

PARKING MANAGEMENT SYSTEM – PHASE 2

STATE PROJECT NO. 1693-37-70

CITY OF MILWAUKEE

SPECIAL PROVISIONS

PREPARED BY

JACOBS™

March 15, 2016

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1. Summary of Work

Location of the Work

The site of the Work is in the City of Milwaukee, at various locations, bounded by 10th Street on the west, Water Street on the east, McKinley Street on the north, and St. Paul Avenue on the south. The extent of the site is shown on the Drawings.

Work Schedule

Work, including the fabrication, installation, connection, and all testing of project subsystems, shall begin immediately upon contract execution and shall be completed by February 24, 2017. Turn-on and setup testing as described in these Special Provisions shall be completed on all project subsystems no later than December 23, 2016, in advance of the City's 30-day system acceptance test. During this system acceptance test, the Contractor shall make any necessary adjustments to project subsystems to promote the success of the system acceptance test.

Definitions and Terms

Standard Specifications: State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction."

The City: The City of Milwaukee, a municipal corporation of the State of Wisconsin, located in the County of Milwaukee.

Commissioner of Public Works, Commissioner or C.P.W.: The Commissioner of Public Works of the City of Milwaukee.

Special Provisions, Technical Specifications, or Specifications: The special body of directions, provisions, or requirements peculiar to a project and otherwise not thoroughly or satisfactorily detailed or prescribed in the standard specifications. The requirements of these Special Provisions shall govern the work and shall take precedence over the specifications or Plans whenever they conflict. Since this project is being locally let by the City of Milwaukee, any reference to State of Wisconsin Department of Transportation Specifications where the term "the Department shall" is used should be replaced with the term "the City shall".

Regulatory Requirements

The Work shall be designed and constructed in accordance with the following codes.

- Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, Part 1 2016 edition.
- National Fire Protection Association (NFPA): NFPA 70, National Electrical Code (NEC), 2005 edition or the latest edition adopted by the State of Wisconsin.
- Americans with Disabilities Act (ADA): "The Americans with Disabilities Act of 1990, Public Law 101-336", commonly known as the "ADA".

Information Available to Contractor

Quantity of Contract Documents: The City will furnish the following Contract Documents to the Contractor at no cost.

- Special Provisions, 1 copy.
- Drawings (11" x 17"), 1 copy.

2. Project Meetings

Summary

General

The Contractor shall schedule and administer project meetings throughout progress of the work.

Administration

The Contractor shall prepare agenda, conduct meetings, and distribute recorded proceedings and decisions to participants in meeting and to parties affected by decisions made at meeting.

Notification

For meetings not regularly scheduled, the Contractor shall give participants not less than three (3) business days prior notice.

Attendance

The Commissioner may elect to attend any project meeting. The Contractor shall have persons of authority in attendance to represent the Contractor's and the subcontractors' interests.

Pre-Construction Meetings

General Meeting

A general conference may be called by the Commissioner, within 10 days from date of Notice to Proceed. Meeting place and time shall be as mutually agreed.

Pre-Construction Meetings

Pre-Construction meetings may be called by the Commissioner before commencing each item of the work to review the material selections, fabrication and installation procedures, and coordination among the various trades. Contractor, installer, manufacturers' representatives, and any trade that requires coordination with the work shall meet at the project site or other location as mutually agreed. The Contractor shall make a record of each conference and the Contractor's Quality Control Program. The Contractor shall complete the mock-ups or field samples required by the Special Provisions for review during the conference.

Progress Meetings

Progress meetings shall be held not less than one (1) meeting per month on a regularly scheduled basis for coordinating, expediting, and scheduling of work. Subcontractors, sub-subcontractors, and suppliers whose presence is necessary, must attend when requested by Contractor.

Special Meetings

Special meetings may be called by Commissioner when warranted and with frequency deemed necessary. Meeting place and time shall be as mutually agreed to.

3. Submittal Procedures

Addressing of Submittals

All submittals shall be addressed to the Commissioner of Public Works of the City of Milwaukee, unless otherwise directed by the Commissioner.

Attn: Mr. Chris Fornal
City of Milwaukee, Department of Public Works
Infrastructure Services, Planning and Developments
841 North Broadway; Room 919
Milwaukee, Wisconsin 53202

Construction Progress Schedule

Content of Progress Schedule

At the first preconstruction meeting, the Contractor shall furnish a Construction Progress Schedule to the Commissioner for record. The Construction Progress Schedule shall be prepared to show the following items:

1. A sequence of operations mutually agreeable to the parties concerned for the essential components of the work.
2. The dates of commencement and completion of each of the major items of work, including the slack or float time that may exist for each activity.
3. Delivery dates for major materials and equipment (all project activities shall be completed by February 24, 2017).

The Contractor shall prepare the Construction Progress Schedule for the various items of the work in the form of a bar chart. On a monthly basis, the Contractor shall enter the actual progress of the work on the chart, and confirm in writing any delay or deviation from the preceding month's schedule, including the action to be undertaken to correct each deficiency. The Contractor shall maintain the progress of the work in accordance with the Construction Progress Schedule. If the time for completion is extended, the Contractor shall submit a revised Construction Progress Schedule.

Adjustment of Construction Progress Schedule

When the Construction Progress Schedule or any reports indicate that a delay may be expected, the Contractor shall take whatever measures are necessary to improve the progress of the work and shall submit revised schedules within seven (7) days after learning of a proposed delay. The revised schedule shall indicate how the rate of progress will be regained without additional cost to the City.

General Requirements for Submittals

Schedule for Submittals

Within thirty (30) days after receipt of Notice to Proceed, the Contractor shall submit to the Commissioner five (5) copies of a "Schedule for Submittals". The Contractor shall indicate on the Schedule the dates on which the Contractor shall furnish to Commissioner the submittals required for each of the various items of work. The Contractor shall directly correlate the submittal Schedule to the Construction Progress Schedule and allow an average of fifteen (15) working days for the Commissioner's review of each submittal. The actual time necessary for Commissioner's review will vary according to the nature and complexity of each submittal. Also allow time in the Schedule for resubmittal of items which may be unacceptable.

At the time the Schedule for Submittals is submitted, the Contractor shall also submit for review a proposed format for transmittal of submittals, including means of identification and examples of the stamps indicating the Contractor's review or approval.

Timing of Submittals

The Contractor shall submit items in accordance with the agreed "Schedule for Submittals" and with such promptness that shall cause no delay in the work, or in the work of any other contractor or subcontractor or the City. Extensions of time will not be granted because of failure to furnish submittals in ample time to allow for review. Each subcontractor shall furnish submittals through the Contractor.

Contractor's Checking of Submittals

The Contractor shall thoroughly check submittals for completeness and for compliance with the Contract Documents before submitting them to the Commissioner. The Contractor shall mark them with the Contractor's stamp certifying that they have so been reviewed. Any submittal without such stamp shall be returned to the Contractor without review.

In checking shop drawings, the Contractor shall verify the dimensions and field conditions and check and coordinate the shop drawings of each section or trade with the requirements of other sections or trades whose work is related thereto, as required for proper and complete installation of the work.

Identification of Submittals

The Contractor shall mark, tag, or otherwise properly label each submittal item with the name of the Contractor, name of the project, the date, and a reference to the applicable item number for identification of each item. The Contractor shall accompany each submittal with a letter of transmittal containing similar information, together with the purpose for which the submittal is being made. Each submittal item, or the label affixed thereon, shall have a clear space suitable to receive the stamps of the Contractor and the Commissioner or Commissioner's representative.

The Contractor shall consecutively number the shop drawings for each portion of the work, and shall retain the numbering system throughout all revisions. The Contractor shall identify each sample item with the name of the manufacturer and the product name or number, in addition to the other information required on the tag or label.

Completeness of Submittals

The Contractor shall make complete submittals for each separate and definable system or subsystem of the work, and shall include in each submittal all the items necessary to completely define and explain the system or subsystem including its performance and installation. Such items shall consist of the shop drawings, product data, supplementary product literature, samples, calculations, statement of manufacturer's review, or other information as required by the technical specifications. Unless otherwise acceptable to the Commissioner, the Contractor shall combine the submittal items required for each system or subsystem and furnish together at one time in a single submission.

Commissioner's Review of Submittals

The Commissioner's or Commissioner's representative's review will determine if the Contractor's submittals appear to be in general conformance with the design concept set forth in the Contract Documents prepared by the Commissioner. It is understood that the Commissioner's review shall not be considered to be complete in every detail or exhaustive and shall also not relieve any contractor, subcontractor, manufacturer, supplier, fabricator, consultant or third party from responsibility for any deficiency that may exist or for any departures or deviations from the

requirements of the Contract Documents or for the responsibility to coordinate the work, or portion of the work, of one trade with another.

Submittals to be Returned Unreviewed

A submittal which, in the Commissioner's or Commissioner's representative's opinion, is incomplete or deviates significantly from the requirements of the Contract Documents, or contains numerous errors, or has not been checked or only checked superficially, will be returned without being reviewed by the Commissioner and the Contractor shall make a new submittal to the Commissioner. A submittal which is not required by the Contract Documents will be returned without review.

Submittals for Commissioner's Action

Definition of Submittals for Action

Certain specific information shall be submitted by the Contractor so that the Commissioner may verify the technical performance of systems or components thereof for compliance with the Contract Documents. Such submittals are required by the technical specifications and may include, but are not necessarily limited to, shop drawings, product data, and samples. When a "mock-up" is required by the Contract Documents, submit shop drawings, product data and other documentation for the mock-up as may be specified for the Commissioner's action.

The term "shop drawings" includes graphic representations which document the required type, number and location of each system component in the work. Such drawings and other illustrations, including fabrication and layout drawings, diagrams, and related schedules, shall establish the actual detail of manufactured or fabricated items, indicate proper relation to adjoining work, amplify design details, and incorporate minor changes of design or construction to suit actual conditions. Shop drawings shall not be reproductions or tracings of the City's Drawings.

The term "product data" includes technical data which document the primary performance for each system and material component in the work. Primary product data shall consist of a material list, together with manufacturers' literature if any, which is necessary to clearly identify the primary function, quality, and performance of the products. Product data shall be custom prepared for the project and made specific for the work. Manufacturers' literature which does not document the primary performance characteristics shall be deemed to be supplementary data and "for information only".

With each submittal, the Contractor shall furnish a material list which stipulates the primary performance characteristics of the materials as required by the Contract Documents. Arrange the material list in a vertical schedule format. The Contractor shall specifically identify materials by manufacturer's name, product name or model number, reference to applicable section of the technical specifications and any related shop drawings, specific location(s) of use in the work, and the primary performance characteristics.

The term "samples" includes various natural materials, fabricated items, equipment, devices, appliances or components thereof, as may be required to verify visual appearance of such items for compliance with the Contract Documents.

Quantities to be Submitted

The Contractor shall furnish the following, unless a greater quantity is specified for a particular item by the technical Specifications.

1. Shop Drawings: Submit one (1) reproducible transparency and six (6) prints of each drawing.

2. Product Data: Submit one (1) reproducible original and six (6) copies of each material list and six (6) copies of manufacturers' literature accompanying the material list.
3. Samples: Submit four (4) each, except for range samples.
4. Range Samples: Where a considerable range of color, graining, texture or other characteristics may be anticipated in finished products, furnish at least six (6) samples of the specified materials or a greater number as necessary to indicate the full range of such characteristics which will be present in the finished products. Any such products delivered or erected without submittal and acceptance of full range samples shall be subject to rejection.

Stamping of Action Submittals

Each submittal will be returned to the Contractor stamped or marked by the Commissioner as follows.

- "A - APPROVED": The Contractor is advised that "A" action means "Approved", and that fabrication, manufacture, construction, or installation may be undertaken, providing the work is in compliance with the Contract Documents.
- "B - APPROVED AS NOTED": The Contractor is advised that "B" action means "Approved as Noted", and that fabrication, manufacture, construction, or installation may be undertaken, providing the Work is in compliance with the Commissioner's notations and the Contract Documents.
- "C - REVISE AND RESUBMIT": The Contractor is advised that "C" action means "Revise and Resubmit", and that fabrication, manufacture, construction, or installation of the work shall NOT be undertaken. The submittal shall be revised in compliance with the Commissioner's notations and Contractor shall resubmit to the Commissioner. A submittal marked "C" action will not be permitted on the site.
- "D - REJECTED": The Contractor is advised that "D" action means "Rejected", and that fabrication, manufacture, construction, or installation of the work shall NOT be undertaken. The submittal does not comply with the Contract Documents and Contractor shall make a new submittal to the Commissioner. A submittal marked "D" action will not be permitted on the site.

Distribution of Action Submittals

The Commissioner will retain one (1) record print. The one (1) reproducible transparency will be returned to Contractor, who shall be responsible for obtaining prints of shop drawings stamped "A" or "B" action and for distribution to the field and to subcontractors. Shop drawings stamped "B" action are not required to be resubmitted. If shop drawings are stamped "C" action, the Contractor shall make revisions in compliance with the Commissioner's notations and resubmit. Resubmitted shop drawings shall have each revision bubbled or encircled to clearly indicate the changes. If stamped "D" action, Contractor shall make a new submittal.

The Commissioner will retain one (1) record copy. The other stamped copies will be returned to the Contractor, who shall be responsible for distribution of copies stamped "A" or "B" action to the field and to the subcontractors. Product data stamped "B" action are not required to be resubmitted. If product data are stamped "C" action, the Contractor shall make revisions in compliance with the Commissioner's notations and resubmit. If stamped "D" action, the Contractor shall make a new product data submittal.

The Commissioner will retain one (1) record sample, if stamped "A" or "B" action. All other samples will be returned to Contractor. Samples stamped "B" action are not required to be resubmitted. If samples are stamped "C" action, the Contractor shall make revisions in compliance with the Commissioner's notations and resubmit. If stamped "D" action, the Contractor shall make a new sample submittal.

Submittals for Information

Definition of Submittals for Information

Certain information shall be submitted by the Contractor as supplementary technical information for substantiating compliance of systems or components thereof with requirements of the Contractor's shop drawings and the Contract Documents. Such submittals are required by the technical specifications and may include, but are not necessarily limited to, the following items:

1. **Supplementary Product Literature:** Supplementary technical literature shall be used to document the characteristics of various system components or products. Such literature may include manufacturer's catalogue information, product specifications, standard illustrations, diagrams, and standard details. The supplementary product literature shall describe physical characteristics such as size, weight, finish, material analysis, electrical requirements, and also furnish other information such as load tables, test results, and industry quality standards.
2. **Certifications:** Certified reports, prepared by the Contractor, verifying either a) the Contractor's review of certain existing conditions and/or existing information prior to commencing with the next phase of construction work, or b) the chemical and physical properties of various building materials, as noted. Materials reports shall state compliance of each item with respect to the technical requirements of the Contract Documents.
3. **Preconstruction Testing Reports:** Technical reports, prepared by the Contractor, which record the results of the Contractor's testing of certain systems, system components, and/or materials, as required by the Contract Documents, prior to the installation of such systems and products. The report shall state compliance with the technical requirements of the Contract Documents.
4. **Technical Calculations:** Technical engineering calculations, which document the technical performance of various systems and material components, as required by the Contract Documents. Calculations shall be prepared and sealed by the Contractor's qualified Professional/Structural Engineer licensed in the State of Wisconsin.
5. **Quality Control Testing and Inspection Reports:** Technical reports which have been made in summary of quality control tests and inspections as performed by the Contractor's agencies for the fabrication and installation of various materials and systems as required by the Contract Documents. Such reports shall clearly state conformance or non-conformance with the technical requirements of the Contract Documents, for each respective item which has been tested and inspected.

