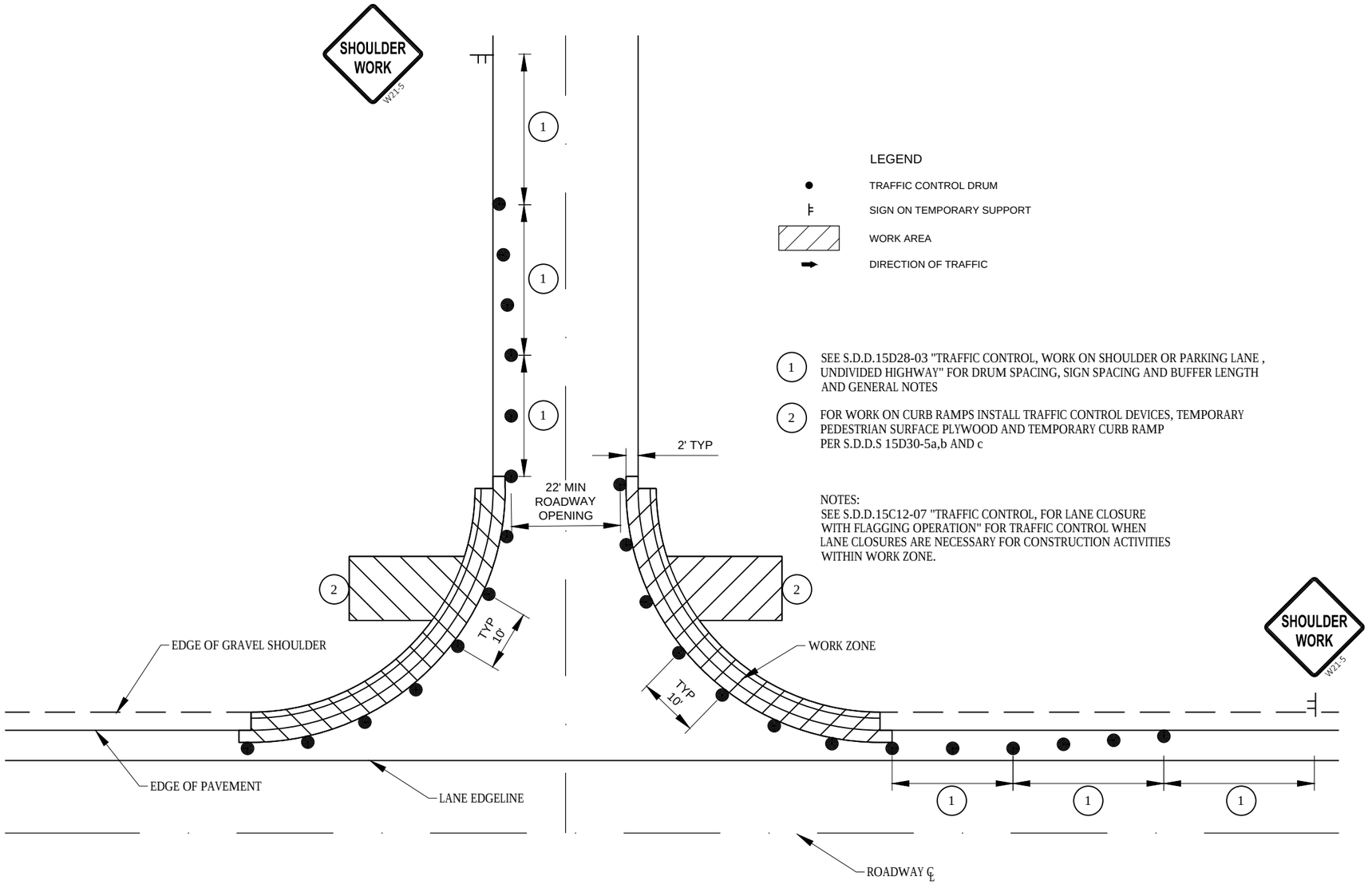
SEE S.D.D.15C19-5A "MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY" FOR TRAFFIC CONTROL WHILE STRIPING.

EXACT LOCATION AND SPACING OF SIGNS TO BE DETERMINED IN THE FIELD BY ENGINEER.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	TRAFFIC CONTROL OVERVIEW	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\025100-TC.DWG
LAYOUT NAME - 01
PLOT DATE : 9/19/2019 3:30 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:2000 FT

2



LEGEND

- TRAFFIC CONTROL DRUM
- SIGN ON TEMPORARY SUPPORT
- WORK AREA
- DIRECTION OF TRAFFIC

(1) SEE S.D.D.15D28-03 "TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE , UNDIVIDED HIGHWAY" FOR DRUM SPACING, SIGN SPACING AND BUFFER LENGTH AND GENERAL NOTES

(2) FOR WORK ON CURB RAMPS INSTALL TRAFFIC CONTROL DEVICES, TEMPORARY PEDESTRIAN SURFACE PLYWOOD AND TEMPORARY CURB RAMP PER S.D.D.S 15D30-5a,b AND c

NOTES:
SEE S.D.D.15C12-07 "TRAFFIC CONTROL, FOR LANE CLOSURE WITH FLAGGING OPERATION" FOR TRAFFIC CONTROL WHEN LANE CLOSURES ARE NECESSARY FOR CONSTRUCTION ACTIVITIES WITHIN WORK ZONE.

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	TRAFFIC CONTROL CURB REPLACEMENT AND CURB RAMP WORK	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\025101-TC.DWG
LAYOUT NAME - 01
PLOT DATE : 9/30/2019 2:09 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 42

2

LEGEND

SIGN ON TEMPORARY SUPPORT

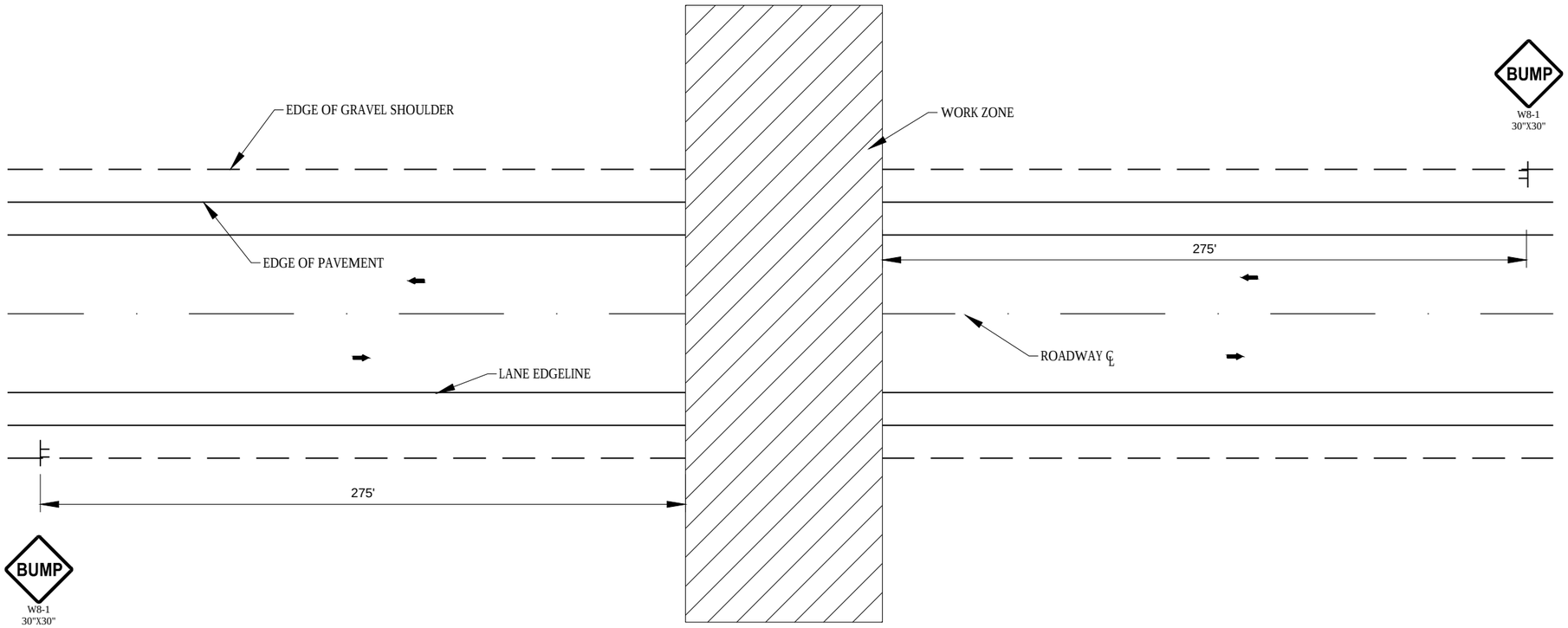
WORK AREA

DIRECTION OF TRAFFIC

NOTES:
SEE S.D.D.15C12-07 "TRAFFIC CONTROL, FOR LANE CLOSURE WITH FLAGGING OPERATION" FOR TRAFFIC CONTROL WHEN LANE CLOSURES ARE NECESSARY FOR CONSTRUCTION ACTIVITIES WITHIN WORK ZONE.

INSTALL BUMP SIGNS WHEN STH 22 IS OPEN TO TWO-LANES OF TRAFFIC DURING CULVERT REPLACEMENT AND PRIOR TO PAVING ASPHALT PATCH

TRAFFIC CONTROL DEVICES TO REMAIN IN PLACE UNTIL LOWER LAYERS OF HMA PAVEMENT HAVE BEEN PLACED.



PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	TRAFFIC CONTROL CULVERT REPLACEMENT	SHEET	E

2

LEGEND

SIGN ON TEMPORARY SUPPORT

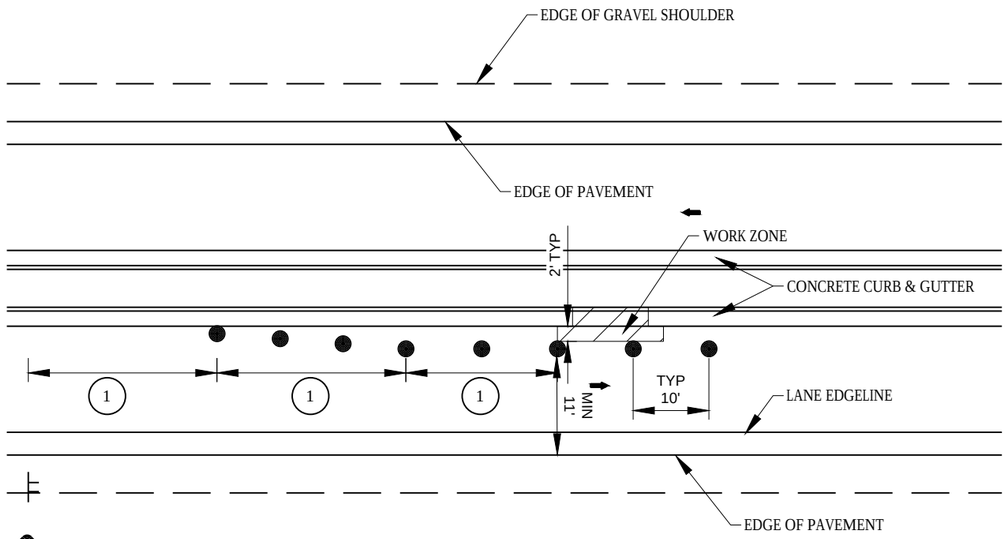
WORK AREA

DIRECTION OF TRAFFIC

(1) SEE S.D.D.15D28-03 "TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE , UNDIVIDED HIGHWAY" FOR DRUM SPACING, SIGN SPACING AND BUFFER LENGTH AND GENERAL NOTES.

NOTES:
SEE S.D.D.15C12-07 "TRAFFIC CONTROL, FOR LANE CLOSURE WITH FLAGGING OPERATION" FOR TRAFFIC CONTROL WHILE WORKING IN THE MEDIAN.

CURB AND GUTTER REPLACEMENT WORK TO BE DONE IN A TIMELY MANNER TO MINIMIZE DISRUPTION TO TRAFFIC.



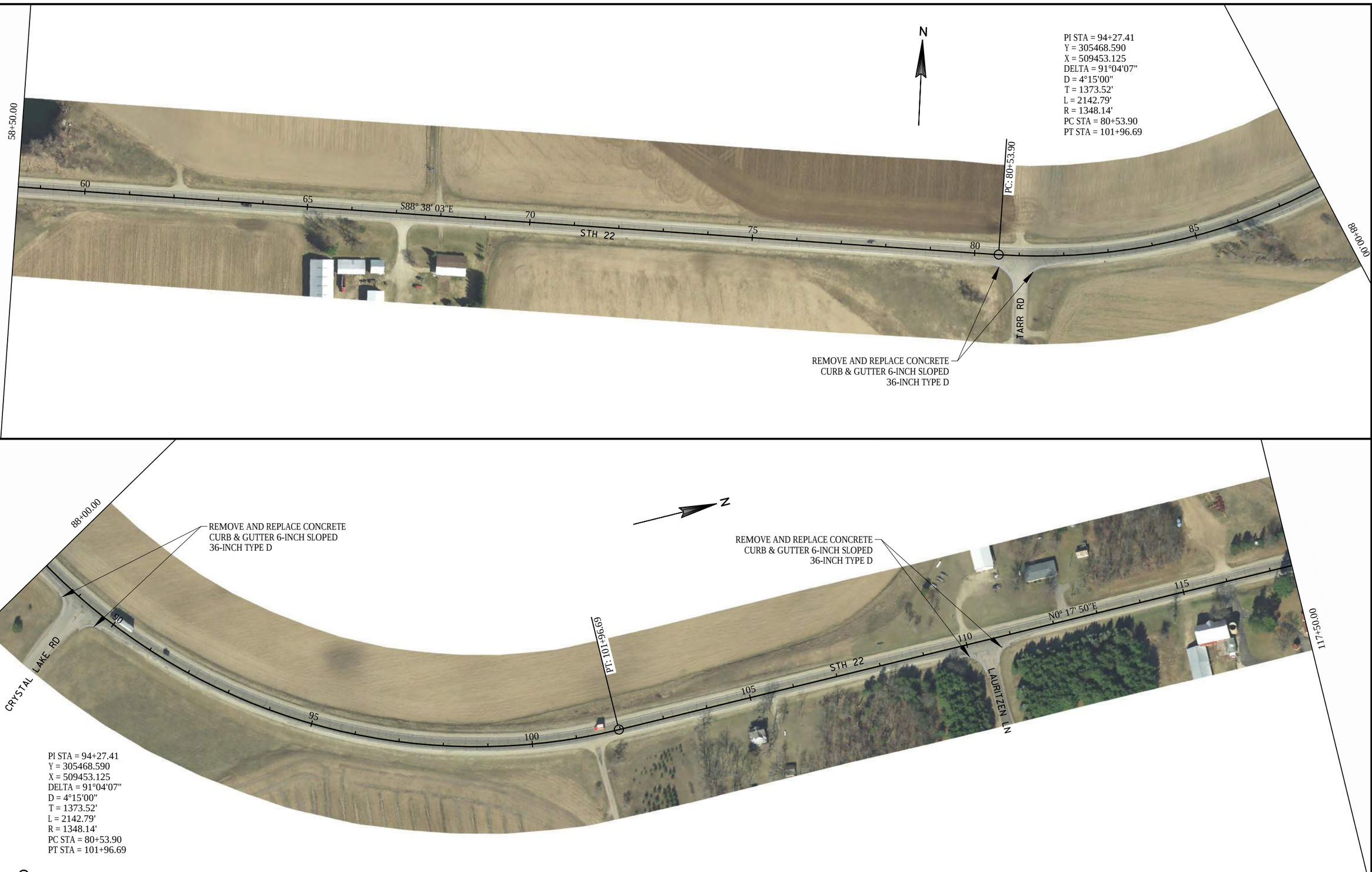
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	TRAFFIC CONTROL CURB AND GUTTER REPLACEMENT IN MEDIAN	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\025101-TC.DWG
LAYOUT NAME - 03
PLOT DATE : 9/30/2019 2:12 PM
PLOT BY : HEIN, MIKE
PLOT NAME :
PLOT SCALE : ########
WISDOT/CADDS SHEET 42

