



**SPECIAL PROVISIONS
FOR
TRAFFIC SIGNALIZATION**

**Story County
NHSX-069-5(128)--3H-85**

**Effective Date
October 17, 2023**

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

230011.01 DESCRIPTION.

A. Scope.

1. Sections 2525 and 4189 of the Standard Specifications, as modified by these special provisions, shall apply to this project. The installation of the traffic control signals and appurtenances shall be in conformance with the MUTCD, as adopted by the Iowa DOT per IAC 761, Chapter 130.
2. These Special Provisions cover the work described in the contract documents. It covers furnishing all labor, equipment, and materials, and performing all required operations to complete the work as per contract documents and to provide a completely operational and working signal system. Unless otherwise modified by the Special Provisions, all work, including equipment, material, and installation, shall be in accordance with the appropriate Iowa DOT standard and supplemental specifications. Where reference is made to the codes, standard specifications, supplemental specifications, the safety orders, the general orders, the standards, laws, and ordinances, it shall mean the version of the reference that is in effect on the bid advertising date.
3. The Contractor shall be responsible for ONE-CALL locates of the traffic and interconnect cables installed under this project until acceptance of the project by the City.
4. At the completion of the project, the Contractor shall provide the city with as-built drawings of the signal installation.
5. At the completion of the project, the Contractor shall mark the location of all conduits with paint and flags. The Ames Public Works Department will then utilize their GPS equipment to map the conduit, footing, and handhole locations.

6. The Contractor shall measure the distance from the bottom of mast arm mounted signal heads and signs to the roadway surface beneath the signal or sign. The measurements shall be provided to the Engineer.
7. The Contractor shall submit to the Traffic Engineer a list of traffic signal items (catalog cuts acceptable) that are proposed for installation.
8. The Contractor must have an I.M.S.A Level II certified Signal Technician on site at all times when work is being performed.
9. The Contractor shall notify the Engineer in writing of any discrepancy or ambiguity as to the intent or meaning of the contract documents or Special Provision before starting to work on that area. The Engineer will supply the Contractor in writing with the intent. The decision of The Engineer shall be final and conclusive.

B. Definitions.

Terms used in this Special Provision shall have the meanings defined below:

- City means City of Ames, Iowa, or its representatives.
- APWD means City of Ames Public Works Department.
- Punch List means a list of items that need to be corrected by the Contractor on the project before the final acceptance can be made.
- Response Time means the elapsed time from when the Contractor is given a notice to take certain actions to the time the Contractor actually starts the action.
- LED means light emitting diode.
- IP means Internet Protocol.
- APS means Accessible Pedestrian Signals.

C. Related Specifications and Standards.

Comply with all of the standards listed below unless otherwise modified by contract documents:

- ANSI Standards.
- ASTM Standards.
- EIA (Electronics Industries Associations) Standards
- IMSA Standards.
- ITE Standards.
- MUTCD.
- National Electrical Code.
- National Electrical Safety Code.
- NEMA Standards.
- Specifications of the Underwriters Laboratories, Inc.
- TIA (Telecommunications Industries Association) Standards.
- TIA/EIA (Telecommunications Industry Association/Electronic Industries Alliance) 568
- NTCIP (The National Transportation Communications for Intelligent Transportation System) Protocol.
- All pertinent local, state and federal laws and regulations covering installation, material, design, construction, and operation.

15011X.02 MATERIALS.

A. Equipment and Materials.

1. Equipment and materials shall be of new stock unless the plans provide for the relocation of, or the use of fixtures furnished by others. New equipment and materials shall be the product of reputable manufacturers of electrical equipment and shall meet Engineer approval.

2. A PDF file of shop drawings shall be furnished for steel mast arm poles to be furnished on the Project. A PDF file of catalog cuts and manufacturer's specifications shall be furnished for all standard "off-the-shelf" items.
3. Engineer review of shop drawings and catalog cuts shall not relieve the Contractor of any responsibility under the Contract documents.
4. All electrical equipment shall conform to the standards of NEMA, and all material and work shall conform to the requirements of NEC, the Standards of ASTM, the ASA, and local ordinances. Miscellaneous electrical equipment and materials shall be UL approved.
5. Wherever reference is made in these specifications or in the standard provisions to the code, the safety orders, the general order, or the standards mentioned above, the reference shall be construed to mean the code, order, or standard that is in effect at the date of advertising of these Specifications.
6. Certification from the manufacturers of all electrical equipment, signal supports, conduit and cable shall be supplied by the Contractor stating said materials complies with these Specifications.
7. Any existing traffic signal equipment designated to be removed on the project shall remain the property of the City of Ames. The Contractor shall deliver any removed equipment to the City of Ames Public Works Facility, 2207 Edison Street.

