



2019 Construction & Project Development Conference

Design Updates

NDDOT
North Dakota
Department of Transportation

Sam Welch, PE
Design Division

Overview of What's New or Updated



Utilities Coordination



Solar Powered Destination Lighting



As Built Plans Workflow



Passing Lane Pavement Marking & Signing



Safety Corridors



High Tension Cable Median Guardrail



Rural Approach Modification Agreement (RAMA)

Utilities Coordination

New Utility Notes
Pilot Projects with Utility
Conflict SP



Plan Preparation Guide

Welcome to the Plan Preparation Guide website. This site contains a collection of reoccurring plan sheets (formerly "Drawings") and notes, which reflect the latest construction practices used by the NDDOT.

The purpose of this website is to provide easy access for these plan sheets and notes. Each plan sheet may need editing to fit your particular needs.

Plan sheets are available in MicroStation DGN, Adobe PDF, and/or Microsoft Excel or Word formats.

Design Section		Bridge Section
Plan Sheets	Special Provisions	Plan Sheets
Standard Notes	Plan Notes	Bridge Notes
Miscellaneous		
Utility Notes Sheet (DOCX, 69K)		

[Notice of Disclaimer](#) | [Required Software](#)

For more information, contact Jon Ketterling, Justin Ramsey, or James Rath by emailing nddot.prepguide@ugpti.org



Pilot Projects with Utility Coordination SP

Two Urban Reconstruction Projects

- Utility Coordinator pay item
- Pothole Utility pay item
- Utility Resolution pay item
- Utility Coordination Table
- Utility Coordination Exhibits
- Pothole Reports



