PROJECT NO. 2014-0017.06

PART 3 – PROJECT REQUIREMENTS

FOR

RED AND PURPLE MODERNIZATION (RPM) PHASE ONE DESIGN-BUILD

CHICAGO TRANSIT AUTHORITY

Issued for Execution
December 12, 2018

FINANCIAL ASSISTANCE BY:

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION

SUPERVISED BY:

CHICAGO TRANSIT AUTHORITY
INFRASTRUCTURE DIVISION - CONSTRUCTION

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3.1 General Project Description

Contractor will provide all necessary professional services, labor, materials, equipment and facilities to completely manage, design, construct, furnish, integrate, inspect, test and commission the Work in accordance with the Contract Documents. The Design/Preconstruction and Construction Work will be performed in accordance with the applicable requirements of the RFP documents, including Project standards, technical provisions, governmental approvals and all applicable laws, ordinances, requirements and regulations. All Work will be completed within the Contract Time and in a manner that, apart from the allowable track access occurrences and contract constraints, will not impede the CTA's ability to maintain CTA Transit Operations. Work must also minimize adverse impacts to the environment, neighborhood, residents, businesses, public access, traffic, public agencies, and utilities.

Parts 3 and 4 of the RFP define the Project and Technical Requirements that govern the Design/Preconstruction and Construction of the Permanent and Temporary Work necessary to complete the Project. The Project and Technical Requirements are divided into Parts to facilitate communication of the requirements, though the Work will be coordinated as a whole. In general, Part 3 captures requirements relevant across multiple disciplines and Part 4 contains the detailed Technical Requirements by specific discipline.

Contractor is required to expand upon the general framework of Part 3 and Part 4 to a level of detail that is required to complete the Project Design/Preconstruction and Construction in accordance with industry standards and codes to deliver a fully integrated, coordinated and compliant Project.

Contractor will not rely solely on the descriptions contained herein, or the more detailed requirements provided in subsequent Parts of the RFP, to identify all Project components to be designed, constructed, and installed. Contractor will determine the full scope of the Work through an extensive examination of all Parts of the RFP and Project Area, as may be reasonably inferred from such examination.

The Work described herein includes various scope elements inherent to the overall execution of Work. The following are examples of typical elements that will be considered included as part of the overall Work:

A. Site clearing, work zone preparation and Contractor support facilities.

B. Temporary elements for work zone safety and construction access.

C. Temporary and Permanent foundations and structural support elements.

D. Temporary conduit/cable adjustments, support and removal.

E. Utility services and connections.

F. Signage.

G. Survey, geotechnical investigation, and engineering investigation to support the design and construction of all Permanent and Temporary Work.

H. Protection and/or relocation of Utilities impacted by construction (see Part 3.13).

I. Demolition, removal, and legal disposal or salvage of existing and/or Temporary material, facilities and infrastructure required for the completion of the Work.

J. Restoration of all properties provided to Contractor for use in prosecuting the Work as shown in Appendix 3E.

The following general description of the Work has been organized by geographical location and by discipline to aid in the presentation of the overall Work. This presentation does not prescribe a mandatory sequencing of the Work. Contractor is responsible for developing the construction staging and phasing of all Work in accordance with the Contract operational constraints contained in other Parts of this RFP.

3.1.1 Project Limits

3.1.1.1 Overall Guideway Improvement Limits

The overall guideway improvement limits are as indicated in Appendix 3A, Overall Guideway Improvement Limits.

3.1.1.2 At-Grade Civil Improvement Limits

The at-grade improvement limits are as indicated in the Appendix 3E, Project Areas Available to Contractor and Appendix 3H, Civil At-Grade Improvement Limits.

3.1.1.3 Corridor Signal Improvement Limits

The corridor signal improvements extend beyond the Overall Guideway Improvement Limits and At-Grade Civil Improvement Limits. Physical signal components are to be replaced from the Belmont station to the Jarvis Relay Room with control and data interface extending beyond as required for a complete operational facility.

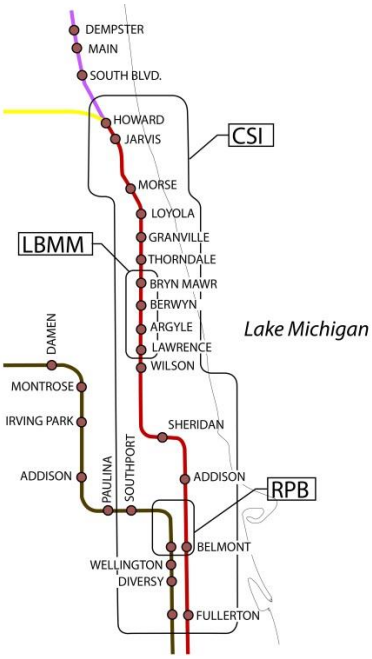

Figure 3.1-1: Project Limits Schematic

3.1.2 Pre-Stage Work

The Pre-Stage Work can be generally described as critical systems, special trackwork, structural repairs and Temporary station elements necessary for the CTA to operate two-track, combined Red Line and Purple Line service on North Mainline Tracks NM1 and NM2 between the Montrose and Thorndale Interlockings during subsequent LBMM phases.

3.1.2.1 Existing Retaining Wall, Wing Wall and Ballast Curb Rehabilitation

Deteriorated and/or structurally deficient sections of Tier I existing retaining walls and existing abutment returns/wing walls along the west side of the LBMM embankment will be temporarily stabilized. Existing ballast curbs will be temporarily and/or permanently stabilized to maintain containment of track ballast. The top of the retaining walls may require reconstruction including removal of ducts.

3.1.2.2 CTA-Provided Materials

CTA is furnishing three double crossovers for each of the Montrose and Thorndale Interlockings as shown in Appendix 4K. The crossovers were procured under Contract C15CT101741569 to Progress Rail Services Corporation, and delivered to the CTA at its property at 301 E 63rd Street (adjacent to 63rd Lower Yard at 313 E. 63rd Street), on the following dates:

A. March 29, 2017 – all three Montrose crossovers
B. November 8, 2017 – Thorndale crossover between Track 1 and Track 2
C. December 19, 2017 – Thorndale crossover between Track 3 and Track 4
D. March 1, 2018 – Thorndale crossover between Track 2 and Track 3

Within 90 days of NTP, Contractor will inspect and inventory such CTA-Provided Material, providing all handling, and upon acceptance, relocate the material from the CTA's yard to its own secured storage (which may include the Site) until installation.

Progress Rail Services Corporation provided the following warranty:

> The Contractor warrants for a period of twelve (12) months following installation and use of the equipment in the CTA system, but in no event longer than thirty (30) months following delivery and acceptance, that (a) all material delivered hereunder shall be new and unused and free from defects in material, workmanship and title, and fit for purpose when used in accordance with Contractor's written instructions and the generally accepted standards of the industry, and (b) any services shall be performed in a competent, diligence manner. The Contractor must commence correction of any defect of the foregoing warranty within five (5) days of written notice, and diligently continue until complete and accepted by the Chief Engineer.

Such warranty may be assigned to Contractor as provided in Part 1.

3.1.2.3 Pre-Stage Interlockings

Two new fully functional, three double-crossover interlockings will be constructed at Montrose and Thorndale including the installation of CTA-Provided Materials in the locations and per the geometry indicated in Part 3.4. Contractor will provide all additional material as required to complete the scope. Montrose Interlocking will be installed in open deck trackwork and Thorndale Interlocking will be installed in ballasted trackwork.

3.1.2.3.1 Montrose Interlocking Installation

The Work at Montrose Interlocking will include complete track, footwalk, and wayside platform renewal and alignment refinement on all four mainline tracks from the new Wilson facilities on the north to tie into the existing geometry on the south including standard ties in the tangents, tapered ties within the curves and spirals, track fasteners, timber guard, SIG, other track materials (OTM), rail, contact rail, and insulator chairs. Refined geometry is required to accommodate increased design speeds as shown in Appendix 3C Horizontal Alignment. Traction power feeder section gaps will be relocated to accommodate the new special trackwork. Foundation and column base replacement are required at Bent 7093 and Bent 7094. The superstructure and substructure steel will be cleaned, abated and painted from the Wilson closed deck structure to the south limit of the Montrose work. Provide new footwalk transitioned into existing. Drip pans will be removed and reinstalled where they exist. Wilson Interlocking will be decommissioned during the installation of the new special trackwork. The two existing power crossovers, the two existing hand-throw crossovers, Wilson Relay House, Wilson Tower and the relay house platform will be removed along with any abandoned communication infrastructure.

3.1.2.3.2 Thorndale Interlocking Installation

The Work at Thorndale Interlocking will include signal and traction power duct bank installation with profile and alignment refinement on all four mainline tracks from approximately 230 ft. north of the Thorndale platform on the north to approximately 130 ft. south of the south Ardmore abutment on the south. Concrete encased duct bank and concrete manholes on the right-of-way, positive cabling from getaway switches on the cable bridge to contact rail taps, fourth leg knife switch inside designated getaway switch enclosures on the cable bridge, positive cabling for a fourth leg from getaway knife switch on the cable bridge to the feeder breaker inside Broadway Substation, and negative cabling from the negative bus in the substation to the wayside manhole bus bars will be installed, and feeder section gaps relocated to accommodate the new special trackwork, all as shown in Appendix 4G. Installation of the crossovers will include new standard ties, track fasteners, SIG, OTM, ballast, rail, contact rail and insulator chairs. New crossovers will be installed in existing track with new 115 RE buffer rails between crossovers and insulated joints. The access ladder from track level to the traction power cable bridge will be removed and replaced with a permanent stair from the traction power cable bridge to track level

once the temporary cables are relocated off of the retaining wall as a part of the Work. Railings will be modified as required.

3.1.2.3.3 Granville Interlocking Removal and Track Rehabilitation

The Granville Interlocking will be decommissioned and removed, and track will be reconstructed to meet the new geometry indicated in Part 3.4 and as depicted in Appendix 3A. Tracks NM1, NM2, NM3, and NM4 will be completely renewed including new standard ties, track fasteners, SIG/ANR, OTM, ballast, rail, contact rail and insulator chairs. All four tracks will be surfaced and aligned throughout the reconstruction area to provide the profile and alignment detailed in Part 3.5. Profiles for NM2 and NM3 will be adjusted to meet platform clearance requirements through the Granville Station Platform as detailed in Part 3.5.

3.1.2.4 Miscellaneous Traction Power Elements

Miscellaneous traction power elements are required to support two track operation.

A. Aluminum clad contact rail will be provided from Leland Abutment to the Thorndale Interlocking along NM1.

B. Twelve foot contact rail inclines for northbound service will be provided from Leland Abutment to the Thorndale Interlocking along NM2.

C. Auxiliary Negative Return (ANR) rail will be provided from Leland Abutment to the Thorndale Interlocking along NM1. A minimum of three 1500 KCMIL cables will be provided at contact rail gaps and transpositions between Leland Abutment and Thorndale Interlocking along tracks NM1 and NM2. Where concrete encased ducts do not exist, install additional 1500 KCMIL cable in 3-1/2 in. RTRC conduit direct buried in ballast, 24 in. minimum burial depth.

3.1.2.5 Miscellaneous Trackwork

Replace 100 RE rail on NM 4 with new 115 RE rail from approximately 230 ft. north of the Thorndale platform on the north to approximately 130 ft. south of the south Ardmore abutment on the south. Provide compromise joints as required.

3.1.2.6 Signal System Elements

Pre-Stage signal Work will utilize the block design and route and aspect criteria provided in Appendix 4E.

3.1.2.6.1 Circuits and Communication Network

Cab control circuits reflecting new track, signal and switch configuration will be provided and line control circuits will be modified between Addison Interlocking (N269RH) and Morse Audio House (N501RH).

New fiber optic cable will also be provided between Addison and Morse along with a new Signal Communications System that will interface with new non-vital systems

linked to adjacent signal houses, the Control Center, and CTA Signal Maintenance networks. The Signal Communications System will include new Ethernet switches, routers, fiber modems and interface panels. The Signal Communications System will also include interfaces to CTA's Communications Backbone System in the Wilson station communications room and Loyola station communications room which will remain until the final Communications Backbone System is tested and commissioned as described in the Corridor Signal Improvements scope in Sub Part 3.1.9.17.

Express vital and train detection cabling and the signal fiber optic cables will be provided linking each of the following relay houses, rooms and other facilities.

A. Addison Interlocking (N269RH)

B. Sheridan Audio House (N291RH)

C. new Montrose Interlocking

D. Wilson Station Signal Maintainer Room

E. Lawrence Audio House (N351RH)

F. new Berwyn Audio House

G. Bryn Mawr Audio House (N399RH)

H. new Thorndale Interlocking

I. Granville Interlocking (N446RH)

J. new Loyola Audio House

K. Loyola Station Communication Room

L. Morse Audio House (N501RH)

The Rail Service Management System database will be modified to reflect the new track circuit configurations.

3.1.2.6.2 Montrose Relay House

A new relay house will be provided on an elevated platform. The relay house will be located within the permissible area indicated in Appendix 3G. The relay house will contain interlocking and cab signal control circuitry plus all the auxiliary equipment required for a complete functioning signal system. The relay house will be sized to comfortably contain all the signal control equipment, the local control panel room, four spare racks for future expansion after Substantial Completion, and eight rack spaces for audio frequency (AF) track circuit and interface equipment required for the LBMM construction phasing and Corridor Signal Improvements Work.

3.1.2.6.3 Montrose Interlocking

New wayside signal equipment including power switch machines, color light signals, train stops, route selectors, and AC track circuits with cab signal transmission loops will be provided for the Montrose Interlocking based on the new track configuration.

New AF track circuits and impedance bonds for track circuits on tracks NM1 and NM2 located between the south limit of Montrose Interlocking and the north house limit near Lawrence will be provided.

A. Sets of insulated rail joints in conjunction with double impedance bond layouts will be provided at relay house limits.

B. Impedance bonds, receive only point units, and other interface equipment to complete the train detection and cab signal interface connections to the running rails will be provided.

Automatic Vehicle Identification (AVI) systems on track NM1 for southbound train identification will be provided.

Pre-Stage work at Montrose Interlocking will include the following Temporary elements:

C. Prior to commissioning of the interlocking, bonding around insulated joints will be provided to maintain the operation of the existing AF track circuit layouts.

D. Software and hardware modifications will be provided to accommodate automatic routing for operations.

E. Interfaces to the existing signal system will be provided at Addison (N269RH), Sheridan (N291RH) and Lawrence (N351RH).

F. Interface to the new Berwyn Audio House will be provided.

G. Temporary reverse cab signal circuits on NM2 and NM3 will be provided between Addison and Montrose to protect trains during irregular operations through Sheridan Station.

3.1.2.6.4 Berwyn Audio House

A new Temporary audio house on new support structure will be provided at Berwyn to serve the mainline until the Winona Relay Room is operational. The audio house will be located in the permissible area indicated in Appendix 3G. Provide new bi-directional cab signal system on NM1 and NM2 including AF track circuits and impedance bonds for track circuits located between the south house limit near Lawrence and the north house limit near Bryn Mawr.

A. Sets of insulated rail joints in conjunction with double impedance bond layouts will be provided at relay house limits.

B. Impedance bonds, receive only point units, and other interface equipment to complete the train detection and cab signal interface connections to the running rails will be provided.

Electric lock circuitry will be provided for hand throw crossovers between NM1 and NM2 at Berwyn. The control of the electric locks will be transferred into the new audio house.

Interface to Montrose and Thorndale Relay Houses will be provided.

3.1.2.6.5 Thorndale Relay House

A new relay house will be provided on an elevated platform. Contractor will coordinate the final location of the relay house on the elevated platform to accommodate the installation of pole mounted Utility (telecommunication) cables along the west alley line. The relay house will be located in the permissible area indicated in Appendix 3G. The relay house will contain interlocking and cab signal control circuitry plus all the auxiliary equipment required for a complete functioning signal system. The relay house will be sized to comfortably contain all the signal control equipment, the local control panel room, four spare racks for future expansion after Substantial Completion, and eight rack spaces for AF track circuit and interface equipment required for LBMM construction phasing and Corridor Signal Improvements Work.

3.1.2.6.6 Thorndale Interlocking

New wayside signal equipment including power switch machines, color light signals, train stops, route selectors, and AC track circuits with cab signal transmission loops will be provided for the Thorndale Interlocking based on the new track configuration.

New AF track circuits and impedance bonds for track circuits on tracks NM1 and NM2 located between the south house limit near Bryn Mawr and the north limit of Thorndale Interlocking will be provided.

A. Sets of insulated rail joints in conjunction with double impedance bond layouts will be provided at relay house limits.

B. Impedance bonds, receive only point units, and other interface equipment to complete the train detection and cab signal interface connections to the running rails will be provided.

AVI systems on track NM2 for northbound train identification will be provided.

Pre-Stage work at the Thorndale Interlocking will include the following temporary elements:

C. Prior to commissioning of the interlocking, bonding around insulated joints will be provided to maintain the operation of the existing AF track circuit layouts.

D. Software and hardware modifications will be provided to accommodate automatic routing for two-track operation.

E. Interfaces to the existing signal system will be provided at Bryn Mawr (N399RH) and Granville (N446RH).

F. Interfaces to the new Berwyn Audio House and the new Loyola Audio House will be provided.

3.1.2.6.7 Loyola Audio House

A new audio house will be provided on new support structure to serve the mainline until the Corridor Signal Improvements are completed. The new audio house will be constructed on the elevated embankment located in the permissible area indicated in Appendix 3G. Provide new bi-directional cab signal system on NM1, NM2, NM3, and NM4 including new AF track circuits and impedance bonds for track circuits located between the south house limit at Thorndale Interlocking and the north house limit north of Loyola station.

A. Sets of insulated rail joints in conjunction with double impedance bond layouts will be provided at relay house limits.

B. Impedance bonds, receive only point units, and other interface equipment to complete the train detection and cab signal interface connections to the running rails will be provided.

3.1.2.6.8 Decommissioned Equipment – Pre-Stage

Facilities will be decommissioned in stages during the installation of new systems as follows:

A. The facilities at Wilson Interlocking will be decommissioned during installation of the new special trackwork at Montrose.
B. The Granville Interlocking will be decommissioned after Thorndale Interlocking is placed in service. Loyola Audio House will provide train detection and cab signals replacing the equipment decommissioned at Granville.

Temporary signaling will be provided to maintain system operation during the decommissioning process and will remain in place until the permanent signal system is commissioned.

3.1.2.6.9 Signal Maintenance Monitoring and Diagnostic Systems

A. New monitor units to display system-wide status and local status will be provided at the new Montrose Relay House, new Thorndale Relay House, new Berwyn Audio House, and new Loyola Audio Houses.

B. Maintainer workstations will be provided at Wilson Station Maintainer Room, Signal Maintenance – 3900 W. Maypole, and Signal Engineering – 567 W. Lake.

3.1.2.7 Communication Elements

Temporary communication equipment will be provided to support staged construction including connection of all facilities (i.e. Temporary platforms, signal houses) to the existing 96 fiber optic cable.

3.1.2.8 Temporary Stations and Platforms

Temporary at-grade station facilities will be provided to accommodate northbound and southbound service at Argyle and Bryn Mawr. The Temporary at-grade structures will provide the public access to CTA's rail system through entry or exit stationhouses and access point to Temporary platforms. The Temporary stations include all site work outside the station footprint to provide safe and accessible pedestrian and bus passenger egress and ingress.

Temporary stations will be initially configured to serve the two track operation on NM1 and NM2. Temporary stations will be reconstructed/reconfigured as required to serve two track operation on NM3 and NM4. Northbound Bryn Mawr service may be discontinued when operation is on NM3 and NM4.

3.1.3 Red-Purple Bypass (RPB) Work

3.1.3.1 Temporary Track RVT

An open deck structural system on deep foundations, or (subject to Sections 4.3 and 8.4.d of Part 1) as modified by Part 1, Exhibit 1, ATC 05.0 and 05.1 – Spread Footing at Temporary Bridge and Clarifications, supporting a new elevated Temporary track system will be provided with necessary connections to Track NM1 north of Belmont station structure north to RV1 including a cut and throw from NM1 to RVT and a cut and throw from RVT to RV1 per the geometry indicated in Part 3.4. Due to the length of service anticipated, the Temporary facility will be provided using the criteria for new facilities. Upon successful commissioning of NM1, NM2, NM3, NM4 and Clark Junction Interlocking, RVT will be removed.

3.1.3.2 Bypass Track NM5

A combination of an open deck and closed deck structural system on deep foundations supporting the new NM5 track and noise barrier walls will be provided with necessary connections to track NM4 north of Belmont station structure to the south and RV2 to the north including special trackwork per the geometry indicated in Part 3.4. The NM5 turnout from NM4 will be fully interlocked. Lubricators will be provided where required. When referenced in other Sub Parts of this document, NM5 is considered to be a Brown Line track.

3.1.3.3 Kenmore Interlocking

A new fully functional interlocking will be provided at Kenmore consisting of a turnout that accommodates movements between NM5 and RV2 and a left-hand crossover between RV1 and RV2. A new relay house will be provided on an elevated platform with stairs to grade.

3.1.3.4 Existing Residential and Commercial Building Demolition

Existing construction on the Project Site that is not used for temporary Contractor facilities, operational facilities, or the Vautravers Building relocation as described in Sub Part 3.1.3.8 will be removed. Vacant parcels will be secured and all open excavations will be filled with clean fill.

3.1.3.5 North Mainline (NM) Track

A closed deck structural system on deep foundations supporting four new tracks, NM1, NM2, NM3 and NM4, footwalks, and noise barrier walls of the North Main Line will be provided from north of Belmont station north to the north side of Newport Avenue per the geometry indicated in Part 3.4. An open deck structural system on deep foundations supporting the new four-track NM will be provided connecting the new closed deck structure to the existing structure at the Project limits approximately 16 ft. south of Bent 6055. The open deck structure will be a combination of new structure and rehabilitated structure to support the proposed operation, geometry, and design speeds. Structural rehabilitation will include repair of existing members and replacement of deteriorated members where required up to the weight limits of steel provided in Sub Part 4.6.5.2.2. A new fully functional, three double crossover interlocking will be provided to replace the existing Clark Junction Interlocking. Alignment will be as indicated in Appendix 3C. Track renewal on the open deck structure will include standard ties in the tangents, tapered ties within the curves and spirals, track fasteners, timber guard, SIG, other track materials (OTM), rail, contact rail, and insulator chairs. Provide new footwalk transitioned into existing. Drip pans in open deck structure will be removed and reinstalled where they exist.

The existing plinths on the existing Belmont closed deck apron will be reconstructed where required for the track geometry refinements as specified in Part 3.4.

The existing superstructure and substructure steel will be cleaned and abated and the structure will be painted between and including bents 6047 and 6061.

3.1.3.6 RV1/RV2 Structure Rehabilitation and Track Improvements

The improvements to existing RV1/RV2 will include complete rehabilitation of the open deck elevated track facility. The Ravenswood structure from Bent 00 to Bent 05 will be new; the structure including Bent 05 through and including Bent 28 will have complete foundation replacement with deep foundations. Structural rehabilitation will include repair of existing members and replacement of deteriorated members where required up to the weight limits of steel provided in Sub Part 4.6.5.2.1 from Bent 05 to approximately Bent 29.

Track renewal on the open deck structure will include standard ties in the tangents, tapered ties within the curves and spirals, track fasteners, timber guard, SIG, other track materials (OTM), rail, contact rail, and insulator chairs. Provide new footwalk transitioned into existing. Drip pans in open deck structure will be removed and reinstalled where they exist.

The existing Ravenswood superstructure and substructure steel will be cleaned and abated and the entire structure will be painted from Bent 05 to approximately Bent 29.

3.1.3.7 Miscellaneous Improvements

Additional miscellaneous improvements are required in order to provide a complete Project in the RPB area.

A. Clark Substation improvements

B. Clark Substation positive and negative traction power feeder relocations

C. Clark Communications Building improvements

D. Clark Tower improvements

3.1.3.8 Vautravers Building Relocation and Rehabilitation

The Vautravers Building is currently unoccupied. A feasibility analysis and cost estimate will be provided by Contractor to validate the Vautravers Building relocation and rehabilitation which is included in the Project. The building will be relocated as shown in Appendix 4J, the exterior rehabilitated, the interior assessed and protected from damage, and the entire facility maintained in an unoccupied “mothballed” condition.

3.1.4 Lawrence to Bryn Mawr Modernization (LBMM)

3.1.4.1 Embankment and Retaining Walls

Full removal of existing retaining walls and embankment will be accomplished under the new NM structure in order to provide clearance for stations and relay rooms and partial removal will be accomplished to provide clearance for track systems and general maintenance. All abutment return/wing wall stems will be replaced including new expansion and waterproofing details between the new and remaining existing construction. Existing Tier II walls to remain will be rehabilitated and recapped. Existing, repaired and new construction will receive a unifying surface treatment and the understructure area in LBMM will be secured.

Repair of retaining walls related to installation of communications and signal cable poles, brackets, and enclosures will be required in support of Corridor Signal Improvements work extending beyond the LBMM limits.

3.1.4.2 Winona Relay Room

A street level, CMU structure Relay Room will be provided in the understructure area at the Winona Middle Track. The room will be a fully functional signal facility. Access will be provided from the Relay Room to track level.

3.1.4.3 North Mainline (NM) Track

A closed deck structural system with noise barriers on deep foundations supporting a new four-track North Main Line will be provided from the Leland Abutment north to

Ardmore per the geometry indicated in Part 3.4. The end transition will be open deck at Leland and ballasted-retained embankment structure at the north Limits. A fully functional middle track will be provided at Winona including special trackwork and bumping posts at each end of the middle track to create fully functional interlockings at Argyle and Berwyn. New closed track will transition to existing open deck track at Leland with variable height timber ties for profile adjustment, plates, shims and OTM. New closed deck track will transition to ballasted track at Ardmore with transition slabs and timber ties of varying length.

3.1.4.4 Stations and Platforms

New accessible stations will be provided at Lawrence, Argyle, Berwyn and Bryn Mawr. Stations include street level structures, providing the public access to CTA's rail system and typically include the approach/site, stationhouses, vertical access, and platform. A station encompasses all entry or exit stationhouses accessing a shared platform. Stationhouses will have a street level structure in accordance with the layout indicated in Appendix 4C.

New center-boarding platforms with full coverage canopies will be provided at each station that integrate the new facilities with the rail fleet. Bus stops will be provided at street level to integrate the new facilities with the bus fleet.

Communication and signage will be provided to make the stations fully functioning as part of the CTA system.

3.1.4.5 CTA-Provided Material

CTA is furnishing fare control equipment as indicated in Sub Part 4.13.6.3.7 in quantities shown in Appendix 4C Station Floor Plans.

3.1.4.6 Abandoned Sewer

An abandoned 8.5 ft. sewer exists from Lawrence Avenue running north and west under the alley west of the existing Lawrence station. The portion of the 8.5 ft. sewer that is bulk-headed off and extends to the northwest beneath the alley will be filled with flowable fill. This fill will start at the existing bulk-head and continue to the northwest to a point determined by Contractor but no less than 14 ft.

3.1.5 Surface and Alignment

Surfacing and aligning of ballasted tracks will be completed to optimize the condition in advance of two-track operation to mitigate the need for track access for maintenance during the Project. Final surfacing and aligning will be performed at the end of the Project.

3.1.6 Building Demolition

Complete demolition, removal and proper disposal of the station, commercial and mixed-use buildings as required to complete the work and listed by address in Part 4.1.

3.1.7 Civil At-Grade Improvements (RPB and LBMM)

3.1.7.1 Drainage Improvements

A complete storm water management system for the facility, Public Way and at-grade improvement areas will be provided. To the greatest extent possible, storm water will be infiltrated and retained on-site for the facility and at-grade improvement areas. Final grades will be provided to promote positive drainage away from CTA stations, other CTA facilities, adjacent construction and for Public Way infrastructure.

3.1.7.2 Improvements in the Public Way and Understructure

Public Way reconstruction and improvements in understructure areas contiguous with the Public Way will be provided to the limits shown in Appendix 3H Civil At-Grade Improvements. All elements are required to achieve full restoration. Understructure improvements will create functional space that merges with the streetscape. Lighting will be provided for the Public Way and usable understructure areas.

3.1.8 Communications

An expansion of the CTA's fiber backbone capability will be provided to add capacity and versatility, facilitate network cutovers, allow for the possible segregation of data types, and permit CTA to accommodate future network demands. Communications backbone Work and Limits will be as shown in Appendix 4I Communications Single Line Drawings and Details extending from Belmont north to Howard and west to Southport. Right-of-way and station communication systems will be provided along with interfaces to signal systems.

3.1.9 Corridor Signal Improvements (CSI)

The Permanent signal improvements are a complete modernization of the signal system to increase capacity from Belmont north to Howard including the new NM5 to Southport. A train detection and control system will be provided that achieves safe braking, headway and performance requirements. The system will include vital track circuit loss-of-shunt detection subsystem utilizing track circuit sequencing logic that provides ability for automatically disabling affected track circuits in the vicinity of the failed track circuit. The system will include a red signal overrun detection subsystem that will disable all cab codes within the interlocking upon a detected overrun. The track circuit system will also include future capabilities as required in Guidance Specification 34 42 20. New signal fiber optic cable will be provided from Barry north to Howard North and west to Southport. All signal facilities will have independent power feeds as prescribed in Sub Part 4.14.4.2.4.F.

As the signal systems are replaced operational conditions will be maintained at all times including functional train detection and control systems for safe, reliable train operations, with continuous cab signal coverage; interlocked switch, signal and train stop control for train movements during each phase of construction, including access to "non-revenue" tracks; and, functional train position and status indication systems. Local control panels will be incrementally modified along with automatic switch and signal routing.

All new relay houses and relay rooms will be provided with a minimum of four spare racks for future expansion of the signal system. Where existing facilities are used, four spare racks will be provided, space permitting.

Remove all decommissioned and retired equipment.

3.1.9.1 Altgeld Interlocking (Existing NM / Fullerton)

An AVI tag reader and decoder system will be provided in the relay house with readers on NM3 and NM4 north of the existing home signals. System modifications and reprogramming will be included to transmit train identity information to Barry.

3.1.9.2 Barry Interlocking (Existing NM / Belmont)

Modifications will be made to the following systems and controls to interface with new Clark Junction track and signal plant: cab control circuits, line circuits, and polar relay based reversible traffic circuits. Existing track locking system between Barry and Clark Junction will be decommissioned.

A new Local Control Panel will be provided along with emergency traffic release controls for all four tracks. Manual signal control functions will be updated to include “fleeting” logic for all home signals.

3.1.9.3 Clark Junction

New interlocking control system equipment will be provided at Clark Junction based on the new track configuration. A new relay house will be provided on an elevated platform. The relay house to be located in the permissible area indicated in Appendix 3G.

Worker Ahead warning systems will be provided on RV1 and RV2 from Clark Junction to the middle of the Kenmore Interlocking, on NM5 from the north end of Belmont Station platform to the middle of Kenmore Interlocking, and on NM1, NM2, NM3 and NM4 from the Clark Junction Relay House to Newport. Supplemental control boxes will be provided at Kenmore Relay House platform and Kenmore Interlocking (256 signal).

New AF track circuits and impedance bonds for track circuits from the north limit of Barry Interlocking through the Belmont platform up to the limits of the new Addison Audio House and between Clark Junction and the Kenmore Interlocking will be provided. All wayside equipment will be installed in permissible areas.

AVI systems on track NM4 for northbound train identification will be provided.

A new Local Control Panel will be provided.

3.1.9.4 Clark Tower

A new control console will be provided in Clark Tower including panel sections for Webster, Altgeld, Belden, Barry, Clark Junction, Lakewood/Seminary and Montrose Interlockings. Provide new panel sections for Kenmore Interlocking remote control and for track circuits originating in Addison Audio House. New communications equipment

and racks will be provided in Clark Tower to support remote control of Kenmore and Montrose Interlockings. Console remote controls for Barry, Altgeld, Belden, Webster, Lakewood/Seminary Interlockings will be maintained.

3.1.9.5 Kenmore Interlocking

New interlocking control system equipment will be provided at the Kenmore Interlocking based on the new track configuration. A new relay house will be provided on an elevated platform. The relay house to be located in the permissible area indicated in Appendix 3G.

New AF track circuits and impedance bonds for track circuits located up to the east limit of Seminary Interlocking will be provided. All wayside equipment will be installed in permissible areas.

A local control panel will be provided in the house with new communications equipment and racks in Kenmore Relay House to support remote control from Clark Junction.

3.1.9.6 Lakewood-Seminary House (Ravenswood Branch)

Modifications will be made to the following systems and controls to interface with new Kenmore and Clark Junction track and signal plant: cab control circuits, line circuits, and traffic control circuits. Existing traffic locking will be modified at the Seminary Interlocking.

The Seminary faceplate/panel for the Local Control Panel will be replaced. Non-vital units for indications from Kenmore will be reprogrammed.

3.1.9.7 Southport House (Ravenswood Branch-Existing RV29RH)

Cab signal control circuits affected by the addition of Kenmore Interlocking home signals and track circuits will be modified along with line repeater circuits.

3.1.9.8 Addison Audio House

A new audio house on new support structure will be provided at Addison to serve the mainline as part of the removal of the Addison Interlocking. The audio house will be located in the permissible area indicated in Appendix 3G. A new bi-directional cab signal system will be provided on all four tracks between Clark Junction and Montrose Interlocking, up to the house limits.

New AF track circuits and impedance bonds for track circuits located within house limits will be provided. All wayside equipment will be installed in permissible areas.

Worker Ahead warning systems will be provided for Sheridan station area. Worker ahead warning systems will consist of two sets of independent zones, NM1 and NM2, and NM3 and NM4 from Grace to 400 ft. north of Irving Park. Intermediate control boxes will be provided at each right-of-way access point at Sheridan Station.

3.1.9.9 Montrose Interlocking

New systems and controls will be provided including cab control circuits for the final CSI block design, line circuits, and reversible traffic circuits from Addison Audio House north to Winona Relay Room. Traffic controls will be interfaced with Clark Junction Interlocking, Argyle Interlocking for tracks NM2 and NM3, and Thorndale Interlocking for tracks NM1 and NM4.

Reversible cab signal systems will be provided for tracks NM2 and NM3 from Argyle to Montrose and for tracks NM1 and NM4 from Montrose to Thorndale including interfaces with Argyle and Berwyn Interlockings. A new control panel to reflect final track circuit configurations will be provided.

New AF track circuits and impedance bonds for track circuits located within house limits will be provided. All wayside equipment will be installed in permissible areas.

Worker Ahead warning systems will be provided for Wilson station area. Worker ahead warning systems will consist of two sets of independent zones, NM1 and NM2, and NM3 and NM4 from Sunnyside to Leland. Intermediate control boxes will be provided at each right-of-way access point at Wilson Transfer Station.

3.1.9.10 Argyle Interlocking

New interlocking control system equipment will be provided at the Argyle Interlocking based on the new track configuration. A local control panel booth will be provided capable of remotely controlling Berwyn Interlocking and Montrose Interlocking.

3.1.9.11 Berwyn Interlocking

New interlocking control system equipment will be provided at the Berwyn Interlocking based on the new track configuration. A local control panel booth will be provided capable of remotely controlling Argyle Interlocking and Thorndale Interlocking.

3.1.9.12 Winona Relay Room

New systems and controls will be provided including cab control circuits, line circuits, and reversible traffic circuits from Montrose Interlocking north to Thorndale Interlocking. An indication panel will be provided in the relay room for Berwyn and Argyle Interlockings and all track circuits located within the house limits. The Berwyn and Argyle Interlockings may be configured as a single redundant vital microprocessor interlocking system.

New AF track circuits and impedance bonds for track circuits located within house limits will be provided. All wayside equipment will be installed in permissible areas.

3.1.9.13 Thorndale Interlocking

New systems and controls will be provided including cab control circuits for the final CSI block design and line circuits, from Winona Relay Room north to the house limits. Traffic controls will be interfaced with Jarvis East and Jarvis West for all four tracks, Berwyn

Interlocking for tracks NM2 and NM3, and Montrose Interlocking and Winona Relay Room for tracks NM1 and NM4.

New AF track circuits and impedance bonds for track circuits located within house limits will be provided. All wayside equipment will be installed in permissible areas.

Reversible cab signal systems will be provided for all four tracks from Thorndale north to Jarvis, on tracks NM2 and NM3 from Berwyn north to Thorndale, and on tracks NM1 and NM4 from Montrose north to Thorndale including interfaces with the Winona Relay Room. A new control panel to reflect final track circuit configurations will be provided.

3.1.9.14 Signal System Improvements between Thorndale and Jarvis

A new bi-directional cab signal system will be provided on all four tracks between Thorndale Interlocking and Jarvis East and Jarvis West Interlockings, as determined by the final CSI block design. The number and location of new signal houses/rooms between Thorndale and Jarvis will be determined by the final block design and the limitations of the new AF track circuit equipment. Houses will be installed in permissible areas.

