HIGHWAY WORK PROPOSAL

Wisconsin Department of Transportation
DT1502 01/2020 s.66.0901(7) Wis. Stats

Proposal Number: 012

COUNTY	STATE PROJECT	FEDERAL	PROJECT DESCRIPTION	HIGHWAY
Milwaukee	2225-15-70	N/A	C Milwaukee, N Lake Dr; Newberry Blvd to Edgewood Ave	STH 032

This proposal, submitted by the undersigned bidder to the Wisconsin Department of Transportation, is in accordance with the advertised request for proposals. The bidder is to furnish and deliver all materials, and to perform all work for the improvement of the designated project in the time specified, in accordance with the appended Proposal Requirements and Conditions.

Proposal Guaranty Required: $100,000.00 Payable to: Wisconsin Department of Transportation	Attach Proposal Guaranty on back of this PAGE.
Bid Submittal Date: June 11, 2024 Time (Local Time): 11:00 am	Firm Name, Address, City, State, Zip Code **SAMPLE** **NOT FOR BIDDING PURPOSES**
Contract Completion Time July 15, 2025	
Assigned Disadvantaged Business Enterprise Goal 0%	This contract is exempt from federal oversight.

This certifies that the undersigned bidder, duly sworn, is an authorized representative of the firm named above; that the bidder has examined and carefully prepared the bid from the plans, Highway Work Proposal, and all addenda, and has checked the same in detail before submitting this proposal or bid; and that the bidder or agents, officer, or employees have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal bid.

Do not sign, notarize, or submit this Highway Work Proposal when submitting an electronic bid on the Internet.

Subscribed and sworn to before me this date _____

(Signature, Notary Public, State of Wisconsin)	(Bidder Signature)
(Print or Type Name, Notary Public, State Wisconsin)	(Print or Type Bidder Name)
(Date Commission Expires)	(Bidder Title)

Notary Seal

For Department Use Only

Type of Work:
Excavation, Base, HMA Pavement, Concrete Pavement, Curb and Gutter Storm Sewer, Pavement Marking, Signs, Plantings, Street Lights, Traffic Signals, Sidewalk.

Notice of Award Dated	Date Guaranty Returned

PLEASE ATTACH
PROPOSAL GUARANTY HERE

PROPOSAL REQUIREMENTS AND CONDITIONS

The bidder, signing and submitting this proposal, agrees and declares as a condition thereof, to be bound by the following conditions and requirements.

If the bidder has a corporate relationship with the proposal design engineering company, the bidder declares that it did not obtain any facts, data, or other information related to this proposal from the design engineering company that was not available to all bidders.

The bidder declares that they have carefully examined the site of, and the proposal, plans, specifications and contract forms for the work contemplated, and it is assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of the specifications, special provisions and contract. It is mutually agreed that submission of a proposal shall be considered conclusive evidence that the bidder has made such examination.

The bidder submits herewith a proposal guaranty in proper form and amount payable to the party as designated in the advertisement inviting proposals, to be retained by and become the property of the owner of the work in the event the undersigned shall fail to execute the contract and contract bond and return the same to the office of the engineer within fourteen (14) days after having been notified in writing to do so; otherwise to be returned.

The bidder declares that they understand that the estimate of quantities in the attached schedule is approximate only and that the attached quantities may be greater or less in accordance with the specifications.

The bidder agrees to perform the said work, for and in consideration of the payment of the amount becoming due on account of work performed, according to the unit prices bid in the following schedule, and to accept such amounts in full payment of said work.

The bidder declares that all of the said work will be performed at their own proper cost and expense, that they will furnish all necessary materials, labor, tools, machinery, apparatus, and other means of construction in the manner provided in the applicable specifications and the approved plans for the work together with all standard and special designs that may be designed on such plans, and the special provisions in the contract of which this proposal will become a part, if and when accepted. The bidder further agrees that the applicable specifications and all plans and working drawings are made a part hereof, as fully and completely as if attached hereto.

The bidder, if awarded the contract, agrees to begin the work not later than ten (10) days after the date of written notification from the engineer to do so, unless otherwise stipulated in the special provisions.

The bidder declares that if they are awarded the contract, they will execute the contract agreement and begin and complete the work within the time named herein, and they will file a good and sufficient surety bond for the amount of the contract for performance and also for the full amount of the contract for payment.

The bidder, if awarded the contract, shall pay all claims as required by Section 779.14, Statutes of Wisconsin, and shall be subject to and discharge all liabilities for injuries pursuant to Chapter 102 of the Statutes of Wisconsin, and all acts amendatory thereto. They shall further be responsible for any damages to property or injury to persons occurring through their own negligence or that of their employees or agents, incident to the performance of work under this contract, pursuant to the Standard Specifications for Road and Bridge Construction applicable to this contract.

In connection with the performance of work under this contract, the contractor agrees to comply with all applicable state and federal statutes relating to non-discrimination in employment. No otherwise qualified person shall be excluded from employment or otherwise be subject to discrimination in employment in any manner on the basis of age, race, religion, color, gender, national origin or ancestry, disability, arrest or conviction record (in keeping with s.111.32), sexual orientation, marital status, membership in the military reserve, honesty testing, genetic testing, and outside use of lawful products. This provision shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The contractor further agrees to ensure equal opportunity in employment to all applicants and employees and to take affirmative action to attain a representative workforce.

The contractor agrees to post notices and posters setting forth the provisions of the nondiscrimination clause, in a conspicuous and easily accessible place, available for employees and applicants for employment.

If a state public official (section 19.42, Stats.) or an organization in which a state public official holds at least a 10% interest is a party to this agreement, this contract is voidable by the state unless appropriate disclosure is made to the State of Wisconsin Ethics Board.

BID PREPARATION

Preparing the Proposal Schedule of Items

A. General

(1) Obtain bidding proposals as specified in section 102 of the standard specifications prior to 11:45 AM of the last business day preceding the letting. Submit bidding proposals using one of the following methods:

1. Electronic bid on the internet.
2. Electronic bid on a printout with accompanying diskette or CD ROM.
3. Paper bid under a waiver of the electronic submittal requirements.

(2) Bids submitted on a printout with accompanying diskette or CD ROM or paper bids submitted under a waiver of the electronic submittal requirements govern over bids submitted on the internet.

(3) The department will provide bidding information through the department's web site at:

https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

The contractor is responsible for reviewing this web site for general notices as well as information regarding proposals in each letting. The department will also post special notices of all addenda to each proposal through this web site no later than 4:00 PM local time on the Thursday before the letting. Check the department's web site after 5:00 PM local time on the Thursday before the letting to ensure all addenda have been accounted for before preparing the bid. When bidding using methods 1 and 2 above, check the Bid Express™ on-line bidding exchange at http://www.bidx.com/ after 5:00 PM local time on the Thursday before the letting to ensure that the latest schedule of items Expedite file (*.ebs or *.00x) is used to submit the final bid.

(4) Interested parties can subscribe to the Bid Express™ on-line bidding exchange by following the instructions provided at the www.bidx.com web site or by contacting:

Info Tech Inc.
5700 SW 34th Street, Suite 1235
Gainesville, FL 32608-5371
email: mailto:customer.support@bidx.com

(5) The department will address equipment and process failures, if the bidder can demonstrate that those failures were beyond their control.

(6) Contractors are responsible for checking on the issuance of addenda and for obtaining the addenda. Notice of issuance of addenda is posted on the department's web site at:

https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

or by calling the department at (608) 266-1631. Addenda can ONLY be obtained from the department's web site listed above or by picking up the addenda at the Bureau of Highway Construction, 4th floor, 4822 Madison Yards Way, Madison, WI, during regular business hours.

(7) Addenda posted after 5:00 PM on the Thursday before the letting will be emailed to the eligible bidders for that proposal. All eligible bidders shall acknowledge receipt of the addenda whether they are bidding on the proposal or not. Not acknowledging receipt may jeopardize the awarding of the project.

B. Submitting Electronic Bids

B.1 On the Internet

(1) Do the following before submitting the bid:

4. Have a properly executed annual bid bond on file with the department.
5. Have a digital ID on file with and enabled by Info Tech Inc. Using this digital ID will constitute the bidder's signature for proper execution of the bidding proposal.

(2) In lieu of preparing, delivering, and submitting the proposal as specified in 102.6 and 102.9 of the standard specifications, submit the proposal on the internet as follows:

1. Download the latest schedule of items reflecting all addenda from the Bid Express™ web site.
2. Use Expedite™ software to enter a unit price for every item in the schedule of items.
3. Submit the bid according to the requirements of Expedite™ software and the Bid Express™ web site. Do not submit a bid on a printout with accompanying diskette or CD ROM or a paper bid. If the bidder does submit a bid on a printout with accompanying diskette or a paper bid in addition to the internet submittal, the department will disregard the internet bid
4. Submit the bid before the hour and date the Notice to Contractors designates
5. Do not sign, notarize, and return the bidding proposal described in 102.2 of the standard specifications.

(3) The department will not consider the bid accepted until the hour and date the Notice to Contractors designates.

B.2 On a Printout with Accompanying Diskette or CD ROM

(1) Download the latest schedule of items from the Wisconsin pages of the Bid Express web site reflecting the latest addenda posted on the department's web site at:

https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

Use Expedite™ software to prepare and print the schedule of items. Provide a valid amount for all price fields. Follow instructions and review the help screens provided on the Bid Express™ web site to assure that the schedule of items is prepared properly.

(2) Staple an 8 1/2 by 11 inch printout of the Expedite□□ generated schedule of items to the other proposal documents submitted to the department as a part of the bidder's sealed bid. As a separate submittal, not in the sealed bid envelop but due at the same time and place as the sealed bid, also provide the Expedite™ generated schedule of items on a 3 1/2 inch computer diskette or CD ROM. Label each diskette or CD ROM with the bidder's name, the 4 character department-assigned bidder identification code from the top of the bidding proposal, and a list of the proposal numbers included on that diskette or CD ROM as indicated in the following example:

Bidder Name
BN00
Proposals: 1, 12, 14, & 22

(3) If bidding on more than one proposal in the letting, the bidder may include all proposals for that letting on one diskette or CD ROM. Include only submitted proposals with no incomplete or other files on the diskette or CD ROM.

(4) The bidder-submitted printout of the Expedite□□ generated schedule of items is the governing contract document and must conform to the requirements of section 102 of the standard specifications. If a printout needs to be altered, cross out the printed information with ink or typewriter and enter the new information and initial it in ink. If there is a discrepancy between the printout and the diskette or CD ROM, the department will analyze the bid using the printout information.

(5) In addition to the reasons specified in section 102 of the standard specifications, proposals are irregular and the department may reject them for one or more of the following:

1. The check code printed on the bottom of the printout of the Expedite™ generated schedule of items is not the same on each page.
2. The check code printed on the printout of the Expedite™ generated schedule of items is not the same as the check code for that proposal provided on the diskette or CD ROM.
3. The diskette or CD ROM is not submitted at the time and place the department designates.

B Waiver of Electronic Submittal

(1) The bidder may request a waiver of the electronic submittal requirements. Submit a written request for a waiver in lieu of bids submitted on the internet or on a printout with accompanying diskette or CD ROM. Use the waiver that was included with the paper bid document sent to the bidder or type up a waiver on the bidder's letterhead. The department will waive the electronic submittal requirements for a bidding entity (individual, partnership, joint venture, corporation, or limited liability company) for up to 4 individual proposals in a calendar year. The department may allow additional waivers for equipment malfunctions.

(2) Submit a schedule of items on paper conforming to section 102 of the standard specifications. The department charges the bidder a $75 administrative fee per proposal, payable at the time and place the department designates for receiving bids, to cover the costs of data entry. The department will accept a check or money order payable to: "Wisconsin, Dept. of Transportation."

(3) In addition to the reasons specified in section 102 of the standard specifications, proposals are irregular and the department may reject them for one or more of the following:

1. The bidder fails to provide the written request for waiver of the electronic submittal requirements.
2. The bidder fails to pay the $75 administrative fee before the time the department designates for the opening of bids unless the bidder requests on the waiver that they be billed for the $75.
3. The bidder exceeds 4 waivers of electronic submittal requirements within a calendar year.

(4) In addition to the reasons specified in section 102 of the standard specifications, the department may refuse to issue bidding proposals for future contracts to a bidding entity that owes the department administrative fees for a waiver of electronic submittal requirements.

PROPOSAL BID BOND

Wisconsin Department of Transportation

DT1303 1/2006

Proposal Number	Project Number	Letting Date
Name of Principal		
Name of Surety	State in Which Surety is Organized	

We, the above-named Principal and the above-named Surety, are held and firmly bound unto the State of Wisconsin in the sum equal to the Proposal Guaranty for the total bid submitted for the payment to be made; we jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns. The condition of this obligation is that the Principal has submitted a bid proposal to the State of Wisconsin acting through the Department of Transportation for the improvement designated by the Proposal Number and Letting Date indicated above.

If the Principal is awarded the contract and, within the time and manner required by law after the prescribed forms are presented for signature, enters into a written contract in accordance with the bid, and files the bond with the Department of Transportation to guarantee faithful performance and payment for labor and materials, as required by law, or if the Department of Transportation shall reject all bids for the work described, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect. In the event of failure of the Principal to enter into the contract or give the specified bond, the Principal shall pay to the Department of Transportation **within 10 business days of demand** a total equal to the Proposal Guaranty as liquidated damages; the liability of the Surety continues for the full amount of the obligation as stated until the obligation is paid in full.

The Surety, for value received, agrees that the obligations of it and its bond shall not be impaired or affected by any extension of time within which the Department of Transportation may accept the bid; and the Surety does waive notice of any such extension.

IN WITNESS, the Principal and Surety have agreed and have signed by their proper officers and have caused their corporate seals to be affixed this date: **(DATE MUST BE ENTERED)**

PRINCIPAL

(Company Name) **(Affix Corporate Seal)**

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

(Name of Surety) **(Affix Seal)**

(Signature of Attorney-in-Fact)

NOTARY FOR PRINCIPAL

(Date)

State of Wisconsin)
) ss.
_____ County)

On the above date, this instrument was acknowledged before me by the named person(s).

(Signature, Notary Public, State of Wisconsin)

(Print or Type Name, Notary Public, State of Wisconsin)

(Date Commission Expires)

Notary Seal

NOTARY FOR SURETY

(Date)

State of Wisconsin)
) ss.
_____ County)

On the above date, this instrument was acknowledged before me by the named person(s).

(Signature, Notary Public, State of Wisconsin)

(Print or Type Name, Notary Public, State of Wisconsin)

(Date Commission Expires)

Notary Seal

IMPORTANT: A certified copy of Power of Attorney of the signatory agent must be attached to the bid bond.

CERTIFICATE OF ANNUAL BID BOND

Wisconsin Department of Transportation

DT1305 8/2003

Time Period Valid (From/To)
Name of Surety
Name of Contractor
Certificate Holder Wisconsin Department of Transportation

This is to certify that an annual bid bond issued by the above-named Surety is currently on file with the Wisconsin Department of Transportation.

This certificate is issued as a matter of information and conveys no rights upon the certificate holder and does not amend, extend or alter the coverage of the annual bid bond.

Cancellation: Should the above policy be cancelled before the expiration date, the issuing surety will give thirty (30) days written notice to the certificate holder indicated above.

(Signature of Authorized Contractor Representative) (Date)

Effective with March 2010 Letting

LIST OF SUBCONTRACTORS

Section 66.0901(7), Wisconsin Statutes, provides that as a part of the proposal, the bidder also shall submit a list of the subcontractors the bidder proposes to contract with and the class of work to be performed by each. In order to qualify for inclusion in the bidder's list a subcontractor shall first submit a bid in writing, to the general contractor at least 48 hours prior to the time of the bid closing. The list may not be added to or altered without the written consent of the municipality. A proposal of a bidder is not invalid if any subcontractor and the class of work to be performed by the subcontractor has been omitted from a proposal; the omission shall be considered inadvertent or the bidder will perform the work personally.

No subcontract, whether listed herein or later proposed, may be entered into without the written consent of the Engineer as provided in Subsection 108.1 of the Standard Specifications.

Name of Subcontractor	Class of Work	Estimated Value

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - PRIMARY COVERED TRANSACTIONS

Instructions for Certification

1. By signing and submitting this proposal, the prospective contractor is providing the certification set out below.

2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective contractor shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective contractor to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

3. The certification in this clause is a material representation of fact upon which reliance was placed when the department determined to enter into this transaction. If it is later determined that the contractor knowingly rendered an erroneous certification in addition to other remedies available to the Federal Government the department may terminate this transaction for cause or default.

4. The prospective contractor shall provide immediate written notice to the department to whom this proposal is submitted if at any time the prospective contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the department to which this proposal is being submitted for assistance in obtaining a copy of those regulations.

6. The prospective contractor agrees by submitting this proposal that, should this contract be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department entering into this transaction.

7. The prospective contractor further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," which is included as an addendum to PR- 1273 - "Required Contract Provisions Federal Aid Construction Contracts," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

8. The contractor may rely upon a certification of a prospective subcontractor/materials supplier that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A contractor may decide the method and frequency by which it determines the eligibility of its principals. Each contractor may, but is not required to, check the Disapproval List (telephone # 608/266/1631).

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph 6 of these instructions, if a contractor in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

1. The prospective contractor certifies to the best of its knowledge and belief, that it and its principals:

   (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

   (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

   (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offense enumerated in paragraph (1)(b) of this certification; and

   (d) Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective contractor is unable to certify to any of the statements in this certification, such prospective contractor shall attach an explanation to this proposal.

Special Provisions

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SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project 2225-15-70, C Milwaukee, N Lake Drive, Newberry Blvd to Edgewood Ave, STH 32, 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, 2024 Edition, as published by the department, and these special provisions.

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 (20240105)

2. Scope of Work.

The work under this contract shall consist of pavement removal, grading, concrete pavement, concrete curb and gutter, precast bike lane curb, sidewalk, storm inlets and lateral connections, curb extensions and pedestrian ramps, planting trees, concrete bases, monotube poles and mast arms, conduit, control vaults, traffic signals 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 10 calendar days after the engineer issues a written notice to do so.

Provide the start date to the engineer in writing within a month after executing the contract but at least 14 calendar days before the preconstruction conference. Upon approval, the engineer will issue the notice to proceed within 10 calendar days before the approved start date.

To revise the start date, submit a written request to the engineer at least two weeks before the intended start date. The engineer will approve or deny that request based on the conditions cited in the request and its effect on the department's scheduled resources.

Do not begin work prior to July 22, 2024.

Do not perform landscape planting work prior to April 1, 2025.

Interim Completion and Liquidated Damages – All work in Stages 1, 2, and 3: November 1, 2024.

Complete Stages 1, 2, and 3 to the stage necessary to be opened to traffic by November 1, 2024. Complete the concrete pavement, curb and gutter, concrete sidewalk, monopoles, arms, traffic signal heads, monopole street luminaires, and overhead signage. Signals and luminaires shall be operational prior to opening. Restoration and incidental construction may be completed after the interim completion date.

If the contractor fails to complete Stages 1, 2, and 3 to the stage necessary to be opened to traffic by November 1, 2024, the department will assess the contractor $2,185.00 interim liquidated damages for each calendar day that this work remains incomplete after 12:01 AM November 2, 2024. An entire calendar day will be charged for any period of time within a calendar day that this work remains incomplete beyond 12:01 AM.

If contract time expires prior to completing all work specified in the contract, additional liquidated damages will be affixed according to standard spec 108.11.

Winter Shutdown

Winter shutdown will commence when all contract work required for the interim completion date has been completed. Do not resume work until April 1, 2025, unless approved by the engineer.

Provide a start date in writing at least 14 days prior to the planned start of construction in 2025. Upon approval the engineer will issue a notice to proceed within 10 days of the approved start date.

Contractor Coordination

Coordinate the work according to standard spec 105.5.2.

Arrange and conduct weekly progress meetings. The contractor's superintendent or representative, designated materials representative, subcontractor's representatives for ongoing subcontract work or subcontract work expected to begin within the next three weeks shall attend. Provide and discuss the schedule and updates at the weekly progress meetings. Agenda items at the meeting shall include, but not be limited to, the following:

- Review of the contractor's and subcontractors' schedule. Indicate if the project is on, ahead or behind schedule. If behind indicate why, how much behind and how the project will get back on schedule.
- Utility conflicts and relocation schedule.
- Evaluation of progress to date.
- Outstanding Requests for Information (RFI's) or issues that may cause contract modifications.
- Shop drawing submittal status.
- Materials submittal status.
- Materials sampling and testing activities and results.
- Lane, road, and ramp closure schedules.
- Impacts to businesses and private properties.
- Impacts to bus routes, emergency services, postal services.
- Equipment status of orders and deliveries.

Obtain permission from the engineer a minimum of 48 hours prior to any construction schedule change.

The labor and materials required to restore concrete sidewalk, after saw cutting, will be deemed incidental to the bid item 690.250, Sawing Concrete.

Work Restrictions

Add the following to standard spec 107.18 Environmental Protection:

Use equipment equipped with vacuum or water spray mechanisms to eliminate the dispersion of dust for performing the roadway cleaning operation. Vacuum equipment shall have suitable, self-contained particulate collectors to prevent discharge from collection bin into the atmosphere.

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

Northern Long-eared Bat *(Myotis septentrionalis)*

Northern long-eared bats (NLEB) have the potential to inhabit the project limits because they roost in trees, bridges and culverts. Roosts may not have been observed on this project, but conditions to support the species exist. The species and all active roosts are protected by the federal Endangered Species Act. If an individual bat or active roost is encountered during construction operations, stop work, and notify the engineer and the WisDOT Regional Environmental Coordinator (REC).

Ensure all operators, employees, and subcontractors working in areas of known or presumed bat habitat are aware of environmental commitments and avoidance and minimization measures (AMMs) to protect both bats and their habitat.

Direct temporary lighting, if used, away from wooded areas during the bat active season April 1 to October 31, both dates inclusive.

Contractor means and methods to remove trees will not be allowed. If it is determined that trees with a 3-inch or greater diameter at breast height (dbh) need to be removed beyond contractor means and methods, notify the engineer to coordinate with the WisDOT REC to determine if consultation with United States Fish and Wildlife Service (USFWS) is required. The contractor must be aware that the WisDOT REC and/or USFWS may not permit modifications.

4. Traffic.

Conform to the construction staging as shown in the construction staging plans, unless the engineer approves modifications to the schedule in writing.

Coordinate traffic requirements under this project with other adjacent department or local municipality projects. Contractor is responsible for implementing and coordinating with other contractors all traffic control shown in the plans. Modifications to the traffic control plan may be required by the engineer to be safe and consistent with adjacent work by others.

Submit to the engineer for approval a detailed traffic control plan if different than the traffic control plan provided in the plan set. Submit this plan **10 days prior** to the pre-construction conference.

No operation may proceed until all traffic control devices for such work are in the proper location.

Always have sufficient experienced personnel available to promptly install, remove and reinstall the required traffic control devices to reroute traffic during the construction operations.

Maintain adequate turning provisions for vehicles, including buses and trucks, at the intersections that are to remain open during all construction operations.

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

Post parking restrictions at least three days prior to the start of construction. Contact Mr. Cameron Potter with City of Milwaukee, Traffic Operations at (414) 286-3276 three working days prior to the start of construction operations.

Do not commence work under this contract until the required traffic control devices and markings are in place and the engineer approves the installations.

Provide proposed sequence of operations and methods of handling traffic. Submit revisions in traffic handling to the engineer for approval at least 48-hours in advance of making any changes in traffic operations.

Provide temporary means to prevent grade differences greater than 1/4-inch at locations where pedestrian access is maintained. Bridge vertical differences using slopes of 12:1 or greater through temporary asphalt wedging or through other means approved by the engineer.

Construction Contact Information

Designate an individual responsible for traffic control maintenance including access of local traffic, and 24-hour emergency traffic control repair. Provide the name and telephone number of this individual to the engineer.

Provide City of Milwaukee Police Department with a 24-hour emergency contact number for when traffic control maintenance is required.

In no case may any barricade, light, sign or other traffic control device be out of service for more than 2 hours. The cost to maintain and restore the above items is incidental to the bid item Traffic Control and no additional payment will be made.

Vehicle Access

Maintain emergency vehicular access at all times to roadways located within the project limits.

Provide access for mail service, utility meter reading and garbage pick-up.

Driveway Construction/Access

Local access to residences within the project area shall be maintained to the maximum extent possible. No residential drive approach shall be closed without sufficient notice given to the occupants of the premise to remove their vehicles prior to removal or closing of the drive approach access. Reasonable vehicular access (11' lane width on gravel, existing pavement, new pavement, or any combination thereof) to abutting residential locations shall be maintained at all times.

On-street parking will not be allowed during construction.

Inform property owners at least 48 hours prior to removing a driveway approach that serves that property, including giving owners 48-hours to remove their vehicles prior to driveway removal or closing of the driveway approach access.

Driveway approach removal and replacement (pavement poured and open to traffic) should be scheduled, so that the time lapse between the removal and replacement is no more than:

Seven days for normal strength concrete driveways and three days for HES concrete driveways.

Stage construction activities in order to maintain through vehicular access for local traffic on North Lake Drive according to the traffic control plans. The staging of work activities shall provide driveway access as specified below. Staging for driveway access shall include, but is not limited to the following four methods:

Method A: HES Concrete Driveway

Construct driveway with 7-inch high early strength concrete (HES) on any day during the week and open to vehicular traffic on the third day after that. Contact property owners to make arrangements to pour driveways for access.

Method B: Concrete Pavement Gap

In order to provide continuous access to residential driveways pavement gaps or adequate bridging to support residents' vehicles shall be used. The access areas shall have ample width and length to accommodate turns from the residents' vehicles. Temporary vehicle access to the residential driveways may be provided with base aggregate as directed by the engineer. Include the cost for the base aggregate in the unit bid price for Base Aggregate Dense 1¼-inch. Construct the pavement, curb and gutter and driveways at the pavement gaps with high early strength concrete (HES) and provide vehicular access of the paved portions soon after curing.

Method C: Alternate Driveways

Keep one driveway in place while the other is being constructed or open.

Method D: Halves

Construct driveway one half at a time:

Driveway Construction Requirements:

ADDRESS	LOCATION	METHOD
2913 N Lake Dr	16+60; LT	A&B
2921 N Lake Dr	17+90, LT	A&B
2933 N Lake Dr	18+60, LT	A&B
2943 N Lake Dr	18+80; LT	A&B
2951 N Lake Dr	20+15; LT	A&B
2963 N Lake Dr	21+05, LT	A&B
3021 N Lake Dr	24+30, LT	A&B
3027 N Lake Dr	24+50, LT	A&B
3033 N Lake Dr	25+10, LT	A&B

ADDRESS	LOCATION	METHOD
3049 N Lake Dr	25+80, LT	A&B
3057 N Lake Dr	26+50, LT	A&B
3067 N Lake Dr	27+20, LT	A&B
3109 N Lake Dr	30+60, LT	A&B
3123 N Lake Dr	30+95 & 31+50 LT	C
3112 N Lake Dr	30+75, RT	D
3201 N Lake Dr	33+65, LT	A&B
3223 N Lake Dr	34+40, LT	D
3233 N Lake Dr	35+10 & 35+75 LT	C
3234 N Lake Dr	35+20, RT	A&B
3245 N Lake Dr	36+80, LT	A&B
3252 N Lake Dr	37+05, RT	A&B
3266 N Lake Dr	38+20, RT	A&B
3288 N Lake Dr	40+00, RT	D
3318 N Lake Dr	41+90, RT	A&B
3329 N Lake Dr	42+50 & 43+00 LT	C
3347 N Lake Dr	43+30, LT	A&B
3330 N Lake Dr	42+65, RT	D
3340 N Lake Dr	43+10, RT	A&B
3351 N Lake Dr	44+00 & 44+65 LT	C
3365 N Lake Dr	44+80, LT	A&B
3378 N Lake Dr	46+00, RT	A&B
3400 N Lake Dr	46+50 & 47+00, RT	C
3410 N Lake Dr	47+45 & 47+90, RT	C
3418 N Lake Dr	48+50, RT	D
3417 N Lake Dr	48+10, LT	A&B
3431 N Lake Dr	49+00, LT	A&B
3435 N Lake Dr	49+60 & 50+30, LT	C
3432 N Lake Dr	49+65, RT	A&B
3445 N Lake Dr	51+00, LT	A&B
3453 N Lake Dr	51+15, LT	A&B
3459 N Lake Dr	51+85, LT	A&B
3450 N Lake Dr	52+10, RT	A&B
3465 N Lake Dr	52+40, LT	A&B
3474 N Lake Dr	52+75, RT	A&B
3477 N Lake Dr	53+10, LT	A&B
3481 N Lake Dr	53+60, LT	A&B
3487 N Lake Dr	54+40, LT	A&B

Definitions

The following definitions shall apply to this contract:

Night-Time Periods

- 9:00 PM to 7:00 AM Monday, Tuesday, Wednesday, Thursday, and Friday

Weekend Periods

- 9:00 PM Friday to 7:00 AM Monday

Detours

2024 Construction (Stages 1, 2, 3)

A detour will be posted as shown in plans, one lane of traffic in one direction will be maintained for local traffic during stages 1, 2, and 3.

2025 Construction (Stages 4, 5, 6)

A detour will be posted as part of an adjacent project, ID **2225-13-70, see Notice to Contractor-Work by Others**.

Traffic Control Description

N Lake Drive (STH 32) will be constructed in six stages, three in 2024, and three in 2025.

Access to the Oak Leaf Trail (along the east limits of the project) will remain open at all times.

Phase 1 - 2024 Construction (Stages 1, 2, 3)

Stage 1

Construction of the southbound lanes on N Lake Drive (from E. Kenwood Blvd to E. Edgewood Ave) for curb ramps, concrete curb and gutter, street lighting and signal equipment as shown in the plans. Contractor to minimize pedestrian disruption to extent possible.

Closed to northbound traffic, one lane open to local traffic in southbound direction.

Stage 2

Construction of the northbound lanes on N Lake Drive (from E. Kenwood Blvd to E. Edgewood Ave) for curb ramps, concrete curb and gutter, street lighting and signal equipment as shown in the plans. Contractor to minimize pedestrian disruption to extent possible.

Closed to northbound traffic, one lane open to local traffic in southbound direction.

Stage 3

Construction on N Lake Drive (from E. Hampshire Ave to E. Edgewood Ave) for installation of Precast Concrete Curb as shown in the plans. Contractor to minimize pedestrian disruption to extent possible.

Closed to northbound traffic, one lane open to local traffic in southbound direction.

Phase 2 - 2025 Construction (Stages 4, 5, 6)

Stage 4

Construction of the southbound lanes on N Lake Drive (from E. Newberry Ave to E. Kenwood Ave) for curb ramps, concrete curb and gutter, street lighting and signal equipment as shown in the plans. Contractor to minimize pedestrian disruption to extent possible.

Closed to northbound traffic, one lane open to local traffic in southbound direction.

Stage 5

Construction of the northbound lanes on N Lake Drive (from E. Newberry Ave to E. Kenwood Ave) for curb ramps, concrete curb and gutter, street lighting and signal equipment as shown in the plans. Contractor to minimize pedestrian disruption to extent possible.

Closed to northbound traffic, one lane open to local traffic in northbound direction.

Stage 6

Construction on N Lake Drive (from E. Newberry Ave to E. Kenwood Ave) for installation of Precast Concrete Curb as shown in the plans. Contractor to minimize pedestrian disruption to extent possible.

Closed to northbound traffic, one lane open to local traffic in southbound direction.

5. Holiday and Special Event Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying North Lake Drive traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday and special event periods:

- From noon Wednesday, July 3, 2024 to 6:00 AM Friday, July 5, 2024 for Independence Day;
- From noon Friday, August 30, 2024 to 6:00 AM Tuesday, September 3, 2024 for Labor Day;
- From noon Wednesday, November 27, 2024 to 6:00 AM Monday, December 2, 2024 for Thanksgiving;
- From noon Friday, May 23, 2025 to 6:00 AM Tuesday, May 27, 2025 for Memorial Day;
- From noon Thursday, July 3, 2025 to 6:00 AM Monday, July 7, 2025 for Independence Day.

stp-107-005 (20210113)

6. Utilities.

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

stp-107-066 (20080501)

Existing trees, street light poles, hydrants and utility poles are to remain in place during construction unless noted on plans. Conduct an on-site visit prior to bidding to determine any special measures required for proper clearance between the trees, hydrants, poles, other utilities and any other physical structures and the construction equipment. During construction operations, keep all manholes accessible to utility companies for emergencies.

The utility work plan includes additional detailed information regarding the location of known discontinued, relocated, or removed utility facilities. These can be requested from the Wisconsin Department of Transportation during the bid preparation process or from the project engineer after the contract has been awarded and executed.

AT&T Wisconsin

AT&T Wisconsin operates underground communication facilities within the limits of the project.

AT&T will adjust the manhole frame & cover located in the NE quadrant of N Lake Dr and E Kenwood BLVD at Station 29 + 37, 50' RT, during construction.

The work will need 1 day to do the adjustment and 10 days notice.

Contact Jay Bulanek at jb5175@att.com with any questions or concerns regarding AT&T Wisconsin facilities.

AT&T Mobility

AT&T Mobility operates underground communication facilities within the limits of the project.

AT&T's preliminary plan is to relocate their underground fiber facilities that currently exist between City HH269 and City HH33. The current design concept is to redirect the underground fiber facilities out of City HH269 heading North, crossing Milwaukee County Parks property to get to the public ROW of E Kenwood Blvd and then head West within the public right-of-way of E Kenwood Blvd to connect to the existing AT&T facility near N Lake Dr, which will meet at a new connection point that is not HH33.

Anticipated start date of work is January 25, 2025. This work will take 5 days to be completed prior to the Phase 2 construction.

Contact Erik Nelson at (847) 212-5923 or en0438@att.com with any questions or concerns regarding AT&T Mobility facilities.

Charter/Spectrum

Charter / Spectrum has underground communications facilities within the limits of the project.

Station 22+45 NW corner of N Lake Dr and Linwood Ave existing Charter vault will be adjusted to grade at time of construction.

Station 29+60 NW Corner of N Lake Dr and E Kenwood BLVD existing Charter vault will be adjusted to grade at time of construction.

The work will take 1 day per location to complete during construction. Charter will require 2 weeks advance notification per location to do the work.

Contact Charles Brasile at (414) 430-5812 or charles.brasile@charter.com with any questions or concerns regarding Charter / Spectrum facilities.

City of Milwaukee

Communications

City of Milwaukee, Communications operates communications underground facilities within the project limits. No conflict anticipated.

Contact Joe Maciejewski at (414) 286-3547 or joe.maciejewski@milwaukee.gov with any questions or concerns regarding City of Milwaukee, Communications facilities.

City Underground Conduit (CUC)

City of Milwaukee City Underground Conduit utility has communications fiber and copper cables in underground conduit located throughout the project limits. Improvements will be made by the contractor as part of the project. Construct CUC items as shown in the plans and in the bid items for this project.

Contact Karen Rogney (414) 286-3243 or krogne@milwaukee.gov with any questions or concerns regarding City of Milwaukee, CUC facilities.

Sanitary Sewer

The City of Milwaukee- Sewer has underground sanitary sewer facilities within the limits of the project. No conflicts anticipated.

Contact Zafar Yousuf at (414) 286-2467 or zyousu@milwaukee.gov with any questions or concerns regarding City of Milwaukee, Sewer facilities.

Water Works

City of Milwaukee, Water Works operates water underground facilities within the project limits.

One water gate valve box located at southeast corner of intersection of N. Lincoln Memorial Dr. & N. Lake Dr will be discontinued prior to construction.

Water valve adjustments to grade will be made by the contractor as part of the project. Construct water items as shown in the plans and in the bid items for this project.

Water main will be constructed at N. Lake Dr. from E. Newberry Blvd. (S/L) to E. Locust St., E. Kenwood Blvd to E. Hampshire St., and E Newport Ct. to E. Edgewood Ave. prior to the start of paving operations.

Contact Joshua Iwen at (414) 286-3640 or jiwen@milwaukee.gov with any questions or concerns regarding City of Milwaukee, Water Works.

Crown Castle Fiber LLC

Crown Castle does not currently have underground communication facilities in the project limits.

Crown Castle is proposing to install four Small Cell nodes and associated fiber optic laterals along Lake Dr. Facilities would be 2 – 1.25” conduits for fiber placement, placed by directional bore and/or open cut trench at 24-36” depth. Power conduit would be 1 – 2” conduits for fiber placement. This work is also dependent on WE Energies supplying power to each proposed node.

Anticipated start date of work is in April 2024. This work will take 15 days to be completed prior to the construction.

Contact Samuel Franklin at (630) 480-5193 or Samuel.Franklin@crowncastle.com with any questions or concerns regarding Crown Castle facilities.

Midwest Fiber Networks

MWFN has underground communication facilities within the construction limit.

MWFN will watchdog to aid in the protection of their fiber line.

MDWN will raise or lower the fiber line approximately 1-2' of clearance above the proposed pipe at approximately Station 29+65 RT 11' between structures 143-144 based on city/county recommendations during storm pipe construction.

MWFN will require 5 days notification.

MWFN anticipates to work during the construction. This work will take 1 day to complete.

Contact Cory Schmuki at (414) 459-3561 or cschmuki@midwestfibernetworks.com with questions or concerns regarding MWFN facilities.

WE Energies-Electric

WE Energies - Electric has underground and overhead facilities within the limits of the project.

We Energies - Electric has 21 manholes located along Lake Dr from E Kenwood Blvd to E Edgewood Ave.

WE-Energies provided the City of Milwaukee with a plan showing the elevation of their anticipated conflicts.

We Energies – Electric will adjust the manholes during the construction.

For electric manhole adjustments, the contractor is required to provide a 14 day notice and a 3 day reminder notice to notify the utility that the site is ready. Contact Tara Blecha at (414) 540-5784 or tara.blecha@we-energies.com.