Utility Coordination Table Appendix A of SP 823(14) NH14-0-011(04)340 PON 21170 Utility Conflict Summary Sheet Sorted By Station																			
UE ID #	Utility Coordination Subbits	Approx. Sta From	Approx. Sta To	LT/RT or Crossing	Roadway (Alignment/Chute)	Approx. City	Unit	Misc Excavation Cut (-) / Fill (+) Feet	Conflict Level	Resolution Criteria / Comments (Information for the Contractor based on early coordination with utilities. Information is approximate; details for the schedule and construction phasing will need to be finalized between the Contractor and Utility Companies. Comments also outline other items that Contractor need to account for in potential phasing for the project).	Utility Company	Type of Facility	Alter/Modification - Time For Construction (D = Working Day, W = Week)	Estimated Time to Complete - Make (D = Working Day, W = Week)	UTILITY ENCOUNTERS (UE)		PUC (N/A) (UE)	Quantity of Potable Utility	
															Proposed To/Make	Conflict			
XCEENE-15	1, 5	2+54	to 2+54	LT	PRBROADWAY_S	9	LF	-0.5	Level 2	Utility Encounter with remains and driveway. Do not over-excavate.	Xcel Energy	Gas Line	-	-	X	-	-	0	
CENLINK-18	1, 5	3+41	to 3+41	Crossing	PRBROADWAY_S	71	LF	12	Level 2	Utility Encounter with sanitary sewer excavation. Carefully excavate around, suspend and support across trench. Potoling at Sta 3+41.08, 30.14 LT (PRBROADWAY_R) included to verify location of utility.	Century Link	Fiber Optic Line	-	-	X	-	CENLINK-18-19H	1	
CENLINK-19	1, 5	3+41	to 4+36	LT	PRBROADWAY_S	97	LF	12	Level 2	Utility Encounter with sanitary sewer excavation. A pothole was completed, see pothole report, site #C. Carefully excavate around, suspend and support across trench.	Century Link	Fiber Optic Line	-	-	X	-	-	0	
XCEENE-16	2, 3, 6	3+00	to 2+40	LT	PRTHST_N	143	LF	3	Level 2	Utility Encounter with sanitary sewer excavation. Electric 750 Feeder Line. A pothole was completed, see pothole report, site #7. Carefully excavate around, suspend and support across trench.	Xcel Energy	Electric Line	-	-	X	-	-	0	
XCEENE-17	2, 3, 6	3+00	to 2+23	LT	PRTHST_N	135	LF	3	Level 4	Conflict with water line excavation. Utility company and contractor to coordinate during construction to adjust height. Potoling at Sta 1+05.16, 34.68 LT (PRTHST_N) included to verify location of utility.	Xcel Energy	Gas Line	4W	2D		X	XCEENE-17-19H	1	
MIDCAB-2	2, 3, 6	3+00	to 2+33	LT	PRTHST_N	135	LF	5	Level 1	No Conflict. According to Midco the line is approximately 23' deep.	Mid-Continent Cable	Fiber Optic Line	-	-			-	0	
CENLINK-20	2, 3, 6	3+00	to 2+34	RT	PRTHST_N	131	LF	5	Level 1	Utility Encounter with storm sewer excavation. Duct Bank. A pothole was completed, see pothole report, site #6.	Century Link	Fiber Optic Line	-	-	X	-	-	0	
CONCOM-6	2, 3, 6	3+00	to 2+42	RT	PRTHST_N	140	LF	3	Level 2	Utility Encounter with sanitary sewer, electrical excavation. A pothole was completed, see pothole report, site #9. The duct bank which has up to six 2" conduits is bored across main. Bank may include utilities from Consolidated Communications, Dakota Carrier Network, 703 Communications, and the City. Carefully excavate around, suspend and support across trench. Suspension will require additional effort to preserve clay duct.	Consolidated Communications	Fiber Optic Line	-	-	X	-	-	0	
XCEENE-18	2, 3, 6	3+03	to 1+96	Crossing	PRTHST_N	74	LF	8.5	Level 4	Conflict with sanitary sewer and water line excavation. Utility company and contractor to coordinate during construction to adjust height. A pothole was completed, see pothole report, site #6. Additional utility pothole at Sta 1+03.50, 11.78 LT (PRTHST_N) provided. Carefully excavate around, suspend and support across trench.	Xcel Energy	Gas Line	4W	2D		X	XCEENE-18-19H	1	
CENLINK-21	2, 3, 6	3+34	to 3+34	Crossing	PRTHST_N	66	LF	<-3	Level 2	Utility Encounter with sanitary sewer and water line excavation. Carefully excavate around, suspend and support across trench.	Century Link	Fiber Optic Line	-	-	X	-	-	0	
CENLINK-22	2, 3, 6	3+34	to -	RT	PRTHST_N	1	EA	<-3	Level 3	Utility Encounter with sanitary sewer and water line excavation. Carefully excavate around, suspend and support across trench. Contract to adjust or relocate Fiber Optic Manhole. Contact prior to pavement removal.	Century Link	Fiber Optic Manhole	4W	2D		X	-	0	
MIDCAB-3	6	3+41	to 3+00	LT	PRTHST_N	50	LF	<-3	Level 1	No Conflict. According to Midco the line is approximately 23' deep.	Mid-Continent Cable	Fiber Optic Line	-	-			-	0	
CENLINK-23	6	3+42	to 3+26	RT	PRTHST_N	36	LF	<-3	Level 1	Utility Encounter with sanitary sewer line excavation and bore pit. Carefully excavate around, suspend and support across trench.	Century Link	Fiber Optic Line	-	-	X	-	-	0	
CENLINK-24	2, 3, 6	3+64	to 4+22	RT	PRTHST_S	58	LF	8.5	Level 2	Utility Encounter with water line excavation. Duct Bank. A pothole was completed, see pothole report, site #9. Carefully excavate around, suspend and support across trench.	Century Link	Fiber Optic Line	-	-	X	-	-	0	
XCEENE-19	2, 3, 6	3+64	to 4+37	LT	PRTHST_S	74	LF	8.5	Level 4	Conflict with water line excavation. Utility company and contractor to coordinate during construction to adjust height. A pothole was completed, see pothole report, site #7. Additional utility pothole at Sta 2+34.72, 38.18 RT (PRTHST_S) provided.	Xcel Energy	Gas Line	4W	2D		X	XCEENE-19-19H	1	
XCEENE-20	2, 3, 6	3+80	to 4+37	LT	PRTHST_S	58	LF	8.5	Level 2	Utility Encounter with storm sewer excavation. Electric 750 Feeder Line. Should be carefully excavated around. Can be suspended across trench. A pothole was completed, see pothole report, site #7.	Xcel Energy	Electric Line	-	-	X	-	-	0	
MIDCAB-4	2, 3, 6	3+80	to 4+37	LT	PRTHST_S	58	LF	8.5	Level 1	No Conflict. According to Midco the line is approximately 23' deep.	Mid-Continent Cable	Fiber Optic Line	-	-			-	0	
CONCOM-7	2, 3, 6	3+80	to 4+37	RT	PRTHST_S	58	LF	8.5	Level 2	Utility Encounter with water line excavation. A pothole was completed, see pothole report, site #9. The duct bank which has up to six 2" conduits is bored across main. Bank may include utilities from Consolidated Communications, Dakota Carrier Network, 703 Communications, and the City. Carefully excavate around, suspend and support across trench. Suspension will require additional effort to preserve clay duct.	Consolidated Communications	Fiber Optic Line	-	-	X	-	-	0	
XCEENE-21	2, 3, 6	3+96	to 3+97	Crossing	PRTHST_S	74	LF	8.5	Level 4		Xcel Energy	Gas Line	4W	2D		X	XCEENE-21-19H	1	
														Totals	44	13			17