New AF track circuits and impedance bonds for track circuits located between the Thorndale Interlocking and the south limit of Jarvis East and Jarvis West Interlockings will be provided. All wayside equipment will be installed in permissible areas.

Worker Ahead warning systems will be provided for Loyola station area. Worker ahead warning systems will consist of two sets of independent zones, NM1 and NM2, and NM3 and NM4 from 500 ft. north of the Granville station platform north to 50 ft. south of the Morse station platform. Intermediate control boxes will be provided at each right-of-way access point at Loyola Station.

Worker Ahead warning systems will be provided for the Chase Ave. curves. Worker ahead warning systems will consist of two sets of independent zones, NM1 and NM2, and NM3 and NM4 from 50 ft. north of the Morse station platform to 50 ft. south of the Jarvis station platform.

3.1.9.15 Jarvis Relay Room

New systems and controls will be provided including cab control circuits and line circuits, from Thorndale north to the house limits. Cab signal controls and loss of shunt monitoring are required for new AF track circuits installed within the Jarvis relay room as part of a new vital processor system supported by new non-vital system. Traffic controls will be interfaced with Thorndale Interlocking for all four tracks.

The existing vital and non-vital processor systems will be modified to reflect changes in the block design and traffic locking system between Jarvis and Thorndale. The existing vital processor interlocking system will continue to control the Jarvis East and Jarvis West interlockings and be modified to interface with the new vital processor system.

Reversible cab signal systems will be provided for all four tracks from Thorndale north to Jarvis. A new control panel and a new model board to reflect final track circuit configurations will be provided.

Architectural, mechanical, electrical, plumbing and fire protection improvements will be provided at Jarvis to make the facility sound and compliant with codes and the Technical Requirements.

3.1.9.16 Howard South Interlocking and Howard North Interlocking

Modifications will be made to the following systems and controls to reflect the final block design: cab control circuits and line circuits. Non-vital indications and software will be provided to reflect additional track circuits required by the final block design. New Local Control Panel faceplates will be provided in the Howard South Relay House, Howard North Relay Room and Howard Tower to reflect final track circuit configuration.

The existing vital and non-vital processor systems will be modified to reflect changes in the block design and traffic locking system between Jarvis and Thorndale.

3.1.9.17 Signal Communications Network

New fiber optic cable will be provided between Barry Interlocking and Howard Tower on the Red Line and between Clark Junction and Southport Relay House (RV29RH) on the Brown Line along with a new Signal Communications System that will interface with new non-vital systems linked to adjacent signal houses, the Control Center, and CTA Signal Maintenance networks. The Signal Communications System will include new Ethernet switches, routers, fiber modems and interface panels. The Signal Communications System will also include interfaces to CTA's Communications Backbone System in the Clark Communications Building and the Howard Tower Communications Room.

Express vital and train detection cabling and the signal fiber optic cables will be provided linking each of the following relay houses, rooms and other facilities.

A. Barry Interlocking
B. Clark Junction Interlocking
C. Clark Tower
D. Kenmore Interlocking
E. Seminary/Lakewood Interlocking
F. Southport Relay House
G. Addison Audio House
H. Montrose Interlocking
I. Wilson Station Signal Maintainer Room
J. Winona Relay Room
K. Thorndale Interlocking

L. New CSI Relay House(s) between Thorndale and Jarvis

M. Jarvis Relay Room

N. Howard South Relay House

O. Howard North Relay Room

P. Howard Tower

The Rail Service Management System database will be modified to reflect the new track circuit configurations.

3.1.9.18 Signal Maintenance Monitoring and Diagnostic Systems

A. New monitor units to display system-wide status and local status will be located at the new Clark Junction, Kenmore, Addison, Winona Relay Room, and Jarvis Relay Room. Wilson Maintainer Room, Montrose and Thorndale will be interfaced to the new system and provided with updated software.

B. Maintainer workstations will be provided at Clark Tower Maintainer Room, Jarvis Maintainer Room, Howard Tower Maintainer Room, and the CTA Control Center – 120 N. Racine.

C. A vital track circuit loss-of-shunt detection subsystem utilizing track circuit sequencing logic will be provided including outputs to the Signal Network and Control Center Alarms. The system will automatically disable affected track circuits in the vicinity of the failed track circuit.

D. A red signal overrun detection subsystem will be provided including output alarms of the system to the Signal Network and Control Center Alarms. A detected overrun will disable all cab codes within the interlocking.

E. Both the vital track circuit loss-of-shunt and red signal overrun represent new functionality for the CTA signal system. Contractor will provide modifications to the Rail System Management System (RSMS) and Centralized Traffic Control (CTC) servers to accommodate the new data from the Signal Network (HMI server) on both vital track circuit loss-of-shunt and red signal overrun and provide for the alarm outputs in the Control Center. Contractor will utilize an appropriate vendor that has at least 5 years' experience in providing modifications to QEI systems.

F. The Worker Ahead warning systems will be modified as noted above in Sub Parts 3.1.9.3, 3.1.9.8, 3.1.9.9, and 3.1.9.14. Worker Ahead warning systems provide output status and alarms to the Signal Network and will need to be expanded to provide output status and alarms to the Control Center.

G. Contractor will provide modifications to the Rail System Management System (RSMS) and Centralized Traffic Control (CTC) servers to accommodate the new data from the Signal Network (HMI server) on Worker Ahead warning system status and provide for Control Center Alarms and graphic display in QuicTrak.

Contractor will utilize an appropriate vendor that has at least 5 years' experience in providing modifications to QEI systems.

3.1.9.19 Decommissioning

Facilities will be decommissioned after CSI is complete as follows:

A. The Addison Interlocking will be decommissioned and the relay house and all special trackwork removed. Track renewal is included on all four tracks including new standard ties, track fasteners, timber guard, SIG, other track materials (OTM), rail, contact rail, and insulator chairs. A new continuous railing and platform decking will be provided on the existing relay house structure. Provide new footwalk transitioned into existing. Drip pans will be removed and reinstalled where they exist. The decommissioning of the Addison Interlocking is also subject to the requirements of Sub Part 3.1.9.D.

B. The Loyola Audio House will be decommissioned and removed, if not used in the Permanent CSI configuration. The Loyola Audio House may remain in service if the signal system is configured to meet the CSI headway and safe braking criteria.

C. The Sheridan Audio House (N291RH) will be decommissioned and removed. Continuous platform decking will be provided on the existing structure.

D. The Morse Audio House (N501RH) will be decommissioned and removed.

E. The Berwyn Audio House will be decommissioned and removed.

F. Clark Junction Relay House will be sequentially decommissioned as new Clark Junction Interlocking is placed in service. Equipment within the old Clark Junction Relay House will be completely removed and the House is to remain.

G. All abandoned impedance bond brackets, signal and route selector mounting brackets, and pedestal foundations will be removed. Abandoned platforms at open deck facilities will remain with new decks and continuous railings; abandoned platforms at ballasted facilities will be removed.

3.2 Allowances

This Part describes requirements governing Allowances.

3.2.1 Facility Aesthetic Allowance

The Facility Aesthetic Allowance will be used for aesthetic enhancements of required elements for station facades, platform canopies, noise barriers, aerial structure elements, and new and repaired retaining walls and abutments. The Facility Aesthetic Allowance will be used by CTA on Work proposed by Contractor to enhance the visual expression of Project elements in an aesthetically pleasing, distinctive, and fully-integrated manner. Consideration will be given to element shape and size, alternate material, surface treatment, and lighting. The Allowance will be used for permanent elements of Work only.

Generally, a sheltered façade for each station, weather-tight at accessible entrances; platform canopies with shed roofs and skylights; galvanized steel members; sealed new or repaired concrete surfaces; lighting at required levels are the point from which enhancements will be introduced using the Facility Aesthetic Allowance. The Allowance will not be used for site preparation, foundation elements, and/or utility entry services up to and including distribution panels.

The Facility Aesthetic Allowance will not be used by Contractor for constructed elements required by Part 3 Project Requirements and Part 4 Technical Requirements. The Allowance will not be used for design of required elements or for design of proposed Allowance enhancements.

The Concept designs required in Part 2.4 Design Management Requirements will include required components and aesthetic enhancements that provide a unified scheme for the Project. The Concept schemes presented will be within a budget defined by the pro-rated portion of Contractor’s Lump Sum Price attributed to Part 3 and Part 4 requirements prior to enhancement plus the value of the Facility Aesthetic Allowance. Concepts presented will be constructible within the Schedule. Contractor will be reimbursed for the actual cost of Construction Work authorized under the Allowance plus overhead and profit as indicated in Sub Part 2.1.10.

3.2.1.1 General Requirements

Contractor will provide a prototypical design of a façade for a Main Stationhouse and Auxiliary Stationhouse within a historic district. Contractor will provide design of a prototypical canopy to be used at all four stations.

The façade and canopy enhancements at each station will start from the prototypical design. Enhancements may include additional or revised elements that improve the customer visual or physical experience. Enhancements may possess unique characteristics to reflect the context of the neighborhood and/or create an identity for the station within the established framework of the typical prototype design.

The aesthetic treatments for structural elements and noise barriers may be applied or integral to the elements. Design and style for elements may vary across the differing

geographies of the Project but will share uniformity for serviceability reasons. Lighting may enhance other aesthetic elements or provide a separate unique visual expression.

Aesthetic enhancement will be concentrated on areas with the greatest impact including station entrances, viaducts, and areas within 20 ft. of cross streets.

Contractor will provide a detailed narrative outlining how they are providing the enhanced aesthetic designs as a part of the Concept submittal. This narrative will detail Contractor's approach to the portions of the Project noted in Sub Parts 3.2.1.2 through 3.2.1.4 including the coordination of systems, integration of elements into a cohesive design, and adherence to all technical requirements. As required for all Work, enhancements must be maintainable, durable and long-lasting and be fully coordinated with other systems. System components must be concealed. Specific to lighting elements, the following will be met:

A. Incorporate new, energy-saving technologies
B. Be programmable and controllable from an electrical room of the station or nearest CTA facility
C. Have a lifespan of 25 years
D. Be mindful of pedestrian and vehicular traffic, taking into account appropriate safety measures
E. Require the least amount of intrusion into the structure, minimize the likelihood of vandalism, and ensure the ongoing maintainability without the need for difficult or onerous access arrangements

3.2.1.2 Façades

Façade is defined as the north or south, street-facing portion of a stationhouse, as well as the continuation north or south into the adjacent alley. The façade includes the stationhouse awning at each station. At Main Stationhouses the façade returns 20 ft.; at Auxiliary Stationhouses the façade returns 15 ft.

The façade will provide a continuation of the rhythms and proportions of existing street façades. Contractor will consider pedestrian scale when developing design of the façade. Contractor will consider columns and other vertical elements with track structure located directly interior to the façade to ensure the track structure does not impede traffic flow.

3.2.1.3 Canopies

Canopy will provide shelter for the platform's full length and will be sloped to drain to the track deck.

Canopy structure will be designed to integrate lighting, PA speakers, cameras, utilities, and distribution in a concealed fashion where feasible, with appropriate access incorporated into the design.

Contractor will consider the quality of structural connections if connections are visible. Field welding of connections will not be accepted in order to minimize failure of field-applied finishes.

3.2.1.4 Elements

Individual elements to be considered for aesthetic enhancement include:

A. Structural columns in RPB area

B. Structural columns in the LBMM area

C. Retaining walls in LBMM area

D. Viaducts in LBMM area

E. Noise barriers in RPB area

F. Noise barriers in LBMM area

G. Visually impactful retaining walls and abutments at non-station viaducts in the LBMM area

H. Aesthetic treatment of other surface elements beyond what is required in the Contract as determined by CTA

I. Lighting

3.2.2 Owner's Contingency Allowance

Use of this Owner's Contingency Allowance will be at the sole discretion of CTA; Contractor has no right to utilization of the Owner's Contingency Allowance. CTA may, at any time by notice to Contractor from CTA, decrease or eliminate the Owner's Contingency Allowance. The Allowance may also be increased by CTA pursuant to a Change Order. Contractor will be reimbursed for the actual cost of the Work provided except as noted below for Claims.

3.2.2.1 Community Enhancement

The Owner's Contingency Allowance may be used for community enhancements at street level improvements to enhance the community experience in the RPB and LBMM areas. Some elements that may be in consideration for installation under this Allowance include:

A. Ornamental fence beyond the limits required in Part 4

B. Neighborhood identifying signs

C. Pavement in areas not required to be paved per Part 4 but that may be used by the community for activities

D. Utility connections in areas the community may use for activities

E. Aesthetic treatments for various elements beyond those required in Part 4 or included in Part 3.2.1 Facility Aesthetic Allowance

F. Other street level enhancements in RPB and LBMM areas as determined by CTA

Design associated with community enhancement elements will be paid out of this Allowance.

3.2.2.2 Technology Advancement

The Owner's Contingency Allowance may be used for upgrades to equipment from what is specified in Part 4 to technology that is current and compatible with the CTA system and installed utilities. Costs for technology advancement are limited to the incremental cost of equipment and infrastructure revisions only to the extent required by the revised equipment selection.

3.2.2.3 Owner's Contingency

The Owner's Contingency Allowance may be utilized to compensate Contractor for certain Work, in connection with either (a) the CTA's acceptance of Contractor's proposal for Work pursuant to the Contract, or (b) the CTA's determination that additional compensation is due to Contractor in respect to an outstanding Claim for Cost and Delay Events or such other Claim as may be approved. For additional compensation due to Contractor in respect to an outstanding Claim for Cost and Delay Events or such other Claim as may be approved, the provisions of Part 1 will apply.

3.2.3 Shared Contingency Allowance

The Shared Contingency Allowance will be used to pay for Relief Events associated with conditions that are Unforeseen Environmental Impairments, Unforeseen Geological Impairments, and/or Unforeseen Utility Impairments (Impairments) as defined in Part 1. The Shared Contingency Allowance will be used to pay the cost of the Work attributed to Impairments. The minimum of any Impairment that can be charged against the Allowance is $25,000. Contractor will be responsible for each Impairment to be charged against the Allowance where the cost is less than $25,000, the cost of which will not be reimbursed. The Shared Contingency Allowance will apply to the total value of each Impairment where the cost is greater than or equal to $25,000.

Upon Final Completion, any balance remaining in the Shared Contingency Allowance will be split between CTA and Contractor with 50 percent to be paid to Contractor and 50 percent to remain unspent. The request for such amount should be provided in Contractor's final pay application. If the Shared Contingency Allowance is exhausted and additional Impairments where the cost is greater than or equal to $25,000 are encountered, these will become Relief Events as described in Part 1, which might include payment from the Owner's Contingency Allowance as noted in Sub Part 3.2.2.3.

3.2.3.1 Environmental Impairments

The scope for removal and legal disposal of any unforeseen environmental impairments including additional fill material if the impairment results in an over-excavation will be covered under this Allowance.

3.2.3.2 Geological Impairments

The scope for removal and legal disposal of any Unforeseen Geological Impairments or incremental cost of modification to the structure caused to mitigate a condition due to Unforeseen Geological Impairments will be covered under this Allowance.

3.2.3.3 Utility Impairments

The scope for removal or relocation of Unforeseen Utility Impairments and CTA Underground Systems Infrastructure will be covered under this Allowance subject to conditions described below.

Utilities that meet the definition of Unforeseen Utility Impairments and conflict with Permanent elements of the Work, and therefore must be removed or relocated, are included in the scope of Shared Contingency Allowance. The scope is limited to approved Work performed by, or at the direction of, the Utilities. Compensation for Work will be in accordance with the terms of any existing agreements between the Utility and CTA and applicable tariffs. Absent of any existing agreement or tariff, CTA reserves the right to negotiate an agreement with the provider as part of the Expenditure Authorization Request approval process. The costs for Utility removal or relocation to accommodate the means and methods chosen by Contractor will not be paid out of the Allowance. "Means and Methods" relocations include any Utility that Contractor chooses to relocate rather than protect in place.

3.2.4 Revenue Equipment Installation and Utility Service Charges Allowance

The Revenue Equipment Installation and Utility Service Charges Allowance will be used to pay for pass-through costs from Utilities or CTA's revenue equipment vendor. Costs for revenue equipment installation and utility service charges are limited to accurately prepared invoices from the respective vendor or utility per the applicable terms of CTA's agreements with the respective vendor or existing agreements with the utility, if any, and applicable tariffs. Contractor will be reimbursed for the actual amount of invoices submitted that reflect Work performed by the provider or authorized subcontractor to the provider.

3.2.4.1 Revenue Equipment Installation

The cost of labor by other CTA contractor to remove, store, and install existing and new revenue equipment at Temporary and Permanent stations will be covered under the Revenue Equipment Installation and Utility Service Charges Allowance. Termination of power and data connections and testing will also be covered under this Allowance. Revenue equipment will be separately supplied by CTA.

The cost of preparing the Work site for the installation of revenue equipment and providing utility services to the point(s) of revenue equipment installation will not be paid out of the Allowance.

3.2.4.2 Utility Service Charges

The cost to CTA of Utility Owners providing services for engineering and installing new or relocating existing service to CTA facilities is to be paid for under this Allowance.

These service charges are limited to the applicable costs of providing utility service. The scope of Work under Utility Service Charges only includes costs that are to be borne by CTA for such service charges.

Work performed by Contractor in conjunction with provisioning Utility services will not be paid out of the Allowance. Utility service charges for service to Contractor facilities will not be paid out of the Allowance.

3.3 Operational Requirements

Safe, efficient public transportation is essential to the social and economic well-being of all the people of the Chicago metropolitan area. CTA operates a network of interconnected bus and rail lines to serve customers in Chicago and 40 suburbs. The transit network is planned and implemented to provide the greatest utility to its customers through integrated connectivity within and between modes.

3.3.1 Ridership

The CTA system carried approximately 515 million riders in 2015. Of that total, approximately 241 million ride the rail system's eight lines and the remainder use the bus system.

The Red Line is the busiest of CTA's eight rail lines, serving approximately 78 million passengers in 2015. Of this total, approximately 43 million use stations on the portion of the line between Fullerton and Howard stations.

On an average weekday in 2015, the rail system carried approximately 767,000 passengers. Saturday service accommodated approximately 479,000 passengers, and Sunday service accommodated approximately 361,000 passengers.

3.3.1.1 Station Entrants

Stations proposed to be rebuilt as part of the Project had the following annual ridership in 2015:

Lawrence – 1,139,000

Argyle – 1,078,000

Berwyn – 1,178,000

Bryn Mawr – 1,605,000

3.3.1.2 Intermodal Transfer

CTA's system is one of integration. That is, passengers are able to use both modes (rail and bus) in combination to travel from origin to destination. The system is designed to take advantage of connections between modes and within like modes to make travel more efficient for passengers. Convenient connections between bus routes and rail lines at train stations are essential. Customers transfer between buses and trains at Lawrence, Berwyn and Bryn Mawr stations as described in Sub Part 3.3.4.

3.3.2 System Continuity

3.3.2.1 Control and Supervision

CTA operates a scheduled railroad. During normal operations, trains depart their original terminal by schedule and do not require any special clearance or permission to leave or

for track occupancy. Train operations are monitored by a combination of controllers located remotely in the Communication/Power Control Center and locally by rail service supervisors along each route.

3.3.2.1.1 Control Center

The CTA Communication/Power Control Center (Control Center) is currently located at 120 N. Racine Avenue and is staffed around the clock. Controllers and Control Center managers can be reached by telephone or by two-way radio.

3.3.2.1.2 Local Control

Every CTA interlocking is provided with a means to electrically operate the switch machines and enter route requests manually through the use of a Local Control Panel (LCP). The LCP provides indications of track circuit occupancy, switch position, direction of traffic, and signal aspects to the tower.

A. Tower

The term “tower” refers to the facility housing the manual control panel used by personnel to establish train routing at an interlocking. An interlocking is a group of switches, locks, trips and signals through a junction, crossover or crossing, arranged to permit train movements without conflict. The tower may or may not be elevated. The towerman’s main responsibility is to ensure that trains are routed properly and safely in order to prevent accidents and delays. To accomplish this, the towerman operates electrical systems in a control tower to operate track switches and signals in an interlocking. This enables the towerman to route trains according to prearranged schedules, special orders, safety regulations, and practices. Howard and Clark towers in the Project area are staffed 24 hours a day to control adjacent interlockings. Howard can establish routes at Howard Terminal, Howard Yard and Jarvis. Clark can establish routes at Clark Junction, Addison, Lakewood, Seminary, Barry, Oakdale, Altgeld, Belden, Webster and Armitage.

B. Relay House

Wayside train control equipment is installed in houses and rooms located adjacent to the various interlockings. The signal houses or rooms are located within close proximity of the equipment controlled to assist with maintainability of the signal system. The signal houses/rooms are commonly referred to as Relay Rooms, Relay Houses or Audio Houses.

3.3.2.2 Service Reliability

CTA’s service must be reliable during normal operations and special events. More than 1.5 million customers use CTA’s integrated transit network each weekday, and the loss of any part of the system can have a ripple effect on the remainder. Plans for service

continuity during construction must be comprehensive in nature and accommodate riders so as not to disrupt the integrated system.

3.3.2.3 Physical System Compatibility

Track (including alignment and clearances), traction power, communications, and signal systems used in the Temporary and Permanent installations must be fully compatible with existing infrastructure components and railcars to provide for the uninterrupted provision of revenue service. Like components are to be specified and installed wherever possible to facilitate efficient future maintenance and to minimize future operational cost.

3.3.2.4 Revenue System

CTA's revenue equipment at train stations is part of an integrated fare collection system. Any modifications to a station will be reviewed by CTA as part of the design review process. In order to make any Temporary facilities useable by passengers, fare controls will be required. Revenue equipment for Permanent facilities must meet CTA standards and will be purchased by CTA for the Project.

3.3.3 System Function

3.3.3.1 Control Center Operation

The CTA Control Center is staffed with Controllers to remotely monitor and direct bus, rail, traction power, customer service and security system operation.

Customer service controllers can make platform and station announcements throughout the system or at specific stations during events and incidents using the public address system at each station.

Controllers can remotely monitor CCTV camera coverage in real time to monitor daily activities, events, and incidents. Controllers also monitor intrusion alarms and Help Point Telephone calls.

Controllers can remotely remove traction power as well as see problems within the traction power distribution system.

Controllers coordinate rerouting buses and trains during planned and emergency events.

Controllers rely on two-way radios to communicate with rail and bus operators, customer service assistants, and maintenance personnel, and are also able to communicate with bus operators via electronic on-vehicle media.

3.3.3.2 Rail Service Operation

Operating personnel are governed by rules that are prescribed by rule books, Executive Orders, Standard Operating Procedures (SOP) and bulletins. SOPs are developed and implemented based on historic standards and contemporary revision.

In the proposed construction corridor, CTA operates a north-south railroad. Track direction is defined as southbound or northbound rather than westbound or eastbound. During normal operation, trains operate on the right-hand track.

On the four-track right-of-way of the North Main Line, used by Red, Brown, and Purple Express lines, NM1 and NM2 are the normal southbound tracks while NM3 and NM4 are the northbound tracks. The proposed NM5 will be the new Brown Line connection to the proposed bypass track.

On the two-track Ravenswood Branch, RV1 is the normal southbound track while RV2 is the normal northbound track.

Reverse running is only done when track access occurrences or other special circumstances require it and is not part of scheduled service.

3.3.3.2.1 Vehicles

CTA's revenue railcar fleet is comprised of three series of railcars: 2600 series from the Budd Company, 3200 series from Morrison Knudsen, and 5000 series from Bombardier. CTA is also in the process of procuring a fourth series of railcar, the 7000 series, from CSR Sifang America JV.

Red and Purple line revenue service is provided by 5000-series railcars. Brown Line revenue service is provided by 3200-series railcars.

However, given that CTA's only heavy maintenance facility, Skokie Shops located north of the Project area, is accessed via the North Main Line, any series railcar may operate along any track in the Project area at any time.

CTA additionally maintains a non-revenue fleet of maintenance equipment, including flat cars, railborne derricks, ballast cars, production tampers, track stabilizers, and ballast regulators, which may operate through the Project area at any time.

3.3.3.2.2 Red Line

The Red Line operates over roughly 22 miles of track between Howard Terminal at the north end and 95th Terminal on the south end. On the North Main Line in the Project area between Howard and Armitage, the Red Line operates southbound over NM2 and northbound on NM3.

The Red Line makes both northbound and southbound stops at 33 total stations between Howard and 95th. Within the Project area, the Red Line makes northbound and southbound stops at Howard, Jarvis, Morse, Loyola, Granville, Thorndale, Bryn Mawr, Berwyn, Argyle, Lawrence, Wilson, Sheridan, Addison and Belmont.

The Red Line operates 24 hours per day, 365 days per year and does not have any scheduled shut downs.

The Red Line normally runs eight-car consists except during overnight hours, when four car consists are used.

3.3.3.2.3 Purple Line Express

The Purple Line Express operates express service over approximately 12 miles of track between Howard Terminal and the Loop. All express service begins and ends at Howard Terminal. On the North Main Line, the Purple Line Express operates southbound over NM1 and northbound on NM4.

The Purple Line Express makes both northbound and southbound stops at 10 stations between Howard and the Loop. The Purple Line Express makes northbound and southbound stops at these stations within the Project area: Howard Terminal, Wilson, Belmont, Wellington, Diversey and Fullerton. During certain home Cubs games and other special events, the Purple Line Express additionally makes southbound stops at Sheridan station.

The Purple Line Express operates during weekday rush periods only using six-car consists.

3.3.3.2.4 Brown Line

The Brown Line operates over about 10 miles of track between Kimball Terminal and the Loop. Service begins and ends at Kimball Terminal at the north end of the line. The Brown Line operates southbound on RV1 from Kimball to Clark Junction. At Clark Junction, the Brown Line enters the North Main Line and proceeds south to the Loop over NM1. The Brown Line operates northbound over NM4 from Armitage to Clark Junction where it is routed across NM3, enters RV2 and proceeds toward Kimball.

The Brown Line stops at 19 stations between Kimball and the Loop. In the Project area, the Brown Line makes northbound and southbound stops at Fullerton, Diversey, Wellington, Belmont and Southport stations.

The Brown Line operates daily from early morning through late night. Several late night/early morning trains are scheduled to turn from southbound to northbound after arriving at Belmont station. The Brown Line is served by eight-car consists during rush hours. During non-rush hours and weekends, four-car consists are used.

3.3.3.2.5 Clark Tower

Clark Tower houses the main control panel for Clark Junction Interlocking. The Clark Tower control panel can additionally control Addison, Barry, Altgeld, Belden and Webster Interlockings on the North Main Line and Lakewood and Seminary Interlockings on the Ravenswood Branch.

Clark Tower is currently operated by a Towerman 24 hours per day, 365 days per year. The Towerman is responsible for establishing routes through Clark Junction. If called for due to an emergency or planned reroute, the Towerman may also operate Addison, Barry, Altgeld, Belden, Webster, Lakewood and Seminary Interlockings.

3.3.3.2.6 Clark Junction Operation

Normal train operation at Clark Junction sees Red Line trains routed straight through on Tracks NM2 and NM3, Purple Line trains routed straight through on Tracks NM1 and NM4, and Brown Line trains converging and diverging. Southbound Brown Line trains join NM1 at Clark Junction, while northbound Brown Line trains diverge first from NM4 to NM3, then to RV2 via a turnout and crossing. Red and Purple line trains cannot operate through Clark Junction while a northbound Brown Line train is crossing from NM4 to RV2.

3.3.3.2.7 Irregular Operation

Irregular operation describes other than normal train routes and stopping patterns resulting from planned or unplanned situations.

A. Reverse Running / Single-track

To accommodate scheduled construction and maintenance activity, or to continue service around an impassable condition, CTA may operate trains in both directions on a single-track. Single-track operation is the bidirectional operation of trains on one track. A single-track zone is the section of track in which this operation occurs. The purpose of a single-track zone is to maintain safety while minimizing service delays. Except in emergencies, single-track zones are typically instituted during overnight hours and weekends. The authority to implement a non-emergency single-track zone is provided within a service bulletin announcing and explaining the single-track zone. Rail Operations prepares and issues these bulletins to all departments and personnel concerned prior to establishing single-track operation. While possible, this type of operation is not desirable because it has a significant impact on scheduled service and system continuity. Reverse running can have a lesser impact on service depending on the presence or absence of bidirectional signaling.

B. Reroute

A reroute occurs when train service is operated on a track other than its normal track. Reroutes may involve a different stopping pattern for trains and a related effect on customer service.

C. Train In Emergency

An application of the train's brakes not initiated by the operator is considered a "train in emergency". In such scenarios, there are specific steps an operator must take to determine the nature of the brake application. When this occurs, a delay to service typically ensues, the length of which depends on the results of the operator's investigation of the problem and steps necessary to correct the cause of the "train in emergency."

D. Train Running Express

When a train or trains become delayed, controllers or supervisors will take measures to restore regular service. One such measure is to authorize an operator or operators to bypass stations where they normally stop to board and alight passengers. This is called “train running express”. In such cases, the controller may direct flagmen at Work zones to clear the right-of-way so that trains on express runs are not further delayed.

E. Relay House Control Panel Use

Under normal operations, relay house control panels are in the automatic mode. In irregular operations, CTA may assign staff to manually control interlockings using the relay house control panel.

F. Pin/Wedge Switch

Interlocking failure can result in a situation whereby personnel may be directed to physically prevent a switch or switches from operating by placing a wooden wedge in the switch points. If the interlocking is so equipped, personnel may also be directed to manually lower the associated trips and use a hook to keep them from raising.

3.3.3.2.8 Worker Ahead Warning System

The Worker Ahead (WA) Warning System is a series of wayside warning lights located in areas of limited visibility which alert Operators that workers are present on or near the track ahead. Whenever personnel are present on the right-of-way within a Workers Ahead warning zone, the WA System must be activated. The WA System must be used in addition to any slow zones, even if part or all of the slow zone overlaps or is located within the Workers Ahead warning zone. The system, when activated by workers using a track level switch, causes a WA signal to flash yellow and reduces the maximum allowable cab signal speed. A WA Warning System can be activated from either end and at intermediate points where workers are likely to enter. The WA system provides a level of supplemental protection to roadway workers on or adjacent to the roadway only in the normal direction of travel. WA installations do not relieve or reduce the responsibility of employees to protect themselves and others by complying with pertinent safety rules and standard operating procedures.

3.3.3.2.9 Radio Communication

CTA uses two-way radios for communication. Radios are used by train Operators, Customer Service Assistants (CSAs), maintenance employees, and associated supervision. Radio reception is required at all locations along the rail right-of-way and within all stations and maintenance facilities.

3.3.3.3 Station Operation

3.3.3.3.1 Normal Operation

Lawrence, Argyle, Berwyn, and Bryn Mawr stations serve the northbound and southbound Red Line. Stations are open 24 hours per day, 365 days per year.

Each staffed station entrance is equipped with fare vending machines to allow customers to check fare balances, add value to existing fare cards, or purchase new fare media.

Each station is staffed by at least one CTA CSA to assist customers with various issues including the CTA system, fares, schedules, routes, and transfer points. The CSA is responsible for inspecting, troubleshooting and reporting defects with station equipment including elevators, escalators, Help Point Telephones, station PA system, signs and ADA accessibility equipment. The CSA communicates with the Control Center to report accidents, suspicious activity, disturbances, threats, fire, unusual occurrences, or other emergencies. The CSA communicates with CTA customers in the station using the PA system.

CTA personnel complete light cleaning of stations, including mopping and trash removal. Mopping is completed using rolling mop buckets. Trash is collected using typical 96-gallon rolling trash carts. Both mop buckets and trash carts are maneuvered throughout the station, including in elevators, along platforms, and through corridors to the Janitor's Closets and Trash Rooms, respectively. Stations are periodically deeply cleaned including pressure washing floors, walls, and ceilings.

3.3.3.3.2 Irregular Operation

In the event that a station is closed, customers will be prevented from accessing both main and auxiliary stationhouses by locking doors, fare controls or gates. If very large crowds are expected, escalators will be deactivated.

3.3.3.4 Bus Service Connections

Lawrence station is a transfer point to the 81 Lawrence bus route, both eastbound and westbound. Additionally, the 36 Broadway bus route stops in both northbound and southbound directions at Broadway and Lawrence Avenue, about one block west of Lawrence station.

Argyle station is not a direct transfer point with any bus routes. The 36 Broadway bus route stops in both northbound and southbound directions at Broadway and Argyle Street, about one block west of Argyle station.

Berwyn station is a transfer point to the westbound 92 Foster and southbound 146 Inner Drive/Michigan Express bus routes. Berwyn is also the terminus of both these bus routes. Additionally, the 36 Broadway bus route stops in both northbound and

southbound directions at Broadway and Berwyn Avenue, about one block west of Berwyn station.

Bryn Mawr station is a transfer point to eastbound and westbound 84 Peterson buses, and the east terminal for the 84 Peterson route. The 36 Broadway bus route stops in both northbound and southbound directions at Broadway and Bryn Mawr Avenue/Ridge Avenue, about one block west of Bryn Mawr station.

3.3.3.5 Emergency Requirements

3.3.3.5.1 Evacuation

In the event of a train evacuation, traction power will be removed remotely from the Control Center prior to beginning. Upon receiving direction from the train operator, passengers will exit the train onto the footwalk. They will then walk along the footwalk to the nearest rail station platform. Passengers will enter the platform using the track access stair at the end of the platform. If necessary, passengers will then exit the station using usual egress paths.

3.3.3.5.2 Fire Fighting

CTA has procedures in place for employees to follow regarding fires on the rail system. Employee actions depend on the nature of the incident.

A. Track Level

All CTA trains are equipped with two kinds of fire extinguishers: water and dry chemical. Operating employees are trained in the use of both. Most fires at track level are the result of debris or a wood crosstie igniting, and these types of fire are usually small and contained. Employees are trained to extinguish them through the use of an extinguisher on the train. In cases where the employee feels they cannot extinguish the fire using the train's extinguisher(s), they may request that assistance be sent to the scene. In all cases, the controller is notified of the situation.

B. Station

All CTA stations are equipped with a dry chemical fire extinguisher. Assigned employees are trained in its use. In cases where the employee feels they cannot extinguish the fire using the station's extinguisher(s), they may request that assistance be sent to the scene. In all cases, the Controller is notified of the situation.

3.3.3.5.3 Bad Order Train

On occasion, a CTA train develops a defect during revenue service operation. When this occurs, the trouble must be located and action taken to allow the train to proceed to its destination, or in some cases, to a location where the train can clear the main

track. Operating crews are trained in resolving common train problems, and most situations are handled within minutes. However, there can be situations that require assistance to be sent to the scene in order to move the train.

3.3.3.5.4 Power Isolation

Generally, power removal should be prevented whenever possible. The need to remove 600 volt power from contact rails ranges from a planned removal (e.g., for Work on or near the right-of-way), to an unplanned emergency removal (e.g., for an emergency evacuation of a train). Any time there is immediate danger to employees' and/or customers' lives or property, procedures require the removal of power. However, removing power may hinder or prevent moving people and equipment to safety quickly. Customers may be inconvenienced, and a delay involving many trains may create an even worse situation than the existing problem. If the situation is not life-threatening and if time and safety allow, the Rail Controller will notify operators of trains in that power section and instruct them to remain berthed at a station (if already in a station), or to proceed to the next station (if between stations) and remain standing at that station. If the situation is life-threatening, the Power Controller will remove power immediately, regardless of train positions/locations. Situations may arise that require 600 volt traction power to be removed, and a length of contact rail shorter than a power section isolated. This requires the use of sectionalizing switches that are to be used only by qualified CTA employees. In some cases, power isolation may be accomplished by the removal of contact rail taps.

3.3.3.5.5 Camera Positioning / Viewing

All CTA stations and many intermediate locations are equipped with closed circuit television cameras that record activity. In addition, images may be viewed on a real-time basis at the Control Center and by others.

3.3.3.5.6 Elevator Detainment

Elevators have been installed in many CTA rail stations to accommodate all customers. They are open whenever the station is open to the general public. To ensure safety and ease of operation, the elevators have interior and exterior customer controls. These have both standard and Braille tactile signage, and speakers/microphones that enable communication between the Control Center and customers inside the elevator. Customer Service Representatives (CSRs) and Customer Service Assistants (CSAs) have a key to turn the elevator and elevator lights on and off. On occasion, an elevator malfunctions with passengers in the cab. All elevator control panels have a push-to-talk button for customers to use in an emergency. When the button is pushed, communication is established with the Communications/Power Control Center. When the call is answered by the Controller, the red light on the elevator control panel flashes. If the customer requests

assistance, the Controller will contact the CSR/CSA, security guard, or other appropriate personnel to assist. The control panel in the elevator also contains an alarm button. When pushed, an audible alarm sounds in the elevator shaft. Station personnel call the Controller when the alarm sounds and follow instructions given by the Controller.

