

Special Provisions

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SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for the Project Lakefront Gateway Local Roads Contract A1, Milwaukee County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2015 Edition, as published by the WisDOT, the City of Milwaukee Street Construction Specifications, dated July 1, 1992, and the following special provisions. In the event that there is a conflict between the State and City specifications; the more stringent of the two shall be used. The department considers only standard specifications, supplemental specifications and interim supplemental specifications issued directly from the department and the City as valid for this contract.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.

100-005 (20150630)

2. Scope of Work.

The work under this contract shall consist of abandoning manholes, underground communications conduit, manholes, vaults, traffic signal bases, concrete work and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

3. Prosecution and Progress.

Begin work within five (5) business days after the engineer issues a written notice to do so.

Maintain all pedestrian access to adjacent properties and businesses, throughout the duration of the project.

The contractor shall notify the following businesses and/or individuals seven (7) calendar days prior to the start of work on this project:

Tim Gasperetti, PE
Irgens
833 E. Michigan Street
Milwaukee, WI 53202
(414) 750-9822

Gina Jaeckel

US Bank
777 East Wisconsin Avenue, Suite 3175
Milwaukee, WI 53202
(414) 765-4615

The City shall be given a written copy of the required starting notification to the above businesses and/or individuals.

Construct and maintain temporary sidewalks and driveways at locations as specified by the engineer, or shown in the plans. Provide gravel access to crosswalks where necessary or as directed by the engineer. Base aggregate for construction of temporary sidewalks and driveways will be incidental to other contract items. Cost of labor and equipment necessary to place and remove temporary sidewalks and driveways shall be incidental to other contract items.

Do not store equipment, vehicles, or materials on East Michigan Street or adjacent streets beyond the project limits without specific approval of the engineer. All equipment, vehicles, and materials shall not impede with traffic along East Michigan Street or Lincoln Memorial Drive.

Secure drums, buckets, and other containers related to construction operations in a secure location to prevent vandalism, and unwanted dumping. If an abandoned container is discovered in the project site notify the WDNR at (800) 943-0003.

Plate all trenches within the roadway resulting from construction activities that are not fully backfilled prior to the end of each construction work day, or as directed by the engineer. Steel plates shall be suitable for carrying vehicles and shall be in addition to the barricades and traffic control devices required for lane closures and traffic control. Cost for steel plates shall be included in the unit bid price for the related underground bid items that are under construction at each location.

Construct this project as shown in the plans and as described below.

Work shall include all traffic control and work necessary to transition traffic to one lane in each direction along East Michigan Street from North Van Buren Street to Lincoln Memorial Drive and to close North Cass Street to through traffic.

Maintain southbound access along North Cass Street for the US Bank drive-thru during all business hours from 6:00 AM to 6:00 PM while North Cass Street is closed to through traffic including days when no construction activity is taking place and during inclement weather. Place and maintain a sign directing traffic to the US Bank drive-thru and note the maximum vertical clearance for entering the parking garage on this sign. Provide shop drawings for this sign to the engineer for approval prior to fabrication and placement. Costs for this work shall be included in the item Traffic Control and no additional payment will be made as part of this contract.

Assure that truck traffic not associated with this project is not allowed on North Cass Street.

Install all proposed conduit, make all necessary connections, and complete all restoration work located in the East Wisconsin Street and North Cass Street intersection and the East Michigan Street and Lincoln Memorial Drive intersection during one consecutive weekend that does not conflict with any planned events or other closures as approved by the City. Provide a schedule and sequence of operations for completing this work to the engineer for approval a minimum of five (5) business days prior to commencing work. Use traffic control measures conforming to the MUTCD and as approved by the engineer. East Wisconsin Street may be reduced to one lane in each direction from 6:00 PM on Friday evening to 6:00 AM on Monday morning in order to complete this work.

If the contractor fails to reopen East Wisconsin Street to two lanes of traffic in each direction prior to 6:01 AM on Monday morning, the City will assess the contractor \$500 in interim liquidated damages for each calendar day that East Wisconsin Street is not open to two lanes of traffic in each direction. An entire calendar day will be charged for any period of time within a calendar day that the contract work remains incomplete beyond 6:01 AM.

Construct and complete all city underground communication from the North Cass Street and East Wisconsin Street intersection to the East Michigan Street and Lincoln Memorial Drive intersection. Work shall progress continuously once excavation has commenced to minimize roadway closure time and subsequent disruptions to local businesses.

Construction will be taking place concurrently in front of 833 East Michigan Street and coordination will be necessary with this project.

Coordinate and schedule all construction activities with Irgens or their designee. Contact Timothy Gasperetti with Irgens or his designee at (414) 750-9822 at least five (5) business days prior to commencing work.

Complete construction operations along North Cass Street and East Michigan Street including the removal of traffic control devices to open two eastbound and one westbound lanes of through traffic along East Michigan Street and two through lanes of traffic along North Cass Street prior to 12:01 AM November 25, 2015. Do not reopen North Cass Street and East Michigan Street until completing the following work: complete all city communications conduit, cable connections, manholes, restoration work, and traffic signal work. Coordinate traffic signal work with the City of Milwaukee to ensure the traffic signals are functioning prior to reopening Cass Street.

