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## **1. Project Overview**

### **1.1. Independent Contractor**

1.1.1. The Contractor agrees it is acting in the role of an independent contractor. The Contractor, and its employees and subcontractors, will not be considered employees of the State for any reason. The Contractor acknowledges that it is responsible for its own financial control. The Contractor has negotiated the payment for this contract with the State, which may result in a profit or loss for the Contractor. The Contractor also acknowledges that it is responsible for the behavioral control of itself, its operations, and its staff. The Contractor is solely responsible for determining the means, methods, and sequence of performing the work covered by this contract. The State has included deliverable dates in this contract, not to provide a “sequence” of work but because the State must coordinate these deliverables with (1) the State’s financial plans, (2) other contracts managed by the State, and (3) work performed by the State’s own staff. The parties have mutually drafted and agreed upon a scope of work. The level of detail used to describe the work is intended only to establish minimum standards and ensure consistency across the hundreds of projects managed by the State; the Contractor remains responsible for determining the means and methods of performing the work to meet or exceed those requirements. The State will not directly supervise the Contractor’s work but will provide oversight and monitoring, as required by Minnesota Statutes §16C.08 and 23 CFR Part 172.5, to ensure compliance with the terms, conditions, and specifications of this contract. At the conclusion of this contract, the State will evaluate the Contractor’s performance under this contract for potential use in future evaluations and selections as required by Minnesota Statutes §16C.08 and 23 CFR Part 172.5.

### **1.2. General Statement of Scope of Work**

1.2.1. The project includes public engagement (including coordination with the City of Minneapolis and Metro Transit’s E Line), preliminary utility and drainage analysis, risk register, preliminary design, and development of cost estimates and concept drawings, all working towards the development of a staff approved layout. Given the location of the corridor and the anticipated existing and future users, the project will incorporate an analysis of multimodal needs on the corridor, which will lead to design elements incorporated into the project layout.

### **1.3. Project Background**

1.3.1. State is planning to repave University Avenue southeast (SE) and 4th Street SE between Central Avenue (Trunk Highway 65) and Interstate (I)-35W in 2027 or sooner. As part of this paving project, State is collaborating with agency partners and community members to identify a multimodal design that improves asset conditions and transportation safety for all corridor users. State is soliciting consultant support to develop conceptual layouts and cost estimates for this corridor. Concepts are expected to include a protected bikeway, pedestrian safety improvements, American with Disabilities Act (ADA) improvements, and signal upgrades. Concepts will also incorporate elements of the Metro Transit E Line (which is expected to include stations within State right-of-way) as needed through conversations with Metro Transit. The consultant team will need to coordinate with staff from the City of Minneapolis and Metro Transit throughout the project to ensure that conceptual designs are understood and compatible with relevant transportation planning. Other key stakeholders include (but are not limited to) Hennepin County, University of Minnesota, Minneapolis Public Schools, Minneapolis Parks and Recreation Board, local residents, local businesses, and community organizations.

### **1.4. Requirements for Work Within Right-of-Way**

1.4.1. Traffic Control

1.4.1.1. The Contractor must meet the following requirements for traffic control for all work related to this contract that occurs within right-of-way prior to the construction letting.

- a. All roadways and property accesses must be kept open to traffic at all times. All legs of a local road intersection must remain open at all times. Pedestrian traffic must be maintained and guided through the project at all times in accordance with the Minnesota Manual of Uniform Traffic Control Devices (MMUTCD) chapter 6D and layouts in chapter 6J.
- b. Notify the State if roadways, property access, legs of intersections, or pedestrian traffic cannot be maintained. The State will then coordinate closures with the necessary parties. The Contractor must provide traffic control plans as needed during this coordination. Road closures may only occur with the permission of the State.
- c. Lane closures may only occur after the State has approved them. The Contractor must submit proposed lane closures to the State for consideration.
- d. The Contractor must provide all traffic control necessary to perform the work. Traffic control must be performed in accordance with the current Metro Lane Closure Manual, MMUTCD including Part 6K of the Minnesota Temporary Traffic Control Field Manual, the Guide to Establishing Speed Limits in Highway Work Zones, the Minnesota Flagging Handbook, the Minnesota Standard Signs and Markings Manual, guidance on accommodating pedestrians and bicycles in works zones, and the Traffic Engineering Manual. The Metro Lane Closure Manual can be found at the following website: <http://www.dot.state.mn.us/metro/trafficeng/laneclosure/index.html>. The other manuals can be found at the following website: <http://www.dot.state.mn.us/trafficeng/publ/index.html>.
- e. When working on the shoulder or median of State highways, the Contractor must perform this work using a lane closure on the mainline and adhering to the lane closure restrictions in the Metro Lane Closure Manual.
- f. The Contractor must furnish, install, maintain, and remove all traffic control devices required to provide safe movement of vehicular traffic through the project during the life of the contract from the start of contract operations to the final completion thereof. The State will have the right to modify the requirements for traffic control as deemed necessary due to existing field conditions.
- g. Traffic control devices include, but are not limited to, barricades, warning signs, trailers, flashers, cones, and drums. Barricade weights must be sufficient to maintain barricade stability.
- h. The Contractor must immediately repair or replace all traffic control devices that become damaged, moved, or destroyed; all lights that cease to function properly; and all barricade weights that are damaged, destroyed, or otherwise fail to stabilize the barricades. The Contractor must provide sufficient surveillance of all traffic control devices at least once every 24 hours.
- i. The Contractor must furnish names, addresses, and phone numbers of at least two individuals responsible for the placement and maintenance of traffic control devices. These individuals must be "on call" 24 hours per day, seven days per week during the times any traffic control devices furnished and installed by the Contractor are in place. The required information must be submitted to the State at the contract kickoff meeting.

- j. The Contractor must respond immediately to any call from the State or its designated representative concerning any request for improving or correcting traffic control devices.
- k. The Contractor must create and update a daily log documenting the traffic control. This log also must include the date and time any changes in the traffic control go into effect. The log must identify the location and verify that the devices are placed according to contract requirements. All entries in the log must include the date and time of the entry and be signed by the person making the inspection. The State reserves the right to request copies of the logs as deemed necessary.
- l. The Contractor must provide copies of the inspection logs within the timeframe agreed upon when requested by the State.
- m. All Contractors', subcontractors', and suppliers' mobile equipment that is operating within the limits of the project with potential exposure to passing traffic must be equipped with operable warning lights that meet the appropriate requirements of the Society of Automotive Engineering International (SAE) specifications. This includes closed roads that are open to local traffic only. This also includes any vehicle that enters the traveled roadway at any time.
- n. Lights must be mounted so that at least one light is visible at all times when at eye level from a 60-foot radius about the equipment. To meet these requirements, supplemental lighting may be used in addition to the lights on the approved products list. All supplemental lights must be SAE Class 1 certified. This specification must be used for both daytime and nighttime operations. All costs incurred to provide warning lights must be at no cost to the State. These warning lights also must be operating and visible when a vehicle decelerates to enter a construction work zone and again when a vehicle leaves the work zone and enters the traveled traffic lane.
- o. The Contractor must equip vehicles with lights that are on the approved products list, which can be found at <http://www.dot.state.mn.us/products/vehiclighting/vehiclesafetylights.html>.
- p. The Contractor must provide protective devices necessary to protect traffic from excavations, drop-offs, falling objects, splatter, or other hazards that may exist during construction. Equipment must not be allowed to suspend over traffic.
- q. All workers within the right-of-way who are exposed to either traffic or to construction equipment must wear reflectorized high-visibility safety apparel. High-visibility safety apparel means personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage and at a minimum meets performance Class 2 requirements of the American National Standards Institute (ANSI)/ International Safety Equipment Association (ISEA) 107-2004 publication American National Standard for High-Visibility Safety Apparel and Headwear.
- r. All high-visibility apparel must be worn in the manner for which it is intended to be worn. All apparel worn on the torso must be closed in the front to provide contiguous 360-degree visibility. If a worker's high-visibility apparel becomes faded, worn, torn, dirty, or defaced, reducing the conspicuity of the apparel, the apparel must be removed from service and replaced with new apparel.

#### 1.4.2. Maintenance

- 1.4.2.1. The Contractor must meet the requirements for maintenance herein for all work related to this contract and prior to the construction letting.