Contact Nicholas Welch at (414) 944-5765 or Nicholas.welch@we-energies.com with questions or concerns regarding this utility.

- We Energies Electric Dispatch # 1(800) 662-4797.

WE Energies-Gas

WE Energies - Gas has underground facilities within the limits of the project.

Highway stationing has been used where possible to locate new facilities. We Energies will be relocating gas in the following areas:

Station 07+84 to Station 15+90 5' from the west right-of-way.

Station 28+50 LT going west 6' off the south E Kenwood Blvd right-of-way, crossing E Kenwood Blvd to the north beyond the project limits, then continuing east 5' off the north E Kenwood Blvd right-of-way, then going north under the sidewalk and crossing Lake Drive at Station 29+80 and continuing east 11' off the E Kenwood Blvd north right-of-way.

Station 35+35 to 39+75 7' off the east right-of-way, then Station 43+00 11' off the east right-of-way, then to Station 46+30 21' off the east right-of-way then crossing under Lake Drive, then continuing north to Station 54+57 6' off the west right-of-way and tying into the existing main.

Crossings of Lake Drive will occur at Stations 7+95, 29+80 ,36+70, 39+80, and 46+30.

Contact 1 (800) 261-5325 for gas emergencies, to identify if gas facilities are live and gas valve box adjustments.

Anticipated start day is April 1, 2024. This work will take 60 days to complete prior to construction.

Please contact Adam Kelly for adjustments at Adam.Kelly@we-energies.com or (414)-940-9127.

Contact Sydney Batchelor at sydney.batchelor@we-energies.com with questions or concerns regarding this utility.

- We Energies Gas Dispatch #1 (800) 261-5325

7. Information to Bidders, WPDES Transportation Construction General Permit (TCGP) for Storm Water Discharges.

The department has obtained permit coverage through the Wisconsin Department of Natural Resources to discharge storm water associated with land disturbing construction activities under this contract. Conform to all permit requirements for the project.

This permit is the Wisconsin Pollutant Discharge Elimination System, Transportation Construction General Permit, (WPDES Permit No. WI-S066796-2). The permit can be found at:

https://widnr.widen.net/s/s5mwp2gd7s/finalsignedwisdotcsgp

A certificate of permit coverage is available from the regional office by contacting Ryan Schnurer at (262) 548-8730. Post the permit certificate in a conspicuous place at the construction site.

stp-107-056 (20230629)

8. Notice to Contractor – City of Milwaukee Coordination.

Street Lighting

The City of Milwaukee has street lighting facilities within the project limits.

This project includes contractor installed temporary overhead street lighting. Maintain street lighting during construction. Notify the City of Milwaukee at (414) 286-3015 when there is any damage to temporary street lighting during construction.

Some work locations have traffic signals attached to the street lighting facilities as shown in plans.

Proposed temporary street lighting work to be coordinated, scheduled and installed by the project contractor several weeks before the project starts. The temporary overhead must be completed and energized before any roadway construction starts. The proposed permanent street lighting work to be coordinated, scheduled and installed by project contractor. Finally, after the permanent underground is fully operational and is approved by the City of Milwaukee street lighting, then the temporary overhead removal work can be coordinated, and scheduled to be done by the project contractor.

Construction time required in working days is estimated to be 5 to 10 business days to terminate temporary lighting, and 5 to 10 business days to terminate permanent lighting.

Contact field operation manager Neal Karweik at (414) 708-4245 to coordinate street lighting work. Prior toconstruction, City of Milwaukee personnel will energize a newly located permanent street lighting power distribution cabinet for street lighting temporary and permanent project use.

Anticipated start date of work is 45 working days before construction.

Estimated construction time is 5 days before construction, 4 to 8 days during construction, and 5 to 7 working days after construction.

For general questions regarding this utility contact Neal Karweik of the City of Milwaukee at (414) 286-5943 office, or (414) 708-4245 mobile.

Traffic Signals

Existing pullboxes and signal bases at the East Kenwood Boulevard and North Lake Drive intersection will be abandoned by the city prior to removal by contractor. The contractor shall furnish and install bases, PVC conduit, cabling, and polymer concrete pullboxes. Contractor shall furnish and install fiber optic cable and inter-duct. All above ground signal work including installing traffic signal standards, traffic signal heads, signal cabinets, and any additional permanent traffic control equipment shall be furnished and installed by the contractor. Contractor shall accept delivery, store, deliver, and install all monotube poles and monotube arms purchased by others. Electrical service for all signals will be provided by the City of Milwaukee. The signal cabinet base will be provided by the City of Milwaukee for installation by the contractor.

The contractor shall install temporary signal cabinet, temporary overhead cabling and temporary traffic signals. Contractor will operate the intersection throughout the project and remove all temporary traffic signal facilities in coordination with paving operations.

Permanent traffic signal materials shall be installed on street lighting poles at locations shown in the plans. The main contractor shall coordinate construction to ensure street lighting installation does not impede traffic signal installation.

The City of Milwaukee will provide electrical service for the traffic signals.

Provide a 30-working day advance notice to Mr. Rudy Gutierrez of the City of Milwaukee's Traffic Signal Field Operations at (414) 286-5941 office or (414) 708-5148 mobile, to coordinate the installation of temporary traffic signal materials as well as any city traffic signal concerns.

Stump Removal

The following stumps are to be removed by the contractor:

Stumps to be removed on North Lake Drive:

15" Stump and trunk Station 50+09 LT	13" Stump Station 54+50 LT
13" Stump and trunk Station 34+42 RT	15" Stump Station 41+19 RT

Sidewalk Construction

The root system on the walk side of the tree shall be cut not deeper than 9 inches below the finished grade of the new walks, and not more than 5 inches from the edge of the new walk. Roots in the walk area shall be removed only to a depth of 9 inches below finished grade of the new walk.

When replacing walks adjacent to the following trees, a slip or thin form must be used. Additionally, soil disturbance in the tree border should be limited to not more than 3" beyond the edge of the new walk.

Station 14+69 W/S	Station 23+00 W/S	Station 25+02 W/S
Station 34+02 W/S	Station 47+79 W/S	Station 36+89 E/S
Station 37+41 E/S		

Place arc on the new sidewalk adjacent to the following trees.

Station 13+05 W/S	Station 24+04 W/S	Station 29+93 W/S
Station 31+10 W/S	Station 31+82 W/S	Station 32+26 W/S
Station 42+80 W/S	Station 30+34 E/S	Station 30+65 E/S
Station 38+42 E/S	Station 42+96 E/S	

Where sidewalks are to be narrowed, all old sidewalks should be removed prior to any root cutting. If necessary, the root system should be cut within 3" of the edge of the proposed new walk, and not more than 9" below the finished grade of the new walk.

Sidewalks are to be removed, and roots cut, by use of **hand implements only.**

Carriage Walk Construction

When constructing or replacing carriage walks, roots shall not be cut by means of mechanical root cutting machines. If root removal is essential to carriage walk replacement, roots shall be manually cut with hand implements. Roots shall be removed not deeper than 9 inches below the finished grade of the new carriage walk.

Move the carriage walk to a position that does not interfere with the street tree at the following locations:

Station 44+09 E/S, move 2' south

General

All cutting for the removal of sod and soil in order to establish a finished grade within 4 feet of existing trees must be done manually if necessary.

No construction equipment, cars trucks, materials shall be parked or stored on any median or tree borders on this project or adjacent roadways.

Root foundations must remain adequate to withstand heavy windstorms.

Root systems of street trees shall not be cut for the installation of any type of cable by the contractor or city department. Contact the Forestry Division at (414) 708-2428 for directional boring specification.

Caution shall be used during the construction process to avoid damage to the roots, trunks, and branches of all street trees. Damage caused to any street tree or irrigation system will be repaired by the City of Milwaukee's Forestry Division and the costs of repair, rejuvenation, and/or value lost will be billed to the contractor or credited against the contract at the option of the city.

At locations where the contractor has not complied with the forestry special requirements stated in the special provisions above, and the maximum clearance was exceeded or a thin form was not used, a minimum credit to the city of $50.00 per location will be taken. The credit will increase in proportion to the excess distance beyond clearance allowed. The credit will be $50.00 for each 2-inch increment or part thereof in excess of the initial clearance allowed. Any damage to the tree's structure totaling 15 percent of the trees value will be billed on a prorated basis. If, in the opinion of the City of Milwaukee's Forestry Division, the tree has been damaged to the point that it warrants removal, the credit that will be taken will be equal to $100.00 per inch diameter of the tree. A field measurement will be taken to determine the tree size.

9. Notice to Contractor – Milwaukee County Parks

Milwaukee County Parks has underground sewer facilities in the project limits.

Existing sanitary connection ties into a manhole in the middle of the road. No conflicts are anticipated at this time.

Contact Blake Prusak at (414) 257-5081 or Blake.Prusak@milwaukeecountywi.gov with questions or concerns regarding Milwaukee County Parks facilities.

10. Notice to Contractor – 0" Clearance Slip or Integral Paving Machine.

Due to the proximity of the existing trees to the existing and proposed new curb line on North Lake Drive between E. Kenwood Avenue and E. Hampshire Avenue on both the east and west sides of the roadway (approximately Station 29 + 50 to Station 33 + 00), a 0" clearance slip or integral paving machine shall be used. The root system on the curb side shall not be cut. Integral paving limits shall not exceed 3" of soil clearance behind the back of curb. If a 0" clearance integral paving machine is not available, the contractor shall gap, and hand form the back of the curb line using a 1/4" steel plate and still not cut any tree roots. Cover exposed tree roots with mulch and water from a period immediately following curb and gutter removal, until the area is backfilled following construction.

11. Notice to Contractor – On-site Crushing.

On-site crushing will not be allowed on this project.

12. Notice to Contractor – Topsoil and Sod.

Complete grading and backfilling prior to moving to the next stage for stages 1, 2, 4 and 5. Place topsoil within 7 calendar days of completing grading activities. Place sod, as designated by the engineer, within 7 calendar days of topsoil placement.

13. Notice to Contractor – Restoration within Right-of-Way.

Excavation and restoration for installation of sidewalk will be limited to 9 inches, beyond the back (high side) of the sidewalk, unless otherwise shown on the plans. This includes installation of sod lawn.

14. Notice to Contractor - Survey.

All survey work necessary to stake out and construct all portions of this project will be measured and paid for under the staking bid items designated in this contract.

15. Notice to Contractor – Milwaukee County Transit System.

The Milwaukee County Transit System (MCTS) operates the following bus route within and/or directly adjacent to the construction limits: Route 44U (Fair Park – Hales Corners UBUS). This route travels via N. Lincoln Memorial Drive and crosses N Lake Drive.

Impacts to MCTS Routing

Invite MCTS to all coordination meetings between the contractor, the department, local officials and business stakeholders to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Notify MCTS at least ten business days prior to beginning project work to provide advance notice of potential service impacts.

Impacts to MCTS Signs and Posts

No MCTS signs or signposts are impacted by this project.

Impacts to Bus Shelters

No MCTS shelters/structures are impacted by this project.

MCTS contacts:

David Locher
Milwaukee County Transit System
1942 N. 17th St.
Milwaukee, WI 53205
Phone: (414) 343-1727
dlocher@mcts.org

Armond Sensabaugh
Milwaukee County Transit System
1942 N. 17th St.
Milwaukee, WI 53205
Phone: (414) 343-1728
asensabaugh@mcts.org

16. Notice to Contractor – Electronic Load Tickets

Replace standard spec. 109.1.4.3 (1) with the following:

Submit an electronic ticket for each load of material for the following bid items:

415.0080	Concrete Pavement 8-Inch
415.1080	Concrete Pavement HES 8-Inch
502.0100	Concrete Masonry Bridges
601.0150	Concrete Curb Integral Type D
601.0155	Concrete Curb Integral Type J
601.0319	Concrete Curb & Gutter 19-Inch
601.0331	Concrete Curb & Gutter 31-Inch
601.0600	Concrete Curb Pedestrian
602.0410	Concrete Sidewalk 5-Inch
602.0865	Concrete Driveway HES 7-Inch

620.0300	Concrete Median Sloped Nose
654.0101	Concrete Bases Type 1
654.0102	Concrete Bases Type 2
654.0110	Concrete Bases Type 10
654.0120	Concrete Bases Type 10-Special
SPV.0090.030	Concrete Curb Integral HES Type D
SPV.0090.031	Concrete Curb Integral HES Type J

Include the information as specified in standard spec 109.1.4.2 on each electronic ticket. If there is a failure in the electronic ticket system, provide a printed ticket for each load of material as a substitute for electronic tickets.

17. Archaeological Site.

Uncatalogued Human Burial site (State Site #47MI63, Burial Site #BMI-0113, Lake Park Mound Group) is located approximately Station 14+00 to 21+00 RT within the limits shown on the plans.

Notify the Bureau of Technical Services – Environmental Process and Document Section (BTS-EPDS) at (608) 266-0099 at least two weeks before commencement of any ground disturbing activities beyond the existing right-of-way limits. BTS-EPDS will determine if a qualified archaeologist will need to be on site during construction of this area.

Do not use the site for borrow or waste disposal. Do not use the site area not currently capped by asphalt/concrete for the staging of personnel, equipment and/or supplies.

stp-107-220 (20180628)

18. Notice to Contractor – Milwaukee County Parks System.

Work

Protect and avoid damage to any part of the Project Area and surrounding areas to ensure the safety of its personnel, County staff and all park users. Provide and install all safety devices, barricades, signs, flag person(s) or other measures as needed to comply.

Conduct reasonable and appropriate restoration work to correct any rutting, re-seed disturbed areas, prevent the spread of invasive species, repair any damage to trails, and take the necessary steps to safely work in any environmentally sensitive areas. Decontaminate their equipment before arriving and/or leaving a project area in order to prevent the spread of invasive species. It is understood that these impacts will be minor in nature and that any park property disturbed during construction will be restored to the condition that existed prior to the project.

Coordination with Milwaukee County Parks System

Obtain a Right-of-Entry permit and apply for the permit a minimum of 45 days prior to construction.

The Parks Department requires that the contractor looking to work on or temporarily occupy county property for a project that will involve access, construction, storage of equipment or material, land disturbance or digging of any kind requires a Right-of-Entry Permit signed by the Parks Director or his/her designee. Right-of-Entry Permits can be obtained at Milwaukee County Parks, 9480 Watertown Plank Road, Wauwatosa, WI 53226. More information can be obtained at:

https://county.milwaukee.gov/EN/Parks/Plan/Get-a-Permit.

The county assumes no responsibility for any loss or damage to the personal property of the vendor while in use or stored at or on the Premises. Maintain policies of insurance and proof of financial responsibility to cover costs as may arise from claims for damages to property of and/or claims which may arise out of or result from contractor activities, by whomever performed, in such coverage and amounts as required and approved by the county. Acceptable proof of such coverage shall be furnished to the county prior to commencement of activities under this agreement. A Certificate of Insurance shall be submitted for review

for each successive period of coverage for the duration of this agreement, unless otherwise specified by the county, in the minimum amounts specified below.

Type of Coverage	Minimum Limits
Wisconsin Workers' Compensation and Employer's Liability and Disease	Statutory/Waiver of Subrogation $100,000/$500,000/$100,000
General Liability Bodily Injury and Property Damage to include: Personal Injury, Fire, Products and Completed Operations	$1,000,000 Per Occurrence $2,000,000 Aggregate
Automobile Liability Bodily Injury and Property Damage All Autos	$1,000,000 Per Accident

Milwaukee County shall be named as an Additional Insured on the General and Automobile Liability policies as respects the services provided in this agreement. A Waiver of Subrogation shall be afforded to Milwaukee County on the Workers' Compensation policy. A 30-day written notice of cancellation or nonrenewal shall be afforded to Milwaukee County.

The insurance specified above shall be placed with a Carrier approved to do business in the State of Wisconsin. All carriers must be A- rated or better per AM Best's Rating Guide. Any requests for deviations from or waivers of required coverages or minimums shall be submitted in writing and approved by Milwaukee County's Risk Manager as a condition of this agreement.

The insurance requirements contained within this Agreement are subject to periodic review and adjustment by the County Risk Manager.

19. Notice to Contractor - Other Contracts.

Modifications to the traffic control plan may be required by the engineer to be safe and consistent with the adjacent work by others. Detour for Stages 4, 5, and 6 is anticipated to be provided by the following project in 2025. Contractor will be responsible for posting detour in the event the other contract (2225-13-70) detour is not posted in time for this project.

The following project may be under construction concurrently with the work under this contract:

Project 2225-13-70

V Shorewood, N Lake Dr., Edgewood Ave to Kensington Blvd
WisDOT Contact Ryan Schnurer, P.E.; (262) 548-8730; Ryan.Schnurer@dot.wi.gov

For all projects, coordinate activities, detours, work zone traffic control, roadway, erosion control and lane closures, and other work items as required with other contracts.

20. Construction Trenches.

Construct trenches to allow local access.

Upon completion of the normal workday and when work is not in progress, plate all trenches resulting from construction activities, which are not fully backfilled, with steel plates suitable for carrying a vehicle as directed by the engineer. Plating is in addition to the barricades and traffic control devices required for lane closure or traffic control. Cost of steel plates shall be included in the bid prices for the related bid items that are under construction.

21. Referenced Construction Specifications.

Construct the work enumerated below conforming to the City of Milwaukee standards. If there is a discrepancy or conflict between the referenced specification and the standard specifications regarding contract administration, part 1 of the standard specifications governs.

Conform to the referenced construction specifications for the following:

Some traffic signal and street lighting work is required to be executed according to City of Milwaukee Standards. The contact person for acquiring said standards is provided in the articles where the reference to City of Milwaukee Standards is made.

stp-105-002 (20130615)

22. Protection of Concrete.

Supplement standard spec 415.3.14 as follows:

Provide for a minimum of one concrete finisher to remain on the project site after final finishing of all concrete surfaces until such time as the concrete has hardened sufficiently to resist surface scarring caused by footprints, handprints, or any other type of imprint, malicious or otherwise. Finisher must actively and continuously patrol on foot the newly placed concrete and repair any damage to the surface that might be sustained as described above.

Include the cost for providing the finisher(s), the necessary equipment, and materials in the contract unit price for each concrete item.

23. Coordination with Businesses and Residents.

The contractor shall arrange and conduct a meeting between the contractor, the department, affected residents, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Hold the first meeting at least one week before the start of work under this contract and no further meetings will be required unless directed by the engineer. The contractor shall arrange for a suitable location for meetings that provides reasonable accommodation for public involvement. The department will prepare and coordinate publication of the meeting notices and mailings for meetings. The contractor shall schedule meetings with at least two weeks' prior notice to the engineer to allow for these notifications.

stp-108-060 (20141107)

24. Public Convenience and Safety.

Revise standard spec 107.8(6) as follows:

Check for and comply with all local ordinances governing the hours of operation, of construction equipment. Do not operate any motorized construction equipment from 9:00 PM until 7:00 AM, unless prior written approval is obtained from the engineer.

Motorized equipment shall be operated in compliance with all applicable local, state, and federals laws and regulations relating to noise levels. All motorized construction equipment will be required to have mufflers constructed according to manufacturer's specifications, and it will be required that mufflers and exhaust systems be maintained in good working order, free from leaks or holes.

Upon request the City of Milwaukee's Department of Neighborhood Services (DNS), may issue a construction noise variance, to work outside of the hours listed above.

Department of Neighborhood Services
4001 South 6th Street
(414) 286-2268

25. Concrete Identification Stamping.

Stamp ends of all monolithic portland cement concrete surfaces with a stamp bearing the contractor's name and the year of construction. Make all letters 2-inches in height.

Include the cost of this work in the contract unit price for other Portland cement concrete items and no additional payment will be made.

26. Erosion Control.

Perform this work according to the requirements of standard spec 107.20 and as hereinafter supplemented.

Take adequate precautions to install and maintain necessary erosion and sediment control during grading and construction operations at curb and gutters, and at other locations as determined by the engineer. Protect storm drain inlets and manholes, as determined by the engineer, with a filter fabric meeting accepted design criteria, standards, and specifications. Maintain all erosion control measures until such time that the engineer determines the measures are no longer necessary.

The contractor shall prepare and submit an erosion control implementation plan (ECIP) for the project including borrow sites, material disposal sites, dust control, and dewatering according to Chapter TRANS 401 requirements. The erosion control implementation plan shall supplement information shown on the plans and shall not reproduce it. The erosion control implementation plan will identify how the contractor intends to implement the project's erosion control plan.

Provide the ECIP 14 calendar days prior to the pre-construction conference. Provide 1 copy of the ECIP to WisDOT and 1 copy of the ECIP to the WDNR Liaison, Mr. Ryan Pappas; WDNR Southeast Region Headquarters; 1027 W. St Paul Ave.; Milwaukee, WI 53233. Pursue operations in a timely and diligent manner, continuing all construction operations methodically from the initial removals and topsoil stripping operations through the subsequent grading, paving, and re-top soiling to minimize the period of exposure to possible erosion. Do not implement the ECIP until it has been approved by the department.

When performing roadway cleaning operations, the contractor shall use equipment having vacuum or water spray mechanism to eliminate the dispersion of dust. If vacuum equipment is employed, it shall have suitable self-contained particulate collectors to prevent discharge from the collection bin into the atmosphere.

27. Remove Aerial Cable, Item 204.9090.S

A Description

The work under this item consists of removing temporary overhead service lines as shown on the plans; including all associated guy wires, anchors, and electrical wire; and removing materials from the site.

B (Vacant)

C Construction

Contractor shall properly dispose of materials off site.

D Measurement

The department will measure Remove Aerial Cable by linear foot pole to pole.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
204.9090.S	Remove Aerial Cable	LF

Payment is full compensation for all work, and for disposal of materials.

28. Cover Plates Temporary, Item 611.8120.S.

A Description

This special provision describes providing and removing steel plates to cover and support traffic loading at manholes, inlets and similar structures during paving operations.

B Materials

Provide a 0.25 inch minimum thickness steel plate that extends to the outside edge of the existing masonry.

C (Vacant)

D Measurement

The department will measure Cover Plates Temporary as each individual unit, 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
611.8120.S	Cover Plates Temporary	EACH

Payment is full compensation for furnishing, installing, and removing the cover plates.

The steel plates shall become the property of the contractor when no longer needed in the contract work.

stp-611-006 (20151210)

29. Topsoil.

Replace standard spec 625.2 (1) with the following:

(1) Topsoil consists of loam, sandy loam, silt loam, silty clay loam, or clay loam humus-bearing soils adapted to sustain plant life, and ensure the topsoil consists of the following:

Topsoil Requirements	Minimum Range	Maximum Range
pH	6.0	8.0
Organic Matter*	5%	20%
Clay	5%	30%
Silt	10%	70%
Sand	10%	70%

*Organic matter determined by loss on ignition test of samples oven dried to constant weight at 212 F (100 C).

Add the following to standard spec 625.2:

(3) Furnish material that is free from large roots, sticks, weeds, brush, stones, litter, and waste products.

(4) Do not furnish surface soils from ditch bottoms, drained ponds, and eroded areas, or soils which are supporting growth of NR 40 listed plants and noxious weeds or other undesirable vegetation.

Replace standard spec 625.3.3 (3) with the following:

(3) Ensure that for the upper 2 inches, 100 percent of the material passes a 1-inch sieve and at least 90 percent passes the No. 10 sieve.

SER-625-001 (20221007)

30. Seeding.

Replacestandard spec 630.3.5 (1) with the following:

(1) Use the following sowing rate for seeds in pounds per 1000 square feet:

- No. 10 at 3 pounds
- No. 20 at 5 pounds
- No. 30 at 5 pounds
- No. 40 at 5 pounds
- No. 60 at an equivalent seeding rate of 1.5 pounds*[1]*
- No. 70 or 70A at 0.4 pounds
- No. 75 at an equivalent seeding rate of 0.7 pounds[1]
- No. 80 at an equivalent seeding rate of 0.8 pounds[1]
- Temporary seeding at 3 pounds
- Nurse crop seeding at 2 pounds

[1] Determine the actual seeding rate by multiplying the equivalent seeding rate by the sum of the unadjusted and adjusted percentages of the various species in the seed mixtures as sown.

SER-630-002 (20221013)

31. Landscape Planting Surveillance and Care Cycles.

If the care specialist fails to perform any of the required care cycles as specified in standard spec 632.3.19.1, the department will assess daily damages in the amount of $500 to cover the cost of performing the work with other forces. The department will assess these damages for each day the requirements of the care cycle remain incomplete, except when the engineer extends the required time period.

The plant establishment period will be for one growing season, until October 15, 2025, according to standard spec 632.3.18.3.

32. Markers Permanent Flexible, Item 633.5350.

Replace standard spec 633.3.6 with the following:

(1) Install bases and permanent flexible tubular marker posts to the pavement as the detail in the plans shows. Use posts with white re-boundable sheeting. Attach posts to bases using a locking pin or other engineer-approved system.

33. Signs Type II Reflective SH, Item 637.2220; Signs Type II Reflective F, Item 637.2230.

Furnish and install signs according to the plans and standard spec 637, except as follows:

The contractor shall provide all necessary sign mounting hardware as shown in the detail drawings which includes but is not limited to 5/16” x 1 ¼” Stainless Steel Fender Washers, 5/16”-18 x 3/4” Stainless Steel Hex Head Bolt, 201 Stainless Steel Banding ¾” x 0.20, Stainless Steel Flared Leg Sign Mount Bracket for ¾” banding, 201 Stainless Steel Wing Seal (buckle) for ¾” banding and one- or two-sided sign mounting Z-brackets that fit 2 3/8 inch post or approved equal.

The contractor shall affix the installation date sticker on back of sign in lower right corner. Stickers will be provided at pre-construction meeting or by the Inspector.

The contractor shall be responsible for recording the location, type, and installation date of the signage using the provided Sign Installation Log (L-101).

34. Pedestal Bases, Item 657.0100; Traffic Signal Standards Aluminum 3.5-FT, Item 657.0405; Traffic Signal Standards Aluminum 13-FT, Item 657.0420; Traffic Signal Standards Aluminum 10-FT, Item 657.0430.

Add the following to standard spec 657.2.1.1:

(9) Pedestal Bases, Traffic Signal Standards 3.5-FT, 10-FT, and 13-FT shall have a black exterior finish, factory applied, and powder-coated.

35. Poles Type 10, Item 657.0350; Poles Type 10 Special, Item 657.0352.

Add the following to standard spec 657.2.1.2:

(3) Type 10 and Type 10 Special Monotube Poles will be supplied by WisDOT. Monotube Poles shall have a black exterior finish, factory applied, and powder-coated. Contractor shall accept delivery, store, and deliver poles to project site.

36. Monotube Arms 30-FT, Item 657.0530; Monotube Arms 35-FT Special, Item 657.0536; Monotube Arms 45-FT Special, Item 657.0546.

Add the following to standard spec 657.2.2.2

(5) Monotube Arms 30-FT, 35-FT, and 40-FT will be supplied by WisDOT. Monotube Arms shall have a black exterior finish, factory applied, and powder-coated. Contractor shall accept delivery, store, and deliver poles to project site.

37. Signal Housings.

Replace standard spec 658.2(3) with the following:

Furnish signal housings, visors, LED modules, backplates, and cutaway visors as the plans show. Furnish black housings, backplates, and visors for all traffic signal faces.

38. Signal Mounting Hardware, Item 658.5070.

Replace standard spec 658.2(7) with the following:

For signal mounting hardware: furnish black weather tight mounting hardware for all traffic signal equipment. Protect mounting hardware from the elements before installation. Use corrosion resistant poly bracket shims.

39. Lamp, Ballast, LED, Switch Disposal by Contractor, Item 659.5000.S.

Description

This special provision describes the detachment and packaging of lamps, ballasts, LEDs, and mercury containing switches (e.g., overhead roadway lighting, underdeck bridge, wall packs, pedestrian signals, traffic control stop lights and warning flashers, fluorescent bulbs, and thermostats) removed under this contract for disposal as hazardous materials.

For Lamp, Ballast, LED, Switch Disposal by Contractor, coordinate removal from the work site by the department's hazardous waste disposal vendor. Disposal will be billed to the department by the hazardous waste disposal vendor.

B Materials

B.1 Disposal by Contractor

Items removed under this contract will be considered the property of the department for waste generator identification. The contractor is responsible for coordinating with the department's hazardous waste vendor for disposal:

https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnslt-rsrces/environment/hazwaste-contacts.pdf

C Construction

C.1 Removal

Arrange for the de-energizing of luminaires after receiving approval from the engineer that the existing luminaires can be removed. Do not remove luminaires that cannot be replaced with proposed LED units and operational within the same workday. The new LED units need to be operational prior to sunset of the same workday.

Detach and remove luminaires and lamps from the existing traffic signal poles or respective structure. Avoid breaking fixtures whenever possible.

Lamps, ballasts, LED, and switches will become property of the department, and will be disposed of in an environmentally sound manner.

C.2 Packaging of Hazardous Materials

Provide a secure, level location removed from the travelled way for storage of the material for disposal.

Pack intact fixtures in the packaging of the new lamps used to replace them, or packaging affording the equivalent protection. Place in full, closed stackable cartons.

Pile cartons no more than four high if palletized and secure cartons with shrink wrap to prevent shifting or falling of the loads. Clearly mark each pallet with the words "Universal Waste Lamps" or "Universal Waste Ballasts", the date, and the number of fixtures on each pallet.

Pack broken fixtures into (min.) 6 mil thick plastic bags and place inside sturdy cardboard boxes or the equivalent. Mark the outer packaging with the term "Broken Fixtures/Lamps", the date and the number of broken fixtures clearly marked on the box.

The hazardous waste vendor will not accept fixtures improperly packaged. The vendor will reject any fixtures not removed as part of a contract pay item or otherwise required under this contract.

Pack ballasts and mercury containing switches in appropriate containers.

C.3 Disposal by Contractor

Complete the lamp and ballast inventory (https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnslt-rsrces/environment/dotlampballastinventory.dotx) and contact the hazardous waste vendor to coordinate pickup and disposal at a location specified by the contractor. Consolidate all pallets and boxes from one project at a single location. Contact the hazardous waste vendor to set up an appointment for pickup. The hazardous waste vendor requires a minimum of one week advance notice to schedule pickup.

D Measurement

The department will measure Lamp, Ballast, LED, Switch Disposal by Contractor as each individual unit removed and received by the hazardous waste vendor, properly packaged and acceptably completed, matching the total number of units provided on the inventory form. The department will not measure broken fixtures that exceed a total of 10 percent of all fixtures to be disposed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
659.5000.S	Lamp, Ballast, LED, Switch Disposal by Contractor	EACH

Payment for Lamp, Ballast, LED, Switch Disposal by Contractor is full compensation for detachment, handling, packaging, labeling and scheduling disposal with the hazardous waste vendor; and scrapping and disposal of all other materials.

stp-659-500 (20220628)

40. Temporary Traffic Signals for Intersections (Location), Item 661.0201.001.

Modify standard spec 661.0201 with the following:

661.2.1 General

The City of Milwaukee will furnish control cabinet, signal controller, and NEMA monitor.

The City of Milwaukee will provide the temporary electrical service for temporary traffic signals.

The City of Milwaukee-Traffic Signals is the applicable electrical utility.

All wood poles are paid for under the temporary street light item.

41. Utility Line Opening (ULO), Item SPV.0060.001.

A Description

Excavate to uncover utilities for the purpose of determining elevation and potential conflicts as shown on the plans or as directed by the engineer.

Excavate in such a manner that the utility in question is not damaged and the safety of the workers is not compromised.

Perform the utility line openings (ULO) as soon as possible and at least 10 days in advance of proposed utility construction to allow any conflicts to be resolved with minimal disruption. Where utilities are within 6 feet of each other at a potential conflict location, only one utility line opening shall be called for. In these cases, a single utility line opening will be considered full payment to locate multiple utilities. Utility line openings shall include a trench up to 10 feet long as measured at the trench bottom, and of any depth required to locate the intended utility.

All utility line openings shall be approved and coordinated with the engineer. Notify the utility engineers or their agents of this work a minimum of 3 days prior to the work so they may be present when the work is completed. The need for performing ULO's as shown on the plans shall be verified since some of the utilities may have been relocated prior to the start of construction.

B (Vacant)

C Construction

It is recommended the contractor use "pot holing" technology to perform this work.

D Measurement

The department will measure Utility Line Opening (ULO) by each unit, acceptably completed. There shall be only one unit paid per ULO.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.001	Utility Line Opening (ULO)	EACH

Payment is full compensation for the excavation required to expose the utility line, backfilling with existing material removed from the excavation, compacting the backfill material, restoring the site, and cleanup.

Existing pavement, concrete curb, gutter, and sidewalk removals necessary to facilitate utility line openings shall not be considered part of or paid for under Utility Line Openings but shall be considered separate and measured and paid for separately as removal items. Replacement pavement, concrete curb, gutter, and sidewalk items shall also be considered separate from Utility Line Openings and will be measured and paid for separately.

42. Adjusting Water Valve Boxes, Item SPV.0060.004.

A Description

This special provision describes adjusting, protecting, and maintaining accessibility, for the duration of the paving project, to all City of Milwaukee water service boxes and water valve boxes located within the project limits.

B Materials

All material for the adjustment of these facilities shall meet City of Milwaukee specifications and will be provided by the City of Milwaukee by contacting Andray DeCordova, Milwaukee Water Works, at (414) 708-3209; or Tim Garczynski, Milwaukee Water Works at (414) 286-6301. If there is contractor damage, the materials must still be provided by the City of Milwaukee, however, in this case, the contractor will be charged for all materials. Materials furnished by the City of Milwaukee and not used on the project shall be delivered back to DPW Field Headquarters – Infrastructure, Operations, Water Works at 3850 N. 35th Street.

C Construction

The contractor, or authorized project representative, shall contact Milwaukee Water Works prior to the start of construction. The city will locate, mark, inspect and repair all water service boxes and water valve boxes within the limits of the project prior to commencement of work on the project. All water service boxes and water valve boxes within the project limits shall be adjusted to proposed elevations by the contractor using materials meeting city specifications. Throughout the duration of the project, the contractor must ensure that all water service boxes, and water valve boxes are adequately located and identified by blue paint, and that at all times, all water appurtenances remain accessible for operation by city forces. Exercise caution working adjacent to water facilities to avoid damage and ensure accessibility.

Upon completion of the contract, the city will inspect all water facilities to ensure the water boxes are clean, properly aligned, and accessible. The contractor shall be responsible to make identified repairs and adjustments, and if any repairs or adjustments are made by the city, the cost will be charged to the contractor.

D Measurement

The department will measure Adjusting Water Valve Boxes by each unit, 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.0060.004	Adjusting Water Valve Boxes	EACH

Payment is full compensation for all excavation, backfilling, disposal of surplus materials, water box adjustments, water box clean-out, and restoration of the work site.

43. Temporary No Parking Signs, Item SPV.0060.010.

A Description

This special provision describes providing, installing, maintaining, and removing Temporary No Parking signs.

B Materials

Furnish materials under this item according to the details as shown on the plans.

Temporary No Parking signs shall be fabricated using 18”x24” 4mm white corrugated (polypropylene twinwall) plastic sign base to print R7-1 regulation; use R7-1D, R7-1L or R7-1R where necessary. Provide a 0.4-inch thick base with a 0.035-inch wall thickness and 0.4-inch cell size. Prepare the sign base as the sheeting manufacturer recommends.

Sign shall be affixed to using 9-gauge galvanized electric fence wire.

C Construction

Install Temporary No Parking Signs according to the plans. Plan changes must be approved by a City of Milwaukee Traffic Engineer.

Any No Parking signage attached to city street trees shall be of a temporary method (nails or spikes are not allowed).

Please contact Mr. Cameron Potter at (414) 286-3276 with questions.

D Measurement

The department will measure Temporary No Parking Signs by each unit, 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.0060.010	Temporary No Parking Signs	EACH

Payment is full compensation for providing, installing, maintaining, and removing Temporary No Parking signs.

44. Methyl Methacrylate (MMA) Two-Component Traffic Marking White Bike Lane Arrow, Item SPV.0060.020; Methyl Methacrylate (MMA) Two-Component Traffic Marking White Bike Lane Symbol, Item SPV.0060.021.

A Description

The contractor shall furnish and install white methyl methacrylate (MMA) resin with hardwearing aggregate and premium pigments to deliver a durable, highly visible and color stable bike lane symbols that meets the non-slip requirements needed for pedestrians, cyclists and vehicles at the locations shown on the plans, in conformance with the details, and the material specifications included herein.

B Materials

The methyl methacrylate material shall be a two-part material. The composition is 98 parts of Component “A”, homogeneously composed of pigment, filler, resins and anti-skid aggregate, and 2 parts of Component “B”, liquid hardener. Part “B” shall be a benzoyl peroxide catalyst.

Use Color-Safe Pavement Marking with Anti-Skid Surface by Transpo Industries, CycleGrip MAXX by Ennis-Flint, or Roadzilla or an approved equal. Color “White”. Use an MMA based resin system capable of retaining an aggregate topping under vehicular traffic conditions. Install Methyl Methacrylate (MMA) Two-Component Traffic Markings according to manufactures specifications and these special provisions.

The material shall comply to the following:

Property	Value	Test Method
Tensile Strength @ 7 days, psi, minimum	400	ASTM D 638
Hardness, Shore D, minimum	50	ASTM D 2240
Gel Time, minutes, minimum	10	ASTM D 2471
Cure Rate, hours, maximum	3	Film @ 75 degrees F
Water Absorption @ 24 hours, maximum	0.25% CELL	ASTM D 570

Aggregate: The aggregate shall be high friction crushed Bauxite, No. 1 Silica, or Phonolite or equivalent. The aggregate will be delivered to the construction site in clearly labeled bags or sacks. The aggregate shall be clean, dry and free from foreign matter. Aggregate shall meet the following requirements:

Property	Value	Test Method
Hardness, minimum	7	Mohs Scale

Submittal: Submit certificates of compliance certifying that the products supplied under the contract conform to these specifications. Submit Application Instructions a minimum 72 hours prior to application.