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 01

PLOT DATE : 8/27/2019 10:20 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

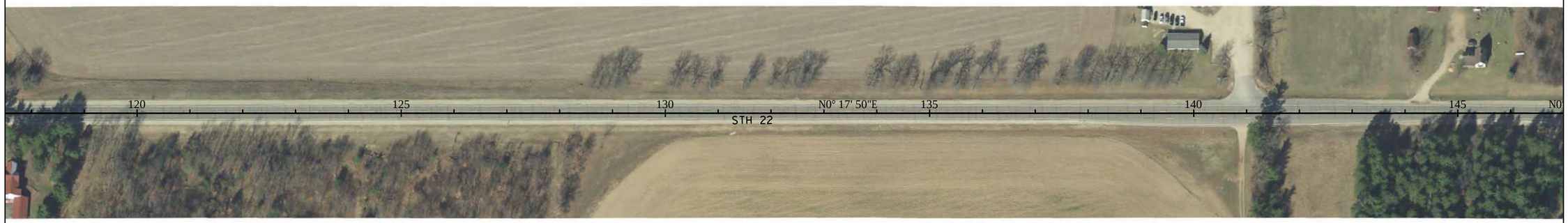


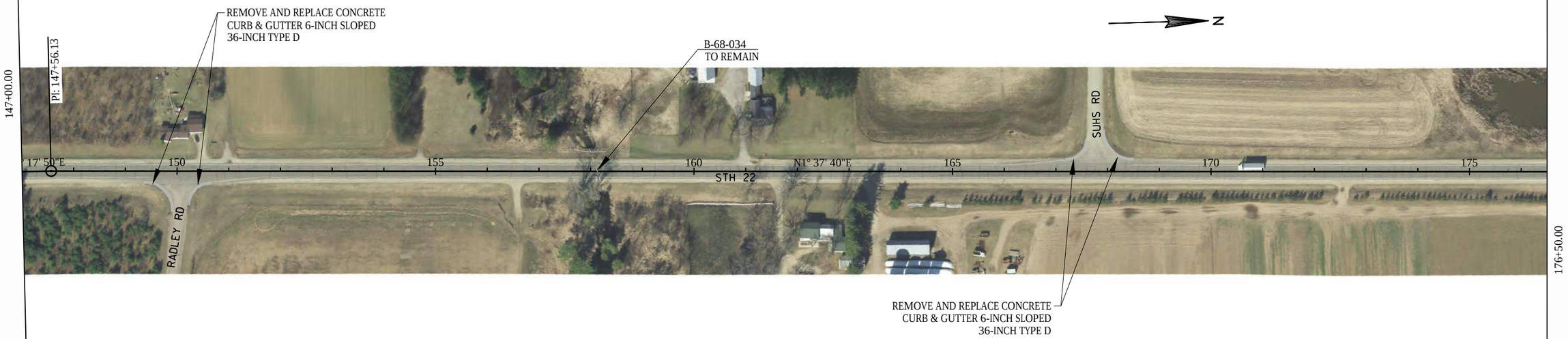
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 02

PLOT DATE : 8/27/2019 10:57 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

WISDOT/CADDS SHEET 44

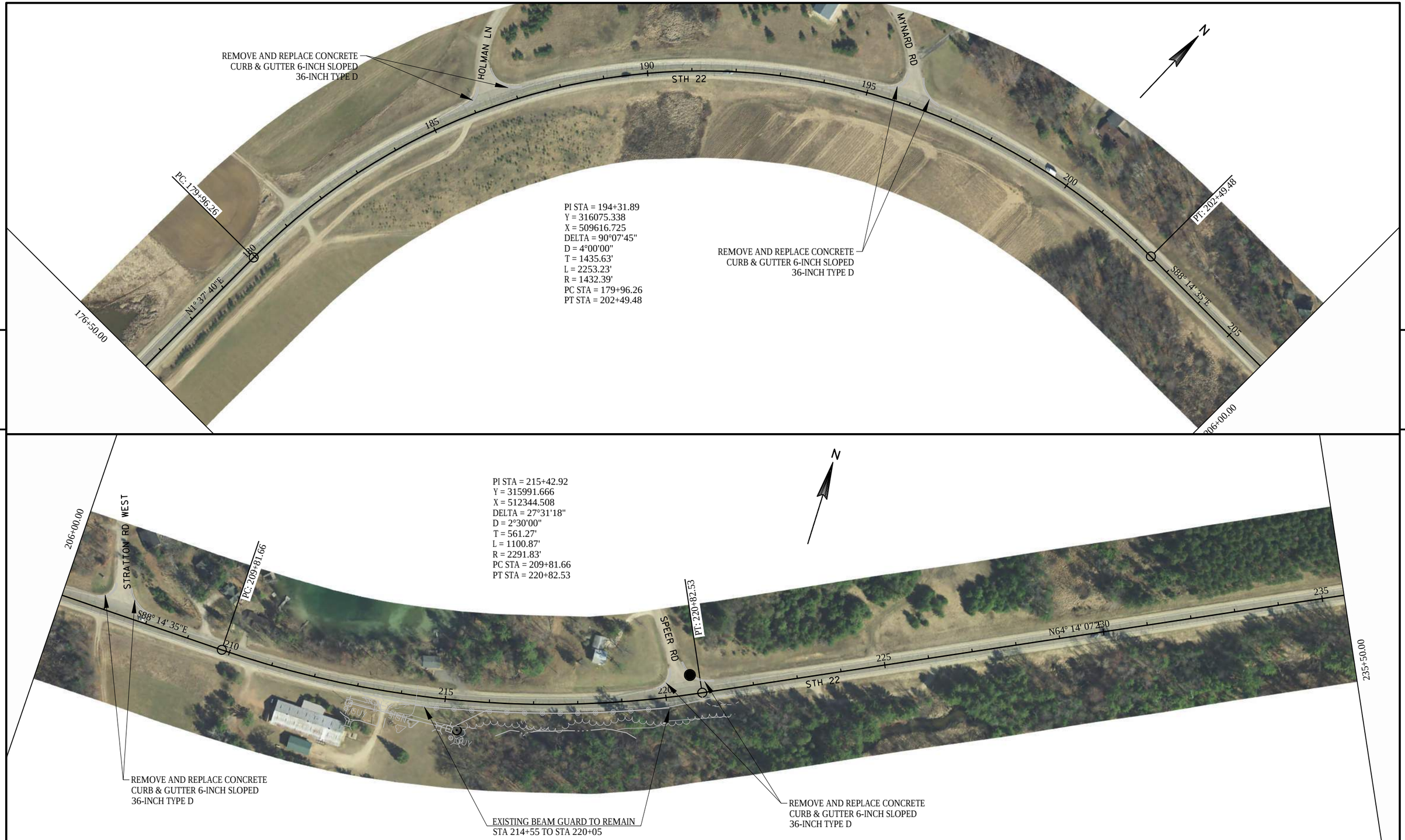




PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 03

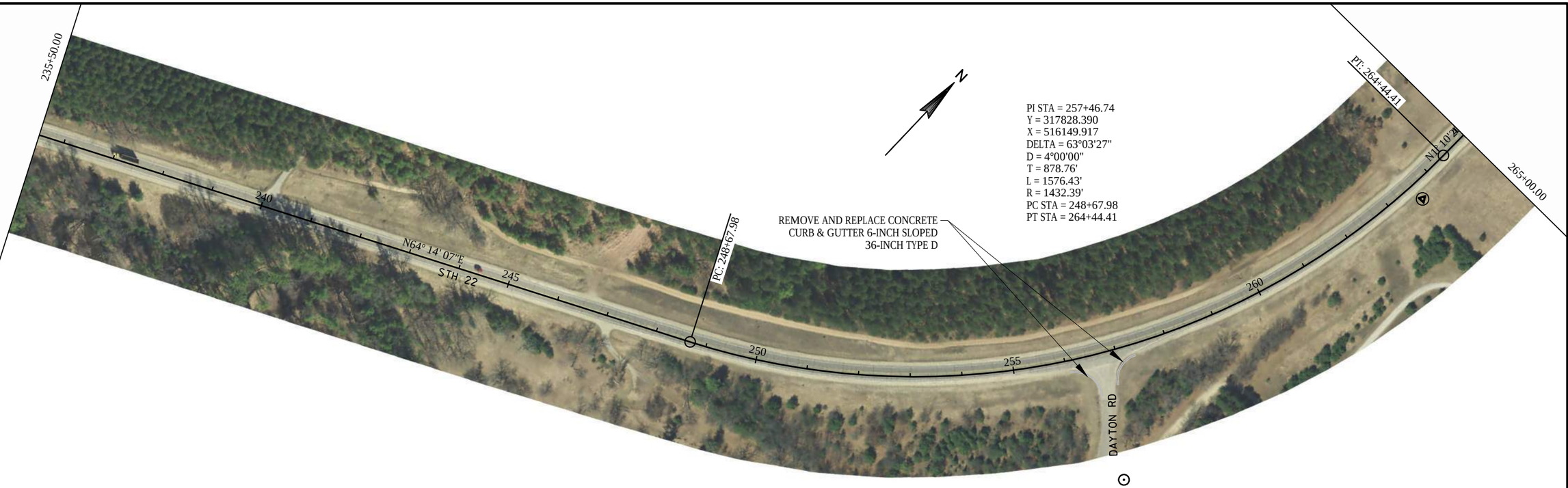
PLOT DATE : 8/27/2019 11:00 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT



PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 04

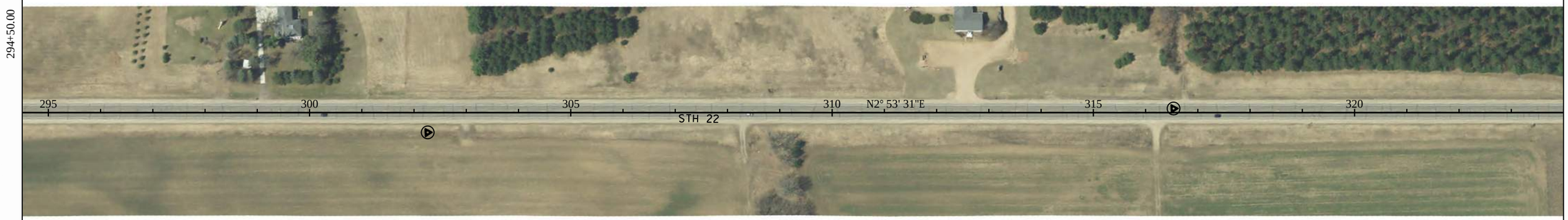
PLOT DATE : 8/27/2019 11:06 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

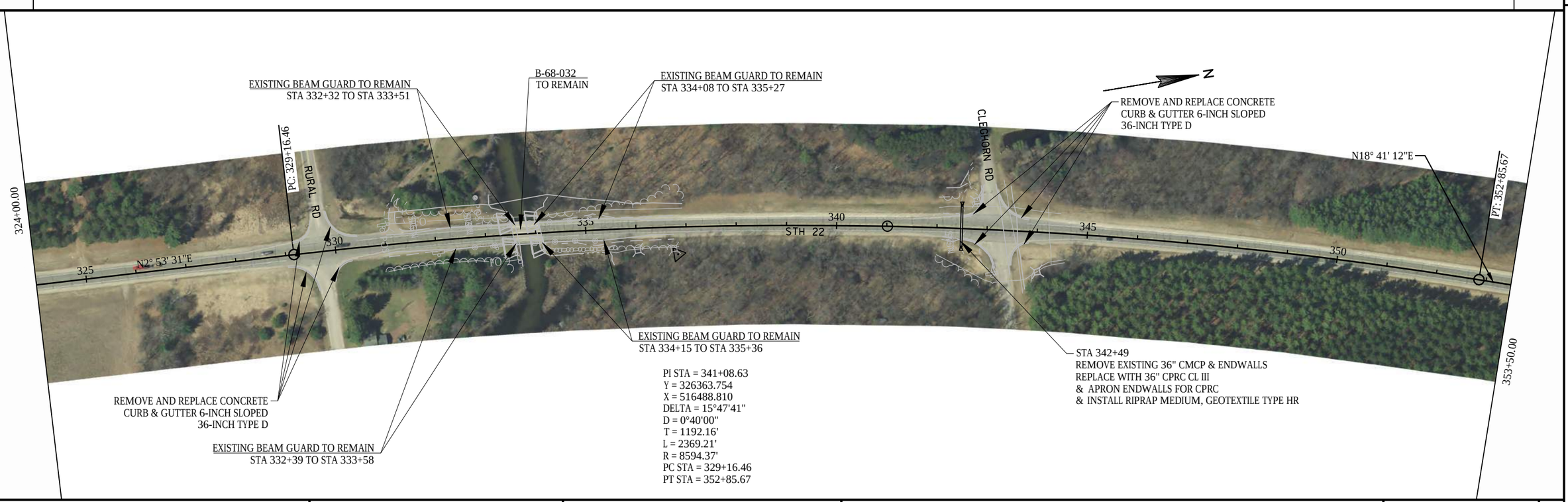


PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 05

PLOT DATE : 8/27/2019 11:10 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