Quantities to be Submitted

The Contractor shall submit three (3) copies of each, unless a greater number is specified for a particular item by the technical specifications.

Distribution of Information Submittals

Submittals for information will be actioned "INFORMATION - NO COMMENTS" or "INFORMATION - COMMENTS AS NOTED", and a stamped copy will be returned to the Contractor. Commissioner will retain one (1) record copy.

Submittals for Commissioner Documentation

Definition of Submittals for Documentation

Certain information about various systems, or components thereof, shall be submitted by the Contractor specifically for the City's record and use. Such submittals are required by the technical specifications and may include, but are not necessarily limited to, the following items:

1. Warranties / Guaranties: Specific warranties and guaranties for system and materials components verifying the technical performance, as required by the Contract Documents, for the time durations noted.
2. Record Documents: Documents prepared by the Contractor recording the as-built conditions of the systems and/or materials, and specifically defining the variations from requirements of the Contract Documents.
3. Maintenance / Operation Manuals: Manuals prepared by the Contractor and to be used by the City, for the City's maintenance and operations of various building systems and/or components thereof resulting in the technical performance required by the Contract Documents.

Quantities to be Submitted

The Contractor shall submit three (3) copies of each, unless greater number is specified for a particular item by the technical specifications.

Distribution of Documentation Submittals

Such submittals, which furnish information directly to the City, will not be acted upon by the Commissioner nor returned to the Contractor.

Progress Photographs

General

The Contractor shall arrange for progress photographs to be taken of the work and delivered to the Commissioner. Photographs shall be taken by a competent commercial photographer acceptable to the Commissioner. The Contractor shall take photographic prints in 8" x 10" size. The Contractor shall mark the negatives and prints with the date of the exposure, name of project, description of view and other pertinent data.

Quantities to be Submitted

On a monthly basis, until the project is 99% complete, the Contractor shall take photographs of five (5) representative views of the project showing as much as possible of the work installed during the previous month.

When the Contract is completed, the Contractor shall take final color photographs of the work from five (5) points of view selected by the Commissioner so as to show all parts of the project.

Distribution of Photographs

The Contractor shall deliver one (1) set of prints and negatives to the Commissioner within five (5) days after the exposures are made.

Basis of Payment

Submittals are part of the acceptance processes for the individual hardware and equipment provided under other pay items. As such, the submittals identified in this document will not be paid for separately, but should be included in the line items for the system components.

5. Environmental Commitments

Three commitments were made during the design and permitting process. The contractor must abide by the following commitments:

I. Upland Habitat Commitment Made

Precautions shall be taken to avoid spreading the Emerald Ash Borer, an invasive species whose presence has been confirmed in several local communities. The quarantine currently in effect shall necessitate that equipment maintenance and construction activities follow DOT special provisions and DATCP restrictions for working in quarantine counties. The contractor shall cooperate with the construction engineer to ensure that this commitment is maintained during construction.

Per Consultation Code 03E17000-2016-SLI-0014 for the protection of the Northern Long Eared Bat, clearing and grubbing work is restricted under this construction project.

Q. Archaeological Resources Commitments Made

Three burial sites are adjacent to the project, 47MI114, 47MI203 & 47MI484. When construction activities include excavation located within or near known burial site or project related ground disturbing activities beyond the existing back edge of sidewalk, a qualified archaeologist (per Wis. Stats. 157.70 (1)(i) and Wis. Admin Code § HS 204 (6) (a)) will monitor the construction –related ground breaking activities. If a site is identified as a potential burial site the contractor shall not use this site for borrow or waste disposal. Areas within the site not currently capped by asphalt/concrete will not be used for staging of personnel, equipment, and/or supplies.

If human bone is discovered during construction, WISDOT will cease work activities immediately and will contact the Wisconsin Historical Society in compliance with Wis. Statute 157.70 regarding the protection of human burial sites.

Burial site 47MI203 is bounded by approximately W. Kilbourn Ave. on the north, W. Michigan St. on the south, N. 4th St. on the east and N. 6th St. on the west. Burial site 47MI114 is bounded approximately by just north of W. McKinley Ave. on the north, W. Juneau Ave. on the south, N. Old World 3rd St. on the east and N. 4th St. on the west. Burial site 47MI484 is bounded by approximately W. Kilbourn on the north, W. Wisconsin on the south, N. Water St. on the east and N. Plankinton Ave. on the west. The selected contractor will be given site specific maps as well.

R. Hazardous Substance or UST's Commitments Made

The City of Milwaukee will provide a qualified representative to observe the excavation for possible soil contamination in the area of concern. The City will provide direction to the contractor if odor/contamination is encountered. Depending on the circumstance, contaminated soil will be excavated and hauled by the contractor to a DNR approved bioremediation facility. Soil remediation (excavation) will be limited to the planned zone of construction. The city does not anticipate any contaminated soils within the project area.

Basis of Payment

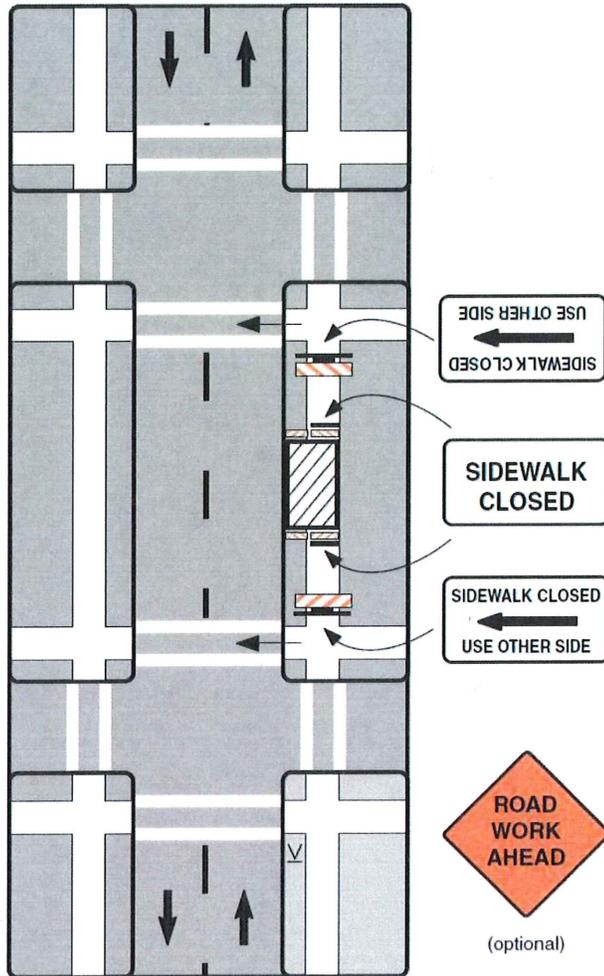
Abiding by the environmental commitments are considered incidental to Item 619.1000 Mobilization.

6. Traffic Management Plan

A Traffic Management Plan (TMP) was developed and approved for the Summerfest Shuttle Bus Parking Management Systems – Phase 2 Project. Key elements of the TMP are included in the Special Provisions. A full copy of the TMP is available from Mr. Chris Fornal, Planning Development and ITS Engineer, City of Milwaukee, (414) 286-2452.

1. All physical construction activities are expected to take place in the sidewalk or roadway median areas. The contractor may park construction vehicles adjacent to the work areas in designated parking lanes. The closure or blockage of through lanes is not permitted for this project. The contractor will need to obtain an excavation permit from the City for sign foundation work and all sidewalk closures. This permit will include no parking signs adjacent to the work zone to allow for non-overnight parking of construction vehicles. The contractor will be required to follow the Work Zone Safety manual published by the Transportation Information Center of the University of Wisconsin-Madison for all closures of a sidewalk.
2. The contractor shall minimize impacts to pedestrians and bicycle movements. Where the sidewalk must be closed temporarily, pedestrians and bicyclists shall be directed to the crosswalk on the opposite side of the street at adjacent signalized intersections. The City of Milwaukee requires that all contractors comply with the Work Zone Safety manual published by the Transportation Information Center of the University of Wisconsin-Madison. This publication addresses the needs of disabled pedestrians and ADA issues. Specific access issues during construction will be coordinated with the engineer on a case by case basis. For pedestrian safety, work zones in the public right of way will be protected by barrels or barricades.
3. Sidewalks shall only be physically closed where required by construction activities and only in the immediate vicinity of the construction activities. The contractor must maintain access to traffic generators, businesses for school buses, garbage trucks, and postal service vehicles. Where obstructions to access are necessary, alternate routes shall be designated. Pedestrian access to traffic generators shall not be restricted. Closures are permitted for the necessary excavation and construction and curing of the concrete sign bases. The duration of sidewalk closure for excavation and sign base installation shall be less than 96 hours (4 days). Subsequent sidewalk closures are permitted for sign erection and wiring. Sidewalk closures for sign erection and wiring shall be a maximum of 36 hours (1.5 days). Extended closures will be required for the erection of the parking/wayfinding signs and potentially for the electrical connections at locations with dynamic signs. The installation of signs shall be completed in a sequential manner such that simultaneous crosswalk closures will not occur. Pedestrians will be redirected to other permanent surfaces. This TMP will be updated as necessary as construction proceeds.
4. The contractor shall not perform construction activities during the following special events: St. Patrick's Day Parade (typically Saturday nearest March 17th), Memorial Day Parade (typically the last Monday in May), Summerfest (typically the last week in June through the first week in July), July 3rd Fireworks, Bastille Days (typically the week after Summerfest), Labor Day parade (typically the first Monday in September), Al's Run (typically the Middle Saturday in September) and Annual Holiday Parade (typically the second Saturday in November). Sidewalk closures are not permitted during these special events and holidays.

Sidewalk Closure (Pedestrian Detour)



Notes

1. Additional advance warning may be necessary.
2. Only the traffic control devices related to pedestrians are shown. Other devices may be needed to control traffic on the streets such as lane closure signs, ROAD NARROWS or LANE NARROWS signs.
3. For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing walkways.
4. Audible devices should be considered to alert pedestrians with visual disabilities of closings and crosswalk changes.

Basis of Payment

Abiding by the traffic management plan is considered incidental to Item 643.000 Traffic Control.

7. Utilities

This contract does not come under the provision of Administration Rule Trans 220.

Underground and overhead utilities are located within the project limits. Utility adjustments are not required for this construction project as noted below. CONTRACTOR shall coordinate construction activities with a call to Diggers Hotline or a direct call to utilities that have facilities in the area as require per Wisconsin state statutes. Use caution to insure the integrity of underground facilities and maintain code clearances from overhead facilities all times.

All excavation work is to be done in the sidewalk or median right of way. Directional boring of 2 inch PVC conduit will be required between locations where dynamic signs are located and adjacent City of Milwaukee traffic signal cabinets, manholes or signal system vaults. This conduit is expected to be located approximately 24 inches below median and sidewalk. Please note that underground utilities are not shown on the project plans. We do not expect utility adjustments will be required with this project work. The locations where concrete foundations for dynamic (electronic) and static (non-electronic) parking signs are to be installed as shown on the project plans or as adjusted by the Project Engineer after Digger's Hotline locates are marked. These locations are anticipated to be free of utility interference. It is expected that the routing of the 2 inch conduit can be field adjusted to avoid any unexpected underground utility conflicts. Existing street light poles, hydrant and utility poles are to remain in place during construction. Contractor should conduct an on-site visit prior to bidding to determine any special measures required for proper clearance between trees, hydrants and poles.

The following utilities have facilities within the project area. The large majority of these facilities are located under the roadway pavement and between the curbs. These facilities should be located under the proposed conduit installations. There are, however, various utility laterals running from the street to adjacent buildings under the sidewalk area. Contacts and/or contact phone numbers for each utility is listed below:

Utility Contact/Email List

AT&T	Jay Bulanek	jb5175@att.com	262-896-7669
MMSD	Debra Jensen	djensen@mmsd.com	414-225-2143
Time Warner	Steve Cramer	steve.cramer@twcable.com	414-277-4045
WE Energies Electric	Kenneth Franecki	kenneth.franecki@we-energies.com	414-944-5531
WE Energies Gas	Patricia Finn	patricia.finn@we-energies.com	414-944-5755
WE-Steam	Robert Jones	robert.jones@we-energies.com	414-221-2446
Clear Channel Outdoor	Dave Jasenski	davidjasenski@clearchannel.com	
MWFN	Richard Trgovec	rtrgovec@midwestfibernetworks.com	414-672-5612
Verizon	Tom Buher	thomas.buher@verizon.com	
Windstream	Jim Kostuch	james.kostuch@windstream.com	262-792-7938
Sprint	James Burton	james.burton@sprint.com	1-800-877-7746
ATC	Kim Stratton	kstratton@atcllc.com	262-506-6876
City of Milwaukee Street Lighting	Wayne Kelly	wkelly@milwaukee.gov	414-286-5944 (Day) 414-286-3015 (Night)
City of Milwaukee Traffic Signals	Al Nichols	anicho@milwaukee.gov	414-286-5941 (Day) 414-286-3015 (Night)
City of Milwaukee Sewers	Zafar Yousuf	zyousu@milwaukee.gov	414-286-2467
City of Milwaukee Water	Pat Pauly	ppauly@milwaukee.gov	414-286-8167
City of Milwaukee Underground Conduit	Karen Rogney	krogne@milwaukee.gov	414-286-3243
City of Milwaukee Communication	Bryan Pawlak	bpawla@milwaukee.gov	414-708-2118

8. References

Standard Specifications

Effective Date

References in the Contract Documents to standard specifications of a society, institute, association, or governmental authority, shall mean the standard specifications of such organization that are in effect either at the date of the Contract Documents or as stipulated by the governing codes and regulations. If such standard specifications are revised prior to completion of any part of the work to which such revision would pertain, the Contractor may, if acceptable to the Commissioner, perform such work in accordance with the revised standard specifications.

Availability

The standard specifications, except as modified in the Special Provisions for the Project, shall have full force and effect as though printed in the Contract Documents. The standard specifications are not furnished with the Contract Documents, because it is assumed that the manufacturers and trades involved are familiar with their requirements. Upon request, the Commissioner will furnish information about where to obtain copies of the referenced standard specifications.

Specification Format

The following terms may be used in the Specifications:

1. Where "as shown", "as indicated", "as detailed", or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated.
2. Where "as directed", "as required", "as permitted", "as authorized", "as accepted", "as selected", or words of similar import are used, the direction, requirement, permission, authorization, acceptance or selection by the Commissioner is intended unless otherwise stated.
3. The term "provide" means "provided complete in place", that is, furnished and installed and ready for operation or use.

Names of Organizations

Reference in the specifications to a technical society, institution, association, or governmental authority is made in accordance with the abbreviations listed in the Standard Specifications, and the following abbreviations. These abbreviations are commonly used in the construction industry and may be used throughout the Contract Documents. If other abbreviations are used, the Commissioner will furnish the definitions. Refer to Drawings for additional abbreviations and for symbols.

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
ETL	Electrical Testing Laboratories

IES Illuminating Engineering Society
IFI Industrial Fasteners Institute
NAAMM National Association of Architectural Metal Manufacturers
PS Product Standard, U.S. Dept. of Commerce
SSPC Society for Protective Coatings
UL Underwriters Laboratories, Inc.

9. Quality Control

Contractor's Quality Control

Contractor's Quality Control Program

Contractor is solely responsible for quality control of the work, and before commencing the work shall establish a comprehensive Quality Control Program. Certain minimum requirements for the Contractor's Quality Control Program may be specified in various sections of the specifications.

The Contractor shall furnish to the Commissioner a complete written description of the Contractor's Quality Control Program for the project for approval by the Commissioner. The Contractor shall itemize the procedures to be followed for each separate item of work.

