

## EAST PROJECT – PHASES 1-4

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### 1.1.1 OVERVIEW OF CONSTRUCTION APPROACH

The purpose of this section is to provide a potential overview of construction activities and their related durations.

The overall construction start to completion is estimated to be roughly 3 years. The main construction activities would include civil construction, OMF construction, systems construction/installation, and integration testing and startup activities.

The civil construction will be performed in individual segments and the activities will continue through the life of the project.

The civil work will start with an intense period to include the construct of the tunnels, Cedar Lake Channel Railroad Bridge, and the TC&W rail realignment. The TC&W rail realignment does impact the phasing and activities for the tunnel construction. The station, OMF, and track activities will also be intense at the start of the project leading into the final systems construction pushing into startup. Based on this preliminary review it is recommended that the tunnel construction, Cedar Lake Channel Railroad Bridge, and the TC&W track realignment and related crossings be some of the first activities.

Material hauling will require coordination and approval from the local jurisdictions. It will be critical to have well defined and planned saturated soil drying areas and haul routes. The majority of the project has good access to major roads which should result in timely hauling operations.

The civil construction activities include but are not limited to the following activities:

- General Demolition/Removals
  - Buildings/Bridges/Pavement
- Clear and Grubbing
- Grading and Fill Operations
- Public Utility
  - Relocations
  - New Installation
  - Abandoning
- Private Utility Relocation and Removals
- Bridges
  - Freight, LRT, Roadway, and Pedestrian
  - Vibration Considerations During Construction
  - Soil Conditions
- Parking Structures
- Cut and Cover Tunnels
  - Sheet Pile Cofferdam Construction
  - Vibration Considerations During Construction
  - Restricted construction zone
  - Support of Excavation
- Retaining Walls
- Pavement – Bituminous and Concrete
- Maintenance of Traffic
  - Detours
  - Closures
  - Temporary Roads
  - Temporary Trails
  - Temporary Parking
  - Intersection Phasing
- Temporary, partial, limited access
- Delivery of materials and equipment
- Erosion Control – NPDES/SWPPP Compliance
- Water Evacuation of sealed tunnel cells

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- Drying of the stockpiled tunnel saturated material
- Stations
- Vertical Circulation
- Track
  - Direct Fixation
  - Ballasted Track
  - Embedded Track
  - Temp Shoofly Construction
- OCS/Substations/Systems

### 1.1.2 CONSTRUCTION SEQUENCING

Construction of the East Project will require linear construction that will be sequenced into multiple segments. Currently the East Project is separated into four separate segments.

Each of the segments will have defined contractual durations and completion milestones that support the project overall baseline project schedule.

The segments may also include independent milestones related to specific activity completions requested by businesses and stakeholders.

During the final design phase a detailed work-specific construction plan will be created to define the various segments, required contracts, schedules, and estimated cost. All of this generated information will then be used to evaluate and manage the construction progress. Based on our experience a 5-6 day work week can be anticipated. The working hours can be anticipated to be between 7 a.m. to 7 p.m. weekdays and 9 a.m. to 4 p.m. on Saturdays. Generally cities will issue authorization for

extended hours through a permit process. It is anticipated that night work will be performed and in some cases 24 hour operations may be required to accommodate maintenance of traffic conditions or related stakeholder requirements. Construction through some of the intersections will require well thought out plans and night work to offset the demands of high traffic volumes. The tunnel construction will require long hours and weekends to maintain an aggressive schedule. This will be a challenge as the majority of the tunnel parallels residential communities and has a restricted work area and limited access. Excellent communication by means of the outreach program will be important to keep the local public aware of progress and construction expectations.

### 1.1.3 STAGING AREA CRITERIA

This initial staging area review will be further evaluated and updated as the construction process and phasing is better defined during the final design. During construction, staging areas will be required to store materials, equipment, and to provide lay down area.

The following factors controlled this review:

- Establish a proper staging area for all areas
  - Materials in same location improves the schedule
- Security of the staging area
  - Material and Equipment need to be secured
  - Fenced areas with good lighting is preferred.

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- Ease of Material and Equipment Delivery/Storage
  - Major roads/highways are the best routes due to road restriction constraints
  - Storage capacity for materials and equipment
- Dual Use Staging Areas
  - Staging for Station and Mainline Construction is the best situation
- Opportunity for contractor labor parking
  - Workers will work longer hours if there is not a bus pool process used to transport workers
- Proper Drainage
  - Dry sites are key
- Availability of power source
  - Stations require power so it is a natural site for staging
- Determination of several areas that will allow for rail welding operations
  - These lay down areas allow the contractor room to weld and construct long sections of rail
  - Extra area improves efficiency
- Limited impacts to existing trees/vegetation, residents, roads, and businesses.
- Areas outside the limits of the corridor could also be reviewed.

staging could occur within property under control of the project. Other publically owned properties will be analyzed during advanced design to accommodate additional potential staging areas.

Staging area exhibits have been produced to define the proposed areas where construction