3.3.4 System Function During Construction

3.3.4.1 Rail Service Operation

3.3.4.1.1 Vehicles

There are no changes to vehicles.

3.3.4.1.2 Operation

A. Red Line

The Red Line will continue to operate 24 hours per day, 365 days per year using eight-car consists except four car consists overnight as described in Sub Part 3.3.3.2.2. Normal station stops will be made except when specific staging plans dictate otherwise. Red Line trains must always stop at Fullerton, Belmont, Sheridan and Wilson.

B. Purple Line

The Purple Line will continue to provide weekday rush period service as described in Sub Part 3.3.3.2.3. Depending on the construction plan, Purple and Red line trains may share tracks in both directions during certain phases of the Project. If Purple and Red line trains share a track, it is anticipated that Purple Line trains will stop at all stations within the shared track zone.

C. Brown Line

The Brown Line will continue to operate as described in Sub Part 3.3.3.2.4. When Red and Purple line trains do not share tracks, Brown Line trains may operate through the existing at-grade junction. Brown and Red line trains must not share tracks during any weekday rush period any time the Red and Purple lines share tracks. Brown Line trains must always stop at Fullerton, Diversey, Wellington and Belmont stations during weekday rush periods. Brown Line trains must always stop at Fullerton and Belmont stations.

3.3.4.2 Tower Operation

3.3.4.2.1 Clark Tower

Clark Tower houses the main control panel for Clark Junction Interlocking. The Clark Tower control panel can additionally control Addison, Barry, Altgeld, Belden, Webster

Interlockings on the North Main Line and Lakewood, Seminary and the proposed Kenmore Interlockings on the Ravenswood Branch.

3.3.4.2.2 Montrose

Proposed Montrose Interlocking is designed to accommodate universal train routing, allowing for the merging and separating of Red and Purple line trains as may be required during certain phases of construction. A train on any of the four tracks can be routed to any of the other tracks within the interlocking limits. Under normal operations, the interlocking will be programmed to automatically route trains on the track to which their service is assigned.

3.3.4.2.3 Thorndale

Proposed Thorndale Interlocking is designed to accommodate universal train routing, allowing for the merging and separating of Red and Purple line trains as may be required during certain phases of construction. A train on any of the four tracks can be routed to any of the other tracks within the interlocking limits. Under normal operations, the interlocking will be programmed to automatically route trains on the track to which their service is assigned.

3.3.4.2.4 Winona Middle Track

Tail tracks at the proposed Winona Middle Track can be used to store disabled trains or non-revenue equipment. The Operator of a disabled train will select into Winona Middle Track using a wayside route selector. Both northbound and southbound trains could be stored.

Winona Middle Track may also be used to access a Temporary station platform during staged construction.

3.3.4.2.5 Ravenswood Branch Track RV2 Operation

The proposed Ravenswood Branch Track RV2 is used to store extra consists for special events or defective trains so as not to impede normal service. RV2 will also have utility in providing an alternate route for revenue trains in the event RV1 or NM5 are not useable. The Operator of a southbound extra consist or defective train will select into RV2 using a wayside route selector at Kenmore Interlocking. The Operator of a northbound extra consist or defective train will be routed across Clark Junction by the towerman or will select a route using the wayside route selector. Both northbound and southbound trains could be stored.

RV2 may be used to store non-revenue equipment. When non-revenue equipment is stored, traction power may be isolated and removed locally only on the portion of track used for storage. Traction power is isolated and removed using a wayside power isolation switch.

RV2 between Kenmore and Clark Junction interlockings may also be used to short-turn northbound Brown or Red Line trains so they can make another southbound trip without having to travel to the terminal. The Operator of a northbound short-turn train will be routed across Clark Junction by the towerman or will select a route using the wayside route selector, pull clear of the interlocking, change ends and proceed south.

3.3.4.3 Train Control Requirement

Temporary signal systems will provide continuous train detection and cab signal during each stage of construction, system modification or configuration change. Interlocking will be provided for any train movements over switches except when using existing, non-signaled crossovers during night and weekend Track Access Occurrences at Berwyn and the NM2-NM3 diamond at Granville with switch points clamped and spiked. Signals with train stops will be installed at strategic locations protecting: 1) normal train movements through passenger stations and within the work zone; 2) special train movements during reroutes and service outages; 3) special train movements during stub terminal operations; and, 4) train movements into and out of designated storage tracks. Traffic locking and bi-directional cab signals will be provided throughout construction to support special train operations. Intermediate signals and extended slotting circuits will be provided to maintain headway and coordinate train traffic through passenger stations within the work zone. Maximum cab signal speeds will be determined by track geometry. Temporary speed restrictions will be established based on the work being performed.

All interlockings will operate in automatic mode. Automatic vehicle identification systems will provide routing information to the signal system. Wayside route selectors will be provided as a back-up initiation point for each route available in automatic mode. Manual mode will also be provided to route trains during special operations such as reroutes, single tracks and line cuts. Local manual mode will be capable of establishing alternate train routing through available switches not in normal service.

Stub terminal operation may be required to support certain construction activities. Train movements into and out of the temporary stub terminal will be interlocked. The terminal interlocking will operate in manual mode during terminal operations. During stub terminal operation, a train will be routed into a passenger station with out-of-service track a short distance ahead. The train will exchange passengers and be routed out of the station in the opposite direction.

CTA will designate portions of unused track for temporary train storage. Access to the stub storage tracks will be interlocked and function normally in automatic mode.

The QuicTrak system will be updated to reflect the track alignment and track circuit configuration at the completion of each stage of Work, system modification or configuration change.

3.3.4.4 Station Operation

3.3.4.4.1 Temporary Stations

If two-track operation is proposed between Montrose and Thorndale interlockings, in general, Lawrence and Berwyn stations may be closed to passengers and Temporary platforms must be placed in service at Bryn Mawr and Argyle.

3.3.4.4.2 Closing / Securing Half of Wilson Station

If two-track operation is proposed between Montrose and Thorndale interlockings, one of the two platforms at Wilson will temporarily not be needed for regular service. Therefore, the temporarily unneeded platform will be closed to entering passengers. However, a condition may arise that requires its use to either unload a train that will not continue, or to stage trains for supplemental service. Because of these possibilities, the temporarily closed platform and its vertical access elements must always be available to exiting passengers, and may be required on a select basis for entering passengers.

3.3.5 Planned System Function Post-Construction

3.3.5.1 Rail Service Operation

3.3.5.1.1 Vehicles

There are no changes to vehicles.

3.3.5.1.2 Operation

A. Red Line

The Red Line will continue to operate 24 hours per day, 365 days per year using eight-car consists except four car consists overnight as described in Sub Part 3.3.3.2.2. Normal station stops will be made between Fullerton and Howard.

B. Purple Line

The Purple Line will continue to provide weekday rush period service as described in Sub Part 3.3.3.2.3. Purple Line trains will make normal scheduled stops between Fullerton and Howard.

C. Brown Line

The Brown Line will continue to operate as described in Sub Part 3.3.3.2.4. Brown Line trains will make normal scheduled stops between Fullerton and Kimball stations.

3.3.5.2 Tower Operation

3.3.5.2.1 Clark Tower

Clark Tower houses the main control panel for Clark Junction Interlocking. The Clark Tower control panel can additionally control Barry, Altgeld, Belden, Webster and the proposed Montrose Interlockings on the North Main Line and the proposed Kenmore, Lakewood and Seminary Interlockings on the Ravenswood Branch. The interlocking will be capable of routing normal train movements automatically, and will be equipped with wayside route selectors for use by train operators.

3.3.5.2.2 Montrose

Proposed Montrose Interlocking is designed to accommodate universal train routing. A train on any of the four tracks can be routed to any of the other tracks within the interlocking limits. The interlocking will be programmed to automatically route trains on the track to which their service is assigned. Montrose Interlocking will be equipped with wayside route selectors for use by train operators.

3.3.5.2.3 Thorndale

Proposed Thorndale Interlocking is designed to accommodate universal train routing. A train on any of the four tracks can be routed to any of the other tracks within the interlocking limits. The interlocking will be programmed to automatically route trains on the track to which their service is assigned. Thorndale Interlocking will be equipped with wayside route selectors for use by train operators.

3.3.5.2.4 Winona Middle Track

The proposed Winona Middle Track is used to store disabled trains so as not to impede normal service. The Operator of a disabled train will select into Winona Middle Track using a wayside route selector. Both northbound and southbound trains could be stored.

Winona Middle Track is used to stage extra trains for special events or to turn disabled trains from northbound to southbound or from southbound to northbound. The Operator of a disabled train will select into Winona Middle Track using a wayside route selector. The Operator will then switch ends of the train to begin operating in the opposite direction. The Operator will select out of the middle track using a wayside route selector.

The tail tracks of Winona Middle Track are used to store non-revenue equipment. When non-revenue equipment is stored, traction power is isolated and removed from the specific tail track affected while the remainder of the track, including the other tail track and crossovers, remain energized and available for use by revenue trains. Non-revenue equipment may be stored on one tail, the other, or both at the same time. Traction power is isolated and removed using a wayside power isolation switch.

Winona Middle Track may also be used to short-turn northbound Red Line trains so they can make another southbound trip without having to travel to the terminal. The Operator of a northbound short-turn train will use the wayside route selector, pull into the middle track, change ends and proceed south.

3.3.5.2.5 Ravenswood Branch Track RV2 Operation

The proposed Ravenswood Branch Track RV2 is used to store extra consists for special events or defective trains so as not to impede normal service. RV2 will also have utility in providing an alternate route for revenue trains in the event RV1 or NM5 are not useable. The Operator of a southbound extra consist or defective train will select into RV2 using a wayside route selector at Kenmore Interlocking. The Operator of a northbound extra consist or defective train will be routed across Clark Junction by the towerman or will select a route using the wayside route selector. Both northbound and southbound trains could be stored.

RV2 may be used to store non-revenue equipment. When non-revenue equipment is stored, traction power may be isolated and removed locally only on the portion of track used for storage. Traction power is isolated and removed using a wayside power isolation switch.

RV2 between Kenmore and Clark Junction interlockings may also be used to short-turn northbound Brown or Red line trains so they can make another southbound trip without having to travel to the terminal. The Operator of a northbound short-turn train will be routed across Clark Junction by the towerman or will select a route using the wayside route selector, pull clear of the interlocking, change ends and proceed south.

3.3.5.3 Station Operation

Proposed Lawrence, Argyle, Berwyn, and Bryn Mawr stations will serve the northbound and southbound Red Line. Stations are to be open 24 hours per day, 365 days per year.

Each ADA-accessible station entrance is to be equipped with fare vending machines to allow customers to check fare balances, add value to existing fare cards, or purchase new fare media.

Each station is planned to be staffed to assist customers with various matters including navigating the CTA system, fares, schedules, routes, and transfer points. Station staff is responsible for inspecting, troubleshooting and reporting defects with station equipment including elevators, escalators, Help Point Telephones, station PA system, signs and ADA accessibility equipment. Station staff can communicate with the Control Center to report accidents, suspicious activity, disturbances, threats, fire, unusual occurrences, or other emergencies, and can communicate with CTA customers in the station using the PA system.

CTA personnel complete light cleaning of stations, including mopping and trash removal. Mopping is completed using rolling mop buckets. Trash is collected using typical 96-

gallon rolling trash carts. Both mop buckets and trash carts are maneuvered throughout the station, including in elevators, along platforms, and through corridors to the Janitor's Closets and Trash Rooms, respectively. Stations are periodically deeply cleaned including pressure washing floors, walls, and ceilings.

3.4 Horizontal Alignment

3.4.1 General

Horizontal alignments for the Red Purple Bypass (RPB) area, Montrose curves and special trackwork area, Lawrence to Bryn Mawr (LBMM) corridor, Thorndale special trackwork area, and Granville track reconstruction and special trackwork removal area are provided in Part 3 Appendix 3C.

3.4.1.1 RPB Area

The RPB area includes new alignments for north mainline tracks 1 thru 4 (NM 1-4), the bypass track (NM 5), Ravenswood tracks 1 and 2 (RV 1 and RV 2), temporary Ravenswood track 1 (RVT) and the specific stationing for all special trackwork points of switch located within the area.

3.4.1.2 Montrose Curve and Special Trackwork Area

The Montrose curves and special trackwork area includes new alignments for NM 1-4 and the specific stationing for all special trackwork points of switch located within the area.

3.4.1.3 LBMM Corridor

The LBMM corridor includes alignments for NM 1-4, the Winona middle track, and the specific stationing for all special trackwork points of switch located within the area.

3.4.1.4 Thorndale Special Trackwork Area

The Thorndale special trackwork area includes alignments for NM 1-4 and the specific stationing for all special trackwork points of switch located within the area.

3.4.1.5 Granville Track Reconstruction and Special Trackwork Removal Area

The Granville track reconstruction and special trackwork removal area includes new alignments for NM 1-2. NM 3-4 will remain on the same tangential bearing as what currently exist.

3.4.2 Horizontal Alignments

The new horizontal alignments for each location consist of tangents joined to circular curves with or without spirals. All NM 1-4 and NM 5 curves are of the maximum radius practical considering the constraints of the right-of-way and proposed track tie-in interface points. Curvature and super elevation are related to the design speed based on the maximum operable speed for each individual curve location and consider the acceleration and deceleration characteristics of the design vehicle. Contractor will adhere to all established new horizontal alignments.

3.4.3 Special Trackwork Points of Switch

Special trackwork points of switch are constrained horizontally for the signal system design at each location listed above in this Part and as defined in Part 3 Appendix 3C. Horizontal switch locations have been coordinated to provide the optimum throughput and operational considerations for each location. Contractor will adhere to all special trackwork points of switch stationing.

3.5 Vertical Clearance, Clearance Envelopes and Typical Sections

3.5.1 Vertical Clearance

The clearances listed below apply to all structures and appurtenances (i.e. conduits, drainage pipes, alley light fixtures, etc.) that may be attached to either a proposed or an existing structure.

3.5.1.1 Roadways

Provide a minimum vertical clearance of 14’-9” over all roadways.

3.5.1.2 Alleys

Provide a minimum vertical clearance of 14’-6” over all alleys.

3.5.1.3 CTA Right-of-Way

Provide a minimum vertical clearance of 14’-6” over all drive aisles and alley pavement areas where service and/or delivery vehicles may travel. Provide a minimum vertical clearance of 11’-0” over all other vehicular areas.

3.5.2 Clearance Envelopes

Rail clearance requirements define areas within which no fixed objects may be located. Requirements are based on the following criteria:

A. Safe passage of trains.

B. Access to all areas on at least one side of the railcar.

C. Space for walkways necessary to evacuate passengers from a disabled train.

D. Space to allow a train to be jacked up to re-railing.

E. Normal passenger ingress and egress at station platforms.

F. Space provision for covering the contact rail.

G. Footwalks/passenger walkways will not be blocked and will be clear of car body encroachments. Minor intermittent encroachments are allowed for equipment and appurtenances.

Contractor will provide the clearance required as shown in the clearance envelope diagrams provided in Part 3 Appendix 3D. The diagrams provide the absolute minimum clearances upon which the work may not encroach. The diagrams apply for final conditions, as well as Temporary construction conditions during the prosecution of the Work. Contractor will strictly adhere to the clearance envelope diagrams.

3.5.3 Typical Sections

Typical sections provided in Part 3 Appendix 3D depict required track cross sectional elements including but not limited to track to platform clearances and areas available for intermittent track appurtenances.

3.6 Project Areas

3.6.1 General Requirements

The CTA is acquiring all property necessary for the project. Properties include permanent acquisitions, Air-Rights Easements, and Construction Easements. Parcel plats are available for review in the Part 3 Appendix 3F. CTA will secure all properties acquired for the Project by Notice to Proceed. Contractor will refer to Real Estate Acquisition – Status Report in Appendix 3F for availability of properties. Contractor will not enter into negotiations for purchase of new property acquisitions. Contractor may lease property for laydown areas, etc. with notification to CTA as to their lease agreements with private property owners.

CTA will provide Contractor with CAD files that include existing CTA right-of-way, properties acquired for the project (hereby considered as CTA right-of-way), air right easements, and construction easements. CTA developed the CAD files in preparation of the Base Case for convenience and use, but Contractor must verify and validate the data and information in those CAD files. Information shown on the plats and/or surveys will supersede any similar information shown in CAD files, the Part 3 Appendix, Part 4 Appendix or the Base Case Plans.

3.6.2 Status of Property Acquisition

The Real Estate Acquisition Status Report located in Appendix 3F indicates the parcel description and status of all full property takes, partial property takes, air rights, permanent easements and construction easements. Appendix 3 F also indicates the status and responsibility for demolition. All property acquisitions will be complete and easements secured prior to the Construction NTP with the exception of Parcel 18 which will be available on July 31, 2019 and Parcel 22 which will be available on June 30, 2019.

3.6.3 Project Areas Available to Contractor

Exhibits provided in the Part 3E Appendix that delineate areas available to Contractor for use during the execution of the work. Contractor is required to satisfy requirements associated with each categorized area, and assume responsibility of all properties acquired for the project. Area categories and requirements are identified in the Sub Parts below:

3.6.3.1 CTA Right-of-Way, General Purpose

Contractor can utilize these areas for proposed improvements and as needed to enable construction operations. Contractor will coordinate use of area with CTA as required in Part 2. Restoration of CTA right-of-way, general purpose, will be in accordance with requirements provided in Part 4.4, and as depicted in the Civil At-Grade Improvement Appendix 3H.

3.6.3.2 CTA Right-of-Way, Potential Redevelopment Sites

Contractor can utilize these areas as needed to facilitate construction operations. Contractor will coordinate use of area with CTA as required in Part 2. The lines on the

exhibit that separate general purpose areas from potential redevelopment site areas include a 3’ buffer from the edge of the Base Case aerial structure. The line also differentiates final condition requirements as depicted in the Appendix 3H Civil At-Grade Improvement Exhibits. Restoration of CTA right-of-way, potential redevelopment sites, will be in accordance with requirements provided in Part 4.4, Civil, Lighting, and Streetscape and as depicted in the Civil At-Grade Improvement Exhibits.

3.6.3.3 Alley Public Way

Use of alley public way areas are subject to access requirements provided in Part 3.11 Allowable Public Way Access. Restoration of alley will be in accordance with requirements provided in Part 4.4 Civil, Lighting, and Streetscape.

3.6.3.4 Construction Easements

Contractor will adhere to all requirements of Construction Easements. This includes insurance provisions, safety considerations, notifications, and time of use or occupancy provisions. Restoration requirements are included in Part 4.4 Civil, Lighting, and Streetscape and associated Part 3 Appendix Exhibits.

3.6.3.5 Air Rights

Air Rights are provided to facilitate Project improvements at select parcels. See Areas Available to Contractor Exhibits in Appendix 3E. Air-Rights Easement Parcels have also been included in Appendix 3F for details dimensions and legal descriptions.

3.6.3.6 Public Way

Contractor to determine extent of area within the public way needed to facilitate construction. Exhibits provided do not delineate areas within the public way that cross, or are adjacent to, the project limits. Use of public way areas are subject to access requirements provided in Part 3.11 Allowable Public Way Access. Restoration of public way will be in accordance with requirements provided in Part 4.4 Civil, Lighting, and Streetscape.

3.6.4 Permissible Areas

Exhibits are included in 3G Appendix that delineate areas within which Contractor is allowed to place structural substructure and other elements required to construct the Project. Below ground and above ground substructure elements have defined permissible areas.

3.6.4.1 Below Ground Permissible Area Exhibits

Below ground exhibits delineate allowable areas for below ground structural substructure elements. Below ground substructure elements are defined as those elements located at the top of the foundation cap and below. Contractor to provide adequate cover between the top of the foundation cap to the top of finish grade as required to facilitate construction of the proposed surface.

3.6.4.2 Above Ground Permissible Area Exhibits

Above ground exhibits delineate areas available for placement of columns and piers within the vertical clearance requirements. Provisions for minimum set-back, minimum 12’ clear passage width, and ingress and egress access to properties must be satisfied as detailed in this section. Above ground permissible areas are further constrained by the civil at-grade improvements indicated in Appendix 3H, pedestrian accessibility and as required to meet permanent alley access requirements including frequency of encroachments as specified below and in Part 3.11 Allowable Public Way Access.

3.6.4.3 Structural Substructure Element Locations

Substructure elements will be located within the CTA right-of-way, except for specific areas where substructure elements are allowed within the Public Way, as delineated in Appendix 3H Permissible Area or as described below. Contractor will accommodate program requirements identified on the Appendix 3H Civil At-Grade Improvement when developing locations of structural elements. The following additional requirements must be satisfied.

3.6.4.3.1 RPB – Roscoe Street at Clark Street

Structural substructure elements may be required in the public way due to the heavily skewed crossing of the North Main Line tracks at the N. Clark Street intersection with W. Roscoe Street. Along Clark Street, minimum sidewalk widths of 8’ are required. The minimum may be reduced to 6’ (between the back of sidewalk and the closest point to the column) at locations of above ground columns, for a maximum length of 4’. Curb and gutter bump outs into the pavement area in the immediate vicinity of the quadrants will be allowed to provide additional parkway width. Bump outs and curb line geometry will be in accordance with the Appendix 3H. Bump outs will not impact thru lanes and will only be allowed in areas of on-street parking. Maximum allowed bump out into the pavement will be the lesser of the width of the existing on-street parking or 8’. Drainage improvements will be provided as necessary to maintain positive drainage at bump out locations.

3.6.4.3.2 RPB – Alley from Roscoe Street to Newport Avenue

The below ground foundational elements and above ground columns will be allowed within the existing limits of the existing alley public way as indicated in Appendix 3G but will not be allowed in the location of the relocated alley.

3.6.4.3.3 RPB – East-west alley north of Roscoe St. at west Bypass limits

Where Temporary or Permanent columns are proposed at CDOT alleys, the minimum clear passage width must be 12' at a point for a maximum length of 4', provided the location of all Permanent or Temporary columns do not impact or restrict off-alley property ingress or egress. Contractor will demonstrate that access is maintained to and from all private properties. Contractor will maintain cross access under the Ravenswood track structure for properties fronting Roscoe that currently have access

from this alley. Design vehicle for residential properties is a Passenger Car Design Vehicle, based on the current version of AASHTO, A Policy on Geometric Design of Highways and Streets.

3.6.4.3.4 LBMM – Public Way Roadway Crossings

Above ground substructure elements are not allowed within any of the roadway public ways. The proposed structure must clear span the entire width of each respective roadway public way.

Clearance greater than the public way width is required at W. Hollywood Avenue, on the south side. Above grade substructure elements must be a minimum of 15’ south of the south right-of-way line.

3.6.4.3.5 LBMM – North-south alley, east and west of CTA right-of-way

Where Temporary or Permanent columns are proposed at CDOT alleys, the minimum clear passage width must be 12 ft. at a point for a maximum length of 4 ft., or (subject to Sections 4.3 and 8.4.d of Part 1) as modified by Part 1, Exhibit 1, ATC 01.3 – Precast Segmental Box Girder Clarifications, provided the location of all Permanent or Temporary columns do not impact or restrict off-alley property ingress or egress. A minimum of 30’ is required between point obstructions for vehicular refuge to maintain bi-directional alley use. To achieve final column layout approval, the Contractor must demonstrate that access is maintained to and from all private properties. Design vehicle for residential properties is a Passenger Car Design Vehicle, based on the current version of AASHTO, A Policy on Geometric Design of Highways and Streets.

3.6.4.3.6 North Main Line at Montrose Avenue

Structural foundation enhancements will require improvements within the. Montrose Avenue public way. Above ground structural elements must be located to provide a minimum of 6’ clearance between the back of sidewalk and the closest point to the column.

3.6.5 At-Grade Improvements Exhibits

A. Contractor is responsible for completing at-grade improvements to the minimum limits as indicated in the Appendix 3H.

B. The proposed curb line geometry will be in accordance with the Appendix 3H.

C. Restoration will be in accordance with requirements provided in Part 4.4 Civil, Lighting, and Streetscape.

D. Contractor will accommodate alley realignments as shown in the Exhibits. Contractor will provide final design including drawings depicting geometric design and final public way configuration to CTA. CTA will prepare plats of vacation and dedication.

E. Contractor will provide mid-block bus stops and crossings at locations as shown in the Appendix 3H. See Part 4.4 Civil, Lighting, and Streetscape for additional requirements.

3.6.6 Special Submittals

Item	Part	Submittal	Type	Initial Submittal
1	§3.6.4.3	Off-alley Ingress/Egress Access Verification	Design	Intermediate

3.7 Environmental

3.7.1 Noise

Contractor is required to comply with all applicable noise regulations, specification requirements, and the noise level limits specified herein.

3.7.1.1 Standards and References

The most stringent and latest edition of Federal and local codes and standards will be adhered to in the design and construction of this Project with regard to noise control. In particular, noise control is to comply with the guidelines contained in the U.S. Federal Transportation Administration (FTA) *Transit Noise and Vibration Impact Assessment* guidance manual (September 2018 or latest revision).

3.7.1.1.1 Terms Used

A. Noise is any audible sound which has the potential to annoy or disturb humans, or to cause an adverse psychological or physiological effect on humans.

B. Daytime refers to the period from 7 AM to 10 PM local time daily, except Sundays and Federal holidays.

C. Nighttime refers to the period from 10 PM to 7 AM local time daily, as well as all day Sunday and Federal holidays.

D. Noise-Sensitive Locations denotes locations where particular sensitivities to noise exist, such as residential areas, academic study halls, institutions, hospitals, and parks.

E. Nuisance Noise refers to sound levels that annoy or disturb a reasonable person of normal sensitivities, but do not exceed the noise limits specified herein.

F. Lot-line refers to the line separating a parcel of land from another parcel or from the street or alley.

G. Background Noise will be defined as the measured ambient noise level associated with all existing environmental, transportation, and community noise sources in the absence of any audible construction activity.

H. Baseline Noise Levels will be defined as the background noise levels that are measured prior to construction work commencing.

I. dBA will be defined as the sound level (in decibels referenced to 20 micro-pascals) as measured using the A-weighting network on a sound level meter, in accordance with ANSI S1.4 Standards.

J. Lmax will be defined as the maximum measured sound level at any instant in time.

K. Leq will be defined as the equivalent sound level, or the continuous sound level that represents the same sound energy as the varying sound levels, over a 20-minute monitoring period.

L. Slow specifies a time constant of 1 second for the root-mean-square (rms) detector used by a sound level meter, in accordance with ANSI S1.4 Standards.

M. Impact noise is noise produced from impact or devices with discernible separation in sound pressure maxima. Examples for impact equipment and processes include, but are not limited to, blasting, clam shovel or chisel drops, pavement breakers, jackhammers, hoe rams, mounted impact hammers, and impact pile drivers (but not vibratory pile drivers).

3.7.1.2 Construction Noise Control

3.7.1.2.1 Construction Noise Limits

A. The construction noise impact thresholds as provided in the FTA guidance manual are presented in Table 3.7-1 and are considered reasonable criteria to identify potential noise impacts from construction. FTA recommends that the noise impact thresholds applied during the construction phase of the Project take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use.

B. Daytime and nighttime construction noise levels at noise-sensitive locations and other noise monitoring locations must not exceed the limits specified in Table 3.7-1; the limits will apply to all points on a given lot-line of an affected receptor. Contractor is required to respond to any complaints related to construction noise.

TABLE 3.7-1: CONSTRUCTION NOISE GUIDELINES

LAND USE	NOISE LIMIT, 1 hour Leq (dBA)	
	DAYTIME	NIGHTTIME
Residential	90	80
Commercial	100	100
Industrial	100	100

Notes: Leq = equivalent continuous sound level; dBA = A-weighted decibel

Source: FTA, September 2018

In addition to the lot-line noise limits, on-site construction equipment operating at full load must not exceed the Lmax noise limits specified in Table 3.7-2. The 50-foot noise emission limits specified in Table 3.7-2 will apply to the entire operation in which the equipment is engaged. Table 3.7-2 also provides distinction as to which equipment is considered to emit impact or continuous noise.

TABLE 3.7-2: CONSTRUCTION EQUIPMENT 50-FOOT NOISE EMISSION LIMITS

EQUIPMENT CATEGORY	Lmax Level (dBA)[1,2]	IMPACT/CONTINUOUS
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compactor (ground)	80	Continuous
Compressor	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Horizontal Boring Hydraulic Jack	80	Continuous
Hydra Break Ram	90	Impact

TABLE 3.7-2: CONSTRUCTION EQUIPMENT 50-FOOT NOISE EMISSION LIMITS		
EQUIPMENT CATEGORY	**Lmax Level (dBA)[1,2]**	**IMPACT/CONTINUOUS**
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Sheet Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

[1]Measured at 50 feet from the construction equipment, with a "slow" (1 sec) time constant.

[2]Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

In addition to the above limitations, construction work should be performed in a manner to prevent nuisance conditions such as noise which exhibits a specific audible frequency or tone (e.g. back-up alarms, unmaintained equipment, brake squeal) or impact noise (e.g. jackhammers, hoe rams). CTA may request Contractor to develop plans for additional mitigation measures to reduce noise levels below the limits.

3.7.1.2.2 Temporary Construction Noise Control

Temporary noise impacts may be reasonably expected during construction at residences and other sensitive receptors in the immediate vicinity of the Project. As a result, noise control measures will be implemented during construction whenever feasible and reasonable in accordance with the FONSI requirements to mitigate these impacts and to achieve consistency with the noise limits herein.

3.7.1.2.3 Construction Noise Mitigation

A. Contractor will use means and methods of construction that minimize noise throughout all phases of the Contract. Location of mobile and stationary equipment, such as air compressors, generators, pumps, etc., will be such as to cause the least disruption of businesses and residences in the vicinity of the Project. All equipment associated with the work must be equipped with noise suppression devices which must be maintained in their original operating condition considering normal wear. Manufacturer-installed noise suppression devices such as mufflers, engine covers, insulation, etc. must not be removed nor rendered ineffectual nor remain off the equipment while the equipment is in use. Additional noise suppression, beyond standard manufacturer features, will be used where necessary.

B. During Design/Preconstruction, Contractor will submit designs for noise abatement measures (e.g. noise barriers, enclosures, and curtains) identified in the Noise Monitoring and Control Plan to be incorporated in the work per Sub Part 4.2.5.1. Before starting construction, Contractor will submit shop and working drawings, computations, material data, and other descriptions, and these will be considered Construction submittals. Drawings and computations will be stamped by a Registered Professional Engineer licensed in the State of Illinois. Equipment Noise Certificates will be submitted with the drawings and computations.

C. Construction noise impacts can be reduced by using alternative construction methods that are less noisy, modifying construction schedules to avoid work during sensitive times of day, using quieter equipment, and applying acoustical treatments to construction equipment and operations. The following best management practice mitigation measures will be implemented to minimize annoyance from construction noise:

    i. Use best available control technologies to limit excessive noise when working near residences.

    ii. Where practical, erect temporary noise barriers between noisy activities and the noise-sensitive receptors.

    iii. Use cast-in-place drilled hole caissons, micro piles or drilled piers; impact-driven piles are prohibited.

iv. Adequately notify the public of construction operations and schedules. Methods such as construction-alert publications and postings to the CTA website must be used.

v. Use smart backup alarms during nighttime work that automatically adjust (lower) the alarm level or tone based on the background noise level, or switch off back-up alarms and replace them with spotters.

vi. Implement noise-deadening measures for truck loading and operations.

vii. Use lined or covered storage bins, conveyors, and chutes with sound-deadening material.

viii. Use acoustic enclosures, shields, or shrouds for equipment and facilities.

ix. Install high-grade engine exhaust silencers and engine-casing sound insulation.

x. Prohibit above-ground jack hammering during nighttime hours.

xi. Minimize the use of generators or use whisper-quiet generators to power equipment.

xii. Limit use of public address systems.

xiii. Use movable noise barriers at the source of the construction activity, if possible.

xiv. Where possible, consideration will be given to early construction of permanent barriers to shield receptors from some construction generated noise.

xv. To the maximum extent possible, vehicles that are not in use will not remain idling in the Project Area.

3.7.1.3 Operational Noise Control

3.7.1.3.1 Operational Noise Control Requirements

A. Contractor must provide noise mitigation consistent with the Project commitments included in the two Findings of No Significant Impact (FONSIs) for the Projects under full operation and the following requirements:

i. Provide noise control measures to mitigate severe noise impacts; and,

ii. Provide noise control measures to mitigate moderate noise impacts where existing day-night noise levels (Ldn) are above 65 dBA (exterior), or where the predicted noise level increase is greater than 3 decibels (dB).

B. All noise mitigation measures must be designed to reduce noise to levels below the thresholds indicated in Appendix 3L for moderate noise impact.

3.7.1.3.2 Noise Mitigation Measures

A. Noise impacts are identified at sensitive receptors where predicted noise levels exceed moderate and severe FTA impact thresholds. FTA's policy on noise mitigation is that mitigation measures must be considered when there are moderate impacts, and that noise mitigation must be implemented when there are severe impacts unless there are compelling reasons why mitigation is not feasible.

B. For these mitigations, a closed, concrete deck structure, noise barrier along the edges of the structure, and welded rail are assumed to be part of the work. Therefore, these features are not considered as potential mitigation measures. Increasing the height of the noise barrier on the structure is not considered a potential mitigation measure since the majority of the noise impacts are at upper-story sensitive receptors where a higher noise barrier would not be effective at lowering noise levels. In addition, good wheel and track condition is assumed for both existing noise conditions and future noise conditions. Changes to wheel or track maintenance are not considered as potential mitigation measures.

C. The primary mitigation measure to be incorporated by Contractor into the Project to reduce noise levels at sensitive receptors is the use of Monoblock frogs. Appendix 3L identifies the locations where mitigation measures may be required.

3.7.1.3.3 Noise Mitigation Design

A. Contractor will perform a detailed noise impact assessment of the design in accordance with the FTA guidance manual. As part of this assessment, Contractor will install noise monitors to update the baseline noise levels and develop a model to evaluate the proposed design with regard to noise impact. The noise modeling will be in compliance with the FTA guidance manual and compatible with the methodology used in the Environmental Assessment process (i.e. the comparison of noise from the proposed infrastructure and service with the existing noise). The methodology is described in the Noise and Vibration Technical Memorandum for each Environmental Assessment: Red-Purple Bypass EA Appendix D-5 and Lawrence to Bryn Mawr Modernization EA Appendix C-6, available through the links provided in Appendix 3K Environmental Assessment. The modeling will be conducted on the actual structural solution (including massing of stringers/deck, bearing type, column material foundation location, track alignment/profile, etc.). The modeling will determine if Contractor's design would alleviate the need to mitigate impacts at any sensitive receptor or if

Contractor's design would generate greater impacts compared to the modeling results in the Environmental Assessment.

B. Contractor will prepare a Design Noise Mitigation Report (DNMR) that will be submitted with the Intermediate design. The DNMR will identify receptors, by FTA land use category, along the entire Project corridor that would be exposed to airborne noise impacts due to the train operations modeled in the Intermediate design, including the future unmitigated estimated Project noise levels. Levels of noise impact will be consistent with FTA guidelines and categorized as either Severe or Moderate Impacts. The DNMR will identify the locations, dimensions and acoustical performance of noise mitigation measures that meet the operational noise control requirements specified above in Sub Part 3.7.1.3.1. The DNMR will include tables and figures that show the extent of noise impact and the location of all mitigation.

C. The specified mitigation measures will be required for sensitive receptor locations indicated in Appendix 3L as part of the base Contract.

D. Contractor will identify potential additional mitigation measures where noise levels would exceed impact thresholds identified in Sub Part 3.7.1.3.1.

   a. Implementing any additional mitigation measures for sensitive receptor locations where an impact is anticipated but the mitigation measure is listed as unspecified in Appendix 3L is not included in the base Contract.

   b. Contractor is required as part of the base Contract to implement additional mitigation measures for sensitive receptors where impacts were not anticipated in Appendix 3L, but due specifically to Contractor's design, additional impacts are introduced.

   c. CTA has full discretion with regard to implementing any additional mitigation. All proposed mitigation measures must be modeled to demonstrate compliance with the Project and Technical Requirements.

3.7.1.4 Special Submittals

Item	Part	Submittal	Type	Initial Submittal
1	3.7.1.2.3	Equipment Noise Certificates	Construction	Intermediate
2	3.7.1.2.3	Designs for Noise Abatement Measures	Construction	As needed

3	3.7.1.3.3	Design Noise Mitigation Report (DNMR)	Administrative	Intermediate

3.7.2 Vibration

Contractor is required to comply with all applicable vibration regulations, specification requirements, and vibration level limits specified herein.