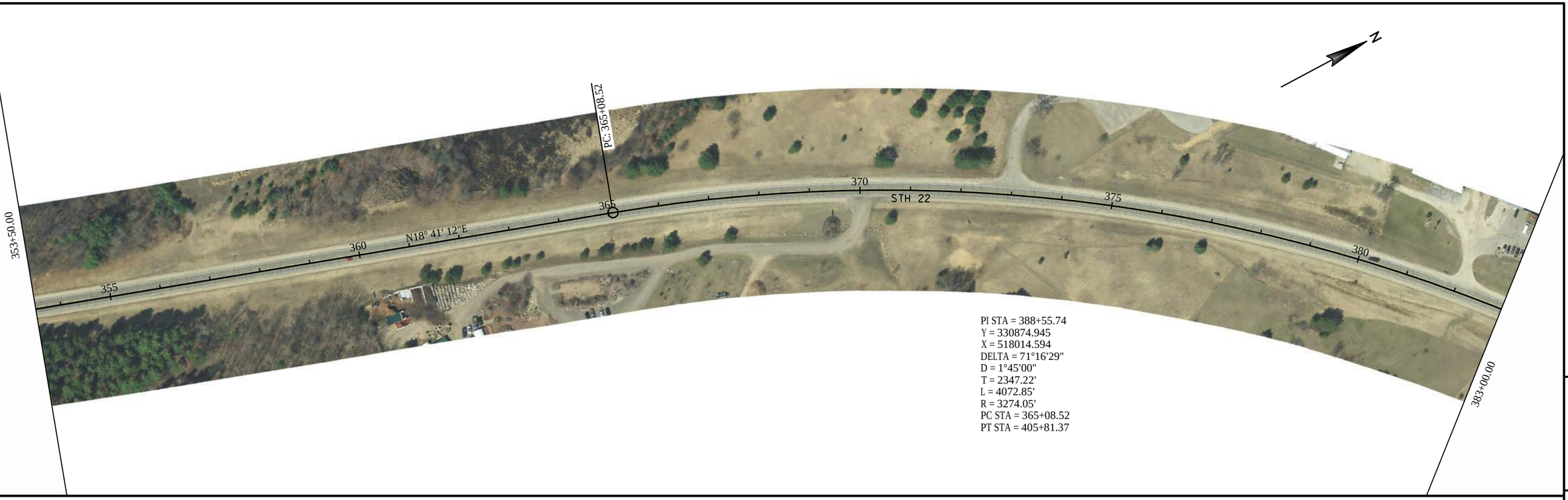




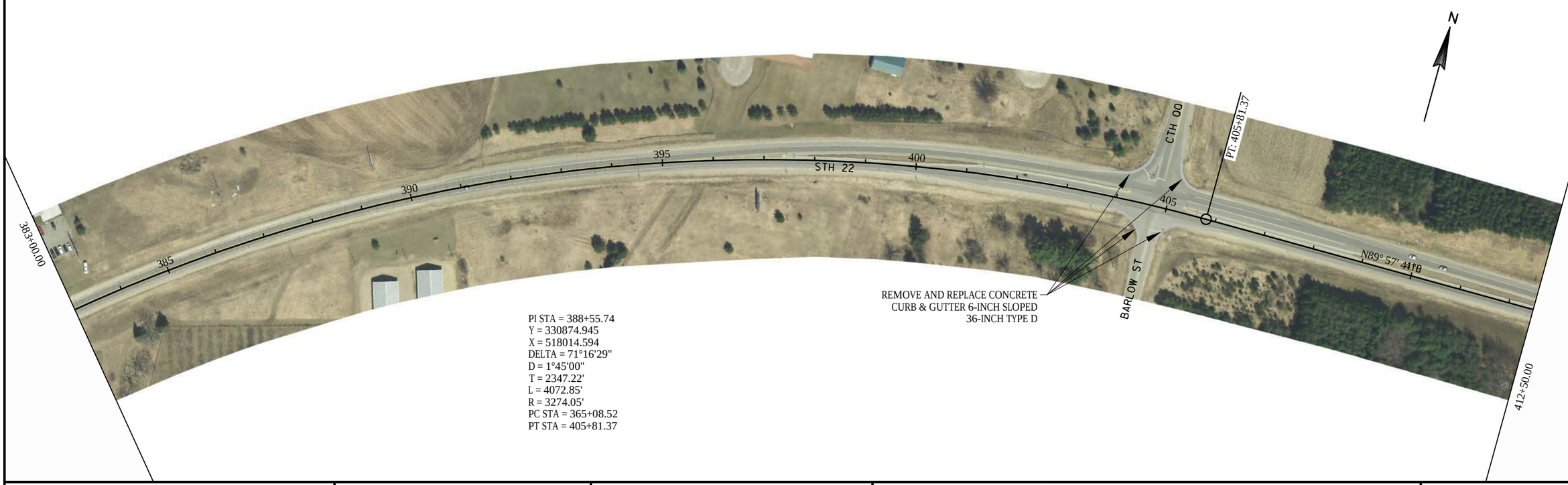
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 06

PLOT DATE : 8/27/2019 11:45 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT



PI STA = 388+55.74
Y = 330874.945
X = 518014.594
DELTA = 71°16'29"
D = 1°45'00"
T = 2347.22'
L = 4072.85'
R = 3274.05'
PC STA = 365+08.52
PT STA = 405+81.37



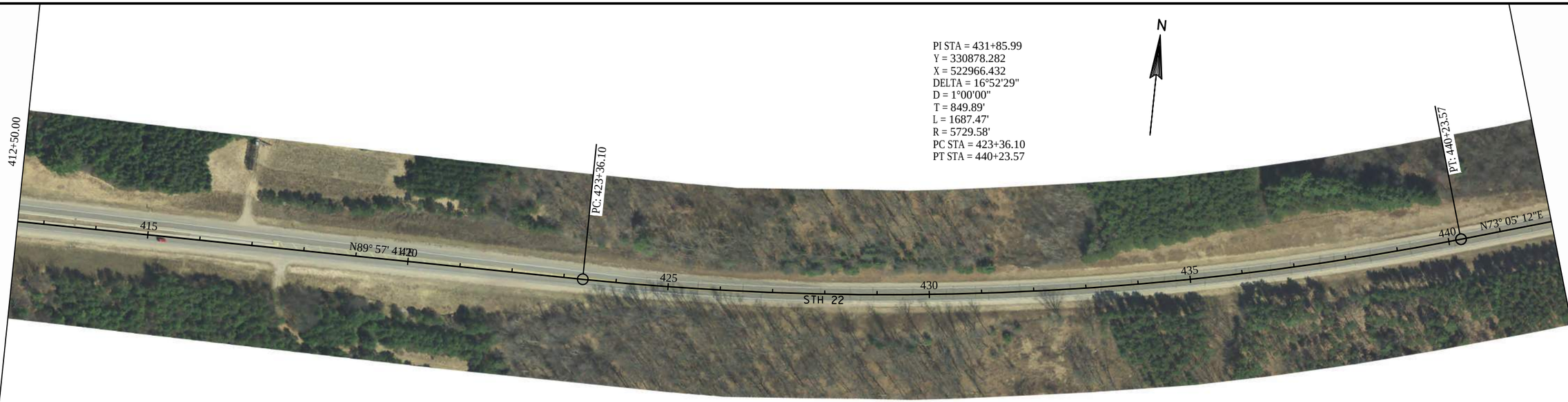
REMOVE AND REPLACE CONCRETE
CURB & GUTTER 6-INCH SLOPED
36-INCH TYPE D

PI STA = 388+55.74
Y = 330874.945
X = 518014.594
DELTA = 71°16'29"
D = 1°45'00"
T = 2347.22'
L = 4072.85'
R = 3274.05'
PC STA = 365+08.52
PT STA = 405+81.37

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 07

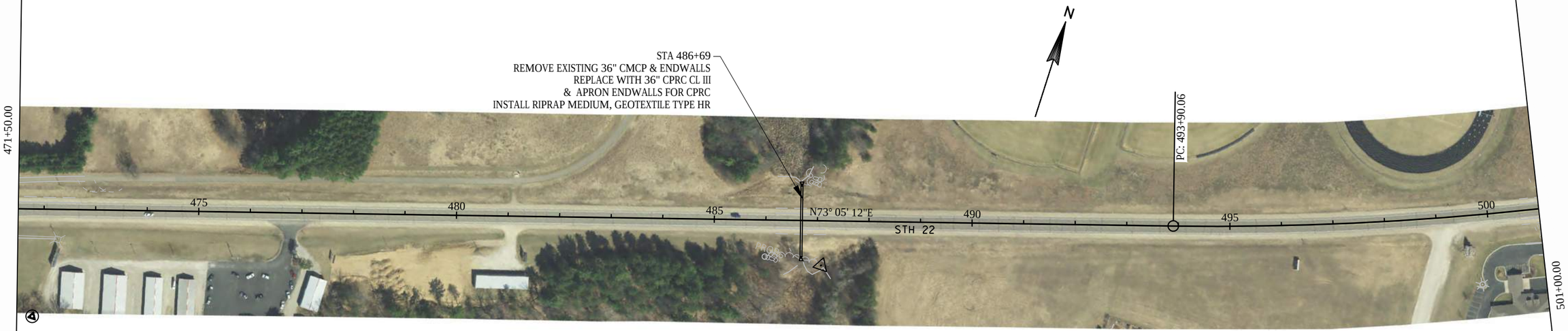
PLOT DATE : 8/27/2019 11:50 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT



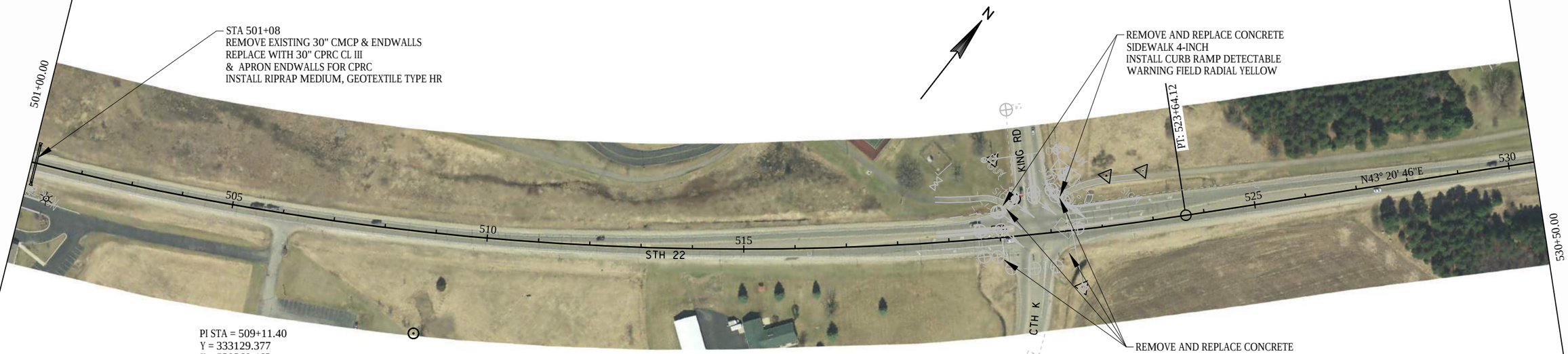
PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 08

PLOT DATE : 8/27/2019 11:53 AM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT



PI STA = 509+11.40
Y = 333129.377
X = 530369.463
DELTA = 29°44'26"
D = 1°00'00"
T = 1521.34'
L = 2974.06'
R = 5729.58'
PC STA = 493+90.06
PT STA = 523+64.12

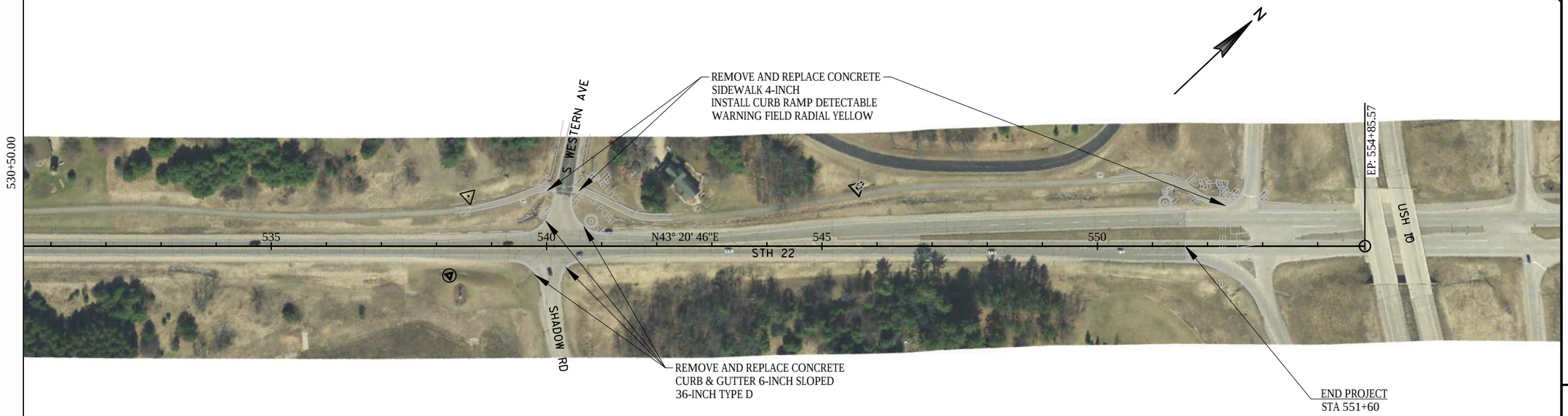


PI STA = 509+11.40
Y = 333129.377
X = 530369.463
DELTA = 29°44'26"
D = 1°00'00"
T = 1521.34'
L = 2974.06'
R = 5729.58'
PC STA = 493+90.06
PT STA = 523+64.12

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 09

PLOT DATE : 8/27/2019 12:01 PM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT



5

5

PROJECT NO: 6300-00-73	HWY: STH22	COUNTY: WAUPACA	PLAN SHEET	SHEET	E

FILE NAME : Q:\WISDOT\STH 22\CAD\63000073\SHEETSOTHER\SHEETSPLAN\050201-PN.DWG
LAYOUT NAME - 10

PLOT DATE : 8/27/2019 12:08 PM PLOT BY : HEIN, MIKE PLOT NAME : PLOT SCALE : 1 IN:200 FT

Attachment F
Traffic Management Plan

WisDOT TMP Documentation and Request for Approval

TMP ID: 7053

Current Version

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.