Supplement standard spec 108.11 of the Wisconsin Department of Transportation Standard Specifications, 2015 Standard Specifications as follows:

If the contractor fails to complete the work necessary to reopen North Cass Street and open East Michigan Street to two eastbound and one westbound lanes of traffic and remove all traffic control devices used as part of this project prior to 12:01 AM on November 25,

2015, the City will assess the contractor \$1,000 in final liquated damages for each calendar day that these conditions are not met after 12:01 AM, November 25, 2015. An entire calendar day will be charged for any period of time within a calendar day that these conditions are not met beyond 12:01 AM.

Supplement standard spec 305.7 of the City of Milwaukee Street Construction Specifications, date 1992 as follows:

The amount of the per diem charge for inspection as referred to in part two (2) shall be \$250.00. The contractor should be aware that work on each project is governed by the project work days, and a per diem inspectional charge of \$250.00 per day will be assessed for each work day after the allotted number of work days. An inspectional charge, in addition to the project work day charge, will be assessed if the number of work days for the overall contract exceeds the amount allotted.

4. Protection and Adjustment of City Electrical Facilities.

The existing lighting facilities will remain in service during the project. The contractor is to use CAUTION when working around these facilities.

After all of the excavation work around the lighting facilities is complete, the Contractor is directed to contact either Mr. Dennis Miller with the City at (414) 286-5942 (Office) or (414) 708-4251 (cell); or Mr. George Berdine with the City at (414) 286-5943 (Office) or (414) 708-4245 (cell). If neither Mr. Miller nor Mr. Berdine are available please contact the electrical services dispatcher at (414) 286-5944 during working hours or at (414) 286-3015 after hours or on weekends to have any exposed facilities inspected and repaired if needed.

Any costs incurred by the City repairing damaged facilities will be incurred by the contractor.

If the contractor requests the removal or alterations of any lighting facilities for their convenience they will be responsible for all costs incurred by the City for fulfilling their request.

5. Traffic.

Perform this work in accordance to the requirements of standard spec 643, and as shown on the plans or as approved by the engineer, except as hereinafter modified.

Submit to the engineer for approval a detailed traffic control plan for any changes to the proposed traffic control detail as shown on the plans. Submit this plan ten days prior to the preconstruction conference.

Provide 24 hours-a-day availability of equipment and forces to expeditiously restore lights, signs, or other traffic control devices that are damaged or disturbed in accordance to standard spec 643.3.1. The cost to maintain and restore the above items shall be

considered incidental to the item Traffic Control as bid and no additional payment will be made.

Supply the name and telephone number of a local contact person for traffic control repair prior to or at the preconstruction conference.

Have available at all times sufficient experienced personnel to promptly install, remove and reinstall the required traffic control devices to reroute traffic during the construction operations.

Provide access for emergency response including fire, police, and rescue vehicles and equipment to all properties including residential, business, parking, and transit entrances at all times during the project.

Maintain access for local, business, and emergency traffic at all times.

On-street parking will not be allowed during construction. All parking restriction postings required to facilitate construction operations will be provided by the City of Milwaukee, Traffic and Lighting Design Section, as directed by the engineer. Contact Jim Brown with the City of Milwaukee at (414) 286-3276 three (3) business days prior to the start of construction activities.

All construction vehicles and equipment entering or leaving the traffic lanes shall yield to through traffic.

6. Utilities.

There are underground and overhead utility facilities located within the project limits. There are known utility adjustments required for this construction project. Coordinate construction activities with a call to Diggers hotline or a direct call to the utilities which have facilities in the area as required per state statutes. Use caution to ensure the integrity of underground facilities during all construction operations; protect utility facilities; and maintain code clearances from overhead facilities at all times.

Bidders are advised to contact each utility company listed in the plans, prior to preparing their bids, to obtain current information on the status of existing and any new utility relocation work.

Utilities will be performing utility work and adjustments within the limits and during the life of this project. Cooperate and coordinate activities with each respective utility.

Unless otherwise specified by the contract or authorized by the engineer, the existing utilities are to remain in service.

If a conflict with an abandoned utility is encountered, contact the appropriate utility owner/representative prior to disturbing any such abandoned facilities. Verify that utilities have been properly abandoned and do not necessitate any special requirements by the

utility. The contractor shall not assume that unmarked facilities have been abandoned. At no time is it acceptable to push, pull, cut, or drill an unmarked facility without explicit consent from the utility.

AT&T – Communications has underground and above ground facilities along East Michigan Street and North Cass Street. No conflicts are anticipated as part of this project.

City of Milwaukee – Underground Conduits and Communications work is included in this contract. The existing communications conduit beginning at the intersection of Wisconsin Avenue, extended south along North Cass Street, and continuing east along East Michigan Street will be abandoned and replaced as part of this contract work.

City of Milwaukee – Street Lighting is located along the east side of North Cass Street and the North side of East Michigan Street. No street lighting work is anticipated as part of this project.

