SECTION 950

TRAFFIC SIGNALS
STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION
CITY OF MANITOWOC, WISCONSIN

SECTION 950

TRAFFIC SIGNALS

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DATE OF ISSUE: October 3, 2005

CITY ENGINEER'S APPROVAL: [Signature]

Valerie Tholen, P.E.
Traffic Signals specifications shall be the State Specifications unless otherwise noted in the Contract Documents under the Special Provisions and Conditions section.

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SECTION 950

TRAFFIC SIGNALS

Details
SECTION 950
TRAFFIC SIGNALS

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<td>A</td>
<td>12</td>
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<td>B</td>
<td>24</td>
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<td>WALL THICKNESS</td>
<td>C</td>
<td>0.064</td>
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<tr>
<td>COVER</td>
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<td>1 1/4</td>
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**FRAME AND COVER**

<table>
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<tr>
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<tbody>
<tr>
<td>60</td>
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<tr>
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</tbody>
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**GENERAL NOTES**

Details of construction, materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the Contract. All frames and covers shall be heavy-duty type, suitable for vehicular traffic loads. Pull boxes located in the roadways shall have locking covers. Entrance holes into pull boxes shall be cut with a circular hole saw or hydraulic conduit punch. Hole size shall be the outside diameter of the conduit that is to fit in the opening plus no more than 1/2. The contractor shall not install wire in any pull box until its installation has been inspected and approved by the engineer. Grounding lug (mechanical connections) shall be R 4 and approved. For use with copper wire, the mechanical connection lugs and cutouts to the pull box shall be partially & permanently sealed with a silicone or rubberized caulking compound as approved by the engineer. Grounding lug connections are not required in pull boxes when wire voltages of less than 50 volts AC are the only voltage encountered in the boxes. Drain duct shall be measured and paid for separately. Rodent wire screen shall be 1/8 stainless steel mesh and be installed with 1/8 stainless steel hose clamp of sufficient size. All metallic conduit in which wire and/or cable is to be installed shall be bushed before installation of the wire and/or cable.

### SIGNAL PULL BOX

The city of Manitowoc, a city in the state of Wisconsin, is shown in the document. The drawing includes a diagram of a signal pull box with dimensions and notes about the installation and use of the box. The document also includes a table of nominal dimensions and weights, with columns for different types of pipes and their respective weights in pounds. The general notes section provides instructions for the installation and use of the pull box, including details about grounding lugs, cable handling, and conduit installation.

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**ILLUSTRATION OF WIRE/CABLE PLACEMENT IN PULLBOX**

The illustration shows the placement of wires and cables within the pull box, with markings for identification and connection points. The diagram includes symbols and labels for different components of the system, such as the entry point for cables, the direction of flow, and the location of connections. The documentation is intended to provide clear guidance for the installation and maintenance of the signal pull box system.
**General Notes**

Details of construction, materials, and workmanship not shown on this drawing shall conform to the pertinent requirements of the contract.

Loop size, location, number of turns of wire, and associated signal phase shall be as shown on the plans.

Pitch lead-out conduit to draw to roadside pull box.

Splices shall be installed by using cast-in-place splice kits such as 3M type box or approved equal. Non-insulated butt splices to fit #12 and stranded wire shall be used. Splices shall be sleeved and insulated from each other as per instructions included in the splice kit.

The ground resistance readings of the loop shall read "infinity" to ground on an ohmmeter using a multiplier scale of 1 megohm and an input resistance of 1 megohms minimum before splicing the lead-in cable.

After splicing the loop wire to the lead-in cable, the contractor shall measure resistance, ground resistance, and wire resistance at the cabinet. End of the lead-in cable and furnish a copy of the readings to the project engineer for evaluation.

Anti-seize lubricating material shall be used on all threads of threaded assemblies before installation.

Loop detector leads shall be identified with their associated loop by use of waterproof tags at both ends of the cable. A list of the cable identification per individual loop lead shall be placed in the cabinet.

The No. 12 amp loop wire from the loop to the roadside pull box shall be hand twisted at least 3 twists per foot before installation.

