

**BIDDING & CONTRACT DOCUMENTS FOR THE  
KING STREET TILE DRAIN**

**BRIAN J. WENDLING  
SAGINAW COUNTY PUBLIC WORKS COMMISSIONER  
CITY OF SAGINAW, SPAULDING TOWNSHIP & BRIDGEPORT TOWNSHIP  
SAGINAW COUNTY, MICHIGAN**

**November 11, 2016  
Draft**



**Hubbell, Roth & Clark, Inc.  
555 Hulet Drive  
Bloomfield Hills, MI 48303**



TABLE OF CONTENTS

<u>NUMBER</u>	<u>SECTION NAME</u>	<u>PAGE NUMBER</u>
<b>BIDDING REQUIREMENTS - CONTRACT PROVISIONS</b>		
00002	Table of Contents.....	1 and 2
	Notice of Letting.....	1 thru 4
00004	Instructions to Bidders.....	1 thru 4
00005	Proposal .....	1 thru 12
00006	Unit Prices .....	1 thru 3
00007	Enrolled House Bill No. 5541 .....	1 thru 5
	Agreement .....	1 thru 11
	Construction Performance Bond.....	1 and 3
	Construction Payment Bond.....	1 and 3
	Notice of Award .....	1
	Notice to Proceed.....	1
07000	General Conditions .....	1 thru 17
00800	General Supplementary Conditions .....	1 thru 16
00801	Landowner Agreement .....	1
00802	Certificate of Substantial Completion .....	1 and 2
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>		
01000	General Specifications .....	1 thru 11
01001	Special Project Requirements .....	1 thru 4
01039	Coordination and Meetings.....	1 thru 4
01300	Submittals .....	1 thru 6
01310	Progress Schedules .....	1 and 2
01400	Quality Control .....	1 thru 3
01500	Construction Facilities .....	1 and 2
01600	Material and Equipment .....	1 thru 6
01700	Contract Closeout .....	1 thru 5
02031	Color Audio-Video Survey.....	1 thru 3
<b>DIVISION 2 - SITE WORK</b>		
02110	Site Clearing .....	1 thru 3
02200	Earthwork .....	1 thru 17
02202	Drainage Geotextiles .....	1 thru 3
02211	Rough Grading .....	1 thru 4
02220	Soil Erosion Control .....	1 thru 6
02510	Bituminous Paving .....	1 thru 14
02550	Maintaining Traffic.....	1 thru 4
02730	Open Cut Sewers .....	1 thru 11
02731	Open Cut Sewer Pipe – Material .....	1 thru 4
02751	Sewer Cleaning.....	1 thru 5
02929	Seeding .....	1 thru 6
02930	General Landscape Materials and Final Grading .....	1 and 2
02970	Landscape Maintenance and Guarantee .....	1 thru 3

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 \_ d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 \_ c o m b i n e d \_ P d f \ 0 0 0 0 2 \_ i a b l e o f c o n t e n t s . d o c x 1 1 / 1 1 / 1 6 2 : 4 0 : 4 3 P M

---

<u>NUMBER</u>	<u>SECTION NAME</u>	<u>PAGE NUMBER</u>
<b>SPECIAL PROVISIONS</b>		
	Aggregate Base, 21AA, Special.....	1 thru 3
	County Drains .....	1 thru 16

**END OF SECTION**

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
0  
0  
0  
2  
-  
t  
a  
b  
l  
e  
o  
f  
c  
o  
n  
t  
e  
n  
t  
s  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
4  
0  
:  
4  
3  
  
P  
M

# SAGINAW COUNTY PUBLIC WORKS COMMISSIONER

## KING STREET TILE DRAIN

### NOTICE OF LETTING, DAY OF REVIEW OF DRAINAGE DISTRICT BOUNDARY AND DAY OF REVIEW OF APPORTIONMENTS

#### NOTICE OF LETTING

**DATE:** Thursday, December 8, 2016  
**TIME:** 10:00 am  
**LOCATION:** Saginaw County Public Works Commissioner's Office, Saginaw County Courthouse  
111 S Michigan Ave, Saginaw, MI 48602  
**QUESTIONS:** (989) 790-5258

The Saginaw County Public Works Commissioner will meet on the above date, time and location to receive construction bids for the King Street Tile Drain. Bids will then be opened and publicly announced.

The King Street Tile Drain will be let in 1 section(s) as follows, each section having the length, average depth and width as set forth:

Said Drain is an open channel approximately 6.5 miles in length. Said open drain has an average depth of 6 feet and an average width of 6 feet. There will be approximately 32,472 lineal feet of drain cleanout. Project also includes miscellaneous items such as traffic control, fencing replacement, removal of telegraph lines, pipe capping, installation of side drains, and erosion repair. The culverts work on the project is as follows:

#### **CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric)**

#1 STA 29+40 (Farm Crossing – Section 12 Farms LLC)  
24 Lin. Ft. Culvert Cleanout

#2 STA 33+32 (Road Crossing – M-13)  
53 Lin. Ft. Culvert Cleanout

#3 STA 38+30 (Farm Crossing – C&C Barsenas)  
11 Lin. Ft. 84"x144" CMP (Remove Culvert)

#4 STA 43+65 (Road Crossing – Banner Rd)  
54 Lin. Ft. 84"x96" CMP (Remove Culvert)  
79 Lin. Ft. 71"x103" CMP (New Culvert)  
1 Lump Sum County Road Reconstruction

#5 STA 66+65 (Road Crossing – Casey Dr)  
40 Lin. Ft. Culvert Cleanout

#6 STA 76+36 (Farm Crossing – Section 12 Farms LLC)  
20 Lin. Ft. Culvert Cleanout

#7 STA 81+27 (Road Crossing – Washington St)  
44 Lin. Ft. Culvert Cleanout

#8 STA 102+47 (Road Crossing – Sheridan Rd)  
65 Lin. Ft. Culvert Cleanout

#9 STA 119+50 (Farm Crossing – Mark W Boese)  
21 Lin. Ft. 84"x120" CMP (Remove Culvert)  
52 Lin. Ft. 83"x128" CMP (New Culvert)  
1 Lump Sum Natural Grass Reconstruction

#10 STA 128+87 (Railroad Crossing – Huron Eastern Railroad)  
40 Lin. Ft. Culvert Cleanout

#11 STA 131+10 (Farm Crossing – Dennis D Feinhauer)  
21 Lin. Ft. 84"x126" CMP (Remove Culvert)  
48 Lin Ft. 83"x128" CMP (New Culvert)  
1 Lump Sum Natural Grass Reconstruction

#12 STA 153+90 (Road Crossing – Williamson Rd)  
48 Lin. Ft. Culvert Cleanout

<u>#13 STA 159+35 (Road Crossing – Studor Rd)</u>		
97	Lin. Ft.	Culvert Cleanout
<u>#14 STA 179+74 (Road Crossing – King Rd)</u>		
60	Lin. Ft.	Culvert Cleanout
<u>#15 STA 202+14 (Road Crossing – Kansas Ave)</u>		
56	Lin. Ft.	Culvert Cleanout
<u>#16 STA 207+11 (Road Crossing – Kansas Ave)</u>		
67	Lin. Ft.	Culvert Cleanout
<u>#17 STA 219+93 (Road Crossing – Dixie Hwy)</u>		
250	Lin. Ft.	Culvert Cleanout
<u>#18 STA 235+77 (Railroad Crossing – Saginaw Bay Southern Railroad)</u>		
52	Lin. Ft.	Culvert Cleanout
500	Sq. Ft.	PZ-27 Sheeting with Channel Cap
30	Cyd	Grout
80	Lin. Ft.	42” Spiral Welded Steel Pipe with Cement Mortar Lining, Welded Joints
20	Cyd	Backfill
<u>#19 STA 242+14 (Farm Crossing – Cheryl Vierke)</u>		
23	Lin. Ft.	Culvert Cleanout
<u>#20 STA 245+58 (Farm Crossing – George A &amp; Sandra L Lundy)</u>		
23	Lin. Ft.	Culvert Cleanout
<u>#21 STA 256+61 (Farm Crossing – Darlene A Munson)</u>		
22	Lin. Ft.	Culvert Cleanout
<u>#22 STA 266+07 (Road Crossing – Mack Rd)</u>		
59	Lin. Ft.	Culvert Cleanout
<u>#23 STA 279+27 (Road Crossing – I-75)</u>		
204	Lin. Ft.	Culvert Cleanout
<u>#24 STA 283+90 (Farm Crossing – Eric Sherwood)</u>		
24	Lin. Ft.	Culvert Cleanout
<u>#25 STA 307+37 (Farm Crossing – JA &amp; JM Cararanza)</u>		
23	Lin. Ft.	42” RCP (Remove Culvert)
45	Lin. Ft.	54” CMP (New Culvert)
1	Lump Sum	Natural Grass Reconstruction
<u>#26 STA 312+55 (Farm Crossing – Michael J &amp; Pamela J Gibson)</u>		
43	Lin. Ft.	42” RCP (Remove Culvert)
59	Lin. Ft.	54” CMP (New Culvert)
1	Lump Sum	Natural Grass Reconstruction
<u>#27 STA 329+30 (Farm Crossing – Carl P &amp; Mary L Demaet)</u>		
89	Lin. Ft.	30” RCP (Remove Culvert)
102	Lin. Ft.	42” CMP (New Culvert)
1	Lump Sum	Natural Grass Reconstruction

This Notice of Letting, the plans, specifications and bid proposal shall be considered a part of the Contract. The Contract will be let in accordance with the Contract Documents now on file at The Saginaw County Public Works Office and available to interested parties. Bids will be made and received in accordance with these documents. Bidding Documents, including plans and specifications, may be examined at the following locations:

Hubbell, Roth & Clark, Inc. – 555 Hulet Dr, Bloomfield Hills, MI 48302  
Online at <http://www.saginawcounty.com/PublicWorks/Current-Projects.aspx>

A **mandatory pre-bid meeting** will be held at 10:00 am on Monday, November 21, 2016, at the office of Saginaw County Public Works Commissioner, 111 S Michigan Ave, Saginaw, Michigan 48602. It is a requirement that any prospective General Contractor bidding attend this meeting. Representatives of the Owner and Professional will be present to discuss the project. Attendance is required for sealed bids to be accepted. The Professional will transmit to all prospective bidders of record an Addendum as the Professional considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be legally effective. Hard copy proposal forms and specifications may be obtained by qualified bidders on November 21, 2016 at the mandatory pre-

bid meeting for a \$25 fee, or at no charge at the Saginaw County Public Works Commissioner's website at: <http://www.saginawcounty.com/PublicWorks/Current-Projects.aspx>

Please call Jenny Kales at Hubbell, Roth & Clark, Inc. at (248) 454-6807 to reserve a hard copy of the proposal forms and specifications by November 14, 2016. Extra copies may not be available at the pre-bid meeting.

A security deposit in the form of a cashier's check, money order, certified check or bidders bond in the amount of 5% of the bid shall be submitted with any bids. No cash will be permitted. The security deposits of all unsuccessful bidders shall be returned after the Contract is awarded.

The Contract will be awarded to the lowest responsive and responsible bidder giving adequate security for the performance of the work and meeting all conditions represented in the Instructions to Bidders. The Contract completion date and the terms of payment will be announced at the time and place of letting. If no satisfactory bids are received, we reserve the right to reject any and all bids and to adjourn to a time and location as we shall announce.

#### **DAY OF REVIEW OF APPORTIONMENTS**

**DATE:** Wednesday, December 14, 2016

**TIME:** 9:00 am to 5:00 pm

**LOCATION:** Saginaw County Public Works Commissioner's Office, Saginaw County Courthouse  
111 S Michigan Ave, Saginaw, MI 48602

**QUESTIONS:** (989) 790-5258

The Saginaw County Public Works Commissioner will hold a Day of Review of Apportionments on the above date, time and location.

The Day of Review is an opportunity to review the tentative apportionment of benefit for each parcel and municipality within the Drainage District.

The Public Works Commissioner, engineers and/or other staff members will be available to assist individuals throughout the day, and make revisions where necessary. There is no need to schedule an appointment for a specific time on the Day of Review. The computation of costs for the Drain will also be available at the Day of Review. Drain assessments are collected in the same manner as property taxes and will appear on your winter tax bill. If drain assessments are being collected for more than one (1) year, you may pay the assessment in full with any interest to date at any time and avoid further interest charges.

Persons with disabilities needing accommodations for effective participation in the Day of Review should contact the Drain Commissioner's Office at the number noted above (voice) or through the Michigan Relay Center at 7-1-1 (TDD) at least 24 hours in advance of the Day of Review to request mobility, visual, hearing or other assistance.

You may appeal the Public Works Commissioner's determination of apportionments to the Saginaw County Probate Court within ten (10) days.

The following is a description of the several tracts or parcels of lands constituting the Special Assessment District of the King Street Tile Drain, as well as a list of any county, township, city, village to be assessed at large:

#### **City of Saginaw, T.11N.-R.4E, Saginaw County, Michigan**

In Section 1 – Entire Section

In Section 2 – South ½ of Northeast ¼ of the Section

#### **City of Saginaw, T.11N.-R.5E., Saginaw County, Michigan**

In Section 6 – Entire Section

#### **City of Saginaw, T.12N.-R.5E., Saginaw County, Michigan**

In Section 31 – South ½ of Southeast ¼ of the Southwest ¼ of the Section

**Bridgeport Charter Township, T.11N.-R.5E., Saginaw County, Michigan**

In Section 3 – The West ½, West ½ of Southeast ¼ of the Section

In Sections 4-6 – Entire Sections

In Section 7 – North ½ of the Section

In Section 8 – North ½ of the Section

In Section 9 – North ½ of the Section

In Section 10 – North ½ of the Section

**Buena Vista Charter Township, T.12N.-R.05E., Saginaw County, Michigan.**

In Section 31 – The Southeast ¼ of the Section.

In Section 32 – The South ½ of the Section

**Spaulding Township, T.11N.-R.4E.**

In Section 1 – Entire Section

In Section 2 – South ¼ of the Northeast ¼ and North ½ of the Southeast ¼ of the Section

In Section 12 – The Northeast ½ of the Section

The following public corporations are to be assessed at large to pay part of the cost of constructing the drain:

**Bridgeport Charter Township  
Buena Vista Charter Township  
City of Saginaw  
Michigan Department of Transportation  
Saginaw County  
Spaulding Township**

**DAY OF REVIEW OF DRAINAGE DISTRICT BOUNDARY**

**DATE: Tuesday, November 29, 2016**

**TIME: 9:00 am to 5:00 pm**

**LOCATION: Saginaw County Public Works Commissioner’s Office, Saginaw County Courthouse  
111 S Michigan Ave, Saginaw, MI 48602**

**QUESTIONS: (989) 790-5258**

The Saginaw County Public Works Commissioner will hold a Day of Review of Drainage District Boundary on the above date, time and location.

The revision of drainage district boundaries by the addition and/or deletion of lands in the Drainage District as recommended by a licensed professional engineer will be available to review for one day, between the hours of 9:00 am to 5:00 pm. A general description of the lands by section number proposed to be added or deleted from the Drainage District as recommended by a licensed professional engineer or surveyor is as follows:

Drain	Municipality	Portions of Sections Added	Portions of Sections Removed
King Drain	City of Saginaw	1-2, 6, 31 & 32	None
	Bridgeport Charter Township	3-10	3-4, 7-10
	Buena Vista Charter Township	31-32	None
	Spaulding Township	1-2, 12	12

Persons with disabilities needing accommodations for effective participation in the Day of Review should contact the Drain Commissioner’s Office at the number noted above (voice) or through the Michigan Relay Center at 7-1-1 (TDD) at least 24 hours in advance of the Day of Review to request mobility, visual, hearing or other assistance.

You may appeal the Public Works Commissioner’s determination of the drainage district boundary to the Saginaw County Circuit Court within ten (10) days.

Dated: November 7, 2016

Brian J. Wendling  
Saginaw County Public Works Commissioner

---

SECTION 00004  
INSTRUCTIONS TO BIDDERS

SCOPE OF WORK

The work under this Contract shall consist of the furnishing of all labor, material, equipment, services, and all incidental items necessary to complete the project in accordance with the Contract Documents.

OBSERVATION OF SITE

Before submitting a Proposal, each bidder shall personally inspect the site of the proposed work to arrive at a clear understanding of the conditions under which the work is to be done.

He shall be held to have compared the premises with the Drawings and Specifications and to have satisfied himself as to the conditions of the premises, existing constructions, and any other conditions affecting the carrying out of the work, before delivery of his Proposal.

No allowance or extra consideration on behalf of the Bidder will subsequently be allowed by reason of error or oversight on the part of the Bidder or on account of interferences by the Owner's or by other Bidder's activities.

SOIL CONDITIONS

The Contractor, as such and as bidder, shall make his own determination as to soil and/or rock conditions and he shall complete the work in whatever material and under whatever conditions he may encounter or create, without extra cost to the Owner. This shall apply whether or not borings are shown on the Drawings.

All bidders conducting soil tests shall restore the area of their testing to original condition as closely as possible.

The Owner does not guarantee that the ground encountered during construction will conform with any boring information furnished herein.

The Owner and Hubbell, Roth & Clark, Inc. may have been involved in the design, observation, and/or construction of other underground projects in the area of the proposed construction. The observation reports, soil reports, and any soil information connected with these projects are available for construction observation and review by the prospective bidders.

ADVERTISEMENT

The published Notice of Letting of Drain Contract for the proposed work contains information necessary to bidders. A copy of the Notice of Letting of Drain Contract shall be considered a part of the Instructions to Bidders as fully as if repeated herein.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
0  
0  
0  
4  
-  
i  
n  
s  
t  
r  
u  
c  
t  
i  
o  
n  
s  
t  
o  
b  
i  
d  
d  
e  
r  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
4  
2  
:  
0  
6  
P  
M

---

PROPOSALS

Proposals will be received in accordance with the Notice of Letting of Drain Contract, and shall be submitted only on forms provided by the Engineer.

Proposals shall be enclosed in sealed envelopes marked with the name of the project and bidder and shall be delivered to the designated location on or before the bid time as specified in the Notice of Letting of Drain Contract.

Proposals shall be made in full conformity with all the conditions set forth in the drawings and in these specifications. Bids are firm and cannot be withdrawn for a period of 90 days after opening of the bids, unless otherwise specified in the Notice of Letting of Drain Contract.

NAME AND STATUS OF BIDDER

The name and legal status of the bidder, either as a corporation, partnership, or individual, shall be stated in the Proposal.

Anyone signing a Proposal as an agent of another or others, must submit with the Proposal, legal evidence of his authority to do so.

The place of residence of each bidder, or the office address and telephone number in the case of a firm or company, with County and State, must be given after his signature.

BIDDER'S QUALIFICATIONS

It is the intention of the Owner to award this Contract to a Bidder fully capable, both financially and with regard to experience to perform and complete the work in a satisfactory manner. If required by the Owner, each bidder under consideration may be required to furnish the Owner, within 48 hours at the Owner's request, the following information sworn to under oath by him:

1. Performance record.
2. The address and description of the bidder's plant and place of business.
3. Itemized list of equipment available for use on the project.
4. A description of any similar project which the bidder has constructed in a satisfactory manner.
5. A certified or authenticated financial statement dated within sixty days prior to the opening of bids. The Owner may require that any items of such statements be further verified.
6. A list of contracts on which the bidder is currently engaged.
7. Such additional information as will satisfy the Owner that the bidder is adequately prepared, in technical experience and otherwise, to fulfill the Contract.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
0  
0  
4  
-  
i  
n  
s  
t  
r  
u  
c  
t  
i  
o  
n  
s  
t  
o  
b  
i  
d  
d  
e  
r  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
4  
2  
:  
0  
6  
P  
M

## BID DEPOSIT

Each Proposal must be accompanied by a bid deposit in the form described in the Notice of Letting of Drain Contract, as a guarantee on the part of the bidder that he will, if called upon to do so, enter into contract in the attached form, to do the work covered by such proposal and at the price stated therein and to furnish acceptable surety for its faithful and entire fulfillment. Such certified check or bidder's bond shall be made out to the Owner and shall be subject to the conditions specified in the Proposal.

The bid deposits of all except the three lowest bidders will be returned within three days after the opening of bids. The bid deposits of the three lowest bidders will be returned within 48 hours after the Contract is awarded to the successful bidder and the signed agreement has been delivered and the required bonds have been finally approved by the Owner, or after rejection of all bids.

Surety companies providing and executing Bid Bonds shall appear on the United States Treasury Department's most current list (Circular 570) as holding certificates of authority as acceptable sureties on federal bonds. The penal sum of such bonds shall not exceed a company's underwriting limitation as stated therein. A surety company shall be licensed in the State in which it provides a bond and in the State where the Contract work is to be performed.

Failure to provide a bid bond from a qualified company shall be a basis for rejection of a bid as non-responsive and non-responsible.

## EXPLANATION TO BIDDERS BY ADDENDUMS

Neither the Owner nor the Engineer will give verbal answers to inquiries, regarding the meaning of the Drawings or Specifications, or give verbal instructions, previous to the award of the Contract. Any verbal statements regarding same by any persons, previous to the award, shall be unauthoritative.

Explanations desired by bidders shall be requested of the Engineer in writing and, if explanations are necessary, a reply will be made in the form of an addendum, a copy of which will be forwarded to each bidder whose work is affected.

Addendums issued to bidders prior to date of receipt of proposals shall become a part of the Specifications, and all proposals shall include the work described in the addendums.

No inquiry received within 4 days of the date fixed for the opening of bids will be given consideration.

Failure of the Engineer to send, or of the bidder to receive, any such interpretations shall not relieve the bidder from obligation under his bid as submitted.

## RIGHT TO ACCEPT, TO REJECT, AND TO WAIVE DEFECTS

The Owner reserves the right to accept any Proposal, to reject any or all Proposals, and to waive any defects or irregularity in the Proposal if it appears advantageous to the Owner to do so.

**Each bidder agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.**

TIME OF COMPLETION

The Owner and the individual citizens of the municipality affected by this project are vitally concerned with the prompt completion of the construction together with the cleanup and restoration of roads and lawns within the time allowed in the Proposal.

The Bidder shall use sufficient labor and equipment to complete and place in service all of the work being constructed within this Contract within the time specified in the Proposal. The surface cleanup shall follow closely behind construction with earth spoil removed from lawns and roads and any trenches neatly finished by the end of each work day. Failure of the Bidder to comply with this type of workmanlike job will result in the suspension of construction operations until the cleanup is effected.

If the Bidder shall be unavoidably delayed in beginning or fulfilling this Contract by reason of excessive storms or floods, or by Acts of Providence, or by strikes, or by court injunction, or by stopping of the work by the Owner because of any emergency or public necessity, or by reason of alterations ordered by the Owner, the Bidder shall have no valid claim for damages on account of any cause or delay; but he shall in such case be entitled to such an extension of the above time limit herein, as the Engineer shall adjudge to be just and reasonable; provided, however, that formal claim for such extension shall be made in writing by the Bidder within a week after the date upon which such alleged cause or delay shall have occurred.

FAIR EMPLOYMENT PRACTICES

Section 4 of the Fair Employment Practices Act PA 1955, No. 251, provides:

Section 4. Every Contract to which the State or any of its political or civil subdivisions is a party shall contain a provision requiring the Bidder and his subcontractors not to discriminate against any employee or applicant for employment, to be employed in the performance of said contract, with respect to his hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment, because of his race, color, religion, national origin or ancestry. Breach of this covenant may be regarded as a material breach of the Contract.

Section 4A of the Act provides:

Section 4A. Every contract which the State or any of its political or civil subdivisions is a party shall contain a provision requiring the Bidder and his subcontractors not to discriminate against any employee or applicant for employment to be employed in the performance of such contract with respect to his hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment because of his age or sex, except where based on a bona fide occupational qualification.

DRAIN INSPECTION/ENGINEER'S NOTES

Use the following link to reference symbols on plan sheets and photos:

<https://www.dropbox.com/sh/jsm45i7xjedtx8l/AAASfO7M9-599r-QKH12x2vda?dl=0>

END OF SECTION

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 - c o m b i n e d - p d f \ 0 0 0 4 - i n s t r u c t i o n s t o b i d d e r s . d o c x 1 1 / 1 1 / 1 6 2 : 4 2 : 0 6 P M

---

PROPOSAL  
FOR  
KING STREET TILE DRAIN  
SAGINAW COUNTY, MICHIGAN

SAGINAW COUNTY PUBLIC WORKS COMMISSIONER  
111 S. Michigan Avenue  
Saginaw, Michigan 48602

Bids Due: December 8, 2016  
On or Before 10:00 am, Local Time  
HRC Job No. 20160331

To Prospective Bidders:

Name of Bidder: \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_ Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

The above, as Bidder, hereby declares this bid is made in good faith without fraud or collusion with any persons bidding, and that the Drawings, Specifications, and all other information referenced in the Instructions to Bidders have been examined. Further, the Bidder is familiar with the location of the work described herein and is fully informed as to the nature of the work and the conditions relating to the performance of the Contract.

The Bidder acknowledges that no representations or warranties of any nature whatsoever have been received, or are relied upon from the Saginaw County Public Works Commissioner, its agents or employees, as to any conditions to be encountered in accomplishing the work and that the bid is based solely upon the Bidder's own independent judgment.

The above, as Bidder, hereby certifies that the Drawings, Specifications, and other data provided by the Owner for bidding purposes have been examined. Further, the undersigned certifies that the proposed construction methods have been reviewed and found acceptable for the conditions which can be anticipated from the information provided for bidding.

The Bidder hereby affirms that the site of work has been inspected and further declares that no charges in addition to the Individual Unit Prices shall be made on account of any job circumstances or field conditions which were present and/or ascertainable prior to the bidding. In addition, The Contractor, as such and as Bidder, shall make the determination as to existing soil conditions and shall also complete the work under whatever conditions created by the Contractor/Bidder's sequence of construction, construction methods, or other conditions the Contractor/Bidder may create, at no additional cost to the Owner.

The above, as Bidder, confirms knowledge of the location of the proposed King Street Tile Project and appurtenant construction in the Townships of Bridgeport, Spaulding, and the City of Saginaw, Saginaw County, Michigan, and the conditions under which it must be constructed; and also declares to have carefully examined the Drawings, Specifications, and Contract Documents which the Bidder understands and accepts as sufficient for the purpose of constructing said King Street Tile Drain Project, and appurtenant work, and agrees to contract with the Saginaw County Public Works Commissioner to furnish all labor, materials, tools, equipment, facilities and supervision necessary to do all the work specified and prescribed for the Saginaw County Public Works Commissioner, in strict accordance with the Owner's General Conditions, and with the full intent of the Drawings and Specifications, prepared by Hubbell, Roth & Clark, Consulting Engineers, and will accept in full payment therefore the sum of:

**BASE BID**

<b>Item No.</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
-----------------	---------------------------	-------------	--------------------	-------------------	---------------------

**OPEN DRAIN CONSTRUCTION**

1.	32,354	Lin. Ft.	Maintenance Access	_____	_____
2.	32,472	Lin. Ft.	Drain Cleanout	_____	_____
3.	32,272	Lin. Ft.	Spoil Leveling	_____	_____
4.	200	Lin. Ft.	Spoil Hauling	_____	_____

**CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric)**

Crossing #1 – STA. 29+40 (Farm Crossing – Section 12 Farms LLC)

5.	24	Lin. Ft.	Culvert Cleanout	_____	_____
----	----	----------	------------------	-------	-------

Crossing #2 – STA. 33+32 (Road Crossing – M-13)

6.	53	Lin. Ft.	Culvert Cleanout	_____	_____
----	----	----------	------------------	-------	-------

Crossing #3 -STA. 38+30 (Farm Crossing – C&C Barsenas)

7.	11	Lin. Ft.	84"x144" CMP (Remove Culvert)	_____	_____
----	----	----------	-------------------------------	-------	-------

Crossing #4 –STA. 43+65 (County Road Crossing – Banner Rd)

8.	54	Lin. Ft.	84" x 96" CMP (Remove Culvert)	_____	_____
----	----	----------	--------------------------------	-------	-------

9.	79	Lin. Ft.	71" x 103" CMP (New Culvert)	_____	_____
----	----	----------	------------------------------	-------	-------

10.	1	Lump Sum	County Road Reconstruction	<u>Lump Sum</u>	_____
-----	---	----------	----------------------------	-----------------	-------

Crossing #5 – STA. 66+65 (Road Crossing – Casey Dr)

11.	40	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Item No.	Estimate Quantity	Unit	Description	Unit Price	Total Amount
----------	-------------------	------	-------------	------------	--------------

**CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued**

Crossing #6 – STA. 76+36 (Farm Crossing – Section 12 Farms LLC)

12.	20	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #7 – STA. 81+27 (Road Crossing – Washington St)

13.	44	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #8 – STA. 102+47 (Road Crossing – Sheridan Rd)

14.	65	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #9-STA. 119+50 (Farm Crossing – Mark W. Boese)

15.	21	Lin. Ft.	84”x120” CMP (Remove Culvert)	_____	_____
-----	----	----------	-------------------------------	-------	-------

16.	52	Lin. Ft.	83” x 128” CMP (New Culvert)	_____	_____
-----	----	----------	------------------------------	-------	-------

17.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
-----	---	----------	------------------------------	-----------------	-------

Crossing #10-STA. 128+87 (Railroad Crossing – Huron Eastern Railroad)

18.	40	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #11-STA. 131+10 (Farm Crossing – Dennis D. Feinhauer)

19.	21	Lin. Ft.	84”x126” CMP (Remove Culvert)	_____	_____
-----	----	----------	-------------------------------	-------	-------

20.	48	Lin. Ft.	83” x 128” CMP (New Culvert)	_____	_____
-----	----	----------	------------------------------	-------	-------

21.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
-----	---	----------	------------------------------	-----------------	-------

Crossing #12 – STA. 153+90 (Road Crossing – Williamson Rd)

22.	48	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Item No.	Estimate Quantity	Unit	Description	Unit Price	Total Amount
----------	-------------------	------	-------------	------------	--------------

**CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued**

Crossing #13 – STA. 159+35 (Road Crossing – Studor Rd)

23.	97	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #14 – STA. 179+74 (Road Crossing – King Rd)

24.	60	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #15 – STA. 202+14 (Road Crossing – Kansas Ave)

25.	56	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #16 – STA. 207+11 (Road Crossing – Kansas Ave)

26.	67	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Crossing #17 – STA. 219+93 (Road Crossing – Dixie Hwy)

27.	250	Lin. Ft.	Culvert Cleanout	_____	_____
-----	-----	----------	------------------	-------	-------

Crossing #18 – STA. 235+77 (Railroad Crossing – Saginaw Bay Southern Railroad)

28.	52	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

29.	500	Sq. Ft.	PZ-27 Sheeting with Channel Cap	_____	_____
-----	-----	---------	---------------------------------	-------	-------

30.	30	Cyd	Grout	_____	_____
-----	----	-----	-------	-------	-------

31.	80	Lin. Ft.	42” Spiral Welded Steel Pipe with Cement Mortar Lining, Welded Joints	_____	_____
-----	----	----------	---	-------	-------

32.	20	Cyd	Backfill	_____	_____
-----	----	-----	----------	-------	-------

Crossing #19 – STA. 242+14 (Farm Crossing – Cheryl Vierke)

33.	23	Lin. Ft.	Culvert Cleanout	_____	_____
-----	----	----------	------------------	-------	-------

Item No.	Estimate Quantity	Unit	Description	Unit Price	Total Amount
<b><u>CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued</u></b>					
<u>Crossing #20 – STA. 245+58 (Farm Crossing – George A &amp; Sandra L. Lundy)</u>					
34.	23	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #21 – STA. 256+61 (Farm Crossing – Darlene A. Munson)</u>					
35.	22	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #22 – STA. 266+07 (Road Crossing – Mack Rd)</u>					
36.	59	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #23 – STA. 279+27 (Road Crossing I-75)</u>					
37.	204	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #24 – STA. 283+90 (Farm Crossing – Eric Sherwood)</u>					
38.	24	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #25 – STA. 307+40 (Farm Crossing – JA &amp; JM Cararanza)</u>					
39.	23	Lin. Ft.	42” RCP (Remove Culvert)	_____	_____
40.	45	Lin. Ft.	54” CMP (New Culvert)	_____	_____
41.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
<u>Crossing #26-STA. 312+55 (Farm Crossing – Michael J &amp; Pamela J. Gibson)</u>					
42.	43	Lin. Ft.	42” RCP (Remove Culvert)	_____	_____
43.	59	Lin. Ft.	54” CMP (New Culvert)	_____	_____
44.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____

Item No.	Estimate Quantity	Unit	Description	Unit Price	Total Amount
----------	-------------------	------	-------------	------------	--------------

**CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued**

Crossing #27 – STA. 329+30 (Farm Crossing – Carl P. & Mary L. Demaet)

45.	89	Lin. Ft.	30” RCP (Remove Culvert)	_____	_____
46.	102	Lin. Ft.	42” CMP (New Culvert)	_____	_____
47.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____

**SIDE DRAIN CROSSINGS (Includes Riprap and Geotextile Fabric)**

48.	30	Lin. Ft.	36” CMP (New) 12 GA APPROX. STA: 36+95	_____	_____
49.	10	Cyd.	Add Rip Rap to 36” CMP at STA. 36+95	_____	_____
50.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 43+30	_____	_____
51.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 44+00	_____	_____
52.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 67+80	_____	_____
53.	40	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 81+00	_____	_____
54.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 173+00	_____	_____
55.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 195+20	_____	_____
56.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 265+80	_____	_____
57.	28	Lin. Ft.	18” CMP (New) 12 GA APPROX. STA: 272+60	_____	_____
58.	36	Lin. Ft.	36” CMP (New) 12 GA APPROX. STA: 285+85	_____	_____
59.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 292+70	_____	_____

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>SIDE DRAIN CROSSINGS (Includes Riprap and Geotextile Fabric) - Continued</u></b>					
60.	28	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 312+20	_____	_____
61.	28	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 317+15	_____	_____
62.	28	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 332+60	_____	_____
63.	28	Lin. Ft.	18" CMP (New) 12 GA APPROX. STA: 337+50	_____	_____
<b><u>SOIL EROSION AND SEDIMENT CONTROL (Includes Geotextile Fabric)</u></b>					
64.	730	Lin. Ft.	Toe Protection	_____	_____
65.	110	Each	Field Tile and Surface Outlet Pipe Splash Pads	_____	_____
66.	20	Each	Side Drain Splash Pad	_____	_____
67.	10	Each	4"/8" Field Tile Outlet Repair (As Needed)	_____	_____
68.	200	Sq. Yds.	Rip Rap (as needed)	_____	_____
69.	1	Lump Sum	Seeding, Fertilizing, Mulching	<u>Lump Sum</u>	_____
<b><u>CLEARING AND DISPOSING OF TREES</u></b>					
70.	1	Lump Sum	+/-900 Lin. Ft. From King Rd North Westside of Railroad up to Drain STA. 235+00	<u>Lump Sum</u>	_____
<b><u>MISCELLANEOUS</u></b>					
71.	1	Lump Sum	Traffic Control	<u>Lump Sum</u>	_____
72.	1	Lump Sum	Remove/Replace Fencing	<u>Lump Sum</u>	_____
73.	1	Lump Sum	Cap 24" Pipe STA: 239+90	<u>Lump Sum</u>	_____

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>MISCELLANEOUS - Continued</u></b>					
74.	50	Syd	Erosion Repair	_____	_____
75.	150	Lin. Ft.	Miscellaneous 12" Side Drain Culverts (As Needed)	<u>Lump Sum</u>	_____
76.	1	Lump Sum	Video Recording	<u>Lump Sum</u>	_____
<b>TOTAL AMOUNT OF BID</b>				_____	

The Owner reserves the right to award the Base Bid or the Base Bid plus any or individual Alternate or combination of Alternates, depending upon the availability of funds.