C Construction

General: Install Methyl Methacrylate (MMA) Two-Component Traffic Marking White Symbols according to manufactures specifications.

Preparation: Prepare surfaces so that they are clean, dry, and free of all dust, oil, debris and any other material that might interfere with the bond between the MMA based resin system and existing surfaces. Contaminates that might interfere with the proper adhesion of the material must be removed by sandblasting or shotblasting. The surface should be visibly dry, and the moisture content should be tested according to ASTM D4263 (modified to 2 hours). Concrete must be fully cured for a minimum of 28 days prior to installation. Surface contaminants such as curing agents, membranes, bond breakers or laitance shall not be mechanically removed prior to marking.

Protect utilities, drainage structures, curbs and any other structure within or adjacent to the treatment location against the application of the surface treatment materials. Cover and protect all existing pavement markings that are adjacent to the application surfaces as directed by the engineer.

Pre-treat joints greater than ¼ inches in width and depth with the MMA resin system specified herein or by using an alternative procedure proposed by the manufacturer and agreed upon by the engineer. Proceed with the MMA resin system installation once the product, in the pre-treated areas, has gelled or once the alternative procedure has been accomplished.

Mix: MMA traffic marking is made up of three components (resin, hardener, and aggregate) that must be mixed thoroughly for uniform curing and performance. Liquid components must be homogenously stirred in the original containers before mixing components A and the liquid BPO concentrate catalyst, called Part B. Thoroughly mix by weight, 2 parts of the liquid hardener (Part B) with 98 parts of Component A. Mixing must be done by using a static mix tube or impingement system just prior to spray gun application on the job site.

Temperature: Material, pavement surface and ambient air temperature must be between 40° F and 105° F, and at least 5° F above dew point prior to striping. Relative humidity must be less than 75%. Installing the materials on surfaces above 105° F can lead to improper cure and dirt pickup. Surface and ambient temperatures should be checked hourly at a minimum if weather conditions cause temperatures to fluctuate during the course of the striping operation. Please note that drying time will be increased when striping at low temperatures. Both the Part A and B must be mixed thoroughly prior to application by any of the various application techniques.

Mixing and Application: Follow the MMA resin technical data sheet for application details. This material should be readily applied to Portland cement concrete surfaces sprayed at a thickness of 30 mils, and no greater than 35 mils, when applied over green MMA pavement marking. This material should be readily applied to Portland cement concrete surfaces sprayed at a thickness of 45 mils when applied directly on cement concrete or HMA pavement.

Curing: Allow the MMA based resin system to cure according to manufacturer recommendations. Protect treated surfaces from traffic and environmental effects until the area has cured.

PERFORMANCE REQUIREMENTS

The following guidelines shall be followed to ensure total understanding of what is expected in the application of any permanent pavement marking material on new pavement surfaces.

The pavement marking shall be uniform thickness across the entire cross section of the marking with well-defined edges. Heavy inner thickness and thin edges or vice-versa will not be accepted. Aggregate shall be spread uniformly over the entire marking. Beginning and ends of markings shall be clean cut and perpendicular to the centerline of the street.

Remove and replace methyl methacrylate that has foreign covering, discolored areas, improper adhesion, improper width, length, or thickness as verified by the engineer against the plans or this special provision. Remove and replace areas that present a ragged appearance, areas that do not present clear and sharply defined edges, and areas with abrupt unintended changes in alignment. Remove excessive dripping of marking material between markings and remove and replace any marking applied with a lack or excess of aggregate. Remove, to the satisfaction of the engineer, all pavement marking applied outside the scope or limits of this project. Removal and replacement of unsatisfactory pavement marking will be at the contractor’s expense. The replaced Colored White surface treatment shall meet the requirements of this sub-article.

Remove and replace Colored White surface treatment that ravels, delaminates, or wears off within 90 days after placement, unless approved to remain in place by the engineer. The limits of removal and replacement shall be approved by the engineer.

Lack of specified thickness: The full unit price bid per unit (each) shall be withheld if lack of thickness is found at each bike lane arrow or symbol. Each bike lane arrow or symbol marking shall be checked a minimum of one time.

Lack of specified width: Payment shall be made with penalty being equal to 25% of the unit price bid per each for each ¼ inch of width lacking not to exceed 100% of the unit price bid.

Improper adhesion: The full unit price bid per item shall be withheld for each occurrence if improper adhesion is found.

Deviation: A marking that in the judgment of the engineer deviates from the specified layout by an unreasonable amount shall be replaced. The contractor shall be responsible for removal of the deviated marking material/repair of the pavement as designated by, and to the satisfaction of, the engineer at no additional compensation.

Excessive Dripping between Symbols: The full unit price bid item shall be penalized for the length of any open space between symbols that is not removed to the satisfaction of the engineer before leaving the project site that workday. Penalty shall be imposed upon the first occurrence and every occurrence thereafter.

Warranty: The MMA based resin system material shall be installed per plans and manufacturer specification. The engineer will notify the contractor within 48 hours of installation regarding any of the MMA based resin system material not installed per specification or to the satisfaction of the engineer. Non-conforming MMA based resin system material shall be removed at no charge to WisDOT and replaced with conforming product.

The warranty period in reference to the following points is to be 1 year from date of installation. Warranty of the following items shall be submitted in writing by the contractor or his installer prior to the pre-construction meeting.

- The MMA based resin system material will maintain its original color in the surface area throughout the 'warranty period' with the exception of natural weathering, tire and dirt deposits and abnormal markings applied after installation.
- Friction will achieve a minimum BPN of 60 according to ASTM E-303.
- The MMA based resin system material will maintain its skid resistance qualities in 100% of its surface area to never fall below a BPN of 60 during the 'warranty period'.
- With the exception of structural cracking or excessive movement of the surface beneath, the MMA based resin system will not be subject to excessive cracking in its surface

D Measurement

The department will measure Methyl Methacrylate (MMA) Two-Component Traffic Marking White Bike Lane Arrow and Bike Lane Symbol by EACH unit, acceptably completed. No deduction will be made for the areas occupied by manholes, inlets, drainage structures, pavement markings or by any public utility appurtenances within the area.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.020	Methyl Methacrylate (MMA) Two-Component Traffic Marking White Integrated Bike Lane Arrow	EACH
SPV.0060.021	Methyl Methacrylate (MMA) Two-Component Traffic Marking White Integrated Bike Lane Symbol	EACH

Payment is full compensation for furnishing and installing all materials including any re-application or repair required under the Performance Requirements and Warranty as provided herein.

45. Methyl Methacrylate (MMA) Two-Component Traffic Marking Bike Lane Green Two-Stage Queue Boxes, Item SPV.0060.023.

A Description

The contractor shall furnish and install white methyl methacrylate (MMA) resin with hardwearing aggregate and premium pigments to deliver a durable, highly visible and color stable bike lane two-stage queue boxes that meets the non-slip requirements needed for pedestrians, cyclists and vehicles at the locations shown on the plans, in conformance with the details, and the material specifications included herein.

B Materials

The methyl methacrylate material shall be a two-part material. The composition is 98 parts of Component “A”, homogeneously composed of pigment, filler, resins and anti-skid aggregate, and 2 parts of Component “B”, liquid hardener. Part “B” shall be a benzoyl peroxide catalyst.

Use Color-Safe Pavement Marking with Anti-Skid Surface by Transpo Industries, CycleGrip MAXX by Ennis-Flint, or Roadzilla or an approved equal. Color “Bike Lane Green” or approved equivalent. Use an MMA based resin system capable of retaining an aggregate topping under vehicular traffic conditions. Install Methyl Methacrylate (MMA) Two-Component Traffic Markings according to manufactures specifications and these special provisions.

The material shall comply to the following:

Property	Value	Test Method
Tensile Strength @ 7 days, psi, minimum	400	ASTM D 638
Hardness, Shore D, minimum	50	ASTM D 2240
Gel Time, minutes, minimum	10	ASTM D 2471
Cure Rate, hours, maximum	3	Film @ 75 degrees F
Water Absorption @ 24 hours, maximum	0.25% CELL	ASTM D 570

Aggregate: The aggregate shall be high friction crushed Bauxite, No. 1 Silica, or Phonolite or equivalent. The aggregate will be delivered to the construction site in clearly labeled bags or sacks. The aggregate shall be clean, dry and free from foreign matter. Aggregate shall meet the following requirements:

Property	Value	Test Method
Hardness, minimum	7	Mohs Scale

Submittal: Submit certificates of compliance certifying that the products supplied under the contract conform to these specifications. Submit Application Instructions a minimum 72 hours prior to application.

C Construction

General: Install Methyl Methacrylate (MMA) Two-Component Traffic Marking green two stage queue boxes according to manufactures specifications.

Preparation: Prepare surfaces so that they are clean, dry, and free of all dust, oil, debris and any other material that might interfere with the bond between the MMA based resin system and existing surfaces. Contaminates that might interfere with the proper adhesion of the material must be removed by sandblasting or shotblasting. The surface should be visibly dry, and the moisture content should be tested according to ASTM D4263 (modified to 2 hours). Concrete must be fully cured for a minimum of 28 days prior to installation. Surface contaminants such as curing agents, membranes, bond breakers or laitance shall not be mechanically removed prior to marking.

Protect utilities, drainage structures, curbs and any other structure within or adjacent to the treatment location against the application of the surface treatment materials. Cover and protect all existing pavement markings that are adjacent to the application surfaces as directed by the engineer.

Pre-treat joints greater than ¼ inches in width and depth with the MMA resin system specified herein or by using an alternative procedure proposed by the manufacturer and agreed upon by the engineer. Proceed with the MMA resin system installation once the product, in the pre-treated areas, has gelled or once the alternative procedure has been accomplished.

Mix: MMA traffic marking is made up of three components (resin, hardener, and aggregate) that must be mixed thoroughly for uniform curing and performance. Liquid components must be homogenously stirred in the original containers before mixing components A and the liquid BPO concentrate catalyst, called Part B. Thoroughly mix by weight, 2 parts of the liquid hardener (Part B) with 98 parts of Component A. Mixing must be done by using a static mix tube or impingement system just prior to spray gun application on the job site.

Temperature: Material, pavement surface and ambient air temperature must be between 40° F and 105° F, and at least 5° F above dew point prior to striping. Relative humidity must be less than 75%. Installing the materials on surfaces above 105° F can lead to improper cure and dirt pickup. Surface and ambient temperatures should be checked hourly at a minimum if weather conditions cause temperatures to fluctuate during the course of the striping operation. Please note that drying time will be increased when striping at low temperatures. Both the Part A and B must be mixed thoroughly prior to application by any of the various application techniques.

Mixing and Application: Follow the MMA resin technical data sheet for application details. This material should be readily applied to Portland cement concrete surfaces sprayed at a thickness of 45 mils, and no greater than 50 mils.

Curing: Allow the MMA based resin system to cure according to manufacturer recommendations. Protect treated surfaces from traffic and environmental effects until the area has cured.

PERFORMANCE REQUIREMENTS

The following guidelines shall be followed to ensure total understanding of what is expected in the application of any permanent pavement marking material on new pavement surfaces.

The pavement marking shall be uniform thickness across the entire cross section of the marking with well-defined edges. Heavy inner thickness and thin edges or vice-versa will not be accepted. Aggregate shall be spread uniformly over the entire marking. Beginning and ends of markings shall be clean cut and perpendicular to the centerline of the street.

Remove and replace methyl methacrylate that has foreign covering, discolored areas, improper adhesion, improper width, length, or thickness as verified by the engineer against the plans or this special provision. Remove and replace areas that present a ragged appearance, areas that do not present clear and sharply defined edges, and areas with abrupt unintended changes in alignment. Remove excessive dripping of marking material between markings and remove and replace any marking applied with a lack or excess of aggregate. Remove, to the satisfaction of the engineer, all pavement marking applied outside the scope or limits of this project. Removal and replacement of unsatisfactory pavement marking will be at the contractor’s expense. The replaced Colored White surface treatment shall meet the requirements of this sub-article.

Remove and replace Colored White surface treatment that ravels, delaminates, or wears off within 90 days after placement, unless approved to remain in place by the engineer. The limits of removal and replacement shall be approved by the engineer.

Lack of specified thickness: The full unit price bid per unit (each) shall be withheld if lack of thickness is found at each bike lane arrow or symbol. Each bike two-stage queue box shall be checked a minimum of one time.

Lack of specified width: Payment shall be made with penalty being equal to 25% of the unit price bid per each for each ¼ inch of width lacking not to exceed 100% of the unit price bid.

Improper adhesion: The full unit price bid per item shall be withheld for each occurrence if improper adhesion is found.

Deviation: A marking that in the judgment of the engineer deviates from the specified layout by an unreasonable amount shall be replaced. The contractor shall be responsible for removal of the deviated marking material/repair of the pavement as designated by, and to the satisfaction of, the engineer at no additional compensation.

Excessive Dripping between Symbols: The full unit price bid item shall be penalized for the length of any open space between symbols that is not removed to the satisfaction of the engineer before leaving the project site that workday. Penalty shall be imposed upon the first occurrence and every occurrence thereafter.

Warranty: The MMA based resin system material shall be installed per plans and manufacturer specification. The engineer will notify the contractor within 48 hours of installation regarding any of the MMA based resin system material not installed per specification or to the satisfaction of the engineer. Non-conforming MMA based resin system material shall be removed at no charge to WisDOT and replaced with conforming product.

The warranty period in reference to the following points is to be 1 year from date of installation. Warranty of the following items shall be submitted in writing by the contractor or his installer prior to the pre-construction meeting.

- The MMA based resin system material will maintain its original color in the surface area throughout the 'warranty period' with the exception of natural weathering, tire and dirt deposits and abnormal markings applied after installation.
- Friction will achieve a minimum BPN of 60 according to ASTM E-303.
- The MMA based resin system material will maintain its skid resistance qualities in 100% of its surface area to never fall below a BPN of 60 during the 'warranty period'.
- With the exception of structural cracking or excessive movement of the surface beneath, the MMA based resin system will not be subject to excessive cracking in its surface.

D Measurement

The department will measure Methyl Methacrylate (MMA) Two-Component Traffic Marking Green Two-Stage Queue Boxes by EACH unit, acceptably completed. No deduction will be made for the areas occupied by manholes, inlets, drainage structures, pavement markings or by any public utility appurtenances within the area.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.023	Methyl Methacrylate (MMA) Two-Component Traffic Marking Green Two-Stage Queue Boxes	EACH

Payment is full compensation for furnishing and installing all materials including any re-application or repair required under the Performance Requirements and Warranty as provided herein.

46. Inlet Covers Type MS 57, Item SPV.0060.102.

A Description

This special provision describes providing work under these items according to the requirements of standard spec 611 and the details as shown on the plans.

B Materials

Furnish materials under these items according to the requirements of standard spec 611 and the details as shown on the plans.

C (Vacant)

D Measurement

The department will measure Inlet Covers Type MS 57 by each unit, 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.0060.102	Inlet Covers Type MS 57	EACH

Payment is full compensation for furnishing and installing the inlet covers and catch basin.

47. Manhole Covers Type MS-58A, Item SPV.0060.103.

A Description

This special provision describes providing work under these items according to the requirements of standard spec 611 and the details as shown on the plans.

B Materials

Furnish materials under these items according to the requirements of standard spec 611 and the details as shown on the plans.

C (Vacant)

D Measurement

The department will measure Manhole Covers Type MS-58A by each unit, 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.0060.103	Manhole Covers Type MS-58A	EACH

Payment is full compensation for removing and salvaging the existing covers, providing new covers, including frames, lids, and for installing and adjusting each cover. Old covers removed remain the City of Milwaukee's property.

48. Catch Basin Type 44-A, Item SPV.0060.110.

A Description

This special provision describes providing work under these items according to the requirements of standard spec 611 and the details as shown on the plans.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Catch Basin Type 44-A by each unit, 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.0060.110	Catch Basin Type 44-A	EACH

Payment is full compensation for providing materials, including masonry, making sewer connections to new or existing facilities, and other fittings; for excavating, backfilling, disposing of surplus material, and for cleaning out and restoring the work site; except that the department will pay for covers, including frames, grates and lids separately.

49. Storm Inlet Type 45A, Item SPV.0060.112.

A Description

This special provision describes providing work under these items according to the requirements of standard spec 611 and the details as shown on the plans.

B Materials

Furnish materials under these items according to the requirements of standard spec 611 and the details as shown on the plans.

C (Vacant)

D Measurement

The department will measure Storm Inlet Type 45A by each unit, 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.0060.112	Storm Inlet Type 45A	EACH

Payment is full compensation for providing materials, including masonry, making sewer connections to new or existing facilities, and other fittings; for excavating, backfilling, disposing of surplus material, and for cleaning out and restoring the work site; except that the department will pay for covers, including frames, grates and lids separately.

50. Install City Precast Controller Base, Item SPV.0060.201.

A Description

This special provision describes providing installation of precast control cabinet bases furnished by the City of Milwaukee, for traffic signal control cabinets as shown on the plans.

B Materials

The 36”x21.25”x20” pre-cast concrete foundation for traffic signal cabinets P1 and P2 will be furnished by the City of Milwaukee. The contractor shall contact Mr. Rudy Gutierrez, Electrical Services Manager at (414) 286-5941 office, (414) 708-5148 mobile; or the Electrical Services Dispatcher at (414) 286-3687 to coordinate pickup of the concrete foundation at the City of Milwaukee Electrical Services headquarters located at 1540 West Canal Street Milwaukee, WI 53233.

C Construction

Install concrete traffic cabinet bases according to the plans. Plan changes must be approved by a City of Milwaukee Electric Services Manager or Traffic Engineer. The primary contacts are Mr. Rudy Gutierrez, Electrical Services Manager at (414) 286-5941 office, (414) 708-5148 mobile; or Mr. Scott Reinbacher, Traffic Control Engineer III at (414) 286-3232.

D Measurement

The department will measure Install City Precast Controller Base by each unit, 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.0060.201	Install City Precast Controller Base	EACH

Payment is full compensation for installing all materials; for excavation, backfilling and disposal of surplus material.

51. ATC Controller and Cabinet Installed, Item SPV.0060.205.

A Description

This special provision describes furnishing and installing an ATC Traffic Signal Controller and NEMA TS2 Type 1 Traffic Signal Control Cabinet.

B Materials

Furnish equipment and assemble the cabinet conforming to the latest revision of NEMA Standards Publication TS 2-2003, Traffic Controller Assemblies with NTCIP requirements, National Electrical Manufacturers Association, hereinafter called NEMA TS2 Standard.

The cabinet shall be designed for TS2 Type 1 operation and shall conform to the design shown in DWG TF5016TWI02.

All equipment, materials, and cabinet features shall be the same type, make, and model on all cabinets delivered under any one order.

Furnish an Econolite Cobalt-C shelf mount controller with the latest ASC/3 software installed.

Furnish any equipment and materials not specifically described but required in order to perform the intended functions in the cabinet.

C Construction

Conform all work to the Wisconsin State Electrical Code (WSEC). Conform all work to standard spec 651 as supplemented or modified in this specification.

C.1 Definitions

Vendor – the firm under contract with the City of Milwaukee for furnishing the fully equipped and operational traffic signal cabinet.

Construction contractor – the firm under contract with the City of Milwaukee or another agency to construct a roadway facility. The construction contractor will install the traffic signal cabinet or may designate a subcontractor, such as an electrical subcontractor, to represent them with regards to the signal cabinet installation.

Owner – City of Milwaukee

Manufacturer – the firm that builds or produces the traffic signal equipment other than the cabinet. For example, the “controller manufacturer”.

C.2 Terminal Facility

Fully wire the terminal facility with 16 load switch sockets: 8 phases of vehicular, 4 phases of pedestrian, and 4 phases of overlap operation; 8 flash transfer relay sockets; 1 flasher socket; and 2 terminal facility Bus Interface Unit (BIU) rack slots. The use of printed circuit boards is not acceptable on the terminal facility, except printed circuit boards are acceptable for the BIU interface with the load bay. Position the 16 load switch sockets in two horizontal rows of 8 sockets each. Support the load switches and flasher by a bracket or shelf extending at least 3 inches from the terminal facility.

Label all terminals, load switches, and flash transfer relay sockets. Label reference designators by silk-screening on the front and rear of the terminal facility to match drawing designations.

Provide rack mounted BIU’s. Provide a dual-row, 64-pin female DIN 41612 Type B connector for each BIU rack position. Provide card guides for both edges of the BIU. Terminal and facilities BIU mounting shall be an integral part of the terminal facility.

Provide a 16-channel, 8-position, TS2 detector rack, with an integrally mounted BIU mounting. Racks shall be addressable. Power a detector rack by the cabinet power supply. Fasten the loop detector rack towards the left side of the lower shelf.

For BIU rack connectors, provide pre-wired address pins or jumper plugs corresponding to the requirements of the NEMA TS2 Standard. The address pins or jumper plugs shall control the BIU mode of operation. BIUs shall be capable of being interchanged with no additional programming.

For the terminal facility, contain all field wires within one or two rows of horizontally-mounted heavy duty terminal blocks. Terminate all field output circuits on an unfused terminal block with a minimum rating of 10 amps. Use mechanical connector lugs rated for copper wire.

Angle the lower section of the terminal block out from the back of the cabinet at approximately a 45 degree angle.

Identify all field input/output (I/O) terminals by permanent alphanumeric labels. All labels shall use standard nomenclature per the NEMA TS2 Standard.

All field flash sequence programming at the field terminals shall be able to be accomplished with the use of only a screwdriver.

Wire field terminal blocks to use three positions per vehicle or overlap phase (green, yellow, red).

Wire one RC network in parallel with each flash transfer relay coil.

Permanently label all logic-level, NEMA-controller and MMU input and output terminations on the terminal facility. Identity the function of each terminal position on the cabinet drawings.

Terminal blocks for DC signal interfacing shall have a number 6-32 x 7/32-inch screw as minimum.

Functions to be terminated shall be as specified in the listing of Input/Output Terminals in Section 5 of the NEMA TS2 Standard.

Conform all terminal facility and cabinet wiring to the WSEC. The green/walk, yellow, and red/don't walk load switch outputs shall be minimum 16 gauge wire. The MMU (other than AC power), controller I/O, and logic ground shall be minimum 22 gauge wire. All wire colors shall be consistent.

C.3 Vehicle Detection Interface Panel

Provide a 16-position interface panel. Interface panel shall allow for the connection of 16 independent field loops. The panels shall have barrier strip type terminals using 8-32 screws and be rated for 20 inch pounds of torque. Provide a ground bus terminal between each loop pair terminal to provide a termination for the loop lead-in cable ground wire. Secure the interface panels to a mounting plate attached to the left interior side wall of the cabinet. The panel shall also include inputs for up to 4 preempts.

Provide a cable consisting of 20 AWG twisted pair wires to enable connection to and from the interface panel to a detector rack. The twisted pair wires shall be color-coded wires. Provide a cable of sufficient length to allow the detector rack to be placed on either shelf.

Identify all termination points by a unique number silk screened on the panel.

C.4 Conductors and Cabling

All conductors in the cabinet shall be copper 22 AWG or larger. All 14 AWG and smaller wire shall conform to MIL-W-16878/1, Type B, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation without clear nylon jacket and rated to 105 degrees Celsius. All 12 AWG and larger wire shall be UL or NRTL listed THHN/THWN 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation, and clear nylon jacketed.

Provide controller and MMU cables of sufficient length to allow the units to be placed on either cabinet shelf in the operating mode. Connecting cables shall be sleeved in a braided nylon mesh. Exposed tie-wraps and interwoven cables are unacceptable.

Provide the cabinet configuration with up to 6 SDLC RS-485 Port 1 communication cables to allow full capabilities of that cabinet. Each communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS-485 communications. Secure all connecting cables and wire runs by mechanical clamps. Stick-on type clamps are not acceptable.

Pre-wire the terminal facility for a Type 16 MMU.

All wiring shall be neat in appearance. Stow excess cable behind the terminal facility or below the shelves in order to allow easy access to the terminal facility and cabinet components. All cabinet wiring shall be continuous from its point of origin to its termination point. Butt type connections/splices are not acceptable.

Wire the grounding system in the cabinet into three separate circuits: AC Neutral, Earth Ground, and Logic Ground.

Optoisolate all pedestrian pushbutton inputs from the field to the controller through the BIU and operate at 12 VAC.

Hook or loop all wire, size 16 AWG or smaller, at solder joints around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

C.5 Cabinet Switches

The above switches shall function as follows:

Off: Signals Dark

Signal: Signals On and operating as follows:

Auto	Hand
Flash: Signals Flash	Signals Flash
Normal: Signals Normal	Signals Advance by use of hand control

Provide manual detector switches. Provide four pedestrian detector switches. The switches shall be spring loaded and automatically return to the center position. Wire the pedestrian switches to the T&F BIU slot 1. The switches shall operate as follows:

Position	Function
Up	Detector Disabled
Center	Detector Enabled
Down	Detector Called

C.6 Bus Bar

Provide a minimum 20-position neutral bus bar capable of connecting three #12 AWG wires per position.

C.7 Circuit Breakers

House in the power panel the following vertically mounted, single pole, 120 volts AC, 60 Hertz circuit breakers, with the ON position being up:

One 30-amp signal breaker. This breaker shall supply power for all cabinet functions not powered through one of the other breakers or fuses listed below. Streetlights will be powered from outside the cabinet in the meter breaker pedestal. This breaker shall feed a signal bus supplied through a solid state bus relay and a radio interference line filter. The bus relay, in all cases, shall be a solid state contactor and shall not be jack mounted. Breakers shall be thermal magnetic type, UL or NRTL listed, with a minimum of 22,000 amp interrupting capacity.

One 15-amp auxiliary breaker. This breaker shall supply power to the fan and heater.

One 10-amp breaker. This breaker shall supply power for control equipment: controller, MMU, and cabinet power supply.

One 20-amp circuit breaker for future use.

Power the cabinet light through the GFI fuse, not a circuit breaker.

C.8 Radio Interference Suppressor

Equip each control cabinet with a single radio interference suppressor (RIS) of sufficient ampere rating to handle the load requirements. Install the RIS at the input power point. The RIS shall minimize interference in both the broadcast and the aircraft frequencies and shall provide a maximum attenuation of 50 DB over a frequency range from 200 KHZ to 75 MHZ, when used in connection with normal installations. The RIS shall be hermetically sealed in a substantial metal case filled with a suitable insulating compound. The terminals shall be nickel-plated brass studs of sufficient external length to provide space to connect two #8 AWG wires and shall be so mounted that they cannot be turned in the case. Ungrounded terminals shall be properly insulated from each other and shall maintain a surface leakage distance of not less than 6.35 mm between any exposed current conductor and any other metallic parts. The terminals shall have an insulation factor of 100-200 megaohms dependent upon external conditions. The RIS shall be rated at minimum 50 amperes. Design the RIS for operation on 115 VAC +/- 10%, 60HZ, single-phase circuits, and to meet the standards of UL or a NRTL and Radio Manufacturer's Association.

C.9 Bus Relay

Provide a normally-open, 60 amp, solid state relay.

C.10 Surge Protector

Install a plug-in type EDCO SHA-1250, or Atlantic/Pacific approved equal, surge protector across the load terminal of the 10-amp circuit breaker. Install a General Electric Varistor, catalog #V130PA20A, at the load terminals of the circuit breaker from the hot line to the grounded current carrying neutral conductor.

C.11 Power receptacles

Mount a 120 VAC 20 amp**,** NEMA 5-20R GFCl convenience outlet at each of these two locations:

On the interior right-side wall above the power panel. The outlet shall be fully operational, and fuse protected.

Near the power panel where it will not interfere with power panel maintenance. This outlet is to be wired by field installation personnel.

C.12 Suppressors and RC Network

Provide a suppressor for each 120 VAC circuit that serves an inductive device, such as a fan motor or a mechanical relay, to protect the controller's solid-state devices from excessive voltage surges. Such suppressors shall be in addition to the surge protector at the input power point. Wire one RC network in parallel with each inductive device.

C.13 Auxiliary Devices

C.13.1 Load Switches

Provide 16 solid state load switches conforming to the requirements of section 6.2 of the NEMA TS2 Standard.

C.13.2 Flashers

Provide one solid state flasher conforming to the requirements of section 6.3 of the NEMA TS2 Standard.

C.13.3 Flash Transfer Relays

Provide 4 flash transfer relays conforming to the requirements of section 6.4 of the NEMA TS2 Standard.

C.13.4 Inductive Loop Detector Units

Provide 8 inductive loop detector units conforming to the requirements of section 6.5 of the NEMA TS2 Standard for 2-channel, rack mount detector units, type C.

C.13.5 Cabinet Power Supply

Provide one cabinet power supply with each cabinet conforming to the requirements of section 5.3.5 of the NEMA TS2 Standard. Provide LED indicators for the 12 VDC, 12 VAC, and 24 VDC outputs. Provide jack plugs on the front panel for access to the +24 VDC for test purposes.

C.14 Bus Interface Units (BIU)

Provide three BIUs conforming to the requirements of section 8 of the NEMA TS2 Standard.

Provide two BIUs with the main panel and one BIU with one of the detector racks.

C.15 Malfunction Management Unit (MMU)

Provide one shelf-mountable, 16 channel, solid-state MMU with Ethernet capability. The MMU shall meet the requirements of Section 4 of the NEMA TS2 Standard. The MMU shall be an Eberle Design Inc. Model MMU2-16LE or preapproved equal.

The MMU shall be capable of the following:

Detecting simultaneously active inputs of Green (Walk), Yellow, or Red (Don’t Walk) on the same channel.

Determining if the field signal input states detected as active or inactive by the MMU correspond with the data provided by the Controller Unit.

Monitoring an optional external watchdog output from a Controller Unit or other external cabinet device.

Monitoring an intersection with up to four approaches using the Flashing Yellow Arrow (for protected/permissive left and right turn movements).

Event logging for the following: AC Line log, Prior/Previous Faults log, and Monitor Reset Log. All log entries shall include a date and time stamp.

All monitor functions shall be capable of being programmed through the front panel, without the need for computers or special programs cards.

A built-in Diagnostic Wizard shall be provided that displays detailed diagnostic information regarding the fault being analyzed. This mode shall provide a concise view of the signal states involved in the fault, pinpoint faulty signal inputs, and provide guidance on how the technician should isolate the cause of the malfunction.

The MMU shall have an LCD display that allows for viewing of log files and field indications, as well as the viewing and setting of date and time and configuration parameters.

C.16 Documentation

C.16.1 Cabinet Intersection Wiring Diagrams

For each individual cabinet ordered, within 10 calendar days after receipt of the procurement order, furnish to the City of Milwaukee’s electrical lead electrician two sets of 22X34-inch detailed printed cabinet intersection wiring diagrams for information only.

At the time of the cabinet delivery, furnish to the City of Milwaukee’s electrical lead electrician two sets of printed 22X34-inch cabinet intersection wiring diagrams and one set of .dgn CAD files per cabinet. Printing the 22X34-inch sheet in smaller sizes is not acceptable. Leave a third drawing in the signal

cabinet. After cabinet acceptance is complete, if any cabinet wiring changes were made, revise the cabinet wiring diagrams, leave one drawing in the signal cabinet, and furnish to the City of Milwaukee's electrical lead electrician two sets of as-built printed cabinet wiring diagrams and one set of as-built .dgn CAD files per cabinet. If no changes were made from time of cabinet delivery, notify the City of Milwaukee's lead electrical technician in writing.

C.16.2 Manuals

At the time of the cabinet delivery, furnish to the City of Milwaukee's electrical lead electrician one set of installation, operations, and maintenance manuals per cabinet including each type of equipment in the cabinet. The manuals shall as a minimum include the following information: a) table of contents, b) operating procedure, c) step-by-step maintenance and trouble-shooting information for the entire assembly, d) schematic diagrams, e) pictorial diagrams of parts locations, f) itemized parts lists with parts numbers, g) theory of operation, and h) maintenance checklists.

The itemized parts lists shall include the manufacturer's name and parts number for all components (such as IC, diodes, switches, relays, etc.) used. The list shall include cross-references to parts numbers of other manufacturers who make the same replacement parts.

For each of the traffic signal controller and MMU, in addition to the above manual requirements, furnish one reference manual for the processor and components proposed to perform the controller and MMU functions. Include a complete set of schematics for the controller, MMU, and any auxiliary circuit boards either in the reference manual or in a separate volume. In addition, furnish a written narrative describing the controller and MMU operation and front panel configuration, and a conceptual flow chart illustrating the control logic for comparison with these specifications. The narrative shall include a discussion of any limitation or exceptions to the performance described in these specifications, and a discussion of any control capabilities provided in addition to that required in these specifications.

C.17 Cabinet Delivery

The construction contractor will provide the traffic signal specifications and plans, including the sequence of operation, to the vendor. The vendor shall determine the required cabinet equipment and assembly requirements from the plans and specifications and provide the owner a list of procurement items. The contractor will order the procurement items. The City of Milwaukee will provide the signal timing to the vendor a minimum of two weeks before the scheduled cabinet delivery date.

For cabinets to be installed in the field by the construction contractor, provide the list of procurement items to the City of Milwaukee a minimum of 60 days before the cabinet is scheduled to be installed in the field. The vendor is responsible for coordinating with the project construction contractor to determine the scheduled cabinet installation date. Cabinets shall be completed, delivered, and accepted within 50 calendar days after the initiation of the procurement request. The City of Milwaukee reserves the right to require up to five cabinets per month to be completed, delivered, and accepted.

If the City of Milwaukee makes a modification to any cabinet order before the entire cabinet is completely built in the vendor's shop, the delivery time does not change. If the owner accepts a vendor requested cabinet order or other modification at any time, the delivery time does not change. All cabinet modifications will be made without additional cost to the owner, except if an additional equipment item is added that is under procurement contract, the established price in the procurement contract will be paid the vendor.

Deliver cabinets to City of Milwaukee Electrical Services headquarters located at 1540 West Canal Street Milwaukee, WI 53233. Final wiring/terminations in all cabinets that are to be city owned will be performed by city forces. Coordinate final cabinet wiring with the City of Milwaukee's Traffic Signal Field Operations unit.

Delivery will be received by the owner. Schedule the delivery directly with the construction contractor. The vendor is responsible for arranging the unloading of the cabinet. Notify the electrical shop of the intent to deliver a minimum of two business days ahead of the desired delivery time. The owner will provide the vendor a list of names, phone numbers, and email addresses for contact information.

The vendor is notified that delivery times and schedules may be changed or delayed at any time for any reason. The vendor may be required to store completed cabinets at their facility for extended periods of time.

C.18 Acceptance Testing

Complete on-site traffic signal acceptance testing in the presence of the owner. The acceptance testing will occur after the signal cabinet is fully installed at the project intersection by the construction contractor and before the traffic signal is turned on. The construction contractor and the owner will determine the time for the acceptance testing. In addition to the cabinet as specified in this specification, add-on accessory items, traffic signal interconnect, system communication, and closed loop system operation are included in the acceptance testing.

Provide an IMSA certified Traffic Signal Bench Technician, Level II, or an IMSA certified Traffic Signal Field Technician, Level II, with a minimum of three years' experience in construction and operation of traffic signal cabinets similar to the cabinets specified in this specification. Alternatively, provide a technician or electrician with a minimum of three years' experience in construction and operation of traffic signal cabinets similar to the cabinets specified in this specification. The technician shall be on-site during the entire acceptance testing and shall be capable and equipped to make in-field revisions / repairs to the signal cabinet to conform to this specification.

Upon successful completion of the acceptance testing as determined by the Owner, a 30-day conditional acceptance of the signal cabinet will be provided to the vendor. Should the cabinet within the 30-day conditional acceptance period fail to perform in any way as determined by the Owner, the vendor shall repair the cabinet to bring it into conformance with this specification and the acceptance testing shall be repeated. Repair times shall conform to the warranty service response times in this specification. The acceptance testing shall be repeated. Upon successful completion of the retesting, a new 30-day conditional acceptance period shall begin. After the signal cabinet runs 30 days without failure, the cabinet will be fully accepted by the Owner.

The vendor will be allowed up to two 30-day conditional acceptance periods. If the cabinet fails during the second 30-day period, an entirely new cabinet shall be furnished and made operational in the field by the vendor at no cost to the owner and a new acceptance testing procedure shall begin. Cabinet replacement times shall conform to the warranty service response times in this specification. The original cabinet becomes the property of the vendor.

The owner reserves the right to perform its own tests on the traffic signal cabinet at any time using the owner's control equipment. Should an individual traffic signal cabinet be found to not meet the requirements of these specifications, the vendor shall pick up the traffic signal cabinet from the owner or from the field, perform at their shop repairs / revisions as necessary to bring the traffic signal cabinet into conformance with these specifications, and deliver the repaired / revised traffic signal cabinet back to the designated location, all at no additional cost to the City of Milwaukee.

C.19 Certification

Provide a written certification with the cabinet delivery that the equipment meets the requirements of the plans and specifications and will fully run the sequence of operation and the signal timing, including closed loop system operation if applicable. The certification shall be on the vendor's company letterhead, shall be addressed to both the City of Milwaukee and the construction contractor, and shall be signed by a company officer authorized to legally obligate the company.

C.20 Warranty

All warranty beyond one year shall be from the manufacturer or vendor.

The warranty shall start upon delivery of the cabinet and all supplied equipment to the owner designated location. Provide a warranty and guarantee statement which stipulates that the cabinet and all supplied equipment, including add-on accessory items, to be, individually and as a cabinet system, free from defects in materials and workmanship for a period of at least one year from the date of final cabinet acceptance in the field, or in the case of a cabinet that is to be delivered to the owner for use by the owner, from the date of delivery of an accepted cabinet to the owner. All warranty beyond one year construction bond needs to be from the manufacturer or vendor. Final cabinet acceptance in the field is after a successful 30-day conditional acceptance period is completed. Delivery of a cabinet for testing does not constitute acceptance of the cabinet. Turn over to the City of Milwaukee warranties and guarantees that are offered by the manufacturer as a customary trade practice. Name the City of Milwaukee as the obligee on all manufacturers' warranties and guarantees. Shipping costs, both to the factory or an Authorized Repair Depot, and return, shall be paid by the vendor.

