THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

MICHIGAN DEPARTMENT OF TRANSPORTATION
ROUTE: VARIOUS
TOWNSHIPS OF SAGINAW, BUENA VISTA, & RICHLAND
COUNTY OF SAGINAW

PLANT INDEX
SHEET NO. DESCRIPTION
1 TITLE SHEET
2 LEGEND SHEET

PLAN INDEX
NO. CS SPOT LOCATION CITY/TWP COUNTY
1 73033-01-001 M-84 (BAY) TITTABAWASSEE SAGINAW SAGINAW
2 73033-01-002 M-84 (BAY) TITABAWASSEE SAGINAW SAGINAW
3 73033-01-003 M-84 (BAY) TITABAWASSEE SAGINAW SAGINAW
4 73033-01-004 M-84 (BAY) McCARTY SAGINAW SAGINAW
5 73033-01-005 M-84 (BAY) TITTABAWASSEE SAGINAW SAGINAW
6 73033-01-006 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
7 73033-01-007 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
8 73033-01-008 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
9 73033-01-009 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
10 73033-01-010 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
11 73033-01-011 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
12 73033-01-012 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
13 73033-01-013 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
14 73033-01-014 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
15 73033-01-015 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
16 73033-01-016 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
17 73033-01-017 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
18 73033-01-018 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
19 73033-01-019 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW
20 73033-01-020 M-84 (BAY) S. TITABAWASSEE SAGINAW SAGINAW

MICHIGAN DEPARTMENT OF TRANSPORTATION
KIRK T. STEUDEL, P.E. - DIRECTOR
APPROVED BY:
MICHIGAN
DEPARTMENT OF TRANSPORTATION

APPROVALS
RECOMMENDED FOR APPROVAL BY:
MICHIGAN DEPARTMENT OF TRANSPORTATION

CONTRACT FOR:
TRAFFIC SIGNAL UPGRADE & INTERCONNECT

DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
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CONTRACT NO.
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DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
DATE: 01/18/11 CS: 73000
CONTRACT NO.
CS: 73000
DATE: 01/18/11 CS: 73000
CONTRACT NO.
GENERAL NOTES

1. All tree trimming required to clear new or salvaged ST., LTO, and T.S. signal st.,s and O.H. ST., LTO, and T.S. signal units shall be included in the bid items and no extra payment shall be made.

2. Existing O.H. & T.S. facilities are not necessarily shown on plans.

3. Install VÖCK files 50 as to not interfere with traffic of future construction stages.

4. All salvaged wood poles shall be files previously installed now on this contract.

5. All traffic street signs such as "no parking", "no standing" etc., shall be transferred from old pole or file to new pole or file at saving location or in close proximity by the contractor.

6. Crossbars shall be removed after all contacts are removed. (Included in the removal of overhead lines).

7. Proposed T.S. shall be put into operation at time of removal of existing T.C. facilities. Contractor shall notify MDOT if unable to maintain T.S. in an operable condition at all times.

8. A minimum clearance of 3'-6" horizontal & 3'-0" vertical must be maintained between proposed facilities & existing O.G. water facilities.

9. Contact local telephone company and MDOT for installation of local telephone company service (interconnect).

10. Contact state agency signal shop (800) 327-3999.


12. Disposal of all traffic signal equipment is included in the removal pay items and shall also include the following: Notification to MDTA that traffic signal equipment is being removed temporary storage of equipment in a dumpster on site (as directed by the engineer), allowing 48 hours to salvage any equipment prior to disposal of any equipment containing environmentally sensitive materials (mercury relay switches for example). Disabling or destruction of all remaining equipment to the satisfaction of the engineer such that it cannot be reused or resold; prior disposal of all remaining equipment.

13. No changes from plans in location of supporting structures, signal head placement or traffic signal equipment is being allowed without prior approval of the Virginia Department of Transportation (VDOT) Traffic and Safety Division. Traffic signals unit in Lansing, 361-1198.

14. Previously included general notes can be found in the special provision for traffic signal work - construction methods (SZN320).

15. The following standard plans are to be used as required in the project:

16. MDOT shall deliver to the Virginia Department of Transportation T.S. cabinet & controller for timing. Contractor shall pick-up cabinet from MDOT when ready for installation.

37. Contractor shall notify property owners of work areas so they can mark and/or relocate utility heads at their own expense.

38. Sawcutting will be incidental to curb & gutter removal pay item.

39. Locating utilities within the construction influence area is the contractor's responsibility. Locating utilities outside the construction influence will be as approved by the engineer and will be paid for as an exploratory investigation, vertical.

MISCELLANEOUS QUANTITIES

The listed items shall apply to all locations directed by the engineer. These items are not detailed or included on the plan sheets.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burial, Type III, High Intensity, Funnel</td>
<td>4 ea</td>
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<tr>
<td>Burial, Type III, High Intensity, Ogee</td>
<td>4 ea</td>
</tr>
<tr>
<td>Lighted Arrow, Type C, Funnel</td>
<td>4 ea</td>
</tr>
<tr>
<td>Lighted Arrow, Type C, Ogee</td>
<td>4 ea</td>
</tr>
<tr>
<td>Sign, Type B, Temp. Prismatic, Funnel</td>
<td>20 sign</td>
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<tr>
<td>Sign, Type B, Temp. Prismatic, Ogee</td>
<td>20 sign</td>
</tr>
<tr>
<td>Plastic Funnel, High Intensity</td>
<td>50 ea</td>
</tr>
<tr>
<td>Plastic Ogee, High Intensity</td>
<td>50 ea</td>
</tr>
<tr>
<td>Sign, Type B, Temp. Prismatic, Funnel</td>
<td>400 sign</td>
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<tr>
<td>Sign, Type B, Temp. Prismatic, Ogee</td>
<td>400 sign</td>
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<tr>
<td>Exploratory Investigation, Vertical</td>
<td>400 ft</td>
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<tr>
<td>Pipe</td>
<td>1 ea</td>
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<tr>
<td>HDPE Contaminated Material Handling &amp; Disposal, 1.4 ton</td>
<td>1.4 ton</td>
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<tr>
<td>Messenger and Core Structure, Funnel</td>
<td>1 Cyd</td>
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<tr>
<td>Power Co. (Inst. Cost to Contractor)</td>
<td>$1,189</td>
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<tr>
<td>Mobilization, Max.</td>
<td>1 LS</td>
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<tr>
<td>Minor Truck Service</td>
<td>1 LS</td>
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<tr>
<td>Flag Control</td>
<td>1 LS</td>
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<tr>
<td>Mobile Attenuator</td>
<td>2 ea</td>
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<tr>
<td>Forces, Protective</td>
<td>300 ft</td>
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<tr>
<td>Sign Covers</td>
<td>6 ea</td>
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<tr>
<td>BR Structures, Concrete, Funnel</td>
<td>1 ea</td>
</tr>
<tr>
<td>BR Structures, Concrete, Ogee</td>
<td>1 ea</td>
</tr>
<tr>
<td>Gutter Box, 6 in</td>
<td>1 ea</td>
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<tr>
<td>Sidewalk, Curb, 4 in</td>
<td>1000 sq ft</td>
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<tr>
<td>Contractor, Shaking, Road Only</td>
<td>1 LS</td>
</tr>
<tr>
<td>Staking P-lum and Extra, One Person</td>
<td>10 hr</td>
</tr>
<tr>
<td>Staking P-lum and Extra, Two Person</td>
<td>20 hr</td>
</tr>
<tr>
<td>Staking P-lum and Extra, Three Person</td>
<td>30 hr</td>
</tr>
<tr>
<td>Utility</td>
<td>Address 1</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------</td>
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<tr>
<td>AT&amp;T</td>
<td>309 S. Washington, Room 525A</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumers Energy</td>
<td>1945 W. Farrell Rd, F23-228</td>
</tr>
<tr>
<td>Transmission</td>
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<tr>
<td>Kochville Township</td>
<td>5851 Mackinaw Rd.</td>
</tr>
<tr>
<td>Saginaw Co. Drain Commissioner</td>
<td>111 S. Michigan Ave.</td>
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<tr>
<td>Buena Vista Township</td>
<td>1180 S. Outer Dr.</td>
</tr>
<tr>
<td>Consumers Energy</td>
<td>2400 Weiss St.</td>
</tr>
<tr>
<td>Gas</td>
<td></td>
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<tr>
<td>Saginaw Intermediate School District</td>
<td>1151 Centurytel Dr, Building A</td>
</tr>
<tr>
<td>Charter Communications Cable</td>
<td>2525 State St.</td>
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<tr>
<td>Consumers Energy</td>
<td>1945 W. Farrell Rd, P12-208A</td>
</tr>
<tr>
<td>Electric Transmission</td>
<td></td>
</tr>
<tr>
<td>Saginaw Valley State University</td>
<td></td>
</tr>
<tr>
<td>NextG Networks, Inc. Telecom</td>
<td>2216 O Toole Ave.</td>
</tr>
<tr>
<td>Saginaw Township</td>
<td>4980 Shattuck Rd.</td>
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<tr>
<td>Consumers Energy</td>
<td>2400 Weiss St.</td>
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<tr>
<td>Electric</td>
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<td>Thomas Township</td>
<td>249 N. Miller Rd.</td>
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<tr>
<td>City of Saginaw</td>
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<tr>
<td>Kentucky Data Link</td>
<td>3701 Communications Way</td>
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<tr>
<td>Pigeon Telephone Company</td>
<td></td>
</tr>
<tr>
<td>Tittabawassee Township</td>
<td></td>
</tr>
<tr>
<td>Verizon Communications</td>
<td></td>
</tr>
</tbody>
</table>
TEST HOLE NO. B-01
LOCATION STATION:
Saginaw, M.I.N 697738.7, E 13159664.0 South Zone
INT 11° 18' N OF CL M-46 (Granite) 85° W OF CL Hemlock Rd
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (4"
Concrete (6"

FILL: Fine to coarse sand, trace silt - brown
very loose to medium dense - moist (SP)

Silty clay, trace fine gravel - gray - hard (CL)
(Qp = 4.5+ taf)

F.O.R. 20.0 ft
W.L. @ 6.0 ft W.D.

NOTES:
1st 6" 2nd 6" 3rd 6"
Numbers in circles denote number of blows required to
drive a 6" O.D., (1.5" I.D.) split spoon sampler 3 successive
6" increments using a 140# hammer falling 30".
Consistency was determined by inspection of samples and
by soil resistance to penetration or by calibrated
penetrometer (Qp).

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.
THE MICHIGAN STATE PLANE SOUTH.
SOIL BORING DATA
NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.

TEST HOLE NO. B-02
LOCATION STATION:
Saginaw, M.I. N 698280.6, E 13210665.0 South Zone
INT 11° 12' N OF CL M-46 (Granite) 83° W OF CL Hemlock Rd
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (3"
Concrete (6"

FILL: Fine sand, trace silt - brown
medium dense - moist (SM)

Silty clay, trace fine gravel - gray - hard (CL)
(Qp = 4.5+ taf)

F.O.R. 20.0 ft
W.L. @ 6.0 ft W.D.

TEST HOLE NO. B-03
LOCATION STATION:
Saginaw, M.I. N 698006.0, E 13159659.0 South Zone
INT 11° 12' N OF CL M-46 (Granite) 83° E OF CL Hemlock Rd
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (3"
Concrete (6"

FILL: Silty sand, trace fine gravel - brown
medium dense - moist (SM)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - stiff to very stiff (CL)
(Qp = 1.25-3.5 taf)

Sandy clay, trace clay - gray - moist (SM)

F.O.R. 20.0 ft
Dry

TEST HOLE NO. B-04
LOCATION STATION:
Saginaw, M.I. N 697666.0, E 13159762.5 South Zone
INT 11° 12' S OF CL M-46 (Granite) 117° E OF CL Hemlock Rd
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (5"

FILL: Fine sand, trace silt - brown
medium dense - moist (SM)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - medium dense - moist (SP)

F.O.R. 20.0 ft
W.L. @ 6.0 ft W.D.

Sandy clay, some silt, trace fine gravel -
gray - hard (CL)
(Qp = 4.5+ taf)
TEST HOLE NO. B-05  
LOCATION STATION: Saginaw, MI. N 698225.0, E 13210421.7 South Zone  
INT #: 31' S of CL M=46/80' W of W curb of driveway  
GROUND SURFACE ELEVATION: (Not obtained)  

Asphalt (3") 
Concrete (9")  
PILL: Silty fine sand - reddish brown - medium dense - moist (SM)  
PILL: Silty clay, little fine to coarse, trace organics - dark gray - very stiff (CL) (Qp = 3.5)  
Silty clay, little fine to coarse sand - brown - very stiff (CL) (Qp = 3.5 taf)  
Silty clay - dark brown - stiff (CL) (Qp = 1.75 taf)  
Silty clay, trace fine to coarse sand - brown - very stiff to stiff (Qp = 3.5 taf to 1.5 taf) (CL)  

BORING DATE 4/1/09  
Dry  

NOTES:  
1st 6"  
2nd 6"  
3rd 6"  

NUMBERS IN CIRCLES DENOTE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. (1.5" I.D.) SPLIT SPOON SAMPLER 3 SUCCESSIVE 6" INCREMENTS USING A 140# HAMMER FALLING 30". CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND BY SOIL RESISTANCE TO PENETRATION OR BY CALIBRATED PENETROMETER (Qp).  

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.  
THE SOIL BORING LOGS REPRESENT POINT INFORMATION.  
PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

TEST HOLE NO. B-06  
LOCATION STATION: Saginaw, MI. N 698310.5, E 13210556.6 South Zone  
INT #: 140' N of CL M=46/19' W of CL M=47  
GROUND SURFACE ELEVATION: (Not obtained)  

Asphalt (3") 
Concrete (9")  
PILL: Clayey sand, trace organics - red - very loose - moist (SC)  
Silty clay - brown - very stiff (CL) (Qp = 3.5 - 2.5 taf)  
Silty clay, trace fine sand - brown - stiff (Qp = 1.5 taf)  
Silty clay, trace fine gravel - very stiff to medium (CL) (Qp = 3.25 - 0.5 taf)  

BORING DATE 4/1/09  
Dry  

TEST HOLE NO. B-07  
LOCATION STATION: Saginaw, MI. N 698274.5, E 13210656.2 South Zone  
INT #: 27' N of CL M=46/131' E of CL M=47  
GROUND SURFACE ELEVATION: (Not obtained)  

Asphalt (3") 
Concrete (10")  
PILL: Fine sand, trace silt - brown - medium dense - moist (SM)  
Clayey silt - brown with orangish oxidation - medium dense - moist (ML)  
Silty clay, trace fine sand - brown - stiff (Qp = 1.5 taf)  
Silty clay, trace fine gravel - very stiff (Qp = 1.75 taf to <0.25 taf)  

BORING DATE 4/2/09  
Dry  

TEST HOLE NO. B-08  
LOCATION STATION: Saginaw, MI. N 698152.5, E 13210532.7 South Zone  
INT #: 40' S of S curb M=46/69' W of driveway curb  
GROUND SURFACE ELEVATION: (Not obtained)  

Asphalt (9")  
PILL: Fine to coarse sand mixed with asphalt, little silt - dark brown to black - medium dense - moist (SM)  
Silty clay - dark brown - very stiff (CL) (Qp = 3.0 taf)  
Silty clay, trace fine to coarse sand - brown - very stiff to stiff (CL) (Qp = 3.5 taf - 1.5 taf)  
Silty clay, trace fine to coarse sand - brown - medium (CL) (Qp = 0.5 taf)  

BORING DATE 4/1/09  
Dry  

SOIL BORING DATA

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
<table>
<thead>
<tr>
<th>TEST HOLE NO. B-09</th>
<th>TEST HOLE NO. B-10</th>
<th>TEST HOLE NO. B-11</th>
<th>TEST HOLE NO. B-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION STATION: Saginaw, MI, 698545.5, E 1321624.6 South Zone INT #3 1/2 of CL M=46 (Gravel)/20W of CL Center Rd</td>
<td>LOCATION STATION: Saginaw, MI, 698545.5, E 1321624.6 South Zone INT #3 1/2 of CL M=46 (Gravel)/20W of CL Center Rd</td>
<td>LOCATION STATION: Saginaw, MI, 698545.5, E 1321624.6 South Zone INT #3 1/2 of CL M=46 (Gravel)/20W of CL Center Rd</td>
<td>LOCATION STATION: Saginaw, MI, 698545.5, E 1321624.6 South Zone INT #3 1/2 of CL M=46 (Gravel)/20W of CL Center Rd</td>
</tr>
<tr>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
<tr>
<td><strong>Asphalt (6&quot;)</strong></td>
<td><strong>Concrete (6&quot;)</strong></td>
<td><strong>Asphalt (6&quot;)</strong></td>
<td><strong>Concrete (6&quot;)</strong></td>
</tr>
<tr>
<td>Silty clay, trace fine gravel - gray - stiff (Qp = 1.5 taf)</td>
<td>Silty clay, trace fine gravel - gray - stiff (Qp = 1.5 taf)</td>
<td>Silty clay, trace fine gravel - gray - stiff (Qp = 1.5 taf)</td>
<td>Silty clay, trace fine gravel - gray - stiff (Qp = 1.5 taf)</td>
</tr>
<tr>
<td>Silty clay, trace fine gravel - brown - hard to very stiff (Qp = 4.5 - 4.5 taf)</td>
<td>Silty clay, trace fine gravel - brown - hard to very stiff (Qp = 4.5 - 4.5 taf)</td>
<td>Silty clay, trace fine gravel - brown - hard to very stiff (Qp = 4.5 - 4.5 taf)</td>
<td>Silty clay, trace fine gravel - brown - hard to very stiff (Qp = 4.5 - 4.5 taf)</td>
</tr>
<tr>
<td>BORING DATE: 4/1/09 Dry</td>
<td>E.O.R. 20.0 ft</td>
<td>BORING DATE: 3/31/09 Dry</td>
<td>E.O.R. 20.0 ft</td>
</tr>
</tbody>
</table>

**NOTES:**

- Numbers in circles denote number of blows required to drive a 2" O.D. (1.5" I.D.) SPLIT TROCH SAMPLER 3 consecutive 6" increments using a 140# hammer falling 30°. Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).
- Water levels may be influenced by residual boring water.
- The soil boring logs represent point information.
- Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.

**SOIL BORING DATA**

<table>
<thead>
<tr>
<th>DATE</th>
<th>CONT SEC</th>
<th>JOB NO</th>
<th>DESIGN</th>
<th>SHEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/28/09</td>
<td>73900</td>
<td>105391A</td>
<td>Bay City TSC</td>
<td>7</td>
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</tbody>
</table>
TEST HOLE NO. B-13
LOCATION STATION:
Saginaw, MI, N 698185.45, E 13219399.4 South Zone
INT #: 297 of CL M-46 (Granite)/800' of CL Country Club Dr
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (4")
FILL: Silty clay, little fine to coarse sand, trace
organic - black - very stiff (CL) (Qp = 2.5 tsf)
FILL: Silty clay, some fine to coarse sand -
brown - stiff (CL) (Qp = 1.25 tsf)
FILL: Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 3.5 tsf)
FILL: Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 2.0 tsf)
FILL: Aggregate Base
FILL: Clayey fine to medium sand - brown -
loose - moist (SC)
Silty clay, little fine to coarse sand, trace
fine gravel - brown - hard (CL) (Qp = 4.5+ +
tsf )
Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 4.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to stiff (CL) (Qp =
4.5+ - 2.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - hard to very stiff
(CL) (Qp = 4.5+ - 2.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.25 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.75 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 2.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 3.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 3.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 4.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 4.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 5.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 5.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 6.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 6.5 tsf)

BORING DATE 4/6/09
Dry

TEST HOLE NO. B-14
LOCATION STATION:
Saginaw, MI, N 698334.86, E 13219441.8 South Zone
INT #: 298 of CL M-46 (Granite)/800' of CL Country Club Dr
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (3")
FILL: Silty clay, little fine to coarse sand, trace
organic - dark gray - very stiff (CL) (Qp =
3.25 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 2.5 - 4.5+ tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 3.5 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 2.0 tsf)

BORING DATE 4/6/09
Dry

TEST HOLE NO. B-15
LOCATION STATION:
Saginaw, MI, N 698335.8, E 13219575.3 South Zone
INT #: 299 of CL M-46 (Granite)/900' of Island GpView Dr
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (4")
FILL: Aggregate Base
FILL: Clayey fine to medium sand - brown -
loose - moist (SC)
Silty clay, little fine to coarse sand, trace
fine gravel - brown - hard (CL) (Qp = 4.5+ +
tsf )
Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 4.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to stiff (CL) (Qp =
4.5+ - 2.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - hard to very stiff
(CL) (Qp = 4.5+ - 2.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.25 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.75 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 2.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 3.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 3.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 4.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 4.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 5.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 5.5 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 6.0 tsf)
Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 6.5 tsf)

BORING DATE 4/7/09
Dry

TEST HOLE NO. B-16
LOCATION STATION:
Saginaw, MI, N 698592.01, E 13216487.2 South Zone
INT #: 300 of CL M-46 (Granite)/190' of CL Country Club Dr
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (3.5")
FILL: Silty fine to coarse sand and gravel -
brown - medium dense - moist (SM)
Silty clay, trace fine to coarse sand - brown -
loose - moist (SC)
Silty clay, trace fine to coarse sand - brown -
hard (CL) (Qp = 1.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard (CL) (Qp =
4.5+ - 4.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to stiff (CL) (Qp =
4.5+ - 4.5 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard to very stiff
(CL) (Qp = 4.5+ - 5.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - hard to very stiff
(CL) (Qp = 4.5+ - 5.5 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.75 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 2.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 3.5 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 3.5 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 4.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 5.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 5.5 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 6.0 tsf)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 4.5+ - 6.5 tsf)

BORING DATE 4/6/09
Dry

NOTES:
1st 6"  2nd 6"  3rd 6"

NUMBERS IN CIRCLES DENOTE NUMBER OF BOWLS REQUIRED TO
DRIVE A 2" O.D. (1.5" ID) SPLIT SPOON SAMPLER 3 SUCCESSIVE
6" INCREMENTS USING A 140# HAMMER FALLING 30".
CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND
BY SOIL RESISTANCE TO PENETRATION OR BY CALIBRATED
PENETROMETER (Qp).

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.
THE SOIL BORING LOGS REPRESENT POINT INFORMATION.
PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT
SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER
THAN THE EXACT LOCATION OF THE BORING.

SOIL BORING DATA
NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
<table>
<thead>
<tr>
<th>Test Hole No.</th>
<th>Location Station</th>
<th>G.S.E. Elevation (Not Obtained)</th>
<th>Soil Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-17</td>
<td>Saginaw, MI 698305.7, E 13248332.7 South Zone INT #5-124N of DL M-46 (Holland)/134W of CL Outer Dr</td>
<td>Asphalt (4&quot;)</td>
<td>Silty clay, little fine to coarse sand, trace fine gravel - gray - medium (CL) (Qp = 4.5 taf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concrete (6&quot;)</td>
<td>Silty clay, little fine to coarse sand - brown - stiff (CL) (Qp = 2.5 taf)</td>
<td></td>
</tr>
<tr>
<td>B-18</td>
<td>Saginaw, MI 698305.7, E 13248332.7 South Zone INT #5-124N of DL M-46 (Holland)/134W of CL Outer Dr</td>
<td>Asphalt (4&quot;)</td>
<td>Silty clay, little fine to coarse sand - brown - stiff (CL) (Qp = 2.5 taf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concrete (6&quot;)</td>
<td>Silty clay, little fine to coarse sand - brown - to medium (CL) (Qp = 4.5-3 taf)</td>
<td></td>
</tr>
<tr>
<td>B-19</td>
<td>Saginaw, MI 698305.7, E 13248332.7 South Zone INT #5-124N of DL M-46 (Holland)/134W of CL Outer Dr</td>
<td>Concrete (6&quot;)</td>
<td>Silty clay, little fine to coarse sand - brown - to medium (CL) (Qp = 4.5-3 taf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asphalt (4&quot;)</td>
<td>Silty clay, little fine to coarse sand - brown - to medium (CL) (Qp = 4.5-3 taf)</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- 1st 6" 2nd 6" 3rd 6"
- Numbers in circles denote number of blows required to drive a 2" o.d., 1.5" i.d., split spoon sampler 3 successive 6" increments using a 14" hammer falling 30".
- Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).
- Water levels may be influenced by residual boring water.
- The soil boring logs represent point information.
- Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.
<table>
<thead>
<tr>
<th>TEST HOLE NO. B-21</th>
</tr>
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<tbody>
<tr>
<td>LOCATION STATION: Saginaw, M.I. N 683957.7, E 1321959.3 South Zone</td>
</tr>
<tr>
<td>INT #6-33 of S Curb M=46 (Williams)/17`W of CL Hamilton</td>
</tr>
<tr>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FILL</th>
<th>Asphalt (6&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Aggregate Base</td>
</tr>
<tr>
<td>FILL: Silty fine to coarse sand and gravel, little organics, trace clay - dark brown to black - loose - moist (SM)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, trace fine gravel - brown - very stiff (CL) (Qp = 3.0 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - hard to very stiff (CL) (Qp = 4.5+ - 2.5 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - stiff to medium (CL) (Qp = 1.0 - 0.75 taf)</td>
<td></td>
</tr>
<tr>
<td>BORING DATE 4/7/09</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEST HOLE NO. B-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION STATION: Saginaw, M.I. N 697450.1, E 13228975.9 South Zone</td>
</tr>
<tr>
<td>INT #6-32 of N Curb M=46 (Williams)/43`W of CL Hamilton</td>
</tr>
<tr>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FILL</th>
<th>Asphalt (2&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Concrete (1&quot;)</td>
</tr>
<tr>
<td>FILL: Silty fine to medium sand, little organics, trace clay - dark brown to black - loose - moist (SM)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, little fine to coarse sand - brown - very stiff (CL) (Qp = 2.75 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - hard to very stiff (CL) (Qp = 4.5+ - 2.5 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - gray - stiff to soft (CL) (Qp = 1.25 - 0.25 taf)</td>
<td></td>
</tr>
<tr>
<td>BORING DATE 4/7/09</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
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</tbody>
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<table>
<thead>
<tr>
<th>TEST HOLE NO. B-23 (NOT DRILLED)</th>
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</thead>
<tbody>
<tr>
<td>LOCATION STATION: Saginaw, M.I. N 697199.6, E 13226047.9 South Zone</td>
</tr>
<tr>
<td>INT #6-31N of S Curb M=46 (Williams)/59`E of CL Hamilton</td>
</tr>
<tr>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FILL</th>
<th>Concrete and Asphalt (6&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>FILL: Silty clay, some organics - dark brown to black - medium (CL) (Qp = 0.75 taf)</td>
</tr>
<tr>
<td>Silty clay, little fine to coarse sand - brown - very stiff (CL) (Qp = 3.5 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - hard (CL) (Qp = 4.5+ - 4.0 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - stiff to medium (CL) (Qp = 1.75-0.5 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - gray - very soft (CL) (Qp=0.25 taf)</td>
<td></td>
</tr>
<tr>
<td>BORING DATE 4/7/09</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
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</tbody>
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<table>
<thead>
<tr>
<th>TEST HOLE NO. B-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION STATION: Saginaw, M.I. N 697199.6, E 13226047.9 South Zone</td>
</tr>
<tr>
<td>INT #6-31N of S Curb M=46 (Williams)/59`E of CL Hamilton</td>
</tr>
<tr>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FILL</th>
<th>Concrete and Asphalt (6&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>FILL: Silty clay, some organics - dark brown to black - medium (CL) (Qp = 0.75 taf)</td>
</tr>
<tr>
<td>Silty clay, little fine to coarse sand - brown - very stiff (CL) (Qp = 3.5 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - hard (CL) (Qp = 4.5+ - 4.0 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - stiff to medium (CL) (Qp = 1.75-0.5 taf)</td>
<td></td>
</tr>
<tr>
<td>Silty clay, some fine to coarse sand, trace fine gravel - gray - very soft (CL) (Qp=0.25 taf)</td>
<td></td>
</tr>
<tr>
<td>BORING DATE 4/7/09</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

1st 6"  
2nd 6"  
3rd 6"  

Numbers in circles denote number of blows required to drive a 2' O.D. (1.5' I.D.) split spoon sampler 3 successive 6" increments using a 14# hammer falling 30". Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

Water levels may be influenced by residual boring water.