Section 1A - Project Information:

TmpType:	2
Region:	NC
Local Program:	No
Created Comment:	
Federal Oversight:	No
Design ID:	6300-00-03
Project Title:	WAUTOMA - WAUPACA PORTAGE COUNTY LINE TO USH 10 RAMPS
County:	WAUPACA
Highway:	WIS 22
Construction Year:	2020
Mainline AADT:	4800
Crossroad AADT:	4100

Section 1B - Project Impacts:

Anticipated Begin:	2020-07-06
Anticipated End:	2020-10-16
OSOW Route:	No
OSOW Type:	

Section 1C - Location:

Location Number:	1
Begin County:	WAUPACA
End County:	WAUPACA

Highway:	WIS 22 NB
Closure Type:	Mainline
Begin Landmark:	PORTAGE - WAUPACA CO LINE
Direction From:	At Landmark
Distance From (mi):	0.0
End Landmark:	WESTERN AVE
Direction From:	Upstream from landmark
Distance From (mi):	0.22

Location Number:	2
Begin County:	WAUPACA
End County:	WAUPACA
Highway:	WIS 22 SB
Closure Type:	Mainline
Begin Landmark:	USH10-STH49/54 EB (B-68-0074 BEGIN)
Direction From:	Downstream from landmark
Distance From (mi):	0.07
End Landmark:	PORTAGE - WAUPACA CO LINE
Direction From:	At Landmark
Distance From (mi):	0.0

Section 2-Project Description

Brief description of work activities:

It is proposed to mill 2 inches of existing asphalt and replace it with 2 inches of HMA Pavement on STH 22 from the Portage/Waupaca County Line to USH 10 (10.45 miles). Damaged concrete curb and gutter will be replaced at many of the 19 side road intersections along the corridor. Three cross culverts will be replaced. Existing curb ramps along the multi-use trail from CTH K to USH 10 will be replaced

and upgraded with raised detectable warning fields to bring them into ADA compliance.

Section 3

Within the project limits are there:

Pedestrians: No

Bicyclists: Yes

Transit Service: No

Railroads: No

Airports: No

Commercial waterway: No

Controlled intersections: Yes

Dynamic message boards: No

What are the current traffic conditions:

Posted speed(mph): 55

Normal travel time(min): 11

Current capacity(vphpl): 1900

Truck %: 21

Queueing present: No

Queueing when:

Section 4

List of chosen strategies:

Strategy	Justification/Comment	Cost
Flagging Operation/One-lane, Two-Way Operation	Mill & Overlay project on 2-lane rural highway	$45000
Temporary Traffic Control Signs	Advanced warning signs on mainline and sideroads	$6000

Cost of chosen strategies (sum of strategy costs): $51000

Section 5

Describe how access to traffic generators (businesses, schools, etc.) and everyday services will be maintained:

Milling and paving operations will be done under traffic utilizing a flagging operation. With the current traffic volumes on STH 22, work zone lengths will not exceed 1.5 miles. Should queues become large and delay exceed 5 minutes the work zone may be shortened. STH 22 will be open to traffic at all times during construction hours. During non-construction hours both lanes of STH 22 will be open to traffic. Businesses, residents, and the school will have access at all times. For curb and gutter replacement and handicap ramp work, traffic control drums and signage will be installed along the edge of the road to delineate the work zone. This is essentially a shoulder closure. There is sufficient width to allow two lanes of traffic to operate on the side roads. When work requires the use of one of the lanes during daytime hours, flaggers will be used as necessary.

Describe how impacts to bicycle riders will be mitigated/coordinated:

The multi-use path on the north side of STH 22 between CTH K and USH 10 will be closed to construct the curb ramps improvements. The construction zone for the ramps extends approximately 15-25 feet behind the existing curb and gutter. Construction of these curb ramps is anticipated to take one week and will happen while school is out of session. The muli-use path will be closed using barricades and signs as shown on SDDs 15D30-05a, b & c. Temporary sidewalk and curb ramps will be installed to allow pedestrians and bicyclists to access the multi-use path. Bicyclists can also use the paved shoulder on STH 22 or a local side road (Western Avenue) which runs parallel to STH 22 between USH 10 and CTH K approximately 450 feet to the north.

Are there anticipated traffic impacts from the proposed project on other road/routes in the region/corridor?

No. STH 22 will operate as it currently does with full access. Minor delays due to the flagging operation are expected but should not cause motorists to seek other routes or impact other regional corridors.

Does the project affect other regions/states?

No. This project is very localized in nature.

List holidays or major special events that occur during the project:

Holiday/Special Event	Begin Date	End Date
Memorial Day	05/22/2020 12:00 PM	05/26/2020 06:00 AM
July 4	07/02/2020 12:00 PM	07/06/2020 06:00 AM
Labor Day	09/04/2020 12:00 PM	09/08/2020 06:00 AM

How will traffic disruptions be minimized during listed events and holidays?

Construction activities will be suspended during these time frames. STH 22 will be open to 2 lanes of traffic.

Section 6 - Traffic Analysis

Section 6+ - Traffic Analysis

What is the anticipated travel delay during the project for each impacted roadway?

#	Location Description	WZ Capacity (vphpl)	Delay (min)	Queue (min)	Delay Cause
1	WIS 22 NB from PORTAGE - WAUPACA CO LINE to WESTERN AVE	600	5	0.1	Flagging
2	WIS 22 SB from USH10-STH49/54 EB (B-68-0074 BEGIN) to PORTAGE - WAUPACA CO LINE	600	5	0.1	Flagging

How was the work zone capacity determined?

Our AADT is 4,800 and K100 is 11.7%. Therefore our peak hourly volume (Two-Way) is 562 vehicles. Flagging capacity for 1.5 miles max is 600 vphpl.

Section 6+ - Intersection/Temporary Signal

Are any intersection traffic control changes proposed?

No intersection traffic control changes are proposed. All side road intersections are controlled by

stop signs on the side road except for CTH K/King Road. CTH K/King Road is controlled by traffic signals. Because traffic patterns are not being significantly altered, no changes are proposed to the signal timing.

Section 7 - Public Information Strategies

Choose strategies that will be used to mitigate the impacts to the public:

Strategy	Intended Audience	Comments
Press Releases/Media Alerts	Local motorists	Press release will be made available to local media prior to construction.
Coordination with Media/Schools/ Businesses/Emergency Services	Local Schools, Businesses & Emergency Services	Local schools, businesses and emergency services will be notified of construction activities and schedules
511 Traveler Information Website (project website, lane closures, motorist information, public information)	Regional motorists	WisDOT can add project to the 511 Site

Section 8 - Incident Management Strategies

List of chosen strategies:

Strategy	Comments	Cost
Incident/Emergency Response Plan and Coordination with Emergency Responders	Local emergency responders will be made aware of construction activities. STH 22 will be open to traffic during construction. Normal incident management practices will be used.	$0

Cost of chosen strategies (sum of strategy costs): $0

Section 9 - Staging Plans

Briefly describe the staging planned for maintaining traffic:

STH 22 Construction will consist of a single stage. STH 22 will be milled and overlaid under

traffic. All side road work will allow side roads to remain open during construction. There is no staging plan for STH 22.

Vehicle Size Restrictions:

#	Location Description	Min lane width to maintain (ft)	Min lane width plus shoulder (ft)	Min Height (ft)	Min shy distance to TCBP (ft)
1	WIS 22 NB from PORTAGE - WAUPACA CO LINE to WESTERN AVE				
2	WIS 22 SB from USH10-STH49/54 EB (B-68-0074 BEGIN) to PORTAGE - WAUPACA CO LINE				

Attachments:

Attachments for TMP ID 7053 are listed below:

[F] Section_3

[f] C- Traffic Report.pdf

[F] Section_8

[f] Emergency Contacts.pdf

[F] Section_4

[f] 6300-00-03 WZIA Alternatives Worksheet.pdf

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

WisDOT TRAFFIC FORECAST REPORT

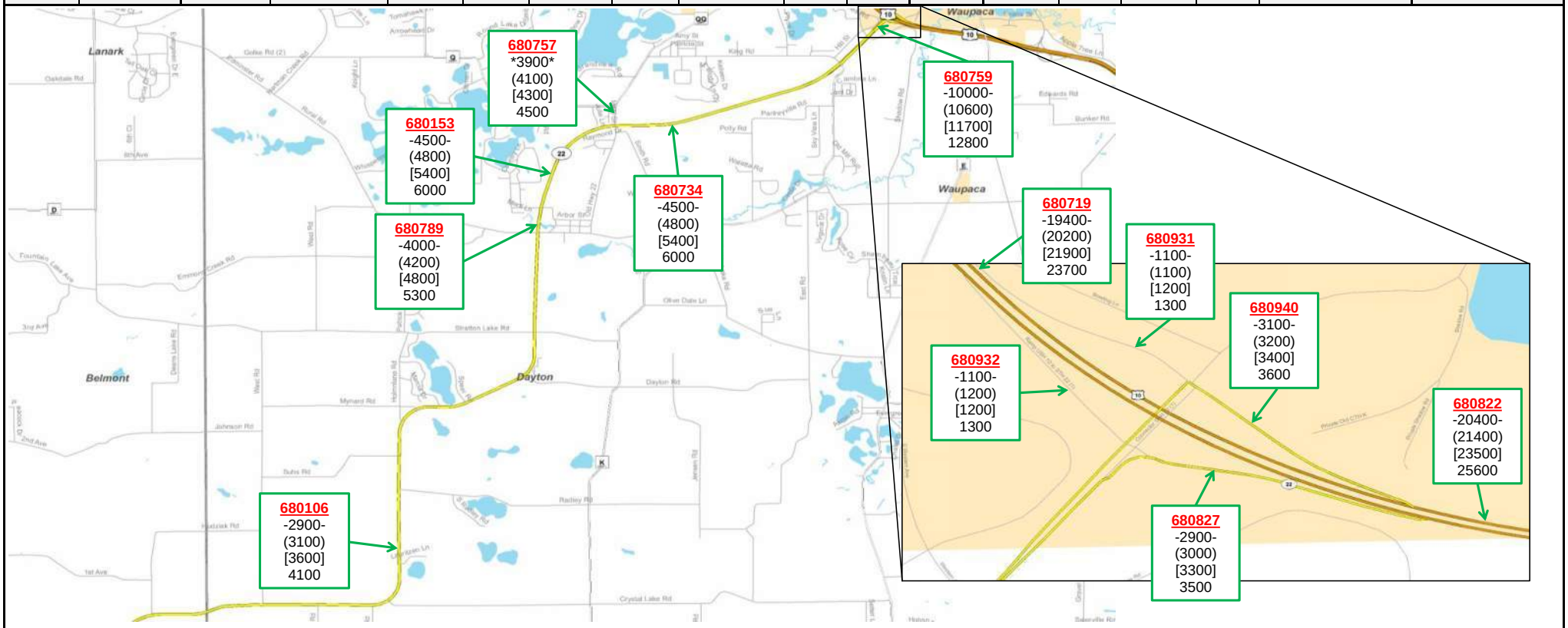
PROJECT ID(S): 6300-00-03/73
ROUTE(S): STH 22

Region/COUNTY(IES): NC / Waupaca
LOCATION: Portage Cty Ln - USH 10
COMPLETED: 1/2/2018

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

Developed by: Jacci Ziebert
Phone: (608) 266-9646
FAX #: (608) 267-0294
E-Mail: jaclyn.ziebert@dot.wi.gov

Design Values (%)											Truck Classification						
Site(s)	Route(s)	Volume(s)	Site Growth %	K250	K100	K30	P	D(Dsgn. Hr.)	T(DHV)	T(PHV)	AADTT	2D	3AX	2S1+2S2	3-S2	DBL-BTM	Total %
680734	**STH 22**	6020	1.41%	11.1	11.7	12.4	13.7	59/41	18.1	15.8	940	10.5	0.5	7.5	2.4	0.1	21.1%



Full Vehicle Classification														
Site(s)	Route(s)	MC	CARS	SU2-4	BUSES	SU2-6	SU3	SU4+	ST4-	ST5	ST6+	MU5-	MU6	MU7+
680789	**STH 22**	1.5	52.8	24.7	4.1	6.4	0.5	0.0	7.5	2.4	0.1	0.1	0.0	0.0

N

SITE ID = Colored, **bolded**, and underlined

Symbol	Count	Symbol	Forecast
-000-	2015 Count	(000)	2020 AADT
000	2012 Count	[000]	2030 AADT
		000	2040 AADT

NOTES ON THE FORECAST:

1. This projection assumes that no major new traffic generators will be added to the development already included in the 2010/2045 Northeast Regional Travel Demand Model.
2. Truck classification percentages were taken from observed short-term 2012 Wisconsin Vehicle Classification Data (Site # 680789).
3. STH 22 is a Factor Group II (Urban-Other) roadway (indicating low to moderate fluctuation in traffic from a seasonal perspective). It is functionally classified as an Urban Principal Arterial (14) for count purposes.
4. The 2010/2045 Northeast Regional Travel Demand Model was used to complete this forecast. The Traffic Analysis Forecasting Information System output was used as a comparison tool to check against the model output. Adjustments were made as needed.
5. Roadway improvements coded within the existing plus committed (E+C) network of the 2010/2045 Northeast Regional Travel Demand Model were assumed to be in place for the purposes of developing this forecast.