The warranty shall provide for full repair or replacement, as determined by the owner, of the failed item or cabinet system, including removal and making the item or system fully operational in the cabinet, at no cost to the owner. Vendor warranty service response times after notification by the owner:

- 4 hours to have qualified service personnel on site at the intersection.
- 12 hours to have the signal safely operational, including all phases and enough detection to run the intersection phasing (minimum 8 detectors).
- 48 hours on business days to restore the signal to full original operations.

If a malfunction in the controller unit, MMU, module, or any auxiliary equipment occurs during the warranty period, the vendor shall, within 24 hours after notification (excluding Saturday and Sunday), furnish and make fully operational in the cabinet, an identical, programmed, controller unit, MMU, module, or auxiliary equipment, for use while the warranted unit is being repaired or replaced. The isolation of any malfunction during the warranty period shall be the responsibility of the vendor.

The City of Milwaukee reserves the right to make repairs to malfunctioning cabinets and equipment that are under warranty, up to and including complete replacement of the cabinet, when in the owner's determination the safety of the traveling public is best served. Such repair work will not in any way void or limit the vendor's warranty and guarantee specified above. The owner will notify the vendor in writing of the repair.

The vendor shall within five business days after notification replace, at the electrical shop, all cabinets, equipment, and supplies used by the owner in making repairs, with new parts meeting the requirements of this specification.

If any cabinet has three or more equipment or cabinet system failures, resulting from poor workmanship, within the first six months of operation after owner acceptance, an entirely new cabinet exactly matching the existing cabinet shall be furnished and made fully operational by the vendor at no additional cost to the owner. Any traffic control, including but not limited to signing, channelizing devices, temporary signals, police control, and flaggers, that becomes necessary as determined by the owner in order to safely replace the cabinet is the full responsibility of the vendor. The original cabinet becomes the property of the vendor.

Provide, at no additional cost, firmware/software maintenance, problem resolution phone technical support, problem resolution technical support in the supplier's facility, firmware/software patches, and firmware/software upgrades for a minimum of three years. The lead for technical support and primary owner contact for support shall be a qualified person employed by the vendor's local office who is personally familiar with the owner's software and signal operations. Help desks and manufacturer's representatives may be utilized by the lead technical support person as resources but are not acceptable for lead technical support.

Maintain an inventory of the firmware/software version on each controller provided. Notify the City of Milwaukee's electrical shop supervisor or lead electrician in writing when a firmware/software patch or upgrade is available. The owner will direct the vendor when to load the patch or upgrade for each controller. Load the patch or upgrade and provide a usable copy of the patch or upgrade to the owner. Alternatively, when requested by the owner, provide the patch or upgrade to the owner for installation by the owner.

D Measurement

The department will measure ATC Controller and Cabinet Installed by each unit, 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.0060.205	ATC Controller and Cabinet Installed	EACH

Payment is full compensation for furnishing and installing the traffic signal controller and control cabinet; for furnishing and installing all other items necessary (such as, wire nuts, splice kits and/or connectors, tape, insulating varnish, ground lug fasteners, etc.) to make the proposed system complete from the source of supply to the most remote unit and for clean-up and waste disposal.

52. Fiber Optic Patch Panel, Item SPV.0060.212.

A Description

This special provision describes furnishing and installing a fiber optic patch panel according to the following standards.

B Materials

Furnish a Fiber Optic Patch Panel with cable lengths as specified in the plans. The patch panel shall have 6 steps, 12 count single-mode OS2 fiber, ST connectors, and a pigtail end. The cable shall be for indoor or outdoor use and shall be riser cable. The body of the patch panel shall be black in color. No pull kit should be pre-installed.

C Construction

Have a certified fiber optic technician perform work for fiber optic terminations, splicing and testing. Have a certified fiber optic technician supervise all fiber optic cable installation. Test the panel and demonstrate that all equipment is operational to the inspector. Ensure termination does not exceed attenuation limits specified in standard spec 678.3.4.

D Measurement

The department will measure Fiber Optic Patch Panel by each unit, 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.0060.212	Fiber Optic Patch Panel	EACH

Payment is full compensation for furnishing and installing fiber optic patch panel and for testing the equipment.

53. Ethernet Switch, Item SPV.0060.213.

A Description

This special provision describes furnishing and installing an Ethernet switch according to the following standards.

B Materials

Furnish an Ethernet Switch with a compatible power supply.

Environmental: This equipment shall meet the NEMA environmental, power and surge ratings as set forth in NEMA TS2 specifications.

Mounting: This equipment must be DIN Rail mountable.

Interfaces: This equipment must support a minimum of 12 Ethernet interfaces, with a minimum of three being shared or dedicated SFP interfaces for pluggable optical connections and support for PoE+ on four or more interfaces.

Management: This equipment must be a managed switch with the ability to support 802.1Q VLAN Tagging, 802.1D Spanning Tree Protocol, and 802.1p Quality of Service. Multicast, broadcast, and flooding storm control should be features.

LEDs: This equipment must have a power input status LED, a ring status LED, and LEDs showing the port link and speed status per port.

Memory: This equipment must have a minimum of 128MB of DRAM, and a minimum of 16MB of flash memory.

C Construction

Install Ethernet switch into field cabinet. Connect switch to the devices as directed by City of Milwaukee communications team. Contact Michael Panlener at (414) 708-3608 for more information.

D Measurement

The department will measure Ethernet Switch by each unit, 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.0060.213	Ethernet Switch	EACH

Payment is full compensation for furnishing and installing Ethernet switch and making necessary connections.

54. Electrical Service Pedestal, Item SPV.0060.215.

A Description

This special provision describes providing installation of meter breaker pedestal.

B Materials

Furnish 120/240V meter breaker pedestal conforming to state standard spec 656.2.3, except do not supply service.

C Construction

Install service pedestal at location shown in plans. Install grounding electrodes as required by local utility and install appropriate grounding conductors. Contact Mr. Rudy Gutierrez, Electrical Services Manager (414) 286-5941 office, (414) 708-5148 mobile, when pedestal will be ready for service with two working days' notice.

D Measurement

The department will measure Electrical Service Pedestal by each unit, 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.0060.215	Electrical Service Pedestal	EACH

Payment is full compensation for furnishing and installing of meter breaker pedestal, including labor, equipment, coordination.

55. EVP 1 Direction Detector, Item SPV.0060.218.

A Description

This special provision describes furnishing and installing an Emergency Vehicle Preemption (EVP) 1 Channel 1 Direction Infrared Detector.

B Materials

Furnish 1 Channel 1 Direction Infrared Detector.

C Construction

Install detector as shown in the plans and according to manufacturer's recommendations.

D Measurement

The department will measure EVP 1 Direction Detector by each unit, 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.0060.218	EVP 1 Direction Detector	EACH

Payment is full compensation for furnishing and installing an Emergency Vehicle Preemption (EVP) 1 Channel 1 Direction Infrared Detector.

56. EVP Phase Selector Card 4 Channel, Item SPV.0060.221.

A Description

This special provision describes furnishing and installing an Emergency Vehicle Preemption (EVP) Phase Selector Card 4 Channel.

B Materials

Furnish a 4 channel phase selector card. The selector card shall be capable of functioning with a GPS radio unit as well as infrared system detectors simultaneously.

C Construction

Install phase selector card into the appropriate slot in the controller cabinet and make all necessary wiring connections to EVP detectors.

D Measurement

The department will measure EVP Phase Selector Card 4 Channel by each unit, 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.0060.221	EVP Phase Selector Card 4 Channel	EACH

Payment is full compensation for furnishing and installing an Emergency Vehicle Preemption (EVP) Phase Selector Card 4 Channel.

57. EVP Confirmation Light, Item SPV.0060.223.

A Description

This special provision describes furnishing and installing an Emergency Vehicle Preemption (EVP) Confirmation Light Assembly.

B Materials

Furnish a typical confirmation light assembly and LED flood light.

C Construction

Install confirmation lights as described in the plans.

D Measurement

The department will measure EVP Confirmation Light by each unit, 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.0060.223	EVP Confirmation Light	EACH

Payment is full compensation for furnishing and installing an Emergency Vehicle Preemption (EVP) Confirmation Light Assembly.

58. Vehicular Video Detection System-2 Cameras, Item SPV.0060.225.

A Description

This specification describes furnishing and installing a system that detects vehicles on a roadway using only video images of vehicle traffic. This item includes all materials and labor necessary to install a completely functional vehicle detection system as shown in the plans, including but not limited to cameras, processors, video monitor, mounting hardware, and power cable.

B Materials

Furnish Vehicular Video Detection System-2 Cameras.

This specification sets forth the requirements for a system that detects vehicles on a roadway and provides detection outputs to a traffic signal controller. The materials shall also include all brackets, risers, mounting hardware, cable, terminations, interface panels, and all other incidentals for the installation of the equipment. This equipment shall meet the NEMA environmental, power and surge ratings as set forth in NEMA TS2 specifications.

The video detection system shall include two video detectors with a high definition camera of at least 720p resolution with a 10x optical zoom with real time iris and shutter speed control by the integrated processor. The faceplate shall be glass with a hydrophilic coating on the exterior and with an indium tin oxide heater applied to the inner surface.

All communications to the video sensor shall be broadband-over-power via three conductor cable. No coaxial cable shall be used.

The video detection system shall include an interface panel that manages communication between sensors, remote access to the sensors, and the cabinet itself. The interface panel shall provide connection points for four video sensors. Each sensor connection shall have a power switch and a resettable fuse. All communications to the detection system shall be to a single IP address. The interface panel shall weigh less than 3 pounds.

All incidental mountings required for pole or mast arm mounted units to install the detector are included in this item.

C Construction

The video detection system shall be installed by supplier factory-certified installers and as recommended by the supplier and documented in installation materials provided by the supplier.

In the event, at installation or turn on date, a noticeable obstruction is present in line with the detection zone(s), the contractor shall be obligated to advise the engineer before setting the zone.

All cables associated with the video detection system shall be routed to the controller. Each lead shall be appropriately marked as to which street or avenue it is associated. Provide 6 feet of cable slack.

The video detection system, as shown in the traffic signal plans, shall be complete, in place, tested, and in full operation.

D Measurement

The department will measure Video Detection System-2 Cameras by each unit, 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.0060.225	Vehicular Video Detection System-2 Cameras	EACH

Payment is full compensation for furnishing and installing Vehicular Video Detection System-2 Cameras, making necessary connections; and testing video detection.

59. Electrical Riser, Item SPV.0060.228.

A Description

This special provision describes fabricating and installing an electrical riser.

B Materials

Furnish C-condulets, reducer bushings, banding, 1” aluminum conduit, ½” aluminum conduit, 1” terminal adaptor, weather head, and sealant as shown in electrical riser detail.

C Construction

Install materials as shown in electrical riser detail.

D Measurement

The department will measure Electrical Riser by each unit, 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.0060.228	Electrical Riser	EACH

Payment is full compensation for fabricating and installing an electrical riser.

60. Pedestrian Countdown Signal Face 12-Inch, Item SPV.0060.267.

A Description

This special provision describes furnishing and installing Pedestrian Countdown Signal Face 12-Inch according to the following standards.

B Materials

Furnish a 12-Inch Light Emitting Diode (LED) Pedestrian Countdown Module that meets ITE PTCSI-STD Part 2 from March 2004 or current Institute of Transportation Engineer (ITE) standards. The countdown digits shall be displayed with an LED color/type of Portland Orange. The unit shall be able to operate when exposed to temperatures between -40 to 165 degrees Fahrenheit. The operating voltage shall be between 80 to 135VAC, and the wattage drawn shall be 7W.

C Construction

Install Pedestrian Countdown Signal Face 12-Inch as shown in the plans. Install following 658.3 from the standard specifications. The Pedestrian Countdown Signal Face 12-Inch shall be installed in the same housing and immediately below the Pedestrian Signal Face 12-Inch.

D Measurement

The department will measure Pedestrian Countdown Signal Face 12-Inch by each unit, 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.0060.267	Pedestrian Countdown Signal Face 12-Inch	EACH

Payment is full compensation for furnishing and installing Pedestrian Countdown Signal Face 12-Inch.

61. Voice Instruction Audible Pushbutton, Item SPV.0060.268.

A Description

This special provision describes furnishing and installing a Voice Instruction Audible Pushbutton.

B Materials

The Voice Instruction Audible Pushbutton shall be a 2-wire pushbutton that meets ADA requirements. The pushbutton shall be capable of providing audio cues with sound emanating from both the front and back of the unit. Sound shall be synchronized between units and automatically adjust to ambient sound levels. Changing settings and firmware updates shall be done wirelessly over Bluetooth. The switch operating life shall be greater than 20 million operations. The pushbutton station shall have an MUTCD compliant sign on its faceplate.

C Construction

Install a Voice Instruction Audible Pushbutton as shown on plans. Follow requirements outlined in MUTCD Section 4E.9 through 4E.12. Pushbutton plates and related signage should provide the direction of travel with a single or double arrow as required and shall be properly focused upon installation.

D Measurement

The department will measure Voice Instruction Audible Pushbutton by each unit, 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.0060.268	Voice Instruction Audible	EACH

Payment is full compensation for furnishing and installing a Voice Instruction Audible Pushbutton, focusing arrows.

62. Voice Instruction Audible Control Unit, Item SPV.0060.269.

A Description

This special provision describes furnishing and installing Voice Instruction Audible Control Unit.

B Materials

The Voice Instruction Audible Control Unit shall be a rack mount card able to be used in a 300 series cabinet. An interconnect panel shall provide enough connection for 16 or more pushbuttons. The panel shall have a separate power supply connection. No polarity requirement shall be needed for the pushbuttons. The control unit shall have LCD display showing status information. Setup shall be performable via Ethernet or Wi-Fi using a PC or by using an app. Any connection option should allow access to setup and configuration of the control unit and any attached voice instruction audible pushbutton.

C Construction

Install a Voice Instruction Audible Control Unit into the controller cabinet's detector rack. Mount the panel to the side of the cabinet in the side panel access. Terminate all pushbutton connections to the panel. Complete setup of the system and demonstrate the pushbuttons are correctly wired and configured.

D Measurement

The department will measure Voice Instruction Audible Control Unit by each unit, 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.0060.269	Voice Instruction Audible Control Unit	EACH

Payment is full compensation for furnishing and installing a Voice Instruction Audible Control Unit, making necessary connections; and configuring the system.

63. Round Aluminum Sign Post System in Soft Surface 7-Foot, Item SPV.0060.280.

A Description

This special provision describes furnishing and installing sign post, post anchor and sign mounting hardware at the locations shown on the plans. All sign posts shall be round tubular aluminum and installed as shown in the plans.

B Materials

Furnish a round aluminum 2" Schedule 40 6061-T6 Extruded Aluminum post with a length of 7 feet, a V-loc Soft-Soil 30" with cleanout bar post anchor for 2 3/8" round post (TAPCO SKU 034-00085, Traffic Safety Supply Company SKU DP00239, Custom Products Corporation Item RPORZVRB23VR2B or approved equal), 5/16" x 1 ¼" Stainless Steel Fender Washers and one- or two-sided sign mounting Z-brackets that fit 2 3/8 inch post or approved equal, as shown in plans.

C Construction

Install Round Aluminum Sign Post System in Soft Surface as shown in plans.

D Measurement

The department will measure Round Aluminum Sign Post System in Soft Surface 7-Foot by each unit, 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.0060.280	Round Aluminum Sign Post System in Soft Surface 7-Foot	EACH

Payment is full compensation for furnishing and installing Round Aluminum Sign Post System in Soft Surface 7-Foot, post anchor and sign mounting hardware at the locations shown on the plans.

64. Round Aluminum Sign Post System in Soft Surface 10-Foot, Item SPV.0060.281.

A Description

This special provision describes furnishing and installing sign post, post anchor and sign mounting hardware at the locations shown on the plans. All sign posts shall be round tubular aluminum and installed as shown in the plans.

B Materials

Furnish a round aluminum 2” Schedule 40 6061-T6 Extruded Aluminum post with a length of 10 feet, a V-loc Soft-Soil 30” with cleanout bar post anchor for 2 3/8” round post (TAPCO SKU 034-00085, Traffic Safety Supply Company SKU DP00239, Custom Products Corporation Item RPORZVRB23VR2B or approved equal), 5/16” x 1 ¼” Stainless Steel Fender Washers and one- or two-sided sign mounting Z-brackets that fit 2 3/8 inch post or approved equal, as shown in plans.

C Construction

Install Round Aluminum Sign Post System in Soft Surface as shown in plans.

D Measurement

The department will measure Round Aluminum Sign Post System in Soft Surface 10-Foot by each unit, 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.0060.281	Round Aluminum Sign Post System in Soft Surface 10-Foot	EACH

Payment is full compensation for furnishing and installing Round Aluminum Sign Post System in Soft Surface 10-Foot, post anchor and sign mounting hardware at the locations shown on the plans.

65. Round Aluminum Sign Post System in Soft Surface 11-Foot, Item SPV.0060.282.

A Description

This special provision describes furnishing and installing sign post, post anchor and sign mounting hardware at the locations shown on the plans. All sign posts shall be round tubular aluminum and installed as shown in the plans.

B Materials

Furnish a round aluminum 2” Schedule 40 6061-T6 Extruded Aluminum post with a length of 11 feet, a V-loc Soft-Soil 30” with cleanout bar post anchor for 2 3/8” round post (TAPCO SKU 034-00085, Traffic Safety Supply Company SKU DP00239, Custom Products Corporation Item RPORZVRB23VR2B or approved equal), 5/16” x 1 ¼” Stainless Steel Fender Washers and one- or two-sided sign mounting Z-brackets that fit 2 3/8 inch post or approved equal, as shown in plans.

C Construction

Install Round Aluminum Sign Post System in Soft Surface as shown in plans.

D Measurement

The department will measure Round Aluminum Sign Post System in Soft Surface 11-Foot by each unit, 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.0060.282	Round Aluminum Sign Post System in Soft Surface 11-Foot	EACH

Payment is full compensation for furnishing and installing Round Aluminum Sign Post System in Soft Surface 11-Foot, post anchor and sign mounting hardware at the locations shown on the plans.

66. Round Aluminum Sign Post System in Concrete Surface 7-Foot, Item SPV.0060.284.

A Description

This special provision describes furnishing and installing sign post, post anchor, anchoring cement and sign mounting hardware at the locations shown on the plans. All sign posts shall be round tubular aluminum and installed as shown in the plans.

B Materials

Furnish a round aluminum 2-inch Schedule 40 6061-T6 Extruded Aluminum post with a length of 7 feet, a V-loc Concrete 8-inch post anchor for 2 3/8-inch round post (TAPCO SKU 037-00012B, Traffic Safety Supply Company SKU DP00241, Custom Products Corporation Item RPORZVR12382OR or approved equal), 5/16-inch x 1 ¼-inch Stainless Steel Fender Washers, one- or two-sided sign mounting Z-brackets that fit 2 3/8-inch post and pourable hydraulic cement for setting of concrete post anchor, as shown in plans.

C Construction

Install Round Aluminum Sign Post System in Concrete Surface as shown in plans.

D Measurement

The department will measure Round Aluminum Sign Post System in Concrete Surface 7-Foot by each unit, 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.0060.284	Round Aluminum Sign Post System in Concrete Surface 7-Foot	EACH

Payment is full compensation for furnishing and installing Round Aluminum Sign Post System in Concrete Surface 7-Foot, post anchor, anchoring cement and sign mounting hardware at the locations shown on the plans.

67. Round Aluminum Sign Post System in Concrete Surface 10-Foot, Item SPV.0060.285.

A Description

This special provision describes furnishing and installing sign post, post anchor, anchoring cement and sign mounting hardware at the locations shown on the plans. All sign posts shall be round tubular aluminum and installed as shown in the plans.

B Materials

Furnish a round aluminum 2-inch Schedule 40 6061-T6 Extruded Aluminum post with a length of 10 feet, a V-loc Concrete 8-inch post anchor for 2 3/8-inch round post (TAPCO SKU 037-00012B, Traffic Safety Supply Company SKU DP00241, Custom Products Corporation Item RPORZVR12382OR or approved equal), 5/16-inch x 1 ¼-inch Stainless Steel Fender Washers, one- or two-sided sign mounting Z-brackets that fit 2 3/8-inch post and pourable hydraulic cement for setting of concrete post anchor, as shown in plans.

C Construction

Install Round Aluminum Sign Post System in Concrete Surface as shown in plans.

D Measurement

The department will measure Round Aluminum Sign Post System in Concrete Surface 10-Foot by each unit, 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.0060.285	Round Aluminum Sign Post System in Concrete Surface 10-Foot	EACH

Payment is full compensation for furnishing and installing Round Aluminum Sign Post System in Concrete Surface 10-Foot, post anchor, anchoring cement and sign mounting hardware at the locations shown on the plans.

68. Round Aluminum Sign Post System in Concrete Surface 11-Foot, Item SPV.0060.286.

A Description

This special provision describes furnishing and installing sign post, post anchor, anchoring cement and sign mounting hardware at the locations shown on the plans. All sign posts shall be round tubular aluminum and installed as shown in the plans.

B Materials

Furnish a round aluminum 2-inch Schedule 40 6061-T6 Extruded Aluminum post with a length of 11 feet, a V-loc Concrete 8-inch post anchor for 2 3/8-inch round post (TAPCO SKU 037-00012B, Traffic Safety Supply Company SKU DP00241, Custom Products Corporation Item RPORZVR12382OR or approved equal), 5/16-inch x 1 ¼-inch Stainless Steel Fender Washers, one- or two-sided sign mounting Z-brackets that fit 2 3/8-inch post and pourable hydraulic cement for setting of concrete post anchor, as shown in plans.

C Construction

Install Round Aluminum Sign Post System in Concrete Surface as shown in plans.

D Measurement

The department will measure Round Aluminum Sign Post System in Concrete Surface 11-Foot by each unit, 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.0060.286	Round Aluminum Sign Post System in Concrete Surface 11-Foot	EACH

Payment is full compensation for furnishing and installing Round Aluminum Sign Post System in Concrete Surface 11-Foot, post anchor, anchoring cement and sign mounting hardware at the locations shown on the plans.

69. Sign Mounting Hardware on Existing Pole (Concrete, Aluminum or Steel), Item SPV.0060.288.

A Description

This special provision describes furnishing and installing Mounting Hardware on Existing Pole (concrete, aluminum or steel pole) with current City of Milwaukee practices.

B Materials

Furnish 201 Stainless Steel Banding ¾” x 0.20., Stainless Steel Flared Leg Sign Mount Bracket for ¾” banding, 201 Stainless Steel Wing Seal (buckle) for ¾” banding, 5/16” x 1-¼” Stainless Steel Fender Washers, 5/16”-18 x 3/4” Stainless Steel Hex Head Bolt.

C Construction

Install and orient Mounting Hardware on Existing Pole (Concrete, aluminum or steel) as shown on the plans.

D Measurement

The department will measure Sign Mounting Hardware on Existing Pole by each unit, 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.0060.288	Sign Mounting Hardware on Existing Pole (Concrete, Aluminum or Steel)	EACH

Payment is full compensation for furnishing and installing Sign Mounting Hardware on Existing Pole (concrete, aluminum or steel pole).

70. Street Name Sign Mounting Hardware on Existing Pole (Concrete, Aluminum, Steel or Wood), Item SPV.0060.290.

A Description

This special provision describes providing furnishing and installing Street Name Mounting Hardware on Existing Pole (concrete, aluminum, steel or wood pole) with current City of Milwaukee practices.

B Materials

Furnish Street Name Sign Wing L-Bracket, 201 Stainless Steel Banding ¾" x 0.20, 201 Stainless Steel Wing Seal (buckle) for ¾" banding.

C Construction

Install and orient Mounting Hardware on Existing Pole (Concrete, Aluminum, Steel or Wood) as shown on the plans.

D Measurement

The department will measure Street Name Sign Mounting Hardware on Existing Pole (Concrete, Aluminum, Steel or Wood) by each unit, 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.0060.290	Street Name Sign Mounting Hardware on Existing Pole (Concrete, Aluminum, Steel or Wood)	EACH

Payment is full compensation for furnishing and installing Street Name Mounting Hardware on Existing Pole (concrete, aluminum, steel or wood pole).

71. Street Name Sign Mounting Hardware on Mast Arm, Item SPV.0060.291.

A Description

This special provision describes providing furnishing and installing Mounting Hardware on Mast Arm with current City of Milwaukee practices.

B Materials

Furnish 201 Stainless Steel Banding ¾" x 0.20., Stainless Steel Flared Leg Sign Mount Bracket for ¾" banding, 201 Stainless Steel Wing Seal (buckle) for ¾" banding, 5/16" x 1-¼" Stainless Steel Fender Washers, 5/16"-18 x 3/4" Stainless Steel Hex Head Bolt.

C Construction

Install and orient Mounting Hardware on Mast Arm as shown on the plans.

D Measurement

The department will measure Street Name Sign Mounting Hardware on Mast Arm by each unit, 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.0060.291	Street Name Sign Mounting Hardware on Mast Arm	EACH

Payment is full compensation for furnishing and installing Street Name Sign Mounting Hardware on Mast Arm.

72. Sign Mounting Hardware on Round Aluminum Sign Post, Item SPV.0060.292.

A Description

This special provision describes furnishing and installing Sign Mounting Hardware on Round Aluminum Sign Post at the locations shown on the plans.

B Materials

Furnish 5/16" x 1 ¼" Stainless Steel Fender Washers and one- or two-sided sign mounting Z-brackets that fit 2 3/8 inch post or approved equal, as shown in plans.

C Construction

Install Sign Mounting Hardware on Round Aluminum Sign Post as shown in plans.

D Measurement

The department will measure Sign Mounting Hardware on Round Aluminum Sign Post by each unit, 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.0060.292	Sign Mounting Hardware on Round Aluminum Sign Post	EACH

Payment is full compensation for furnishing and installing Sign Mounting Hardware on Round Aluminum Sign Post.

73. Remove Sign Post Assembly and Signs Type II, Item SPV.0060.293.

A Description

This special provision describes removing 2 3/8" round post, sign post anchor and Type II signage according to the plans.

B (Vacant)

C Construction

Remove 2 3/8" sign post, sign post anchor and signage as shown on the plans. Signage should remain fixed to poles and delivered to City of Milwaukee Sign Shop at 1540 West Canal Street Milwaukee, WI.

D Measurement

The department will measure Remove Sign Post Assembly and Type II Signage by each unit, 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.0060.293	Remove Sign Post Assembly and Type II Signage	EACH

Payment is full compensation for removing 2 3/8" round post, sign post anchor and Type II signage.

74. Pull Boxes 13-Inch x 24-Inch x 24-Inch, Item SPV.0060.302.

A Description

This special provision describes providing and installing Pull Boxes which are a fiberglass/polymer concrete at the locations shown on the plans according to current Wisconsin Department of Transportation standard spec 653.

B Materials

Furnish Pull Box (Fiberglass/polymer concrete) of rectangular composite enclosure with Tier 15 Rating (15,000 lb. Design Load) and (22,500 lb. Test Load), and nominal 13” wide x 24” long and 24” total depth, flared wall. Cover shall be Tier 15 Rating (15,000 lb. Design Load) and (22,500 lb. Test Load), bolted cover with logo “Street Lighting” and use Penta bolts to secure cover. The pull box listed and labeled by (UL) or other Nationally Recognized Testing Laboratory.

C Construction

Conform to standard spec 673.3 and City of Milwaukee standards. The pull box installation covers the excavation, 12-inches of crushed stone, end bell connectors for conduit connection, backfilling and for disposing of surplus material. Rigid nonmetallic PVC bell end connectors are to be use when connecting conduit to the pull box.

D Measurement

The department will measure Pull Boxes 13-Inch x 24-Inch x 24-Inch by each unit, 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.0060.302	Pull Boxes 13-Inch x 24-Inch x 24-Inch	EACH

Payment is full compensation for providing and installing all materials including pull boxes, covers, bolts, washers, caulking; for excavating, bedding, backfilling, and restoration of ground to original condition including sand, aggregate, concrete, or other required materials; and for disposing of surplus materials.

75. Pull Boxes 17-Inch x 30-Inch x 24-Inch, Item SPV.0060.303.

A Description

This special provision describes furnishing and installing Fiberglass/Polymer Concrete Pull Box at the locations shown on the plans according to standard spec 653.

B Materials

Furnish fiberglass/polymer concrete pull box of rectangular composite enclosure with Tier 15 Rating (15,000 lb Design Load) and (22,500 lb Test Load), and nominal 17” wide x 30” long and 24” total depth, flared wall style #CHB173024 as by Highline Products or #B12173024A as by Hubbell Power Systems or approved equal. Cover shall be Tier 15 Rating (15,000 lb Design Load) and (22,500 lb Test Load), bolted cover with logo “ Street Lighting” #CHC1730HL1 as by Highline Products or #C12173002A41 as by Hubbell Power Systems, or approved equal. The pull box shall be listed and labeled by (UL) or other Nationally Recognized Testing Laboratory.

C Construction

Conform to standard spec 673.3 and City of Milwaukee standards. The pull box shall be installed on 12-inches of crushed stone, set flush with grade and backfilled.

D Measurement

The department will measure Pull Boxes 17-Inch x 30-Inch x 24-Inch by each unit, 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.0060.303	Pull Boxes 17-Inch x 30-Inch x 24-Inch	EACH

Payment is full compensation for furnishing and installing all materials, including pull box, crushed aggregate, for excavation, backfill, for disposing of surplus material.

76. Remove Poles, Item SPV.0060.310.

A Description

This special provision describes removing an existing concrete, wood, steel, and aluminum pole and delivering them to the City of Milwaukee street lighting yard. All work shall be according to standard spec 651.

B Materials

Furnish Existing poles, including luminaire(s), bracket arm(s), clamp(s), conduit, cabling, and any other equipment mounted to the poles.

C Construction

Disconnect all cables and wiring that is mounted on or in the poles and carefully removes the bracket arm(s), clamp(s), luminaire(s), and poles.

Protect and deliver the following removed street lighting equipment (aluminum poles, aluminum arms, wood poles, mounting brackets, LED luminaires) to 1540 West Canal Street, Milwaukee, Wisconsin. Make arrangements for the delivery of this material between the hours of 7:30 AM and 2:30 PM and call 24 hours in advance (telephone (414) 286-5944. No delivery will be accepted after 2:30 PM. Properly dispose of all other material.

Dispose of all other non-aluminum or non-wood poles, conduit, cabling and high pressure sodium luminaires appropriately away from the project area.

D Measurement

The department will measure Remove Poles by each unit, 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.0060.310	Remove Poles	EACH

Payment is full compensation for removing an existing concrete, wood, steel, and aluminum pole, storing the poles and any equipment attached to them, and delivering them to the City of Milwaukee Street Lighting Yard.

77. Poles Type A26 Gray Concrete, Item SPV.0060.312.

A Description

This special provision describes furnishing and installation of the following material as shown in plans and according to the following. All work shall be according to standard spec 651.

B Materials

B.1 Furnish Concrete Pole

The total height of pole from the butt of pole to the top is 31 feet +/-. The pole shall be concrete, one-piece with dimensions, taper and cross section as shown in the drawings. The butt section may be round or octagonal in shape as indicated in the drawings. The pole shall be manufactured as a prestressed and reinforced centrifugally spun pole as set forth in A.S.T.M. C1089-88 unless otherwise directed. The pole has a removable ornamental aluminum pole cap, firmly and securely fastened in place by set screws or another approved device which will securely retain it in place.

The concrete pole shall have a hollow raceway at least 1 1/2 inches in diameter and continuous in a straight line, without appreciable offset, throughout its entire length.

The raceway shall be free from sharp projections or edges that might injure the insulated wire or cable sheath.

Dimensions and locations for lateral opening in the raceway are shown on the drawing. (E-53-55)

All poles shall be furnished with hand hole. The hand hole shall be located on the face 90 degrees from the lateral opening in the butt of pole and shall have the minimum dimensions of 2-1/2" x 8"*. The cover shall be heat-treated cast aluminum, or other material as approved by the city, fastened to non-ferrous insert in the pole. The cover shall be secured to the pole using 1/4"-20 NC by 3/4" long 18-8 stainless button head Torx T27H tamper proof screws. Bolt down poles are to have the hand hole 90º to the slot opening at the top of the pole and be 2½" x 8".

A plaque with the pole number as shown on the plans shall be affixed onto the pole shaft.

The pole, when manufactured, should be polished and include a non-sacrificial anti-graffiti shield coating on the entire above ground length.

B.2 Pea Gravel

The pea gravel must consist of particles from natural gravel deposits and shall be composed of clean, hard, tough, durable pebbles free from adherent coatings, soft, flat, or elongated particles, and organic or other deteriorative matter. The following limits apply to deteriorative substances in the pea gravel.

Chert	not over 4% by weight
Coal	not over ½% by weight
Clay lump and friable particles	not over ½% by weight
Soft fragments	not over 1% by weight
Any combination of the above	not over 4% by weight
Flat, elongated or laminated pcs. (Flat and elongated particles are those having a length more than five times the average thickness)	Not over 10% by weight

Grading requirements of the pea gravel are as follows:

Passing 3/8-inch sieve	95% to 100%
Passing No.4 sieve	25% to 50%
Passing No.8 sieve	0% to 5%

Each unit will require approximately 0.25 cubic yard of pea gravel.

B.3 Riser Cable

Pole is to be wired as shown on the plans. A separate riser cable will be required to be installed inside of pole for each lighting fixture on the pole. The riser cable shall be 35 feet in length and cut from copper 2#12 UF with ground cable. One wire shall be black, the other shall be white, and the ground can be either bare or green. All splicing is to be done inside the metal housing. The ground wires shall be spliced inside the metal housing and grounded to the housing and each fixture. The cable shall conform to NEC Article 340. The riser cable shall be continuous without splices. The electrical system in use utilizes a full system ground. The neutral is not to be grounded at any point.

C Construction

The direct bury pole is to be set as illustrated in the plans. The holes are to be 14 or 16 inches in diameter and to a depth of 5 feet 6 inches depending on manufacturers' pole butt length. The holes can be bored, hydrovac, or hand dug but all shall be cylindrical. If any part of the hole is within 3 feet of a buried utility, the holes must be hand dug or hydrovac. No other method of setting poles is acceptable. The poles should be parallel and perpendicular to the horizon once set.

In some cases, the poles are to be installed in areas of concrete walk. Prior to concrete removal, the concrete should be saw cut to allow adequate room for pole and cable installation. Saw cutting for removal should be square or rectangular in shape. The contractor shall be responsible for disposing all debris from excavation and removed from site.

There is to be a minimum 6-inch bed of tamped pea gravel for the pole to set on. Then pea gravel is to be backfill around the pole and be tamped every 12 inches and filled to within 3 inches of finished grade.

In areas where concrete walk was removed, felt paper is to be installed around the base of pole and 3 inches of concrete installed. Concrete shall be the standard 5 bag mix, and the finished surface should match adjacent grades.

Grass areas that were disturbed during construction shall be filled with 6 inches of topsoil and sod to match the adjacent finished grade. Addresses are to be stenciled to the pole as shown on the plan.

D Measurement

The department will measure Poles Type A26 Gray Concrete by each unit, 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.0060.312	Poles Type A26 Gray Concrete	EACH

Payment is full compensation for furnishing and installing Poles Type (A26 Gray Concrete, Direct Bury).

78. Poles Type A21 Gray Concrete, Item SPV.0060.313.

A Description

This special provision describes furnishing and installation of the following material as shown in plans and according to the following. All work shall be according to standard spec 651.

B Materials

B.1 Furnish Concrete Poles.

The total height of pole from the butt of pole to the top is 26 feet 1 inch +/-. The pole shall be concrete, one-piece with dimensions, taper and cross section as shown in the drawings. The butt section may be round or octagonal in shape as indicated in the drawings. The pole shall be manufactured as a prestressed and reinforced centrifugally spun pole as set forth in A.S.T.M. C1089-88 unless otherwise directed. The pole has a removable ornamental aluminum pole cap, firmly and securely fastened in place by set screws or another approved device which will securely retain it in place.

The concrete pole shall have a hollow raceway at least 1 1/2 inches in diameter and continuous in a straight line, without appreciable offset, throughout its entire length.

The raceway shall be free from sharp projections or edges that might injure the insulated wire or cable sheath.

Dimensions and locations for lateral opening in the raceway are shown on the drawing. (E-53-56)

All poles shall be furnished with hand hole. The hand hole shall be located on the face 90 degrees from the lateral opening in the butt of pole and shall have the minimum dimensions of 2-1/2" x 8"*. The cover shall be heat-treated cast aluminum, or other material as approved by the city, fastened to non-ferrous insert in the pole. The cover shall be secured to the pole using 1/4"-20 NC by 3/4" long 18-8 stainless button head Torx T27H tamper proof screws. Bolt down poles are to have the hand hole 90º to the slot opening at the top of the pole and be 2½” x 8”.

A plaque with the pole number as shown on the plans shall be affixed onto the pole shaft.

The pole, when manufactured, should be polished and include a non-sacrificial anti-graffiti shield coating on the entire above ground length.

B.2 Pea Gravel

The pea gravel must consist of particles from natural gravel deposits and shall be composed of clean, hard, tough, durable pebbles free from adherent coatings, soft, flat, or elongated particles, and organic or other deteriorative matter. The following limits apply to deteriorative substances in the pea gravel.

Chert	not over 4% by weight
Coal	not over ½% by weight
Clay lump and friable particles	not over ½% by weight
Soft fragments	not over 1% by weight
Any combination of the above	not over 4% by weight
Flat, elongated or laminated pcs. (Flat and elongated particles are those having a length more than five times the average thickness)	Not over 10% by weight

Grading requirements of the pea gravel are as follows:

Passing 3/8-inch sieve	95% to 100%
Passing No.4 sieve	25% to 50%
Passing No.8 sieve	0% to 5%

Each unit will require approximately 0.25 cubic yard of pea gravel.