The soil boring logs represent point information. Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.
### TEST HOLE NO. B-29
**Location Station:** Saginaw, MI  (GPS coordinates not obtained)
**Int #:** 8-36% of N Cut M=58 (Davenport)/86W of CL M=84 (Bay)
**Ground Surface Elevation:** (Not obtained)

<table>
<thead>
<tr>
<th>Boring Date</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/18/09</td>
<td>Dry</td>
</tr>
</tbody>
</table>

**Notes:**
- Numbers in circles denote number of blows required to drive a 2" O.D. (1.5" I.D.) split spoon sampler. 3 successive 6" increments using a 140# hammer falling 30".
- Consistency determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

### TEST HOLE NO. B-30
**Location Station:** Saginaw, MI  (GPS coordinates not obtained)
**Int #:** 8-36% of N Cut M=58 (Davenport)/92W of CL M=84 (Bay)
**Ground Surface Elevation:** (Not obtained)

<table>
<thead>
<tr>
<th>Boring Date</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/26/09</td>
<td>Dry</td>
</tr>
</tbody>
</table>

**Notes:**
- Numbers in circles denote number of blows required to drive a 2" O.D. (1.5" I.D.) split spoon sampler. 3 successive 6" increments using a 140# hammer falling 30".
- Consistency determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

### TEST HOLE NO. B-31
**Location Station:** Saginaw, MI  (GPS coordinates not obtained)
**Int #:** 8-40% of S Cut M=58 (Davenport)/92E of CL M=84 (Bay)
**Ground Surface Elevation:** (Not obtained)

<table>
<thead>
<tr>
<th>Boring Date</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/16/09</td>
<td>Dry</td>
</tr>
</tbody>
</table>

**Notes:**
- Numbers in circles denote number of blows required to drive a 2" O.D. (1.5" I.D.) split spoon sampler. 3 successive 6" increments using a 140# hammer falling 30".
- Consistency determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

### TEST HOLE NO. B-32
**Location Station:** Saginaw, MI  (GPS coordinates not obtained)
**Int #:** 8-40% of S Cut M=58 (Davenport)/92E of CL M=84 (Bay)
**Ground Surface Elevation:** (Not obtained)

<table>
<thead>
<tr>
<th>Boring Date</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/20/09</td>
<td>Dry</td>
</tr>
</tbody>
</table>

**Notes:**
- Numbers in circles denote number of blows required to drive a 2" O.D. (1.5" I.D.) split spoon sampler. 3 successive 6" increments using a 140# hammer falling 30".
- Consistency determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).
TEST HOLE NO. B-37
LOCATION STATION: Saginaw, M. N. 711171.4, E 13227253.7 South Zone INT #: 74’ 5” of CL Shattuck / 20’ E of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)
Asphalt (2’)
Concrete (8’)
FILL: Silty fine to coarse sand - brown - medium dense - wet (SM)
WOOD
Silty clay, some fine to coarse sand, trace fine gravel - brown - very stiff to hard (CL) (Qp = 2.5 - 4.5 taf)
Silty clay, some fine to coarse sand, trace fine gravel - gray - hard to very stiff (CL) (Qp = 4.5±2.5 taf)
Silty clay, some fine to coarse sand, trace fine gravel - gray - stiff (CL) (Qp = 1.75 taf)
BORING DATE: 5/20/09
Dry

TEST HOLE NO. B-38
LOCATION STATION: Saginaw, M. N. 711211.3, E 13227114.0 South Zone INT #: 29’5” of CL Shattuck / 89’W of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)
Asphalt (9’)
FILL: Fine sand, trace silt - light brown - medium dense to loose - moist (SP)
Silty clay, trace fine gravel - brown - hard to very stiff (CL) (Qp = 4.5±3.0 taf)
Silty clay, trace fine gravel - brown - stiff (CL) (Qp = 1.5 taf)
BORING DATE: 5/27/09
Dry

TEST HOLE NO. B-39
LOCATION STATION: Saginaw, M. N. 711357.3, E 13227166.4 South Zone INT #: 106’ of CL Shattuck / 46’W of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)
Asphalt (6’)
FILL: Fine sand, little fine gravel - brown - loose - moist (SP)
FILL: Sandy clay, trace fine gravel, petroleum odor noted - gray - very stiff (CL) (Qp = 2.0 taf)
Silty clay, trace fine gravel - brown - hard to very stiff (CL) (Qp = 4.5±2.5 taf)
Silty clay, trace fine gravel - brown - stiff (CL) (Qp = 1.5 taf)
BORING DATE: 5/25/09
Dry

TEST HOLE NO. B-40
LOCATION STATION: Saginaw, M. N. 705216.4, E 13227322.2 South Zone INT #: 27’5” of CL Shattuck / 62’ E of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)
Asphalt (6’)
FILL: Fine to coarse sand, some fine gravel, little silt (recycled asphalt) - dark brown to black - medium dense - moist (SP)
FILL: Silty clay, little fine gravel - dark brown - very stiff (CL) (Qp = 2.75 taf)
Silty clay, trace fine gravel - brown - hard to very stiff (CL) (Qp = 4.5±2.75 taf)
Silty clay, trace fine gravel - brown - stiff (CL) (Qp = 1.5 taf)
BORING DATE: 5/27/09
Dry

NOTES:
1st 6’
2nd 6’
3rd 6’

Numbers in circles denote number of blows required to drive a 2” O.D. (1.5’ I.D.) split spoon sampler 3 successive 6” increments using a 140# hammer falling 30°. Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

Water levels may be influenced by residual boring water.
The soil boring logs represent point information.
Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.

MDOT
Michigan Department of Transportation

SOIL BORING DATA

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
<table>
<thead>
<tr>
<th>Test Hole No.</th>
<th>Location Station</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-41</td>
<td>Saginaw, Mi. N 7135318.6, E 133227010.5 South Zone INT #11: 14% of CL Enterprise/100 W of CL M-84 (Bay) GROUND SURFACE ELEVATION: (Not obtained)</td>
<td></td>
</tr>
<tr>
<td>B-42</td>
<td>Saginaw, Mi. N 7135318.8, E 133227009.0 South Zone INT #11: 14% of CL Enterprise/100 W of CL M-84 (Bay) GROUND SURFACE ELEVATION: (Not obtained)</td>
<td></td>
</tr>
<tr>
<td>B-43</td>
<td>Saginaw, Mi. N 7135356.4, E 133227155.9 South Zone INT #11: 86 N of CL Enterprise/45 W of CL M-84 (Bay) GROUND SURFACE ELEVATION: (Not obtained)</td>
<td></td>
</tr>
<tr>
<td>B-44</td>
<td>Saginaw, Mi. N 7135381.3, E 133227204.4 South Zone INT #11: 22% of CL Enterprise/56 W of E Curb M-84 (Bay) GROUND SURFACE ELEVATION: (Not obtained)</td>
<td></td>
</tr>
</tbody>
</table>

**Asphalt (6")**
- Fill: Silty clay, fine to coarse sand, trace fine gravel - hard (CL) (Op = 4.5 - 4.5 taf)
- Boring Date 3/25/09 Dry

**Concrete (6")**
- Silty clay, fine to coarse sand, trace fine gravel - hard (CL) (Op = 4.25 - 2.5 taf)
- Boring Date 3/25/09 Dry

**Silt (5")**
- Fill: Silty clay, fine to coarse sand, gray - very stiff (CL) (Op = 2.5 taf)
- Silty clay, fine to coarse sand - brown - stiff (CL) (Op = 1.0 taf)
- Boring Date 3/23/09 Dry

**Silt (4")**
- Silty clay, fine to coarse sand - brown, fine to medium sand - brownish gray - loose - moist (SC)
- Clayey fine to medium sand - brownish gray - loose - moist (SC)

**Silt (3")**
- Silty clay, fine to coarse sand, trace fine gravel - hard (CL) (Op = 4.5 - 4.5 taf)
- Silty clay, fine to coarse sand, trace fine gravel - hard to very stiff (CL) (Op = 4.5 - 2.5 taf)
- Boring Date 3/25/09 Dry

**Silt (2")**
- Silty clay, trace fine gravel - light brown - hard to very stiff (CL) (Op = 1.0 taf)

**Silt (1")**
- Silty clay, trace fine gravel - light brown - hard to very stiff (CL) (Op = 1.0 taf)

**Silt (0")**
- Silty clay, trace fine gravel - light brown - hard to very stiff (CL) (Op = 1.0 taf)

**SOIL BORING DATA**

<table>
<thead>
<tr>
<th>DATE</th>
<th>CONT SEC</th>
<th>FOR NO</th>
<th>DESIGN</th>
<th>SHEET</th>
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<td>73900</td>
<td>105391A</td>
<td>MDOT City TSC</td>
<td>15</td>
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**NOTES:**
- Numbers in circles denote number of blows required to drive a 2" o.d. (1-1/4" i.d.) split spoon sampler 3 successive 6" increments using a 140# hammer falling 30". Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Op).
- Water levels may be influenced by residual boring water.
- The soil boring logs represent point information.
- Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.
- Coordinates are based on Michigan State Plane South.
TEST HOLE NO. B-45
LOCATION STATION: Saginaw, Mi. N 711333.3, E 13222780.3 South Zone
INT #12: 19° 5' of CL McCarty / 105° W of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (6")
FILL: Silty fine to coarse sand, some recycled asphalt – dark brown to black – medium dense – moist (SM)
FILL: Silty clay – gray – very stiff (CL) (Qp = 2.75 taf)

Silty clay, trace fine gravel – brown – hard to very stiff (CL) (Qp = 4.5+ – 2.5 taf)

BORING DATE 3/29/09
Dry

TEST HOLE NO. B-46
LOCATION STATION: Saginaw, Mi. N 716800.0, E 13222764.2 South Zone
INT #12: 77.5 of CL McCarty / 45° W of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (6")
FILL: Fine sand, little fine gravel – brown – loose – moist (SP)

Sandy clay – brown – stiff (CL) (Qp = 1.75 taf)

Silty clay, trace fine gravel – brown – hard to very stiff (CL) (Qp = 4.5+ – 3.0 taf)

BORING DATE 3/25/09
Dry

TEST HOLE NO. B-47
LOCATION STATION: Saginaw, Mi. N 716497.3, E 13222798.6 South Zone
INT #12: 78.5 of CL McCarty / 89° E of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (6")
FILL: Silty fine to coarse sand, little fine gravel – brown – medium dense to loose – moist (SM)

Silty clay, trace fine gravel – brown – hard to very stiff (CL) (Qp = 4.5+ – 2.5 taf)

BORING DATE 3/29/09
Dry

TEST HOLE NO. B-48
LOCATION STATION: Saginaw, Mi. N 716450.3, E 13222744.6 South Zone
INT #12: 78.5 of CL McCarty / 45° W of CL M-84 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (5")
FILL: Silty clay, some fine to coarse sand, trace fine gravel, trace organics – brown – very stiff (CL) (Qp = 2.25 – 3.0 taf)

Silty clay, some fine to coarse sand, trace fine gravel – brown – hard (CL) (Qp = 4.5+ taf)

Silty clay, some fine to coarse sand, trace fine gravel – gray – hard to very stiff (CL) (Qp = 4.5+ – 5.0 taf)

Silty clay, some fine to coarse sand, trace fine gravel – gray – stiff (CL) (Qp = 1.5 taf)

BORING DATE 3/23/09
Dry

NOTES:
1st 6" 2nd 6" 3rd 6"

NUMBERS IN CIRCLES DENOTE NUMBER OF BOWS REQUIRED TO DRIVE A 2" O.D. (1.5" ID.) SPLIT SPOON SAMPLER 3 SUCCESSIVE 6" INCREMENTS USING A 140# HAMMER FALLING 30". CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND BY SOIL RESISTANCE TO PENETRATION OR BY CALIBRATED PENETROMETER (Qp).

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.

THE SOIL BORING LOGS REPRESENT POINT INFORMATION.

PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

SOIL BORING DATA

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH. 

DATE 04/28/09
73900
105391A
Bay City TSC
MDOT

04/28/09
TEST HOLE NO. B-52
LOCATION STATION:
Saginaw, M. I. 719-54.2, E 13227289.5 South Zone
INT #13: 20' N of CL Schuett / 65' E of CL M-B4 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

TEST HOLE NO. B-53
LOCATION STATION:
Saginaw, M. I. 720056.9, E 13227232.2 South Zone
INT #144.2' of Curb Fash, Sq. Wall Dr./42'E of CL M-B4 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

TEST HOLE NO. B-54
LOCATION STATION:
Saginaw, M. I. 720105.0, E 13227103.7 South Zone
INT #144.18' of Island Fash, Wall Dr./399' W of CL Bay M-B4 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

TEST HOLE NO. B-55
LOCATION STATION:
Saginaw, M. I. 720232.8, E 13227162.6 South Zone
INT #144.97' of Island Fash, Wall Dr./333' of CL M-B4 (Bay)
GROUND SURFACE ELEVATION: (Not obtained)

Concrete (10")
FILL: Fine sand, trace silt - dark brown -
medium dense - moist (SP)
FILL: Silty clay, little fine to coarse sand, little
fine gravel, trace organics - brown - very
stiff (CL) (Qp = -2.0 tef)

Asphalt (8")
FILL: Sand and Gravel (Aggregate Base)
FILL: Silty clay, some fine to coarse sand -
brown - very stiff to stiff (CL) (Qp = 2.5 -
1.0 tef)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard (CL) (Qp = 4.5+
1.0 tef)

Asphalt (3")
FILL: Sand and Gravel (Aggregate Base)
FILL: Silty clay, little fine to medium sand -
greenish gray - stiff (CL) (Qp = 1.5 tef)

Silty clay, some fine to coarse sand, trace
fine gravel - brown - hard (CL) (Qp = 4.5+
1.0 tef)

Silty clay, some fine to coarse sand, trace
fine gravel - gray - stiff (CL) (Qp = 1.5 tef)

Silty clay, some fine to coarse sand, trace fine
gravel - light brown -
hard to very stiff (CL) (Qp = 4.5+
2.25 tef)

Boring Date: 3/29/09
Dry

Boring Date: 3/23/09
Dry

Boring Date: 3/23/09
Dry

Boring Date: 3/24/09
Dry

NOTES:

1st 6" 2nd 6" 3rd 6"

Numbers in circles denote number of blows required to
drive a 2" O.D. (1.5" I.D.) SPLIT SPOON SAMPLER 3 SUCCESSIVE
6" INCREMENTS USING A 140# HAMMER FALLING 20'.
CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND
BY SOIL RESISTANCE TO PENETRATION OR BY CALIBRATED
PENDETOMETER (Qp).

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.

THE SOIL BORING LOGS REPRESENT POINT INFORMATION.
PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT
SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER
THAN THE EXACT LOCATION OF THE BORING.

SOIL BORING DATA

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
<table>
<thead>
<tr>
<th>Location Station</th>
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<th>Test Hole No.</th>
<th>Test Hole No.</th>
<th>Test Hole No.</th>
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<td>Saginaw, M. N 721811.8, E 13227060.4 South Zone</td>
<td>105391A</td>
<td>105391A</td>
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<td>INT #15: 36% of CL Tituswasses/10% of CL M-84 (Bay)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
</tbody>
</table>

**Test Hole No. B-56**

- **Location Station:** Saginaw, M. N 720160.5, E 13227284.8 South Zone
- **Int #15: 1421% of inland flood, Moll Cl/CL of CL M-84 (Bay)**
- **Ground Surface Elevation:** (Not obtained)

**Fill:** Sand and Gravel (Aggregate Base)

- Silty clay, some fine to coarse sand - greenish gray - very stiff (CL) (Qp = 2.5 tcf)
- Silty clay, some fine to coarse sand, trace fine gravel - brown - very stiff to hard (CL) (Qp = 2.5 - 4.5+ tcf)
- Silty clay, some fine to coarse sand, trace fine gravel - gray - very stiff to stiff (CL) (Qp = 3.75 - 4.5+ tcf)

**Boring Date:** 3/23/09

**Drill:** E.O.R. 20.0 ft

**Notes:** 1st 6", 2nd 6", 3rd 6" numbers in circles denote number of blows required to drive a 2" O.D. (1 1/2" I.D.) split spoon sampler 3 successive 6" increments using a 140# hammer falling 30°. Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

**Water Levels:** May be influenced by residual boring water.

**The soil boring logs represent point information.**

**Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.**

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**Test Hole No. B-57**

- **Location Station:** Saginaw, M. N 721994.5, E 13227161.3 South Zone
- **Int #15: 132% of CL Tituswasses/43% of CL M-84 (Bay)**
- **Ground Surface Elevation:** (Not obtained)

**Fill:** Fine sand, trace silt - light brown - loose - moist (SP)

- Silty clay - brown with orange motting - very stiff (CL) (Qp = 2.5 tcf)
- Silty clay, trace fine gravel - brown - hard to very stiff (CL) (Qp = 4.5+ - 4.5+ tcf)

**Boring Date:** 3/24/09

**Drill:** E.O.R. 20.0 ft

**Notes:** 1st 6", 2nd 6", 3rd 6" numbers in circles denote number of blows required to drive a 2" O.D. (1 1/2" I.D.) split spoon sampler 3 successive 6" increments using a 140# hammer falling 30°. Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

**Water Levels:** May be influenced by residual boring water.

**The soil boring logs represent point information.**

**Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.**

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**Test Hole No. B-58**

- **Location Station:** Saginaw, M. N 721873.7, E 13227303.4 South Zone
- **Int #15: 52% of CL Tituswasses/10% of CL M-84 (Bay)**
- **Ground Surface Elevation:** (Not obtained)

**Fill:** Silty fine to coarse sand - dark brown - medium dense - moist (SM)

- Sandy clay, little fine gravel - brown - stiff to hard (CL) (Qp = 1.0 - 4.0 tcf)
- Clayey sand, some fine gravel - brown - hard (CL) (Qp = 4.5+ tcf)

**Boring Date:** 3/29/09

**Drill:** E.O.R. 20.0 ft

**Notes:** 1st 6", 2nd 6", 3rd 6" numbers in circles denote number of blows required to drive a 2" O.D. (1 1/2" I.D.) split spoon sampler 3 successive 6" increments using a 140# hammer falling 30°. Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

**Water Levels:** May be influenced by residual boring water.

**The soil boring logs represent point information.**

**Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.**

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**Test Hole No. B-59**

- **Location Station:** Saginaw, M. N 721811.8, E 13227060.4 South Zone
- **Int #15: 36% of CL Tituswasses/10% of CL M-84 (Bay)**
- **Ground Surface Elevation:** (Not obtained)

**Fill:** Fine sand, trace silt - light brown - medium dense - moist (SP)

- Silty clay, little fine gravel, STRONG FERROMAGNETIC OXIDE NODULD - light brown - stiff (CL) (Qp = 1.0 tcf)
- Silty clay, some fine gravel - brown - hard (CL) (Qp = 4.5+ tcf)

**Boring Date:** 3/24/09

**Drill:** E.O.R. 20.0 ft

**Notes:** 1st 6", 2nd 6", 3rd 6" numbers in circles denote number of blows required to drive a 2" O.D. (1 1/2" I.D.) split spoon sampler 3 successive 6" increments using a 140# hammer falling 30°. Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp).

**Water Levels:** May be influenced by residual boring water.

**The soil boring logs represent point information.**

**Presentation of this information in no way implies that subsurface conditions are the same at locations other than the exact location of the boring.**

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**Soil Boring Data**

- **Date:** 04/28/09
- **Cont. Sec.:** 73900
- **Job No.:** 105391A
- **Design Unit:** Bay City TSC
- **MDOT:** Michigan Department of Transportation
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<td>Saginaw, MI. N 721776.2, E 13227241.9 South Zone</td>
<td>Saginaw, MI. N 705996.3, E 13233583.8 South Zone</td>
<td>Saginaw, MI. N 706103.0, E 13233600.9 South Zone</td>
<td>Saginaw, MI. N 705994.2, E 13233703.2 South Zone</td>
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<tr>
<td>INT #16: 52'5 of S Currie St (N=58) to 88'W of E Currie St</td>
<td>INT #16: 23' of S Currie St (N=58) to 88'W of E Currie St</td>
<td>INT #16: 45' of N Currie St (N=58) to 30'W of E Currie St</td>
<td>INT #16: 20' of Currie St (N=58) to 84'W of W Currie St</td>
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<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
<td>GROUND SURFACE ELEVATION: (Not obtained)</td>
</tr>
</tbody>
</table>

**Asphalt (8'')**
- FILL: Sandy clay, little fine gravel - brown - very stiff (CL) (Qp = 3.0 taf)
- FILL: Clayey sand, some silt, trace of water - medium dense - moist (SC)
- Sandy clay - brown - hard (CL) (Qp = 4.5+ taf)

**Asphalt (3'')**
- FILL: Sand and Gravel (Aggregate Base)
- Silty clay, some fine to coarse sand, trace of muddy gravel - brown - very stiff to hard (CL) (Qp = 2.0 - 4.5+ taf)
- Silty clay, some fine to coarse sand, trace of muddy gravel - gray - very stiff to hard (CL) (Qp = 1.75-2.5 taf)

**Concrete (10'')**
- FILL: Fine sand, trace silt - reddish brown - loose - moist (SP)
- Silty clay, trace fine to coarse sand, trace of muddy gravel - brown - hard (CL) (Qp = 4.5 taf)
- Silty clay, trace fine to coarse sand, trace of muddy gravel - gray - very stiff to hard (CL) (Qp = 4.25 - 3.75 taf)
- Silty clay, trace fine to coarse sand, trace of muddy gravel - gray - very stiff to hard (CL) (Qp = 2.5 - 1.0 taf)

**Asphalt (3'')**
- FILL: Sandy clay, little fine gravel - brown - hard to very stiff (CL) (Qp = 4.5+ - 2.5 taf)
- Silty clay, some fine to coarse sand, trace of muddy gravel - gray - very stiff to hard (CL) (Qp = 1.75-0.75 taf)
- Silty clay, trace fine to coarse sand, trace of muddy gravel - gray - very stiff to hard (CL) (Qp = 0.75-0.5 taf)

**SOIL BORING DATA**

- **NOTES:** Numbers in circles denote number of blows required to drive a 2" O.D. (1.5" I.D.) Split Spoon Sampler 3 successive 6" increments using a 140# hammer falling 30". Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated Penetrometer (Qp).
- **WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.**
- **THE SOIL BORING LOGS REPRESENT POINT INFORMATION.**
- **PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING**

**COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.**

**SOIL BORING DATA**

- **DATE:** 04/28/09
- **CONTRACT:** 73900
- **JOB NO:** 105391A
- **DESIGN UNIT:** Bay City TSC
- **USERS:** 20
TEST HOLE NO. B-64
LOCATION STATION:
Saginaw, M. N. 705939.1, E 13233637.1 South Zone
INT 163°30' to 3 Curb State St (N=66/(21) 1/2 of Curb Hill St
GROUND SURFACE ELEVATION: (Not obtained)

FILL: Sandy clay, some silt, some fine gravel
- brown - very stiff (CL) (Op = 3.4 taf)
Silty clay - brown - very stiff (CL) (Op = 3.0 taf)
Silty clay, trace fine gravel - brown - hard (CL) (Op = 4.0 taf)
Silty clay, trace fine gravel - brown - stiff to medium (CL) (Op = 1.5-0.5 taf)

BORING DATE 3/31/09
Dry

TEST HOLE NO. B-65
LOCATION STATION:
Saginaw, M. N. 705972.5, E 13234234.6 South Zone
INT 17.22' to N Curb State St (N=58)/(98)' of CL Wish Ave
GROUND SURFACE ELEVATION: (Not obtained)

Asphalt (3")
Concrete (9")
FILL: Fine to medium sand - brown - loose - moist (SP)
Silty clay, some fine to coarse sand, trace fine gravel - brown - hard (CL) (Op = 4.5 taf)
Silty clay, some fine to coarse sand, trace fine gravel - gray - very stiff to stiff (CL) (Op = 3.5 - 1.0 taf)
Silty clay, some fine to coarse sand, trace fine gravel - gray - medium (CL) (Op = 0.5 taf)

BORING DATE 3/19/09
Dry

TEST HOLE NO. B-66 (NOT DRILLED)

Concrete (9")
FILL: Fine to medium sand, trace silt - medium dense - moist (SP)
Silty clay, some fine to coarse sand, trace fine gravel - brown - loose - moist (SM)
Silty clay, some fine to coarse sand, trace fine gravel - brown - hard (CL) (Op = 4.0-4.5 taf)
Silty clay, some fine to coarse sand, trace fine gravel - gray - very stiff (CL) (Op = 2.75-2.25 taf)

BORING DATE 3/19/09
Dry

TEST HOLE NO. B-67
LOCATION STATION:
Saginaw, M. N. 705997.5, E 13234371.7 South Zone
INT 17.21' to Curb State St (N=6725 rumpy/(90)' of Wish Ave Curb
GROUND SURFACE ELEVATION: (Not obtained)

NOTES:

1st 6" 2nd 6" 3rd 6"

NUMBERS IN CIRCLES DENOTE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. (1.5" I.D.) SPLIT SPOON SAMPLER 3 SUCCESSIVE 6" INCREMENTS USING A 14# HAMMER FALLING 30".
CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND BY SOIL RESISTANCE TO PENETRATION OR BY CALIBRATED PENETROMETER (Op).

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.

THE SOIL BORING LOGS REPRESENT POINT INFORMATION.

PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

SOIL BORING DATA

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
TEST HOLE NO. B-68
LOCATION STATION: Saginaw, MI. N 706344.7, E 13234569.2 South Zone
INT #193'33" of S Curved Davenport/55' to 1-675 ramp CL
GROUND SURFACE ELEVATION: (Not obtained)

FILL: Silty fine to coarse sand - brown - medium dense to loose - moist (SM)

Silty clay, some fine to coarse sand, trace fine gravel - brown - medium (CL) (Qp = 0.75 taf)

Silty clay, some fine to coarse sand, trace fine gravel - brown - very stiff to hard (CL) (Qp = 3.0 - 4.5 taf)

Silty clay, some fine to coarse sand, trace fine gravel - gray - very stiff to hard (CL) (Qp = 2.0 taf)

BORING DATE 3/19/09
Dry

Concrete (9')

FILL: Sandy clay, trace fine gravel - brown - very stiff (CL) (Qp = 2.5 taf)

Peat - black - loose - moist (SP)

Sandy clay, trace silt, little organic - gray - medium (CL) (Qp = 0.75 taf)

Silty clay, trace fine gravel, trace organics - brown and gray - medium to stiff (CL) (Qp = 0.75 - 1.0 taf)

Silty clay, trace fine gravel - brown - very stiff to hard (CL) (Qp = 2.5 - 4.5+ taf)

BORING DATE 3/16/09
Dry

NOTE: 1st 6", 2nd 6", 3rd 6".

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.
The soil boring logs represent point information.
PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT
SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER
THAN THE EXACT LOCATION OF THE BORING.

FILL: Silty fine to coarse sand - brown - medium dense to loose - moist (SM)

Silty clays, trace fine gravel - brown - medium (CL) 

Silty clay, trace fine gravel, trace organics - brown and gray - medium (CL) (Qp = 0.75 taf)

Silty clay, trace fine gravel - brown - very stiff to hard (CL) (Qp = 2.5 - 4.5+ taf)

E.O.R. 20.0' H

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
TEST HOLE NO. B-72
LOCATION STATION:
Saginaw, MI N 706435.7, E 1323453.3 South Zone
INT #19: 31'W of R-675 ramp CL/98'S of median island curb
GROUND SURFACE ELEVATION: (Not obtained)

FILL: Fine to coarse sand, trace silt — brown — moist — dense medium — moist (SP)

Fine to medium sand, trace silt — gray — medium dense — wet (SP)

Silty clay, trace fine sand, trace organics — gray — very soft (CL) (Qp < 0.25 t/sf)

Fibrous peat, little fine to coarse sand — black — loose — wet (PT)

Silty clay, little organics, trace fine sand — gray — very soft to medium (CL) (Qp = 0.25 — 0.75 t/sf)

Silty clay, trace fine sand, trace organics — gray — stiff to very soft (CL) (Qp = 1.5–2.5 t/sf)

E.O.B. 20.0 ft
BORING DATE 3/16/09
W.L. 65° W.S.
W.L. 65° 4.8°

NOTES:
1st 6'
2nd 6'
3rd 6'

NUMBERS IN CIRCLES DENOTE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. (1.5" I.D.) SPLIT SPOON SAMPLER 3 SUCCESSIVE 6" INCREMENTS USING A 14# HAMMER FALLING 30".
CONSISTENCY WAS DETERMINED BY INSPECTION OF SAMPLES AND BY SOIL RESISTANCE TO PENETRATION OR BY CALIBRATED PENETROMETER (Qp).

