

DESIGN NARRATIVE
Maskwonicut Street Bridge
Electric Traction Modifications
100% Submission

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DESIGN NARRATIVE

The proposed Maskwonicut Street Bridge construction requires modification to Amtrak's overhead contact system (OCS). Currently there is no bridge superstructure spanning Amtrak's right of way. The original bridge was removed years ago due to excessive flashover from the high voltage wires to icicles formed on the bridge. All that currently remains are the original granite block bridge abutments. The proposed Maskwonicut St. Bridge will be steel construction and will involve removal of the existing bridge abutments. Concrete walls will be installed in their place and will be set back to provide additional clearance to the track. Currently, the OCS and ancillary (feeder and static) wires are supported from the existing granite abutments. To facilitate removal of the existing bridge abutments, the existing OCS abutment supports will be removed. By increasing the separation of the OCS contact wire and its supporting messenger wire (OCS system height) at the adjacent catenary structures, the OCS will free-run underneath the proposed bridge with no attachments. A bridge clearance analysis was performed using the proposed bridge layout and clearances to track to confirm required clearances to the OCS are maintained. No temporary profiling is required for the OCS.

Ancillary wires will also have to be relocated from the existing bridge abutments to facilitate removal of the abutments. A temporary layout plan has been provided depicting this work. The Track 1 static wire will be removed between structures 211-27 and 211-31, with a temporary static wire being run along the ground surface to maintain continuity of the grounding system. This approach will be typical for Track 2 as well. A temporary bare feeder jumper supported by long feeder brackets will span between adjacent bridge structures. The existing insulated feeder cable will be removed from the bridge span to allow for demolition of the bridge abutments. Once the abutments are removed, both the static wire and insulated feeder wire can be re-installed to match the existing condition. If Amtrak permits and it is deemed feasible, it may be possible to leave the insulated feeder span in place and instead install pulloffs from the catenary to free up the abutment for demolition.

While the majority of this work can be completed during night-time railway operation outages, it is anticipated that a weekend outage will be required for abutment demolition. It is possible that both tracks will need to be out of service simultaneously for periods of time.

The design is based on a track speed of 145 mph which, per AREMA requirements, corresponds to a maximum contact wire gradient of 0.200% and a maximum change of gradient from one span to the next not exceeding half of the maximum gradient. This requires the OCS profiling changes to be carried out to adjacent catenary spans. From an OCS perspective, the contractor will be responsible for providing all OCS-related material, as well as for installation of the

bonding and grounding of the new bridge. However, all other OCS modifications, including final tie-in of the bonding and grounding system, will be performed by Amtrak Force Account.

Specifications and a cost estimate have also been included as part of this submission. There are no changes to these items from the 75% submission. As part of this 100% submission, bill of material drawings have also been included. Please note that this information is located on three separate drawings: the OCS Bill of Material, the steel Bill of Material, and the bonding and grounding Bill of Material which can be found on the bonding and grounding layout plan. This 100% submission will need to be distributed to Amtrak for review and approval prior to submission of Final Plans.