B.3 Riser Cable

Pole is to be wired as shown on the plans. A separate riser cable will be required to be installed inside of pole for each lighting fixture on the pole. The riser cable shall be 30 feet in length and cut from copper 2#12 UF with ground cable. One wire shall be black, the other shall be white, and the ground can be either bare or green. All splicing is to be done inside the metal housing. The ground wires shall be spliced inside the metal housing and grounded to the housing and each fixture. The cable shall conform to NEC Article 340. The riser cable shall be continuous without splices. The electrical system in use utilizes a full system ground. The neutral is not to be grounded at any point.

C Construction

The direct bury pole is to be set as illustrated in the plans. The holes are to be 14 or 16 inches in diameter and to a depth of 5 feet 6 inches depending on manufacturers' pole butt length. The holes can be bored, hydrovac, or hand dug but all shall be cylindrical. If any part of the hole is within three feet of a buried utility, the holes must be hand dug or hydrovac. No other method of setting poles is acceptable. The poles should be parallel and perpendicular to the horizon once set.

In some cases, the poles are to be installed in areas of concrete walk. Prior to concrete removal, the concrete should be saw cut to allow adequate room for pole and cable installation. Saw cutting for removal should be square or rectangular in shape. The contractor shall be responsible for disposing all debris from excavation and removed from site.

There is to be a minimum 6-inch bed of tamped pea gravel for the pole to set on. Then pea gravel is to be backfill around the pole and be tamped every 12 inches and filled to within 3 inches of finished grade.

In areas where concrete walk was removed, felt paper is to be installed around the base of pole and 3 inches of concrete installed. Concrete shall be the standard 5 bag mix, and the finished surface should match adjacent grades.

Grass areas that were disturbed during construction shall be filled with 6 inches of topsoil and sod to match the adjacent finished grade. Addresses are to be stenciled to the pole as shown on the plan.

D Measurement

The department will measure Poles Type A21 Gray Concrete by each unit, 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.0060.313	Poles Type A21 Gray Concrete	EACH

Payment is full compensation for furnishing and installing Poles Type (A21 Gray Concrete, Direct Bury).

79. Poles Type H17 Concrete Pole, Item SPV.0060.317.

A Description

This special provision describes furnishing and installation of Poles Type (H17 Concrete Pole) as shown in plans and according to the following.

B Materials

Furnish Concrete Pole. The pole shall be concrete, one-piece with dimensions, taper and cross section as shown in the plan set. The butt section may be round or octagonal in shape. The pole shall be manufactured as a prestressed and reinforced centrifugally spun pole as set forth in A.S.T.M. C1089-88 unless otherwise directed.

1. Concrete Aggregates:

Concrete aggregates shall meet all the requirements of A.S.T.M.C33. All aggregate employed in the manufacture of the concrete poles shall be a combination of hard black stone and white crystalline stone. The texture and color of the aggregates shall be approved by the Purchasing Division DOA.

The aggregates shall be of adequate strength in resisting crushing stresses and impervious to moisture; of such character as not to deteriorate or change as a result of continued exposure for years to the weather; and of such character that it crushes into masses approximately cubical in form, not in flakes. Aggregates shall all pass a 3/8-inch sieve, with a minimum size passing a #100 sieve.

Cement:

The cement shall be fresh and free from lumps and shall conform to specifications of the American Society of Testing Materials, serial designation C-150, Type I or Type III.

Water:

The water employed shall be free from acids, alkalis, oil, or organic matter.

Materials Proportion:

The materials combined to produce the concrete shall be proportioned by weight.

Steel:

The surface of all steel shall be free from dirt, oil, or grease. The steel used as either reinforcing or prestressing shall be adequately sized to meet the strength requirements of the finished poles, as herein specified. Longitudinal reinforcement, prestressing and spiral wrap shall comply with the latest version of the applicable ASTM standards. All prestressed wire shall be stressed to not less than 60% or more than 70% of its tensile strength.

Test of Materials:

Any and all of the above materials shall be subject to test at any time before use, as may be directed, and samples for this purpose shall be furnished by the contractor upon request.

2. Pole Strength:

All poles furnished shall withstand a 90-mph wind load plus 30 percent gust factor and 400 lbs. working load.

2.1 The pole design shall allow for a maximum load of not less than twice the working load.

2.2 The elastic limit at which any pole will actually fail to withstand any additional stress without permanent injury shall not be less than two and one-half times the working load.

3. Loading and Stability:

The H17 supplied under this specification shall support a tenon mount 100-pound fixture with an EPA of 5. All pole designs shall meet the latest revision of the AASHTO specifications for these poles as defined in their STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS handbook.

> *The manufacturer shall submit engineering calculations for lighting poles to show that maximum stress and deflections do not exceed specified performance requirements under full design loading, as well as other certified reports and data which indicate that the poles meet all load requirements. Engineering calculations shall be prepared and sealed by an engineer licensed in the State of Wisconsin.*

The entire horizontal and vertical “wind sail” area of the pole assembly subject to wind load including arm and luminaire shall be designed to withstand the AASHTO standard specifications, from above, for wind load requirements for a 90 MPH wind load with gust factor computed per section 3.8.5.and height and exposure factors from table

4. Cable Raceway:

Each concrete pole shall have a hollow raceway at least one and one-half inches in diameter and continuous in a straight line, without appreciable offset, throughout its entire length.

4.1 The raceway shall be free from sharp projections or edges that might injure the insulated wire or cable sheath.

4.2 Dimensions and locations for lateral opening in the raceway are shown on the drawings.

4.3 All poles shall be furnished with hand hole. The hand hole shall be located on the face 90 degrees from the lateral opening in the butt of pole and shall have the minimum dimensions of 2-1/2" x 8". The cover shall be heat-treated cast aluminum, or other material as approved by the city, fastened to non-ferrous insert in the pole. The cover shall be secured to the pole using 1/4"-20 NC by 3/4" long 18-8 stainless button head Torx T27H tamper proof screws. Bolt down poles are to have the hand hole 90º to the slot opening at the top of the pole and be 2½” x 8”.

4.4 Two lateral openings into the raceway, of dimensions and locations as shown on the drawings, shall be provided in the butt of the pole.

5. Concrete:

5.1 Strength: The concrete strength shall meet the following requirements when tested according to A.S.T.M. C39.

Release of Prestressing Steel: Concrete cylinders made according to A.S.T.M. C31 shall attain a minimum strength of 3,500 p.s.i. at the time that prestressing is released.

28 Days: Concrete cylinders made according to A.S.T.M. C31 shall attain a minimum strength of 8,000 p.s.i. at twenty-eight days.

5.2 Admixture: All poles shall be manufactured with quality HSF (high silica fume) cement to reduce porosity in the concrete and increase compressive strength.

5.3 The city may sample and test the concrete at any time. Concrete samples made according to A.S.T.M. C31 shall be furnished by the contractor upon request of the city.

5.4 Process and Surface Finish: The finished concrete used in the manufacture of poles shall be a very dense product, free from undesirable air pockets or voids.

a. The concrete shall be compacted by the centrifugal process so that the surface is dense, with the coarse and fine aggregate evenly distributed. If requested to do so by the Purchasing Division - DOA, a sample shall be produced that is representative of the pole cross-section and at least three inches in length. The sample shall be submitted to the city for approval with respect to color, texture and finish. The concrete mix from which the sample was made shall be noted and submitted with the sample. A representative sample of all aggregates used also shall be submitted.

b. The mixture of aggregates shall be essentially uniform over the entire exterior surface of concrete poles furnished.

c. Size of the duct shall be controlled so that the prestressed and/or reinforcing rods are not embedded in "slurry" (i.e., water-cement-sand mix that collects in the pole core during the spinning process).

d. Following the casting operation, the pole shall be cured with low-pressure steam for as long as needed to reach the necessary strength to allow handling and release of prestressing wires. Poles shall remain in storage for as long as needed for the concrete to reach the required compressive strength. Poles shall meet the design strength before shipment is allowed.

e. To assure that poles are not prematurely exposed to freeze-thaw action and deicer, adequate curing of the concrete for development of sufficient strength to resist scaling and for reduction of water content of the concrete shall be the responsibility of the manufacturer.

f. The finished surface must be polished so that the color and surface smoothness are uniform over the entire surface. The face surface shall be sealed with a siloxane penetrating sealer and a high molecular weight acrylic copolymer or other sealing compounds that will yield equivalent degree of protection from water, salt, and/or other chemical infiltration and does not discolor or fade.

g. The entire lot of concrete poles to be furnished under this specification shall be uniformly consistent in color and finish.

h. Treatment with diluted acid to obtain the desired finish is not permitted.

i. The finished surface of all poles shall be free from visible pits, fins, grooves, patches, or other surface markings not specifically enumerated herein.

j. The top of the pole shall be flat and perpendicular to the longitudinal axis of the pole so that the pole cap will have a positive seat.

k. Chloride accelerators shall not be used in the manufacturing process.

6. Reinforcement: The reinforcing cage, spiral reinforcement and prestressing steel shall be placed in position and maintained in place during the centrifugal manufacturing process. The longitudinal reinforcement, prestressing and spiral reinforcement shall continue throughout the entire length of the pole.

6.1 Cover: All steel shall be covered at all points by at least 1/2-inch of concrete, except where it may be necessary in the process of manufacture to have the rods and/or wire extend beyond the ends of the poles. In such case, the rods and/or wires shall be cut off afterward, even with the face of the molded product, unless otherwise noted on the drawings included herein.

Where the above minimum coverage cannot be maintained next to cable entrance, wire outlet, etc., the reinforcing shall be protected with a suitable sleeve.

Drawings of the reinforcing cage, spiral reinforcement and prestress steel that the manufacturer proposes to use in the manufacture of concrete poles, showing the size, shape and arrangement of reinforcing prestressing spiral reinforcement, ties, method of holding cage in place, etc. SHALL BE SUBMITTED TO STREET LIGHTING DIVISION.

7. Waterproofing: The top and bottom of the poles shall be properly coated with bitumastic waterproofing material.

7.1 Waterproofing material shall be of such quality and consistency that it will not crack or chip when subjected to extremely cold weather, and that it will not flow when subjected to extremely hot weather.

8. Accessories:

Miscellaneous: All pipes, bolts, nut wire, washers, pole caps, casting, fittings, and appurtenances of any sort are to be furnished by the contractor and made of approved rust-proof metal of such design, composition, and dimensions as may be approved by the city before the contractor begins manufacture.

9. Marking: Every pole shall bear an impressed marking, or other type of marking acceptable to the city, of the type of pole, contractor's insignia, and casting date (month and year). Type of pole and contractor's insignia shall have letters at least 1 inch tall. The casting date shall have digits not less than 1/2-inches tall. All markings shall be located in line with the cable entrance in the butt of the pole and shall be placed 15 inches to 20 inches above the ground line.

10. Color Pigments: Poles with a colored finish shall be furnished where specified. The coloring is to be done by mixing a pigment into the concrete before casting. The color of the pole shall be uniform throughout the body of the pole, shall not fade and shall be maintenance free. The type of coloring pigment shall be indicated with the bid and a sample which represents the finished colored pole shall be furnished for approval of the Purchasing Division - DOA, if requested.

11. Anti-Graffiti Shield: All poles shall include a non-sacrificial anti-graffiti shield coating on the entire above ground length in the bid price. Test results from the latest ASTM G53, D2247, B117 tests and test method should be included with the bid documents.

12. A plaque with the pole number as shown on the plans shall be affixed onto the pole shaft.

C Construction

The poles are to be set as illustrated in the plans. The holes are to be 14 inches in diameter and to a depth of 4 or 5 feet depending on manufacturers' pole butt length. The holes can be bored, hydrovac, or hand dug but all shall be cylindrical. If any part of the hole is within 3 feet of a buried utility; the holes must be hand dug or hydrovac. No other method of setting poles is acceptable.

The pea gravel backfill around the pole is to be tamped every 12 inches and filled to within 3 inches of finished grade. The H15 poles are to be set parallel and perpendicular to the horizon.

The pea gravel must consist of particles from natural gravel deposits and shall be composed of clean, hard, tough, durable pebbles free from adherent coatings, soft, flat, or elongated particles, and organic or other deteriorative matter. The following limits apply to deteriorative substances in the pea gravel.

Chert	not over 4% by weight
Coal	not over ½% by weight
Clay lump and friable particles	not over ½% by weight
Soft fragments	not over 1% by weight
Any combination of the above	not over 4% by weight
Flat, elongated or laminated pcs. (Flat and elongated particles are those having a length more than five times the average thickness)	not over 10% by weight

Grading requirements of the pea gravel are as follows:

Passing 3/8-inch sieve	95% to 100%
Passing No.4 sieve	25% to 50%
Passing No.8 sieve	0% to 5%

Each unit will require approximately 0.25 cubic yard of pea gravel.

Parkway areas that were disturbed during construction shall be filled with 6 inches of topsoil and sodded to match the adjacent finished grade. Addresses are to be stenciled to the pole as shown on the plan.

Poles are to be wired as shown on the plans. Riser cables in pole shall be 20 feet in length and cut from 2#12 UF copper with ground. The wires are to be color coded as one black, one white and the ground are to be either green or bare. The cable shall conform to NEC Article 339. The riser cable shall be continuous without splices.

The Milwaukee Harp fixture is set on the pipe tenon that is attached to the top of the pole and is secured to the pole using standard 1-1/2" stainless steel hex head nut. Perform all splices and connections for the operation of fixture.

D Measurement

The department will measure Poles Type H17 Concrete Pole by each unit, 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.0060.317	Poles Type H17 Concrete Pole	EACH

Payment is full compensation for furnishing and installation of Poles Type (H17 Concrete Pole).

80. 35 FT. Wood Poles, Item SPV.0060.323.

A Description

This special provision describes furnishing and installing wood poles for temporary lighting as shown on plans and according to requirements of the plans, specifications and contract. The poles will be utilized to provide temporary lighting in the respective areas. All work shall be according to standard spec 651. All necessary miscellaneous hardware and materials needed to complete the installation of the wood poles are considered incidental. After the project is completed and permanent facilities are functioning, the contractor supplied wood poles will be returned to the City of Milwaukee Electrical Services yard.

B Materials

Furnish 35 FT. Wood Pole.

B.1.1 Wood Pole

The poles shall be Class 4 wood poles conforming to the American Specifications and Dimensions for Wood Poles (ANSI 05.1.) unless the engineer specifies otherwise.

B.1.2 Shaving

All poles shall be machine shaved the entire length.

B.1.3 Gaining and Drilling

Poles shall be slab gained from the top of the pole to a point 48” below the top of the pole. 1st and 2nd gains are to be drilled with a 11/16 “diameter drill. 1st gain 8” from the top of the pole and 2nd gain 24” below 1st gain.

B.1.4 Incising

All poles shall be incised throughout that portion of the pole surface terminating one foot above and two feet below the standard ground line per A.W.P.A. Specifications #C8-73.

B.1.5 Treatment

All poles shall be butt treated by the thermal process per A.W.P.A. specifications.

#C7-73. The treatment shall be water borne preservative, CHROMATED COPPER ARSENATE “CCA” Type “C” per A.W.P.A. specifications #P5-83. Only Oxide formulated chemicals can be used.

B.1.6 Inspection and Acceptance

An independent inspection agency shall inspect the poles per A.W.P.A. Specifications #M2-83. A certified copy of the test report must be delivered with each load shipped.

B.1.7 A.W.P.A. Designations

Reference to A.W.P.A. designation shall mean the latest revision of the particular A.W.P.A. specification and/or test procedure in effect at time this bid is let for the item/product described herein.

B.2 Pea Gravel

The pea gravel must consist of particles from natural gravel deposits and shall be composed of clean, hard, tough, durable pebbles free from adherent coatings, soft, flat, or elongated particles, and organic or other deteriorative matter. The following limits apply to deteriorative substances in the pea gravel.

Chert	not over 4% by weight
Coal	not over ½% by weight
Clay lump and friable particles	not over ½% by weight
Soft fragments	not over 1% by weight
Any combination of the above	not over 4% by weight
Flat, elongated or laminated pcs. (Flat and elongated particles are those having a length more than five times the average thickness)	not over 10% by weight

Grading requirements of the pea gravel are as follows:

Passing 3/8-inch sieve	95% to 100%
Passing No.4 sieve	25% to 50%
Passing No.8 sieve	0% to 5%

Each unit will require approximately 0.25 cubic yard of pea gravel.

B.3 Grounding Electrode and Conductor

Furnish and install an approved 5/8-Inch diameter x 8-foot-long copper clad grounding electrode per NEC, WSEC, and local utility codes. Run a single unbroken length of stranded bare #6 copper wire from the grounding electrode to the top of wood pole leaving a 2-foot coil. Make the electrical connection between the grounding electrode conductor and grounding electrode by the exothermic weld method.

C Construction

Wood Poles shall be installed to an embedment depth of 6 foot for a 35 foot pole, 6 foot 6 inches for a 40 foot pole, 7 foot for a 45 foot pole, and according to plan details. The holes can be bored, hydrovac, or hand dug but all shall be cylindrical. If any part of the hole is within 3 feet of a buried utility, the holes must be hand dug or hydrovac. No other method of setting poles is acceptable. The poles should be blocked and or raked as noted on the construction drawings.

In some cases, the poles are to be installed in areas of concrete walk. Prior to concrete removal, the concrete is to be saw cut to such size to allow for adequate room for pole and cable installation. Saw cutting for removal should be rectangular in shape. The contractor will be responsible for disposing all debris from excavation and sidewalk removal. The spoils are not to be used as backfill.

There is to be a minimum of a 6-inch bed of tamped pea gravel as a base for the pole. The area around the pole is to be backfilled with pea gravel and be tamped every 12 inches and filled to finished grade.

After permanent facilities are in service, contractor will remove, completely strip poles of all clevises, clamps, cabling, and transport all wood poles to City of Milwaukee Electrical Services yard. Contact Neal Karweik at (414) 708-3454 to make arraignments for delivery. Contractor must have own equipment for unloading poles within BES yards.

D Measurement

The department will measure 35 FT. Wood Poles by each unit, 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.0060.323	35 FT. Wood Poles	EACH

Payment is full compensation for shipping to the site, excavating for base, placement of pole, removal of poles, shipping poles to city yard.

81. Water Tight Connectors 3 & 4 Port, Item SPV.0060.343.

A Description

This special provision describes providing materials, general requirements, personnel qualifications, construction methods, and testing requirements used to perform electrical connections/splices required.

All work shall be according to standard spec 651.

B Materials

Furnish materials conforming to the WSEC, consisting of chapter comm. 16 of the WEC combined with the NEC.

All materials furnished under this contract for street lighting installation are subject to approval by the City of Milwaukee street lighting engineer. A prototype may be requested for submittal by the engineer with a cable sample installed and spliced for approval prior to field installation.

The contractor shall furnish a complete list of materials to be furnished and used for street lighting. Such list shall include names and addresses of manufactures, together with catalog numbers, certificates of compliance, specifications, and other product information requests by the engineer. The list shall be submitted within 10 calendar days of execution of contract. No material shall be incorporated into the lighting system prior to the written approval of the engineer. Approval does not change the intent of the specifications. The contractor shall not substitute or make changes in material without resubmitting for approval.

Use either the Polaris Edge (ISPB2) or Morris Product submersible insulated connector or else an equal connector that is 3, or 4 Port Pre-Insulated, that is designed for use in below grade boxes, direct burial, and submersible. The Conductors Range from #2/0 - #14 Rated for 600 Volts Dual Rated for CU. or AL.

Waterproof and Tear Resistant cable tags/labels that need to be attached for identifying the circuit. A tag/label per street lighting conductor, and or cable for each branch circuit leg.

C Construction

C.1 General Requirements

Work under items related to the street lighting system shall conform to the National Electrical Code (NEC), 2020 Edition, or the latest edition adopted by the State of Wisconsin, Wisconsin Department of Commerce Chapter Comm 16 (Electrical) State of Wisconsin electrical code, City of Milwaukee code, and these special provisions and good electrical practices. The contractor shall not take advantage of lack of details in plans or these specifications where to do so would conflict with the applicable code and standards.

C.2 Personnel Qualifications

An electrician holding all appropriate licenses (including City of Milwaukee Licenses) shall supervise all work done referring to the street lighting system. All splices shall be made by an electrician. For the purposes of this contract, an electrician is a person who served a four year apprenticeship and passed state exams.

C.3 Splices

The contractor shall perform water tight splicing in a pull box with materials listed or equal on Street Lighting Standard Details 142. Conductor runs shall be continuous between pole locations, and no splicing of conductors outside the pull box will be allowed. The water tight splices shall reside in the pull box and above the wiring coils called for in Street Lighting Standard Details 142. The 2#12UF with ground cable (per luminaire) shall be brought to the pole hand hole where it will be spliced with the riser cable to the light fixture. See luminaire specification for information on the installation of an in-line watertight fuse holder installed in-line with the hot conductor that leads to the luminaire and accessible in pole at the hand hole.

Contractor is to bundle circuit conductors together and identify circuit at every split point.

Hand hole splices if needed should be completed using a multi-tap connector. The connector should be rated for 600 volts, conductor range #1/0 through #14 AL-CU, have a insulating cover rated at 105 degrees Celsius, and meet or exceed ANSI 119.4 Class A specifications for reliability.

C.4 In Service Distribution Systems

The contractor shall not make splices to any underground connections or to any existing distribution system. As indicated on plans, underground splices and connections to existing underground circuitry will be completed by city electricians.

C.5 Testing

After the city makes preliminary acceptance of the street lighting system, it shall be monitored by the City of Milwaukee, Street Lighting Electrical Services during a 60-calendar day operational “burn in”. Final acceptance of the lighting system will be based on its meeting standard operational criteria as stated in these specifications. The contractor shall be responsible for all necessary repairs and adjustments to the lighting system to meet standard operational criteria.

D Measurement

The department will measure Water Tight Connectors 3 & 4 Port by each unit, acceptably completed. This covers the Water Tight Connectors 3 & 4 Port submersible insulated connectors in the pull box, and the incidental waterproof and tear resistant cable tags/labels for identifying cables/circuits inside the pull box.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.343	Water Tight Connectors 3 & 4 Port	EACH

Payment is full compensation for furnishing labor, equipment, coordination and all materials such as the multi-port submersible insulated connectors, in-line fuse holder assemblies, waterproof and Tear Resistant cable tags/labels, anti-oxidant for wire connections.

82. Luminaire Arm Single Member 6-Ft., Item SPV.0060.345.

A Description

This special provision describes furnishing and installation of Luminaire Arm Single Member 6-Ft. as shown in plans and according to the following. All work shall be according to standard spec 651.

B Materials

Furnish Luminaire Arm Single Member 6-Ft.

Fabricated per the City of Milwaukee City Spec. and drawing C-87-76.

Bracket arm is 2" schedule 80 Aluminum pipe curved to City Spec's.

Mounting plate is either cast aluminum ½" AA#713 or extruded 6063-T6 bar stock.

C Construction

The bracket shall be attached to the pole with two ½" x 13 NC x 1" long stainless steel bolts.

D Measurement

The department will measure Luminaire Arm Single Member 6-Ft. by each unit, 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.0060.345	Luminaire Arm Single Member 6-Ft.	EACH

Payment is full compensation for the bracket arm, and all connections.

83. Luminaire Arm Single Member 6-FT. WP Mount, Item SPV.0060.346.

A Description

This special provision describes furnishing and installation of the following material as shown in plans and according to the following.

B Materials

Furnish 6 ft. Aluminum Mounting Bracket – The aluminum bracket shall be fabricated from 2" aluminum pipe schedule 80. It shall have a 27" rise, and a 9" straight end section that is suited for use with a slipfit luminaire. Wire-The wire shall be copper 2#12 UF with ground wire. One wire shall be black, the other shall be white. The ground wire shall be grounded to fixture. The cable shall conform to NEC Article 339.

Fabricated per City of Milwaukee City Spec. and drawing C-81-27.

C Construction

Mounting height-The height to light center shall be 26' unless otherwise specified on the drawing or indicated in the field by the engineer. The bracket shall be attached to the wood pole with two 3/8"x 3" long) galvanized wood lag bolts, and one 5/8"x (10" to 12" long) galvanized through bolt with galvanized washers and nut.

D Measurement

The department will measure Luminaire Arm Single Member 6-FT. WP Mount by each unit, 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.0060.346	Luminaire Arm Single Member 6-FT. WP Mount	EACH

Payment is full compensation for the bracket arm, and all connections.

84. Installing Equipment Grounding Electrode, Item SPV.0060.353.

A Description

This special provision describes providing and installing grounding protection to provide personnel and equipment protection against faults, surge currents and lightning transients.

B Materials

Furnish Ground Rod – Use ground rods meeting the requirement of UL-467. Ground rods must be made of copper-clad steel with a nominal diameter of 5/8 inches. Ground rod sections must be a minimum of 8 feet in length and manufactured for the sole purpose of providing electrical grounding.

Grounding Conductors – Use 7 strand #6 AWG copper insulated (green) conductor for electrical protection ground. The grounding conductor shall be continuous without splices from the grounding electrode through the handhole grounding clip of the pole and of minimum length to make connection.

Mechanical bonding – Provide connection to the grounding electrode using G5 acorn ground clamp. Apply an anti-oxidant compound to all mechanical connections.

C Construction

Provide a ground rod assembly driven into the earth at a single point (single point ground).

A licensed electrician shall install the primary ground rod assembly in an electrical pull box so that the top 4 inches are accessible for inspection, resistance testing, and maintenance.

D Measurement

The department will measure Installing Equipment Grounding Electrode by each unit, 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.0060.346	Installing Equipment Grounding Electrode	EACH

Payment is full compensation for the grounding electrode and all connections.

85. Luminaire Arms Mounting Clamps Poles Type A-21 & A-26 Single Bracket, Item SPV.0060.355.

A Description

This special provision describes providing Luminaire Arms Mounting Clamps Poles Type -1 & 2 Single Bracket (A21 & A26 Pole) two piece mounting clamp is fabricated for the City of Milwaukee. The clamp is furnished and installed as hereinafter specified. All work shall be according to standard spec 651.

B Materials

Furnish two piece mounting clamp is cast aluminum alloy #713 and is fabricated per City Specification.

Drawings: D-79-9 (Front Bracket Plate), D-79-10 (Rear Bracket Plate).

Manufacturer: City of Milwaukee Street Lighting Shop

Furnished by the City of Milwaukee

Contact Storeroom Inventory Manager at (414) 286-5947

C Construction

The clamp shall be attached to the pole by aligning the cable slot on the pole with cable slot on bracket and securing bracket to pole using four stainless steel 1/2” bolts, washers, lock washers and nuts.

D Measurement

The department will measure Luminaire Arms Mounting Clamps Poles Type A-21 & A-26 Single Bracket by each unit, 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.0060.355	Luminaire Arms Mounting Clamps Poles Type A-21 & A-26 Single Bracket	EACH

Payment is full compensation for Luminaire Arms Mounting Clamps Poles Type -1 and 2 Single Bracket (A21 and A26 Pole).

86. Lantern Arms Mounting Clamps Poles Type A21 & A26 Single Bracket, Item SPV.0060.359.

A Description

This special provision describes providing and installing Luminaire Arms Mounting Clamps Poles Type A21 & A26 Single Bracket two piece mounting clamp is fabricated for the City of Milwaukee. The clamp is furnished and installed as hereinafter specified. All work shall be according to standard spec 651.

B Materials

Furnish The two-piece mounting clamp is cast aluminum alloy #319 or 356 T6 and is fabricated per City Specification.

Drawings: C-14-4 (*Front and Rear Bracket Plates)*.

Manufacturer: City of Milwaukee Street Lighting Shop

Furnished by the City of Milwaukee

Contact Storeroom Inventory Manager at (414) 286-5947

C Construction

The clamp shall be attached to the pole by aligning the cable slot on the pole with cable slot on bracket and securing bracket to pole using four stainless steel 1/2” bolts, washers, lock washers and nuts.

D Measurement

The department will measure Lantern Arms Mounting Clamps Poles Type A21 & A26 Single Bracket by each unit, acceptably completed. Each unit will consist of two halves.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.359	Lantern Arms Mounting Clamps Poles Type A21 & A26 Single Bracket	EACH

Payment is full compensation for providing and installing Luminaire Arms Mounting Clamps Poles Type A21 & A26 Single Bracket.

87. Lantern Arms Mounting Clamps Poles Type A21 & A26 Double Bracket, Item SPV.0060.360.

A Description

This special provision describes providing Luminaire Arms Mounting Clamps Poles Type A21 & A26 Double Bracket two piece mounting clamp is fabricated for the City of Milwaukee. The clamp is furnished and installed as hereinafter specified. All work shall be according to standard spec 651.

B Materials

Furnish The two-piece mounting clamp is cast aluminum alloy #319 or 356 T6 and is fabricated per City Specification.

Drawings: C-14-4 (two each *Front Plates* only*)*.

Manufacturer: City of Milwaukee Street Lighting Shop

Furnished by the City of Milwaukee

Contact Storeroom Inventory Manager at (414) 286-5947

C Construction

The clamp shall be attached to the pole by aligning both cable slots on the pole with the cable slots on brackets and securing bracket to pole using four stainless steel 1/2” bolts, washers, lock washers and nuts.

D Measurement

The department will measure Lantern Arms Mounting Clamps Poles Type A21 & A26 Double Bracket by each unit, acceptably completed. Each unit will consist of two identical halves.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.360	Lantern Arms Mounting Clamps Poles Type A21 & A26 Double Bracket	EACH

Payment is full compensation for providing Luminaire Arms Mounting Clamps Poles Type A21 & A26 Double Bracket.

88. Installing City Furnished Luminaire Utility High Pressure Sodium, Item SPV.0060.366.

A Description

This special provision describes installing high pressure sodium utility luminaires as indicated in plans. All work shall be according to standard spec 651.

B Materials

High pressure sodium utility luminaires are furnished by the City of Milwaukee per City Spec, and drawing. Ensure proper operation and function prior to mounting.

C Construction

Pick up luminaires from the City of Milwaukee yard located at 1540 W. Canal Street. Contact person is William Olson at our street lighting shop (414) 286-5953 to coordinate pick up.

The luminaire requires 3 wire operation at 240 volt. The luminaire shall be attached to the 6 foot aluminum bracket arm using the supplied hardware.

Perform all splices and connections required for the operation of luminaire.

D Measurement

The department will measure Installing City Furnished Luminaire Utility High Pressure Sodium by each unit, 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.0060.366	Installing City Furnished Luminaire Utility High Pressure Sodium	EACH

Payment is full compensation for Installing City Furnished Luminaire Utility High Pressure Sodium luminaires; for making all connections; and for all testing.

89. Luminaire Utility 1LED, Item SPV.0060.374.

A Description

This special provision describes furnishing and installing street lighting fixture according to current City of Milwaukee Electrical methods and National Electrical Code standards. All work shall be according to standard spec 651.

B Materials

Furnish Luminaire Utility 1LED with I.E.S. Type 2 Light Distribution (NEMA label ‘1LED2’)

Cree RSWM-A-HT-2ME-9L-30K7-UL-GY-N-Q1-SS

Philips Road Focus RFM-72W32LED-3K-G2-R2M-UNV-DMG-FAWS4-RCD7-PH9-SP2-GY3

Or approved equal.

TECHNICAL SPECIFICATIONS:

All features below shall be incorporated into the equipment and all items shall be furnished and installed into a complete unit ready for operation.

TYPE:

The LED luminaires purchased under this contract will be of Cree Inc, RSW series, Philips Road Focus RFM series, or approved equal with the above order number. The luminaires shall be designed so it can efficiently produce uniform illumination according to I.E.S. Type II light distribution according to the lighting plan.

HOUSINGS: The housing and door shall be rugged, high quality, cast aluminum for maximum strength, durability and lasting beauty. All castings shall be free from pits, blowholes, or other irregularities. All edges are to be free from burrs.

Housing: The housing shall have an integral leveling pad or other suitable means for quick, easy and proper positioning of the luminaire.

Door: The door shall be hinged and easily opened for routine maintenance. All component parts shall be easily accessible with the lower housing opened. Tool-less entry is required.

Leveling: A bubble level is to be located inside the electrical compartment for easy leveling at installation.

Hinges: Hinges shall be so constructed and designed to accurately position the door and assure a positive locking with the housing. The hinges shall be provided with a safety catch to prevent the accidental disengagement of the door during servicing.

Finish: The entire housing shall be polyester powder-coated for durability and corrosion resistance. Rigorous five-stage pre-treating and painting process shall yield a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117).

Color: The luminaire shall be grey in color unless otherwise specified.

Label: There shall be a NEMA label ‘1LED2’ clearly visible at 30 feet height attached to the door of the luminaire.

In addition, the luminaire complete model number and manufacturing date shall be indicated inside the housing.

LED/OPTICAL ASSEMBLY:

The LED assembly is to be chip on board. The LED module is to be enclosed and sealed with a borosilicate Prismatic Glass optical assembly. The combination shall be NEMA IP66 rated for dust and water resistant. The L_{70}, per IES TM-21, must be greater or equal to 100,000 hours of operational time at 25 degrees Centigrade.

The color temperature is to be 3,000K CCT.

POWER SUPPLY:

The Electronic driver must have an expected life of 100,000 hours at a 25°C ambient.

It is to be rated at 240 volts, 60Hz. A driver with multiple input voltages can be supplied as long as it can operate at 240 volts.

SURGE PROTECTION

A surge protector which provides a minimum of 20kV/10kA protection as per IEEE/ANSI C62.41 Category C is to be included. There shall be a visual indicator showing the surge protector is operational.

TERMINAL BLOCK: A heavy duty terminal block shall be provided which will accept wire sizes up to #6 A.W.G. The terminal block shall be compatible with either aluminum or copper wire.

MOUNTING: Mast arm mount is adjustable for arms from 1-1/4” to 2” (1-5/8” to 2-3/8” O.D.) diameter. Provide a bolt clamping mechanism with 3G vibration rating per ANSI C136.

HARDWARE: All nuts, bolts, latches, etc. furnished with the luminaire shall be fabricated from stainless steel or non-ferrous materials.

PHOTOCONTROL: No photocell is needed, but a shorting cap and a 7-pins socket are required.

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

i. This warranty will remain in effect for ten years from date of acceptance.

ii. Under this provision, the contractor 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 at no cost to the city.

C Construction

Install lighting fixture on the mounting bracket on the pole according to manufacturer standards. Provisions for inserting 2#12UF with ground riser cable between the fixture and cable connecting point at the transformer base/ hand hole shall be included per applicable details within design set.

D Measurement

The department will measure Luminaire Utility 1LED by each unit, 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.0060.374	Luminaire Utility 1LED	EACH

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

90. Remove Luminaire, Item SPV.0060.387.

A Description

This special provision describes removing existing street lighting luminaire complete as shown in the plans.

B (Vacant)

C Construction

C.1

The contractor is responsible to disconnect all cables and wiring that is mounted on or in the poles and carefully remove luminaire complete from street light pole.

C.2

Contractor is responsible to protect and deliver the removed street lighting equipment to 1540 West Canal Street, Milwaukee, Wisconsin. The contractor will need to coordinate with the Street Lighting Shop Yard contact person for the delivery of this material.

Street Lighting Shop Yard Contact Person:

Neal Karweik – (414) 286-5943 office / (414) 708-4245 cell

All the materials must be dropped off at one time.

The Street Lighting Shop Yard hours for dropping off materials is from 8:00 AM to 2:00 PM Monday through Friday. Contractor must be out of the shop yard by 2:00 PM NO LATER.

D Measurement

The department will measure Remove Luminaire by each unit, 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.0060.387	Remove Luminaire	EACH

Payment is full compensation for removing existing street lighting luminaire complete.

91. Adjusting CUC Manhole Cover, Item SPV.0060.400.

A Description

This special provision describes adjusting the existing chimney of the block, precast, or brick round manholes, furnishing, installing and removing protection of the cables in the manhole during adjustment operations. Perform work according to the standard specifications, the provisions of the article Adjusting Manhole Covers, as shown on the plans, and as hereinafter specified.

B Materials

Furnish and install materials that conform to the requirements of standard spec 519. Salvage and reinstall existing covers on the manholes. The city will supply covers designated for replacement. Contractor shall contact Karen Rogney at (414) 286-3242 to obtain the “Castings Requisitions Form” required to obtain the covers. Contractor shall contact Ricardo Lopez, Inventory Clerk at (414) 286-6123 prior to obtaining the frames and lids from the DPW Field Headquarters at 3850 N. 35th St. Contractor must have the “Castings Requisitions Form” in hand in order to obtain the castings.

C Construction

Report any pre-existing problems to Mr. Curt Campagna, CUC Manhole Maintenance Manager at (414) 286-5967 three working days in advance of any construction on manholes.

Before removing the pavement around the manhole, the contractor shall place a ¾-inch plywood cover or equal over existing active Street Lighting, Traffic Control, Communications or private vendor electrical cables. This cover shall be properly supported to/at the manhole floor.

Break out and remove pavement around manhole. Remove existing covers and store and secure them properly. Any damaged, lost, or stolen covers shall be the responsibility of the contractor and shall be replaced at contractor’s expense.

Remove existing chimney to surface of concrete roof slab. If manhole does not have an existing concrete roof slab, remove sufficient chimney as to provide adequate corbel to fit new cast iron frame and cover.

Adjust manhole cover to proposed grade using bricks or concrete rings as necessary. Completely underpin entire flange area of manhole frame with mortar, bricks and/or concrete rings. Remove wedges/shims. Fill voids with grout. Do not back plaster inside walls.

After completion of paving, remove the temporary ¾-inch plywood cover or equal which is over the existing electrical cables in the manhole as mentioned above.

Notify Mr. Campagna three working days in advance of completion of each manhole adjustment, for inspection and acceptance of work performed. The contractor will receive no payment until the above work is approved by City Underground Conduits.