B. Schedule of Unit Prices.

Complete and forward to the Engineer three copies of a list of unit costs for each item listed on the Schedule of Unit Prices by the preconstruction meeting. The Schedule of Unit Prices will be provided to the Contractor. The sum of the costs for each item shall equal the total Contract Lump Sum price for the traffic signal installation(s). The unit costs will be used to prepare progress payments to the Contractor. The unit costs will also be used to establish the total cost for any Extra Work Orders related to traffic signal installation work items unless otherwise negotiated.

C. Warranties.

The Contractor shall transfer all required equipment warranties on the date of final acceptance to the Contracting Authority.

D. Handholes.

1. The body of the precast hand hole shall meet the requirements for Class 1500D concrete pipe in so far as applicable.
2. Cast iron ring and cover (Neehan R-5900E or approved equal) may be rated light duty for non-traffic areas (145 pounds minimum); but shall be rated heavy duty for traffic areas (320 pounds minimum) where shown on the plans. Deviations in weights shall not exceed plus or minus five percent.
3. The cover shall have the words TRAFFIC SIGNAL cast on the top of the cover.
4. Cable hooks – Four cable hooks shall be provided in all handholes as detailed on the plans. Cable hooks shall be galvanized steel with a minimum diameter of 3/8 inch and a minimum length of 5 inches and anchored in the wall of the hand hole utilizing appropriate anchoring devices.
5. Type 2 Handholes shall be Quazite 30 inch by 48 inch "PG" Style (Stackable) Assembly Model # PG3048BB36 or approved equal. The handhole shall have a two-piece cover rated for heavy-duty loading. The legend "Traffic Signal" shall be on both pieces of the lid and be secured by

two stainless steel bolts. A minimum of four cable hooks will be installed in each handhole to support the signal cables.

6. An Omni Marker ball, Model 163 101.4 kHz telephone marker, manufactured by Industry Technology shall be installed in each Type 2 Handhole.

E. Conduit System.

1. The number, type, and size of conduit shall be as shown on the plans. Conduit shall meet the requirements of Section 2525 and Article 4185.10 of the Standard Specifications.
2. Conduit shown on the plans as rigid steel shall be galvanized steel meeting the requirements of ANSI Standard Specification C80.1, latest revision.
3. Conduit shown on the plans as PVC conduit shall meet the requirements of NEMA TC-2, Type 2, and applicable UL Standards. HDPE conduit, orange in color, with an SDR of 13.5 will be allowed to be used in place of PVC conduit. For traffic signal interconnect conduit, HDPE conduit, green in color, with an SDR of 13.5 will be allowed to be used in place of PVC conduit.
4. All conduit openings in the controller cabinet, hub cabinet, hand holes, and bases shall be sealed with an approved sealing compound. This compound shall be readily workable soft plastic. It shall be workable at temperatures as low as 30°F, and shall not melt or run at temperatures as high as 300°F.

F. Electrical Cable.

1. General.

Electrical cable for intersection signalization shall be rated 600 volts minimum. The number of conductors and size of all electrical cable shall be as shown on the plans. All wire shall be plainly marked on the outside of the sheath with the manufacturer's name and identification of the type of the cable. Home runs for cables shall be labeled as follows:

NW comer is red	SE comer is blue
NE comer is green	SW comer is orange

2. Power Lead-In Cable.

Power lead-in cable shall be 600 volt, single conductor, stranded copper, Type USE, with UL approval and size as shown on plans.

3. Signal Cable.

Signal cable shall be 600 volt, multi-conductor copper wire. Signal cable shall meet the requirements of IMSA. Specification 19-1, latest revision there of or polyethylene insulated, polyvinyl chloride jacketed signal cable. All conductors shall be No. 14 AWG unless otherwise specified on the plans. The conductors shall be stranded and not solid.