Pre-Construction Meetings

As part of the Contractor's Quality Control Program, the Contractor shall hold Pre-Construction Meetings. The Contractor shall record the minutes of each conference and include the following items.

1. Contractor, installer, and material manufacturer have reviewed the locations and conditions under which the materials would be fabricated and installed.
2. Installer shall follow the requirements of the Contract Documents and manufacturers' instructions.
3. Installer shall follow special instructions, if any, furnished by the manufacturer at the time of the pre-construction meeting. Such special instructions shall be recorded in the minutes or a copy attached thereto.
4. Contractor and installer agree that the proposed installations shall perform as required.
5. Review mock-ups or field samples, if required, and record appropriate comments.

Fabricators and Installers

The Contractor shall employ experienced specialty firms regularly engaged in fabricating or installing work of the same type required for this project. Fabricators and installers shall employ skilled tradesmen who are thoroughly experienced with the materials and equipment used in the work.

Manufacturer's Review

The Contractor and installer shall review the Drawings and Specifications, the shop drawings, and product data, with qualified representative(s) of the materials manufacturers for the products and systems to be used in the Work. The review of the documents and conditions shall confirm that all of the parties are in agreement the selected materials and systems are proper and adequate for the applications shown, especially with respect to compatibility with adjacent systems and materials.

Contractor's Testing Laboratories

The Contractor shall employ, at his own expense, the services of qualified testing laboratories to make the inspections, tests, and reports as required by the Contractor's Quality Control Program and as required by governing authorities having jurisdiction over the work.

The Contractor shall also pay for testing required for the convenience of the Contractor in performance of the work, and for testing related to remedial operations performed to correct deficiencies in the work.

Duties of Contractor's Testing Laboratories

Inspection and testing services shall follow the Contractor's Quality Control Program, and shall be performed in a manner which is consistent with reasonable standards of engineering practice. In

general, such services shall include on-site inspections, instructions for the taking of test samples, testing of assemblies or material samples, interpretation of tests, issuance of test reports, instructions to the Contractor in connection with the correction of deficiencies in the work, final inspections when the work is reported to be completed, and issuance of final inspection reports.

Inspection by Contractor

During the progress of the work, and upon completion of each item of work, the Contractor shall examine the work as necessary to ensure that it shall meet the quality requirements and take appropriate action as may be necessary to ensure conformance with the Contract Documents. The Contractor shall verify that the material and equipment systems used in the work comply with the quality, quantity, location, tolerances, clearances, function, completeness, operation and other characteristics required for the work.

Contractor's Assistance to the Commissioner

Refer to requirements for inspection and testing by the City as specified in the Standard Specifications and the Special Provisions. The activities of the City's testing laboratories are solely at the discretion of the City and in no way relieve the Contractor of sole responsibility for maintaining the Quality Control Program. The City's testing laboratories will perform independent inspections and tests, interpret and evaluate the results for compliance with the Contract Documents, record observations and submit reports. Contractor is responsible for the following items.

1. Notify the Commissioner at least one (1) day in advance before installing work to be tested.
2. Furnish casual labor required to facilitate testing.
3. Furnish material samples and access to materials as required for testing.
4. Furnish storage facilities for the material test samples.
5. Furnish full and ample means of assistance for monitoring the Contractor's Quality Control Program.

Contractor's Administration Staff

General

The Contractor shall furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision, and superintending of the work. Key members of this staff shall not be changed without the consent of the Commissioner, unless such members prove to be unsatisfactory to the Contractor and cease to be employed in a similar capacity by the Contractor.

Contractor's Coordinating Engineer

The Contractor shall furnish the services of a qualified engineer, who shall be responsible for coordinating the work with the various trades, including the review of the shop drawings, eliminating conflicts or interferences between the various trades, checking for completeness of the shop drawings and directing changes in the work as may be required to effect compliance with the Contract Documents.

Contractor's Project Manager

Prior to commencement of the work, the Contractor shall select a project manager who shall have full responsibility for the prosecution of the work, with full authority to act in all matters as necessary for the proper coordination, direction and technical administration of the work.

9. Warranty

The contractor, seller and/or the manufacturer warrants that goods provided hereunder will be of merchantable quality, will conform to applicable specifications, drawings, designs, samples or descriptions, will be free from defects in materials and workmanship and will be fit for the particular purpose intended by the City.

The warranty will remain in effect for a period of one (1) year from date of installation except as noted below.

Contractor, seller and/or manufacturer agrees to repair or replace within a reasonable time, any part, feature or product found to be defective during the warranty period, including all freight, at no cost to the City.

Contractor, seller and/or manufacturer should include a complete warranty statement confirming compliance with the above requirements and those found in the technical requirements as well as any other applicable warranties with the bid.

A. Decorative Pole and Casting Factory Finish

The contractor is to provide a five (5) year written warranty, warranting that the factory applied finishes will not develop excessive fading or excessive non-uniformity of color or shade, and will not crack, peel, pit, corrode, or otherwise fail as a result of defects in materials or workmanship within the following defined limits. This warranty should be submitted within three working days of receiving a request. Upon notification of such defects, within the warranty period, manufacture/contractor shall make necessary repairs or replacement at the convenience of the City. This warranty applies to all coated metal products such as support poles, aluminum bases and sign support arms or brackets.

1. **“Excessive Fading”**: A change in appearance which is perceptible and objectionable as determined by the Commissioner when visually compared with the original color range standards.
2. **“Excessive Non-Uniformity”**: Non-uniform fading to the extent that adjacent components have a color difference greater than the original acceptable range of color.
3. **“Will Not Pit or Otherwise Corrode”**: No pitting or other type of corrosion discernible from a distance of 10', resulting from the natural elements in the atmosphere at the project site.

B. Signage

The contractor is to provide a five (5) year written full replacement warranty to the City that all signs will be free of defects due to craft work including, but not limited to:

1. Bubbling, chalking, rusting or other disintegration of the sign panel, graphics or of the edges.
2. Corrosion appearing beneath paint and vinyl surfaces, on sign panels, brackets, posts or other support assemblies (except as an obvious result of vandalism or other external damage).
3. Corrosion of fasteners.
4. The assemblies not remaining true and plumb on their supports.
5. Peeling, delamination or warping ("oil canning").
6. Repair and reinstallation of signage due to failed mountings.

Contractor shall also extend in writing to the City all manufacturers' warranties for materials and components used within the signs. It is the Contractor's responsibility to obtain extended 5-year manufacturer warranties on all paint and powder coat applications. The Contractor will be required to fully replace all signs that are in error relative to the working documents (sign message schedule and sign type drawings) that will be submitted to the Contractor upon the award of contract.

10. Temporary Facilities and Controls

Temporary Facilities at the Site

Summary

In addition to the requirements of the Standard Specifications and the Special Provisions, the Contractor shall provide items of general services and temporary facilities specified herein and required for the proper and expeditious prosecution of the work. Such items may include, but are not limited to, temporary toilets, temporary storage, material hoists, temporary stairs or ladders, ramps, protective coverings, and other temporary facilities.

Responsibilities

The Commissioner will not be responsible for construction procedures, methods, techniques, sequence of work, or for safety precautions and programs in connection with the work, and will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

Connections and Removal

The Contractor shall provide temporary connections to utilities and services in locations acceptable to the City and local authorities having jurisdiction thereof. The Contractor shall furnish necessary labor and materials, and make installations in a manner subject to the acceptance of such authorities, and maintain such connections throughout the work. The Contractor shall remove the temporary installation and connections when no longer required. The Contractor shall restore the services and sources of supply to proper operating condition. The Contractor shall thoroughly clean and recondition those parts of permanent heating and air circulation systems used for temporary service.

Costs

The Contractor shall pay all costs for providing, operating, maintaining, and removing such temporary facilities, including temporary electrical power, water, fuel for temporary heating, until final acceptance of the work unless the City makes arrangements for the use of completed portions of the work before substantial completion.

Water, Snow and Ice

The Contractor shall keep areas of the site free from accumulations of water, snow, or ice, where the work is in progress or where the public may have access.

Temporary Electrical Service and Lighting

The Contractor shall make all arrangements with the local electric company or other appropriate entity for temporary electrical service to the construction site. The Contractor shall provide equipment necessary for temporary power and lighting, furnish electrical service of capacity adequate for construction tools and equipment without overloading the temporary facilities, and make available for construction operations of every trade.

Temporary Water Service

The Contractor shall furnish water necessary for construction purposes. The Contractor shall make all arrangements for temporary water service and temporary connections to existing mains.

Temporary Toilets

The Contractor shall provide suitable toilet facilities for the Contractor's staff, and other toilet facilities for the use of all workmen on the job, including those of other contractors. The

Contractor shall provide toilets where work is in progress and in the quantity required to conveniently serve the needs of all personnel.

The Contractor shall properly maintain the toilets in accordance with requirements of the State and local health regulations and ordinances. The Contractor shall immediately correct any facilities or maintenance methods failing to meet such requirements.

Temporary Storage

Allocation of Space

Available space at the job site is limited to the public right-of-way within the project limits as shown on the Drawings and the Contractor shall allocate such space for storage purposes. Any additional off-site space required shall be the responsibility of the Contractor.

Coordination and Layout

The Contractor shall arrange the available storage areas and coordinate their use by the trades on the job. The Contractor shall maintain a current layout of all storage facilities which shall be subject to the Commissioner's review.

Other Storage

The Contractor shall furnish storage for mock-up materials.

Pumping and Draining

The Contractor shall provide and maintain a temporary drainage system and pumping equipment as required to keep excavated areas free from water from any source. As the work progresses, the Contractor shall remove all water from basement areas, tunnels, pits, trenches and similar areas. The Contractor shall provide as required for proper performance of the work, such as installation of underground piping and conduit systems. The Contractor shall perform pumping and draining in such manner to prevent damage to any part of the construction, such as endangering concrete footings or adjacent construction or property.

11. General Notes and Product Requirements

Project General Notes

Prior to the construction, the location of underground utilities shall be determined in the field by the contractor by contacting "Diggers Hotline" at (800) 242-8511 or 811.

Project Materials shall be installed in compliance with Wisconsin Department of Transportation Standard Specifications Section 652 Except:

The Contractor is responsible for all costs including repairs, replacement or relocation etc. of traffic signal facilities if the contractor does any deviation from the design without the project engineers signed permission.

1. Details of construction materials and workmanship not shown on this drawing shall confirm to the pertinent requirements of the contract.
2. Locations of the PVC conduits where they are required are identified in the prints. However, installation may require integration with existing field conditions. Appropriate adjustment on conduit locations may be made if the field conditions are such that the conduit cannot be installed at the specified locations. Any relocations must be approved by the engineer. Field mark each conduit location by stamping and painting with red painting on top and backside of curb.
3. Depth of conduit installed below the streets, highway, road, and alleys shall be 24-inches minimum and 36" maximum. (Measured from the finished flange line)
4. Conduit installed behind curb, and under driveways shall be installed at the base of the backside of the curb/gutter section.
5. Where there is more than one conduit to be laid behind the curb, place all conduits in the same trench.
6. Any exception to the minimum or maximum depth shall be only with written approval of the engineer.
7. Bending of PVC electrical conduit shall be accomplished by using a blanket or emersion type take designed for the purpose of bending PVC electrical conduit.
8. All cut ends shall be trimmed inside and outside to remove all rough edges on all conduits. (See NEC 352.28 2008 Code)
9. Prior to conduit acceptance, all conduit ends shall be thoroughly cleaned and capped immediately after installation with the appropriate cast plastic cap which fits snugly on the conduit, but easily removed in the future. Duct tape or any other capping method is not acceptable.
10. All conduits being furnished and installed shall have the U.L. Label firmly attached.
11. Pull rope (3/8 inch nylon) shall be installed in all new conduit.
12. Immediately after the contractor has confirmed all the electrical conduit and conduit connections, and just before electrical work is covered up with concrete, soil, or etc. the contractor is required to contact the City of Milwaukee Electrical Shop Supervisions for final inspection and approval of all work.

TRAFFIC SIGNALS – Al Nichols (Office) 414-286-5941; (Cell) 414-708-5148

TRAFFIC SIGNALS – Dispatcher @ 414-286-3687

Unless otherwise specified later in the Special Provisions, The contractor shall furnish a one (1) year warranty, agreeing to repair or replace work, which has failed as a result of defects in materials or workmanship. Upon notification of such defect, with in the warranty period, make necessary repairs or replacement at the convenience of the City of Milwaukee. (See specifications for more details)

Substitutions

“Substitutions” are changes to the specified materials, equipment, products, or processes required by the Contract Documents, when such changes are initiated by the Contractor after the bidding period and award of contract. The following are not considered to be substitutions.

1. When several manufacturers’ products or equivalent product as approved by the Commissioner are specified in the Contract Documents for an item of work, any one thereof is acceptable for the Contractor to choose and are not considered substitutions.
2. Changes accepted during the bidding period prior to award of contract and incorporated in the Contract Documents are not considered substitutions.
3. Revisions to Contract Documents requested by the Commissioner are not considered substitutions.

Consideration

The Contractor shall comply with requirements of the Standard Specifications. Substitute materials, equipment, products, or processes will be considered only if the Contractor submits to the Commissioner a written request, identified as a “Request for Substitution”. Requests received more than 30 days after notice to proceed with the work may not be considered, at the sole discretion of the Commissioner, unless the specified material, equipment, product, or process is discontinued by the specified manufacturer. The following are also not acceptable for consideration:

1. Requests for substitution will not be considered if incomplete or otherwise do not comply with the required procedures.
2. Substitution will not be considered if indicated on shop drawings, product data or other submittals furnished without the mandatory “Request for Substitution” from the Contractor.
3. Substitution will not be considered if the specified materials, equipment, products or processes would not be available from the specified manufacturer because the Contractor’s proposed installer is not qualified by or acceptable to the specified manufacturer or because the Contractor failed to procure such items in a timely manner.

Required Procedures

Requests for substitution of materials, equipment, products, or processes other than those specified in the Contract Documents shall be submitted by Contractor in writing to the Commissioner, identified as a “Request for Substitution” and addressed to the Commissioner. Each “Request for Substitution” shall be accompanied by such drawings, specifications, samples, performance data and other information as may be necessary to assist the Commissioner in determining whether the proposed substitution is acceptable. The burden of proof rests solely upon the Contractor. Each “Request for Substitution” shall stipulate the following items:

1. The substitution is equal in quality and serviceability to the specified item.
2. The substitution shall not entail changes in details and construction of related work.
3. The substitution shall not entail changes in the required design and artistic effect.
4. The substitution shall not involve additional cost to the City. If the substitution costs less than the specified materials, equipment, products, or processes, then credits to the City shall be described by Contractor in an accompanying request for a Change Order.

Warranty

Regardless of the evidence submitted, or any review or independent investigation by the Commissioner, a request for substitution of materials, equipment, products, or processes is a warranty by the Contractor to the City that such substitution meets the foregoing requirements. In no event shall any substitution be construed as a waiver of the right of the City to require the work to conform to the standard of quality and performance established by the specified materials, equipment, products or processes required by the Contract Documents.

Manufacturers' Instructions

Compliance

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written instructions.

Conflicts

In case of any differences or conflicts between the requirements of the manufacturer's instructions and the technical sections of the Specifications, the instructions or Specifications having the more detailed and precise requirements which are specifically applicable to the work in question, as determined by the Commissioner, shall govern.

Manufacturers' Nameplates

Manufacturers' names or nameplates shall not be permanently affixed to ornamental and miscellaneous metal work, and similar factory-fabricated products on which, in the Commissioner's opinion, the nameplates would be objectionable if visible after installation of the work. This requirement does not apply to Underwriters labels where required, nor to manufacturers' names and rating plates on mechanical and electrical equipment.