- a. The work site must be completely cleaned up to equal or better condition than before excavation. Existing pavement or surface must be neatly saw cut and excavated using a method enabling vertical and horizontal exploration through this cut when the need to expose a utility underneath pavement occurs.
- b. Test holes must be excavated to expose the utility to be measured in a manner that ensures the safety of excavation and prevents any damage to the utility. All applicable utility damage prevention laws must be complied with, and coordination with utility inspectors must occur as required.
- c. The Contractor is responsible for any damage to the utility during excavation. In the event of utility damage, work must be stopped and appropriate agencies notified, including the utility owner. Work must not resume until the owner has determined what action to take. The Contractor is liable for all costs associated with the repair or replacement of the facility and must contact the State immediately if hazardous materials are encountered.
- d. Excavation must be backfilled with approved material around the utility structure and compacted, in lifts, with appropriate devices. Pavement within the limits of the original cut must be permanently restored at the time of backfill. If the test hole is excavated in an area other than the roadway pavement, the area must be restored to equal or better condition than before excavation. The Contractor is responsible for the integrity of the backfill/surface restoration. If the work site is not appropriately restored, the Contractor must return and properly restore the site at no extra cost to the State.

#### **1.5. Web-Based Teleconferencing**

1.5.1. The Contractor must provide the means for the project team to meet via web-based teleconferencing that allows participants to view the desktop of the meeting organizer. Participants must be able to “take control” of the virtual desktop as needed to point out things on the file being displayed. Voice communication may occur via computer or phone.

#### **1.6. Source Type Codes and P6 Activity Codes**

1.6.1. Every deliverable must list a source type code. The source type code will be used in the Contractor’s invoice to subtotal the deliverables together under that source type code.

1.6.2. Every deliverable must list a P6 activity code that matches the P6 activity in the P6 schedule. The Contractor may use this code to understand the due dates for that deliverable in the schedule and how the activity relates to other activities in the schedule.

1.6.3. The Contractor is not required to know how to use Primavera P6 (P6) or work within the program itself unless stated in Project Management section. The Contractor is, however, expected to understand the concept of Critical Path Method scheduling, understand hardcopy reports printed by the P6 schedule, update the hardcopy reports, and recommend changes to the schedule to reflect changes in the scope or flow of work.

#### **1.7. Milestones and Contract Completion Timeline**

1.7.1. The late start and the late finish dates included in the project schedule are the contractual due dates for this contract.

- a. Construction limits for the project should be identified by June 30, 2023.
- b. Contractor will work with State to incorporate the work into the State’s P6 schedule.
- c. The approved layout should be completed by October 30, 2023.

## 1.8. Format of Deliverables

1.8.1. All deliverables must be provided in electronic file format.

1.8.2. Software

- a. Report source files must be in current versions of Microsoft Word and Microsoft Excel. Files must be delivered to the State by email or File Transfer Protocol (FTP).
- b. Computer Aided Drafting and Design (CADD) deliverable source files must meet the State's Level 2 Enhanced CADD Data Delivery Specifications.
- c. All applicable spatial data and maps created in Geographic Information System (GIS) software must be provided in a standard shapefile format (.shp) that is compatible with current versions of ArcMap software.
- d. Schedules created by the Contractor must be created in P6 format on the Contractor's server following all State schedule guidelines, including the State's work package dictionary.
- e. All source files also must be converted to Adobe Acrobat Portable Document Format (.pdf) extension), and the PDF must be searchable, with scanned pages eliminated except for signature pages.

1.8.3. Plain Language

- a. All documents or exhibits specifically designed to be used by the public must be developed in "plain language." Executive Order 14-07 requires the Office of the Governor and all Executive Branch agencies to communicate with Minnesotans using plain language and defines plain language as a communication that an audience can understand the first time they read or hear it. Additional information is available at (<https://www.dot.state.mn.us/consult/adaplainlanguage.html>). To meet the requirements of this executive order, the Contractor will:
  - i. Use language commonly understood by the public
  - ii. Write in short and complete sentences
  - iii. Present information in a format that is easy to find and easy to understand
  - iv. Clearly state directions and deadlines to the audience
- b. Technical documents, presentations, spreadsheets, and drawings used by technical staff do not need to be in plain language.

1.8.4. Accessibility Standards

1.8.4.1. The Contractor must comply with the State of Minnesota's Accessibility Standard ([http://mn.gov/oet/images/Stnd\\_State\\_Accessibility.pdf](http://mn.gov/oet/images/Stnd_State_Accessibility.pdf)) for all documents or exhibits specifically designed to be used by the public. The State of Minnesota's Accessibility Standards are based on the Web Content Accessibility Guidelines (WCAG) 2.0 (Level AA) and Section 508 of the Rehabilitation Act, as amended. Additional requirements can be found at (<http://www.dot.state.mn.us/ada/accommodation.html>) and include:

- a. Providing interpreters, translators, or other special accommodations.
- b. Providing documents in an alternative format.
- c. Following the PDF accessibility guidance.

1.8.4.2. The State of Minnesota's Accessibility Standard also includes:

- a. All videos must include closed captions, audio descriptions, and a link to a complete transcript.
- b. All documents, presentations, spreadsheets, drawings, and other material must be provided in an accessible format. Native files must be provided in an editable format. Acceptable formats include InDesign, Word, and Excel.
- c. All materials intended for downloading and printing must be labeled as such, and the content must be provided in an accessible format.

1.8.4.3. Technical documents, presentations, spreadsheets, and drawings used by technical staff do not need to comply with the State of Minnesota's Accessibility Standard.

1.8.4.4. All outward-facing Microsoft Word documents to be used during the project must be designed with ADA-accessible features, including alt text and screen-reader compatibility.

## **1.9. Standards and Guidance**

1.9.1. All field data must be provided in Global Information/Positioning Systems (GIS/GPS)/County Coordinates – NAD83 (1996) County Datum and NAVD 88 vertical datum, MicroStation, and Microsoft Excel/Word formats. Field data may be submitted in other formats only after receiving written permission from the state's Project Manager.

1.9.2. All design work must be done in conformance with current State MicroStation and GEOPAK standards, following Level 2 Enhanced CADD Data Delivery Specifications.

1.9.3. All design must be conducted by or under the direct supervision of a Professional Engineer licensed in Minnesota.

1.9.4. All survey work must be conducted by or under the direct supervision of a Professional Land Surveyor.

1.9.5. All deliverables must be prepared in accordance with The Highway Project Development Process (HPDP): <https://www.dot.state.mn.us/project-development/index.html>

1.9.6. State uses the Primavera P6 scheduling tool. Scheduling deliverables must be compatible with P6 format and work package dictionary: <https://www.dot.state.mn.us/pm/p6.html>.

1.9.7. Failure of this scope of work to list a specific standard under a specific deliverable does not absolve the Contractor's obligation to comply with all laws, regulations, and standards that apply to highway projects within the State of Minnesota. The Contractor must comply with all state, federal, and local standards, laws, and regulations related to the scope of work and project area. Work must comply with the latest edition or revision of that standard in effect on the proposal due date, including any amendments in effect on that date, unless otherwise specified in the contract or otherwise directed by the State.

1.9.8. Websites have been supplied to the Contractor for some of the standards and guidance documents listed for convenience only in an effort to help the Contractor locate the required standard or guidance. The websites are not guaranteed to be correct. It is ultimately the Contractor's responsibility to locate the required standard and to determine if the standard has been modified pursuant to this Contract.

1.9.9. Additional requirements for standards may be provided within the scope tasks that follow.

## **1.10. Items Provided by the State**

1.10.1. The State will provide the following items. Some items must be provided at Notice to Proceed. Other items are developed as the project progresses. The Contractor is responsible for requesting the needed information when it is available during the project development.

- a. As-built plans (if available)
- b. Base mapping: topography, triangular irregular networks (tin), DTM, right-of-way, property lines
- c. MicroStation files of base mapping, cross-sections, utilities, detail design plans/layout and construction plans
- d. Existing alignment/survey
- e. Project limits
- f. Right-of-way information
- g. Sample plan
- h. Example or existing/draft Stormwater Pollution Prevention Plan (SWPPP) and title sheet
- i. Project scoping document (when available)
- j. Traffic data and available traffic analyses/studies
  - i. MnDOT Traffic Engineering Manual
  - ii. Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD)
  - iii. State StreetLight license
- k. Draft ADA design recommendations
- l. Final plans for completed projects on the corridor
- m. State's risk register template
- n. State lighting records
- o. State signing records
- p. State Traffic Management System (TMS) records
- q. Transportation Asset Management System (TAMS)
- r. MnDOT survey request form
- s. Existing soil boring information (if available)
- t. Existing drainage systems plans
  - i. Hydrinfra inventory table and map of existing drainage system with asset information including material type, dimensions, coordinates, and condition ratings
  - ii. GIS shapefiles of storm drainage features in the project area that have been recorded in the TAMS Hydrinfra database
  - iii. Known existing drainage flooding and erosion issue areas
  - iv. Piezometers and groundwater elevation data (if available)

## **2. Project Management (Source Type 1010)**

### **2.1. Project Coordination and Administration (P6 Activity Code OPM1000)**

2.1.1. Project management includes work necessary for communicating and completing the project tasks on time and within budget. The Contractor must not reassign the project manager or their primary duties without the written consent of the State's project manager. The Contractor's staff must have the training and expertise necessary for the work tasks to which they are assigned.