The Owner, at its sole discretion, reserves the right to award to the Bidder who, in the sole determination of the Owner, will best serve the interest of the Owner. The Owner reserves the right to accept any bid, to reject any or all bids, to waive any and all informalities involving price, time, or changes in the work, and to negotiate contract terms with the successful Bidder, and the right to disregard all nonconforming, nonresponsive, unbalanced or conditional bids. However, it is the intention of the Owner to award to the low total bid to one bidder. Also, the Owner reserves the right to reject the bid of any Bidder if the Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the bid is not responsive or the Bidder is unqualified, of doubtful financial ability, or fails to meet any other pertinent standard or criteria established by the Owner.

Each bidder agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

Each Proposal must be accompanied by a bid deposit in the form of a certified check, cashier's check or bid bond, executed by the bidder and Surety Company, payable to the Wolf Creek Drain Drainage District in the amount of 5% of the amount of the Proposal. See Instructions to Bidders – Bid Deposit for more information.

**TAXES**

The Bidder affirms that all applicable Federal, State and Local taxes of whatever character and description are included in all prices stated in this Form of Proposal.

**ADDENDA**

The Bidder acknowledges the following Addenda, covering revisions to the drawings or specifications and the cost, if any, of such revision has been included in the quoted proposal:

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

**FEES**

The Bidder shall refer to the General Conditions for allowable Fees for additional work performed, upon Owner's written authorization, by Bidder's own forces and/or for additional work, upon Owner's written authorization, by Bidder's subcontractors.

**TIME OF COMPLETION**

If awarded the Contract for the Wolf Creek Drain Project, we agree to have all work substantially completed by August 31, 2016. Substantial Completion is defined that the facility is ready to use for its intended purpose with all utility systems fully functional.

The Bidder hereby agrees to furnish the required Bonds, Insurance Certificates, and Policies within ten (10) days after acceptance of this Proposal.

Final Completion with all clean-up and punch-list items shall be complete by September 30, 2016.

The execution of all work and specific constraints as described in the contract drawings and specifications, with particular reference to Section 01001 Special Project Requirements, must be strictly adhered to.

**LIQUIDATED DAMAGES**

Time is of the essence for completion of this project in order to have the Project ready for the Saginaw County Public Works Commissioner. The Bidder guarantees that the work will be completed within the time limit stated herein before or within the time as extended as provided elsewhere in the Specifications. Inasmuch as the damage and loss to the Owner which will result from the failure of the Bidder to complete the work within the stipulated time, will be most difficult or impossible to accurately determine, it is mutually agreed that the damages to the Owner for such delay and failure on the part of the Bidder shall be liquidated in the amount of Five Hundred Dollars (\$500.00), for each and every calendar day by which the Bidder shall fail to complete the work or any part thereof within the provisions hereof, and such liquidated damages shall not be considered as a penalty.

The Owner will deduct and retain out of any money due or to become due hereunder the amount of the liquidated damages, and in case those amounts are less than the amount of actual liquidated damages, the Bidder shall pay the difference upon demand of the Owner.

We understand that liquidated damages may be assessed should we fail to meet the stipulated completion dates. Specifically, liquidated damages will be assessed daily beginning August 31, 2016 until such a time that Substantial Completion is achieved and further if all work is not completed by the Final Completion Date.

**BIDS TO REMAIN FIRM**

The price stated in this Proposal shall be guaranteed for a period of not less than 90 days from the bid due date and if authorized to proceed within that period, the bidder agrees to complete the work covered by the Proposal at said price.

If this Proposal is accepted by the Owner and the undersigned shall fail to contract as aforesaid and to furnish the required surety bonds within fifteen (15) days after being notified of the acceptance of their bid, then the undersigned shall be considered to have abandoned the contract, and the Certified Check, Cashier's Check or Bid Bond accompanying this Proposal shall be forfeited to the County of Saginaw.

If the undersigned enters into the contract in accordance with their proposal, or if their proposal is not accepted, then the accompanying bid guarantee shall be returned to the undersigned.

Company Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Title: \_\_\_\_\_

Address: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_

Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_

Email Address: \_\_\_\_\_

**LEGAL STATUS OF BIDDER**

This Bid is submittal in the name of:

(Print) \_\_\_\_\_

The undersigned hereby designates below the business address to which all notices, directions or other communications may be served or mailed:

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

The undersigned hereby declares the legal status checked below:

- INDIVIDUAL
- INDIVIDUAL DOING BUSINESS UNDER AN ASSUMED NAME
- CO-PARTNERSHIP

The Assumed Name of the Co-Partnership is registered in the County of \_\_\_\_\_, Michigan

- CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF \_\_\_\_\_

\_\_\_\_\_. The Corporation is

- LICENSED TO DO BUSINESS IN MICHIGAN
- NOT NOW LICENSED TO DO BUSINESS IN MICHIGAN

The name, titles, and home addresses of all persons who are officers or partners in the organization are as follows:

A corporation duly organized and doing business under the laws of the State of \_\_\_\_\_

NAME AND TITLE	HOME ADDRESS
_____	_____
_____	_____
_____	_____

Signed and Sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

By (Signature)

Printed Name of Signer

Title

**BID BOND**

We, the undersigned, \_\_\_\_\_

As Principal, hereinafter called the Principal, and \_\_\_\_\_

A corporation duly organized under the laws of the State of \_\_\_\_\_

As surety, hereinafter called the SURETY, are held and firmly bound unto:

The Owner: \_\_\_\_\_

in the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_),

For the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for \_\_\_\_\_

NOW, THEREFORE, if the OWNER shall accept the bid of the Principal and the Principal shall enter into a contract with the OWNER in accordance with the terms of such bid, and give such bond or bonds as may be specified in the CONTRACT DOCUMENTS with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such contract and give such bond or bonds, if the Principal shall pay to the OWNER the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the OWNER may in good faith contract with another party to perform the work covered by said bid, then the obligation of the Principal shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_

(Witness)

\_\_\_\_\_

(Principal)

(Seal)

(Title)

\_\_\_\_\_

\_\_\_\_\_

(Witness)

(Surety)

(Title)

**END OF SECTION**

---

## Unit Prices

### Part 1 General

#### 1.01 Scope

- A. This section describes the method of measurement and basis of payment for all items of Work included in the Contract and specified in the Proposal. CONTRACTOR shall provide labor, material, tools, equipment and services required to complete the Work specified herein and indicated on the Plans.
- B. OWNER WILL MAKE NO ALLOWANCES FOR ITEMS NOT INCLUDED IN THE PROPOSAL.

#### 1.02 Items of the Proposal

Item 1

**Maintenance Access**, see Special Provision – County Drains, pg. 3

Item 2

**Drain Cleanout**, see Special Provision – County Drains, pg. 4-5

Item 3

**Spoil Leveling**, see Special Provision – County Drains, pg. 5-6

Item 4

**Spoil Hauling**, see Special Provision – County Drains, pg. 6

Items 5-6, 11-14, 18, 22-28, 33-38

**Culvert Cleanout**,

This work will consist of providing the labor, materials, and equipment for cleaning sediment and debris out of culvert.

Items 7-8, 15, 19, 39, 42, 45

**Culvert Removal**, see Special Provision – County Drains, pg. 13-16

Items 9, 16, 20, 40, 43, 46

**Install New Culvert (Includes Riprap End Protection and Geotextile Fabric)**, see Special Provision – County Drains, pg. 13-16

Items 28-32

**Saginaw Bay Southern Railroad Culvert**

This work will consist of providing the labor, materials, and equipment for cleaning out the culvert, inserting a 42” spiral welded steel pipe with cement mortar lining, and pressure grouting pipe inside concrete box culvert. In addition, installing PZ-27 sheeting with channel gap in front of existing wingwalls and backfilling with plain riprap.

Item 10

**County Road Reconstruction**, see Special Provision – County Drains, pg. 14

Items 17, 21, 41, 44, 47

**Natural Grass Reconstruction**, see Special Provision – County Drains, pg. 14

Items 48-63

**Side Drain Crossings (Includes Riprap & Geotextile Fabric)**, see Special Provision – County Drains, pg. 3-4

Item 64

**Toe Protection**, see Special Provision – County Drains, pg. 7-9

Item 65

**Field Tile and Surface Outlet Pipe Splash Pads**, see Special Provision – County Drains, pg. 12-13

Item 66

**Side Drain Splash Pad**, see Special Provision – County Drains, pg. 7-9

Item 67

**4”/8” Field Tile Outlet Repair (As Needed)**, see Special Provision – County Drains, pg. 7-9

Item 68

**Rip Rap (As Needed)**, see Special Provision – County Drains, pg. 7-9

Item 69

**Seeding, Fertilizing, and Mulching**, see Special Provision – County Drains, pg. 7-9

Item 70

**Clearing and Disposing of Trees**, see Special Provision – County Drains, pg. 1

Item 71

**Traffic Control**,

This work will consist of providing the labor, materials, and equipment for placing traffic control measure per project engineer and Saginaw County Road Commission Standards.

Item 72

**Remove/Replace Fencing**,

This work will consist of providing the labor, materials, and equipment for removing existing fencing, protecting during construction, and reinstalling once construction has been completed.

Item 73

**Cap and Fill 24” Steel Pipe**,

This work shall consist of providing the labor, materials, and equipment for filling the pipe with concrete or cement grout, backfill eroded area above pipe with plain rip rap, and installing bulkhead on both ends of pipe per MDOT standards.

Item 74

**Erosion Repair**, see Special Provision – County Drains, pg. 7-9

Item 75

**Miscellaneous Side Drain Culverts (As Needed)**, see Special Provision – County Drains, pg. 3-4

Item 76

**Video Recording**

Prior to construction all road & private (driveways, mailboxes, end treatment, etc.) crossing conditions to be recorded by video by contractor.

End of Section



---

**PROJECTS UNDER ACT NO. 524 OF PUBLIC ACTS OF 1980**

**General Information**

1. Interest will be paid on retainage in accordance with the Act.
2. The Contractor may request reasonable interest on accounts past due on prior progress payments which can be included in the next request for payment.
3. Retainage will be in accordance with the Act, Subsections 3 and 4.
4. All matters described in Subsection 3 of the Act shall be submitted to the decision of an agent at the option of the Owner.

**Retainage**

The retainage for the project shall be as follows:

1. For projects with Payment Schedule No. 1, the retainage shall be in accordance with Act No. 524.
2. For projects with Payment Schedule No. 2, the retainage shall be ten percent (10%) of the contract price.

**Payment**

All requests for payment shall be in compliance with Act No. 524 of Public Acts of 1980. Construction contracts having a dollar value of less than \$30,000 or a contract that provides for three or fewer payments shall be exempt from the Act. The requests for payments shall be made in accordance with one of the following Payment Schedules:

**Payment Schedules**

1. Not later than the 25th day of each calendar month, the Owner will make partial payment to the Contractor on the basis of a duly certified, approved estimate of the work performed during the preceding calendar month by the Contractor, but the Owner will retain a percentage as stated in Act No. 524 of the amount of each such estimate until final completion and acceptance of all work covered by this contract.
2. Payment requests shall be limited to three or fewer payments less ten percent (10%) retained on each payment request, except for the final payment, which shall include all amounts previously retained. Payment requests will only be permitted after completion of fifty percent (50%) of the project, after seventy-five percent (75%) of the project and after one hundred percent (100%) of the project is completed and accepted. No payment request will be made within 30 consecutive days of a previous request.

Act No. 524

Public Acts of 1980

Approved by Governor

January 29, 1981

**STATE OF MICHIGAN**  
**80<sup>th</sup> LEGISLATURE**  
**REGULAR SEASON OF 1980**

Introduced by Rep. Ryan

ENROLLED HOUSE BILL NO. 5541

AN ACT to provide for the terms of certain construction contracts with certain public agencies; to regulate the payment and retainage of payments on construction contracts with certain public agencies; and to provide for the resolution of certain disputes.

***The People of the State of Michigan enact:***

Sec. 1. As used in this act:

(a) "Agent" means the person or persons agreed to or selected by the contractor and the public agency pursuant to section 4(2).

(b) "Architect or professional engineer" means an architect or professional engineer licensed under Act No. 299 of the Public Acts of 1980, being sections 339.101 to 339.2601 of the Michigan Compiled Laws, and designated by a public agency in a construction contract to recommend progress payments.

(c) "Construction contract" or "contract" means a written agreement between a contractor and a public agency for the construction, alteration, demolition, or repair of a facility, other than a contract having a dollar value less than \$30,000.00 or a contract that provides for 3 or fewer payments.

(d) "Contract documents" means the construction contract; instructions to bidders; proposal; conditions of the contract; performance bond; labor and material bond; drawings; specifications; all addenda issued before execution of the construction contract and all modifications issued subsequently.

(e) "Contractor" means an individual, sole proprietorship, partnership, corporation, or joint venture, that is a party to a construction contract with a public agency.

(f) "Facility" means a building, utility, road, street, boulevard, parkway, bridge, ditch, drain, levee, dike, sewer, park, playground, or other structure or work that is paid for with public funds or a special assessment.

(g) "Progress payment" means a payment by a public agency to a contractor for work in place under the terms of a construction contract.

(h) "Public agency" means this state, or a county, city township, village, assessment district, or other political subdivision, corporation, commission, agency, or authority created by law. However, public agency does not include the state transportation department, a school district, junior or community college, the Michigan state housing development authority created in Act No. 346 of the Public Acts of 1966, as amended, being sections 125.1401 to 125.1496 of the Michigan Compiled Laws, and a municipal electric utility or agency. "Assessment district" means the real property within a district area upon which special assessments

---

are levied or imposed or the construction, reconstruction, betterment, replacement, or repair of a facility to be paid for by funds derived from those special assessments imposed or levied on the benefited real property.

(i) "Retainage" or "retained funds" means the amount withheld from a progress payment to a contractor pursuant to Section 3.

Sec. 2. (1) The construction contract shall designate a person representing the contractor who will submit written requests for progress payments, and a person representing the public agency to whom requests for progress payments are to be submitted. The written requests for progress payments shall be submitted to the designated person in a manner and at such time as provided in the construction contract.

(2) The processing of progress payments by the public agency may be deferred by the public agency until work having a prior sequence, as provided in the contract documents, is in place and is approved.

(3) Each progress payment requested, including reasonable interest if requested under subsection (4), shall be paid within 1 of the following time periods, whichever is later:

(a) Thirty days after the architect or professional engineer has certified to the public agency that work is in place in the portion of the facility covered by the applicable request for payment in accordance with the contract documents.

(b) Fifteen days after the public agency has received the funds with which to make the progress payment from a department or agency of the federal or state government, if any funds are to come from either of those sources.

(4) Upon failure of a public agency to make a timely progress payment pursuant to this section, the person designated to submit requests for progress payments may include reasonable interest on amounts past due in the next request for payment.

Sec. 3. (1) To assure proper performance of a construction contract by the contractor, a public agency may retain a portion of each progress payment otherwise due as provided in this section.

(2) The retainage shall be limited to the following:

(a) Not more than 10% of the dollar value of all work in place until work is 50% in place.

(b) After the work is 50% in place, additional retainage shall not be withheld unless the public agency determines that the contractor is not making satisfactory progress, or for other specific cause relating to the contractor's performance under the contract. If the public agency so determines, the public agency may retain not more than 10% of the dollar value of work more than 50% in place.

(3) The retained funds shall not exceed the pro rata share of the public agency's matching requirement under the construction contract and shall not be commingled with other funds of the public agency and shall be deposited in an interest bearing account in a regulated financial institution in this state wherein all such retained funds are kept by the public agency which shall account for both retainage and interest on each construction contract separately. A public agency is not required to deposit retained funds in an interest bearing account if the retained funds are to be provided under a state or federal grant and the retained funds have not been paid to the public agency.

(4) Except as provided in Section 4(7) and (8), retainage and interest earned on retainage shall be released to a contractor together with the final progress payment.

(5) At any time after 94% of work under the contract is in place and at the request of the original contractor, the public agency shall release the retainage plus interest to the original contractor only if the original contractor provides to the public agency an irrevocable letter of credit in the amount of the retainage plus interest, issued by a bank authorized to do business in this state, containing terms mutually acceptable to the contractor and the public agency.

Sec 4. (1) The construction contract shall contain an agreement to submit those matters described in subsection (3) to the decision of an agent at the option of the public agency.

---

(2) If a dispute regarding a matter described in subsection (3) arises, the contractor and the public agency shall designate an agent who has background, training, and experience in the construction of facilities similar to that which is the subject of the contract, as follows:

(a) In an agreement reached within 10 days after a dispute arises.

(b) If an agreement cannot be reached within 10 days after a dispute arises, the public agency shall designate an agent who has background, training, and experience in the construction of facilities similar to that which is the subject of the contract and who is not an employee of the agency.

(3) The public agency may request dispute resolution by the agent regarding the following:

(a) At any time during the term of the contract, to determine whether there has been a delay for reasons that were within the control of the contractor, and the period of time that delay has been caused, continued, or aggravated by actions of the contractor.

(b) At any time after 94% of work under the contract is in place, whether there has been an unacceptable delay by the contractor in performance of the remaining 6% of work under the contract. The agent shall consider the terms of the contract and the procedures normally followed in the industry and shall determine whether the delay was for failure to follow reasonable and prudent practices in the industry for completion of the project.

(4) This dispute resolution process shall be used only for the purpose of determining the rights of the parties to retained funds and interest earned on retained funds and is not intended to alter, abrogate, or limit any rights with respect to remedies that are available to enforce or compel performance of the terms of the contract by either party.

(5) The agent may request and shall receive all pertinent information from the parties and shall provide an opportunity for an informal meeting to receive comments, documents, and other relevant information in order to resolve the dispute. The agent shall determine the time, place, and procedure for the informal meeting. A written decision and reasons for the decision shall be given to the parties within 14 days after the meeting.

(6) The decision of the agent shall be final and binding upon all parties. Upon application of either party, the decision of the agent may be vacated by order of the circuit court only upon a finding by the court that the decision was procured by fraud, or other illegal means.

(7) If the dispute resolution results in a decision:

(a) That there has been a delay as described in subsection (3)(a), all interest earned on retained funds during the period of delay shall become the property of the public agency.

(b) That there has been unacceptable delay as described in subsection (3)(b), the public agency may contract with a subsequent contractor to complete the remaining 6% of work under the contract, and interest earned on retained funds shall become the property of the public agency. A subsequent contractor under this subdivision shall be paid by the public agency from the following sources until each source is depleted, in the order listed below:

(i) The dollar value of the original contract, less the dollar value of funds already paid to the original contractor and the dollar value of work in place for which the original contractor has not received payment.

(ii) Retainage from the original contractor, or funds made available under a letter of credit provided under section 3(5).

(iii) Interest earned on retainage from the original contractor, or funds made available under a letter of credit provided under section 3(5).

(8) If the public agency contracts with a subsequent contractor as provided in subsection (7)(b), the final progress payment shall be payable to the original contractor the time period specified in section 2(3). The amount of the final progress payment to the original contractor shall not include interest earned on retained funds. The public agency may deduct from the final progress payment all expenses of contracting with the subsequent contractor. This act shall not impair the right of the public agency to bring an action or to otherwise enforce a performance bond to complete work under a construction contract.

Sec. 5. (1) Except as provided in subsection (2), this act shall apply only to a construction contract entered into after the effective date of this act.

(2) For a construction contract entered into before the effective date of this date, the provisions of this act may be implemented by a public agency, through a contract amendment, upon the written request of the contractor, with such consideration as the public agency considers adequate.

Sec. 6. This act shall take effect January 1, 1983.



**AGREEMENT**  
**BETWEEN OWNER AND**  
**CONTRACTOR ON THE BASIS OF A**  
**STIPULATED PRICE**

THIS AGREEMENT is dated as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year 2016 by and between

**SAGINAW COUNTY PUBLIC WORKS COMMISSIONER** (hereinafter called OWNER) and

(hereinafter called

CONTRACTOR). OWNER and CONTRACTOR in consideration of the mutual covenants hereinafter set

forth, agree as follows: ***KING STREET TILE DRAIN***

**Article 1 - WORK**

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Work - The entire completed construction of the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

The Project for which the Work under the Contract Documents is being done may be the whole or only a part is generally described as follows: Project - The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

**Article 2 - PROFESSIONAL**

The Project has been designed by: **Hubbell, Roth & Clark, Inc.**

who is hereinafter called PROFESSIONAL and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to PROFESSIONAL in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

**Article 3 - CONTRACT TIME**

- 3.1 The Work will be substantially completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions per the times as indicated in the Bid Form, Section 5.
- 3.2 *Liquidated Damages.* OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of

requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER **five hundred dollars (\$500.00)** for each day that expires after the time specified in Section 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time specified in Section 3.1 or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER **five hundred dollars (\$500.00)** for each day that expires after the time specified in Section 3.1 for completion and readiness for final payment.

**Article 4 - CONTRACT PRICE**

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraph 4.1 below:

4.1 for all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this paragraph 4.1:

<b>Item No.</b>	<b>Estimated Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>OPEN DRAIN CONSTRUCTION</u></b>					
1.	32,354	Lin. Ft.	Maintenance Access	_____	_____
2.	32,472	Lin. Ft.	Drain Cleanout	_____	_____
3.	32,272	Lin. Ft.	Spoil Leveling	_____	_____
4.	200	Lin. Ft.	Spoil Hauling	_____	_____
<b><u>CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric)</u></b>					
<u>Crossing #1 – STA. 29+40 (Farm Crossing – Section 12 Farms LLC)</u>					
5.	24	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #2 – STA. 33+32 (Road Crossing – M-13)</u>					
6.	53	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #3 -STA. 38+30 (Farm Crossing – C&amp;C Barsenas)</u>					
7.	11	Lin. Ft.	84”x144” CMP (Remove Culvert)	_____	_____

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued</u></b>					
<u>Crossing #4 – STA. 43+65 (County Road Crossing – Banner Rd)</u>					
8.	54	Lin. Ft.	84” x 96” CMP (Remove Culvert)	_____	_____
9.	79	Lin. Ft.	71” x 103” CMP (New Culvert)	_____	_____
10.	1	Lump Sum	County Road Reconstruction	<u>Lump Sum</u>	_____
<u>Crossing #5 – STA. 66+65 (Road Crossing – Casey Dr)</u>					
11.	40	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #6 – STA. 76+36 (Farm Crossing – Section 12 Farms LLC)</u>					
12.	20	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #7 – STA. 81+27 (Road Crossing – Washington St)</u>					
13.	44	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #8 – STA. 102+47 (Road Crossing – Sheridan Rd)</u>					
14.	65	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #9-STA. 119+50 (Farm Crossing – Mark W. Boese)</u>					
15.	21	Lin. Ft.	84”x120” CMP (Remove Culvert)	_____	_____
16.	52	Lin. Ft.	83” x 128” CMP (New Culvert)	_____	_____
17.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
<u>Crossing #10-STA. 128+87 (Railroad Crossing – Huron Eastern Railroad)</u>					
18.	40	Lin. Ft.	Culvert Cleanout	_____	_____

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued</u></b>					
<u>Crossing #11-STA. 131+10 (Farm Crossing – Dennis D. Feinhauer)</u>					
19.	21	Lin. Ft.	84"x126" CMP (Remove Culvert)	_____	_____
20.	48	Lin. Ft.	83" x 128" CMP (New Culvert)	_____	_____
21.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
<u>Crossing #12 – STA. 153+90 (Road Crossing – Williamson Rd)</u>					
22.	48	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #13 – STA. 159+35 (Road Crossing – Studor Rd)</u>					
23.	97	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #14 – STA. 179+74 (Road Crossing – King Rd)</u>					
24.	60	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #15 – STA. 202+14 (Road Crossing – Kansas Ave)</u>					
25.	56	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #16 – STA. 207+11 (Road Crossing – Kansas Ave)</u>					
26.	67	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #17 – STA. 219+93 (Road Crossing – Dixie Hwy)</u>					
27.	250	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #18 – STA. 235+77 (Railroad Crossing – Saginaw Bay Southern Railroad)</u>					
28.	52	Lin. Ft.	Culvert Cleanout	_____	_____
29.	500	Sq. Ft.	PZ-27 Sheeting with Channel Cap	_____	_____

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued</u></b>					
<u>Crossing #18 – STA. 235+77 (Railroad Crossing – Saginaw Bay Southern Railroad) - Continued</u>					
30.	30	Cyd	Grout	_____	_____
31.	80	Lin. Ft.	42” Spiral Welded Steel Pipe with Cement Mortar Lining, Welded Joints	_____	_____
32.	20	Cyd	Backfill	_____	_____
<u>Crossing #19 – STA. 242+14 (Farm Crossing – Cheryl Vierke)</u>					
33.	23	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #20 – STA. 245+58 (Farm Crossing – George A &amp; Sandra L. Lundy)</u>					
34.	23	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #21 – STA. 256+61 (Farm Crossing – Darlene A. Munson)</u>					
35.	22	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #22 – STA. 266+07 (Road Crossing – Mack Rd)</u>					
36.	59	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #23 – STA. 279+27 (Road Crossing I-75)</u>					
37.	204	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #24 – STA. 283+90 (Farm Crossing – Eric Sherwood)</u>					
38.	24	Lin. Ft.	Culvert Cleanout	_____	_____
<u>Crossing #25 – STA. 307+40 (Farm Crossing – JA &amp; JM Cararanza)</u>					
39.	23	Lin. Ft.	42” RCP (Remove Culvert)	_____	_____
40.	45	Lin. Ft.	54” CMP (New Culvert)	_____	_____

Item No.	Estimate Quantity	Unit	Description	Unit Price	Total Amount
----------	-------------------	------	-------------	------------	--------------

**CROSSINGS (Furnish and Install, Includes Riprap End Protection and Geotextile Fabric) – Continued**

Crossing #25 – STA. 307+40 (Farm Crossing – JA & JM Cararanza) - Continued

41.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
-----	---	----------	------------------------------	-----------------	-------

Crossing #26-STA. 312+55 (Farm Crossing – Michael J & Pamela J. Gibson)

42.	43	Lin. Ft.	42” RCP (Remove Culvert)	_____	_____
-----	----	----------	--------------------------	-------	-------

43.	59	Lin. Ft.	54” CMP (New Culvert)	_____	_____
-----	----	----------	-----------------------	-------	-------

44.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
-----	---	----------	------------------------------	-----------------	-------

Crossing #27 – STA. 329+30 (Farm Crossing – Carl P. & Mary L. Demaet)

45.	89	Lin. Ft.	30” RCP (Remove Culvert)	_____	_____
-----	----	----------	--------------------------	-------	-------

46.	102	Lin. Ft.	42” CMP (New Culvert)	_____	_____
-----	-----	----------	-----------------------	-------	-------

47.	1	Lump Sum	Natural Grass Reconstruction	<u>Lump Sum</u>	_____
-----	---	----------	------------------------------	-----------------	-------

**SIDE DRAIN CROSSINGS (Includes Riprap and Geotextile Fabric)**

48.	30	Lin. Ft.	36” CMP (New) 12 GA APPROX. STA: 36+95	_____	_____
-----	----	----------	--	-------	-------

49.	10	Cyd.	Add Rip Rap to 36” CMP at STA. 36+95	_____	_____
-----	----	------	--------------------------------------	-------	-------

50.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 43+30	_____	_____
-----	----	----------	--	-------	-------

51.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 44+00	_____	_____
-----	----	----------	--	-------	-------

52.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 67+80	_____	_____
-----	----	----------	--	-------	-------

53.	40	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 81+00	_____	_____
-----	----	----------	--	-------	-------

54.	24	Lin. Ft.	12” CMP (New) 12 GA APPROX. STA: 173+00	_____	_____
-----	----	----------	---	-------	-------

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>SIDE DRAIN CROSSINGS (Includes Riprap and Geotextile Fabric) - Continued</u></b>					
55.	24	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 195+20	_____	_____
56.	24	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 265+80	_____	_____
57.	28	Lin. Ft.	18" CMP (New) 12 GA APPROX. STA: 272+60	_____	_____
58.	36	Lin. Ft.	36" CMP (New) 12 GA APPROX. STA: 285+85	_____	_____
59.	24	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 292+70	_____	_____
60.	28	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 312+20	_____	_____
61.	28	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 317+15	_____	_____
62.	28	Lin. Ft.	12" CMP (New) 12 GA APPROX. STA: 332+60	_____	_____
<b><u>SOIL EROSION AND SEDIMENT CONTROL (Includes Geotextile Fabric)</u></b>					
63.	28	Lin. Ft.	18" CMP (New) 12 GA APPROX. STA: 337+50	_____	_____
64.	730	Lin. Ft.	Toe Protection	_____	_____
65.	110	Each	Field Tile and Surface Outlet Pipe Splash Pads	_____	_____
66.	20	Each	Side Drain Splash Pad	_____	_____
67.	10	Each	4"/8" Field Tile Outlet Repair (As Needed)	_____	_____
68.	200	Sq. Yds.	Rip Rap (as needed)	_____	_____
69.	1	Lump Sum	Seeding, Fertilizing, Mulching	<u>Lump Sum</u>	_____

<b>Item No.</b>	<b>Estimate Quantity</b>	<b>Unit</b>	<b>Description</b>	<b>Unit Price</b>	<b>Total Amount</b>
<b><u>CLEARING AND DISPOSING OF TREES</u></b>					
70.	1	Lump Sum	+/-900 Lin. Ft. From King Rd North Westside of Railroad up to Drain STA. 235+00	<u>Lump Sum</u>	_____
<b><u>MISCELLANEOUS</u></b>					
71.	1	Lump Sum	Traffic Control	<u>Lump Sum</u>	_____
72.	1	Lump Sum	Remove/Replace Fencing	<u>Lump Sum</u>	_____
73.	1	Lump Sum	Cap 24" Pipe STA: 239+90	<u>Lump Sum</u>	_____
74.	50	Syd	Erosion Repair	_____	_____
75.	150	Lin. Ft.	Miscellaneous 12" Side Drain Culverts (As Needed)	<u>Lump Sum</u>	_____
76.	1	Lump Sum	Video Recording	<u>Lump Sum</u>	_____
<b>TOTAL AMOUNT OF BID</b>					_____

**11.08**

As provided in paragraph 11.9 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by PROFESSIONAL as provided in paragraph 9.10 of the General Conditions. Unit prices have been computed as provided in paragraph 11.9 of the General Conditions.