4. Tracer Wire.

The tracer wire shall be a No. 10 AWG, single conductor, stranded copper, Type THHN, with UL approval and an orange colored jacket.

5. Emergency Vehicle Preemption Optical Detector Cable.

The cable shall meet the requirements of IPCEA-S-6I-402/NEMA WC 5, Section 7.4 600 volt control cable 75 °C, Type B. The cable shall contain three conductors, each of which shall be No. 20 AWG stranded, tinned copper with 25 mil minimum average thickness low-density polyethylene insulation. Insulation shall be color coded one yellow, one blue, and one orange. The shield shall be aluminized polyester film with a nominal 20% overlap. A No. 20 AWG stranded, tinned, bare drain wire shall be placed between the insulated conductors and the shielded in contact with the conductive surface of the shield. The jacket shall be black PVC

with a minimum rating of 600 volts and 80 °C and a minimum thickness of 45 mil. The jacket shall be marked as required by IPCEA/NEMA.

6. Three Pair No. 18 Cable.

The three Pair No. 18 AWG cable shall be Belden 9773 cable.

7. Coaxial Cable.

The cable shall be Belden 8281 coaxial cable.

8. Cat5E Cable.

The cable shall be Cat5E outdoor use rated cable.

G. Concrete Bases.

1. Footings shall be Class C structural concrete meeting the requirements of Section 2403 of the Standard Specifications.
2. Reinforcing steel shall be the type and size as shown on the plans and shall conform to the requirements of Section 2404 of the Standard Specifications.

H. Pedestrian Push Buttons.

1. Pedestrian Push Button Detectors shall be manufactured by Polara Engineering, Inc. The control unit shall be a Polara iCCU-S with Option A or city approved equal prior to bid. The button shall be a Polara iDS23RN0-Y iDS2 APS ped station or city approved equal prior to bid. The push button shall be weatherproof and of sturdy design. The entire assembly shall be weather tight, secure against electrical shock, and able to withstand continuous hard usage. The button housing shall be yellow in color. Push button signs shall be furnished and shall conform to the requirements of the MUTCD. Signs shall be R10-3e, as indicated on the plans. The ped station shall be connected to signal wiring using the proper size of spade terminal unless otherwise noted in the plans. The system shall be independent lab tested to meet:
 - NEMA TS 2 Section 2.1
 - Temperature & Humidity requirements, or TS4 equivalent
 - Transient Voltage Protection requirements, or TS4 equivalent
 - Mechanical Shock and Vibration requirements, or TS4 equivalent
 - IEC 61000-4-4, IEC 61000-4-5 Transient Suppression requirements
 - FCC Title 47, Part 15, Class A Electronic Noise requirements
2. Furnish a certification from the equipment manufacturer stating that the equipment furnished under this specification complies with all provisions of this specification. If there are any items that do not comply with this specification, then a list of those exceptions must be detailed on the certification.

I. Traffic Signal Poles.

1. General.

- a. This section of the Special Provisions described minimum acceptable design, material, and fabrication requirements for traffic signal poles. Poles shall be manufactured in accordance with the requirements of the latest Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals as approved by the American Association of State Highway and Transportation Officials. The poles shall be manufactured in accordance with City of Ames standard shop drawings. Mast arms and pole assemblies shall be wet coat with a zinc primer painted over galvanized finish. The paint shall be standard Bronze color to match the color of current City of Ames traffic signal poles.
- b. The traffic signal mast arm and pole assemblies shall be designed to support the number of signal heads (use weight and projected areas of die cast aluminum signal heads) and

signs as shown on the plans. The mast arm and pole assemblies shall be designed to support a minimum of two signal heads and a traffic control sign at the outboard end of the arm.