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.
THE SOIL BORING LOGS REPRESENT POINT INFORMATION.
PRESNTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

TEST HOLE NO. B-73 (NOT DRILLED)

Concrete (9")

FILL: Fine to medium sand, trace silt — brown — loose — moist (SP)

Silty clay, some fine to coarse sand, trace fine gravel — brown — hard (CL) (Qp = 4.5± t/sf)

Silty clay, some fine to coarse sand, trace fine gravel — gray — hard to very stiff (CL) (Qp = 4.5±–6.3 t/sf)

Silty clay, some fine to coarse sand, trace fine gravel — gray — stiff (CL) (Qp = 1.5–1.75 t/sf)

BORING DATE 3/17/09
Dry

TEST HOLE NO. B-74
LOCATION STATION:
Saginaw, MI N 706276.0, E 13254193.5 South Zone
INT #19: 33' of Davenport (N–M) Curb/28'W of Main Ave Curb
GROUND SURFACE ELEVATION: (Not obtained)

Concrete (9")

FILL: Fine to medium sand, trace silt, trace organics — black — loose — moist (SP)

Silty clay, trace fine to medium sand — brown — loose — moist (SM)

Silty clay, trace fine to coarse sand, trace fine gravel — brown and gray, mottled — very stiff (CL) (Qp = 3.0 t/sf)

Silty clay, some fine to coarse sand, trace fine gravel — brown — very stiff to hard (CL) (Qp = 3.0–4.25 t/sf)

Silty clay, little fine to coarse sand, trace fine gravel — brown — hard (CL) (Qp = 4.5± t/sf)

Silty clay, some fine to coarse sand, trace fine gravel — brown — hard to very stiff (CL) (Qp = 4.5±–3.25 t/sf)

Silty clay, little fine to coarse sand, trace fine gravel — gray — stiff (CL) (Qp = 1.0 t/sf)

BORING DATE 3/17/09
Dry

TEST HOLE NO. B-75
LOCATION STATION:
Saginaw, MI N 706349.1, E 13234235.7 South Zone
INT #19: 52'N of Davenport (M–O) Curb/24'W of Island Curb
GROUND SURFACE ELEVATION: (Not obtained)

Concrete (9")

FILL: Fine to medium sand, trace silt, trace organics — black — loose — moist (SP)

Silty clay, trace fine to medium sand — brown — loose — moist (SM)

Silty clay, trace fine to coarse sand, trace fine gravel — brown and gray, mottled — very stiff (CL) (Qp = 3.0 t/sf)

Silty clay, some fine to coarse sand, trace fine gravel — brown — very stiff to hard (CL) (Qp = 3.0–4.25 t/sf)

Silty clay, little fine to coarse sand, trace fine gravel — brown — hard (CL) (Qp = 4.5± t/sf)

Silty clay, some fine to coarse sand, trace fine gravel — brown — hard to very stiff (CL) (Qp = 4.5±–3.25 t/sf)

Silty clay, little fine to coarse sand, trace fine gravel — gray — stiff (CL) (Qp = 1.0 t/sf)

BORING DATE 3/17/09
Dry

NOTE: COORDINATES ARE BASED ON MICHIGAN STATE PLANE SOUTH.
<table>
<thead>
<tr>
<th>Test Hole No.</th>
<th>Location Station</th>
<th>Ground Surface Elevation (Not obtained)</th>
<th>Fill</th>
<th>Boring Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-76</td>
<td>Saginaw, Mi. N 706330.9, E 13234308.2 South Zone</td>
<td>(Not obtained)</td>
<td>Concrete (9&quot;)</td>
<td>3/17/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706224.8, E 13233657.8 South Zone</td>
<td>(Not obtained)</td>
<td>Fill: Fine to medium sand - brown - medium dense - moist (SP)</td>
<td>3/18/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706229.0, E 13233664.5 South Zone</td>
<td>(Not obtained)</td>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - very stiff (CL) (Qp = 3.5-4.0+ taf)</td>
<td>3/17/09</td>
</tr>
<tr>
<td>B-77</td>
<td>Saginaw, Mi. N 706330.9, E 13234308.2 South Zone</td>
<td>(Not obtained)</td>
<td>Concrete (9&quot;)</td>
<td>3/17/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706224.8, E 13233657.8 South Zone</td>
<td>(Not obtained)</td>
<td>Fill: Fine to medium sand - brown - medium dense - moist (SP)</td>
<td>3/18/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706229.0, E 13233664.5 South Zone</td>
<td>(Not obtained)</td>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - very stiff to hard (CL) (Qp = 3.5-4.0+ taf)</td>
<td>3/17/09</td>
</tr>
<tr>
<td>B-78</td>
<td>Saginaw, Mi. N 706330.9, E 13234308.2 South Zone</td>
<td>(Not obtained)</td>
<td>Concrete (9&quot;)</td>
<td>3/17/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706224.8, E 13233657.8 South Zone</td>
<td>(Not obtained)</td>
<td>Fill: Fine to medium sand - brown - medium dense - moist (SP)</td>
<td>3/18/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706229.0, E 13233664.5 South Zone</td>
<td>(Not obtained)</td>
<td>Silty clay, some fine to coarse sand, trace fine gravel - brown - very stiff to hard (CL) (Qp = 3.5-4.0+ taf)</td>
<td>3/17/09</td>
</tr>
<tr>
<td>B-79</td>
<td>Saginaw, Mi. N 706330.9, E 13234308.2 South Zone</td>
<td>(Not obtained)</td>
<td>Concrete (9&quot;)</td>
<td>3/17/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706224.8, E 13233657.8 South Zone</td>
<td>(Not obtained)</td>
<td>Fill: Fine to medium sand - trace silt - brown - loose - moist (SP)</td>
<td>3/18/09</td>
</tr>
<tr>
<td></td>
<td>Saginaw, Mi. N 706229.0, E 13233664.5 South Zone</td>
<td>(Not obtained)</td>
<td>Silty clay, some fine to medium sand, trace fine gravel - brown - very loose - wet (SM)</td>
<td>3/17/09</td>
</tr>
</tbody>
</table>

Notes: 1st "6", 2nd "6", 3rd "6" Numbers in circles denote number of blows required to drive a 2" O.D., (1.5" I.D.) split spoon sampler 3 successive 6" increments using a 140# hammer falling 30". Consistency was determined by inspection of samples and by soil resistance to penetration or by calibrated penetrometer (Qp). Water levels may be influenced by residual boring water. THE SOIL BORING LOGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

Soil Boring Data

Note: Coordinates are based on Michigan State Plane South.
TEST HOLE NO. B-80
LOCATION STATION:
Saginaw, MI  N 706304.0, E 13237906.1 South Zone
INT 220.57'H of Curb Slewport (W=58)/40°W to E Curb Hill St
GROUND SURFACE ELEVATION: (Not obtained)

Concrete (9')
FILL: Fine to medium sand, trace silt - brown - medium dense - moist (SP)

Silty clay, some fine to coarse sand, trace fine gravel - brown - hard (CL) (Qp = 4.0-4.25 tf/sf)

Silty clay, some fine to coarse sand, trace fine gravel - gray - very stiff to stiff (CL) (Qp = 2.0-1.0 tf/sf)

Silty clay, some fine to coarse sand, trace fine gravel - gray - medium (CL) (Qp = 0.75 tf/sf)

E.O.S. 20.0 ft
BORING DATE 3/18/09
Dry

WATER LEVELS MAY BE INFLUENCED BY RESIDUAL BORING WATER.

THE SOIL BORING LOGS REPRESENT POINT INFORMATION.

PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN THE EXACT LOCATION OF THE BORING.

NOTE HEIGHTS ARE BASED ON MICHIGAN STATE PLANE SOUTH.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Controller &amp; Cabinet, Rem</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>HH, Rem</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Pushbutton, Rem</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>TS, Pedestrian, Bracket Arm, Hand, Rem</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>TS, Span Wire, Hand, Rem</td>
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<tr>
<td>6</td>
<td>Steel Pole, Rem (Embedded)</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Span Wire, Rem</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Controller, Rem, Ped, Hand</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Case Sign, Rem</td>
<td>1</td>
</tr>
</tbody>
</table>

EX. WOOD POLE

EMBEDDED ST. POLE

REMOVAL CABLE DIAGRAM

NOT TO SCALE

TRAFFIC SIGNAL REMOVAL SHEET

Michigan Department of Transportation

TRAFFIC SIGNALS

REMOVABLE BASE MTD CONTROLLER & CABINET

HH

EMBEDDED ST. POLE

EX. WOOD POLE

EX. WOOD POLE

EX. WOOD POLE
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#18 PJ.
3. PUSHBUTTON CABLES ARE 2/C#18 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 7/C#16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

COIL-UP SUFFICIENT LENGTH OF 600V.
1-3/C #6 SECONDARY CABLES FOR 120V.
T.S. FEED FOR CONNECTION BY CE.
FUSE AT 60A.
NEMA 4X-STAINLESS STEEL
60A. SERVICE DISCONNECT
EX. WOOD POLE
ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>DESCRIPTION</th>
<th>QUANTITIES</th>
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<tbody>
<tr>
<td></td>
<td>Detectable Warning Surface</td>
<td>51 Sys</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Conc, 4 in, Decorative Stamped</td>
<td>150 SqF</td>
</tr>
<tr>
<td></td>
<td>Curb and Gutter, Conc, Curb F2</td>
<td>45 Ft</td>
</tr>
<tr>
<td></td>
<td>Hand Potholing</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>51 Sys</td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>50 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>65 SYD</td>
</tr>
<tr>
<td>3</td>
<td>Excavations, Earth</td>
<td>10 Cyd</td>
</tr>
</tbody>
</table>

SIDEWALK REMOVAL

HAZARDOUS OR FLAMMABLE MATERIAL

NE QUADRANT REMOVAL DIAGRAM

1"=10'

M-84 (BAY RD.)
AT TITTABAWASSEE RD.
SAGINAW TOWNSHIP, SAGINAW COUNTY
ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

Turf Establishment, Performance
Hand Patching
Curb and Gutter, Concrete, Decorative Stamped
Sidewalk, Concrete, 4 inch, Decorative Stamped
Sidewalk Ramp
Detectable Warning Surface

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>12 F4</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>120 SF</td>
</tr>
<tr>
<td>3</td>
<td>Sidewalk, Concrete, 4 inch, Decorative Stamped</td>
<td>350 SF</td>
</tr>
<tr>
<td>4</td>
<td>Curb and Gutter, Concrete, Decor F?</td>
<td>45 F4</td>
</tr>
<tr>
<td>5</td>
<td>Manhole Cover</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Turf Establishment, Performance</td>
<td>4172 SF</td>
</tr>
</tbody>
</table>

AOA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

DECORATIVE STAMPED CONCRETE

SW QUADRANT

PLAN 1:100

SIDEWALK CONSTRUCTION SHEET
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Curb and Gutter, Rem</td>
<td>40 Ft</td>
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<tr>
<td>C</td>
<td>Sidewalk, Rem</td>
<td>38 Syd</td>
</tr>
<tr>
<td>C</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SE QUADRANT REMOVAL DIAGRAM

1" = 10'

SIDEWALK REMOVAL SHEET

M-84 (BAY RD.)

AT TITABAWASSEE RD.

SAGINAW TOWNSHIP, SAGINAW COUNTY

DESIGNED BY: JESSI ESTEP

DESIGN UNIT: TRAFFIC DESIGN B

FILE: 7303301006e-pr042711ct.dgn

04/27/11
ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
TRAFFIC SIGNAL REMOVAL SHEET

M-84 (BAY RD.) AT FASHION SQUARE MALL DR.
SAGINAW TOWNSHIP, SAGINAW COUNTY

HAZARDOUS OR FLAMMABLE MATERIAL

REM. CONTROLLER

REM. EMBEDDED STEEL POLE

ST. POLE

ELECTRIC SERVICE

REMOVAL CABLE DIAGRAM
NOT TO SCALE

SEE ADA RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.
FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF ENERGY, LABOR AND ECONOMIC GROWTH AT 989-686-0032. COST TO CONTRACTOR WILL BE INCIDENTAL.

NOT TO SCALE

BOX SPAN CALCULATIONS

P.O.C. IS CALCULATED AT 1000 POUNDS TENSION.

SUGGESTED STEM LENGTHS

POLE: NW QUAD

POLE: NE QUAD

POLE: SW QUAD

POLE: SE QUAD

NOTE:

POLE CONTACT HEAVY IS SHOWN ABOVE & GRADE.

FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. LOW CLEARANCE HEIGHT - 17'

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pedestal, underground serve, 1-1 1/2&quot; DB Conduit</td>
</tr>
<tr>
<td>2</td>
<td>Controller and Cabinet, Digital Type</td>
</tr>
<tr>
<td>3</td>
<td>Controller and Cabinet, Digital Type, Delivered</td>
</tr>
<tr>
<td>4</td>
<td>Wireless Vehicle Detection System</td>
</tr>
<tr>
<td>5</td>
<td>Wireless Vehicle Sensor Node</td>
</tr>
<tr>
<td>6</td>
<td>Pushbutton and Sign</td>
</tr>
<tr>
<td>7</td>
<td>SS, Round</td>
</tr>
<tr>
<td>8</td>
<td>SS, Steel, Anchor Base, 30 foot</td>
</tr>
<tr>
<td>9</td>
<td>Pushbutton Pedestal, Alum</td>
</tr>
<tr>
<td>10</td>
<td>Conduit, DB, 1, 1 1/2&quot; inch</td>
</tr>
<tr>
<td>11</td>
<td>Conduit, DB, 1, 3&quot; inch</td>
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<tr>
<td>12</td>
<td>Conduit, DB, 3, 3&quot; inch</td>
</tr>
<tr>
<td>13</td>
<td>Pushbutton Pedestal, Unmetered</td>
</tr>
<tr>
<td>14</td>
<td>Case Sign, One Way, 24 inch by 30 inch, Non-Illuminated</td>
</tr>
</tbody>
</table>

FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF ENERGY, LABOR AND ECONOMIC GROWTH AT 989-686-0032. COST TO CONTRACTOR WILL BE INCIDENTAL.

NOTE:

POLE CONTACT HEAVY IS SHOWN ABOVE & GRADE.

FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. LOW CLEARANCE HEIGHT - 17'

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pedestal, underground serve, 1-1 1/2&quot; DB Conduit</td>
</tr>
<tr>
<td>2</td>
<td>Controller and Cabinet, Digital Type</td>
</tr>
<tr>
<td>3</td>
<td>Controller and Cabinet, Digital Type, Delivered</td>
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<td>4</td>
<td>Wireless Vehicle Detection System</td>
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<tr>
<td>5</td>
<td>Wireless Vehicle Sensor Node</td>
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<td>6</td>
<td>Pushbutton and Sign</td>
</tr>
<tr>
<td>7</td>
<td>SS, Round</td>
</tr>
<tr>
<td>8</td>
<td>SS, Steel, Anchor Base, 30 foot</td>
</tr>
<tr>
<td>9</td>
<td>Pushbutton Pedestal, Alum</td>
</tr>
<tr>
<td>10</td>
<td>Conduit, DB, 1, 1 1/2&quot; inch</td>
</tr>
<tr>
<td>11</td>
<td>Conduit, DB, 1, 3&quot; inch</td>
</tr>
<tr>
<td>12</td>
<td>Conduit, DB, 3, 3&quot; inch</td>
</tr>
<tr>
<td>13</td>
<td>Pushbutton Pedestal, Unmetered</td>
</tr>
<tr>
<td>14</td>
<td>Case Sign, One Way, 24 inch by 30 inch, Non-Illuminated</td>
</tr>
</tbody>
</table>

FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF ENERGY, LABOR AND ECONOMIC GROWTH AT 989-686-0032. COST TO CONTRACTOR WILL BE INCIDENTAL.

NOTE:

POLE CONTACT HEAVY IS SHOWN ABOVE & GRADE.

FIELD ADJUSTMENTS ARE TO BE MADE FOR ANY DIFFERENCE IN GRADE AT POLE VS. ROAD GRADE. LOW CLEARANCE HEIGHT - 17'
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
5. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Curb and Gutter, Rem</td>
<td>33 Ft</td>
</tr>
<tr>
<td>C</td>
<td>Sidewalk, Rem</td>
<td>36 Syd</td>
</tr>
<tr>
<td>C</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SIDEWALK REMOVAL SHEET

SECTION 3
T12N,R4E
SAGINAW TOWNSHIP
BLDG #4675 Bay

HAZARDOUS OR FLAMMABLE MATERIAL

SIDEWALK REMOVE
CURB & GUTTER, REM

MAINTAINER OF SYSTEM:

DESIGNED BY: ROD STEFAN
DATE/PROunts: 7053313-111
SIGNED UNIT: TOWNSHIP ENGINEER
FILING: 705331314a-m42711-dgn

FILED: 705331314a-m42711-dgn

M-84 (BAY RD.)
AT FASHION SQUARE MALL OR
SAGINAW TOWNSHIP, SAGINAW COUNTY
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
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</thead>
<tbody>
<tr>
<td>1)</td>
<td>Detachable Warning Surface</td>
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<tr>
<td>2)</td>
<td>Sidewalk Ramp</td>
</tr>
<tr>
<td>3)</td>
<td>Sidewalk, Conc, 4 Inch, Decorative Stamped</td>
</tr>
<tr>
<td>4)</td>
<td>Curb and Gutter, Conc, Det F2</td>
</tr>
<tr>
<td>5)</td>
<td>Hand Painting</td>
</tr>
<tr>
<td>6)</td>
<td>Turf Establishment, Performance</td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.

SECTION 3
T12N.R4E
SAGINAW TOWNSHIP
BLDG #4675 Bay

SIDEWALK INSTALL SHEET
M-84 (BAY RD.)
AT FASHION SQUARE MALL DR.
SAGINAW TOWNSHIP, SAGINAW COUNTY

Hazardous or Flammable Material

Detectable Warning Curb & Gutter Misc Pr
Landing Area 4' x 4' Min.
Max Slope 2%

Detectable Warning Surface
Curb & Gutter, Misc
LANDING AREA 4' X 4' MIN.
MAX SLOPE 2%
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>36 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>34 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SIDEWALK REMOVE
CURB & GUTTER, REM

HAZARDOUS OR FLAMMABLE MATERIAL

NE QUADRANT
REMOVAL DIAGRAM
1"=10'

SIDEWALK REMOVAL SHEET
M-84 (BAY RD.)
AT FASHION SQUARE MALL DR.
SAGINAW TOWNSHIP, SAGINAW COUNTY

DESIGNED BY: RKL DEPT
DATE/REV
DESIGNED UNIT: TRAFFIC ENGINEERING
DRAWER: JESSI ESTEP
FILE: 73033-01-011e-pr042711ct.dgn
04/27/11

73033-01-011
105391A
### List of Material

<table>
<thead>
<tr>
<th>No.</th>
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<td>Sidewalk, Conc. 4 Inch, Decorative Stamped</td>
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<tr>
<td></td>
<td>Curb and Gutter, Conc. Det F2</td>
<td>754 Sys</td>
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<tr>
<td></td>
<td>Hand Paving</td>
<td>754 Sys</td>
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</tbody>
</table>

* Matches Existing Elevation

### ADA Accessible Criteria

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

### DETECTABLE WARNING SURFACE

- Detectable Warning
- Curb & Gutter Misc PR
- Decorative Stamped Concrete

### HAZARDOUS OR FLAMMABLE MATERIAL

- Detectable Warning
- Curb & Gutter Misc PR

### Section 2

**T12N, R4E**

**Saginaw Township, Saginaw County**

**Traffic Signals**

**TRAFFIC SIGNALS**

- **M-84 (Bay Rd.)**
- **AT Fashion Square Mall Dr.**
- **Saginaw Township, Saginaw County**

---

**Plan:**

- Ne Quadrant
- Ne Quadrant

**Diagram:**

- Diagram of sidewalk installation
- Diagram of hazardous or flammable material

---

**DESIGNED BY:**

- JESSI ESTEP

**DRAWN BY:**

- JACOB WRIGHT

**CHECKED BY:**

- JESSI ESTEP

**DATE:**

- 04/27/11

**PLAN SHEET:**

- 48

**FILE:**

- 7303301011e-pr042711ct.dgn

---

**Location:**

- AT Fashion Square Mall Dr.
- Saginaw Township, Saginaw County
LIST OF MATERIAL

<table>
<thead>
<tr>
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<tr>
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<td>Excavation, Emp</td>
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SECTION 3
T12N.R4E
SAGINAW TOWNSHIP

CONSENT TO
CONSTRUCT SIDEWALK

HAZARDOUS OR
FLAMMABLE MATERIAL

WEST MEDIAN
REMOVAL DIAGRAM
1"=10'

EAST MEDIAN
REMOVAL DIAGRAM
1"=10'

SIDEWALK REMOVAL SHEET
M-84 (BAY RD.)
AT FASHION SQUARE MALL DR.
SAGINAW TOWNSHIP, SAGINAW COUNTY
1) Push-button must be no more than 24" from the ADA accessible criteria.

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

ADA ACCESSIBLE CRITERIA

* Matches existing elevation

Section 3
T12N R4E
Saginaw Township
### LIST OF MATERIAL

<table>
<thead>
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<th>No.</th>
<th>Item</th>
<th>Quantity</th>
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<tbody>
<tr>
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<td>2</td>
<td>Sidewalk, Rem</td>
<td>29 Syd</td>
</tr>
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<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
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</table>

### SW QUADRANT

**SIDEWALK REMOVE CURB & GUTTER, REM**

**SECTION 3**

**T12N,R4E**

**SAGINAW TOWNSHIP**

**CONSENT TO CONSTRUCT SIDEWALK**

**SIDEWALK REMOVAL DIAGRAM**

1\"=10'

**HAZARDOUS OR FLAMMABLE MATERIAL**

---

**DESIGN UNIT:**

**TRAFFIC SIGNALS:**

**FILE:** 73033-01-011.e-pr042711ct.dgn

**DATE:** 04/27/11

**DESIGNED BY:** JESSI ESTEP

**BAY CITY**

**CS:** 73033

**M-84 (BAY RD.) AT FASHION SQUARE MALL DR.**

**SAGINAW TOWNSHIP, SAGINAW COUNTY**
1) Push-button must be no more than 24" from the ADA accessible criteria.
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

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<td>5858.20</td>
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* MATCHES EXISTING ELEVATION

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
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<tr>
<td>1) Detectable Warning Surface</td>
<td>30 FT</td>
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<tr>
<td>2) Sidewalk Ramp</td>
<td>720 SF</td>
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<tr>
<td>3) Sidewalk Concrete. Decorative Stamped</td>
<td>36 SF</td>
</tr>
<tr>
<td>4) Curb and Gutter, Conc. Det F2</td>
<td>36 FT</td>
</tr>
<tr>
<td>5) Hand Patching</td>
<td>1 TON</td>
</tr>
<tr>
<td>6) Turf Establishment. Performance</td>
<td>1257 SYD</td>
</tr>
</tbody>
</table>

**Hazardous or Flammable Material**

**Detectable Warning**

**Curb & Gutter Misc Pr**

**Decorative Stamped Concrete**

**Land Area 4' X 4' Min.**

**Max Slope 2%**

**SW Quadrant Plan**

**Section 3**

**T12N R4E**

**Saginaw Township, Saginaw County**
LIST OF MATERIAL

<table>
<thead>
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<th>NO.</th>
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<td>2</td>
<td>Sidewalk, Rem</td>
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<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
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SE QUADRANT

REMOVAL DIAGRAM

1"=10'

HAZARDOUS OR FLAMMABLE MATERIAL

SECTION 2
T12N,R4E
SAGINAW TOWNSHIP

SIDEWALK REMOVAL SHEET

M-84 (BAY RD.)
AT FASHION SQUARE MALL OR
SAGINAW TOWNSHIP, SAGINAW COUNTY
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

3) The push-button should be located up to 5' behind the crosswalk.

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

1) Push-button must be no more than 24" from the ADA accessible criteria.

1) Detectable Warning Surface
2) Sidewalk Ramp
3) Sidewalk, Concrete, 4 in. Decorative Stamped
4) Curb and Gutter, Concrete, 0.8 ft
5) Hand Polishing
6) Turf Establishment, Performance
7) Decorative Stamped Concrete
8) Detectable Warning
9) Curb & Gutter Misc PR
10) Landing Area 4' x 4' Min.
11) Max Slope 2%
12) Hazardous or Flammable Material

ADA Accessible Criteria

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**List of Material**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
<td>Sidewalk Ramp</td>
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<td>6</td>
<td>Turf Establishment, Performance</td>
<td>865 sq yd</td>
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**ADA Accessible Criteria**

- Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
- Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
- The push-button should be located up to 5' behind the crosswalk.

- Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
**List of Material**

<table>
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<th>No.</th>
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**TRAFFIC SIGNAL REMOVAL SHEET**

**M-84 (BAY RD.)**

**AT SCHUST RD.**

**SAGINAW TOWNSHIP, SAGINAW COUNTY**

**TRAFFIC SIGNAL REMOVAL SHEET**

**SEE ADA RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.**
HAZARDOUS OR FLAMMABLE MATERIAL

EX. ROW

LIST OF MATERIAL

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<td>1 Cyd</td>
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SIDEWALK REMOVE

CURB & GUTTER, REM

SIDEWALK REMOVAL SHEET

M-84 (BAY RD.)

AT SCHUST RD.

SAGINAW TOWNSHIP, SAGINAW COUNTY

SIDEWALK REMOVAL DIAGRAM

NOT TO SCALE

NW QUADRANT

REMOVAL DIAGRAM

NOT TO SCALE
NW QUADRANT
1"=10'

LIST OF MATERIAL

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<tr>
<th>NO.</th>
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<tr>
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<td>Sidewalk Ramp</td>
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<td>Hand Patching</td>
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<td></td>
<td>Turf Establishment, Performance</td>
<td>60 5syd</td>
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</tbody>
</table>

* MATCHES EXISTING ELEVATION

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

HAZARDOUS OR FLAMMABLE MATERIAL

DETECTABLE WARNING

CURB & GUTTER MISC PR

LANDING AREA 4' x 4' MIN., MAX SLOPE 2%

NW QUADRANT PLAN 1"=10'

SIDEWALK INSTALL SHEET

HAZARDOUS OR FLAMMABLE MATERIAL

ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24'' FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
LIST OF MATERIAL

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SIDEWALK REMOVE
CURB & GUTTER, REM

HAZARDOUS OR FLAMMABLE MATERIAL

NE QUADRANT REMOVAL DIAGRAM
NOT TO SCALE
**LIST OF MATERIAL**

<table>
<thead>
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<tr>
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<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>923 Sq</td>
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ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

---

**NE QUADRANT PLAN**

- **1"=10'**

- **NE QUADRANT PLAN**

- **HAZARDOUS OR FLAMMABLE MATERIAL**

- **DETECTABLE WARNING**

- **Curb & Gutter Misc Pr**

- **LANDING AREA 4' X 4' MIN.**

- **MAX SLOPE 2%**

---

**LIST OF MATERIAL**

<table>
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<th>No.</th>
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<td>Turf Establishment, Performance</td>
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---

**NE QUADRANT PLAN**

- **1"=10'**

- **HAZARDOUS OR FLAMMABLE MATERIAL**

- **DETECTABLE WARNING**

- **Curb & Gutter Misc Pr**

- **LANDING AREA 4' X 4' MIN.**

- **MAX SLOPE 2%**

---

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
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<tr>
<td></td>
<td>Hand Patching</td>
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<tr>
<td></td>
<td>Curb and Gutter, Conc., Det F2</td>
<td>43 Ft</td>
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<tr>
<td></td>
<td>Hand Pushing</td>
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</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
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ADA ACCESSIBLE CRITERIA

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**NE QUADRANT PLAN**

- **1"=10'**

- **HAZARDOUS OR FLAMMABLE MATERIAL**

- **DETECTABLE WARNING**

- **Curb & Gutter Misc Pr**

- **LANDING AREA 4' X 4' MIN.**

- **MAX SLOPE 2%**

---

**LIST OF MATERIAL**

<table>
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<th>Item</th>
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<td></td>
<td>Curb and Gutter, Conc., Det F2</td>
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**NE QUADRANT PLAN**

- **1"=10'**

- **HAZARDOUS OR FLAMMABLE MATERIAL**

- **DETECTABLE WARNING**

- **Curb & Gutter Misc Pr**

- **LANDING AREA 4' X 4' MIN.**

- **MAX SLOPE 2%**

---

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Curb and Gutter, Conc., Det F2</td>
<td>43 Ft</td>
</tr>
<tr>
<td></td>
<td>Hand Pushing</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>923 Sq</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

---

**NE QUADRANT PLAN**

- **1"=10'**

- **HAZARDOUS OR FLAMMABLE MATERIAL**

- **DETECTABLE WARNING**

- **Curb & Gutter Misc Pr**

- **LANDING AREA 4' X 4' MIN.**

- **MAX SLOPE 2%**

---

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Curb and Gutter, Conc., Det F2</td>
<td>43 Ft</td>
</tr>
<tr>
<td></td>
<td>Hand Pushing</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>923 Sq</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

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---

**NE QUADRANT PLAN**

- **1"=10'**

- **HAZARDOUS OR FLAMMABLE MATERIAL**

- **DETECTABLE WARNING**

- **Curb & Gutter Misc Pr**

- **LANDING AREA 4' X 4' MIN.**

- **MAX SLOPE 2%**

---

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Curb and Gutter, Conc., Det F2</td>
<td>43 Ft</td>
</tr>
<tr>
<td></td>
<td>Hand Pushing</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>923 Sq</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
**List of Material**

<table>
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<th>No.</th>
<th>Item</th>
<th>Quantities</th>
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<tbody>
<tr>
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<td>Detectable Warning Surface</td>
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</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>30 ft</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Concrete, Def. E2</td>
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<td>4</td>
<td>Hand Patching</td>
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</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>773 sq yd</td>
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</tbody>
</table>

**Swimming Access Criteria**

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**PLAN**

1. The push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**SW Quadrant**

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.
SE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

HAZARDOUS OR FLAMMABLE MATERIAL

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
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<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>34 Ft</td>
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<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>30 Syd</td>
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<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
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SIDEWALK REMOVAL SHEET
M-84 (BAY RD.)
AT SCHUST RD.
SAGINAW TOWNSHIP, SAGINAW COUNTY
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
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</thead>
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<tr>
<td>Detectable Warning Surface</td>
<td>100 Syd</td>
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<td>Curb and Gutter, Conc, Det F2</td>
<td>38 Ft</td>
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<tr>
<td>Hand Polishing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>100 Syd</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Push button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

SE QUADRANT

PLAN

1"=10'

ESI DICTION

SE QUADRANT

PLAN

1"=10'
# LIST OF MATERIAL

<table>
<thead>
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<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
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<tr>
<td>1</td>
<td>Controller and Cabinet, Rem</td>
<td>1 Ea</td>
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<tr>
<td>2</td>
<td>Case Sign, Rem</td>
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<tr>
<td>3</td>
<td>TS, Span Wire w/o, Rem</td>
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<td>4</td>
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<td>Serv Disconnect, Rem</td>
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<td>6</td>
<td>Hh, Rem</td>
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<tr>
<td>8</td>
<td>Pedestal Fdn, Rem</td>
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<tr>
<td>10</td>
<td>TS, Pedestrian, Pedestal Mtd, Rem</td>
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<tr>
<td>11</td>
<td>Controller Fdn, Rem</td>
<td>1 Ea</td>
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</tbody>
</table>

## REMOVAL CABLE DIAGRAM

- **NOT TO SCALE**

**TRAFFIC SIGNAL REMOVAL SHEET**

- **DESIGNED BY:** ROD ESTEP
- **DATE/PROJ #:** 04/27/11
- **CS:** 73033
- **DRAWING UNIT:** TRAFFIC SIGNS
- **FILE:** 7303301007e-pr042711ct.dgn
- **AUTH:** JESSI ESTEP

**PLAN:** M-84 (BAY RD.)

**LOCATION:** AT MCCARTY RD.

**DESIGNER:** BAY CITY

**PROJECT:** 105391A

**SAGINAW TOWNSHIP, SAGINAW COUNTY**
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/C #16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C #16 PJ.
3. PUSHBUTTON CABLES ARE 2/C #16 SHIELDED PJ.
4. DOUGHNUT SIGNAL CABLES ARE 1/C #16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

1. PEDESTRIAN SIGNAL CABLES ARE 7/C #16 PJ.
2. PUSHBUTTON CABLES ARE 2/C #16 SHIELDED PJ.
3. DOUGHNUT SIGNAL CABLES ARE 1/C #16 PJ.
4. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
5. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

TRAFFIC SIGNAL INSTALL SHEET

NOT TO SCALE
LIST OF MATERIAL

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<thead>
<tr>
<th>NO.</th>
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<th>QUANTITY</th>
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</thead>
<tbody>
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<td>Curb and Gutter, Rem</td>
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<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>29 Syd</td>
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<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
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</tbody>
</table>

NW QUADRANT REMOVAL DIAGRAM

1"=10'

SIDEWALK REMOVAL SHEET

M-84 (BAY RD.) AT McCARTY RD.

