Today’s Topics

• Technical Issue #15: Traction Power Substations
• Technical Issue #13: Freight Rail
• Technical Issue #14: Transmission Line Coordination
• Technical Issue #2: TH 55 Recap
Technical Issue #15
Traction Power Substation (TPSS) Locations
Standard TPSS: Blue Line

14'

11'

45'
TPSS Example: Green Line

TPSS at 25th and U of M Transitway
TPSS Locations

• Converts electrical power (AC to DC) to operate trains
• Requires climate controlled environment
• Placement criteria
  ▪ Located within 500’ of track preferred
  ▪ Spacing of approximately 5000’ between substations preferred to maintain continuous power to trains
  ▪ Requires closer spacing for steeper track grades
  ▪ Located at-grade to minimize cost and provide adequate access for maintenance
TPSS Locations

• Location determined by a load flow study
  ▪ 17 TPSS locations identified
  ▪ Initial location review and refinement by BPO staff
  ▪ Additional location review with project partners as part of the IRT process
TPSS Locations

• Location review looked at parcel ownership and followed the following order in determination of the optimal sites

1. Met Council property
2. Hennepin County Railroad Authority property
3. Other public agency property (MnDOT, County, City)
4. Private property acquired as part of the LRT project
5. Vacant private property
TPSS Locations: Minneapolis, Golden Valley, Robbinsdale and Crystal

[Map showing the locations and segments of the TPSS system]
TPSS Locations: Brooklyn Park

Legend
- METRO Blue Line Extension Stations
- METRO Blue Line Extension Alignment
- Relevant City Boundaries
- TPSS

Segments
BP 1 Brooklyn Park 1
BP 2 Brooklyn Park 2
C Crystal
R Robbinsdale
CV Golden Valley
M Minneapolis

METRO Blue Line LRT Extension TPSS

Kimley-Horn

Metro Blue Line Extension
Robbinsdale LRT
TPSS Locations Recommendation

- Continue working with project stakeholders to finalize locations as identified
Technical Issue #13
Freight Rail
Freight Rail: BNSF Railway Corridor
Freight Rail: Existing Typical Section

NOTE – SECTION SHOWN IS NOT REPRESENTATIVE OF ENTIRE CORRIDOR. DIMENSIONS VARY AND ARE SHOWN FOR DISCUSSION PURPOSES ONLY.
Freight Rail

• Issues to be resolved:
  ▪ Location of shifted freight rail track
  ▪ Location of LRT tracks
  ▪ Design appropriate corridor protection treatments
  ▪ Bridges and other structures
  ▪ Soil stabilization
  ▪ Accommodate Xcel Transmission Line (TI #14)
  ▪ Constructability
Recommendation: Typical Sections

- BNSF owns, operates on the approximate western 50 ft
- LRT operates on the approximate eastern 50 ft
- Preserve BNSF’s ability to make future capacity improvements within the western 50 ft
- Design appropriate corridor protection treatments to ensure safe operations
  - Ditch (moat)
  - Retained embankment
  - Wall
Typical Section: Ditch (Moat)
Typical Section: Retained Embankment
Typical Section: Wall
Recommendation: Bridge Overpasses

- Managing potential impacts to current/future BNSF freight service
  - Preserve BNSF’s ability to make a future capacity improvement within the approximate western 50 ft
- Reconstruct four bridges over the BNSF corridor at Plymouth Ave, Theodore Wirth Pkwy, Golden Valley Rd, 36th Ave
Plymouth Avenue
Golden Valley Road
36th Avenue
Recommendation: Other Structures

- Geotechnical explorations found peat, organic clay, and soft clay, often at significant depth
- Use range of soil stabilization techniques necessary to support LRT and freight in some locations
  - Load transfer platform over controlled modulus columns, or similar methods, for freight and LRT as necessary south of 36th Ave
  - Conventional bridges for LRT over Grimes and Golden Valley Ponds
Typical Section: Grimes Pond
Recommendation: Right of Way along BNSF Railway Corridor

- BNSF owns, operates on approximate western 50 ft
- LRT operates on a permanent easement on approximate eastern 50 ft
- BNSF corridor typically 100 ft wide and accommodates project needs with few exceptions
  - Steve O’s Bar and Grill: parking lot
  - Sawhorse Designers & Builders: parking lot
- Right of way needs adjacent to BNSF corridor
  - Permanent acquisitions limited, focused on station areas
  - Temporary acquisitions to be determined
Recommendation: Grade Crossings

- Shared freight/LRT/road at-grade crossings
  - Vehicles and pedestrians at-grade
  - Quiet zone ready

- Final layout and traffic control devices to be determined as part of final design
Example: Existing Bass Lake Road Crossing
Technical Issue #14
Transmission Line Coordination
Transmission Line Coordination
Transmission Line Coordination

• Issues to be resolved:
  ▪ Compatibility with freight rail improvements
  ▪ Compatibility with LRT improvements
  ▪ Constructability
  ▪ Electrical clearances
  ▪ Maintenance access in the future
Transmission Line Coordination: Existing Steel Lattice Structures
Transmission Line Coordination

- Potential Xcel Energy transmission line accommodations:
  - Remain in current location
  - Steel poles east of LRT tracks
  - Steel poles west of BNSF tracks
  - Steel poles between LRT tracks
Transmission Line Coordination: New Poles West of BNSF Track
Transmission Line Coordination: Existing Wood Poles West of BNSF Track
Transmission Line Coordination: Recommendation