City of Milwaukee – Sanitary Sewer runs south along North Cass Street and continues east along East Michigan Street. No conflicts are anticipated as part of this project

City of Milwaukee – Water has facilities that extend along North Cass Street from Wisconsin Avenue and continue east along East Michigan Street. Water main work will be completed prior to and during this contract. An existing 8-inch water main extending east along the south side of East Michigan Street from North Cass Street to approximately Sta. 105+30 will be abandoned. A new connection between the existing 12-inch water main and the existing 16-inch water main located on the north side of Michigan Street will be added at approximately Sta. 105+25 and a new lateral will be placed from this location and will extend to the 833 East Michigan building. Work is anticipated to begin on September 21, 2015 or September 28, 2015 and will last eight (8) working nights. Contact Patrick Pauly at (414) 286-8167 for additional information.

Level 3 Communications - Underground and overhead fiber optic cable is located along the project. Contact Mr. Brahim Gaddour at (414) 908-1027 for further information. No conflicts are anticipated as part of this project.

Midwest Fiber Networks – Underground and overhead fiber optic cable is located along the project. Contact Mr. Nik Ivancevic at (414) 226-2205 for additional information. No conflicts are anticipated as part of this project.

MMSD - Combined sewer runs south along North Cass Street and continues east along East Michigan Street. No sanitary sewer or combined sewer work is anticipated as part of this contract.

Time Warner Cable – Time Warner Cable has facilities along this project including overhead and underground fiber optic cable. Please contact Mr. Steve Cramer at (414) 277-4045 for additional information. No conflicts are anticipated as part of this project.

We Energies – Electric has underground facilities located along North Cass Street and East Michigan Street. We Energies has manholes located in the intersection of Michigan Street. No conflicts are anticipated as part of this project.

We Energies – Gas has facilities located along North Cass Street and East Michigan Street. A gas line will be relocated by We Energies in advance of this contract. Contact we energies gas prior to bidding to determine project schedule. No conflicts are anticipated as part of this contract.

City of Milwaukee Utilities – To obtain additional City of Milwaukee utility information please contact Mr. Anthony Kotecki with the City of Milwaukee at (414) 286-3886.

7. Other Contracts.

The following projects may be under construction concurrently with the work under this contract. Coordinate all construction activities including work zone traffic control, roadway and lane closures, and other work items as required with other contracts.

City of Milwaukee Water Main

The City of Milwaukee will be installing water main improvements along East Michigan Street. Additional projects may be under construction concurrently with the work items under this contract. Contact Patrick Pauly with Milwaukee Water Works at (414) 286-8167 for additional information and to coordinate work.

833 East Michigan Street Development

Irgens Development is currently constructing the 833 East Michigan Street building. Coordinate all work with Tim Gassperetti with Irgens at (414) 750-9822 or their designees as part of this project. A weekly meeting shall be scheduled with Irgens and its designated contractors to schedule construction operations throughout the duration of this project.

833 East Michigan Street Scape Project

The City of Milwaukee will have a streetscape project occurring concurrently with this project in front of the 833 east Michigan Street building. Coordinate all work with the City of Milwaukee and Tim Gassperetti with Irgens at (414) 750-9822 or their designees as part of this project. A weekly meeting shall be scheduled with Irgens and its designated contractors to schedule construction operations throughout the duration of this project.

Northwestern Mutual Development

Northwestern Mutual is currently constructing a new campus along East Wisconsin Street. Coordinate any lane closures at the North Cass Street and East Wisconsin Street intersection with Northwestern Mutual and there designated contractors.

Hoan Bridge Construction

WisDOT is currently reconstructing the Hoan Bridge as part of a roadway improvement project. As part of this WisDOT project East Michigan Street is currently designated as a detour route. Coordinate any road closures along East Michigan Street with the WisDOT construction Project Manager, Carolynn Gellings at (414) 750-3233.

8. Work by Others.

City of Milwaukee Street Lighting and Traffic Signals will install temporary overhead facilities and relocate permanent facilities, as needed, before and during roadway construction. City of Milwaukee forces will complete all above ground traffic signal work as part of the contract.

City of Milwaukee Sewers will relocate two catch basins along the south side of Michigan Street in front of the 833 East Michigan building. This work will be complete prior to or during construction. The Contractor shall notify John Schmidt at (414) 286-0467 with the City of Milwaukee at least five (5) business days prior to any proposed work adjacent to the existing and proposed storm sewer locations to coordinate and provide adequate notice for city forces to install the proposed structures.

9. Street Lighting Polymer Concrete Vault 13-Inch X 24-Inch x 18-Inch, Item SPV.0060.01; Street Lighting Polymer Concrete Vault 17-Inch X 30-Inch x 18-Inch, Item SPV.0060.02.

A Description

This special provision describes furnishing and installing Polymer Concrete Vaults in accordance with current City of Milwaukee methods.

B Materials

Polymer Concrete shall be manufactured from one of the general types and grades defined in polymers in concrete structural applications state of the art report, ACI 548.6R-96 for structural uses. Thermoplastics will not be acceptable.

Enclosure walls shall be made from pattern cut structural fiberglass cloths to assure uniform, pre-measurable fiberglass content on all areas. Chopper gun fiberglass construction is not acceptable.

Binding polymers used in the manufacture of the polymer concrete and the fiber reinforced polyester shall be of the same formulation or from formulations with demonstrated chemical compatibility to assure complete chemical bonding of all components. Fiber reinforced polyester wall sections must be cast integrally into and chemically bonded within the upper polymer concrete casting.