Wisconsin Department of Transportation

Daily % Class Distribution for 04/23/2012 through 04/25/2012 (47 hours)

Site Names:	680789, 9960, NC	Seasonal Factor Group:	2
County:	Waupaca	Daily Factor Group:	2
Funct. Class:	U Principal Arterial - Other	Axle Factor Group:	5
Location:	STH 22 BTWN RURAL & CLEGHORN RDS DAYTON TNSHP	Growth Factor Group:	1

	Roadway	Neg DIR	Pos DIR
MC	1.46	1.61	1.30
CAR	52.77	53.17	52.34
PU	24.71	24.43	25.00
BUS	4.14	4.98	3.25
2D	6.37	5.59	7.19
SU 3	0.50	0.47	0.53
SU 4+	0.01	0.03	0.00
ST 4-	7.46	8.90	5.92
ST 5	2.38	0.67	4.20
ST 6+	0.06	0.03	0.09
MT 5-	0.14	0.11	0.18
MT 6	0.00	0.00	0.00
MT 7+	0.00	0.00	0.00
Trucks	21.06	20.78	21.36
Combo Trucks	10.04	9.71	10.38
Classified	100.00	100.00	100.00
Volume	6,974	3,594	3,380

Alternative #	Main Work Zone Strategies	Capital Cost of Strategies ($)	WZ Capacity (vphpl)	Expected Delay (min.)	Expected Queue (miles)	Project Duration (Days)	DAILY Road User Costs ($)	Property Impacts	Pedestrian Impacts
1	Flagging Operation	$90,000	600	5	0.1	45	$9,400	None	None

Jurisdiction	Position	First Name	Last Name	Street Address	City	State	Zip	Phone	email
City of Waupaca	Director of Public Works	Justin	Berrens	111 S Main Street	Waupaca	WI	54981	(715) 258-4420	jberrens@cityofwaupaca.org
City of Waupaca	Fire Chief	Jeffy	Deuman	P.O. Box 46	Waupaca	WI	54981	(715) 258-4434	
City of Waupaca	Police Chief	Brian	Hoelzel	124 S Washington Street	Waupaca	WI	54981	(715) 258-4400	
King		King Fire Dept.&	First Responde	N2665 County Highway QQ	King	WI	54946	(715) 258-5586	
ThedaCare Medical Center	Vice President	David	Corso	800 Riverside Drive	Waupaca	WI	54981	(715) 258-1000	david.corso@thedacare.org
Waupaca County	Highway Commissioner	Casey	Beyersdorf	515 E Fulton Street	Waupaca	WI	54981	(715) 258-7152	casey.beyersdorf@co.waupaca.wi.us
Waupaca County	Sheriff	Tim	Wilz	1402 Royalton Street	Waupaca	WI	54981	(715) 258-4466	
Waupaca County	Emergency Management	Andrew	Carlin	1402 Royalton Street	Waupaca	WI	54981	(715) 258-4464	andrew.carlin@co.waupaca.wi.us
Waupaca County	Emergency Management	Eric	Halverson	1402 Royalton Street	Waupaca	WI	54981	(715) 258-4464	eric.halverson@co.waupaca.wi.us
Wisconsin State Patrol	Commander	Captain Travis	Wanless	2805 Martin Avenue	Wausau	WI	54401-7172	(715) 845-1143	
Wisconsin State Patrol	Executive Director	Lieutenant Les	Mlsna	2805 Martin Avenue	Wausau	WI	54401-7172	(715) 845-1143	

Attachment G
Environmental Commitments Basic Sheet

Section Five: Environmental Commitments

Identify and describe any avoidance, minimization or compensation measures (commitments) in detail. Be specific on what needs to happen and specifically where on the project. Indicate when the commitment should be implemented and who in WisDOT is responsible for fulfilling each commitment (Project Manager, Environmental Coordinator, etc.). Please note if the commitment will be indicated on the final plan, recorded in the Plans, Specifications and Estimates (PS&E), under special provisions in the final plan set, in construction notes, or some other written format. Attach a copy of this completed matrix to the design study report and the PS&E submittal package. Be sure to capture all commitments for each factor listed below and update it if further commitments are made after the Environmental Document is signed.

Factor	**Commitment** (If none, include N/A)
Business and Economics	*Access to businesses will be maintained at all times during construction*
Community	*Access to properties and residents along the corridor will be maintained at all times during construction.*
Aesthetics	N/A
Agriculture	N/A
Relocations	N/A
Indirect Impacts	N/A
Cumulative Impacts	N/A
Environmental Justice	N/A
Historic Properties	*No special or supplemental commitments – Project is included on the WisDOT Screening List. See Attachment 8 - Historical Screening List*
Burial Sites	*For uncatalogued site 47WP335/BWP-0177 (Rural Miner Mound) notify WisDOT's Cultural Resources Team (CRT) when the project is within one year of construction. CRT will petition the Wisconsin Historical Society (WHS) for authorization to work within the boundaries of the burial site under State Statute 157.70.* *For site 47WP68 (Potts), if the undertaking includes ground disturbance beyond the existing ditch back slope intercept, a qualified archaeologist must monitor the construction related ground disturbance activities.* *For sites 47WP277 (P. Pope 3 and 47WP171 (unnamed site), if the undertaking includes ground disturbance beyond the existing right of way limits, a qualified archaeologist must monitor the construction related ground disturbance activities.* *For sites 47WP68 (Potts), 47WP277 (P. Pope 3) and 47WP171 (unnamed site), sites shall not be used for borrow or waste disposal, and the site area not currently capped by asphalt/concrete shall not be used for the staging of personnel, equipment and/or supplies.* *See Attachment 7 – Archaeology Documentation*
Tribal Lands	*No special or supplemental commitments. See Attachment 1 – Tribal Notification Letter & Mailing List*
Section 4(f)	N/A
Section 6(f) or Other Specially Funded Lands	N/A
Wetlands	*All unavoidable wetland impacts will be mitigated at a statewide wetland banking site at an appropriate ratio. The construction project manager and regional environmental coordinator will assure fulfillment of this commitment.*
Surface Water Resources	N/A

Floodplains	N/A
Groundwater, Wells and Springs	N/A
Coastal Zones	N/A
Unique Wildlife and Habitat Concerns	N/A
Threatened and/or Endangered Species	*Per WisDNR Initial Project Review Letter there are no threatened or endangered species in the project area.*
Air Quality	N/A
Construction Sound	*WisDOT Standard Specification 107.8(6) and 108.7.1 will apply.*
Traffic Noise	N/A
Hazardous Substances, Contamination and Asbestos	N/A
Stormwater	*At the three culvert replacements specific details and methods that include isolating the work areas with impermeable dams and proper collection or dewatering of sediment laden water shall be included in the special provisions. The contractor will need to outline these construction methods in the ECIP. The construction project manager and WisDNR will assure fulfillment of this commitment.*
Erosion Control	*WisDOT/WisDNR Cooperative Agreement will be followed.* *WisDNR recommends biodegradable non-netted mat be used on this entire project. Avoid the use of fine mesh matting that is tied or bonded at the mesh intersection such that the openings in the mesh are fixed in size.* *The construction project manager will assure fulfillment of these commitments.*
Other:	*All project equipment shall be decontaminated for removal of invasive species prior to and after each use on the project site by utilizing other best management practices to avoid the spread of invasive species as outlined in NR 40, Wis. Adm. Code.* *This project involves work that may involve cutting or wounding oak trees. To prevent the spread of oak wilt disease, avoid cutting or pruning oak trees from April through September.* *This project has the potential for spreading the Emerald Ash Borer (EAB) beetle. No ash material or hardwood debris from EAB quarantined areas shall be transported to non-quarantined areas without a compliance agreement issued by WI Department of Agriculture, Trade and Consumer Protection.* *The construction project manager will assure fulfillment of these commitments.*
Other:	

Factor Sheets Attached (in order of reference within the document):

Wetlands Factor Sheet

Attachment H
Beam Guard Analysis Memo

Memorandum

Foth Infrastructure & Environment, LLC
5117 West Terrace Drive, Suite 401
Madison, WI 53718
(608) 242-5900
www.foth.com

09/10/2019

TO: Wendy Arneson, WisDOT NC Region
George Fechhelm, WisDOT NC Region

CC:

FR: Chris Saxby, Foth Infrastructure & Environment, LLC

RE: Existing Guardrail Conditions Report & Comparison to Standards with Recomendations
ID 6300-00-03
Wautoma – Waupaca
Portage County Line to USH 10 Ramps
STH 22
Waupaca County

Part of the scope of Project 6300-00-03, STH 22 was to evaluate the condition and configuration of the existing guardrail within the project limits. There are two locations guardrail is present. The first is on the south side of the road at the south end of Stratton Lake. The second is off the four corners of structure B-68-032 over the Crystal River. A field investigation was conducted and measurements taken in April 2019 to determine the current layouts of the existing beam guard. The measurements taken were compared to the standard detail drawings (SDD) for Midwest Guardrail System (MGS) found in the latest version of the Wisconsin Department of Transportation's Facilities Development Manual (FDM). Pertinent SDDs are attached at the end of the document.

Beam Guard South of Stratton Lake

The existing section of guardrail along the south side of the roadway is approximately 500 feet long and protects a steep embankment (2.5:1) and the apron endwalls for three 36"x18" elliptical culvert pipes. The typical roadway cross section in this segment of STH 22 is made up of 2-12 foot travel lanes. On both sides of the roadway there is a 3 foot paved shoulder adjacent to a 5 foot gravel shoulder (an 8 foot shoulder in total).

The energy absorbing terminal (EAT) on the west end of the guardrail is a typical installation consistent with the FDMs SDD 14B44-04a Midwest Guardrail System

Energy Absorbing Terminal (MGS). Measurements show that the face of the guardrail near the end of the EAT is located approximately 12 feet from the edge of the travel lane, which means it is 4 feet off the edge of the shoulder rather than the 2 feet shown on SDD 14B44-04a . The face of the guardrail at the upstream end of the EAT is approximately 9 feet from the edge of the travel lane, or 1 foot off the shoulder point, rather than at the shoulder point. This results in a 18:1 flare rather than the 25:1 shown on SDD 14B44-04a. All of the post spacings within the EAT match those on SDD 14B44-04a. The height of the EAT is approximately 28 inches. SDD 14B42-06A Midwest Guardrail System (MGS) Guradrail states that for new MGS installations the mounting height shall be 31 inches but for existing installations the mounting height shall be between 27.75 and 32 inches. Therefore the current mounting height is within standards. The EAT appears to be in excellent condition. Photo 1.0 shows the existing EAT.

Photo 1.0 Existing Westerly EAT at Stratton Lake

The section of the guardrail between the EATS is mounted on posts that are spaced at the standard 6' 3" spacing. The guardrail offset from the travel lane varies between 8.5 and 9 feet. The typical shoulder width is 8 feet. Therefore the guardrail is set off the shoulder point 0.5 to 1 foot rather than at the shoulder point. The mounted height of the beam guard is approximately 28 inches which is within standards for existing MGS guardrail per SDD 14B42-06a.

Between posts 25 and 35 the existing guardrail is warped and damaged. If this piece is not replaced through standard maintenance it should be replaced as part of the project. Photo 1.1 shows the damaged guardrail.

Photo 1.1 Damaged guardrail near Stratton Lake

The eastern EAT is a typical installation consistent with the SDD 14B44-04a. Measurements show that the face of the guardrail near the end of the EAT is located approximately 11.67 feet from the edge of the travel lane, which means it is 3.67 feet off the edge of the shoulder rather than the 2 feet shown on the SDD. The face of the guardrail at the upstream end of the EAT is approximately 9 feet from the edge of the travel lane, 1 foot off the shoulder point, rather than at the shoulder point. This results in a 22:1 flare rather than the 25:1 shown on SDD 14B44-04a. All of the post spacings within the EAT match those on SDD 14B44-04a. The height of the EAT is approximately 28 inches which is within standards for existing MGS guardrail per SDD 14B42-06a. The EAT appears to be in excellent condition. Photo 1.2 shows the existing easterly EAT.

Photo 1.2 Existing easterly EAT at Stratton Lake

The pavement design report for this project states the pavement life for the proposed overlay is anticipated to be 6 to 10 years. The field inspection revealed that the existing post spacing matches current standard details, the rail is mounted with standards and the EATs are in excellent condition. Based on review of FDM section 11-45-4.4 it is recommended that this existing guardrail system at the south end of Stratton Lake should remain in place. The damaged section between posts 25 and 35 should be replaced as part of the project if it is not repaired by routine maintenance activities prior to construction.

Crystal River Bridge Beam Guard

The existing bridge over the Crystal River has guardrail located at all four corners. The bridge itself has type W rail (thrie beam guardrail) running on both sides of the deck rather than concrete parapet. The existing guardrail is attached directly to the type W rail. The existing guardrail general layout of the guardrail is similar for all four quadrants of the bridge. Some dimensions vary slightly.

Based on the current SDDs for MGS and Class "A" guardrail it appears the current configuration is combination of both systems and may have been installed to standards that were once used but are no longer available on SDDs. Each section of guardrail contains a thrie beam transition from the type W rail of the structure to the guardrail followed by a short section of standard guardrail that then attaches to a standard EAT.

The thrie beam transition piece of guardrail has the connection, post configuration and length typical of SDD 14B20-11a Steel Thrie Beam Structure Approach and SDD 14B20-11E Steel Thrie Beam Structure Approach Connection to Bridge Railing Types "F" and "W". SDD 14B20-11a shows an overall length of 20'-7 ¾" and a transition piece that symmetrically transitions from the thrie beam to the class "A" guardrail by a height reduction from both the top and bottom. The existing transition is 20'-7 ¾" (20.65') long but the actual transition piece is consistent with SDD 14B45-5a for the MGS where the top of the transition piece remains the same height and the transition from thrie beam to class "A" guardrail is done by taking the width only off the bottom. SDD 14B45-5a for the MGS installation shows an overall length of 25' as opposed to the existing 20.65'. There appears to be a combination of SDDs used for the thrie beam transition sections. In summary it appears the thrie beam transitions installed at all four corners of the structure are consistent with SDD 14B20-11a for a typical Class "A" installation rather than and MGS system but the actual transition piece used is consistent with SDD 14B45-5a for the MGS. Photos 1.3 and 1.4 show the typical transition on all four corners of the structure.

Photo 1.3 Thrie beam transition at the Crystal River Bridge

Photo 1.4 Thrie beam transition at the Crystal River Bridge

The typical thrie beam transition length from SDD 14B20-11a is 20.65'. The standard EAT length is 50' from post 1 to post 9 of the installation. Combined this is a total length of 70.65 feet. The existing runs of guardrail are approximately 120.65 feet long thus indicating there is 50 feet (8 sections at 6.25') between the thrie beam transition and the EAT. Existing conditions show the guardrail is kinked at the end of the thrie beam transition piece to indicate that the entire length of the class "A" guardrail is in the flared section of the EAT when in fact by standards 50 feet of guardrail should be parallel to the 8 foot shoulder before the EAT. Therefore the existing tapers are 50 feet longer than standards. Photos 1.5 and 1.6 show the straight taper from the thrie beam transition piece to the EAT

.

Photo 1.5 Straight taper from thrie beam transition to EAT (SE Corner)

Photo 1.6 Straight taper from thrie beam transition to EAT (NW Corner)

The offset to the face of the thrie beam transition guardrail varies from 8’ to 8.5’. The shoulder width in this segment of STH 22 is 8 feet. The thrie beam transition is located at the shoulder point. The EAT in the southwest quadrant is 11.33 feet from the edge of the travel lane. Subtracting the shoulder width of 8’ the existing offset to the EAT is 3.33’, not the 2’ shown on the SDD. Similarly the southeast quadrant EAT has an offset of 2.5’, the northeast EAT offset is 4.25’ and the northwest EAT offset is 3.25’. These varying offsets along with the extra 50 feet of guardrail produce flare rates of 28:1 in the southwest quadrant, 48:1 in the southeast quadrant, 25:1 in the northeast quadrant and

31:1 in the northwest quadrant. The standard flare rate is 25:1. Only the southeast quadrant meets the standard flare rate. However, if installed correctly with the middle 50 feet of guardrail parallel to the shoulder the flare rate would not meet standards.