D Measurement

The department will measure Adjusting CUC Manhole Cover by each unit, 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.0060.400	Adjusting CUC Manhole Cover	EACH

Payment is full compensation for furnishing all required materials, exclusive of frames, grates, or lids available and designated for adjusting; for removing, reinstalling and adjusting the covers according to the requirements of the plans and contract. Covers to be adjusted and which are rendered unfit for use by the contractor through the contractor’s operations will be replaced by the contractor in kind at the contractor’s own cost and expense.

92. 4’ Diameter “Doghouse” Manhole Type CUC, Item SPV.0060.410.

A Description

This special provision describes providing a 4’-0” diameter precast concrete “doghouse” manhole for the City of Milwaukee Underground Conduit Section at locations shown in the plans, according to standard spec 301, 611 and 501, and as hereinafter provided. This work includes providing and placing PVC pipe and associated fittings, cement encasement, and other appurtenances to extend existing conduit as required to provide a complete and fully functional communications manhole unit.

B Materials

Furnish 4’-0” diameter precast concrete “doghouse” manhole.

B.1 Manhole

Furnish and install a 4’ diameter precast concrete “doghouse” manhole. Concrete and steel reinforcement shall conform to ASTM specification: C478 (latest edition), except that the single cages of 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 both located in the center of the wall, and #6 hoop rebar centered in the wall 3” above the window knock-outs.

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.

Field verify window depth and locations prior to ordering manhole.

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.

B.2 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.

Manufacturers of PVC Conduit DB-60 shall request evaluation and approval of their products by filing with the department’s Research Supervisor, Bureau of Highway Construction, a certificate setting forth the name or brand of pipe to be furnished, the specified type, category, grade and PVC plastic cell classifications. The certificate shall have attached a certified test report from an approved independent testing laboratory showing specific results of tests performed on each diameter conduit to be furnished conforming to all requirements of these specifications. The conduit tested shall be randomly selected for test by the independent testing laboratory as being representative of that manufacturer’s conduit. The manufacturer of the conduit shall also submit with the certification, a guarantee that all conduit furnished be of the same quality and composition and conform to the specification requirements as tested by the independent laboratory, as long as the manufacturer continues to furnish materials for WISDOT projects.

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).

B. 3 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

B.4 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 with water to inundate the aggregate sufficiently to provide an approximate 3 inch slump. Deposit the mix directly from a concrete transit mix truck.

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

C Construction

C.1 Manhole

Install the bottom section of the manhole while avoiding damage to the live active cables. The excavation may need to be widened to slide the bottom under the existing cables. After the bottom section of the manhole has been set, the existing cables need to be placed within the window openings, splice cases and/or coils placed back into the manhole.

Exercise extreme care in the handling of working cables within the excavation. When cables need to be moved, particularly lead sheathed cables, move cables slowly and gradually. Avoid sharp kinks that may damage the inner core of the cables and the sheath.

Complete the "doghouse" manhole installation without any damage or service disruption to the existing cables.

Install 4' Diameter "Doghouse" Manholes Type CUC Installed over Conduit according to standard spec 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.

Install manhole cover to proposed grade using concrete rings and/or bricks. Completely underpin entire flange area of manhole frame with mortar, bricks and/or concrete rings. Remove wedges/shims. Fill voids with grout. Do not back plaster inside walls.

C.2 Placing Duct

All ducts shall be inspected before placing to see that the bores are clean and free from mud, sand, etc. Only ducts with a smooth bore, free from burrs, rough projections etc. shall be used. Where burrs or other rough areas likely to damage cable are found in the duct, they shall be smoothed off by rasping or scraping.

All existing ducts shall be extended into the new manhole structure unless otherwise noted on the plan. Split PVC duct should be used on ducts containing cables. The split duct shall be installed per manufactures recommendations using tape and reinforced with plastic straps to produce a rigid, stable unit.

All ducts shall terminate on the inside wall of the manhole. A standard end bell fitting shall be installed on all duct access points into the manhole.

Where trace wires are present, reconnect and extend trace with #10 copper wire extended two feet past the inside wall of the manhole.

C.3 Concreting

Begin concreting after conduit has been laid and the trench and duct have been inspected. The minimum concrete encasement of the ducts is three inches on the top, two inches on the sides, and three inches on the bottom. After placing, the concrete shall be puddled with a splicing bar or similar tool so that complete duct encasement is accomplished. Wood braces used to keep the conduit from floating shall be removed 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.

D Measurement

The department will measure 4’ Diameter “Doghouse” Manhole Type CUC by each unit, 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.0060.410	4’ Diameter “Doghouse” Manhole Type CUC	EACH

Payment is full compensation for all excavation work and disposal of material; for adjusting manhole frame to final grade, for furnishing and installing all materials, including precast manhole, conduit, conduit fittings, end bells, bricks, and coarse aggregate, bedding, concrete forms, concrete placement, appurtenances, and backfilling.

93. Removing CUC Manhole, Item SPV.0060.420.

A Description

This special provision describes removing various manholes for the City of Milwaukee Underground Conduit Department at locations shown in the plans, according to standard spec 204. Removal means removal of the existing structure and any necessary conduit alterations required.

B (Vacant)

C Construction

C.1 General Requirements

Complete all operations necessary to remove the existing structure and that might endanger the new construction before constructing new work.

Manholes designated for removal and subsequent reconstruction will ordinarily contain working cables which must be maintained during the course of this phase of work. Protective measures against damage must be observed when handling and working around these cables.

C.2 Frame and Cover Removal

Remove the frame and cover on all manholes designated for removal. If the castings are to be salvaged as directed in the plans, exercise caution with frames embedded in concrete so unnecessary damage to the frame does not occur during the process of breaking concrete. Remove all mortar and concrete from the frame. Store salvaged castings at location approved of by the engineer.

C.3 Protection of Cables

Extreme care must be exercised in the handling of working cables in manholes or exposed conduit package areas while removal work is going on. Cables may carry high voltage that may be life threatening.

No cable removed from its racks and spanning the manhole opening is to be permitted to sag appreciably from its own weight across such opening. Provide temporary supports for all cables. When cables need to be moved, particularly lead sheathed cables, move cables slowly and bend gradually. Avoid sharp kinks that may damage inner core of cables and the sheath. Cables must be left as stationary as is practicable

after the cables have been temporarily located. Exercise care if further shifting is required while construction work progresses and if needed, re-support. Guard against damage to the exposed cables by falling objects such as tools, equipment and debris. Avoid stepping on cables. Do not use cables to support any objects during the course of the construction work.

Promptly notify Mr. Brian Pawlak at (414) 286-5970 work / (414) 708-2118 cell, of any visible cable defects discovered at the time the cable is exposed. Report any signs of abrasion, sheath rupture, kinking in the cable or evidence of sheath cracks.

The contractor will be held liable for all damage due to carelessness and to neglect and is responsible for protecting and safeguarding cables. All damage will be repaired at the contractor's expense.

C.4 Removing Existing Structure

After removal of the castings and protecting and supporting the cables, carefully remove the manhole roof, walls, floor and all hardware. No portion of the existing structure is to remain. The increase in the size of the excavation will be determined by the size of the manhole to be reconstructed as indicated in the detail plans. Remove all waste material accumulated by the removal of the existing structure from the work site. No part of this waste material can be used as backfill material.

C.5 Conduit Alterations

Break back by hand sections of cement encased conduit to facilitate excavation for the new proposed structure. Hand chip concrete away for the existing pipes. Carefully remove pipes from around the cables. Hand chip enough concrete away from the pipes to allow for the coupling of split ducts on to the ends of the pipes. Protect exposed pipe ends and existing cables from damage.

D Measurement

The department will measure Removing CUC Manhole by each unit, 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.0060.420	Removing CUC Manhole	EACH

Payment is full compensation for breaking down and removing structure; conduit alterations; for providing cable protection; for hauling and disposing of materials.

94. Pole Type A26 Concrete Bolt Down, Item SPV.0060.818.

A Description

This special provision describes furnishing and installation of the following material as shown in plans and according to the following.

Design:

1. General: The various designs of concrete poles to be furnished are shown on the prints of drawings that form a part of this specification and are attached hereto. The dimensions given are not intended to be exact or precision measurements. Slight variations in dimensions and design that are immaterial to strength and appearance will be permitted, but all such variations Infrastructure Services Div, Transportation Section, Traffic & Lighting Design.

Drawing No.	Date-Rev.	Type
E-92-66	11-20-92	A-26 Bolt Down
E-63-78	07-15-63	A-31 Bolt Down

2. Description: The pole shall be concrete, one-piece with dimensions, taper and cross section as shown in the drawings. The pole shall be manufactured as a prestressed and reinforced centrifugally spun pole as set forth in A.S.T.M. C1089-88 unless otherwise directed.

B Materials

Furnish Pole Type A26 Concrete Bolt Down.

1. The pole shall be concrete, one-piece with dimensions, taper and cross section as shown in the drawings. The butt section may be round or octagonal in shape as indicated in the drawings. The pole shall be manufactured as a prestressed and reinforced centrifugally spun pole as set forth in A.S.T.M. C1089-88 unless otherwise directed. The pole has a removable ornamental aluminum pole cap, firmly and securely fastened in place by set screws or other approved device which will securely retain it in place. The concrete pole shall have a hollow raceway at least 1 1/2 inches in diameter and continuous in a straight line, without appreciable offset, throughout its entire length.

2. The raceway shall be free from sharp projections or edges that might injure the insulated wire or cable sheath.

3. Dimensions and locations for lateral opening in the raceway are shown on the drawings. All poles shall be furnished with hand hole. The hand hole shall be located on the face 90 degrees from the lateral opening in the butt of pole and shall have the minimum dimensions of 2-1/2" x 8". The cover shall be heat-treated cast aluminum, or other material as approved by the city, fastened to non-ferrous insert in the pole. The cover shall be secured to the pole using 1/4"-20 NC by 3/4" long 18-8 stainless button head Torx T27H tamper proof screws. Bolt down poles are to have the hand hole 90º to the slot opening at the top of the pole a1.

a. Concrete Aggregates: Concrete aggregates shall meet all the requirements of A.S.T.M. C33. All aggregate employed in the manufacture of the concrete poles shall be a combination of hard black stone and white crystalline stone. The aggregates shall be of adequate strength in resisting crushing stresses and impervious to moisture; of such character as not to deteriorate or change as a result of continued exposure for years to the weather; and of such character that it crushes into masses approximately cubical in form, not in flakes. Aggregates shall all pass a 3/8 inch sieve, with a minimum size passing a #100 sieve.

b. Cement: The cement shall be fresh and free from lumps and shall conform to specifications of the American Society of Testing Materials, serial designation C-150, Type I or Type III.

c. Water: The water employed shall be free from acids, alkalis, oil, or organic matter.

d. Materials Proportion: The materials combined to produce the concrete shall be proportioned by weight.

e. Steel: The surface of all steel shall be free from dirt, oil, or grease. The steel used as either reinforcing or prestressing shall be adequately sized to meet the strength requirements of the finished poles, as herein specified. Longitudinal reinforcement, prestressing and spiral wrap shall comply with the latest version of the applicable ASTM standards. All prestressed wire shall be stressed to not less than 60% or more than 70% of its tensile strength.

f. The pole, when manufactured, should be polished and include a non-sacrificial anti-graffiti shield coating on the entire above ground length.

4. PEA GRAVEL

The pea gravel must consist of particles from natural gravel deposits and shall be composed of clean, hard, tough, durable pebbles free from adherent coatings, soft, flat, or elongated particles, and organic or other deteriorative matter. The following limits apply to deteriorative substances in the pea gravel.

Chert not over 4% by weight

Coal not over ½% by weight

Clay lump and friable particles not over ½% by weight

Soft fragments not over 1% by weight

Any combination of the above not over 4% by weight

Flat, elongated or laminated pcs. Not over 10% by weight
(Flat and elongated particles are those having a length more than five times the average thickness)

Grading requirements of the pea gravel are as follows:

Passing 3/8 inch sieve 95% to 100%

Passing No.4 sieve 25% to 50%

Passing No.8 sieve 0% to 5%

Each unit will require approximately 0.25 cubic yard of pea gravel.

5. Test of Materials: Any and all of the above materials shall be subject to test at any time before use, as may be directed, and samples for this purpose shall be furnished by the contractor upon request.

a. POLE STRENGTH: All poles furnished shall withstand a 90 mph wind load plus 30 percent gust factor and a constant working load as specified in the following table:

POLE TYPE	WORKING LOAD (LBS)
A-26 Bolt Down	400

1. The pole design shall allow for a maximum load of not less than twice the working load.

2. The elastic limit at which any pole will actually fail to withstand any additional stress without permanent injury shall not be less than two and one-half times the working load.

b. LOADING AND STABILITY: The A-26 bolt down assembly and A-31 bolt down assembly furnished under this specification shall support two bracket mounted 36 inch, 40 pound arms each with a one hundred pound fixture of an EPA of 5. City of Milwaukee (infrastructure Services Division) Drawing number B-08-07 of the fixture and arm assembly is attached. All pole designs shall meet the latest revision of the AASHTO specifications for these poles as defined in their STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS handbook.

The manufacturer shall submit engineering calculations for lighting poles to show that maximum stress and deflections do not exceed specified performance requirements under full design loading, as well as other certified reports and data which indicate that the poles meet all load requirements, within 30 days of the bid award. Engineering calculations shall be prepared and sealed by an engineer licensed in the State of Wisconsin.

The entire horizontal and vertical “wind sail” area of the pole assembly subject to wind load including arm and luminaire shall be designed to withstand the AASHTO standard specifications, from above, for wind load requirements for a 90 MPH wind load with gust factor computed per section 3.8.5.and height and exposure factors from table.

c. CABLE RACEWAY: Each concrete pole shall have a hollow raceway at least one and one-half inches in diameter and continuous in a straight line, without appreciable offset, throughout its entire length.

1. The raceway shall be free from sharp projections or edges that might injure the insulated wire or cable sheath.

2. Dimensions and locations for lateral opening in the raceway are shown on the drawings.

3. All poles shall be furnished with hand hole. The hand hole shall be located on the face 90 degrees from the lateral opening in the butt of pole and shall have the minimum dimensions of 2-1/2" x 8"*.The cover shall be heat-treated cast aluminum, or other material as approved by the city, fastened to a non-ferrous insert in the pole. The cover shall be secured to the pole using 1/4"-20 NC by 3/4" long 18-8 stainless button head Torx T27H tamper proof screws. Bolt down poles are to have the hand hole 90º to the slot opening at the top of the pole and be 2½” x 8”.

4. Two lateral openings into the raceway, of dimensions and locations as shown on the drawings, shall be provided in the butt of the pole. These openings shall be the same dimension on the surface of the pole and at the raceway. There shall be no taper from the outside surface to the interior raceway.

d. CONCRETE:

1. Strength: The concrete strength shall meet the following requirements when tested according to A.S.T.M. C39.

a. Release of Prestressing Steel: Concrete cylinders made according to A.S.T.M. C31 shall attain a minimum strength of 3,500 p.s.i. at the time that prestressing is released.

28 Days: Concrete cylinders made according to A.S.T.M. C31 shall attain a minimum strength of 8,000 p.s.i. at 28 days.

2. Admixture: All poles shall be manufactured with quality HSF (high silica fume) cement to reduce porosity in the concrete and increase compressive strength.

3. Process and Surface Finish: The finished concrete used in the manufacture of poles shall be a very dense product, free from undesirable air pockets or voids.

a. The concrete shall be compacted by the centrifugal process so that the surface is dense, with the coarse and fine aggregate evenly distributed. If requested to do so by the Purchasing Division - DOA, a sample shall be produced that is representative of the pole cross-section and at least three inches in length. The sample shall be submitted to the city for approval with respect to color, texture and finish. The concrete mix from which the sample was made shall be noted and submitted with the sample. A representative sample of all aggregates used also shall be submitted.

b. The mixture of aggregates shall be essentially uniform over the entire exterior surface of concrete poles furnished.

c. Size of the duct shall be controlled so that the prestressed and/or reinforcing rods are not embedded in "slurry" (i.e., water-cement-sand mix that collects in the pole core during the spinning process).

d. Following the casting operation, the pole shall be cured with low-pressure steam for as long as needed to reach the necessary strength to allow handling and release of prestressing wires. Poles shall remain in storage for as long as needed for the concrete to reach the required compressive strength. Poles shall meet the design strength before shipment is allowed.

e. To assure that poles are not prematurely exposed to freeze-thaw action and deicer, adequate curing of the concrete for development of sufficient strength to resist scaling and for reduction of water content of the concrete shall be the responsibility of the manufacturer.

f. The finished surface must be polished so that the color and surface smoothness are uniform over the entire surface. The face surface shall be sealed with a siloxane penetrating sealer and a high molecular weight acrylic copolymer or other sealing compounds that will yield equivalent degree of protection from water, salt, and/or other chemical infiltration and does not discolor or fade.

g. The entire lot of concrete poles to be furnished under this specification shall be uniformly consistent in color and finish.

h. Treatment with diluted acid to obtain the desired finish is not permitted.

i. The finished surface of all poles shall be free from visible pits, fins, grooves, patches, or other surface markings not specifically enumerated herein.

j. The top of the pole shall be flat and perpendicular to the longitudinal axis of the pole so that the pole cap will have a positive seat.

k. Chloride accelerators shall not be used in the manufacturing process.

e. REINFORCEMENT: The reinforcing cage, spiral reinforcement and prestressing steel shall be placed in position and maintained in place during the centrifugal manufacturing process. The longitudinal reinforcement, prestressing and spiral reinforcement shall continue throughout the entire length of the pole.

1. COVER: All steel shall be covered at all points by at least 1/2 inch of concrete, except where it may be necessary in the process of manufacture to have the rods and/or wire extend beyond the ends of the poles. In such case, the rods and/or wires shall be cut off afterward, even with the face of the molded product, unless otherwise noted on the drawings included herein.

Where the above minimum coverage cannot be maintained next to cable entrance, wire outlet, etc., the reinforcing shall be protected with a suitable sleeve.

Drawings of the reinforcing cage, spiral reinforcement and prestress steel that the manufacturer proposes to use in the manufacture of concrete poles, showing the size, shape and arrangement of reinforcing prestressing spiral reinforcement, ties, method of holding cage in place, etc. SHALL BE SUBMITTED WITH THE BID OR WITHIN THREE WORKING DAYS OF RECEIVING A REQUEST.

NOTE: IF NOT PROVIDED WITH THE BID, BUT REQUESTED BY THE DOA, BUSINESS OPERATIONS DIVISION, PROCUREMENT SERVICES SECTION, THE DOCUMENTATION/ INFORMATION DETAILED HEREIN MUST BE FURNISHED WITHIN THREE WORKING DAYS OF RECEIVING A REQUEST OR THE BID WILL BE REJECTED.

f. WATERPROOFING: The top and bottom of the poles shall be properly coated with bitumastic waterproofing material.

1. Waterproofing material shall be of such quality and consistency that it will not crack or chip when subjected to extremely cold weather, and that it will not flow when subjected to extremely hot weather.

g. ACCESSORIES:

1. Pole cap: Each pole, when the design calls for a pole cap, shall have a removable aluminum pole cap, firmly and securely fastened in proper position by the contractor.

2. Span Hook: The design of the span hook for the Type "JB" concrete pole is shown on the drawings that form a part of this specification.

3. Miscellaneous: All pipes, bolts, nut wire, washers, pole caps, casting, fittings, and appurtenances of any sort are to be furnished by the contractor and made of approved rust-proof metal of such design, composition, and dimensions as may be approved by the city before the contractor begins manufacture.

h. MARKING: Every pole shall bear an impressed marking, or other type of marking acceptable to the city, of the type of pole, contractor's insignia, and casting date (month and year). Type of pole and contractor's insignia shall have letters at least one inch tall. The casting date shall have digits not less than 1/2 inch tall. All markings shall be located in line with the cable entrance in the butt of the pole and shall be placed fifteen inches to 20 inches above the ground line.

i. COLOR PIGMENTS: Poles with a colored finish shall be furnished where specified. The coloring is to be done by mixing a pigment into the concrete before casting. The color of the pole shall be uniform throughout the body of the pole, shall not fade and shall be maintenance free. The type of coloring pigment shall be indicated with the bid and a sample which represents the finished colored pole shall be furnished for approval of the Purchasing Division - DOA, if requested.

j. ANTI-GRAFFITI SHIELD: All poles shall include a non-sacrificial anti-graffiti shield coating on the entire above ground length in the bid price. Test results from the latest ASTM G53, D2247, B117 tests and test method should be included with the bid documents.

D Measurement

The department will measure Pole Type A26 Concrete Bolt Down by each unit, 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.0060.818	Pole Type A26 Concrete Bolt Down	EACH

Payment is full compensation for the pole, riser cable or cables, pea gravel, and all connections. This bid price also includes furnishing labor, equipment, and coordination.

95. Luminaire Historic Milwaukee Harp LED 1, Item SPV.0060.865.

A Description

This special provision describes furnishing and installation of the following material as shown in plans and according to the following.

B Materials

Furnish Holophane MHNB20Kv2B4-AG-S equipped with Keystone KT-LED45HUID-EX39-830D LED lamp, or Halco HID45-CS-EX39-LED screw in bulb.

TECHNICAL REQUIREMENTS: All features listed below shall be incorporated in the design of the Milwaukee Harp. All listed items shall be furnished and installed into a complete unit ready for installation and operation and satisfying all electrical codes and industrial standards for outdoor luminaires. All parts shall be interchangeable between luminaires of different manufactures.

1. HOUSING: The Milwaukee Harp's housing and components shall be cast from ASTM #356T6 or 319 aluminum. All castings shall be free from pits, blowholes, or other irregularities. All surfaces shall be smooth with edges free of flashing burrs and imperfections. Manufacturer's identification or logo will not be permitted on the exterior of the housing.

2. REFLECTOR: The reflector shall be aluminum not less than 0.046" in thickness, and of such uniform thickness and strength to protect against dents or deformations. The entire surface of the reflector shall have a minimum of an Alzak finish to provide a permanent and efficient reflecting surface, which may be easily cleaned and maintained. The reflector is to be mounted in such a manner to allow its removal without removal of mounting hardware. The reflector shall not extend beyond the frame of the luminaire in such a manner that it interferes with the proper operation of the refractor hinge assembly.

3. REFRACTOR: The refractor is to be manufactured from thermal resistant **borosilicate glass** in a teardrop shape and size which is similar to original Milwaukee Harp refractors. It shall not extend beyond the frame of the luminaire in such a manner that it interferes with the proper operation of the refractor hinge assembly.

4. LIGHTING DISTRIBUTION: The reflector/refractor combination shall be available in A.S.A.- IES Type IV distribution patterns.

5. MOUNTING: The Harp Luminaire shall accommodate a tenon with 1½" standard pipe thread with a hex locking nut for mounting to pole. The hex nut and washer are to be supplied for each unit as part of the bid price.

6. GASKETING: A durable gasket, made from non-deteriorating, sunlight resistant 1/8 inch thick rubber or neoprene, shall be installed where the lantern housing and the harp arms mate.

7. BALLAST: There will be no ballast or ignitor in the harp fixture.

8. SURGE PROTECTOR: The luminaire is to be factory wired with a surge protector Littelfuse LSP10277S-LSP10 in series on the hot and neutral between the input power and the mogul socket in order to protect the LED lamp. The surge protector shall be secured inside the harp fixture, easily accessible without causing any interference with the wiring.

9. HARDWARE: All clips, springs, blots, etc. which are required to assemble the Harp luminaire shall be made of stainless steel, brass or aluminum. This requirement includes the hinge pin. There shall be no ferrous materials used.

10. SOCKET: The Mogul socket shall be constructed from rugged, high grade porcelain, rated at not less than 600 volts and be able to withstand the voltage stresses generated by the starting device. It shall have lamp grips to hold the lamp securely. The center contact shall be spring loaded for positive electrical contact. The socket shall be located so the lamp's light center is at the focal point of the reflector/refractor combination.

11. HINGE AND LATCH ASSEMBLY: The hinge assembly shall not be an integral part of the main housing casting. It shall be a replaceable part attached to the main housing casting with hardware. The hinge assembly shall be consistent from unit to unit. The latch assembly must allow release without tools. All materials shall be aluminum.

12. FINISH: The finish shall consist of one primer coat (2 to 3 mils) X-I-M Flash Bond 400 White or equal and two prime finish coats, applied electrostatically with the color specified on the order and as follows:

Black enamel:	Gloss, oil, quick dry enamel, RAL 9005, Jet Black. (2 coats applied electrostatically 2 to 2.5 mils dry film)
Accent panels:	Gloss, oil, quick dry enamel, RAL 1000 Green Beige (2 coats applied electrostatically 2 to 2.5 mils dry film).

The accent panels may also be highlighted with tape colored to the RAL 1000, (Green Beige) specification. The tape must be able to withstand all environmental conditions that could be reasonably be encountered in the typical use of the Harp.

The tape must be fade resistant.

13. LAMP: The luminaire shall be equipped with Keystone KT-LED45HID-EX39-830D LED or lamp

C Construction

The Milwaukee Harp fixture is set on the pipe tenon that is attached to the top of the pole and is secured to the pole using standard 1-1/2” stainless steel hex head nut. Perform all splices and connections for the operation of fixture.

D Measurement

The department will measure Luminaire Historic Milwaukee Harp LED 1 by each unit, 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.0060.865	Luminaire Historic Milwaukee Harp LED 1	EACH

Payment is full compensation for the Luminaire Historic Milwaukee Harp, surge protector, LED lamp and all connections needed for complete installation. This bid price also includes furnishing labor, equipment, coordination.

96. Luminaire Historic Milwaukee Lantern LED, Item SPV.0060.866.

A Description

This special provision describes furnishing and installation of the following material as Milwaukee Lantern shown in plans and according to the following.

B Materials

Furnish Luminaire Historic Milwaukee Lantern LED.

1. GENERAL APPEARANCE: The Milwaukee Lantern Holophane MLNB20KvB4G shall replicate and conform to the shape and size as shown on plan set.

2. HOUSING: The Lantern Housing shall be cast from ASTM #319 or #356T6 aluminum alloy. The casting shall be free from pits, blowholes, or other irregularities and shall have smooth surfaces. Manufacturer’s Logo or identification shall not be visible on the exterior of the casting.

3. REFLECTOR: The reflector shall be aluminum not less than 0.046" in thickness, and of such uniform thickness and strength to protect against dents or deformations. The entire surface of the reflector shall have a minimum of an Alzak finish to provide a permanent and efficient reflecting surface, which may be easily cleaned and maintained. The reflector is to be mounted in such a manner to allow its removal without removal of mounting hardware. The reflector shall not extend beyond the frame of the luminaire in such a manner that it interferes with the proper operation of the refractor hinge assembly.

4. REFRACTOR: The refractor is to be manufactured from **borosilicate glass** to provide the most efficient distribution of lighting. The shape and size of the refractor is to be similar to original Milwaukee Lantern refractors. It shall not extend beyond the frame of the luminaire in such a manner that it interferes with the proper operation of the refractor hinge assembly. Refractor gasket(s) are not to be installed.

5. SURGE PROTECTOR: The Luminaire is to be wired with a surge protector, Littelfuse LSP10277S-LSP10 in series on the hot and neutral between the input power and the mogul socket in the arm, in order to protect the LED bulb. The surge protector shall be easily accessible without causing wiring interference.

6. MOUNTING: The Large Milwaukee Lantern is to be pendant mounted using the ball coupling and canopy lock nut. The lock nut used to secure the lantern to the arm is to be provided with the lantern. It is to be made from stainless steel.

7. ELECTRICAL CONNECTIONS: All electrical connections shall be accessible by removing the reflector only. Electrical components are to be listed by Underwriters Laboratory or other nationally recognized testing organizations.

8. LEADS: The power leads are to be routed through the top of the luminaire, (through the ball socket) and have a pigtail length of 12 inches minimum. They are to be #16 AWG stranded copper wire with insulation able to withstand the pulses from the starters and all environmental conditions that could be reasonably encountered in the typical use of the Lantern. They will consist of a black wire (line) white wire (neutral) and green wire (ground, connected to the casting). All paths of the leads are to be protected by insulating bushings or other suitable protection per standard or code.

9. HARDWARE: All clips, springs, bolts, etc. which are required to assemble the luminaire shall be made of stainless steel, brass or aluminum. This requirement includes the hinge pin. There shall be no ferrous materials used.

10. SOCKET: The Mogul socket shall be constructed from rugged, high grade porcelain, rated at not less than 600 volts and be able to withstand the voltage stresses generated by the starting device. It shall have lamp grips to hold the lamp securely. The center contact shall be spring loaded for positive electrical contact. The socket shall be located so the lamp's light center is at the focal point of the reflector/refractor combination.

11. HINGE AND LATCH ASSEMBLY: The hinge assembly shall not be an integral part of the main housing casting. It shall be a replaceable part attached to the main housing casting with hardware. The hinge assembly shall be consistent from unit to unit. The latch assembly must allow release without tools. All materials shall be aluminum.

12. FINISH: The finish shall consist of one primer coat (2 to 3 mils) X-I-M Flash Bond 400 White or equal and two prime finish coats, applied electrostatically with the color specified on the order and as follows:

Black enamel: Gloss, oil, quick dry enamel, RAL 9005, Jet Black.
(2 coats applied electrostatically 2 to 2.5 mils dry film)

Accent panels: Gloss, oil, quick dry enamel, RAL 1000 Green Beige
(2 coats applied electrostatically 2 to 2.5 mils dry film).

The accent panels may also be highlighted with tape colored to the RAL 1000 (Green Beige) specification. The tape must be able to withstand all environmental conditions that could be reasonably be encountered in the typical use of the Harp.

The tape must be fade resistant.

Note: Supplier to submit color sample and specification data for approval and supply one gallon of finish paint and one quart of accent panel paint per 25 luminaires.

13. LAMP: The luminaire shall be equipped with Keystone KT-LED80HID-EX39-830-D or Halco HID80-CS-EX39-LED screw in bulb.

C Construction

The Lantern 1-1/4" tenon is to be threaded into the bracket and 1-1/4" stainless steel hex head nut installed on pipe tenon, lock nutting the fixture to the bracket. Perform all splices and connections needed for the operation of fixture.

D Measurement

The department will measure Luminaire Historic Milwaukee Lantern LED by each unit, 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.0060.866	Luminaire Historic Milwaukee Lantern LED	EACH

Payment is full compensation Luminaire Historic Milwaukee Lantern LED fixture, surge protector, screw in bulb, and all connections.

97. Inline 5A Fast Acting Fuse With Holder, Item SPV.0060.881.

A Description

This special provision describes providing materials, general requirements, personnel qualifications, construction methods, and testing requirements used to perform electrical connections/splices required.

All work shall be according to standard spec 651.

B Materials

B.1

Furnish materials conforming to the WSEC, consisting of chapter comm. 16 of the WEC combined with the NEC.

B.2

All materials furnished under this contract for street lighting installation are subject to approval by the City of Milwaukee street lighting engineer. A prototype maybe requested for submittal by the engineer with a cable sample installed and spliced for approval prior to field installation.

B.3

The contractor shall furnish a complete list of materials to be furnished and used for street lighting. Such list shall include names and addresses of manufactures, together with catalog numbers, certificates of compliance, specifications, and other product information requests by the engineer. The list shall be submitted within ten calendar days of execution of contract. No material shall be incorporated into the lighting system prior to the written approval of the engineer. Approval does not change the intent of the specifications. The contractor shall not substitute or make changes in material without resubmitting for approval.

Use either the KLM-5 Bussmann Limitron Fast Acting Fuse housed in 1-Pole Midget Fuse Holder HEB-AA Bussmann 10A 600V with 2A0600 Bussmann insulator fuse boot or else an equal fuse assembly compatible with internal raceway of light unit.

C Construction

C.1. General Requirements

Work under items related to the street lighting system shall conform to the National Electrical Code (NEC), 2020 Edition, or the latest edition adopted by the State of Wisconsin, Wisconsin Department of Commerce Chapter Comm 16 (Electrical) State of Wisconsin electrical code, City of Milwaukee code, and these special provisions and good electrical practices. The contractor shall not take advantage of lack of details in plans or these specifications where to do so would conflict with the applicable code and standards.

C.2 Personnel Qualifications

An electrician holding all appropriate licenses (including City of Milwaukee Licenses) shall supervise all work done referring to the street lighting system. All splices shall be made by an electrician. For the purposes of this contract, an electrician is a person who served a four year apprenticeship and passed state exams.

C.3 Splices

The contractor shall perform water tight connections at pole’s handhole with materials listed or equal on Street Lighting Standard Details 142. Conductor runs shall be continuous between pole locations, and no splicing of conductors outside the pull box will be allowed. The water tight splices shall reside in the pull box and above the wiring coils called for in Street Lighting Standard Details 145. The 2#12UF with ground cable (per luminaire) shall be brought to the pole hand hole where it will be spliced with the riser cable to the light fixture. See luminaire specification for information on the installation of an in-line watertight fuse holder installed in-line with the hot conductor that leads to the luminaire and accessible in pole at the hand hole.

C.4 In Service Distribution Systems

The contractor shall not make splices to any underground connections or to any existing distribution system. As indicated on plans, underground splices and connections to existing underground circuitry will be completed by city electricians.

C.5 Testing

After the city makes preliminary acceptance of the street lighting system, it shall be monitored by the City of Milwaukee, Street Lighting Electrical Services during a 60-calendar day operational “burn in”. Final acceptance of the lighting system will be based on its meeting standard operational criteria as stated in these specifications. The contractor shall be responsible for all necessary repairs and adjustments to the lighting system to meet standard operational criteria.

D Measurement

The department will measure Inline 5A Fast Acting Fuse With Holder by each unit, acceptably completed. This covers the fuse, holder, and insulated boot in the hand hole of the light pole, and the incidental waterproof connections.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.881	Inline 5A Fast Acting Fuse With Holder	EACH

Payment is full compensation for furnishing and installing n-line fuse holder assemblies and for disposing of surplus material.

98. Marking Crosswalk Epoxy Transverse Line 12-Inch, Item SPV.0090.003.

A Description

This special provision describes furnishing and installing Marking Crosswalk Epoxy Transverse Line 12-Inch as directed by the engineer, as shown on the drawings and as hereinafter provided.

Perform work under these items according to the requirements of standard spec 646 and the details as shown on the plans, with the exception of the differences noted here within.

B Materials

Furnish epoxy pavement marking and glass bead material according to the standard spec 646.

C Construction

Construction of pavement markings shall be according to manufacturer application and installation procedures, standard spec 646, and engineer.

All pavement marking areas shall be laid out by the contractor and then reviewed by the engineer. Approval of the marking layout shall be approved by the engineer prior to placement of material.

The contractor shall protect the pavement markings from damage and allow them to fully cure prior to allowing traffic to drive over markings. Any damage shall be corrected by the contractor at the contractor’s expense.

D Measurement

The department will measure Marking Crosswalk Epoxy Transverse Line 12-Inch by the linear foot, 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.0090.003	Marking Crosswalk Epoxy Transverse Line 12-Inch	LF

Payment is full compensation for preparing the surface, furnishing, and installing all materials.

99. Marking Stop Line Epoxy 24-Inch, Item SPV.0090.004.

A Description

This special provision describes furnishing and installing Marking Stop Line Epoxy 24-Inch as directed by the engineer, as shown on the drawings and as hereinafter provided.

Perform work under these items according to the requirements of standard spec 646 and the details as shown on the plans, with the exception of the differences noted here within.

B Materials

Furnish epoxy pavement marking and glass bead material according to the standard spec 646.

C Construction

Construction of pavement markings shall be according to manufacturer application and installation procedures, standard spec 646, and the engineer.

All pavement marking areas shall be laid out by the contractor and then reviewed by the engineer. Approval of the marking layout shall be approved by the engineer prior to placement of material.

The contractor shall protect the pavement markings from damage and allow them to fully cure prior to allowing traffic to drive over markings. Any damage shall be corrected by the contractor at the contractor's expense.

D Measurement

The department will measure Marking Stop Line Epoxy 24-Inch by the linear foot, 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.0090.004	Marking Stop Line Epoxy 24-Inch	LF

Payment is full compensation for preparing the surface, furnishing, and installing all materials.

100. Precast Concrete Curb, Item SPV.0090.029.

A Description

This special provision describes providing and installing precast concrete curb bike lane median of the type and length specified in the plans and detailed in the standard drawings. This work shall be performed according to standard spec 601, except as herein modified.

B Materials

Furnish the concrete mix design. The mix design shall be a mixture conforming to standard spec 501 and be capable of obtaining a strength of 7500 psi at 28 days.

All reinforcement shall be epoxy coated according to standard spec 416. The internal reinforcement shall consist of epoxy coated bars as detailed in the plan. The tie bars shall be epoxy coated bars with a size and length as detailed in the plan.

Nonshrink grout shall be according to standard spec 415.

C Construction

C.1 General Requirements

Cast to the shape and dimensions detailed in the standard drawings. The precast concrete curb reinforcement shall be cast at the height and spacing detailed in the standard drawings. and have a minimum two inches of concrete cover.

Submit at least 60 days prior to production the name and location of the precast manufacturer, a current copy of the WISDOT Certified Precast Concrete Producer list with the precast manufacturer highlighted indicating approval to cast items for at least one of the Product Keys under category I, the WISDOT approved PC mix design, and the precast production drawings. Production shall not commence until the submittal has been approved by the Resident Engineer and WisDOT QA has been notified of the production schedule.

C.3 Construction Requirements.

Each segment of precast concrete curb shall be pinned to a minimum depth of 6 inches below the roadway using epoxy coated tie bars with a size and length as detailed in the details. Tie bars shall be recessed 1/4 inch below top of curb and grouted in place with nonshrink grout according to standard spec 415. Grout shall be finished flush with top of curb.