Testing

Meet ANSI/SCTE 77 2010 (**Tier 15 or greater**), ASTM C 857, & WUC 3.6 structural requirements.

Compressive Modulus of Elasticity (fiberglass reinforced polymer): 5.6×10^6 PSI tested in accordance with procedures outlined in ASTM D-695

Comprehensive Strength (fiberglass reinforced polymer): 24,300 PSI tested in accordance with ASTM D-695

Flexural Strength (fiberglass reinforced polymer): 18,700 PSI tested in accordance with ASTM D-790

Tensile Strength (fiberglass reinforced polymer): 12,100 PSI tested in accordance with procedures outlined in ASTM D-638

Tensile Modulus of Elasticity (fiberglass reinforced polymer): 8.6×10^5 PSI tested in accordance with procedures outlined in ASTM D-638

Splitting Tensile Strength (polymer concrete): Tested in accordance with procedures outlined in ASTM C-496

Accelerated Service: Tested in accordance with procedure E outlined in ASTM D-756

Water Absorption: Tested in accordance with ASTM D-570 outlined in sections 6.1 and 6.5

Impact Resistance (fiberglass reinforced polymer concrete): 72 foot pounds in accordance with ASTM D-2444 administered with a "C" tup

Skid Resistance: 0.60 coefficient of friction in accordance with ASTM C-1028

Flammability Test: Tested in accordance with ASTM D-635

Ultraviolet Exposure: Tested in accordance with ASTM test method G-53

Chemical Resistance

1. Sodium Chloride 5%
2. Sodium Carbonate 0.1 N
3. Hydrochloric Acid 0.2 N
4. Acetic Acid 5%
5. Sulfuric Acid 0.1N
6. Sodium Sulfate 0.1 N
7. Sodium Hydroxide 0.1N
8. Kerosene Oil per ASTM D-543
9. Transformer Oil per ASTM D-543

The street lighting vaults and covers shall be gray in color and shall be flared wall as indicated on the Drawings. Covers shall be provided with 2 stainless steel bolts. Each cover shall have the words "**STREET LIGHTING**" cast into its surface along the longest dimension. The words shall be permanently recessed into the surface.

C Construction

Install rectangular flared wall vaults according to current City of Milwaukee standards. **Vault shall be at minimum four (4) feet away from any proposed or existing street light pole.** Provisions for inserting conduit into any side or the bottom of the vault shall be included.

D Measurement

The Department will measure Street Lighting Polymer Concrete Vault as a unit for each specific vault installed that is acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.01	Street Lighting Polymer Conc. Vault 13-Inch x 24-Inch x 18-Inch	EACH
SPV.0060.02	Street Lighting Polymer Conc. Vault 17-Inch x 30-Inch x 18-Inch	EACH

Payment is full compensation for furnishing and installing street lighting vaults.

10. 4’ Diameter Manhole Type TES, Item SPV.0060.03.

A Description

The work under this item consists of a 4’-0” round manhole for the City of Milwaukee Underground Conduit Section at locations shown in the plans, in accordance with sections 301, 611 and 501 of the standard specifications, and as hereinafter provided.

B Materials

Concrete and steel reinforcement shall conform to ASTM specification: C478 (latest edition), except that the single cage circumferential reinforcement in all vertical walls shall consist of lines of #6 steel wire spaced 3” horizontally and lines of #10 steel wire spaced 8” vertically located in the center of the wall.

Two lifting inserts for 1-1/2” diameter lifting eyes shall be cast in the wall of the base and all other riser sections except the top cap section.

Up to four 7/8” diameter galvanized steel 1-11/16” pulling-in eyes shall be cast in the wall of the base section directly across from each duct entrance.

Four 5/8” diameter plastic threaded cable rack bolt inserts shall be cast in the wall of the riser section.

Supply a continuous circumferential Butyl Rubber gasket, to be laid on the wall joint of the base and riser section when manhole is being assembled at job site.

The number of pulling-in eyes and/or cable rack bolt inserts may vary. Additionally, the size, location, shape and number of duct entrances and/or knock-out area may vary. Unit price of manhole shall not vary for number of openings, pulling-in eyes and/or rack bolt inserts.

The City will supply a frame and lid for the manhole. Contractor shall contact Mr. Ricardo Lopez, Inventory Clerk at (414) 286-6123 prior to obtaining the frame and lid from the DPW Headquarters at 3850 N. 35th St. Contractor must have the "Casting Requisition Form" which shall be supplied by the City at the Preconstruction Meeting.

For any questions on materials, contact Ms. Karen Rogney at (414) 286-3243.

C Construction

4' Diameter Manholes Type TES shall be installed in accordance with subsection 611.3. Install the top of the roof deck at a standard depth of 18" below finished grade where possible. A minimum depth of 12" from finished grade to the top of the roof deck must be maintained.

D Measurement

The department will measure 4' Diameter Manhole Type TES by each individual manhole acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.03	4-FT Diameter Manhole Type TES	EACH

Payment is full compensation for all excavation work and disposal of material; for, furnishing and installing all materials, including bricks, and coarse aggregate, bedding and backfilling, concrete forms, concrete placement, appurtenances, and backfilling; and for all labor, tools, equipment and incidentals necessary to complete the work.

11. 5' Diameter Manhole Type TES, Item SPV.0060.04.