The structure plans for B-68-032 show a typical section of 2-12 foot lanes and 8 foot shoulders to the face of the railing. This roadway width is consistent with the STH 22 typical section. The existing guardrail deflects in slightly on 3 of the 4 corners of the structure. This deflection is shown in Photos 1.7, 1.8 and 1.9.

Photo 1.7 Inward deflection the guardrail off the structure railing at the southwest corner

Photo 1.8 Inward deflection the guardrail off the structure railing at the northeast corner

Photo 1.9 Inward deflection the guardrail off the structure railing at the northwest corner

The EAT in the southeast quadrant has a rectangular marker panel rather than a square one. The rectangular shape does not meet the SDD. Photo 1.10 shows the rectangular panel marker.

Photo 1.10 Rectangular panel marker in the southeast quadrant

All of the existing guardrail near the Crystal River structure has a mounted height between 27 and 29 inches which meets current standards for existing installations. All of the guardrail appears to be in a workable condition.

Although the guardrail system is not installed to current design standards, it appears as though it was installed to standards at the time of installation. The EATs and posts are in good condition and the rail is mounted to current standards. The SCD indicates there is no crash history at the bridge. The pavement design report for this project states the pavement life for the proposed overlay is anticipated to be 6 to 10 years. Given this information and after a review of FDM section 11-45-4.4 it is recommended that the guardrail systems on all four corners of the Crystal River Bridge remain in place.

Summary for Stratton Lake Guardrail

- The westerly and easterly EATs near Stratton Lake have flare rates of 18:1 and 22:1 respectively as opposed to the standard 25:1 flare rate.
- The terminal ends of the EATs at Stratton Lake are offset nearly 4 feet from the edge of shoulder rather than the standard 2 feet.
- The hinge point of the EATs at Stratton Lake are offset 1 foot from the edge of the shoulder as opposed to 0 feet per standards.
- The guardrail near Stratton Lake is offset 0.5 to 1 feet from the edge of the shoulder as opposed to 0 feet per standards.
- The damaged section of guardrail at Stratton Lake between posts 25 and 35 should be replaced by the project if it is not replaced by routine maintenance prior to construction.

Summary for Crystal Lake Guardrail

- All four quadrants of the bridge have primarily the same guardrail configuration.
- The thrie beam approaches have post spacing and overall length consistent with Class “A” guardrail, not MGS guardrail.
- The actual thrie beam transition pieces are consistent with the MGS system even though layout and dimensions are consistent with Class “A” guardrail.
- 50 feet of guardrail that should be parallel to the shoulder is included in the flair of the EAT making the flares 50 feet longer than they should be.
- Shoulder offsets to the EATs are greater than the standard 2 feet.
- Flare rates of the EATs are not consistent with the 25:1 standard
- Three of the quadrants have guardrail that deflects inward slightly from the connection to the structure railing.
- The southeast quadrant has a rectangular, rather than square, marker panel.

Recommendations

Existing guardrail was field inspected and measured in place. Measurements were then compared to existing standard detail drawings in Chapter 16 of the FDM. Section 11-45-4.4 of the FDM was reviewed for criteria and guidance on how to handle guardrail hardware evaluations and treatments. FDM Section 11-45-4.4 states to apply the following guardrail hardware guidance for all Perpetuation and Rehabilitation improvement projects:

- Replace/restore existing guardrail system or hardware where determined to be deficient/missing.

- Replace guardrail where the remaining service life is less than the improvement's pavement treatment service life. If the existing guardrail has a reasonable service life remaining, it is not mandatory to replace it.

For this project the guardrail system is not deficient or missing. The estimated remaining service life is greater than that of the proposed pavement treatment service life of 6 to 10 years. There is no documented crash history for the existing guardrail locations.

Based on these reviews and project team discussions it is recommended to leave the existing guardrail systems in place at both the Stratton Lake and Crystal River Bridge locations. The damaged section of guardrail at the Stratton Lake location between posts 25 and 35 should be replaced as part of the project if it is not repaired by routine maintenance activities prior to construction.

SDD 14b15-a Steel Plate Beam Guard, Class "A", Installation and Elements

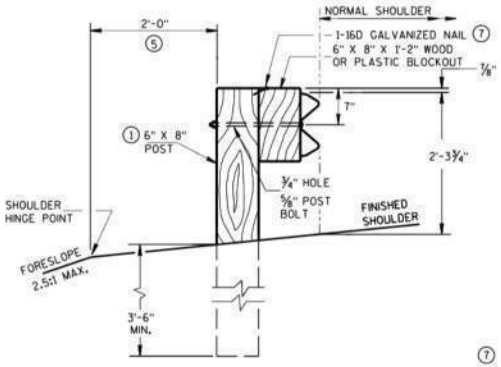
GENERAL NOTES

1. W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS.

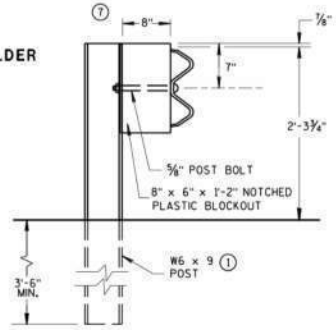
   DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
2. USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
3. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
4. USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
5. IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
6. IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY.
7. WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

   INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

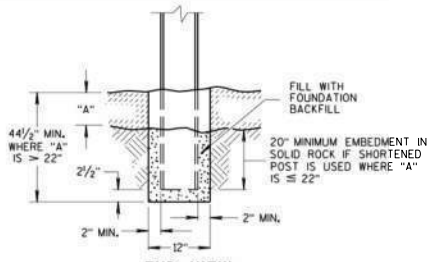
   ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



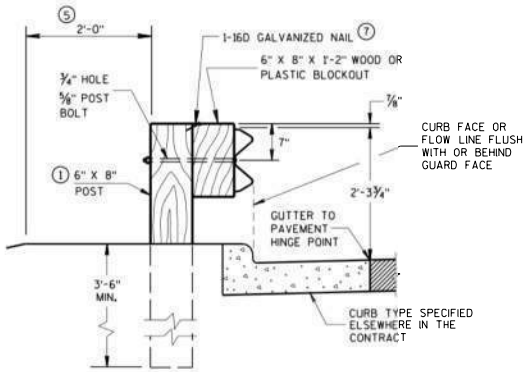
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



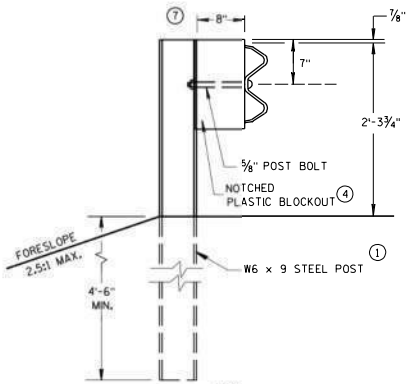
END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



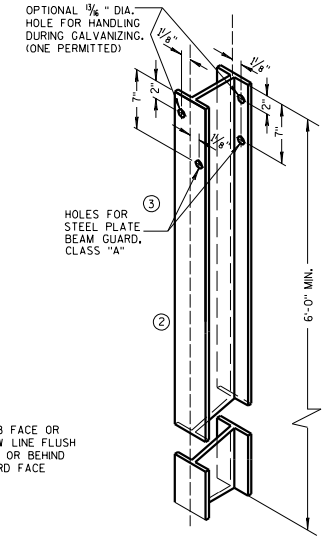
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)



END VIEW
LOCATED ALONG A CURBED ROADWAY

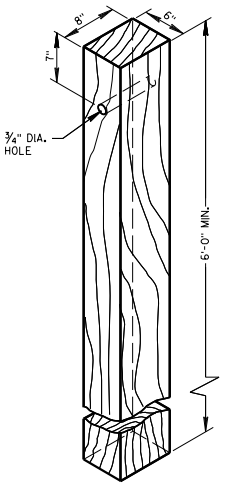


END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

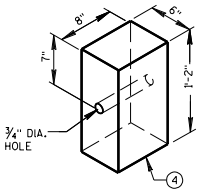


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

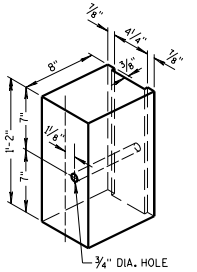
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



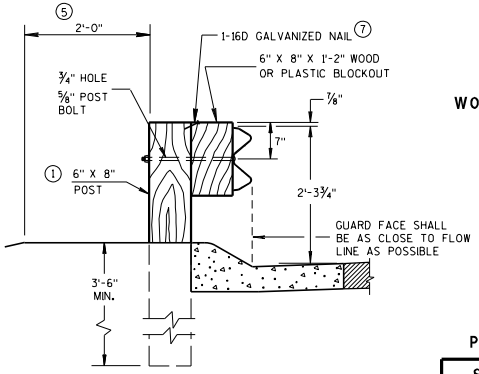
WOOD POST
(6"X8") NOMINAL



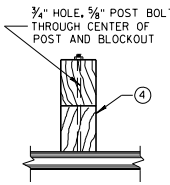
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



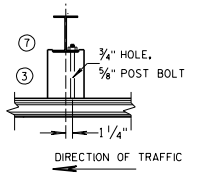
TYPICAL NOTCHED (1)
PLASTIC BLOCKOUT
FOR STEEL POSTS



END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY



PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

STEEL PLATE BEAM GUARD,
CLASS "A"
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 14 B 15-11a

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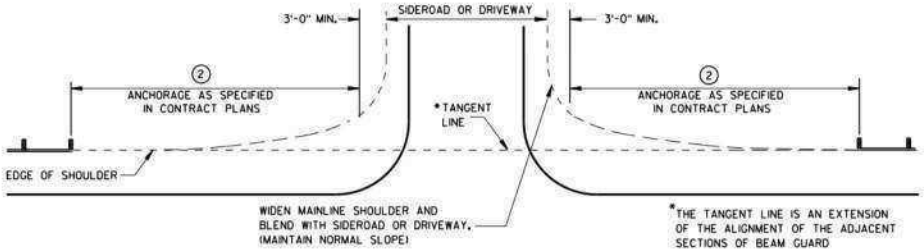


BEAM GUARD AT SIDEROADS OR DRIVEWAYS

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

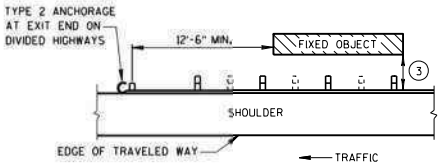
THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

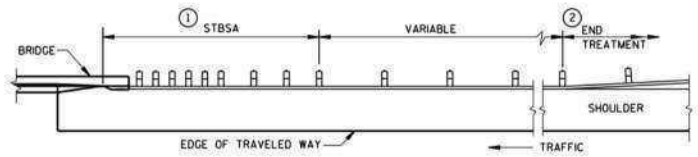
(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

(3)

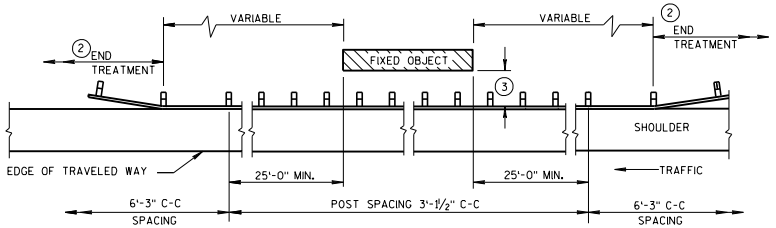
MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"



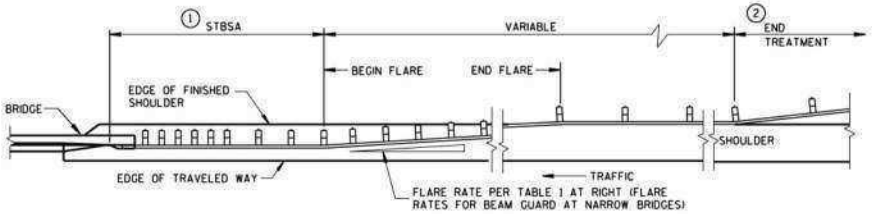
BEAM GUARD AT OBSTACLES
EXIT END - ONE WAY TRAFFIC



BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC
(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")



BEAM GUARD AT NARROW BRIDGES
(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

STEEL PLATE BEAM GUARD
CLASS "A"
AT BRIDGES, OBSTACLES
AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-21-07
DATE
FHWA

/S/ Jerry M. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

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S.D.D. 14 B 18-6a

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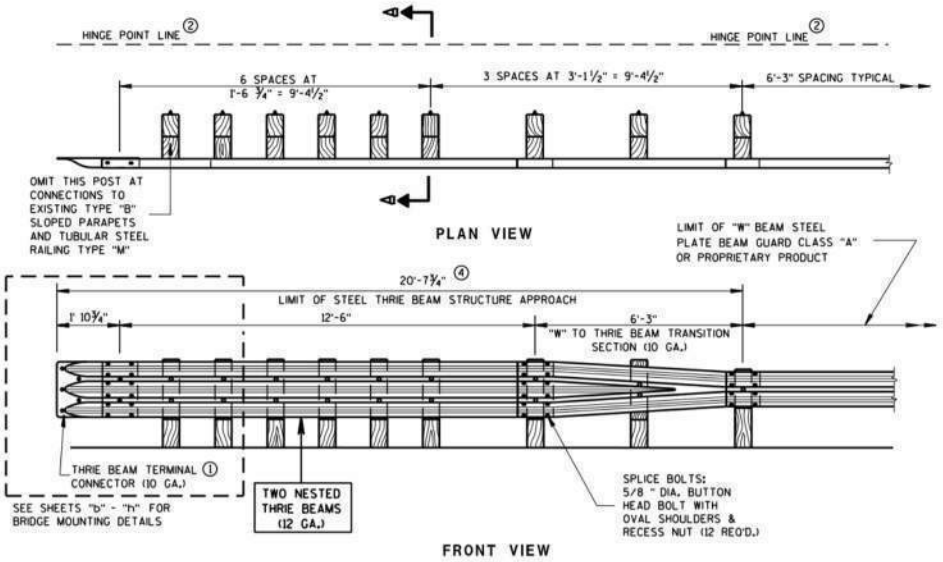
S.D.D. 14 B 18-6a

SDD 14b20-a Steel Thrie Beam Structure Approach



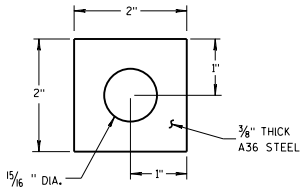


PLATE WASHER DETAIL

GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

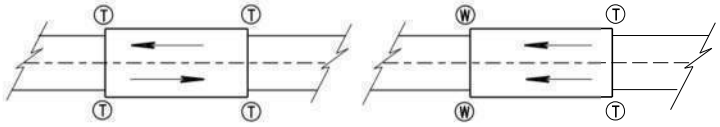
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



