

Northstar Commuter Rail Extension Feasibility Assessment

Appendix H – Technical Memorandum on Capital Cost Estimates

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Prepared for



by



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1. Introduction

This Technical Memorandum documents the assumptions used to estimate the costs for capital improvements to support the proposed Northstar Service Alternatives.

2. Capital Cost Methodology

2.1. Standard Cost Categories and Unit Costs

Capital costs were estimated for the Northstar Commuter Rail Extension Feasibility Assessment following the Federal Railroad Administration’s (FRA’s) Standard Cost Categories, presented in Table 1. Capital costs were based on a quantification of the infrastructure improvements necessary to accommodate the expanded Northstar service on the existing BNSF rail corridor.

Table 1: FRA Standard Cost Categories

FRA Standard Cost Categories
10 Guideway & Track Elements
20 Stations, Stops, Terminals, Intermodals
30 Support Facilities: Yards, Shops, Admin. Bldgs
40 Sitework & Special Conditions
50 Systems
60 ROW, Land, Existing Improvements
70 Vehicles
80 Professional Services
90 Unallocated Contingency
100 Finance Charges

The costs were estimated using the Technical Memorandum on Capital Cost Estimating Methodology prepared for this project. The Methodology is presented in Appendix I. Unit costs for all Northstar-specific pay items were estimated in 2020 dollars. Overall costs were increased to 2025 dollars using an inflation factor.

2.2. Assumptions for Proposed Capital Improvements

Berkeley Simulation Software, Inc. Rail Traffic Controller™ (RTC) software was used to identify the improvements needed to accommodate expanded Northstar commuter rail service with existing and future traffic levels. RTC simulations concluded in April 2020 and informed the capital cost estimating process.

The primary capital improvements needed to maintain the level of projected freight service, as identified in the RTC model, consist of:

- Installing new higher-speed turnouts and crossovers
- Adding new main track, station track, and maintenance facility track
- Upgrading or relocating existing auxiliary tracks and industry track connections
- Constructing new bridges to support proposed new track
- Reconfiguring and expanding existing Centralized Traffic Control (CTC) control points
- Adding new CTC control points
- Adding CTC and Positive Train Control (PTC) to new or extended tracks (which also includes the installation of power-operated derails at several locations)
- Construction of new grade crossing warning devices or modification of existing grade crossing devices

The sub-sections below discuss the assumptions for the general types of capital improvements needed to accommodate expanded Northstar service that are associated with the FRA Standard Cost Categories listed in Table 1.

2.2.1. *Guideway & Track Elements*

New main track is assumed to be constructed at several locations with 136# continuous welded rail (CWR) with timber ties in accordance with BNSF track standards, with mainline track built to FRA Class 5 standards. Where locations for new track are identified as part of the needed capital improvements, the type and extent of work needed to prepare the existing track right-of-way, including clearing, sub-grade preparation, and embankment widening, was estimated by analyzing the existing field conditions using a combination of online maps, Google Earth, and field visits to the site locations.

Main track tie replacement and surfacing work is not included for the corridor between Minneapolis and St. Cloud because BNSF track is already able to accommodate the Northstar commuter train and Amtrak maximum train speeds of 79 MPH in the corridor. Lower maximum train speeds exist in some locations due to the characteristics of the railroad and are not proposed to be increased. The one exception is the proposed upgrade of the auxiliary track on the Wayzata Subdivision between CP Stadium and CP Harrison Street with 66% tie replacement and surfacing to increase train speeds to 40 MPH. New turnouts and crossovers are assumed to be constructed with timber ties, with the size and location of new turnouts and crossovers determined using the RTC model and other operating characteristics that affect maximum permissible or achievable train speed. Where turnouts or segments of track are required to be removed or relocated, the costs for those activities are included.

Costs for extending existing culverts under main tracks to accommodate a new third main track are included where appropriate. Costs for new track structures are included where a proposed new main track parallel to other main tracks crosses over a roadway or stream. Two new structures are included on the Staples Subdivision; one over Rice Creek and one over Mississippi Street, both located between Northtown Yard and Coon Creek. No other new structures are required because the lengths, track centers, and locations of new tracks were adjusted to avoid the need for new structures.

As a safety measure for pedestrians, fencing will be installed in two locations, one of which is near a CTC control point in a residential area between two grade crossings, and one of which is at a commuter

station to be expanded. Decorative fencing will be used near the commuter station. Six-foot-high chain link fencing will be used near the CTC control point.

2.2.2. Stations, Stops, Terminals, Intermodals

The proposed extension of Northstar commuter train service to St. Cloud involves four categories of station improvements:

- At Big Lake Station, a new center platform is proposed for certain Service Alternatives where Northstar trains operating between St. Cloud and Minneapolis make stops at Big Lake. The new center platform will conform with Americans with Disabilities Act, BNSF, Metro Transit and other applicable standards. The center platform will be constructed between Staples Subdivision Main Tracks 1 and 2 and will be connected to the existing Big Lake Station platform with an enclosed overhead walkway between a new elevator/stairway tower on the center platform and a new elevator/stairway tower on the existing station platform. No changes to existing driveways, parking, or access roadways are anticipated.
- At St. Cloud station, a new station track with power-operated turnouts and signals at both ends, 480-Volt AC standby power facility and connections, and a new platform conforming to Americans with Disabilities Act, BNSF, Metro Transit and other applicable standards will be constructed and connected to the existing Amtrak station area.
- At all Northstar stations, existing electronic signage and passenger information systems will be updated to reflect all the changes associated with the proposed extension of Northstar service to St. Cloud. No other changes are anticipated at those stations.
- At the existing Northstar Fridley commuter station, a new third main track will be constructed along the south side of the existing station platform for certain Service Alternatives. Northstar trains will use the third main track to board and alight passengers and the track will be constructed to required horizontal and vertical levels to achieve accessible boarding and alighting at Fridley.