A Description

The work under this item consists of a 5'-0" round manhole for the City of Milwaukee Underground Conduit Section at locations shown in the plans, in accordance with sections 301, 611 and 501 of the standard specifications, and as hereinafter provided.

B Materials

Concrete and steel reinforcement shall conform to ASTM specification: C478 (latest edition), except that the two cage circumferential reinforcements in all vertical walls

shall consist of lines of #6 steel wire spaced 3” horizontally and lines of #10 steel wire spaced 8” vertically located in the center of the wall.

Two lifting inserts for 1-1/2” diameter lifting eyes shall be cast in the wall of the base and all other riser sections except the top cap section.

Up to four 7/8” diameter galvanized steel 1-11/16” pulling-in eyes shall be cast in the wall of the base section directly across from each duct entrance.

Four 5/8” diameter plastic threaded cable rack bolt inserts shall be cast in the wall of the riser section.

A continuous circumferential Butyl Rubber gasket shall be supplied, to be laid on the wall joint of the base and riser section when manhole is being assembled at job site.

The number of pulling-in eyes and/or cable rack bolt inserts may vary. Additionally, the size, location, shape and number of duct entrances and/or knock-out area may vary. Unit price of manhole shall not vary for number of openings, pulling-in eyes and/or rack bolt inserts.

The City will supply a frame and lid for the manhole. Contractor shall contact Mr. Ricardo Lopez, Inventory Clerk at (414) 286-6123 prior to obtaining the frame and lid from the DPW Headquarters at 3850 N. 35th St. Contractor must have the “Casting Requisition Form” which shall be supplied by the City at the Preconstruction Meeting.

For any questions on materials, contact Ms. Karen Rogney at (414) 286-3243.

C Construction

5’ Diameter Manholes Type TES shall be installed in accordance with subsection 611.3. Install the top of the roof deck at a standard depth of 18” below finished grade where possible. A minimum depth of 12” from finished grade to the top of the roof deck must be maintained.

D Measurement

The department will measure 5’ Diameter Manhole Type TES by each individual manhole acceptably completed.

E Payment

The department 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.0060.04	5’ Diameter Manhole Type TES	EACH

Payment is full compensation for all excavation work and disposal of material; for, furnishing and installing all materials, including bricks, and coarse aggregate, bedding and backfilling, concrete forms, concrete placement, appurtenances, and backfilling; and for all labor, tools, equipment and incidentals necessary to complete the work.

12. Installing Conduit Into Existing Manhole, Item SPV.0060.05

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 including restoration materials, 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 in a concrete structure or saw and remove full sections of block or bricks from the existing structure for the entering of 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. This work may include the removal of the 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 Manhole 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 department 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.0060.05	Installing Conduit Into Existing Manhole	Each

Payment is full compensation for drilling holes; removing blocks; removing bricks; 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.

13. Install Traffic Signal Base; Item SPV.0060.06.

A Description

Install concrete traffic signal bases furnished by the City of Milwaukee, for traffic signals as shown on the plans.

B Materials

Pre-cast concrete traffic signal bases will be furnished by the City of Milwaukee.

C Construction

Pick up pre-cast concrete traffic signal bases from the City of Milwaukee yard located at 1540 W. Canal Street. Contact traffic signal shop dispatch at (414) 286-3687 to coordinate pick up. Install concrete traffic signal bases in accordance with the plans. Plan changes must be approved by the City of Milwaukee Electric Services Supervisor or Traffic Engineer. The primary contacts are Mr. Al Nichols, Traffic Operations Supervisor (414) 286-3687-office, (414) 708-5148-mobile; or Mr. Joseph Blakeman, Traffic Control Engineer (414) 286-8070.

D Measurement

The department will measure Install Traffic Signal Base as each individual item of material acceptably completed.

E Payment

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

<u>Item Number</u>	<u>Description</u>	<u>Unit</u>
SPV.0060.06	Install Traffic Signal Base	Each

Payment is full compensation for installing all materials; for excavation, backfilling and disposal of surplus material; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

- 14. 14-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.01; 10-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.02; 8-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.03; 6-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.04; 4-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.05; 3-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.06; 2-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.07; 1-Duct Conduit, Cement Encased, 4-inch Rigid Nonmetallic Conduit DB-60, Item SPV.0090.08**

A. Description

This work consists of furnishing and installing cement encased multiple duct conduit packages below grade as shown on the plans and as hereinafter described. Work shall progress continuously once excavation has commenced to reduce roadway closure time.

B. Materials

1. Conduit. Furnish and install DB-60 polyvinyl chloride (PVC) conduit. Conduit will be accepted on the basis of a Manufacturer’s Certificate of Compliance and WISDOT field inspection upon delivery to a project.

PVC conduit and fittings shall conform to the requirements of Standard Specifications for Smooth-Wall Poly (Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation, ASTM Designation: F512 (latest edition).

2. Conduit Spacers. Furnish and install nonmetallic Snap-Loc 4 x 1 base spacer (part number S288NFN) and intermediate spacer (part number S289NFN) manufactured by Carlon or engineer (City of Milwaukee) approved equal.