2.1.2. Meeting summaries must be submitted no later than five business days after each meeting and a final meeting summary must be submitted no later than five business days after receiving comments on summary notes.

2.1.3. The Contractor will:

- a. Prepare invoices accompanied by:
  - i. A cover letter explaining the general status of the project, including at a minimum the work completed to date, the anticipated remaining efforts, and required schedule changes
  - ii. Progress report form
  - iii. Supporting data for direct expenses
  - iv. An updated project status report reflecting P6 activities identified by the State's project manager
- b. Manage, coordinate, direct, and monitor subcontractor services, including reviewing progress reports, deliverables, schedule, and invoices.
- c. Update the State's project manager on the status of the project schedule, budget, and general status/progress on a monthly basis.
- d. Store all deliverables in an organized electronic document management system and make deliverables available to the State's project manager as needed whether the file is incomplete, in draft form, or the final deliverable by email, FTP site, ProjectWise, other consultant-provided directory. If agreed upon by the State's and contractor's project managers, the State can provide restricted access to a ProjectWise document center for use as the project file transfer vehicle and repository.
- e. Lead coordination with other governmental agencies as required for data collection, regulatory requirements, and project coordination, as directed by the State. This is supplemental coordination beyond that explicitly called for elsewhere in this scope. These activities include communications via phone, email, and written correspondence for the duration of the project.
- f. Create a method to list and track issues that develop during the project that either need resolution or implementation. The tracking spreadsheet must prioritize issues for due dates and amount of risk to schedule and construction budget. For example, the State's project manager may send an email to the Contractor stating that an issue needs to be resolved or completed. The Contractor must log that issue and track it until it is marked completed. The Contractor will review the list with the State's project manager at the bi-weekly progress meetings.

2.1.4. Deliverables:

- a. Monthly invoices and progress reports
- b. Subcontractor status reports included with monthly invoices and progress reports
- c. Update calls with the State's project manager
- d. Document management system
- e. Issue resolution tracking spreadsheet
- f. Agency correspondence

## **2.2. Project Meetings (P6 Activity Code OPM1000)**

2.2.1. Kickoff Meeting

2.2.1.1. The Contractor will schedule and facilitate a project kickoff meeting to confirm the basic project objectives, solidify a work plan, and obtain consensus on the project requirements. This meeting must occur no later than 15 business days after Notice to Proceed. The meeting will be held virtually and will include up to five Contractor staff.

2.2.2. Project Management Team (PMT) Meetings

2.2.2.1. The Contractor will facilitate monthly PMT meetings with the State's project manager and other personnel as identified by the State's project manager. The intent of the PMT is to review overall project progress as measured by the P6 schedule and to discuss issues that are not resolved at the design level. The PMT meetings are intended to provide a management-level view of project development. PMT meetings may be canceled with written approval from the State's project manager.

2.2.2.2. The Contractor will:

- a. Meet with the State's project manager bi-weekly to review progress of deliverables, issues, and team effectiveness
- b. Solicit feedback from the State's project manager to assess whether all services meet or exceed the requirements of the project
- c. Direct changes to personnel and/or procedures to correct identified deficiencies and implement opportunities for improvements
- d. Review work tasks to be completed and explain coordination and progress with the State's functional group leads
- e. Identify needs and issues and discuss steps.

2.2.2.3. Progress meeting attendees may vary depending on issues that need discussion. The Contractor's project manager must attend these meetings. Meetings will be held virtually.

2.2.3. Risk Assessment Workshop

2.2.3.1. The goal of the risk assessment workshop is to identify potential design risks to the pre-letting portion of project delivery and develop possible mitigation strategies. The workshop may occur at a State location or be held virtually. The State's project manager will supply the Contractor with a list of State and other personnel to be invited to the risk assessment workshop.

2.2.3.2. The Contractor will schedule one risk assessment workshop with the State and Contractor's staff no later than six months after Notice to Proceed.

2.2.4. Additional Project Coordination Meetings

2.2.4.1. The purpose of these meetings will vary and will include topics such as design coordination and review, coordination with other agencies, and other issues as agreed to by the State's project manager.

2.2.4.2. The Contractor will:

- a. Facilitate 20 additional project meetings
- b. Prepare and distribute a draft and final meeting agenda and summary for each meeting

2.2.5. Technical Advisory Subcommittee Meetings

2.2.5.1. Contractor's Project Manager will set up and prepare for monthly Technical Advisory Committee (TAC) meetings. The TAC will be comprised of technical staff from the State and

local partner agencies including Hennepin County, City of Minneapolis, Metro Transit, and others as determined by the State's Project Manager. The Contractor's Project Manager will develop an agenda and content for the meeting and provide meeting minutes.

2.2.5.2. The Contractor will:

- a. Facilitate six additional project meetings
- b. Prepare and distribute a draft and final meeting agenda and summary for each meeting

2.2.6. Stakeholder Coordination Meetings

2.2.6.1. These are supplemental meetings beyond those explicitly called for elsewhere in this scope. This is not meant to be the public engagement plan, and it's not meant to be specific design coordination meetings. These meetings are meant to have a focus on general scope of the project and general project management coordination between stakeholders.

2.2.6.2. The Contractor will:

- a. Facilitate 15 stakeholder coordination meetings with the State's project manager, other State staff, and stakeholders, as needed
- b. Prepare agendas, facilitate the meetings, and prepare and distribute draft and final meeting summaries

2.2.7. Deliverables:

- a. Meeting invite, materials, agenda, and draft and final meeting summaries for each meeting

### **2.3. Work Plan and Schedule (P6 Activity Code OPM1000)**

2.3.1. Schedule Management

2.3.1.1. The State will provide a PDF of the draft project schedule in Primavera P6 format with all State Work Packages included in the schedule and will include the State's P6 Work Packages Dictionary. The State will maintain the official schedule on State servers to be updated manually based on Contractor recommendations.

2.3.1.2. The Contractor will manage the schedule by:

- a. Providing monthly schedule updates to the State's project manager either by marking up a PDF copy of the schedule or by providing a report describing the schedule updates needed
- b. Determining if any activities owned by the Contractor need to have their percent complete and remaining duration updated
- c. Determining if any activities owned by the State need to have their percent complete and remaining duration updated
- d. Contacting persons responsible for each activity to determine the actual percent complete. State staff will update their own activities and provide updates to the Contractor
- e. Examining the schedule and determine what activities need to start work, need to show progress in work, or need to be completed within a month
- f. Determining if committed resources, either the Contractor's or the State's, are still dedicated to the project and schedule and report resource discrepancies if they occur

- g. Communicating schedule update information with activity owners as needed and determine if additional activities need to be added to the schedule
- h. Sending recommended updates to the State's project manager for review

2.3.1.3. The schedule must not extend beyond the contractual completion dates or contain negative float. If any activities do have negative float, the Contractor must provide a recovery schedule recommendation within 5 business days to explain how the negative float will be eliminated.

2.3.1.4. Deliverables:

- a. Monthly schedule updates to the State's project manager
- b. Recovery schedule recommendation

### **3. Public Involvement Plan (Source Type 0054)**

Develop and implement the Public Involvement Plan (PIP) to include both public and agency stakeholders, consisting of the Conflict assessment and Management Process (CAMP) or a similar process that might include the following steps:

1. Project Analysis
2. Stakeholder Identification
3. Conflict Identification
4. Conflict Mapping
5. Conflict Assessment
6. Public Involvement Strategy
7. Implementation and Management

Design the PIP to engage, inform, and gather input from all stakeholders throughout the corridor evaluation, including both the general public, local residents and businesses, and agency representatives.

#### **3.1. Project Analysis**

Conduct thorough project research and scale to the size of the project or policy. Formalize the Project Goals Statement.

3.1.1. Deliverables

- a. Document all the project goals from major goals to minor goals. Include explanation for each goal.

#### **3.2. Stakeholder Identification**

Identify internal and external stakeholders, including agencies, elected and appointed officials, advocacy groups, businesses and adjacent property owners/tenants. Particular attention should be paid to historically disadvantaged groups as part of the stakeholder identification. Coordinate with staff from City of Minneapolis, Metro Transit, Hennepin County, and other relevant agencies who have held recent public engagement in this area to identify stakeholders.