Each of the proposed Service Alternatives considered train frequency and scheduling so that the number of trainsets and train crews at Target Field Station at any one time would not exceed the available space. Therefore, no storage track or station platform extensions are required and no expansion of the existing train crew facility at Target Field Station is needed. The proposed train schedules for each of the Service Alternatives does not require a trainset or train crew to lay overnight at Target Field Station or at St. Cloud Station. However, 480-Volt AC standby power was proposed at the St. Cloud station to allow a train to layover with its locomotive shut down during the midday if necessary.

2.2.3. Support Facilities: Yards, Shops, Admin. Bldgs

Metro Transit operates the Big Lake Maintenance Facility (BLMF), also known as the Vehicle Maintenance Facility (VMF), where Northstar commuter trains are based and serviced. Almost all the servicing and light-to-medium maintenance required for the Northstar fleet is performed at BLMF. The exception is wheel truing of Northstar locomotives, which is performed by BNSF forces at the BNSF Northtown locomotive maintenance facility. An expansion of the BLMF, including the construction of an additional stub track inside the shop building, was underway at the time of a visit during the study. The

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installation of a new drop table to facilitate the changeout of passenger car wheel sets had recently been completed.

The Northstar fleet currently includes four operational 4-car train sets plus spare equipment. Several of the Service Alternatives would require one additional Northstar trainset to be procured. BLMF does not have enough trackage to accommodate the additional train set. Therefore, for those Service Alternatives that require the additional train set, a double-ended storage and servicing track was proposed to be added to the existing track configuration, as well as an extension of the east lead track to enable east-end train movements between the new track and the maintenance buildings.

The proposed storage/servicing track includes:

- Paved access roadway on both sides of the track
- 480-Volt AC standby power facilities and connections
- Compressed air connections
- Locomotive drip pans
- Exterior lighting
- Electrical connections
- Track, and platform area drainage
- Derails to facilitate the use of FRA Blue Signal Protection for Workers requirements

2.2.4. Sitework & Special Conditions

Sitework includes removal of existing turnouts, crossovers, and track, clearing and grubbing at the St. Cloud Station, and removal of a bumping post at the Big Lake Station.

2.2.5. Systems

The cost estimate recognizes that full-corridor CTC and PTC are fully operational between Minneapolis and St. Cloud. All Northstar locomotives and cab control passenger cars are equipped with operational PTC equipment.

Communications and signaling improvements include new CTC control points at certain locations and enlarged, upgraded, or reconfigured CTC control points at other locations. CTC and PTC are proposed for all segments of new main track, as well as the signal and communications work necessary to modify the CTC and PTC systems to accommodate all other proposed improvements. Certain signals, signal bridges, and cantilevers are proposed to be removed and signals are proposed to be replaced or added as needed to accommodate the additional main track or extended CTC control points. All the changes are required to maintain or increase operating capacity and connectivity, increase the operating flexibility available to train dispatchers, and to ensure the continued dependability of Northstar, Amtrak, and BNSF freight train operations in the corridor.

Communications and signaling work at grade crossings are also included in this category. Most of the existing grade crossings are currently signaled and some have FRA-approved Quiet Zones. Proposed grade crossing work includes upgrades to accommodate a third main track through the crossings that currently have two main tracks. In several locations, grade crossings are included within the limits of a new or expanded CTC control point with multiple main tracks. Signal work has been included to incorporate coordinated signal functionality at these locations.

Upgrades to roadway approaches and grade crossings to accommodate new tracks through crossings include new precast crossing panels, rubber flange and timber or concrete panel crossing surfaces at private crossings, removal and extension of median barriers to accommodate additional or shifted tracks, modifications to drainage ditches and culverts, and roadway re-profiling of approach grades to meet MnDOT and AREMA standards. Costs for precast concrete panels are included at public crossings where panels do not currently exist.

2.2.6. ROW, Land, Existing Improvements

Based on conceptual designs, no land acquisition is needed in locations where new track is to be constructed. However, two existing easements near the Rice Creek Bridge will likely need to be modified to enable the construction of the proposed new third main track and the continuation of existing recreational facilities. Changes to the property and track lease to a private party at Minneapolis Junction will need to be revised to accommodate the new second west leg of the wye at that location. With these exceptions, it is assumed that new track will be built within the existing right-of-way.

2.2.7. Vehicles and Equipment

Costs for one additional locomotive, two additional bi-level passenger coaches, and two additional bi-level cab control passenger cars were included. Currently, MnDOT's preference is to acquire and upgrade, modify, equip, and paint (or wrap) compatible used commuter rail equipment from other agencies, where available, to supplement the Northstar fleet so that all commuter equipment is interchangeable, has the same functionality and appearance, and uses the same spare parts inventory as the existing Northstar fleet. The modifications and upgrades specifically include the necessary compatible PTC equipment, HVAC, operating control systems, and passenger information systems. The purchase of new locomotives and commuter cars is also an option, depending on market conditions and availability at the time of the acquisition. The cost of the rolling stock acquisitions also included the cost of on-site testing and qualification by BNSF and Metro Transit personnel of the on-board PTC equipment on the acquired locomotives and cab control passenger cars.

If, at the time of procurement, Metro Transit opts to acquire locomotives and passenger cars that are not the same as the existing Northstar fleet, then the purchase of a spare parts inventory with sufficient quantities of critical and long-lead time components will be required to support the acquired equipment. If the spare parts and components are foreign made and stocked, then sufficient inventory must be purchased and maintained by the agency to compensate for the long lead time needed for the transportation time for overseas replenishment. Failure to maintain an adequate spare parts inventory could result in the rolling stock being unavailable for service due to the inability of maintenance forces to replace critical components when required. In addition to the spare parts inventory, an analysis would be required to identify any special tooling and/or shop equipment, not already on hand at the Big Lake Maintenance Facility, that would be needed to service the acquired rolling stock.