**Article 5 - PAYMENT PROCEDURES**

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. PROFESSIONAL will process applications for Payment as provided in the General Conditions.

5.1 In accordance with Payment Schedule No. 1 of Act No. 524 of Public Acts of 1980, OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by PROFESSIONAL, on or about the 25th day of each month during construction. All such payments will be measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.2 *Final Payment.* Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by PROFESSIONAL as provided in Section 14.13.

## **Article 6. INTEREST**

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest as allowed by law at the place of the Project.

## **Article 7. CONTRACTOR'S REPRESENTATIONS**

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda) and other related data identified in the Bidding Documents including "technical data".
- 7.2 CONTRACTOR has visited the site, conducted an alert, heads-up, eyes-open reasonable examination of the area, and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.
- 7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- 7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface or physical conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified, if any, in the General Conditions as provided in paragraph 4.2.1. CONTRACTOR accepts the determination set forth in paragraph 4.2.2 of the General Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and Professional do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.
- 7.5 CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.
- 7.6 CONTRACTOR has correlated the information known to the CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 7.7 CONTRACTOR has given PROFESSIONAL written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by PROFESSIONAL is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **Article 8. CONTRACT DOCUMENTS.**

The Contract Documents, which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work, consist of the following:

- 8.1 This Agreement.
- 8.2 Exhibits to this Agreement.
- 8.3 Performance and Payment Bonds.
- 8.4 Notice to Proceed.
- 8.5 General Conditions.
- 8.6 Specifications contained herein.
- 8.7 Drawings as listed on this document's Title Page.
- 8.8 Addenda.  
*(Those Addenda which pertain exclusively to the bidding process need not be listed.)*
- 8.9 CONTRACTOR's Bid.  
*(Attach actual Bid only in special circumstances.)*
- 8.10 Documentation submitted by CONTRACTOR prior to Notice of Award.
- 8.11 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.5 and 3.6 of the General Conditions.

The documents listed in paragraphs 8.2 et seq. above are deemed attached to this Agreement.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

## **Article 9. MISCELLANEOUS**

- 9.1 Terms used in this Agreement, which are defined in Article 1 of the General Conditions, will have the meanings indicated in the General Conditions.
- 9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.5 OTHER PROVISIONS.  
None

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and PROFESSIONAL. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by PROFESSIONAL on their behalf.

This Agreement will be effective on \_\_\_\_\_, 2016  
(which is the Effective Date of the Agreement).

OWNER: **SAGINAW COUNTY PUBLIC  
WORKS COMMISSIONER**

**CONTRACTOR**

By: \_\_\_\_\_

By: \_\_\_\_\_

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Address for giving notices:  
Brian J. Wendling  
Saginaw County Public Works Commissioner  
111 S. Michigan Avenue  
Saginaw, MI 48602

Address for giving notices:



# Construction Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

Saginaw County Public Works Commissioner  
111 S. Michigan Avenue  
Saginaw, MI 48602

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description (Name and Location): KING STREET TILE DRAIN  
SAGINAW COUNTY, MICHIGAN

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

SURETY

Company: (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

SURETY

Company: (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

EJCDC No. 1910-28A (1984 Edition)

Prepared through the joint efforts of The Surety Association of America, Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
  - 3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and
    - 3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and
  - 3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
  - 4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or
    - 4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or
  - 4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or
    - 4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
      1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or
      2. Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4 and the Owner refuses the payment tendered or the Surety had denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

(FOR INFORMATION ONLY - Name, Address and Telephone)

AGENT or BROKER:                      OWNER'S REPRESENTATIVE (Architect, Professional or other party):

6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
  - 6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
  - 6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and
  - 6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.
  - 12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amount received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
  - 12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
  - 12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
  - 12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof



# Construction Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

Saginaw County Public Works Commissioner  
111 S. Michigan Avenue  
Saginaw, MI 48602

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description (Name and Location): KING STREET TILE DRAIN  
SAGINAW COUNTY, MICHIGAN

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_

Name and Title:

SURETY

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_

Name and Title:

CONTRACTOR AS PRINCIPAL

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_

Name and Title:

SURETY

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_

Name and Title:

EJCDC No. 1910-28B (1984 Edition)

Prepared through the joint efforts of The Surety Association of America, Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, American Institute of Architects, American Subcontractors Association, and the Associated Specialty Contractors.

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2. With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due

Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the

Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed

and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Construction

Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction

Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

(FOR INFORMATION ONLY - Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Professional or other party):

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions.

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.



**NOTICE OF AWARD**

Dated: \_\_\_\_\_

TO:

PROJECT: King Street Tile Drain, Saginaw County, Michigan

OWNER's CONTRACT NO.:

CONTRACT FOR: King Street Tile Drain

You are notified that your Bid dated \_\_\_\_\_, 2016 for the above Contract has been considered. You are the apparent Successful Bidder and have been tentatively awarded a contract for KING STREET TILE DRAIN.

The Contract Price of your contract is

Four (4) copies of each of the proposed Contract Documents accompany this Notice of Award. Additional sets of the Drawings will be delivered separately or otherwise made available to you immediately as requested.

You must comply with the following conditions precedent within fifteen (15) days of the date of this Notice of Award, that is by \_\_\_\_, 2016.

1. You must deliver to Hubbell, Roth & Clark, Inc. (3) fully executed counterparts of the Agreement including the Construction Performance Bond, the Construction Payment Bond, and the Certificates of Insurance.
2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Instructions to Bidders (paragraph 18) and General Conditions (paragraph 5.1).
3. Before you may start any Work at the site, the General conditions provides that you and Owner must each deliver to the other (with copies to PROFESSIONAL and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the contract Documents.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

**HUBBELL, ROTH & CLARK, INC. on behalf of**

Brian J. Wendling  
Saginaw County Public Works Commissioner

By: \_\_\_\_\_  
James F. Burton, P.E.  
Project Manager

ACCEPTANCE OF AWARD

By: \_\_\_\_\_

Date: \_\_\_\_\_



## NOTICE TO PROCEED

Dated: \_\_\_\_\_

TO:

PROJECT: King Street Tile Drain, Saginaw County, Michigan

OWNER's CONTRACT No.:

CONTRACT FOR: King Street Tile Drain, Saginaw County

You are notified that the contract Times under the above contract will commence to run on , \_\_\_\_\_, 2016. By the date, you are to start performing your obligations under the contract Documents. In accordance with Article 3 of the Agreement the dates of Substantial completion and completion and readiness for final payment are \_\_\_\_\_, 2016 and \_\_\_\_\_, 2016 respectively.

Also before you may start any Work at the site, you must:

---

**Hubbell, Roth & Clark, Inc. on behalf of**

Brian J. Wendling  
Saginaw County Public Works Commissioner

By: \_\_\_\_\_  
James F. Burton, P.E.  
Project Manager

ACCEPTANCE OF AWARD By: \_\_\_\_\_

Date \_\_\_\_\_



GENERAL CONDITIONS – CONTRACTOR LAYOUT  
TABLE OF CONTENTS

1. Contract Documents.....	2	23. Patents.....	10
2. Contract Drawings and Specifications.....	2	24. “Or Equal” Clause .....	10
3. Engineer’s Status .....	2	25. Cleaning Up .....	10
4. Construction Observer Status .....	3	26. Use of Complete Portions of the Work.....	11
5. Contractor’s Responsibility .....	3	27. Payment Withheld .....	11
6. Permits and Regulations .....	3	28. Contractor’s Right to Stop Work.....	11
7. Subcontracts.....	4	29. Fair Employment Practices Act .....	11
8. Information by the Contractor .....	4	30. Authority.....	11
9. General Requirements for Materials and Workmanship .....	4	31. Starting Work .....	12
10. Testing and Sampling .....	5	32. Sanitary Regulations .....	12
11. Lines and Grades.....	5	33. Sunday and Night Work .....	12
12. Protection of Work and Property .....	5	34. Progress of Work.....	12
13. Responsibility for Adjoining Structures and Trees.....	5	35. Time of Completion.....	12
14. Maintenance of Service.....	6	36. Extension of Time.....	12
15. Storage of Materials.....	6	37. Time is Essence of Contract .....	12
16. Relation to Other Contractors .....	6	38. Estimated Quantities .....	13
17. Contractor’s Supervision and Origination.....	7	39. Forfeiture of Contract .....	13
18. Facilities for Inspection.....	7	40. No Waiver of Contract.....	13
19. Shop Drawings.....	8	41. Payment Not to Be Stopped.....	13
20. Errors and Corrections in Drawings and Specifications .....	8	42. Guarantee.....	14
21. Changes in the Work.....	8	43. Estimates and Payments .....	14
22. Basis for Determining Cost of Changes in the Work .....	9	Contractor’s Declaration .....	16
		Contractor’s Affidavit .....	17

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
C  
o  
m  
b  
i  
n  
e  
d  
-  
P  
D  
F  
\  
0  
0  
7  
0  
0  
-  
G  
e  
n  
e  
r  
a  
l  
-  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

---

GENERAL CONDITIONS

1. CONTRACT DOCUMENTS

The original and three copies of the Contract shall be signed by the Owner and the Contractor, unless otherwise required.

The work under this Contract shall consist of the items listed in the proposal, including all incidentals necessary to fully complete the project in accordance with the contract Documents. The Contract documents shall consist of the Advertisement, Instructions to Bidders, Proposal, Specifications, General Conditions, General Supplementary Conditions, Contract, Bonds and Contract Drawings.

2. CONTRACT DRAWINGS AND SPECIFICATIONS

The work to be done is shown on the accompanying set of original drawings prepared by Hubbell, Roth & Clark, Inc., Consulting Engineers, Bloomfield Hills, Michigan, and are hereby made a part of this Contract, it being mutually understood and agreed that when taken together, the drawings and contract documents, including the specifications and the general conditions, are complementary, and what is called for by any one shall be binding as if called for by all. The intent of the Contract documents is to include in the contract price the cost of all labor and materials, water, fuel, tools, plant, equipment, light, transportation, and all other expenses as may be necessary for the proper execution and completion of the work.

These original drawings may be supplemented by other drawings furnished by the contractor and approved by the Engineer or supplied to the Contractor by the Engineer during the progress of the work as he may deem to be necessary or expedient. All such supplementary contract drawings or instructions are intended to be consistent with the Contract Documents, true developments thereof and reasonably inferable therefrom. Therefore, no extra charge will be allowed on a claim that particular supplemental contract drawings or instructions differed from the Contract Documents, incurring extra work, unless the Contractor has first brought the matter, in writing, to the Engineer's attention for proper adjustment before starting on the work covered by such and has received from the Engineer an order in writing to so proceed.

These original and supplementary drawings constitute the drawings according to which the work is to be done. The Contractor shall keep at the site of the work an approved or conformed copy of all drawings and specifications and shall at all times give the Engineer or Owner access thereto.

In case any inconsistency, omission or conflict shall be discovered in either specifications or drawings, or if in any place, the meaning of either or both shall be obscure, or uncertain, or in dispute, the Engineer shall decide as to the true intent and his decision shall be final and binding.

3. ENGINEER'S STATUS

The Engineer shall furnish consultation and advice to the Owner during construction. He may advise the Owner to stop the work whenever such stoppage may be necessary to insure that the finished work will be in accordance with the plans and specifications. He may advise the Owner to reject all work and material which do not conform to the drawings and specifications. The engineer may stop work only under the written direction of the owner.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
\n  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

4. CONSTRUCTION OBSERVER STATUS

The Owner may appoint on the job construction observer(s) who shall be under the direction of the Engineer. The construction observer on the work will inform the Engineer as to the progress of the work, the manner in which it is being done, and the quality of the materials being used. The construction observer will call to the attention of the Contractor any failure to follow the drawings and specifications that he may observe. The construction observer shall advise the Engineer to reject materials suspend the work until any questions on the performance of the work can be referred to and decided by the Owner. The construction observer shall have no authority to determine the means and methods used to complete the work, direct the Contractor's work or workmen, to supervise the Contractor's operations, to stop work on the project or to change the Contract Drawings or Specifications.

In no instance shall any action or omission on the part of the construction observer release the Contractor of the responsibility of completing the work in accordance with the drawings, specifications and/or, municipal ordinances or established prior practices of the owner, in the municipality in which the project resides.

5. CONTRACTOR'S RESPONSIBILITY

The Contractor shall assume full responsibility for the work, specifically including jobsite safety, and take all precautions for preventing injuries to persons and property on or about the work; shall bear all losses resulting to him on account of the amount or character of the work or because the conditions under which the work is done are different, or because the nature of the ground in which the work is done is different from what was estimated or expected, or on account of the weather, floods, elements or other causes, and he shall assume the defense and save harmless the Owner, the Engineer and their individual officers and agents from all claims relating to labor provided and materials furnished for the work; to inventions, patents, and patent rights used in doing the work; to injuries to any persons or property received or sustained by or from the Contractor, his agents or employees in doing the work or arising out of the work performed or to be performed; and to any act, or neglect of the Contractor, his agents or employees.

The mention of any specific duty or liability of the contractor in this or in any part of the Contract documents shall not be construed as a limitation or restriction upon any general liability or duty imposed on the contractor by the Contract Documents.

6. PERMITS AND REGULATIONS

The Contractor shall secure, at no cost to the Owner, all permits and licenses necessary for the prosecution of the work. The Contractor shall keep himself fully informed of all laws, ordinances, and regulations in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

He shall at all times observe and comply with, and shall cause all his agents and employees to observe and comply with all existing and future laws, ordinances, regulations, orders, and decrees. Provided that if the drawings and specifications are at variance therewith, the Contractor shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in the Contract Documents.

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
-  
G  
e  
n  
e  
r  
a  
l  
-  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
l  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

7. SUBCONTRACTS

The Contractor shall not sublet, assign, or transfer this Contract or any portion thereof or any payments due him thereunder, without the written consent of the Owner.

Assignment or subletting the whole or any portion of this contract shall not operate to release the contractor or his bondsmen hereunder from any of the contract obligations.

The Contractor shall, as soon as practicable after the signing of the Contract, notify the Owner in writing of the names of subcontractors proposed for the work and shall not employ any that the Owner may object to as incompetent or unfit.

If the Contractor shall cause any part of the work under this Contract to be performed by a subcontractor, the provisions of this Contract shall apply to such subcontractor and his officers and employees in all respects as if he and they were employees of the Contractor, and the Contractor shall not be in any manner thereby relieved from his obligation and liabilities; and the work and materials furnished by the subcontractor shall be subject to the same provisions as if furnished by the Contractor.

8. INFORMATION BY THE CONTRACTOR

The Contractor shall submit to the Engineer full information as to the materials, equipment, and arrangements which the Contractor proposes to furnish. This information shall be complete to the extent that the Engineer may intelligently judge if the proposed materials, equipment, and arrangements will meet the contract requirements.

Prior to the approval of materials, equipment, and arrangements by the Engineer based on the information submitted by the Contractor, any work done by the Contractor shall be at his own risk.

The approval of information covering materials, equipment, and arrangements by the Engineer shall in no way release the Contractor from his responsibility for the proper design, installation, and performance of any material, equipment, or arrangement, or from his liability to replace same should it prove defective.

9. GENERAL REQUIREMENTS FOR MATERIALS & WORKMANSHIP

In the specifications where a particular material or piece of equipment is specified by reference to some particular make or type, or equal, it is not the intent to limit competition but to set up by such reference a standard of quality most easily understood and defined. If materials or equipment of other make or type than that specified by name are offered by the Contractor, they will be given full consideration by the Engineer and the Engineer's decision will be final as to whether the materials or equipment offered are equal to those specified.

Unless otherwise stipulated in the specifications, all equipment, materials, and articles incorporated in the work covered by this Contract are to be new and of the best grade of their respective kinds for the purpose. The Contractor shall, if required, furnish such evidence as to kinds and quality of materials as the Engineer may require.

The Contractor shall furnish suitable tools and building appliances and employ competent labor to perform the work to be done, and any labor or tools or appliances that shall not, in the judgment of the

Engineer, be suitable or competent to produce this result may be ordered from the work by the Owner, at the advice of the Engineer, and such labor or tools or appliances shall be substituted therefor by the Contractor as will meet with the approval of the Engineer/Owner.

If not otherwise provided, material or work called for in this contract shall be furnished and performed in accordance with well-known established practice and standards recognized by architects, engineers and the trade.

10. TESTING AND SAMPLING

Where called for in the specifications, samples of materials in the quantity named shall be submitted to the Engineer for approval. Where tests are required they shall be made at the expense of the Contractor, except as otherwise called for in the specifications. For materials covered by ASTM or Federal Specifications, unless otherwise stipulated, the required tests are to be made by the manufacturer and his certificate therefor submitted to the Engineer.

11. LINES AND GRADES

All lines and grades shall be established by the Contractor. Establishment of principal reference lines, transfer of line and grade into facilities, location of all piping and equipment shall be the responsibility of the Contractor.

12. PROTECTION OF WORK AND PROPERTY

The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect all public property and private abutting property from injury or loss arising in connection with this Contract. He shall, without delay, make good any such damage, injury or loss, and shall defend and save the Owner and Engineer harmless from all such damages or injuries occurring because of his work. He shall furnish and maintain all passageways, barricades, guard fences, lights and danger signals, provide watchmen and other facilities for protection required by public authority or by local conditions, all at no additional cost to the Owner.

In an emergency affecting the safety of life or of the work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall take such action as may be necessary to prevent such threatened damage, injury or loss.

The Contractor shall assume full responsibility of loss or damage to the work during the entire construction period resulting from caving earth and from storms, floods, frosts, and other adverse weather conditions, and from all other causes whatsoever, not directly due to the acts or neglect of the Owner, including fire, vandalism and malicious mischief, and shall turn the finished work over to the Owner in good condition and repair, at the time of the final estimate.

13. RESPONSIBILITY FOR ADJOINING STRUCTURES & TREES

The Contractor shall assume full responsibilities for the protection of all pavements, curbs, bridges, railroads, poles and any other surface structures and all water mains, sewers, telephone, gas mains, and other underground services and structures along the near the work which may be affected by his operations, and shall indemnify, defend and save harmless the Owner against all damages or alleged damages to any such structure arising out of his work. The Contractor shall bear the cost of repair or replacement of any such structure damaged as a result of his operations.

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
-  
G  
e  
n  
e  
r  
a  
l  
-  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
l  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

No trees or shrubbery of any kind shall be removed or destroyed by the Contractor without the written permission of the Owner, and the Contractor will be held fully responsible for any damages caused by his work to adjoining trees and shrubs. Ample precautions shall be taken by the Contractor to protect such trees and shrubs as are to remain in place by surrounding them with fences or other protection before construction work begins. Shrubbery that has to be removed shall be preserved and replaced in a manner acceptable to the Owner.

14. MAINTENANCE OF SERVICE

Drainage through existing sewers and drains shall be maintained at all times during construction and all nearby gutters shall be kept open for drainage. Where existing sewers are encountered in the line of the work which interferes with the construction, the flow in the sewers, including both dry weather flow and storm flow, shall be maintained.

All detours shown on the drawings or required because of the Contractors operations shall be built and maintained at the Contractor's expense.

Safety precautions shall be followed at all street openings, substantial barricades shall be erected as deemed necessary to prevent accidents to vehicular or pedestrian traffic and red flags by day and yellow lights by night shall be diligently posted by the Contractor at all points of possible danger. In case detours or other traffic instructions are necessary, suitable warning or direction signs shall be erected and maintained by the Contractor. Contractor shall be responsible for insuring that all barricades, flags, lights, etc. are in place and functional at the end of each day.

During the progress of the work, the Contractor shall accommodate both vehicular and foot traffic and shall provide free access to fire hydrants, water and gas valves. Except as otherwise specified herein or as noted on the drawings, street intersections may be blocked but one-half at a time, and the contractor shall lay and maintain temporary driveways, bridges and crossings, such as in the opinion of the Owner are necessary to reasonably accommodate the public.

In the event of the Contractor's failure to comply with these provisions, the Owner may with or without notice, cause the same to be done; and will deduct the cost of such work from any money due or to become due the Contractor under this Contract, but the performance of such work by the Owner or at his instance, shall serve in no way to release the Contractor from his general or particular liability for the safety of the public or the work.

15. STORAGE OF MATERIALS

Materials and equipment distributed, stored and placed upon or near the site of the work shall at all times be so disposed as not to interfere with work being prosecuted by other contractors in the employ of the Owner, or with street drainage, or with fire hydrants or with access thereto, and not to hinder, any more than may be necessary, the ordinary traffic of the street.

16. RELATION TO OTHER CONTRACTORS

The Contractor shall so conduct his operations as not to interfere with or injure the work of other contractors or workmen employed on adjoining or related work and he shall promptly make good any injury or damage which may be done to such work by him or his employees or his agent. Should a contract for adjoining work be awarded to another contractor, and should the work of one of these

contracts interfere with that of the other, the Owner shall decide which contractor shall cease work for the time being and which shall continue or whether the work in both contracts shall continue at the same time and in what manner.

17. CONTRACTOR'S SUPERVISION AND ORIGINATION

The work under this Contract shall be under the direct charge and direction of the Contractor. The Contractor shall give efficient superintendence to the work, using his best skill and attention. The Contractor shall at all times keep on the site of the work, during its progress, a competent superintendent and any and all necessary foremen and assistants. The superintendent shall represent and have full authority to act for the Contractor in the latter's absence, and all directions given to him shall be as binding as if given to the Contractor. On written request in each case, all such directions will be confirmed in writing to the Contractor.

The Contractor shall employ only competent, efficient workmen and shall not use on the work any unfit person or one not skilled in the work assigned to him, and he shall at all times enforce strict discipline and good order among his employees. Whenever the Owner shall notify the Contractor, in writing, that any man on the work is, in the opinion of the Owner, careless, incompetent, disorderly, or otherwise unsatisfactory, such man shall be discharged from work and shall not again be employed on it except with the written consent of the Owner.

The Contractor shall establish and maintain an office on the site of the work or at some convenient point adjacent thereto, during the continuance of this Contract and shall have at all times during working hours, a representative authorized to receive and execute any and all orders, when given by the Engineer; and such order, when given out and received by said representative shall be deemed to have been given to and received by the Contractor. Copies of the drawings and specifications shall at all times be kept on file by the Contractor at readily accessible points near the work.

18. FACILITIES FOR INSPECTION

The Owner, the Engineer, and their employees shall at all times have the right to enter upon the premises upon which work is being done, or upon which material is stored for the work under this Contract, and to inspect the work under this Contract, and to inspect the work and materials, and to ascertain whether or not the construction is carried out in accordance with this Contract, and the Contractor shall furnish all reasonable facilities, and give ample time for such inspection. All materials shall be subject to mill and shop inspection, as provided in the specifications.

The Contractor shall promptly remove from the premises all materials rejected by the Engineer as failing to meet contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contractor and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not remove such rejected work and materials promptly, after written notice, the Owner may remove them and store the material at the expense of the Contractor.

The Engineer has the right to have removed by the Contractor such portion of the work as he may deem necessary for the discovery of improper work or material, and the Contractor must restore such work at his own expense if improperly done and at the expense of the party of the first part if found to be in proper condition. Any work which, during its progress and before its final acceptance, may

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
\  
1  
0  
4  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
G  
e  
n  
e  
r  
a  
l  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

become damaged from any cause, shall be removed and replaced by good, satisfactory work at the Contractor's expense.

19. SHOP DRAWINGS

Where called for in the specifications, the Contractor shall submit to the Engineer for review copies of details, specifications, cuts, and drawings of such equipment and structural work as may be required. The Contractor shall make any changes or alterations required by the Engineer and re-submit same without delay. The review of the Engineer shall not relieve the Contractor of responsibility for errors in the drawings, as the Engineer's checking is intended to cover compliance with the drawings and specifications and not to enter into every detail of the shop work. No work shall be undertaken until the Engineer has reviewed the shop drawings.

20. ERRORS AND CORRECTIONS IN DRAWINGS AND SPECIFICATIONS

The Contractor shall examine and check all drawings and specifications furnished by the Owner for dimensions, quantities, and coordination with other parts of the work on this or related contracts and shall notify, in writing, the Engineer of any and all errors, omissions, or discrepancies he may discover by examining and checking of same. The Contractor shall not be allowed to take advantage of any such error, omission, or discrepancy, as full instructions will be furnished by the Engineer, and the Contractor shall carry out such instructions as if originally specified. In no case shall be Contractor proceed with the work in uncertainty, and any work done by the Contractor after the discovery of any error, omission, or discrepancy, until authorized, will be at the Contractor's risk and responsibility. The work is to be made complete and to the satisfaction of the Engineer, notwithstanding any minor omissions in the specifications or drawings.

21. CHANGES IN THE WORK

The Owner shall have the right to require, by written order, changes in, additions to, or deductions from the work required by the contractor documents; provided that if changes, additions, or deductions are made, the general character of the work as a whole is not changed thereby. Adjustments in the contract price, if any, because of any change, addition, or deduction in the work shall be determined as hereinafter provided, and any claim for extension of time for completion shall be adjusted at the time of ordering the change, addition, or deduction. No claim for change, addition, or deduction, or adjustment of price, or extension of time for completion thereof, shall be made or allowed unless done in pursuance of a written order from the Owner specifically authorizing such change, addition, or deduction. Drawings without a written order shall not be considered such authority. Written notice of such claims shall be made to the Engineer before the commencement of work. Where the written notice of such claims shall be made to the Engineer before the commencement of work. Where the written order diminished the quantity of work to be done, this shall not constitute a basis for a claim for damages or anticipated profits on the work that may be deleted.

Under circumstances which, in the judgment of the Engineer, so necessitate, the Engineer shall have authority to require, by written order, changes in, additions to, or deductions from the work. Such written order by the Engineer shall be subject to later confirmation by the Owner when the extent and cost have been established.

It is understood and agreed that in case any change in, addition to, or deduction from the work is required, said change shall in no way invalidate the Contract and shall not affect or discharge the bonds furnished by the Contractor.

The Contractor, without extra charge, shall make such slight alternations as may be necessary to make adjustable parts fit to fixed parts, leaving all complete and in proper shape when done.

22. BASIS FOR DETERMINING COST OF CHANGES IN THE WORK

Adjustments, if any, in the contract price by reason of change in the work shall be limited to the amount specified in the written order authorizing the change in the work. Adjustments shall be determined by one or more of the following methods, the Owner reserving the right to select the method or methods at the time the written order is issued:

- A. An acceptable lump sum proposal: To facilitate checking and acceptance, the proposal shall be itemized with quantities and prices given for the various items.
- B. Unit Prices: The unit prices may be the "Unit Price" set in the Agreement, or fixed by subsequent agreement between the Owner and the Contractor.
- C. On a cost-plus-limited basis not to exceed a specified maximum limit of cost:
- D. "COST" as herein used shall be the actual and necessary cost incurred by the Contractor by reasons of the change in the work for:
  - 1. Labor
  - 2. Materials
  - 3. Equipment Rental
  - 4. Insurance Premium
  - 5. Labor costs shall be the amount shown on the Contractor's payroll with payroll taxes added when such taxes can be shown to have been incurred. In no case shall be rates charged for labor exceed the rates paid by the Contractor for the same class of labor employed by him to perform work under the regular items of the Contract.
  - 6. Material costs shall be the net price paid for material delivered to the site of the work. If any material previously required is omitted by the written order of the Owner after it has been delivered to or partially worked on by the Contractor and consequently will not retain its full value for other uses, the Contractor shall be allowed the actual cost of the omitted material less a fair market value of the material as determined by the Owner.
  - 7. Equipment Rental shall be the actual additional costs incurred for necessary equipment. Costs shall not be allowed in excess of usual rental charged in the area for similar equipment of like size and condition, including the cost of necessary supplies and repairs for operating the equipment. No costs, however, shall be allowed for the use of equipment on the site in connection with other work unless its use incurs actual and additional costs to the Contractor. If equipment not on the site is required for the change in the work only, the cost of transporting such equipment to and from the site shall be allowed.
  - 8. Insurance Premium shall be limited to those based on labor payroll and to the types of insurance required by the Contract. The amount allowed shall be limited to the net

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
\  
1  
\  
0  
4  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
G  
e  
n  
e  
r  
a  
l  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

costs incurred as determined from the labor payroll covering the work. The Contractor shall, upon request of the Owner, submit verification of the applicable insurance rates and premium computations.

"PLUS" as herein is defined as a percentage to be added to the items of "Cost" to cover superintendence, use of ordinary tools, bonds, overhead expense and profit. The percentage shall not exceed 15 percent on work done entirely by the Contractor and shall not exceed an aggregate total of 20 percent on work done by a subcontractor.

"SPECIFIED MAXIMUM LIMIT OF COST" is the amount stated in the written order of the Owner authorizing the change in the work. The amount to be allowed the Contractor shall be the "cost" and "plus" the percentage or the specified maximum, whichever is the lesser amount.

The Contractor shall keep complete, accurate, daily record of the net actual cost of changes in the work, and shall present such information in such form and at such times as the Owner may request.

23. PATENTS

The Contractor shall pay all royalties and license fees and shall hold and save the Owner and his agent harmless from all liability of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the owner, unless otherwise specifically stipulated in the Contract Documents. In this respect, the Contractor shall defend all suits or claims for infringement of any patent or license right.

In the event that any claim, suit, or action at law or in equity of any kind, whatsoever, is brought against the Owner, involving any such patents or license rights, then the Owner shall have the right to, and may, retain from any money due or to become due to the Contractor, such sufficient sum as is considered necessary to protect said Owner, against loss, and such sum maybe retained by the Owner until such claim or suit shall have been settled and satisfactory evidence to that effect shall have been furnished the Owner.

24. "OR EQUAL" CLAUSE

Whenever, in any of the Contract Documents, material, or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or equal," if not inserted, shall be implied. The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality desired and shall not be construed in such a manner as to exclude manufacturers' products of comparable quality, design and efficiency. The Contractor shall comply with the requirements of the Contract Documents relative to the Owner's approval of materials and equipment before they are incorporated in the work.

25. CLEANING UP

The Contractor shall remove at his own expense from the Owner's property and from all public and private property, all temporary structures, rubbish and waste materials resulting from his operations. This requirement shall not apply to property used for permanent disposal of rubbish or waste materials in accordance with permission of such disposal granted to the Contractor by the Owner thereof.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
\n  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
G  
e  
n  
e  
r  
a  
l  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

26. USE OF COMPLETE PORTIONS OF THE WORK

The Owner may, at any time during progress of the work, after written notice to the Contractor, take over and place in service any completed portions of the work which are ready for service, although the entire work of the Contract is not fully completed, and notwithstanding the time for completion of the entire work or such portion may not have expired. In such event, the Contractor will be relieved of further work on or maintenance of said portion, except as covered by his guarantee of same.

27. PAYMENT WITHHELD

The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate for progress payment to such extent as may be necessary to protect itself from loss on account of:

- A. Defective work not remedied.
- B. Claims filled or reasonable evidence indicating probable filing of claims.
- C. Failure of the contractor to make payments properly to subcontractors or for material or labor.
- D. A reasonable doubt that the Contract can be completed for the balance then unpaid.
- E. Damage to another contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

28. CONTRACTOR'S RIGHT TO STOP WORK

If the work should be stopped under an order of any court, or other public authority for a period of three months, through no act or fault of the contractor or of anyone employed by him, or if the Owner should fail to pay to the Contractor within sixty days of its maturity and presentation any sum certified by the Engineer, provided no appeal is taken, the contractor may, upon seven days written notice to the Owner and the Engineer, stop work or terminate this Contract, and shall receive from the Owner payment in full for all work executed, as determined from the prices contained in the approved detailed estimate as computed by the Engineer, but no claim for extra compensation or damages shall be made or allowed because of such termination of the Contract.