3. Conduit Bed. Furnish and install a minimum 2” conduit bed of stone chips or crushed stone screenings conforming to the following:

3/8 Inch Crushed Stone Chips	
Sieve Sizes	% Passing by Weight
½”	100
3/8”	90-100
No. 8	0-15
No. 30	0-3

Crushed Stone Screenings	
Sieve Sizes	% Passing by Weight
½”	100

No. 4	75-100
No. 100	10-25

4. Concrete. The type of concrete mix to be used to encase the ducts will be:

Type I Cement	280 lbs
Fly Ash	100 lbs
Sharp Torpedo Sand	3100 lbs
Water	35 gals
Chryso Air 260 or approved equal	2.0 ozs
Chryso Plast 209 or approved equal	7.0 ozs
Air	5%

Mix the materials to provide an approximate 3 inch slump

5. Slurry Backfill. Aggregate slurry backfill consists of No. 1 concrete aggregate Class 'C' concrete mix with the cement deleted.

Fly Ash (Class C)	75 lbs.
Concrete Sand (Damp)	1830 lbs.
No. 1 Concrete Aggregate	1830 lbs.

Mix the materials with water to inundate the aggregate sufficiently to provide an approximate 3 inch slump. Deposit the mix in the trench directly from a concrete transit mix truck.

6. Pull Rope. Pull rope specifications will be:

- Flat construction (7/16" to 5/8" wide)
- 100% woven aramid fiber (may include tracer wire)
- 1500 lbs. Minimum pull strength prelubricated
- sequential footage markings for location

7. Surface Restoration. Four (4) inches of topsoil, seed, and mulch shall be used to restore areas where no hard surfaces were removed. All surface restoration shall conform to the requirements for the above bid items as defined in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2015 Edition.

For any questions on materials, contact Ms. Karen Rogney at (414) 286-3243.

C. Construction Method

1. Excavation. The excavation shall have the minimum or maximum dimensions shown on the plans and as follows:

No. of Ducts Wide	Minimum	Maximum
1	8 1/2"	11"
2	14 1/8"	16 5/8"
3	19 3/4"	22 1/4"
4	25 3/8"	27 7/8"
5	31"	33 1/2"
6	36 5/8"	39 1/8"
7	42 1/4"	44 3/4"
8	47 7/8"	50 3/8"

These minimum and maximum trench widths apply to standard 4 inch PVC electrical duct only. When required, the excavation may be widened for the handling and placing of materials. The cost of additional surface restoration shall be included in the unit bid for the work and will not be paid separately.

Sheath and brace open-cut trenches as required by code and as necessary to maintain safety. The cost of furnishing, placing and removing of sheathing and bracing shall be included in the unit bid for the work.

The dimensions of the excavation will be governed by the number, configuration and the grade (cover) to which the conduit is to be installed as shown on the plan. The walls of the excavation shall be clean and true.

Prior to excavating trenches, locate and mark the trench and place full depth sawcuts along each side. Saw cuts shall be paid for under a separate bid item.

Prior to excavating trenches, expose the existing manhole and conduit lines. The object of this is to permit adjustments in line and grade to avoid special construction methods. Protect the exposed manhole and conduit from damage.

Lay the conduit at a depth so that sufficient protection from damage is provided. Allowable covers shall be as follows:

The standard cover for mainline conduit is 39 inches and the minimum cover acceptable is 28 inches.

Maintain the standard cover wherever possible and any deviation less than the minimum cover requires the approval of the engineer.

Grade the trench to have a minimum pitch of three inches per 100 feet. When an obstruction is encountered in the trench and it is necessary to excavate a deeper trench than

would otherwise be required, in order to obtain drainage, refer the matter to the engineer to determine whether the extra excavation should be made.

In grading a trench for mainline conduit, there are three general practices for direction of pitch.

(a) When grading a trench in a street with a level grade, the high point of the trench bottom should ordinarily be centered between manholes and pitched downward equally toward each manhole.

(b) Where the street slopes in one direction, locate the high point of the trench bottom approximately 30 feet from the end wall of the higher manhole and grade toward both manholes.

(c) Where a steep grade is encountered, grade the trench at the minimum pitch from the end wall of the higher manhole to a point 20 feet plus or minus toward the lower manhole. From this point, follow the street grade at the standard cover to a point 20 feet plus or minimum away from the end wall of the lower manhole. From this point, the remainder of the section shall be laid at the normal pitch.

After the rough excavation is completed, prepare the bottom of the trench to receive the conduit. Bring the duct bed to the final grade by grading uniformly from the high point to the low or drainage points. Use stone chips or crushed stone screenings to grade the trench. The duct bed shall be a minimum of 2" in depth.

2. Placing of Duct

Proceed with placing the ducts as soon as the duct bed has been completed. Inspect all ducts before placing to see that the bores are clean and free from mud, sand, etc. Use only ducts with a smooth bore, free from burrs, rough projections etc. Smooth off burrs or other rough areas likely to damage cable are found in the duct by rasping or scraping.

Place the duct on base spacers with the ends staggered so no two couplings are adjacent. This may be accomplished by the use of the short lengths in stock or cutting back full length sections to the desired lengths. If cut pieces are used, place the cut end at the manhole. Locate the base spacers within 2 feet of the end of each duct and one base spacer located in the middle of the duct.

Use full length pieces for the balance of the conduit line.