3.7.2.1 Standards and References

The most stringent and latest edition of Federal and local codes and standards will be adhered to in the design and construction of this Project with regard to vibration control. In particular, vibration control is to comply with the guidelines contained in the U.S. Federal Transportation Administration (FTA) Transit *Noise and Vibration Impact Assessment* guidance manual (September 2018 or latest revision).

3.7.2.1.1 Terms Used

A. Daytime refers to the period from 7 AM to 10 PM local time daily, except Sundays and Federal holidays.

B. Nighttime refers to the period from 10 PM to 7 AM local time daily, as well as all day Sunday and Federal holidays.

C. Lot-line refers to the line separating a parcel of land from another parcel or from the street or alley.

D. PPV is defined as peak particle velocity in the unit of inches per second (ips). PPV is an indicator used in determining potential damage to buildings from stress associated with blasting and other construction activities.

E. rms is defined as root mean square, expressed as VdB, and is used in the FTA guidance manual to evaluate vibration impacts in terms of annoyance to humans.

3.7.2.2 Construction Vibration Control

3.7.2.2.1 Construction Vibration Limits

A. Construction activities have the potential to produce vibration levels that may annoy or disturb people and may cause damage to structures. Architectural and structural damage to existing structures surrounding a Work site could occur if appropriate precautions are not taken.

B. Impacts of all construction activities will be limited by specific vibration restrictions. Table 3.7-3 contains the maximum threshold vibration limits for construction vibration monitoring as established by FTA. PPV is an indicator used in determining potential damage to buildings from stress associated

with blasting and other construction activities. These limits may be lowered to protect fragile and/or historic structures.

TABLE 3.7-3: THRESHOLD VIBRATION LIMITS FOR CONSTRUCTION VIBRATION MONITORING	
BUILDING CATEGORY	**PEAK PARTICLE VELOCITY (in/sec)**
Reinforced-concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: FTA, Transit Noise and Vibration Impact Assessment, September 2018

3.7.2.2.2 Temporary Construction Vibration Control

Temporary vibration impacts may be reasonably expected during construction at residences and other sensitive receptors in the immediate vicinity of the Project. As a result, vibration control measures will be implemented during construction whenever feasible and reasonable in accordance with the FTA guidelines to mitigate these impacts.

3.7.2.2.3 Construction Vibration Mitigation

CTA has identified vibration-sensitive sites along the Project corridors. Contractor will be responsible for the identification of and coordination with vibration-sensitive sites affected by the work for the duration of construction. Contractor is responsible for evaluating the need for, design of, and the provision of any necessary precautionary features to protect existing structures from damage, including, at a minimum, selecting construction methods and procedures that will prevent damage. Construction vibration mitigation will be coordinated with the pre- and post-construction building surveys as required in Sub Part 4.2.4.

A. Prior to construction, the following studies will be carried out to document pre-construction conditions for buildings and structures that may be affected by construction vibration:

   i. Undertake a pre-construction survey of any buildings where the predicted construction vibration level exceeds the damage risk criteria. The survey will include inspection of building foundations and photographs of existing conditions. The survey will be used to establish baseline, pre-construction conditions.

   ii. Conduct a conditions assessment for any National Register of Historic Places (NRHP) listed, eligible or contributing structure located within

15 feet of Project construction activities. If warranted based on structure type and condition, prepare a protection and stabilization plan prior to construction. The addresses for inclusion in the condition assessment include:

Individual Eligible Properties

4728-4744 N Broadway	5120 N Broadway	5718 N Broadway
4703-4715 N Broadway	1039-1053 W Lawrence	1101-1107 W Bryn Mawr
4753 N Broadway	1100-1108 W Lawrence	5247 N. Magnolia Ave
4850 N Broadway	4875 N Magnolia Ave	5400-5402 N Winthrop Ave

Uptown Square Historic District

1101-1113 W Lawrence	4753 N Broadway	4703-4715 N. Broadway

West Argyle Street Historic District

1109 W Argyle	4930-4934 N Winthrop	5036-5038 N Winthrop
1125-7 W Argyle	4936-4938 N Winthrop	5040-5042 N Winthrop
4910 N Winthrop	4940 N Winthrop	5046 N Winthrop
4916 N Winthrop	4940 N Winthrop	5050 N Winthrop
4918 N Winthrop	5012 N Winthrop	5052 N Winthrop
4920-4922 N Winthrop	5016 N Winthrop	5040-5058 N Winthrop
4926 N Winthrop	5022-5030 N Winthrop	5060-5062 N Winthrop
4928 N Winthrop	5032 N Winthrop	

Bryn Mawr Ave Historic District

1125-1131 Bryn Mawr	1118-1124 Bryn Mawr	

Lakeview Community Area

3264-3266 N. Clark	3356 N. Sheffield	3265-3269 N. Clark
934 W. Roscoe	947-949 W. Newport	938 W. Newport
1015 W. Newport		

B. During construction, the following mitigation measures must be incorporated where feasible as needed to avoid potential construction-related vibration impacts:

i. To the extent possible, maintain distances greater than 25 feet from vibration-sensitive historic buildings to avoid potential construction-related vibration impacts.

ii. Use less vibration-intensive construction equipment or techniques near vibration-sensitive historic buildings.

iii. Route heavily-laden trucks away from vibration-sensitive historic buildings.

iv. Sequence construction activities that produce vibration, such as demolition, excavation, earthmoving, and ground impacting, such that the vibration sources do not operate simultaneously.

v. Use devices with the least impact to accomplish necessary tasks.

vi. Use non-impact demolition and construction methods, such as saw or torch cutting and removal for off-site demolition instead of high-impact methods near vibration-sensitive historic buildings.

vii. Use cast-in-place drilled hole (CIDH), micro piles or drilled piles; impact-driven piles are prohibited.

viii. Use building protection measures such as underpinning, soil grouting, or other forms of ground improvement where needed to prevent deterioration of building condition due to construction.

ix. If sheet piles are required within 25 feet of a historic vibration-sensitive building, consider alternate construction methods, such as a slurry wall.

3.7.2.3 Operational Vibration Control

The Contractor must provide vibration mitigation consistent with the Project commitments included in the Finding of No Significant Impact (FONSI) for the Project under full operation.

3.7.2.3.1 Operational Vibration Criteria

The FTA criteria for vibration impact are used to assess community annoyance to vibration from CTA operations. The FTA vibration impact criteria are based on the maximum vibration levels generated in occupied indoor spaces as trains pass the sensitive receptor. The FTA impact threshold for residential land uses is 72 VdB (rms vibration velocity level in decibels relative to 1 micro-inch per second) in any 1/3 octave band between 8 Hertz (Hz) and 80 Hz. For a project where the Project consists of modifications to an existing vibration source, the FTA procedures

consider the existing vibration levels. The interpretation of the criteria relative to this Project is:

A. If the existing and future vibration levels from CTA operations are below the impact threshold - no impact.

B. If the existing vibration levels are below the impact threshold and the future vibration levels would be above the impact threshold - impact.

C. If the existing vibration levels are above the impact threshold and future would result in more than a 3-decibel increase - impact; if the increase is less than 3 decibels - no impact.

When the Project will cause vibration more than 5 VdB greater than the existing source, the standard vibration criteria can be applied to the Project. Appendix 3L identifies locations where vibration is anticipated to exceed impact thresholds.

3.7.2.3.2 Vibration Mitigation Measures

A. Vibration impacts are identified at sensitive receptors where predicted vibration levels exceed the FTA impact thresholds. A closed-deck aerial structure with concrete columns and welded rail is assumed to be part of the Project, as well as, good wheel and track condition for both existing vibration conditions and future vibration conditions; therefore, changes to wheel and/or track maintenance are not considered potential mitigation measures. Mitigation measures will be considered for all sensitive receptors where impacts are predicted.

B. The following mitigation measures will be considered for incorporation into the Project by Contractor to reduce vibration levels at sensitive receptors:

   i. Use Monoblock frogs.

   ii. Tune the vibration frequency of the resilient bearing pads based on the final design bearing stiffness and structure mass.

C. Vibration isolation will be provided at any point where an aerial structure column, aerial structure girder, or other structure is in direct contact with, supported on, or supporting a building structure, or at any point where a station structure or other transit structure is in very close proximity or directly against a building structure or building foundation element. Vibration isolation in the form of a resilient element will be provided between the transit structure elements and building structure elements to prevent direct transmission of noise and vibration to buildings. There will be no rigid connection between the building elements and the transit structure elements.

3.7.2.3.3 Vibration Mitigation Design

A. Contractor will perform a detailed vibration impact assessment of the preliminary design in accordance with the FTA guidance manual. As part of this assessment, Contractor will develop a model to evaluate the proposed design with regard to vibration impact. The vibration modeling will be in compliance with the FTA guidance manual and compatible with the methodology used in the Environmental Assessment process. The methodology is described in the Noise and Vibration Technical Memorandum for each Environmental Assessment: Red-Purple Bypass EA Appendix D-5 and Lawrence to Bryn Mawr Modernization EA Appendix C-6, available through the links provided in Appendix 3K Environmental Assessment. The modeling will be conducted on the actual structural solution (including massing of stringers/deck, bearing type, column material foundation location, track alignment/profile, etc.). The modeling will determine if Contractor's design would alleviate the need to mitigate impacts at any sensitive receptor or if the design would generate greater impacts compared to the modeling results in the Environmental Assessment.

B. Contractor will prepare a Design Vibration Mitigation Report (DVMR) that will be submitted with the Intermediate design. The DVMR will identify receptors, by FTA land use category, along the entire Project corridor that would be exposed to ground-borne vibration impacts due to the train operations modeled in the Intermediate design, including the future unmitigated estimated Project vibration levels. The DVMR will identify the locations, dimensions and performance of vibration mitigation measures that meet the operational vibration criteria specified above in Sub Part 3.7.2.3.1. The DVMR will include tables and figures that show the extent of ground-borne vibration impact and the location of vibration mitigation.

C. The specified vibration mitigation measures will be required for sensitive receptor locations identified in Appendix 3L as part of the base Contract.

D. Contractor will identify potential additional mitigation measures where vibration levels would exceed impact thresholds identified in Sub Part 3.7.2.3.1.

    a. Contractor is required as part of the base Contract to implement additional mitigation measures for sensitive receptors where impacts were not anticipated in Appendix 3L, but due specifically to Contractor's design, additional impacts are introduced.

    b. CTA has full discretion with regard to implementing any additional mitigation. All proposed mitigation measures must be modeled to demonstrate compliance with the Project and Technical Requirements.

3.7.2.4 Special Submittals

Item	Part	Submittal	Type	Initial Submittal
1	3.7.2.2.3	Pre-Construction Conditions Assessments and LBMM National Register of Historic Places (NRHP) Conditions Assessment	Administrative	Intermediate
2	3.7.2.2.3	Stabilization and Protection Plan for National Register Eligible or Contributing Properties	Administrative	Intermediate
3	3.7.2.3.3	Design Vibration Mitigation Report (DVMR)	Administrative	Intermediate

3.7.3 Temporary Erosion and Sediment Control

3.7.3.1 General Requirements

This Project is considered a Regulated Development as defined in the City of Chicago Stormwater Ordinance Manual (Stormwater Ordinance). All Regulated Developments are subject to the erosion and sediment control requirements described in the Stormwater Ordinance and the City of Chicago, Department of Water Management – Regulations for Sewer Construction and Stormwater Management (DWM Regulations).

Contractor must install and maintain soil erosion and sediment control (SESC) measures during construction to prevent and reduce the discharge of sediment and other pollutants in stormwater runoff from the development. The SESC measures will be installed prior to land disturbing activities and be maintained in functional order until the property has been permanently stabilized. A site is considered permanently stabilized when all land disturbing activities have been completed, all construction SESC measures have been removed, and a uniform perennial vegetative cover with a density of 70 percent for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been completed.

3.7.3.2 Standards, Codes, and References

Design and construction will be in accordance with the requirements listed herein, and the standards, codes and references listed below.

A. City of Chicago, Department of Water Management – Regulations for Sewer Construction and Stormwater Management (DWM Regulations)

B. City of Chicago, Department of Water Management – Stormwater Management Ordinance Manual (Stormwater Ordinance)

C. Illinois Urban Manual

Publications are listed in hierarchical order, where the Codes and Standards listed higher in the list will take precedence over those listed below them.

All erosion and sediment control best management practices (BMPs) must be implemented in accordance with the standards and specifications set forth in the “Illinois Urban Manual”. This manual was prepared for the Illinois Environmental Protection Agency (IEPA) by the United States Department of Agriculture’s (USDA) - Natural Resources Conservation Service (NRCS) in Illinois and can be accessed at http://www.aiswcd.org/illinois-urban-manual/.

In the following table, the letter “C” indicates the portions of the applicable Guidance Specifications that are contractual requirements and the “R” indicates the portions of the specifications that are for reference

TABLE 3.7-4: GUIDANCE SPECIFICATIONS				
Spec. No.	**Specification**	**Part 1**	**Part 2**	**Part 3**
		General	**Products**	**Execution**
31 25 00	TEMPORARY EROSION AND SEDIMENT CONTROL	**R**	**R**	**R**

3.7.3.3 Affidavit in Support of Soil Erosion and Sediment Control Measures

With erosion and sediment control plans an Affidavit will be submitted as part of the Stormwater Management submittal to the Department of Buildings. Refer to Part 4.5, Drainage Systems for additional information and requirements on the submittal of the Stormwater Management Report.

A. The Affidavit ensures that functional and effective construction SESC measures will be installed and operational on the Regulated Development in order to reduce or prevent the discharge of sediment and other pollutants in stormwater runoff from the development. The Affidavit provides a list that identifies the SESC BMPs that will be installed and maintained on the Regulated Development. The Affidavit also provides information on required frequency for inspection of SESC measures.

B. The Affidavit must be signed by the Contractor and CTA. A copy of the affidavit must be kept on-site during construction and made available upon request to City personnel. The Affidavit form is included in Appendix II-C of the DWM Regulations.

C. Erosion and sediment control plan sheets must adhere to the requirements listed in the DWM Regulations, Chapter II, Part 2.1. The plan sheets must indicate the type and location of the SESC measures, proper maintenance schedules for the SESC items and applicable details of the SESC measures such as inlet filters, silt fence/perimeter erosion barrier, erosion control blanket, dewatering sediment filter bags, stabilized construction entrances, etc. Due to the significant number of stormwater infiltration BMPs that will be utilized on this Project, adequate SESC systems are critical to be implemented and in-place prior to the installation of the infiltration BMPs to prevent sediment from clogging the BMPs.

3.7.3.4 Special Submittals

Item	Part	Submittal	Type	Initial Submittal
1	3.7.3.3	Affidavit in Support of Soil Erosion and Sediment Control Measures	Administrative	Intermediate

3.7.4 Contaminated and Hazardous Material

3.7.4.1 Standards, Codes, and References

Design and construction will be in accordance with the requirements listed herein, and the standards, codes and references listed below.

A. All work under this Contract will be done in strict accordance with all applicable Federal, State, and City regulations, standards and codes governing asbestos abatement and any other trade work done in conjunction with same.

B. IDOT Standard Specifications for Road and Bridge Construction, Adopted January 1, 2012, Section 669 “Removal and Disposal of Regulated Substances”.

C. IDOT Special Provision for Removal and Disposal of Regulated Substances, dated January 11, 2013

D. Illinois Commercial and Public Building Asbestos Act (225 ILCS 207) and Asbestos Abatement for Public and Private School and Commercial and Public Buildings in Illinois (77 IL Admin Code 855).

E. Occupational Safety and Health Administration (OSHA)

   i. 29 CFR Section 1910.1001 - General Industry Standard for Asbestos.

   ii. 29 CFR Section 1910.134 General Industry Standard for Respiratory Protection.

   iii. 29 CFR 1926.1101 Construction Industry Standard for Asbestos.

   iv. 29 CFR Section 1910.20 Access to Employee Exposure and Medical Records.

   v. 29 CFR Section 1910.1200 Hazard Communication.

   vi. 29 CFR 1926 US OSHA Construction Standards.

   vii. 29 CFR 1926.62 US OSHA Lead Exposure In Construction; Interim Final Rule.

   viii. 29 CFR 1910.134 US OSHA Respiratory Protection.

F. Environmental Protection Agency (EPA)

   i. 40 CFR Part 61 Subparts A and M (Revised Subpart B) – National Emission Standard for Hazardous Air Pollutants (NESHAP).

   ii. 40 CFR Part 763.1 Asbestos-Containing Materials in Schools: Final Rule and Notice.

   iii. 40 CFR 763 Subpart E, USEPA Asbestos Model Accreditation Plan Appendix C (MAP): Interim Final Rule

   iv. 40 CFR Part 50, Appendix B, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method)

v. 40 CFR Part 50, Appendix G, Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air

vi. 40 CFR Part 241 Non-Hazardous Secondary Materials, “Final Rule: Additions to List of Categorical Non-Waste Fuels”.

vii. In accordance with 40 CFR 241, creosote treated railroad ties can be combusted in units at major source pulp and paper mills or power producers subject to Title 40 CFR Part 63 Subpart DDDDD that had been designated to burn biomass and fuel oil, but are modified (e.g., oil delivery mechanisms are removed) in order to use natural gas as part of normal operations and not solely as part of start-up or shut-down operations.

G. Illinois Environmental Protection Agency – Information Statement on the Removal of Lead – Based Paint from Exterior Surfaces, latest revision

H. Illinois Environmental Protection Act

I. SSPC Guide 6, Guide for Containing Debris Generated During Paint Removal Operations

J. SSPC Guide 16, Guide to Specifying and Selecting Dust Collectors

K. SSPC Guide 7: Guide for Disposal of Lead Containing Surface Preparation Debris

L. SSPC TU-7, Conducting Ambient Air, Soil, and Water Sampling Activities During Surface

M. National Institute of Occupational Safety and Health (NIOSH)

N. American National Standards Institute (ANSI).

O. The Illinois Department of Public Health regulations apply to all facilities occupied by children 6 years old or younger. The Chicago Department of Public Health inspects for, and regulates, lead contamination in all Chicago public facilities. Mitigation or abatement of all interior and exterior lead-bearing substances are covered by these specifications.

P. 410 ILCS 45 Illinois Lead Poisoning Prevention Act

Q. 77.I.p.845 Illinois Lead Poisoning Prevention Code

R. HUD Guidelines Lead Based Paint: Interim Guidelines for Hazard

S. Identification and Abatement in Public and Indian Housing, Revised Chapters 5, 8, 9, 10, and 11 (June, 1996)

T. United State Environmental Protection Agency (USEPA), “Mold Remediation in Schools and Commercial Buildings”, Office of Air and Radiation, Indoor Environments Division (6609J), EPA 402-K-01-001, March 2001.

U. New York City Department of Health and Mental Hygiene, “Guidelines on Assessment and Remediation of Fungi in Indoor Environments”, November 2008.

V. Illinois Department of Public Health, “Reducing Your Exposure to Mold”, Division of Environmental Health Fact Sheet.

In the following table, the letter “C” indicates the portions of the applicable Guidance Specifications that are contractual requirements and the “R” indicates the portions of the specifications that are for reference.

TABLE 3.7-5 GUIDANCE SPECIFICATIONS

Spec. No.	Specification	Part 1	Part 2	Part 3
		General	Products	Execution
02 61 00	REMOVAL AND DISPOSAL OF CONTAMINATED SOIL	R	R	R
02 71 00	INTERIOR ASBESTOS ABATEMENT	R	R	R
02 71 10	EXTERIOR ASBESTOS ABATEMENT	R	R	R
02 72 00	LEAD ABATEMENT	R	R	R
02 73 00	MOLD ABATEMENT	R	R	R
02 83 00	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES FOR BRIDGE STRUCTURES	R	R	R
34 11 06	DESTRUCTION OF CREOSOTE-CONTAINING WOOD MATERIALS	R	R	R
31 23 18	CCDD AND UNCONTAMINATED SOIL DISPOSAL	R	R	R

3.7.4.2 Soils

3.7.4.2.1 Baseline Determination

The results of the soils investigations, including sampling locations, are included in Part 7 for reference.

A. Hazardous waste soils generated from the RPM Project Area will be disposed of at a licensed Subtitle C Hazardous Waste facility in accordance with all applicable local, state, and federal regulations.

B. All earth excavation not designated as Hazardous Subtitle C material or non-contaminated material excavated 10 ft. or greater below street level will be

disposed of at a licensed Subtitle D landfill in accordance with all applicable local, state, and federal regulations.

C. Non-contaminated soils excavated 10 ft. or greater below street level that meet the criteria for acceptance as clean construction or demolition debris (CCDD) material can be placed at an approved CCDD facility, adhering to the rules and regulations identified in 35 Ill. Adm. Code 1100. CCDD material will be screened by Contractor on-site during soil excavation activities, in accordance with IEPA regulations, based on the limited subsurface soil investigation completed.

3.7.4.2.2 Responsibilities

A. Contractor will provide an executed copy of Uncontaminated Soil Certification by Licensed Professional Engineer (LPC-663) with supporting documentation to secure disposal authorization from a permitted CCDD fill site.

B. The name, address, and telephone number of the laboratory that Contractor will use to perform the analytical testing for waste characterization samples prior to starting work will be submitted. Submit the soil samples for the constituents required for the ultimate disposition of non-hazardous non-special waste, or hazardous waste soils.

C. Authorization from a permitted CCDD fill site for disposal of uncontaminated soils, obtain authorization from a licensed and permitted Subtitle D disposal facility for disposal of non-hazardous non-special waste, and obtain authorization from a licensed and permitted Subtitle C landfill or treatment facility for disposal or treatment of hazardous waste. Provide name, contact information, authorization letters, and site identification numbers for all soil disposal sites.

D. CTA will be responsible to sign Hazardous Waste Manifest as the generator.

3.7.4.2.3 Compliance Requirements

A. Contaminated materials management and disposal will be conducted in accordance with the IDOT Standard Specifications for Road and Bridge Construction, Adopted April 1, 2016, Section 669 “Removal and Disposal of Regulated Substances.”

B. Haulers for transportation of Hazardous Waste will hold a current, valid waste hauling Permit pursuant to 35 IAC 809 and/or 723 as applicable.

C. All excavation will be performed in accordance with OSHA requirements and rules and will comply with local codes, authorities having jurisdiction, and the City of Chicago.

D. Comply with City of Chicago ordinances including but not limited to noise, dust control, and stockpiling.

3.7.4.2.4 Soil Management Plan and Site Contamination Plan

The Soil Management Plan and Site Contamination Plan essential elements are as follows:

A. Notify the CTA and no less than forty-eight business hours prior to excavating, loading and transporting any materials from the Project Area.

B. Excavate ballast, sub ballast and/or subgrade to the extent required to complete the proposed construction work in accordance with Contract Documents. Soils in different areas of the Work site may be classified differently in the Contract Documents. Contractor will be responsible for the removal of each type of materials separately. Contractor will clean and/or decontaminate excavation equipment (tools, shovels, backhoes, etc.) after completing excavation work in the impacted soil areas and prior to initiating work in the non-impacted soil areas. All cleaning and/or decontamination residuals must be collected and disposed of in accordance with applicable federal, state and local regulations. Submit copies of equipment and decontamination procedures for equipment and vehicles utilized to excavate and remove non-hazardous non-special waste, or hazardous waste from the Project Area.

C. Contractor will be responsible for keeping CCDD and uncontaminated soil separated from contaminated soils and general construction and demolition debris, and hazardous waste. If CCDD and uncontaminated soil come in contact with contaminated soils or general construction or demolition debris, or hazardous waste, the former CCDD and uncontaminated soils will now be considered contaminated materials, and Contractor will dispose of newly designated soils as contaminated soils. Contractor will be responsible for characterization of newly designated contaminated soil.

D. Trucks transporting material to CCDD fill sites will be field screened with a Photoionization Detector (PID) prior to leaving the Project Area. Contractor will immediately notify the CTA if any load exhibits PID readings above the background concentration. Any loads with elevated PID readings will be disposed of at a Subtitle D landfill.

E. Immediately notify the CTA if any materials, (solid or liquid) requiring special handling (i.e., stained soil, soil with odors, or liquids) are encountered during excavation. Such materials will not be transported to uncontaminated soil filling site.

F. Immediately notify the CTA if any CCDD or uncontaminated soil loads are rejected by the CCDD filling site.

3.7.4.2.5 Site Specific Health and Safety Plan

Contractor will prepare a Site Specific Health and Safety Plan in accordance with section 669.06 of the Standard Specifications for Road and Bridge Construction in Illinois.

3.7.4.2.6 Stormwater Management Plan

Contractor will prepare a Stormwater Management Plan in accordance with section 669.07 of the Standard Specifications for Road and Bridge Construction in Illinois.

3.7.4.2.7 Personnel Requirements

A. OSHA training in compliance with the Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) for applicable workers.

B. Compliance with 35 IAC 809 and/or 723 as applicable.

C. Drivers will hold, and present upon request, a current valid Commercial Driver's License.

3.7.4.3 Hazardous Building and Structure Material

3.7.4.3.1 Hazardous Building and Structure Material Survey

Contractor will review all existing information and complete all necessary supplemental inspections to identifying all hazardous materials and contaminated waste in the CTA facilities (stations, substations, relay house, bridge structures, etc.) including: Asbestos Containing Material Survey (ACM); Lead-Based Paint (LBP); and Hazardous Materials/Universal Waste.

A. Contractor will complete any required supplemental ACM survey in accordance with the EPA NESHAPS, IDPH, and OSHA regulations. This survey will be completed by conducting a thorough ACM inspection in the interior and exterior areas of the building where demolition activities will be completed. The asbestos inspection is to be completed utilizing IDPH licensed asbestos inspectors. Samples will be analyzed by a "National Voluntary Laboratory Accreditation Program" (NVLAP) accredited laboratory. Contractor can also utilize the existing previous inspections reports prepared on behalf of CTA. Destructive investigation and sampling will be conducted in the building to identify all suspect asbestos containing materials prior to demolition of the building. Contractor will collect samples for Transmission Electron Microscopy (TEM) analysis of homogeneous floor tile areas that tested negative for asbestos content using Phase Light Microscopy (PLM) methods when the mastic associated with the floor tile also tested negative for asbestos content.

B. Contractor will complete any required supplemental Lead Based Paint survey. Contractor will test the building and structures identified for painting for LBP only as required for demolition of the building, paint removal or as

required to be utilized for clean demolition or recycled debris. The LBP survey is to be completed in accordance with the Illinois Environmental Protection Agency (IEPA), Illinois Department of Public Health (IDPH), Chicago Department of Public Health and Occupational Safety and Health Administration (OSHA) requirements utilizing IDPH licensed lead inspectors or risk assessors. Any paint chip samples collected will be analyzed by a laboratory accredited by either the American Industrial Hygiene Association (AIHA) or American Association for Laboratory Accreditation (A2LA) that participates in the AIHA Environmental Lead Proficiency Analytical Testing (ELPAT) Program.

C. Contractor will prepare a pre-demolition letter report for the building investigation. The letter report will include all environmental hazards (and non-hazards) needed to be removed or managed prior to demolition. The deliverables will be provided in draft form for CTA review prior to finalizing the documents.

3.7.4.3.2 Hazardous Material Remediation Oversight

Contractor will provide Air Sampling Professional/Project Managers (ASP/PM) for the building and RV and NML structure abatement as needed to satisfy applicable regulations such as EPA NESHAP, IDPH, City of Chicago, and OSHA regulations. At a minimum, the ASP/PM will be responsible for general asbestos abatement oversight activities, asbestos air sampling of inside and outside work areas, clearance air monitoring for asbestos abatement operations, and reporting. The ASP/PM will have to coordinate work with the asbestos/demolition Contractor and monitor abatement activities in accordance with all local, state and federal guidelines.

A. The ASP/PM will be licensed by the IDPH. Laboratories analyzing PCM samples will participate in AIHA PAT Program or analyst will be AAR. The ASP/PM will be responsible for asbestos air sampling of inside and outside work areas and clearance monitoring. Air monitoring will be conducted in accordance with the National Institute for Occupational Safety and Health (NIOSH) Method 7400, counting rules and all local, state and federal requirements. The ASP/PM will provide work area monitoring (inside and outside containments) and final clearance inspection, testing and sample analysis using phase contrast microscopy (PCM) in accordance with IDPH regulations. The timing and sequencing, including area start and finish points, of abatement must be coordinated with the CTA, and the asbestos/demolition Contractor for related phases of the overall Project.

B. Contractor will also prepare monitoring reports in a standardized reporting format to document on-site monitoring during abatement that includes, at minimum:

i. Summary of work
ii. Company and ASP/PM Name and License
iii. Date and time of activities
iv. Asbestos abatement Contractor
v. Daily worker log
vi. Work area sign-in and out logs
vii. Photographs during abatement activities (before and after)
viii. Notifications
ix. Worker and Supervisor Licensing
x. Waste Manifests
xi. Analytical/filled out air sampling forms by ASP/PM
xii. Daily inspector's logs
xiii. Other forms and/or logs required by state and federal regulations
xiv. Provide sampling and analysis of unexpected ACM encountered during the work

3.7.4.4 Special Submittals

Item	Section	Submittal	Type	Initial Submittal
1	3.7.4.2.4	Soil Management Plan	Administrative	Intermediate
2	3.7.4.2.4	Site Contamination Operation Plan	Construction	Preconstruction
3	3.7.4.2.5	Site Specific Health and Safety Plan	Construction	Preconstruction
4	3.7.4.2.6	Stormwater Management Plan	Construction	Preconstruction
5	3.7.4.3.1	Hazardous Building and Structure Material Survey	Administrative	Intermediate

3.7.5 Air Quality

3.7.5.1 General Requirements

Due to the urban environment of the Project area with close proximity to dense areas of residential, school and commercial land use, limiting air quality impacts is a requirement of the Project. Contractor is responsible to develop and implement Best Management Practices for controlling the dust and limiting emissions from construction equipment. Contractor will follow local, state and federal requirements for controlling fugitive dust (air-borne dirt generated by their construction activities), diesel particulate emissions (by exhaust emission controls and low sulfur fuels) and greenhouse gas emissions (by limiting equipment operations such as excessive idling and by using alternative fuels).

3.7.5.2 Standards, Codes, and References

Design and construction will be in accordance with the requirements listed herein, and the standards, codes, regulations, and references listed below.

A. U.S. and Illinois Environmental Protection Agency
B. City of Chicago, Department of Transportation, Rules and Regulations For Construction in the Public Way
C. City of Chicago Regulation 13-32-125, Construction Site Cleanliness
D. City of Chicago Regulation 2-92-595, Clean Diesel Contracting
E. Cook County Green Construction Ordinance
F. RPM Environmental Assessments in Appendix 3

Publications are listed in hierarchical order, where the Codes and Standards listed higher in the list will take precedence over those listed below them.

3.7.5.3 Contractor Responsibilities

A. Prepare a Dust Control Plan
B. Prepare a Emission Reduction Compliance Plan
C. Prepare Daily Log of heavy-duty diesel motor vehicles, non-road vehicles and non-road equipment used in the performance of the Project

3.7.5.4 Submittal Requirements

3.7.5.4.1 Dust Control Plan

Contractor to prepare Dust Control Plans for all areas of work. The plan will address all elements of dust generating activities and develop specific types of control techniques appropriate to that specific situation.

3.7.5.4.2 Emission Reduction Compliance Plan

Contractor to prepare a written compliance plan to address current local, state and federal requirements for emission reduction from construction equipment.

Contractor to plan and schedule construction vehicles access and egress to the construction Work site and staging areas without excessive disruption and impacts on residences and commercial establishments, to minimize emissions from the adjacent neighborhood traffic. The plan at a minimum will consider the following:

A. Minimize idling times by equipment and trucks

B. Maintain construction equipment in proper working condition

C. Instruct operators in proper use of equipment

D. Use proper size of equipment for the job

E. Use alternative fuels for on-site generators

F. Discourage use of single-occupant vehicles by encouraging carpools, shuttle vans and transit passes for Contractor Team

G. Reduce electricity use in the Project Area without compromising on safety

3.7.5.5 BMP Compliance Requirements

A. Comply with City of Chicago ordinances including but not limited to dust control and stockpiling.

B. Construction work started on or after January 1, 2017 and January 1, 2020 will meet a minimum of 3.0 and 4.0 clean fleet scores, respectfully per reporting period, exclusive of vehicles covered by a clean fleet score annual waiver certificate, see Chicago website for additional information https://www.cityofchicago.org/city/en/progs/env/clean-diesel.html.

C. Submit compliance reports as required by regulations.

3.7.5.6 Special Submittals

Item	Section	Submittal	Type	Initial Submittal Date
1	3.7.5.3.1	Dust Control Plan	Administrative	30 days before start of construction
2	3.7.5.3.2	Emission Reduction Compliance Plan	Administrative	60 days before start of construction
3	3.7.5.4	Emission Compliance Reports	Administrative	As required by regulation

3.7.6 Light Pollution

3.7.6.1 General Requirements

Due to the urban environment of the Project area with close proximity to dense areas of residential, and commercial land use, limiting construction light pollution impacts is a requirement of the Project. Contractor is responsible to develop and implement Best Management Practices for limiting light pollution impacts during construction.

Light pollution is a general term to describe excessive light and/or harmful glare that can be a safety issue and a quality of life issue. The main issues and problems with exterior lighting and light pollution fall in the following main areas:

A. Glare
    i. Disability glare – caused by overly bright light sources that shine directly into one's eyes and can risk blindness
    ii. Discomfort glare – due to high contrast or non-uniform distribution of light in the field of review
    iii. Nuisance or annoyance glare – typically results in complaints from adjacent property use
B. Light Trespass – poor control of outdoor lighting where crossing property lines and impacts quality of life for the adjacent property
C. Security – use of high wattage lighting often times creates deep shadows creating a security concern
D. Energy Usage – inefficient lighting being wasted through light energy spilling upward and outward rather than being directed onto the target area

3.7.6.2 Standards, Codes, and References

Design and construction will be in accordance with the requirements listed herein, and the standards, codes, regulations, and references listed below.

A. City of Chicago Regulation 13-96-1120, Certain types of artificial lighting prohibited
B. Cook County Lighting Ordinance
C. RPM Environmental Assessments in Appendix 3

Publications are listed in hierarchical order, where the Codes and Standards listed higher in the list will take precedence over those listed below them.

3.7.6.3 Contractor Responsibilities

Prepare a Plan to minimize Light Pollution

3.7.6.4 Light Pollution Plan

Contractor to prepare a Light Pollution Plan for the all areas of work. The plan will address all elements of light generating activities and develop specific BMPs appropriate to that specific situation.

3.7.6.5 Compliance Requirements

A. Illuminate with properly shielded fixtures that prevent light source itself and the resultant glare, from being directly visible. Light from a luminaire that projects on to publically accessible areas and adjacent property that causes glare, annoyance, discomfort, or loss of visual ability will not be permitted.

B. Do not over illuminate; never use more illumination than needed.

C. Aim lighting downward, keeping all of its distribution within the Project Limits and below the horizontal plane so as not to be a source of glare (bulbs fully recessed within the fixture). Cone of emitted light will not project on to adjacent properties.

D. Do not burn lighting in areas not required for the work.

E. Submit compliance reports as required by regulations.

F. Address revisions to the plan if required due to complaints from the public.

3.7.6.6 Special Submittals

Item	Section	Submittal	Type	Initial Submittal Date
1	3.7.6.3	Light Pollution Plan	Administrative	30 days before start of construction

3.7.7 Environmental Impact Mitigation Plan

The Environmental Impact Mitigation Plan (EIMP) is a component of the overall Design Build Management System and Construction Management Plan and will serve as the mechanism to ensure the mitigation measures are implement for the protection of public and private facilities adjacent to the Work.

3.7.7.1 Elements

The EIMP will be comprised of the criteria, mitigation strategies and special submittals for the following:

A. Noise (Part 3.7.1)

B. Vibration (Part 3.7.2)

C. Temporary Erosion and Sediment (Part 3.7.3)

D. Contaminated and Hazardous Material (Part 3.7.4)

E. Air Quality (Part 3.7.5)

F. Light Pollution (Part 3.7.6)

G. Protection of Existing Structures (Part 4.2.7 & 4.6.6.1)

H. Protection of Existing Sewers (Part 4.5.3.2.1)

I. Use of Recycled Concrete (subject to Part 1 Section 4.3, in accordance with the Proposal Extract in Part 1, Exhibit 1 on page 3.1-45, Contractor commitment to use concrete rubble from demolition for temporary aggregate)

J. All other miscellaneous items included in the NEPA Tracking Matrix (Appendix 3K)

3.7.7.2 Impact Mitigation Baseline, Monitoring and Validation

3.7.7.2.1 Baseline

In addition to the noise and vibration data included in the Appendix 3L, the Pre-Construction Inspection and Surveys described in Part 4.2.4 and the Hazardous Building and Structure Material Survey described in Part 3.7.4.2.1 will serve as the basis for evaluating and documenting the existing conditions for the various EIMP components.