29. FAIR EMPLOYMENT PRACTICES ACT

The Contractor agrees that neither he nor his subcontractor will discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect to his hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment, because of his race, color, religion, national origin or ancestry. Breach of this covenant may be regarded as a material breach of this Contract.

30. AUTHORITY

No agent of the Owner shall have power to revoke, alter, enlarge, or relax the stipulation or requirements of these specifications, except insofar as such authority may be specifically conferred by the specifications themselves, without the formal authorization to do so, conferred by the Contract of which the specifications are a part, or by ordinance, resolution, or other usual official action by the Owner.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
/\  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

31. STARTING WORK

Material shall be ordered and work shall begin on the ground within thirty (30) days after the Contract is signed, unless otherwise stated.

32. SANITARY REGULATIONS

Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained in sanitary condition by the Contractor, and their use shall be strictly enforced.

33. SUNDAY AND NIGHT WORK

The Contractor is required to prosecute work done under this Contract during the hours of daylight, and work will be permitted at night or on Sundays if it is in the best interest of the owner to accommodate traffic, service disruptions, and to keep the project on schedule. Contractor is required to get owner approval at least 48 hours prior to requesting night work. Also this provision is superseded if work is required to save property or life or as specifically authorized or directed by the Owner. Tunnel work may be prosecuted at night except on Sundays.

34. PROGRESS OF WORK

The work shall be prosecuted regularly and uninterruptedly, unless the Owner shall otherwise specifically direct, with such force and at such points as to insure its full completion within the time herein stated.

If, in the opinion of the Owner, it is necessary or advisable that certain portions of the work be done immediately, the Contractor, upon written order, shall proceed with such work without delay. Should he fail to so proceed, the Owner may do or cause to be done, such work, and the cost of the same will be deducted from any money due or to become due the Contractor under this Contract.

35. TIME OF COMPLETION

The time allowed for completion of the work contemplated in this Contract shall be as stated in the proposal or specifications.

36. EXTENSION OF TIME

All days in which work is suspended by order of the Owner, or in accordance with these specifications, shall automatically extend the time for completion an equal number of days.

37. TIME IS ESSENCE OF CONTRACT

It is distinctly understood and agreed to by the parties hereto that the time specified for the completion of the work is the essence of this Contract, and the Contractor shall not be entitled to claim performance of this agreement unless the work is satisfactorily completed, in every respect, within the time herein specified.

38. ESTIMATED QUANTITIES

The quantities of the various classes of work to be done and materials to be furnished under this Contract which have been estimated as stated elsewhere herein, are approximate and only for the purpose of comparing, on a uniform basis, the bids offered for the work under this Contract; and neither the Owner nor his agents is to be held responsible should any of the said estimated quantities be found incorrect during the construction of the work; and the Contractor shall make no claim for anticipated profit, nor for loss of profit, because of a difference between the quantities of the various classes of work actually done or materials actually delivered and the estimated quantities as herein stated.

39. FORFEITURE OF CONTRACT

If the work to be done under the Contract shall be abandoned by the Contractor, or if any time in the judgment of the Owner, the contractor shall fail to prosecute the work at a reasonable rate of progress, or to comply with all or any of the terms and requirements herein set forth, then the Owner shall have the right to take possession of the work, including Contractor's plant, supplies, and materials, at any time after having notified the Contractor in writing to discontinue the work under this Contract for said cause or causes, and such action shall not affect the right of the Owner to recover damages resulting from such failure. Upon receiving such notice, the Contractor shall and will, upon demand, immediately give the Owner to recover damages resulting from such failure. Upon receiving such notice, the Contractor shall and will, upon demand, immediately give the Owner safe and peaceable possession of the work, including the plant, and shall then cease to have control over any portion thereof or the men employed thereon.

The Owner may then proceed to complete the work herein specified, by contract or otherwise; and the entire cost of the same shall be charged to the Contractor and deducted from any sum or sums due or to become due under the contract; the excess cost, if any, to be paid by the Contractor or his sureties, to said Owner.

40. NO WAIVER OF CONTRACT

Neither the acceptance of the whole or any part of the work by the Owner or his Engineer, or any of its agents, nor any order, measurements, or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for the whole or any part of the work by the Owner, nor any extension of time, nor any possession taken by the Owner or its agents, shall operate as a waiver for any portion of the Contract or any power therein provided; nor shall any waiver of any breach of the Contract be held to be a waiver of any other or subsequent breach.

41. PAYMENT NOT TO BE STOPPED

The Owner shall not, nor shall any officer thereof, be precluded or stopped by any return or certificate made or given by the Engineer, or other officer, agent or appointee, under the provisions of this agreement, at any time (either before or after the final completion and acceptance of the work and payment made therefor pursuant to any such return or certificates showing the true and correct amount of money due therefor, notwithstanding any such return or certificate, or any payment made in accordance therewith) from demanding and receiving from the Contractor or his sureties, separately or collectively, such sums as may have been improperly paid said Contractor by reason of any such return or certificate which has been untruly or incorrectly compiled.

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
G  
e  
n  
e  
r  
a  
l  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

42. GUARANTEE

The Contractor, as a condition precedent to final payment, shall execute a guarantee to the Owner warranting for a period of one year from the date of final payment to keep in good order and repair any defect in all the work done under the contract, either by the Contractor or his subcontractors, or the material suppliers, that may develop during said period due to improper materials, defective equipment, workmanship, or arrangements, and any other work affected in making good such imperfections shall also be made good, all without expense to the Owner, and the Contractor shall execute, in favor of the Owner, the attached Maintenance and Guarantee Bond.

When the specifications call for a guarantee period greater than one year, the Contractor shall provided such longer guarantee period.

43. ESTIMATES AND PAYMENTS

The Owner shall pay and the Contractor receive the prices bid in the proposal, or agreed upon, less any deduction for any uncompleted portion, based upon measurements made by the Engineer or as otherwise herein stipulated, and such measurements shall be final and conclusive.

As aid to the Owner in preparing estimates for progress payments, the Contractor may be required to submit to the Owner for approval a breakdown of some or all contract unit prices into their essential component parts. The sum of the component parts shall not exceed the total contract price per unit and the breakdown shall not overrule the contract price per unit.

The Contractor shall submit to the Owner a written request for each payment and a Contractor's Declaration declaring that he has not performed any work, furnished any material, sustained any loss, damage or delay, for any reasons, including soil conditions encountered or created, or otherwise done anything for which he will ask, demand, sue for, or claim compensation from the Owner other than, as indicated on the Contractor's Declaration. When requested by the Owner, the Contractor shall submit receipts or other vouchers showing his payments for materials and labor, including payments to subcontractors.

Payments based on progress estimates will be made on a monthly basis for work completed during the preceding month or since the date of the last preceding progress payment. Payments will be in accordance with the provision of Act 524 of the Michigan Public Acts of 1980 and in accordance with the terms of this Contract. No allowance will be made for materials furnished which are not incorporated in the finished work, unless otherwise stated.

Partial Payment for materials and/or equipment stored on the jobsite may be allowed on the basis of 90% of the invoice cost of the material providing materials are properly stored. Partial Payment will be allowed on the basis of 90% of the invoice cost less the cost of delivery for materials and/or equipment stored off the jobsite providing the following conditions are met:

- Materials can be inspected by the OWNER and are clearly identifiable for the project.
- Items are properly stored in the opinion of the OWNER.
- Evidence of clear title transfer to the OWNER upon such partial payment can be provided.
- Insurance coverage against loss or damage is provided including certificates guaranteeing same.

Pursuant to Act 524, Michigan Public Acts of 1980, the Owner shall designate a person representing it to whom written requests for payments shall be submitted. The Contractor shall designate a person who shall submit written requests for payment to the Owner.

In the event a dispute arises over an avoidable or unacceptable delay in the performance of the work as described in Section 4(3) of Act 524 of Michigan Public Acts of 1980 [MCLA125.1564(3)], the dispute may, at the option of the Owner, be submitted for resolution in accordance with the provisions of Section 4 of Act 524 of the Michigan Public Acts of 1980 to an agent designated pursuant to Section 4(2) of the Act. The dispute resolution process described above shall be used only for the purpose of determining the rights of the parties to retained funds and interest earned on retained funds.

The Owner may withhold the payment of any estimate or portion of estimate until the Contractor shall have furnished satisfactory evidence that he has paid all claims of every nature.

No payment shall be considered as acceptance of the work or any portion thereof prior to the final completion of the work, and the payment of the final estimate.

Within thirty (30) days after the completion of the work under this Contract to the satisfaction of the Owner and the Engineer, in accordance with all and singular terms and stipulations herein contained, the Owner shall make final payment, from a final estimate made by the Engineer. Before final payment is made, the Contractor shall, as directed by the Owner, furnish a Contractor's Affidavit that he has paid or satisfactorily secured all claims of every nature. Also, the Contractor shall furnish a release from the surety or sureties and permit agencies as applicable, approving payment of final estimate by the Owner. The final payment, when made, shall be considered as final approval and acceptance of the completed work herein specified.

The acceptance by the Contractor of the final payment aforesaid shall operate as, and shall be, a release to the Owner and his agents, from all claim and liability to the Contractor for anything done or furnished for, relating to the work, or for any act or neglect of the Owner or of any person relating to or affecting the work.

Y  
:  
A  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
C  
o  
m  
b  
i  
n  
e  
d  
P  
D  
F  
\  
0  
0  
7  
0  
0  
G  
e  
n  
e  
r  
a  
l  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
6  
2  
:  
4  
6  
P  
M

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
/\  
0  
0  
7  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
0  
8  
/  
2  
0  
/  
1  
5  
3  
:  
2  
5  
:  
0  
0  
P  
M

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period \_\_\_\_\_  
to \_\_\_\_\_ A.D., 20\_\_\_\_, performed any work, furnished any material, sustained any loss, damage or  
delay for any reason, including soil conditions encountered or created, or otherwise done anything for which I  
shall ask, demand, due for, or claim compensation from \_\_\_\_\_

\_\_\_\_\_

the Owner, or his agents, in addition to the regular items set forth in the contract numbered \_\_\_\_ and dated \_\_\_\_

\_\_\_\_\_

A.D., 20\_\_\_\_, for \_\_\_\_\_

\_\_\_\_\_

executed between myself and the Owner, and in the Change Orders for work issued by the Owner in writing as  
provided thereunder, except as I hereby make claim for additional compensation and/or extension of time as  
set forth on the itemized statement attached hereto.

There (is) (is not) an itemized statement attached.

Date: \_\_\_\_\_

Company: \_\_\_\_\_

By: \_\_\_\_\_

Position: \_\_\_\_\_





SECTION 00800

GENERAL SUPPLEMENTARY CONDITIONS

PART 1 INSURANCE

1.1 Insurance Required of the Contractor

- A. Prior to commencement of the work, the Contractor shall purchase and maintain during the term of the project such insurance as will protect him, the Owner, and the Engineer from claims arising out of the work described in this contract and performed by the Contractor, Subcontractor(s) or Sub-Subcontractor(s) consisting of the below listed policies.

1.2 Worker's Compensation Insurance

- A. Worker's Compensation insurance including Employer's Liability to cover employee injuries or disease compensable under the Workers' Compensation Statutes of the states in which work is conducted under this contract; disability benefit laws, if any; or Federal compensation acts such as U. S. Longshoremen or harbor Workers', maritime Employment, or Railroad Compensation Act(s), if applicable.
- B. Self-insurance plans approved by the regulatory authorities in the state in which work on this project is performed are acceptable.

1.3 Comprehensive General Liability

- A. A Comprehensive General Liability policy to cover bodily injury to persons other than employees and for damage to tangible property, including loss of use thereof, including the following exposures:
  - 1. All premises and operations
  - 2. Explosion, collapse and underground damage
  - 3. Contractor's Protective coverage for independent contractors or subcontractors employed by him.
  - 4. Contractual Liability for the obligation assumed in the Indemnification or Hold Harmless agreement found hereinafter.
  - 5. The usual Personal Injury Liability endorsement with no exclusions pertaining to employment.
  - 6. Products and Completed Operations coverage. This coverage shall extend through the contract guarantee period.
- B. Additional Insured Requirements:
  - 1. Coverage shall be Primary and Non-contributory
  - 2. The policy shall include an endorsement which includes the following as additional insured's:
    - a. Saginaw County Public Works Commissioner, Saginaw County Road Commission, Fremont Township, Swan Creek Township, their counsel, members, Board members, public officials, consultants, agents, and employees

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
0  
8  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
2  
8  
:  
1  
2  
P  
M

- b. The “Engineer”  
Hubbell, Roth & Clark, Inc.  
Their owners, directors, officers, consultants, agents, and employees

1.4 Comprehensive Automobile Liability

- A. A Comprehensive Automobile Liability policy to cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned and hired vehicles and including Michigan “No Fault” coverage.
- B. In light of standard policy provisions concerning (a) loading and unloading and (b) definitions pertaining to motor vehicles licensed for road use vs. unlicensed or self-propelled construction equipment, it is strongly recommended that the Comprehensive General Liability and the Comprehensive Auto Liability be written by the same insurance carrier, though not necessarily in one policy.
- C. Additional Insured Requirements:
  - 1. Coverage shall be Primary and Non-contributory
  - 2. The policy shall include an endorsement which includes the following as additional insured’s:
    - a. Saginaw County Public Works Commissioner, Saginaw County Road Commission, Fremont Township, Swan Creek Township, their counsel, members, Board members, public officials, consultants, agents, and employees
    - b. The “Engineer”  
Hubbell, Roth & Clark, Inc.  
Their owners, directors, officers, consultants, agents, and employees

1.5 Owner's & Contractors Protective Liability Policy

- A. The Contractor shall purchase for the Owner, a separate Owner's Protective Liability policy to protect the Owner, the Engineer, their consultants, agents, employees and such public corporations in whose jurisdiction the work is located, for their contingent liability for work performed by the Contractor, the Subcontractor(s) or the Sub-Subcontractor(s) under this contract.
- B. Purchase the Owner's Protective Liability policy in the Owner’s name.
- C. Additional Insured Requirements:
  - 1. The policy shall include an endorsement which includes the following as additional insured’s:
    - a. The “Engineer”  
Hubbell, Roth & Clark, Inc.  
Their owners, directors, officers, consultants, agents, and employees

1.6 Builder's Risk-Installation Floater

- A. The Contractor shall purchase a Builder's Risk-Installation Floater in a form acceptable to the Owner covering property of the project for the full cost of replacement as of the time of any loss which shall include, as named insured, (a) the Contractor, (b) all Subcontractors, (c) all

Sub-Subcontractors, (d) the Owner, and the Engineer, as their respective interests may prove to be at the time of loss, covering insurable property which is the subject of this contract, whether in place, stored at the job site, stored elsewhere, or in transit at the risk of the insured(s).

- B. Coverage shall be effected on an "All Risk" form including, but not limited to, the Perils of fire, wind, flood, vandalism, collapse, theft and earthquake, with exclusions normal to the cover.
- C. The Contractor may arrange for such deductibles as he deems to be within his ability to self-assume, but he will be held solely responsible for the amount of such deductible and for any coinsurance penalties.
- D. Any insured loss shall be adjusted with the Owner and the Contractor and paid to the Owner and Contractor as trustee for the other insured.
- E. Additional Insured Requirements:
  - 1. Coverage shall be Primary and Non-contributory
  - 2. The policy shall include an endorsement which includes the following as additional insured's:
    - a. Saginaw County Public Works Commissioner, Saginaw County Road Commission, Fremont Township, Swan Creek Township, their counsel, members, Board members, public officials, consultants, agents, and employees
    - b. The "Engineer"  
Hubbell, Roth & Clark, Inc.  
Their owners, directors, officers, consultants, agents, and employees

1.7 Umbrella or Excess Liability

- A. The Contractor is granted the option of arranging coverage under a single policy for the full limit required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy equal to the total limit(s) requested.
- B. Umbrella or Excess policy wording shall be at least as broad as the primary or underlying policy(ies) and shall apply both to the Contractor's general liability and to his automobile liability insurance.
- C. Additional Insured Requirements:
  - 1. Coverage shall be Primary and Non-contributory
  - 2. The policy shall include an endorsement which includes the following as additional insured's:
    - a. Saginaw County Public Works Commissioner, Saginaw County Road Commission, Fremont Township, Swan Creek Township, their counsel, members, Board members, public officials, consultants, agents, and employees
    - b. The "Engineer"  
Hubbell, Roth & Clark, Inc.  
Their owners, directors, officers, consultants, agents, and employees

y  
:  
\  
2  
0  
1  
6  
0  
3  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
0  
8  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
2  
8  
:  
1  
2  
P  
M

1.8 Railroad Protective Liability

- A. Where such an exposure exists, as determined by the Owner, the Contractor will provide coverage in the name of each railroad company having jurisdiction over rights-of-way across which work under the contract is to be performed.
- B. Additional Insured Requirements:
  - 1. Coverage shall be Primary and Non-contributory
  - 2. The policy shall include an endorsement which includes the following as additional insured's:
    - a. Saginaw County Public Works Commissioner, Saginaw County Road Commission, Fremont Township, Swan Creek Township, their counsel, members, Board members, public officials, consultants, agents, and employees
    - b. The "Engineer"  
Hubbell, Roth & Clark, Inc.  
Their owners, directors, officers, consultants, agents, and employees

1.9 Limits of Liability

- A. The required limits of liability for insurance coverage shall be **not less than** the following:
  - 1. Workers' Compensation  
Coverage A - Compensation ..... Statutory  
Coverage B - Employer's Liability ..... \$500,000
  - 2. Comprehensive General Liability  
Bodily Injury and Property Damage ..... \$1,000,000      Each Occurrence  
Combined Single Limit ..... \$2,000,000      Per Job Aggregate  
..... \$1,000,000      Completed Operations Aggregate
  - 3. Comprehensive Automobile Liability  
Bodily Injury and Property Damage ..... \$1,000,000      Each Accident  
Combined Single Limit
  - 4. Owner's Protective  
Bodily Injury and Property Damage ..... \$1,000,000      Per Occurrence  
Combined Single Limit ..... \$1,000,000      Aggregate
  - 5. Builder's Risk & Installation Floater      Cost to replace at time of loss
  - 6. Umbrella or Excess Liability      \$2,000,000      Per Occurrence  
..... \$2,000,000      Aggregate
  - 7. Insurance - Other Requirements
    - a. Notice of Cancellation or Intent Not to Renew: Policies will be endorsed to provide that at least 30 days written notice shall be given to the Owner and to the Engineer, of cancellation of, material change, or intent not to renew (see sample endorsements which follow this Section).

1.10 Evidence of Coverage

- A. Prior to commencement of the work, the Contractor shall furnish to the Owner, Certificates of Insurance in force on the Owner's Form of Certificate provided.
- B. Other forms of Certificate are acceptable only if (1) they include all of the items prescribed in the Owner's Form of Certificate, including agreement to cancellation provisions outlined

herein, (2) the Engineer's Project Identification Number, and (3) they have written approval of the Owner and the Engineer.

- C. The Owner reserves the right to request complete copies of policies if deemed necessary to ascertain details of coverage not provided by certificates.
- D. Such policy copies shall be "Originally Signed Copies," and so designated.
  - 1. Insurance Required for the Contractor
    - a. Workers' Compensation and Employers' Liability
    - b. Comprehensive General Liability-including:
      - 1) All premises and operations.
      - 2) Explosion, collapse and underground damage.
      - 3) Contractor's Protective.
      - 4) Contractual Liability for obligations assumed in the Indemnification-Hold Harmless Agreement of this Contract.
      - 5) Personal Injury Liability.
      - 6) Products and Completed Operations
    - c. Comprehensive Automobile Liability - including owned, non-owned and hired vehicles and Michigan "No Fault" coverage.
    - d. Umbrella or Excess Liability.
    - e. Builders Risk Installation Floater
    - f. Railroad Protective Liability
  - 2. Insurance Required for the Owner
    - a. Owners' and Contractor's Protective Liability Policy which names as additionally insured the Engineer, their consultants, agents, employees and such public corporations in whose jurisdiction the work is located.
    - b. Refer to sample endorsements which follow this Section.

1.11 Qualification of Insurers

- A. In order to determine financial strength and reputation of insurance carriers, all companies providing the coverages required shall be licensed or approved by the Insurance Bureau of the State of Michigan and shall have a financial rating no lower than XI and a policyholder's service rating no lower than A as listed in A. M. Best's Key Rating Guide, current edition.
- B. Companies with ratings lower than A;XI will be acceptable only upon written consent of the Owner.

1.12 Contract Security

- A. If the Owner is a public entity, the Contractor shall furnish a surety bond (form attached) in an amount at least equal to 100 percent of the contract price as security for the faithful performance of this contract. The Contractor shall furnish, also, a separate surety bond (form attached) in an amount at least equal to 100 percent of the contract price as security for the payment of all persons performing labor on the project under this contract, and furnishing materials in connection with this contract. The surety on each such bond shall be a duly authorized surety company satisfactory to the Owner.

- B. Regardless of whether the Owner is or is not a public entity, the Contractor shall furnish a Maintenance and Guarantee Bond (form attached) covering all work under this contract. The guarantee is to cover a period of one year subsequent to the date of the final estimate, unless otherwise specified.
- C. Surety Companies providing and executing Surety and Guarantee Bonds shall appear on the United States Treasury Departments most current list, Circular 570, as holding certificates of authority as acceptable sureties on federal bonds. The penal sum of such bonds shall not exceed the company's limitation as stated therein. A surety company shall be licensed in the State in which it provides a bond and in the State where the contract work is to be performed.

1.13 Indemnification

- A. The contractor agrees to indemnify, defend, and save harmless the Owner and the Engineer, their consultants, agents, and employees, from and against all loss or expense (including costs and attorney's fees) by reason of liability imposed by law upon the Owner and the Engineer, their consultants, agents, and employees for damages because of bodily injury, including death at any time resulting there from, sustained by any person or persons or on account of damage to property, including loss of use thereof, arising out of or in consequence of the performance of this work, whether such injuries to persons or damage to property is due, or claimed to be due, to the negligence of the contractor, his subcontractors, the Owner, the Engineer, and their consultants, agents, and employees, **except** only such injury or damage as shall have been occasioned by the sole negligence of the Owner, the Engineer, or their agents, employees or consultants.
- B. The Contractor also agrees to indemnify, defend and save harmless the Owner and the Engineer, their owners, directors, Board members, officers, directors, officials, and council members, consultants, agents and employees, from and against any and all loss or expense (including costs and attorney's fees) for any and all claims or allegations of supervision, inspection or observation activities or services which may arise out of, or in consequence of, the performance of this work.

PART 2 PART 2 – NOT USED

PART 3 PART 3 – NOT USED

END OF SECTION

y  
:  
\  
2  
0  
1  
6  
0  
3  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
0  
0  
8  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
2  
8  
:  
1  
2  
  
P  
M

Client#: 7782

PAVCOR

**ACORD™ CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY)  
 04/02/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER <b>Insurance Agency</b> 24724 Any Street (248) 666-6666 P.O. Box 2067 SomeCity, MI 48037-2067		CONTACT NAME: <b>Insurance Agent name</b> PHONE (A/C, No, Ext): <b>248 555-5555</b> FAX (A/C, No): <b>248 111-1111</b> E-MAIL ADDRESS: <b>InsuranceAgent@InsuranceGroup.com</b> PRODUCER CUSTOMER ID #:	
INSURED <b>Company ABC</b> 2654 Street Name AnyCity, MI 48183		INSURER(S) AFFORDING COVERAGE INSURER A: <b>Insurance Company 1</b> INSURER B: <b>Insurance Company 2</b> INSURER C: INSURER D: INSURER E: INSURER F:	

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> X,C,U <input checked="" type="checkbox"/> Contractual GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC	X	X	MPA00000042433S	11/17/2014	11/17/2015	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$100,000 MED EXP (Any one person) \$5,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMPIOP AGG \$2,000,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS <input checked="" type="checkbox"/> Drive Other Car	X	X	BA00000042434S	11/17/2014	11/17/2015	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DEDUCTIBLE RETENTION \$	X	X	CMB00000042435S	11/17/2014	11/17/2015	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000 \$ \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			WC0001100555	05/01/2014	04/30/2015	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$500,000 E.L. DISEASE - EA EMPLOYEE \$500,000 E.L. DISEASE - POLICY LIMIT \$500,000
A	Installation Floater	X		MPA00000042433S	11/17/2014	11/17/2015	\$150,000 \$1,000 deductible

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)  
 Municipality Name, their counsel, members, board members, public officials, consultants, agents and  
 (See Attached Endorsements evidencing the change of policy)

CERTIFICATE HOLDER Municipality Name 18500 Street Name AnyCity, MI 48025	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <b>SIGNATURE</b>
---	---

y  
:  
\ 2  
0 1  
6 0  
3  
\ 2  
0 1  
6 0  
3 3  
1  
\ 0  
4  
- d  
e  
s  
i  
g  
n  
\ s  
p  
e  
c  
s  
\ 0  
0  
8  
0  
0  
- g  
e  
n  
e  
r  
a  
l  
- s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
- c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
2  
:  
1  
2  
  
P  
M

**DESCRIPTIONS (Continued from Page 1)**

employees, as well as the engineer; Hubbell Roth & Clark, their owners, directors, officers, consultants, agents, and employees are included as Additional Insured per written contract with respect to the general, auto and umbrella liability coverages for the work performed by the named insured for the certificate holder. Insurance is considered primary and non contributing and a waiver of subrogation applies. Should any of the above described policies be cancelled before the expiration date thereof, the issuing Company will mail 30 days prior written notice to the Certificate holder. Endorsements evidencing the change of Policy are attached.

Example only

POLICY NUMBER: TRA 4820287

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.**

**EARLIER NOTICE OF CANCELLATION  
PROVIDED BY US**

This endorsement modifies insurance provided under the following:

- BUSINESS AUTO COVERAGE PART
- CRIME AND FIDELITY COVERAGE PART
- EQUIPMENT BREAKDOWN COVERAGE PART
- FARM COVERAGE PART
- COMMERCIAL PROPERTY COVERAGE PART
- COMMERCIAL INLAND MARINE COVERAGE PART
- COMMERCIAL LIABILITY UMBRELLA COVERAGE PART
- OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART
- COMMERCIAL GENERAL LIABILITY COVERAGE PART
- LIQUOR LIABILITY COVERAGE PART
- PROFESSIONAL LIABILITY COVERAGE

**SCHEDULE**

Number of Days' Notice 30

<u>Name Of Additional Insured Person(s) Or Organization(s)</u>	<u>Location(s) Of Covered Operations</u>

(If no entry appears above, information required to complete this Schedule will be shown in the Declarations as applicable to this endorsement.)

For any statutorily permitted reason other than nonpayment of premium, the number of days required for notice of cancellation, as provided in paragraph 2. of either the CANCELLATION Common Policy Condition or as amended by an applicable state cancellation endorsement, is increased to the number of days shown in the Schedule above.

y  
:  
\ 2  
0 1  
6 0  
3 3  
\ 2  
0 1  
6 0  
3 3  
3 1  
\ 0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\ 0  
0  
8  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
2  
8  
:  
1  
2  
P  
M

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY  
CG 20 37 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

### ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART  
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

#### SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)	Location And Description Of Completed Operations
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

**A. Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

**B.** With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

COMMERCIAL GENERAL LIABILITY  
CG 20 33 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR  
CONTRACTORS – AUTOMATIC STATUS WHEN  
REQUIRED IN CONSTRUCTION AGREEMENT WITH YOU**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

**A. Section II – Who Is An Insured** is amended to include as an additional insured any person or organization for whom you are performing operations when you and such person or organization have agreed in writing in a contract or agreement that such person or organization be added as an additional insured on your policy. Such person or organization is an additional insured only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured.

However, the insurance afforded to such additional insured:

1. Only applies to the extent permitted by law; and
2. Will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

A person's or organization's status as an additional insured under this endorsement ends when your operations for that additional insured are completed.

**B.** With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to:

1. "Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or the failure to render, any professional architectural, engineering or surveying services, including:
  - a. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or
  - b. Supervisory, inspection, architectural or engineering activities.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage", or the offense which caused the "personal and advertising injury", involved the rendering of or the failure to render any professional architectural, engineering or surveying services.

Y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4  
D e s i g n \ S p e c s \ 0 0 8 0 0  
G e n e r a l - S u p p l i e m e n t a r y - C o n d i t i o n s . d o c  
1 1 / 1 1 / 1 6  
2 : 2 8 : 1 2  
P M

y  
:  
\ 2  
0 1  
6 0  
3 3  
\ 2  
0 1  
6 0  
3 3  
3 1  
\ 0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\ 0  
8  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
2  
:  
8  
:  
1  
2  
  
P  
M

2. "Bodily injury" or "property damage" occurring after:
- a. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
  - b. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

- C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

The most we will pay on behalf of the additional insured is the amount of insurance:

- 1. Required by the contract or agreement you have entered into with the additional insured; or
  - 2. Available under the applicable Limits of Insurance shown in the Declarations;
- whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

Example only

Y :  
 \ 2  
 0 1  
 6 0  
 3  
 \ 2  
 0 1  
 6 0  
 3 3  
 1  
 \ 0  
 4  
 - D  
 e s i g n  
 \ S  
 p e c s  
 \ 0  
 0 8  
 0 0  
 - G  
 e n e r a l  
 - S  
 u p p l e m e n t a r y  
 - C  
 o n d i t i o n s  
 . d  
 o c  
 x 1  
 / 1  
 / 1  
 / 1  
 / 1  
 / 1  
 2  
 :  
 2  
 8  
 :  
 1  
 2  
 P  
 M

SPREXC

<b>ACORD™ INSURANCE BINDER</b>		DATE 06/18/14	
THIS BINDER IS A TEMPORARY INSURANCE CONTRACT, SUBJECT TO THE CONDITIONS SHOWN ON THE REVERSE SIDE OF THIS FORM.			
PRODUCER	PHONE (A/C, No, Ext): 248-555-5555 FAX (A/C, No): 248-333-3333	COMPANY Selective Insurance Company of Amer	BINDER # BINDER83730
Insurance Company Name Any Street City, State Zip		EFFECTIVE DATE 06/18/14	EXPIRATION DATE 08/18/14
CODE: 38-3112729 AGENCY CUSTOMER ID: 7430		TIME 12:01	TIME 12:01 AM NOON
INSURED Owner's Name Any Street SomeCity, MI 48001		THIS BINDER IS ISSUED TO EXTEND COVERAGE IN THE ABOVE NAMED COMPANY PER EXPIRING POLICY #:	
SUB CODE:		DESCRIPTION OF OPERATIONS/VEHICLES/PROPERTY (Including Location) Project Description	

COVERAGES	LIMITS			
TYPE OF INSURANCE	COVERAGE/FORMS	DEDUCTIBLE	COINS %	AMOUNT
PROPERTY CAUSES OF LOSS <input type="checkbox"/> BASIC <input type="checkbox"/> BROAD <input type="checkbox"/> SPEC				
GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> OCP	Owners & Contractors Protective Liability RETRO DATE FOR CLAIMS MADE:	EACH OCCURRENCE DAMAGE TO RENTED PREMISES MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE		\$ 1,000,000 \$ \$ \$ \$ 1,000,000
AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS		PRODUCTS - COMP/OP AGG COMBINED SINGLE LIMIT BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE MEDICAL PAYMENTS PERSONAL INJURY PROT UNINSURED MOTORIST		\$ \$ \$ \$ \$ \$ \$ \$
AUTO PHYSICAL DAMAGE DEDUCTIBLE <input type="checkbox"/> COLLISION: <input type="checkbox"/> OTHER THAN COL:	<input type="checkbox"/> ALL VEHICLES <input type="checkbox"/> SCHEDULED VEHICLES	ACTUAL CASH VALUE STATED AMOUNT OTHER		\$ \$ \$
GARAGE LIABILITY <input type="checkbox"/> ANY AUTO		AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EACH ACCIDENT AGGREGATE		\$ \$ \$ \$
EXCESS LIABILITY <input type="checkbox"/> UMBRELLA FORM <input type="checkbox"/> OTHER THAN UMBRELLA FORM	RETRO DATE FOR CLAIMS MADE:	EACH OCCURRENCE AGGREGATE SELF-INSURED RETENTION WC STATUTORY LIMITS		\$ \$ \$ \$
WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY		E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT		\$ \$ \$
SPECIAL CONDITIONS/OTHER COVERAGES	Named Insured to include: <b>Owners Name</b> & the Engineer, their (See attached Spec Conditions/Other Covs page.)	FEES TAXES ESTIMATED TOTAL PREMIUM		\$ \$ \$

NAME & ADDRESS  <b>Contractors Name</b> <b>SomeStreet</b> <b>AnyCity State Zip</b>	MORTGAGEE	ADDITIONAL INSURED
	LOSS PAYEE	<input checked="" type="checkbox"/> Contractor
LOAN #		
AUTHORIZED REPRESENTATIVE <i>Michael G. Lewis</i>		

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
0  
0  
8  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
c  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
2  
:  
8  
:  
1  
2  
  
P  
M

### CONDITIONS

This Company binds the kind(s) of insurance stipulated on the reverse side. The Insurance is subject to the terms, conditions and limitations of the policy(ies) in current use by the Company.