• South of the Indiana Substation:
  ▪ Shift the existing Xcel 115 kV transmission line to new poles west of the BNSF track

• North of the Indiana Substation:
  ▪ Leave the existing Xcel 115 kV transmission line in-place west of the BNSF track
Technical Issue #2
TH 55 Recap
Olson Memorial Highway

- Additional Proposed Signalized Intersection
- Proposed Mid-block crossing (3 total)
- Penn Avenue LRT Station
- Van White Blvd. LRT Station
Sidewalks on Olson Memorial Highway
# Crossing Olson Memorial Highway

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing Crossing Length (ft)</th>
<th>Planned Crossing Length (ft)</th>
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</thead>
<tbody>
<tr>
<td>Penn Ave N - West Side</td>
<td>139</td>
<td>138</td>
</tr>
<tr>
<td>Penn Ave N - East Side</td>
<td>138</td>
<td>141</td>
</tr>
<tr>
<td>Humboldt Ave N - West Side</td>
<td>121</td>
<td>120</td>
</tr>
<tr>
<td>Humboldt Ave N - East Side</td>
<td>121</td>
<td>120</td>
</tr>
<tr>
<td>Van White Memorial Blvd - West Side</td>
<td>125</td>
<td>135</td>
</tr>
<tr>
<td>Van White Memorial Blvd - East Side</td>
<td>129</td>
<td>143</td>
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</tbody>
</table>
## Olson Memorial Highway

<table>
<thead>
<tr>
<th>Design Parameter</th>
<th>Exiting Corridor</th>
<th>Planned Corridor</th>
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</thead>
<tbody>
<tr>
<td>Lane Widths</td>
<td>Vary, 12’ - 17’</td>
<td>Consistent, 11’</td>
</tr>
<tr>
<td>Horizontal Alignment</td>
<td>Continuous and straight</td>
<td>Lane shifts to accommodate turn lanes and mid-block crossings</td>
</tr>
<tr>
<td>Traffic Signals</td>
<td>6 total – not to current standards, require maintenance</td>
<td>7 total (1 added at Thomas Ave) installed to current standards, new equipment</td>
</tr>
<tr>
<td>North/South Pedestrian Crossings</td>
<td>6 signalized and 9 unsignalized crossings – ADA compliance varies, limited refuge area</td>
<td>10 total at high-volume pedestrian crossings – signalized, protected median refuge and redirection</td>
</tr>
<tr>
<td>East/West Pedestrian Crossings</td>
<td>5’ sidewalk – poor condition, some gaps, north sidewalk offset 8’, south sidewalk at back of curb</td>
<td>6’ concrete sidewalk – continuous on north and south side</td>
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<tr>
<td>Bicycle Facilities</td>
<td>No facilities</td>
<td>Potential for a 10’ wide, 2-way cycle track in north boulevard from Thomas Ave to Van White Blvd</td>
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<tr>
<td>Boulevards</td>
<td>0’ - 8’, grass and street trees, fair condition</td>
<td>10’ buffer for sidewalks, new grass and street trees, additional snow storage</td>
</tr>
<tr>
<td>Lighting</td>
<td>Standard Minneapolis street lighting – low to adequate foot-candles and uniformity ratio</td>
<td>New fixtures, pedestrian lighting at stations, enhanced pedestrian lighting at crossings</td>
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</tbody>
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Crossings at Signalized Intersections

Existing: OMH Pedestrian Crossing Time (3.5 ft/s) = 32 Sec (Min.), 43 Sec (Max.)
Proposed: OMH Pedestrian Crossing Time (3.5 ft/s) = 34 Sec (Min.), 48 Sec (Max.)
Crossings at Signalized Intersections

Penn Avenue and Olson Memorial Highway - View from Southeast corner
Crossings at Signalized Intersections

Penn Avenue and Olson Memorial Highway - View from Southeast corner
Mid-block Crossings

Olson Memorial Highway between Newton Ave and Oliver Avenue - Looking Northwest
Mid-block Crossings and Sidewalks
Upcoming CMC Meeting Schedule
## Upcoming CMC Meeting Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Time</th>
<th>Agenda</th>
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<tbody>
<tr>
<td>Oct 29</td>
<td>Brooklyn Park Community Activity Center</td>
<td>1:00 PM – 3:00 PM</td>
<td>• Presentation of recommendation on revised project scope/cost estimate</td>
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<tr>
<td></td>
<td>Gardenview Room 5600 85&lt;sup&gt;th&lt;/sup&gt; Ave N</td>
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<td></td>
<td>Brooklyn Park</td>
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<tr>
<td>Nov 12</td>
<td>Brooklyn Center Community Center Constitution Hall</td>
<td>1:00 PM – 3:00 PM</td>
<td>• Final recommendation and CMC action on revised project scope/cost estimate</td>
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<td>6301 Shingle Creek Parkway Brooklyn Center</td>
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<tr>
<td>Dec 10</td>
<td>Brooklyn Center Community Center Constitution Hall</td>
<td>1:00 PM – 2:30 PM</td>
<td>• TBD</td>
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<tr>
<td></td>
<td>6301 Shingle Creek Parkway Brooklyn Center</td>
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More Information

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Twitter: @BlueLineExt