3.7.7.2.2 Monitoring

In progress construction impacts and potential adjustments to the mitigation strategies will be evaluated based on the construction monitoring program as required in Part 4.2.

3.7.7.2.3 Validation

In addition to the compliance requirements outline in the various Parts indicated above, the Post-Construction Survey, Photos and Video requirement indicated in Part 4.2.11 will serve as basis for validating the implementation of the environmental impact mitigations measures.

3.7.7.3 Reporting

A. The NEPA Tracking Matrix will be updated throughout design, construction and closeout to ensure the Project complies with NEPA commitments.

B. Construction reporting requirements will be in accordance with Part 2.5.1.13.

3.8 Time Period Requirements

This Part describes the Milestones, Punchlist Work and Final Completion time requirements.

3.8.1 Milestones

3.8.1.1 Milestone 1

Achieve Project Element Substantial Completion of the initial RPB phase described in Sub Part 3.9.1, within 878 calendar days after issuance of NTP. All elements of the bypass structure, track, footwalk, and systems must be fully tested, commissioned and safety certified in accordance with all Contract requirements in order to achieve Project Element Substantial Completion of this Milestone.

3.8.1.2 Milestone 2

Achieve Project Element Substantial Completion of the Lawrence to Bryn Mawr Modernization area within 1,922 calendar days after issuance of NTP. All elements of structure, track, footwalk, stations, and systems must be fully tested, commissioned and safety certified in accordance with all Contract requirements in order to achieve Project Element Substantial Completion of this Milestone.

3.8.1.3 Milestone 3

Achieve Substantial Completion of all Contract Work within 2,002 calendar days after issuance of NTP.

3.8.2 Punchlist Work

Contractor is required to complete Punchlist Work within 120 calendar days after issuance of a Certificate of Project Element Substantial Completion or Substantial Completion by CTA.

3.8.3 Final Completion

Contractor is required to achieve Final Completion within 180 calendar days after issuance of the Milestone 3 Certificate of Substantial Completion by CTA.

3.8.4 Liquidated Damages

Contractor will be liable for Liquidated Damages for the time that Contractor causes a delay in returning the system to normal operational service after any Track Access Occurrence, Substation Occurrence, or scheduled special transit operation; or, for any Unexpected Rail Interruption. Contractor will be liable for Liquidated Damages for the failure to achieve Project Element Substantial Completion or Substantial Completion of any Milestone in accordance with Contract requirements. The time requirements and the amount of Liquidated Damages are listed below. Any such amounts will be payable as Liquidated Damages.

3.8.4.1 Contractor Failures to Complete

A. For failure of Contractor to timely return back to service any of the tracks or facilities impacted by any Track Access Occurrence, with the exception of extended reroutes, including, but not limited to, single track, track closure, reroute, reroute with back ride, or line cut proposed on an hourly basis, Liquidated Damages will be calculated for each track as shown in Table 3.8-1:

TABLE 3.8-1: LIQUIDATED DAMAGES FOR TRACK ACCESS OCCURRENCES WITH THE EXCEPTION OF EXTENDED REROUTES

Rail Line	Brown	Purple	Red
From one minute up to the first 29 minutes delayed	$2,000.00	$1,000.00	$5,000.00
In addition, from 30 minutes up to the first 59 minutes delayed	$4,300.00	$1,200.00	$10,000.00
For each additional hour, or fraction thereof, thereafter delayed	$38,000.00	$12,000.00	$67,000.00

B. For failure of Contractor to timely return back to service any of the tracks or facilities impacted by an extended reroute Track Access Occurrence proposed on a daily basis, Liquidated Damages will be calculated for each track as shown in Table 3.8-2:

TABLE 3.8-2: LIQUIDATED DAMAGES FOR EXTENDED REROUTE TRACK ACCESS OCCURRENCES

For each day, or fraction thereof, any track of an extended reroute is delayed	$21,000.00

C. For failure of Contractor to return a substation back to full service after each authorized Substation Occurrence scheduled for Contractor's work, Liquidated Damages will be calculated as shown in Table 3.8-3:

TABLE 3.8-3: LIQUIDATED DAMAGES FOR SUBSTATION OCCURRENCES

From one minute up to the first 59 minutes delayed	$2,400.00
For each additional hour, or fraction thereof, thereafter delayed	$2,400.00

D. For any Unexpected Rail Interruptions, Liquidated Damages will be calculated as shown in Table 3.8-4:

TABLE 3.8-4: LIQUIDATED DAMAGES FOR UNEXPECTED RAIL INTERRUPTION			
Rail Line	**Brown**	**Purple**	**Red**
From time equal to 2x the scheduled headway up to the first 8 hours	$423,000	$178,000	$744,000
Each additional hour, or fraction thereof, from 8 hours and one minute to 24 hours	$34,000	$22,000	$56,000
Each additional hour, or fraction thereof, beyond 24 hours	$25,000	$18,000	$37,000

E. Failure of Contractor to achieve Project Element Substantial Completion or Substantial Completion of a Contract Milestone:

Failure to achieve Project Element Substantial Completion of Milestone No.1 within the proposed number of calendar days after NTP will result in the assessment of Liquidated Damages per day in the amount of $25,000.00

Failure to achieve Project Element Substantial Completion of Milestone No. 2 within the proposed number of calendar days after NTP will result in the assessment of Liquidated Damages per day in the amount of $45,000.00

Failure to achieve Substantial Completion of Milestone No. 3 within the proposed number of calendar days after NTP will result in the assessment of Liquidated Damages per day in the amount of $73,000.00

3.9 Construction Phasing

This Part describes the phasing requirements of the Work with respect to the Red-Purple Bypass, Lawrence to Bryn Mawr Modernization and Corridor Signal Improvements areas.

Contractor's phasing must support CTA Rail and Bus Operations alternative and normal service plans that provide the necessary level of customer service during construction and at construction completion, respectively. For example, Contractor's operations cannot impact streets on which bus shuttles established for line cut Track Access Occurrences (TAOs) will run.

To further support Rail and Bus Operations, Contractor must provide an initial 90-day advance written notice to establish the date Contractor intends to start or end any phase in which Red and Purple Line trains will operate on the same tracks in an extended reroute TAO. TAOs are described in Part 3.10. Contractor must provide a second written notice 60 days ahead of that date to confirm or, if required, nominally refine that date. A third written notice must be provided by Contractor 30 days in advance to affirm the start or end date of combined Red and Purple line service. The start or end of combined Red and Purple line service in any extended reroute TAO must occur either Sunday at 0001 hours or at the conclusion of a weekend Track Access Occurrence ending on a Sunday or on a Monday by 0400 hours.

Project Element Substantial Completion of each phase must be requested by Contractor and certified by CTA and requires the completion of all traction power, signal, and communications infrastructure needed to provide unrestricted support of CTA's operating plan. This includes bi-directional operation, if required, whether necessitated by CTA operations or TAOs. Project Element Substantial Completion included in each phase, as well as the implementation of each Temporary system modification or configuration change, must be in accordance with an approved Systems Cutover Plan as described in Sub Part 2.5.2.2.

Public Way impacts must be mitigated in that closures of roadways, alleys, sidewalks and ancillary functions and elements must be modified to reflect subsequent phase requirements before proceeding from one phase to the next.

The following phasing descriptions are meant to describe and support CTA's operating needs and are not meant to define specific work areas, construction activities, or construction limits. Adjacent work or work in other areas may proceed concurrently as long as CTA's operating needs are not impacted and Project requirements are met.

3.9.1 Red-Purple Bypass (RPB)

A. The initial RPB phase must construct and place into operation Permanent and/or Temporary structures, track, signals, and traction power to carry Brown Line trains during subsequent phases of RPB construction without restriction when not under a TAO.

   Upon construction completion of the initial RPB phase, rail operations will require the following:

i. Except as modified by allowable Track Access Occurrences, southbound Brown Line trains from Southport station may move from Ravenswood Branch Track RV1 to North Mainline Track NM1 at Belmont station without impacting rail service on other North Mainline tracks

ii. Northbound Brown Line trains in normal service may use North Mainline Track NM4 at Belmont station without impacting rail service on North Mainline Tracks NM3, NM2 or NM1 when proceeding north to Ravenswood Branch Track RV2 on the bypass structure

iii. North Mainline Tracks NM3 and NM4 must be capable of carrying combined Red Line and Purple Line rail operations between the Belmont and Addison stations with all trains able to make stops at both stations; reverse direction cab signals must be operational for southbound trains on track NM3

iv. The existing Ravenswood Branch Track RV2 segment between Clark Junction and the Seminary interlocking must be available for bi-directional operation to Ravenswood Branch Tracks RV1 and RV2 without the need for single-track operation of any length on either track.

For this phase, Brown, Red and Purple line rail service will operate normally except as modified by allowable Track Access Occurrences.

Track circuit system future capabilities, as identified in Guidance Specification 34 42 20, are not required for the track circuit system placed into service in this phase and may be considered a segregated item of incomplete Work and not an item of the Punchlist as described in Sub Part 2.13.2.

B. The second RPB phase cannot begin until all infrastructure needed to support the operational requirements to be provided by the initial RPB phase is fully commissioned and substantially complete.

The second RPB phase will commence at the conclusion of the Track Access Occurrence(s) that reroutes northbound combined Red and Purple Line train operations from Track NM3 to NM4 between Belmont and Addison and reroutes southbound combined Red and Purple line train operations from Track NM2 to NM3 between Addison and Belmont.

The second RPB phase must construct the new structure, track, traction power and signals for North Mainline Tracks NM1 and NM2 between Belmont station and Cornelia Avenue such that, upon completion of that phase, North Mainline Tracks NM1 and NM2 are capable of carrying combined Red Line and Purple Line rail operations between the Belmont and Addison stations with all trains able to make stops at both stations.

At the completion of this phase, the following must also be completed:

i. A new left-hand turn out from North Mainline Track NM2 to the existing Ravenswood Branch Track RV2 segment at Clark Junction that can no longer be part of normal northbound Brown Line service must be available for signalized operation to Ravenswood Branch Tracks RV1 and RV2

ii. A new diamond crossing where the existing Ravenswood Branch Track RV2 segment crosses North Mainline Track NM1

iii. A new diamond crossover between North Mainline Tracks NM1 and NM2

iv. One-half of a new diamond crossover between North Mainline Tracks NM2 and NM3

v. Reverse direction cab signals must be must be operational for northbound trains on track NM2

For this phase, Red Line and Purple Line trains may operate together on North Mainline Tracks NM3 and NM4 between the Belmont and Addison stations and Brown Line trains will utilize the infrastructure constructed in the initial RPB phase except as modified by allowable TAOs.

C. The third RPB phase cannot begin until all infrastructure needed to support the operational requirements to be provided by the second RPB phase is fully commissioned and substantially complete.

The third RPB phase will commence at the conclusion of the TAO(s) that reroutes northbound combined Red and Purple Line train operations from Track NM3 to Track NM2 between Belmont and Addison and reroutes southbound combined Red and Purple Line train operations from Track NM2 to Track NM1 between Addison and Belmont.

The third RPB phase must construct the new structure, track, traction power, and signals for North Mainline Tracks NM3 and NM4 between Belmont station and Cornelia Avenue such that, upon completion of this phase, North Mainline Tracks NM1, NM2, NM3 and NM4 may be placed back into normal service.

At the completion of this phase, the following must also be completed:

i. A new diamond crossover between North Mainline Tracks NM3 and NM4

ii. The new diamond crossover between North Mainline Tracks NM2 and NM3

D. The fourth RPB phase cannot begin until all infrastructure needed to support the operational requirements to be provided by the third RPB phase is fully commissioned and substantially complete.

The fourth RPB phase will decommission the Addison interlocking and replace existing special track work with tangent track and new foot walk.

3.9.2 Lawrence to Bryn Mawr Modernization (LBMM)

A. The initial LBMM phase must construct the improvements necessary for CTA to operate two-track, combined Red Line and Purple Line service on North Mainline Tracks NM1 and NM2 between the Montrose and Thorndale Interlockings.

   At the completion of this phase, the following must be completed:

   i. The Montrose and Thorndale Interlockings

   ii. Systems infrastructure to support bi-directional operation on North Mainline Tracks NM1 and NM2 between the Montrose and Thorndale Interlockings, including required interfaces to the existing signal system at Montrose and Thorndale

   iii. Northbound and southbound station stops serving Argyle and Bryn Mawr station customers

   iv. Preparatory Work, such as the Temporary mainline barrier sufficient to support normal train speeds between station stops during rush periods of extended reroute rail operation. Refer to Parts 3.10 and 4.6 for Temporary mainline barrier information.

   v. All Work associated with the Granville interlocking removal must be complete as part of the initial LBMM phase

   For this phase, Red and Purple line rail service will operate normally except as modified by allowable TAOs.

   Track circuit system future capabilities, as identified in Guidance Specification 34 42 20, are not required for the track circuit system placed into service in this phase and may be considered a segregated item of incomplete Work and not an item of the Punchlist as described in Sub Part 2.13.2.

B. The second LBMM phase cannot begin until all infrastructure needed to support the operational requirements to be provided by the initial LBMM phase is fully commissioned and substantially complete. Second-phase LBMM rail operations on North Mainline Tracks NM1 and NM2 must begin on a Sunday at 0001 hours, continue uninterrupted for seven calendar days, and demonstrate that the minimum required service levels can be provided before the second LBMM phase demolition and construction activities may begin. The service demonstration period can only start after the initial LBMM phase Work has been fully commissioned and achieved Element Substantial Completion.

   To support rail operations in the next phase, the second LBMM phase must construct the improvements necessary for CTA to operate two-track, combined, bi-directional Red Line and Purple Line service on North Mainline Tracks NM3 and NM4.

   At the completion of this phase, the following must be completed:

i. New permanent structures, track, and systems for North Mainline Tracks NM3 and NM4

ii. Winona Middle Track

iii. A northbound station stop serving Argyle station customers and southbound station stops serving Argyle and Bryn Mawr station customers

iv. Preparatory Work, including the installation of engineered Temporary barriers, sufficient to support normal train speeds between station stops during rush periods of extended, two-track reroute rail operation

For this phase, CTA will operate combined Red Line and Purple Line service on North Mainline Tracks NM1 and NM2 between the Montrose and Thorndale Interlockings except as modified by allowable TAOs.

C. The third LBMM phase cannot begin until all infrastructure needed to support the operational requirements to be provided by the second LBMM phase are fully commissioned and substantially complete.

Third-phase LBMM rail operations on North Mainline Tracks NM3 and NM4 must begin on a Sunday at 0001 hours, continue uninterrupted for seven calendar days, and demonstrate that the minimum required service levels can be provided before the third LBMM phase demolition and construction activities may begin. The service demonstration period can only start after the initial LBMM phase Work has been fully commissioned and achieved Element Substantial Completion.

To support rail operations in the next phase, the third LBMM phase must construct the improvements necessary for the CTA to return to four-track operation between Montrose and Thorndale Interlockings.

At the completion of this phase, the following must be completed:

i. New permanent structures, track, and systems for North Mainline Tracks NM1 and NM2

ii. New permanent Lawrence, Argyle, Berwyn and Bryn Mawr stations

For this phase, CTA will operate combined Red Line and Purple Line service on North Mainline Tracks NM3 and NM4 between the Montrose and Thorndale Interlockings except as modified by allowable TAOs.

D. The fourth LBMM phase cannot begin until all infrastructure needed to support the operational requirements to be provided by the third LBMM phase are fully commissioned and substantially complete.

To support rail operations at the conclusion of this phase, the fourth LBMM phase must construct the improvements necessary to remove Temporary

facilities, complete the closed-deck structure, provide the final track configuration and complete the Punchlist for the LBMM portion of the Work.

For this phase, Red and Purple line rail service will follow normal, four-track operation except as modified by allowable TAOs.

3.9.3 Corridor Signal Improvements (CSI)

CSI consists of the Work necessary to provide an upgraded signal system between:

A. Barry Interlocking and Clark Junction

B. Clark Junction and the Seminary Interlocking

C. Clark Junction and Montrose Interlocking

D. Montrose Interlocking and Thorndale Interlocking

E. Thorndale Interlocking and Jarvis Interlocking

Ancillary Work is required at:

i. Altgeld Interlocking

ii. Barry Interlocking

iii. Clark Tower

iv. Lakewood Interlocking

v. Howard South Interlocking

vi. Howard North Interlocking

CSI implementation must support the operations requirements needed for, and to be provided in, the various RPB and LBMM phases. For the implementation of this Work, Brown, Red and Purple line rail service will follow the rail service requirements of the corresponding RPB and/or LBMM phases. Work between Altgeld and Howard North Interlockings, and Clark Junction and Lakewood Interlockings is subject to all constraints described in Part 3.10.

Contractor will coordinate its Work with the work to be completed under the Broadway Substation Upgrade Project.

3.10 Allowable CTA Access

This Part describes allowable Contractor access to perform certain portions of the Work on or adjacent to CTA operating tracks or the CTA right-of-way. CTA manages this access through its authorization of a Track Access Occurrence and/or a work zone requiring flagging protection. Allowable access to CTA's Clark and Broadway substations and CTA yards and non-revenue service tracks is also described.

3.10.1 Track Access Occurrences

All CTA tracks are in service seven days a week, 24 hours a day, unless specifically removed from service by CTA for specific times by a Rail Service Bulletin. A Track Access Occurrence is the planned, scheduled, and approved establishment of a condition(s) that provides a modification to the normal operation of CTA service on a section of track. Normal operation is defined as routing that accommodates four-track operation on the North Mainline corridor and two-track operation on the Ravenswood Branch corridor while serving all open stations. Excluding scheduled work zones requiring flagging protection or use of an Automated Work Zone Protection System, any condition that results in a modification to CTA rail operations, including any condition which restricts the ability of CTA customers to utilize the rail system, and which is not part of and consistent with an approved Track Access Occurrence constitutes an Unexpected Rail Interruption.

Track Access Occurrences are Schedule elements as indicated in Sub Part 2.1.6.1, Elements. Track Access Occurrences will be included on the FWLA and discussed at weekly CTA Rail Operations Construction Meetings. Sub Part 2.6.4 describes the use of Rail Service Bulletin requests to obtain Track Access Occurrences.

The types of Track Access Occurrences are defined as follows:

A. Track closure - a section of track between two points removed from service when no service is scheduled.

B. Reroute - train operation over a different track than normal without bypassing any stations at which stops are scheduled.

C. Reroute with back ride (four or fewer stations) - train operation over a different track than normal while bypassing four or fewer stations at which stops are scheduled.

D. Reroute with back ride (five or more stations) - train operation over a different track than normal while bypassing five or more stations at which stops are scheduled.

E. Extended reroute - train operation over different tracks than normal for an extended period of time, i.e., continuously over consecutive calendar days, including multiple consecutive weekdays.

F. Single track (1-zone) - bidirectional operation of trains over one track between adjacent crossovers or interlockings.

G. Single track (2-zone) – bidirectional operation of trains over one track between crossovers or interlockings with an intermediate crossover or interlocking.

H. Line cut - Suspension of service between two adjacent stations, with alternate service provided by bus.

Track access may be requested as an individual Track Access Occurrence or as an allowable simultaneous combination of multiple types of Track Access Occurrences subject to all requirements and constraints defined in this Part. Allowable Track Access Occurrence types and combinations of types are shown in Table 3.10-1 and the allowable hours for Track Access Occurrences are indicated in Table 3.10-2. The allowable hours are subject to a change of plus or minus fifteen (15) minutes.

Cells containing a plus sign (+) represent an allowable Track Access Occurrence or allowable combination of two concurrent Track Access Occurrences.

Cells containing a minus sign (-) represent two concurrent Track Access Occurrences that will be allowed, but are not preferable to CTA. These combinations have a detrimental impact on passenger service and, because of the complexity of their implementation by CTA Rail Operations or the management of passenger circulation and communications, the impacts could be prohibitive.

Cells containing a capital letter “X” represent two Track Access Occurrence types that will not be allowed to occur simultaneously. Concurrent activities that are not permitted have a significant detrimental impact on passenger service (or in some cases are not possible due to the combination of time and scheduled service). Conditions that require passengers on the same route to alter their travel more than once (such as two separate reroutes with back riding, or the combination of a line cut and reroute with back riding) are not permitted.

In addition to the allowable Track Access Occurrence combinations shown in Table 3.10-1, the following are the allowable combinations of three or more Track Access Occurrences:

i. C, G, & J

ii. F, H, & J

iii. F, I, & J

iv. A, F, G, & J

v. C, F, H, & J

No other combinations of three or more Track Access Occurrence types will be allowed.

Any Track Access Occurrence requested to perform construction activities south of Irving Park Rd. will be considered an RPB Track Access Occurrence. Any Track Access Occurrence requested to perform construction activities north of Irving Park Rd. will be considered an LBMM Track Access Occurrence. The RPB corridor extends south to Armitage station and west to Southport station on the Ravenswood Branch. The LBMM corridor extends north to the Howard North Interlocking.

TABLE 3.10-1: ALLOWABLE TRACK ACCESS OCCURRENCE TYPES AND COMBINATIONS																				
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**
A - Red Line reroute - RPB	+																			
B - Red Line reroute with back ride - RPB	+	X																		
C - Red Line line cut - RPB	+	X	X																	
D - Brown Line track closure - RPB	+	+	+	+																
E - Brown Line reroute - RPB	+	+	+	X	+															
F - Brown Line reroute with back ride (Wellington & Diversey) - RPB	+	+	+	X	+	X														
G - Brown Line single track (1-zone) - RPB	+	+	+	X	+	-	X													
H - Brown Line single track (2-zone) - RPB	-	-	X	X	-	X	X	X												
I - Brown Line line cut - RPB	+	+	X	X	+	+	X	X	X											
J - Purple Line track closure - RPB	+	+	+	+	+	+	+	+	+	+										
K - Red Line reroute with back ride (four or fewer stations) - LBMM	+	X	X	+	+	-	+	-	+	+	X									
L - Red Line reroute with back ride (five or more stations) - LBMM	-	X	X	-	-	-	-	-	-	-	X	X								
M - Purple Line track closure - LBMM	+	+	+	+	+	+	+	+	+	+	+	+	+							
N - Two-direction Red Line reroute with three or fewer stations closed (bus augmentation) - LBMM	+	X	X	+	+	-	+	-	-	+	X	X	+	X						

TABLE 3.10-1: ALLOWABLE TRACK ACCESS OCCURRENCE TYPES AND COMBINATIONS																			
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**
O - Extended reroute of Tracks NM1 & 2 (south of Addison station to north of Belmont station) - RPB	+	-	X	+	+	-	+	-	-	X	-	-	+	+	X					
P - Extended reroute of Tracks NM3 & 4 (south of Addison station to north of Belmont station) - RPB	+	-	X	+	+	-	+	-	-	X	-	-	+	+	X	X				
Q - Extended reroute of Tracks NM1 & 2 (Montrose Interlocking to Thorndale Interlocking) - LBMM	+	-	-	+	+	-	+	-	+	+	X	X	X	X	+	+	X			
R - Extended reroute of Tracks NM3 & 4 (Montrose Interlocking to Thorndale Interlocking) - LBMM	+	-	-	+	+	-	+	-	+	+	X	X	X	X	+	+	X	X		
S - Extended reroute Purple Line - RPB	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	+	+	+	X	
T - Extended reroute Brown Line - RPB	X	X	+	X	X	X	X	X	X	+	+	+	+	+	+	X	+	+	X	X

TABLE 3.10-2: TRACK ACCESS OCCURRENCE ALLOWABLE HOURS					
TRACK ACCESS OCCURRENCE TYPE	Daily 0900-1500	Nightly 2000-0400	Nightly 2200-0400	Weekend 2200 Fri-0400 Mon	Extended
A - Red Line reroute - RPB	Y	Y	N	Y	N
B - Red Line reroute with back ride - RPB	N	N	Y	Y	N
C - Red Line line cut - RPB	N	N	Y	Y	N
D - Brown Line track closure - RPB*	N	N	Y *	N	N
E - Brown Line reroute - RPB	Y	Y	Y	Y	N
F - Brown Line reroute with back ride (Wellington & Diversey) - RPB	N	N	Y	Y	N

TABLE 3.10-2: TRACK ACCESS OCCURRENCE ALLOWABLE HOURS					
TRACK ACCESS OCCURRENCE TYPE	Daily 0900-1500	Nightly 2000-0400	Nightly 2200-0400	Weekend 2200 Fri-0400 Mon	Extended
G - Brown Line single track (1-zone) - RPB	N	N	Y	Y	N
H - Brown Line single track (2-zone) - RPB	N	N	Y	Y	N
I - Brown Line line cut - RPB	N	N	Y	Y	N
J - Purple Line track closure - RPB*	Y *	Y *	Y	Y	N
K - Red Line reroute with back ride (four or fewer stations) - LBMM	N	N	Y	Y	N
L - Red Line reroute with back ride (five or more stations) - LBMM	N	N	Y	Y	N
M - Purple Line track closure - LBMM*	Y *	Y	Y	Y	N
N - Two-direction Red Line reroute with three or fewer stations closed (bus augmentation) - LBMM	N	N	N	Y	N
O - Extended reroute of Tracks NM1 & 2 (south of Addison station to north of Belmont station) - RPB	NA	NA	NA	NA	Y
P - Extended reroute of Tracks NM3 & 4 (south of Addison station to north of Belmont station) - RPB	NA	NA	NA	NA	Y
Q - Extended reroute of Tracks NM1 & 2 (Montrose Interlocking to Thorndale Interlocking) - LBMM	NA	NA	NA	NA	Y
R - Extended reroute of Tracks NM3 & 4 (Montrose Interlocking to Thorndale Interlocking) - LBMM	NA	NA	NA	NA	Y
S - Extended reroute Purple Line - RPB	NA	NA	NA	NA	Y
T - Extended reroute Brown Line - RPB	NA	NA	NA	NA	Y

Y = Track access type is allowable.

N = Track access type is not allowable.

NA = Condition not applicable.

Note: * D, J and M may occur only during the hours of no scheduled train service as shown in Table 3.10 – 3.

TABLE 3.10-3: HOURS OF NO SCHEDULED SERVICE						
	Purple Line				Brown Line	
	Base Period		Overnight			
	NM1	NM4	NM1	NM4	RV1	RV2
Monday	1000-1430	1100-1530	1900-0500ND	2000-0600ND	0115-0400	0200-0445
Tuesday	1000-1430	1100-1530	1900-0500ND	2000-0600ND	0230-0400	0245-0445
Wednesday	1000-1430	1100-1530	1900-0500ND	2000-0600ND	0230-0400	0245-0445
Thursday	1000-1430	1100-1530	1900-0500ND	2000-0600ND	0230-0400	0245-0445
Friday	1000-1430	1100-1530	1900-2400	2000-2400	0230-0400	0245-0445
Saturday	0001-2400	0001-2400	0001-2400	0001-2400	0230-0400	0245-0445
Sunday	0001-0500ND	0001-0500ND	0001-0500ND	0001-0500ND	0230-0500	0245-0545

ND = Next day NA = Condition not applicable

Schematic representations of the existing and final track configurations appear in Figures 3.10-1 and 2 for RPB and 3.10-3 and 4 for LBMM.