2.2.8. Professional Services

Professional services fees are included to cover design costs, program management costs, construction management and oversight costs, and integration, testing and commissioning costs. These costs are included in the estimate as a percentage of construction cost. Table 2 presents the assumptions used to calculate Professional Services costs.

Table 2: Professional Services Costs

Professional Services	Cost as a Percentage of Construction Cost
Design Engineering (Categories 10, 40, 50, 60)	5%
Design Engineering for Stations and Facilities (Categories 20 AND 30)	10%
Program Management	2%
Construction Management & Inspection	6%
Engineering Services During Construction	1%
Integration, Testing, Commissioning	1%

2.2.9. Contingency

Contingency costs are calculated as a percentage of the total capital cost for each FRA Standard Cost Category. Contingency percentages vary depending on the level of design completed for the work elements included in a particular category. An unallocated contingency of 5% is added to categories 10 through 80. Table 3 presents the assumptions used to calculate Contingency Costs.

Table 3: Contingency Cost Percentages

FRA Standard Cost Category	Contingency Cost as a Percentage of Total Capital Cost
10 Guideway & Track Elements	20%
20 Stations, Stops, Terminals, Intermodals	30%
30 Support Facilities: Yards, Shops, Admin. Bldgs	30%
40 Sitework & Special Conditions	20%
50 Systems	20%
60 ROW, Land, Existing Improvements	Not Applicable
70 Vehicles	20%
80 Professional Services	0%
90 Unallocated Contingency	5% of All Category 10-80 Costs
100 Finance Charges	Not Applicable

2.2.10. Finance Charges

Finance charges are not calculated for the Northstar Commuter Rail Extension project.

3. Description of Capital Improvements

Capital improvements are discussed in the following sub-sections with the justification for the improvement. Concept plans for the capital improvements are in Appendix G.

3.1. St. Cloud Improvements

The St. Cloud improvements would provide additional operating capacity and improved operating flexibility between MP 75.2 and MP 73.2 to accommodate Northstar trains clear of Main Track 2 at St. Cloud station, enable improved utilization of both main tracks at St. Cloud by both Amtrak and freight trains, and improve the flow of freight train traffic on the Staples Subdivision. Figure 1, Figure 2, and Figure 3 depict the three capital improvements in St. Cloud.

Figure 1: New St. Cloud West Control Point



Figure 2: St. Cloud Station Track



Figure 3: Upgrade St. Cloud Control Point



Proposed improvements include:

- Construct new CTC control point at MP 75.0 West St. Cloud including:
 - New universal #24 power-operated crossover between Main Tracks 1 and 2 to replace existing hand throw crossover
 - New powered west wye turnout to replace existing hand throw turnout to enable trains to enter and leave west wye without stopping
 - Upgraded industry track connections
 - Signal/PTC changes to accommodate the proposed new track work
- Construct new station track and platform off Main Track 2 west of Amtrak platform at St. Cloud station for Northstar commuter trains including related improvements:
 - New powered turnouts and signals on both ends as part of extending existing CP St. Cloud to include the station track
 - 480-Volt AC standby power connection and drip pan at west end of station track
 - Elimination of industry track turnout on Main Track 2 west of station and reconnect industry track from other end from west leg of the wye
 - Grade crossing and warning system improvements for industry track
 - Elimination of hand throw turnout connection between west wye and Main Track 2 just west of St. Cloud station
 - Signal/PTC changes to accommodate the proposed new track work
- Upgrade Existing CP St. Cloud at MP 73.6 including:
 - Replace existing crossovers with new #24 universal crossover
 - Other track and turnout changes due to using #24 universal crossover
 - Extend existing CTC control point to include turnouts and signals at both ends of proposed station track off Main Track 2 west of Amtrak station
 - Signal/PTC changes to accommodate the proposed new track work

3.2. CP MP 66 Upgrade

Upgrading the universal crossover at MP 66 to #24 would reduce the time required to make diverging route movements at CP 66 by increasing diverging route speeds for both passenger and freight trains through the universal crossover. Increasing speeds would improve the flow of train traffic on the Staples Subdivision. The improvement would be needed because of additional train traffic between St. Cloud and Big Lake. Figure 4 depicts the capital improvements at MP 66.

Figure 4: CP MP 66 Upgrade



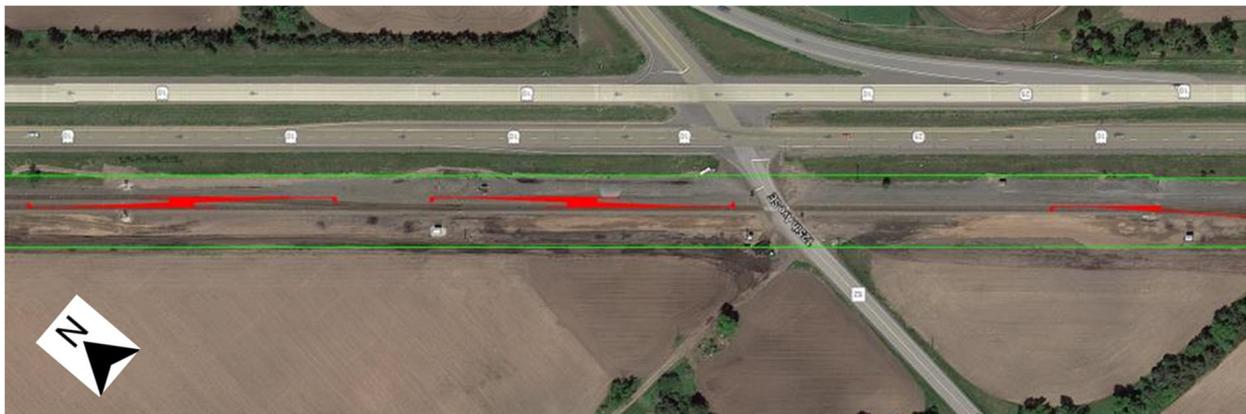
Proposed Improvements:

- Construct new universal #24 power-operated crossover between Main Tracks 1 and 2 to replace existing #20 universal crossover
- Signal/PTC changes to accommodate the proposed new track work

3.3. New Control Point at Becker

Constructing a new CTC control point at Becker would provide additional operating capacity and improved operating flexibility between the existing CTC control points at MP 66 and MP 52.8, improving the flow of train traffic on the Staples Subdivision. The new control point would reduce congestion caused by loaded and empty coal trains moving to and from Becker. The improvement is needed because of additional train traffic between St. Cloud and Big Lake. Figure 5 presents the capital improvements at Becker.

Figure 5: New Control Point at Becker



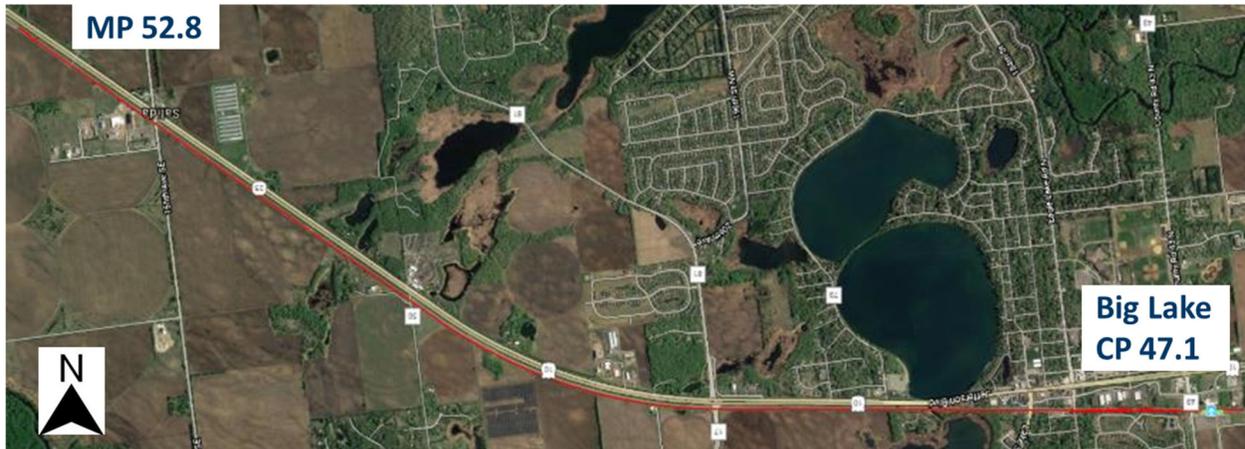
Proposed improvements include:

- Construct new #24 universal crossover between Main Tracks 1 and 2, west of the existing turnout to expedite the movement of trains that serve the coal-fired electrical generating station. This also expedites the movements of the St. Cloud-Northtown Yard local which works at the Becker siding off Main Track 1 twice each day.
- Replace existing hand throw turnout to generating station spur with new power-operated turnout to reduce the time needed for loaded and empty coal trains to enter and leave the main track at Becker. Configuration also enables westbound empty coal trains to utilize Main Track 1 from Becker instead of using Main Track 2 to MP 66 and then crossing over to Main Track 1.
- Signal/PTC changes to accommodate the proposed new track work.

3.4. Big Lake West Siding

The Big Lake West Siding would provide additional operating capacity and improved operating flexibility between the existing CTC control point at MP 52.8 and the Big Lake Station over a new connection to the station track. The five-mile-long siding would be needed to accommodate meets between opposing Northstar revenue and deadhead trains moving between Big Lake and St. Cloud that would occur in this segment under certain Service Alternatives. Figure 6 depicts the capital improvements for the Big Lake West Siding.

Figure 6: Big Lake West Siding



Proposed Improvements include:

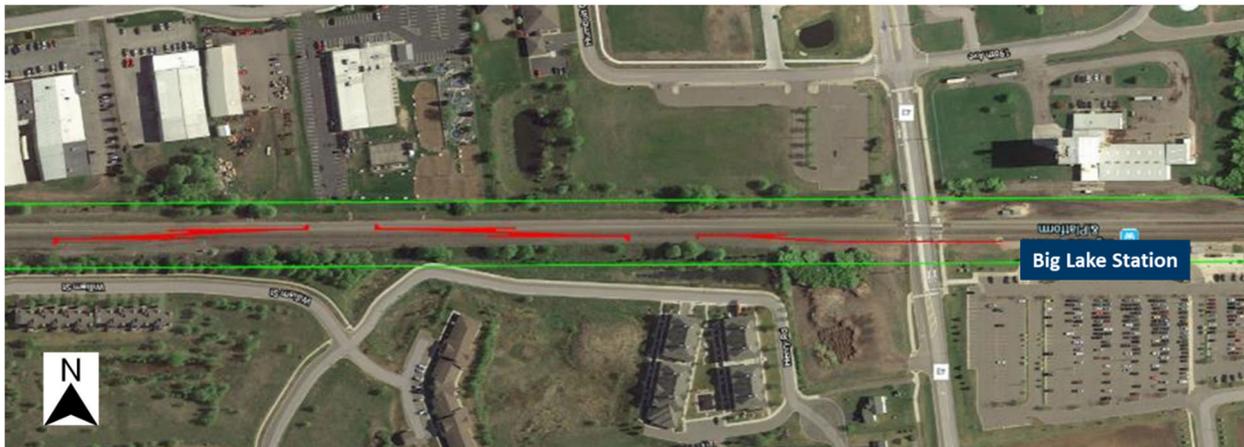
- Construct new Big Lake West Siding (a third main track in CTC territory) between the existing CTC control point at MP 52.8 and the proposed new CTC control point at MP 47.1, with a new track connection to the Big Lake Station
- Construct new #24 power-operated turnout at CP 528 for west end of new main track
- Construct new #24 power-operated turnout at CP 47.1 for east end of new main track
- Construct new grade crossing and warning system improvements to accommodate new main track through existing rail-highway grade crossings between MP 46.9 and MP 52.8
- Industry track changes at MP 47.1 to accommodate new CTC control point.