- c. The mast arms and support poles shall be continuous tapered, round, steel poles of the transformer base type as shown on the plans. The poles shall be fabricated from low carbon (maximum carbon 0.30%) steel of U.S. Standard gauge. Transformer bases will not be used when the manufacturer's structural design calculations indicate that the loadings on the pole will not permit the use of the transformer base.
- d. When a transformer base is not used, the pole shaft shall have a handhole 10 inches by 12 inches for cable access. The handhole shall be provided with a cover.
- e. After manufacture, they shall have minimum yield strength of 48,000 PSI. The base and flange plates shall be of structural steel conforming to AASHTO M183 (ASTM A36) and cast steel conforming to ASTM A27, Grade 65-35 or better.
- f. It may be permissible to fabricate poles and mast arms by welding two sections together. The method used for connecting the sections shall result in a smooth joint and shall be factory welded as follows:
 - All longitudinal butt welds, except within one foot of a transverse butt-welded joint, shall have a minimum 60 percent penetration for plates 3/8 inch and less in thickness, and a minimum of 80 % penetration for plates over 3/8 inch in thickness.
 - All longitudinal butt welds on poles and arms within one foot of a transverse butt welded joint shall have 100 % penetration.
 - All transverse butt welds for connecting sections shall have 100 % penetration achieved by back-up ring or bar.
 - All transverse butt welds and all specified 100%-penetration longitudinal butt welds on poles and mast arms shall be examined 100 % by ultrasonic inspection according to the requirements of AWS D1.1-80.AH.
- g. Welding and fabrication shall conform to the Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges and by Supplemental Specifications No. 969.
- h. Personnel performing nondestructive testing shall be qualified in accordance with the American Society for Nondestructive Testing Recommended Practice No. SNT-TC-1A and applicable Supplements B (Magnetic Particle) and C (Ultrasonic). Evidence shall be presented for approval of the Engineer, concerning their qualifications. A report shall be required showing that welds have been inspected and either found satisfactory or found unsatisfactory but repaired and reinspected and found satisfactory. The cost of nondestructive testing shall be paid by the Contractor and will be considered incidental to other items in the contract.
- i. Pole manufacturers shall certify that only certified welding operators in accordance with AWS D1.1-80 were used and only electrodes as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel for Highway Bridges were used.

2. Mast Arm.

The mast arms shall be designed to support traffic signals and/or signs as shown on the plans and indicated in these Specifications. They shall be certified by the fabricator that the mast arms are capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure. The mast arms shall be of the length as shown on the plans. The mast arms shall be galvanized inside and out in accordance with ASTM A123, latest revision.

3. Poles.

The pole shall be designed to support the traffic signals and/or signs as shown on the plans. The pole shall be galvanized inside and out in accordance with the requirements of ASTM A123, latest revision. The pole shall be equipped with a minimum 8 inch by 12 inch hand hole and cover located in the transformer base of the pole. Securing of the cover to the base shall be done with the use of simple tools. Hardware shall be corrosion resistant.

4. Pedestrian Pushbutton Poles.

Where signal plans indicate that pedestrian pushbuttons are located on separate poles from the signal poles, a 5 foot aluminum pole Frey Manufacturing Part # CP6A6040TCSS shall be used with tethered base. Concrete footing to be used to attach the pedestal base to. Pole caps must be installed on all pedestrian pushbutton poles.

5. Combination Pole.

- a. Where a combination street lighting/signal pole is specified on the plans, the luminaire arm is to be mounted in the same vertical plane as the signal arm unless otherwise indicated on the plans.
- b. The luminaire arm type shall be a single member tapered type arm unless specified otherwise on the plans.
- c. The luminaire arm shall provide the spread and nominal mounting height as shown on the plans.
- d. Where a combination street lighting/signal pole is specified on the plans, the pole shall be equipped with a minimum 4 inch by 6 inch hand hole and cover located opposite the signal mast arm.
- e. The luminaire arm shall be arched.

6. Hardware.

- a. The mast arms and poles shall be equipped with all necessary hardware, shims, and anchor bolts to provide for a complete installation without additional parts.
- b. The anchor bolts shall meet the requirements of ASTM A36 or better.
- c. The anchor bolts shall be hot dip galvanized for a minimum of 12 inches on the threaded end.
- d. The anchor bolts shall be threaded a minimum of 6 inches at one end and have a 4 inch long, 90 degree bend at the other end.
- e. The fabricator shall submit drawings for anchor bolts and base design. All hardware shall be steel, hot dipped galvanized meeting the requirements of ASTM A123, Class D or electrodeposited coated of the same coating thickness and so designed for this purpose.

7. Shop Drawings.

All traffic signal poles shall be detailed on shop drawings by the manufacturer indicating pole and arm dimensions and attachment method along with signal weight, projected areas, and type of mounting that it is designed to accommodate.