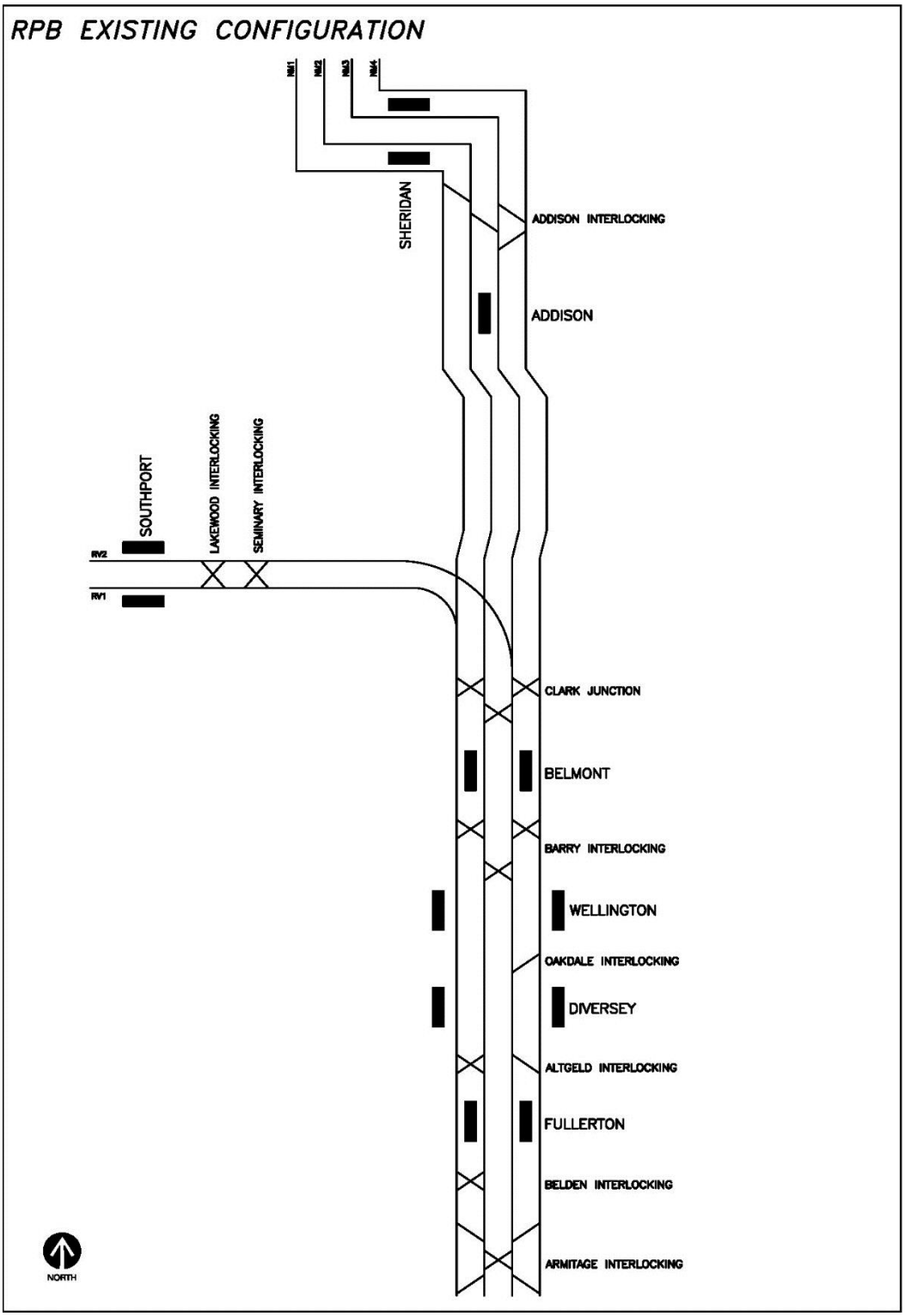

Figure 3.10-1: RPB Existing Configuration

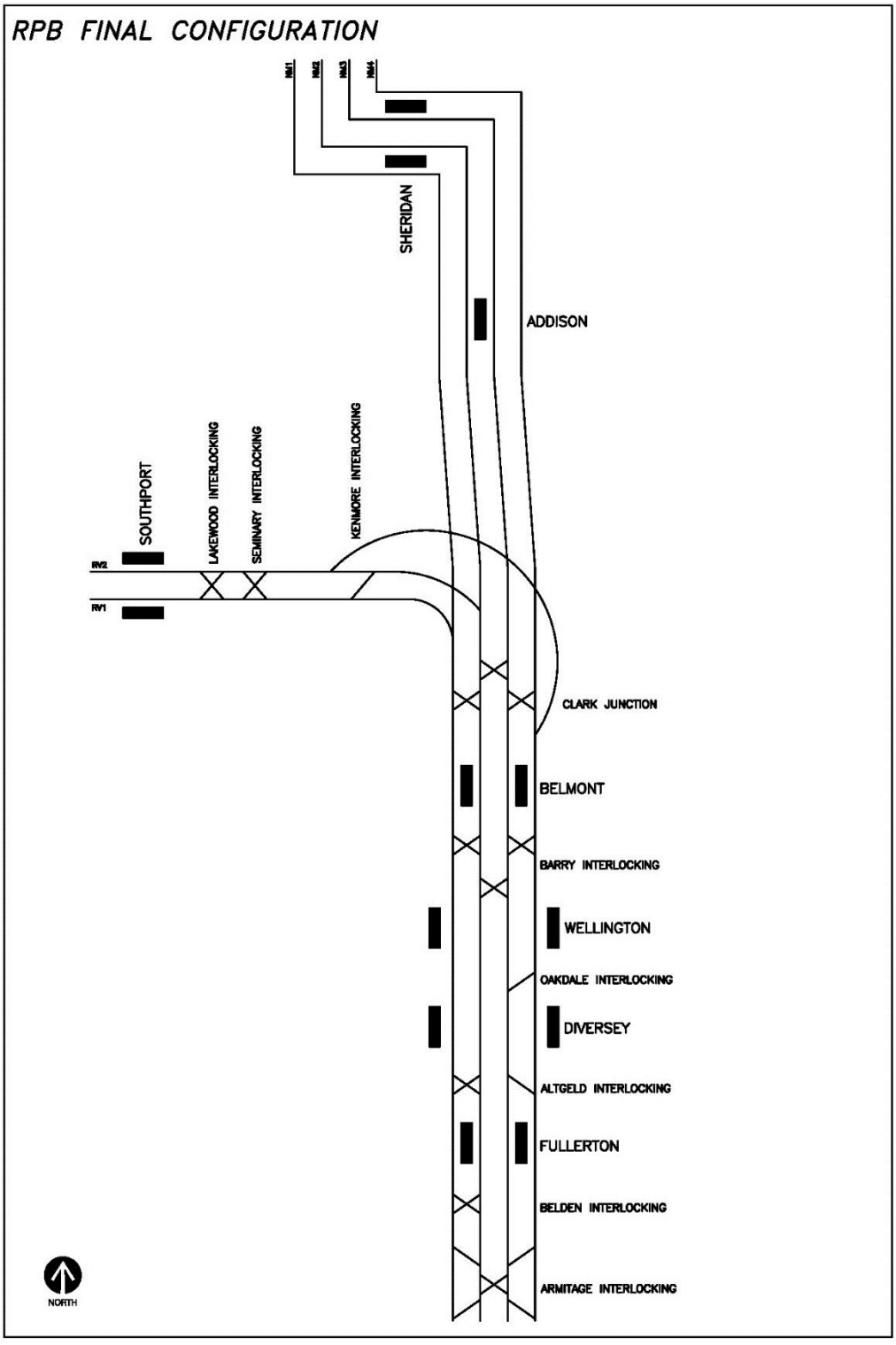

Figure 3.10-2: RPB Final Configuration

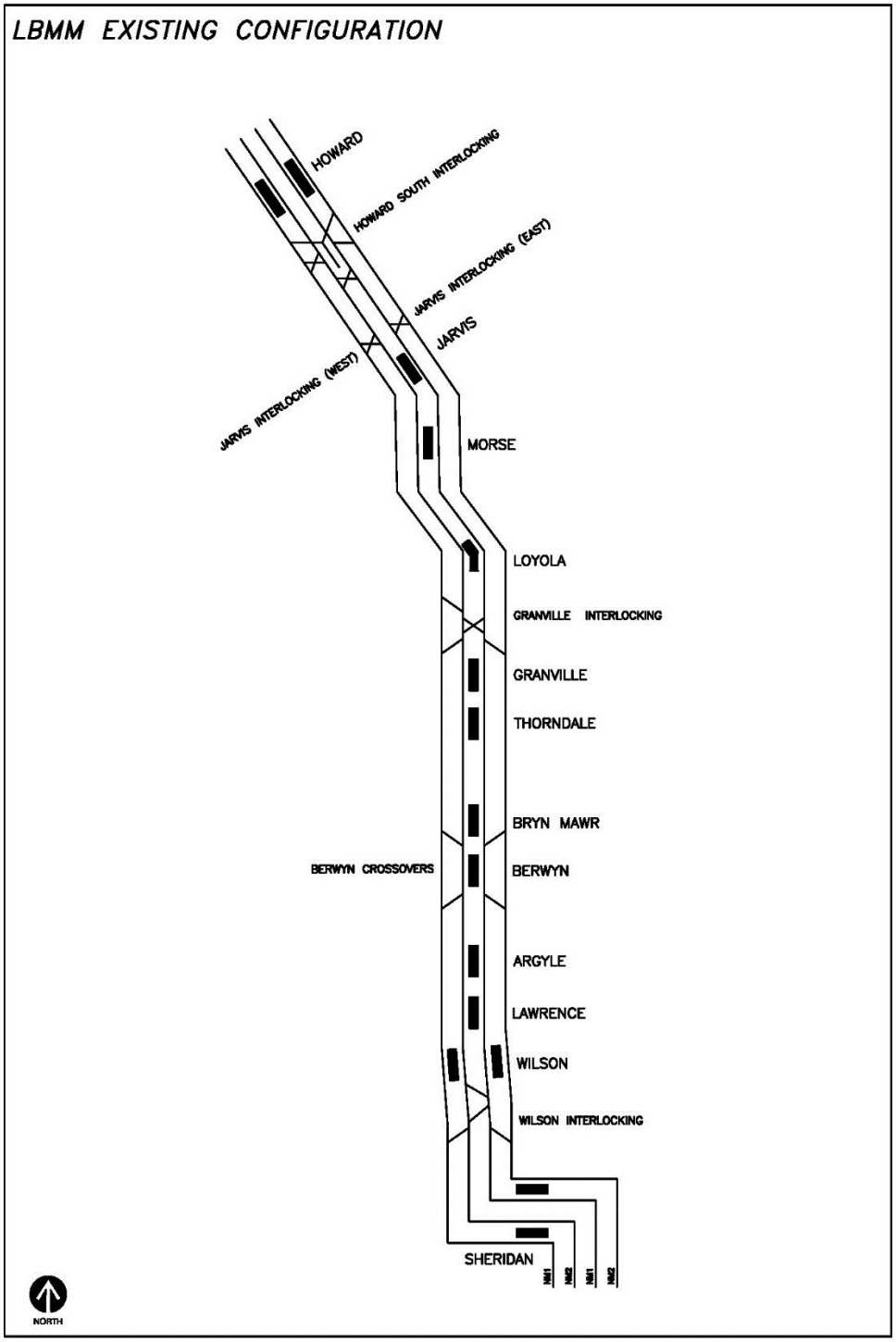

Figure 3.10-3: LBMM Existing Configuration

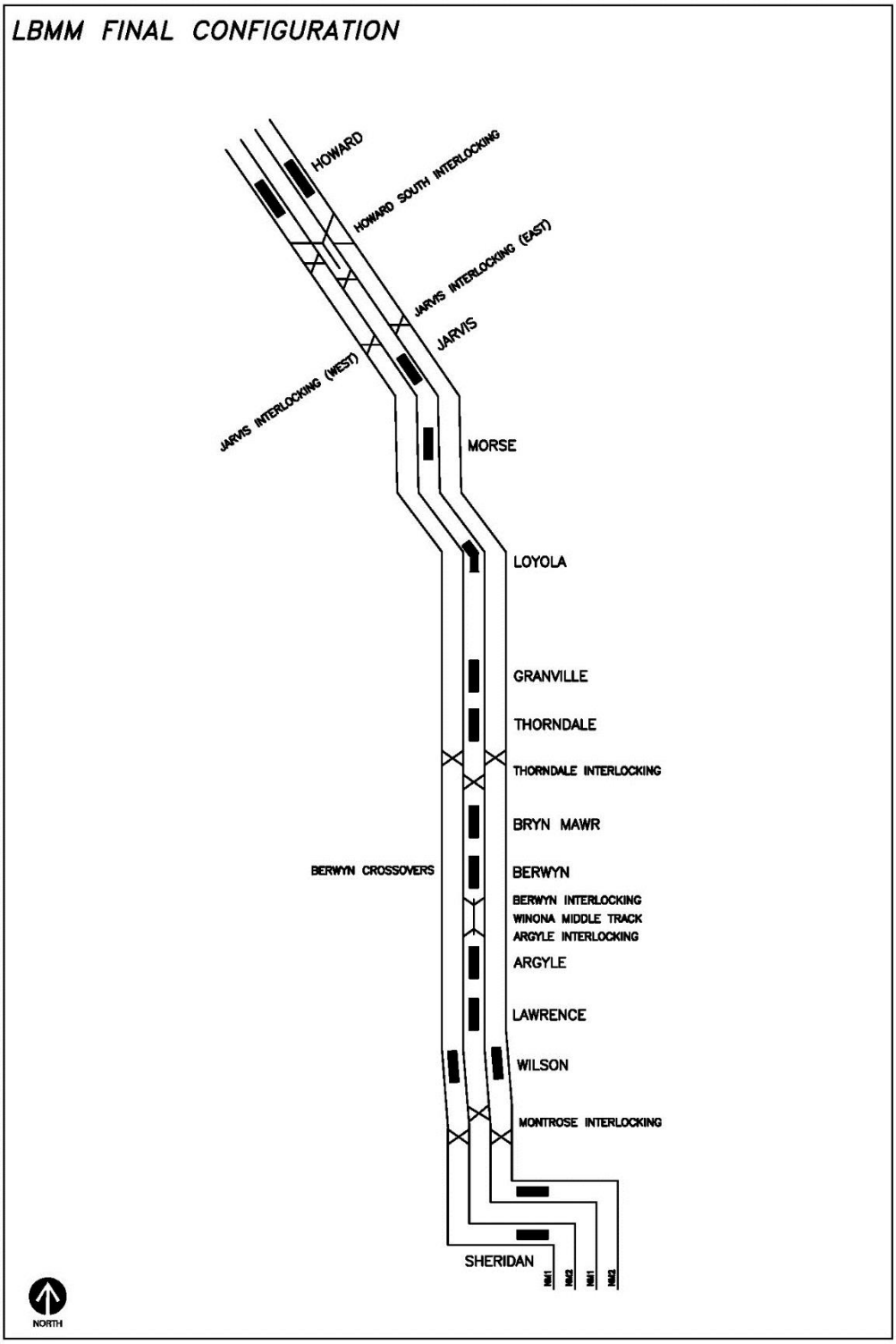

Figure 3.10-4: LBMM Final Configuration

Schematic representations of the Track Access Occurrences developed by CTA for implementation of the Base Case are included in Part 7 Reference Documents.

3.10.2 Work Zone Protections

3.10.2.1 Work Zones Requiring Flagging Protection

During periods of construction, a slow zone may be established at the Work site with CTA flagging personnel deployed to facilitate safe and continuous train operations and to protect CTA passengers and employees, Contractor, the general public and property in the vicinity. CTA Flaggers only provide flagging protection for the CTA right-of-way. Flaggers for the public way are solely Contractor's responsibility. Refer to Sub Part 2.6.2 for information on requesting flaggers using Rail Operations Manpower Orders.

A work zone requiring flagging protection is required whenever three or more workers are scheduled to work on, across or near a section of track for one half hour or more. Except as noted in Sub Part 3.10.8.2, no one is permitted to enter the right-of-way, work on or over track level, or utilize a work zone requiring flagging protection during rush hour periods, which are Monday through Friday, from 0500 to 0900 hours and from 1500 to 1900 hours.

Outside of rush-hour periods, work zones requiring flagging protection may be required on tracks adjacent to a Track Access Occurrence area and allowed on active tracks outside of Track Access Occurrence areas. Flagging protection will be ordered and assigned according to the latest update of the CTA Flagmen Requirements manual. The current Flagmen Requirements manual is provided as Appendix 2B. These standards must be adhered to and the number of flagmen assigned to a work location will be as required by the CTA Flagmen Requirements manual as certain Work locations require multiple flagging personnel even when only one track is fouled by the Work.

Adjacent tracks are two or more tracks with centers spaced less than twenty feet apart not separated by an approved barrier. When work will cause the fouling of an adjacent track or the only position in the clear is between adjacent tracks, each track will need a work zone requiring protection.

By labor contract, CTA flagging personnel are entitled to a 30-minute break after a continuous 5-1/2 hour work period, including report and travel time. The 5-1/2 hour period begins when the person reports to work at his or her home terminal. Additionally, flagging personnel are entitled to occasional personal breaks (to use the washroom facilities) during the normal course of work. When flagging personnel leave the Work site, work must cease unless provision is made for a relief flagger. Contractor will coordinate the Work schedule with the flagging personnel break periods.

Personnel picks, in which transit operations employees select work locations and assignments, typically occur twice a year. Contractor must provide an estimate of daily flagging personnel needs forty-five days in advance of each CTA personnel pick. The Contractor's flagging personnel estimates must cover flagging personnel required for Track Access Occurrences planned for the next ten months as well flagging personnel required for work to be performed outside of Track Access Occurrences.

3.10.2.2 Optional Automated Work Zone Protection System – LBMM

3.10.2.2.1 Conceptual Overview

In lieu of work zones requiring flagging protection, for Track Access Occurrence types Q and R, Contractor may utilize an Automated Work Zone Protection System (AWZPS) for Work between Leland and Ardmore Avenues.

An AWZPS is a Temporary overlay signaling system of wayside signals and train stops with centralized controls that will prevent train entry into Automated Work Zones (AWZs) adjacent to locations where Contractor is performing construction activities that, despite Contractor's slow zone mitigation efforts, may foul adjacent, in-service tracks.

An AWZPS will function only in the normal direction of travel as defined by the specific Track Access Occurrence type. Work activities requiring use of the AWZPS will be suspended if CTA operates trains against the normal direction of travel.

If an AWZPS is proposed, Contractor must provide a detailed estimate of CTA towerman hours required for AWZPS operation forty-five days in advance of each CTA personnel pick. The estimates must provide towermen requested for the next ten months and must be broken down daily by towermen needed for daytime work between rush periods (0900 -1500), nighttime work (2000 – 0400), and weekend work.

For the purpose of calculating towerman quantities, one towerman will be required to support each AWZPS in operation. The duration of a towerman personnel request must be at least eight hours and divisible by four. For example:

A. Contractor 12 hour shift requiring a towerman will be counted as 12 towerman personnel hours

B. Contractor 8 hour work shift requiring a towerman will use 8 towerman personnel hours.

C. Contractor 10 hour work shift requiring a towerman will use 12 towerman personnel hours.

Refer to Sub Part 2.6.2 for information on requesting towermen using Rail Operations Manpower Orders and to Sub Part 4.11.6.6 for the technical requirements for AWZPS design and implementation.

3.10.2.2.2 AWZPS Operation

An AWZPS will allow trains to operate through the Track Access Occurrence limits at maximum allowable cab signal speed. When actuated by a CTA towerman, the AWZPS wayside signals and train stops will prevent trains from entering specific AWZs. To perform Work that may foul in-service tracks as described in Contractor's

Construction Process Plans, the following conceptually describes the process envisioned to utilize an AWZPS.

- Contractor requests from a CTA qualified person that train entry into a specific AWZ or AWZs be stopped.
- The CTA qualified person relays the request to stop train entry into the prescribed AWZs to the towerman.
- The towerman determines when Contractor's request can be honored, places the appropriate signals at stop, and notifies the CTA qualified person the AWZs protection is in place.
- The CTA qualified person notifies Contractor that the activity requiring protection may proceed.
- Contractor proceeds to perform the activity requiring the protection. After stopping at the AWZPS signal, trains can be held for a maximum of two minutes beyond the scheduled headway at the time of construction. Current scheduled headways are available on the CTA website at https://www.transitchicago.com. Scheduled headways are subject to change.
- Contractor notifies the CTA qualified person when the activity requiring protection has been completed to a point that protection is no longer required.
- The CTA qualified person notifies the towerman when the work requiring protection has been completed and rail traffic may resume within the prescribed AWZs.
- The towerman clears the AWZPS signals allowing trains to proceed.

3.10.2.2.3 AWZPS Constraints

An AWZPS cannot be used for work to be performed on an in-service track.

An AWZPS cannot be used during rush periods.

Contractor is allotted 0 (zero) towerman personnel hours. The allotment is the maximum quantity of towerman personnel hours available at no cost to Contractor.

An AWZPS must be fully installed, tested and accepted prior to the start of the Track Access Occurrence for which the AWZPS is to provide protection.

An AWZPS must be maintained by Contractor from its installation through removal.

An AWZPS must be removed by the conclusion of the respective Track Access Occurrence types Q and R.

The AWZPS wayside signals and train stops will be controlled from one tower facility that must be located within the Track Access Occurrence limits.

For Track Access Occurrence types Q and R, the AWZPS signals and train stops may be located to prevent train entry into a minimum of two and a maximum of six AWZs for each in-service track, subject to the requirements of Sub Part 4.11.6.6.

AWZPS wayside signals and train stops will not be allowed within station platforms or be allowed to create a condition where a train is held partially within a station platform area.

Only one activity requiring AWZPS actuation will be conducted at a single time. AWZPS signals must be cleared allowing trains to proceed that had been held prior to a subsequent Contractor request to utilize the AWZPS.

3.10.2.3 Optional AWZPS – North Mainline and Ravenswood Branch

For work between Armitage Interlocking and Addison Interlocking on the North Mainline and between Clark Junction and Lakewood Interlocking on the Ravenswood Branch, CTA will consider Contractor's proposed use of existing tower-controlled interlocking signals at Armitage, Belden, Altgeld, Oakdale, Barry, Clark, Addison, Seminary and Lakewood to augment manual flagging or in lieu of manual flagman protection for certain work activities. Proposed uses of existing tower-controlled interlocking signals must be included in Contractor's Slow Zone Mitigation Plan referenced in Sub Part 3.10.8.

Operations for AWZPS's utilizing existing tower-controlled interlocking signals will be in accordance with Sub Part 3.10.2.2.2.

3.10.3 Track Access Occurrence Constraints

3.10.3.1 Track Access Occurrences: Calculating Quantities

The following Sub Parts describe how Track Access Occurrence quantities must be calculated by Contractor. The quantities will become part of the Contract requirements upon CTA acceptance.

The remaining quantity of a given type of Track Access Occurrence may be moved among daily, nightly and weekend closures. For example:

A. A portion of the remaining quantity of Track Access Occurrence type E, Brown Line reroute – RPB calculated for use on a nightly Track Access Occurrence may be applied for use on a weekend Track Access Occurrence for type E, Brown Line reroute – RPB.

Quantities of any given type of Track Access Occurrence, except for extended reroutes, will not be allowed to be shifted to another type of Track Access Occurrence. For example:

B. A portion of the remaining quantity of Track Access Occurrence type E, Brown Line reroute – RPB, may not be moved for use as a Track Access Occurrence type G, Brown Line single track (1-zone) – RPB.

The duration of extended reroutes may be adjusted as follows:

C. A portion of the remaining quantity of Track Access Occurrence type O - Extended reroute of Tracks NM1 & 2 (south of Addison station to north of Belmont station) – RPB may only be moved to Track Access Occurrence type P - Extended reroute of Tracks NM3 & 4 reroute (south of Addison station to north of Belmont station) – RPB. However, the total quantity of Track Access Occurrence type O – Extended reroute of Tracks NM1 & 2 (south of Addison station to north of Belmont station) – RPB and Track Access Occurrence type P – Extended reroute of Tracks NM3 & 4 reroute (south of Addison station to north of Belmont station) – RPB cannot exceed the sum of Sub Parts 3.10.3.2.5 A and B.

D. A portion of the remaining quantity of Track Access Occurrence type R – Extended reroute of Tracks NM3 & 4 (Montrose Interlocking to Thorndale Interlocking) – LBMM may only be moved to a Track Access Occurrence type Q – Extended reroute of Tracks NM1 & 2 (Montrose Interlocking to Thorndale Interlocking) – LBMM. However, the total quantity of Track Access Occurrence type Q – Extended reroute of Tracks NM1 & 2 (Montrose Interlocking to Thorndale Interlocking) – LBMM and Track Access Occurrence type R – Extended reroute of Tracks NM3 & 4 (Montrose Interlocking to Thorndale Interlocking) – LBMM cannot exceed the sum of Sub Parts 3.10.3.2.5 C and D.

3.10.3.1.1 Daily or Nightly Track Access Occurrence

For the purpose of calculating quantities for any daily or nightly Track Access Occurrence, eight hours must be used. Multiple simultaneous Track Access Occurrences will be counted separately as multiples of eight hours for each Track Access Occurrence. For example:

A. A nightly 2000-0400 Red Line reroute – RPB (Track Access Occurrence type A) will be counted as eight hours.

B. A nightly 2200-0400 Red Line reroute with back ride – RPB (Track Access Occurrence type B) will be counted as eight hours.

C. A nightly 2000-0400 Red Line reroute – RPB (Track Access Occurrence type A) proposed to occur simultaneously with a nightly 2200-0400 Red Line reroute with back ride – RPB (Track Access Occurrence type B) will be counted as 16 hours (eight hours for each occurrence).

3.10.3.1.2 Weekend Track Access Occurrence

For the purpose of calculating quantities for any weekend Track Access Occurrence, the duration of each weekend Track Access Occurrence equals the number of hours counted for the Track Access Occurrence. Each weekend Track Access Occurrence,

except for a 2200 Friday to 0400 Monday (54-hour) occurrence, must be at least eight hours in duration and equal a duration that can be divided by four to equal a whole number. Multiple simultaneous Track Access Occurrences will be counted separately. For example:

A. An eight-hour Track Access Occurrence requested will be equal to eight hours for each type(s) of Track Access Occurrence requested.

B. A 14-hour Track Access Occurrence will be counted as a 16-hour Track Access Occurrence in order to comply with the requirement that the duration be in four hour increments after the first eight hours.

C. A 54-hour Track Access Occurrence requested will be counted as 54 hours.

D. An eight-hour Track Access Occurrence combined with a 54-hour Track Access Occurrence requested will be counted as 62 hours.

3.10.3.1.3 Extended Reroute

For the purpose of quantifying and calculating any extended reroutes, calendar days will be used. One calendar day will be equal to one day, or part thereof, for which the extended reroute is in place.

3.10.3.2 Track Access Occurrences by Type Allotted to Contractor

3.10.3.2.1 Allowable track closure types and allotted hours

A.	D – Brown Line track closure – RPB	0 hours
B.	J – Purple Line track closure – RPB	1,032 hours
C.	M – Purple Line track closure – LBMM	2,124 hours

3.10.3.2.2 Allowable reroute types and allotted hours

A.	A – Red Line reroute – RPB	108 hours
B.	E – Brown Line reroute – RPB	216 hours

3.10.3.2.3 Allowable reroute with back rides (four or fewer stations) types and allotted hours

A.	B – Red Line reroute with back ride – RPB	108 hours
B.	F – Brown Line reroute with back ride (Wellington & Diversey) – RPB	150 hours
C.	K – Red Line reroute with back ride (Four or fewer stations) – LBMM	172 hours

3.10.3.2.4 Allowable reroute with back rides (five or more stations) types and allotted hours

A. L – Red Line reroute with back ride (Five or more stations) – LBMM 1,700 hours

3.10.3.2.5 Allowable extended reroute types and allotted days

A. O - Extended reroute of Tracks NM1 & 2 – RPB 436 days

B. P - Extended reroute of Tracks NM3 & 4 – RPB 467 days

C. Q - Extended reroute of Tracks NM1 & 2 – LBMM 593 days

D. R - Extended reroute of Tracks NM3 & 4 – LBMM 654 days

E. S – Extended reroute Purple Line – RPB 42 days

F. T – Extended reroute Brown Line – RPB 42 days

3.10.3.2.6 Allowable single track (1-zone) type and allotted hours

A. G - Brown Line single track (1-zone) – RPB 258 hours

3.10.3.2.7 Allowable single track (2-zone) type and allotted hours

A. H – Brown Line single track (2-zone) – RPB 54 hours

3.10.3.2.8 Allowable line cut types and allotted hours

A. C – Red Line line cut – RPB 300 hours

B. I – Brown Line line cut – RPB 0 hours

3.10.3.2.9 Allowable two-direction reroutes with three or fewer station closure types and allotted hours

A. N – Red Line two-direction reroute 432 hours

3.10.3.3 Track Access Occurrence Conclusion

At the conclusion of any RPB Track Access Occurrence, weekday rail operations through the Red-Purple Bypass Project area must be returned to either the pre-construction operating configuration or to a configuration that does not require Red Line and Brown Line trains to share the same track.

3.10.3.4 Track Access Occurrence Duration

The duration of any Track Access Occurrence must include time to hold a jobsite briefing, traction power removal, secure track and signal system, restore traction power, restore signal system and operate a test train. Contractor will allow a minimum of one hour for power removal, a minimum of one hour for power restoration, and, if required, a

minimum of one hour for the operation of a test train, also referred to as a test train occurrence. A test train will be required after any track replacement, signal modification, modification to fixed facilities adjacent to tracks, or any construction activity determined by CTA to require a test train.

3.10.3.5 Alternate Revenue Service

Alternate revenue service during any Track Access Occurrences may only use track segments with traction power, signal and track elements that have been fully commissioned and accepted by the CTA for the required service levels and direction(s) of travel.

3.10.3.6 Tracks Removed from Service

Tracks removed from service as part of a Track Access Occurrence must be able to be placed back into unrestricted service at the conclusion of the Track Access Occurrence.

3.10.3.7 Purple Line Shuttle Service

When Purple Line shuttle (local) service that operates only between Howard station and Linden station uses six-car trains, sufficient track space is needed south of Howard station to turn trains from southbound to northbound. In such cases, Tracks NM1 and NM4 must remain in service between Howard station and the south end of Jarvis station.

3.10.3.8 Special Events

During special events, Contractor will be limited in the performance of Work requiring Track Access Occurrences as detailed in Table 3.10-4.

TABLE 3.10-4: TRACK ACCESS OCCURRENCE SPECIAL EVENT RESTRICTIONS

Event	Day Type	A Red Line reroute - RPB	B Red Line reroute with backride - RPB	C Red Line line cut - RPB	D Brown Line track closure - RPB	E Brown Line reroute - RPB	F Brown Line reroute with backride (Wellington & Diversey) - RPB	G Brown Line single track (1-zone) - RPB	H Brown Line single track (2-zone) - RPB	I Brown Line line cut - RPB	J Purple Line track closure - RPB	K Red Line reroute with backride (four or fewer stations) - LBMM	L Red Line reroute with backride (five or more stations) - LBMM	M Purple Line track closure - LBMM	N Two-direction Red Line reroute with three or fewer stations closed (bus augmentation)-LBMM	O Extended reroute of Tracks NM1 & 2 (south of Addison station to north of Belmont station) - RPB	P Extended reroute of Tracks NM3 & 4 (south of Addison station to north of Belmont station) - RPB	Q Extended reroute of Tracks NM1 & 2 (Montrose Interlocking to Thorndale Interlocking) - LBMM	R Extended reroute of Tracks NM3 & 4 (Montrose Interlocking to Thorndale Interlocking) - LBMM	S Extended reroute Purple Line - RPB	T Extended reroute Brown Line - RPB
Cubs Day		A	AN	AN	A	A	AN	AN	AN	AN	A	AN	AN	A	X	A	A	A	A	A	A
Cubs Night		A	AD	X	A	A	AD	AD	AD	AD	A	AD	AD	A	X	A	A	A	A	A	A
Wrigley Field Concert		A	AD	X	A	A	AD	AD	AD	AD	A	AD	AD	A	X	A	A	A	A	A	A
Taste of Chicago	WD	A	A	AN	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	SAT	A	AN	AN	A	A	AN	AN	AN	AN	A	AN	X	A	AN	A	A	A	A	X	A
	SUN	A	AN	AN	A	A	AN	AN	AN	AN	A	AN	X	A	AN	A	A	A	A	X	A
Independence Day		A	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Air & Water Show	SAT	A	AN	AN	A	A	AN	AN	AN	X	A	AN	AN	A	AN	A	A	A	A	X	A
	SUN	A	AN	AN	A	A	AN	AN	AN	X	A	AN	AN	A	AN	A	A	A	A	X	A
Marathon	SUN	X	X	X	A	X	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Jazz Festival	FRI	A	AN	AN	A	A	A	AN	AN	X	A	AN	AN	A	AN	A	A	A	A	A	A
	SAT	A	AN	X	A	A	A	AN	AN	X	A	AN	X	A	AN	A	A	A	A	X	A
	SUN	A	AN	X	A	A	A	AN	AN	X	A	AN	X	A	AN	A	A	A	A	X	A
Blues Fest	FRI	A	A	X	A	A	AN	AN	AN	X	A	AN	AN	A	AN	A	A	A	A	A	A
	SAT	A	AN	X	A	A	AN	AN	AN	X	A	AN	AN	A	AN	A	A	A	A	X	A
	SUN	A	AN	X	A	A	AN	AN	AN	X	A	AN	AN	A	AN	A	A	A	A	X	A
Gospel Fest	SAT	A	A	AN	A	A	A	A	AN	AN	A	AN	AN	A	AN	A	A	A	A	X	A
	SUN	A	A	AN	A	A	A	A	AN	AN	A	AN	AN	A	AN	A	A	A	A	X	A
St. Patrick's Parade	FRI	A	AN	X	A	A	AN	X	X	X	A	X	X	A	X	A	A	A	A	X	A
	SAT	X	AN	X	A	A	AN	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Pride Parade	SUN	X	X	X	A	X	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Lollapal-	THU	X	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	A	A

TABLE 3.10-4: TRACK ACCESS OCCURRENCE SPECIAL EVENT RESTRICTIONS

Event	Day Type	Red Line reroute - RPB	Red Line reroute with backride - RPB	Red Line line cut - RPB	Brown Line track closure - RPB	Brown Line reroute - RPB	Brown Line reroute with backride (Wellington & Diversey) - RPB	Brown Line single track (1-zone) - RPB	Brown Line single track (2-zone) - RPB	Brown Line line cut - RPB	Purple Line track closure - RPB	Red Line reroute with backride (four or fewer stations) - LBMM	Red Line reroute with backride (five or more stations) - LBMM	Purple Line track closure - LBMM	Two-direction Red Line reroute with three or fewer stations closed (bus augmentation)-LBMM	Extended reroute of Tracks NM1 & 2 (south of Addison station to north of Belmont station) - RPB	Extended reroute of Tracks NM3 & 4 (south of Addison station to north of Belmont station) - RPB	Extended reroute of Tracks NM1 & 2 (Montrose Interlocking to Thorndale Interlocking) - LBMM	Extended reroute of Tracks NM3 & 4 (Montrose Interlocking to Thorndale Interlocking) - LBMM	Extended reroute Purple Line - RPB	Extended reroute Brown Line - RPB
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**
ooza	FRI	X	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	A	A
	SAT	X	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
	SUN	X	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Easter Weekend		A	A	A	A	A	A	A	A	X	A	X	X	A	X	A	A	A	A	X	A
Thanksgiving Weekend (4 days)		A	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	A	A
Christmas Eve		A	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	A	A
Christmas Day		A	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
New Year's Eve		A	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	A	A
New Year's Day		A	X	X	A	A	X	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Memorial Day Weekend		A	A	X	A	A	A	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Labor Day Weekend		A	A	X	A	A	A	X	X	X	A	X	X	A	X	A	A	A	A	X	A
Rib Fest	FRI	A	A	AN	A	A	X	X	X	X	A	AN	AN	A	AN	A	A	A	A	A	A
	SAT	A	A	AN	A	A	X	X	X	X	A	AN	AN	A	AN	A	A	A	A	X	A
	SUN	A	A	AN	A	A	X	X	X	X	A	AN	AN	A	AN	A	A	A	A	X	A
Soldier Field - Night Concert/ Game	WD	A	A	X	A	A	A	A	A	X	A	A	X	A	A	A	A	A	A	A	A
	SAT	A	A	X	A	A	A	A	A	X	A	AD	AD	A	AD	A	A	A	A	X	A
	SUN	A	A	X	A	A	A	A	A	X	A	AD	AD	A	AD	A	A	A	A	X	A

A = occurrence may be scheduled subject to Table 3.10-2 TAO Allowable Hours

AN = occurrence may be scheduled during nighttime hours subject to Table 3.10-2 TAO Allowable Hours

AD = occurrence may be scheduled during daytime hours subject to Table 3.10-2 TAO Allowable Hours

X = occurrence not allowed

3.10.4 Work Zone Requiring Flagging Protection: Area Constraints

In order to minimize the operational impacts to the CTA, the number of allowable, simultaneous work zones requiring flagging protection will be constrained. For the purpose of establishing geographic areas to define the use of work zones requiring flagging protection, the following areas, as depicted in Figure 3.10-5, must be used in Contractor's Slow Zone Mitigation Plan:

A. Area 1 is the area of the North Mainline from the south end of the Armitage station platform to the north line of Leland Avenue including any Ravenswood Branch track to the east of stationing 5+00 on Track RV1 and 5+00 on Track RV2

B. Area 2 is the area of the North Mainline from the north line of Leland Avenue to the Howard North Interlocking

C. Area 3 includes any Ravenswood Branch track to the west of stationing 5+00 on Track RV1 and 5+00 on Track RV2 and extending to Southport on both tracks, and any track to the Ravenswood Branch occupying the airspace over the North Mainline

D. Area 4 is the Howard North Yard non-revenue service tracks

E. Area 5 is the Purple Line north of the Howard Yard and Shop Complex to the north limit of the South Boulevard Team Tracks.

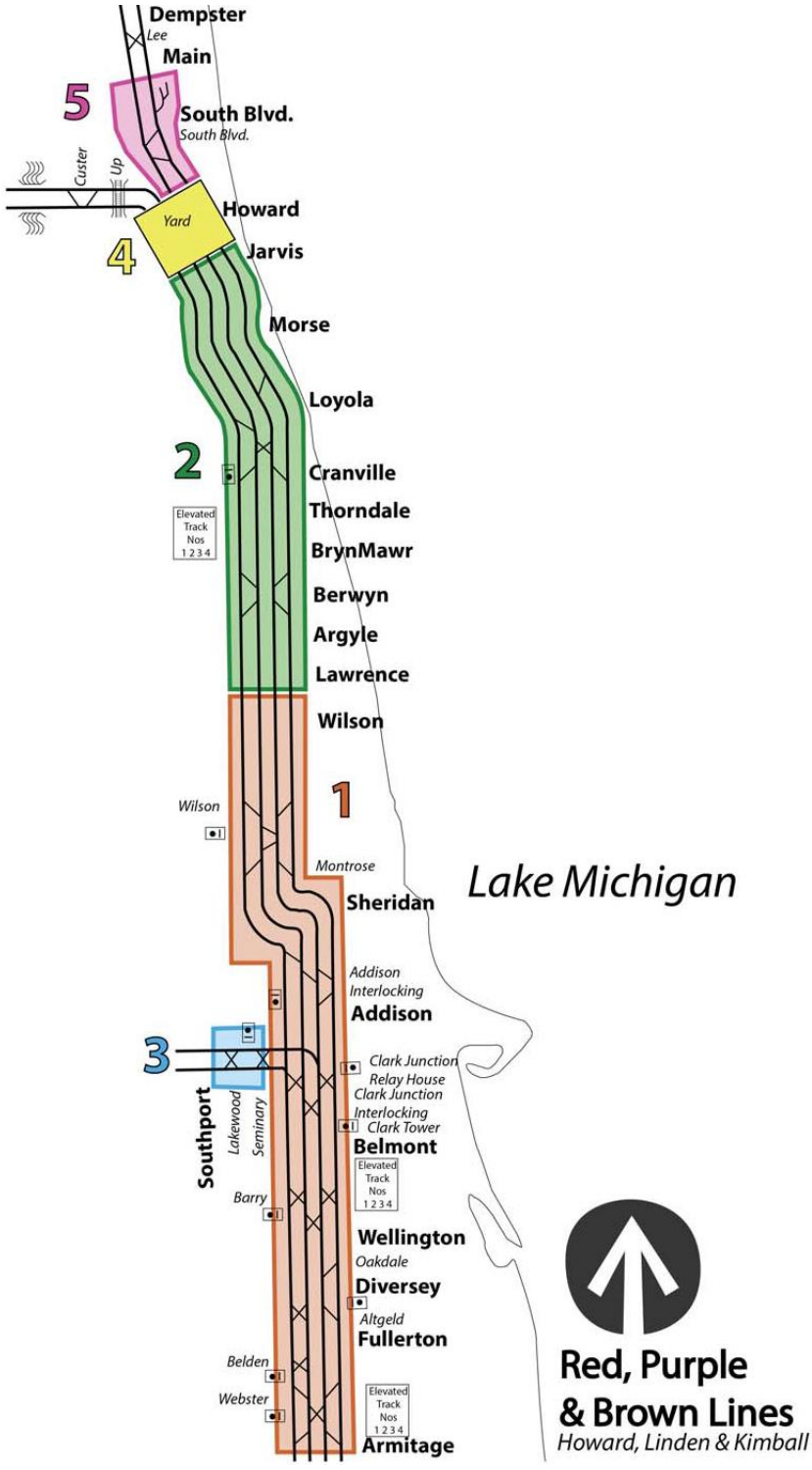

Figure 3.10-5: Geographic Areas Used to Define Work Zones Requiring Flagging Protection

3.10.4.1 Area 1 Constraints

A. A maximum of four simultaneous work zones requiring flagging protection in two geographic locations will be allowed within Area 1 except as noted in 3.10.4.6. This maximum includes any work zone(s) requiring flagging protection associated with any Track Access Occurrence or moving work gang.

3.10.4.2 Area 2 Constraints

A. A maximum of four simultaneous work zones requiring flagging protection in two geographic locations will be allowed within Area 2 except as noted in 3.10.4.6. This maximum includes any work zone(s) requiring flagging protection associated with any Track Access Occurrence or moving work gang.

3.10.4.3 Area 3 Constraints

A. A maximum of four simultaneous work zones requiring flagging protection in two geographic locations will be allowed within Area 3. This maximum includes any work zone(s) requiring flagging protection associated with any Track Access Occurrence or moving work gang.

3.10.4.4 Area 4 Constraints

A. A maximum of one work zone requiring flagging protection will be allowed on Howard North Yard non-revenue service tracks within Area 4.

3.10.4.5 Area 5 Constraints

A. A maximum of two simultaneous work zones requiring flagging protection in two geographic locations will be allowed within Area 5. Note: The crossing of tracks at grade level by any vehicles or equipment requires flagging protection.

3.10.4.6 Work Zone Requiring Flagging Protection: General Constraints

A. Adjacent tracks are two or more tracks with centers spaced less than twenty feet apart not separated by an approved barrier. When work will cause the fouling of an adjacent track or the only position in the clear is between adjacent tracks, each track will need a work zone requiring protection.

B. In addition to the Area 1 through 5 constraints described above, two additional work zones, i.e., a fifth and sixth work zone requiring flagging protection at one geographic location on the North Mainline, will be allowed either south of Barry Interlocking, between Addison Interlocking and the north line of Leland Avenue, or north of Thorndale Interlocking.

C. The use of a moving work gang with flagmen will be counted as a work zone requiring flagging protection.

D. No work zones requiring flagging protection will be allowed on the impacted routes during any line cut or re-route with back ride except for protection of track adjacent to the specific Track Access Occurrence.

3.10.5 Flagger Hour, Infrastructure Hour and Test Train Constraints

The following are the allotted quantities available to Contractor to fully implement the Work including survey and field verification, design, construction, testing, completion of all Punchlist Work activities, and correction of any non-conforming Work.

3.10.5.1 Flagger Hours

For the purpose of calculating flagger-hour quantities, a flagger request must be at least eight hours in duration and equal a duration that can be divided by four for each person requested to equal a whole number. The quantity of requested hours must include time for travel and required breaks. For example:

A. A Contractor five hour work shift which requires three flaggers will use 24 flagger hours.

B. A Contractor eight hour work shift which requires three flaggers will use 36 flagger hours (because travel and break time will increase the flaggers work hours beyond eight).

C. A Contractor 14 hour work shift which requires three flaggers will use 48 flagger hours.

Contractor is allotted 118,652 flagger hours for Track Access Occurrences and for all Work performed outside of Track Access Occurrences. The allotment is the maximum quantity of flagger hours available at no cost to Contractor.

Flagger personnel are requested as indicated in Part 2.6 CTA Operations Interface. Contractor is not entitled to any additional flagger hours beyond that provided in its Proposal. CTA expects Contractor fully accounted for all reasonably anticipated flagger hours required in its Proposal, which was a material portion of its Proposal. However, CTA may, in its Discretion, grant additional flagger hours in the event that Contractor requires more flagger hours than allotted. In such event, Contractor must reimburse CTA for all flagger costs associated with the use of flaggers in excess of the allotted flagger hours. The cost for each flagger hour in excess of the allotted amount will be $98.00, subject to adjustment by CTA at the time the additional hours are granted. Contractor will be charged amounts equal to this hourly rate applied to the hours determined in accordance with the above quantity calculation method.

3.10.5.2 Infrastructure Personnel Hours

CTA infrastructure personnel are available to support Work or provide access to Work areas as requested by Contractor. Infrastructure personnel include, but are not limited

to, signal maintainers, traction power linemen, substation attendants, communications technicians, testing engineers, and facilities maintenance personnel.

For the purpose of calculating infrastructure personnel-hour quantities, an infrastructure personnel request must be at least eight hours in duration and equal to a duration that can be divided by four for each person requested to equal a whole number. For example:

A. A Contractor 12 hour work shift requiring a substation attendant will be counted as 12 infrastructure personnel hours

B. A Contractor five hour work shift requiring two signal maintainers will use 16 infrastructure personnel hours.

C. A Contractor eight hour work shift requiring two signal maintainers will use 16 infrastructure personnel hours.

D. A Contractor ten hour work shift requiring two traction power linemen will use 24 infrastructure personnel hours.

Contractor is allotted 16,608 infrastructure personnel hours. The allotment is the maximum quantity of infrastructure personnel hours available at no cost to Contractor.