Utility Company Information			
Utility Company	Contact Name	Phone Number	Email
Consolidated Communications	Rob Thomas	701-956-6032	RobT@consolidated.com
Century Link	Chuck Grunewald	701-241-2141	chuck.grunewald@centurylink.com
City	Mike Day	218-284-2733	mday@cityofminn.com
Xcel Energy - Gas	Steve Swenter	701-241-4522	Steve.Swenter@xcel.com
Xcel Energy - Electric	Jessica Warren	701-275-3421	jessica.warren@xcel.com
Sanford/Moorhead Electric	Glenn Rudolph	701-234-2662	grudolph@moorheadelectric.com
Midco	Corey Wilco	701-212-5682	Corey.wilco@midco.com
Midstream	Dawn Falinski	701-234-1776	dawn.falinski@midstream.com

Utility Conflict Level Designations	
(Disclaimer: The following conflict levels were designated based on information provided by utility companies, surveyed located and limited pre-design potoling locations.)	
Level 1	Utility not exposed by proposed improvements, no impacts.
Level 2	Utility exposed by proposed improvements but no permanent impacts, contractors to protect in place and perform careful excavations.
Level 3	Utility permanently impacted by proposed improvements and requires vertical adjustment only. Horizontal location of utility will not change.
Level 4	Utility permanently impacted by proposed improvements and requires complete relocation. Vertical and horizontal location of utility will change.

Site No: 6 US STATE PLANE 1983, NAD 1983(CONUS), NORTH DAKOTA SOUTH 3302, GEOID 12B, GRID COORDINATES,
INTERNATIONAL FT



Site Number 6

Photo Direction: = East

9615,462354.207,2896497.977,902.165, UEC*1 1-2IN CITY OF FARGO
9616,462355.151,2896498.133,902.117, UEC*1 1-2IN CITY OF FARGO
9617,462354.185,2896498.168,902.262, UEC*1 1-2IN CITY OF FARGO
9618,462354.580,2896498.209,902.212, UEC*1 1-2IN CITY OF FARGO
9619,462354.141,2896498.343,902.593, PVC*TOP 4IN CITY OF FARGO
9620,462355.113,2896498.385,902.608, PVC*TOP 4IN CITY OF FARGO
9621,462353.940,2896498.893,902.185, UEC* 1 1-2IN CITY OF FARGO
9622,462355.618,2896498.965,902.131, UEC* 1 1-2IN CITY OF FARGO
9623,462353.938,2896499.320,902.215, UEC* 2IN CITY OF FARGO
9624,462355.496,2896499.393,902.144, UEC* 2IN CITY OF FARGO

Moving Forward

- Utility conflicts during Environmental phase
- Notes Template
- Utilities shown in Cross Sections



Solar Powered Destination Lighting



Selecting Solar Locations

- Power connection cost estimates
 - \$0 to >\$25,000
- \$30/month plus energy usage
- If >\$2500/connection, used Solar option
- If <\$2500/connection, used traditional hardwire



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

SOLAR POWERED DESTINATION LIGHTING

PROJECT HES-2-999(049) – PCN 21807

DESCRIPTION

This work consists of installing a solar powered destination lighting system.

MATERIALS

A. General.

Provide a system that allows for the solar panels, luminaire, and batteries to operate on the same voltage. Use components designed for outdoor use.

B. Work Drawings.

Furnish work drawings to the Engineer within 50 days after the date of contract execution. Provide the dimensions, type of material, and the functional characteristics of the equipment to be installed within the work drawings.

Submit the following work drawings:

- LED Luminaire
- Solar Panels and Mounting Hardware
- Batteries for Solar Equipment
- Charge Control Unit
- Lighting Cabinet

C. Luminaire.

Provide a luminaire manufactured by US Luminaire model number USL-YAXW-50W-30K-24V.