- Signal/PTC changes to accommodate the proposed new track work.

3.5. Big Lake Station Track Connection

The Big Lake Station track connection would provide a direct connection for trains moving between BLMF and St. Cloud. The improvement would be needed to avoid a reverse movement for each Northstar commuter train that would be caused by the current ‘east-end only’ stub track configuration at Big Lake Station. The improvement would be necessary to enable all the proposed Service Alternatives to operate efficiently and avoid the consumption of main track capacity that would occur without this improvement. Figure 7 depicts the Big Lake Station Track Connection improvements.

Figure 7: Big Lake Station Track Connection



Proposed Improvements include:

- Construct new CTC control point with #24 universal crossover between Main Tracks 1 and 2 at MP 47.1
- Extend the west end of the Big Lake Station stub track to connect with new CTC control point at MP 47.1 east of the proposed new universal crossover enabling direct connection between the Big Lake Maintenance Facility and St. Cloud without the need for a reverse movement over the existing control point at Big Lake (MP 46.6)
- Construct grade crossing and signal improvements to add third track through the County 43 grade crossing
- Signal/PTC changes to accommodate the proposed new track work

3.6. Big Lake Station Expansion

The Big Lake Station Expansion would include construction of a center platform at Big Lake Station that would mitigate train movement conflicts, congestion, and lost corridor capacity caused by crossover movements made by Northstar commuter trains operating between St. Cloud and Minneapolis. With the proposed center platform station, each Northstar commuter train to or from St. Cloud that had a schedule stop at Big Lake would use the main tracks to serve Big Lake commuters. Figure 8 illustrates the improvements that are proposed for the Big Lake Station Expansion.

Figure 8: Big Lake Station Expansion



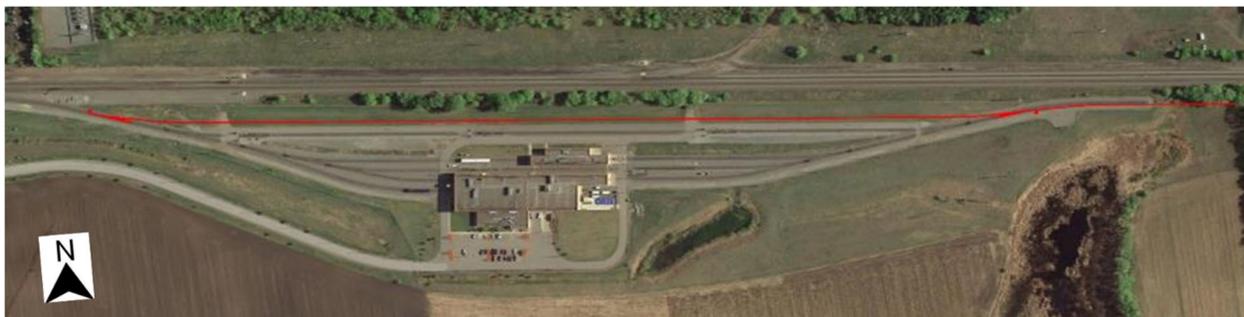
Proposed improvements include:

- Shift Main Track 1 to north between west end of CP Big Lake (MP 46.6) and west end of County 43 grade crossing to accommodate new Northstar commuter station platform between Main Tracks 1 and 2.
- Construct new accessible Northstar commuter station platform with Northstar amenities between Main Tracks 1 and 2 to enable Northstar commuter trains operating between St. Cloud and Target Field Station to remain on their same main track for the station stop.
- Construct new enclosed pedestrian overhead walkway between a new elevator tower on the center platform and a new elevator tower on the existing Big Lake station platform to provide access between the existing Big Lake Northstar station and its parking facilities and the proposed new center platform facility.
- Signal/PTC changes to accommodate the proposed new trackwork

3.7. Big Lake Maintenance Facility Expansion

The BLMF expansion is needed for the service alternatives that require an additional trainset for the Northstar commuter train fleet. The existing maintenance facility does not have enough track room to store and service the added trainset. Figure 9 presents the improvements proposed for the BLMF Expansion.

Figure 9: Big Lake Maintenance Facility Expansion



Proposed improvements include:

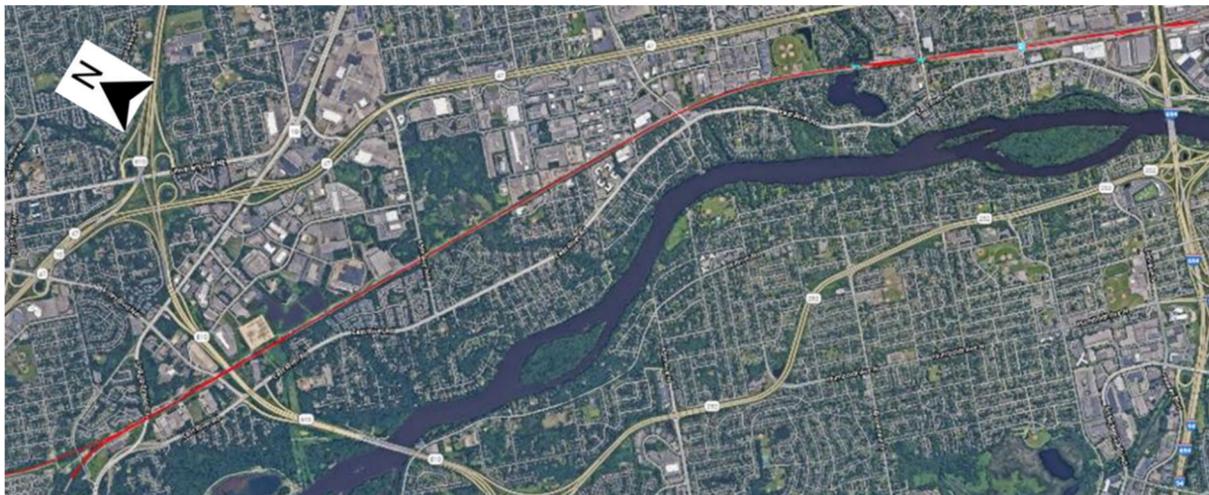
- Construct a new storage/service track north of the existing tracks within the Big Lake Maintenance Facility where there is presently room to construct up to three more tracks.
- Connect both ends of the new track to the lead tracks on each end and extend the east lead stub track to provide head room for a train set to enter and leave the track from the east end.
- Construct service roads, overhead lighting, drip pans, 480-Volt AC standby power connections, compressed air connections, electrical service drop outlets, and drainage for the new track.

3.8. Third Main Track CP Coon Creek to CP Interstate

The third main track would be needed to maintain dependable and/or expanded Northstar commuter train operations, improve the capability to prioritize the movement of additional freight trains through the highly congested main track corridor west of and around BNSF's Northtown Yard, and increase the capacity to enable freight trains to depart from and enter the west end of Northtown Yard simultaneously. Freight trains enter and leave the yard at several locations at very slow (5-10 mph) speeds from both ends of the Yard. Through-freight-trains that do not need to enter Northtown Yard stop on the two main tracks at Northtown to change crews. All these movements create congestion that affects the performance and schedules of BNSF freight trains, Amtrak intercity trains, and Northstar commuter trains. Adding a third main track would provide an additional route that would also serve the west side platform at the Fridley Northstar commuter station, enabling Northstar commuter trains in both directions to serve Fridley Station simultaneously.

Two adjacent control points are proposed at Coon Creek to provide universality from all three main tracks east of Coon Creek to both main tracks of the Staples Subdivision and the single-track Hinckley Subdivision main track west of Coon Creek. The configuration would also enable the construction of a new passenger station west of Foley Boulevard grade crossing on the north side to serve NLX intercity passenger trains between Minneapolis and Superior-Duluth should NLX service be established in the future. Figure 10 presents the third main track improvements between CP Coon Creek and CP Interstate.

Figure 10: Third Main Track CP Coon Creek to CP Interstate



Proposed improvements include:

- Reconfigure the existing CTC control point at Coon Creek to accommodate the proposed new third main track, utilizing all new #24 crossovers to increase the speed of diverging movements at this busy junction between the BNSF Staples and Hinckley Subdivisions approximately five miles west of Northtown Yard
- Construct a new CTC control point adjacent to and immediately east of Coon Creek in the vicinity of and through the existing opening at the MN 610 overhead highway bridge, utilizing new #24 crossovers to connect the new third main track with Main Tracks 1 and 2
- Construction of a new third main track in CTC territory with several track shifts, changes to several grade crossings, several culvert extensions, a new bridge over Rice Creek, and a new bridge over Mississippi Street between CP Coon Creek and CP Interstate
- Expansion of the existing CTC control point at MP 16.3 to accommodate the proposed new third main track as well as new #24 crossovers between main tracks
- Expansion of the existing CTC control point at CP Interstate to accommodate the new third main track including new #24 crossovers connecting main tracks at the west end of Northtown Yard
- Industry track changes to accommodate the new third main track between CP Coon Creek and CP Interstate
- Removal of existing signals and construction of new signals at several locations and other signal/PTC changes to accommodate the proposed new track work.

3.9. Third Main Track CP Interstate to CP Van Buren

The third main track from CP Interstate to CP Van Buren would be needed to maintain dependable and/or expanded Northstar commuter train operations through the highly congested main track corridor around and east of BNSF's Northtown Yard. When connected to the CP Coon Creek to CP Interstate segment, this third main track would extend from CP Coon Creek, through CP Interstate, past Northtown Yard, through CP 35th Street to CP Van Buren, without a connection to the congested control point at Mississippi Street. The east half of this third main track segment is currently in use by trains moving to and from the Canadian Pacific Railroad's main tracks that cross over Northtown Yard on an elevated right-of-way. Figure 11 presents the third main track improvements between CP Interstate and CP Van Buren.