SAGINAW TOWNSHIP, SAGINAW COUNTY
**LIST OF MATERIAL**

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<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
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<tbody>
<tr>
<td>Hand Patching</td>
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<td>Sidewalk Ramp</td>
<td>281 SYD</td>
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<td>Detectable Warning Surface</td>
<td>12 FT</td>
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<tr>
<td>Turf Establishment, Performance</td>
<td>291 SYD</td>
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</table>
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**ADA ACCESSIBLE CRITERIA**

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb and Gutter, Rem</td>
<td>34 Ft</td>
</tr>
<tr>
<td>Sidewalk, Rem</td>
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<tr>
<td>Excavation, Earth</td>
<td>10 Cyd</td>
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</tbody>
</table>

**SIDEWALK REMOVE CURB & GUTTER, REM**

**EXCAVATION EARTH**

**HAZARDOUS OR FLAMMABLE MATERIAL**

**SIDEWALK REMOVAL SHEET**

**M-84 (BAY RD.) AT McARTY RD.**

**SAGINAW TOWNSHIP, SAGINAW COUNTY**
<table>
<thead>
<tr>
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<th>EASTING</th>
<th>PR. ELEV</th>
<th>EX. ELEV</th>
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* MATCHES EXISTING ELEVATION

### LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
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</thead>
<tbody>
<tr>
<td>Hand Patching</td>
<td>1 Ton</td>
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<tr>
<td>Curb and Gutter, Conc, Det F2</td>
<td>34 Ft</td>
</tr>
<tr>
<td>Sidewalk Ramp</td>
<td>12 Ft</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>237 Sqd</td>
</tr>
</tbody>
</table>

### ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

### LIST OF MATERIAL

- **Hand Patching**: 1 Ton
- **Curb and Gutter, Conc, Det F2**: 34 Ft
- **Sidewalk Ramp**: 12 Ft
- **Turf Establishment, Performance**: 237 Sqd

### SIDEWALK INSTALL SHEET

**NE QUADRANT**

**PLAN**
1" = 10'

- **CS**: 73033
- **JN**: 105391A
- **TSC**: M-84 (BAY RD.) AT McCARTY RD.
- **DATE**: 04/27/11
- **AUTH**: DESIGNED BY: JESSI ESTEP
- **FILE**: 73033-01-007
- **DATE/REV**: 04/27/11CT
- **NO.**: 7303301007e-pr042711ct.dgn
- **DRAWING SHEET**: 73033-01-007e
- **DESIGN UNIT**: M-84 (BAY RD.)
- **LOCATION**: BAY CITY"
LIST OF MATERIAL

<table>
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<td>Sidewalk, Rem</td>
<td>29 Syd</td>
</tr>
<tr>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SW QUADRANT

REMOVAL DIAGRAM

1"=10'
ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk landing with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

EASTING

T

WATER

499.51 *

MAX SLOPE 2%

LANDING AREA 4' X 4' MIN.

SW QUADRANT

PLAN

1"=10'

Hazardous or Flammable Material

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
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<tbody>
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</tr>
<tr>
<td>02</td>
<td>Sidewalk Ramp</td>
<td>20 FT</td>
</tr>
<tr>
<td>03</td>
<td>Curb and gutter, conc, set F2</td>
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<tr>
<td>04</td>
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<td>05</td>
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<tr>
<td>06</td>
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* MATCHES EXISTING ELEVATION
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
<td>43 Ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>28 Syd</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SE QUADRANT REMOVAL DIAGRAM

1"=10'

HAZARDOUS OR FLAMMABLE MATERIAL
**ADA ACCESSIBLE CRITERIA**

1. PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).
2. PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.
3. THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.
4. PUSH BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>Description</th>
<th>Quantities</th>
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<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>12 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>250 SF</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc. Det. #2</td>
<td>45 Ft</td>
</tr>
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<td>4</td>
<td>Hand Polishing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>45 Yd</td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Controller and Cabinet, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>3</td>
<td>TS, Span Wire Mtd, Rem</td>
<td>2 Ea</td>
</tr>
<tr>
<td>4</td>
<td>Steel Pole, Rem (Embedded)</td>
<td>4 Ea</td>
</tr>
<tr>
<td>5</td>
<td>Span Wire, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>2</td>
<td>Case Sign, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>6</td>
<td>TS, Bracket Arm Mtd, Rem</td>
<td>2 Ea</td>
</tr>
</tbody>
</table>

SEE ADA RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.
**ADA ACCESSIBLE CRITERIA**

1) **PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).**

2) **PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%**.

3) **THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.**

4) **PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.**
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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<td>6 FT</td>
</tr>
<tr>
<td>(2)</td>
<td>Curb and Gutter, Conc, Det F2</td>
<td>18 FT</td>
</tr>
<tr>
<td>(3)</td>
<td>Hand Pothiching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>(4)</td>
<td>Turf Establishment, Performance</td>
<td>14 Yrd</td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION

**ADA ACCESSIBLE CRITERIA**

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4’ LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5’ BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>2</td>
<td>Curb and Gutter, Conc, Det F2</td>
<td>40 Ft</td>
</tr>
<tr>
<td>3</td>
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<td>4</td>
<td>Detectable Warning Surface</td>
<td>32 Ft</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>59 Syc</td>
</tr>
<tr>
<td>6</td>
<td>HAZARDOUS OR FLAMMABLE MATERIAL</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION

**ADA ACCESSIBLE CRITERIA**

1. **PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).**

2. **PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.**

3. **THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.**

4. **PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.**
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<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
<td>41 FT</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>21 Cd</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SE QUADRANT REMOVAL DIAGRAM

SIDEWALK REMOVAL SHEET

M-84 (BAY)
AT ENTERPRISE DR.
SAGINAW TOWNSHIP, SAGINAW COUNTY
### LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Curb and Gutter, Conc, Det F2</td>
<td>41 Ft</td>
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<tr>
<td>Sidewalk Ramp</td>
<td>185 Sft</td>
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<tr>
<td>Detectable Warning Surface</td>
<td>51 Sd</td>
</tr>
</tbody>
</table>

### ADA ACCESSIBLE CRITERIA

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3. The push-button should be located up to 5' behind the crosswalk.

4. Pushbutton to face the intersection and be parallel to crosswalk direction as directed by engineer.

---

### DETECTABLE WARNING

- CURB & GUTTER MISC PR
- LANDIG AREA 4' X 4' MIN.
- MAX SLOPE 2%
FOR ELECTRICAL SERVICE INSPECTION CONTACT MICHIGAN DEPARTMENT OF ENERGY, LABOR, AND ECONOMIC GROWTH AT 989-686-0032. COST TO CONTRACTOR WILL BE INCIDENTAL.

CONTACT: MR. NICK CHENOWETH
ENERGY AT 989-761-5883 FOR SERVICE DISCONNECT & RECONNECT, 1 WOOD POLE REMOVAL TRANSFER 2 DOWN GUYS, 1 DOWN GUY REMOVAL... EN #006500300B. COST TO CONTRACTOR: $330

CONTACT: DAVID HOEH AT 989-233-3339 FOR WIRELESS SENSOR LAYOUT 3 DAYS PRIOR TO INSTALLATION.

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITIES</th>
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<tbody>
<tr>
<td>1</td>
<td>Remote Station</td>
<td>1 Ea</td>
</tr>
<tr>
<td>2</td>
<td>Controller and Cabinet, Digital Type</td>
<td>1 Ea</td>
</tr>
<tr>
<td>3</td>
<td>Battery and Cabinet, Digital Type, Delivered</td>
<td>1 Ea</td>
</tr>
<tr>
<td>4</td>
<td>Wireless Vehicle Detection System</td>
<td>1 Ea</td>
</tr>
<tr>
<td>5</td>
<td>Wireless Vehicle Sensor Node</td>
<td>22 Ea</td>
</tr>
<tr>
<td>6</td>
<td>1-3&quot; DB Conduit</td>
<td>3&quot; HH, Round, 3 foot Dia.</td>
</tr>
<tr>
<td>7</td>
<td>1-3&quot; DB Conduit</td>
<td>6 Ea</td>
</tr>
<tr>
<td>8</td>
<td>Pushbutton Pedestal, Alum</td>
<td>4 Ea</td>
</tr>
<tr>
<td>9</td>
<td>1-3&quot; DB Conduit</td>
<td>2 Ea</td>
</tr>
<tr>
<td>10</td>
<td>1-3&quot; DB Conduit</td>
<td>10 Ea</td>
</tr>
<tr>
<td>11</td>
<td>1-3&quot; DB Conduit</td>
<td>22 Ea</td>
</tr>
<tr>
<td>12</td>
<td>1-3&quot; DB Conduit</td>
<td>10 Ea</td>
</tr>
<tr>
<td>13</td>
<td>Pedestal, Alum</td>
<td>2 Ea</td>
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<td>14</td>
<td>Pedestal, Fdn</td>
<td>3 Ea</td>
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<tr>
<td>15</td>
<td>Pushbutton Pedestal, Alum</td>
<td>1 Ea</td>
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<tr>
<td>16</td>
<td>Pedestal, Fdn</td>
<td>3 Ea</td>
</tr>
<tr>
<td>17</td>
<td>Wireless Repeater</td>
<td>2 Ea</td>
</tr>
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</table>

PHASING DIAGRAM

NOT TO SCALE

NOT TO SCALE

TRAFFIC SIGNAL INSTALL SHEET

M-84 (BAY RD.)
AT SHATTUCK RD.
SAGINAW TOWNSHIP, SAGINAW COUNTY

FIXED OBJECTS:

CONTROLLER

Pole 3" HH

PEDESTAL

ST. POLE
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE
1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE
1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
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4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
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4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
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6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

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2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

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1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

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1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
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6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
<td>33 Ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>42 Syd</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>10 Cyd</td>
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</tbody>
</table>

HW QUADRANT

REMOVAL DIAGRAM

1"=10'

SIDEWALK REMOVE
Curb & Gutter, Rem

HAZARDOUS OR FLAMMABLE MATERIAL
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>(c) Detectable Warning Surface</td>
<td>1 FT</td>
</tr>
<tr>
<td>(d) Sidewalk Ramp</td>
<td>255 SQ FT</td>
</tr>
<tr>
<td>(e) Curb and Gutter, Conc, Det F2</td>
<td>2 FT</td>
</tr>
<tr>
<td>(f) Hand Polishing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>(g) Turf Establishment, Performance</td>
<td>103 SQ FT</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

1950 ft²

HAZARDOUS OR FLAMMABLE MATERIAL

- DETECTABLE WARNING
- CURB & GUTTER WSC PR
- LANDING AREA 4' X 4' MIN.
- MAX SLOPE 2%
- NW QUADRANT
- PLAN 1"=10'
- SIDEWALK INSTALL SHEET
- M-84 (BAY RD.)
- AT SHATTUCK RD.
- SAGINAW TOWNSHIP, SAGINAW COUNTY
SIDEWALK REMOVAL
CURB & GUTTER, REM

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>33 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>30 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cu</td>
</tr>
</tbody>
</table>

HAZARDOUS OR FLAMMABLE MATERIAL

NE QUADRANT REMOVAL DIAGRAM
1"=10'

SIDEWALK REMOVAL SHEET
M-84 (BAY RD.) AT SHATTUCK RD.
SAGINAW TOWNSHIP, SAGINAW COUNTY

DESIGNED BY: JESSI ESTEP
DESIGN UNIT: TRAFFIC ENGINEERING

73033-01-002
04/27/11
7303301002e-pr042711ct.dgn.dgn

SIDEWALK REMOVAL SHEET
M-84 (BAY RD.) AT SHATTUCK RD.
SAGINAW TOWNSHIP, SAGINAW COUNTY

DESIGNED BY: JESSI ESTEP
DESIGN UNIT: TRAFFIC ENGINEERING

73033-01-002
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SIDEWALK REMOVAL SHEET
M-84 (BAY RD.) AT SHATTUCK RD.
SAGINAW TOWNSHIP, SAGINAW COUNTY

DESIGNED BY: JESSI ESTEP
DESIGN UNIT: TRAFFIC ENGINEERING

73033-01-002
04/27/11
7303301002e-pr042711ct.dgn.dgn
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Quantities</th>
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<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
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<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>270 SQF</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc, Bet F2</td>
<td>33 Ft</td>
</tr>
<tr>
<td>4</td>
<td>Hand Finishing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>101 SQF</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

MATCHES EXISTING ELEVATION
SIDEWALK REMOVE
CURB & GUTTER, REM

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>25 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>9 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SW QUADRANT
REMOVAL DIAGRAM

EX. ROW

EX. ROW

SIDEWALK REMOVAL SHEET
M-84 (BAY RD.)
AT SHATTUCK RD.

SAGINAW TOWNSHIP, SAGINAW COUNTY

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>25 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>9 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>
**Detectable Warning**

- CURB & GUTTER W/JSC PR
- LANDING AREA 4' X 4' MIN.
- MAX SLOPE 2%

**WATER**

2.76'.6'

2.76'.6'

9.9'.5'

5.1'.5'

**List of Material**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Detectable Warning Surface</td>
<td>6 FT</td>
</tr>
<tr>
<td></td>
<td>Sidewalk Ramp</td>
<td>3 FT</td>
</tr>
<tr>
<td></td>
<td>Curb and Gutter, Conc. Bit D2</td>
<td>25 FT</td>
</tr>
<tr>
<td></td>
<td>Hand Pilling</td>
<td>1 Top</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>32 Syd</td>
</tr>
</tbody>
</table>

**ADA Accessible Criteria**

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5" behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

---

**List of Material**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Paching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Curb and Gutter, Conc. Bit D2</td>
<td>25 Ft</td>
</tr>
<tr>
<td>Hand Pilling</td>
<td>1 Top</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>32 Syd</td>
</tr>
</tbody>
</table>

---

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<th>Quantities</th>
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</thead>
<tbody>
<tr>
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<td>1 Ton</td>
</tr>
<tr>
<td>Curb and Gutter, Conc. Bit D2</td>
<td>25 Ft</td>
</tr>
<tr>
<td>Hand Pilling</td>
<td>1 Top</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>32 Syd</td>
</tr>
</tbody>
</table>
ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).
2) PULL-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.
3) THE PULL-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.
4) PULL-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
**Traffic Signal Removal Sheet**

**Plan: 73033-01-004**
**Date/Revised: 04/27/11**
**File: 7303301004e-pr042711ct.dgn**

**Traffic Signals:**

- **DESIGNED BY:** JESSI ESTEP  
  **DESIGNED BY:** BAY CITY  
  **DESIGNED BY:** M-84 (BAY RD.)  
  **DESIGNED BY:** AT WEISS ST.

- **TRAFFIC SIGNAL REMOVAL SHEET**

**List of Material**:

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Controller and Cabinet, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>2</td>
<td>Span Wire, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>3</td>
<td>TS, Pedestrian Bracket Arm Mtd, Rem</td>
<td>4 Ea</td>
</tr>
<tr>
<td>4</td>
<td>TS, Span Wire Mtd, Rem</td>
<td>5 Ea</td>
</tr>
<tr>
<td>5</td>
<td>HH, Rem</td>
<td>4 Ea</td>
</tr>
<tr>
<td>6</td>
<td>Pedestal Fdn, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>7</td>
<td>Controller, Rem</td>
<td>4 Ea</td>
</tr>
<tr>
<td>8</td>
<td>Controller Fdn, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>9</td>
<td>Case Sign, Rem</td>
<td>1 Ea</td>
</tr>
<tr>
<td>10</td>
<td>Controller Fdn, Rem</td>
<td>1 Ea</td>
</tr>
</tbody>
</table>

See ADA Ramp Detail Plans for removal/construction of sidewalks and ramps.
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C#16 PJ.
3. PUSHBUTTON CABLES ARE 2/C#16 SHIELDED PJ.
4. DOGHOUSE SIGNAL CABLES ARE 1/C#16 PJ.
5. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
6. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

16 LS. DIGITAL TYPE CONTROLLER & CABINET

INSTALL CABLE DIAGRAM

NOT TO SCALE
TRAFFIC SIGNAL INSTALL SHEET
ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Detectable Warning Surface</td>
<td>12</td>
<td>TON</td>
</tr>
<tr>
<td>(2)</td>
<td>Sidewalk, Rock</td>
<td>50</td>
<td>TON</td>
</tr>
<tr>
<td>(3)</td>
<td>Curb and Gutter, Conc. 4&quot; B 1-1/2&quot;</td>
<td>50</td>
<td>TON</td>
</tr>
<tr>
<td>(4)</td>
<td>Hand Patching</td>
<td>1</td>
<td>TON</td>
</tr>
<tr>
<td>(5)</td>
<td>Turf Establishment, Performance</td>
<td>50</td>
<td>YD</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. **Pushbutton must be no more than 24" from the ADA accessible criteria.**
2. **Pushbutton must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.**
3. **The pushbutton should be located up to 5' behind the crosswalk.**
4. **Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.**

**SIDEWALK REMOVAL SHEET**

**HAZARDOUS OR FLAMMABLE MATERIAL**
SW QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>35 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>24 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>No.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>12 Tons</td>
</tr>
<tr>
<td>2</td>
<td>Curb and Gutter, Conc. Set In</td>
<td>240 Lts</td>
</tr>
<tr>
<td>3</td>
<td>Hand Polishing</td>
<td>1 Bar</td>
</tr>
<tr>
<td>4</td>
<td>Turf Establishment, Performance</td>
<td>64 Yard</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE SIDEWALK (REACH CONSIDERATION).
2. PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.
3. THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.
4. PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO THE CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

* MATCHES EXISTING ELEVATION

---

**SW QUADRANT**

**PLAN**

| 1"=10' |

---

**SW QUADRANT**

**PLAN**

| 1"=10' |
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
<td>56 ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>24 Syd</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SE QUADRANT REMOVAL DIAGRAM

HAZARDOUS OR FLAMMABLE MATERIAL
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Defective Warning Surface</td>
<td>16 Ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk Ramp</td>
<td>215 Ft</td>
</tr>
<tr>
<td></td>
<td>Curb and Gutter, Conc. Dc4 F2</td>
<td>56 Ft</td>
</tr>
<tr>
<td></td>
<td>Hand Pushing</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>42 Sft</td>
</tr>
</tbody>
</table>

---

**ADD ACCESSIBLE CRITERIA**

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
FOR ELECTRICAL SERVICE INSPECTION CONTACT MICHIGAN DEPARTMENT OF ENERGY, LABOR, AND ECONOMIC GROWTH AT 989-486-0075. COST TO CONTRACTOR WILL BE INCIDENTAL.

CONTACT: MR. NICK CHENOCHI OF CONSUMERS ENERGY AT 989-751-4623 FOR SERVICE DISCONNECT & RELOCATE, & 2 DOWN GUY REMOVALS. ERI-035650310 COST TO CONTRACTOR: $4,110

UTILIZE EXISTING CONDUIT & HANGHOLE WHERE POSSIBLE, OTHERWISE INSTALL NEW AS DIRECTED BY ENGINEER.

NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE
1. TRAFFIC SIGNAL CABLES ARE 5/C SWG 6 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 3/C SWG 6 PJ.
3. YAGI ANTENNA CABLES ARE LMF 400 OR APPROVED EQUAL.

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Keep Eliminate</td>
<td>1 EA</td>
</tr>
<tr>
<td>2</td>
<td>Control &amp; Cabinet. Digital Type</td>
<td>1 EA</td>
</tr>
<tr>
<td>3</td>
<td>Control &amp; Cabinet. Digital Type, Extended</td>
<td>1 EA</td>
</tr>
<tr>
<td>4</td>
<td>Stainless Steel, Closed Loop, 20 foot</td>
<td>1 EA</td>
</tr>
<tr>
<td>5</td>
<td>N.P.D.</td>
<td>4 EA</td>
</tr>
<tr>
<td>6</td>
<td>Tee, Reducer, For, 20/20 inch, 50 inch, Non-Illuminated</td>
<td>1 EA</td>
</tr>
<tr>
<td>7</td>
<td>Strain Pole, 10 foot, Steel, 10 foot</td>
<td>1 EA</td>
</tr>
<tr>
<td>8</td>
<td>Strain Pole, Cross Arm,</td>
<td>1 EA</td>
</tr>
<tr>
<td>9</td>
<td>Cross Arm, Steel, 3-1/2 inch</td>
<td>1 EA</td>
</tr>
<tr>
<td>10</td>
<td>Cross Arm, Steel, 1 inch</td>
<td>1 EA</td>
</tr>
<tr>
<td>11</td>
<td>Cross Arm, Steel, 1/2 inch</td>
<td>1 EA</td>
</tr>
</tbody>
</table>

INSTALL CABLE DIAGRAM

STICK: 7" ARC

COIL UP SUFFICIENT LENGTH OF CABLES, 1-3/6# SECONDARY CABLES FOR 120V T.S. FUSE FOR CONNECTION BY CORE FUSE AT 60A. (NEW 47-3/6 STAINLESS STEEL)

60A, SERVICE DISCONNECT

INSTALL CABLE DIAGRAM

NOT TO SCALE
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and gutter, Rem</td>
<td>30 Ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>1' 6&quot;</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1' 3&quot;</td>
</tr>
</tbody>
</table>
### List of Materials

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>1 FT</td>
</tr>
<tr>
<td>Sidewalk Ramp</td>
<td>3 FT</td>
</tr>
<tr>
<td>Curb and gutter, Gen. 4 ft 2 in.</td>
<td>3 FT</td>
</tr>
<tr>
<td>Hand Potholing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>100 sqyd</td>
</tr>
<tr>
<td>Water Stabilizer, high</td>
<td>1 gal</td>
</tr>
</tbody>
</table>

### ADA Accessible Criteria

1. **Push-Button** must be no more than 24" from the edge of sidewalk (reach consideration).
2. **Push-Button** must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>10 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Lamp</td>
<td>100 Ft</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc. Set F2</td>
<td>25 Ft</td>
</tr>
<tr>
<td>4</td>
<td>Hand Railing</td>
<td>1 Tn</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>100 Yrd</td>
</tr>
<tr>
<td>6</td>
<td>Water Shutoff, Adj</td>
<td>160</td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDLWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDLWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>20 ft</td>
</tr>
<tr>
<td>Sidewalk Ramp</td>
<td>20 ft</td>
</tr>
<tr>
<td>Curb and Gutter, Conc. T2</td>
<td>10 ft</td>
</tr>
<tr>
<td>Hand Painting</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>300 sqyd</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).
2. PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4.4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.
3. THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.
4. PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

* MATCHES EXISTING ELEVATION

---

**SW QUADRANT PLAN**

1"=10'

---

**SW QUADRANT PLAN**

1"=10'
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
<td>50 ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>10 yd</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1 yd</td>
</tr>
</tbody>
</table>

SE QUADRANT
REMOVAL DIAGRAM
1'-10'
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Detectable Warning Surface</td>
<td>12 Ft</td>
</tr>
<tr>
<td>(x)</td>
<td>Sidewalk Frame</td>
<td>350 Ft</td>
</tr>
<tr>
<td>(x)</td>
<td>Curb and Gutter, Cem. Det F2</td>
<td>50 Ft</td>
</tr>
<tr>
<td>(x)</td>
<td>Hand Railing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>(x)</td>
<td>Turf Establishment, Performance</td>
<td>1000 sq. ft</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).
2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.
3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.
4) PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.
FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF LABOR AND ECONOMIC GROWTH AT 888-668-0092 COST TO CONTRACTOR WILL BE INCIDENTAL.

CONTACT: MR. NICK CHEMINEAU OF CONSUMERS ENERGY AT 888-791-5555 FOR SERVICE DISCONNECT & RECONNECT, & 2000 REMEDIAL.

ST. POLE
3-3/4" DB CONDUIT
3-1/2" DB CONDUIT

TYPICAL

NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/CHG PJ.
2. PEDESTRIAN SIGNAL CABLES ARE Y/CHG PJ.
3. YAGI ANTENNA CABLES ARE LD400 OR APPROVED EQUAL.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>35 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>37 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>3 Cyd</td>
</tr>
</tbody>
</table>

NW QUADRANT REMOVAL DIAGRAM

1" = 10'

SIDEWALK REMOVE
CURB & GUTTER, REM
### List of Material

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>Detectable Warning Surface</td>
<td>60 FT</td>
</tr>
<tr>
<td>0.2</td>
<td>Sidewalk Ramp</td>
<td>233.44 FT</td>
</tr>
<tr>
<td>0.3</td>
<td>Curbing &amp; Gutter, Conv. Grav. Def. E5</td>
<td>35 FT</td>
</tr>
<tr>
<td>0.4</td>
<td>Hand Paving</td>
<td>3 TON</td>
</tr>
<tr>
<td>0.5</td>
<td>Turf Establishment, Performance</td>
<td>70 SYD</td>
</tr>
</tbody>
</table>

### ADA Accessible Criteria
1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

*Matches existing elevation*
### List of Material

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>30 ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Pave</td>
<td>300 SF</td>
</tr>
<tr>
<td>3</td>
<td>Curb and gutter, Conc. &amp; Cnt. Fc</td>
<td>25 ft</td>
</tr>
<tr>
<td>4</td>
<td>Hand Railing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>65 syd</td>
</tr>
</tbody>
</table>

### ADA Accessible Criteria

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>ITEMS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>12 FT</td>
<td></td>
</tr>
<tr>
<td>Sidewalk Rim</td>
<td>2 FT</td>
<td></td>
</tr>
<tr>
<td>Curb &amp; gutter, Coll, Eid.</td>
<td>4 FT</td>
<td></td>
</tr>
<tr>
<td>Hand Railing</td>
<td>1 Ton</td>
<td></td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>300 SYD</td>
<td></td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and gutter, Rem</td>
<td>35 M</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>20 Yd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Yd</td>
</tr>
</tbody>
</table>

SE QUADRANT
REMOVAL DIAGRAM
"=10'"
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Detectable Warning Surface</td>
<td>12 Ft.</td>
</tr>
<tr>
<td>02</td>
<td>Sidewalk Ramp</td>
<td>270 Pk.</td>
</tr>
<tr>
<td>03</td>
<td>Curb &amp; Gutter, Concrete, Int Pk.</td>
<td>350 Pk.</td>
</tr>
<tr>
<td>04</td>
<td>Hand Patching</td>
<td>1 Box</td>
</tr>
<tr>
<td>05</td>
<td>Turf Establishment, Performance</td>
<td>350 Yd.</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction as directed by engineer.

* MATCHES EXISTING ELEVATION

SE QUADRANT PLAN

1:100

MAXIMUM INSTALL DEPTH

48" MAX. (R.A.E.)

EMERGENCY EXIT:

100 MT. CITY

CITY OF RICHARD, RICHARD COUNTY
② 30' LS, DIGITAL TYPE, POLE MTD CONTROLLER
① HH
① SERVICE DISCONNECT (NEMA 4X)
① 36' DIA. X 14' UNCASED FDN
① 30' ANCHOR BASE STEEL STRAIN POLE
④ WIRELESS INTERCONNECT REMOTE ANTENNA
⑬ 2W-2C-PA SEE DETAIL D-2 ON SIG-028-A
⑩ ⑯ ALUMINUM PEDESTAL
⑬ 2W-2C-BA SEE DETAIL D-1 ON SIG-029-B

HAZARDOUS OR FLAMMABLE MATERIAL

EX. HH

66' EX R.O.W.