3.2.1. Deliverables

- a. Document identifying all stakeholders.

### **3.3. Conflict Identification**

Identify existing and potential issues related to the identified stakeholders.

- 3.3.1. Deliverables
  - a. Document identifying all conflicts.

### **3.4. Conflict Mapping**

Produce an influence/interest grid of stakeholders. Map relationships between stakeholders, including alliances, relationships with friction, broken relationships, relationships that don't exist and relationships that need to exist. Indicate power imbalances and triggering events which may create issues.

- 3.4.1. Deliverables
  - a. Influence/interest grid document.

### **3.5. Conflict Assessment**

Review conflicts for likelihood of occurring, risk to the project for time, scope and budget, and risk to State's reputation.

- 3.5.1. Deliverables
  - a. Assessment document that explains risk of each conflict.

### **3.6. Public Involvement Strategy**

Generate possible options for resolution with input from the PMT and TAC with a focus on identifying impacts, outcomes, strategies and planned responses. Develop practices that may be used to ensure the opportunity for involvement for all individuals and/or groups within the project area. The PIP must identify public involvement goals for the project and develop a public involvement strategy that targets these goals. If the strategy differs from what it outlined in the implementation of task 3.7 then the contract will be amended to reflect to appropriate strategy.

The Public Involvement Strategy should account for the unknown future health conditions related to COVID-19 and should provide opportunities for both in-person and virtual engagement. The Public Involvement Strategy should identify a digital strategy including social media, email updates, and other online information to inform stakeholders about the project. Other public engagement, such as direct outreach to residents and businesses along the corridor, pop-up events, and attendance at nearby events, maybe needed and should be considered as part of the Public Involvement Strategy. The strategy should identify how the project team will engagement with historically disadvantaged groups identified in task 3.2.

Metro Transit is planning to construct the E Line Bus Rapid Transit (BRT) project along these corridors and State also has planned bridge projects on University Avenue and 4<sup>th</sup> Street over I-35W. There have also been recent Hennepin County projects east and west of the corridor. The public involvement strategy must be attuned to this and coordinated with the public involvement strategy of those projects and other public engagement happening in the area.

3.6.1. Deliverables

- a. PIP Strategy document

**3.7. Implementation and Management**

Implement the PIP strategy developed as part of task 3.6.

3.7.1. Deliverables

- a. Public engagement events – Set up, prepare materials for, and run three public engagement events that could be virtual, in person, or both. If in person, the events are assumed to occur in the area of the corridor.
- b. Stakeholder meetings – Prepare for, attend, and prepare minutes for 15 meetings with identified stakeholders to discuss the corridor study.
- c. Participate in other engagement activities as identified in task 3.6.

**4. Traffic Counts (Source Type 1014)**

**4.1. Standards and Guidance**

4.1.1. All deliverables must be prepared in accordance with:

- a. Conduct field studies in accordance with the methods described in Chapter 4 of the Manual on Transportation Engineering Studies, 2nd Edition published by the Institute of Transportation Engineers (ITE).
- b. The Contractor will provide all turning movement volumes in the required format shown in the example provided in the resources section on the following webpage: <http://www.dot.state.mn.us/metro/warrant>, in Excel spreadsheet, Adobe PDF, and PetraPro (PPD file) format.
- c. The Contractor will provide all bidirectional daily traffic volumes in the required format shown here: <http://www.dot.state.mn.us/metro/warrant/files/i-35/076+00.840%20-%20CSAH%202/I-35%20AT%20CSAH%20%20RP%20076.%2000.%20840HOURLY%20APPROACH%20QUNT%20YEAR%202003.pdf>, in Excel spreadsheet and Adobe PDF.

**4.2. Items Provided by the State**

- a. Count locations of data collection

**4.3. Milestones and P6 Activity Codes**

4.3.1. There are multiple tasks that need to be completed as part of TFC1000 listed in this scope of work with different completion dates. The Contractor will work with the State to determine when each deliverable will be completed within the P6 schedule.

**4.4. Turning Movement Volume Collection (TFC1000)**

4.4.1. The Contractor will:

- a. Collect and provide vehicle cars and trucks with separate bicycle counts and pedestrian counts on major and minor roads at the following intersections:

- i. University Ave northeast (NE) & east (E) Hennepin Ave
- ii. University Ave SE & Central Ave (TH 65)
- iii. University Ave SE & 3<sup>rd</sup> Ave SE
- iv. University Ave SE & 6<sup>th</sup> Ave SE
- v. University Ave SE & I-35W Southbound Ramps
- vi. University Ave SE & I-35W Northbound Ramps
- vii. University Ave SE & 10<sup>th</sup> Ave SE
- viii. 4<sup>th</sup> Street NE & E Hennepin Ave
- ix. 4<sup>th</sup> Street SE & Central Ave (TH 65)
- x. 4<sup>th</sup> Street & 4<sup>th</sup> Ave SE
- xi. 4<sup>th</sup> Street & 6<sup>th</sup> Ave SE
- xii. 4<sup>th</sup> Street & I-35W Southbound Ramps
- xiii. 4<sup>th</sup> Street & I-35W Northbound Ramps
- xiv. 4<sup>th</sup> Street & 10<sup>th</sup> Ave SE

If recently taken counts are available, they may be used in lieu of new counts after receiving agreement from the State's project manager.

- b. Recommend time periods to collect traffic counts and complete counts. For purposes of this scope, assume data collection will occur during the following time periods:
  - i. Collect data for 12-hour turning movement counts from 6:00 AM – 6:00 PM.
- c. Submit the proposed count location(s), time(s), and date(s) of collection to the State project manager for approval at least 72 hours before collecting the data.

4.4.2. Turning movement vehicle count methods must adhere to the following criteria:

- a. Count data must be collected on a Tuesday, Wednesday, and/or Thursday of a non-holiday week.
- b. If the count locations are proximate to schools, count data must be collected when school is in session unless otherwise approved by the State.
- c. Count data must not be collected during a weather event that disrupts typical travel behavior.
- d. Count data must not be collected if any incidents, work zones, events, or detours are present within the study area.
- e. Vehicle counts must be separated into passenger vehicle and heavy commercial vehicle categories.

4.4.3. Pedestrian crossing count methods must include:

- a. Pedestrian crossings are counted when they cross a marked or unmarked crosswalk, and the counts are presented as a two-way count total on the approach to the intersection where the crossing occurs (i.e., pedestrians crossing the south leg of an intersection are recorded as northbound approach crossing pedestrian counts).
- b. Those who do not cross the street are not counted, such as those turning the corner on the sidewalk without crossing the street.
- c. Pedestrian crossing counts include individuals walking or jogging, skaters, Segway riders, scooter users, and people using wheelchairs or other special needs users as well as bicyclists walking/riding their bicycles across the road (behaving like pedestrians).

4.4.4. Bicycle count methods must adhere to:

- a. Bicyclists riding their bicycles on the road (behaving like vehicles) are counted as bicycles. Bicycle counts are presented as directional turning movement counts.

4.4.5. Deliverables:

- a. Turning movement count files for:
  - i. Vehicle turning movements for each 15-minute increment, including left turns, through movements, and right turns for each approach
  - ii. Total number of vehicle turning movements for the entire count period and the peak periods
  - iii. Peak hour volumes and peak hour factors (PHF) for each peak period
  - iv. Pedestrian crossing counts for each 15-minute increment
  - v. Total number of pedestrian crossings for the entire count period and the peak periods

**4.5. Bidirectional Daily Traffic Volume Collection**

4.5.1. Daily traffic volumes must be counted for the following road segments:

- a. University Ave SE between Central Avenue (TH 65) and 1<sup>st</sup> Ave SE
- b. University Ave SE between 8<sup>th</sup> Ave SE and I-35W
- c. 4<sup>th</sup> Street SE between Central Avenue (TH 65) and 1<sup>st</sup> Ave SE
- d. 4<sup>th</sup> Street SE between 8<sup>th</sup> Ave SE and I-35W

4.5.2. The Contractor will provide separate counts for passenger vehicle, single-unit commercial vehicle, and combo-unit commercial vehicle categories

4.5.3. The Contractor will collect bidirectional vehicular volume counts and provide:

- a. The proposed count location(s) and date(s) of data collection to the State project manager for approval at least 72 hours before collecting the data.
- b. Data collected for a 24-hour period beginning and ending at 12:00 AM.
- c. All counts in electronic format that include two-way and bidirectional totals for each one-hour increment during the 24-hour count period.