Figure 11: Third Main Track CP Interstate to CP Van Buren



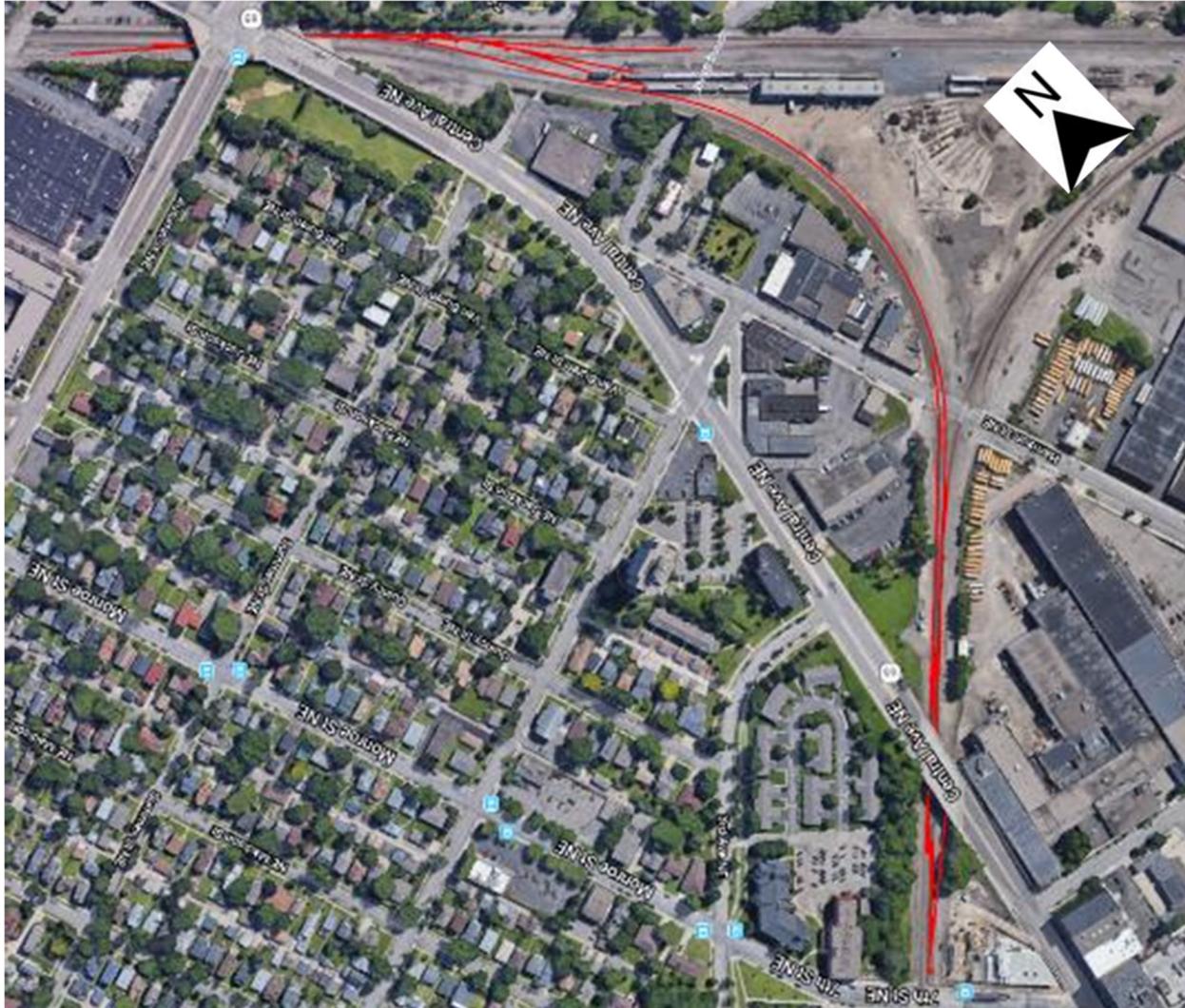
Proposed improvements include:

- Construct new turnout in CP Interstate to connect the western segment of the third main track to the Interstate-Van Buren segment.
- Conduct right-of-way preparation and construct a new third main track in CTC territory between CP Interstate and CP 35th Street and join the recently constructed BNSF-CP connecting track that extends from CP 35th Street to CP Van Buren to complete a third main track between approximately MP 16.3 and MP 10.5.
- Remove and replace industry track turnouts and shift industry tracks as necessary to enable construction of proposed new third main track and maintain industry track functionality.
- Construct new signals, remove some existing signals, and make other signal/PTC changes required to accommodate the proposed new track work.
- Relocate communications facilities to accommodate the new third main track

3.10. Two Main Tracks CP Van Buren to CP Stadium

Constructing a second track between CP Harrison and CP Van Buren and upgrading the auxiliary track to main track between CP Stadium and CP Harrison would provide additional track and signal capacity and operating flexibility (effectively two main tracks) between CP Stadium and CP Van Buren. The two main tracks would enable simultaneous passenger and freight train movements and increase freight train operating speeds in this bottleneck segment immediately outside Target Field Station. The added capacity and additional flexibility would support service dependability for Northstar commuter trains and reduce delays and transit time for freight trains. Figure 12 presents the improvements.

Figure 12: Two Main Tracks CP Van Buren to CP Stadium



Proposed improvements include:

- Construction of a new second west wye track between CP Van Buren and CP Harrison Street with minor track shifts of the existing leg of the wye between the two points
- Extension of CP Van Buren east to accommodate the new second west wye track including adding and removing several signals for this control point
- Reconfiguration of the siding on the Midway Subdivision between CP Van Buren and the Wayzata Subdivision connection to enable major track changes to the tracks within the “Friends of the 261” facility inside the wye at Minneapolis Junction. The proposed track changes were required to accommodate the new second leg of the wye between CP Van Buren and CP Harrison Street
- Reconfiguration of CP Harrison Street to provide parallel connections between the Wayzata Subdivision main track, the Wayzata Subdivision auxiliary track east of Harrison Street, and the

two legs of the west wye between Harrison Street and CP Van Buren. The reconfiguration provides two parallel tracks between CP Stadium and CP Van Buren

- Reconfiguration of the east wye connection (Wayzata Sub. main track) and the industry track near Central Avenue at CP Harrison Street to accommodate the west wye changes
- Construction of new #20 power-operated universal crossover on the east end of CP Harrison Street to enable trains using either of the two Wayzata Subdivision tracks to reach any of the three wye tracks (2 west and 1 east) at Harrison Street (Minneapolis Junction)
- Upgrade of the auxiliary track between CP Harrison Street and CP Stadium with 66% tie replacement and surfacing to increase train speeds on that track segment
- Grade crossing improvements and signal/PTC changes (including the removal of several existing signals and construction of several new signals and other signal/PTC changes) to accommodate the proposed new track work

4. Presentation of Capital Costs by Service Alternative

Table 4 provides an overview of the capital improvements needed for each Service Alternative. Cells in blue indicate improvements needed for initial operation and orange cells indicate improvements needed by 2040.