D Measurement

The department will measure Precast Concrete Curb by the linear foot, 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.0090.029	Precast Concrete Curb	LF

Payment is full compensation for furnishing and installing Precast Concrete Curb.

101. Concrete Curb Integral HES Type D, Item SPV.0090.030; Concrete Curb Integral HES Type J, Item SPV.0090.031.

A Description

This special provision describes providing integral concrete curb using high early strength (HES) concrete.

B Materials

Furnish materials according to standard spec 601.2, except that concrete shall be high early strength and capable of being opened to traffic within three calendar days.

C Construction

Construct according to standard spec 601.3.

D Measurement

The department will measure Concrete Curb Integral HES Type D and Concrete Curb Integral HES Type J by the linear foot, 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.0090.030	Concrete Curb Integral HES Type D	LF
SPV.0090.031	Concrete Curb Integral HES Type J	LF

Payment is full compensation for integral concrete curb using high early strength (HES) concrete, according to standard spec 601.5.

102. Install Fiber Optic Cable Outdoor Plant 72-CT Contractor Supplied, Item SPV.0090.201.

A Description

This special provision describes furnishing and installing fiber optic cable.

B Materials

Furnish ultra low loss single mode loose tube OS2 fiber cable suitable for outdoor installation. Each fiber shall be color coded with a maximum 12 fibers per color coded polyethylene buffer tube jacket. Color coding shall not cause microbending or fibers to stick to each other. The cable shall have a fully water blocked core. Cable shall be armored for rodent resistance.

Furnish a pull rope for use during installation of the fiber cable. The pull rope shall be rated for 1,800 lbs or greater of pull strength.

Furnish 1” protective subduct with nominal inner diameter of 1.03”, nominal outer diameter of 1.31”, and a weight of 14 pounds per 100’ length. Furnish materials to rack subduct cable at manholes.

C Construction

Install and perform testing of the fiber optic cable according to standard spec 678.3.

D Measurement

The department will measure Install Fiber Optic Cable Outdoor Plant 72-CT Contractor Supplied by each unit, 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.0090.201	Install Fiber Optic Cable Outdoor Plant 72-CT Contractor Supplied	EACH

Payment is full compensation for furnishing and installing fiber optic cable including all hardware and fittings necessary to install the fiber optic cable.

103. Electrical Cable 3#4/1#8 XLPE USE-2, Item SPV.0090.240.

A Description

This special provision describes furnishing and installing service cable according to current City of Milwaukee standards.

B Materials

Furnish cable according to City of Milwaukee Specification 34-A-2, “Power Cable, Thermo-Plastic Insulated, Thermo-Plastic Sheathed.”

C Construction

Install service cable according to current City of Milwaukee standards.

D Measurement

The department will measure Electrical Cable 3#4/1#8 XLPE USE-2 by the linear foot, 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.0090.240	Electrical Cable 3#4/1#8 XLPE USE-2	LF

Payment is full compensation for furnishing labor, equipment, coordination and all materials.

104. Cable Type 1#6 AWG 5kV, Item SPV.0090.301.

A Description

This special provision describes furnishing, installing and connecting electrical cable type 1#6 AWG 5kV (1#6 Primary Line Wire) overhead series primary cable complete with all splicing, identifications, and terminations, and conforming to standard spec 651.

B Materials

Furnish Electrical Cable Type 1#6 AWG 5kV – overhead series primary cable shall conform to the City of Milwaukee specifications. The cable provided will be a 5kV voltage rated #6 solid, WP, Copper and Cross Linked Poly, Black overhead cable.

Furnish electrical cable type 1#6 AWG 5kV non-shielded overhead series primary cable for continuous conductor temperature of 90 degrees Celsius, rated for wet or dry conditions, and aerial spanning of non-shielded cable at voltages of 2001 volts and above.

C Construction

Install electrical cable 1#6 AWG 5kV overhead series primary cable as shown on street lighting temporary design plan. The overhead installation shall conform to standard spec 661.2.1.4 when attaching to wood poles.

Contractor to provide all necessary cable connector hardware, clevis, insulators, and splicing materials required to make water tight connections.

Temporary overhead cable and facilities as shown on temporary lighting plans will remain in place until after the permanent underground conduit, pull boxes, and cable have been installed and all circuitry has been inspected and energized and finally accepted by the City of Milwaukee Street Lighting Construction Supervisor.

D Measurement

The department will measure Cable Type 1#6 AWG 5kV by the linear foot, acceptably completed. Measurement will be made in a straight line between changes in direction and to the centers of poles. Sag of the aerial cable or vertical cable will not be measured for payment. The rewiring to facilitate relocation of the cable due to staging or other construction requirements will not be measured for payment.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.301	Cable Type 1#6 AWG 5kV	LF

Payment is full compensation for furnishing labor, tools, equipment, transporting, coordination, including making connections and testing installed cable system; and for disposing of surplus material.

105. City Furnished Electrical Cable 1#8 AWG 5kV Concentric, Item SPV.0090.302.

A Description

This special provision describes providing for installation of the following material as shown in plans and according to the following. All work shall be according to standard spec 651.

B Materials

Supplied by the City of Milwaukee per City Spec.

Contractor responsible to contact Street Lighting Shop Yard Contact Person Shop four working days before with the exact number or linear footage of materials needed. The advance notice will allow the shop to gather the requested items for the contractor to pick up and sign for taking possession of the materials.

The contractor will be responsible for the materials that they take possession of and for the returning any unused materials back to the shop in good condition. If any materials come back damaged or broken the contractor will be responsible for replacing the broken or damaged item.

Street Lighting Shop Yard Contact Person:

Neal Karweik – (414) 286-5943 office / (414) 708-4245 cell

All the materials must be picked up all at one time.

The Street Lighting Shop Yard hours for picking up materials is from 8:00 AM to 2:00 PM Monday through Friday.

Contractor must be out of the shop yard no later than 2:00 PM.

D Measurement

The department will measure City Furnished Electrical Cable 1#8 AWG 5kV Concentric by each unit, 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.0090.302	City Furnished Electrical Cable 1#8 AWG 5kV Concentric	EACH

Payment is full compensation for installation, labor, equipment, coordination.

106. Electrical Cable Type 3#6 AL Triplex, Item SPV.0090.303.

A Description

This special provision describes furnishing and installing service cable according to current City of Milwaukee.

Electrical methods and National Electrical Code standards. All work shall be according to standard spec 651.

B Materials

Furnish Electrical Cable Type 3#6 AL Triplex.

#6 Triplex ASCR (Aluminum conductor steel reinforced)

#6 stranded aluminum wires with 3/64 polyethylene insulation 7 strands

1 #6 bare neutral, 6 strands of Aluminum conductors around a steel messenger,

ASCR 6/1

Voltage of 600 volts phase-to-phase or less and at conductor temperatures not to exceed 75°C for polyethylene insulated conductors or 90°C for crosslinked polyethylene (XLP) insulated conductors.

Service drop cable meets or exceeds the following ASTM specifications:

- B-230 Aluminum Wire, 1350-H19 for Electrical Purposes.
- B-231 Aluminum Conductors, Concentric-Lay-Stranded.
- B-232 Aluminum Conductors, Concentric-Lay-Stranded, Coated Steel Reinforced (ACSR).
- B-399 Stranded 6201-T81 Aluminum Alloy Conductors.
- B-901 Compressed Round Stranded Aluminum Conductors Using Single Input Wire.

Conductors are concentrically stranded, compressed 1350-H19 aluminum. Insulated with either polyethylene or crosslinked polyethylene (XLP). Neutral messengers are concentrically stranded 6201, AAC, or ACSR. Cable meets or exceeds all applicable requirements of ANSI/ICEA S-76-474.

C Construction

The cable shall be installed to supply power, usually from a pole to the user's service head where connection to the service entrance cable is made. All splices must be completed by the contractor unless otherwise designated on plans.

D Measurement

The department will measure Electrical Cable Type 3#6 AL Triplex by the linear foot, 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.0090.303	Electrical Cable Type 3#6 AL Triplex	LF

Payment is full compensation for furnishing and installing the cable, and restoration.

107. Electrical Cable Type 2#2/1#4 AL Triplex, Item SPV.0090.304.

A Description

This special provision describes furnishing and installing service cable according to current City of Milwaukee.

Electrical methods and National Electrical Code standards. All work shall be according to standard spec 651.

B Materials

Furnish Electrical Cable Type 2#2/1#4 AL Triplex.

B.1.1

2#2/1#4 Triplex ASCR (Aluminum conductor steel reinforced).

Unless otherwise specified, the cable to be furnished shall comply with the manufacture and test requirements of the Insulated Cable Engineers Association (ICEA) specifications No S-61-402, NEMA WC5, and No S-66-524 NEMA WC7, latest revisions.

B.1.2

2 #2 stranded aluminum wires with 3/64 polyethylene insulation 7 strands 1 #4 bare neutral, 6 strands of Aluminum conductors around a steel messenger, ASCR 6/1.

B.1.3 Voltage

Voltage of 600 volts phase-to-phase or less and at conductor temperatures not to exceed 75°C for polyethylene insulated conductors or 90°C for crosslinked polyethylene (XLP) insulated conductors.

B.1.4 Specifications

Service drop cable meets or exceeds the following ASTM specifications:

- B-230 Aluminum Wire, 1350-H19 for Electrical Purposes.
- B-231 Aluminum Conductors, Concentric-Lay-Stranded.
- B-232 Aluminum Conductors, Concentric-Lay-Stranded, Coated Steel Reinforced (ACSR).
- B-399 Stranded 6201-T81 Aluminum Alloy Conductors.
- B-901 Compressed Round Stranded Aluminum Conductors Using Single Input Wire.

B.1.5 Insulated Conductors

All Aluminum conductors are concentrically stranded and shall be Class A or Class B 3% compressed 1350-H19 aluminum. Solid conductors shall be H16 temper.

B.1.6 Insulation

Shall be 600V either black extruded high molecular weight polyethylene (PE) or black extruded crosslinked polyethylene (XLP). Insulation shall be a nominal 45 mils thickness.

B.1.7 Bare Neutral Messenger

Neutral messengers are concentrically stranded 6201, AAC, or ACSR. Cable meets or exceeds all applicable requirements of ANSI/ICEA S-76-474. The direction of lay of the outer layer is right hand.

B.1.8 Protection of Ends

Before shipment, the ends of all wire and cable shall be carefully sealed to protect the insulation from moisture. Both ends of the wire and cable shall be accessible for testing but shall be covered and protected from injury.

B.1.9 Lengths

Ten percent of the reels of any one item may be shipped in random length of not less 50% of the specified nominal length. This tolerance is permitted so that the cable manufacturers may avoid brazing together lengths of copper conductor. All conductors shall be free from brazes or splices.

B.1.10 Service Drop Cable Schedule

Triplex Service Drop 600 Volt PE or XLP ASCR reduced size neutral messenger.

CITY OF MILW P/N	CODE WORD	SIZE AWG	NO# WIRE	INSUL (INS)	BARE NTRL SIZE AWG	BARE NTRL NO# WIRE	REEL LNG (FT)	WGHT LBS PER 1000' ALUM	WGHT LBS PER 1000' CABLE
3400-032	Cockle 2	7	0.045	4	6/1	1800'	163	227	---
3400-034	Strombus	4	7	0.045	6	6/1	1500'	103	154
3400-036	Voluta 6*	7	0.045	6	6/1	2200'	73	116	---

* ACSR Full Size Neutral Messenger

C Construction

The cable shall be installed to supply power, usually from a pole-mounted transformer, to the user's service head where connection to the service entrance cable is made. All splices must be completed by the contractor unless otherwise designated on plans.

D Measurement

The department will measure Electrical Cable Type 2#2/1#4 AL Triplex by the linear foot, 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.0090.304	Electrical Cable Type 2#2/1#4 AL Triplex	LF

Payment is full compensation for furnishing and installing the cable, and restoration.

108. Liquidtight Flexible Nonmetallic 1 ½-Inch Conduit, Item SPV.0090.319.

A Description

This special provision describes providing furnishing and installing Liquidtight flexible nonmetallic conduit for street lighting according to standard spec 652, and as shown in the plan details. All work shall be according to standard spec 651.

B Materials

Furnish Liquidtight flexible nonmetallic conduit shall be Type LFNC-B. The conduit shall be nonconductive, noncorrosive to oil, acid, ozone, and alkaline. The conduit shall have a smooth inner surface with integral reinforcement within the conduit wall.

The flexible nonmetallic conduit shall be UL listed for use as indicated in Article 356 of the latest NEC, and for outdoor use and sunlight resistant.

The fittings and adapters shall be of the same manufacturer as the conduit.

C Construction

Install the fittings, adapters, and conduit in conjunction with street lighting. Install per the manufacturer's instructions and as shown on the plans.

D Measurement

The department will measure Liquidtight Flexible Nonmetallic 1 ½-Inch Conduit by the linear foot, 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.0090.319	Liquidtight Flexible Nonmetallic 1 ½-Inch Conduit	LF

Payment is full compensation for furnishing and installing the conduit, including the connectors.

109. Electrical Cable Type 4#2/1#8 XLP, Item SPV.0090.324.

A Description

This special provision describes furnishing and installing service cable according to current City of Milwaukee Electrical methods and National Electrical Code standards. The service cable shall consist of five cross-linked polyethylene covered, stranded, copper conductors. All work shall be according to Wisconsin DOT Standard Specifications standard spec 651.

B Materials

Furnish Electrical Cable.

B.1.1

Unless otherwise specified, the cable to be furnished shall comply with the manufacture and test requirements of the Insulated Cable Engineers Association (ICEA) Specification No. S-61-402, NEMA WC5, latest revision.

B.1.2 Conductors

The conductors shall be of soft round annealed uncoated stranded copper conductor per ASTM B-3, ASTM B-8, and UL Standard UL-44. Conductors No. 8 A.W.G. or larger shall be stranded. Conductors smaller than No. 8 A.W.G. shall be solid unless otherwise specified. Stranding must meet the requirements of ASTM B8, Class B.

B.2 Insulation

B.2.1 600V

The insulation for cable rated 600V shall be cross XLPE thermosetting chemically crosslinked polyethylene insulation according to industry standard ICEA Pub. No. S-95-658/Nema WC-70 (2009), latest revision, and shall be a nominal 45 mils. thickness. Insulation shall meet the ANSI/ASTM D2220-74 (latest revision) accelerated water absorption requirements and -30°C (-22°F) cold bend test with a separator applied between the stranded conductor and insulation to facilitate cable stripping. The outside diameter of the insulating covering must be circular and extruded concentrically over the conductor.

B.2.2 Nominal Thickness

The nominal insulation thickness around each individual conductor shall be not less than 90% of the thickness specified in the schedule.

B.2.3 Color Code

The insulation compound which covers each conductor making up a cable shall be color coded in conformance with the N.E.M.A. Color Code Standard, unless otherwise specified; however, printed color designations as in I.3.2 or I.3.3. will not be acceptable under this specification (see schedule). Individual cable will be black, white, red, gray and green.

B.3 Marking

B.3.1

Identification for each conductor must be provided by colors according to I.M.S.A. Standards. The outer insulation must be marked with the following information at a minimum: conductor size (AWG), 600V, XLPE, USE-2, manufacturer’s name, date of manufacture. All markings must be a minimum of 1/8 inch in height. Marking shall be at approximately 2 foot intervals. A sequential footage marking must be located on the opposite side of the jacket. All marking must be perfectly legible with permanent white ink.

B.4 Round Cable

B.4.1

This cable shall consist of stranded, uncoated, conductors each concentrically encased with a cross linked polyethylene USE-2 rubber insulation.

B.4.2 Inspection and Tests

Each length of the individual insulated conductor and completed cable shall comply with all requirements of I.C.E.A. Standards S-61-402. Sampling and Test Methods shall be according to Part 6. A certified report of the tests made on the cable to show compliance with this specification may be required prior to shipment. If requested, a sample of the cable covered by the report shall also be submitted.

POWER, CABLE SCHEDULE FOR SPECIFICATION

Cable	**4#2/1#8**		**4#4/1#8**	
Size of Conductor	#2	#8	~~#4~~	~~#8~~
Number of Conductors	4	1	4	1
Number of Wires in Conductor	7	7	7	7
Type of Insulation	4 Cross-Linked Polyethylene (XLPE)	1 Cross-Linked Polyethylene (XLPE)	4 Cross-Linked Polyethylene (XLPE)	1 Cross-Linked Polyethylene (XLPE)
Insulation Thickness	60 mils	60 mils	60 mils	60 mils
Insulation Voltage Rating	600 volt	600 volt	600 volt	600 volt
Insulation Color Code	1-black (hot) 1-white (neutral) 1-red (hot) 1-gray (neutral)	1-green (ground)	1-black (hot) 1-white (neutral) 1-red (hot) 1-gray (neutral)	1-green (ground)
Non-Hydroscopic Fill	None		None	
Moisture Resisting Sheath				
Jacket Thickness	None		None	
Cable	**4#6/1#8**		**4#8/1#8**	
Size of Conductor	#6	#8	#8	#8
Number of Conductors	4	1	4	1
Number of Wires in Conductor	7	7	7	7
Type of Insulation	4 Cross-Linked Polyethylene (XLPE)	1 Cross-Linked Polyethylene (XLPE)	4 Cross-Linked Polyethylene (XLPE)	1 Cross-Linked Polyethylene (XLPE)
Insulation Thickness	60 mils	60 mils	60 mils	60 mils
Insulation Voltage Rating	600 volt	600 volt	600 volt	600 volt
Insulation Color Code	1-black (hot) 1-white (neutral) 1-red (hot) 1-gray (neutral)	1-green (ground)	1-black (hot) 1-white (neutral) 1-red (hot) 1-gray (neutral)	1-green (ground)
Non-hydroscopic Fill	None		None	
Moisture Resisting Sheath				
Jacket Thickness	None		None	

All conductors shall be uncoated annealed soft copper.

C Construction

The cable shall be installed in HDPE, PVC, and Liquidtight Flexible Non-Metallic conduit when indicated on plans. Any turf damage during installation of cable shall be restored (grass, asphalt or concrete) by the contractor, All splices in luminaires, pull boxes, and transformer bases / hand holes, must be completed by the contractor unless otherwise designated on plans. Do not splice directly in underground or conduit. Do not leave wire or cable ends uncovered or submerged in water. If the engineer observes this condition, the engineer may reject the entire length of cable or wire. Make all electrical connections and splices in the luminaire, pole or transformer base with approved pressure or compression type fittings. Cover tape with a liberal coating of an electrical varnish or sealant providing flexible protection from oil, moisture, and corrosion. Obtain the engineer's approval of this electrical coating before using. Extend wire for termination 15 inches beyond the pole hand hole. Make all electrical splices in the pull box with

pre-approved insulated direct burial and submersible multi-port splice and tap connectors with wire range 2/0 - #14 AWG.

For all cables entering each pull box/vault, provide an extra loop, approximately 3 feet in length, to remain in each pull box/vault. This loop of cable is in addition to the amount needed to reach from the entrance conduit raceway end to the opening in the exiting conduit raceway.

When there is more than one circuit, bundle the circuit conductors with nylon cable ties or engineer approved electrical tape at access points.

At each pull box, identify the line side of each circuit with an attached tag using a fade-resistant waterproof black marker pen and provide the following Info:

Circuit ID: (*Cir.WD-E*)

Line Side coming from unit street light unit is on: (*Street Name*)

Side of street light unit is on: (*N,S,E,or W*)

Number of street lighting units from nearest crossing street: (*1,2,3,4,5*)

Direction from the nearest crossing street: (*N,S,E,or W*)

Name of the nearest crossing street: (*Street Name*)

Example of Tag Info:

Cir.WD-E,

Line Side from: *W. Canal St. / N. / 1 / W. /of Potawatomi Cir.*

Install conductors in continuous lengths without splices from termination to termination. The contractor may only splice at pull boxes that connect to light poles by using pre-approved insulated direct burial and submersible multi-port splice and tap connectors with wire range 2/0 - #14 AWG. At locations where no pull box or transformer bases exist, splice at the hand-holes in poles.

D Measurement

The department will measure Electrical Cable Type 4#2/1#8 XLP by the linear foot, 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.0090.324	Electrical Cable Type 4#2/1#8 XLP	LF

Payment is full compensation for furnishing and installing the cable, and restoration.

110. 2-Duct Conduit Cement Encased DB-60, Item SPV.0090.402.

A Description

This special provision describes furnishing and installing cement encased multiple duct conduit packages below grade as shown on the plans and as hereinafter described.

B Materials

Furnish cement encased multiple duct conduit packages.

B.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).

B.2 Conduit Spacers

Furnish and install nonmetallic interlocking base spacers and intermediate spacers that provide a 1-1/2" vertical and 1-1/2" horizontal separation between PVC pipes. The base spacers shall provide a 3" vertical separation from the trench bed to the bottom of the PVC pipes.

B.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

B.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

B.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.

B.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

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

C Construction

C.1 Excavation

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

Number of Ducts Wide	Minimum (Inches)	Maximum (Inches)
1	8 1/2	11
2	14 5/8	17 1/8
3	20 3/4	23 1/4.
4	26 7/8	29 3/8
5	33	35 1/2
6	39 1/8	41 5/8
7	45 1/4	47 3/4
8	51 3/8	53 7/8

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.

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, 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.

C.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 20 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.

C.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 inches on the top, two inches on the sides, and 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.

C.4 Slurry Backfill

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

An aggregate slurry as specified shall be used to backfill the concrete encased conduit. The trench shall be backfilled to the proposed or existing subgrade. The mix shall be deposited in the trench directly from a concrete transit mix truck.

D Measurement

The department will measure 2-Duct Conduit Cement Encased DB-60 by the linear foot, 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.0090.402	2-Duct Conduit Cement Encased 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, encasement and backfilling including any concrete, stone, aggregate slurry, bracing, or other related materials; for disposing of surplus materials; and for making inspections, and for installing the conduit.

111. Methyl Methacrylate (MMA) Two-Component Traffic Marking Green Bike Lane Panel, Item SPV.0165.025.

A Description

The contractor shall furnish and install white methyl methacrylate (MMA) resin with hardwearing aggregate and premium pigments to deliver a durable, highly visible and color stable bike lane panel that meets the non-slip requirements needed for pedestrians, cyclists and vehicles at the locations shown on the plans, in conformance with the details, and the material specifications included herein.

B Materials

The methyl methacrylate material shall be a two-part material. The composition is 98 parts of Component “A”, homogeneously composed of pigment, filler, resins and anti-skid aggregate, and 2 parts of Component “B”, liquid hardener. Part “B” shall be a benzoyl peroxide catalyst.

Use Color-Safe Pavement Marking with Anti-Skid Surface by Transpo Industries, CycleGrip MAXX by Ennis-Flint, or Roadzilla or an approved equal. Color “bike lane green” or approved equivalent. Use an MMA based resin system capable of retaining an aggregate topping under vehicular traffic conditions. Install Methyl Methacrylate (MMA) Two-Component Traffic Markings according to manufactures specifications and these special provisions.

The material shall comply to the following:

Property	**Value**	**Test Method**
Tensile Strength @ 7 days, psi, minimum	400	ASTM D 638
Hardness, Shore D, minimum	50	ASTM D 2240
Gel Time, minutes, minimum	10	ASTM D 2471
Cure Rate, hours, maximum	3	Film @ 75 degrees F
Water Absorption @ 24 hours, maximum	0.25% CELL	ASTM D 570

Aggregate: The aggregate shall be high friction crushed Bauxite, No. 1 Silica, or Phonolite or equivalent. The aggregate will be delivered to the construction site in clearly labeled bags or sacks. The aggregate shall be clean, dry and free from foreign matter. Aggregate shall meet the following requirements:

Property	**Value**	**Test Method**
Hardness, minimum	7	Mohs Scale

Submittal: Submit certificates of compliance certifying that the products supplied under the contract conform to these specifications. Submit Application Instructions a minimum 72 hours prior to application.

C Construction

General: Install Methyl Methacrylate (MMA) Two-Component Traffic Marking green bike lane panels according to manufactures specifications.

Preparation: Prepare surfaces so that they are clean, dry, and free of all dust, oil, debris and any other material that might interfere with the bond between the MMA based resin system and existing surfaces. Contaminates that might interfere with the proper adhesion of the material must be removed by sandblasting or shotblasting. The surface should be visibly dry, and the moisture content should be tested according to ASTM D4263 (modified to 2 hours). Concrete must be fully cured for a minimum of 28 days prior to installation. Surface contaminants such as curing agents, membranes, bond breakers or laitance shall not be mechanically removed prior to marking.

Protect utilities, drainage structures, curbs and any other structure within or adjacent to the treatment location against the application of the surface treatment materials. Cover and protect all existing pavement markings that are adjacent to the application surfaces as directed by the engineer.

Pre-treat joints greater than ¼ inches in width and depth with the MMA resin system specified herein or by using an alternative procedure proposed by the manufacturer and agreed upon by the engineer. Proceed with the MMA resin system installation once the product, in the pre-treated areas, has gelled or once the alternative procedure has been accomplished.

Mix: MMA traffic marking is made up of three components (resin, hardener, and aggregate) that must be mixed thoroughly for uniform curing and performance. Liquid components must be homogenously stirred in the original containers before mixing components A and the liquid BPO concentrate catalyst, called Part B. Thoroughly mix by weight, 2 parts of the liquid hardener (Part B) with 98 parts of Component A. Mixing must be done by using a static mix tube or impingement system just prior to spray gun application on the job site.

Temperature: Material, pavement surface and ambient air temperature must be between 40° F and 105° F, and at least 5° F above dew point prior to striping. Relative humidity must be less than 75%. Installing the materials on surfaces above 105° F can lead to improper cure and dirt pickup. Surface and ambient temperatures should be checked hourly at a minimum if weather conditions cause temperatures to fluctuate during the course of the striping operation. Please note that drying time will be increased when striping at low temperatures. Both the Part A and B must be mixed thoroughly prior to application by any of the various application techniques.

Mixing and Application: Follow the MMA resin technical data sheet for application details. This material should be readily applied to Portland cement concrete and HMA surfaces sprayed at a thickness of 45 mils, and no greater than 50 mils.

Curing: Allow the MMA based resin system to cure according to manufacturer recommendations. Protect treated surfaces from traffic and environmental effects until the area has cured.

PERFORMANCE REQUIREMENTS

The following guidelines shall be followed to ensure total understanding of what is expected in the application of any permanent pavement marking material on new pavement surfaces.

The pavement marking shall be uniform thickness across the entire cross section of the marking with well-defined edges. Heavy inner thickness and thin edges or vice-versa will not be accepted. Aggregate shall be spread uniformly over the entire marking. Beginning and ends of markings shall be clean cut and perpendicular to the centerline of the street.

Remove and replace methyl methacrylate that has foreign covering, discolored areas, improper adhesion, improper width, length, or thickness as verified by the engineer against the plans or this special provision. Remove and replace areas that present a ragged appearance, areas that do not present clear and sharply defined edges, and areas with abrupt unintended changes in alignment. Remove excessive dripping of marking material between markings and remove and replace any marking applied with a lack or excess of aggregate. Remove, to the satisfaction of the engineer, all pavement marking applied outside the scope or limits of this project. Removal and replacement of unsatisfactory pavement marking will be at the contractor’s expense. The replaced Colored White surface treatment shall meet the requirements of this sub-article.

Remove and replace Colored White surface treatment that ravels, delaminates, or wears off within 90 days after placement, unless approved to remain in place by the engineer. The limits of removal and replacement shall be approved by the engineer.

Lack of specified thickness: The full unit price bid per unit (each) shall be withheld if lack of thickness is found at each bike lane arrow or symbol. Each bike lane arrow or symbol marking shall be checked a minimum of one time.

Lack of specified width: Payment shall be made with penalty being equal to 25% of the unit price bid per each for each ¼ inch of width lacking not to exceed 100% of the unit price bid.

Improper adhesion: The full unit price bid per item shall be withheld for each occurrence if improper adhesion is found.

Deviation: A marking that in the judgment of the engineer deviates from the specified layout by an unreasonable amount shall be replaced. The contractor shall be responsible for removal of the deviated marking material/repair of the pavement as designated by, and to the satisfaction of, the engineer at no additional compensation.

Excessive Dripping between Symbols: The full unit price bid item shall be penalized for the length of any open space between symbols that is not removed to the satisfaction of the engineer before leaving the project site that workday. Penalty shall be imposed upon the first occurrence and every occurrence thereafter.

Warranty: The MMA based resin system material shall be installed per plans and manufacturer specification. The engineer will notify the contractor within 48 hours of installation regarding any of the MMA based resin system material not installed per specification or to the satisfaction of the engineer. Non-conforming MMA based resin system material shall be removed at no charge to WisDOT and replaced with conforming product.

The warranty period in reference to the following points is to be 1 year from date of installation. Warranty of the following items shall be submitted in writing by the contractor or his installer prior to the pre-construction meeting.

- The MMA based resin system material will maintain its original color in the surface area throughout the 'warranty period' with the exception of natural weathering, tire and dirt deposits and abnormal markings applied after installation.
- Friction will achieve a minimum BPN of 60 according to ASTM E-303
- The MMA based resin system material will maintain its skid resistance qualities in 100% of its surface area to never fall below a BPN of 60 during the 'warranty period'.
- With the exception of structural cracking or excessive movement of the surface beneath, the MMA based resin system will not be subject to excessive cracking in its surface.

D Measurement

The department will measure Methyl Methacrylate (MMA) Two-Component Traffic Marking Green Bike Lane Panel by the square foot, acceptably completed. No deduction will be made for the areas occupied by manholes, inlets, drainage structures, pavement markings or by any public utility appurtenances within the area.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.025	Methyl Methacrylate (MMA) Two-Component Traffic Marking Green Bike Lane Panel	SF

Payment is full compensation for furnishing and installing all materials including any re-application or repair required under the Performance Requirements and Warranty as provided herein.

112. Concrete Pavement Joint Sealing, Item SPV.0180.001.

A Description

This special provision describes providing minimum requirements for preparing the pavement joints or cracks and furnishing and installing the sealant. Seal all expansion, hand-formed, and sawed joints in the pavement. Also, seal all bond or construction joints.

B Materials

Furnish joint sealer that complies with the requirements of ASTM Designation D 3405. Joint sealer shall be composed of a mixture of materials that will form a resilient and adhesive compound capable of effectively sealing joints in concrete against the infiltration of moisture and foreign material throughout

repeated cycles of expansion and contraction with temperature changes and shall be of a mixture that will not flow from the joints or be picked up by vehicle tires at summer temperatures. The material must be capable of being brought to a uniform pouring consistency suitable for completely filling the joints without inclusion of large air holes or discontinuities.

The joint sealer shall be elastic type but poured, and it shall be melted by indirect heat in suitable equipment provided with positive temperature control and mechanical agitation. The material shall not be damaged when heated to the temperature required for satisfactory pouring.

C Construction

Prior to the installation of the joint sealer, clean the pavement joint or crack of all foreign material. Completely remove the slurry resulting from the sawing operations from the joint by blowing it clean with compressed air (using a minimum air pressure of 80 psi).

Only apply the joint sealer when the atmospheric and concrete temperatures are both above 40° F.

D Measurement

The department will measure Concrete Pavement Joint Sealing by the square yard, 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.0180.001	Concrete Pavement Joint Sealing	SY

Payment is full compensation for furnishing and placing the joint sealant; cleaning the pavement joints and cracks.

ADDITIONAL SPECIAL PROVISION 4

This special provision does not limit the right of the department, prime contractor, or subcontractors at any tier to withhold payment for work not acceptably completed or work subject to an unresolved contract dispute.

Payment to First-Tier Subcontractors

Within 10 calendar days of receiving a progress payment for work completed by a subcontractor, pay the subcontractor for that work. The prime contractor may withhold payment to a subcontractor if, within 10 calendar days of receipt of that progress payment, the prime contractor provides written notification to the subcontractor and the department documenting "just cause" for withholding payment.

The prime contractor is not allowed to withhold retainage from payments due subcontractors.

Payment to Lower-Tier Subcontractors

Ensure that subcontracting agreements at all tiers provide prompt payment rights to lower-tier subcontractors that parallel those granted first-tier subcontractors in this provision.

Acceptance and Final Payment

Within 30 calendar days of receiving the semi-final estimate from the department, submit written certification that subcontractors at all tiers are paid in full for acceptably completed work.

Additional Special Provision 6 (ASP-6)
Modifications to the standard specifications

Make the following revisions to the standard specifications:

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108 Prosecution and Progress

Add subsection 108.9.4.1 effective with the November 2023 letting:

108.9.4.1 Winter Suspension for Completion Date Contracts

(1) The contractor may request a winter suspension for a completion date contract. If the department determines weather conditions do not allow for the completion of the remaining work, the department may approve the contractor's request and determine the start date of the winter suspension. The end date of the winter suspension is March 31 or a date mutually agreed upon by both parties. For multi-year contracts, the department will only consider winter suspension for the final year of the contract.

(2) During winter suspension, store all materials in a manner that does not obstruct vehicular and pedestrian traffic and protect the materials from damage. Install traffic control and other safety devices necessary to protect the traveling public and pedestrians. Provide suitable drainage and install temporary erosion control where necessary. If the winter suspension begins when liquidated damages are being assessed, or when the work has not progressed as scheduled and would not have been completed prior to the completion date, the cost of necessary pre-suspension work is incidental. If the winter suspension begins prior to the contract completion date, and the work has progressed as scheduled and would have been completed prior to the completion date, the cost of pre-suspension work will be paid as specified under 109.4.

(3) For a winter suspension that begins prior to the contract completion date and the work has progressed as scheduled and would have been completed prior to the completion date, the engineer will extend contract time to correspond with the end of the winter suspension and liquidated damages will not be assessed during the winter suspension.

(4) For a winter suspension that begins when liquidated damages are being assessed or when the work has not progressed as scheduled and would not have been completed prior to the completion date, the engineer will not extend contract time. Time will be suspended until the end of the winter suspension. Liquidated damages will not be assessed during the winter suspension and liquidated damages will resume at the end of the winter suspension.

108.10.2 Excusable, Non-Compensable Delays

108.10.2.1 General

Replace entire section with the following effective with the January 2024 letting:

(1) Non-compensable delays, 108.10.2.1(3), are excusable delays not the contractor's or the department's fault. The engineer will not pay for the delay costs listed in 109.4.7 for non-compensable delays.

(2) For non-compensable delays under calendar day and completion date contracts, the engineer will extend contract time if the conditions specified in 108.10.1 are met. The department will relieve the contractor from associated liquidated damages, as specified in 108.11, if the engineer extends time under 108.10.1.

(3) The following are non-compensable delays:

1. Delays due to earthquakes, other cataclysmic phenomena of nature the contractor cannot foresee and avoid, severe weather or job conditions caused by recent weather as specified in 108.10.2.2.
2. Extraordinary delays in material deliveries the contractor or their suppliers cannot foresee and forestall resulting from strikes, lockouts, freight embargoes, industry-wide shortages, governmental acts, or sudden disasters.
3. Delays due to acts of the government, a political subdivision other than the department, or the public enemy.
4. Delays from fires or epidemics.
5. Delays from strikes beyond the contractor's power to settle not caused by improper acts or omissions of the contractor, their subcontractors, or their suppliers.
6. Altered quantities as specified in 109.3.

108.10.3 Excusable Compensable Delays

Replace entire section with the following effective with the January 2024 letting:

(1) Compensable delays are excusable delays due to the department's actions or lack of actions. The engineer will grant a time extension for a compensable delay if the conditions specified in 108.10.1 are met.

(2) The following are compensable delays:

1. A contract change for revised work as specified for extra work under 104.2.2.1, for a differing site condition under 104.2.2.2, or for significant changes in the character of the work under 104.2.2.4.
2. A contract change for an engineer-ordered suspension under 104.2.2.3.
3. The unexpected discovery of human remains, an archaeological find, or historical find consistent with 107.25.
4. The unexpected discovery of a hazardous substance consistent with 107.24.
5. The non-completion of work that utilities or other third parties perform, if that work is not completed as specified in the contract.

(3) For a compensable delay or a time extension, the department will relieve the contractor from associated liquidated damages under 108.11, and will pay the contractor for delay costs determined as follows:

1. Adjust the contract price as specified in 109.4.2 through 109.4.5 for delays under item 1 of 108.10.3(2).
2. Adjust the contract price as specified in 109.4.7 for delays under items 2 through 5 of 108.10.3(2).

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310 Open Graded Base

310.2 Materials

Replace paragraph two with the following effective with the November 2023 letting:

(2) The contractor may substitute material conforming to the gradation requirements for crushed aggregate specified in Table 310-01 if that material conforms to the fracture requirements for open-graded crushed gravel specified in 301.2.4.5.

TABLE 310-01 COARSE AGGREGATE (% passing by weight)

AASHTO No. 67[1]

SEIVE	COARSE AGGREGATE (% PASSING by WEIGHT) AASHTO No. 67
2-inch	-
1 1/2-inch	-
1-inch	100
3/4-inch	90 – 100
1/2-inch	-
3/8-inch	20 – 55
No. 4	0 – 10
No. 8	0 – 5
No. 16	-
No. 30	-
No. 50	-
No. 100	-
No. 200	<=1.5

[1] Size according to AASHTO M43.

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390 Base Patching

390.4 Measurement

Replace entire section with the following effective with the November 2023 letting:

(1) The department will measure Removing Pavement for Base Patching by the cubic yard acceptably completed. Measure the depth from the bottom of the adjacent pavement to the top of the patch.

(2) The department will measure Base Patching Asphaltic by the ton acceptably completed as specified for asphaltic pavement in 450.4.

(3) The department will measure Base Patching Concrete HES and Base Patching Concrete SHES by the cubic yard acceptably completed. Measure the depth from the bottom of the adjacent pavement to the top of the patch.