4.5.4. Deliverables:

- a. Bidirectional daily traffic count files

**5. Traffic Modeling (Source Type 1016)**

The Contractor will model and analyze University Ave SE and 4<sup>th</sup> Street SE from Central Ave (TH 65) to Interstate I-35W. The Contractor will model and analyze the following scenarios for AM and PM peak period conditions:

- a. 2022 Base Conditions.
- b. 2027 Opening Year Build scenario.

**5.2. Standards and Guidance**

5.2.1. All deliverables will be prepared in accordance with the following:



- a. The modeling will conform to the current MnDOT Modeling Guidelines and CORSIM Calibration Parameters available here:  
<http://www.dot.state.mn.us/trafficeng/modeling/modelreq.html>.
- b. The modeling will conform to the modeling process outlined in the current Advanced CORSIM Training Manual available here:  
<http://www.dot.state.mn.us/trafficeng/modeling/training.html>.

### **5.3. Items Provided by the State**

- a. Available crash data
- b. Available traffic models
- c. All Detector Report

### **5.4. Milestones and P6 Activities**

5.4.1. There are multiple tasks that must be completed as part of Traffic Modeling listed in this scope of work with different completion dates. The Contractor will work with the State to determine when each deliverable will be completed within schedule.

### **5.5. Traffic Analysis**

5.5.1. The modeling must be performed using Vissim, CORSIM, or another State-approved microsimulation software package. Deliverables in this task can include multiple iterations of review, and these interim steps may not be included in the P6 schedule. The Contractor must work with State on the schedule for interim deliverables and approvals.

5.5.2. The Contractor will develop a base model by:

- a. Attending and facilitating an initial traffic analysis coordination meeting between the Contractor and the State to establish the traffic analysis criteria and goals.
- b. Attending and facilitating a meeting between the contractor, the State, and the Federal Highway Administration (FHWA) to present results of the initial traffic analysis coordination meeting and gain FHWA concurrence on the traffic analysis approach.
- c. Preparing for and attending up to 3 meetings with the State and FHWA staff to discuss the modeling process, calibration results, and operational results of the base model.
- d. Conducting a field review of existing traffic operations in the study area including queue lengths during the AM and PM peak periods to aid in the calibration of the base model and to verify existing geometric conditions and traffic operations. The Contractor may review corridor operations from the Regional Transportation Management Center (RTMC).
- e. Preparing and submitting a draft Existing Traffic Conditions Report that discusses the field observations made including the locations of existing bottleneck conditions, high weave areas, and mainline queue lengths and documenting the existing geometric and operational deficiencies of the study area.
- f. Reviewing and assembling required modeling data for this project including traffic counts, turning movements, signal and ramp metering timings, posted and design speeds, and geometrics as supplied by the State and other agencies, by accessing the Metro District website, accessing the State's data extraction workstation, and field review. For work in Greater Minnesota, the Contractor must work with the State project manager to obtain available data.

- g. Developing a lane schematic that graphically represents the existing network.
- h. Developing existing AM and PM 15-minute traffic volume data for the peak period by interpolating bad or missing traffic volume data and by balancing the volume data.
- i. Building the existing conditions AM and PM models. This includes entering volume data for vehicles (including transit), pedestrians, and bicycles; traffic signal and ramp meter control data; and the appropriate calibration values.
- j. Verifying that the network data has been coded correctly and develop a freeway quality control worksheet and arterial quality control worksheet that lists link information.
- k. Calibrating the AM and PM base models according to "CORSIM Calibration Parameters."
- l. Preparing a Calibration Technical Memorandum that summarizes the calibration process and changes required.
- m. Performing 10 runs using different random seeds for each run.
- n. Developing the arterial and freeway measure of effectiveness (MOEs) tables and graphics that reflect the corridors multimodal use.
- o. Submitting the base models and deliverables for this task to the State for review.
- p. Incorporating comments provided by the State and resubmit deliverables for this task.

5.5.3. Deliverables:

- a. Agenda, meeting materials, and meeting summary for each meeting
- b. Notes documenting field review
- c. Draft Existing Traffic Conditions Report
- d. Final Existing Traffic Conditions Report
- e. Modeling data
- f. Lane schematic diagrams
- g. Traffic volume data sets
- h. O-D matrices
- i. Model files
- j. Quality control worksheet
- k. Calibration technical memorandum
- l. Arterial and freeway MOE tables and graphics

5.5.4. The Contractor will complete a future scenario traffic analysis for every future scenario for the study area by:

- a. Preparing for and attending up to three meetings with the State and FHWA staff to discuss future scenario operational results.
- b. Completing the following for each future scenario:
  - i. Develop a lane schematic that graphically represents the network and includes all key design features.
  - ii. Convert the forecast traffic data into AM and PM 15-minute volume data, balance the volume data, and check the volume data for capacity constraints.
  - iii. Develop AM and PM O-D matrices for all freeway entrances and exits.
  - iv. Build the AM and PM models. This includes entering volume data, traffic signal and ramp meter control data, and the appropriate calibration values.

- v. Verify that the network data has been coded correctly and develop a freeway quality control worksheet and an arterial quality control worksheet that lists link information.
- vi. Perform 10 runs on each model using different random seeds for each run. The same random number set will be used for each model.
- vii. Develop the arterial and freeway measure of effectiveness tables and graphics.
- viii. Prepare and submit a draft Traffic Modeling and Analysis Report that documents the results of all model runs.
- ix. Submit the model and deliverables for this task to the State for review.
- x. Incorporate comments provided by the State and resubmit deliverables for this task.

#### 5.5.5. Deliverables

- a. Agenda, meeting materials, and meeting summary for each meeting
- b. Lane schematic diagrams
- c. Traffic volumes data sets
- d. O-D matrices
- e. Model files
- f. Quality control worksheet
- g. Arterial and freeway MOE tables and graphics
- h. Draft Traffic Modeling and Analysis Report
- i. Final Traffic Modeling and Analysis Report

#### 5.5.6. The Contractor will perform a sensitivity analysis on up to three scenarios that may include geometry modifications and/or volume modifications. The sensitivity analysis includes:

- a. Preparing for and attending up to three meetings with the State and FHWA staff to discuss sensitivity analysis results.
- b. Completing the following for each sensitivity analysis scenario:
  - i. Develop AM and PM 15-minute volume data, balance the volume data, and check the volume data for capacity constraints required to accurately model the sensitivity scenario.
  - ii. Update the model to reflect other network changes included as part of the sensitivity scenario (e.g., updated signal timings, revised intersection geometry, etc.).
  - iii. Develop a lane schematic that graphically represents the network and includes all key design features for the sensitivity scenario.
  - iv. Develop AM and PM O-D matrices for all freeway entrances and exits.
  - v. Update the AM and PM models. This includes entering volume data, traffic signal and ramp meter control data, and the appropriate calibration values.
  - vi. Verify that the network data has been coded correctly and develop a freeway quality control worksheet and an arterial quality control worksheet that lists link information.
  - vii. Perform 10 runs on each model using different random seeds for each run. The same random number set will be used for each model.
  - viii. Develop the arterial and freeway measure of effectiveness tables and graphics.
  - ix. Prepare and submit a draft Sensitivity Analysis Report that documents the results of all model runs.
  - x. Submit the model and deliverables for this task to the State for review.

- xi. Incorporate comments provided by the State and resubmit deliverables for this task.