36" DIA. X 14' UNCASED FDN
30' ANCHOR BASE STEEL STRAIN POLE
2W-2C-BA SEE DETAIL D-1 ON SIG-029-B

HAZARDOUS OR FLAMMABLE MATERIAL

EX. HH

66' EX R.O.W.

1-1/2" DIRECTIONAL BORE

EX. HH

66' EX R.O.W.

36" DIA. X 14' CASED FDN
30' ANCHOR BASE STEEL STRAIN POLE

HAZARDOUS OR FLAMMABLE MATERIAL

EX. HH

66' EX R.O.W.

SEE ADD RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.

PLAN
J=30
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
<td>20 Ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>27 Syd</td>
</tr>
<tr>
<td></td>
<td>Excavation, Earth</td>
<td>3 Cyd</td>
</tr>
</tbody>
</table>

NW QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>1 FT</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>244 FT</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc. Int F2</td>
<td>20 FT</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Hand Railing</td>
<td>1 Lin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Yellow Reflective Performance</td>
<td>10 Lin</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Water Shutoffs, 4&quot;</td>
<td>24 Lin</td>
<td></td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4" LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.  

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.

MAGAZINE INSTALL SHEET

PLAN 1"=10'

DON QUADRANT

PLAN 1"=10'

HAZARDOUS OR FLAMMABLE MATERIAL

* MATCHES EXISTING ELEVATION
<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk, Rem</td>
<td>25 FT</td>
</tr>
<tr>
<td>Sidewalk, Rem</td>
<td>20 SqYd</td>
</tr>
<tr>
<td>Excavation, Earth</td>
<td>1 CY</td>
</tr>
</tbody>
</table>

NE QUADRANT
REMOVAL DIAGRAM

HAZARDOUS OR FLAMMABLE MATERIAL

CITY OF BAGLEY, BAGLEY COUNTY

MDOT

DRAWN BY: [Signature]
DRAWN FOR: [Signature]
CHECKED BY: [Signature]
ISSUED BY: [Signature]

[Scale Information]
[Date]
[Location]
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Detectable Warning Surface</td>
<td>12 ft</td>
</tr>
<tr>
<td></td>
<td>Sidewalk Ramp</td>
<td>157 ft</td>
</tr>
<tr>
<td></td>
<td>Surf and Gutter, Conc. Buff F2</td>
<td>2 ft</td>
</tr>
<tr>
<td></td>
<td>Hand Finishing</td>
<td>1 ton</td>
</tr>
<tr>
<td></td>
<td>Turt Establishment, Performance</td>
<td>195 sqft</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

* MATCHES EXISTING ELEVATION

HAZARDOUS OR FLAMMABLE MATERIAL

NE QUADRANT PLAN 1"=10'
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>12 FT</td>
</tr>
<tr>
<td>Sidewalk Jump</td>
<td>12 FT</td>
</tr>
<tr>
<td>Surf and gutter, Conc. Det F2</td>
<td>35 FT</td>
</tr>
<tr>
<td>Hand Polishing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Surf Establishment, Permeable</td>
<td>100 Yds</td>
</tr>
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</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the crosswalk.
4) Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>42 FT</td>
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<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>20 SYD</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 CYD</td>
</tr>
</tbody>
</table>

SE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>3 ft</td>
</tr>
<tr>
<td>Sidewalk Ramp</td>
<td>77 ft</td>
</tr>
<tr>
<td>curb &amp; gutter misc. pr</td>
<td>42 ft</td>
</tr>
<tr>
<td>Hand Finishing</td>
<td>1 ton</td>
</tr>
<tr>
<td>turf establishment, performance</td>
<td>48 sqyd</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
NOTE: EXISTING SIGN AND WOOD POSTS ARE TO BE AVOIDED DURING CONSTRUCTION. IF ANY ARE IMPACTED, THEY ARE TO BE REPLACED IN KIND BY THE CONTRACTOR.

NEW 45’/4 WOOD POLE & GUY (BY CE)

2W-2C-BA SEE DETAIL D-1 ON SIG-029-B

EX. ANCHOR BASE STEEL STRAIN POLE
8 LS, DIGITAL TYPE, POLE MTD CONTROLLER
2W-2C-BA SEE DETAIL D-1 ON SIG-029-B

WIRELESS INTERCONNECT MASTER ANTELLNA
SERVICE DISCONNECT (NEMA 4X)
SECONDARY SERVICE (BY CE)

36" DIA. X 14’ CASED FDN
30’ ANCHOR BASE STEEL STRAIN POLE
2W-2C-BA SEE DETAIL D-1 ON SIG-029-B

HAZARDOUS OR FLAMMABLE MATERIAL

SEE ADA RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.

TRAFFIC SIGNAL INSTALL SHEET

M-58 EB (STATE)
AT MICHIGAN AVE.
CITY OF SAGINAW, SAGINAW COUNTY
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Wood Pole</td>
<td>1</td>
</tr>
<tr>
<td>Case Sign</td>
<td>1</td>
</tr>
<tr>
<td>3-3&quot; DB Conduit</td>
<td>1</td>
</tr>
<tr>
<td>1-1 1/2&quot; DB Conduit</td>
<td>1</td>
</tr>
<tr>
<td>Conduit, DB, 1&quot;</td>
<td>15 Ft</td>
</tr>
<tr>
<td>Conduit, DB, 3&quot;</td>
<td>15 Ft</td>
</tr>
<tr>
<td>TS, One Way Span Wire Mtd (LED)</td>
<td>1</td>
</tr>
</tbody>
</table>

**NOTE:**
- CABLES TO BE USED UNLESS SPECIFIED OTHERWISE
- Pedestrian Signal Cables are 7/C#16 PJ.
- Traffic Signal Cables are 5/C#16 PJ.
- Yagi Antenna Cables are LMR 400 or Approved Equal.

**INSTALL CABLE DIAGRAM**

- **NEW WOOD POLE**
- **60A. SERVICE DISCONNECT** (NEMA 4X-STAINLESS STEEL)
- **FUSE** at 60A.
- **COIL-UP SUFFICIENT LENGTH OF 600V.**
- **1-3/C #6 SECONDARY CABLES FOR 120V.**
- **T.S. FEED FOR CONNECTION BY CE.**

**TRAFFIC SIGNAL INSTALL SHEET**

- **NO. 2207**
- **DATE**: 05/20/11
- **DESIGN UNIT**: MICHIGAN DEPARTMENT OF TRANSPORTATION
- **CITY OF SAGINAW, SAGINAW COUNTY**
- **AT MICHIGAN AVE.**
- **ER#1005663799**
- **COST TO CONTRACTOR**: $930.
### LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>50 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>33 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

---

**SIDEWALK REMOVAL SHEET**

**M-58 EB (STATE)**

**AT MICHIGAN AVE.**

**CITY OF SAGINAW, SAGINAW COUNTY**

**DESIGNED BY: JESSI ESTEP**

**DATE/REVCN: 05/20/11**

**FILE: 730910A.pr052011ct.dgn**

---

**NW QUADRANT**

**REMOVAL DIAGRAM**

**NOT TO SCALE**
### List of Material

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>10 Ft</td>
</tr>
<tr>
<td>Curb and Gutter, Conc, Det F2</td>
<td>296 Sft</td>
</tr>
<tr>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>57 Sft</td>
</tr>
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</table>

### Northings and Elevations

<table>
<thead>
<tr>
<th>Point</th>
<th>Northing</th>
<th>Easting</th>
<th>Pr. Elev</th>
<th>Ex. Elev</th>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>5229.12</td>
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<td>5624.57</td>
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<td>499.40</td>
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<tr>
<td>(4)</td>
<td>5248.53</td>
<td>5624.59</td>
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<td>499.72</td>
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<td>(5)</td>
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<td>(8)</td>
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<td>(9)</td>
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<td>5616.33</td>
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<td>500.15</td>
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<td>5606.42</td>
<td>500.12</td>
<td>500.22</td>
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<tr>
<td>(13)</td>
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<td>5601.72</td>
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<td>(15)</td>
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</tr>
</tbody>
</table>

* Matches Existing Elevation

### ADA Accessible Criteria

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

### Drawing Information

- **Department:** Michigan Department of Transportation
- **Design Unit:** TRAFFIC SIGNALS
- **City:** CITY OF SAGINAW, SAGINAW COUNTY
- **File:** 73073-01-037
- **Date:** 05/20/11
- **Design Unit:** TRAFFIC SIGNALS
- **Plan:** 730733-01
- **Revision:** P052011CT.DGN
- **City:** BAY CITY
- **Street:** M-58 (STATE)
- **Location:** AT MICHIGAN AVE.
- **Scale:** 1" = 10'
NE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>30 ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>13 yds</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

M-58 EB (STATE)
AT MICHIGAN AVE.
CITY OF SAGINAW, SAGINAW COUNTY

Michigan Department of Transportation
TRAFFIC SIGNALS

DESIGNED BY: JESSI ESTEP
DESIGN UNIT: TRAFFIC SIGNALS
73073-01-037
7307301037e-pr052011ct.dgn
05/20/11
BAY CITY
105391A

SIDEWALK REMOVAL SHEET

SIDEWALK REMOVE
CURB & GUTTER, REM
**Detachable Warning**

**Curb & Gutter Misc PR**

**Landing Area 4' x 4' Min. Max Slope 2%**

**ADA Accessible Criteria**

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
HAZARDOUS OR FLAMMABLE MATERIAL

SW QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>45 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>31 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SIDEWALK REMOVAL SHEET
M-58 EB (STATE)
AT MICHIGAN AVE.
CITY OF SAGINAW, SAGINAW COUNTY
1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

* Matches existing elevation
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>22'</td>
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<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>19 Syd</td>
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<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SIDEWALK REMOVE
CURB & GUTTER, REM

SIDEWALK REMOVAL SHEET
M-58 EB (STATE)
AT MICHIGAN AVE.
CITY OF SAGINAW, SAGINAW COUNTY

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb and Gutter, Rem</td>
<td>22'</td>
</tr>
<tr>
<td>Sidewalk, Rem</td>
<td>19 Syd</td>
</tr>
<tr>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
</tr>
</tbody>
</table>

SE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Detectable Warning Surface</td>
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<tr>
<td>(2)</td>
<td>Sidewalk Ramp</td>
<td>22 FT</td>
</tr>
<tr>
<td>(3)</td>
<td>Curb and Gutter, Conc, Set F2</td>
<td>174 lin.</td>
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<td>(4)</td>
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<td>(5)</td>
<td>Side Rehab, Performance</td>
<td>59 sqyd</td>
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<td>(6)</td>
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<td></td>
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</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**SIDEWALK INSTALL SHEET**

SE QUADRANT

PLAN  \( T = 10' \)

<table>
<thead>
<tr>
<th>POINT</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>PR. ELEV</th>
<th>EX. ELEV</th>
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<td>5694.27</td>
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<td>499.75</td>
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* MATCHES EXISTING ELEVATION
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Controller and cabinet, 1.25</td>
<td>1 1/2</td>
</tr>
<tr>
<td>2</td>
<td>W. Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>3</td>
<td>T. Pedestrian, Pedestrian Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>4</td>
<td>T. Pedestrian, Bracket 3/8 Hrn</td>
<td>2 Lb</td>
</tr>
<tr>
<td>5</td>
<td>T. Open Hrn H. Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>6</td>
<td>Sign H. Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>7</td>
<td>Pedestrian, Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>8</td>
<td>Sign H. Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>9</td>
<td>Pedestrian, Hrn</td>
<td>1 Lb</td>
</tr>
<tr>
<td>10</td>
<td>Sign H. Hrn</td>
<td>1 Lb</td>
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</tbody>
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REM. 1W-1C
REM. 3LB POST
REM. W3-3 SIGN

SEE ADA RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.

NOT TO SCALE

TRAFFIC SIGNAL REMOVAL SHEET

CITY OF BASHEIN, SAGINAW COUNTY
NORTH QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Curb &amp; Gutter, Rem</td>
<td>20 CY</td>
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<tr>
<td>Excavation, Earth</td>
<td>5 CY</td>
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</table>
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td></td>
<td>Detectable Warning Surface</td>
<td>6 FT</td>
</tr>
<tr>
<td></td>
<td>Sidewalk Ramp</td>
<td>24' MT</td>
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<tr>
<td></td>
<td>Curb and gutter, Conc, Def P2</td>
<td>26 FT</td>
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<tr>
<td></td>
<td>Hand Pitching</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>50 Syd</td>
</tr>
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</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHPUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.

NORTH QUADRANT PLAN
1"=10'

SIGN TO BE RELOCATED
EAST QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
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<tbody>
<tr>
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<td>34 Ft</td>
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<tr>
<td>2</td>
<td>Excavation, Earth</td>
<td>5 Cyd</td>
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</table>
ADD ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4" long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb &amp; gutter, Rem</td>
<td>20 FT</td>
</tr>
<tr>
<td>2</td>
<td>Excavation, Earth</td>
<td>5 CYD</td>
</tr>
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SOUTH QUADRANT
REMOVAL DIAGRAM

NOT TO SCALE
* MATCHES EXISTING ELEVATION

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.
FOR ELECTRICAL SERVICE INSPECTION CONTACT MICHIGAN DEPARTMENT OF ENERGY, LABOR, AND ECONOMIC GROWTH AT 989-668-0092. COST TO CONTRACTOR WILL BE INCIDENTAL.

CONTACT: MR. NICK CHEMENOF OF CONSUMERS ENERGY AT 989-792-3663 FOR SERVICE DISCONNECT & RECONNECT. 2 DRAIN GUT REOVALS. REMOVE WOOD POLE. NEW 40'/4 WOOD POLE.

#106566794 COST TO CONTRACTOR: $1650.

ST. POLE

3-3" DB CONDUIT

1-1 1/2" DB CONDUIT

1-3" DB CONDUIT

NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE.

1. TRAFFIC SIGNAL CABLES ARE 5/CW/G6 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/CW/G6 PJ.
3. TAI-G ANTENNA CABLES ARE LWR 400 OR APPROVED EQUAL.

INSTALL CABLE DIAGRAM

NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24&quot;X30 1-WAY NON-ILLUMINATED CASE SIGN</td>
<td>X4</td>
</tr>
<tr>
<td>2</td>
<td>24&quot;X30 1-WAY NON-ILLUMINATED CASE SIGN</td>
<td>X4</td>
</tr>
<tr>
<td>3</td>
<td>24&quot;X30 1-WAY NON-ILLUMINATED CASE SIGN</td>
<td>X4</td>
</tr>
<tr>
<td>4</td>
<td>24&quot;X30 1-WAY NON-ILLUMINATED CASE SIGN</td>
<td>X4</td>
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</table>

SE QUADRANT

1-3" DB CONDUIT PEDESTAL

NE QUADRANT

1-3" DB CONDUIT

TYPICAL

3-3" DB CONDUIT

1-1 1/2" DB CONDUIT

8 LS. DIGITAL TYPE CONTROLLER & CABINET POLE MTD

PS #2

PS #1

ST. POLE

ST. POLE

60A SERVICE DISCONNECT (NEH-4X STAINLESS STEEL) POLE AT 60A.

COIL-UP SUFFICIENT LENGTH OF 600V.

1-3/4 IN SECONDARY CABLES FOR 120V.

T.S. FEED FOR CONNECTION BY SE.

INSTALL CABLE DIAGRAM

NOT TO SCALE
<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>10 Ryd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Ryd</td>
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</tbody>
</table>

**Diagram Notes:**
- NW Quadrant
- Removal Diagram
- Not to Scale

**Legend:**
- HAZARDOUS OR FLAMMABLE MATERIAL
- EX. ROW
- SOD
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>01</td>
<td>Detectable Warning Surface</td>
<td>10 ft.</td>
</tr>
<tr>
<td>02</td>
<td>Sidewalk Ramp</td>
<td>12 ft.</td>
</tr>
<tr>
<td>03</td>
<td>Curb and Sidewalk, Conc. Cem. Ext F2</td>
<td>15 ft.</td>
</tr>
<tr>
<td>04</td>
<td>Hand Painting</td>
<td>1 box</td>
</tr>
<tr>
<td>05</td>
<td>Turf Establishment, Performance</td>
<td>37 yd²</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3. The push-button should be located up to 5' behind the crosswalk.

4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**NW QUADRANT PLAN**

1' = 10'

**HAZARDOUS OR
FLAMMABLE MATERIAL**
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
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<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>30 FT</td>
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<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>14 FT</td>
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<tr>
<td>3</td>
<td>Curb and Gutter, Cem. Est. Eq.</td>
<td>20 FT</td>
</tr>
<tr>
<td>4</td>
<td>Hand Fencing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>55 sqyd</td>
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<tr>
<td>6</td>
<td>Water Smoother, 65</td>
<td>1 65</td>
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* MATCHES EXISTING ELEVATION

404 ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
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</thead>
<tbody>
<tr>
<td>01</td>
<td>Detectable Warning Surface</td>
<td>10 ft</td>
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<tr>
<td>02</td>
<td>Sidewalk Ramp</td>
<td>210 sf</td>
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<tr>
<td>03</td>
<td>Curb and Gutter, Conc. Est P1</td>
<td>47 ft</td>
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<td>04</td>
<td>Hand Fencing</td>
<td>1 ton</td>
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<tr>
<td>05</td>
<td>Tint Establishment, Performance</td>
<td>35 sq ft</td>
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**ADA ACCESSIBLE CRITERIA**

1. PUS-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (PEACH CONSIDERATION).

2. PUS-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3. THE PUS-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4. PUS-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.

**SW QUADRANT PLAN**

1:10'
LIST OF MATERIAL

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</thead>
<tbody>
<tr>
<td>1</td>
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<td>10.44</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Eav</td>
<td>6.40</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyl</td>
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</tbody>
</table>

SE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

HAZARDOUS OR FLAMMABLE MATERIAL
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>6 FT</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>50 BF</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc. Cast Fz</td>
<td>36 FT</td>
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<td>4</td>
<td>Hand Railing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>20.5 Yd</td>
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</tbody>
</table>

* MATCHES EXISTING ELEVATION

**ADA ACCESIBLE CRITERIA**

1. PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2. PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3. THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4. PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/CWG 6 RJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/CWG 6 RJ.
3. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>3</td>
<td>Controller and Cabinet, Digital Type, Failured</td>
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</tr>
<tr>
<td>4</td>
<td>Wireless Intercom, Remote</td>
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</tr>
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<td>Signal Pole, Steel, Anchor Base, 3’ cord</td>
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<td>Signal Pole, Pipe, Conduit</td>
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<tr>
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<td>Signal Pole, Pipe, Hardware</td>
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<td>11</td>
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<td>Cables, (4), 4 Inch, Wire, Length 100 ft</td>
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<td>13</td>
<td>Cables, (1), 1 Inch, Wire, Length 100 ft</td>
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<tr>
<td>14</td>
<td>Cables, (2), 3/4 Inch, Wire, Length 100 ft</td>
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<tr>
<td>15</td>
<td>Cables, (3), 1/2 Inch, Wire, Length 100 ft</td>
<td>1</td>
</tr>
</tbody>
</table>

INSTALL CABLE DIAGRAM

NOT TO SCALE
LIST OF MATERIAL

- Detectable Warning Surface: 10 ft
- Sidewalk Ramp: 100 ft
- Curb and Gutter: Concrete F2: 25 ft
- Hand Pothching: 1 Ton
- Turf Establishment: Performance: 107 SYD

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24 from the edge of sidewalk (reach consideration).
2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3) The push-button should be located up to 5' behind the curbwalk.
4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

HAZARDOUS OR FLAMMABLE MATERIAL

NW QUADRANT PLAN

<table>
<thead>
<tr>
<th>POINT</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>PR. ELEV</th>
<th>EX. ELEV</th>
<th>MATCHES EXISTING ELEVATION</th>
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<td>16</td>
<td>5448.23</td>
<td>5912.39</td>
<td>500.14</td>
<td>500.39</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>5448.42</td>
<td>5917.51</td>
<td>499.88</td>
<td>500.28</td>
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</tr>
<tr>
<td>18</td>
<td>5448.58</td>
<td>5922.95</td>
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<td>500.16</td>
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<tr>
<td>19</td>
<td>5448.88</td>
<td>5925.23</td>
<td>499.59</td>
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<tr>
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<td>5925.23</td>
<td>499.59</td>
<td>499.59</td>
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</tr>
</tbody>
</table>
ADA ACCESSIBLE CRITERIA:

1. Push-button must be at least 24" from the edge of sidewalk (check consideration).

2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3. The push-button should be located up to 5' behind the crosswalk.

4. Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.
<table>
<thead>
<tr>
<th>POINT</th>
<th>NORTHING</th>
<th>EASTING</th>
<th>PR. ELEV</th>
<th>EX. ELEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5394.31</td>
<td>5938.41</td>
<td>499.40 *</td>
<td>499.40</td>
</tr>
<tr>
<td>2</td>
<td>5402.90</td>
<td>5928.74</td>
<td>499.55 *</td>
<td>499.55</td>
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<tr>
<td>3</td>
<td>5402.31</td>
<td>5928.76</td>
<td>499.55</td>
<td>500.05</td>
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<td>4</td>
<td>5398.95</td>
<td>5928.88</td>
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<td>500.06</td>
</tr>
<tr>
<td>5</td>
<td>5398.84</td>
<td>5923.89</td>
<td>499.82</td>
<td>500.06</td>
</tr>
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<td>6</td>
<td>5398.70</td>
<td>5918.89</td>
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<td>7</td>
<td>5398.54</td>
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<td>500.16</td>
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<td>8</td>
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<td>5914.08</td>
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<td>9</td>
<td>5393.92</td>
<td>5919.07</td>
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<td>12</td>
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<td>5377.22</td>
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<td>500.31</td>
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<tr>
<td>15</td>
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<td>500.29 *</td>
<td>500.29</td>
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<tr>
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<td>5384.82</td>
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<td>499.97</td>
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<td>18</td>
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<td>19</td>
<td>5394.20</td>
<td>5937.82</td>
<td>499.41</td>
<td>499.95</td>
</tr>
</tbody>
</table>

**SW QUADRANT PLAN**

1"=30'

**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>10 FT</td>
</tr>
<tr>
<td>Sidewalk Paving</td>
<td>200 SQF</td>
</tr>
<tr>
<td>Curb and Gutter, Cone, Dot E2</td>
<td>45 FT</td>
</tr>
<tr>
<td>Hand Railing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Turf Establishment, Performance</td>
<td>300 SYD</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb and Sutter, Rem</td>
<td>20 FT</td>
</tr>
<tr>
<td>Sidewalk, Rem</td>
<td>24 Yard</td>
</tr>
<tr>
<td>Excavation, Earth</td>
<td>3 Yard</td>
</tr>
</tbody>
</table>
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>10 ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Paving</td>
<td>24 ft²</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter - Conc.</td>
<td>1 ton</td>
</tr>
<tr>
<td>4</td>
<td>Hand Patching</td>
<td>100 sq ft</td>
</tr>
<tr>
<td>5</td>
<td>Sidewalk, Paving, Performance</td>
<td>150 sq ft</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**SE QUADRANT PLAN**

**SE QUADRANT PLAN**

*Measures Existing Elevation*
FOR ELECTRICAL SERVICE INSPECTION CONTACT WICHEGAN DEPARTMENT OF ENERGY, LABOR, AND ECONOMIC GROWTH AT 989-686-0032. COST TO CONTRACTOR WILL BE INCIDENTAL.

CONTACT: MR. NICK CHENOWETH OF CONSUMERS ENERGY AT 989-791-5693 FOR SERVICE DISCONNECT & RECONNECT. REMOVE WOOD POLE & 2 DING GUYS. NEW 40'/4 WOOD POLE, & TRANSFER STREET LIGHT. RR #1005663792. COST TO CONTRACTOR: $845

UTILIZE EXISTING CONDUIT & HANDHoles WHERE POSSIBLE. OTHERWISE INSTALL NEW AS DIRECTED BY ENGINEER.

PHASING DIAGRAM

NOTE: PULL & REMOVE WOOD POLE HEIGHT. SEE SHEET 3 SHEETS.
FIELD COORDINATE IS TO BE TESTED FOR JOHN SERVICE AT POLE. TRENCH CAN MEASURE HEIGHT = 3FT
NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 6/0X6 R.J.
2. PEDESTRIAN SIGNAL CABLES ARE 7/0X6 R.J.
3. PROJECTION CABLES ARE 2/0X6 SHIELDED R.J.
4. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

COIL-UP SUFFICIENT LENGTH OF 600V., 1-3/C #2 SECONDARY CABLES FOR 120V.
T.S. FEED FOR CONNECTION BY CE.
FUSE AT 60A, NEMA 4X-STAINLESS STEEL.
60A, SERVICE DISCONNECT

INSTALL CABLE DIAGRAM NOT TO SCALE

J6 LS, DIGITAL TYPE CONTROLLER & CABINET
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>12 FT</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>13 FT</td>
</tr>
<tr>
<td>3</td>
<td>Curb &amp; Gutter, Conc. Int FZ</td>
<td>40 FT</td>
</tr>
<tr>
<td>4</td>
<td>Hand Potholing</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turt Establishment, Performance</td>
<td>50 Yard</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push button should be located up to 5' behind the crosswalk.

4) Push button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

* Matches Existing Elevation
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>12 FT</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Pump</td>
<td>175 SQ FT</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Cons. Fnt</td>
<td>41 FT</td>
</tr>
<tr>
<td>4</td>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Trench Establishment, Performance</td>
<td>50 Yd</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1. Push-button must be no more than 24" from the edge of sidewalk (reach consideration).
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
SW QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb and Gutter, Rem</td>
<td>40 Ft</td>
</tr>
<tr>
<td>Sidewalk, Rem</td>
<td>50 Yd</td>
</tr>
<tr>
<td>Excavation, Earth</td>
<td>1 Cyp</td>
</tr>
</tbody>
</table>

SIDEWALK REMOVE
CURB & GUTTER REMOVE
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>2 FT</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>30 FT</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc. Del E2</td>
<td>4 FT</td>
</tr>
<tr>
<td>4</td>
<td>Hand Forking</td>
<td>1 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment Performance</td>
<td>75 Sqyd</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).
2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.
3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.
4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
SE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE
* MATCHES EXISTING ELEVATION

### ADA ACCESSIBLE CRITERIA

1. **PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).**

2. **PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.**

3. **THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.**

4. **PUSH-PUSH BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.**
SECONDARY SERVICE (BY CE)
① SERVICE DISCONNECT (NEMA 4X)
② 8 LS, DIGITAL TYPE POLE MTD CONTROLLER
③ HH
④ 30' ANCHOR BASE STEEL STRAIN POLE
⑤ 36" DIA. X 14' UNCASED FDN
⑥ 2W-2C-BA SEE DETAIL D-1 ON SIG-029-B
⑦ PUSHBUTTON FOR CROSSING M-46
⑧ WIRELESS VEHICLE DETECTION ACCESS POINT MTDO AT 25'
⑨ EX. 30'/5 WOOD POLE
⑩ SEE DETAIL D-1 ON SIG-029-B
⑪ HH
⑫ 30' ANCHOR BASE STEEL STRAIN POLE
⑬ 36" DIA. X 14' UNCASED FDN
⑭ 2W-2C-BA SEE DETAIL D-1 ON SIG-029-B
⑮ PUSHBUTTON FOR CROSSING M-46
⑯ 36" DIA. X 14' UNCASED FDN
⑰ WIRELESS DETECTION REPEATER MTD AT 25'
⑱ HH
⑲ 2W-2C-BA SEE DETAIL D-3 ON SIG-029-A
⑳ PUSHBUTTON FOR CROSSING M-46

SEE ADA RAMP DETAIL PLANS FOR REMOVAL/CONSTRUCTION OF SIDEWALKS AND RAMPS.
ST. POLE

3-3" DB CONDUIT

1-1 1/2" DB CONDUIT

TYPICAL

NOTE: CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/8" X 16 P.J.
2. PEDESTRIAN SIGNAL CABLES ARE 7/16" X 16 P.J.
3. PISHNEUTON CABLES ARE 2/5" X 16 SHIELDED P.J.
4. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

CONTACT: MIKE NICK CHENINOTH OF CONSUMERS ENERGY AT 989-791-5863 FOR NEW SERVICE.
SERVICE DISCONNECT, 4 & 2 DOWN GUY RENOVALS. EXP 00089-0076
COST TO CONTRACTOR: $420.

LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Service Disconnect</td>
<td>2 each</td>
</tr>
<tr>
<td>2</td>
<td>Controller, metal, digital type</td>
<td>2 each</td>
</tr>
<tr>
<td>3</td>
<td>Controller, metal, digital type, bell ringer</td>
<td>2 each</td>
</tr>
<tr>
<td>4</td>
<td>Wireless vehicle detection system</td>
<td>2 each</td>
</tr>
<tr>
<td>5</td>
<td>Nonreturnable pipe, 1/2&quot; S x 10 feet</td>
<td>2 each</td>
</tr>
<tr>
<td>6</td>
<td>Single street light, 110 volt</td>
<td>4 each</td>
</tr>
<tr>
<td>7</td>
<td>Main boxes</td>
<td>4 each</td>
</tr>
<tr>
<td>8</td>
<td>Extension and pipe</td>
<td>4 each</td>
</tr>
<tr>
<td>9</td>
<td>3&quot; x 10, 1/2&quot; Schedule 40 pipe</td>
<td>4 each</td>
</tr>
<tr>
<td>10</td>
<td>3&quot; x 10, 1/2&quot; Schedule 40 pipe, 110 volt</td>
<td>2 each</td>
</tr>
<tr>
<td>11</td>
<td>Field sign, 5/8&quot; x 10, non-illuminated</td>
<td>7 each</td>
</tr>
<tr>
<td>12</td>
<td>pole signs</td>
<td>4 each</td>
</tr>
<tr>
<td>13</td>
<td>Conduit, 1-1/4&quot; x 100'</td>
<td>4 each</td>
</tr>
<tr>
<td>14</td>
<td>Conduit, 1-1/2&quot; x 100'</td>
<td>4 each</td>
</tr>
</tbody>
</table>

INSTALL CABLE DIAGRAM

NOT TO SCALE

TRAFFIC SIGNAL METAL SHEET

CONTACT: DAVID MUIR AT 989-233-3539 FOR NWS SENSOR LAYOUT 3 DAYS PRIOR TO INSTALLATION.

FOR ELECTRICAL SERVICE INSPECTION CONTACT MICHIGAN DEPARTMENT OF ENERGY, LABOR, AND ECONOMIC GROWTH AT 989-686-0592.
COST TO CONTRACTOR WILL BE INCIDENTAL.

UTILIZE EXISTING CONDUIT & HANDHOLES WHERE POSSIBLE, OTHERWISE INSTALL NEW AS DIRECTED BY ENGINEER.
### LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>10 ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>177 sq ft</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Curb, &amp; Driv</td>
<td>42 ft</td>
</tr>
<tr>
<td>4</td>
<td>Hand Railing</td>
<td>1 ton</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Intersec</td>
<td>48 sq yd</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. **Push-Button** must be no more than 24" from the edge of sidewalk (reach consideration).
2. **Push-Button** must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

*MATCHES EXISTING ELEVATION*
### LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>1 each</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>1 each</td>
</tr>
<tr>
<td>3</td>
<td>Curbing, Gutter, Concrete, 6&quot; F2</td>
<td>1 each</td>
</tr>
<tr>
<td>4</td>
<td>Wood Post Indication</td>
<td>1 each</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment Performance</td>
<td>1 each</td>
</tr>
<tr>
<td>6</td>
<td>Water Shut-off Jet</td>
<td>1 each</td>
</tr>
</tbody>
</table>

#### ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4’ long section of sidewalk (landing) with a slope of no more than 2%. 

3) The push-button should be located up to 5’ behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to cross-walk direction or as directed by Engineer.

---

* Matches existing elevation
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Detectable Warning Surface</td>
<td>1.44</td>
</tr>
<tr>
<td>02</td>
<td>Sidewalk Ramp</td>
<td>2650 HFT</td>
</tr>
<tr>
<td>03</td>
<td>Curb and Gutter, Conc. Int. E2</td>
<td>50.44</td>
</tr>
<tr>
<td>04</td>
<td>Hand Railing</td>
<td>1.70</td>
</tr>
<tr>
<td>05</td>
<td>Trench Establishment, Performance</td>
<td>57 Sys</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24” from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4’ long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5’ behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.

* MATCHES EXISTING ELEVATION

Hazardous or Flammable Material

SW QUADRANT PLAN
1’=10’
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detectable Warning Surface</td>
<td>24 FT</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk Ramp</td>
<td>245.4 FT</td>
</tr>
<tr>
<td>3</td>
<td>Curb and Gutter, Conc. Int. F2</td>
<td>40 FT</td>
</tr>
<tr>
<td>4</td>
<td>Hand Paving</td>
<td>7 Ton</td>
</tr>
<tr>
<td>5</td>
<td>Surf Establishment, Performance</td>
<td>19.5 Yd</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1) PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PUSHBUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

HAZARDOUS OR FLAMMABLE MATERIAL

SE QUADRANT
PLAN
1"=10'

EX. ROW

WATER

SE QUADRANT
PLAN
1"=10'
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectable Warning Surface</td>
<td>12 ft</td>
</tr>
<tr>
<td>Sidewalk Ramp</td>
<td>24 ft</td>
</tr>
<tr>
<td>Curb and Gutter, Concrete</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Hand Railing</td>
<td>46 Syd</td>
</tr>
</tbody>
</table>

ADA ACCESSIBLE CRITERIA

1. PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

2. PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.

3. THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4. PUSH BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.

* MATCHES EXISTING ELEVATION
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td></td>
<td>Sidewalk Ramp</td>
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<tr>
<td>2</td>
<td>Curb and Gutter, Conc. Cast In</td>
<td>26 FT</td>
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<tr>
<td></td>
<td>Hand Rail Hutch</td>
<td>1 Ton</td>
</tr>
<tr>
<td>3</td>
<td>ADA ACCESSIBLE CRITERIA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) PUSH-BUTTON MUST BE NO MORE THAN 24&quot; FROM THE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EDGE OF SIDEWALK (REACH CONSIDERATION)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BEHIND THE CROSSTRAFFIC.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) PUSH BUTTON TO FACE THE INTERSECTION AND BE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.</td>
<td></td>
</tr>
</tbody>
</table>

* MATCHES EXISTING ELEVATION
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Quantities</th>
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<tbody>
<tr>
<td></td>
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<td>42 FT</td>
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<tr>
<td></td>
<td>Curb and Gutter, Conc. Pk Et'2</td>
<td>36 LT</td>
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<tr>
<td></td>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>87 SYD</td>
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<td></td>
<td>Filler Shutoff, Etd</td>
<td>16 SYD</td>
</tr>
<tr>
<td></td>
<td>Curb Riser, Adj</td>
<td>6 SYD</td>
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</table>

ADA ACCESSIBLE CRITERIA

1) Push-button must be no more than 24" from the edge of sidewalk (reach consideration).

2) Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.

3) The push-button should be located up to 5' behind the crosswalk.

4) Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by engineer.
AD4 ACCESSIBLE CRITERIA

1) PUSH- BUTTON MUST BE NO MORE THAN 24" FROM THE EDGE OF SIDEWALK (REACH CONSIDERATION).

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3) THE PUSH- BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.

4) PASS- BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSSWALK DIRECTION OR AS DIRECTED BY ENGINEER.
**CONTACT:** DAVID HOEH AT 989-233-3339 FOR WIRELESS SENSOR LAYOUT 3 DAYS PRIOR TO INSTALLATION.

**LIST OF MATERIAL**

<table>
<thead>
<tr>
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<tbody>
<tr>
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<td>4</td>
<td>Serv Disconnect</td>
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<tr>
<td>5</td>
<td>Wireless Vehicle Detection System</td>
<td>5</td>
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<tr>
<td>6</td>
<td>Pushbutton and Sign</td>
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<td>7</td>
<td>Conduit, DB, 1, 1/2 inch</td>
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<td>8</td>
<td>Conduit, DB, 1, 3 inch</td>
<td>65 Ft</td>
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<tr>
<td>9</td>
<td>Conduit, DB, 3, 3 inch</td>
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<td>10</td>
<td>Conduit, DB, 4, 3 inch</td>
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<td>12</td>
<td>Cable, Sec, 600V, 1, 3/C #6</td>
<td>50 Ft</td>
</tr>
<tr>
<td>13</td>
<td>Span Wire</td>
<td>16</td>
</tr>
<tr>
<td>14</td>
<td>Pushbutton Pedestal, Fdn</td>
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<td>15</td>
<td>Strain Pole Fdn, Cased</td>
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<td>16</td>
<td>TS, Pedestrian, Two Way Span Wire Mtd (LED)</td>
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<td>17</td>
<td>TS, One Way Span Wire Mtd (LED)</td>
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<td>18</td>
<td>TS, One Way Span Wire Mtd (LED)</td>
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</tr>
<tr>
<td>36</td>
<td>Access Point</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/C #16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C #16 PJ.
3. PUSHBUTTON CABLES ARE 2/C #16 SHIELDED PJ.
4. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
5. ACCESS POINT CABLES ARE CAT 5 OR APPROVED EQUAL.

**INSTALL CABLE DIAGRAM**

**NOT TO SCALE**

**TRAFFIC SIGNAL INSTALL SHEET**

**NOT TO SCALE**

**NOT TO SCALE**

**NOTE:** CABLES TO BE USED UNLESS SPECIFIED OTHERWISE

1. TRAFFIC SIGNAL CABLES ARE 5/C #16 PJ.
2. PEDESTRIAN SIGNAL CABLES ARE 7/C #16 PJ.
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4. YAGI ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.
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LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>35 Ft</td>
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<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>14 Syd</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
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</table>

NW QUADRANT
Removal Diagram
Not to Scale
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
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</thead>
<tbody>
<tr>
<td>Hand Patching</td>
<td>1 Ton</td>
</tr>
<tr>
<td>Curb and Gutter, Conc, Det F2</td>
<td>35 Ft, 127 Sft</td>
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<tr>
<td>Sidewalk Ramp</td>
<td>12 Ft</td>
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<tr>
<td>Detectable Warning Surface</td>
<td>48 Syd</td>
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<td>Turf Establishment, Performance</td>
<td>5814.22, 5810.33, 5805.31, 5810.34, 5800.31, 5800.31</td>
</tr>
</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1) **PUSH-BUTTON MUST BE NO MORE THAN 24" FROM THE END OF SIDEWALK (REACH CONSIDERATION).**

2) **PUSH-BUTTON MUST BE IN THE MIDDLE OF A 4' LONG SECTION OF SIDEWALK (LANDING) WITH A SLOPE OF NO MORE THAN 2%.**

3) **THE PUSH-BUTTON SHOULD BE LOCATED UP TO 5' BEHIND THE CROSSWALK.**

4) **PUSH-BUTTON TO FACE THE INTERSECTION AND BE PARALLEL TO CROSS-WALK DIRECTION OR AS DIRECTED BY ENGINEER.**

* MATCHES EXISTING ELEVATION

---

**SIDEWALK INSTALL SHEET**

**NW QUADRANT PLAN**

**1"=10'**

**NW QUADRANT**

**1"=10'**

---

**HAZARDOUS OR FLAMMABLE MATERIAL**
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curb and Gutter, Rem</td>
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<tr>
<td></td>
<td>Sidewalk, Rem</td>
<td>18 Syd</td>
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<tr>
<td></td>
<td>Excavation, Earth</td>
<td>1 Cyd</td>
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</tbody>
</table>

SIDEWALK REMOVAL SHEET

NE QUADRANT REMOVAL DIAGRAM

HAZARDOUS OR FLAMMABLE MATERIAL
**LIST OF MATERIAL**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Detectable Warning Surface</td>
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</tr>
<tr>
<td></td>
<td>Sidewalk Ramp</td>
<td>35 Ft</td>
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<tr>
<td></td>
<td>Curb and Gutter, Conc, Do4 Fl</td>
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<td></td>
<td>Hand Railing</td>
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<tr>
<td></td>
<td>Turf Establishment, Performance</td>
<td>61 Sqyd</td>
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</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

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2) **Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.**

3) **The push-button should be located up to 5' behind the crosswalk.**

4) **Pushbutton to face the intersection and be parallel to crosswalk direction or as directed by Engineer.**

---

**NE QUADRANT PLAN 1"=10'**

**HAZARDOUS OR FLAMMABLE MATERIAL**

---

**NE QUADRANT PLAN 1"=10'**
**LIST OF MATERIAL**

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<td>2</td>
<td>Sidewalk Ramp</td>
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<td>3</td>
<td>Curb and Gutter, Conc. Det F2</td>
<td>56 FT</td>
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<td>4</td>
<td>Hand Paving</td>
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<td>5</td>
<td>Surf Enhanced, Performance</td>
<td>50 Sft</td>
</tr>
<tr>
<td>6</td>
<td>Sidewalk, Brickers</td>
<td>50 Sft</td>
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</tbody>
</table>

**ADA ACCESSIBLE CRITERIA**

1. **Push-button must be no more than 24" from the edge of sidewalk (reach consideration).**
2. Push-button must be in the middle of a 4' long section of sidewalk (landing) with a slope of no more than 2%.
3. The push-button should be located up to 5' behind the crosswalk.
4. Push-button to face the intersection and be parallel to crosswalk direction or as directed by engineer.

**SW QUADRANT PLAN**

- Sidewalk Ramp: 226 Sft
- Detectable Warning Surface: 10 ft
- Hand Paving: 50 Sft
- Surf Enhanced, Performance: 50 Sft

**SW QUADRANT PLAN**

- 4' x 4' Landing Area
- Detectable Warning Surface
- 2% Max Slope

**Detectable Warning Surface**

- Matches Existing Elevation

**SW QUADRANT PLAN**

- 4.9% Ex
- 4.3% Ex
- 10°
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curb and Gutter, Rem</td>
<td>35 Ft</td>
</tr>
<tr>
<td>2</td>
<td>Sidewalk, Rem</td>
<td>14 Syd</td>
</tr>
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<td>3</td>
<td>Excavation, Ent</td>
<td>1 Cyd</td>
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</table>

SE QUADRANT
REMOVAL DIAGRAM
NOT TO SCALE
LIST OF MATERIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>2</td>
<td>Sidewalk Ramp</td>
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<td>3</td>
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<td>4</td>
<td>Mow Potting</td>
<td>1 Ctn</td>
</tr>
<tr>
<td>5</td>
<td>Turf Establishment, Performance</td>
<td>88 sync</td>
</tr>
</tbody>
</table>

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DETECTABLE WARNING CURB & GUTTER MISC PR
LANDING AREA 4' X 4' MIN. MAX SLOPE 2%

SE QUADRANT PLAN
1" = 10'

SIDEWALK INSTALL SHEET

SE QUADRANT PLAN

EX. ROW

M-46 (GRATIOT) AT HEMLOCK RD.
RICHLAND TOWNSHIP, SAGINAW COUNTY
PULL-OFF CONNECTION DETAIL
FOR 3-WAY SUSPENSION

DETAIL COPPER JUMPER
SPAN WIRE GROUNDING

(2) Galvanized steel bar
Anderson #93731-4110
rated at 10k lbs each
(or approved equivalent)

(2) washers

TC1 Barron Bethea type connector
(or approved equivalent)

PW:RD/T&S/Standards/Signals/mdot sig010a.dgn
06/22/10
SIG-010-A

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

FHWA APPROVAL DATE
NOT TO SCALE
CONTROLLER CABINET MOUNTED ON WOOD POLE DETAIL "B"

CONTROLLER CABINET MOUNTED ON STEEL POLE DETAIL "A"

NOTE:
The distance between LB's as shown on this detail is for clarity of the drawing only. Actual distance between LB's shall be minimized as is practical to the installation.

NOTE:
If rigid metal conduit is used, the conduit must be bonded according to the current N.E.C.
Steel pole

3" metal service cap (weather head)

60A Service disconnect (NEA-4-4 stainless steel) fused at 60A

NOTE: Porcelain insulator (if required) shall meet the codes and placement requirements of the local utility.

Pole base

3" metal service cap (weather head)

1 1/2" to 2" close nipple (metal)

1 1/2" to 2" LB nipple (metal)

Stainless steel banding

Metal bond bushing inside cabinet

1 1/2" to 2" lock nut

1 1/2" to 2" close nipple (metal)

1 1/2" to 2" LB nipple (metal)

1 1/2" to 2" lock nut

Grade level

NOTE: Only 1-2" hole in steel pole allowed for mounting disconnect.

SERVICE DISCONNECT

3" metal service cap (weather head)

240V 3 wire service cable 1-3/8" MG AWG

1 1/2" to 2" service cap

240V 3 wire service cable 1-3/8" MG AWG

NOTE: The distance between LB's as shown on this detail is for clarity of the drawing only. Actual distance between LB's shall be minimized as practical to the installation.

UNDERGROUND ELECTRIC SERVICE

3" service cap install (weather head)

240V 3 wire service cable 1-3/8" MG AWG

1 1/2" to 2" service cap

240V 3 wire service cable 1-3/8" MG AWG

NOTE: Non-metered service with 1-3/8" MG and service cable

Non-metered service with 1-3/8" MG and service cable

Michigan Department of Transportation
Bureau of Highways Delivery Standard Plan for
Secondary Service/Disconnect
For Steel Poles

ENGINEER OF DELIVERY

PREPARED BY TRAFFIC AND SAFETY

ENGINEER OF DEVELOPMENT

SPECIAL DETAIL

FHWA APPROVAL DATE

SIG-013-A

73900

105391A

SIG-013-A

SHEET 1 of 2

SHEET 2 of 2

73900

105391A

Not to Scale

Michigan Department of Transportation
Bureau of Highways Delivery Standard Plan for
Secondary Service/Disconnect
For Steel Poles

SIG-013-A

SHEET 1 of 2

SHEET 2 of 2

105391A

Not to Scale
**SLOPE LIMITS FOR ANCHOR GUYS**

- **Thimble, preformed deadend**
- **Curved washer**

**NOTE:** Use screw anchor or Double Helix anchor according to soil condition as directed by the Engineer.

**POLE GUY**

**NOTE:**

- Any dimension to be 10' unless otherwise specified.
- Tamp earth well back into hole at grade level.

**GUY STRUT**

**NOTE:**

- Use screw anchor or Double Helix anchor according to soil condition as directed by the Engineer.
- Set pole in middle of hole.
- Concrete backfill for the full depth of the hole.
- Earth backfill for the full depth of the hole.

**WOOD POLE INSTALLATION**

**SELF SUPPORTING WOOD POLE IN CONCRETE**

**WOOD POLE SETTING DEPTHS**

Reference Standard Specification for Construction Section 819.03
**POLYMER PRECAST ROUND HANDHOLE WITH FLOOR**

**PRECAST CONCRETE HANDHOLE**

**USE THE OPPOSITE END OF PIPE (all other dimensions same)**

**TYPICAL CONDUIT ENTRANCE AT HANDHOLE**

**36" DIAMETER ROUND PRECAST CONCRETE HANDHOLE**

**NOTE:** Logo imprint may read “Traffic Signal” for non-MDOT installation.
POLYMER CONCRETE HANDHOLE

NOTES:
1. The material and workmanship shall be in accordance with the current M.D.O.T. Standard Specifications for Construction.
2. The contractor may construct the handhole structure of brick, cement, concrete masonry, or of precast reinforced concrete.
3. All concrete masonry shall be grade 30M.
4. The inner surface of the handhole shall be smooth.
5. Heavy Duty covers shall be castings which meet the requirements of the current specifications for gray iron castings ASTM designation A48 and shall have a minimum strength as provided for Class No. 30 gray iron castings.
6. All castings shall be cleaned by sand blasting.
7. The seating face of the cover and the seat for the same on the frame if required, shall be ground or machined so that the cover shall have an even bearing on its seat to prevent rocking or tilting.
8. The castings shall be free of pouring faults, blow holes, cracks and other imperfections. They shall be sound, true to form and thickness, clean and neatly finished and shall be coated with tar pitch varnish.
9. Light Duty cover shall be bolted to frame with not less than 2 countersunk hex head bronze bolts.
10. Precast handhole with Heavy Duty cover shall be set on a concrete slab similar to detail for brick handholes.
11. The Heavy Duty cover & frame shall be East Jordan Iron Works #209 Neenah Foundry, #6-6052-HP for square cover or East Jordan Iron Works #2860 Type "A", Neenah Foundry #R-6052 D for circular cover or an approved equal.
12. Handhole shall be equipped with cable rack and hooks to train cable.

NOT TO SCALE

GRADE RING WITH 39" I.D. & 46 1/2" RECESS

NOTE:
Galvanized step is standard with grade ring ASTM C478.

4" x 4" x 4" PRECAST CONCRETE HANDHOLE
4' x 4' x 4' PRECAST CONCRETE HANDHOLE

NOTE:
Machined surface
(1) Open pickhole
(2) 3/4" dia holes 13 1/2" apart

MANHOLE FRAME (HEAVY DUTY)
Estimated weight 410 lbs

MANHOLE COVER (HEAVY DUTY)
Estimated weight 245 lbs

NOTE:
Machined surface
DIRECT BURIAL CONDUIT(S)/CABLE(S)

6"-18"

Sand-gravel backfill-grade "A"

Varies to no. of conduits

6"

6" 6"

30"

3"

8 1/2" 3 1/2" 12"

9 1/2"

4 1/2"

14"

10 1/2"

3" 3" 3" 3" 3" 3" 9 1/2"

5 1/2"

16"

16" 16" 16" 16" 16" 16" 16" 16" 16" 16" 16" 16"

1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0"

Encased Conduit

NOTE:
Preferred trench width "W" not wider than conduit encasement width "D".

NOTE:
Marking tape shall have proper logo as supplied by the Engineer and installed by the Contractor.

TYPICAL SECTION OF TRENCH

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
CONDUIT (DIRECT BURIAL/ENCASED)

SIG-023-A
COLOR CODE FOR WIRING CONNECTING TRAFFIC SIGNAL LAMPS

NOTE: No splices allowed between traffic signal head and controller.

COLOR CODE FOR WIRING CONNECTING PEDESTRIAN SIGNAL LAMPS
(Walking person - hand symbol)

COLOR CODE FOR WIRING CONNECTING TRAFFIC SIGNAL LAMPS

LED PED (filled)

LED PED (filled symbols)

STANDARD - 3 COLOR SIGNAL DISPLAY

FLASHING YELLOW ARROW (FYA) - 4 COLOR SIGNAL DISPLAY

DOG HOUSE W/RIGHT TURNS - 5 COLOR SIGNAL DISPLAY

COLOR CODE FOR WIRING CONNECTING TRAFFIC SIGNAL LAMPS
NOTE:

For all cable poles, install 3/4" x 10'-0" ground rod(s) as shown on "ground rod installation".
Connect ground rod(s) with #6 min. copper wire to messenger wire with non-solder type connection.

STEEL POLE/PEDESTAL GROUNDING DETAIL

CONTROLLER CABINET GROUNDING DETAIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

FHWA APPROVAL DATE

NOT TO SCALE

File: FHWA/MDOT/Standards/Signals/Project/105391A.pdf
Rev: Rev-01/20
Plan Date: 02/15/19
Sheet No: 7 of 8

NOTE:

For all cable poles, install 3/4" x 10'-0" ground rod(s) as shown on "ground rod installation".
Connect ground rod(s) with #6 min. copper wire to messenger wire with non-solder type connection.
1) All ground rods shall be 3/4" x 10' in length copperclad.
2) Ground rods shall be driven straight down, so that only the required portions of the ground rod is exposed to attach the ground wires.
3) All ground rods shall be connected to each other or to a span wire with a single #6 AWG copper conductor.
4) Each ground wire attaching to a ground rod shall have its own approved acorn type connector.
5) Do not install any ground rods within 10' of any other ground rods from other grounding.
6) The grounding system shall measure 10 ohms or less.
7) A separate #6 AWG copper ground is required from the service disconnect (safety switch) to the ground busbar in the controller cabinet.
8) Ground rod for each steel pole, wood pole, pedestal and/or traffic signal controller cabinet shall be located in the adjacent handhole as indicated on the plans or as directed by the Engineer.
9) All metal bases must be connected to a ground rod with a #6 ground wire.
10) All ground rods shall be connected to the ground wire from span wire to ground rod with a #6 continuous ground wire.
SINGLE BEACON
INSTALLED ON A SINGLE SIGN POST (WOOD)

All advance warning Sign Opticals, facing the same direction, shall be programmed to flash on and off simultaneously.

(*) NOTE: For projects maintained by the Wayne Co. Department of Public Services (WCDPS), use rigid metal for conduits installed below grade.

SINGLE BEACON
INSTALLED ON TWO SIGN POSTS (WOOD)

All advance warning Sign Opticals, facing the same direction, shall be programmed to flash on and off simultaneously.
All advance warning Sign Opticals, facing the same direction, shall be programmed to flash on and off simultaneously.

**SINGLE BEACON**
INSTALLED ON TWO SIGN POSTS (STEEL)

**DUAL BEACONS**
INSTALLED ON TWO SIGN POSTS (WOOD)
All advance warning Sign Opticals, facing the same direction, shall be programmed to flash on and off simultaneously.

DUAL BEACONS
INSTALLED ON TWO SIGN POSTS (STEEL)
NOTE:
1) Pipe assembly shall be such length and height as to accommodate traffic signals and pedestrian signals for proper maintenance and clear vehicular and pedestrian viewing.
2) Pipe assembly shall be of such length and height as to accommodate an (12"x27") case sign for proper maintenance and clear vehicular viewing.
3) Bracket lengths are 16 inches for LED pedestrian signals and for LED pedestrian countdown signals.

NOTE:
- Walking person and hand symbol are filled.
- Left Turn Green Arrow (LTGA)
- Flashing Yellow Arrow (FYA)

LED PED

Countdown

PEDESTAL MOUNTED SIGNAL DISPLAYS

NOTE:
- Walking person and hand symbol are filled.
**Pedestal Foundation**

- 20" x 20" x 2' deep
- 12" x 48" deep

**Gravel Handhole**

- 36" x 36" x 36" x 36"

**#6 or larger standard ground wire**

- Min. slack above foundation top

**12 3/4" dia. bolt circle**

- Use non-solder type connection

**Copper clad ground rod(s)**

- #6 min. copper ground wire

**3/4" x 10'-0"**

- Ground lug

- Grounding system shall measure 10 ohm or less to ground.

**Aluminum cap**

- (Typ)

**Iron cross**

- (Typ)

**Bottom bracket assembly**

- Octagonal aluminum base

- Nominal 14 1/4"

- Variable 16 1/2"

- Ground lug

- Nominal 17 3/4"

- Bolt circle 12 3/4"

**Square aluminum base**

- 13 5/8"

- 3/8" x 1 1/4" stainless steel set screw

- Cover held in place with a 1/4" x 20 UNC x 2" stainless steel machine screw.

**3/4" schedule 80 PVC conduit**

- 1 1/2" grade level

**NOTES:**

1) Alternate foundation may be constructed 20" x 20" square - 48" deep.

2) Grounding system shall measure 10 ohm or less to ground.

**3/4" x 10'-0" copper clad ground rod(s)**

- As directed by Engineer and in accordance with the current NEC.

**Traffic/PeDESTRIAN Signal Mounting Hardware**

- Standard Bracket

- Square base

- Octagonal base

- Square aluminum base

- Octagonal aluminum base

**NOTE:** Use pedestal collar for pedestal length = 14' (typical for 3 color traffic signals with pedestrian signals)

**SIGNAL MOUNTING HARDWARE FOR FLATBED BRACKET**

- Top bracket assembly

- Bottom bracket assembly

**Octagonal aluminum base**

- Nominal 14 1/4"

- Variable 16 1/2"

- Bolt circle 12 3/4"

**Square aluminum base**

- 15"

- Nominal 14 1/4"

- 3/8" x 20 UNC x 2" stainless steel set screw

- Cover held in place with a 1/4" x 20 UNC Hex head 300 grade stainless steel machine screw.

**Traffic and Safety**
ANCHOR BOLT DETAIL

Washers: 3/4" diameter standard flat galvanized (8 required).

NOTE:
Anchor bolts are to be ASTM A-307 steel (4 required).

Nuts: 3/4" High Strength Hex head galvanized (4 required).

3/4" diameter galvanized.
NOTES:

1) The relative position of 2-Way TS & pedestrian bracket arm signals within the bracket assembly shall be reversed (i.e., the signal nearest the pole goes to the outside of the bracket assembly & the outside signal goes inboard or nearest to pole) according to the plan view to provide clear vehicular and pedestrian viewing.

2) Pipe assembly shall be of such length and height as to accommodate traffic signals and pedestrian signals for proper maintenance and clear vehicular and pedestrian viewing.

3) Pipe assembly shall be of such length and height as to accommodate an illuminated (12"x27") case sign for proper maintenance and clear vehicular viewing.

4) Bracket lengths are 36 inches for LED pedestrian signals and LED pedestrian countdown signals.

Flashing Yellow Arrow (FYA)

NOTES: Walking person and hand symbol are filled.

Left Turn Green Arrow (LTGA)
NOTES:
1) The relative position of 2-Way T.S. & pedestrian bracket arm signals within the bracket assembly shall be reversed, i.e. the signal nearest the pole goes to the outside of the bracket assembly & the outside signal goes inboard or nearest to pole, according to the plan view to provide clear vehicular and pedestrian viewing.

2) Pipe assembly shall be of such length and height as to accommodate traffic signals and pedestrian signals for proper maintenance and clear vehicular and pedestrian viewing.

3) Pipe assembly shall be of such length and height as to accommodate an illuminated (12"x27") case sign for proper maintenance and clear vehicular viewing.