D. Batteries.

Provide batteries that are Absorbed Glass Mat deep cycle (AGM) that are maintenance free and provide power at 24 Volt DC.

Supply enough batteries to provide 7 days reserve power in winter.

Use batteries that weigh 100 pounds or less.

E. Charge Control Unit.

Supply a Charge Control Unit that meets the system requirements.

F. Cabinet.

Provide a NEMA 3R rated cabinet that is lockable with a power disconnect inside the cabinet.

G. Solar Panels.

Supply single or multiple crystal solar panels with a combined total of a minimum of 600 Watts that have a 10 year warranty on power output.

CONSTRUCTION REQUIREMENTS

A. General.

Install the batteries and charge control unit in the cabinet.

B. Solar Panels.

Use mounting brackets capable of being set from 0 to 75 degrees from horizontal. Mount the solar panels to the south side of the wood pole.

C. Final Drawings.

Submit final drawings of the system and a parts list to the Engineer.

D. Training.

Provide a two hour training session on the operation of the system.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Bid Item	Unit
Destination Lighting - Solar	Each

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

A sepia-toned photograph of a construction site. In the foreground, a large concrete slab is being laid out on a grid of rebar. An excavator is visible on the left, and a concrete pump truck is in the background. The site is surrounded by rolling hills under a clear sky. A dark semi-transparent banner is overlaid across the middle of the image, containing the text. A solid orange rectangle is on the right side of the banner.

As Built Plans

Updated As Built Plans Workflow

Proposed

New web based access to As-Builts

- Objective to create a As-Built Plans Map
- Web based search of FileNet
- Developed by NDDOT IT staff

New Workflow

- Dist. Rep. creates As-Built from Contract Plans in FileNet
- Project Engineer uses Adobe Pro to markup edits
- Dist. Rep. review and upload As-Built Plan to FileNet

What to Expect

Existing As-Builts

- Scanning at District Offices
- Upload to FileNet

Future As-Builts

- Updated Workflow
- New RCN numbers
- Updates to CRM

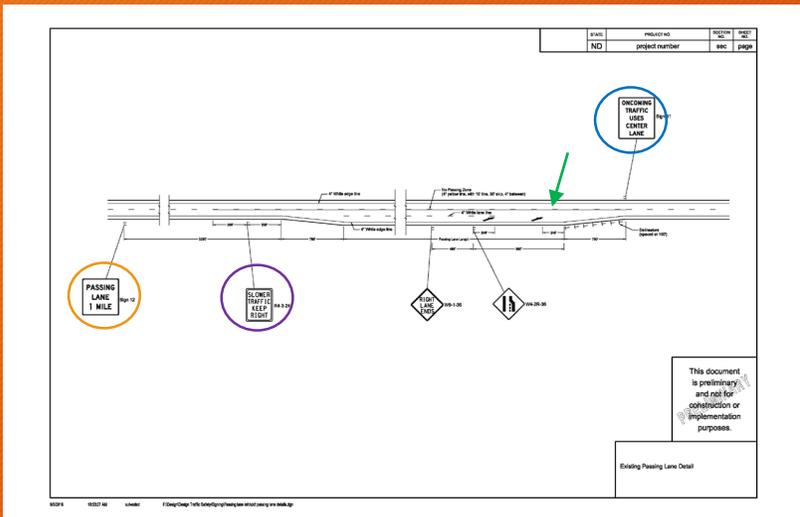
Access to As-Builts using Web Based system



