2019 Construction & Project Development Conference

Design Updates

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
Welcome to the Plan Preparation Guide website. This site contains a collection of recurring plan sheets (formerly “drawings”) and notes, which reflect the latest construction practices used by the NDOT.

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.

Notice of Disclosure | Required Software

For more information, contact Ian Kettering, Justin Ramsay, or James Kuhl by emailing ndot.ppreadvisors@nd.gov
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
### 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

- 2 - Century Link
- 11 - City of Fargo

---

**Date of Survey:** 11/2/2018

---

**Apex Engineering Group**
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
SOLAR POWERED DESTINATION LIGHTING

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

MATERIALS

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

B. Work Drawings.
Furnish work drawings to the Engineer within 30 days after the date of contract execution. Provide the dimensions, type of material, and the functional characteristics of the equipment to be included within the work drawings.

Submit the following work drawings:
- LED Luminaires
- Solar Panels and Mounting Hardware
- Batteries for Solar Equipment
- Charge Control Unit
- Lighting Cabinet

C. Luminaires.
Provide a luminaire manufactured by US Luminaire model number USL-VAXW-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 460 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

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination Lighting - Solar</td>
<td>Each</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, equipment, labor, and incidental items to complete the work as specified.
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
New Signing & PVMT Marking Detail
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)
Safety Corridor
VISION ZERO
High Tension Cable Median Guardrail (HTCMG)
Elements of Design

- Driven Socket
- 6H:1V slope
- 4-cable system
- MASH TL3
- 9’ Max deflection

NCHRP Report 711
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
Plan View Exhibit

Existing ROW

Temp. Construction Easement
100'

20'
Other updates

Section 8 - Quantities

Spec/Code Map
Questions?