Proof of Compliance

Whenever the Contract Documents require that a product complies with ASTM standards, ANSI specifications, or other published standard, the Contractor shall submit a statement from the manufacturer certifying that the product complies with such requirements. If further requested by the Commissioner, the Contractor shall also submit supporting test data to substantiate such compliance.

12. Alteration and Removal Procedures

PART 1 – GENERAL

Summary

General: Provide the Alteration and Removal Procedures for the work including, but not limited to altering, removing, cutting, patching, repairing, relocating, salvaging, disposing and similar activities as necessary to integrate new construction with exiting construction and to complete the work in accordance with the requirements of the contract documents.

Conduct the work such that the existing facilities where indicated on the drawings shall remain in full and continuous operation without interruption during the alteration and construction of the work.

Miscellaneous Removals: Sidewalk topping on existing hollow walks which are not being abandoned will be removed by others

Hazardous Materials: Hazardous materials such as asbestos, asbestos products, lead solder, leaded paint, or other toxic substances shall not be allowed on the site, nor be used in the work. The Contractor shall notify the Commissioner if any of the products or materials specified in the contract documents or proposed by the Contractor, or its subcontractors or material suppliers, or encountered on the job site contain or are reasonably believed to contain hazardous materials in any form, so that a qualified consultant retained by the City can determine whether such materials may be used in the work, or need to be removed from the site or rendered harmless in a manner which will not adversely affect the health of any persons and which will comply with applicable governmental laws and regulations.

Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, provisions, and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

PART 2 - PRODUCTS

NOT USED

PART 3- EXECUTION

3.1 PROTECTION

General: Provide and maintain whatever measures are necessary to protect against damaging the existing construction and facilities to remain or to be salvaged. Contractor is responsible for damages, including City's loss of use, due to insufficient protection of existing construction and facilities.

Structural Integrity: Do not overload the existing structures. Maintain and protect the structural integrity of existing structures and parts thereof at all times. If necessary, due to Contractor's operations or construction loads, supplement the structural capacity of the existing structures until such time that the existing structures or permanent alterations are capable of sustaining imposed loads.

Dust and Debris Protection: Provide and maintain protection to prevent the migration of dust and airborne particles to areas outside the area of construction, and to protect against damage from construction debris.

3.2 EXISTING UTILITIES AND SERVICES

General: Where indicated, existing utilities and services such as water, power, light, heating, ventilating, and air conditioning, shall be disconnected, removed, terminated, and capped. Perform such work in the manner necessary to minimize disruption to existing operational facilities. Give notice and obtain approval from the Commissioner before commencing the interruption of existing utilities and services.

Program Description: Furnish a complete written description of the Contractor's program for the protection of existing utilities and services to remain in operation for duration of the work. Itemize the methods, procedures, and sequence to be followed for each utility or service and arrange the description to correspond with the project construction schedule.

Owned Utilities and Services: Alter or interrupt only with the approval and in accordance with the requirements of the owner of the utility or service.

Abandoned Lines: Utilities and services designated to be abandoned shall be permanently closed or capped.

3.3 EXISTING FACILITIES

Alteration and Removal: Provide as indicated and as necessary to accommodate new construction, resulting in generally clean break lines at existing construction to remain.

Explosives: The use of explosives is prohibited.

Impact Noise: Provide suitable measures necessary to prevent transmission of impact noise or vibrations into occupied areas of existing facilities and neighboring buildings.

Pneumatic or mechanically powered impact hammers and similar equipment may be used only during specific time periods as allowed by written permission from the Commissioner.

Remove and lower materials without impact either manually or with the use of chutes and similar devices.

Cutting Torches: Cuffing torches may be used only as allowed by written permission from the Commissioner. Provide means and methods to preclude the migration of smoke and other products of combustion resulting from the use of cuffing torches into occupied areas of neighboring buildings.

Patching, Repairing and Refinishing: Provide as indicated and as necessary, due to removal or damage to existing construction to remain. Perform in accordance with requirements of the Specifications, or if not specified, use materials to result in construction, integrity, and appearance to match similar original construction.

Preparation of Existing Surfaces: Where existing surfaces are to be refinished or are to serve as a substrate for the attachment or application of new materials or construction, prepare or alter the existing surfaces as necessary to properly accommodate the new materials.

Reinstallation: Reinstall existing material or equipment indicated to be removed and reused in the work, as well as items indicated to be temporarily removed to accommodate new construction. Reinstall in a manner to match the existing installation, unless otherwise indicated, to be altered, refurbished, or refinished.

Salvaging: Carefully remove and dismantle materials to be salvaged. If salvaged for the City's future use, clean the item to remove dust or extraneous matter and deliver to storage space at existing adjacent facilities as designated by the Commissioner.

Ownership of Removed Material: Existing material to be removed and not designated to be salvaged for reinstallation in the work or for the city's future use shall become the property of the Contractor. Existing material which has become the Contractor's property shall not be displayed nor offered for sale on City property.

13. Federal Aid Provisions

Effective August 2015 letting

BUY AMERICA PROVISION

All steel and iron materials permanently incorporated in this project shall be domestic products and all manufacturing and coating processes for these materials must have occurred within the United States. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to the requirements of Buy America. The exemption of this requirement is the minimal use of foreign materials if the total cost of such material permanently incorporated in the product does not exceed one-tenth of one percent (1/10 of 1%) of the total contract cost or \$2,500.00, whichever is greater. For purposes of this paragraph, the cost is that shown to be the value of the subject products as they are delivered to the project. The contractor shall take actions and provide documentation confirming to CMM 1-28.5 to ensure compliance with the "Buy America provision.

<http://wisconsindot.gov/rdwy/cmm/forms/cm-02-28.pdf>

Upon completion of the project certify to the engineer, in writing using department form WS4567, that all steel, iron, and coating processes for steel or iron incorporated into the contract work conform to these "Buy America" provisions. Attach a list of exemptions and their associated costs to the certification form. Department form WS4567 is available at:

<http://wisconsindot.gov/rdwy/worksheets/ws4567.doc>

NOTICE TO ALL BIDDERS

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of possible bid rigging, bidding collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General.



Buy America Certification

WS4567

3/26/12

Wisconsin Department of Transportation

Project ID: _____ Highway: _____ County: _____
Name of Road/Project: _____
Prime Contractor: _____
Address: _____
Contact Person: _____ Phone: _____
DOT Project Manager: _____ Project Leader: _____

The undersigned certifies that only domestic steel and iron was permanently incorporated into the construction portion of the project.

To be considered domestic, all steel and iron used and all products manufactured from steel and iron must be produced in the United States. This includes smelting, coating, bending, shaping, and all other manufacturing processes performed on the product. Coating includes all processes which protect or enhance the value of the material to which the coating is applied.

This requirement does not preclude a minimal use of foreign steel and iron materials, provided the cost of such materials does not exceed 0.1 percent of the contract price or \$2500 whichever is greater. Attached to this certification are invoices and other available documentation substantiating a claimed exemption.

Signature (prime contractor representative) _____

Typed or Printed Name _____

Title _____

Date _____

14. Acceptance Testing

Description

The Advanced Parking Guidance System (APGS) is composed of many subsystems. To verify that components have been installed correctly and that each subsystem is performing as intended, acceptance testing must follow a process that includes subsystem testing on the components as standalone elements, followed by overall system acceptance testing and integration. (System acceptance testing and integration will be completed by the City.) This specification describes the component acceptance testing requirements to be completed by the Contractor. The tests themselves will be included and paid for as part of the individual components and subsystems.

General

The APGS collects current parking availability from the associated parking structures and stores it in a database. Using the information from the database, the system displays the availability on dynamic message signs and on browser-based maps and web pages. The system consists of subsystems and components that collect, process, and display the information.

Testing

The component acceptance testing will be accomplished in a hierarchy of two levels. The sequence of tests shall include: Turn-on Testing and Setup Testing.

Turn-on Testing

The turn-on tests demonstrate that the equipment has been installed and wired properly. It will consist of the following elements:

- Visual inspection of the installation, verifying the quality of this installation. This will include the dressing of cables and their terminations.
- Any continuity or measurements that verify the performance characteristics such as output levels or DC continuity.
- Application of power to the components. Manufacturers' manuals and test procedures will be used to verify that the components are operating correctly. This would include the visual indicators on the equipment, meter readings on the equipment, and the lack of anomalies such as activating current surge suppressors.

These tests will be conducted on all installed components and their associated wiring. The Commissioner or his designee shall witness all testing.

Set-up Testing

Once power has been applied to the equipment and it has been verified that the equipment has been wired correctly, the Contractor shall setup the equipment in its operational configuration. The Contractor shall use local ports to exercise the equipment and verify its operation at the local level. Specific actions would include, but not be limited to, the following:

- Assign channels to wireless transceivers.
- Assign addresses, IP or other, to components.
- Measure output power, receive signals, local and remote dynamic guide sign control
- Align antennas if required.
- Demonstrate that networks can communicate.

Because the component tests will require software that is not part of the hardware installation, the Contractor can emulate the software to demonstrate functionality and verify the equipments' operation. In particular, the contractor shall conduct the following tests:

- From a laptop computer, connect locally to each dynamic guide sign and send display text messages. Each sign will respond by displaying the proper text message.
- From a laptop computer connected to the City's local area network (LAN), emulate the central system software by remotely sending commands to each dynamic guide sign. Each sign will respond by displaying the proper text message.
- From a laptop computer connected to the City's LAN, emulate the central system software by sending commands to another laptop computer at each parking facility. Each parking facility laptop will respond with a proper notification that the command was received.

These tests will be performed on all individual components. The Commissioner or his designee shall witness all testing.

Test Equipment

The Contractor shall furnish all test equipment necessary to test the systems and their components. The test equipment shall satisfy the manufacturers' criteria and satisfy the technical performance requirements dictated by the system design. All test equipment shall be calibrated by an independent laboratory unless it can be demonstrated to the satisfaction of the Commissioner that such calibration is not necessary.

Test Plan

The Contractor shall deliver to the Commissioner, not less than 21 calendar days prior to testing, a complete test plan for all components. This written document shall be complete and list all proposed tests, their test equipment requirements and configuration, and their acceptance criteria.

Documentation

Three (3) copies of all operations and maintenance manuals for each component shall be delivered for each assembly installed. In addition, full documentation for all software and associated protocols shall be supplied to the Department on a CD-ROM or DVD-ROM. The Department reserves the right to provide this documentation to other parties who may be contracted with in order to provide overall integration or maintenance of this item.

Basis of Payment

All testing is part of the acceptance processes for the individual hardware and equipment provided under other pay items. As such, the testing identified in this document will not be paid for separately, but should be included in the line items for the system components.

15. Cleaning

Summary

General

In addition to the clean-up requirements specified in the Standard Specifications, the Contractor is responsible for daily cleaning of the job site and for the coordination and direction of the cleaning by every trade. Each trade is required to perform cleaning for its portion of the work and as directed by the Contractor. The Contractor shall perform final cleaning of items provided as a part of the Contract, before acceptance of the work by the Commissioner, including removal of dust, dirt, stains, and finger marks from all finished metal, stone, or glass surfaces. The Contractor shall provide broom cleaning of sidewalks.

Finished Areas

The Contractor shall clean finished surfaces to remove any mortar, dust, and other extraneous matter, including but not limited to, the exposed surfaces of stone, miscellaneous metal, concrete, and also the surfaces visible after all work is in place.

Final Cleaning

In addition to the cleaning specified herein and in the various sections of the Specifications, the Contractor shall prepare the work for final acceptance by a thorough cleaning throughout, including washing or cleaning of surfaces on which dirt or dust has collected. The Contractor shall leave the work in an undamaged, bright, clean, polished condition. Re-cleaning will not be required after the work has been accepted, unless later operations of the Contractor make re-cleaning of certain portions necessary.

Removal

The Contractor shall remove trash and rubbish from every area. As soon as practicable after completion of the work, the Contractor shall dismantle the temporary construction facilities and remove from the City's premises the construction equipment, barricades, rubbish of every kind, surplus materials and supplies belonging to Contractor or its subcontractors.

Basis of Payment

Cleaning of work sites is part of the work provided under other pay items. Final cleaning is part of the mobilization pay item. As such, the cleaning identified in this document will not be paid for separately, but should be included in the line items for the appropriate components.

16. Closeout Submittals

Record Documents

Record Set Electrical As-Built Requirements

In accordance with the Standard Specifications and Special Provisions, the Contractor shall make a complete and accurate record of the changes or deviations from the Contract Documents and shop drawings, indicating the work as actually installed. The Contractor, and the subcontractor for each part of the work, shall record the changes under the direction of the Contractor as the work progresses. The Contractor shall neatly and correctly mark such changes on blackline prints of the Drawings affected, or on a copy of the Specifications, together with appropriate supplementary notes. The Contractor shall arrange the record Drawings in proper order and index the shop drawing information in accordance with the various sections of the Specifications. The Contractor shall keep the record set of Drawings, shop drawings and Specifications at the job site for review by the Commissioner.

Contractor shall furnish three (3) copies of as-built drawings for all work done. The as-built drawings shall meet all the requirements listed below. Submit drawings to the City of Milwaukee City Engineer Office as 841 N. Broadway, Milwaukee, WI, 53202. Attn: Chris Fornel.

- Locate and clearly dimensions all conduit runs, fitting, splice vaults, pull boxes, meter pedestals, light bases, transformer, poles and other appurtenances in two (2) directions. Swing ties should be made from objects that are permanent in nature and visible on the finished surface.
- Street names shall be on all sheets.
- Show all sizes and material type of pipes and cable.
- All horizontal distances shall be shown to the nearest tenth of a foot (i.e. 205.3). All vertical distances shall be shown to the nearest inch (i.e. 24").
- Show location and elevations of pipes and fittings where changes or deflections in directions occur.
- Special detail drawings will be supplied where required for clarity.
- Deviations from original plans or standard details shall be noted on as-built drawings.

ELECTRICAL AS-BUILT REQUIREMENTS:

Locate and clearly dimension all conduit runs, fittings, splice vaults, pull boxes, meter pedestals, light bases, transformer, poles and other appurtenances in two (2) directions. Swing ties should be made from objects that are permanent in nature and visible on the finished surface.

Endorsement

At the completion of the work the Contractor and each subcontractor shall certify, by endorsement thereon, that each of the revised prints of the Drawings and Specifications constitutes a complete and accurate record of the work as installed or constructed.

Submittal of Record Documents

Prior to the Contractor's applications for final payment, and as a condition to approval of the applications, each subcontractor shall deliver to the Contractor the record Drawings and Specifications arranged in proper order, indexed, and endorsed. The Contractor shall assemble the records for all items of the work, review them for completeness, and submit them to the Commissioner. The Contractor shall deliver the records in suitable transfer cases properly indexed and marked for each division of the work.

Acceptance

Review or receipt of record documents by the Commissioner shall not be a waiver for any deviation from the Contract Documents or the shop drawings, nor in any way relieve the Contractor from its responsibility to perform the work in accordance with the Contract Documents.

Operation and Maintenance Instructions

Manual

In accordance with the Standard Specifications and Special Provisions, and under the direction of the Contractor, each subcontractor shall furnish three (3) complete sets of operation and maintenance instruction manuals. The manuals shall contain the manufacturers' instructions for each item of equipment and apparatus furnished under the Contract, together with any additional data as may be required by the various sections of the Specifications. The Contractor shall furnish manufacturer's original printed brochures, not photocopies. The manuals shall be indexed and suitably bound in hard cover binders. In addition, one set of the operation and maintenance manuals shall be supplied to the Department in PDF format on a CD-ROM.

Endorsement

At the completion of the work the Contractor and each subcontractor shall certify, by endorsement thereon, that each of the manuals is complete and accurate.