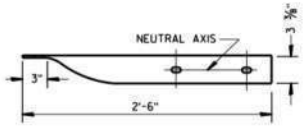
TWO WAY TRAFFIC

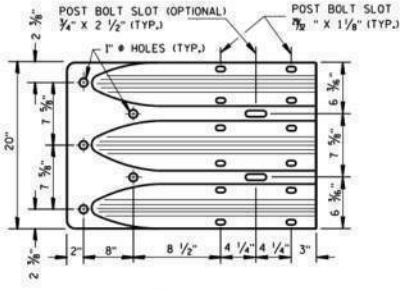
ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

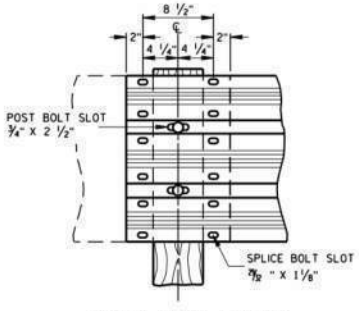
Ⓦ W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

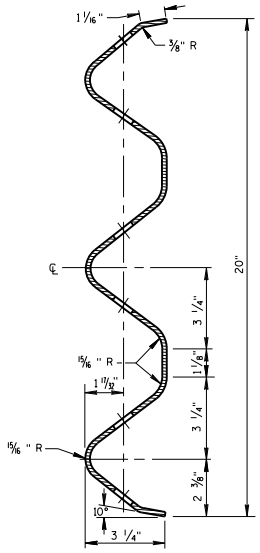




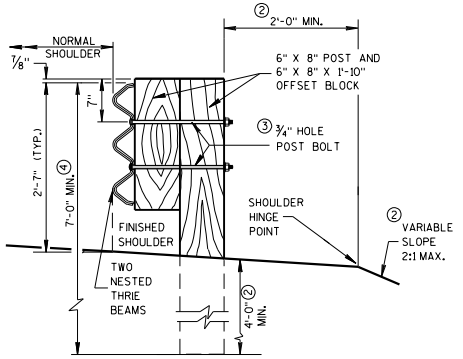
THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE



SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION A-A

STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-31-2012
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER

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S.D.D. 14 B 20-11a

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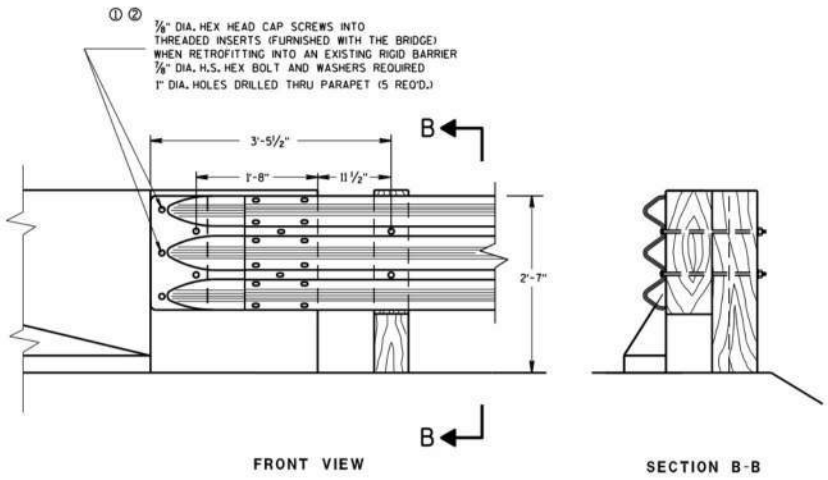
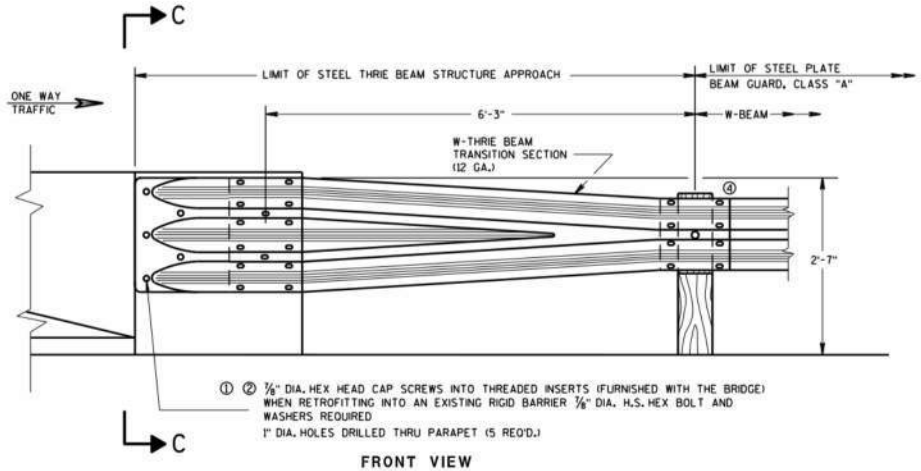
S.D.D. 14 B 20-11a



FRONT VIEW

SECTION B-B

THRIE BEAM CONNECTION TO BRIDGE
PARAPET WITH SQUARE ENDS



FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO
BRIDGE PARAPETS WITH SQUARE ENDS
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

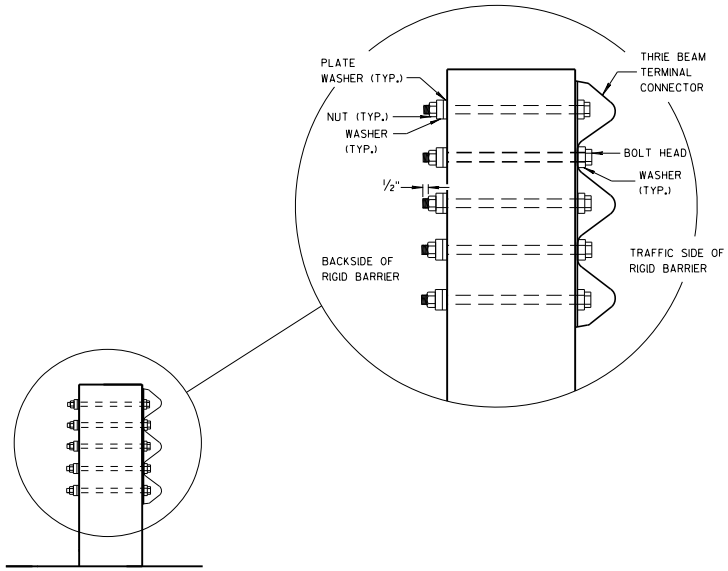
① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X ⅝" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 ½".

④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



SECTION C-C

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED 8/31/2012 — DATE /S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER FHWA

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S.D.D. 14 B 20-11b

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S.D.D. 14 B 20-11b

1. WOOD OR STEEL POSTS (w6X9 OR w6X8,5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

2. USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

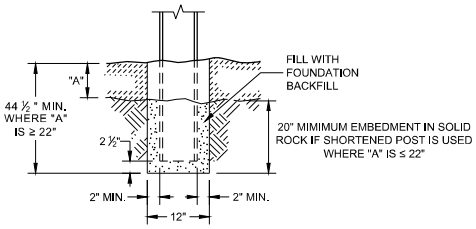
3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

4. WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

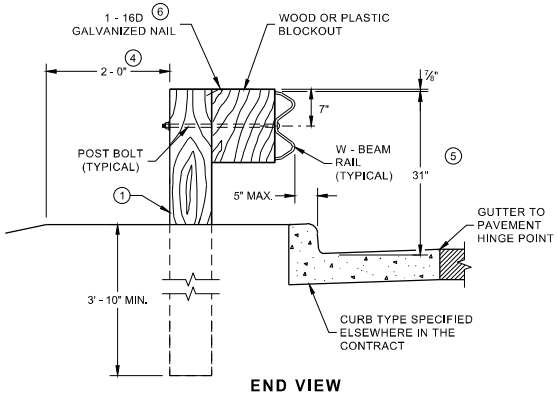
5. FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 ¾" TO 32".

6. WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

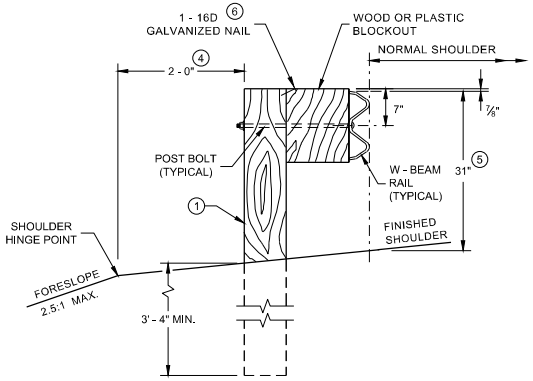
7. TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



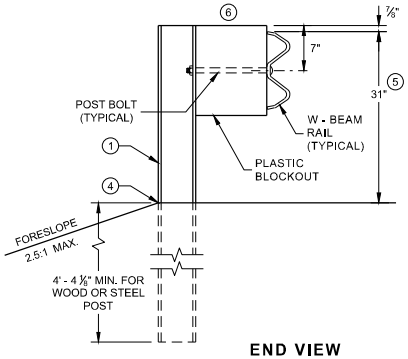
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (3)



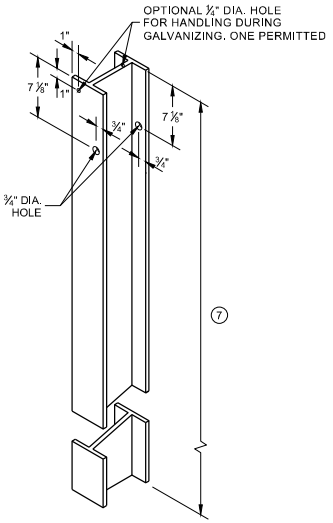
END VIEW
LOCATED ALONG A CURBED ROADWAY



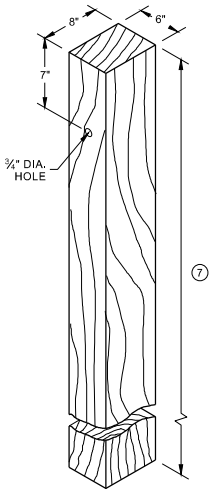
END VIEW
LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION



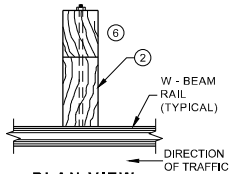
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



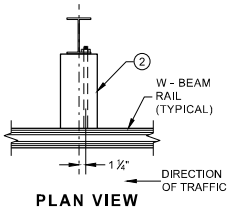
STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9) (1)



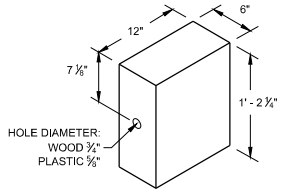
WOOD POST (6" X 8") NOMINAL (1)



PLAN VIEW WOOD POST, BLOCKOUT & BEAM



PLAN VIEW STEEL POST, PLASTIC BLOCKOUT & BEAM



WOOD OR PLASTIC BLOCKOUT (2)

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 14B42 - 06a

6

SDD 14B42 - 06a

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED

(C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.

(D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.

(E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.

(F) DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

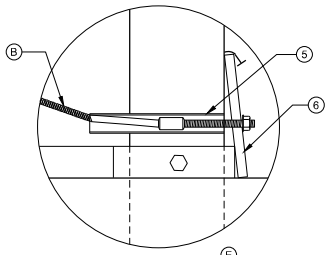
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

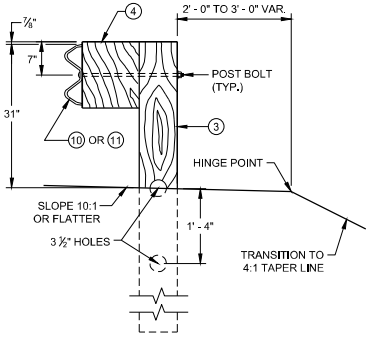
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

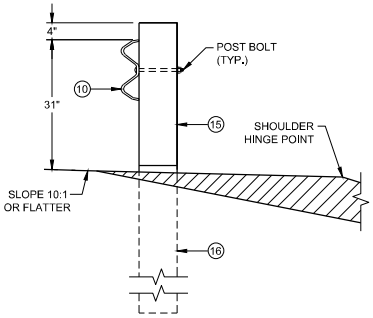
THE CENTER OF THE UPPER 3 ½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



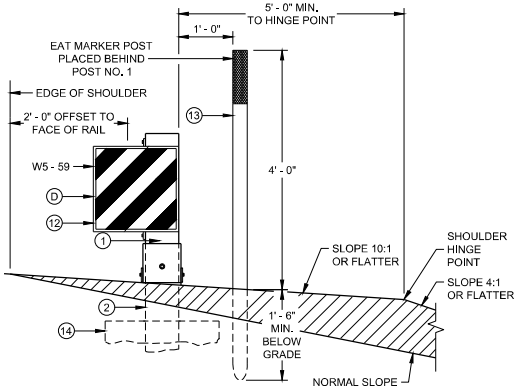
DETAIL "A" (E)