This binder may be cancelled by the Insured by surrender of this binder or by written notice to the Company stating when cancellation will be effective. This binder may be cancelled by the Company by notice to the Insured in accordance with the policy conditions. This binder is cancelled when replaced by a policy. If this binder is not replaced by a policy, the Company is entitled to charge a premium for the binder according to the Rules and Rates in use by the Company.

#### Applicable in California

When this form is used to provide insurance in the amount of one million dollars (\$1,000,000) or more, the title of the form is changed from "Insurance Binder" to "Cover Note".

#### Applicable in Delaware

The mortgagee or Obligee of any mortgage or other instrument given for the purpose of creating a lien on real property shall accept as evidence of insurance a written binder issued by an authorized insurer or its agent if the binder includes or is accompanied by: the name and address of the borrower; the name and address of the lender as loss payee; a description of the insured real property; a provision that the binder may not be canceled within the term of the binder unless the lender and the insured borrower receive written notice of the cancellation at least ten (10) days prior to the cancellation; except in the case of a renewal of a policy subsequent to the closing of the loan, a paid receipt of the full amount of the applicable premium, and the amount of insurance coverage.

Chapter 21 Title 25 Paragraph 2119

#### Applicable in Florida

Except for Auto Insurance coverage, no notice of cancellation or nonrenewal of a binder is required unless the duration of the binder exceeds 60 days. For auto insurance, the insurer must give 5 days prior notice, unless the binder is replaced by a policy or another binder in the same company.

#### Applicable in Nevada

Any person who refuses to accept a binder which provides coverage of less than \$1,000,000.00 when proof is required: (A) Shall be fined not more than \$500.00, and (B) is liable to the party presenting the binder as proof of insurance for actual damages sustained therefrom.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
D  
e  
s  
i  
g  
n  
\  
S  
p  
e  
c  
s  
\  
0  
0  
8  
0  
0  
-  
G  
e  
n  
e  
r  
a  
l  
-  
S  
u  
p  
p  
l  
e  
m  
e  
n  
t  
a  
r  
y  
-  
C  
o  
n  
d  
i  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
2  
8  
:  
1  
2  
  
P  
M

**SPECIAL CONDITIONS/OTHER COVERAGES (Cont. from page 1)**

consultants, agents, employees,  
& such public corporations in whose jurisdiction the work is located.

\*\* Continued From Additional Interests Section \*\*

Hubbell, Roth & Clark, Inc.  
555 Hulet Drive; P.O. Box 824  
Bloomfield Hills, MI 48303-0824  
Type: Additional Insured

Example only

y  
:  
\ 2  
0 1  
6 0  
3  
\ 2  
0 1  
6 0  
3 3  
1  
\ 0  
4  
- d  
e s  
i g  
n  
\ s  
p e  
c s  
\ 0  
8 0  
0  
- g  
e n  
e r  
a l  
- s  
u p  
p l  
e m  
e n  
t a  
r y  
- c  
o n  
d i  
t i  
o n  
s  
.  
d o  
c x  
  
1  
/  
1  
/  
1  
/  
1  
6  
  
2  
:  
2  
8  
:  
1  
2  
  
P  
M

COMMERCIAL GENERAL LIABILITY  
CG 20 31 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – ENGINEERS,  
ARCHITECTS OR SURVEYORS**

This endorsement modifies insurance provided under the following:

OWNERS AND CONTRACTORS PROTECTIVE LIABILITY COVERAGE PART

A. **Section II – Who Is An Insured** is amended to include as an additional insured any architect, engineer or surveyor engaged by you, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by your acts or omissions or the acts or omissions of those acting on your behalf:

1. In connection with your premises; or
2. In the performance of your ongoing operations.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusion applies:

This insurance does not apply to "bodily injury" or "property damage" arising out of the rendering of or the failure to render any professional services by or for you, including:

1. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

2. Supervisory, inspection, architectural or engineering activities.

This exclusion applies even if the claims against any insured allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that insured, if the "occurrence" which caused the "bodily injury" or "property damage" involved the rendering of or the failure to render any professional services by or for you.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance**:

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

**LANDOWNER AGREEMENT FORM**

**Project Name:** KING STREET TILE DRAIN

**Date:**

**Contractor's Name:**

**Address:**

**Landowner's Name:**

**Address:**

**Agreement:**

**CONTRACTOR**

**LANDOWNER**

By:  
(Authorized Signature)

By:  
(Authorized Signature)

Date:

Date:

\*Renters cannot authorize.

\*Landowner agreeing to take spoils must level or remove spoils prior to final completion of project.



**CERTIFICATE OF SUBSTANTIAL COMPLETION**

---

PROJECT: King Street Tile Drain

DATE OF ISSUANCE \_\_\_\_\_

---

OWNER: Saginaw County Public Works Commissioner

OWNER's Contract No.:

CONTRACTOR:

PROFESSIONAL: Hubbell, Roth & Clark, Inc.

---

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

TO: SAGINAW COUNTY PUBLIC WORKS COMMISSIONER  
OWNER

And To  
CONTRACTOR

---

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and PROFESSIONAL, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within \_\_\_\_\_ days of the above date of Substantial Completion.

From the date of Substantial Completion the responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees shall be as follows:

**RESPONSIBILITIES:**

OWNER: SAGINAW COUNTY PUBLIC WORKS COMMISSIONER

CONTRACTOR:

---

The following documents are attached to and made a part of this Certificate:

[For items to be attached see definition of Substantial Completion as supplemented and other specifically noted conditions precedent to achieving Substantial Completion as required by Contract Documents.]

---

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

---

Executed by PROFESSIONAL on \_\_\_\_\_, 2016

PROFESSIONAL

By: \_\_\_\_\_  
(Authorized Signature)

CONTRACTOR accepts this Certificate of Substantial Completion on \_\_\_\_\_, 2015

CONTRACTOR

By: \_\_\_\_\_  
(Authorized Signature)

OWNER accepts this Certificate of Substantial Completion on \_\_\_\_\_, 2015

OWNER

By: \_\_\_\_\_  
(Authorized Signature)

SECTION 01000

GENERAL SPECIFICATIONS

1.1 WORKING SPACE..... 2

1.2 WORK WITHIN PUBLIC STREETS OR LAND..... 2

1.3 EASEMENTS..... 2

1.4 LOCATING WORK..... 2

1.5 SOIL CONDITIONS ..... 2

1.6 SURVEY MONUMENTS..... 3

1.7 TRENCH BACKFILL..... 3

1.8 MAINTENANCE AND RESTORATION OF PAVEMENTS, ROAD  
SURFACES, STRUCTURES AND TRENCH BACKFILL ..... 4

1.9 ROAD PERMITS ..... 5

1.10 ROAD DETOURS..... 5

1.11 PROTECTION OF THE PUBLIC ..... 5

1.12 BARRICADES AND PROTECTION..... 5

1.13 MAINTENANCE OF TRAFFIC ..... 5

1.14 PRESERVATION OF TREES ..... 6

1.15 REPLACEMENT OF SHRUBBERY ..... 6

1.16 SODDING ..... 7

1.17 FINAL CLEANUP, GRADING, TOP SOIL AND SEEDING..... 7

1.18 EXISTING STRUCTURES AND UTILITIES ..... 8

1.19 PUBLIC AND PRIVATE UTILITIES..... 8

1.20 PUMPING, BAILING AND DRAINING..... 9

1.21 SHEETING, SHORING AND BRACING ..... 9

1.22 DISPOSAL OF EXCAVATED MATERIAL ..... 9

1.23 DISPOSAL OF WASTE MATERIALS..... 9

1.24 TUNNELING ..... 10

1.25 COMPRESSED AIR ..... 10

1.26 EXPLOSIVES ..... 10

1.27 INSPECTION OF PREMISES ..... 10

1.28 SCHEDULE OF OPERATIONS ..... 10

1.29 ORDINANCES AND CODES ..... 10

1.30 REQUIREMENTS PERTAINING TO WORK WITHIN RAILROAD  
RIGHTS-OF-WAY..... 11

1.31 TRAFFIC CONTROL ..... 11

1.32 DUST CONTROL ..... 11

1.33 INCONVENIENCES ..... 11

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 \_ d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 \_ c o m b i n e d \_ p d f \ 0 1 0 0 0 \_ g e n e r a l \_ s p e c i f i c a t i o n s . d o c x 1 1 / 1 1 / 1 6 2 : 4 9 : 1 7 P M

y  
:  
\  
2  
0  
1  
6  
0  
3  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
/  
1  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

1.1 WORKING SPACE

- A. The contractor shall interfere as little as possible with traffic and in all cases shall confine the work operations to the minimum space possible.
- B. Stockpiling of construction material and equipment will be permitted as necessary, but in no case shall traveled roadways, driveways, or entrances be unduly obstructed.
- C. Should storage areas be desired on private property, the Contractor may obtain such space on privately owned property at his own expense, by agreement with the property owner thereof. The Contractor shall provide the Owner with a copy of the written permission from the private property owner prior to occupying the property.

1.2 WORK WITHIN PUBLIC STREETS OR LAND

- A. Where the centerline of the proposed improvement is within the public street or land, the contractor shall confine his operations to within the public street or land unless easements have been acquired (See "Easements"). It shall be the contractor's responsibility to use such methods and/or materials, including sheeting, so as to prevent any portion of the excavation from encroaching on private property. This shall not preclude the contractor from obtaining the right to encroach on private land in accord with the foregoing article "Working Space." All signing and barricading shall be done in accordance with current edition of the Michigan Manual of Uniform Traffic Control Devices (M.M.U.T.C.D.) as issued by the Michigan Department of Transportation.

1.3 EASEMENTS

- A. In certain instances the owner may have acquired certain permanent easements and construction easements for the contractor's use in constructing the work. The contractor shall confine work operations to these easements except as noted under the foregoing article "Working Space."

1.4 LOCATING WORK

- A. The contractor shall accurately locate the work from reference points established by the Owner along the surface of the ground and the line of work. For sewers, "cut sheets" will be furnished by the Owner. Reference points shall be protected and preserved by the contractor.

1.5 SOIL CONDITIONS

- A. The contractor, as such and as bidder, shall make his own determination as to soil and/or rock conditions and shall complete the work in whatever material and under whatever conditions may be encountered or created, without extra cost to the owner. This shall apply whether or not borings are shown on the drawings.
- B. The owner does not guarantee that the ground encountered during construction will conform with any boring information furnished herein.

- C. The Owner and Engineer may have been involved in the design, construction observation, and/or construction of other underground projects in the area of the proposed construction. The observation field reports, soil reports, and any soil information connected with these projects are available for review by the prospective bidders.

1.6 SURVEY MONUMENTS

- A. Monuments or other recognized property boundary markers at street intersections, section corners, acreage or lot corners, and right-of-way lines shall be preserved and protected. Where such monuments or markers must be removed during construction, the Owner shall be notified and the Contractor shall make all necessary arrangements with a land surveyor registered in the State of Michigan to have these monuments or markers properly witnessed prior to disturbance or removal and later reset by the registered land surveyor at no cost to the Owner.

1.7 TRENCH BACKFILL

- A. The Contractor, as such and as bidder, shall carefully review the contract drawings and specifications and shall determine the extent of the "Special Backfill" requirements. The cost of providing for and meeting the requirements for Special Backfill shall be included in the unit price of the work as bid at no extra cost to the Owner.
- B. Special backfill shall be used at all locations and of the type called for on the drawings, and at other locations specified herein whether called for on the drawings or not.
- C. The type and method of backfilling is dependent on its locations and function and shall conform with the following requirements. The owner will supply field observation on the special backfill compaction requirements.
- D. Backfilling of trenches in the shoulder area and under private gravel drives shall be carried to within 6 inches of the existing surface as specified under Trench A or Trench B as required. The shoulder shall be defined herein as the area within ten feet of the pavement edge, or the width of the existing graveled shoulder, whichever is the lesser. The remaining depth shall be backfilled with 6 inches of compacted 21AA aggregate. Backfilling of trenches crossing gravel roads or streets shall be carried to within 8 inches of the existing surface and the remaining depth shall be backfilled with 8 inches of compacted 21AA limestone aggregate. Compaction shall be performed by a pneumatic-tired roller or a vibratory compactor until the compaction requirements as required for Trench A or Trench B and as detailed in the following paragraphs are met.
- E. The requirements as specified herein are in addition to the conditions provided for under permit granted by the Board of County Road Commissioners of the County or the Michigan Department of Transportation.
- F. Trench A
  - 1. All trenches under graveled, slag or hard surfaced roads, pavements, hard surfaced parking lots and driveways, sidewalks, curbs and where the trench edge is within 3 feet of a pavement shall be backfilled with bank run sand meeting the requirements of Granular Material, MDOT Class II. The material shall be placed by the Controlled Density Method or other effective means having the approval of the Engineer and is to

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
/  
1  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

be compacted to 95 percent of maximum unit weight as determined by ASTM D-1557 Modified Proctor. Trenches under pavement to be constructed in the near future, as noted or shown on the drawings, shall be backfilled with MDOT Class II Granular Material, meeting the requirements of Table 902-3 Grading Requirements for Granular Materials 1996 in the MDOT 1996 Standard Specifications for Construction.

G. Trench B

1. Trench B shall be used where called for on the drawings and where the trench crosses slag or gravel drives, shoulders, or parking lots whether called for on the drawings or not.

H. All trenches shall be backfilled with granular material, MDOT Class II to a point 12 inches above the pipe for diameters less than 24 inches and up to the spring line with materials meeting the requirements of the 1996 MDOT Table 902-2, Class 34R for diameters 24 inches or larger. This portion of the backfill is to be placed in layers not exceeding 6 inches in depth, and shall be thoroughly compacted by mechanical tamping to not less than 95% of maximum unit weight utilizing ASTM D-1557 Modified Proctor. The remainder of the backfill shall be made with suitable excavated material (excluding blue and gray clays, peat, muck, marl or other organic materials) placed in one foot layers with each layer being thoroughly compacted by approved mechanical methods, or other effective means having the approval of the Engineer, to a density of 90% of maximum unit weight utilizing ASTM D-1557 Modified Proctor.

1.8 MAINTENANCE AND RESTORATION OF PAVEMENTS, ROAD SURFACES, STRUCTURES AND TRENCH BACKFILL

A. Where trenches cross existing improved roadways or drives or where the trench parallels an existing improved roadway which is disturbed by the contractor's operations, the contractor shall consolidate the trench backfill and shall place a temporary gravel fill, meeting 21AA Aggregate Gradation or (County Road Specifications) at least 8" thick; and shall, during the life of the contract, maintain the same in good condition with additional gravel as settling takes place. All structures, including curbing, walks, paving, gravel, or street road surfaces, etc., that may be damaged or destroyed by the contractor's operations, shall be repaired and replaced by him at his own expense. In restoring pavement, a saw shall be used and a cut equal to at least 3/4 of the thickness of the existing pavement shall be made on each side of the part to be restored, with the exception of expansion joints that shall be saw cut the full depth of the pavement. Concrete shall be 3500 psi, using six (6) sacks of cement per cubic yard of concrete, unless otherwise required.

B. If the pavement removed had an asphaltic concrete surface, the surface shall be removed to a distance one foot beyond the limits of the removed concrete pavement. The butt joint in asphaltic concrete removal shall be prepared by sawing through the total depth of asphaltic concrete. The surface shall be replaced with a nominal two inches of MDOT bituminous surface mixture as required by the Owner and meeting the requirements of the Michigan Department of Transportation as to materials and method of replacement at no extra cost to the Owner.

C. Trenches shall be backfilled to the requirement of "Trench A" or "Trench B" specifications as described in this section and as specified on plans and profiles. After completion of backfill,

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

the work area shall be restored as noted under "Final Cleanup - Grading, Topsoil, and Seeding and/or Sodding".

1.9 ROAD PERMITS

- A. The contractor shall obtain any necessary construction permits required of contractors for work within public streets, highways, roads, or alleys. The cost of construction permits, including, but not limited to, inspection fees, application fees, and/or review fees that may be required in connection with such permits, shall be at the Contractor's expense. Construction operations shall be conducted in accordance with provisions of such permits, including tunneling of pavements where required. The cost of any required bonds shall be included in the cost of the work as bid.

1.10 ROAD DETOURS

- A. The contractor shall provide and maintain all temporary roadways as required for work operations or as required under "Road Permits" or otherwise specified or shown on the drawings at no extra cost to the Owner.

1.11 PROTECTION OF THE PUBLIC

- A. The contractor shall provide sufficient barricades, guard railings, fencing, advance construction signing, coverings or other means to protect the public from injury due to the work operations, including completed or uncompleted work, at all times until acceptance of the work by the Owner at no extra cost to the Owner.

1.12 BARRICADES AND PROTECTION

- A. The contractor shall provide and maintain in good repair, all barricades, guard railings, etc., as required for the protection of the workers, the Owner's employees and employees of Owner's agent in strict compliance with state and local requirements.
- B. At dangerous points throughout the work, the contractor shall provide and maintain guard rails, colored lights, and flags. All possible precautions shall be taken to protect the workers from injury at no extra cost to the Owner.

1.13 MAINTENANCE OF TRAFFIC

- A. During the progress of the work, the contractor shall accommodate both vehicular and pedestrian traffic as provided in these specifications and as indicated on the drawings. In the absence of specific requirements, traffic shall be maintained in accordance with the current edition of the Michigan Manual of Uniform Traffic Control Devices. Access to fire hydrants and water valves shall always be maintained. The contractor's truck and equipment operations on public streets shall be governed by County regulations, all local traffic ordinances, and regulations of the Fire and Police Department.
- B. Small street openings necessary for manholes, alignment holes, sewer connections, etc. will be permitted. Such holes shall not be open longer than necessary and shall be protected and any traffic detouring necessary shall be done to the satisfaction of the Owner. Wherever possible,

Y  
:  
2  
0  
1  
6  
0  
3  
3  
2  
0  
1  
6  
0  
3  
3  
1  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
/  
1  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

small openings shall be covered with steel plates at pavement level secured in place during periods that work is not being performed at no extra cost to the Owner.

- C. Where streets are partially obstructed, the contractor shall place and maintain temporary driveways, ramps, bridges and crossings which in the opinion of the Owner are necessary to accommodate the public at no extra cost to the Owner. In the event of the contractor's failure to comply with the foregoing provisions, the Owner may, with or without notice, cause the same to be done and deduct the cost of such work from any monies due or to become due the contractor under this contract. However, the performance of such work by the Owner, or at his insistence, shall serve in no way to release the contractor from his liability for the safety of the traveling public.
- D. The contractor shall provide flagmen, warning lights, signs, fencing and barricades necessary to direct and protect vehicular and pedestrian traffic at no extra cost to the Owner.
- E. The contractor shall inform the local fire department in advance of work operations of street obstructions and detours, so that the fire department can set up plans for servicing the area in case of an emergency. The governing police department and the owner shall be notified at least one week prior to obstructing any street.

1.14 PRESERVATION OF TREES

- A. The contractor shall protect and preserve all trees along the line of work, and will be held responsible for any damage to trees. Where necessary to preserve a tree and its main roots, the contractor shall tunnel under such tree. Where specifically called for on the drawings, the contractor shall remove trees completely, including stumps and main roots.
- B. Where tunneling is not required for trees close to the trench and root trimming is necessary, the contractor shall hand trench ahead of the machine digging and cut all roots cleanly to minimize damage to the roots.
- C. Tree branches shall be tied back to protect them from the contractor's machinery.
- D. When a tree is removed by the contractor for his convenience and with the permission of the Owner and the adjacent property owner (where required), the contractor shall furnish one three (3) inch dia. tree for every six (6) inches of diameter of the tree removed. The species shall be as directed by the Owner. All trees installed shall be guaranteed to grow for a period of one (1) year.
- E. The contractor will receive no extra compensation for preservation of trees or for their removal and replacement where called for, and the cost of all work involved shall be included in the unit price bid or at no extra cost to the owner.

1.15 REPLACEMENT OF SHRUBBERY

- A. The contractor shall protect and/or replace all shrubbery damaged or destroyed by operations under this contract at no extra cost to the owner.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
/  
1  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

1.16 SODDING

- A. Where called for in the specifications, or on the drawings, the contractor shall furnish all labor and material and place Grade A sod to the finished grade shown or to conform with existing grades and provide a smooth and uniform surface to meet existing ground surface.
- B. Sod shall be densely rooted blue grass or other approved perennial grasses, free from noxious weeds and reasonably free from other weeds. Sod shall be not less than 2 inches thick, cut in strips not less than 10 inches wide by 18 inches long. The type of grass shall match the adjacent lawn.
- C. The area to be sodded shall be made smooth and shall be covered with not less than 2 inches of approved top soil screened to remove all debris uniformly spread over the scarified ground surface.
- D. Sod shall be moist and shall be laid in a moist earth bed. Pegs shall be used where required to hold the sod in place.
- E. Sod shall not be placed during a drought nor during the period from July 1 to August 15.
- F. Sod to be kept moist by the contractor for fourteen (14) days to insure growth.
- G. The cost of providing for and meeting the sodding requirements shall be included in the bid price or at no extra cost to the owner.

1.17 FINAL CLEANUP, GRADING, TOP SOIL AND SEEDING

- A. Upon completion of construction and before final payment is made, the contractor shall restore the working area to as clean a condition as existed before construction operations started.
- B. The Contractor shall go over the entire area and regrade and fill any areas that may have settled, including fills made from excess excavated materials and all other areas that may have been disturbed during construction operations.
- C. Where established lawn or grass areas have been disturbed by the contractor's operations, the Contractor shall provide, unless otherwise specified or called for on the drawings or in the specifications, not less than the minimum depth of approved top soil and shall grade, seed, fertilize and mulch the areas as required by the Owner and per the following Table:

<u>Location</u>	<u>Seed Mixture</u>	<u>Amount of Seed</u>	<u>Fertilizer</u>	<u>Top Soil (min.)</u>
Lawn	MDOT Class A	100 lb/Acre	400 lb/Acre	3"
Other Areas	MDOT Roadside	35 lb/Acre	200 lb/Acre	2"

- D. Fertilizing and sowing shall be done in an approved manner, and the seed shall be covered by light raking or dragging, and then rolled with a light roller. Fertilizer shall be 10-6-4 commercial type.
- E. Seeding areas are to be kept moist for fourteen (14) days to insure growth. The cost of providing for and meeting these requirements shall be incidental to the project unless otherwise provided.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
/  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

1.18 EXISTING STRUCTURES AND UTILITIES

- A. Certain underground structures and utilities have been shown as an aid to the contractor, but the owner does not guarantee their location or that other underground structures or utilities may not be encountered.

1.19 PUBLIC AND PRIVATE UTILITIES

A. Utilities

1. The Contractor must provide adequate protection for water, sewer, gas, telephone, TV cable, or any other public or private utilities encountered. The Contractor will be held responsible for any damages to such utilities arising from his operation.
2. When it is apparent that construction operations may endanger the foundations of any utility conduit, or the support of any structure, the contractor shall notify the utility owner of this possibility and shall take steps as may be required to provide temporary bracing or support of conduit or structures.
3. In all cases where permits or inspection fees are required by utilities in connection with changes to or temporary support of their conduits, the contractor shall secure such permits and pay all inspection fees.
4. Where it is necessary in order to carry out the work, that a pole, electric or telephone, be moved to a new location, or moved and replaced after construction, the contractor shall arrange for the moving of such pole or poles, and the lines thereof, and shall pay any charges therefor.
5. Where it is the policy of any utility owner to make repairs to damaged conduit or other structures, the contractor shall cooperate to the fullest extent with the utility and shall see that construction operations interfere as little as possible with the utilities operations. The contractor shall pay any charges for these repairs.

B. Existing Sewer Facilities

1. Existing sewers or drains may be encountered along the line of work. In all such cases, the contractor shall perform the work in such a manner that sewer service will not be interrupted. and shall make all temporary provisions to maintain sewer service as incidental to the work as bid.
2. Unless otherwise indicated on the drawings, the contractor shall replace any disturbed sewer or drain, or relay same at a new grade and/or location to be established by the Owner such that sufficient clearance for the sewer will be provided.
3. The contractor will receive no extra compensation for replacement or relocation of sewers or drains encountered, or for relaying at a new grade where called for by the drawings unless a separate bid item has been included in the proposal.

C. Existing Water Facilities

1. Where existing water mains are encountered in the work, they shall be maintained in operation. If necessary, they shall be re-laid using ductile iron pipe of the type and with joints as specified within the current water main specifications of the governmental agency controlling said utility.
2. The contractor will receive no extra compensation for the relaying and/or lowering or raising of water mains or water service leads, except where a separate bid item has been included in the proposal.

D. Existing Gas Facilities

1. Where existing gas mains and services are encountered, the contractor shall arrange with the gas company for any necessary relaying, and shall pay for the cost of such work unless otherwise provided.

1.20 PUMPING, BAILING AND DRAINING

- A. The contractor shall provide and maintain adequate pumping and drainage facilities for removal and disposal of water from trenches or other excavations.
- B. Where the work is in ground containing an excessive amount of water, the contractor shall provide, install, maintain, and operate suitable deep wells or well points, connecting manifolds and reliable pumping equipment to operate same to insure proper construction of the work. Alternate dewatering methods may be implemented if approved by the Owner.
- C. Drainage or discharge lines shall be connected to adjacent public storm water drains or extended to nearby water courses wherever possible. In any event, all pumping and drainage shall be done without damage to any highway or other property, public or private, and without interference with the rights of the public or private property owners and in accordance with the MDEQ and local requirements for soil erosion and sedimentation control.
- D. The contractor shall receive no extra compensation for providing, maintaining or operating any dewatering or drainage facilities.

1.21 SHEETING, SHORING AND BRACING

- A. Where necessary in order to construct the work called for by the contract, to insure the safety of the workers, or to protect other things of value, the contractor shall use and, if necessary, leave in place, such sheeting, shoring, and bracing as is needed to carry out the work or to adequately insure the stability of such work, or to insure the safety of the workers and/or to protect adjoining things of value. The contractor will receive no extra compensation for sheeting, shoring, or bracing, whether removed or left in place.

1.22 DISPOSAL OF EXCAVATED MATERIAL

- A. With the exception of an amount of excavated materials sufficient for backfilling and construction of fills, as called for on the drawings, all broken concrete, stone, and excess excavated materials shall be disposed of from the site by the contractor. The contractor will be required to obtain his own disposal ground, and will receive no extra compensation for disposing of any of the excess materials.

1.23 DISPOSAL OF WASTE MATERIALS

- A. Unless otherwise directed by the owner, all waste materials and debris resulting from the construction work shall be removed from the premises at no extra cost to the owner.
- B. The contractor shall, at all times, keep the premises free from accumulations of waste material or debris caused by his employees or work, and shall remove same when necessary or required by the owner.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
/  
1  
6  
  
2  
:  
4  
9  
:  
1  
7  
P  
M

1.24 TUNNELING

- A. The contractor shall construct the work in tunnel where shown on the drawings or required by permits, and at other locations may, at his option, construct the work in tunnel where it crosses existing roadways, public and private utilities, walks or other structures. Tunnel work shall be constructed in accordance with the drawings and specifications, "Road Permit" requirements, or as otherwise noted on the drawings at no extra cost to the owner.

1.25 COMPRESSED AIR

- A. The contractor shall provide compressed air as required for the work at no extra cost to the owner.

1.26 EXPLOSIVES

Explosives may be brought or used on the premises only with the written consent of the owner.

- A. If explosives are used, the contractor shall comply with all laws, rules, and regulations governing their use. The contractor shall be fully responsible for the safety of all persons and property and any approval by the owner shall not relieve the contractor of such responsibility.
- B. All fees and assessments in connection therewith shall be paid for by the contractor, the cost of which shall be included in the proposal. The contractor shall be responsible for furnishing sufficient, properly qualified safety inspectors as required by the state and local governing bodies. The cost of providing for and meeting the requirements for handling explosives shall be at no extra cost to the owner.

1.27 INSPECTION OF PREMISES

- A. The bidder shall visit the premises and thoroughly acquaint himself with the conditions to be encountered in the installation of the work shown on the drawings and described in the specifications, as no extras will be allowed to cover work which he has not included in his tender due to his failure to inspect the premises.

1.28 SCHEDULE OF OPERATIONS

- A. The contractor shall submit, for the owner's review and approval, a schedule of his proposed operations. The contractor's schedule shall be complete and shall show in detail the manner in which he proposed to complete the work under this contract.

1.29 ORDINANCES AND CODES

- A. All work shall be executed and inspected in accordance with all local and state rules and regulations and all established codes applicable thereto and shall conform in all respects to the requirements of all authorities having jurisdiction thereover.
- B. Should any change in the contract plans and/or specifications be required to comply with local regulations, the contractor shall notify the owner in accordance with Specification 00120, Instructions to Bidders. After entering into contract, the contractor will be held to complete all work necessary to meet the local requirements without extra expense to the owner.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
4  
9  
:  
1  
7  
P  
M

- C. Where the work required by the drawings and specifications is above the standard required, it shall be done as shown or specified.

1.30 REQUIREMENTS PERTAINING TO WORK WITHIN RAILROAD RIGHTS-OF-WAY

- A. Where the contract drawings call for work within railroad rights-of-way or where the work crosses under railroad tracks, the contractor shall secure the approval of the railroad company of the method and schedule of operations and shall carry out the work in strict accordance therewith, all to the satisfaction of the railroad company and at no extra cost to the owner.
- B. The owner will pay the cost of all inspectors and flagmen required and furnished by the railroad company during the construction operations.
- C. The additional named insured under General Supplementary Conditions for "Owner and Contractor's Protective Public Liability and Property Damage Insurance" shall include the name of the railroad company.

1.31 TRAFFIC CONTROL

- A. During construction the contractor shall control traffic in accordance with the current edition of the Michigan Manual of Uniform Traffic Control Devices issued by the Michigan Department of Transportation.

1.32 DUST CONTROL

- A. The contractor shall provide adequate measures to control dust caused by his operation. The methods employed, and frequency of application shall be as approved and directed by the Owner.

1.33 INCONVENIENCES

- A. The contractor shall at all times be aware of inconveniences caused to the abutting property owners and general public. Where undue inconveniences are not remedied by the contractor, the municipality, upon four hours notice, reserves the right to perform the necessary work and to have the owner deduct the cost thereof from the money due or to become due to the contractor.

END OF SECTION

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
0  
0  
0  
-  
g  
e  
n  
e  
r  
a  
l  
-  
s  
p  
e  
c  
i  
f  
i  
c  
a  
t  
i  
o  
n  
s  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
/  
1  
6  
  
2  
:  
4  
9  
:  
1  
7  
P  
M



**SECTION 01001**

**SPECIAL PROJECT REQUIREMENTS**

1. GENERAL

These specifications form a part of the Specifications and Contract Documents for the King Street Tile Drain Project in Fremont and Swan Creek Townships, Saginaw County, Michigan, with the requirements herein specified supplementing and/or superseding those contained in the balance of the Specifications and Contract documents. Construction specifications not addressed herein on the balance of the specifications shall be in accordance with the MDOT 2012 Standard Specifications for Construction.

2. EXISTING CONDITIONS

Each bidder shall personally visit the sites of the project and pay particular attention to the existing conditions and the salient features of the project in order to assure him of the amount of equipment, materials, and work required to satisfy the requirements of the project.

3. EXISTING UTILITY LOCATIONS

As an aid to the Contractor, various existing overhead and underground utilities and structures have been shown on the plans. Neither the Owner nor the Engineer guarantees the accuracy and completeness of locations and number of utilities as this information has been taken from available utility company and municipal records and field topo. The Contractor shall immediately repair or have repaired by the utility owner any damaged utility lines at his own expense, with no additional compensation to be provided by the Owner.