Passing Lane Signing & PVMT Marking

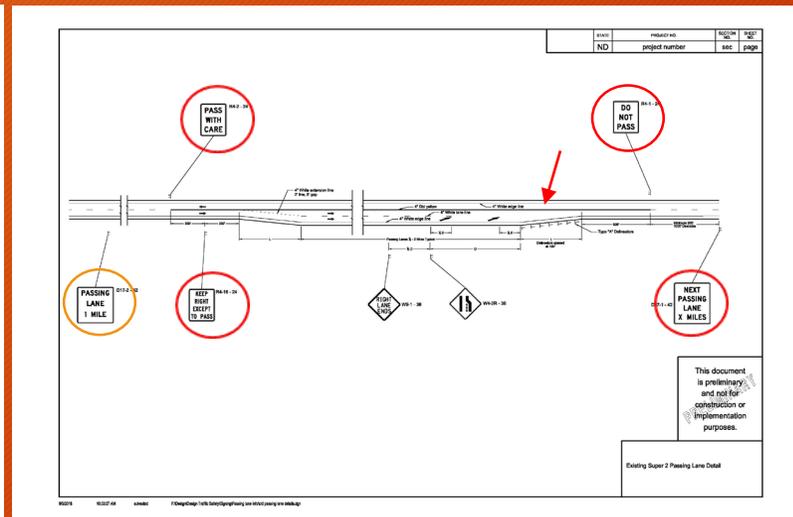
Old Signing & PVMT Marking Details

Passing Lane



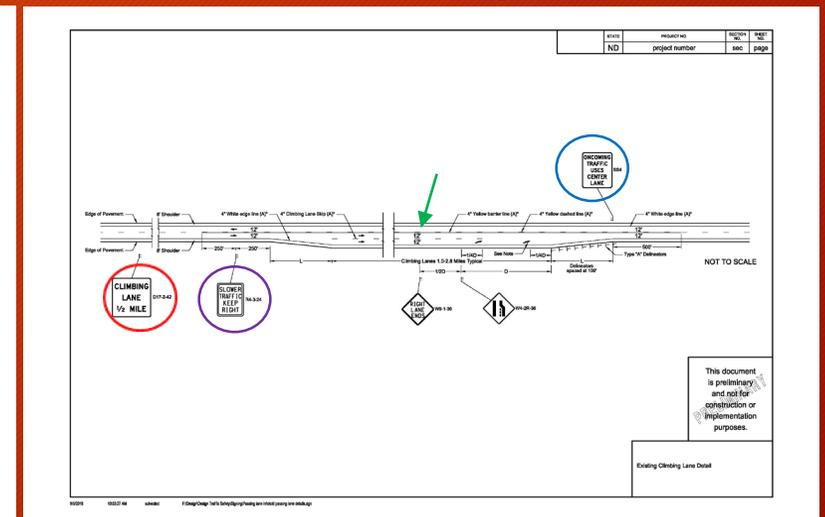
Opposing traffic allowed to pass
Clear zone from middle lane

Super 2



Opposing traffic can't pass
Clear zone from right lane

Climbing



Opposing traffic allowed to pass
Clear zone from middle lane



Safety Corridors

VISION
ZERO 

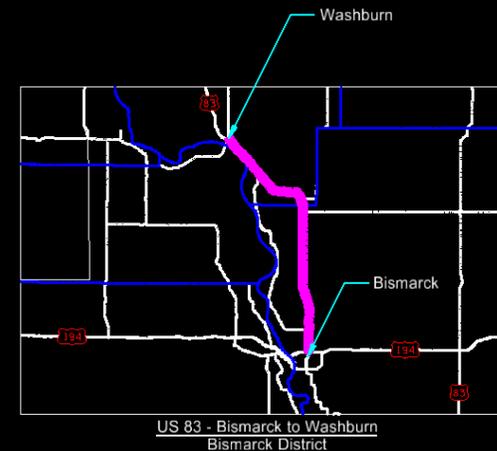
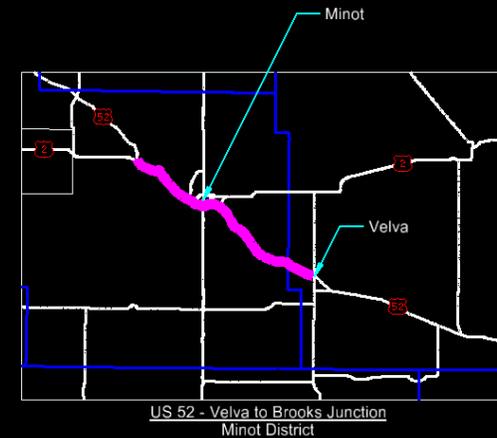
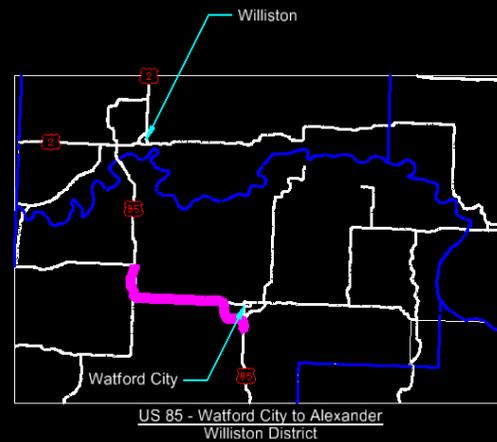
Safety Corridors Conception



- 2018 North Dakota Vision Zero Plan (SHSP Update, 2018-2023)
- Crash data driven analysis
- Identify and Prioritize Safety Strategies and Roadway Safety Investment
- 4E collaborative approach (Enforcement, Education, Engineering, and EMS)
- A Decision Document was created to designate specific roadways sections as a Safety Corridor
- Follow up Decision Document for the proposed treatments for the Safety Corridors.