Infrastructure personnel are requested as indicated in Part 2.6 CTA Operations Interface. Contractor is not entitled to any additional infrastructure personnel hours beyond that provided in its Proposal. CTA expects Contractor fully accounted for all reasonably anticipated infrastructure personnel hours required in its Proposal, which was a material portion of its Proposal. However, CTA may, in its Discretion, grant additional infrastructure personnel hours in the event that Contractor requires more infrastructure personnel hours than allotted. In such event, Contractor must reimburse CTA for all infrastructure personnel costs associated with the use of infrastructure personnel in excess of the allotted infrastructure personnel hours. The cost for each infrastructure personnel hour in excess of the allotted amount will be $183.00, subject to adjustment by CTA at the time the additional hours are granted. Contractor will be charged amounts equal to this hourly rate applied to the hours determined in accordance with the above quantity calculation method.

3.10.5.3 Test Trains

Contractor will be allotted 150 test train occurrences, at no cost to Contractor, as part of the Contract. A test train occurrence will equal one test train for no longer than eight hours. In the event that Contractor requires more test trains than allotted, Contractor must reimburse CTA for all test train costs (costs will be deducted from the Contract) associated with the use of test train occurrences in excess of the allotted test train occurrences. Additional test train occurrences will be charged to Contractor at the rate of $2,800.00 per test train occurrence.

3.10.6 Allowable Substation Occurrences and Constraints

Contractor will be allotted the types and quantities of substation occurrences indicated below to fully implement the Work including survey and field verification, design, construction, testing, completion of all Punchlist Work activities, and correction of any Nonconforming Work.

3.10.6.1 Full Substation Equipment Outage on Saturdays and Sundays – Clark Substation

An occurrence cannot exceed 12 hours from 2200 hours Saturday to 1000 hours Sunday. Contact rails will be energized with power isolated at the getaway switches.

A maximum of two Full Substation Equipment Outages for the installation and removal of equipment protection barriers at Clark Substation will be provided at no cost to Contractor as part of the Contract.

3.10.6.2 Rectifier #1 Continuous Outage – Clark Substation

A Rectifier #1 Continuous Outage will remove Rectifier #1 from service for an extended period while roof modifications are made to the Clark Substation. The remaining two rectifiers, AC switchgear, DC switchgear, feeder breakers, and contact rail remain energized. Contractor may perform Work only when a CTA substation attendant is on-site to provide watch service.

A maximum of one Rectifier #1 Continuous Outage will be provided at no cost to Contractor as part of the Contract. The maximum duration of the Rectifier #1 Continuous Outage is 21 days.

3.10.6.3 Rectifier #3 Continuous Outage – Clark Substation

A Rectifier #3 Continuous Outage will remove Rectifier #3 from service for an extended period for modifications to the Ravenswood Branch negative return negative bus at the Clark Substation. The remaining two rectifiers, AC switchgear, DC switchgear, feeder breakers, and contact rail remain energized. Contractor may perform Work only when a CTA substation attendant is on-site to provide watch service.

A maximum of one Rectifier #3 Continuous Outage will be provided at no cost to Contractor as part of the Contract. The maximum duration of the Rectifier #3 Continuous Outage is four days.

3.10.6.4 Feeder to DC Switchgear Outage on Saturdays, Sundays or Weeknights

An occurrence cannot exceed any 12 hours on Saturday or Sunday and will only be allowed between 2000 to 0400 hours (eight hours) on weeknights. This type of occurrence may be restricted by special events which increase ridership. A Feeder to DC Switchgear Outage occurrence may allow for multiple feeders to be taken out of

service and will remove power from the feeder breaker to the getaway switches or contact rail, but the AC switchgear, DC switchgear and contact rail will stay energized during the occurrence.

A maximum of 22 Feeder to DC Switchgear Outage occurrences at Clark Substation will be provided at no cost to Contractor as part of the Contract.

A maximum of 20 Feeder to DC Switchgear Outage occurrences at Broadway Substation will be provided at no cost to Contractor as part of the Contract.

3.10.7 Sidings, Yards, Yard Tracks and Tracks Removed from Service

CTA tracks and yard areas illustrated in Appendix M and described below are available for Contractor use during the Contract period. The configurations depicted are approximate but are representative of the areas that will be available to Contractor. Contractor's temporary facilities, including, but not limited to, power, trailers, toilets, etc., will be provided by Contractor at no additional cost to CTA if Contractor chooses to utilize these tracks and yard areas in the performance of the Work. Contractor must secure yard street access gates at all times when not in immediate use. The means used to secure the gates must permit unrestricted CTA access. Available yards and tracks are:

A. CTA-owned property located at 3925 W. Cermak, Chicago, Illinois (formerly CTA's Lawndale Garage)

B. The South Boulevard Team Tracks: Contractor must use CTA flagger protection when Contractor's vehicles, equipment or yard operations may foul the mainline track

C. The Howard Yard and Shop Complex North Yard Tracks 1N and 2N and portions of the gore between the Evanston mains and the mainline loop: Contractor must use CTA flagger protection when Contractor's vehicles, equipment or yard operations may cross, foul or operate on leads or loop tracks

During extended reroute Track Access Occurrence types Q and R, Contractor may use North Mainline track segments that are removed from service in support of its construction operations. However, track segments that are of sufficient length, are not in use as part of the scheduled reroute, and are contiguous with adjacent in-use track segments, must remain available for use by CTA Rail Operations and retain track systems functionality sufficient for the purposes of short turning trains, storage of an extra fill train or the lay up a defective train. These track segments are shown in Figure 3.10-6.

Contractor may use the Skokie Yard test track to perform the track circuit technology future capabilities demonstration referenced in Sub Part 4.11.5.1.3. The demonstration must be coordinated with CTA's use of the yard and test track in the testing and maintenance of new and existing vehicles.

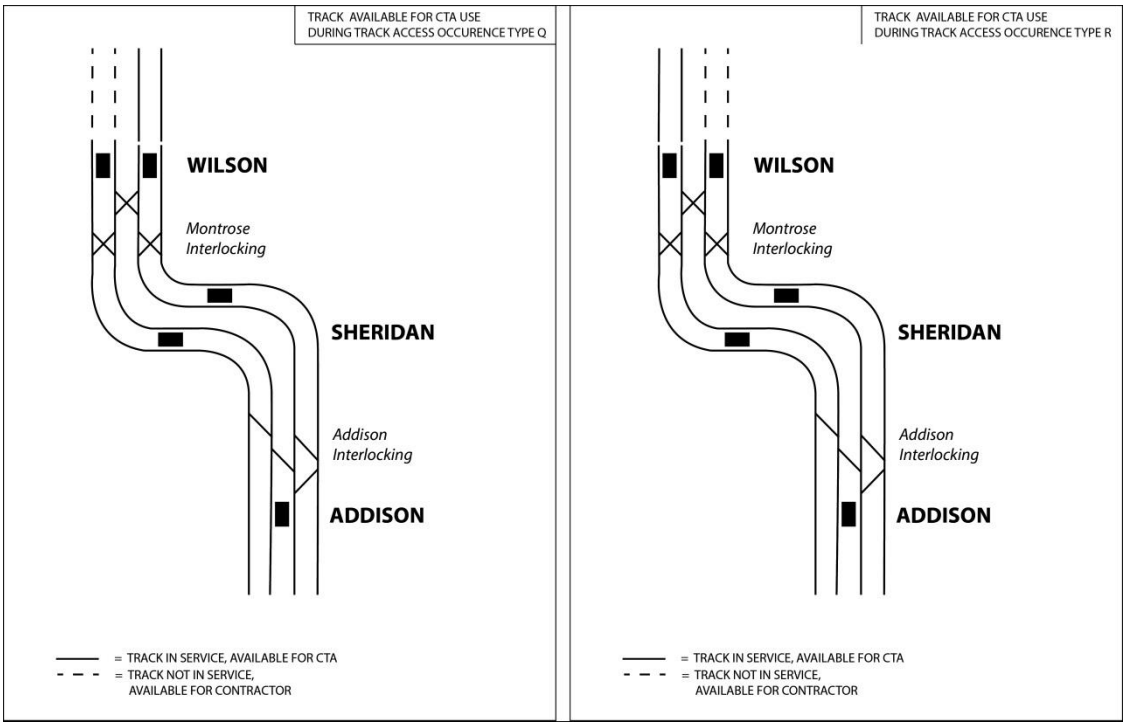

Figure 3.10-6: Track Segments to Remain Available for CTA Rail Operations' Use

3.10.8 Right-of-Way Access Plan

Contractor must submit a Right-of-Way Access Plan that is composed of three coordinated plans: a Track Access Plan, a Slow Zone Mitigation Plan and a Substation Access Plan. The Right-of-Way Access Plan is a component plan of the DBMS. To the extent possible, construction related service disruptions should be scheduled to occur during weekends and/or off peak periods.

3.10.8.1 Track Access Plan

The Track Access Plan details the Track Access Occurrences Contractor requires to fully implement the Work including survey and field verification, design, construction, testing, completion of all Punchlist Work activities, and correction of any Nonconforming Work.

The Track Access Plan must, at a minimum, provide the following information:

A. A narrative detailing the Track Access Occurrences required to perform all Work. The narrative must clearly identify, by type or combination of types and specific location, the Track Access Occurrences Contractor will implement and detail how the Track Access Occurrences are coordinated with and support the construction phases, Contractor's phasing plan and achievement of the Project Milestones.

B. Graphical depictions that indicate the type or combination of types and specific location of the Track Access Occurrences, including where CTA trains will operate during the Track Access Occurrences

C. Durations, including start and finish times, of each Track Access Occurrence

D. Calculation of quantities of each Track Access Occurrence

E. Descriptions of the weekday rail operating configuration to be provided at the conclusion of each Track Access Occurrence

F. A narrative and accompanying graphics detailing Contractor's use of Contractor provided work trains, subject to Part 1 Section 4.3, in accordance with the Proposal Extract in Part 1, Exhibit 1 on page 3.N-12, in the performance of the RPB and LBMM Work

G. A narrative and accompanying graphics detailing Contractor's use of yard areas, yard tracks, track siding(s) and North Mainline track segments removed from service and to be used in the support of construction operations. The narrative should include the timeframes and durations for the use of each.

H. A narrative and schedule describing Contractor's track circuit technology future capabilities demonstration on the Skokie Yard test track, including durations for installation, test, and removal activities.

Each submittal of the Track Access Plan must summarize the following information in a spreadsheet format: a list of Work activities by Project area, Contractor's phase designation for each activity, type of Track Access Occurrence needed for each activity including the quantity of each respective Track Access Occurrence duration (daily, nightly, weekend, and extended) that will be used, the total hours by Track Access Occurrence for each activity, and the number of flagger hours, infrastructure personnel hours, and test trains needed for each activity.

3.10.8.2 Slow Zone Mitigation Plan

The CTA intends for the number of work zones requiring flagging protection and associated slow zones to be minimized at all times. In particular, the CTA desires to provide a level of rush hour customer service during the extended duration, two-track reroute Track Access Occurrences that necessitates trains operating at normal speeds. Outside of rush hours, simultaneous work zones requiring flagging protection or an Automated Work Zone Protection System (AWZPS) may be utilized for track, right-of-way and station Work; however, the use of simultaneous work zones requiring flagging protection or an AWZPS is generally not preferred. Work may proceed during rush periods if performed behind the engineered barrier(s) described below and, subject to Contractor's means, methods, scheduling and planning, no work zones requiring flagging protection are required for that Work.

Examples of conditions with a Temporary barrier in place that, if left unmitigated, will necessitate work zones requiring flagging protection or the use of an AWZPS to prevent train entry into Automated Work Zones include, but are not limited to:

A. Placement and orientation of cranes or other lifting equipment such that the loss of control of a lift could result in an active track being fouled

B. Placement and orientation of cranes, articulated or telescoping equipment too close to active tracks such that a boom collapse could result in active tracks being fouled

C. Placement and orientation of cranes, articulated or telescoping equipment such that equipment failure or improper use could result in tipped equipment and active tracks being fouled

Table 3.10-5 provides a list of equipment types, the potential hazards presented by that equipment, and the mitigations that will generally negate the need for work zones requiring flagging protection or the use of an AWZPS for Work performed during Track Access Occurrence types Q and R. The equipment, hazards, and mitigations listed are not intended to be all inclusive, but are provided as general guidance.

TABLE 3.10-5: EQUIPMENT TYPES, POTENTIAL HAZARDS, AND MITIGATIONS TO GENERALLY NEGATE NEED FOR WORK ZONES REQUIRING FLAGGING PROTECTION OR USE OF AWZPS

			MITIGATION REQUIRED: DISTANCE FROM BARRIER (FEET)			
EQUIPMENT	POTENTIAL HAZARDS	POTENTIAL MITIGATION MEASURES	0-10	10-15	15-20	>20
TRUCK	Truck backs/drives into Temporary barrier or active right-of-way	Placement of jersey barriers, bundled railroad tie wheel stops, or other positive stop system where truck traffic is present	X	NR	NR	NR
LOADER / BACKHOE	Loader / backhoe drives into Temporary barrier or active right-of-way	Placement of jersey barriers, bundled railroad tie wheel stops, or other positive stop system	X	NR	NR	NR
	Loader / backhoe swing swings bucket or load into Temporary barrier or active right-of-way	Location of equipment within active construction area, orientation of equipment with respect to active right-of-way	X	X	X	NR
CRANE	Crane swings boom or load over active right-of-way or into Temporary barrier	Swing or slew limiter or position of equipment within active construction area, orientation of equipment with respect to active right-of-way	X	X	X	X

TABLE 3.10-5: EQUIPMENT TYPES, POTENTIAL HAZARDS, AND MITIGATIONS TO GENERALLY NEGATE NEED FOR WORK ZONES REQUIRING FLAGGING PROTECTION OR USE OF AWZPS

			MITIGATION REQUIRED: DISTANCE FROM BARRIER (FEET)			
EQUIPMENT	POTENTIAL HAZARDS	POTENTIAL MITIGATION MEASURES	0-10	10-15	15-20	>20
	Crane lift is of a height or length such that it may foul the Temporary barrier or active right-of-way if it gets away from the crane or construction workers	Location of equipment within active construction area, orientation of equipment with respect to active right-of-way, limit lift height/length	X	X	X	X
TELEHANDLER / FORK LIFT	Telehandler / lift drives into Temporary barrier or active right-of-way	Placement of jersey barriers, bundled railroad tie wheel stops, or other positive stop system	X	X	NR	NR
	Telehandler / lift extends load into Temporary barrier or active right-of-way	Location of equipment within active construction area, orientation of equipment with respect to active right-of-way, limit lift height/length	X	X	X	NR
CONCRETE PUMP OR CONVEYOR	Concrete pump slick line or boom or conveyor swings over or into Temporary barrier or active right-of-way	Location of equipment within active construction area, orientation of equipment with respect to active right-of-way, limit pump or conveyor rotation, or position pump at streets only	X	X	X	X
DRILL RIG	Drill rig rotates into Temporary barrier or active right-of-way	Swing or slew limiter or position of equipment within active construction area, orientation of equipment with respect to active right-of-way	X	X	X	NR
MANLIFT	Manlift platform or boom extends or swings into Temporary barrier or active right-of-way	Location of equipment within active construction area, orientation of equipment with respect to active right-of-way, limit height/reach	X	X	X	X

X = Mitigation(s) required
NR = Mitigations not required

The goal of the Slow Zone Mitigation Plan is the minimization of work zones requiring flagging protection. The Slow Zone Mitigation Plan must provide the following information:

D. A detailed narrative describing the use of work zones requiring flagging protection or use of an AWZPS to perform all Work. The narrative should clearly identify, by type and specific location, the location and duration of construction work zones requiring flagging protection and AWZPSs.

E. Calculation of flagger, towerman, and infrastructure personnel hours required to perform the Work.

F. The estimate of daily flagging and towerman personnel needs for the next ten-month period to support CTA personnel picks described in Sub Part 3.10.2.

G. A detailed narrative describing the multiple ways Contractor will employ to minimize slow zones or the use of an AWZPS including, but not limited to, the following:

i. Design and construction of engineered, Temporary barriers to be employed on the mainline, at stations, and at other wayside structures. The mainline and station barriers are required for Track Access Occurrences types Q and R. Engineered, Temporary barriers that allow Work to proceed during rush periods may be used elsewhere if the relevant requirements are met. Drawings must be provided depicting the barriers to be used for each typical location.

The following requirements apply to mainline barrier design and construction:

a) The face of any element of the barrier or the barrier supports is to be located a minimum of 8 ft. from the centerline of the adjacent, in-service track with one exception. The face of any element of the barrier or barrier supports may be located a minimum of 7 ft. 2 in. from the centerline of the adjacent, in-service tracks in any area on closed deck or open deck structure where there are continuous foot walks (Permanent or Temporary) available on both sides of the structure.
b) Ballast adjacent to the barrier must be dressed to provide a level walking surface and clear area adjacent to the in-service track.
c) The barrier must extend at least 12 ft. above the top of rail of the adjacent, in-service track.
d) Within the LBMM corridor, the barrier is to start and terminate beyond the work zone and run continuously between station platforms.
e) The lower 6 ft. of the barrier must provide a physical obstruction sufficient to restrict personnel, tools, and material passage

between the in-service tracks and the construction work zone; however, the lower 6 ft. section of the barrier does not need to be a visual screen.

f) The upper 6 ft. of the barrier must provide a visual screen for CTA Rail Operators.

g) Locked gates must be provided at 400 ft. intervals. Gates must be configured to swing into the construction work zone and must be signed to advise of Control notification requirements for entry to the right-of-way and to prevent entry by personnel that have not been Rail Safety Trained. Sub Part 2.6.5 describes the process for requesting waivers for Rail Safety Training of specific personnel.

h) Fence and screen materials are to be affixed to the construction side of posts, i.e., the post face away from in-service tracks. Where required, laps should be made with the material in the typical direction of travel overlaying the following material.

i) Only non-conductive materials are to be used (posts, fence and visual screen). The barrier design, including choice of materials, should assume a speed of 55 miles per hour for trains operating on the adjacent, in-service track. Contractor must pothole prior to installing any below-grade posts, post foundations or guy-cable anchors. All foundations, posts or support elements are to be installed first. For the second LBMM phase, fence and screen material that will prohibit passage between Tracks 2 and 3 must be installed just before the start of the first extended re-route.

j) Signs corresponding to right-of-way stationing should be affixed to both sides of the barrier at 100 ft. intervals. If an AWZPS is utilized, the unique identifier of the associated work zone must be displayed on the signs.

k) The Contractor must inspect the barrier each calendar day from the construction work zone and repair any defects, such as loose or torn material or broken or leaning posts, at the time of discovery.

l) Prior to the installation of the barrier for the second LBMM phase, the Contractor must provide OSHA-compliant fall protection/guardrail affixed to the outside face of the existing, west retaining wall where the distance to centerline of Track NM1 is less than 7 ft. 2 in. The guardrail may be affixed to the top of the retaining wall only in areas where clearances do not permit fixation to the face of the wall. “No Clearance” signs will be placed on the guardrail at 50 ft. intervals. The Contractor must inspect the guardrail on a weekly basis and make repairs at the time defects are discovered.

The following requirements apply to station barriers and other wayside structure barrier design and construction:

m) The face of the barrier in the customer circulation area is to be located a minimum of 8 ft. from the in-service platform edge.
n) The barrier must extend at least 8 ft. above the top of platform.
o) In addition to providing a visual screen, barriers in stations must protect customers and CTA personnel from adjacent construction activities.
p) One gate, locked to prevent customer access to the construction work area, must be provided per station, unless additional gates are required to support operations and maintenance. Gates must be configured to swing into the construction work zone and must be signed to prevent personnel that have not been Rail Safety Trained from entering. Sub Part 2.6.5 describes the process for requesting waivers for Rail Safety Training of specific personnel.

ii. Design characteristics of the closed deck structure to limit the lengths and heights of required material lifts.

iii. Means and methods for closed deck construction

iv. Scheduling of the Work, for example by shifting certain Work activities outside of rush hours to times of longer headways.

v. Planning of the Work, for example movement of material to/from the Work site, means of material placement, and positioning of equipment and loads relative to active tracks so that the equipment remains between the lift and the engineered barrier for the full path of the lift or move and cannot penetrate the plane of the barrier even in the event of mechanical failure.

vi. The use of an intrusion detection system at station Work sites that will activate a visual alarm, such as a strobe light, and/or an audible alarm when the barrier has been disturbed or the barrier plane has been violated to permit a change of Work means and methods or require re-scheduling of that activity under flagging protection.

vii. Processes and technology to be employed by Contractor to limit and control the movements of personnel, equipment and materials (e.g., geo-fencing on lifts and/or equipment, equipment slew/travel limiters, use of CCTV and/or CTA QuicTrak enabled tablet computers to coordinate lifts/moves with train movements).

3.10.8.3 Substations Access Plan

The Substation Access Plan details the Substation Access Occurrences Contractor requires to fully implement the Work including survey and field verification, design,

construction, testing, completion of all Punchlist Work activities, and correction of any non-conforming Work.

The Substation Access Plan must detail the Work to be accomplished during the Substation Access Occurrences, the timing of the Substation Access Occurrences to support the RPB and LBMM construction phases and achievement of the Milestones, and the coordination of the substation occurrences with Contractor's Track Access Occurrences.

3.10.8.4 Right-of-Way Access Plan Submittal

Right-of-Way Access Plan update submittals must be made as Design submittals are made, as construction means and methods change, or as any of the three constituent plans are materially revised.

3.11 Allowable Public Way Access

This Part describes allowable closures of streets, alleys and sidewalks. The quantities indicated are the maximum available to Contractor to implement the Work and represent the total requirements for design, construction, and completion of all Punchlist work activities and correction of any non-conforming work. Contractor will work to reduce the various closures below the maximum durations indicated wherever possible to reduce the overall impact to the community. Contractor will notify CTA through the Project Website of all full and partial street and alley closures in advance of requesting CDOT permits, consistent with Section 18.9 of Part 1. Contractor access to the public way will be in accordance with local and state agency requirements and as required in Sub Part 3.11.4.2.

3.11.1 Roadway Closures

Contractor will minimize frequency and duration of roadway closures so as to reduce negative impacts to users of the public way in the vicinity of the Project limits. Contractor will conform to the following requirements:

A. Roadway closures will be fully coordinated with the overall Public Way Impact Mitigation Plan and will consider parking restrictions and seasonal restrictions or activities, such as snow routes and street cleaning.

B. Contractor will be responsible for any and all approvals, Permits and Permit Fees necessary to accommodate roadway closures.

C. Where work is occurring in consecutive blocks along a roadway, the temporary lane closures will be in line with each other, instead of staggered, to minimize the weaving of traffic and will be coordinated to ensure simultaneous detours are not required.

D. Roadway closures will be coordinated with impacted CTA bus routes.

E. Roadway closures will be coordinated with impacted sidewalks, bike lanes, school and business loading zones and other similar uses.

F. All detours will be in place, including all signage, prior to closure of any road.

G. Pedestrian access will be maintained during street closures of all types except in rare instances where construction activities would be hazardous to the public and no reasonable mitigation would be possible.

Allowable roadway closures are summarized on the table below.

Table 3.11-1: Allowable Roadway Closures

Roadway	56-Hour Closures	Extended Closures	On-Street Parking Closures
W. School Street (One-way, Eastbound)	**X**	**X**	**X**

Table 3.11-1: Allowable Roadway Closures			
Roadway	56-Hour Closures	Extended Closures	On-Street Parking Closures
N. Clark Street (Two-Way)	X		X
W. Roscoe Street (One-way, Westbound)	X		X
W. Newport Avenue (One-way, Eastbound)	X		X
W. Cornelia Avenue (One-way, Westbound)	X		X
N. Sheffield Avenue (Two-way)	X		X
N. Seminary Avenue (One-way, Northbound)			X
W. Waveland Avenue (Two-way)			X
W. Montrose Avenue (Two-way)	X		X
W. Leland Avenue (Two-way)	X		X
W. Lawrence Avenue (Two-way)	X		X
W. Ainslie Street (One-way, Eastbound)		X	X
W. Argyle Street (Two-way)	X		X
W. Winona Street (Two-way)		X	X

Table 3.11-1: Allowable Roadway Closures			
Roadway	56-Hour Closures	Extended Closures	On-Street Parking Closures
W. Foster Avenue (Two-way)	X		X
W. Berwyn Avenue (Two-way)	X		X
W. Balmoral Avenue (Two-way)		X	X
W. Catalpa Avenue (Two-way)		X	X
W. Bryn Mawr Avenue (Two-way)	X		
W. Hollywood Avenue (Two-way)	X		
W. Ardmore Avenue (Two-way)		X	X
W. Thorndale Avenue (Two-way)			X
W. Rosemont Avenue (One-way, Eastbound)			X
W. Loyola Avenue (Two-way)			X
W. Albion Avenue (One-Way Eastbound)			X

3.11.1.1 56-Hour Weekend Street Closures

Contractor is allowed a maximum weekend closures per roadway as indicated in the Table 3.11-2. Weekend closures are considered independent of the allowed extended closures. Weekend closure can commence on Friday at 9:00 PM. Roadway must be fully accessible to traffic by Monday 5:00 am. In addition, only two of these roadways may be

closed at any given time in the LBMM corridor and only two of these roadways may be closed at any given time at RPB.

Table 3.11-2: 56-Hour Weekend Street Closure Constraints

Roadway	Maximum Weekend Closure Occurrences
W. School Street (Sheffield to Wilton)	8
N. Clark Street (approx. 500’ S of Roscoe to approx. 100’ N of Roscoe)	24
W. Roscoe Street (Sheffield to approx. 200’ E of Sheffield)	25
N. Sheffield Avenue (Clark to Roscoe)	25
W. Newport Avenue (Clark to approx. 250’ E of Clark)	8
W. Cornelia Avenue (Sheffield to Wilton)	4
W. Montrose Avenue (approx. 100 W of Kenmore to approx. 200 E of Clifton)	4
W. Leland Avenue (Winthrop to Broadway)	10
W. Lawrence Avenue (Winthrop to Broadway)	10
W. Foster Avenue (Winthrop to Broadway)	10
W. Berwyn Avenue (Winthrop to Broadway)	10
W. Bryn Mawr Avenue (Winthrop to Broadway)	10

W. Hollywood Avenue (Winthrop to Broadway)	10

The following roadways will not be closed simultaneously:

A. Hollywood Avenue and Bryn Mawr Avenue
B. Bryn Mawr Avenue and Foster Avenue
C. Foster Avenue and Lawrence Avenue
D. Lawrence Avenue and Montrose Avenue
E. Clark Street and Sheffield Avenue

3.11.1.2 56-Hour Weekday Street Closure

Contractor is allowed a maximum 56-hour weekday closures as indicated in the Table 3.11-3. 56-hour Street Closures must occur Monday thru Thursday with closures commencing on Monday at 9 PM. and fully accessible to traffic by Thursday at 5 AM.

Table 3.11-3: 56-Hour Street Closure Constraints

Roadway	Maximum 56-Hour Weekday Street Closure Occurrences
W. Argyle Street (Winthrop to Broadway)	10

3.11.1.3 Extended Closure

Roadways designated as Extended Closure can be closed to facilitate project construction operations provided all Contract requirements are satisfied.

Maximum durations for closures are provided in Table 3.11-4, or (subject to Sections 4.3 and 8.4.d of Part 1) as modified by Part 1, Exhibit 1, ATC 23.0 and 23.1 – Extended Closure Occurrences. Durations from ATC 23.0 and 23.1 are included as well for convenience. The Maximum Closure Duration listed below is the maximum for all occurrences by location, not for each occurrence by location. Contractor is responsible per 3.11.1.B above for government approvals of closures modified by ATC.

Table 3.11-4: Extended Street Closure Constraints		
Roadway	Maximum Closure Duration (Calendar Weeks)	No. of Occurrences
W. School Street (Sheffield to Wilton)	130	4
W. Ainslie Street (Winthrop to Broadway)	82 (ATC rev. to 49)	2 (ATC rev. to 5)
W. Winona Street (Winthrop to Broadway)	70 (ATC rev. to 49)	2 (ATC rev. to 5)
W. Balmoral Avenue (Winthrop to Broadway)	68 (ATC rev. to 31)	2 (ATC rev. to 5)
W. Catalpa Avenue (Winthrop to Broadway)	66 (ATC rev. to 41)	2 (ATC rev. to 5)
W. Ardmore Avenue (Winthrop to Broadway)	46 (ATC rev. to 28)	2 (ATC rev. to 5)

3.11.1.4 On Street Parking Closures

Contractor can utilize the parking lane of the public way within those roadways designated as On-Street Parking Closures. Contractor must maintain pedestrian, bicycle, residential and business access along with a minimum of one thru lane in each direction for two-way streets, or one thru lane for one-way streets during any partial closures. Contractor is responsible for all Permits and Permit Fees associated with the closure of all on-street parking stalls

3.11.2 Alley Closures

Contractor will minimize the frequency and duration of alley closures so as to reduce negative impacts to property owners adjoining the Project limits. Contractor will conform to the following requirements:

A. Alley closures are categorized as Extended or Daily Closures.

B. Alley closures will be fully coordinated with the overall Public Way Impact Mitigation Plan.

C. Contractor will be responsible for any and all approvals, Permits and Permit Fees necessary to accommodate alley closures.

D. Contractor is responsible for providing notification to any adjacent or adjoining property owner or other potentially affected party in accordance with Part 2.14 Public Information, Communication and Service.

E. Alley closures require written aldermanic approval letter to be obtained by Contractor and provided to CTA and CDOT Division of Infrastructure Management (DOIM) prior to the Permit being issued.

F. During Alley Closure, Contractor will be responsible for providing alternate parking for adjacent property (residential and businesses) whose parking is impacted by the work.

G. During Alley Closure, Contractor will be responsible for garbage removal for all impacted property owners, see Part 7 for Refuse–Recycle Summary.

H. During Alley Closure, Contractor will be responsible for providing alternate covered storage and delivery arrangement for adjacent property (residential and businesses) whose storage and delivery access is impacted by the work.

I. LBMM Alley closures will be restricted as follows:

   i. No more than six (6) alley blocks may be closed at any given time.

   ii. No more than three (3) consecutive blocks of Alley Closures at any given time.

   iii. When three (3) consecutive blocks of Alley Closures are used at any given time, at least one (1) of those blocks must by a Daily Alley Closure.

3.11.2.1 Daily Alley Closure

Contractor will utilize Daily Alley Closures for construction activities that allow Contractor to return access of the alley to adjoining property owners at the end of the work day. Temporary alley closures occur Mondays thru Fridays, from 8 AM to 4 PM (inclusive of contractor set-up and wrap-up). Daily Alley closures are not allowed on weekends.

During Daily Alley Closure Contractor will be responsible for garbage removal for all impacted property owners, see Part 7 for Refuse–Recycle Summary.

Maximum Allowable Days of Daily Alley Closures are provided in Table 3.11-5.

3.11.2.2 Extended Alley Closure

Contractor can utilize Extended Alley Closures for construction activities that do not reasonably allow for handback of the public alley at the end of the workday. Such activities include demolition, caisson installation, substructure construction, and alley pavement reconstruction. Maximum Extended Alley Closures and Occurrences are provided in Table 3.11-5. The Maximum Closure Duration listed below is the maximum for all occurrences by location, not for each occurrence by location:

Table 3.11-5: Allowable Alley Closures			
Alley	Maximum Extended Closure Duration (Calendar Weeks)	No. of Extended Closures (Occurrences)	Maximum Allowable Days of Daily Closures (Calendar Days)
Red Purple Bypass			
W. Belmont Ave. to W. School St.	21	2	126
W. School St. North to Midblock Alley	21	2	66
W. School to Midblock Alley (diagonal)	117	3	24
Midblock North to W. Roscoe St.	31	3	126
W. Roscoe St. to W. Newport Ave. (diagonal)	117	3	24
W. Newport Ave. North to Midblock	35	3	24
Midblock North to W. Cornelia Ave.	22	2	60
W. Roscoe St. to W. Newport Ave. (east)	30	2	126
W. Roscoe St. to W. Newport Ave. (west)	30	2	126
W. Sheffield Ave. to W. Seminary Ave	30	2	186
LBMM East Alley			
W. Leland Ave. to W. Lawrence Ave.	13	2	126

Table 3.11-5: Allowable Alley Closures			
Alley	Maximum Extended Closure Duration (Calendar Weeks)	No. of Extended Closures (Occurrences)	Maximum Allowable Days of Daily Closures (Calendar Days)
W. Lawrence Ave. to W. Ainslie Ave.	19	2	198
W. Ainslie Ave. to W. Argyle Ave.	16	2	180
W. Argyle Ave. to W. Winona Ave.	16	2	138
W. Winona Ave. to W. Foster Ave.	22	2	138
W. Foster Ave. to W. Berwyn Ave.	14	2	138
W. Berwyn Ave. to W. Balmoral Ave.	17	2	180
W. Balmoral Ave. to W. Catalpa Ave.	16	2	126
W. Catalpa Ave. to W. Bryn Mawr Ave.	15	2	210
W. Bryn Mawr Ave. to W. Hollywood Ave.	12	2	126
W. Hollywood Ave. to W. Ardmore Ave.	15	2	144
W. Ardmore Ave. to W. Thorndale Ave.	8	2	72
LBMM West Alley			
W. Lawrence Ave. to North to Midblock	0	0	132
W. Ainslie Ave. to W. Argyle Ave.	0	0	138

Table 3.11-5: Allowable Alley Closures			
Alley	Maximum Extended Closure Duration (Calendar Weeks)	No. of Extended Closures (Occurrences)	Maximum Allowable Days of Daily Closures (Calendar Days)
W. Argyle Ave. to W. Winona Ave.	0	0	138
W. Winona Ave. to W. Foster Ave.	0	0	78
W. Foster Ave. to W. Berwyn Ave.	0	0	138
Midblock North to W. Balmoral Ave.	0	0	84
Midblock North to W. Catalpa Ave.	0	0	84
Midblock north to W. Hollywood Ave.	0	0	150
W. Hollywood Ave. North to Midblock	0	0	84
W. Ardmore Ave. to W. Thorndale Ave.	3	1	150

3.11.3 Location Specific Requirements

As part of the Public Way Impact Mitigation Plan, Contractor must provide individual plans to specifically address the access requirements for the following properties:

3.11.3.1 Belmont to School Alley

Maintain access for deliveries and loading. Area under CTA structure may be utilized to shift traffic to maintain access.

3.11.3.2 Newport to Cornelia Alley

Maintain access for deliveries and loading. Area under CTA structure may be utilized to shift traffic to maintain access.

3.11.3.3 Aragon Ballroom (1106 W Lawrence Ave)

Contractor will coordinate with the Aragon Ballroom to maintain access to the facility during construction.

A. Emergency Egress
B. Deliveries and Loading

3.11.3.4 Goudy School (5120 N Winthrop Ave)

Contractor will coordinate with local schools and appropriate board of education to maintain vehicular and pedestrian access to educational facilities in the area.

A. School Loading Zones (Winona & Foster)
B. Deliveries
C. Emergency Access/Egress
D. Working Hours
E. ADA ingress/egress and Parking

3.11.3.5 Broadway Substation

Contractor will stage the new alley pavement construction to maintain access for deliveries, loading and emergency egress.

3.11.3.6 Swift Elementary Specialty School (5900 N Winthrop Ave)

Contractor will coordinate with local schools and appropriate board of education to maintain bus, private vehicle, and pedestrian access to educational facilities in the area.

A. School Loading Zones
B. Deliveries
C. Emergency Access/Egress
D. Working Hours

3.11.4 Public Way Impact Mitigation Plan

This Sub Part includes the requirements for the development of a Public Way Impact Mitigation Plan for the work. Contractor will design, and implement the Transportation Management in accordance with the requirements of this contract and FHWA, IDOT, and CDOT requirements. In addition to the requirements in this Sub Part, the Contractor will need to address project specific requirements in Part 3.11 and Part 6 Third Party Coordination. The Public way impact mitigate plan is part of the DBMS.

3.11.4.1 Standards, Codes, and References

The design and implementation of Transportation Management will be in accordance with this Sub Part and the requirements of the standards listed below, unless otherwise stipulated in this Sub Part. Use the most current version of each listed standard, code or reference. Contractor is responsible to obtain clarification on any unresolved ambiguity prior to proceeding with design or construction. If a conflict arises, the more stringent standard applies.