#### 5.5.7. Deliverables

- a. Agenda, meeting materials, and meeting summary for each meeting
- b. Traffic volumes data sets
- c. Lane schematic diagrams
- d. O-D matrices
- e. Model files
- f. Quality control worksheet
- g. Arterial and freeway MOE tables and graphics
- h. Draft Sensitivity Analysis Report
- i. Final Sensitivity Analysis Report

### 6. Staff-Approved Layout (Source Type 1140)

#### 6.1. File Format

- a. Conceptual geometric layout (PDF)
- b. Preliminary geometric layout and profiles (PDF)
- c. Final, certified geometric layout and profiles (PDF)

#### 6.2. Standards and Guidance

- a. MINN. STAT. 161.162, Subd. 2 (<https://www.revisor.mn.gov/statutes/cite/161.162>)
- b. Highway Project Development Process (HPDP)/Minnesota Department of Transportation: Geometric Layouts (<http://www.dot.state.mn.us/planning/hpdp/>).
- c. Access Management Manual (<http://www.dot.state.mn.us/accessmanagement/resources.html>)
- d. Road Design Manual (<https://roaddesign.dot.state.mn.us/roaddesign.aspx>)
- e. Facilities Design Guide (<https://roaddesign.dot.state.mn.us/facilitydesign.aspx>)
- f. Standard Plans (<https://standardplans.dot.state.mn.us/StdPlan.aspx>)
- g. Standard Plates (<https://standardplates.dot.state.mn.us/StdPlate.aspx>)
- h. Load and Resistance Factor Design (LRFD) Bridge Design Manual (<http://www.dot.state.mn.us/bridge/lrfd.html>)
- i. Traffic Engineering Manual (<http://www.dot.state.mn.us/trafficeng/publ/tem/index.html>)
- j. Minnesota Manual on Uniform Traffic Control Devices (MN MUTCD) (<http://www.dot.state.mn.us/trafficeng/publ/mutcd/index.html>)
- k. State Aid Manual (<http://www.dot.state.mn.us/stateaid/manual.html>)
- l. Traffic Engineering Publications (<http://www.dot.state.mn.us/trafficeng/publ/index.html>)
- m. Technical Memoranda (<https://techmemos.dot.state.mn.us/techmemo.aspx>)
- n. Geometric Layout Development ([Geometric layout development \[PDF\] \[state.mn.us\]](#))
- o. Complete Streets Design Guidance (<http://www.dot.state.mn.us/planning/completestreets/guidance.html>)
- p. Bicycle Facility Design Manual (<http://www.dot.state.mn.us/bike/bicycle-facility-design-manual.html>)

#### 6.3. Items Provided by the State

- a. Layout representing scoping-level decisions and concepts

- b. Layout Content Review Form

#### **6.4. Prepare Conceptual Geometric Drawing (No P6 Activity Code)**

6.4.1. The Contractor will:

- a. Evaluate the project requirements and provide recommendations on design details, including design parameters, potential design exceptions, traffic operations, and safety.
- b. Prepare three conceptual geometric drawings for State review. The State will use the conceptual drawings to work with the Contractor to determine final project direction. Concept drawing(s) are not required to be in CADD format but must include:
  - i. Alignments
  - ii. Profiles
  - iii. Two-dimension line work

6.4.2. Deliverables

- a. Conceptual Project Layout identifying major project scope and geometric approach

#### **6.5. Prepare Preliminary Geometric Layout and Profile (P6 Activity Code LAY1040)**

6.5.1. The Contractor will:

- a. Prepare one preliminary geometric layout(s) for State review. Preliminary geometric layout(s) will be used to coordinate design details with State and determine the correct design application of design features. Preliminary geometric layout(s) must include enough detail to understand design approach.
- b. Prepare and submit a preliminary construction cost estimate for each layout. Each preliminary cost estimate will include costs for major construction items, project contingency representing expected but non-quantified costs, and risk assumptions. The preliminary cost estimate will be used as a tool to help determine a preferred project alternative.

6.5.2. Preliminary Geometric Layout components must include:

- a. Profile(s)
- b. Draft pedestrian ramp configuration
- c. Draft Pedestrian Access Route (PAR)
- d. Proposed design vehicle turning movements
- e. Initial 3D design model
- f. Design vehicle determination

6.5.3. Deliverables:

- a. Preliminary geometric layout and profile
- b. Preliminary construction cost estimate

#### **6.6. Conduct GDSU Review of Preliminary Layout Design Support (P6 Activity Code LAY1045).**

6.6.1. The Contractor will:

- a. Coordinate with the Geometric Design Support Unit (GDSU) to obtain agreement on the final design approach to meet project objectives.

6.6.2. Deliverables:

- a. Formal final design approach concurrence from GDSU in trackable format (memo or correspondence)

#### **6.7. Prepare Final Geometric Layout and Profile (P6 Activity Code LAY1050)**

##### 6.7.1. The Contractor will:

- a. Prepare a final geometric layout, based on the preliminary geometric layout, representing all applicable information identified in the GDSU Content Review form ([https://edocs-public.dot.state.mn.us/edocs\\_public/DMResultSet/download?docId=1954370](https://edocs-public.dot.state.mn.us/edocs_public/DMResultSet/download?docId=1954370)).
- b. Coordinate comments received from GDSU with District input and direction. The Contractor will incorporate resolved comments into a final geometric layout and profile. The final geometric layout will be used as documentation for the preferred alternative for the design approach for the project. The final geometric layout will be certified by the Contractor and approved by the State.
- c. Refine the preliminary cost estimate to reflect changes in the final geometric layout. Components in the final geometric layout cost estimate includes costs for major construction items, project contingency representing expected but non-quantified costs, and risk assumptions. The cost estimate is not expected to be in the form of a Statement of Estimated Quantities (SEQ) cost estimate, and may be in any format that provides an appropriate cost estimate at this project stage.
- d. Submit a project funding map that identifies project components with different funding configurations. The funding map will follow the guidelines shown in this document [SEQ Guidance \(PDF\) \(state.mn.us\)](#).
- e. Determine the funding arrangement for the project.

##### 6.7.2. Deliverables:

- a. Final layout content review form
- b. Final geometric layout and profile
- c. Final geometric layout cost estimate
- d. Project funding map

#### **6.8. Revise and Sign Geometric Layout by District (P6 Activity Code LAY1075)**

##### 6.8.1. The Contractor will:

- a. Coordinate comments received from GDSU based on final geometric layout review with the District for incorporation.
- b. Incorporate resolved comments into the final layout prior to signature.
- c. Finalize layout construction cost estimate based on resolved comments.

##### 6.8.2. Deliverables:

- a. Final certified staff-approved layout
- b. Final geometric layout cost estimate to construct

### **7. Design Memorandum/Exceptions (Source Type 1150)**

#### **7.1. Standards and Guidance**

7.1.1. Geometric Design (<http://www.dot.state.mn.us/design/geometric/>).

7.1.2. Geometric design standards and exceptions ([https://edocs-public.dot.state.mn.us/edocs\\_public/DMResultSet/download?docId=623068](https://edocs-public.dot.state.mn.us/edocs_public/DMResultSet/download?docId=623068)).

- 7.1.3. Road Design Manual (<http://roaddesign.dot.state.mn.us/roaddesign.aspx>).
- 7.1.4. Facilities Design Guide (<https://roaddesign.dot.state.mn.us/facilitydesign.aspx>).
- 7.1.5. Highway Project Development Process (HPDP) (<http://www.dot.state.mn.us/planning/hpdp/>).

## **7.2. Items Provided by the State**

- 7.2.1. Design Memorandum Template ([https://edocs-public.dot.state.mn.us/edocs\\_public/DMResultSet/download?docId=617906](https://edocs-public.dot.state.mn.us/edocs_public/DMResultSet/download?docId=617906)).

## **7.3. Prepare and Approve Design Memo (P6 Activity Code DME1000)**

- 7.3.1. The Contractor will:
  - a. Use the Design Memorandum Template to identify all design criteria. The design criteria will be dependent on project type, reflect applicable project and State standards, and be recorded in the project-specific design memorandum.
  - b. Identify any portions of the project not meeting the controlling design criteria based on project type and standards and provide justification.
- 7.3.2. Deliverable:
  - a. Completed Design Memorandum

## **8. Municipal Consent (Source Type 1140)**

### **8.1. Standards and Guidance**

- 8.1.1. All deliverables must be prepared in accordance with:
  - a. Highway Project Development Process (HPDP)/Minnesota Department of Transportation (MnDOT): Municipal Consent (<http://www.dot.state.mn.us/project-development/subject-guidance/municipal-consent/other-guidance.html>)

### **8.2. Items Provided by the State**

- a. Supporting data or reports not included in project scope

### **8.3. Prepare and Send Municipal Consent Package to City (MNC1000)**

- 8.3.1. The Contractor will facilitate and attend three meeting(s) with the city(s) to:
  - a. Present staff-approved layout and project cost including city's cost share
- 8.3.2. The Contractor will prepare the municipal consent request package, which must include:
  - a. Request letter
  - b. Final geometric layout (use statute language)
  - c. Cost estimate identifying the city's share of the project cost
  - d. Project purpose
  - e. Route location
  - f. Short description of the proposed design of the highway
- 8.3.3. Deliverables
  - a. Municipal consent package
  - b. Meeting materials, agenda, and meeting summary for each meeting