Designating the Safety Corridors

- Williston District
- Minot District
- Bismarck District



NDDOT's role in the Safety Corridor

- Sign to ID them as Safety Corridors
- Sign removal opportunities
- Digital Message Signs (DMS)
- 6" grooved wet reflective tape centerline and edgelines
- Larger 3"x9" longitudinal delineators
- Access and median crossover removals
- Update mailbox supports
- Pavement marking for turn lanes on the widened shoulders
- Chevrons at horizontal curves
- Optical speed bars pavement markings
- Speed limit pavement markings message
- Dynamic Speed Display Signs (DSDS)

VISION
ZERO 

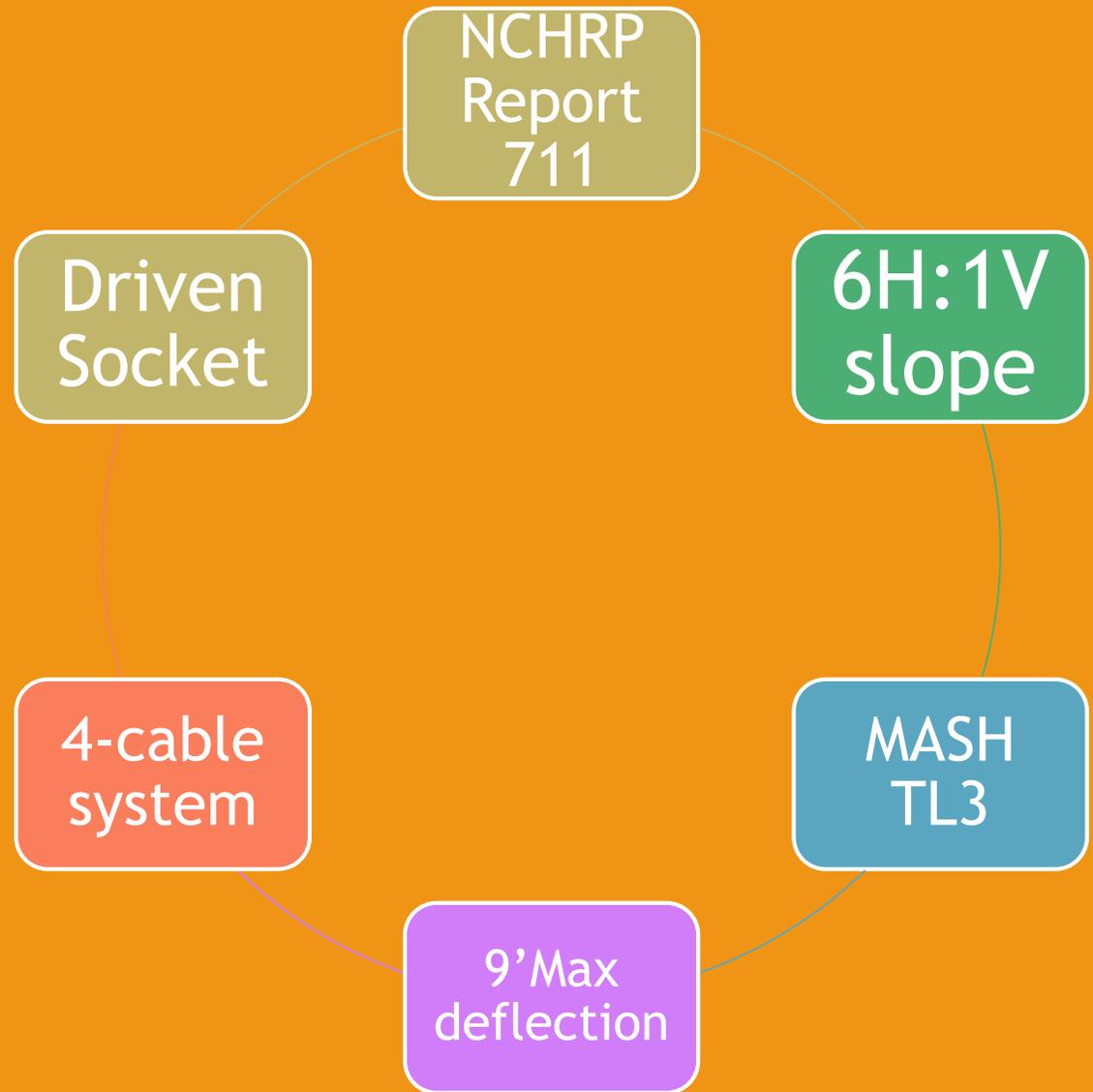


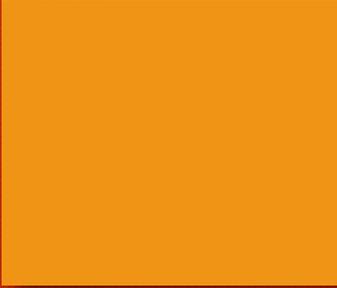


High Tension Cable Median Guardrail (HTCMG)



Elements of Design







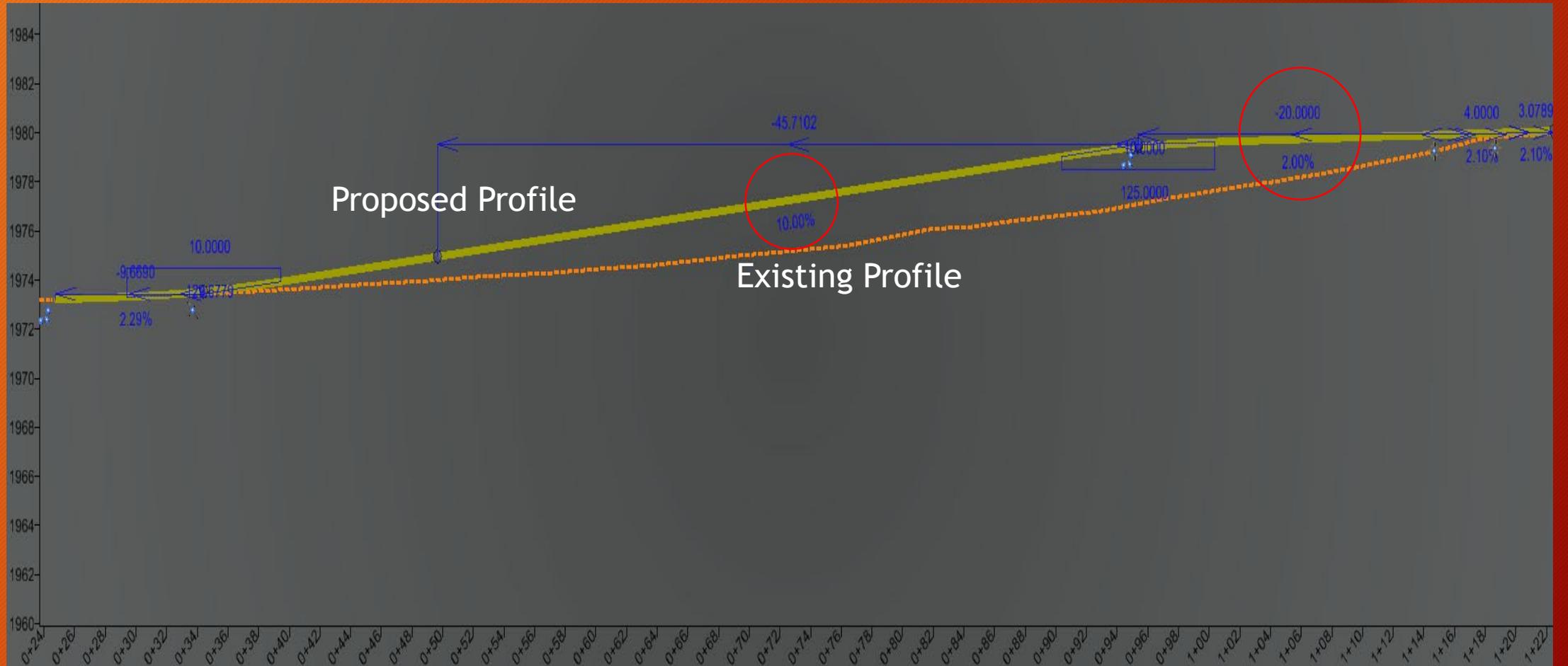
Rural Approach Mod. Agreement (RAMA)