Submittal of Manuals

Prior to the Contractor's applications for final payment, and as a condition to approval of the applications, each subcontractor shall deliver to the Contractor the manuals arranged in proper order, indexed and endorsed. The Contractor shall assemble the manuals for all divisions of the work, review them for completeness, and submit them to the Commissioner. The Contractor shall deliver the manuals in suitable transfer cases indexed and marked for each item of the work.

Contract Closeout

Warranties and Guaranties

In addition to the general warranty of the work as required by the General Conditions and Bureau Requirements, the Contractor shall furnish any other extended warranties or guaranties as required by the Specifications.

Waivers of Lien

The Contractor shall furnish the releases and waivers of liens arising out of the provisions of the Contract.

17. Static Guide Sign, 4-Panel, SPV.0060.001

18. Static Guide Sign, 4-Panel Double Sided, SPV.0060.002

Work under this item will consist of furnishing, installing, and testing a static guide sign or double sided guide sign complete with support pole, heavy wall cast aluminum base, sign housing, and sign blank.

References

- American Association of State Highway and Transportation Officials (AASHTO): Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (2009, 5th Edition)
- American Welding Society (AWS): AWS D1.1/D1.1M "Structural Welding Code - Steel", and AWS D1.2/D1.2M "Structural Welding Code - Aluminum".
- National Association of Architectural Metal Manufacturers (NAAMM): "Metal Finishes Manual".
- American Institute of Steel Construction (AISC): AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", including the "Commentary" thereto.
- American Iron and Steel Institute (AISI): AISI "Specification for the Design of Cold-Formed Steel Structural Members".
- Industrial Fasteners Institute (IFI): IFI "Fastener Standards".
- The Society for Protective Coatings (SSPC): "Steel Structures Painting Manual, Volume 2, Systems and Specifications".
- American Society of Testing Materials (ASTM): "D4956 Standard Specification for Retroreflective Sheeting for Traffic Control"

Submittals

Shop Drawings: The Contractor shall furnish elevations and details of fabrication and installation. The drawings shall include all materials used in the fabrication, all dimensions, finishes, design loads, and method of installation.

Samples: Samples of all fabricated sign material shall be delivered to the City of Milwaukee Traffic Sign Shop at 1540 West Canal Street, Milwaukee, WI. 53233 for their inspection and approval by the Commissioner of Public Works before any work on the above project shall commence. Samples shall be delivered between the hours of 7:00 AM and 2:30 PM Monday through Friday.

Product Literature: The Contractor shall furnish manufacturer's specifications describing the general properties of all sign material used in this project. Specifications for sign material as well as their supporting structures shall be furnished.

Structural Calculations: The Contractor shall furnish engineering calculations to demonstrate maximum stress and deflection of signage, sign support systems under load. A registered professional engineer licensed in the State of Wisconsin shall prepare calculations.

Quality Assurance

Contractor's Quality Assurance Responsibilities: The Contractor is solely responsible for quality control of the Work.

Regulatory Requirements: The Contractor shall comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities. The Contractor shall adhere to the "Manual on Uniform Traffic Control Devices".

Delivery, Storage, and Handling

General: The Contractor is responsible to deliver and store material in manufacturer's original packaging, correctly labeled for proper identification, at the project site. It is the Contractor's responsibility to protect all material from damage and deterioration.

Project/Site Conditions

Existing Conditions: The Contractor shall coordinate with the work of other trades so as to prevent damage, interference, or delay. Obtain templates, drawings, or other information as necessary for proper alignment and connection to such other work.

Maintenance

The Contractor shall furnish a maintenance manual describing the procedures necessary for operating, cleaning, and maintaining the Work. Manufacturer brochures describing the material used in the work shall be furnished also. This shall include finish paint formula and manufacturer's numbers, etc.

B Materials

General Sign Materials

Aluminum: Provide the following specific type of aluminum regarding alloy, temper, and finish required for the project:

1. Aluminum Sign Blank Material: ASTM 5052-H38 Flat Anodized Aluminum.
2. Aluminum Extrusions: ASTM B221/B221M. 6063-T6 aluminum.
3. Aluminum Castings: ASTM B179. 514.
4. Aluminum Bars, Rods and Wire: ASTM B211/B211M.
5. Aluminum Pipe: 2" I.D. ASTM B 6061-T6 aluminum.

Steel: Provide the following specific type of steel:

1. Structural Steel Shapes, Plates and Bars: ASTM A36/A36M.
2. Steel Pipe: ASTM A595, Type C seamless pipe. Provide Hot-Dip Galvanized pipe for exterior pipe.
3. Structural Steel Tubing: ASTM A500 cold-formed, or ASTM A501 hot-formed. Provide Hot-Dip Galvanized tubing.

Gray Iron Castings: ASTM A48/A48M, Class 30B. Heavy wall sand casting, fine and tight, free of irregularities.

Fasteners: ASTM A307, ANSI/ASME B18.2.1, B18.2.2, B18.6.3, and B18.22.1. All fasteners used on this project shall fall under the above standards. Stainless steel 300 series alloy where used to join dissimilar materials. Stainless steel cap-screws, nuts, and washers shall be used to secure signs to the boiler plate. The cap-screw size shall be 5/16"x 3/4" 18NC.

Welding Electrodes and Filler Metal: The Contractor shall provide the alloy and type of material required for strength, workability, compatibility, and color match after grinding smooth and finishing the fabricated product.

Finishing Materials for Sign Blanks

Polyurethane Coatings: Provide the following products or equal as acceptable to the Commissioner of Public Works.

1. Acrylic Polyurethane Enamel: 2-component, acrylic modified, aliphatic polyurethane enamel having U.V. inhibitors and engineered for application to signage components. Gloss shall be of 90+/- units at 60 degrees F. Flat sheen of 10+/- units at 60 degrees F.
2. Primer for Steel: 2-component primer with zinc chromate pigment and phosphate activator.
3. Primer for Galvanized and Stainless Steel, on Non-Ferrous Metal: Clear colorless primer.

Screening Materials: Provide photo processed screening, ATSM D4956-04, Type IX, arranged to furnish sharp and solid images without edge build-up or bleeding of the coating. Pattern-cut screens may be used for non-repeat copy, provided that final image copy is equal to photo screen quality. Only weather resistant materials, compatible with the intended substrates shall be used.

Vinyl Graphics: Pressure sensitive type, ASTM Type IX, white, non-yellowing, non-peeling and weather resistant electro-cuttable vinyl film.

Universal Acrylic Latex Semi-Gloss Enamel: For application to sign supports only, not to sign blanks or sign faces.

- Devoe "Metalclad Acrylic Latex Semi-Gloss Coating 417XX" or equal.
- Glidden "Glid-Guard Lifemaster Finish 5200" or equal.
- Sherwin-Williams "Metalatex Semi-gloss Enamel B42 Series" or equal.
- Or equivalent product as approved by the Commissioner.

Graphic Artwork: Contractor shall procure all electronic files for the full-color digital artwork for all sign types from the Commissioner. Contractor shall coordinate receipt of all artwork files with the Commissioner to meet the project schedule. The output of all graphic panels for all sign types shall be under this contract.

Fonts/Typefaces: The fonts selected by the City of Milwaukee, Commissioner of Public Works, shall be used for this project. The fonts used are indicated on the Drawings.

No substitutions of any other typefaces may be made. Under no circumstances are typefaces to be electronically distorted (squeezed or extended) for purposes of fitting to the specified sign or general alteration of the sign face composition unless noted on the Drawings. This includes, but is not limited to, stretching, squeezing, tilting, outlining, or shadowing.

All letterforms shall be computer generated. Hand cut letters are not acceptable.

Extra Materials: The Contractor shall deliver to the City of Milwaukee, Traffic Sign Shop, 1540 West Canal Street, Milwaukee, WI. 53233, in original packaging, the following item:

1. Provide one (1) quart of each finish paint color and its related formula for touch-up purposes.

Shop Application of Sign Finishes

Sign Graphics: Provide the letters, numerals, symbols and other graphics markings, using the finish materials shown. Apply the graphics neatly, uniformly proportioned and spaced, and accurate within the dimensions indicated. Prepare the substrate surfaces and apply finish materials in accordance with manufacturer's instructions.

Polyurethane Finishes: Surfaces excepting polyurethane coatings shall be clean to obtain proper adhesion. Chemically treat or clean as recommended by paint manufacturer to remove deleterious film or residue.

1. Primer: Apply in strict accordance with paint manufacturer's recommendations as required for proper adhesion and application of finish.
2. Acrylic Polyurethane Enamel: Apply in 2.0 mils dry film thickness as recommended by manufacturer using correct color and sheen.

Fabrication of Signs and Supports

Provide standard and custom manufactured sign assemblies, components completely fabricated and finished at the factory before delivery to site. Construct signage to accurate detail and dimensions as shown and as reviewed on shop drawings. Fit and assemble all work at shop to the greatest extent possible and mark components as required to facilitate assembly during installation. Exposed fasteners on finished sign faces will be allowed, unless specifically indicated.

Metal Signs and Supports: Fabricate exposed surfaces uniformly flat and smooth, without distortion, pitting, or other blemishes. Form exposed metal edges to a smooth radius. Grind exposed welds and rough edges to make flush with adjacent smooth surfaces.

1. Welding: Make welds continuous. Comply with American Welding Society and Aluminum standards for type of metal.
2. Fasteners: Sign blanks shall be fastened to sign standards by means of exposed stainless steel cap screws. Perform drilling operation at shop.
3. Dissimilar Materials: Where metal surfaces will be in contact with dissimilar materials, coat the surfaces with epoxy paint with a minimum 2.0 mil dry film thickness or provide other means of dielectric separation as recommended by manufacturer to prevent galvanic corrosion.

Castings: Exposed castings shall be uniformly free from porosity and roughness. Edges shall be filled and ground smooth. Faces shall be chemically etched and mechanically polished to a bright finish.

Galvanizing: Exterior steel components and other steel where noted shall be galvanized. Shop fabrication shall be completed prior to application of zinc coating. Remove mill scale and rust, clean and pickle the units as required for proper pretreatment of surfaces. Provide hot-dip galvanizing in accordance with requirements of ASTM A123/A123M for steel plates, bars and strips greater than 1/8" thickness, assembled steel products and ASTM A153/A153M for iron and steel hardware.

Sign Housing: Design Wind Load: Provide outdoor sign assemblies designed to withstand a wind loading for a wind speed of 80 mph, calculated based on AASHTO Standard

Specifications for Structural Support for Highway Signs, Luminaires and Traffic Signals (2009, 5th Edition), tested, and installed.

Static guide sign housings shall be a brushed aluminum case, with dimensions as shown in the Plans. The housing shall be manufactured using 100% extruded aluminum. Sheet aluminum shall be a minimum of 1/8-inch thick. Aluminum members shall be seamless with continuous welds in the corner.

Bases: Ornamental bases custom fabricated of heavy wall cast aluminum shall be cast from ASTM #356 alloy. The sand casting shall be sandblast or otherwise clean the scale. In addition, sand off casting to produce a smooth and uniform surface free from pits, blowholes or other irregularities.

The housing shall be rated for NEMA 4 with the doors internally gasketed to provide the necessary seal. All corners shall be welded for stability and water tightness. Silicone or other sealants will not be allowed to seal joints.

The static guide sign shall be affixed to the steel support pole as shown in the Plans.

The back face of the sign housing shall be constructed of brushed aluminum sheeting.

C CONSTRUCTION

General

The Contractor shall prepare and submit a shop drawing detailing the complete static guide sign equipment installation. The shop drawings shall identify the installation and specifications of all components to be supplied, for approval of the Commissioner. The complete installation of all signage shall be in accordance with manufacturer's printed instructions and approved shop drawings.

Installation

The Contractor shall examine the areas to receive the work and the conditions under which the work shall be performed. The Contractor shall remedy any faulty conditions for which they are responsible. Areas that need correction shall be corrected in a timely fashion.

Installation of Signs

The Contractor shall set and attach the sign accurately on location, alignment and elevation, plumb, level and true, as measured from established reference points and from other work already in place. Components shall fit accurately together to form tight joints and secure connections.

Application of Graphics

Preparation: Surfaces to graphic markings shall be clean, dry, and otherwise made ready for application of materials.

Vinyl Graphics: The Contractor shall apply graphics accurately and in accordance with manufacturer's instructions. Apply uniformly smooth, free from bubbles, wrinkles, stretching, or other blemishes.

Painted or Screened Graphics: The Contractor shall apply painted or screened graphics in compliance with coating manufacture's application instructions. Correct primers shall be used so they are compatible with each substrate. Apply all markings to obtain neat edges, minimum 3 mils dry film thickness and as required to maintain solid marking without voids.

Repair: All blemishes that may need repair shall be repaired so that the repair is not noticeable. Any items that are damaged beyond repair shall be replaced.

Cleaning

Upon completion of work at project site, remove all material, debris, containers, and equipment from the project site. The Contractor shall remove all protective coverings and clean the exposed surfaces of the work to remove dirt, stains, and all other material that is not called for by the contract. This shall be done by methods recommended by the manufacturer.

Protection Cleaning

All work shall be protected during the construction period. All completed work shall be clean and free from defects at time of acceptance by the City of Milwaukee.

C WARRANTY

Support Pole, Heavy Wall Cast Aluminum Base, Sign Housing

The Contractor shall warrant all non-electrical architectural signage components, to the City of Milwaukee, for a period of 5 years, against all defects in material and workmanship. Upon notification of such defects the Contractor shall make all necessary repairs or replace said material at the convenience of the City of Milwaukee.

D MEASUREMENT

The STATIC GUIDE SIGN, 4-PANEL; or STATIC GUIDE SIGN, 4-PANEL; DOUBLE SIDED bid items will be measured for payment by the each (EACH) unit of measure and based on the actual number of static signs furnished, installed, and accepted.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.001	STATIC GUIDE SIGN, 4-PANEL	EACH
SPV.0060.002	STATIC GUIDE SIGN, 4-PANEL, DOUBLE SIDED	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials (including but not limited to the support pole, cast iron base, sign housing, sign blank) and incidentals necessary to complete the work.

19. Dynamic Guide Sign, 3-Panel, Item SPV.0060.003

A DESCRIPTION

Work under this item will consist of furnishing, installing, and testing a dynamic guide sign complete with support pole, heavy wall cast aluminum base, sign housing, sign blank, LED panels, and electrical components.

References

- American Association of State Highway and Transportation Officials (AASHTO): Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (2009, 5th Edition)
- American Welding Society (AWS): AWS D1.1/D1.1M "Structural Welding Code - Steel", and AWS D1.2/D1.2M "Structural Welding Code - Aluminum".
- National Association of Architectural Metal Manufacturers (NAAMM): "Metal Finishes Manual".
- American Institute of Steel Construction (AISC): AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", including the "Commentary" thereto.
- American Iron and Steel Institute (AISI): AISI "Specification for the Design of Cold-Formed Steel Structural Members".
- Industrial Fasteners Institute (IFI): IFI "Fastener Standards".
- The Society for Protective Coatings (SSPC): "Steel Structures Painting Manual, Volume 2, Systems and Specifications".
- American Society of Testing Materials (ASTM): "D4956 Standard Specification for Retroreflective Sheeting for Traffic Control"

Submittals

Shop Drawings: The Contractor shall furnish elevations and details of fabrication and installation. The drawings shall include all materials used in the fabrication, all dimensions, finishes, design loads, and method of installation.

Samples: Samples of all fabricated sign material shall be delivered to the City of Milwaukee Traffic Sign Shop at 1540 West Canal Street, Milwaukee, WI. 53233 for their inspection and approval by the Commissioner of Public Works before any work on the above project shall commence. Samples shall be delivered between the hours of 7:00 AM and 2:30 PM Monday through Friday.