## 9. Stormwater Design (Source Type 1141)

### 9.1. Standards and Guidance

9.1.1. All deliverables must be prepared in accordance with:

- a. Current version of the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit
- b. Minnesota Pollution Control Agency (MPCA) Minnesota Stormwater Manual
- c. Minnesota Department of Natural Resources (DNR) Best Practices for Meeting DNR General Public Waters Work Permit
- d. Federal Highway Administration (FHWA) Hydraulic Design Series No. 4, Introduction to Highway Hydraulics
- e. FHWA Hydraulic Design Series No. 5, Hydraulic Design of Highway Culverts
- f. FHWA Hydraulic Engineering Circular Number 14 (HEC-14), Hydraulic Design of Energy Dissipators for Culverts and Channels
- g. FHWA Hydraulic Engineering Circular Number 15 (HEC-15), Design of Roadside Channels with Flexible Linings
- h. FHWA Hydraulic Engineering Circular Number 21 (HEC-21), Design of Bridge Deck Drainage Systems
- i. FHWA Hydraulic Engineering Circular Number 22 (HEC-22), Urban Drainage Design Manual
- j. FHWA Hydraulic Engineering Circular Number 23 (HEC-23), Bridge Scour and Stream Instability Countermeasures: Experience, Selection and Design Guidance, Volumes 1 and 2
- k. U.S. Geological Survey (USGS), Generalized Skew Coefficients for Flood-Frequency Analysis in Minnesota
- l. Minnesota Local Road Research Board and Minnesota Department of Transportation (MnDOT), Minnesota Guide for Stream Connectivity and Aquatic Organism Passage through Culverts

9.1.2. All deliverables must be prepared in accordance with the following project specific standards:

- a. Stormwater Storage and Treatment Systems:
  - i. Construct all stormwater treatment and storage systems with a minimum of two feet of vertical freeboard above the high-water level (HWL) of a 100-year, 24-hour storm event to the berm crest (continuous flat surface).
  - ii. Construct berm crest width of five feet, minimum.
  - iii. Provide a wet pretreatment basin/cell upstream of all infiltration and filtration systems, unless another method is approved by the District Water Resources Engineer.
  - iv. Underground structural stormwater storage and/or infiltration facilities will not be approved on this project, unless approved by the District Water Resources Engineer.
- b. Wet Stormwater Ponds and Filtration Basins:
  - i. Line stormwater ponds and filtration basins if they are located within a very high or a high-vulnerability area of a Drinking Water Supply Management Area (DWSMA), within an Emergency Response Area (ERA), or located within contaminated soils.



- ii. Provide a minimum of depth from the normal water level (NWL) to the pond bottom of at least three feet and a maximum depth of 10 feet.
- iii. Provide a 1:10 (V:H) bench extending from a wet pond NWL a minimum of 10 feet horizontally into the pond. Above the NWL, slopes must be no steeper than 1:3 (V: H) with 1:4 slopes preferred.
- iv. Base filtration rates for the design of the filtration basin on the MPCA Stormwater Manual. Base ponding depth within the filtration basin on the design filtration rate and a maximum 48-hour drawdown period.

c. Infiltration Basins:

- i. Infiltration basins cannot be located within a very high or a high-vulnerability DWSMA or within an ERA. For proposed infiltration within other DWSMA vulnerability areas, written approval must be received from the corresponding City.
- ii. Infiltration is not permitted in areas with soil or groundwater contamination, karst, within three feet of a regional groundwater table, in Hydrologic Soil Group D, where soil infiltration rates are more than 8.3 inches per hour without modification, within 200 feet of a private water supply well, within 100 feet from a septic system, or within 100 feet of buildings or building foundations.
- iii. Base infiltration rates for the design of infiltration basins on measured infiltration rates along with the MPCA Stormwater Manual correction factor. Alternatively, use the MPCA Stormwater Manual design infiltration rates for the applicable soil texture.
- iv. Provide an overflow to establish the maximum water quality ponding depth to achieve the required maximum 48-hour drawdown period.

d. Hydrologic Methods:

- i. Design the drainage system so pre-project conditions are not exceeded for flood damage potential.
- ii. Design stormwater storage and treatment facilities using the Atlas 14, 100-year, 24hour rainfall event with an antecedent moisture condition of 2.

9.1.3. All deliverables must be prepared using an approved drainage design software.

| Software        | Possible Vendor                 | Functions   |
|-----------------|---------------------------------|---|
| GEOPAK Drainage | Bentley                         | Rational method hydrology<br>Inlet design and spread analysis<br>Storm drainpipe design and hydraulic grade line analysis |
| Flowmaster      | Bentley                         | Inlet design and spread analysis<br>Channel/pipe critical and normal depth, capacity                                      |
| HydroCAD        | HydroCAD Software Solutions LLC | Generate NRCS (SCS) hydrograph<br>Develop stage-storage and stage-discharge for ponds                                     |

| Software                 | Possible Vendor | Functions   |
|--------------------------|-----------------|---|
|                          |                 | Combine/route hydrographs through ponds and channels  |
| XP-SWMM                  | Innovyze        | Generate NRCS (SCS) hydrograph or model historical storm<br>Dynamic routing of hydrographs through ponds, pipes, and channels with varying tailwater/flow conditions                            |
| Hydraulic Toolbox        | FHWA            | Channel lining analysis<br>Inlet design and spread analysis<br>Channel/pipe critical and normal depth, capacity   |
| CulvertMaster            | Bentley         | Analyze headwater and hydraulics for single or multiple culverts and/or road overtopping<br>Design pipe size based on maximum headwater   |
| HY-8                     | FHWA            | Analyze headwater and hydraulics for single culvert, multiple barrels, broken back culverts, and/or road overtopping<br>Design pipe size based on maximum headwater<br>Energy dissipater design |
| HEC-RAS                  | COE             | Water surface profiles for steady or unsteady flow<br>Analysis of bridges, bridge-culverts, and culverts  |
| P8 Urban Catchment Model | Walker          | Model for predicting generation and transport of pollutants in stormwater runoff in urban watersheds  |
| PEAKFQ                   | USGS            | Gauge frequency analysis  |
| SHSAM                    | BARR            | Structural Pollution Control Device (SPCD) analysis   |
| SMS                      | Aquaveo         | 2D hydraulic modeling for complex waterways using FESWMS or TUTFLOW models  |

**9.2. Items Provided by the State**

- a. HydInfra storm drainage asset management system data available for the project area including data for any ponds, culverts, pipes, and hydraulic structures

**9.3. Preliminary Stormwater System Analysis (P6 Activity Code PND1000)**

9.3.1. The Contractor will compile available water resources-related information, regulatory requirements applicable to the project, and develop a water resources design criteria summary document.

9.3.2. The summary document must include and identify:

- a. Existing stormwater drainage plans, models, and survey data including available data on culverts, ditches, storm sewer systems, and stormwater treatment systems within the project area.
- b. Information collected during the field survey relating to existing conditions.
- c. Available soil conditions where infiltration, filtration, and wet ponds are proposed and where stormwater trunk line piping is proposed. Identify the source(s) of the data including web-based data, soil borings, and other.
- d. Water resources issues including, but not limited to, areas with historically inadequate drainage (e.g., known flooding areas, citizen-identified concerns and complaints), environmentally sensitive areas, localized flooding, and maintenance problems associated with drainage, erosion areas, high groundwater table areas, areas known to contain contaminated soil or water, karst areas, ERAs, and DWSMAs including the degree of vulnerability of each DWSMA throughout the project area.
- e. Volume control, water quality, and rate control requirements as imposed by federal and state government regulations, State District Hydraulic Guidelines, watershed district and/or watershed management organization standards and rules, and any local governmental unit standards and rules.
- f. Existing drainage systems that require cleaning and/or inspection and make recommendations if features need repair or replacement.

9.3.3. The Contractor will prepare drainage overview map(s) for the project area including:

- a. Existing and proposed drainage features including, but not limited to, culverts, ditches, storm sewer, outfalls, drop inlets, catch basins, wet ponds, dry ponds, infiltration basins, and filtration basins. Available municipal drainage system information must be included.
- b. Delineated drainage areas to each point of inflow and outflow from the project. Existing and proposed drainage areas must identify the time of concentration and modeled peak flows for the design events identified in the water resources design criteria summary. Existing and proposed ponding or detention areas must show the model peak water surface elevation for the 100-year design storm event.
- c. All waters within one mile of the project that receive project runoff: public waters, outstanding resource value waters, special waters, and impaired waters.
- d. Federal Emergency Management Agency (FEMA) Floodplain boundaries, Watershed District flood elevations and/or floodplain boundaries, National Wetlands Inventory (NWI) wetland boundaries, jurisdictional ditches, karst areas, ERAs and DWSMAs, and other relevant drainage system information including agricultural drainage tile systems within and adjacent to the project area.
- e. Existing drainage infrastructure and locations for repair, lining, replacement, and erosion control recommendations.