Table 4: Capital Improvements by Service Alternative

Improvements Needed for Initial Operation Improvements Needed by 2040	Minimum Service Alternative	Minimum Bi directional Alternative	Northstar Express Alternative	Bi Directional Alternative
Overhead and Equipment Costs				
Upgrade Fare Collection Systems	Blue	Blue	Blue	Blue
Acquire one additional Northstar trainset	Blue	Blue	Blue	Blue
Expand Big Lake Maintenance Facility	Blue	Blue	Blue	Blue
Station Improvements				
Extend and connect Big Lake Station spur track to the north	Blue	Blue	Blue	Blue
Build station siding at St Cloud Station	Blue	Blue	Blue	Blue
Construct center through platform at Big Lake Station	Blue	Blue	Blue	Blue
Control Points, Crossovers and Sidings				
Upgrade existing universal crossover east of St Cloud station	Blue	Blue	Blue	Blue
Install new CTC Control Point and universal crossover west of St Cloud station	Blue	Blue	Blue	Blue
New CTC Control Point at Becker	Orange	Orange	Orange	Blue
Upgrade Universal Crossover in CTC Control Point MP 66	Blue	Orange	Orange	Blue
Big Lake West Siding	Blue	Blue	Blue	Orange
Additional Mainline Track				
Third Main track CP Coon Creek to CP Interstate	Orange	Orange	Blue	Blue
Third Main Track CP Interstate to CP Van Buren	Blue	Blue	Orange	Orange
Second Main Track CP Van Buren to CP Stadium	Orange	Orange	Orange	Orange

The subsections below present the capital costs by Service Alternative for initial operation and by 2040. All costs are shown in 2025 dollars.

4.1. Minimum Service Alternative

Table 5 presents the capital improvements needed for the Minimum Service Alternative for initial operation and by 2040.

Table 5: Capital Costs for Minimum Service Alternative

Capital Improvements	Cost for Improvements Needed for Initial Operation (2025\$)	Cost for Improvements Needed by 2040 (2025\$)
St. Cloud Improvements	\$25.9 million	\$25.9 million
New Becker CTC Control Point		\$7.8 million
Big Lake Station Track Connection	\$9.6 million	\$9.6 million
Third Main Track CP Coon Creek to CP Interstate		\$76.5 million
Two Main Tracks CP Van Buren to CP Stadium		\$19.2 million
Total	\$35.6 million	\$139.0 million

4.2. Minimum Bi-Directional Service Alternative

Table 6 presents the capital improvements needed for the Minimum Bi-Directional Service Alternative for initial operation and by 2040.

Table 6: Capital Costs for Minimum Bi-Directional Service Alternative

Capital Improvements	Cost for Improvements Needed for Initial Operation (2025\$)	Cost for Improvements Needed by 2040 (2025\$)
St. Cloud Improvements	\$25.9 million	\$25.9 million
Upgrade Universal Crossovers at CP MP 66		\$7.6 million
New Becker CTC Control Point		\$7.8 million
Big Lake Station Track Connection	\$9.6 million	\$9.6 million
Big Lake Station Expansion	\$31.1 million	\$31.1 million
Big Lake Maintenance Facility Expansion	\$8.0 million	\$8.0 million
Third Main Track CP Coon Creek to CP Interstate		\$76.5 million
Two Main Tracks CP Van Buren to CP Stadium		\$19.2 million
Equipment Procurement	\$21.0 million	\$21.0 million
Total	\$95.6 million	\$206.7 million

4.3. Northstar Express Service Alternative

Table 7 presents the capital improvements needed for the Northstar Express Service Alternative for initial operation and by 2040.

Table 7: Capital Costs for Northstar Express Service Alternative

Capital Improvements	Cost for Improvements Needed for Initial Operation (2025\$)	Cost for Improvements Needed by 2040 (2025\$)
St. Cloud Improvements	\$25.9 million	\$25.9 million
Upgrade Universal Crossovers at CP MP 66		\$7.6 million
New Becker CTC Control Point		\$7.8 million
Big Lake Station Track Connection	\$9.6 million	\$9.6 million
Big Lake Maintenance Facility Expansion	\$8.0 million	\$8.0 million
Third Main Track CP Coon Creek to CP Interstate	\$76.5 million	\$76.5 million
Third Main Track CP Interstate to CP Van Buren		\$14.0 million
Two Main Tracks CP Van Buren to CP Stadium		\$19.2 million
Equipment Procurement	\$21.0 million	\$21.0 million
Total	\$141.0 million	\$189.6 million

4.4. Bi-Directional Service Alternative

Table 8 presents the capital improvements needed for the Bi-Directional Service Alternative for initial operation and by 2040.

Table 8: Capital Costs for Bi-Directional Service Alternative

Capital Improvements	Cost for Improvements Needed for Initial Operation (2025\$)	Cost for Improvements Needed by 2040 (2025\$)
St. Cloud Improvements	\$25.9 million	\$25.9 million
Upgrade Universal Crossovers at CP MP 66	\$7.6 million	\$7.6 million
New Becker CTC Control Point	\$7.8 million	\$7.8 million
Big Lake West Siding		\$36.2 million
Big Lake Track Connection	\$9.6 million	\$9.6 million
Big Lake Station Expansion	\$31.1 million	\$31.1 million
Big Lake Maintenance Facility Expansion	\$8.0 million	\$8.0 million
Third Main Track CP Coon Creek to CP Interstate	\$76.5 million	\$76.5 million
Third Main Track CP Interstate to CP Van Buren		\$14.0 million
Two Main Tracks CP Van Buren to CP Stadium		\$19.2 million
Equipment Procurement	\$21.0 million	\$21.0 million
Total	\$187.5 million	\$256.8 million