Formations of two ducts or more in height are to be carried forward in full formation, that is, as each tier of twenty foot lengths is laid, the next higher tier of ducts shall then be placed on the intermediate spacers. Place these intermediate spacers on top of the base

spacers located within two feet from each duct end and one in the middle of each duct. Place the intermediate spacers and ducts for the remaining tiers. Glue each length into the adjoining coupling. A twist and push on the duct being placed will suffice for a water tight joint. Exercise caution in the driving operation, so that neither the coupling nor the duct will be split or damaged in any way. After the full formation has been completed, place wood trench and duct bracing on the ducts to prevent shifting or floating while the concrete envelope is being placed and during driving operation.

This procedure shall be followed with succeeding lengths, providing spacers at the proper intervals, until sufficient trench footage of completed formation has been placed and is ready to receive concrete encasement.

The terminating point for mainline conduit will be the inside manhole wall. Install a standard end bell fitting flush with the wall on all duct access points.

Install a #10 copper tracer wire along and above the centerline of the duct for encasement in the concrete. The wire shall be 4 feet longer than the run of conduit and be at least 2 feet long at each access point.

Install a pull rope in each run of conduit, as laid. The rope shall be 4 feet longer than the run of conduit and shall be doubled back at least 2 feet at each raceway access point. Anchor the pull rope at each access point in a manner acceptable to the engineer.

3. Concreting. Begin concreting after sufficient conduit has been laid and the trench and duct have been inspected. The minimum concrete encasement of the ducts is three (3) inches on the top, two (2) inches on the sides, and three (3) inches on the bottom. After placing, puddle the concrete with a splicing bar or similar tool so that complete duct encasement is accomplished. Remove wood braces used to keep the conduit from floating before the concrete sets completely and the resultant encasement voids filled with concrete.

Allow the concrete encasement to set for a minimum of 6 hours before backfilling is commenced.

4. Slurry Backfill. Commence backfilling of the conduit immediately after the duct has been inspected, approved and has set to withstand the load.

Use an aggregate slurry as specified to backfill all concrete encased conduit. Slurry backfill the trench to the proposed or existing subgrade. Deposit the in the trench directly from a concrete transit mix truck.

5. Surface Restoration. Commence restoration immediately after the backfill has been placed to minimize work zone closures and disruptions to traffic. The cost of all topsoil, seed, and mulch used for restoration shall be included in the unit bid item for this work.

D. Measurement

The item 14-Duct, 10-Duct, 8-Duct, 6-Duct, 4-Duct, 3-Duct, 2-Duct and 1-Duct Cement Encased, 4-Inch Rigid Non-Metallic Conduit DB-60, furnished and installed at the locations on the plans, will be measured by the linear foot acceptably installed. The measured quantity will equal the linear feet of encased duct, based on the distance along the centerline of duct between ends of conduit. City of Milwaukee shall have final acceptance.

E. Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.01	14-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.02	10-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.03	8-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.04	6-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.05	4-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.06	3-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.07	2-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF
SPV.0090.08	1-Duct Conduit Cement Encased 4-Inch Conduit DB-60	LF

Payment is full compensation for furnishing the conduit, conduit bodies, conduit fittings, conduit spacers, end caps and trace wire; for excavating, bedding material, encasement and backfilling including concrete, stone, aggregate slurry, bracing, or other related materials;; for disposing of surplus materials; and for making inspections, for installing the conduit, and for furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

15. Survey Project, Item SPV.0105.01.

A Description

Perform this work according to standard spec 105.6 and standard spec 650 and as hereinafter provided.

Standard spec 105.6 and 650 are modified to define the requirements for construction staking for this contract.

Replace standard spec 105.6.2 with the following:

The City will not perform any construction staking for this contract. Survey control information may be obtained from the City of Milwaukee. The contractor shall perform all survey required to layout and construct the work under this contract, subject to the engineer’s approval.

The survey includes establishing horizontal and vertical position for all aspects of construction including but not limited to subgrade, base aggregate, concrete pavement, curb, gutter, curb and gutter, driveways, sidewalk, conduit, manholes, pull boxes and vaults, electrical installations, supplemental control, traffic control, pavement marking, etc.

The City may choose to perform quality assurance survey during construction. The quality assurance survey does not relieve the contractor of the responsibility for furnishing all survey work required under this contract.

Delete standard spec 650.1 of the standard specifications.

B Materials (Vacant)

C Construction

C.1.1 Verifications of Conditions

Survey required under this item shall be in accordance to all pertinent requirements of section 650 of the standard specifications and shall include all other miscellaneous survey required to layout and construct all work under this contract.

D Measurement

The department will measure Survey Project, as a single lump sum unit for all work associated with survey, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.01	Survey Project	LS

Payment is full compensation for performing all survey work required to layout and construct all work under this contact and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

16. Concrete Pavement 8-Inch Colored Red, Item SPV.0165.01.

A Description

This special provision describes replacing existing decorative colored concrete pavement located in the intersection of East Wisconsin Street in accordance to the lines, dimension, elevations and details as shown on the plans and provided in the contract.

B Materials

B.1 Concrete

Conform to section 501 of standard specification and as follows:

Integrally color the concrete using non-fading pigments conforming to ASTM C979.