4. EXPOSING EXISTING UTILITIES

Contractor shall verify the depth of existing utilities throughout the project length in order to permit the Engineer to adjust grades to avoid conflicts with existing utilities. Should the Contractor fail to expose the existing utilities **Prior to Construction**, the Contractor shall be responsible for removing and reinstalling any proposed utility with which a conflict arises from his failure to perform this item.

5. COOPERATION WITH OTHER CONTRACTORS

The Contractor shall make every effort to cooperate and coordinate with all other contractors working in the area at the time of construction.

6. HOURS OF OPERATION

Contractor shall abide by work hour regulations per municipality unless otherwise authorized, in writing, by the local ordinance official. No work on Sunday is allowed. Should an emergency arise which would require working beyond the hours mentioned, approval for work beyond the permitted hours can be requested to the Office of the Saginaw County Public Works Commissioner. The Contractor shall contact the Project Engineer to submit this request.

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
0  
1  
0  
0  
1  
-  
s  
p  
e  
c  
i  
a  
l  
-  
p  
r  
o  
j  
e  
c  
t  
-  
r  
e  
q  
-  
d  
o  
c  
o  
8  
/  
2  
7  
/  
1  
5  
7  
:  
1  
3  
:  
0  
0  
A  
M

7. M.I.O.S.H.A. STANDARDS

All work performed by the Contractor must conform to the current M.I.O.S.H.A. standards and requirements including confined space entry. If required by the City, the Contractor will be required to sign a waiver stating that he has read, understood and will comply with M.I.O.S.H.A. requirements.

8. RESIDENT COMPLAINTS

The Contractor will be required to immediately address any resident complaints or concerns. Should the Contractor not be able to answer the resident, they must be directed to the Project Engineer.

9. ADDITIONAL BIDS - QUANTITY INCREASE/DECREASE

Additional quotations may be requested during the term of this Contract, separately from the original bid and are subject to the same terms and conditions of the original bid. There will be no adjustment in the contract unit prices regardless of the percentage increase or decrease above or below the contract quantity for any item of work.

10. NON-DISCRIMINATION CLAUSE

By signing and submitting this proposal for consideration by the Owner, the Contractor covenants not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions or privileges of employment or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status or a handicap that is unrelated to the individual's ability to perform the duties of a particular job or position. Breach of this covenant may be regarded as a material breach of the contract.

11. MAINTAINING FLOW

The Contractor shall perform the work so that the all natural drainage within the project limits is maintained at all times. It shall be left to the discretion of the Contractor as to the type and extent of work and materials necessary to accomplish this. The Contractor will be liable for any and all damages caused by his failure to maintain existing drainage patterns.

12. CONTRACTOR'S LIABILITY

The Contractor shall be solely responsible for any damages to buildings by sewage backups due to his operations. The Contractor shall indemnify and hold harmless the Owner and the Engineer in this regard.

13. SUBSURFACE CONDITIONS

The Contractor shall be solely responsible for making his own subsurface soils investigations and shall assume all risks and responsibility for his conclusions pertaining to the potential difficulties which may be encountered during the course of work. He shall complete the work, in whatever material and under whatever ground conditions he may encounter or create, without additional cost to the Owner.

14. MAINTAINING SOLID WASTE (RUBBISH) SERVICES

Rubbish collection shall not be interfered with by the Contractor's operations. If access to certain areas is blocked by the Contractor's operations, he shall transport the rubbish himself to a location accessible to the collection crews, incidental to the project.

15. TRAFFIC CONTROL

Contractor shall maintain traffic according to the Saginaw County, MDOT, and Manual on Uniform Traffic Control Devices (MMUTCD) Standards. Maintaining Traffic shall include all labor, materials, and equipment necessary for the installation, relocation, covering, supplementing, and removing the proposed traffic control measures including all signage, barricades, and other traffic control devices as required for traffic maintenance and control for the duration of the project. This item is to cover maintaining traffic during the various stages of the project per the approved Contractor's Sequence of Operation. This item shall meet the requirements of the Saginaw County Standards, as well as, Specification 02550 Maintaining Traffic.

16. DEWATERING

Any dewatering necessary to construct this project shall be considered incidental unless otherwise noted. All costs for dewatering shall be included in the unit bid price for the affected construction. The dewatering outlet shall be approved by the Project Engineer and the receiving property shall be protected from erosion.

17. TREE PROTECTION

Keep clear all debris or fill, equipment and material from influence of the tree root system, which is typically the drip line.

During construction, the Contractor shall not cause or permit the cleaning of equipment or material or the storage or disposal of waste material such as paints, oils, solvents, asphalt, concrete, mortar, or any other material harmful to the life of a tree within the drip line of any protected tree or group of trees.

No damaging attachment, wires (other than supportive wires for a tree), signs, or permits may be fastened to any tree.

Tree Trimming: All bruised and scarred trunks and branches incurred as the result of the work shall be repaired using standard arboriculture procedures and performed by a professional tree service company.

The Contractor shall remove damaged and, where necessary, those low hanging branches that impede his construction work. The Project Engineer shall be notified prior to any substantial trimming necessary for construction. Removal shall be not less than 12" from the tree's main stem. Wherever practical, the Contractor shall "tie back" and protect with reasonable care those branches that interfere with his construction. In the case of pines or trees adjacent to construction activities, tarps are to be placed with caution over the tree branches so as to not break the branches and to protect them from equipment exhaust and damage.

All final branch trimming (trimming within 12" of the main stem) shall be performed by a professional tree service company using standard arboriculture procedures. No additional payment will be made for tree trimming. Trees shall be trimmed so that branches are evenly distributed on all sides, i.e. no lopsided effects.

Y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
0  
1  
0  
0  
1  
-  
s  
p  
e  
c  
i  
a  
l  
-  
p  
r  
o  
j  
e  
c  
t  
-  
r  
e  
q  
.  
d  
o  
c  
o  
8  
/  
2  
7  
/  
1  
5  
7  
:  
1  
3  
:  
0  
0  
A  
M

Tree Replacement: Trees shown to remain which have been killed or damaged so severely that the survival chances are minimal as determined by the Engineer, shall be removed and replaced with one (1) 2-1/2" minimum caliper tree for each 6" diameter removed. The replacements shall have at least equal shade potential and other characteristics comparable to those of the trees removed. Type of replacement and location shall be determined by the property owner and the local municipality. Trees so replaced shall be paid for solely at the Contractor's expense.

18. EXISTING MATERIAL AS BACKFILL

The Contractor is to make his own determination as to the suitability of using existing excavated material for backfill conditions as specified. If the Contractor wishes to use this material he shall have the material tested by an independent laboratory and submit the results to the Project Engineer. Upon written approval of both parties, all handling, stockpiling, moisture control, etc. recommended in the laboratory's report shall then be adhered to as if contained herein. All costs associated with the Contractor's investigation and testing are considered incidental to the project.

19. GUARDRAILS

Contractor to remove guardrails in locations identified in the plans to gain access to the project areas. Temporary protection such as traffic control drums may be necessary to protect the end of the guardrail section to remain. The extent of guardrail removal will be discussed and approved in the field by the Owner and the agency with jurisdiction over the road where the guardrail is located. Contractor may reinstall undamaged materials. Guardrail system materials and installation shall be in accordance with the current version of the MDOT Standard Plan R-60 Series and R-62 Series and Section 807 of the 2012 MDOT Standard Specifications for construction and shall be included in the unit price for "Remove and Replace Guardrails".

**END OF SECTION**

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Related Sections
- B. Coordination
- C. Pre-Bid Meeting
- D. Pre-Award Meeting
- E. Preconstruction Meeting
- F. Progress Meetings

1.2 RELATED SECTIONS

- A. Section 00120 – Instructions for Bidders
- B. Section 00700 - General Conditions
- C. Section 00800 - General Supplementary Conditions
- D. Section 01300 - Submittals
- E. Section 01310 - Progress Schedules

1.3 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various sections of the Contract Documents to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.
- C. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.4 PRE-BID MEETING

- A. Engineer will schedule a meeting as noted in the Information for Bidders.

: \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 1 0 3 9 - c o o r d i n a t i o n - a n d - m e e t i n g s . d o c x 1 1 / 1 1 / 1 6 2 : 4 9 : 5 8 P M

- B. Attendance Required: Owner, Engineer, and Bidders.
- C. Attendance Requested: Regulatory Agencies, Utility Representatives.
- D. Agenda:
  - 1. Review of Permits Required.
  - 2. Review of Special Project Requirements.
  - 3. Regulatory requirements affecting the project.
  - 4. Review of Contract Documents.
  - 5. Critical work sequencing.
  - 6. Use of premises by Owner and Contractors
  - 7. Construction facilities and controls provided by Owner.
  - 8. Temporary utilities provided by Contractor and by Owner.
  - 9. Survey and layout.
  - 10. Security and housekeeping procedures.
  - 11. Responsibility for testing.
- E. Record minutes and distribute copies within two days after meeting to participants, or include in an addendum, with one copy to all participants, and those affected by decisions made.

1.5 PRE-AWARD MEETING (if necessary)

- A. Engineer will schedule a meeting prior to issuing Notice of Award.
- B. Attendance Required: Owner, Engineer, and Contractor.
- C. Agenda:
  - 1. Review of Owner-Contractor Agreement.
  - 2. Review of Submission of bonds and insurance certificates.
  - 3. Regulatory requirements affecting the project.
  - 4. Review of Federal, State and Local contract requirements.
  - 5. Review of list of Subcontractors, list of Products, and schedule of values.
  - 6. Designation of personnel representing the parties in Contract, and the Engineer.
  - 7. Critical work sequencing.
  - 8. Use of premises by Owner and Contractor
  - 9. Construction facilities and controls provided by Owner.
  - 10. Mobilization
  - 11. Project Coordination
- D. Record minutes and distribute copies within two days after meeting to participants, with one copy to all participants, and those affected by decisions made.

1.6 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting prior to issuing Notice of Award.
- B. Attendance Required: Owner, Engineer, major subcontractors and Contractor.
- C. Agenda:
  - 1. Review of Execution of Owner-Contractor Agreement.

: \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 1 0 3 9 - c o o r d i n a t i o n - a n d - m e e t i n g s . d o c x 1 1 / 1 1 / 1 6 2 : 4 9 : 5 8 P M

2. Review of Regulatory requirements affecting the project.
3. Distribution of Control Documents.
4. Submission of progress construction schedule.
5. Designation of personnel representing the parties in Contract, and the Engineer.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Critical work sequencing.
8. Use of premises by Owner and Contractor
9. Construction facilities and controls provided by Owner.
10. Mobilization
11. Project Coordination
12. Temporary utilities provided by Contractor and Owner.
13. Survey and layout.
14. Security and housekeeping procedures.
15. Procedures for testing.
16. Procedures for maintaining record documents.

- D. Record minutes and distribute copies within two days after meeting to participants, with one copy to all participants, and those affected by decisions made.

#### 1.7 PROGRESS MEETINGS

- A. The Engineer will schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and Suppliers, Owner, Engineer, as appropriate to agenda topics for each meeting.
- D. Agenda:
1. Review minutes of previous meetings.
  2. Review of Work progress.
  3. Field observations, problems, and decisions.
  4. Identification of problems which impede planned progress.
  5. Review of submittals schedule and status of submittals.
  6. Review of on-site and off-site fabrication and delivery schedules.
  7. Maintenance of progress schedule.
  8. Corrective measures to regain projected schedules.
  9. Planned progress during succeeding work period.
  10. Coordination of projected progress.
  11. Maintenance of quality and work standards.
  12. Effect of proposed changes on progress schedule and coordination.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

: \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 1 0 3 9 - c o o r d i n a t i o n - a n d - m e e t i n g s . d o c x 1 1 / 1 1 / 1 6 2 : 4 9 : 5 8 P M

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SCHEDULE FOR SUBMISSION

- A. Submittal procedures
- B. Submittal Review
- C. Proposed Products list
- D. Shop Drawings, Product Data, and Samples
- E. Manufacture's installation instructions
- F. Manufacture's certificates

1.2 RELATED SECTIONS

- A. Section 00700 - General Conditions
- B. Section 01400 - Quality Control
- C. Section 01700 - Contract Closeout

1.3 SCHEDULE FOR SUBMISSION

- A. Prior to submitting any shop drawings, product data, portfolios, samples, etc. the Contractor shall prepare a summary, listing all items in the project which he will submit for review by the Engineer.
- B. The summary shall be submitted within twenty (20) calendar days after receipt of Notice to Proceed and shall be updated once per month thereafter.
- C. The summary shall include the proposed dates for submittal for each item for control purposes. The summary shall be prepared in coordination with the Project Schedule for Construction and adequate time shall be allowed therein for review and possible resubmittal.
- D. The summary and schedule for submittals shall not relieve the Contractor of his obligation to comply with specification requirements for items not listed on the schedule.
- E. Nothing herein shall be construed as allowing additional time for completion of the project in the event resubmittal is required for shop drawings or the other items to be submitted.

y :  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
3  
0  
0  
-  
s  
u  
b  
m  
i  
t  
t  
a  
l  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
0  
:  
1  
6  
P  
M

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
3  
0  
0  
-  
s  
u  
b  
m  
i  
t  
t  
a  
l  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
0  
:  
1  
6  
P  
M

1.4 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer approved transmittal form.
- B. Sequentially number the transmittal form. Re-submittals shall have original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor and supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and deliver to the Engineer in a manner to allow sufficient time for review and processing by the Engineer so as to not cause delays in the Work. Coordinate submission of related items.
- F. All drawings, information and documentation shall be prepared and submitted with all words in the English language and dimensions in American units. No foreign language or metric units will be permitted.
- G. Identify variations from Contract Documents and Products and system limitations which may be detrimental to successful performance of the completed work.
- H. Provide space for Contractor and Engineer review stamps.
- I. Revise and resubmit submittals as required and identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals to all concerned and related parties. Instruct parties to promptly report any inability to comply with provisions.
- K. The Engineer reserves the right to refuse to check or review any submittal of a subcontractor or manufacturer which is not presented in compliance with the foregoing requirements.
- L. Electronic Submittals:
  - 1. All electronic submittals shall follow the procedures outlined above.
  - 2. Electronic submittal procedures are only applicable to Shop Drawings and product data submittals.
  - 3. Electronic submittals shall be made in a standard format the Engineer has agreed in advance to accept, JPEG, TIF, DGN, DXF, DWG, or PDF.
  - 4. Reviewed submittals shall be returned in JPEG, TIF, or PDF electronic format for the Contractor's printing and distribution.

1.5 SUBMITTAL REVIEW

- A. All subcontractors and manufacturers' drawings shall first be sent directly to the Contractor, who shall keep a record of the drawing numbers and the dates of receipt. The Contractor shall check thoroughly all such drawings, as regards measurements, sizes of members, materials, and all other details to assure himself that they conform to the intent of the drawings and the

specifications, and shall promptly return to the subcontractors and/or manufacturers for correction such drawings as are found inaccurate or otherwise in error.

- B. The Engineer will review the Contractor's, subcontractors' and manufacturers' drawings within a reasonable time after receipt thereof and will return one copy endeavoring to indicate, by notation thereon or written instructions, any correction which may be necessary to meet the Contract requirements. The Contractor shall then review such notations and/or instructions and if he concurs therein, shall make or have made such required corrections, and shall, when so noted on the drawings or requested by the Engineer, resubmit corrected drawings to the Engineer as soon as possible, for final review. Such further review by the Engineer will be limited to the corrections only, and the Contractor, by such re-submission shall be held to have represented that such drawings contain no other alterations, additions or deletions, unless the Contractor (in writing) directs the Engineer's specific attention to same. Should the Contractor question, or dissent from, such notations and/or instructions, he shall so inform the Engineer and request further clarification before resubmitting the drawings.
- C. The review of Contractor's, subcontractors', and manufacturers' drawings by the Engineer is for coordination and assistance, and the Engineer does not thereby assume responsibility for errors or omissions. Such errors or omissions must be made good by the Contractor, irrespective of the receipt, review of the drawings by the Engineer, and even though the work is done in accordance with such drawings.

#### 1.6 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Owner-Contractor Agreement submit list of all major products proposed for use, including those previously called for to be submitted in the Proposal, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Substitutions: Whenever a particular brand or make or type of material, equipment, or other item is specified or is indicated on the Contract Drawings, it is for the purpose of establishing a standard of quality, design, and type desired and to supplement the detailed specifications. Any other brand or make or type which in the opinion of the Engineer is equivalent to that specified or indicated may be offered as a substitute, subject to the following provisions:
  - 1. Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature and performance data together with samples of the materials where feasible to enable the Engineer to determine if the proposed substitution is equal to that specified.
  - 2. Contractor shall submit certified tests where applicable by an independent laboratory, acceptable to the Owner, attesting that the proposed substitution is equal.
  - 3. A list of installations where the proposed substitution is used.
  - 4. Requests for substitutions shall include full information concerning differences in cost, and any savings in cost resulting from such substitutions shall be passed on to the Owner.
  - 5. Where the review of a substitution requires revision or redesign of any part of the work, all such revision and redesign and all new drawings and details required, therefore, shall be provided by the Contractor at his own cost and expense and shall be subject to the review of the Engineer.

6. In all cases, the Engineer shall be sole judge as to whether a proposed substitution is to be incorporated into the project. The Contractor shall abide by the Engineer's decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item specified or indicated. No substitute items shall be used in the work without review of the Engineer.

1.7 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. The intent of the Contract Documents is to include in the contract price the cost of all labor and materials, water, fuel, tools, plant, equipment, light, transportation, and all other expenses as may be necessary for the proper execution and completion of the work.
- B. While the contract drawings and specifications propose to be complete in all respects as to layout, type of equipment and materials, they are not intended to serve as detailed sleeve or insert drawings, and the preparation of such drawings required or necessary for this purpose, or to set equipment accurately, shall be the responsibility of the Contractor.
- C. These Contract Documents shall be supplemented by other drawings, product data, samples and portfolios of all equipment, apparatus, materials, etc. furnished by the Contractor and reviewed by the Engineer. All such supplementary drawings or instructions are intended to be consistent with the Contract Documents, true developments thereof and reasonably inferable therefrom. Therefore, no extra charge will be allowed on a claim that particular supplemental drawings or instructions differed from the Contract documents, incurring extra work, unless the Contractor has first brought the matter, in writing, to the Engineer's attention for proper adjustment before starting on the work covered by such and has received from the Engineer an order in writing to so proceed.
- D. These original and supplementary drawings constitute the drawings according to which the work is to be done. The Contractor shall keep at the site of the work, copies of all drawings and specifications and shall at all times give the Engineer or Owner access thereto.
- E. Shop Drawings are drawings, diagrams, schedules other data specifically prepared for the Work by the Contractor or a subcontractor, Subcontractor manufacturer, supplier or distributor to illustrate some portion of the Work.
- F. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of these submittals is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.
- G. Product Data are illustrations, standard schedules, performance charts, instructions, catalog cuts, brochures, diagrams, materials lists and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- H. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.
- I. The Contractor shall review, approve, and submit to the Engineer, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents requested by the Engineer or Owner or otherwise necessary for the proper execution of the work, with reasonable promptness and in such sequence as to cause no delay in the Work or in the

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
3  
0  
0  
-  
s  
u  
b  
m  
i  
t  
t  
a  
l  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
0  
:  
1  
6  
P  
M

activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

- J. The Contractor shall perform no portion of the Work requiring submittal, resubmittal, and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed by the Engineer. Such Work shall be in accordance with reviewed submittals.
- K. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or contained within such submittals with the requirements of the Work and of the Contract Documents.
- L. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's review of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of submittal and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in the Shop Drawings, Product Data, Samples or similar submittals by the Engineer's review thereof, as the Engineer's review is intended to cover compliance with the Contract Document and not to enter into every detail of the shop work.
- M. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those required by the Engineer on previous submittals.
- N. When professional certification of performance criteria of materials systems or equipment is required by the Contract Documents, the Engineer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.
- O. Shop Drawings
  - 1. Submit in the form of two legible opaque copies.
  - 2. One reviewed copy will be returned to the Contractor for his duplication and distribution.
  - 3. After review, produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article herein and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- P. Product Data
  - 1. Submit two copies of the documents which the Engineer requires. One reviewed copy will be returned to the Contractor for his duplication and distribution.
  - 2. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
  - 3. Product data shall be bound with an index sheet containing a space at least 5" x 8" for review stamps and notes.
  - 4. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSEOUT.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
P  
d  
f  
\  
0  
1  
3  
0  
0  
-  
s  
u  
b  
m  
i  
t  
t  
a  
l  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
0  
:  
1  
6  
P  
M

Q. Samples

1. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
2. Submit samples of sufficient size and representative of finishes indicating textures, and patterns for Owner selection.
3. Include identification on each sample, with full Project information.
4. Submit the number of samples specified in individual specification sections; two of which will be retained by the Engineer.
5. Reviewed samples which may be used in the work are indicated in individual specification sections.

1.8 MANUFACTURER INSTALLATION INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, operating, maintaining and finishing to the Engineer in quantities specified for Product Data.
- B. Identify conflicts between manufacturer's instructions and contract documents.

1.9 MANUFACTURER CERTIFICATES

- A. When specified in individual sections, submit certification by manufacturer to Engineer, in quantities specified for Product Data.
- B. Indicate material or Product meets or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

---

SECTION 01310  
PROGRESS SCHEDULES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Format.
- B. Content.
- C. Revisions to schedules.
- D. Submittals.

1.2 RELATED SECTIONS

- A. Section 00700 - General Conditions
- B. Section 00800 - General Supplementary Conditions
- C. Section 01000 – General Specifications
- D. Section 01300 - Submittals

1.3 FORMAT

- A. Prepare schedules as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Multiples of 11 x 17 inches

1.4 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules to define critical portions of the entire schedule.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
3  
1  
0  
-  
P  
r  
o  
g  
r  
e  
s  
s  
-  
s  
c  
h  
e  
d  
u  
l  
e  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
0  
:  
4  
1  
P  
M

- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the last day of each month.
- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.

1.5 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect, on schedules of separate contractors.

1.6 SUBMITTALS

- A. Submit initial schedules within 30 days after date established in Notice to Proceed. After review, resubmit required revised data within ten days.
- B. Submit the number of opaque reproductions which Contractor requires, plus four copies which will be retained by Engineer or, submit one opaque reproduction and one reproducible transparency.

1.7 DISTRIBUTION

- A. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

y  
:  
\ 2  
0 1  
6 0  
3 3  
\ 2  
0 1  
6 0  
3 3  
3 1  
\ 0  
4 4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\ 2  
0 1  
6 1  
1 1  
1 1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\ 0  
1 3  
1 0  
-  
p  
r  
o  
g  
r  
e  
s  
s  
-  
s  
c  
h  
e  
d  
u  
l  
e  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1 1  
/  
1 6  
2  
:  
5 0  
:  
4 1  
P  
M

---

SECTION 01400  
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Tolerances
- C. References.
- D. Mockup.
- E. Inspecting and testing laboratory services.
- F. Manufacturers' field services and reports.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals
- B. Section 01600 - Material and Equipment

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.4 TOLERANCES

- A. Monitor tolerance control of installed Products to produce acceptable Work. Do not permit tolerances to accumulate.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
4  
0  
0  
-  
q  
u  
a  
l  
i  
t  
y  
-  
c  
o  
n  
t  
r  
o  
l  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
/  
1  
6  
  
2  
:  
5  
1  
:  
0  
1  
  
P  
M

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
4  
0  
0  
-  
q  
u  
a  
l  
i  
t  
y  
-  
c  
o  
n  
t  
r  
o  
l  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
/  
6  
2  
:  
5  
:  
0  
1  
P  
M

- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.5 REFERENCES

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date specified in the individual specification sections, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. The contractual relationship, duties, and responsibilities of the parties in Contract nor those of the Architect/Engineer shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 MOCK-UP

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups are representative of the quality required for the Work.
- D. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.7 INSPECTING AND TESTING LABORATORY SERVICES

- A. Owner will appoint, employ, and pay for specified services of an independent firm to perform inspecting and testing, as required.
- B. The independent firm will perform inspections, tests, and other services specified in individual specification sections and as required by the Engineer or the Owner.
- C. Inspecting, testing, and source quality control may occur on or off the project site. Perform off-site inspecting or testing as required by the Engineer or the Owner.
- D. Reports will be submitted by the independent firm to the Engineer, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

1. Notify Engineer and independent firm 48 hours prior to expected time for operations requiring services.
  2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing or inspecting does not relieve Contractor of performing Work to contract requirements.
- G. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for retesting will be charged to the Contractor by deducting inspecting or testing charges from the Contract Sum.

1.8 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit report in duplicate within 30 days of observation to Engineer for information.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

Y  
:  
\  
2  
0  
1  
6  
0  
3  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
4  
0  
0  
-  
q  
u  
a  
l  
i  
t  
y  
-  
c  
o  
n  
t  
r  
o  
l  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
5  
1  
:  
0  
1  
  
P  
M



SECTION 01500

CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities: Sanitary facilities.
- B. Temporary Controls: Barriers, protection of the Work, and ground and surface water control.
- C. Construction Facilities: First Aid Facilities and parking,

1.2 RELATED SECTIONS

- A. Section 01700 - Contract Closeout

1.3 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain adequate and required facilities and enclosures during the entire duration of the project.

1.4 BARRIERS

- A. The Contractor shall provide barricades, and adequate warning flags, signs, and lights in accordance with governing laws and ordinances to protect construction areas, existing facilities, and adjacent properties.
- B. Provide protection for plant life designated to remain. Replace damaged plant life.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.5 GROUND AND SURFACE WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment. All water from whatever sources entering the work during any stage of construction shall be promptly removed and disposed. All pumping and drainage shall be done without damage to property or structures and without interference with the rights of the public, owners of private property, pedestrians or vehicular traffic, or the work of other contractors. Dewatering shall be done in such a manner that soil under or adjacent to existing structures shall not be disturbed, removed, or displaced.

1.6 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.

y :  
2  
0  
1  
6  
0  
3  
2  
0  
1  
6  
0  
3  
3  
1  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
5  
0  
0  
-  
c  
o  
n  
s  
t  
r  
u  
c  
t  
i  
o  
n  
-  
f  
a  
c  
i  
l  
i  
t  
i  
e  
s  
.  
d  
o  
c  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
1  
:  
3  
1  
P  
M

- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

1.7 FIRST AID FACILITIES

- A. A completely equipped, readily accessible first-aid kit shall be provided and maintained at the job site at all times.

1.8 PARKING

- A. Provide temporary gravel surface parking areas to accommodate construction personnel.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

y  
:  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
5  
0  
0  
-  
c  
o  
n  
s  
t  
r  
u  
c  
t  
i  
o  
n  
-  
f  
a  
c  
i  
l  
i  
t  
i  
e  
s  
.  
d  
o  
c  
1  
/  
1  
/  
1  
6  
2  
:  
5  
1  
:  
3  
1  
P  
M

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General Provisions.
- B. Transportation and handling.
- C. Storage and protection.
- D. "Or Equal" Clause
- E. Product options.
- F. Substitutions.
- G. Installation of Equipment.
- H. Damage during tests and instruction period.
- I. Services of manufacturer's engineers.
- J. Equipment manufacturer certification.

1.2 RELATED SECTIONS

- A. Section 00120 - Instructions to Bidders
- B. Section 01400 - Quality Control

1.3 GENERAL PROVISIONS

- A. Products (including all materials, machinery, equipment, and systems) shall be carefully designed and installed to insure that all required functions are adequately performed within specified degrees of precision and that each unit shall operate with every other part, furnished or existing, to provide a complete integrated system which shall operate to the satisfaction of the Engineer. Any changes or revisions of existing work made necessary by the type and dimensions of furnished products shall be made at the expense of the Contractor, and he shall furnish detail drawings showing such changes or revisions for the approval of the Engineer.
- B. Submit to the Engineer ample proof that each and every part of the products to be furnished is of a reliable make and of a type which has been in successful operation within the continental United States. Installation of any experimental or untried type of apparatus, material, or machinery will not be allowed.

Y :  
2  
0  
1  
6  
0  
3  
2  
0  
1  
6  
0  
3  
3  
1  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
6  
0  
0  
-  
m  
a  
t  
e  
r  
i  
a  
l  
-  
a  
n  
d  
-  
e  
q  
u  
i  
p  
m  
e  
n  
t  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
1  
:  
5  
0  
P  
M

- C. Each major item of equipment shall have the manufacturer's nameplate securely affixed in a conspicuous place. The nameplate shall show the manufacturer's name, address, model number, rating, and any other pertinent data such as speed, horsepower, etc.
- D. All materials, equipment, and accessories shall be new and unused and shall be essentially the products of a manufacturer regularly engaged in the production of such material or equipment and shall essentially duplicate material or equipment that has been in satisfactory operation at least 5 years.
- E. The owner reserves the right to reject any material or equipment manufacturer who, although he meets the above requirements, does not provide satisfactory evidence indicating adequate and prompt post-installation repair and maintenance service as required to suit the operational requirements of Owner. Items of any one type of materials or equipment shall be the product of a single manufacturer.
- F. All piping and equipment furnished under this contract shall be fabricated of such materials that under normal operating conditions harmful substances are not imparted to the water supply system.
- G. Except as otherwise specified or required, equipment shall be primed and finish painted at the factory in accordance with the recommendations or the approved manufacturer. All equipment supplied under this contract shall include at least one quart of finish paint used for touch-up at the completion of construction.
- H. Certification shall be provided that all materials which may come into contact with potable water meets the National Sanitation Foundation Standard 61 and all MDPH regulations in force at the time of submittals.

1.4 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Transport and handle all materials in such a manner to avoid breakage, inclusion of foreign materials, and/or damage by water or other causes.
- C. Deliver packaged materials in original unopened containers. Packages or materials showing evidence of damage or contamination regardless of cause will be rejected.
- D. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- E. Repair or replace all items damaged or broken as a result of the Contractor's operation at no cost to the Owner.
- F. When specified in the individual Section, equipment shall be made available for conditional acceptance by the Engineer at the factory prior to shipment.
- G. Equipment shall not be delivered unless it can be immediately incorporated into the work or proper storage facilities are available.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
6  
0  
0  
-  
m  
a  
t  
e  
r  
i  
a  
l  
-  
a  
n  
d  
-  
e  
q  
u  
i  
p  
m  
e  
n  
t  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
5  
:  
1  
:  
5  
0  
P  
M

- H. Crate all parts of equipment carefully to facilitate shipping and handling. Crates shall completely protect the equipment and be sufficiently strong to permit lifting and skidding without additional bracing or reinforcement.
- I. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.
- J. Notify the Engineer at least two days in advance of the delivery of equipment.

1.5 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions, with seals and labels intact and legible.
- B. Store sensitive Products in weather tight, climate controlled enclosures.
- C. For exterior storage of fabricated Products, place on sloped supports, above ground.
- D. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Product.
- F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- H. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with the provision "No Substitutions": Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for "or Equal" or Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article and Section 01300.

1.7 "OR EQUAL" CLAUSE

- A. Specifying an article, material, or piece of equipment by reference to a proprietary product or by using the name of a manufacturer or vendor followed by the clause "or equal" shall be

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 1 6 0 0 - m a t e r i a l - a n d - e q u i p m e n t . d o c x 1 1 / 1 1 / 1 6 2 : 5 1 : 5 0 P M

understood to indicate the type, function, minimum standard of design, efficiency, and quality desired and shall not be construed in such a manner as to exclude products of comparable quality, design, and efficiency.

- B. Comparable products shall be capable of performing equal function and shall be compatible with other equipment, materials, or systems to which they connect or will become an integral part of.
- C. The clause "or approved equal" which may appear elsewhere in the documents shall mean the same as "or equal".
- D. Wherever in the documents an article, material, or piece of equipment is defined by specifying a proprietary product or using the name of a manufacturer or vendor the term "or equal" if not included shall be implied.
- E. Substitutions of "or equal" products are subject to approval of the Engineer.