Product Literature: The Contractor shall furnish manufacturer's specifications describing the general properties of all sign material used in this project. Specifications for sign material as well as their supporting structures shall be furnished.

Structural Calculations: The Contractor shall furnish engineering calculations to demonstrate maximum stress and deflection of signage, sign support systems under load. A registered professional engineer licensed in the State of Wisconsin shall prepare calculations.

Quality Assurance

Contractor's Quality Assurance Responsibilities: The Contractor is solely responsible for quality control of the Work.

Regulatory Requirements: The Contractor shall comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities. The Contractor shall adhere to the "Manual on Uniform Traffic Control Devices".

Delivery, Storage, And Handling

General: The Contractor is responsible to deliver and store material in manufacturer's original packaging, correctly labeled for proper identification, at the project site. It is the Contractor's responsibility to protect all material from damage and deterioration.

Project/Site Conditions

Existing Conditions: The Contractor shall coordinate with the work of other trades so as to prevent damage, interference, or delay. Obtain templates, drawings, or other information as necessary for proper alignment and connection to such other work.

Maintenance

The Contractor shall furnish a maintenance manual describing the procedures necessary for operating, cleaning, and maintaining the Work. Manufacturer brochures describing the material used in the work shall be furnished also. This shall include finish paint formula and manufacturer's numbers, etc.

B MATERIALS

General Sign Materials

Aluminum: Provide the following specific type of aluminum regarding alloy, temper, and finish required for the project:

1. Aluminum Sign Blank Material: ASTM 5052-H38 Flat Anodized Aluminum.
2. Aluminum Extrusions: ASTM B221/B221M. 6063-T6 aluminum.
3. Aluminum Castings: ASTM B179. 514.
4. Aluminum Bars, Rods and Wire: ASTM B211/B211M.
5. Aluminum Pipe: 2" I.D. ASTM B 6061-T6 aluminum.

Steel: Provide the following specific type of steel:

1. Structural Steel Shapes, Plates and Bars: ASTM A36/A36M.
2. Steel Pipe: ASTM A595, Type C seamless pipe. Provide Hot-Dip Galvanized pipe for exterior pipe.
3. Structural Steel Tubing: ASTM A500 cold-formed, or ASTM A501 hot-formed. Provide Hot-Dip Galvanized tubing.

Gray Iron Castings: ASTM A48/A48M, Class 30B. Heavy wall sand casting, fine and tight, free of irregularities.

Fasteners: ASTM A307, ANSI/ASME B18.2.1, B18.2.2, B18.6.3, and B18.22.1. All fasteners used on this project shall fall under the above standards. Stainless steel 300 series alloy where used to join dissimilar materials. Stainless steel cap-screws, nuts, and washers shall be used to secure signs to the boiler plate. The cap-screw size shall be 5/16"x 3/4"18NC.

Welding Electrodes and Filler Metal: The Contractor shall provide the alloy and type of material required for strength, workability, compatibility, and color match after grinding smooth and finishing the fabricated product.

Finishing Materials for Sign Blanks

Polyurethane Coatings: Provide the following products or equal as acceptable to the Commissioner of Public Works.

1. Acrylic Polyurethane Enamel: 2-component, acrylic modified, aliphatic polyurethane enamel having U.V. inhibitors and engineered for application to signage components. Gloss shall be of 90+/- units at 60 degrees F. Flat sheen of 10+/- units at 60 degrees F.
2. Primer for Steel: 2-component primer with zinc chromate pigment and phosphate activator.
3. Primer for Galvanized and Stainless Steel, on Non-Ferrous Metal: Clear colorless primer.

Screening Materials: Provide photo processed screening, ATSM D4956-04, Type IX, arranged to furnish sharp and solid images without edge build-up or bleeding of the coating. Pattern-cut screens may be used for non-repeat copy, provided that final image copy is equal to photo screen quality. Only weather resistant materials, compatible with the intended substrates shall be used.

Vinyl Graphics: Pressure sensitive type, ASTM Type IX, white, non-yellowing, non-peeling and weather resistant electro-cuttable vinyl film.

Universal Acrylic Latex Semi-Gloss Enamel: For application to sign supports only, not to sign blanks or sign faces.

- Devoe "Metalclad Acrylic Latex Semi-Gloss Coating 417XX" or equal.
- Glidden "Glid-Guard Lifemaster Finish 5200" or equal.
- Sherwin-Williams "Metalatex Semi-gloss Enamel B42 Series" or equal.
- Or equivalent product as approved by the Commissioner.

Graphic Artwork: Contractor shall procure all electronic files for the full-color digital artwork for all sign types from the Commissioner. Contractor shall coordinate receipt of all artwork files with the Commissioner to meet the project schedule. The output of all graphic panels for all sign types shall be under this contract.

Fonts/Typefaces: The fonts selected by the City of Milwaukee, Commissioner of Public Works, shall be used for this project. The fonts used are indicated on the Drawings.

No substitutions of any other typefaces may be made. Under no circumstances are typefaces to be electronically distorted (squeezed or extended) for purposes of fitting to the specified sign or general alteration of the sign face composition unless noted on the Drawings. This includes, but is not limited to, stretching, squeezing, tilting, outlining, or shadowing.

All letterforms shall be computer generated. Hand cut letters are not acceptable.

Extra Materials: The Contractor shall deliver to the City of Milwaukee, Traffic Sign Shop, 1540 West Canal Street, Milwaukee, WI. 53233, in original packaging, the following item:

1. Provide 1 (one) quart of each finish paint color and its related formula for touch-up purposes.

Shop Application of Sign Finishes

Sign Graphics: Provide the letters, numerals, symbols and other graphics markings, using the finish materials shown. Apply the graphics neatly, uniformly proportioned and spaced, and accurate within the dimensions indicated. Prepare the substrate surfaces and apply finish materials in accordance with manufacturer's instructions.

Polyurethane Finishes: Surfaces excepting polyurethane coatings shall be clean to obtain proper adhesion. Chemically treat or clean as recommended by paint manufacturer to remove deleterious film or residue.

1. **Primer:** Apply in strict accordance with paint manufacturer's recommendations as required for proper adhesion and application of finish.
2. **Acrylic Polyurethane Enamel:** Apply in 2.0 mils dry film thickness as recommended by manufacturer using correct color and sheen.

Fabrication of Signs and Supports

Provide standard and custom manufactured sign assemblies, components completely fabricated and finished at the factory before delivery to site. Construct signage to accurate detail and dimensions as shown and as reviewed on shop drawings. Fit and assemble all work at shop to the greatest extent possible and mark components as required to facilitate assembly during installation. Exposed fasteners on finished sign faces will be allowed, unless specifically indicated.

Metal Signs and Supports: Fabricate exposed surfaces uniformly flat and smooth, without distortion, pitting, or other blemishes. Form exposed metal edges to a smooth radius. Grind exposed welds and rough edges to make flush with adjacent smooth surfaces.

1. **Welding:** Make welds continuous. Comply with American Welding Society and Aluminum standards for type of metal.
2. **Fasteners:** Sign blanks shall be fastened to sign standards by means of exposed stainless steel cap screws. Perform drilling operation at shop.
3. **Dissimilar Materials:** Where metal surfaces will be in contact with dissimilar materials, coat the surfaces with epoxy paint with a minimum 2.0 mil dry film thickness or provide other means of dielectric separation as recommended by manufacturer to prevent galvanic corrosion.

Castings: Exposed castings shall be uniformly free from porosity and roughness. Edges shall be filled and ground smooth. Faces shall be chemically etched and mechanically polished to a bright finish.

Galvanizing: Exterior steel components and other steel where noted shall be galvanized. Shop fabrication shall be completed prior to application of zinc coating. Remove mill scale and rust, clean and pickle the units as required for proper pretreatment of surfaces. Provide hot-dip galvanizing in accordance with requirements of ASTM A123/A123M for steel plates, bars and strips greater than 1/8" thickness, assembled steel products and ASTM A153/A153M for iron and steel hardware.

Sign Housing: The dynamic guide sign shall operate without any decrease in performance over an ambient temperature range of -30°F to + 165°F with a relative humidity of up to 95%.

Design Wind Load: Provide outdoor sign assemblies designed to withstand a wind loading for a wind speed of 80 mph, calculated based on AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires and Traffic Signals (2009, 5th Edition), tested, and installed.

Dynamic guide sign housings shall be a brushed aluminum case, with dimensions as shown in the Plans.

The housing shall be manufactured using 100% extruded aluminum. Sheet aluminum shall be a minimum of 1/8-inch thick. Aluminum members shall be seamless with continuous welds in the corner. Holes shall be provided within the sign housing for cable egress as shown in the Plans. Holes shall have bushings to protect the cable during installation.

Access to the interior of the housing for routine maintenance or inspection shall be by access doors mounted on the rear of the sign. To avoid any corrosion or dirt, the door hinge shall be mounted internal to the housing. Each door shall open away from the center of the sign housing, and shall have a 3-point Corbin locking mechanism. Each door shall open 90 degrees, and be retained in the open position by a rigid telescoping retention device.

Bases: Ornamental bases custom fabricated of heavy wall cast aluminum shall be cast from ASTM #356 alloy. The sand casting shall be sandblast or otherwise clean the scale. In addition, sand off casting to produce a smooth and uniform surface free from pits, blowholes or other irregularities.

The housing shall be rated for NEMA 4 with the doors internally gasketed to provide the necessary seal. All corners shall be welded for stability and water tightness. Silicone or other sealants will not be allowed to seal joints.

Electrical and communication connections within the housing shall be weatherproof and easily coupled.

The dynamic guide sign shall be affixed to the steel support pole as shown in the Plans.

A thermostatically controlled heater and louvered vents shall be used to keep condensation from forming on the display face of the static or LED displays.

The back face of the sign housing shall be constructed of brushed aluminum sheeting.

LED Displays

The dynamic LED displays will be used to disseminate parking availability information to motorists. The LED displays should be readable from 200 ft by an individual with 20/20 vision. In particular, the display shall comply with the following requirements:

Display characteristics

Character height:	five (5) inch characters
Number of characters:	four (4) alphanumeric characters
Number of lines:	single line
Type of display:	Red LED capable of alpha numeric displays
LED life:	100,000 hrs (minimum)

Mechanical

Nominal dimensions with mounting flange:	28.75 inch wide by 7.75 inch high
Nominal dimensions of cutout:	27 inch wide by six (6) inch high

LED Circuit Boards

General

- a.) LED circuit boards shall be manufactured using a FR-4 laminated fiberglass printed circuit board with the front face printed with black UV cure ink.
- b.) The failure of an LED string shall not cause the failure of any other LED string.
- c.) The circular base of the discrete LEDs shall be soldered so that they are flush.
- d.) All LEDs shall be perpendicular to the circuit board.
- e.) All exposed metal on both sides of the LED circuit board (except connector contacts) shall be protected from water and humidity by an application of conformal coating.
- f.) The conformal coating shall contain a UV brightener to aid in visual inspection.
- g.) The presence of ambient radio signals, magnetic interference, and electromagnetic interference shall not impair the performance of the sign system. Interference includes power lines, transformers, and motors. The sign will not radiate electromagnetic signals that adversely affect any other electronic device, including those located in vehicles passing underneath or near the sign and its' controller.
- h.) The Cabinet and sign components shall operate in the following temperature and humidity conditions:

Operational temperature range: -30°F to +165°Fa.

Humidity range: 0% to 99% (non-condensing)

Storage temperature range: -40°F to +185°F

Components will not be damaged by a temporary exposure while operating to a temperature range of -40°F to +185°F

- i.) Signs will use one of the following three viewing angles:

All LEDs shall have a nominal viewing cone of 15° with a half-power angle of 7.5° a. measured from the longitudinal axis of the LED. Viewing cone tolerances shall be as specified in the LED manufacturer's product specifications and shall not exceed ± 3 degrees.

All LEDs shall have a nominal viewing cone of 30° with a half-power angle of 15° b. measured from the longitudinal axis of the LED. Viewing cone tolerances shall be as specified in the LED manufacturer's product specifications and shall not exceed ± 3 degrees.

All LEDs shall have a nominal viewing cone of 60° with a half-power angle of 30° a. measured from the longitudinal axis of the LED. Viewing cone tolerances shall be as specified in the LED manufacturer's product specifications and shall not exceed ± 3 degrees.

- j.) The discrete LEDs shall be driven using pulse width modulation (PWM). Signs will use current PWM to achieve the proper LED intensity levels for all light conditions. The drive pulse shall be modulated at a frequency high enough to provide flicker-free operation.
- k.) The LED drive circuit board shall contain a microprocessor-controlled power regulation circuit that controls the pulse width modulation (PWM) applied to the LED strings. LED specifications.
- l.) Color Vs Brightness Regulated DC Power Supplies
- m.) The LED Circuit board shall be powered with auto-ranging regulated switching power supply that converts the incoming AC electricity to DC at a nominal voltage of 12 VDC.
- n.) Power supplies shall be UL recognized
- o.) Power supplies shall be arranged in a redundant parallel configuration, and rated such that if one supply fails the remaining supply shall be able to operate 100% of the LEDs in the sign message.
- p.) The pair of power supplies shall contain two physically and electrically independent supplies.
- q.) The pair of power supplies shall be placed in parallel according to the manufacturer's recommendations.
- r.) Power supplies used to power the LED sign message and its controller board shall be identical and v. interchangeable.
- s.) Power supply specifications:
- t.) Nominal output voltage: 12 VDC ±10%

Minimum temperature range for 100% output power: -30°F to +140°F

Minimum operating input voltage range: 100VAC to 200 VAC.

The Contractor shall provide interface protocols for the LED displays, as well as display software development kits (SDKs), if available.

The number of dynamic LED displays per dynamic guide sign shall be as indicated in the Plans.

Electrical Components

Power Distribution Assembly: The power distribution assembly shall be as shown on the Plans. The power distribution assembly shall consist of the following: one (1) 15 A, 120 V main circuit breaker and one duplex, 3 prong, NEMA GFI Type 5-15R grounded utility type outlet.

Rating of breakers shall be shown on face of breaker or handle. Breaker function shall also be labeled below breakers on panel. All conductors from the power distribution assembly routed to the cabinet wiring shall be connected to the terminal block on the common side, except for the AC power conductor between the service terminal block and main circuit breaker. All internal conductors terminating at the blocks shall be connected to the other side of the blocks.

The terminal blocks shall be barrier type rated at 20 A, 600 VRMS minimum. The terminal screws shall be nickel plated brass binder head type with screw inserts of same material. The terminals of the power line service terminal block shall be labeled "AC+, AC-, and AC GND", and shall be covered with a clear insulating material to prevent inadvertent contact.

The power distribution assembly shall include over-voltage, transient protection. Over-voltage protection shall include, as a minimum, a surge arrestor, which shall reduce the effect of power line voltage transients and be mounted to the panel. The arrestor shall have the following minimum features:

Peak current	20 kA (8x20 μ s waveshape)
Life Test	5% change
Clamp voltage	280 V typical @ 20 kA
Response time	≤ 5 ns
Continuous service current	10 amps or greater 120 VAC/60 Hz
Operating Temperature	-40°C to +75°C (minimum)
Nominal dimensions	7.15 inches by 3.15 inches by 2.25 inches

Each sign shall be supplied with a heavy-duty plastic envelope to store plans, wiring diagrams, schematics, etc. The envelope shall have minimum dimensions of 10 inches x 15 inches.

Wireless Transceiver Cable Protection: A gas tube, over voltage protector shall be provided for the coaxial patch cable. Specific requirements include:

Peak surge current:	20 kA
Response time:	≤ 7 ns
Input/output connectors:	N female/N female
Temperature range:	-40°C to +75°C (minimum)
Humidity:	0% to 95% (non-condensing)
Nominal dimensions:	1.5 " by 1" by 1.5"

The lightning arrestor shall be mounted through bulkhead panel up to ¼" thick as shown on the Plans.