Contact the City of Milwaukee for color and stamp information in order to match the existing pavement.

Add integral concrete coloring according to manufacturer's instructions. Provide to the engineer a copy of the manufacturer instructions before producing material for incorporation into the work.

Maintain mix characteristics for all colored concrete requiring a matching finish. Use the same source, brand, type, and color of Portland cement, supplementary cementitious materials, aggregates, and admixtures for colored concrete throughout the project. Use constant cement content, supplementary cementitious material content and water/cement materials ratio in the concrete mix to maintain consistent color.

B.2 Concrete Curing

Supply a liquid membrane-forming clear curing compound conforming to ASTM C1315, type 1.

B.3 Admixtures

Furnish admixtures designed for use with and compatible with colored concrete pigments. Do not use calcium chloride or other admixtures containing chlorides.

B.4 Mix Approval

Obtain engineer approval for colored concrete mixes before placing colored concrete. The engineer will base approval either on a successful performance history or on trial batches. Upon engineer approval, the submitted sample panel or the test slab will be the visual quality standard for finished work under the contract.

B.4.1 Performance History

Provide documentation from a previously completed site development project that incorporated colored concrete sidewalk. Provide the following to the engineer for review and approval:

1. Project Info: Project ID, Client, Location, Contact Information
2. Mix proportions: quantities per cubic yard expressed as SSD weights and net water, water to cementitious material ratio, air content, and 28-day or earlier compressive strength.
3. Materials: type, brand, and source.
4. Sample panel: Provide a finished colored concrete sample from the previous project having minimum dimensions of 2-foot by 2-foot by 1.5-inch.

C Construction

Construct colored concrete in accordance to section 602 of the standard specifications and conforming to the contract specifications under the associate bid items and provided herein.

C.1 Preparing the Foundation

Remove all materials, foreign debris, and sediment from areas that decorative concrete will be in contact with. Clean all corners and edges of adjacent full depth concrete pavement which colored concrete will be poured against.

Cover or otherwise protect adjacent concrete work, if applicable, from discoloration and spillage while placing and curing colored concrete. Remove and replace discolored concrete as directed by the engineer.

Remove test slabs not permanently incorporated into the work and restore the site after the engineer determines the test slab is no longer needed.

C.2 Forms

Furnish and use wood or metal forms of sufficient strength to resist springing, tipping, or other displacement during depositing and consolidating the concrete. If using wood forms, provide surfaced planks, at least 2-inch nominal thickness stock except for sharply curved sections. If using metal forms, insure they are the engineer-approved sections with a flat surface on top. Use forms as deep as the depth of the sidewalk. Securely stake, brace, and hold the forms firmly to the required line. Make forms tight to prevent mortar leakage. Clean and oil before placing concrete against them. Secure curved forms to previously placed concrete base using drilled anchors or an acceptable method as approved by the engineer.

C.3 Placement

Place colored concrete in accordance to section 602 of the standard specifications and conforming to the contract specifications under the associate bid items and provided herein.

The engineer will check and approve the foundation, forms, and reinforcement, if required, before placing the concrete.

Produce consistent colored concrete mixes. Once colored concrete placement has started, the engineer will not allow variations in the amounts, types, or source of materials with the exception of minor adjustments of water and air-entraining agent as necessary. Other changes require the contractor to repeat the mix approval process.

Colored concrete mixes for matching colored items shall be consistent. If the contractor chooses to provide the mixes with high early strength concrete, then all colored concrete for matching colored items shall be provided as high early strength concrete.

Schedule colored concrete placement to minimize exposure to rapid drying conditions, wind and full sun, before curing materials are applied. Do not place colored concrete if rain, snow, or freezing temperature is forecast within 24-hours. Do not place colored concrete on surfaces unless the ambient temperature of that surface is at least ten degrees above freezing temperatures. Utilize blankets, tents, heaters, and other approved methods to prevent all surfaces below the colored concrete from freezing.

Perform finishing operations consistently to avoid discoloration in the finished colored concrete. Do not begin finishing until bleed water has left the surface. Addition of surface water for aiding in finishing (often referred to as blessing the concrete) is not allowed. If water is added to the surface of the colored concrete once concrete is in place, the engineer will reject the colored concrete. During final finishing and texturing, apply all strokes in the same direction.

Cure colored concrete in accordance to section 415.3.12 of the standard specifications, using the impervious coating or impervious sheeting method. Protect colored concrete from premature drying and excessive cold or low temperatures by prompt application of curing material. Do not allow plastic sheeting to come in contact with colored concrete.

Protect the colored concrete from damage. Do not permit construction traffic or material storage on the colored concrete. Exclude other foot traffic from colored concrete for at least 24-hours after placement.

D Measurement

The department will measure Concrete Pavement 8-Inch Colored Red in area by the square foot acceptably completed, measured as the vertical area within the pay limits the contract plans show.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.01	Concrete Pavement 8-Inch Colored Red	SF

Payment is full compensation for providing all material, including concrete, pigment, reinforcement, and expansion joints; for preparation of foundation; for placing, stamping, finishing, and placing joints, protecting, and curing; for heating, covering the subgrade, tenting, or blankets required to maintain the required placement temperature; for maintaining appropriate temperatures throughout the project; and restoring the work site including the area of curb ramp.