A. Chicago Department of Transportation (CDOT) “Rules and Regulations for Construction in the Public Way”;

B. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction;

C. Illinois Supplement to the National Manual on Uniform Traffic Control Devices (ILMUTCD);

D. FHWA Manual on Uniform Traffic Control Devices;

E. CDOT Specifications;

F. CDOT Traffic Control Standards;

G. IDOT Highway Standards & District Specific Standards;

H. The Contract documents; and

I. Directives issued by CDOT or IDOT to eliminate traffic problems and hazards

3.11.4.2 Public Way Impact Mitigation Plan Requirements

A. Contractor will prepare a Public Way Impact Mitigation Plan (PWIMP) to be submitted to and gain acceptance from CDOT and IDOT during Design development. Contractor will update the PWIMP any time personnel or conditions change throughout the Project.

B. Contractor will develop and implement a comprehensive plan detailing the process of how mobility and safety will be maintained throughout design work and construction work. The PWIMP will be monitored for effective performance and updated as required. The PWIMP will include details of all planned detours, roadway and alley closures, traffic control devices, pavement marking, signage applicable to each phase of work, bikeways, pedestrian circulation, and parking and loading. The information will be of sufficient detail to allow verification of

design criteria and safety requirements, including typical sections, alignment, pavement marking layout, signage, drop off conditions, and Temporary drainage.

C. The PWIMP will identify the type of traffic control required for the Project, identify and evaluate work zone impacts, and develop work zone impact management strategies to mitigate those impacts through the use of:
    i. Transportation operations strategies and/or processes to better manage the transportation system;
    ii. Traffic Control Plans (TCP) to provide site-specific Maintenance of Traffic (MOT) solutions; and
    iii. Public information and outreach strategies to communicate with the public and Project stakeholders throughout construction in conjunction with Part 2.14 Public Information, Communication, and Services.

D. Contractor will prepare the plan in a report format, with numbered and dated pages, with tracked and logged revisions as necessary to update the report for design and construction activities.

E. The PWIMP will provide a narrative to weave all components together and will include the following items, at a minimum:
    i. Descriptions of the duties for all personnel with traffic management responsibilities
    ii. Descriptions of the design methods to be used for Temporary roadways and structures providing equipment and material access to the CTA right-of-way including lighting, signing and pavement markings
    iii. Procedures to identify and incorporate the needs of Emergency Service providers, law enforcement entities, and other related public way users
    iv. Methods and frequency of inspection and maintenance of all traffic control
    v. Descriptions of contact methods, personnel available, and response times for responses to any conditions needing attention during any hours
    vi. Procedures to modify the Plans as needed to adapt to current CTA, CDOT and IDOT circumstances
    vii. Procedures to coordinate with CDOT, IDOT and other Governmental Entities
    viii. Procedures to communicate information in accordance with Part 2.14 Public Information, Communication and Services
    ix. Description of work and durations/schedule
    x. Sequence of construction
    xi. Strategies for minimizing impact to environmentally recognized conditions as described in Part 3.7 Environmental

xii. Traffic Control strategies for providing public safety and convenience

xiii. Access for businesses including deliveries

xiv. Plan for impacted residential, commercial and institutional parking

xv. Access for maintenance of utility service to adjacent properties

xvi. Identify haul routes and right-of-way access points for equipment and materials.

xvii. Work Zone Incident Management Plan (WZIMP)

xviii. Lane Closures and durations, including bicycle lanes

xix. Road Closures and durations

xx. Alley Closures and durations

xxi. Sidewalk Closures and durations

xxii. Metered and non-metered Parking Closures and durations

xxiii. Impacts to bus routes

xxiv. Plan for additional temporary bike racks and Divvy stations at CTA stations that remain open during construction

xxv. Plans to be developed to minimize impacts to sensitive noise receptors in the project area including identification of haul roads and parking of construction equipment.

3.11.4.2.1 Work Zone Incident Management Plan

The Public Way Impact Mitigation Plan will include a Work Zone Incident Management Plan (WZIMP). During construction MOT will become increasingly sensitive to incidents such as equipment malfunctions, traffic crashes and inclement weather. Contractor will prepare and implement a formal WZIMP to address how potential incidents relating to construction operations will be managed. The WZIMP will include specific time limits for the detection, verification, and classification of construction related incidents, as well as for the dissemination of information about the incidents. The WIMP will provide a mechanism to review and capture lessons learned from construction related incidents. The WZIMP will identify and provide for the incorporation of design elements to aid incident management. Contractor is required to adjust TCP as necessary per CDOT evaluation of incidents in proximity to the work zone but not directly caused by contractor operations (See Part 6.7 – CDOT RTPC).

3.11.4.2.2 Coordination with Emergency Services

Notify the Chicago Police Department and the Chicago Fire Department twenty one (21) days prior to any work blocking any street during construction. Contractor will make accommodations as directed by the Chicago Police Department and the Chicago Fire Department.

No material or obstruction of any sort will be placed within 25 ft. of any fire hydrant, standpipe or emergency exit. Fire hydrants and standpipes must be readily accessible to the fire department at all times.

3.11.4.2.3 Maintenance of Traffic

Maintenance of Traffic will be developed for the Project. MOT will include the development, design, installation, maintenance and removal of all items associated with maintenance of public way travel for the purpose of regulating, warning or directing traffic during construction. MOT will be performed in a manner that minimizes both construction duration and impact to the traveling public. MOT submittals are Administrative submittals.

Contractor will design and implement Maintenance of Traffic (MOT) for work areas in accordance with the Contract Documents and the following general requirements:

A. Provide for the safe, accessible and efficient passage of all forms of traffic including but not limited to pedestrians, bicycles, bus stops and vehicular traffic through and around construction zones throughout construction of the Project, while maintaining safety and accessibility for all workers on the Project

B. Be fully coordinated with active and on-going rail and bus operations of the transit agency

C. Minimize inconvenience and interruptions to the public users of transit operations

D. Minimize adverse impacts on residents, businesses, schools, parks, daycare facilities and all users traversing the public way

E. Provide traffic analysis of all MOT phases to ensure acceptable mobility, capacity, queues, delays, and progression throughout the Project area

F. Develop and coordinate MOT and incident management activities with the appropriate governing agency, CTA, local law enforcement, and other Emergency Services to ensure public safety and emergency response times are not compromised

G. Provide and maintain in passable condition such temporary access, roads and facilities as may be necessary to accommodate traffic diverted from the Project Area under construction, or using the Project Area under construction

H. Maintenance of access by Third Parties in accordance to requirements contained in Part 6 Third Party Coordination and Utility Maintenance Access

I. Provide and maintain in a safe condition temporary approaches to, and crossings of the Project

Variances from the site-specific plans will only be for emergencies affecting life and property. Contractor will immediately notify CTA and other authorities having

jurisdiction, as applicable, of any such emergency changes in accordance the applicable requirements of Part 2.8 Systems Safety and Security.

3.11.4.2.4 Parking

Contractor to develop a strategy to address off-street parking and surface lots during construction which will be included in the Public Way Impact Mitigation Plan. Contractor will address how Community Parking (residential, institutional and business parking) impacted by the construction will be mitigated. CTA will make no provisions for parking during construction. Contractor will provide ADAAG compliant parking. The Parking Plan will address the following requirements:

A. Community Parking
    i. Contractor will provide off-site parking when street or alley closures impact access to existing parking. Contractor will provide off-site parking that is available 24/7, at a parking facility that is safe, secure and located within 15 minutes travel time for the owner.
    ii. Contractor will provide access to Community Parking during Daily Alley Closures before 8 AM and after 4 PM.
    iii. Contractor will limit the Work area footprint and maximize the parking for the community.
    iv. Contractor will provide snow removal for Contractor provided parking facilities.
    v. Contractor will provide accessible parking space(s) immediately adjacent to the buildings served by existing accessible space(s) obstructed or made unusable by Contractor's operations

B. Metered and Permit Parking:
    i. Contractor will identify in the Parking strategy the location, schedule of impact, and duration of impacted metered parking space during construction. Contractor will be responsible for any and all Permits and Permit Fees necessary to accommodate the temporary removal of metered parking and maintain access to off-street parking.
    ii. Contractor will provide alternate off-site parking in accordance with Community Parking Item A when access is impacted for more than seven calendar days.

3.11.4.2.5 Special Events and Holidays

Contractor will accommodate traffic moratoriums imposed by the City for special events, including but not limited to athletic events, parades and festivals. Per the CDOT Rules and Regulations for Construction in the Public Way, lane and street closures will consider these events and be adjusted or modified as appropriate.

Contractor will not use roadways adjacent to Wrigley Field for hauling two hours before and one hour after Chicago Cubs baseball games, concerts and other special events. Contractor will also limit roadway closures and detours that could impact traffic in the immediately adjacent neighborhoods during these same periods.

Contractor will not implement a roadway closure on a roadway to be closed for the conduct of special events or that serves as a detour for the roadway closed by such special event. In addition to those mentioned in the preceding paragraph, special events that may require roadway closures include, but are not limited to:

A. Argyle Lunar New Year Parade
B. Argyle Night Market
C. Belmont & Sheffield Music Festival
D. Bike the Drive
E. Chicago Marathon
F. Dim Sum and Then Sum: Uptown 5K
G. EdgeFest
H. Edgewater 5K
I. Lakeview East Festival of the Arts
J. Lincoln Park Greek Fest
K. Midsommarfest
L. Northalsted Halloween Parade
M. Northalsted Market Days
N. Pride Parade
O. Race to Wrigley
P. St. Thomas of Canterbury Corpus Christi parade
Q. Transamerica Chicago Triathlon
R. Windy City Ribfest
S. Wrigleyville Summerfest

Work that restricts or interferes with traffic will not be allowed from noon on the day preceding a holiday or holiday weekend through noon the day following a holiday or holiday weekend. Holidays that occur on Friday, Saturday, Sunday or Monday are considered a holiday weekend. January 1, the third Monday of January, the third Monday of February, Memorial Day, July 4, Labor Day, November 11, Thanksgiving Day, the day after Thanksgiving, and Christmas Day are considered holidays. When any of these holidays fall on a Sunday, the following Monday is considered a holiday.

When any of these holidays fall on a Saturday, the preceding Friday is considered a holiday.

3.11.4.2.6 Site-Specific Traffic Control Plan

Contractor will prepare site-specific TCP for each major phase of construction that requires diversion of traffic. Contractor will include the following components in each TCP:

A. Detailed sequence of construction notes, separated by work zone activities and construction activities;

B. Locations of signs, drums, cones, barricades, portable changeable message boards, concrete barriers and all other temporary traffic control devices, along with device size, messaging, spacing, frequency and other pertinent information necessary to provide a complete and compliant traffic control setup;

C. Specific sign messages with sign sizes, spacing or referenced distances for all temporary signs;

D. ILMUTCD sign designations for standard signs;

E. Sign fabrication details for all non-standard signs (i.e. those signs not included in ILMUTCD);

F. Pavement marking details including size, material, color, location, spacing (for discontinuous marking) and lane widths;

G. Contractor flagger locations and signage;

H. Detailed design of all Temporary roadways, including pavement markings, roadside barriers and other appurtenances required to complete the Work. All Temporary roadways will be designed for the assigned posted speed;

I. Temporary signing, traffic signal, and lighting plans, as required all temporary traffic control devices necessary to safely and efficiently construct a particular portion of Work;

J. Contact information of emergency responders.

K. Traffic analysis for each MOT phase

L. Traffic signal timing plans for Temporary and existing traffic signals (if changed)

M. Transportation Operation Strategies

3.11.4.2.7 Relocation of Bus Routes

Where Work obstructs an existing bus stop or bus route, the bus stop or route will be temporarily relocated in an ADA accessible location in coordination with CTA twenty one days prior to the obstruction to the existing bus stop.

3.11.4.2.8 Roadway Closure

Contractor will minimize frequency and duration of roadway closures and partial closures so as to reduce negative impacts to users of the public way in the vicinity of the Project limits. Contractor will conform to the following requirements:

A. Roadway closures and partial closures will be fully coordinated with the overall Public Way Impact Mitigation Plan.

B. Contractor will be responsible for any and all approvals, Permits and Permit Fees necessary to accommodate roadway closures.

C. Roadway closures and partial closures will be implemented based on approved TCP's that have been coordinated with the appropriate agencies (CTA, CDOT, IDOT, Police, Fire and Chicago OEMC, etc.)

D. All detours will be in place, including all signing, prior to closure of any road.

3.11.4.2.9 Alley Closure

Contractor will minimize the frequency and duration of alley closures and daily alley closures so as to reduce negative impacts to property owners adjoining the Project limits. Contractor will conform to the following requirements:

A. Extended alley closures and daily alley closures will be fully coordinated with the overall Public Way Impact Mitigation Plan.

B. Contractor will be responsible for any and all approvals, Permits and Permit Fees necessary to accommodate alley closures.

C. Extended alley closures and daily alley closures will be implemented based on approved TCP's that have been coordinated with the appropriate agencies (CTA, CDOT, IDOT, Police, Fire and Chicago OEMC, etc.)

D. Contractor is responsible for providing notification to any adjacent or adjoining property owner or other potentially affected party in accordance with Part 2.14 Public Information, Communication and Service.

E. Contractor will coordinate and accommodate refuse removal, parking and loading as noted in Part 2.5.

F. Coordination of residential access and utility service access will be required throughout construction.

3.11.4.2.10 Sidewalk Closure

Contractor will develop an approach to the Work to minimize impact to sidewalks. Contractor will minimize the frequency and duration of sidewalk closures to reduce negative impacts to users of the public way in the vicinity of the Project limits. At a minimum, accessible protected pedestrian access along one side of a roadway must be provided with sidewalk closure signs posted as required by CDOT. Contractor will

maintain access walkways to all properties, buildings and businesses. Sidewalk closures will meet the requirements of the CDOT Rules and Regulations for Construction in the Public Way. Provide notifications in accordance with Part 2.14 Public Information, Communications and Services.

3.11.4.2.11 Maintaining Access to Adjacent Property

Contractor will provide safe access to property abutting the Project Area when the usual means of access are obstructed by the performance of the Contract. Contractor will provide access in accordance to Part 6 Third Party Coordination and in particular, maintenance access for utility service. Driveways will be kept open. During construction of driveways and driveway ramps, access will be provided by Contractor for each driveway and driveway ramp. The accesses provided by Contractor will conform to any and all accessibility requirements pursuant to the Americans with Disabilities Act and related regulations and guidelines. Contractor must provide accommodations for the materials and equipment stored at residences that will be rendered inaccessible by any Contractor activity.

3.11.4.2.12 Haul Routes

Contractor will assume full responsibility for determining the jurisdiction through which its haul routes pass, and will permit the hauling operations with respect to laden weights, types of vehicle, frequency and dimensions of loads, required traffic control and hours of operation. Contractor will develop haul routes to limit noise impacts to sensitive noise receptors, in accordance to Environmental documents and requirements located in Part 3.7. All necessary Permits, licenses or bonds will be obtained and paid for by Contractor. The unavailability of haul routes or limitations thereon will not become a basis for extension of time for completion of the Work.

Include the location of the truck and equipment staging areas to be used for both short and long-term activities that will minimize deleterious impacts to residences, businesses and institutions from noise, vibration, dust and diesel emissions generated by idling and working vehicles and equipment.

3.11.4.2.13 Vehicle Load Restriction

Vehicle load restriction will be in accordance with state and local requirements, unless Contractor has obtained an over-legal load Permit from the appropriate agency. Movement of any oversized Project construction equipment or material will be in accordance with the requirements of the authority having jurisdiction. No such oversized load is to be moved over public streets without first obtaining approval of the appropriate agency, as applicable. Contractor will be responsible for any damages caused by Contractor activities.

3.11.4.2.14 Execution of Traffic Control Devices and Regulation

A. Contractor will be responsible for the proper location, installation and arrangement of traffic control devices. Special attention will be given to advance warning signs during construction operations in order to keep lane

assignment consistent with barricade placement at all times. Contractor will cover, turn away, or remove all traffic control devices which are inconsistent with lane assignment patterns during the transition from one construction stage to another.

B. Construction signs referring to temporary closures during working hours will be removed or covered during non-working hours unless lanes are to remain closed.

C. Contractor will coordinate traffic maintenance Work on this project with adjoining or overlapping projects, including barricade placement necessary to provide a uniform traffic detour pattern.

D. Contractor will ensure all traffic control devices installed by Contractor are operational 24 hours a day, 7 days a week. Contractor will respond to any call from CTA concerning any request for improving or correcting traffic control devices and begin making the requested repairs within two hours from the time of notification.

E. Contractor is responsible for any and all damages to existing traffic signals, conduits and loop detectors as a result of the Work. Contractor will repair all damages within 24 hours.

3.11.4.3 Special Submittals

Item	Part	Submittal	Type	Initial Submittal Date
1	3.11	Public Way Closure Notification	Public Way Access Request	As needed
2	3.11.2	Public Way Impact Mitigation Plan	Administrative	Intermediate

3.12 Hours of Work

CTA authorizes Contractor to perform construction activities at any time subject to Contractor's compliance with requirements provided in the Contract Documents with respect to construction noise limits, construction vibration limits, light trespass mitigation, access requirements and constraints, and as generally consistent with Contractor's Proposal; subject to minimizing nighttime (2200-0700) Work where possible and practicable.

Contractor must identify with each weekly submittal of the Five-Week Look-Ahead schedule, those construction activities requiring nighttime or weekend performance. Contractor will present the Five-Week Look-Ahead schedule at each Monthly Community Task Force meeting during the Project construction duration.

3.13 Utilities

CTA has initiated Advance Utility Relocations (AUR) throughout the RPM project area. Utilities that are known to be in direct conflict with Permissible Areas will be included in AUR unless noted otherwise in this Part 3.13 or the exhibits provided in Appendix 3I. AUR will be complete by NTP plus 180 calendar days, except for AT&T facilities in Clark Street which will be complete by NTP plus 270 days. Refer to Sub Part 3.13.6.4. CTA's AUR, along with Utility relocations that will be the responsibility of Contractor, are discussed below and shown in Appendix 3I.

Contractor is responsible for the timely completion of Utility relocations that are not part of AUR and for construction of new Utility services necessary for the Project. Contractor is responsible for the protection in place of Utilities, whether or not the Utilities are part of AUR.

Contractor will coordinate the design and construction of new Utility services and Utility protection and relocation, other than AUR, required to complete the Work starting at NTP. Contractor's obligation to coordinate Utilities is applicable to all Utilities impacted by the Project, whether or not:

A. CTA has had previous discussion with a Utility

B. CTA has entered into a Utility Agreement with the impacted Utility

C. Utilities have been relocated as part of Advance Utility Relocations (AUR)

Contractor may enter into agreements with Utilities in accordance with Part 1, and Contractor will issue Utility Work Orders (per Sub Part 3.13.4 below) or other instruments or documents necessary to achieve Contractor's obligations for Utility relocation or protection. Contractor will notify CTA and make available copies of all correspondence between Contractor and Utilities.

Department of Electrical Operations (DEO) and Office of Emergency Management and Communications (OEMC) facilities are Utilities. However, with minor exceptions, DEO and OEMC facilities are not part of AUR. Contractor is responsible for all Work with respect to traffic signals, public way lighting, public surveillance cameras and data transmission facilities, and fire protection equipment that are under DEO and OEMC jurisdiction.

3.13.1 Advance Utility Relocations

Should AUR remain in progress at NTP plus 180 days, CTA will continue to manage these relocations. Contractor will include these in-progress relocations in Contractor's Utility Matrix (per Sub Part 3.13.3 below) and account for these in-progress relocations in Contractor's means and methods. Contractor will attend coordination meetings with Utilities and CTA as required until the AUR is complete.

3.13.1.1 Utility Status Drawings

Exhibits provided in Appendix 3I indicate the status of AUR by identifying Utilities that will be relocated outside of Permissible Areas in advance of Contractor's Work as well as identifying the Utility scope for which Contractor will be responsible. Utility Status Drawings Removals exhibits are provided in Appendix 3I showing which Utilities will be

removed as part of AUR. Utility Status Drawings Advance Utility Relocations exhibits are provided in Appendix 3I showing which Utilities are planned, designed, or constructed to replace the removals as required. The exhibits depicting removal and status of Utilities may be updated by CTA as work progresses.

The information shown in Appendix 3I refers to main line Utility runs (i.e., lines generally running parallel to the direction of traffic in street or alleys). Service connections, laterals, manholes, catch basins, inlets, and other structures within the Public Way will be replaced or reconnected along with the associated Utility when that Utility is relocated. This work will be completed by CTA for AUR and by Contractor for Utility relocations by Contractor. Service connections and laterals within the Public Way may not be depicted in Utility Status Drawings and may exist in Permissible Areas. Contractor is responsible for locating, protecting, adjusting, relocating, or replacing these service connections and laterals as required to accommodate Contractor's means and methods.

3.13.1.2 Utility Reference Information

Available design for AUR work is included in Part 7.19 for Contractor's reference.

Drawings included in Part 7.19 may be updated by CTA as work progresses.

3.13.2 Utility Management Plan (UMP)

Contractor will develop a Utility Management Plan (UMP), which will be a part of the DBMS. The UMP will include, at a minimum, the following:

A. Designation of a Utility Coordinator to coordinate and monitor all Utility Work for the duration of the Project;

B. Identification of all Utilities impacted and with the potential to be impacted by the Project;

C. Identification of Utility relocation work required for the Project beyond that already performed by AUR;

D. Impact on Contractor's activities from remaining AUR work based upon the most recent update of Appendix 3I or any additional Utility relocation work;

E. Identification of all new Utility services for Temporary and Permanent Project facilities;

F. Identification of the party responsible for the design, construction, inspection, acceptance and cost of all Utility Work;

G. Process for notifying CTA of Utility Agreements, Utility Work Orders, and other related instruments or documents;

H. Process for notifying relevant parties of Utility outages;

I. Creation, maintenance and update on a monthly basis of Contractor's Utility status drawings showing all the existing and proposed Utility alignments;

J. Establishment of Contractor's design and construction procedures, processes and schedules for protecting or relocating Utilities;

K. Process for completing emergency Utility work including timely status updates and coordination with CTA and Utility;

L. Methodology for ensuring that all Utility work is completed in accordance with the UMP;

M. Proposed format of Contractor's Utility Matrix; and,

N. Proposed format of Utility Agreements, Utility Work Orders, or other instruments of Utility relocation, protection, and coordination.

3.13.3 Contractor's Utility Matrix

Contractor will develop a Contractor's Utility Matrix. Contractor's Utility Matrix will be updated on a monthly basis and posted to the Project Website in its native file format. Contractor's Utility Matrix will include, at a minimum, the following information for each Utility:

A. Name of Utility;

B. Conflict notification date;

C. Location of Utility;

D. Description of Utility by size and type;

E. Proposed relocation or protection measures for the Utility;

F. Relocation status (Temporary or Permanent);

G. Length of Utility protection or relocation;

H. Easement requirements;

I. Utility design review and approval process;

J. Utility design approval date;

K. Utility construction process; and,

L. Dates of anticipated Utility outages.

3.13.4 Utility Work Order (UWO)

Contractor will prepare a Utility Work Order (UWO) for each Utility that is impacted by Contractor's Work. The primary purpose of the UWO is to provide greater detail on the Work to be performed for or by impacted Utilities and for new Utility services for Temporary and Permanent CTA facilities that are part of the Work.

Contractor will submit each UWO to CTA and to the Utility. The UWO will contain at a minimum:

A. Detailed procedures for the Utility Work regarding design review and acceptance of facilities;

B. Contractor's schedule of submittals to the Utility, which will be updated as necessary;

C. Contractor's Schedule activities relevant to the scope of the Utility Work;

D. Standards, responsibilities, and procedures for design, review, and performance of the Utility Work;

E. Standards, responsibilities, and procedures for any inspection, testing, and acceptance of facilities, including placement of facilities into service; and,

F. Standards, responsibilities, and procedures for quality assurance and quality control of the Utility Work.

3.13.5 Utility Construction Requirements

Contractor will follow procedures specified by the Chicago Department of Transportation Office of Underground Coordination (OUC) for all Utility Work. Except for understructure lighting, Utilities relocated by Contractor will not be attached in their permanent configuration to CTA structure unless specifically identified in Appendix 3I.

Contractor will inspect and test all new Work prior to placement into service as required by the Utility. Contractor will submit reports of tests, inspections, meter readings, and similar procedures performed on Utilities and post all documents to the Project Website.

3.13.5.1 Existing Utility Information

Information regarding Utilities shown in the Contract Documents was gathered using industry standard protocols. Existing Utility information is provided in Appendix 3J. Contractor will conduct additional Utility investigations as required to prosecute the Work.

3.13.5.2 Utility Protection in Place

In locations where impacts to relocated or existing Utilities cannot be avoided, both within and outside the Permissible Areas, Contractor will coordinate Utility protection in place measures or relocation measures in accordance with the Illinois Underground Utility Facilities Damage Prevention Act for each Utility and as described in Part 6. Contractor will be required to repair, replace, or reconstruct Utilities damaged as a result of Contractor's Work to the satisfaction of CTA and the Utility.

Contractor will exercise caution with respect to all Utilities located or relocated outside of Permissible Areas and pay special attention to AUR in alleys. Utilities relocated in advance in alleys will be located outside of Permissible Areas as depicted in Appendix 3I, but, in the case of aerial power and telecommunications, Utilities may be present within the overall area available to Contractor or within the aerial envelope of construction equipment anticipated to be used by Contractor to prosecute the Work.

3.13.5.3 Abandoned Utilities

Where existing Utilities are abandoned and removal of these abandoned Utilities is necessary to execute the Work, Utilities will be removed by Contractor. Contractor will follow procedures identified in the CDOT “Rules and Regulations for Construction in the Public Way” for removing abandoned facilities.

3.13.5.4 Utility Services and Connections

Contractor is responsible for providing Utility services and connections to Contractor and CTA Temporary and Permanent facilities as specified in Sub Part 2.5.12.4. New Utility services will be designed and constructed using the most efficient path, minimizing lengths and bends, while allowing future maintenance to leave the facility unencumbered and operational. Costs for Utility Service Charges paid to the Utilities in conjunction with bringing service to or relocating service to Temporary and Permanent CTA Project operating facilities will be paid according to Sub Part 3.2.4.2.

3.13.6 Utility Disposition Narrative

The information provided below presents Contractor with an understanding of the disposition of Utilities throughout the Project, including existing Utilities, Utilities to be relocated, Utilities to remain in place, and Contractor responsibilities regarding Utilities. The CTA RPM Phase One Utility Matrix, provided in Appendix 3I, provides a list of Utilities to be relocated by AUR and describes the location, by sector, of each utility relocation. Sub Parts 3.13.6.1 through 3.13.6.6 describe work to be completed by CTA during AUR. Sub Part 3.13.6.7 describes work to be completed by Contractor after NTP.

3.13.6.1 Sector RPB-01: Alleys between Newport and Roscoe and Sheffield and Seminary

ComEd, AT&T, RCN, Crown Castle, and Comcast have aerial Utilities in the alleys between Newport and Roscoe and Sheffield and Seminary which are in conflict with the Red-Purple Bypass. ComEd will construct a joint duct bank generally located in the center of these alleys. ComEd, AT&T, RCN, Comcast, and Crown Castle will be relocating their existing aerial facilities into this underground duct bank.

ComEd, AT&T, Comcast, and RCN underground facilities will serve customers on the north side of the alley south of Newport, customers on the west side of the alley east of Seminary, and customers on the east side of the alley west of Sheffield. ComEd, AT&T, Comcast, and RCN will serve customers on the south side of the alley north of Roscoe by attaching distribution and customer services wires to the south side of the CTA Ravenswood structure.

Utility service riser poles will be installed at various locations on the north, west and east sides of the alleys to provide a pathway for service wires from the underground duct bank to customer properties as shown in Appendix 3I. These riser poles will be 21-ft. high and will provide attachments for power and telecommunications services lines.

Utility services will rise up each pole from underground ducts; services will not be strung from riser pole to riser pole in a direction parallel to the alley.

There are no known conflicts with proposed AUR drawings and permissible areas in RPB-01.

3.13.6.2 Sector RPB-02: School Street and Alleys between Sheffield and Clark and Belmont and Roscoe

ComEd, AT&T, RCN, and Comcast have aerial and underground facilities in the alleys between Sheffield and Clark as well as Belmont and Roscoe, which are generally in conflict with Permissible Areas. ComEd will construct a joint duct bank generally located in the center of the alleys east of Sheffield and along parts of School Street. ComEd, AT&T, Comcast, and RCN will be relocating their facilities into this underground duct bank, and these facilities will serve customers on the west side of the alley.

Utility service riser poles will be installed at various locations on the west side of the alleys to provide a pathway for service wires from the underground duct bank to customer properties as shown in Appendix 3I. These riser poles will be approximately 21-ft. high and will provide attachments for power and telecommunications services lines. Utility services will rise up each pole from underground ducts; services will not be strung from riser pole to riser pole in a direction parallel to the alley.

ComEd, AT&T, Comcast, and RCN will serve customers on the north end of the alley, south of Roscoe Street, by attaching distribution and customer services wires to the CTA Ravenswood structure.

Aerial facilities in the diagonal alley west of Clark and north of School Street will generally remain in place, but aerial primary electrical lines (12 kV) will be relocated to the south end of the alley. Aerial electrical services and telecommunications lines will remain, and Contractor will protect the aerial lines. ComEd will construct additional facilities (transformers, switchgear, feeders, etc.) as shown in Appendix 3I.

A 2 in. gas line on the south side of School Street will be abandoned in place, and PGL will construct a new gas line to supply properties on the north side of the street, as shown in Appendix 3I.

The sewer in the alley south of School Street will be reconstructed by ComEd as part of ComEd relocation of their utilities.

3.13.6.3 Sector RPB-03: Intersection of Sheffield and Roscoe

There are no aerial facilities at this intersection. ComEd, AT&T, PGL, and DWM are performing advance relocations in the area as shown in Appendix 3I.

3.13.6.4 Sector RPB-04: Clark Street from Roscoe to Buckingham

ComEd, AT&T, PGL, and DWM have underground facilities in Clark Street. ComEd facilities are not in conflict with Permissible Areas and will remain in place. AT&T, PGL,

and DWM Water will be relocating their underground facilities outside of the Permissible Areas. OEMC and WOW! communications lines are co-located inside AT&T ducts and will be relocated with AT&T.

AT&T's underground facilities in this sector contain large amounts of legacy copper wire systems and AT&T anticipates that cut-over of these legacy copper wire systems may take up to 15 months. Underground work by Contractor that impacts AT&T's facilities cannot commence until AT&T's cut-overs are complete. AT&T's cutover work is anticipated to be complete by NTP plus 270 days.

The Contractor's attention is directed to Part 3.13.6.7 and Part 6.11 which describes requirements for reconstruction of sanitary sewers on Clark and Roscoe.

3.13.6.5 Sector RPB-05: Streets and Alleys Bordered by Roscoe, Clark and Cornelia

ComEd, AT&T, RCN and Comcast have aerial and underground facilities in the streets and alleys in this area. DWM and PGL have underground facilities in the streets.

In the alleys between Roscoe and Newport, there are existing aerial service lines to properties on the west side of the elevated structure. Aerial service lines will generally be disconnected and removed by CTA during Advance Demolition Work, with the exception of a power service line to the Vautravers Building and to a street light circuit. This will be protected by Contractor and relocated by Contractor as required to facilitate the Work.

In the alleys between Newport and Cornelia, ComEd, AT&T, RCN and Comcast have aerial and underground facilities. The underground facilities and aerial facilities on the west side of the alley will be protected by Contractor. RCN and Comcast are attached to CTA structure at the alley intersection and will relocate to underground at this location only as part of the AUR as shown in Appendix 3I. Other aerial facilities, including poles and aerial telecom facilities on the east side of the alley will be protected by Contractor or relocated by Contractor to facilitate the Work.

3.13.6.6 Sectors LBMM-01 – LBMM-04: Alleys Parallel to the CTA Red/Purple Line between Leland and Thorndale and at All Cross Streets

ComEd, AT&T, RCN, and Comcast have aerial and underground facilities throughout the east and west alleys. In the east alleys, these facilities will be relocating into a joint underground duct bank that will be constructed by ComEd and will be located generally down the middle of the east alley. Customer services will be provided via service riser poles that will be placed intermittently on the east side of the east alley. These riser poles will be approximately 21-ft. high and will provide attachments for power and telecommunications services lines. Utility services will rise up each pole from underground ducts; services will not be strung from riser pole to riser pole in a direction parallel to the alley. Service lines will be attached to cross-arms that are aligned parallel to the alley and will span overhead from the riser cross arms to properties.

Aerial and underground ComEd and telecommunications facilities in the west alleys will generally remain in place, except as noted below. ComEd will construct and install additional facilities (transformers, poles, feeders, etc.) in the west alleys to accommodate relocations in the east alleys.

In the west alley between Ardmore and Thorndale, ComEd has permanently relocated overhead lines to underground to facilitate construction of CTA structures over the alley. AT&T, RCN, and Comcast overhead facilities are temporarily attached to the CTA substation building façade; they will remain there until Contractor completes CTA structures over the alley.

There are instances where earth retention systems used to construct ComEd ductbanks during the Advance Utility Relocations will remain within the permissible areas after the Advance Utility Relocation program is complete, generally by no more than 2 ft. 6 in. The known conceptual locations of these systems are in the east alley of Sectors LBMM-01 – LBMM-04 as shown on the exhibits provided in Appendix 3I; locations shown are conceptual only and extents may not be confined to the areas identified. The system will be soldier pile and lagging. Conceptual typical cross sections of the system are provided in Part 7.19 for reference. Final design of the earth retention systems is still under development and will be shared with Contractor when complete.

3.13.6.7 Contractor Responsibilities

Within Sectors RPB-01 and RPB-02, Contractor will be responsible for protection and reattachment of wires attached to the Ravenswood structure and maintenance of customer services as required to complete Contractor's Work on the CTA Ravenswood structure. ComEd services are attached to the Ravenswood structure using brackets between Newport and Roscoe and attached using other methods between Sheffield and Clark Substation. Contractor will coordinate with ComEd to ensure the services currently attached to the structure using brackets are reattached in the same manner and services currently using other attachment methods are reattached to structure using brackets.

In Sector RPB-05, RCN has one abandoned underground conduit and one abandoned handhole in the alley, which will be removed by Contractor as required to facilitate Contractor's Work. An aerial ComEd service line from the north side of Newport serves the Vautravers Building and an alley lighting circuit; this service line will be left in place by CTA and removal and replacement will be coordinated by Contractor.

All LBMM cross streets contain numerous underground facilities that Contractor will protect in place.

At the Thorndale relay house, Contractor will coordinate its relay house design to accommodate the relocation of existing telecommunications cables currently affixed to the east substation wall to poles to be located along the west line of the alley. Contractor to coordinate relocation of the telecommunications cables with the utilities after relay house construction.

Contractor responsibilities for sewers shown in Appendix 3I include the following:

A. Line the 9 in. sewer on School Street and reconstruct manholes in Sector RPB-02

B. Line sewer from manhole at Roscoe to manhole at Newport in Sheffield Avenue and line sewer laterals and inlets in Sector RPB-03

C. Reconstruct a portion of the existing DWM sewer, including replacing manholes, on Clark Street from Roscoe to Buckingham. DWM has agreed to a 4 ft. horizontal clearance of this sewer to the ComEd conduit in Clark Street south of Roscoe.

D. Replace sewer, including manholes, on Roscoe east of Clark with a 24” concrete sewer that flows to the west

E. Protect in place or relocate sewer in east alley north of Leland Avenue as required to accommodate final design

F. Protect in place or relocate sewer in east alley north and south of Lawrence Avenue as required to accommodate final design

G. Protect in place 16 ft. and 8.5 ft. diameter sewers on Lawrence

H. Fill the abandoned 8.5 ft. diameter sewer stub-out in the west alley, at Lawrence, as described in Sub Part 3.1.4.6

I. Reconstruct sewers on Foster and Bryn Mawr (48 in. diameter) and on Catalpa (12-in. diameter) that are embedded in existing CTA foundations

J. Protect in place or relocate sewer in east alley north of Foster Avenue as required to accommodate final design

K. Protect in place or relocate sewer in east alley north of Balmoral Avenue as required to accommodate final design

L. Protect in place or relocate sewer in east alley north of Catalpa Avenue as required to accommodate final design

M. Protect in place or relocate sewer in east alley north of Bryn Mawr Avenue as required to accommodate final design

N. Protect in place all other sewers in cross streets and alleys in LBMM

O. Line sewers located in LBMM cross streets as described in Part 6.11

3.13.7 Special Submittals

Item	Part	Submittal	Type	Initial Submittal Date
1	3.13.3	Contractor's Utility Matrix	Design	Within 60 days of NTP
2	3.13.4	Utility Work Order	Design	Varies
3	3.13.5	Utility Inspection and Test Reports	Construction	Varies