8. Certifications.

The fabricator shall certify that the mast arms are capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure; that only certified welding operators in accordance with AWS D1.1-80 or latest revisions were used; and that only electrodes as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel for Highway Bridges were used.

J. Traffic Signs.

1. Traffic signs shall conform to the requirements of Section 4186 of the Standard Specifications.
2. The street name signs shall be white letters, FHWA Series B or C font, 12 inches high on a green background. The sign shall have a white border, 0.75 inches wide. The thickness of aluminum sign blanks shall be 0.125 inches and the height shall be 18 inches. The corners of the sign blank shall have a 1.5 inch radius.
3. The sheeting material for all signs shall be Diamond Grade Reflective Sheeting.

15011X.03 CONSTRUCTION.

A. Testing And Maintenance Of Signal Equipment.

1. Notify the Engineer the date the signal or signal system will be ready for testing once the project is open to traffic.
2. Upon authorization of the Engineer, place the signal or signal system in operation for a consecutive 30-day test period. The signal(s) shall not be placed into operation without prior notification and authorization of the Engineer. Any failure or malfunction of the equipment furnished by the Contractor, exclusive of minor malfunctions (such as LED burnouts) occurring during the test period, shall be corrected at the Contractor's expense and the signal of system tested for an additional 30 consecutive day period. This procedure shall be repeated until the signal equipment has operated satisfactorily for 30 consecutive days.
3. A representative from the manufacturer and/or supplier of signal controller shall be at the project site when the signal controllers are ready to be turned on, to provide technical assistance including, as a minimum, programming of all necessary input data. All required signal timing data shall be provided by the Engineer.
4. After signal turn on and prior to final acceptance of the completed traffic signal system, the Contractor shall respond, within 24 hours, to perform maintenance or repair of any failure or malfunction reported.

B. Handholes.

1. Handholes shall be installed at the locations shown on the plans, and at such additional points, as the Contractor, at his own expense, may desire to facilitate the work.
2. Handholes shall be installed in a neat and workmanlike manner. When the use of forms is required, they shall be set level and of sufficient thickness to prevent warping or other deflections from the specified pattern. A means shall be provided for holding conduit runs rigidly in place while the concrete is placed. All conduits shall enter the hand hole at a depth of 12 inches from the top of the hand hole. Any deviations from this requirement shall be approved by the Engineer. The ends of all conduits leading into the hand hole shall fit approximately 2 inches beyond the inside wall. A coarse aggregate drain of 1 inch clean stone or gravel conforming to the dimensions shown on the plan details shall be provided. Cast iron rings and covers for handholes shall be set flush with sidewalk and pavement. The cast iron rings and covers shall be set 1 inch below finished grade when placed in soil so as to prevent damage from snow removal equipment.

C. Wiring.

1. Where practical, color codes shall be followed so that the red insulated conductor connects to the red indication terminal, yellow to yellow, and green to green. Circuits shall be properly labeled at the controller by durable labels, or other appropriate methods, attached to the cables.
2. All vehicle and pedestrian signal cable runs shall be continuous from connections made in the handhole compartment of signal pole bases to the terminal compartment in the controller cabinet. Splicing will not be allowed in underground hand holes unless specifically called for on the plans. Cable runs for radar detection cables and emergency vehicle preemption cables shall be continuous from the unit to the control cabinet.
3. Power lead-in cable runs shall be continuous from the Power Company service point to the meter socket and from the meter socket to the controller cabinet.

4. Slack for each cable shall be provided by a 4 foot length in each hand hole and a 2 foot length in each signal pole, pedestal and controller base (measured from the hand hole compartment in the pole to the end of the cable). Coil cable slack in hand hole and place on the hooks.
5. Cables shall be pulled through conduit by means of a cable grip designed to provide a firm hold upon the exterior covering of the cable or cables, with a minimum of dragging on the ground or pavement. This shall be accomplished by means of reels mounted on jacks, frame mounted pulleys, or other suitable devices. Only vegetable lubricants may be used to facilitate the pulling of cable.
6. The various types of connectors (RJ45, spade, etc.) used throughout the signal installations shall be crimped using the proper crimping tool designed specifically for the connector being used.
7. All connections made in the pole base shall be done using Scotchlok model #314 Self-Stripping Electrical Pigtail Connectors or an approved equivalent. Where it is required to splice into existing interconnect in handholes, splices shall be made using watertight connectors.