390.5 Payment

Replace entire section with the following effective with the November 2023 letting:

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
390.0100	Removing Pavement for Base Patching	CY
390.0201	Base Patching Asphaltic	TON
390.0305	Base Patching Concrete HES	CY
390.0405	Base Patching Concrete SHES	CY

(2) Payment for Removing Pavement for Base Patching is full compensation for removing old pavement; for preparing the foundation and bringing up to grade. If the engineer orders the contractor to excavate yielding or unstable subgrade materials and backfill with suitable materials, the department will pay for that work with contract bid items or as agreed upon using 109.4.

(3) Payment for Base Patching Asphaltic is full compensation for providing and compacting asphaltic mixture including asphaltic binder.

(4) Payment for Base Patching Concrete HES and Base Patching Concrete SHES is full compensation for providing, curing, and protecting concrete. Payment also includes providing tie bars and dowel bars in unhardened concrete and steel within the patch. For tie bars and dowel bars provided in concrete not placed under the contract, the department will pay separately under the Drilled Tie Bars and Drilled Dowel Bars bid items as specified in 416.5.

(5) Payment for Base Patching SHES also includes providing test data to the engineer as specified in 416.2.4.

(6) The department will pay for sawing existing concrete pavement for removal under the Sawing Concrete bid item as specified in 690.5.

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460 Hot Mix Asphalt Pavement

460.2.8.2.1.3.1 Contracts with 5000 Tons of Mixture or Greater

Replace paragraph four with the following effective with the November 2023 letting:

(4) Use the test methods identified below, or other methods the engineer approves, to perform the following tests at the frequency indicated:

Blended aggregate gradations:

Drum plants:

- Field extraction by ignition oven according to WTM T308, chemical extraction according to AASHTO T-164 method A or B; or automated extraction according to WTM D8159. Gradation of resulting aggregate sample determined according to WTM T30.
- Belt samples, optional for virgin mixtures, obtained from stopped belt or from the belt discharge using an engineer-approved sampling device and performed according to WTM T11 and T27.

Batch plants:

- Field extraction by ignition oven according to WTM T308, chemical extraction according to AASHTO T-164 method A or B; or automated extraction according to WTM D8159. Gradation of resulting aggregate sample determined according to WTM T30.

Asphalt content (AC) in percent:

Determine AC using one of the following methods:

- AC by ignition oven according to WTM T308.
- AC by chemical extraction according to AASHTO T-164 method A or B.
- AC by automated extraction according to WTM D8159.
- If the department is using an ignition oven to determine AC, conform to WTP H003.
- If the department is not using an ignition oven to determine AC, ignition oven correction factor (IOCF) must still be reverified for any of the reasons listed in WTP H003 Table 2 and conform to WTP H-003 sections 3 through 6.
- Gradation of resulting aggregate sample determined according to WTM T30.

Bulk specific gravity of the compacted mixture:

According to WTM T166.

Theoretical maximum specific gravity:

According to WTM T209.

Air voids (Va) by calculation according to WTM T269.

VMA by calculation according to WTM R35.

460.2.8.3.1.4 Department Verification Testing Requirements

Replace paragraph three with the following effective with the November 2023 letting:

(3) The department will perform testing conforming to the following standards:

Bulk specific gravity (G_{mb}) of the compacted mixture according to WTM T166.

Maximum specific gravity (Gmm) according to WTM T209.

Air voids (Va) by calculation according to WTM T269.

VMA by calculation according to WTM R35.

Asphalt content by ignition oven according to WTM T308, chemical extraction according to AASHTO T-164 method A or B, or automated extraction according to WTM D8159. If using an ignition oven to determine AC, conform to WTP H-003.

460.3.3.2 Pavement Density Determinations

Replace entire section with the following effective with the February 2024 letting:

(1) The engineer will determine the target maximum density using department procedures described in WTM T355. The engineer will determine density according to CMM 815 and WTM T355 as soon as practicable after compaction and before placement of subsequent layers or before opening to traffic.

(2) Do not re-roll compacted mixtures with deficient density test results. Do not operate continuously below the specified minimum density. Stop production, identify the source of the problem, and make corrections to produce work meeting the specification requirements.

(3) A lot is defined as one day's production for each sublot type or one production shift if running 24 hours per day and placed within a single layer for each location and target maximum density category indicated in table 460-3. The lot density is the average of the tests taken for that lot. The department determines the number of tests per lot according to WTP H-002.

(4) An HTCP-certified Nuclear Density Technician I (NUCDENSITYTEC-I) or a nuclear density ACT working under a NUCDENSITYTEC-I technician, will locate samples and perform the testing. A NUCDENSITYTEC-I technician will coordinate and take responsibility for the work an ACT performs. No more than one ACT can work under a single NUCDENSITYTEC-I technician. The responsible NUCDENSITYTEC-I technician will ensure that sample location and testing is performed correctly, analyze test results, and provide density results to the contractor weekly.

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503 Prestressed Concrete Members

503.2.2 Concrete

Replace paragraph five with the following effective with the November 2023 letting:

(5) Furnish prestressed concrete members cast from air-entrained concrete, except I-type girders may use non-air-entrained concrete. Use type I, IL, IS, IP, IT, II, or III cement. The contractor may replace up to 30 percent of type I, IL, II, or III cement with an equal weight of fly ash, slag, or a combination of fly ash and slag. Ensure that fly ash conforms to 501.2.4.2.2 and slag conforms to 501.2.4.2.3. Use only one source and replacement rate for work under a single bid item. Use a department-approved air-entraining admixture conforming to 501.2.5.2 for air-entrained concrete. Use only coarse aggregate conforming to 310.2(2).

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604 Slope Paving

604.2 Materials

Replace paragraph three with the following effective with the November 2023 letting:

(3) Under the Slope Paving Crushed Aggregate bid item, furnish crushed stone or crushed gravel conforming to the gradation in Table 604-01, but with the additional requirements that at least 75 percent of the particles, by count, have at least one fractured face. Determine fracture according to WTM D5821.

TABLE 604-01 COARSE AGGREGATE (% passing by weight)

AASHTO No. 4[1]

SEIVE	COARSE AGGREGATE (% PASSING by WEIGHT) AASHTO No. 4
2-inch	100
1 1/2-inch	90 - 100
1-inch	20 - 55
3/4-inch	0 - 15
1/2-inch	-
3/8-inch	0 - 5
No. 4	-
No. 8	-
No. 16	-
No. 30	-
No. 50	-
No. 100	-
No. 200	<=1.5

[1] Size according to AASHTO M43.

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612 Underdrains

612.3.9 Trench Underdrains

Replace paragraph one with the following effective with the November 2023 letting:

(1) Under the Underdrain Trench bid item, excavate and backfill underdrain trenches. Backfill with coarse aggregate gradation conforming to 604.2(3). Before backfilling place geotextile as the plans show.

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614 Semi-rigid Barrier Systems and End Treatments

614.2.6 Sand Barrel Arrays

Replace paragraph one with the following effective with the November 2023 letting:

(1) Furnish sand barrels from the APL. Use fine aggregate conforming to gradation shown in Table 614-2 mixed with sodium chloride conforming to AASHTO M143. Apply an object marker to front-most barrel in the array.

TABLE 614-2 FINE AGGREGATE GRADATION

SEIVE	FINE AGGREGATE (% PASSING by WEIGHT)
3/8-inch	100
No. 4	90 - 100
No. 8	-
No. 16	45 - 85
No. 30	-
No. 50	5 - 30
No. 100	0 - 10
No. 200	<=3.5

628 Erosion Control

628.2.13 Rock Bags

Replace paragraph two with the following effective with the November 2023 letting:

(2) Fill the bags with a clean, sound, hard, durable, engineer-approved coarse aggregate conforming by visual inspection to the gradation specified for coarse aggregate gradation in 604.2(3).

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639 Drilling Wells

639.2.1 General

Replace paragraph two with the following effective with the November 2023 letting:

(2) For grout use fine aggregate conforming to 501.2.7.2; and gradation conforming to 614.2.6(1); and type I, IL, IS, IP, or IT cement.

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652 Electrical Conduit

652.3.1.2 Installing Underground

Replace paragraph two with the following effective with the November 2023 letting:

(2) Excavate trenches true to line and grade to provide the conduit uniform bearing throughout its length. Do not backfill the trench before inspecting the conduit. Carefully tamp the backfill in place as specified for placing backfill in layers in 651.3. Place at least 0.7 cubic feet of coarse aggregate gradation conforming to 604.2(3) directly under each drainage hole.

ERRATA

390.3.4 Special High Early Strength Concrete Patching

Correct errata link in paragraph (1) by changing from 416.3.8 to 416.3.7.

(1) Construct as specified for special high early strength repairs under 416.3.7 except as follows:

- The contractor may delay removal for up to 14 calendar days after cutting the existing pavement.
- Open to traffic as specified for concrete base in 320.3.

ADDITIONAL SPECIAL PROVISION 7

A. Reporting 1st Tier and DBE Payments During Construction

1. Comply with reporting requirements specified in the department's Civil Rights Compliance, Contractor's User Manual, Sublets and Payments.
2. Report payments to all DBE firms within 10 calendar days of receipt of a progress payment by the department or a contractor for work performed, materials furnished, or materials stockpiled by a DBE firm. Report the payment as specified in A(1) for all work satisfactorily performed and for all materials furnished or stockpiled.
3. Report payments to all first tier subcontractor relationships within 10 calendar days of receipt of a progress payment by the department for work performed. Report the payment as specified in A(1) for all work satisfactorily performed.
4. All tiers shall report payments as necessary to comply with the DBE payment requirement as specified in A(2).
5. DBE firms must enter all payments to DBE and non-DBE firms regardless of tier.
6. Require all first tier relationships, DBE firms and all other tier relationships necessary to comply with the DBE payment requirement in receipt of a progress payment by contractor to acknowledge receipt of payment as specified in A(1), (2), (3) and (4).
7. All agreements made by a contractor shall include the provisions in A(1), (2), (3), (4), (5), and (6), and shall be binding on all first tier subcontractor relationships, all contractors and subcontractors utilizing DBE firms on the project, and all payments from DBE firms.

B. Costs for conforming to this special provision are incidental to the contract.

NOTE: CRCS Prime Contractor payment is currently not automated and will need to be manually loaded into the Civil Rights Compliance System. Copies of prime contractor payments received (check or ACH) will have to be forwarded to paul.ndon@dot.wi.gov within 5 days of payment receipt to be logged manually.

***Additionally, for information on Subcontractor Sublet assignments, Subcontractor Payments and Payment Tracking, please refer to the CRCS Payment and Sublets manual at:

https://wisconsindot.gov/Documents/doing-bus/civil-rights/labornwage/crcs-payments-sublets-manual.pdf

ADDITIONAL SPECIAL PROVISION 9

Electronic Certified Payroll or Labor Data Submittal

(1) Use the department's Civil Rights Compliance System (CRCS) to electronically submit certified payroll reports for contracts with federal funds and labor data for contracts with state funds only. Details are available online through the department's highway construction contractor information (HCCI) site on the Labor, Wages, and EEO Information page at:

https://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/default.aspx

(2) Ensure that all tiers of subcontractors, including all trucking firms, either submit their weekly certified payroll reports (contracts with federal funds) or labor data (contracts with state funds only) electronically through CRCS. These payrolls or labor data are due within seven calendar days following the close of the payroll period. Every firm providing physical labor towards completing the project is a subcontractor under this special provision.

(3) Upon receipt of contract execution, promptly make all affected firms aware of the requirements under this special provision and arrange for them to receive CRCS training as they are about to begin their submittals. The department will provide training either in a classroom setting at one of our regional offices or by telephone. Contact Paul Ndon at (414) 438-4584 to schedule the training.

(4) The department will reject all paper submittals for information required under this special provision. All costs for conforming to this special provision are incidental to the contract.

(5) Firms wishing to export payroll/labor data from their computer system into CRCS should have their payroll coordinator contact Paul Ndon at paul.ndon@dot.wi.gov. Not every contractor's payroll system is capable of producing export files. For details, see Section 4.8 CPR Auto Submit (Data Mapping) on pages 49-50; 66-71 of the CRCS Payroll Manual at:

https://wisconsindot.gov/Documents/doing-bus/civil-rights/labornwage/crcs-payroll-manual.pdf

NON-DISCRIMINATION PROVISIONS

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. Non-discrimination: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

a. Withholding payments to the contractor under the contract until the contractor complies; and/or
b. Cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

BUY AMERICA PROVISION

Buy America (as documented in 88 FR 57750 (2 CFR part 184 and 200) from the Office of Management and Budget: Federal Register: Guidance for Grants and Agreements) shall be domestic products and permanently incorporated in this project as classified in the following three categories, and as noted in the Construction and Materials Manual (CMM):

1. Iron and Steel

   All iron and steel manufacturing and coating processes (from the initial melting stage through the application of coatings) 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 the iron and steel manufacturing and coating processes Buy America 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.

2. Manufactured Product

   All manufactured products (as defined in CMM 228.5) are covered under a previous waiver from 1983 and are currently exempt from Buy America.

3. Construction Material

   All construction materials (as defined in 88 FR 57750 (2 CFR part 184 and 200) and as referenced in CMM 228.5) must comply with Buy America. All manufacturing process of construction materials must occur in the United States.

88 FR 55817 (DOT-OST-2022-0124) allows a limited waiver of Buy America requirements for de minimis costs and small grants.

- The Total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of total applicable costs for the project[1]; or
- The total amount of Federal financial assistance applied to the project, through awards or subaward, is below $500,000[2]

The contractor shall take actions and provide documentation conforming to CMM 228.5 to ensure compliance with this Buy America provision.

https://wisconsindot.gov/rdwy/cmm/cm-02-28.pdf

Upon completion of the project, certify to the engineer, in writing using department form DT4567 that all iron and steel, manufactured products, and construction materials conform to this Buy America provision.

Form DT4567 is available at: https://wisconsindot.gov/Documents/formdocs/dt4567.docx

Attach a list of iron or steel and construction material exemptions and their associated costs to the certification form.

1 The de minimis public interest waiver does not apply to iron and steel subject to the requirements of 23 U.S.C. 313 on financial assistant administered by FHWA. The de minimis threshold in 23 CFR 635.410(b)(4) continues to apply for iron and steel.
2 The small grant portion of the waiver does not apply to iron, steel, and manufactured goods subject to the requirements of 49 U.S.C. 22905(a).

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Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0002	108.4400 CPM Progress Schedule	1.000 EACH	_____.____	_____.____
0004	201.0220 Grubbing	55.000 ID	_____.____	_____.____
0006	204.0100 Removing Concrete Pavement	29,770.000 SY	_____.____	_____.____
0008	204.0115 Removing Asphaltic Surface Butt Joints	101.000 SY	_____.____	_____.____
0010	204.0120 Removing Asphaltic Surface Milling	755.000 SY	_____.____	_____.____
0012	204.0150 Removing Curb & Gutter	495.000 LF	_____.____	_____.____
0014	204.0155 Removing Concrete Sidewalk	4,500.000 SY	_____.____	_____.____
0016	204.0195 Removing Concrete Bases	10.000 EACH	_____.____	_____.____
0018	204.0220 Removing Inlets	64.000 EACH	_____.____	_____.____
0020	204.0245 Removing Storm Sewer (size) 001.12-Inch	1,948.000 LF	_____.____	_____.____
0022	204.9090.S Removing (item description) 001. Aerial Cable	11,650.000 LF	_____.____	_____.____
0024	205.0100 Excavation Common	24,872.000 CY	_____.____	_____.____
0026	213.0100 Finishing Roadway (project) 001. 2225-15-70	1.000 EACH	_____.____	_____.____
0028	305.0120 Base Aggregate Dense 1 1/4-Inch	36,050.000 TON	_____.____	_____.____
0030	415.0080 Concrete Pavement 8-Inch	24,820.000 SY	_____.____	_____.____

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Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0032	415.0210 Concrete Pavement Gaps	46.000 EACH	_____.____	_____.____
0034	415.1080 Concrete Pavement HES 8-Inch	1,400.000 SY	_____.____	_____.____
0036	416.0610 Drilled Tie Bars	64.000 EACH	_____.____	_____.____
0038	455.0605 Tack Coat	142.000 GAL	_____.____	_____.____
0040	460.2000 Incentive Density HMA Pavement	150.000 DOL	1.00000	150.00
0042	460.5224 HMA Pavement 4 LT 58-28 S	230.000 TON	_____.____	_____.____
0044	465.0105 Asphaltic Surface	6.000 TON	_____.____	_____.____
0046	465.0120 Asphaltic Surface Driveways and Field Entrances	9.000 TON	_____.____	_____.____
0048	601.0150 Concrete Curb Integral Type D	7,220.000 LF	_____.____	_____.____
0050	601.0155 Concrete Curb Integral Type J	1,620.000 LF	_____.____	_____.____
0052	601.0319 Concrete Curb & Gutter 19-Inch	845.000 LF	_____.____	_____.____
0054	601.0331 Concrete Curb & Gutter 31-Inch	2,305.000 LF	_____.____	_____.____
0056	601.0600 Concrete Curb Pedestrian	250.000 LF	_____.____	_____.____
0058	602.0410 Concrete Sidewalk 5-Inch	40,194.000 SF	_____.____	_____.____
0060	602.0515 Curb Ramp Detectable Warning Field Natural Patina	820.000 SF	_____.____	_____.____

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Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0062	602.0615 Curb Ramp Detectable Warning Field Radial Natural Patina	260.000 SF	_____.____	_____.____
0064	602.0815 Concrete Driveway 7-Inch	710.000 SY	_____.____	_____.____
0066	602.0865 Concrete Driveway HES 7-Inch	890.000 SY	_____.____	_____.____
0068	608.0412 Storm Sewer Pipe Reinforced Concrete Class IV 12-Inch	2,631.000 LF	_____.____	_____.____
0070	611.2004 Manholes 4-FT Diameter	1.000 EACH	_____.____	_____.____
0072	611.8120.S Cover Plates Temporary	10.000 EACH	_____.____	_____.____
0074	619.1000 Mobilization	1.000 EACH	_____.____	_____.____
0076	620.0300 Concrete Median Sloped Nose	1,155.000 SF	_____.____	_____.____
0078	623.0200 Dust Control Surface Treatment	24,115.000 SY	_____.____	_____.____
0080	624.0100 Water	330.000 MGAL	_____.____	_____.____
0082	625.0100 Topsoil	24,450.000 SY	_____.____	_____.____
0084	627.0200 Mulching	11,285.000 SY	_____.____	_____.____
0086	628.1104 Erosion Bales	100.000 EACH	_____.____	_____.____
0088	628.1504 Silt Fence	1,200.000 LF	_____.____	_____.____
0090	628.1520 Silt Fence Maintenance	600.000 LF	_____.____	_____.____

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Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0092	628.1905 Mobilizations Erosion Control	2.000 EACH	_____.____	_____.____
0094	628.1910 Mobilizations Emergency Erosion Control	6.000 EACH	_____.____	_____.____
0096	628.6510 Soil Stabilizer Type B	3.000 ACRE	_____.____	_____.____
0098	628.7005 Inlet Protection Type A	91.000 EACH	_____.____	_____.____
0100	628.7020 Inlet Protection Type D	308.000 EACH	_____.____	_____.____
0102	628.7560 Tracking Pads	10.000 EACH	_____.____	_____.____
0104	628.7570 Rock Bags	100.000 EACH	_____.____	_____.____
0106	629.0210 Fertilizer Type B	19.000 CWT	_____.____	_____.____
0108	630.0200 Seeding Temporary	185.000 LB	_____.____	_____.____
0110	630.0300 Seeding Borrow Pit	165.000 LB	_____.____	_____.____
0112	630.0500 Seed Water	616.000 MGAL	_____.____	_____.____
0114	631.0300 Sod Water	334.000 MGAL	_____.____	_____.____
0116	631.1000 Sod Lawn	13,170.000 SY	_____.____	_____.____
0118	632.0101 Trees (species, root, size) 001. Frontier Elm 3" Cal. B&B	2.000 EACH	_____.____	_____.____
0120	632.0101 Trees (species, root, size) 002. Callery Pear 3" Cal. B&B	1.000 EACH	_____.____	_____.____

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SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0122	632.0101 Trees (species, root, size) 003. Tulip Tree 2.5" Cal. B&B	1.000 EACH	_____.____	_____.____
0124	632.9101 Landscape Planting Surveillance and Care Cycles	6.000 EACH	_____.____	_____.____
0126	633.5350 Markers Permanent Flexible	180.000 EACH	_____.____	_____.____
0128	637.2220 Signs Type II Reflective SH	388.600 SF	_____.____	_____.____
0130	637.2230 Signs Type II Reflective F	265.600 SF	_____.____	_____.____
0132	638.2602 Removing Signs Type II	108.000 EACH	_____.____	_____.____
0134	638.3000 Removing Small Sign Supports	1.000 EACH	_____.____	_____.____
0136	642.5201 Field Office Type C	1.000 EACH	_____.____	_____.____
0138	643.0300 Traffic Control Drums	21,427.000 DAY	_____.____	_____.____
0140	643.0420 Traffic Control Barricades Type III	14,336.000 DAY	_____.____	_____.____
0142	643.0500 Traffic Control Flexible Tubular Marker Posts	96.000 EACH	_____.____	_____.____
0144	643.0600 Traffic Control Flexible Tubular Marker Bases	192.000 EACH	_____.____	_____.____
0146	643.0705 Traffic Control Warning Lights Type A	28,672.000 DAY	_____.____	_____.____
0148	643.0715 Traffic Control Warning Lights Type C	21,427.000 DAY	_____.____	_____.____
0150	643.0900 Traffic Control Signs	30,207.000 DAY	_____.____	_____.____

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Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0152	643.1050 Traffic Control Signs PCMS	28.000 DAY	_____.____	_____.____
0154	643.3150 Temporary Marking Line Removable Tape 4-Inch	13,400.000 LF	_____.____	_____.____
0156	643.3205 Temporary Marking Line Paint 8-Inch	1,275.000 LF	_____.____	_____.____
0158	643.3250 Temporary Marking Line Removable Tape 8-Inch	2,031.000 LF	_____.____	_____.____
0160	643.5000 Traffic Control	1.000 EACH	_____.____	_____.____
0162	644.1410 Temporary Pedestrian Surface Asphalt	9,351.000 SF	_____.____	_____.____
0164	644.1430 Temporary Pedestrian Surface Plate	1,240.000 SF	_____.____	_____.____
0166	644.1601 Temporary Pedestrian Curb Ramp	1,334.000 DAY	_____.____	_____.____
0168	644.1605 Temporary Pedestrian Detectable Warning Field	248.000 SF	_____.____	_____.____
0170	644.1810 Temporary Pedestrian Barricade	682.000 LF	_____.____	_____.____
0172	646.1020 Marking Line Epoxy 4-Inch	13,080.000 LF	_____.____	_____.____
0174	646.2020 Marking Line Epoxy 6-Inch	7,145.000 LF	_____.____	_____.____
0176	646.3020 Marking Line Epoxy 8-Inch	665.000 LF	_____.____	_____.____
0178	646.5020 Marking Arrow Epoxy	44.000 EACH	_____.____	_____.____
0180	646.5220 Marking Symbol Epoxy	27.000 EACH	_____.____	_____.____

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Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0182	646.7120 Marking Diagonal Epoxy 12-Inch	2,310.000 LF	_____.____	_____.____
0184	646.7520 Marking Crosswalk Epoxy Block Style 24-Inch	2,055.000 LF	_____.____	_____.____
0186	646.8120 Marking Curb Epoxy	220.000 LF	_____.____	_____.____
0188	646.8220 Marking Island Nose Epoxy	10.000 EACH	_____.____	_____.____
0190	650.4500 Construction Staking Subgrade	5,295.000 LF	_____.____	_____.____
0192	650.7000 Construction Staking Concrete Pavement	5,295.000 LF	_____.____	_____.____
0194	650.8501 Construction Staking Electrical Installations (project) 001. 2225-15-70	1.000 EACH	_____.____	_____.____
0196	650.9000 Construction Staking Curb Ramps	42.000 EACH	_____.____	_____.____
0198	650.9500 Construction Staking Sidewalk (project) 001. 2225-15-70	1.000 EACH	_____.____	_____.____
0200	650.9911 Construction Staking Supplemental Control (project) 001. 2225-15-70	1.000 EACH	_____.____	_____.____
0202	650.9920 Construction Staking Slope Stakes	5,295.000 LF	_____.____	_____.____
0204	652.0225 Conduit Rigid Nonmetallic Schedule 40 2-Inch	135.000 LF	_____.____	_____.____
0206	652.0235 Conduit Rigid Nonmetallic Schedule 40 3-Inch	14,435.000 LF	_____.____	_____.____
0208	652.0335 Conduit Rigid Nonmetallic Schedule 80 3-Inch	2,770.000 LF	_____.____	_____.____

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Federal ID(s): N/A

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Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0210	652.0615 Conduit Special 3-Inch	1,500.000 LF	_____.____	_____.____
0212	654.0101 Concrete Bases Type 1	7.000 EACH	_____.____	_____.____
0214	654.0102 Concrete Bases Type 2	1.000 EACH	_____.____	_____.____
0216	654.0110 Concrete Bases Type 10	1.000 EACH	_____.____	_____.____
0218	654.0120 Concrete Bases Type 10-Special	3.000 EACH	_____.____	_____.____
0220	655.0230 Cable Traffic Signal 5-14 AWG	1,245.000 LF	_____.____	_____.____
0222	655.0250 Cable Traffic Signal 9-14 AWG	440.000 LF	_____.____	_____.____
0224	655.0260 Cable Traffic Signal 12-14 AWG	135.000 LF	_____.____	_____.____
0226	655.0280 Cable Traffic Signal 19-14 AWG	705.000 LF	_____.____	_____.____
0228	655.0290 Cable Traffic Signal 21-14 AWG	105.000 LF	_____.____	_____.____
0230	655.0305 Cable Type UF 2-12 AWG Grounded	3,515.000 LF	_____.____	_____.____
0232	655.0515 Electrical Wire Traffic Signals 10 AWG	960.000 LF	_____.____	_____.____
0234	655.0900 Traffic Signal EVP Detector Cable	815.000 LF	_____.____	_____.____
0236	657.0100 Pedestal Bases	7.000 EACH	_____.____	_____.____
0238	657.0350 Poles Type 10	1.000 EACH	_____.____	_____.____
0240	657.0352 Poles Type 10-Special	3.000 EACH	_____.____	_____.____

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Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0242	657.0405 Traffic Signal Standards Aluminum 3.5-FT	5.000 EACH	_____.____	_____.____
0244	657.0420 Traffic Signal Standards Aluminum 13-FT	1.000 EACH	_____.____	_____.____
0246	657.0430 Traffic Signal Standards Aluminum 10-FT	1.000 EACH	_____.____	_____.____
0248	657.0530 Monotube Arms 30-FT	1.000 EACH	_____.____	_____.____
0250	657.0536 Monotube Arms 35-FT-Special	1.000 EACH	_____.____	_____.____
0252	657.0546 Monotube Arms 45-FT-Special	2.000 EACH	_____.____	_____.____
0254	658.0173 Traffic Signal Face 3S 12-Inch	21.000 EACH	_____.____	_____.____
0256	658.0412 Pedestrian Signal Face 12-Inch	8.000 EACH	_____.____	_____.____
0258	658.5070 Signal Mounting Hardware (location) 001. N Lake Drive & E Kenwood Blvd.	1.000 EACH	_____.____	_____.____
0260	659.5000.S Lamp, Ballast, LED, Switch Disposal by Contractor	80.000 EACH	_____.____	_____.____
0262	661.0201 Temporary Traffic Signals for Intersections (location) 001. N Lake Drive & E Kenwood Blvd.	1.000 EACH	_____.____	_____.____
0264	690.0150 Sawing Asphalt	215.000 LF	_____.____	_____.____
0266	690.0250 Sawing Concrete	5,385.000 LF	_____.____	_____.____
0268	715.0720 Incentive Compressive Strength Concrete Pavement	6,375.000 DOL	1.00000	6,375.00

Proposal ID: 20240611012 **Project(s):** 2225-15-70

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0270	740.0440 Incentive IRI Ride	3,585.000 DOL	1.00000	3,585.00
0272	SPV.0060 Special 001. Utility Line Opening (ULO)	10.000 EACH	_____.____	_____.____
0274	SPV.0060 Special 004. Adjusting Water Valve Boxes	58.000 EACH	_____.____	_____.____
0276	SPV.0060 Special 010. Temporary No Parking Signs	48.000 EACH	_____.____	_____.____
0278	SPV.0060 Special 020. MMA Two-Component Traffic Marking White Integrated Bike Lane Arrow	15.000 EACH	_____.____	_____.____
0280	SPV.0060 Special 021. MMA Two-Component Traffic Marking White Integrated Bike Lane Symbol	15.000 EACH	_____.____	_____.____
0282	SPV.0060 Special 023. MMA Two-Component Traffic Marking Green Two-Stage Queue Boxes	7.000 EACH	_____.____	_____.____
0284	SPV.0060 Special 102. Inlet Covers Type MS 57	63.000 EACH	_____.____	_____.____
0286	SPV.0060 Special 103. Manhole Covers Type MS 58-A	76.000 EACH	_____.____	_____.____
0288	SPV.0060 Special 110. Catch Basins Type 44A	71.000 EACH	_____.____	_____.____
0290	SPV.0060 Special 112. Storm Inlet Type 45A	5.000 EACH	_____.____	_____.____
0292	SPV.0060 Special 201. Install City Precast Controller Base	1.000 EACH	_____.____	_____.____
0294	SPV.0060 Special 205. ATC Controller And Cabinet Installed	1.000 EACH	_____.____	_____.____

Proposal ID: 20240611012 **Project(s):** 2225-15-70

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0296	SPV.0060 Special 212. Fiber Optic Patch Panel	1.000 EACH	_____.____	_____.____
0298	SPV.0060 Special 213. Ethernet Switch	1.000 EACH	_____.____	_____.____
0300	SPV.0060 Special 215. Electrical Service Pedestal	1.000 EACH	_____.____	_____.____
0302	SPV.0060 Special 218. EVP 1 Direction Detector	4.000 EACH	_____.____	_____.____
0304	SPV.0060 Special 221. EPV Phase Selector Card 4 Channel	1.000 EACH	_____.____	_____.____
0306	SPV.0060 Special 223. EVP Confirmation Light	4.000 EACH	_____.____	_____.____
0308	SPV.0060 Special 225. Vehicular Video Detection System 2 Cameras	2.000 EACH	_____.____	_____.____
0310	SPV.0060 Special 228. Electrical Riser	4.000 EACH	_____.____	_____.____
0312	SPV.0060 Special 267. Pedestrian Countdown Signal Face 12-Inch	8.000 EACH	_____.____	_____.____
0314	SPV.0060 Special 268. Voice Instruction Audible Push Button	8.000 EACH	_____.____	_____.____
0316	SPV.0060 Special 269. Voice Instruction Audible Control Unit	1.000 EACH	_____.____	_____.____
0318	SPV.0060 Special 280. Round Aluminum Sign Post System In Soft Surface 7-Foot	1.000 EACH	_____.____	_____.____
0320	SPV.0060 Special 281. Round Aluminum Sign Post System In Soft Surface 10-Foot	16.000 EACH	_____.____	_____.____
0322	SPV.0060 Special 282. Round Aluminum Sign Post System In Soft Surface 11-Foot	9.000 EACH	_____.____	_____.____

Proposal ID: 20240611012 **Project(s):** 2225-15-70

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0324	SPV.0060 Special 284. Round Aluminum Sign Post System In Concrete Surface 7-Foot	2.000 EACH	_____.____	_____.____
0326	SPV.0060 Special 285. Round Aluminum Sign Post System In Concrete Surface 10-Foot	2.000 EACH	_____.____	_____.____
0328	SPV.0060 Special 286. Round Aluminum Sign Post System In Concrete Surface 11-Foot	5.000 EACH	_____.____	_____.____
0330	SPV.0060 Special 288. Sign Mounting Hardware On Existing Pole (Concrete, Aluminum, or Steel)	83.000 EACH	_____.____	_____.____
0332	SPV.0060 Special 290. Street Name Sign Mounting Hardware On Existing Pole (Concrete, Aluminum, .)	2.000 EACH	_____.____	_____.____
0334	SPV.0060 Special 291. Street Name Sign Mounting Hardware On Mast Arm	6.000 EACH	_____.____	_____.____
0336	SPV.0060 Special 292. Sign Mounting Hardware On Round Aluminum Sign Post	80.000 EACH	_____.____	_____.____
0338	SPV.0060 Special 293. Remove Sign Post Assembly and Signs Type II	43.000 EACH	_____.____	_____.____
0340	SPV.0060 Special 302. Pull Boxes 13-Inch x 24-Inch x 24-Inch	129.000 EACH	_____.____	_____.____
0342	SPV.0060 Special 303. Pull Boxes 17-Inch x 30-Inch x 24-Inch	12.000 EACH	_____.____	_____.____
0344	SPV.0060 Special 310. Remove Poles	80.000 EACH	_____.____	_____.____
0346	SPV.0060 Special 312. Poles Type A26 Gray Concrete	18.000 EACH	_____.____	_____.____

Proposal ID: 20240611012 **Project(s):** 2225-15-70

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0348	SPV.0060 Special 313. Poles Type A21 Gray Concrete	3.000 EACH	_____.____	_____.____
0350	SPV.0060 Special 317. Poles Type H17 Concrete Pole	67.000 EACH	_____.____	_____.____
0352	SPV.0060 Special 323. 35 FT Wood poles	59.000 EACH	_____.____	_____.____
0354	SPV.0060 Special 343. Water Tight Connections 3 & 4 Port.	330.000 EACH	_____.____	_____.____
0356	SPV.0060 Special 345. Luminiare Arm Single Member 6-Ft	8.000 EACH	_____.____	_____.____
0358	SPV.0060 Special 346. Luminaire Arm Single Member 6-FT WP Mount	51.000 EACH	_____.____	_____.____
0360	SPV.0060 Special 353. Installing Equipment Grounding Electrode	100.000 EACH	_____.____	_____.____
0362	SPV.0060 Special 355. Luminaire Arms Mounting Clamps Poles Type A-21 & A-26 Single Bracket	8.000 EACH	_____.____	_____.____
0364	SPV.0060 Special 359. Lantern Arms Mounting Clamps Poles Type A21 & A26 Single Bracket	19.000 EACH	_____.____	_____.____
0366	SPV.0060 Special 360. Luminaire Arms Mounting Clamps Poles Type A21 & A26 Double Bracket	2.000 EACH	_____.____	_____.____
0368	SPV.0060 Special 366. Installing City Furnished Luminaire Utility High Pressure Sodium	57.000 EACH	_____.____	_____.____
0370	SPV.0060 Special 374. Luminaire Utility 1 LED	13.000 EACH	_____.____	_____.____
0372	SPV.0060 Special 387. Remove Luminaire	15.000 EACH	_____.____	_____.____

Proposal ID: 20240611012 **Project(s):** 2225-15-70

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0374	SPV.0060 Special 400. Adjusting CUC Manhole Cover	10.000 EACH	_____.____	_____.____
0376	SPV.0060 Special 410. 4' Diameter "Doghouse" Manhole Type CUC	9.000 EACH	_____.____	_____.____
0378	SPV.0060 Special 420. Removing CUC Manhole	9.000 EACH	_____.____	_____.____
0380	SPV.0060 Special 818. Pole Type A26 Concrete Bolt Down	1.000 EACH	_____.____	_____.____
0382	SPV.0060 Special 865. Luminaire Historic Milwaukee Harp LED 1	68.000 EACH	_____.____	_____.____
0384	SPV.0060 Special 866. Luminaire Historic Milwaukee Lantern LED	24.000 EACH	_____.____	_____.____
0386	SPV.0060 Special 881. Inline 5A Fast Acting Fuse With Holder	105.000 EACH	_____.____	_____.____
0388	SPV.0090 Special 003. Marking Crosswalk Epoxy Transverse Line 12-Inch	110.000 LF	_____.____	_____.____
0390	SPV.0090 Special 004. Marking Stop Line Epoxy 24-Inch	275.000 LF	_____.____	_____.____
0392	SPV.0090 Special 029. Precast Concrete Curb	1,712.000 LF	_____.____	_____.____
0394	SPV.0090 Special 030. Concrete Curb Integral HES Type D	430.000 LF	_____.____	_____.____
0396	SPV.0090 Special 031. Concrete Curb Integral HES Type J	210.000 LF	_____.____	_____.____
0398	SPV.0090 Special 201. Install Fiber Optic Cable Outdoor Plant 72-CT Contractor Supplied	450.000 LF	_____.____	_____.____

Proposal ID: 20240611012 **Project(s):** 2225-15-70

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0400	SPV.0090 Special 240. Electrical Cable 3#4/1#8 XLPE USE-2	15.000 LF	_____.____	_____.____
0402	SPV.0090 Special 301. Cable Type 1#6 AWG 5kV	4,100.000 LF	_____.____	_____.____
0404	SPV.0090 Special 302. City Furnished Electrical Cable 1#8 AWG 5kV Concentric	4,300.000 LF	_____.____	_____.____
0406	SPV.0090 Special 303. Electrical Cable Type 3#6 AL Triplex	3,600.000 LF	_____.____	_____.____
0408	SPV.0090 Special 304. Electrical Cable Type 2#2/1#4 AL Triplex	3,600.000 LF	_____.____	_____.____
0410	SPV.0090 Special 319. Liquidtight Flexible Nonmetallic Conduit 1 1/2 - Inch Conduit	1,050.000 LF	_____.____	_____.____
0412	SPV.0090 Special 324. Electrical Cable Type 4#2/1#8 XLP	13,500.000 LF	_____.____	_____.____
0414	SPV.0090 Special 402. 2-Duct Conduit Cement Encased DB-60	86.000 LF	_____.____	_____.____
0416	SPV.0165 Special 025. MMA Two-Component Traffic Marking Green Bike Lane Panel	5,510.000 SF	_____.____	_____.____
0418	SPV.0180 Special 001. Concrete Pavement Joint Sealing	24,806.000 SY	_____.____	_____.____

Section: 0001 **Total:** _____.____

Total Bid: _____.____

PLEASE ATTACH ADDENDA HERE