C CONSTRUCTION

General

The Contractor shall prepare and submit a shop drawing detailing the complete dynamic guide sign equipment installation. The shop drawings shall identify the installation and specifications of all components to be supplied, for approval of the Commissioner. The complete installation of all signage shall be in accordance with manufacturer's printed instructions and approved shop drawings.

Installation

The Contractor shall examine the areas to receive the work and the conditions under which the work shall be performed. The Contractor shall remedy any faulty conditions for which they are responsible. Areas that need correction shall be corrected in a timely fashion.

Installation of Signs

The Contractor shall set and attach the sign accurately on location, alignment and elevation, plumb, level and true, as measured from established reference points and from other work already in place. Components shall fit accurately together to form tight joints and secure connections.

Application of Graphics

Preparation: Surfaces to graphic markings shall be clean, dry, and otherwise made ready for application of materials.

Vinyl Graphics: The Contractor shall apply graphics accurately and in accordance with manufacturer's instructions. Apply uniformly smooth, free from bubbles, wrinkles, stretching, or other blemishes.

Painted or Screened Graphics: The Contractor shall apply painted or screened graphics in compliance with coating manufacture's application instructions. Correct primers shall be used so they are compatible with each substrate. Apply all markings to obtain neat edges, minimum 3 mils dry film thickness and as required to maintain solid marking without voids.

Repair: All blemishes that may need repair shall be repaired so that the repair is not noticeable. Any items that are damaged beyond repair shall be replaced.

Internal Components

The Contractor shall demonstrate a prototype assembly using the proposed components. This demonstration shall take place at a Contractor selected and Commissioner-approved location. These conformance tests shall be completed prior to the delivery of any completed assemblies to the project site. Any deviations from these specifications that are identified during this testing shall be corrected prior to the shipment of the assembly to the project site.

Appropriate connectors shall be furnished and installed to interface the in-cabinet components to the incoming electrical service and antenna. The Contractor shall mount the in-cabinet components inside the dynamic guide sign structure and connect them to AC power and communication feeds.

The Contractor shall make all power connections to the sign in accordance with the Plans and as required. The neutral buss shall be isolated from the sign and equipment ground. It shall terminate at the neutral lug. All conductors used in sign wiring shall terminate with properly sized non-insulated (if used, for DC logic only) or clear spring-space type terminals except when soldered to a through panel solder lug on the rear side of the terminal block or as specified elsewhere. All conductors, except those, which can be readily traced, shall be labeled. Labels attached to each end of the conductor shall identify the destination of the other end of the conductor. Cabling shall be routed to prevent conductors from being in contact with metal edges. Cabling shall be arranged so that any removable assembly may be removed without disturbing conductors not associated with that assembly.

All equipment in the cabinet, when required, shall be clearly and permanently labeled using marker strips. The marker strips shall be made of material that can be easily and legibly written on using a ballpoint pen. Marker strips shall be located immediately below the item that they are to identify and must be clearly visible with the items installed.

LED Displays

The dynamic LED displays shall be mounted in the dynamic guide sign housing as shown in the Plans. The LED displays shall be installed with a weatherproof compression seal. All connections shall be made as shown in the Plans.

The Contractor shall set the logical address (or ID) of each LED display. Each LED display in the system shall have a unique logical address (or ID). The Contractor shall maintain a list of all the dynamic LED display addresses and shall provide the list to the Commissioner at the project completion.

Cleaning

Upon completion of work at project site, remove all material, debris, containers, and equipment from the project site. The Contractor shall remove all protective coverings and clean the exposed surfaces of the work to remove dirt, stains, and all other material that is not called for by the contract. This shall be done by methods recommended by the manufacturer.

Protection Cleaning

All work shall be protected during the construction period. All completed work shall be clean and free from defects at time of acceptance by the City of Milwaukee.

Testing

The Contractor shall test each installed dynamic guide sign. The test shall be conducted from the dynamic guide sign using the standard communication protocol and laptop. The Contractor shall verify that each of the LED displays can display a desired message.

The Contractor shall maintain a log of all testing and the corresponding test results. A representative of the Contractor and a representative of the Commissioner shall sign the log as witnessing the results. Records of all tests shall be submitted to the Commissioner prior to accepting the installation.

Documentation

Three (3) copies of all operations and maintenance manuals for each component shall be delivered for each assembly installed. In addition, full documentation for all software and associated protocols shall be supplied to the Department on a CD-ROM. The Department reserves the right to provide this documentation to other parties who may be contracted with, in order to provide overall integration or maintenance of this item.

Warranty

Support Pole, Heavy Wall Cast Aluminum Base, Sign Housing

The Contractor shall warranty all non-electrical architectural signage components, to the City of Milwaukee, for a period of five (5) years, against all defects in material and workmanship. Upon notification of such defects the Contractor shall make all necessary repairs or replace said material at the convenience of the City of Milwaukee.

LED Display

The Contractor shall warranty all materials and workmanship including labor for a period of one year after the completion and acceptance of the installation, unless other warranty requirements prevail. The warranty period shall begin when the Contractor completes all construction obligations related to this item and when the components for this item have been accepted, which shall be documented as the final completion date in the construction status report. This warranty shall include repair or replacement all failed components via a factory authorized depot repair service. All items sent to the depot for repair shall be returned within 2 weeks of the date of receipt at the facility. The depot location shall be in the United States. The provider of the warranty shall be responsible for all return shipping costs.

The depot maintainer designated for each component shall be authorized by the original manufacturer to supply this service. A warranty certificate shall be supplied for each component from the designated depot repair site indicating the start and end dates of the warranty. The certificate shall be supplied at the conclusion of the system acceptance test and shall be for a minimum of two years after that point. The certificate shall name the City as the recipient of the service. The City shall have the right to transfer this service to other private parties who may be contracted to perform overall maintenance of the facility.

D MEASUREMENT

The DYNAMIC GUIDE SIGN, 3-PANEL bid items will be measured for payment by the each (EACH) unit of measure and based on the actual number of number of LED panels included on each sign, as shown in the Plans.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.003	DYNAMIC GUIDE SIGN, 3-PANEL	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials (including but not limited to the support pole, cast iron base, sign housing, sign blank) and incidentals necessary to complete the work.

20. Sign Panel, 24" x 30", Item SPV.0060.004

A DESCRIPTION

Work under this item describes furnishing and installing a static sign panel on an existing City lighting pole.

B MATERIALS

Sign Panels

Sign panels shall meet the requirements of Wisconsin Department of Transportation Standard Specifications, Section 637, Signing. The sign panels shall have a sheet aluminum base, ASTM Type IX reflective sheeting face, and ASTM Type IX reflective demountable messages. The dimensions of the signs shall be 24 in. wide by 30 in. high. Sign colors, legend, messages, and border shall be as shown in the Plans.

Banding Straps

Sign panels shall be mounted using stainless steel banding straps. The sign panel mounting shall use hex head nuts and bolts, washers, and other steel hardware treated in one of the following ways:

1. Hot dipped or mechanically zinc coated according to ASTM A 153, class D.
2. Cadmium plated according to ASTM B 766 type III, class 12.
3. Electrically zinc coated according to ASTM B 633, type III, SC 3.

The Contractor shall use only nuts and bolts manufactured with sufficient clearance to allow the nuts to run freely on the bolts after plating or coating.

C CONSTRUCTION

General

The Contractor shall prepare and submit a shop drawing detailing the sign panel. The shop drawings shall identify the installation and specifications of all components to be supplied for approval of the Commissioner.

Installation

Sign panels shall be installed at locations as indicated in the Plans. Sign panels shall be positioned and secured a minimum of eight (8) feet above sidewalk grade. Sign panels shall be attached to existing City light poles using stainless steel banding straps. At locations where an existing City-owned parking sign(s) is in place, the sign(s) will be removed and delivered to the City as directed by the Commissioner. The Contractor shall only remove City-owned parking signs facing the same direction as the proposed sign panels. The cost of this work shall be included in this item.

D MEASUREMENT

The SIGN PANEL, 24" x 30" bid item will be measured for payment by the each (EACH) unit of measure and based on the actual number of sign panels furnished, installed, and accepted by the City.

E BASIS OF PAYMENT

SIGN PANEL, 24" x 30", measured as provided above, will be paid for at the contract unit price each, which price shall be payment in full for furnishing and installing the sign and for all labor, tools, equipment, transportation, and incidentals necessary to complete this item of work. This shall also include the removal and delivery of existing City-owned parking signs at proposed sign panel locations.

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.004	SIGN PANEL, 24" x 30",	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work. This shall also include the removal and delivery of existing City-owned parking signs at proposed sign panel locations.

21. Electrical Vault, 13" x 24" x 18", Item SPV.0060.005

A DESCRIPTION

This section describes constructing and installing an electrical vault and vault lid.

B MATERIALS

The Contractor shall furnish an electrical vault and vault lid constructed of a polymer concrete material and gray in color. The vault shall be one piece measuring 13 inches by 24 inches and a minimum of 18 inches high.

The Contractor shall furnish a lid with minimum design load of 6,000 pounds. The vault lid shall have 2 slots measuring ½ inch by 2 inches to use to raise the lid. Each cover shall have the word "TRAFFIC" cast into its surface along the longest dimension. The words shall be permanently recessed into the surface.

The Contractor shall furnish manufactured gaskets, from the City's approved product list, between the lid and top of vault to resist water from entering the electrical vault. The Contractor shall furnish and install self-curing caulking to provide a permanent bond and made of flexible rubber that is not affected by sunlight, water, oils, mild acids, and alkali. The Contractor shall use mildew-resistant non-flammable, gray caulk.

C CONSTRUCTION

General

The Contractor shall provide a manufacturer-approved knockout and punch driver to provide openings in the electrical vault for conduit if not provided. Voids between conduit and vault shall not exceed ½ inch. The Contractor shall caulk the interior and exterior electrical vault. The Contractor shall cure caulking according to manufacturer's specifications before backfilling.

The Contractor shall secure vault lid to vault with two 3/8-inch 16 UNC stainless steel pentahead bolts and washers to lock the lid. The Contractor shall anchor any necessary support assemblies to the vault using stainless steel hardware.

D MEASUREMENT

The ELECTRICAL VAULT, 13" x 24" x 18" bid item will be measured for payment by the each (EACH) unit of measure and based on the actual number of electrical vaults furnished, installed, and accepted.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.005	ELECTRICAL VAULT, 13" x 24" x 18"	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work.

22. Tandem Circuit Breaker, 120V, 15/20 Amp, Furnish Only, Item SPV.0060.006

A DESCRIPTION

The Contractor shall furnish a tandem single-pole circuit breaker for installation by the City.

B MATERIALS

The Contractor shall furnish a plug-in tandem style single-pole thermal-magnetic circuit breaker. Circuit breaker A of the unit shall have a current rating of 15 Amperes and circuit breaker B of the unit shall have a current rating of 20 Amperes. The unit shall have a voltage rating of 120/240 VAC. The tandem circuit breaker shall occupy a single space in an existing load center panel.

The circuit breaker shall provide a trip indicator providing visual indication that a circuit has been tripped.

C CONSTRUCTION

N/A

D MEASUREMENT

The TANDEM CIRCUIT BREAKER, 120V, 15/20 AMP, FURNISH ONLY bid item will be measured for payment by the actual number of circuit breakers furnished and accepted.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.006	TANDEM CIRCUIT BREAKER, 120V, 15/20 AMP, FURNISH ONLY	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work.

23. Communication Equipment, Dynamic Guide Sign, Item SPV.0060.007

A DESCRIPTION

This item shall consist of furnishing, installing, and testing the communication equipment at locations as indicated on the Plans. This item shall include a wireless transceiver, terminal port server, and firewall/router as indicated in the Plans and any other peripheral communications equipment and materials.

The communication equipment will transmit parking availability information from a parking facility to a central location and transmit data to dynamic guide signs throughout the downtown area by using a service provider's wireless cellular data network.

B MATERIALS

The Contractor shall furnish all required tools, equipment, cables, materials, and consumable supplies, required to install and integrate the components of the communication equipment as outlined herein and as shown in the Plans.

All furnished equipment and component parts shall be new, and of the latest design and manufacture. They shall comply with all specifications at the time of installation. All parts shall be of high quality workmanship, and no part or attachment shall be substituted or applied contrary to the manufacturer's recommendations and standard practices.

The equipment shall be designed to protect personnel from exposure to high voltages and shall be UL certified.

The Contractor shall provide the following equipment items to be installed at locations as indicated on the Plans:

- Wireless cellular transceiver
- Terminal port server

Wireless Cellular Transceiver

The wireless transceiver shall provide full-duplex wireless data communications using wireless cellular technology. The wireless cellular transceiver shall be a MultiModem GSM/GPRS wireless modem or Engineer approved equal.

The complete wireless transceiver shall comply with the following requirements:

Electrical

Data ports:	One RJ-45 Ethernet Model: RJ-45, 10BaseT/100BaseTX, 802.3
Frequency band:	Dual band 850/1900 or 900/1800 GSM/GPRS
Input power:	5-32 VDC with less than 800 mA current draw
Power ports:	Screw terminal
RF Antenna:	50 ohm SMA (female connector)

Environmental & Mechanical

Operating temperature:	-20 to +55 °C
Relative humidity range:	20% to 95% (non-condensing)
Dimensions:	nominally 2.8" L x 7.0" W x 1.2" H

The wireless transceiver shall be configured using a Windows-based web browser.

The Contractor shall contact the City of Milwaukee Telecommunications Engineer (Michael Panlener, 414-286-3266) to have the wireless communication account (cellular) billing information and lines initiated through the City accounts. SIM cards will then be sent to the Contractor at an address and to a designated person. The Contractor shall contact the City of Milwaukee Telecommunications Engineer to have the quantity of wireless cellular transceivers furnished to an address and to a designated person.

Terminal Port Server

The Contractor shall furnish and install a terminal port server at the locations indicated in the Plans. The terminal port server shall be a multi-port serial-to-Ethernet server. The terminal port server shall have a minimum of four (4) DB-9 RS-232 ports and one (1) RJ-45 10/100 Base-T port. The Ethernet port shall be full duplex. The terminal port server shall be configurable through a built-in web browser.

The terminal port server shall operate within specifications over the temperature range of -20° C to 55° C. The terminal port server shall operate with relative humidity of 95%, non-condensing.

The terminal port server shall include a power supply compatible with 120 VAC. The power supply shall be compatible with the environment specified for the terminal port server.

The terminal port server shall be DIN rail or panel mounted.

The terminal port server shall be UL listed.

C CONSTRUCTION

General

The Contractor shall prepare and submit a shop drawing detailing the complete communications equipment installation. The shop drawings shall identify the installation and specifications of all components to be supplied, for approval of the Engineer.

The Contractor shall demonstrate a prototype assembly using the proposed components. This demonstration shall take place at a Contractor and Engineer approved location. These conformance tests shall be completed prior to the delivery of any completed assemblies to the project site. Any deviations from these specifications that are identified during this testing shall be corrected prior to shipment of the assembly to the project site.

Appropriate connectors shall be furnished and installed to interface the in-cabinet components. The Contractor shall mount the in-cabinet components in the equipment enclosure and connect them to the power source and communication feeds. All cables shall be dressed and secured to the equipment racks or rails using cable straps or other method approved by the Engineer.

Testing

The Contractor shall develop test procedures that document the proper operation and verify the functionality of the Communications Equipment. These test procedures shall include any set-up procedures recommended by the equipment manufacturer. A written test plan shall be prepared and submitted to the Engineer not less than 21 days prior to testing.