1.8 SUBSTITUTIONS

- A. Refer also to Section 01300.
- B. Engineer will consider requests for Substitutions after the date established in Notice to Proceed.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:
  - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
  - 2. Will provide the same warranty for the Substitution as for the specified Product.
  - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
  - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
  - 2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Also provide information required by Section 01300 for substitutions. Burden of proof is on proposer.
  - 3. The Engineer will notify Contractor in writing of decision to accept or reject request.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
6  
0  
0  
-  
m  
a  
t  
e  
r  
i  
a  
l  
-  
a  
n  
d  
-  
e  
q  
u  
i  
p  
m  
e  
n  
t  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
5  
:  
1  
:  
5  
0  
P  
M

1.9 INSTALLATION OF EQUIPMENT

A. General

1. Contractor shall have on hand sufficient personnel, proper equipment, and machinery of ample capacity to facilitate the work.
2. Contractor shall be responsible for locating, aligning, and leveling all equipment.
3. Complete manufacturer's installation instructions including permissible tolerances shall be furnished with each unit of equipment.
4. All equipment shall be installed in accordance with the approved manufacturer's specifications, drawings, and tolerances under the direct supervision of the required manufacturer's engineer.
5. Equipment shall be erected in a neat and workman-like manner on the foundations at the locations and elevations shown on the drawings unless directed otherwise by the Engineer during installation.

B. Installation

1. Special care shall be used in locating, aligning and, leveling all equipment and parts thereof to insure that each item is in the proper position relative to other equipment and that all parts are aligned within allowable tolerances. The Contractor shall be responsible for this accuracy and shall notify the Engineer of any conditions in prior work which would prevent this alignment before proceeding with the work. The Contractor shall employ a competent surveyor to set all lines and levels of equipment to the accuracy required.
2. All blocking and wedging required for the proper support and leveling of equipment during installation shall be furnished by the Contractor. All temporary supports shall be removed except steel wedges and bronze shims which may be left in place with the approval of the Engineer.
3. Each piece of equipment or supporting base bearing on concrete foundations shall be bedded in grout. The Contractor shall provide a minimum of 1-1/2" thick grouting or as indicated on Contract Drawings.

1.10 DAMAGE DURING TESTS AND INSTRUCTION PERIODS

- A. Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and he shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.

1.11 SERVICES OF MANUFACTURER'S ENGINEERS

- A. The contract price shall include the cost of furnishing competent engineers or superintendents from each company manufacturing equipment for the Project to:
1. Assist the Contractor to install, adjust, and test the equipment in conformity with the Contract Documents.
  2. Supervise start-up operations and adequately instruct designated employees of the Owner in the proper operation and maintenance procedures when requested by the Owner throughout the guarantee period of the equipment. A report on each visit shall be filed by the manufacturer's representative with the Engineer.

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 \_ d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 \_ c o m b i n e d \_ P d f \ 0 1 6 0 0 \_ m a t e r i a l \_ a n d \_ e q u i p m e n t . d o c x 1 1 / 1 1 / 1 6 2 : 5 1 : 5 0 P M

1.12 EQUIPMENT MANUFACTURER CERTIFICATION

- A. The Contractor will provide Engineer with written certification obtained from each company manufacturing equipment for the Project that the equipment is installed and does operate in accordance with the manufacturer's recommendations.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 - c o m b i n e d - p d f \ 0 1 6 0 0 - m a t e r i a l - a n d - e q u i p m e n t . d o c x 1 1 / 1 1 / 1 6 2 : 5 1 : 5 0 P M

---

SECTION 01700  
CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures
- B. Final cleaning
- C. Adjusting
- D. Project record documents
- E. Lubrication survey
- F. Spare parts and special tools
- G. Equipment startup services
- H. Substantial completion.
- I. Warranties

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals
- B. Section 01500 - Construction Facilities

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B. Provide submittals to Engineer that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.4 FINAL CLEANING

- A. Complete final cleaning and restoration prior to final project inspection.
- B. Remove all temporary labels, stains and foreign substances. Wash or clean by approved methods all surfaces on which dust and dirt has collected.

y :  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
7  
0  
0  
-  
c  
o  
n  
t  
r  
a  
c  
t  
-  
c  
l  
o  
s  
e  
o  
u  
t  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
2  
:  
0  
8  
P  
M

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
7  
0  
0  
-  
c  
o  
n  
t  
r  
a  
c  
t  
-  
c  
l  
o  
s  
e  
o  
u  
t  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
2  
:  
0  
8  
P  
M

- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean debris from drainage systems.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- G. Restore disturbed area. Lawn area may be seeded unless otherwise noted. Paved area shall be restored to their original condition, compatible with the surrounding area, using like materials and workmanship.
- H. Touchup painted surface. Clean and repaint with matching color all scratched, marred or otherwise damaged painted surfaces of all equipment and enclosures.

1.5 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, Product Data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. As the work progresses, keep a complete and accurate record of all changes in the Contract Documents (including Drawings, Shop Drawings, Product Data, and Specifications) indicating the work as actually installed. All changes shall be neatly shown on blue-line prints of the drawings effected or in the specifications which shall be kept at the job site for inspection by the Owner and the Engineer.
- C. Ensure entries are complete and accurate, enabling future reference by Owner.
- D. Store record documents separate from documents used for construction.
- E. Record information concurrent with construction progress.
- F. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda, Field Modifications and Change Orders.
- G. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish main floor datum.
  2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  4. Field changes of dimension and detail.
  5. Details not on original Contract drawings.
- H. On completion of the work, prior to the Contractor's application for final payment and as a condition to its approval by the Engineer and Owner, the Contractor shall arrange such site records in order in accordance with the various sections of the specifications bind them together and index them and deliver them to the Engineer. In addition the Contractor shall request a complete set of reproducible contract Drawings, and transfer all as-built revisions and changes to them and deliver them to the Engineer. These drawings shall be dated and marked "As-Built".
- I. All reproducible tracings made by the Contractor, equipment manufacturers, and/or material suppliers shall be corrected to show the work as actually completed or installed and a reproducible copy of these drawings shall then be turned over to the Engineer.
- J. Prints in triplicate of all corrected opaque drawings shall be furnished to the Engineer prior to the issuance of the final estimate.
- K. Written approval or other evidence satisfactory to the Engineer of the final conditions of the work shall be obtained from:
1. Saginaw County
  2. All public authorities or agencies having jurisdiction over any portion of the work
  3. Others as requested by the Engineer in writing.
- L. All public authorities or agencies having jurisdiction over any part of the work shall be determined, and all the requirements of these authorities or agencies with respect to but not limited to inspection, permits, fees, approval, and the like regardless of whether they are listed above or not shall be met.
- M. Submit all documents to Engineer for approval prior to submittal of final Application for Payment.

#### 1.7 SUBSTANTIAL COMPLETION

- A. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy and utilize the facilities for its intended use.
- B. When the Contractor considers that the Work, or portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Engineer a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the Contractor's list, the Engineer will make an inspection to determine whether the Work or designated portion thereof is substantially

complete. If the Engineers inspection discloses any item, whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall complete or correct such item upon notification by the Engineer. The Contractor shall then submit a request for another inspection by the Engineer to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Engineer will prepare a Certificate of Substantial Completion which shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

1.8 WARRANTIES

- A. Provide duplicate copies of all warranties.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers with a Table of Contents in three D side ring binder with durable plastic cover.
- C. Submit warranty documents prior to final Application for Payment.
- D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.
- E. All parts of the work or equipment which is in the opinion of the Engineer prove defective in material, workmanship, or operation within the warranty period shall be removed and replaced or repaired in a manner satisfactory to the Engineer and at no cost to the Owner.
- F. Any service material or equipment required because of the defect shall be supplied without charge.
- G. All work specified to be designed by the Contractor shall be guaranteed to perform as specified.
- H. The Warranty period shall be one year from the date of Substantial Completion unless:
  - 1. A greater period is specified elsewhere.
  - 2. Owner chooses to take over and use a portion of the Work as provided for in the Specifications; in which case the warranty shall be one year from said takeover and use.
- I. Equipment or work replaced and/or repaired during the warranty period shall be guaranteed for one year from the date of acceptance of the repair or replacement or until expiration of the original warranty period whichever comes later.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
7  
0  
0  
-  
c  
o  
n  
t  
r  
a  
c  
t  
-  
c  
l  
o  
s  
e  
o  
u  
t  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
2  
:  
0  
8  
P  
M

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
1  
7  
0  
0  
-  
c  
o  
n  
t  
r  
a  
c  
t  
-  
c  
l  
o  
s  
e  
o  
u  
t  
.d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
2  
:  
0  
8  
P  
M



SECTION 02031

COLOR AUDIO-VIDEO ROUTE SURVEY

PART 1 GENERAL

1.1 GENERAL

- A. The bid item "Audio-Video Route Survey" is included in the proposal to cover the cost of obtaining a record of the existing conditions prior to the start of construction. Only drives and roads where maintenance access crossing will occur.
- B. The Contractor shall engage the services of a professional electrographer actively engaged in color audio-video recordings of projects similar to the work included under this Contract.
- C. The firm performing this work shall have the equipment and experience necessary to produce a digital color audio-video recording of the prescribed quality, meeting all of the requirements specified herein.
- D. The Engineer may require the video taping of a "sample" route to verify the ability of the electrographer to perform the work.
- E. All digital recordings and written records shall become the property of the Owner. The firm performing this work shall also provide one complete copy of all DVD discs and written records to the Engineer.
- F. Complete coverage shall include all surface features located within the public right-of-way, easement areas and adjacent private properties up to building line when such properties lie within the zone of influence of construction and will be supported by appropriate audio descriptions made simultaneously with video coverage. Such coverage shall include but not be limited to all existing driveways, sidewalks, curbs, ditches, roadways, landscaping, trees, culverts, mail boxes, headwalls, and retaining walls, or buildings located within such zone of influence.
- G. Coverage shall include the entire project area impacted by construction and any portions of streets to be used by the Contractor as access roads and/or haul roads.
- H. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than twelve (12) feet to insure proper perspective.
- I. In some instances, audio-video coverage will be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance approved by the Owner.
- J. All recording must be made using digital equipment, full color audio-video DVD discs. One complete copy of DVD discs and written records shall be provided to the Owner prior to commencing construction on this project.

- K. Digital audio-video discs (DVD) shall be Sony, Panasonic, J.V.C or equal on DVD discs suitable for recording and play-back on computer DVD ROM players and conventional DVD players utilizing DVD R format.
- L. Buildings shall be identified by street number, when visible, in such a manner that structures of the proposed system can be located by reference. In all instances, however, locations shall be identified by audio or visual means at intervals not-to-exceed 100 lineal feet in the general direction of travel.
- M. The rate of speed in the general direction of travel of the conveyance used during recording shall not exceed 30 feet/minute. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that stop-action during play-back will produce clarity of detail in the object viewed.
- N. All recording shall be done during times of good visibility. No recording shall be done during periods of visible precipitation, or when more than 10% of the ground area is covered with snow or standing water, unless otherwise authorized by the Owner.
- O. Any recorded coverage not acceptable to the Owner shall be rerecorded at no additional charge.
- P. The Owner shall have the authority to designate areas for which coverage may be added or omitted and this shall be considered as incidental to the Contract.
- Q. All DVD discs shall be properly identified as to location, time and date in a manner acceptable to the Owner.
- R. A record of the contents of each DVD disc shall be supplied by a sheet identifying each segment in the DVD disc by location, disc number, disc time, starting point, traveling direction and ending point.
- S. The recording shall be done prior to placement of materials or equipment on the construction area and the DVD disc and record of contents must be furnished one week prior to the start of construction.
- T. To preclude the possibility of tampering or editing in any manner, all video recordings, must, by electronic means, display continuously and simultaneously generated transparent digital information to include the date and time of recording, as well as the corresponding engineering stationing numbers. The date information will contain the month, day and year; for example 10/5/96 and be placed directly below the time information. The time information shall consist of hours, minutes and seconds, separated by colons. For example 10:53:18. This transparent information will appear on the extreme upper left-hand third of the screen.
- U. The engineering stationing numbers must be continuous, accurate and correspond to the project stationing and must include the standard engineering symbols. For example 14+84. This transparent information will appear on the extreme area covered, direction of travel, viewing side, etc.

: \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 2 0 3 1 - c o l o r - a u d i o - v i d e o - r o u t e - s u r v e y . d o c x 1 1 / 1 1 / 1 6 2 : 5 2 : 3 5 P M

- V. Below the engineering station, periodic transparent alpha/numeric information will appear. This information will consist of the name of the project, name of area covered, direction of travel, viewing side, etc.
- W. Digital audio-video discs must be originally recorded with minimum horizontal resolution of 480 lines. Reprocessed DVD discs will not be acceptable.
- X. In order to produce the proper detail and perspective, artificial lighting will be required where it is necessary to fill in shadow areas caused by trees, utility poles, road signs, or other such objects.

1.2 BASIS OF PAYMENT

- A. Payment shall be by "Lump Sum" based on construction zones as identified on the construction plans.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

END OF SECTION

:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
0  
3  
1  
-  
c  
o  
l  
o  
r  
-  
a  
u  
d  
i  
o  
-  
v  
i  
d  
e  
o  
-  
r  
o  
u  
t  
e  
-  
s  
u  
r  
v  
e  
y  
.  
d  
o  
c  
u  
m  
e  
n  
t  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
2  
:  
3  
5  
P  
M



SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of surface debris.
- B. Removal of paving, curbs, and gravel roadway materials, as required.
- C. Removal of trees, shrubs, and other plant life, including root system.
- D. Topsoil excavation and stockpiling.

1.2 RELATED SECTIONS

- A. Section 02200 – Earthwork
- B. Section 02220 - Soil Erosion Control

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable code for disposal of debris.
- B. Coordinate clearing Work with utility companies.

1.4 SITE INFORMATION

- A. The Contractor shall be held to have compared the conditions of the site where work is to be performed with the drawings and specifications and to have satisfied himself as to the conditions of the site, existing conditions, and any other conditions affecting the carrying out of the work, before delivery of his proposal. It is expressly understood that he will obtain first-hand information concerning the available facilities for receiving, transporting, handling and storing construction equipment and materials and concerning other local conditions that may affect his work.
- B. The contractor shall draw his own conclusions as to soil conditions, including possible presence of groundwater, to be encountered, and he shall complete the work under any job or field condition which was present and/or ascertainable prior to bidding.
- C. He shall also complete the work under whatever conditions he may create by his own sequence of construction, construction methods, or other condition he may create at no additional cost to the Owner.
- D. No allowance or extra consideration on behalf of the Contractor will subsequently be allowed by reason of error or oversight on the part of the Contractor.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

### 3.1 WORK INCLUDED

- A. The work included under this section consists of providing all labor, equipment and services to execute all items of clearing, demolition, soil erosion control and removal as shown on the drawings, including all incidental work obviously required to effect complete work to the full intent of the drawings and specifications.

### 3.2 PREPARATION

- A. Verify that existing plant life designated to remain is tagged or identified.
- B. Identify the waste area for disposing of removed materials off site.

### 3.3 PROTECTION

- A. Locate, identify and protect utilities that remain, from damage.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect bench marks, survey control points, and existing structures from damage or displacement.

### 3.4 CLEARING

- A. Clear areas required for access to site and execution of Work, as shown on the Contract Drawings.
- B. Remove trees and shrubs as indicated. Remove stumps, roots, and other debris to depths indicated on the Drawings and Section 02930 – General Landscape Materials and Final Grading.
- C. Clear undergrowth and deadwood, without disturbing subsoil.
- D. Remove topsoil and grass as indicated.

### 3.5 REMOVAL

- A. Remove debris, rock and extracted plant life from site, and dispose of in accordance with all Federal, State and Local Ordinances.
- B. Removing paving, curbs, and gravel base, as required, and dispose of off -site. Neatly saw cut edges at right angle to surface.

3.6 TOPSOIL EXCAVATION

- A. Excavate or strip topsoil from cleared areas without mixing with foreign or underlying materials.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site or off site as approved by the Engineer; construct piles to drain freely, and protect from erosion.
- D. Remove excess topsoil not intended for reuse from site.
- E. Refer to Sections 02930 - General Landscape Materials and Final Grading and 02970 – Landscape Maintenance and Guarantee.

END OF SECTION



SECTION 02200

EARTHWORK

1.1 TABLE OF CONTENTS

1.1 TABLE OF CONTENTS ..... 1  
1.2 EXCAVATION ..... 1  
1.3 REMOVING TREES AND STUMPS ..... 1  
1.4 REMOVING EXISTING STRUCTURES, RETAINING WALL AND CULVERTS ..... 2  
1.5 REMOVING MISCELLANEOUS STRUCTURES ..... 3  
1.6 ROADWAY EXCAVATION ..... 6  
1.7 EXCAVATION AND BACKFILL FOR STRUCTURES ..... 11  
1.8 SUBBASE ..... 14  
1.9 FINE GRADING ..... 15  
1.10 FINAL TRIMMING AND CLEANUP ..... 16

1.2 EXCAVATION

- A. Excavation shall consist of all work required to construct the earth grade and its appurtenances true to the lines, grades and cross sections called for on the plans and in accordance with these specifications. Excavation shall consist of the following items, any and all of which may be included and incidental to it: clearing and grubbing; removing trees, stumps, hedge, old culverts and miscellaneous structures; roadway excavation, including salvaging and stock-piling topsoil; excavation for structures; trimming and finishing earth grade; fine grading and cleanup; final trimming and cleaning up; and cleaning up roadsides.
- B. Soil notations when shown on the plans are for general information purposes only and shall not relieve the Contractor of his responsibility in investigating all local conditions affecting the work.

1.3 REMOVING TREES AND STUMPS

- A. This work shall consist of removing trees or stumps where called for on the plans, or directed by the Engineer which occur within the right of way outside of areas estimated for clearing and grubbing, and shall include cutting such trees, removing their stumps from the ground and properly disposing of the material.
- B. The size of trees will be determined by the average diameter of the tree trunk taken at a point 4 feet above the ground. The diameter will be measured to the nearest full inch. Trees having major limbs lower than 4 feet from the ground shall be measured at the smallest diameter below such limbs.
- C. Stumps shown on the plans or authorized by the Engineer to be removed will be measured as the average diameter across the top of the stump. Measurement will be to the nearest full inch.
- D. Where more than one tree grows from a common source below ground, each tree or stump therefrom will be measured as a separate tree or stump.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
5  
3  
:  
2  
7  
  
P  
M

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
3  
:  
2  
7  
P  
M

- E. If the contract contains a separate item for “Removing Trees” or “Removing Stumps,” the contract unit price each shall be payment in full for removing such trees or stumps, which are outside the areas estimated for clearing and grubbing, backfilling of all holes after removal of trees or stumps, and disposing of materials, in accordance with the following schedule of sizes:
- F. Diameter
  - Removing Trees and Stumps 8-18 inches
  - Removing Trees and Stumps 19-36 inches
  - Removing Trees and Stumps 37 inches or larger
  - Removing Stumps Same diameters as trees
- G. Removing trees or stumps less than 8 inches in diameter shall be considered as incidental to work of Earth Excavation unless the contract contains an item of work covering such removal. Trees and stumps less than 8 inches in diameter will not be shown on the plans unless their removal is covered by a contract item.
- H. If the contract does not include a separate item for Removing Trees or Removing stumps above 8 inches in diameter, then all work specified in this section, as shown on the plans, shall be considered as incidental to construction of the project.

1.4 REMOVING EXISTING STRUCTURES, RETAINING WALL AND CULVERTS

- A. This work shall consist of removing, in whole or in part, all structures, retaining walls and culverts shown on the plans to be removed or required to be removed for the construction of the project, or the filling of old culverts as required, together with the salvaging, storing and disposing of all resulting materials and the backfilling and compacting of all resulting trenches.
- B. Structures shall be removed in such a manner as not to damage work or material which is to be salvaged or any new work under construction. Portions of existing structures not interfering with the new construction shall be removed to at least 2 feet below the earth grade of the new work. Portions of the existing structures, outside of the construction limits, shall be removed as indicated on the plans.
- C. Materials designated to be salvaged shall be stored in neat piles in locations determined by the Engineer within the right of way and adjacent to the site or the work, or loaded on trucks. Materials not designated to be salvaged shall become the property of the Contractor and shall be removed from the site of the work.
- D. All old culverts or parts thereof that interfere with the new construction, or which are specified to be removed shall be removed. Steel and timber superstructures and abutments, and the floors of all concrete and masonry culverts that are to be abandoned, shall be removed entirely. Concrete and masonry abutments shall be removed entirely or broken down to an elevation of at least 2 feet below the proposed elevation of the earth grade.
- E. Where old culverts are to be extended or otherwise incorporated into the new work, only such part of the old structure shall be removed as to provide a proper connection to the new work, and the connecting edges shall be cut, chipped and trimmed to the required lines and grade without weakening or damaging the part of the structure to be retained.

- F. All road pipe culverts that are to be abandoned, the tops of which come within 3 feet below the proposed earth grade within the area of the roadbed, and elsewhere to an elevation within 2 feet below the proposed finished earth grade, shall be removed. Road culverts at a lower elevation, if in good condition in the opinion of the Engineer, may be properly bulkheaded and left in place. The ends of the culvert left in place shall be blocked with a masonry bulkhead or concrete which thickness shall be 1/3 the diameter of the pipe, but in no case less than 12 inches.
- G. If the contract contains a lump sum price for "Removal of Existing Structures" or "Removal of Portions of Existing Structures," such lump sum price shall be payment in full for the removal and disposal of the existing structures. If the contract does not specifically provide for separate payment and the plans provide for such removal, no extra payment will be made for these items of work, but compensation therefore shall be considered as being incidental to construction of the project.
- H. If the contract includes a separate item for removing culverts, the contract unit price each for "Removing Culverts" shall be payment in full for excavation, removing the specific culverts listed, salvaging, storing, disposing of the materials and backfilling the trenches.
- I. All materials including Granular Backfill, required for backfilling removed structures or culverts, shall be considered incidental to removal of the structures involved, unless otherwise specified.
- J. If the contract does not include an item for Removing Culverts, the removal indicated on the plans shall be incidental to the proposed construction. The removal and disposal of all existing culverts which is necessary to accommodate proposed construction will be considered as incidental to the proposed construction.
- K. The bulkheading of all open ends of pipe culverts which is necessary due to a partial removal of the culvert shall be incidental to the item of work which necessitated the partial removal.

1.5 REMOVING MISCELLANEOUS STRUCTURES

- A. This work shall consist of removing old pavement, surface and base course, integral and separate curb, curb and gutter, sidewalk, masonry, railway track, fence, poles, safety zones, guard rail, manholes, catch basins, inlets, sewers and any other structures which are not suitable to be left in the roadway; and salvaging and disposing of the resulting materials and backfilling the resulting trenches, holes and pits.
- B. Breaking Down and Removing
  - 1. All old structures with all attached parts and connections shown on the plans to be removed, or that which interferes with the new construction, shall be entirely removed within the limits shown, unless otherwise provided.
  - 2. In removing separate curb or separate curb and gutter, sidewalk, crosswalk, and similar structures, where portions of the existing structure are to be left in the surface of the finished work, the old structure shall be removed to an existing joint, unless otherwise directed by the Engineer. Where integral curb is to be removed flush with the existing concrete pavement, the operation shall be performed by mechanical means so as to leave a reasonably neat and flush cleavage plane, without damage to the underlying pavement. When pavement which includes integral curb is to be

removed, the removal shall be as herein specified for concrete pavement. In removing an old pavement or concrete base with a bituminous surface, the old concrete shall be removed to an existing joint or cut to a true line with a vertical face at the locations called for on the plans, or as directed by the Engineer. The cutting of old pavement or base course shall be accomplished by line drilling a sufficient number of times such that removal of the old concrete will not in any manner disturb or damage the sections of pavement or base course which are to remain in place. In addition to line drilling, all finished pavement shall be cut to a depth of at least 3 inches with a power-driven concrete saw so as to eliminate all traces of the drilling. In removing a concrete base course, where part of the existing bituminous surface is to remain in place, the bituminous surface shall be cut the full depth by the use of a power driven saw along a line parallel to and at least 1 foot from either side of the base course removal. The removal of the bituminous surface as provided above, together with removal of the concrete base will be paid for as "Removing Old Pavement." Any concrete or bituminous surface damaged beyond the removal called for shall be removed and replaced at the Contractor's expense.

3. When a concrete or brick pavement is encountered under the existing pavement, the item of "Removing Old Pavement" will be allowed for each pavement removed, except old pavement with a concrete cap will be considered as only one pavement, whether or not there is a separation layer of earth or bituminous material between the old pavement and the concrete cap. The removal of a flexible pavement such as aggregate or macadam that is encountered in the excavation, at any elevation will not be paid for separately, but shall be included as a part of Earth Excavation.
4. Small quantities of earth may incidentally be removed when removing old pavement. Any earth so removed shall be replaced by backfilling with suitable material meeting the approval of the Engineer to the elevation of the proposed subgrade at the Contractor's expense.
5. The item of Removing Asphalt Surface shall consist of removing an asphalt or tar surface from a rigid base, such as concrete or brick, or from a flexible base, such as macadam or aggregate, and disposing of the material removed. The removal of an asphalt surface and the underlying aggregate or macadam base will be paid for as Earth Excavation. The removal of an asphalt surface and the concrete or brick base will be paid for as Removing Old Pavement. Where part of the existing asphalt surface is to remain in place exposed, it shall be cut the full depth by the use of a power-driven saw before starting to remove the adjacent surface. Where part of the existing asphalt surface is to remain in place and is to be resurfaced with asphalt, it shall be cut to a true line with equipment approved by the Engineer.
6. All masonry structures within the area of the roadbed shall be removed entirely or broken down to an elevation of at least 2 feet below the proposed earth grade, and elsewhere to an elevation of at least 1 foot below the proposed earth grade.
7. In the removal of railway track, all rails, paving, ties, tracks, encasement, concrete foundations and other appurtenances shall be removed. Rails shall be separated into single rail lengths of lengths not greater than 33 feet. Crushed stone or gravel ballast shall be left in place unless otherwise provided.
8. In the removal of manholes, catch basins and inlets, any live sewers connected with them shall be rebuilt and properly connected, and satisfactory by-pass service shall be maintained during such construction operations.
9. If the plans call for abandoning manholes, catch basins or inlets, the castings shall be carefully removed and the masonry broken down to an elevation at least 2 feet below the proposed earth grade within the area of the roadbed, and elsewhere to an elevation

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
5  
3  
:  
2  
7  
P  
M

at least 1 foot below the proposed earth grade. The abandoned structures shall be backfilled with a concrete mixture composed of 1 part Portland cement to not over 10 parts of fine aggregate. Existing live sewer connections shall be rebuilt and properly reconnected and satisfactory by-pass service shall be maintained during such construction operations. The removed castings shall remain the property of the Owner.

10. All open ends of abandoned sewers encountered in removing or abandoning drainage structures shall be plugged with brick masonry or concrete.
11. All sewers that are to be abandoned, the tops of which come within 3 feet below the proposed earth grade within the area of the roadbed and elsewhere to an elevation within 2 feet below the proposed earth grade, shall be removed. Sewers at lower elevation, if in good condition in the judgment of the Engineer, may be properly plugged and left in place as provided above.
12. When a portion of the existing structure is to be retained, care shall be taken not to impair the value of the retained portion during construction operation.
13. All operations necessary for the removal of any structure which might endanger the new construction shall be completed prior to construction of the new work.

C. Disposing of Materials

1. Materials salvaged during construction of the project shall become the property of the Contractor unless otherwise shown on the plans or in the proposal. Materials reserved for use by the Owner shall be removed without damage to the material and stored outside the limits of construction at the location and in the manner approved by the Engineer. Materials that become the property of the Contractor shall be removed from the project.
2. Suitable pieces of concrete or masonry removed during construction of the project may be used in the construction or riprap, tree wells, and similar structures, or may be used otherwise as approved by the Engineer.
3. All concrete, stone, brick and such material that cannot be used as above specified, all broken concrete which is matted together by steel reinforcement, and all other waste material, shall be properly disposed of by the Contractor at no cost to the Owner.

D. Backfilling

1. All trenches, holes and pits resulting from the breaking down or removal of miscellaneous structures shall be filled with suitable excavated material, or porous backfill of the grade specified as follows:
2. Backfilling of the entire trench, hole or pit excavation under road surfaces, pavement, sidewalk, curb, driveways and where the edge of the excavation is within 3 feet of the pavement shall be made with Granular Material, Class II. The material shall be placed by means having the approval of the Engineer and is to be compacted to 95 percent of maximum unit weight. If the above operation will result in a non-draining pocket, the backfill method and materials shall be as directed by the Engineer.
3. Backfilling of all other excavations beyond the areas noted above shall be made with selected excavated material placed in one-foot layers with each layer being thoroughly compacted by means having the approval of the Engineer, to a density equivalent to the undisturbed adjacent soil. Unless otherwise provided this work will be measured in the original position of the structures to be removed as follows:
4. Removing Old Pavement, surface course and concrete or brick base course will be measured by area in square yards. Unless otherwise provided, Removing Old Pavement shall include surface course and base course. Where removing old curb or

curb and gutter is required in conjunction with Removing Old Pavement, surface or base course, these structures will be classed as Removing Old Pavement, surface course or base course and will be measured by area in square yards. Concrete driveways to be removed will be measured as Removing Old Pavement unless otherwise provided.

5. Removing Curb, Curb and Gutter, Gutter, or Integral Curb flush with existing concrete pavement, in cases where these structures are not adjacent to old pavement or base course which is to be removed, will be measured by length along the base of the curb face or along the flow-line of the gutter in lineal feet.
6. Removing Asphalt Surface will be measured by area in square yards.
7. Removing Sidewalk will be measured by area in square yards.
8. Removing masonry structures will be measured by volume in cubic yards.
9. Removing guard rail will be considered as incidental to Earth Excavation or new guard rail construction.
10. Removing Railway Tracks will be measured by length in lineal feet of rail. Removing the paving and track foundations between the rails and on each side of the track will be measured separately by volume in cubic yard as Removing Track Encasement.
11. Removing Fence will be measured by length in feet.
12. Removing Sewers of the diameter specified will be measured by length in feet.
13. Removing Utility Poles, Pole Stubs, Manholes, Catch Basins, Inlets and Safety Zones will be measured as units, including all attached parts and connections.
14. Granular Material, Class II, will not be measured or paid for separately, but will be considered as incidental to the removal item, unless otherwise provided for in the proposal.
15. The contract unit price shall be payment in full for sawing, where specified herein, breaking down, removing, backfilling and disposing of materials.
16. The bulkheading of all open ends of abandoned sewer encountered in removing or abandoning drainage structures and sewers, as herein specified, or in the construction of new sewers, shall be considered as incidental to the removal or abandonment of the structure or sewer, or the item of new construction.
17. The removal of any sewer, manhole, catch basin or inlet which is shown on the plans, and which is necessary to permit the construction of a new item of work shall be incidental to the item of work.

- E. If the contract does not include a separate item for removing any of the miscellaneous structures listed herein, removing such structure or structures, as herein specified and as shown on the plans, including sawing, shall be considered as incidental to the proposed construction.

## 1.6 ROADWAY EXCAVATION

- A. This work shall consist of the removal and disposal of all materials necessary for construction of the earth grade, including salvaging and stockpiling topsoil; preparing roadway foundation; picking up and disposing of stones, boulders and broken rock; grading the roadway, intersections and entrances; constructing ditches; construction embankments; borrow excavation; disposing of surplus and unsuitable materials; and maintaining the work in a finished condition until acceptable.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
3  
:  
2  
7  
P  
M

- B. All excavated materials which are not covered by separate items in the contract will be considered as Earth Excavation and shall include all the work listed under the general heading of Excavation.
- C. Earth Excavation may be designated as Borrow Excavation, Unsuitable Subgrade Excavation or Ditch Excavation, if so provided.
- D. Salvaging and Stockpiling Topsoil
  1. Topsoil, within the grading limits for cuts, and where the fill is less than 5 feet in height to the top of road metal, shall be removed to a depth and width specified on the plans or as directed by the Engineer. Topsoil from berm ditches and inlet and outlet ditches shall be removed within construction limits, if required on the plans or in the proposal. Topsoil from peat and muck areas shall not be removed. All vegetation shall be cut to a height of approximately 5 inches and all such vegetation brush, stones, rocks, and any other objectionable litter or foreign material shall be removed before the ground is broken for removal of topsoil. All vegetation shall be disposed of as specified under Clearing and Grubbing.
  2. Equipment and methods of operations shall be such as to avoid the lifting of subsoil.
  3. The topsoil from the roadway shall be stockpiled in an approved location within the limits of the highway, or placed in the slopes as directed by the Engineer. Upon completion of the work, all stockpile areas shall be restored to a neat and satisfactory condition as directed by the Engineer.
  4. When the fill is to be 5 feet or less to plan grade, the topsoil shall be stripped from the entire fill area.
  5. Where embankments are to be constructed on existing slopes steeper than 1 vertical to 6 horizontal, consecutive steps with a horizontal dimension of not less than 3 feet shall be formed in the slope before any of the embankment material is placed.
  6. Old road surfacing of gravel, crushed stone, or other non-rigid type, occurring within the area of the roadbed and underlying proposed embankment less than 1 foot in depth shall be broken up and removed.
- E. Unsuitable Subgrade Excavation
  1. Unsuitable Subgrade Excavation shall be the operation of removing unsuitable soils below the level of the ground after topsoil has been stripped in fill areas where the embankment is to be 5 feet or less in height to plan grade, and the removal of unsuitable soils, below the subgrade elevation, as determined by the Engineer in cut areas after the subgrade has been established.
  2. Unsuitable Subgrade Elevation shall be accomplished within the limits as established by the Engineer. All such excavated material shall be disposed of as shown on the plans or as directed by the Engineer.
  3. The areas excavated of unsuitable material shall be backfilled with non-frost heaving material similar to the adjacent soil, except that when directed by the Engineer for areas where free water due to seepage is present, the excavation shall be backfilled with Granular Material, Class II and drainage shall be provided. The backfill shall be compacted to not less than 95 percent of the maximum unit weight, unless otherwise specified.
- F. Disposing of Stones, Broken Rock and Boulders
  1. All stones and boulders, occurring within construction limits that are not required for the construction of riprap or like structures may be placed in embankments, insofar as

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
6  
2  
:  
5  
3  
:  
2  
7  
P  
M

feasible. The stones and boulders shall be placed in layers and all voids shall be completely filled with sound earth, and thoroughly compacted, but no layer of such material shall be placed within 12 inches of the surface of the earth grade between the outside edges of the shoulders.