D. Electrical Cable.

A tracer wire shall be installed in all conduits with the exception of conduits between detector loops and hand holes. The tracer wire shall be spliced in the hand holes and controller to form a continuous network. The splice shall be a soldered connection and then covered with a wire nut.

E. Concrete Bases.

1. Concrete bases for poles and controllers shall be poured to form a monolithic foundation and shall conform to the dimensions shown on the plans. Excavations for these bases shall be made in a neat and workmanlike manner. The bottom of all foundations shall rest securely on firm undisturbed ground. The material for the forms shall be of sufficient thickness to prevent warping or other deflections from the specified pattern. The forms shall be set level or sloped slightly to blend with the adjacent ground level and means shall be provided for holding them rigidly in place while the concrete is being deposited. All conduits shall be installed and held rigidly in place before concrete is deposited in the forms. A ground rod (s) shall be placed at each pole and controller base as shown on the plans. Anchor bolts for the signal poles or the controller cabinet shall be set in place by means of a template constructed to space the anchor bolts in accordance with the manufacturer's requirements. The center of the template and the center of the concrete base shall coincide unless the Engineer shall direct otherwise. Concrete shall be consolidated by vibration during placement.
2. The top of the base shall be finished level and the top edges shall be rounded with an edger having a radius of 1/2 inch. In sidewalk areas, adjacent to sidewalks, or in other paved areas, the top 10 inches of the base shall be formed square and shall be flush with the surrounding paved area. Preformed expansion material shall be provided between the base and the other paved area. When installed in an earth shoulder away from the pavement edge, the top of the concrete base shall be approximately 2 inches above the surface of the ground. The exposed surface of the base shall have a rubbed surface finish.
3. After the foundation or base has been poured, absolutely no modification of any sort may be made. If the anchor bolts, conduit, or any part of the foundation or base is installed in an incorrect manner as determined by the Engineer, the entire foundation or base shall be removed and a new foundation or base installed at the Contractor's expense.
4. Prior to setting poles, the anchor bolts shall be covered in such a manner as to protect them against damage and to protect the public from possible injury. The foundations must be given a minimum of 7 days to cure before poles are erected.

F. Bonding and Grounding.

1. All conduit, steel poles, and pedestals shall be bonded to form a continuous system and be effectively grounded. Bonding jumpers shall be No. 6 AWG bare copper wire or equal connected to the ground rod by Cadweld connectors. Bare copper ground wires shall be connected together by an approved mechanical crimp type of connector. Split bolt connectors will not be used.
2. Grounding of the conduit and neutral at the service point shall be accomplished as required by the National Electric Safety Code, except bonding jumpers shall be No. 6 AWG or equal.
3. Ground electrodes shall be provided at each signal pole and at the controller as detailed on the plans.
4. A No. 6 AWG bare copper ground wire shall be installed in all PVC conduits that carry 120 volt signal cables.

G. Replacing Damaged Improvements.

Improvements such as sidewalks, curbs, driveways, roadway pavement and any other improvements removed, broken, or damaged by the Contractor shall be replaced or reconstructed with the same kind of materials found on the work or with materials of equal quality. The new work shall be left in serviceable condition satisfactory to the Engineer. Whenever a part of a square or slab of existing concrete sidewalk, driveway, or pavement is broken or damaged, the entire square or slab shall be removed and the concrete reconstructed. Surface restoration, including sidewalk, driveway, and street surface replacement, and seeding or sodding, shall be completed in accordance with the current edition of "Specification Standards for Public Improvements" of the City of Ames. Surface restoration shall be considered incidental to the bid items of the project and will not be paid for separately.

H. Traffic Signs.

Traffic signs shall be mounted on the mast arms utilizing a universally adjustable SKYBRACKET cable clamp kit mounting hardware bracket.

230011.04 METHOD OF MEASUREMENT.

Measurement for Traffic Signalization will be lump sum.

230011.05 BASIS OF PAYMENT.

Traffic Signalization will be paid for at the contract lump sum price bid, which price shall be full compensation for furnishing all equipment, materials, and all other work necessary or incidental to the construction of the complete signal installation and for all equipment, tools, labor, and incidentals necessary to complete the work.