Documentation

One copy of all operations and maintenance manuals for each component shall be delivered for each assembly installed. In addition, full documentation for all software and associated protocols shall be supplied to the Department on a CD-ROM. The Department reserves the right to provide this documentation to other parties who may be contracted in order to provide overall integration or maintenance of this item.

Warranty

The Contractor shall warranty all materials and workmanship including labor for a period of one (1) year after the completion and acceptance of the installation, unless other warranty requirements prevail. The warranty period shall begin when the components for this item have been accepted by the client and documented as the final completion date in the construction status report. This warranty shall include repair or replacement of all failed components via a factory authorized depot repair service. All items sent to the depot for repair shall be returned within two weeks of the date of receipt at the facility. The depot location shall be in the United States. The provider of the warranty shall be responsible for all return shipping costs.

The depot maintainer designated for each component shall be authorized by the original manufacturer to supply this service. A warranty certificate shall be supplied for each component from the designated depot repair site indicating the start and end dates of the warranty. The certificate shall be supplied at the conclusion of the system acceptance test and shall be for a minimum of two years after that point. The certificate shall name the Department as the recipient of the service. The Department shall have the right to transfer this service to other private parties who may be contracted to perform overall maintenance of the facility.

D METHOD OF MEASUREMENT

The COMMUNICATION EQUIPMENT bid items will be measured for payment by the each (EACH) unit of measure and based on the actual number of communication equipment assemblies furnished, installed, tested, and accepted.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.007	COMMUNICATION EQUIPMENT, DYNAMIC GUIDE SIGN	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work.

24. Remove and Replace Existing Form, Item SPV.0060.008

A DESCRIPTION

This work shall consist of excavation using pressurized water and a vacuum system. Specifically, the Contractor shall excavate in and around existing City foundations and forms as shown in the Plans to remove existing soil and gravel and expose existing City conduit and direct buried cable.

Work under this item shall also consist of furnishing and placing porous granular material for backfilling conduit and cable in trenches or around foundations/forms.

B MATERIALS

¾" road gravel wash stone with sand mix shall be used as back-fill.

The replaced asphalt form shall meet the requirements of Wisconsin Department of Transportation Standard Specifications Section 465: Asphaltic Surface. The thickness of the newly constructed asphalt form shall be four (4) inches or as directed by the Commissioner.

The replaced Portland cement concrete form shall meet the requirements of Wisconsin Department of Transportation Standard Specifications Section 501 Concrete. The thickness of the newly constructed concrete form shall be four (4) inches or as directed by the Commissioner.

C CONSTRUCTION

General

Surplus excavated material shall be disposed of by the Contractor in such a manner that public or private property will not be damaged or endangered.

Aside from the materials listed above, all other construction and demolition debris or waste shall be disposed of in a licensed landfill, recycled, reused, or otherwise disposed of as allowed by State or Federal solid waste disposal laws and regulations and solid waste determinations of the Wisconsin EPA.

D METHOD OF MEASUREMENT

Excavation of existing forms shall be measured each for payment by the each (EACH) unit of measure and based on the actual number of forms excavated and replaced and accepted by the City.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.008	REMOVE AND REPLACE EXISTING FORM	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work.

25. Electric Cable in Conduit, 2/C No. 10, 1/C No. 10 GND, Item SPV.0090.001

A DESCRIPTION

This section describes furnishing and installing electrical wire and cable for underground installations.

B MATERIALS

The Contractor shall furnish type UF cable with ground including the number and size of conductors as shown on the Plans. The cable shall be rated at a minimum of 60°C wet or dry and shall be suitable for installation in wet and dry locations including direct burial in the earth, and shall be resistant to oils and chemicals. The cable shall be rated for 600 volts and be UL listed Type UF.

The UL listing mark, cable voltage, insulation type and ratings, as well as the cable size shall be clearly printed on the cable in a color contrasting with the insulation color. All electric cables shall be color coded. Neutral wires shall be color coded white. Single phase three wire runs of cable shall be color coded one black, one red, and one white. Single phase two wire runs shall be similarly color coded based on the applicable phase(s) and neutral. Insulated ground wires, where applicable, shall be green.

C CONSTRUCTION

General

Cable shall not be spliced underground in conduit. The Contractor shall not leave wire or cable ends uncovered or submerged in water. If the Commissioner observes this condition, the Commissioner may reject the entire length of cable or wire. The Contractor shall make all electrical connections and splices with approved pressure or compression type fittings.

The Contractor shall install conductors in continuous lengths without splices from termination to termination. The Contractor may splice only at hand-holes in the bases of the traffic signal standards or poles, electrical vaults, or in Commissioner-approved junction boxes.

All cables accessible in hand-holes, traffic signal controller cabinets, electrical vaults, or Commissioner-approved junction boxes, shall be clearly labeled to designate cable usage. Labels shall be computer-printed and shall be waterproof and non-smearing.

Installation

If installing electric cable in conjunction with traffic signals, the Contractor shall use type UF, 2 conductor with ground, solid or stranded copper conductor cable, sized as the Plans show, from the traffic signal control cabinet to the pertinent light pole base or bases or junction boxes as indicated in the Plans.

The Contractor shall strip the minimum length of jacket necessary to make terminations in a neat and technically proficient manner.

D MEASUREMENT

The City will measure the ELECTRIC CABLE IN CONDUIT by the linear foot (FOOT) unit of measure and based on conduit installed and accepted.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.001	ELECTRIC CABLE IN CONDUIT, 2/C NO. 10, 1/C NO. 10 GND	FOOT

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work.

- 26. Concrete Foundation, Static Guide Sign, Item SPV.0060.010**
27. Concrete Foundation, Dynamic Guide Sign, Item SPV.0060.011

A DESCRIPTION

This work shall include all labor, materials, and equipment for installation of drilled shaft concrete foundations to support static and dynamic guide signs at locations as indicated in the Plans and as directed by the Commissioner. Work includes drilling of the foundation shaft, furnishing and installing any necessary hardware (entering conduits, reinforcement bars, anchor bolts, grounding, etc.), swabbing and clearing the electrical conduits, and furnishing and placing concrete foundations as shown on the Plans.

B MATERIALS

Concrete

Concrete shall meet the requirements of Wisconsin Department of Transportation Standard Specifications Section 501 Concrete.

Steel Reinforcement Bars

Reinforcement bars shall be ASTM A615 Grade 60.

Anchor Bolt Assemblies

Anchor bolts shall be fabricated from steel meeting the requirements of ASTM A400. Nuts shall be fabricated in accordance with ASTM A563. Washers shall be fabricated in accordance with ASTM F436. Anchor bolt diameter and length shall be as noted on the Plans. Anchor bolt assemblies shall include anchor bolts, nuts; lock washers, and flat washers. All hardware shall be hot-dipped galvanized in accordance with ASTM A153.

Grounding (Dynamic Guide Signs only)

Grounding electrode conductors shall be solid, soft drawn 1/C No. 6 copper and shall be installed according to NEC requirements.

Grounding electrodes shall be copper-clad steel solid circular cross section with a nominal diameter of $\frac{3}{4}$ in. and provide a minimum cumulative in-soil-contact length of 8 ft. Resistance to ground of all grounding electrodes shall be measured and recorded. Measurements shall be made with a ground tester during dry soil conditions as approved by the Commissioner. Resistance to ground shall not exceed 10 Ohms.

Conduit (Dynamic Guide Signs only)

Conduit shall be schedule 40 PVC electrical conduit of the quantity, size, and type as specified in the Plans and conforming to the specifications below.

The Contractor shall furnish electrical conduit with a UL label on each length delivered and used. While the NEC conduit classification for rigid nonmetallic (RNC) includes PVC, HDPE, and RTRC, under city specifications, RNC refers to PVC only.

The Contractor shall use PVC electrical conduit for rigid nonmetallic conduit conforming to UL 651.

C CONSTRUCTION

General

The foundation shall be 24 in. in diameter (18 in. at the surface), with a 9 ½ in. bolt circle and four identical anchor bolts. Top of foundation shall be set at an elevation of 3 in. above grade. Foundation shall be finished smooth and level to allow proper mounting of guide sign. The foundation shall be centered back from the face of curb in accordance with the Plans. Depth of foundation shall be as noted in the Plans. All concrete finishing work shall be accomplished by an experienced concrete finisher with a minimum of five (5) years experience and shall be approved by the Commissioner prior to commencement of concrete operations. The cost of furnishing and installing all concrete and steel reinforcement bars for the foundation shall be included in this item.

The hole for the foundation shall be made by the Contractor who is responsible for all excavation by any means necessary, i.e., auger truck, hydro-vac truck, backhoe, hand dig. If soil conditions require the use of a liner to form the hole, the liner shall be withdrawn as the concrete is deposited. The top of the foundation shall be constructed level. A liner or form shall be used to produce a uniform smooth side to the top of the foundation. Foundation top shall be chamfered ¾ in.

The steel reinforcement, raceways (dynamic guide signs only), and anchor bolts shall be secured and properly positioned in the augered hole so after pouring concrete the components shall retain their proper positions. Reinforcement bars shall maintain 3 in. cover from the top, bottom, and all sides of the concrete foundation as shown in the Plans.

For dynamic guide signs, grounding electrodes shall be installed as shown on the Plans.

Sawcutting

In locations where the existing sidewalk slab on grade is to remain in place, the Contractor shall sawcut a perpendicular clean joint in the sidewalk around the installation area of the concrete foundation. The sidewalk in the installation area shall then be removed to facilitate installation of the concrete foundation and that portion which is to remain in place. If the existing sidewalk is removed or damaged outside of this area, the Contractor shall repair that portion at no additional expense to the satisfaction of the Commissioner.

Sidewalk Removal

The limits of the sidewalk removal for each guide sign foundation shall be approved by the Commissioner prior to beginning removal. The removal limits shall extend to the nearest existing joints as directed by the Commissioner. If the existing sidewalk is removed or damaged outside the designated limits, the Contractor shall repair that portion at no additional expense to the satisfaction of the Commissioner. Sidewalk removal associated with concrete foundations shall be paid for as part of a separate pay item.

Sidewalk

Sidewalk replacement around new foundation shall be installed, measured, and paid for as part of a separate pay item.

Anchor Bolts

Anchor bolts shall be set in accordance with dimensions shown in the Plans so that when a guide sign is mounted on the foundation, the sign shall be properly oriented as indicated in the Plans. The anchor bolts shall be set by means of a metal template which shall be submitted for

approval before any foundation work is begun. The template shall hold the bolts plumb, and in proper position during the pour, and shall serve as a form for the top of the foundation. The cost of furnishing and installing anchor bolt assemblies and template shall be included in this item.

Conduits (Dynamic Guide Signs only)

Foundation conduits shall be large radius, prefabricated elbows of a quantity, size, and type as specified in the Plans. The elbow ends above ground shall extend to an elevation as specified in the Plans, shall be centered within the foundation, and shall be fitted with approved conduit bushings prior to the installation of cables. The cost of furnishing and installing conduit stub-ups complete with bushings shall be included in this item.

Grounding (Dynamic Guide Signs only)

The ground rod shall be installed so the acute angle between the rod and the vertical line is not greater than 45 degrees, or as directed by the Commissioner.

If subsurface conditions prohibit the installation of the ground rod to the required length, several ground rods providing a minimum cumulative in-soil-contact length of 8 ft. shall be bonded together into an array by a No. 6 AWG bare copper wire located 18 in. below finished grade, or the ground rod shall be buried in a trench at a minimum depth of 2 ½ ft.

D METHOD OF MEASUREMENT

CONCRETE FOUNDATIONS shall be measured for payment by the each (EACH) unit of measure and based on the actual number of CONCRETE FOUNDATIONS installed, as indicated in the Plans and as directed by the Commissioner.

E BASIS OF PAYMENT

The Department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.010	CONCRETE FOUNDATION, STATIC GUIDE SIGN	EACH
SPV.0060.011	CONCRETE FOUNDATION, DYNAMIC GUIDE SIGN	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work, included but not limited to; drilling of the foundation shaft, furnishing and placing concrete foundations within the limits of the foundation, furnishing and installing any necessary hardware (entering conduits, reinforcement bars, anchor bolts, grounding, etc.), swabbing and clearing the electrical conduits, and any necessary topsoil, seeding, and mulching of the disturbed areas as well as all associated labor is to be included in this price.

28. ScanNet XML Script License, Item SPV.0060.012

A DESCRIPTION

This item shall include all labor, materials, licensing, and equipment for installation and configuration of the SFTP LotXML program at parking facility locations as indicated in the Plans and as directed by the Commissioner. Work includes coordination with a qualified subcontractor to install and configure the SFTP LotXML program as shown on the Plans.

B MATERIALS

LotXML Counts Program by MN Technologies

C CONSTRUCTION

LotXML is a program developed to allow for the quick and easy retrieval of count information from the Scan Net software system. The count information is extracted in real time, formatted and outputted into an XML file that can be readily used by web developers or anyone in need of real time accurate count information. The program provides SFTP support. The program will require you to input your FTP server address for where you would like the file to be sent along with the appropriate credentials for the account. An interval will be selected (i.e. 1/5/10/30 minutes) for the XML file update to the remote location.

D METHOD OF MEASUREMENT

SCANNET XML SCRIPT LICENSE shall be measured for payment by the each (EACH) unit of measure and based on the actual number of SCANNET XML SCRIPT LICENSE installed and configured by qualified subcontractor, as indicated in the Plans and as directed by the Commissioner.

E BASIS OF PAYMENT

The City will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.012	SCANNET XML SCRIPT LICENSE	EACH

Payment is full compensation for furnishing labor, equipment, coordination, and all materials and incidentals necessary to complete the work, included but not limited to; coordination with qualified subcontractor to install and configure the SFTP LotXML program as well as all associated labor is to be included in this price.

29. Installing Conduit Into Existing Manhole, Item SPV.0060.13.

A DESCRIPTION

This special provision describes locating existing conduit system manholes and installing new conduit into those manholes at the locations shown on the plans. The contractor shall verify existing conduit manhole locations with the City of Milwaukee, and shall maintain any existing conductors, fibers, and conduit paths without interruption or damage. Repair and restoration of all disturbed areas resulting from the work shall be in accordance with the pertinent provisions of the standard specifications, and as hereinafter provided.

B MATERIALS

Conduit, as provided and paid for under other items in this contract. All materials shall conform to the pertinent provisions of the standard specifications unless otherwise noted.

C CONSTRUCTION

Carefully expose the outside of the existing structure without disturbing any existing conduits or cabling.

Drill the appropriate sized hole for the entering conduit at a location within the structure that will not disturb the existing cabling and will not hinder the installation of new cabling within the installed conduit, or remove existing abandoned conduit from the structure to allow for the installation of the new conduits as indicated on the plans.

Fill any void area between the drilled hole and conduit with an engineer-approved filling material to protect against conduit movement and entry of fill material into the structure.

Carefully tamp backfill into place. All disturbed areas shall be repaired and restored in kind.

D MEASUREMENT

The department will measure Installing Conduit Into Existing Item by the unit, acceptably installed. Up to six conduits entering a structure per entry point into the existing structure will be considered a single unit. Conduits in excess of six, or conduits entering at significantly different entry points into the existing manhole will constitute multiple units.

E PAYMENT

The City will pay for the measured quantity at the contract unit price under the following bid item:

<u>Item Number</u>	<u>Description</u>	<u>Unit</u>
SPV.0060.13	Installing Conduit Into Existing Manhole	Each

Payment is full compensation for drilling holes; removing abandoned conduit; furnishing and installing all materials, including bricks, and coarse aggregate; for excavation, bedding and backfilling, including any sand or other required materials; furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for disposal of surplus materials; for making inspections; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.