SECTION C - C
TYPICAL AT POST NOS. 3 - 9

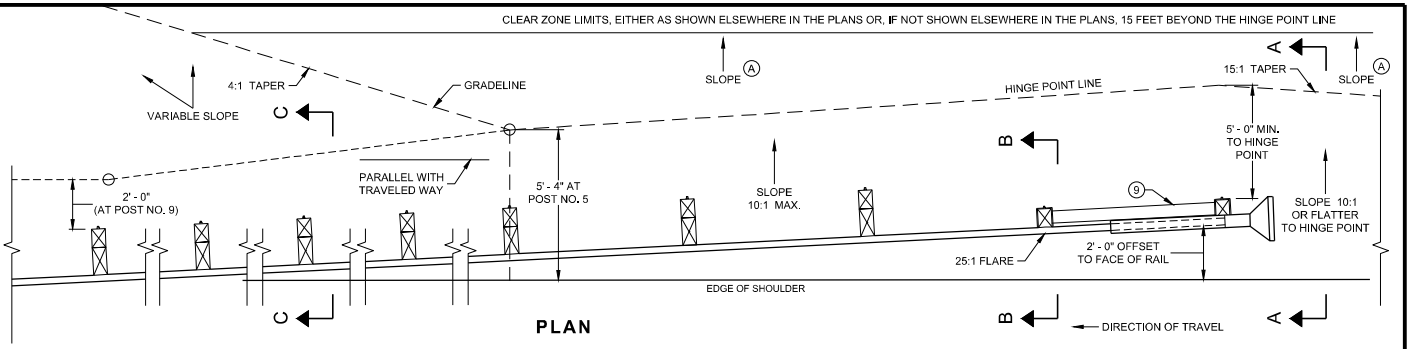


SECTION B - B
TYPICAL AT POST NO. 2*

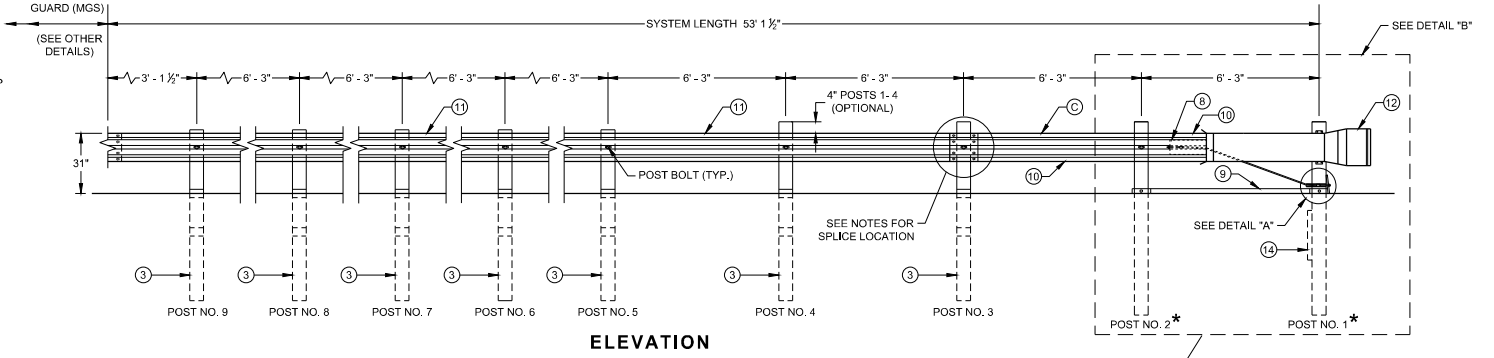


SECTION A - A
TYPICAL AT POST NO. 1*

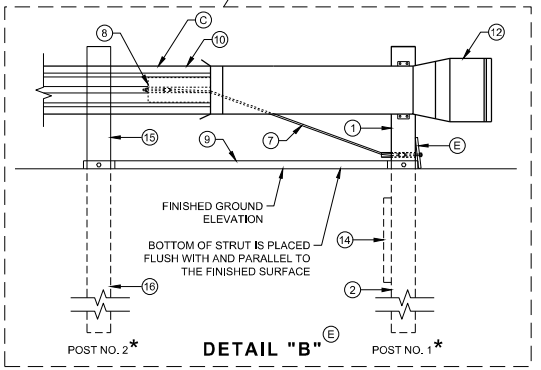
CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE



PLAN



ELEVATION



DETAIL "B" (E)

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

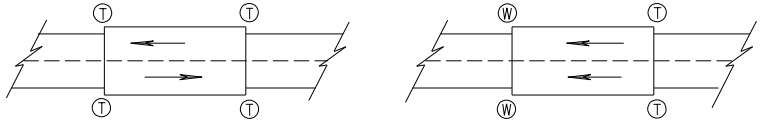
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

SDD 14B44 - 04a

6

SDD 14B44 - 04a



TWO WAY TRAFFIC ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

GENERAL NOTES

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

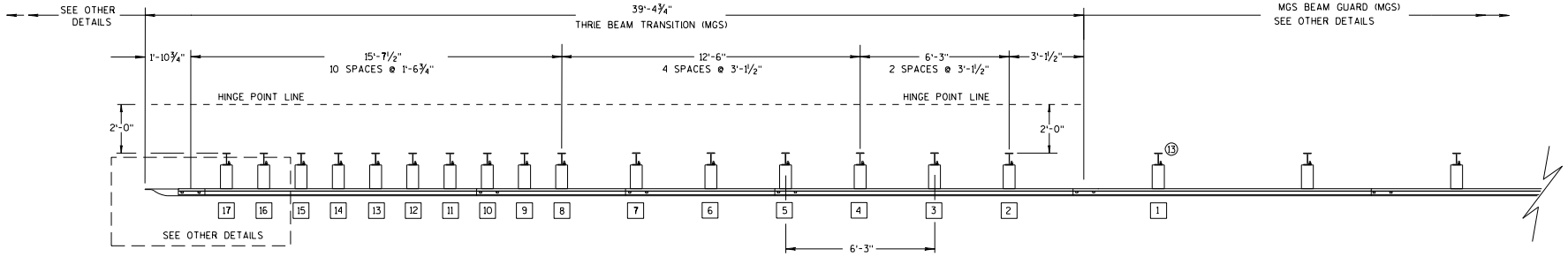
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

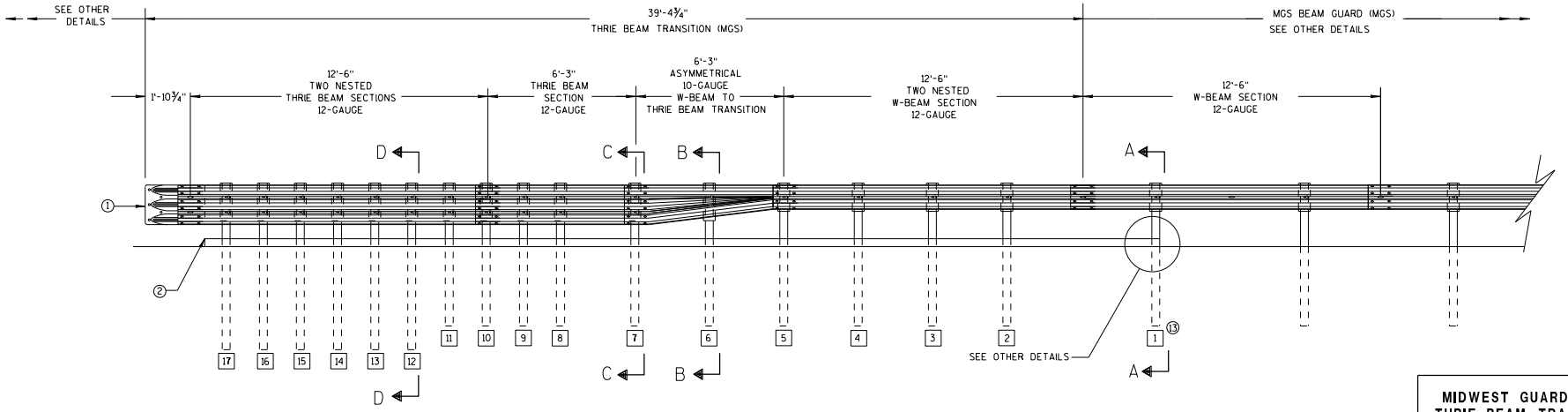
(1) BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

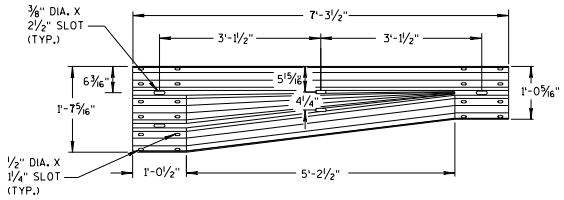
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

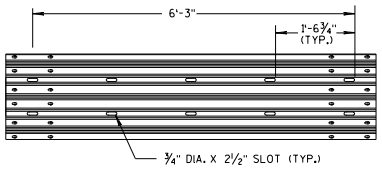
S.D.D. 14 B 45-5a

6

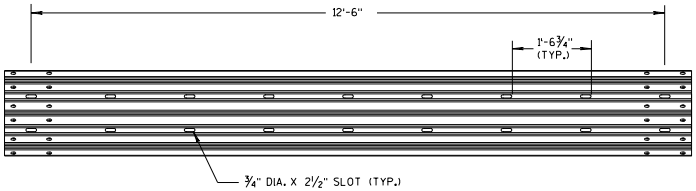
S.D.D. 14 B 45-5a



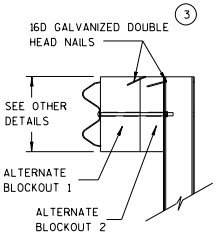
W-BEAM TO THRIE BEAM TRANSITION SECTION



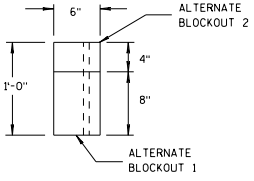
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

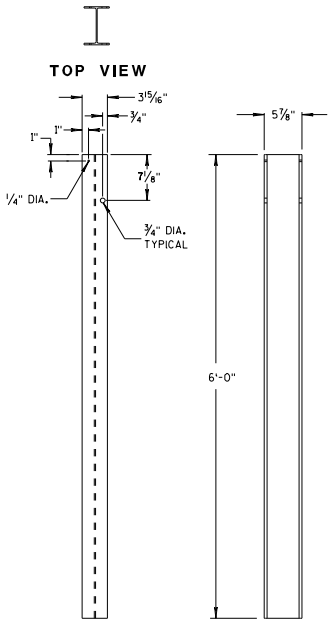


SIDE VIEW

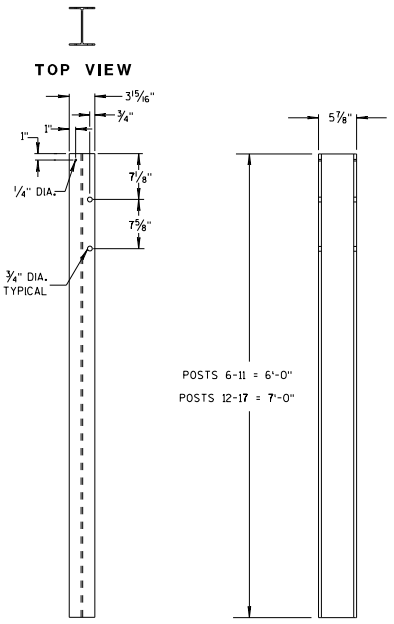


TOP VIEW

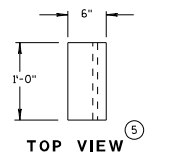
ALTERNATE WOOD BLOCKOUT DETAIL



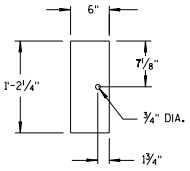
STEEL POSTS 1-5 (13)



STEEL POSTS 6-17

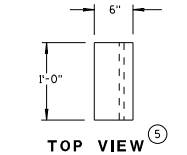


TOP VIEW (5)

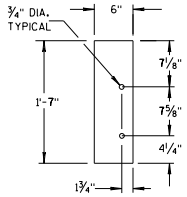


FRONT VIEW

BLOCKOUT POSTS 1-5



TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

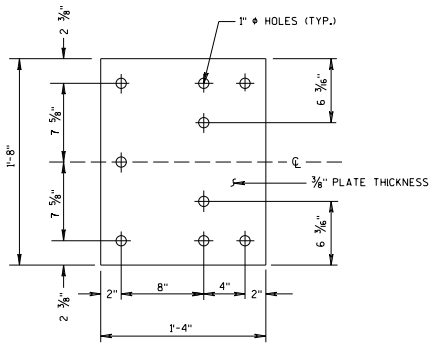
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

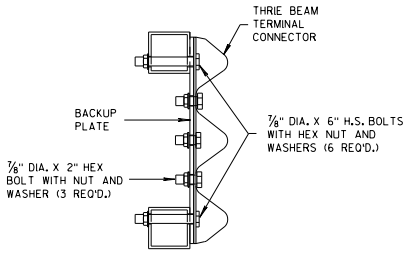
S.D.D. 14 B 45-5c

6

S.D.D. 14 B 45-5c



BACK-UP PLATE DETAIL

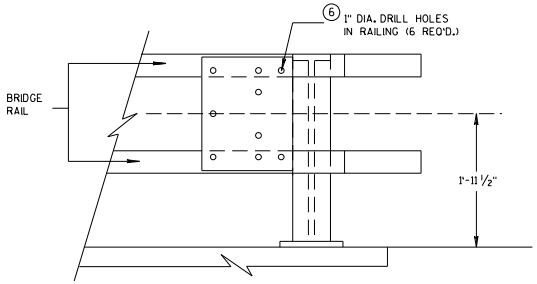


SECTION J-J

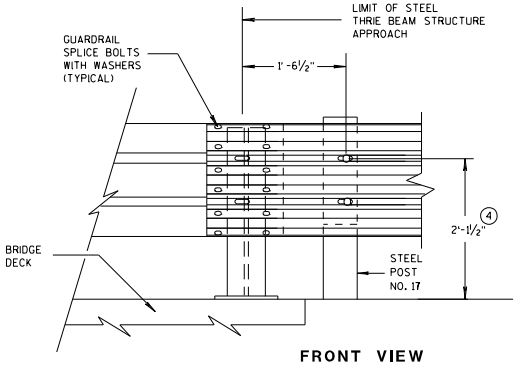
GENERAL NOTES

(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

(6) DRILLING HOLES THROUGH THE PAPRPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

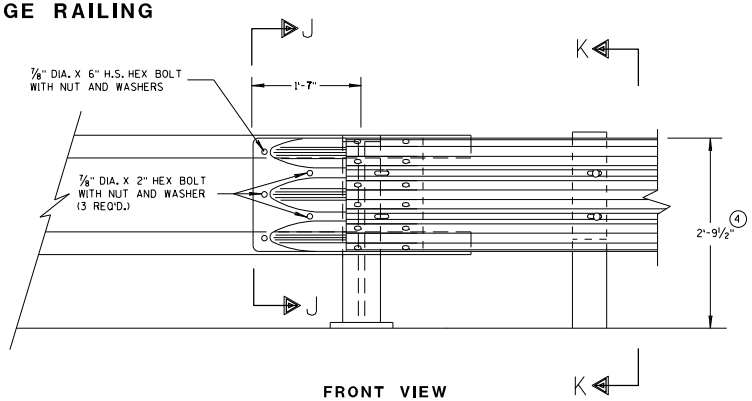


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

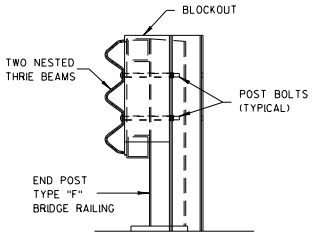


FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW



SECTION K-K

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 07/2018 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA

6

S.D.D. 14 B 45-5g

6

S.D.D. 14 B 45-5g