4) Bracket lengths are 16 inches for LED pedestrian signals and LED pedestrian countdown signals.
**TYPICAL BRACKET CONNECTION**

- **Entrance head**
- **Flat washer**
- **Signal nut with recess down**
- **Threaded bracket connection**
- **Install serrated metal washer & use a silicone sealant to weatherproof fitting.**
- **Bottom nut backed-off tight against cotter-key with recess down & cotter key bent.**
- **Round end of the cotter key to the inside.**
- **Install serrated metal washer & use a silicone sealant to weatherproof fitting.**

**NOTE:**
- Cotter key required as shown

**ONE-WAY TRAFFIC SIGNAL HEAD**

- **Entrance head**
- **Flat washer**
- **Signal nut with recess down**
- **Threaded bracket connection**
- **Apply silicon sealant to seal top of signal head**
- **3 layers of black friction tape over end of lashing rod**

**HANGER ATTACHMENT**

- **Apply permanent loctite sealant (or approved equal) on nipple threads**
- **Heavy Duty lock nut**
- **Plastic bushing to be securely installed.**

**NOTE:**
- Exterior surface of all mounting assembly located below span clamps, including stems, lock nuts, and related hardware, must match the current FHWA Highway Yellow Color Tolerance Chart per the Standard Specifications for Construction.
BASE MOUNTED TRAFFIC SIGNAL CONTROLLER CABINET

SECTION A-A

3" spacing between conduits (typ)
Copp any unused conduit tail

1 1/4" schedule 80 PVC rigid metal conduit

3/4" x 3 1/2" galvanized bolts, nuts & washers (4 required)

- Washer
- Nut
- Lock washer

3/4" x 3 1/2" galvanized bolts, nuts & washers (4 required)

1/4" 3" schedule 80 PVC conduits

1/2" or larger stranded copper ground wire with 3/8" lock above foundation.

4" or larger stranded copper ground wire with 3/8" lock above foundation.

Base mounted controller cabinet

3/4" x 3 1/2" galvanized foundation (4) bolts,
(8) nuts & (8) washers (required)

3/4" x 3 1/2" galvanized foundation (4) bolts,
(8) nuts & (8) washers (required)

3" above Grade level

TOP VIEW

CONTROLLER POD

BASE MOUNTED CONTROLLER PAD

NOTE:
Payment for controller pad to be included in controller foundation pay item.
Controller cabinet door to open toward pad.

SIDE VIEW

36" to 48" min

NOT TO SCALE

FUTILITY
Michigan Department of Transportation
Bureau of Highways Delivery Standard Plan

(SPECIAL DETAIL)勝

SIG-045-A

SHEET 3 of 4

PLAN DATE

SIG-045-A

SHEET 4 of 4

FUTIVITY
Michigan Department of Transportation
Bureau of Highways Delivery Standard Plan

(SPECIAL DETAIL)勝

PLAN DATE
**GLOBAL POSITIONING SYSTEM (GPS) MODULE MOUNTED ON STEEL POLE**

- **GPS Antenna**
- **Aluminum Terminal Compartment**
- **Aluminum Cap (Typ)**
- **Pole Foot 1 1/4" Hole**
- **1 1/2" to 3/4" Reducing Bushings**
- **3/4" x 0.30" Min. Stainless Steel Band (3'-0" Spacing)**
- **16" x 1 1/12" Rigid Pipe Side of Pole Bracket**
- **600 V. 5/C #16 Cable to Controller**

**GLOBAL POSITIONING SYSTEM (GPS) MODULE MOUNTED ON WOOD/CONCRETE POLE**

- **GPS Antenna**
- **Aluminum Terminal Compartment**
- **Aluminum Cap (Typ)**
- **Pole Foot 1 1/4" Hole**
- **5/8" x 0.30" Min. Stainless Steel Band**
- **3/8" X 5" Hex Head Lag Screw (2 Min.)**
- **600 V. 5/C #16 Cable to Controller**

**Note:** For projects maintained by the Wayne Co. Department of Public Services (WCDPS), use rigid metal for conduits installed below grade.

---

** Michigan Department of Transportation**

**Bureau of Highways Delivery Standard Plan for**

**GLOBAL POSITIONING SYSTEM (GPS) MODULE**

**PREPARED BY:**

TRAFFIC AND SAFETY

**CHECKED BY:**

ENGINEER OF DEVELOPMENT

**ENGINEER OF DELIVERY**

**SHEET NO.:**

105391A

**PLAN DATE:**

6/22/10

**FHWA APPROVAL DATE:**

---

**Michigan Department of Transportation**

**Bureau of Highways Delivery Standard Plan for**

**GLOBAL POSITIONING SYSTEM (GPS) MODULE MOUNTED ON WOOD/CONCRETE POLE**

**NOT TO SCALE**

**File: mdot sig051a.dgn**

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**Michigan Department of Transportation**

**Bureau of Highways Delivery Standard Plan for**

**GLOBAL POSITIONING SYSTEM (GPS) MODULE MOUNTED ON STEEL POLE**

**NOT TO SCALE**

**File: mdot sig051a.dgn**

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**Michigan Department of Transportation**

**Bureau of Highways Delivery Standard Plan for**

**GLOBAL POSITIONING SYSTEM (GPS) MODULE MOUNTED ON WOOD/CONCRETE POLE**

**NOT TO SCALE**

**File: mdot sig051a.dgn**

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**Michigan Department of Transportation**

**Bureau of Highways Delivery Standard Plan for**

**GLOBAL POSITIONING SYSTEM (GPS) MODULE MOUNTED ON STEEL POLE**

**NOT TO SCALE**

**File: mdot sig051a.dgn**
**PEDESTRIAN PUSHBUTTON SIGN INSTALLATION ON WOOD POLE**

1. **Mounting Bracket**
   - 2 1/4" x 2 1/4" Galvanized Hex head lag screws (2 required).
   - 1 1/2" x 20" Galvanized Hex head lag screws (2 required).

2. **Riser Pole**
   - Use 1 1/2" schedule 80 PVC conduit.

3. **Wood Post**
   - Use 4" x 6" or 6" x 6" wood post.

4. **Anchor Bolt Detail**
   - Use 3/4" diameter galvanized hex head anchor bolts (4 required).
   - Use 3/4" x 10'0" copper clad ground rods as directed by Engineer in accordance with NEC.

5. **Ground Wire**
   - Use 3/4" diameter standard flat galvanized washers (8 required).

6. **Schedule 80 PVC Conduit**
   - Schedule 80 PVC conduit size of conduit as shown on plans.

7. **Anchor Bolt**
   - Use non-solder type connection.

**NOTE:** Anchor bolts are to be ASTM A-307 steel (4 required).

---

**Refer to Standard Plan for Wood Posts**

**ANCHOR BOLT DETAIL**

**ANCHOR BOLT DETAIL**

---

**Sleeve**

**Sleeve**

---

**PEDESTRIAN PUSHBUTTON INSTALLATION ON WOOD POST (SPECIAL DETAIL)**

**PEDESTRIAN PUSHBUTTON INSTALLATION ON WOOD POST (SPECIAL DETAIL)**

---

**NOT TO SCALE**

**NOT TO SCALE**

---

**Michigan Department of Transportation**

**Michigan Department of Transportation**

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**FHWA Approval Date**

**FHWA Approval Date**

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**Plan Date**

**Plan Date**

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**Sheet No.**

**Sheet No.**

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**Job No.**

**Job No.**

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**Control Section**

**Control Section**

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**File:**

**File:**

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**Rev.:**

**Rev.:**

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**SHEET 3 of 4**

**SHEET 4 of 4**
INSTALLATION OF INTEGRAL MESSENGER CABLE

FIGURE 8 CABLE

INTEGRAL MESSENGER (I.M.) CABLE SECTION
DETAIL "A"

AERIAL SPLICE
DETAIL "B"

CABLE CLOSURE
DETAIL "C"

DEAD-END POLE
DETAIL "E"

TANGENT POLE (WOOD POLE)
DETAIL "H"

TANGENT POLE
(STEEL OR CONCRETE POLE)
DETAIL "I"

NOTE FOR DETAILS "E", "F", "G":
Individual connectors to be taped with 3 layers of approved plastic tape & overall one layer of half lap approved plastic tape.
DESCRIPTION:
Integral messenger wire consists of a support wire and a conductor core laid parallel and covered with a single extrusion of black low density polyethylene. The single extrusion provides a jacket over the support wire and core, and forms a web joining the two. See detail "A" on this sheet. The support wire is 0.134 inches in diameter. Grade 190 steel, Class A galvanized, Extra High Strength steel having a rated breaking strength of 2680 pounds.

INSTALLATION:
Every effort shall be made to limit the length of spans to a maximum of 250 feet. Integral messenger wire is prone to low frequency wind vibration commonly referred to as "dancing" while "dancing" may not be so violent in low wind areas as to attract attention. Prolonged low amplitude vibration will eventually cause open circuits and/or support wire failures. Therefore, FHWA recommends that all integral messenger distribution wire be spiraled approximately one spiral for each 15 feet of span.

Spiraling of the wire should be done from every other pole by applying the spiraling torque to the support clamp after the two outside bolts have been properly tightened, thus keeping the spiraling torque on the support wire and not on the core. As spiraling operations proceed along a lead, spiraling at alternate poles should be in opposite directions, thereby reducing the torsion otherwise imposed on those clamps which are at the intermediate poles. The procedure to be followed in spiraling distribution wire is shown in detail "B" of this sheet.

If clamps are not adequately tightened the torsion developed in spiraling will cause the support wire to turn in the clamp resulting in the migration of the spirals from the spans toward the pole. "Dancing" of the wire and damage to it at the poles will be the final results of inadequate clamping. The proper type of support clamps must be used on all corners as shown in details "E", "F", "G" and "I" of this sheet.

When pulling the wire up to correct sag, a suitable wire grip should be used directly on the insulated support wire. The grip should be of such design as to give proper holding power and yet not damage the support wire jacket. The Crescent Tool Company #800 or an equivalent grip is suggested. A standard line wire grip should not be used because it will damage the insulation. If the insulation is damaged in any way, it must be repaired with sealing compound or by cutting out the damaged portion. At deadends, it is necessary to remove the support wire covering before applying the deadend grip. It must be done carefully to avoid damaging the support wire or core. The electrical continuity of the support wire must be maintained throughout the lead.
**UNDERGROUND SERVICE METERED AND UNMETERED**

**NOTE:** Use AISI series 300 stainless steel for all fasteners for service disconnect and meter per manufacturer's recommendations.

- **Backfill with compacted granular material (class II)**
- **Grade level**
- **U.G. Service Pedestal (direct buried)**

**U.G. Service Pedestal (Plastic)**

- **Service entrance door (lockable)**
- **U.G. Service Pedestal (direct buried)**
- **Fiberglass or plastic type UV stabilized material**
- **Service entrance door (lockable)** (approximate 11" x 31" front opening)
- **60A lockable service disconnect** (NEMA 4-X stainless steel) fused at 60A

**FRONT VIEW**

**U.G. Service Pedestal (Plastic)**

- **Use non-solder type connection**
- **1 1/2" schedule 80 PVC conduit**
- **2" schedule 80 PVC conduit**
- **Stub and plug**
- **Secondary service cable from utility Co.**

**SECTION "A-A"**

**DETAIL "A"**

- **Lock nut**
- **Bond bushing (metal)**
- **Flat washer**
- **1 1/2" close nipple (metal)**
- **Back plate**
- **1 1/2" LB (metal)**
- **1 1/2" close nipple (metal)**

**NOT TO SCALE**
ANCHOR BASE STEEL STRAIN POLE AND FOUNDATION

POLE REQUIREMENTS

<table>
<thead>
<tr>
<th>Field</th>
<th>Requirement</th>
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<tbody>
<tr>
<td>Length</td>
<td>20'-0&quot; to 25'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>25'-0&quot; to 32'-0&quot;</td>
</tr>
<tr>
<td></td>
<td>32'-0&quot; to 35'-6&quot;</td>
</tr>
<tr>
<td></td>
<td>36'-0&quot; to 39'-6&quot;</td>
</tr>
</tbody>
</table>

NOTES:

1. Acceptable mill tolerances to apply to all nominal dimensions.
2. Handhole shall be provided & be perpendicular to eye bolt hole.
3. Materials and galvanizing:
   a. Shaft steel shall be ASTM A572, fy=50ksi.
   b. Base plate ASTM A36.
   c. All galvanizing shall meet ASTM A123.
4. Welding:
   a. Welding shall conform to AWS D1.1
   b. Ultrasonic inspection for all 100% welds and visual or magnetic particle for all others.
5. Tolerances overall height + 1%.
   a. Sweep and chamber 1/8" per feet.
   b. Twist 10^max. overall.
6. Design conforming to current AASHTO

---

ACCESS HAND HOLE

- Steel pole
- Span stra

POLE TO BASE WELD JOINT

- Access hand hole
- Steel pole
- Span stra

NOT TO SCALE

PREPARED BY: [Signature] [Date]

CHECKED BY: [Signature] [Date]

ENGINEER OF DELIVERY: [Signature] [Date]

ENGINEER OF DEVELOPMENT: [Signature] [Date]

TRAFFIC AND SAFETY: [Signature] [Date]

MICHIGAN DEPARTMENT OF TRANSPORTATION

FILE: SIG-150-A

SHEET: 2 of 7
ANCHOR BASE STEEL STRAIN POLE FOUNDATION

NOTE:

1) Install (3) 3" and (1) 1 1/2" conduits in all steel strain pole foundations (Indicate direction of bends in foundation top.)

2) Schedule 80 PVC conduits (36" Elbow) and (1) 1 1/2" Schedule 80 PVC conduit (for grounding)

3) Use non-solder type connection (3/4" x 10'-0" copper clad ground rod) as directed by Engineer and in accordance with the current N.E.C.

Drilled Shaft Foundation for Strain Pole (Cased and Uncased)
Exposed concrete surfaces shall be cast in forms. Exposed concrete edges shall be beveled 3/4".

Steel casing shall be per plan.

Steel reinforcement shall be ASTM A615 grade 60 without epoxy coating.

Steel reinforcement shall have a clear cover of 3.00 IN. unless noted otherwise. Steel reinforcement may be adjusted to ensure proper clear cover.

Conduits and anchor bolts shall be rigidly installed before concrete is placed. Anchor bolts shall be spaced by means of a template. The center of the template shall coincide with the center of the foundation.

Concrete is to be placed in accordance with section 705 (use construction method) with a tremie tube or concrete pump beginning at the shaft bottom. Grade T concrete must be used for underwater placement. Grade S2 may be used in dry excavations only. See MDOT standard specifications Table 701-1 (Concrete Structure Mixtures).

Per MDOT standard specifications 301.12, the grade S2 acceptable slump range is 4-6 inches. The grade T acceptable slump range is 8-10 inches.

Steel casing may stop at the conduit entrance to foundation. Conduit entrance shall then be formed separately. Even though the steel casing stops at the conduit entrance, the entire length of the foundation will be paid for as a cased foundation.

See special provision for strain pole foundation and anchor bolts.

Concrete is to be placed in accordance with section 705 (wet construction method) with a tremie tube or concrete pump beginning at the shaft bottom. Grade T concrete must be used for underwater placement. Grade S2 may be used in dry excavations only. See MDOT standard specifications Table 701-1 (Concrete Structure Mixtures).
Horizontal reinforcement detail for
anchor bolts and vertical rebars

<table>
<thead>
<tr>
<th>Anchor Bolt Dia. (in.)</th>
<th>Foundation Dia. (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
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<tr>
<td>75</td>
<td>136</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Radius (in)</th>
<th>Length (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.875</td>
<td>74</td>
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<tr>
<td>10</td>
<td>75</td>
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<tr>
<td>15.5</td>
<td>97</td>
</tr>
<tr>
<td>16.5</td>
<td>136</td>
</tr>
</tbody>
</table>

#8 Rebar vertical reinforcement

#3 Rebar horizontal reinforcement

1 3/4" or 2" Anchor Bolt
Note:
42" diameter foundations are permissible based on the special conditions listed in the foundation depth and soil type.
Alternate 42" diameter foundation depths shall be contractor designed and submitted for evaluation and approval of the Engineer.

Provide 8 1/2" or larger hole in casing at 3 feet from top of foundation for conduit. Hole and conduit orientation shall be as called for on plans or as specified by the Engineer.

Notes:
1. Cut 8 1/2" or larger diameter hole in steel casing at 3 feet from top of foundation for conduit.
2. Trench for placement of conduits after casing is in place and before dewatering.

<table>
<thead>
<tr>
<th>MAST ARM TYPE</th>
<th>SOIL CONDITION</th>
<th>FOUNDATION DEPTH</th>
<th>CASING DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGLE ARM</td>
<td>Saturated</td>
<td>4 ft. C-10</td>
<td>16.0'</td>
</tr>
<tr>
<td>SINGLE ARM</td>
<td>Saturated</td>
<td>5 ft. C-10</td>
<td>13.5'</td>
</tr>
<tr>
<td>DOUBLE ARM</td>
<td>Saturated</td>
<td>6 ft. C-10</td>
<td>18.5'</td>
</tr>
<tr>
<td>DOUBLE ARM</td>
<td>UNCONFined</td>
<td>7 ft. C-10</td>
<td>15.5'</td>
</tr>
</tbody>
</table>

**Foundation Depth and Soil Table**

1. Anchor bolts shall be set and held vertical at the correct location and at the proper elevation using a 3/8" steel bar circle or approved equal. Each set of four bolts shall be tied together by welding into a basket with 4 #2 bar circle or approved equal. This is in addition to the steel template.
2. Anchor bolts with (2) Hex nuts and (2) washers per bolt with threaded ends and galvanized a minimum 20" per ASTM A575.
3. 24" dia bolt circle for Category I Mast Arm, 20" dia bolt circle for Category II and Category III Mast Arms.

**Drilled Foundation Shaft (Cased or Uncased)**

- 8 vertical bars equally spaced.
- #4 bar circle tie

**Steel Template**

- Steel template must be kept horizontal at all times after installation.
- Anchor bolts-2" dia. equally spaced at 30"
- Bolt circle see note 1 typ.
- Flat washers 1/2" stock thickness

**Anchor Bolt Cage Assembly**

- Anchor bolt cage shall be shop fabricated from an hex circle or 3/4" square stock or approved equal, welded to fittings of anchor bolts to hold alignment.
- Steel reinforcement bar circle located outside vertical steel bars.

** Mast Arm Foundation

- Anchor bolt cage shall be shop fabricated from an hex circle or 3/4" square stock or approved equal, welded to fittings of anchor bolts to hold alignment.
- Steel reinforcement bar circle located outside vertical steel bars.
ANCHOR BOLTS

NOTES:

1) INSTALL 3" CONDUIT BEND(S) IN ALL NEW FOUNDATIONS AS DIRECTED BY THE ENGINEER. (INDICATE DIRECTION OF BENDS IN FOUNDATION TOP.)

2) INSTALL POLE THAT THE FOUNDATION & ANCHOR BOLTS ARE PLUMB.

6" Curb
Grade (level)
1 1/2"

Use non-solder type connection (typ) #6 or larger standard ground wire with 18" min slack above foundation top (typ)

NOTES:

1) All ground rods shall be 3/4"x10' copper clad rod a minimum of 2 ground rods shall be used (one for the service disconnect and one for the messenger cable & pole).

2) Ground rod placement shall not be less than 12" from the foundation with a minimum of 6' between ground rods. Placement shall be as directed by the Engineer and in compliance with N.E.C.

3) Ground wire shall be #6 or larger standard ground wire with 18" min slack above foundation top.

4) Ground wire connection to grounding rod(s) shall utilize a non-solder type connection.

1"min.-3"max. radius (Heat bend at 1100°F min. to 1300°F max.)

(3) 3" and (1) 1 1/2" PVC schedule 80 conduit 36" radius plastic bend

NOTES:

1) INSTALL 3" CONDUIT BEND(S) IN ALL NEW FOUNDATIONS AS DIRECTED BY THE ENGINEER. (INDICATE DIRECTION OF BENDS IN FOUNDATION TOP.)

2) INSTALL POLE THAT THE FOUNDATION & ANCHOR BOLTS ARE PLUMB.

6" Curb
Grade (level)
1 1/2"

Use non-solder type connection (typ)

3/4" x 10'-0" copper clad ground rod(s) a minimum of 3/4" from foundation as directed by Engineer and in compliance with the current N.E.C.

NOTE:

ALL GROUNDS SHALL PROVIDE LESS THAN 10 OHM RESISTANCE TO GROUND

6'-3"
3/4" x 10'-0" copper clad ground rod(s) a minimum of 3/4" from foundation as directed by Engineer and in compliance with the current N.E.C.

Electrical conduit and grounding without handhole

NOTES:

1) INSTALL 3" CONDUIT BEND(S) IN ALL NEW FOUNDATIONS AS DIRECTED BY THE ENGINEER. (INDICATE DIRECTION OF BENDS IN FOUNDATION TOP.)

2) INSTALL POLE THAT THE FOUNDATION & ANCHOR BOLTS ARE PLUMB.
NOTES:
1) INSTALL 3" CONDUIT BEND(S) IN ALL NEW FOUNDATIONS AS DIRECTED BY THE ENGINEER. (INDICATE DIRECTION OF BENDS IN FOUNDATION TOP.)
2) INSTALL POLE THAT THE FOUNDATION & ANCHOR BOLTS ARE PLUMB.

NOTE:
ALL FOUNDATIONS SHALL PROVIDE LESS THAN 10 OHM RESISTANCE TO GROUND

(3) 3" and (1) 1 1/2" PVC schedule 80 conduit 36" radius plastic bend

ELECTRICAL CONDUIT AND GROUNDING WITH HANDHOLE

NOTES:
1) ALL GROUND RODS SHALL BE 3/4" x 10' copper clad rod a minimum of 2 ground rods shall be used here for the service disconnect and one for the messenger cable & pole.
2) Ground rod placement shall not be less than 12" from the foundation with a minimum of 6" between ground rods. Placement shall be as directed by the Engineer and in compliance with N.E.C.
3) Ground wire shall be #6 or larger standard ground wire with 18" min slack above foundation top.
4) Ground wire connection to grounding rod shall utilize a non-solder type connection.
YAGI ANTENNA ATTACHMENT DETAIL (STEEL POLE)
FOR REMOTE LOCATION

YAGI ANTENNA ATTACHMENT DETAIL (WOOD POLE)
FOR REMOTE LOCATION

NOTE:
Antenna attachment similar to
ped signal bracket assembly.
(Finished assembly has no
threads exposed.)
YAGI ANTENNA ATTACHMENT DETAIL (STEEL POLE)

FOR MASTER OR REPEATER LOCATION

SINGLE BRACKET METHOD PREFERRED

NOTES:
- Finished assembly has no threads exposed.

YAGI ANTENNA ATTACHMENT DETAIL (WOOD POLE)

FOR MASTER OR REPEATER LOCATION

SINGLE BRACKET METHOD PREFERRED

NOTES:
- Finished assembly has no threads exposed.
Yagi antenna attachment detail (steel pole)
For master or repeater location
Use when 2 brackets are required

NOTE: Antenna attachment similar to ped signal bracket assembly. (Finished assembly has no threads exposed.)

Yagi antenna attachment detail (wood pole)
For master or repeater location
Use when 2 brackets are required

NOTE: Antenna attachment similar to ped signal bracket assembly. (Finished assembly has no threads exposed.)
**TYPICAL VEHICLE SENSOR NODE CONFIGURATION**

**INTERSECTION DETECTION CROSS ROAD ACTIVATED (NON-LOCKING)**

1. **ACCESS POINT** (48 sensors per AP)
2. **REPEATER** (10 sensors per RP)
3. **VEHICLE SENSOR NODE (VSN)**
4. **TRAFFIC SIGNAL**
5. **STOP BAR**

*NOTE: REPEATER SHOULD BE LOCATED BEHIND SENSORS*

**150' MAX RANGE**
- Access Point to Sensor
- Repeater to Sensor

**1000' MAX RANGE**
- Access Point to Repeater

**TYPICAL VEHICLE SENSOR NODE CONFIGURATION**

**INTERSECTION DETECTION CROSS ROAD ACTIVATED (LOCKING)**

1. **ACCESS POINT** (48 sensors per AP)
2. **REPEATER** (10 sensors per RP)
3. **VEHICLE SENSOR NODE (VSN)**
4. **TRAFFIC SIGNAL**
5. **STOP BAR**

*NOTE: REPEATER SHOULD BE LOCATED BEHIND SENSORS*

**150' MAX RANGE**
- Access Point to Sensor
- Repeater to Sensor

**1000' MAX RANGE**
- Access Point to Repeater
TYPICAL VEHICLE SENSOR NODE CONFIGURATION

INTERSECTION DETECTION LEFT-TURN ACTIVATED

PERMISSIVE PROTECTED (NON-LOCKING)

NOTE:
REPEATER SHOULD BE LOCATED BEHIND SENSORS
TYPICAL VEHICLE SENSOR NODE CONFIGURATION

TRAFFIC CONTROLLER

(POLE LOCATION)

STOP BAR

VEHICLE SENSOR NODE (VSN)

ACCESS POINT

REPEATER

NOTE:

10-15'

TYPICAL 6' X 6' DETECTION ZONE

3'

TYPICAL

3'

DIRECTION OF TRAVEL

TYPICAL 6' X 20' DETECTION ZONE

3'

TYPICAL

10-15'

TYPICAL 6' X 30' DETECTION ZONE

3'

TYPICAL
TYPICAL VEHICLE SENSOR NODE LANE PLACEMENT DIAGRAM

FOR TWO PHASE OPERATION (NON-LOCKING)

* WITH RIGHT TURN DELAYS
TYPICAL VEHICLE SENSOR NODE LANE PLACEMENT DIAGRAM
FOR LEFT-TURN OPERATION—PERMISSIVE PROTECTED (NON-LOCKING)

STOP BAR

TYPICAL VEHICLE SENSOR NODE LANE PLACEMENT DIAGRAM
FOR LEFT-TURN OPERATION—PROTECTED ONLY (LOCKING)

STOP BAR

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

SHEET 9 OF 9

SIG-420-A

11/16/2010

PW: RD/T&S/Standards/Signals/mdot 420a.dgn

(SPECIAL DETAIL)
Michigan Department of Transportation

SCOPE OF SERVICE
FOR
TRAFFIC & SAFETY SERVICES
Under $________ Traffic Signal Modernization Design

CONTROL SECTION(S):

JOB NUMBER(S):

PROJECT LOCATIONS:

PROJECT DESCRIPTION:
Signal Modernization Design for intersections # _____, Overhead Flashing Beacon Design for intersections # ___. Perform any ramp design necessary to comply with MDOT design practices and ADA requirements at all the required locations.

These modernizations will be designed under JN _____ C and installed under the JN _____ A.

Geotechnical:
Soil borings are included in this consultant design scope. The soil borings must be included as plan sheets.
Soil borings are not included in this consultant design scope. If strain poles are required, soil boring information will be provided to the consultant by MDOT and must be included on the plans.

Sidewalk Ramp Design:
Sidewalk ramp design is included in this consultant design scope.
Sidewalk ramp design is not included in this consultant design scope.

Right-of-way survey:
Right-of-way survey is included in this consultant design scope.
Right-of-way survey is not included in this consultant design scope.

Road design survey:
Road design survey is included in this consultant design scope.
Road design survey is not included in this consultant design scope.

ANTICIPATED SERVICE START DATE:

ANTICIPATED SERVICE COMPLETION DATE:

PRIMARY PREQUALIFICATION CLASSIFICATIONS:
Traffic Signal Design
SECONDARY PREQUALIFICATION CLASSIFICATION(S):

<table>
<thead>
<tr>
<th>Roads and Streets</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Design Surveys (See attachment A)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Right of Way Surveys (See attachment A)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Geotechnical Engineering Services</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

DBE REQUIREMENT: N/A

PROJECT MANAGER:
Douglas Adelman
Traffic and Safety Support Area
Michigan Department of Transportation
Murray D. Van Wagoner Building
P.O. Box 30050
Lansing, MI 48909
Ph: 517-373-2363
Fax: 517-373-2330
E-mail: adelmand@michigan.gov

General Requirements:

Design and develop traffic signal contract plans, proposal package, engineering documents, and related work necessary for new installation or modernization of electronic traffic signal control devices to be accomplished by contract bid letting.

The preferred traffic signal layout is box span, however, if design considerations indicate diagonal span layout is preferred, then both options must be presented at the base plan stage for internal review by MDOT.

If it is determined during construction, the design is not constructible due to consultant design error; the signal design consultant will be responsible for correcting the design at no additional cost to MDOT. If the constructability is based on changes made by MDOT, the consultant will be compensated.

CONSULTANT RESPONSIBILITIES:

1) Any non-typical pedestrian detour plans must be developed as part of the proposal or plan sheets. MDOT will provide a typical pedestrian detour plan for the proposal.

2) Proposed plan views must have a 1”=30’ scale when plotted to 11”x17”. Full traffic signals must also include quadrant details at a 1”=10’ scale showing all utilities and proposed facilities.

3) Utility Coordination:
   a) Responsibility for utility coordination will be shared by MDOT staff and the consultant. The consultant will call in a design/survey Miss Dig at least two weeks prior to any design survey or design field visit. The consultant will include design/survey Miss Dig locates and all other utility information on the plans.
(both existing and proposed plans). MDOT will provide the consultant with all information received from soliciting the utility companies.

b) The consultant will stake proposed foundation locations in the field prior to any field utility coordination meeting.

c) The consultant will attend utility coordination meetings and on-site field meetings as required with the utility engineer and the affected utility companies in the area and make any necessary design and plan revisions. The consultant will actively work with MDOT personnel until utility conflicts are resolved.