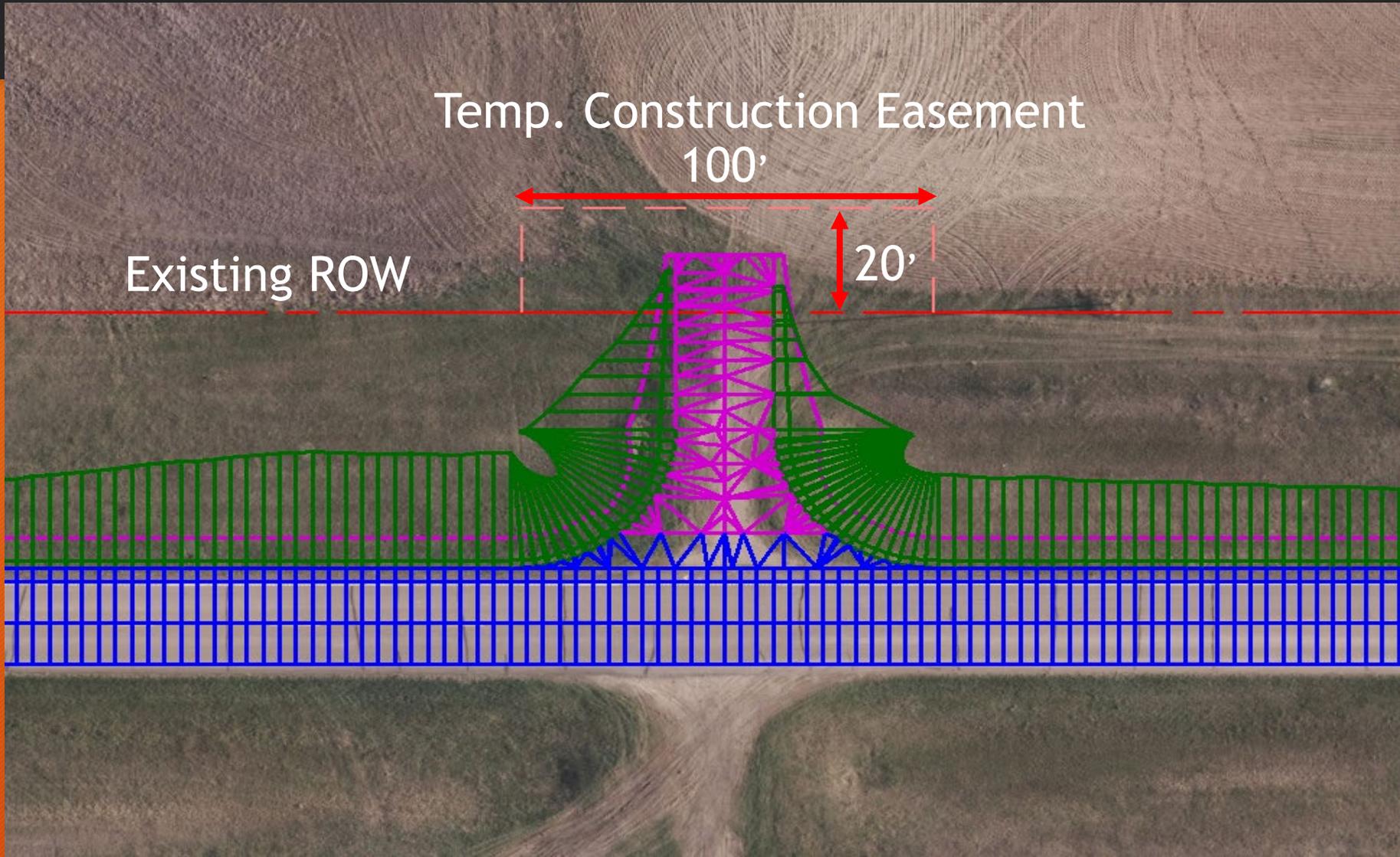
RAMA

- Alternate to Temporary Construction Easements
- Optional Access Modification
- Eliminates need for title work, plats, and valuations
- SFN61535, plan exhibit, and profile exhibit
- No payment to owner
- If they do not agree, design to stay in ROW

Profile View Exhibit



Plan View Exhibit



Other updates



Section 8 - Quantities



Spec/Code Map

Questions?