9.3.4. Deliverables:

- a. Water resources design criteria summary
- b. Drainage overview map(s) for existing and proposed conditions

#### **9.4. Preliminary Stormwater System Design (P6 Activity Code PND1000)**

9.4.1. The Contractor will:

- a. Develop preliminary existing and proposed conditions hydrologic/hydraulic models of the project area and perform modeling as necessary to ensure project conformance

to project design standards and permitting requirements. Analyses will be completed for the design storm events identified in the water resources design criteria summary document.

- b. Prepare a preliminary stormwater system design and a corresponding preliminary stormwater design report. The design and report must include documentation of the preliminary design, including how the meets the requirements identified in the water resources design criteria summary document. The report must provide documentation of the following:
  - i. Total disturbed soil area, existing and proposed impervious area, reconstructed impervious area, and resulting regulatory requirements for volume control and water quality treatment.
  - ii. Preliminary sizes and locations of culverts, storm sewer trunk lines, and outfalls.
  - iii. The location, size, type, slope, computed headwater for the existing (where applicable) and proposed conditions discharges, and preliminary invert elevations of each culvert and outfall.
  - iv. Preliminary location, surface area, and treatment volume depth of potential stormwater treatment systems including preliminary grading sufficient to establish construction limits and right-of-way needs.
  - v. Construction limits and required right-of-way for all drainage system facilities and stormwater treatment systems.
  - vi. Drainage tile system impacts and required connections and rerouting.
  - vii. How the preliminary drainage system design will preserve existing drainage patterns wherever possible unless approved by the District Water Resources Engineer.
  - viii. Coordination with the State Bridge and Utilities Office and District Water Resources Engineer.
  - ix. Modeling results of existing and proposed conditions stormwater systems as required for project permitting and/or as directed by the District Water Resources Engineer.

9.4.2. Deliverables:

- a. Existing and proposed conditions hydrologic/hydraulic models
- b. Preliminary stormwater system design
- c. Preliminary stormwater design report

**9.5. Request Soil Borings/Piezometers (P6 Activity Code PND1010)**

9.5.1. The Contractor will prepare a request for a soil boring investigation for the potential stormwater treatment system locations identified in the preliminary stormwater design report. The request must include a map of the requested stormwater treatment systems and the preferred location(s) of borings within each treatment system including:

- a. The required number of borings at each location needed to accurately characterize the soil conditions for the intended design and to satisfy any applicable regulatory requirements.
- b. The required depth of the borings to identify groundwater and saturated soil conditions.
- c. A description of any soil sample collection and testing required including test methods.

- d. Provisions and details for installation and monitoring of piezometers include the required frequency of monitoring and start and end dates for monitoring.

9.5.2. Deliverables:

- a. Soils investigation request memorandum
- b. Map of potential stormwater management facilities and boring needs
- c. Soil sample results
- d. Piezometer results

**10. ADA Design (Source Type 1250)**

**10.1. Standards and Guidance**

- a. Agency ADA Accessibility Design Standards and Information  
<http://www.dot.state.mn.us/ada/design.html>.
- b. Plan Review Checklist #1:  
<http://www.dot.state.mn.us/ada/pdf/planreviewchecklist1.pdf>.
- c. Plan Review Checklist #2:  
<http://www.dot.state.mn.us/ada/pdf/planreviewchecklist2.pdf>.

**10.2. Items Provided by the State**

- a. Final ADA Field Walk Recommendations
- b. Comments provided to State from ADA Plan Review #1
- c. Comments provided to State from ADA Plan Review #2
- d. Road plans for upcoming planned ADA improvements

**10.3. ADA Plan Review #1 (P6 Activity Code ADA2000)**

10.3.1. This task involves plan review only; it does not include any plan sheet preparation or modification. Preparation of road plans is included under the Road Design scope.

10.3.2. The Contractor will:

- a. Review the 30 percent road plan set.
- b. Prepare for and attend two meetings with the District and ADA Unit for over-the-shoulder reviews and to resolve any identified ADA design issues.
- c. Document the findings of its plan review relative to ADA design compliance and completeness.
- d. Prepare and submit a completed ADA Review Checklist #1.
- e. Submit comments and checklist to the ADA Unit prior to the 60 percent plan submittal.

10.3.3. Deliverables

- a. Meeting agenda, materials, and summary for each meeting
- b. Review Checklist #1

**10.4. ADA Plan Review #2 (P6 Activity Code ADA3000)**

10.4.1. The scope of this work is for the coordination of the ADA design review for roadway projects. Development of the ADA design is included in the road plan scope.

10.4.2. The Contractor will:

- a. Review the 60 percent road plan set.

- b. Prepare for and attend two meetings with the District and ADA Unit for over-the-shoulder reviews and to resolve any identified ADA design issues.
- c. Document the findings of its plan review relative to ADA design compliance and completeness, and changes made in response to Checklist #1.
- d. Prepare and submit a completed ADA Review Checklist #2.
- e. Submit comments and checklist #2 to the ADA Unit prior to the 95 percent plan submittal.

10.4.3. The Contractor will prepare and submit ADA-specific Special Provisions at 95 percent level of completeness for review by State ADA Unit.

10.4.4. Deliverables

- a. Meeting agenda, materials, and summary for each meeting
- b. Review Checklist #2
- c. ADA-specific Special Provisions (PDF)

**11. Utility Coordination (Source Type 1195)**

This task is for utility coordination only and does not include subsurface utility engineering.

This scope of work references and follows the MnDOT Utility Accommodation and Coordination Manual and assumes the contractor understands these steps.

**11.1. Standards and Guidance**

11.1.1. Specific utility coordination activities must be handled in compliance with:

- a. For the purpose of this Contract, “designate” refers to finding the presence and horizontal location of underground utilities using surface geophysical prospecting techniques (equivalent to quality level B)
- b. For the purpose of this Contract, “locate” means to obtain the precise horizontal and vertical position of subsurface utilities by non-destructive excavating techniques (equivalent to quality level A).
- c. Statute 216D requires utility locations according to Construction Institute (CI)/ American Society of Civil Engineers (ASCE) 38-02 Standard Guideline for the Collection and Designation of Existing Subsurface Utility Data.
- d. Utility coordination will be performed according to the MnDOT Utility Accommodation and Coordination Manual, which is available online at: [www.dot.state.mn.us/utility/](http://www.dot.state.mn.us/utility/).
- e. If subsurface utility engineering (SUE) is not performed on this project, Quality Level (QL) D accuracy will be required, except as surveyed for above-ground features.

**11.2. Items Provided by the State**

11.2.1. Unless a recent SUE report is provided by the State, the State provided data should be considered draft and in need of verification by the Contractor as part of this scope for the defined project study area. State only guarantees utility quality level A information provided in an SUE investigation.

- a. Previous plan sets with utility information
- b. Hydinfra
- c. Previous Gopher State One Call (GSOC) ticket responses
- d. Available utility information

- e. Survey information for above-ground and overhead utility
- f. SUE report [IF COMPLETED BY State OR OTHERS]

**11.3. Milestones and P6 Activity Codes**

11.3.1. There are multiple tasks that need to be completed as part of UTI1070 listed in this scope of work with different completion dates. The Contractor will work with the State to determine when each deliverable will be completed within the P6 schedule.

**11.4. Conduct Preliminary Utility Design Meeting – Step 4 (P6 Activity Code UTI1010)**

11.4.1. The purpose of this meeting is to review the project layout with utility owners and discuss potential conflicts. Project plans that depict the resulting utility information will facilitate decision making at the meeting.

11.4.2. The Contractor will meet with the State, prior to the meeting with utility owners, to review the identified conflicts and propose potential design solutions.

11.4.3. The Contractor will:

- a. Plan and conduct the Preliminary Utility Design Meeting. The Utility Design Meeting often takes place between the 60 percent and 75 percent plan completion. The intent of this meeting before 30% design is to identify utility risks for the project or utilities that could impact the layout.
- b. Invite the State's PM, designers, and utility owners to this meeting.
- c. Prepare a draft utility conflict resolution matrix in advance of the meeting based on utility owner input. The conflict matrix will be used to develop the draft utility tabulation sheet.
- d. Facilitate the meeting such that solutions to utility conflicts are addressed to form an efficient design. Design modifications that minimize utility conflicts must be considered and documented.

11.4.4. Deliverables:

- a. Meeting agendas, materials, and summaries
- b. Draft utility conflict resolution matrix

**12. Grant Writing (Source Type 0054)**

12.1.1. Contractor will assist State in applying for grant opportunities that can help fund project needs. Possible grants include but are not limited to federal Highway Safety Improvement Program (HSIP), future Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grants, and the Metropolitan Council Regional Solicitation. Contractor will provide analysis and documentation for all application materials to submitted by State to the awarding agency.