Splices of No. 10 loop wire to lead-in cable shall be made only in pull boxes at the side of the road.

The No. 12 amp loop wire shall be installed from the roadside pull box through the loop duct, back to the roadside pull box, and be installed in one non-spliced, continuous length.

Protection of the conduit, conductors, and pull box shall be required after installation and before the new concrete pavement is placed.

12" Pull boxes in pavement shall be corrugated steel only.
LOOP SAW CUT (TYP)

6'X20' EXTENSION LOOP (typ)

12' (typ)

6'X30' LOOP (typ)

STOP

BAR

SAW CUT ACROSS PAVEMENT

LOOP DETECTOR SAW GROOVES 3/8" WIDE X 3" DEEP

6' WIDE BY REQUIRED LENGTH (SEE PLAN)

EXACT LOCATIONS TO BE DETERMINED BY THE FIELD ENGINEER.

NO SCALE

SIGNAL LOOP DETECTOR SAWED IN EXISTING PAVEMENT
**General Notes**

Details of construction materials and workmanship not shown on this drawing shall conform to the pertinent requirements of the contract.

**Conduit Dimensions**

Conduit height above the concrete base shall be 1 inch.

Depth of conduit installed below the traveled way shall be 24 inches minimum and 36 inches maximum.

Depth of conduit installed that is not below the traveled way shall be 18 inches minimum and 36 inches maximum.

Any portion of the conduit base shall only be installed with the written approval of the engineer.

Control cabinet base top surfaces shall be formed, finished and level.

When a type IC control cabinet base is used to form a control cabinet, a 36" square 4" thick concrete maintenance platform shall be required on the corner of the cabinet. The top inch shall be above finished grade and be formed, finished and level.

Maintenance platforms are not required when the surrounding area is paved.

Manhole bending radii of conduit = 6 x the diameter.

All metallic conduit ends shall be reamed and threaded.

All conduit ends at the top of concrete bases shall be capped if metallic or plugged if nonmetallic immediately after placement and before concrete is poured. Conduits in which wire or cable is not being installed shall remain capped or plugged.

All four (two inch and three inch) conduit shall be installed from the cabinet base to the first nearest pull box located as shown on the plan. Bell ends shall be installed on all PVC conduit exposed at the top of the concrete base before installation of cable or wire.

Concrete form depth below finished grade shall be 6" minimum. Concrete forms shall be removed after concrete has set.

When anchor rods using the alternate 4" bend are furnished for the type IC base, the 4" bend shall be in addition to the specified anchor rod bar length. The "L" bend shall not be threaded.

Straight anchor rods shall be threaded 12" in length on each end of the rod.

**Conduit Locations in 24" x 36" Pull Box**

Leading to controller cabinet base type 6, 7, 8 and 9.
SIGNAL CONDUIT LOCATION
INSIDE OF CONTROL CABINET

2-3" CONDUITS
2-2" CONDUITS
1-1" CONDUIT
1" ELEC. SERVICE CONDUIT

MAINTENANCE PLATFORM

DOOR
ELECTRICAL SERVICE
FROM POWER POLE TO CONTROL CABINET

VERIFY HEIGHT OF
SERVICE HEAD WITH
ELECTRIC UTILITY

3 *6 CONDUCTORS IN 1" PVC
SCHEDULE 40 CONDUIT

100A BYPASS TYPE
METER SOCKET
BY CONTRACTOR

METER BY
ELECTRIC UTILITY

WOODEN ELECTRIC
UTILITY POWER POLE

FREE STANDING CABINET,
MODEL EL 712

60 AMP CIRCUIT BREAKER SERVICE
ENTRANCE DISCONNECT.
INTERRUPTING RATING TO EXCEED
AVAILABLE FAULT CURRENT
FROM ELECTRICAL UTILITY

3 *6 & 1*6 GRD SINGLE PHASE IN
1" PVC SCHEDULE 80 COUNT

2 -5/8" X 8"0"
COPPERCLAD GROUND
RODS SPACED 6"0" APART

CONCRETE
CABINET BASE
TYPE 9

EXISTING GROUND

NO SCALE