4) Meetings:
   a) The consultant is responsible for arranging design related meetings including the following personnel: All local agencies, TSC Traffic & Safety Engineer, TSC Development Engineer, TSC Delivery Engineer, TSC Utility Engineer MDOT Region Electrician, MDOT Region Maintenance Supervisor, MDOT Region Operations Engineer, MDOT Environmental Coordinator, MDOT Region Real Estate (Property Manager), MDOT Lansing Signals Design, MDOT Lansing Signals Operations, and MDOT Project Manager.
   b) The consultant is responsible for scheduling, attending, and providing meeting minutes for the following meetings:
      i) Design kick off meeting
      ii) Radio Interconnect field survey (as required)
      (I) Document results on the Signal Radio Survey Form #1516: [http://mdotwas1.mdot.state.mi.us/public/webforms/detail.cfm?ALLFORMS__FormNumber=1516](http://mdotwas1.mdot.state.mi.us/public/webforms/detail.cfm?ALLFORMS__FormNumber=1516)
      iii) Plan review meeting at preliminary plan stage
      iv) Utility coordination meeting (coordinate scheduling with utility engineer)
      v) Utility coordination field meetings as required (coordinate scheduling with utility engineer)
      vi) OEC meeting prior to plan completion.

5) Perform strain pole foundation design as required. The MDOT has developed a strain pole foundation design table for box span signals. This table can be found on the Traffic and Safety website in the Signal Design Guides area. A special foundation design may be necessary depending on site specific soil properties and proposed signal layout and geometry.

6) Perform design service including the design and preparation of base plans, preliminary (75%) plans, OEC plans, final plans, and a complete “E proposal” package.

7) In the performance of design service, govern all project design and plan work by the applicable codes, standards, and practices of the Michigan Department of Transportation, hereinafter referred to as the department, and the current Michigan Manual of Uniform Traffic Control Devices.

8) All documents prepared by the Consultant, including, drawings, estimates, specifications, field notes, investigation studies, etc., are the property of the department.


10) Plans are to be designed using the current version of the MDOT Standard Specifications.

11) Perform any design/coordination tasks with any railroad company involved within the project limits, including (but not limited to):
a) Determine railroad contact person(s)
b) Complete any applications required by the railroad company to perform the proposed traffic signal work.
c) Include related notes and special provisions as required in the proposal.

12) Any existing or proposed pedestrian pushbuttons and ramps must be accessible per ADA guidelines and MDOT design practices including:
   a) Show proposed grades on ADA ramp designs
   b) Pushbutton must be within 24” from edge of sidewalk
   c) The pushbutton must be located in the middle of a 4’ pushbutton landing (maximum slope of 2%).
   d) ADA ramps are required at every crosswalk controlled by a pedestrian signal head.
   e) Sidewalk is required to connect ADA ramps on a quadrant.

13) Perform sidewalk and ramp design as needed to comply with MDOT design practices and ADA requirements. For all stop and go traffic signals, all ADA ramps will be replaced unless the existing ramps are compliant with MDOT design practices and ADA guidelines. For flashing signals, pedestrian ramps will not be replaced unless they are disturbed.

14) Perform survey as needed in compliance with MDOT survey practices and standards in accordance with attachment A.

**Soil Borings:**

15) Give the TSC Traffic and Safety engineer and the Region Soils Engineer at least three working days notice prior to beginning soil borings.

16) Provide the preliminary report to the Region Soils Engineer and to the Project Manager for review and approval.

17) Perform Design Service for drilled shaft foundations as required including soil boring information, identification of any suspected contamination of the boring site, and preliminary foundation investigation. (Refer to MDOT's website.) The following information must be provided for proper analysis of strain pole foundations:
   a) Accurate pole location information
   b) Soil classification
   c) Standard penetration values every 2.5 feet (750 mm) extending 25 feet (7.6 m) below the ground surface elevation (blows/foot in accordance with ASTM D1586)
   d) Undrained shear strength (PSF, for cohesive soils)
   e) Ground water table elevation

**Task 1: Base Plan Preparation**

1. Design and develop contract base plans necessary for new installation or modernization of electronic traffic signal control devices to be accomplished by contract bid letting. Base plans include (but are not limited to):
a. ADA ramp and pushbutton design (proposed slopes, ramp types, and landing locations, but not final elevations)
b. Radio interconnect (if the scope requires Radio Interconnect Design): Show location of antennas, masters, repeaters, and remotes per the completed radio survey.
c. Existing road rights-of-way (ROW)
d. Field measured/surveyed road and lane geometry and posted speed limits
e. Field measured/surveyed locations of any visible utilities
f. Utility note sheet listing the contact names and phone numbers for each utility having facilities within the project limits.
g. Field measured/surveyed locations of all utility markings from design/survey Miss Dig
h. All utility information received from MDOT soliciting utility companies
i. Proposed types and dimensioned locations of poles and controller
j. Proposed traffic and pedestrian signal head types and locations
k. Proposed pushbuttons, traffic loops, and antennas
l. Proposed traffic signal removal (if required) and installation plan(s)
m. Proposed phasing (as required)
n. POCH diagram for proposed attachments to wood poles (not required for steel pole pole attachments)

2. Where applicable, the intersection and ADA ramp survey will be used to develop base plans

3. If existing or proposed equipment appear to be outside existing right-of-way, contact Douglas Adelman (517-373-2363), Traffic Signal Unit in Lansing.

**Task 1: Deliverables (Base Plans)**

1. All traffic signal plan and interconnect sheets (no details required) in the following formats:
   a. One 11x17 pdf file Distributed as follows:
      i. All local agencies: Pdf file
      ii. Traffic Signals Unit: Pdf file
      iii. TSC Delivery Engineer: Pdf file
      iv. TSC Traffic & Safety Engineer: Pdf file
      v. TSC Utilities Engineer: Pdf file
      vi. Region Soils Engineer: Pdf file
      vii. Region Traffic & Safety Engineer: Pdf file
      viii. Utility company supplying power: Pdf file

**Task 2: Preliminary (75%) Plan Preparation**

1. Design and develop preliminary (75%) contract plans necessary for new installation or modernization of electronic traffic control devices to be accomplished by contract bid letting. Preliminary (75%) plans include (in addition to base plan information):
   (a) Location and types of utilities as provided by the utility companies and resulting from utility coordination meeting(s) as required.
   (b) Separate Interconnect plan sheet (if the scope requires Radio Interconnect Design)
   (c) List of Materials and Quantities
   (d) Wiring diagram
   (e) ADA ramp and pushbutton design (including existing and proposed elevations)
   (f) Point of Contact Height (POCH) diagram(s)
(g) Appropriate note blocks for contact persons, etc.  
(h) Proper file names, levels, and text sizes  
(i) Any additional right-of-way required for existing and proposed traffic signal appurtenances  
(j) Soil boring information including depths, soil description, water level, and depth of foundation (if required)

2. Attend plan review meeting at the local TSC.

**Task 2: Deliverables Preliminary (75%) Plans**

1) A summary spreadsheet listing utility conflicts by location and quadrant including the following:
   a) Specify utility conflicts as overhead or underground  
   b) Specify utility and owner (if unknown label as such)  
   c) Specify locations and utilities for which inadequate information was received
2) All traffic signal plan and interconnect sheets including details.
3) All required special provisions, notices to bidders, and specifications in E-Proposal format including a draft progress clause, a draft coordination clause, and a draft special provision for maintaining traffic.
4) Preliminary pedestrian detour plans must be included as 8 ½”x11” sheets within the maintaining traffic special provision or in the plans as 11”x17” sheets.
5) Format of Task 3 Deliverables  
   a) One electronic 11x17 pdf file (filename: Job#PLANHALF.pdf)  
   b) One electronic proposal pdf file (filename: Job#PROPOSAL.pdf)
6) Distribute Task 3 Deliverables as follows:  
   i) All local agencies: Pdf file  
   ii) Traffic Signals Unit  
   iii) TSC Delivery Engineer  
   iv) TSC Traffic & Safety Engineer  
   v) TSC Utilities Engineer  
   vi) Region Soils Engineer  
   vii) Region Traffic & Safety Engineer  
   viii) Lansing Signal Shop  
   ix) Utility company supplying power

**Task 3: OEC Plans and Proposal Preparation**

1) Incorporate the department's comments on the plans and prepare complete detailed construction OEC plans, supplemental specifications, special provisions, measurement and payment items, estimates of quantities, span calculations, and engineer's estimates of cost for all necessary construction and related work included in this project.
2) During preparation of the OEC plans, make such alterations, corrections, and revisions to said plans and supporting materials as are deemed necessary and desirable by the department to insure conformance of plans to good design and standard practices and to have said plans and other material in proper form for receiving bids.
3) During preparation of the proposal, work with the appropriate MDOT personnel to obtain final bid proposal documents including progress clause, coordination clause, special provision for maintaining traffic, and utility relocation status (form 2286).
4) Pedestrian detour plans must be included as 8 ½”x11” sheets within the maintaining traffic special provision or in the plans as 11”x17” sheets.
5) Attend and provide electronic plans for the OEC meeting.
Task 3: Deliverables (OEC Plans and Proposal):

1. Deliver to the department electronic OEC plans, proposal and supporting documents compatible with current E-Proposal requirements (Refer to MDOT website: E-Proposal Training for MDOT Consultants Document).

Task 4: Final Plan and Proposal Preparation

1) Make any final changes necessary to the plans and proposal and supporting documents

Task 4: Deliverables (Final Plans):

1. Upon completion of design services for this project and final approval thereof by the department, deliver to the department final plans, proposal and supporting documents compatible with current E-Proposal requirements (Refer to MDOT website: E-Proposal Training for MDOT Consultants Document). All CAD files must be “Intergraph Microstation Version 8 file format” and all PDF files must be Adobe Acrobat version 8.

Format of Task 4 Deliverables (Final Plans):

a) One (1) 11”x17” paper copy of the title sheet with original stamps and signatures including a map of the area with work locations identified, a list of locations, and other items as determined by Traffic Signal Unit
b) Final Approved Electronic files of all signal plans must be submitted to Traffic Signal Unit.
c) Electronic (pdf) 11”x17” plan file (filename: Job#PLANHALF.pdf)
d) Electronic (pdf) proposal file (filename: Job#PROPOSAL.pdf)
e) Electronic (pdf) files of all required supporting documents
f) Editable electronic files of all supporting documents and of all files inserted into proposal document. For example, submit the progress clause as a word document in addition to the progress clause (pdf) which will also be inserted in the proposal pdf.
g) Construction cost estimate (excel format)
h) One copy of all design computations as required for use by the department.
i) Upon request by the department, make available thereto all notes utilized in preparation of the plans, supplemental specifications, and cost estimates.
j) For all signal contracts, a "txt" or “csv” file compatible with Transport system detailing the materials used
k) Checklist of "typical" signal details to be used
l) All required checklists of MDOT Special Provisions extracted per E-Proposal format

Distribute Task 4 Deliverables to Lansing Traffic Signals Unit only as follows:

i) One (1) 11”x17” paper copy of the title sheet
ii) All electronic files to be delivered on a compact disk (CD) and sent via email

MDOT RESPONSIBILITIES:
Utilities:
MDOT staff will:
- Distribute plans to all the utility companies in the area
- Receive and pass on all utility information
- Assist in scheduling and conducting utility coordination meeting(s)
- Coordinate any necessary utility relocation

Department Review:
The department will review and comment on the base plan, the preliminary (75%) plan, and the OEC plan submittals. Additional plan review may be required dependent on completeness and accuracy of the plans submitted.

Information services to be provided by the MDOT are:
- Layout request indicating signal design parameters
- Control section numbers
- Job numbers
- Contact information for TSC/Region/C&T personnel
- Appropriate Traffic and Safety Notes
- Available signal design plans and/or layout drawings for each location
- Available signal phasing or operational information for each location
- A Proposal file will be made available to be used as a template

Items available on MDOT's website - [http://mdotwas1.mdot.state.mi.us/public/tands/plans.cfm](http://mdotwas1.mdot.state.mi.us/public/tands/plans.cfm)

1. Signal Details
   - a. MDOT Typical Signal Construction Detail Sheets
   - b. MDOT Typical Signal Information Note Sheet
   - c. MDOT Typical Signal Legend Sheet

2. Traffic Consultant Files
   - a. Cell libraries
   - b. Microstation information
   - c. CAD instructions for consultants
   - d. MDOT sample layouts
   - e. MDOT Suggested Traffic Signal Design Procedure
     - f. MDOT Requirements for Preliminary Geotechnical Investigations for Signal Foundations
     - g. Method of Measurement and Basis of Payment for Signal Contracts
     - h. Signal Span Calculation Program (non-disclosure statement required)

3. Traffic Guidelines
   - Traffic Signal Head Placement Diagrams
   Signal special provisions are now available on the Design IRS menu.

Reference Documents and Standards to be Used:
- National *Manual of Uniform Traffic Control Devices*
- *Michigan Vehicle Code*
- Local and national electrical codes
- MDOT Standards, Specifications, and Construction Details
- MDOT Pay Item Code Book

**PROJECT COORDINATION:**
Coordinate design service with MDOT, Traffic and Safety Support Area, Traffic Signal Unit, Douglas Adelman (517-373-2363); overhead and/or underground utility/telephone companies.

**PAYMENT SCHEDULE**
Compensation for this Scope of Services shall be on an actual cost plus fixed fee basis.

**CONSULTANT PAYMENT**

**CONSULTANT PAYMENT – Actual Cost Plus Fixed Fee:**
Compensation for this project shall be on an actual cost plus fixed fee basis. This basis of payment typically includes an estimate of labor hours by classification or employee, hourly labor rates, applied overhead, other direct costs, subconsultant costs, and applied fixed fee.

All billings for services must be directed to the Department and follow the current guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's website. This document contains instructions and forms that must be followed and used for billing. Payment may be delayed or decreased if the instructions are not followed.

Payment to the Consultant for services rendered shall not exceed the maximum amount unless an increase is approved in accordance with the contract with the Consultant. Typically, billings must be submitted within 60 days after the completion of services for the current billing. The final billing must be received within 60 days of the completion of services. Refer to your contract for your specific contract terms.

Direct expenses, if applicable, will not be paid in excess of that allowed by the Department for its own employees in accordance with the State of Michigan’s Standardized Travel Regulations. Supporting documentation must be submitted with the billing for all eligible expenses on the project in accordance with the Reimbursement Guidelines. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this project.

The use of overtime hours is not acceptable unless prior written approval is granted by the MDOT Region Engineer/Bureau Director and the MDOT Project Manager. Reimbursement for overtime hours that are allowed will be limited to time spent on this project in excess of forty hours per person per week. Any variations to this rule should be included in the priced proposal submitted by the Consultant and must have prior written approval by the MDOT Region Engineer/Bureau Director.
and the MDOT Project Manager.

The fixed fee for profit allowed for this project is 11.0% of the cost of direct labor and overhead.

ATTACHMENT A

SURVEY SCOPE OF WORK

Survey is required at all traffic signal locations (both flashers and full traffic signals). The scope of survey includes the following:

<table>
<thead>
<tr>
<th>Intersection topographic survey</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADA ramp survey</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Right of way survey</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Intersection topographic survey limits include all utilities and structures within rights-of-way from existing curb and gutter (shots on back of curb, flow line, and edge of gutter at 5’ intervals) to 10’ behind existing rights-of-way. Survey limit extends 100’ beyond the points of curvature.

A design/survey MISS DIG request must be submitted at least 2 weeks prior to beginning of survey to ensure that utility locates are marked and can be picked up by the survey. The MISS DIG utility marks are to be shot in and labeled as a MISS DIG locate.

ADA ramp survey limits include drainage structures (and any other utility located in or adjacent to the curb and gutter) near existing or proposed ADA ramps. Curb and gutter shots near existing or proposed ADA ramps must be taken every 3 feet. Both ends of sidewalk joints must be included to help define the limits of sidewalk replacement during ADA ramp design. If an ADA ramp exists, enough information must be collected to properly define the existing conditions.

Right-of-way survey limits must include all existing and proposed ADA ramps and traffic signal equipment. If additional right-of-way is required for existing or proposed design, sufficient data must be provided to enable MDOT to write a legal description.

PROJECT SURVEY LOCATIONS:

1)

2)

3)
NOTES: The Selected Consultant shall discuss the scope of this survey with an MDOT Region Surveyor or an MDOT Lansing Design Surveyor before submitting a price proposal.

The Selected Consultant surveyor must contact the Region or TSC Traffic and Safety Engineer for work restrictions in the project area prior to submitting a price proposal.
A **detailed Survey Work Plan must** be included in the project proposal. A **spreadsheet estimate** of hours by specific survey task such as traversing, leveling, mapping, etc., **must** be included in the **priced proposal**.

It is the responsibility of the Professional Surveyor to safeguard all corners of the United States Public Land Survey System, published Geodetic Control and any other Property Controlling corners that may be in danger of being destroyed by the proposed construction project.

**GENERAL REQUIREMENTS:**

1. Surveys must comply with **all Michigan law** relative to land surveying.

2. Surveys must be done under the **direct supervision** of a Professional Surveyor licensed to practice in the State of Michigan.

3. Work in any of the following categories of survey: Road Design, Structure, Hydraulic, Right-of-Way, and/or Ground Control (Photogrammetric) must be completed by a survey firm which is pre-qualified by MDOT for that category.

4. Surveys must meet all requirements of the Michigan Department of Transportation (MDOT) Design Surveys *Standards of Practice* dated March 2008, the MDOT Design Survey Manual on-line, and the MDOT RTK guidelines. Please contact the Design Survey office to clarify any specific questions regarding these standards.

5. Consultants must obtain all necessary permits required to perform this survey on any public and/or private property, including an up-to-date permit from the MDOT Utilities Coordination and Permits Section.

6. Prior to performing the survey, the Consultant must:
   a) **Contact the TSC Traffic and Safety engineer to provide at least one working day notice prior to beginning soil borings.**
   b) Contact all landowners upon whose lands they will enter. The contact may be personal, phone or letter, but must be documented. This notice must include the reasons for the survey on private land, the approximate time the survey is to take place, the extent of the survey including potential brush cutting (which must be minimized), and an MDOT contact person (the MDOT Project Manager or designate).

7. The Consultant must contact any and all Railroads prior to commencing field survey on railroad property. The cost for any permit, flaggers and/or training that is required by the Railroad will be considered as a direct cost, but only if included in the Consultant’s priced proposal.

8. The Consultant must adhere to all applicable OSHA and MIOSHA safety standards, including the appropriate traffic signs for the activities and conditions for this job.

9. Consultants are responsible for a comprehensive and conscientious research of all
records, including MDOT records, essential for the completion of this project.

10. Measurements, stationing, recorded data, and computations must be in International Feet, unless specified otherwise by the MDOT Project Manager.

11. Coordinate values shall be based upon the Michigan State Plane coordinate system NAD83 (CORS). All elevations must be based upon the North American Vertical Datum of 1988 (NAVD88). The datums must be clearly stated in the Survey Work Plan. A preliminary submittal of the adjusted Horizontal and Vertical control for the project may be submitted to the MDOT Survey Consultant Coordinator or Region Surveyor for review and acceptance as soon as it is available. **NOTE:** AN ASSUMED DATUM CAN BE USED ON THIS PROJECT, LIMITED ONLY TO THE INTERSECTION.

12. The survey notes must be submitted to the Design Survey Unit in 10" by 12" divided portfolios with flap covers. As many portfolios should be used as are needed to contain all of the required documents and Compact Discs (CD’s) or DVD’s. **Duplicate CD’s must be included in the portfolio, with one set labeled “Region Surveyor”**. **NOTE:** THREE CD’S ARE REQUIRED. NO PAPER PORTFOLIO IS REQUIRED.

13. Each portfolio must be labeled on the outside as in the following example:

Survey Notes for:
Route, Location and Project Limits [I-94 under Beaubien Street ]
Control Section [S06 of 82024] Job Number [45197D] Date [of submittal]
By [ Name of Firm ]
Michigan Professional Surveyor [ ] License # [ ]

14. Each submittal is to be divided into six sections. These sections are to be labeled as follows: Administrative, Alignment, Control, Property, Mapping, and Miscellaneous.

15. **All data**, whether electronic or paper, **must be recorded on non-rewritable Compact Discs (CD’s) or DVD’s**. All paper files, including MicroStation files, must be scanned and/or converted to Adobe Acrobat .PDF format. CD’s must be organized in the same manner as the portfolio, such as by Administrative section, Control section, etc. A Table of Contents in Adobe Acrobat format is required that has all .PDF pages of the CD bookmarked/linked so each place in the .PDF archive can be accessed with a single click of the computer mouse. Specified format files such as ASCII text, CAiCE and MicroStation must have separate access in native format outside of the .PDF file. CD’s must be labeled with the control section, job number, data type and file names. It is not necessary to label each individual paper page in the portfolio.

16. Each category of survey must be packaged separately (i.e., Structure surveys separate from Road surveys and Hydraulic surveys). CD’s must be labeled with the Control Section, Job Number, data type and file names.
17. The Consultant representative shall record and submit typewritten minutes for all project related meetings to the MDOT Project Manager within two weeks of the meeting. The Consultant shall also distribute the minutes to all meeting attendees.

18. The MDOT Project Manager is the official contact for the Consultant. The Consultant must send a copy of all project correspondence to the MDOT Project Manager. The MDOT Project Manager shall be made aware of all communications regarding this project. Any survey related questions regarding this project should be directed to a Survey Consultant Project Manager or MDOT Region Surveyor.

This Attachment A was prepared by:

Michael C. Barger, PS
MDOT Survey Consultant Project Manager
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517-241-3431
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At the completion of this survey for this project, legible copies of all field survey notes, all electronic data, and all research records obtained for this project will be considered the property of MDOT and must be sent to the MDOT, Design Support Area, Supervising Land Surveyor, P.O. Box 30050, Lansing, MI 48909. Please use MDOT’s Form 222(5/01) entitled “SURVEY NOTES: RECEIPT AND TRANSMITTAL” for all transmittals. A copy of this transmittal form must also be sent to the MDOT Project Manager for Design.

Acceptance of this survey by the MDOT Supervising Land Surveyor and/or the MDOT Project Manager does not relieve the Consultant of any liability for the content of the survey.

WORK RESTRICTIONS

The Selected Consultant and the Selected Consultant only, is advised to discuss Traffic Control scenarios with the MDOT Traffic and Safety Engineer at the closest MDOT TSC prior to submitting a priced proposal.

Topics to be discussed with the Traffic and Safety Engineer include:

- The project limits extend 100 feet from the intersection.
- No survey work is required in the traveled roadway.
- Crew members will restrict the road crossings to the crosswalks.
- Topographic mapping begins at the inside edge of the curb and ends at the property line.
No work shall be performed or lane closures allowed during the Memorial Day, July 4th, or Labor Day holiday periods, as defined by the MDOT Project Manager or representative specifically designated by the Project Manager.

The Consultant must call the MDOT Region or TSC Traffic and Safety Engineer before beginning work to inform him or her of surveying activity in the area. The MDOT Region or TSC must be notified at least two weeks prior to lane closures so advance notice can be posted on the Web site.

Traffic shall be maintained by the Consultant throughout the project in accordance with Sections 812, 922, 103.05 and 103.06 of the Standard Specifications for Construction, 2003 edition, [www.mdot.state.mi.us/specbook/](http://www.mdot.state.mi.us/specbook/), and Supplemental Specification 03SS001(2) Errata to the 2003 Standard Specifications and all other supplemental specifications currently in effect against the Standard Specifications for Construction. All traffic control devices shall conform to the current edition, as revised, of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD). All warning signs for maintenance of traffic used on this project shall be fabricated with prismatic retro-reflective sheeting, and shall be set up five feet above ground.

The Consultant shall use MDOT standard “maintaining traffic” typicals for any and all closures.

Typical MDOT traffic control diagrams are available on line at [www.mdot.state.mi.us/tands/plans.cfm](http://www.mdot.state.mi.us/tands/plans.cfm)

### COORDINATION WITH OTHER CONTRACTS IN THE VICINITY

The Consultant shall coordinate his operations with contractors performing work on other projects within or adjacent to the Construction Influence Area (CIA).

The Consultant’s attention is called to the requirements of cooperation with others as covered in Article 104.07 of the 2003 Standard Specifications for Construction. Other contracts or maintenance operations may occur during the life of the project.

No claim for extra compensation or adjustment in contract unit prices will be allowed on account of delay or failure of others to complete work unit scheduled.

### FIELD SURVEY

The purpose of the field survey is to obtain all information and data required by the project design engineer, to leave control in the field for future construction staking, and to provide a sufficient history of the area to enable the MDOT Design Survey Unit to perform dependable surveys in the future. The Consultant surveyor must discuss the scope of this survey with the project design engineer before initiating any work on this project. Notes of this meeting and a detailed Survey Work Plan with an estimate of hours broken down by specific survey task must be submitted to the MDOT Project Manager and Survey Consultant Project Manager within two weeks of this meeting.
CONTROL

The purpose of the mapping is for ADA ramp improvements and other upgrades to the intersection. No typical control is necessary. An assumed horizontal and vertical datum is adequate. Property irons either found or established would be appropriate to be used as project control. At least two horizontal and vertical control points are necessary for future layout.

GOVERNMENT CORNERS & PROPERTY

Any government corner that would help locate the property is required for ROW survey. Copies of plats in the area are required to be included in the PDF portfolio. MDOT Right of Way maps are to be used as a guideline only and not held as the final document. Copies of deeds in the four quadrants of an intersection is required and should serve as a basis of Right of Way location.

ALIGNMENT

No alignment is required.

MAPPING

Mapping of the intersections includes the following detail:

- Curb (top back of curb) & gutter (at flow line and at edge) is to be collected through the curves with observations every 3 feet along the arc near existing or proposed ADA ramps. Outside exiting or proposed ADA ramp areas, curb and gutter observations may be every 5 feet.
- Drainage structures (and any other utility located in or adjacent to the curb and gutter) near existing or proposed ADA ramp areas must be located because they can affect ADA ramp design.
- If an ADA ramp exists, enough information must be collected to properly define the existing conditions.
- Existing sidewalk joint ends must be mapped to help determine limits of sidewalk replacement.
- Locate all utilities that can be seen on site. No utility company contacts are required.
- ROW needs to be shown on the mapping for ROW survey. A distance should be noted from the back of sidewalk to the ROW line.

The Consultant must submit a **CAiCE software file, named MDOTjob#.zip**, utilizing CAiCE’s built-in archive feature, of all survey mapping points and data files for the mapping area. If a Digital Terrain Model is needed for the project, it must be created in CAiCE and named EXRD. **The CAiCE software used must be Version 10.6 or newer.**

The Consultant is responsible for using the latest MDOT CAiCE Feature Codes, files and Plans Production tugboat (macro), available on the MDOT Design Survey File Transfer Protocol (FTP) site at ftp://ftp.michtrans.net/. The consultant Username is “survcons.” The consultant Password is $urvcon$. The tugboat can also be used to convert CAiCE files into Geopak and MicroStation formats.
The Consultant must provide an electronic MicroStation Intergraph Version 8 format file of the mapping area. This must be named MDOTjob#pl.dgn, for example 79023Cpl.dgn, and must be submitted in a sub-directory outside of the CAiCE archive file named “MicroStation.” The MicroStation file will be a 2-D file of the planimetric features including contours. This file must be sized appropriately, utilize the seed file seedrd_c.dgn with working units of 1000, 1, and be compiled in standard MDOT format. The Consultant is responsible for using the latest MDOT Resource files, color table, and cell files, available on the MDOT File Library site under CAD_V8. Go to http://mdotwas1.mdot.state.mi.us/public/bbs/

For a comprehensive list of MicroStation level designations, contents and line attributes, refer to the “MDOTV8LEVEL.pdf” table located on the MDOT Design Survey File Transfer Protocol web site. This table replaces the former Attachments AA, C & D. Also in the ftp site, the Consultant should refer to the V8GROUP&ALPHA LIST.pdf file for Data Collection Codes.

The Consultant must also submit files created from CAiCE that are formatted for design in Geopak software. This can be accomplished by using the MDOT Plans Production CAiCE Tugboat available on the MDOT Design Survey FTP site. The Consultant must submit a 3D MicroStation Triangle file, a Survey Chain (TIN Boundary) around the edited Triangle file with the name and Feature “CLIP”, a Job#.OBS file, a Job#.KCP file, a Job#.XYZ file and a Job#.ALI file. Each alignment must be computed separately and uniquely named to include the JN and a description, such as 79585_AsC_Wbd.ALI. These files must be submitted electronically in a subdirectory outside of the CAiCE archive file named “Geopak.”

POST SURVEY CLEAN-UP

Once the survey is complete, all stakes must be removed to aid the maintenance crews and adjacent property owners. All benchmarks and control points and their witnesses must remain in place. The use of paint should be minimal to non-existant.

FINAL REPORT: DELIVERABLES

The final report for this project shall include:

- Provide three CD copies with the following information:
  - Administration
    - A copy of this portion of the Scope of Services
    - Surveyor’s Report
    - Properly named digital portfolio as an Adobe PDF file
  - Control
    - Horizontal and vertical control sheets with coordinates in English units
  - Alignment
    - None.
  - Property
    - All plats, recorded surveys and deeds used to ascertain the ROW.
o Mapping
  - A printout of the above listed areas showing the elevations collected
  - A digital copy of the CAiCE zip file, MicroStation files and GeoPak files
o Miscellaneous
  - Any information that may help the designer understand field conditions