2. Boulders in excess of 1/8 cubic yard in volume that cannot be placed in embankments shall be disposed of in a manner that will not detract from the appearance of the roadside.
3. All stones, broken rock and boulders less than 1/8 cubic yard in volume that cannot be placed in embankment or otherwise incorporated in the work shall, unless otherwise specified, be disposed of by the Contractor at his own expense. If buried, the top of the stones, broken rock and boulders shall be not less than 12 inches below the natural ground level.

G. Grading the Roadway, Intersections and Entrances

1. All suitable materials removed from the excavation shall be used in the construction of the earth grade, as far as practicable, and at such other places as shown on the plans or as approved by the Engineer.
2. The road bed and ditches shall be maintained in such condition that the work will be well drained at all times. If it is necessary, in the prosecution of the work, to interrupt existing surface drainage, sewers or under-drainage, then temporary drainage facilities shall be provided until the permanent drainage work is completed. The construction of all temporary drainage facilities shall be considered as incidental to the construction of the project.
3. The grading shall be so conducted as to avoid removing or loosening any material outside of the required slopes and any such material which may be removed or loosened shall be replaced and thoroughly compacted to the required cross section. All intersecting roads, approaches, entrances and driveways shall be graded as shown on the plans or as directed by the Engineer.

H. Constructing Ditches

1. All suitable materials excavated from inlet, outlet, berm and intercepting ditches shall be used in the construction of the roadway, as far as practicable, or shall be otherwise disposed of as shown on the plans or as directed by the Engineer. No waste or surplus excavation shall be left within 3 feet from the edge of the ditch. Any such surplus or waste material shall be spread in a thin, uniform layer. All roots, stumps, trees, and other objectionable materials in the slopes and bottom of the ditch shall be removed and the holes backfilled with suitable material. All ditches constructed on the project shall be maintained to the required cross section and shall be kept free from debris until final acceptance.
2. When the contract contains a separate item and unit price for inlet, outlet, berm, or intercepting ditch excavation, it shall include the removal and disposal of all materials encountered as provided above for the construction of such new ditches, or the trimming, straightening, widening, deepening and relocating or existing ditches at the locations shown on the plans.
3. All temporary and abandoned ditches within the proposed roadway limits shall be backfilled with suitable material meeting the approval of the Engineer and compacted to 95 percent of maximum unit weight. Temporary and abandoned ditches beyond the limits of the roadway shall be backfilled with suitable material to the elevation of the surface of the adjacent ground or, as required to form the desired contour. This portion of the backfill shall be uniformly compacted to form a stable surface.

I. Constructing Embankments

1. Embankments shall be constructed with sound earth. The materials shall be deposited and compacted by either the Twelve-Inch Layer Method or the Controlled Density Method. The Controlled Density Method will be required unless some other method is specifically called for on the plans or authorized.
2. Where stones are prevalent, the material shall be carefully placed so that all large stones will be well distributed and the interstices completely filled with smaller stones, earth, sand or gravel so as to form a solid embankment. Any rock or fragmental material of such size as would prohibit it from being placed in layers of the specified depth shall be placed in the embankment only where and as directed by the Engineer. In no case shall stones over 3 inches in diameter be placed within 12 inches of the surface of the earth grade within the areas between lines 2 feet outside of the edges of proposed road metal.
3. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material.
4. Where filling in layers of the specified thickness is not feasible, as in the case of filling in water or filling over slopes too steep for the operation of equipment, the embankment may be constructed in one layer of sand or sandy gravel to the minimum elevation at which the equipment can be operated as determined by the Engineer. The fill material placed in this manner shall be thoroughly compacted by rolling or tamping, by use of approved compacting equipment by thorough saturation with water, by vibration, or by a combination of these or other approved methods capable of producing a uniform and well consolidated roadway foundation. Above this elevation the embankment shall be constructed in layers of the specified thickness, unless otherwise provided on the plans or authorized.
5. Portions of the embankment adjacent to any structure shall be constructed as specified under Excavation and Backfill for Structures,
6. The construction requirements for the two methods of placing and compacting embankments are as follows:
  - a) Twelve-Inch Layer Method. The material shall be deposited and spread in layers not more than 12 inches in depth, loose measure, parallel to the finished grade and extending to the full width of the embankment. The material shall be deposited by operating the conveying equipment over the layer being placed, insofar as feasible. Each layer shall be compacted to not less than 95 percent of the maximum unit weight as determined at the existing moisture content. The maximum unit weight will be determined as specified under the Controlled Density Method, except the test shall be modified to comply with the existing moisture content of the material at the time of placing. The operations of compacting shall be continued until each layer is compacted to the required density for its full width.
  - b) Controlled Density Method. The material for the embankment shall be deposited and spread in layers not more than 9 inches in depth, loose measure, and extending to the full width of the embankment.
7. The material for embankments of 4 feet or less and the bottom 4 feet of embankments of more than 4 feet above the surface of the ground upon which the embankment is to be constructed shall have not more than the optimum moisture content at the time of compaction.
8. The material for that part of the embankment more than 4 feet above the surface of the ground upon which the embankment is to be constructed shall have a moisture content of not greater than 2 percent above optimum at the time of compaction.

9. If the material contains an excess of moisture, it shall be dried to the required moisture content before being compacted.
  10. Each layer of material containing the required amount of moisture shall be compacted to not less than 95 percent of the maximum unit weight, unless otherwise specified on the plans, in the proposal or authorized before the succeeding layer is started.
  11. When the original ground upon which the embankment is being placed, or any section of compacted embankment, or the soil in cut sections becomes rutted or distorted by the Contractor's equipment, the method of operation shall be changed to eliminate this condition. The Contractor shall reshape and recompact any area so rutted or distorted at his own expense. This shall be done before any succeeding layers are placed.
  12. Where the embankment is to be 5 feet or less in height to the plan grade, the topsoil shall be stripped from the entire fill area. The depth of the topsoil to be removed shall be as shown on the plans or as directed by the Engineer. After the topsoil is removed, the entire area upon which the embankment is to be constructed shall be compacted to not less than 90 percent of the maximum unit weight, to a depth of 9 inches.
  13. Where the embankment is to be more than 5 feet in height to the plan grade, the original ground over the entire area upon which the embankment is to be constructed shall be compacted to not less than 90 percent of the maximum unit weight, to a depth of 9 inches.
- J. Disposing of Surplus and Unsuitable Material
1. All suitable surplus excavated material may be used to uniformly widen embankments to flatten slopes and to fill low places in the right of way, as approved by the Engineer. All unsuitable material shall be disposed of as show on the plans or deposited in low places within the right of way as approved by the Engineer. All surplus and unsuitable material that cannot be used as above specified shall be disposed of by the Contractor at his expense. Removal and disposal of all unsuitable material shall be completed before surfacing operations are started.
  2. Public and private roads used by the Contractor between the project and disposal locations shall be maintained by the Contractor at his expense, including repairs of any damage caused by his operations, and including the application of a dust palliative, when necessary, as determined by the Engineer.
  3. "Earth Excavation" will be paid for at the contract unit price per cubic yard, which price shall be payment in full for all work specified under the general heading of Excavation, for which no separate unit price is included in the contract. Disposal of all excavated materials together with the stockpiling of topsoil will be considered incidental to Earth Excavation.
  4. Unsuitable Subgrade Excavation will be paid for at the contract unit price per cubic yard for Earth Excavation, which price shall be payment in full for excavating the material below the subgrade elevation in cut sections, or below the elevation of the stripped embankment area in fill sections, and disposing of the material as shown on the plans or as directed by the Engineer. There will be no item of Overhaul, and all haul costs thereof shall be incidental to this item of Unsuitable Subgrade Excavation.
  5. Backfilling of areas created by the item of Unsuitable Subgrade Excavation with suitable materials excavated from the project will be paid for as Earth Excavation. The quantity to be paid for shall be equal to the amount of unsuitable material excavated below the earth grade in cut areas or below the existing ground elevation after topsoil removal in fill areas as measured in cubic yards of volume in its original position.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
/  
1  
6  
  
2  
:  
5  
3  
:  
2  
7  
  
P  
M

6. If special backfill is required in the areas of Unsuitable Subgrade Excavation, the contract unit price per cubic yard or per ton shall be payment in full for furnishing, backfilling and compacting this material.
7. If the contract includes a separate item for "Ditch Excavation", the contract unit price per lineal foot shall be payment in full for all the work of excavation, trimming and disposing of all encountered materials as herein provided. Stump and tree removal with the ditch excavation will not be paid for separately.
8. Unless otherwise provided in the proposal, no payment will be made separately or directly for haul or any part of the work. All haul will be considered a necessary and incidental part of the work and the cost thereof shall be included in the contract unit price for the pay item of work involved.
9. Compaction of the embankment will not be paid for separately, but shall be considered as incidental to the work of Earth Excavation and shall include all the work of manipulating the soil to dry it or adding water, as required to obtain the specified densities. No claim for additional compensation will be allowed for any delay required to obtain the specified moisture content or the specified density.

1.7 EXCAVATION AND BACKFILL FOR STRUCTURES

- A. This work shall consist of the removal and disposal of all materials necessary for the construction of structures including cofferdams, channel excavation, placing and compacting the backfill, disposing of surplus material and cleaning up the site. This work shall include all necessary clearing and grubbing and removing old structures or parts thereof, as required, except where the contract includes a separate item or items for such work.
- B. Foundation excavation will be classified as unclassified excavation, and shall include all materials of whatever nature encountered, including rock excavation and portions of the existing structure which are within the foundation excavation limits as shown on the plans and which are to be removed.
- C. Foundation Excavation
  1. Foundation excavation shall be made of sufficient size to permit construction of the foundation units and to provide for adequate drainage. When masonry is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation, and the final removal of the material to grade shall not be made until just before the masonry is to be placed. Concrete shall not be placed until the depth of excavation has been checked and the suitability of foundation material has been approved. The elevations for the bottom of footings shall be subject to such changes as are necessary to insure a satisfactory foundation if so provided by authorization.
  2. The surface of all rock or other hard material upon which masonry is to be placed shall be freed from all loose fragments, cleared and cut to a firm surface. The surface shall be level, stepped, or serrated as directed by the Engineer.
  3. For structures other than bridges, footing excavation may be trimmed to the exact size of the footing and the footing forms omitted, where soil conditions permit and when approved by the Engineer. In this case, adequate forms to establish the grade and alignment for the top of the footing and to support the reinforcing steel in proper position will be required.
  4. All unsound material underlying proposed structures other than bridges shall be removed and replaced with bank run gravel or coarse aggregate, in layers not

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
1  
1  
/  
1  
/  
1  
6  
2  
:  
5  
3  
:  
2  
7  
P  
M

exceeding 6 inches in depth, and each layer shall be thoroughly compacted by tamping or vibrating, or both. The foundation shall be otherwise corrected if so provided.

5. The Contractor shall furnish, place and maintain at all times such sheeting and bracing as may be required to support the sides of the excavation and to support and protect from damage all structures, including pavement, curbs, sidewalks, pipe lines and conduits adjacent to or crossing the trench, and such sheeting as may be required for the safety of vehicular and pedestrian traffic. Sheeting and bracing, not required by the plans or authorized by the Engineer to be left in place, shall be removed as the trench is backfilled. Supports for pipes, conduits, etc., crossing the trench shall conform to the requirements of the owners of such facilities, and, if so ordered by the Engineer, shall be left in place.

D. Cofferdams

1. The interior dimensions of cofferdams shall be such as to give sufficient clearance for the construction of forms and the inspection of their exteriors, and to permit pumping outside of the forms. Cofferdams or cribs which are tilted or moved laterally during the process of striking shall be righted or enlarged so as to provide the necessary clearance. Cofferdams shall not be braced to substructure forms. They shall be constructed so as to protect the work in place against damage from high water and to prevent injury to the foundation by erosion. No timber bracing shall extend into or remain in the finished masonry.
2. Plumbing shall be done from a sump located outside the forms in such manner as to avoid injury to the concrete. When called for on the plans or provided by authorization, a tremie concrete seal shall be placed.
3. Cofferdams shall be removed in such a manner as not to disturb or mar the finished masonry.
4. The Engineer will order that sheet piling for cofferdams remain in place in case its removal might induce movements in the completed structure or otherwise jeopardize the completed work.

E. Channel Excavation

1. Channel excavation shall consist of the removal and disposal of all materials of whatever nature encountered necessary for the purpose of bank trimming, straightening, widening, deepening or relocating the channel or the stream or watercourse. Channel excavation shall include all clearing, and grubbing and tree removal within and adjacent to the channel for a distance of 3 feet from either side of the top of bank.
2. Channel excavation shall be made to the grades and cross section as called for on the plans or as otherwise ordered by the engineer, and the resulting material shall be used in the construction of approach fills or disposed of as shown on the plans or as approved by the Engineer. No waste or surplus excavation shall be left within 3 feet of the edge of the channel and any surplus shall be spread and uniformly sloped to provide drainage to the channel.
3. All temporary and abandoned channels within the proposed roadway limits shall be backfilled with suitable material meeting the approval of the Engineer and compacted to 95 percent of maximum unit weight. Temporary and abandoned channels beyond the limits of the roadway shall be backfilled with suitable material to the elevation of the surface of the adjacent ground, or, as required, to form the desired contour. This portion of the backfill shall be uniformly compacted to form a stable surface.

F. Backfill

1. Backfill shall not be placed against any portion of the structure until the structure has been approved by the Engineer for backfilling. The required curing, surface finishing and waterproofing of the work to be covered by backfill shall be completed and all concrete shall have attained at least 75 percent of its design strength as determined by cylinder or beam tests, before the backfill is made. The cylinders and beams shall be cured at the same temperature as the structure concrete. All spaces excavated and not occupied by the new structure or by special porous backfill shall be backfilled with sound earth or other approved material from the excavation. After the backfill has been placed and compacted to the flow lines elevation of the weepholes, the back end of each weephole shall be covered with not less than 2 cubic feet of coarse aggregate, as incidental to construction of the structure. Where underdrains are called for in lieu of weepholes, the types and limits of porous backfill material required around the underdrains shall be as called for on the plans. All stones, boulders, and broken rock, placed in the backfill shall be uniformly distributed in layers except that no such material shall be placed within 12 inches of any pipe, conduit or other structure that might be subject to breakage. All voids therein shall be carried up the surface of the adjacent ground or to the elevation for proposed earth grade and its top surface shall be neatly graded. Prior to placing backfill on existing slopes which are steeper than 1 vertical to 6 horizontal, steps shall be formed in the slopes. Backfill around abutments, piers and other structures shall be deposited on opposite sides at the same time to equalize the loading. Fills around all structures shall be trimmed to the lines shown on the plans.
2. Unless otherwise specified on the plans or required, the space for a distance of at least 18 inches from the back of abutments, wings, and retaining walls and from the bottom of weepholes or other drainage devices to the elevation of earth grade shall be backfilled with Granular Material, Class II, in such a manner as to provide drainage.

G. Disposal of Surplus and Unsuitable Material

1. Surplus and unsuitable material shall be disposed of as specified under Roadway Excavation or as otherwise shown on the plans or approved by the Engineer.
2. Unless otherwise specified, foundation excavation will be measured by volume in cubic yards in its original position in the space bounded by the existing ground surface or exposed portion of the existing substructures, the elevation of the bottom of the foundation, and the vertical planes indicating the excavation limits, as shown on the plans.
3. When the contract contains a separate item for Cofferdams, all cofferdams for the structure will be grouped as a unit and measured as such unless otherwise provided on the plans or authorized.
4. Channel Excavation will be measured by volume in cubic yards in its original position and will be exclusive of any material indicated above as foundation excavation.
5. Granular Backfill of the grades specified will be measured by volume in cubic yards, loose measure or compacted in place, as provided on the plans. Material placed outside of the maximum pay limits of porous backfill as shown on will not be included in the pay quantity.
6. "Unclassified Excavation" will be paid for at the contract unit price per cubic yard, which price shall be payment in full for the work specified.
7. If the contract contains a separate item for "Cofferdams," the contract lump sum price shall be payment in full for the work of constructing, maintaining and removing all cofferdams, including pumping. No payment will be made for this item before work

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
5  
3  
:  
2  
7  
  
P  
M

has progressed to a point where the cofferdams are no longer needed. If the contract does not include a separate item for cofferdams, no payment will be made to the Contractor for cofferdams as such but the cost thereof shall be included in the contract unit price for substructure concrete.

- 8. Temporary sheet piling left in place by order of the Engineer, which is not specified on the plans or in the proposal to be left in place, will be paid for on the basis of the salvage value of the material placed.
- 9. "Channel Excavation" will be paid for at the contract unit price per cubic yard, which price shall be payment in full for the work specified.
- 10. Backfill, except granular backfill, will not be paid for as such but payment for all work in connection with its handling shall be included in the price paid for foundation or channel excavation.
- 11. "Granular Backfill" of the grades specified will be paid for at the contract unit price per cubic yard, which price shall be payment in full for furnishing the material, hauling and compacting the material in place. When such backfill is made with excavated materials from the project, it will not be paid for as such, but will be incidental to excavation, unless otherwise provided.
- 12. No payment will be made separately or directly for haul on any part of the work. All haul will be considered a necessary and incidental part of the work and the cost thereof shall be included in the contract unit price for the pay items of work involved.

1.8 SUBBASE

- A. This work shall consist of placing a subbase of Granular Material, Class II on the prepared subgrade.
- B. The subgrade shall be constructed to the alignment, grade and cross section shown on the plans, and the surface shall be trimmed as described under Fine Grading, Preparing Subgrade when a concrete pavement or concrete base course or when a non-rigid surface or base course is to be placed.
- C. Should the subgrade at any time prior to or during the placing of subbase become soft or unstable to the extent that rutting occurs in the subgrade, or to the extent that subgrade material is forced up into the subbase material, the operation of hauling and placing subbase shall be immediately discontinued. Where subgrade material has become mixed with the subbase material, the mixed material shall be removed and disposed of. After the subgrade has been corrected as directed by the Engineer, new subbase material shall be placed and compacted as specified above. The removal, disposal, and replacement of the subbase shall be at the Contractor's expense.
- D. Subbase (compacted in place) will be measured by volume in cubic yards based on the neat lines called for on the plans.
- E. Subbase (compacted in place) will be paid for at the contract unit price per cubic yard, which price shall be payment in full for all the work specified, including furnishing, hauling, placing and compacting the material.
- F. Water used for compacting the subbase will not be paid for separately, but shall be considered as incidental to the construction of the subbase.

1.9 FINE GRADING

- A. This work shall consist of trenching, when required, preparing the subgrade, and constructing shoulders, and shall apply to the area between the outside lines of the finished shoulders or between the outside edges of curb or curb and gutter where such structures are called for.
- B. Trenching
  - 1. Trenching will not be required unless it is shown on the plans. When trenching is required, it shall consist of grading to the approximate elevation and cross section for subgrade plus a sufficient distance on the shoulders outside of the excavated area or elsewhere in its intended final position.
  - 2. All stones and rocks over 3 inches in diameter encountered in trenching shall be removed and disposed of as specified under Roadway Excavation and this work shall be considered as incidental to the item of Fine Grading.
- C. Preparing Subgrade
  - 1. The Subgrade shall be smoothed, trimmed and completed to require line, grade and cross section shown on the plans. The subgrade between lines at least 1 foot on either side of the proposed metal shall be compacted to not less than 95 percent of the maximum unit weight for a depth of 9 inches. All soft and yielding materials encountered which become unstable under the compaction effort, and all other unsuitable materials shall be removed and replaced with suitable materials as directed by the Engineer.
  - 2. The surface of the subgrade shall be finished in the manner described herein, depending on the type of surface or base course to be placed.
    - a. Concrete Pavement and Concrete Base Course
      - 1) When a concrete pavement or concrete base course is to be placed directly on the prepared subgrade, and no subbase is to be placed, the earth subgrade shall be constructed at or slightly above the required elevation so that the placing of forms, and the operation of the subgrade planer on the forms, shall involve a cutting and removal of previously compacted material. The preparation of the subgrade shall be completed ahead of placing forms a distance equivalent to that covered normally in one day's paving operation.
      - 2) After the pavement forms have been set true to line and grade, a subgrade planer operating on the forms shall be used to plane off the high grade. If any low areas are encountered they shall be filled with suitable material and compacted to the density of the adjacent soil and this area re-planed. A self-propelled 5-ton roller shall be used behind the subgrade planer prior to placing concrete.
    - b. Non-Rigid Surface and Base Courses
      - 1) When a non-rigid surface or a base course is to be placed on the prepared subgrade, the earth subgrade shall be constructed to the alignment, grade, and cross section shown on the plans, except that a tolerance of 1/10 foot above or below the established grade will be permitted. The grade shall be that obtainable from machine operations, and the 1/10 foot tolerance shall be a permitted variation, and not a uniform difference from the plan grade. The preparation of the subgrade shall be completed ahead of placing the aggregate

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
  
1  
1  
/  
1  
1  
/  
1  
6  
  
2  
:  
5  
3  
:  
2  
7  
  
P  
M

- surface or base course a distance equivalent to that covered normally in one day's operation of placing aggregate surface or base course.
- 2) When a flexible pavement or base course is being constructed, unless the subgrade is composed of sand or other freely self-draining material, positive subgrade drainage during the placing and compacting of the road metal shall be obtained by cutting and maintaining trenches through the shoulders approximately 150 feet apart, staggered alternately each side of the centerline, with one or more placed at right angles opposite low points in the grade. These drainage trenches shall be at least 1 foot in width at the bottom and at such depth and grade as to give positive drainage from the subgrade. The trenches shall be filled with Granular Material, Class II, unless otherwise directed by the Engineer.
  - 3) The subgrade as formed shall be maintained in a smooth and compacted condition until the non-rigid surface or base course has been placed. Should the subgrade at any time prior to or during the placing of the concrete pavement, non-rigid surface, or subbase become soft or unstable to the extent that rutting occurs, the subgrade will be corrected as directed by the Engineer at the Contractor's expense.
  - 4) No subbase, base course, surfacing, curb or curb and gutter shall be placed on the subgrade until it has been approved by the Engineer.

D. Constructing Shoulders

1. Earth shoulders shall be constructed of sound earth or other approved material to the required grade and thoroughly compacted by rolling with pneumatic-tired compacting equipment. The use of steel tread tractors for compacting the shoulders along pavements will not be permitted. The equipment shall be operated in such manner as to provide satisfactory compaction without damaging the pavement. The shoulders shall be constructed in a proper sequence with the surfacing operation. In the construction of gravel and other non-rigid type surfaces, the shoulders shall be constructed during the preparation of the subgrade to a height not less than the edge thickness of each course of road metal before compaction.
2. Aggregate shoulders of the type specified shall be constructed according to the requirements specified for the particular type of shoulder material required.
3. If the contract does not include a separate item for "Fine Grading," this work will be considered as incidental to construction of the project.

1.10 FINAL TRIMMING AND CLEANUP

- A. Final trimming and cleaning up shall include removing weeds and other objectionable vegetation on those portions of the construction site outside of the finished shoulder lines or outer edges of the curbs.
- B. All irregularities shall be made smooth, washouts shall be filled, all backslopes rounded and entire areas compacted and completed to the required lines, grade and cross sections.
- C. All weeds shall be cut and all rubbish and debris removed from the project, and disposed of as provided for under Clearing and Grubbing.

- 
- D. If the contract does not include a separate item for “Final Trimming and Cleaning Up,” this work will be considered as incidental to the construction of the project.

END SECTION

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
0  
-  
e  
a  
r  
t  
h  
w  
o  
r  
k  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
/  
1  
6  
  
2  
:  
5  
3  
:  
2  
7  
  
P  
M



---

SECTION 02202  
DRAINAGE GEOTEXTILES

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. Section 02200 – Earthwork

1.2 REGULATORY REQUIREMENTS

- A. Conform to ASTM D4759

PART 2 PRODUCTS

2.1 DESCRIPTION

- A. This work shall consist of furnishing and placing a geotextile for drainage applications as shown on the drawings. The geotextile shall be designed to allow passage of water while retaining insitu soil without clogging. The quantities of drainage geotextiles as shown on the plans may be increased or decreased at the direction of the Engineer based on construction procedures and actual site conditions that occur during construction of the project. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

2.2 MATERIALS

- A. Fibers used in the manufacture of geotextiles, and the threads used in joining geotextiles by sewing, shall consist of long chain synthetic polymers composed of at least 85% by weight polyolefins, polyesters, or polyamides. They shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including selvages. These materials shall conform to the physical requirements of Table 1.
- B. Geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled or tagged to provide product identification sufficient for inventory and quality control purposes. Rolls shall be stored in a manner which protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof cover.

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 2 2 0 2 - d r a i n a g e - g e o t e x t i l e s . d o c x 1 1 / 1 1 / 1 6 2 : 5 4 : 0 2 P M

2.3 TABLE 1 – PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILES

<u>PROPERTY</u>	<u>CLASS A4</u>	<u>CLASS B5</u>	<u>TEST METHOD</u>
Grab Strength Lbs.	180	80	ASTM D 4632
Elongation (%)	N/A	N/A	ASTM D 4632
Sewn Seam Strength <sup>6</sup> Lbs.	160	70	ASTM D 4632
Puncture Strength Lbs.	80	25	ASTM D 4833
Burst Strength psi	290	130	ASTM D 3786
Trapezoid Tear Lbs.	50	25	ASTM D 4533
Apparent Opening Size	1. Soil with 50% or less particles by weight passing U.S. No. 200 Sieve, AOS less than 0.6mm (greater than #30 U.S. Std. Sieve)  2. Soil with more than 50% particles by weight passing U.S. No. 200 Sieve, AOS less than 0.297mm (greater than #50 U.S. Std. Sieve).		ASTM D 4751
Permeability <sup>7</sup> (cm/sec)	k fabric >k soil for all classes		ASTM D 4491
Ultraviolet Degradation at 150 Hours	70% Strength retained for all classes		ASTM D 4355

1. Acceptance of geotextile material shall be based on ASTM D 4759.
2. Contracting agency may require a letter from the supplier certifying that its geotextile meets specification requirements.
3. Minimum - use value in weaker principal direction. All numerical values represent minimum average roll value (i.e., test results from any sampled roll in a lot shall meet or exceed the minimum values in the Table). Stated values are for non-critical, non-severe applications. Lots samples according to ASTM D 4354.
4. Class A Drainage applications for fabrics are where installation stresses are more severe than Class B applications; i.e., very coarse, sharp angular aggregate is used, a

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 - c o m b i n e d - p d f \ 0 2 2 0 2 - d r a i n a g e - g e o t e x t i l e s : d o c x 1 1 / 1 1 / 1 6 2 : 5 4 : 0 2 P M

heavy degree of compaction (95% AASHTO T99) is specified or depth of trench is greater than 10 feet.

5. Class B Drainage applications are those where fabric is used with smooth graded surfaces having no sharp angular projections, no sharp angular aggregate is used; compaction requirements are light (<95% AASHTO T99) and trenches are less than 10 feet in depth.
6. Values apply to both field and manufactured seams.
7. A nominal coefficient of permeability may be determined by multiplying permittivity value by nominal thickness. The k value of the fabric should be greater than the k value of the soil.

### PART 3 EXECUTION

#### 3.1 CONSTRUCTION REQUIREMENTS

- A. Geotextile Exposure Following Placement: Exposure of geotextiles to the elements between laydown and cover shall be a maximum of fourteen (14) days to minimize damage potential.
- B. Geotextile Placement: Successive sheets of geotextiles shall be overlapped a minimum of 12 inches in the direction of flow.
- C. Seams: Where seams are required in the longitudinal trench direction, they shall be joined by either sewing or overlapping. All seams shall be subject to the approval of the Engineer.
- D. Overlapped seams shall have a minimum overlap equal to the width of the trench.
- E. Repair: A geotextile patch shall be placed over the damaged area and extend three (3) feet beyond the perimeter of the tear or damage.

END OF SECTION

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
0  
2  
-  
d  
r  
a  
i  
n  
a  
g  
e  
-  
g  
e  
o  
t  
e  
x  
t  
i  
l  
e  
s  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
6  
  
2  
:  
5  
4  
:  
0  
2  
  
P  
M



SECTION 02211  
ROUGH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of topsoil and subsoil.
- B. Cutting, grading, filling, rough contouring, and compacting, the site to meet the requirements shown on the Contract Drawings and as specified in related sections.

1.2 RELATED SECTIONS

- A. Section 01039 – Coordination and Meetings
- B. Section 01400 – Quality Control
- C. Section 02110 – Site Clearing
- D. Section 02200 – Earthwork
- E. Section 02220 – Soil Erosion Control
- F. Section 02930 – General Landscape Materials and Final Grading
- G. Section 02970 – Landscape Maintenance and Guarantee

1.3 REFERENCES

- A. AASHTO T180 - Moisture-Density Relations of Soils Using a 10 lb (4.54 kg) Rammer and an 18-in. (457 mm) Drop.
- B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- E. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- F. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Topsoil: Type - Existing Removed Material as specified in Section 02200, 02930 and 02958.
- B. Subsoil Type: Excavated and re-used material, graded, free of lumps larger than 3 inches, rocks larger than 2 inches and debris conforming to ASTM D2487 Group Symbol OL.
- C. Subsoil Type S2: Imported material, graded, free of lumps larger than 3 inches, rocks larger than 2 inches and debris conforming to ASTM D2487 Group Symbol OL, as required to complete fill operation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 01039.
- B. Verify that survey bench mark and intended elevations for the Work are as indicated.

### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Protect all utilities from damage.
- D. Notify utility company to remove or relocate utilities as required.
- E. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- F. Protect bench marks, survey control points, structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.3 SOIL EXCAVATION

- A. Excavate topsoil and subsoil from areas to be excavated for installation of structures and utilities and areas to be further re-landscaped, or re-graded as indicated on the Contract Drawings. Depth of subsoil removal shall be as called for on the Contract Drawings and as specified in Section 02970.
- B. Do not excavate and process wet material to obtain optimum moisture content.
- C. When excavating through roots, perform work by hand and cut roots with sharp axe.
- D. Stockpile in area designated on remote site to depth not exceeding 10 feet and protect from erosion. Segregate topsoil from sub-soil and store separately. Protect stockpiles from erosion from water and wind.

- E. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key placed fill material to slope to provide firm bearing.
- F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

### 3.4 FILLING

- A. Install Work in accordance with State of Michigan MDOT standards and as called for in Sections 02200 – Earthwork and Section 02970 – Landscape Maintenance and Guarantee and as called for on the Contract Drawings.
- B. Fill areas to contours and elevations with unfrozen materials.
- C. Place fill material on continuous layers and compact as called for in Sections 02200, 02970 and as called for on the Contract Drawings.
- D. Filling of topsoil and final grading is covered under Sections 02930 and 02970.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Slope grade away from building minimum 2 inches in 10 ft unless noted otherwise.
- G. Make grade changes gradual. Blend slope into level areas.
- H. Remove surplus fill materials from site.

### 3.5 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation or as called for in Sections 02200 and 02970.

### 3.6 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Control: Field inspection and testing.
- B. Testing: In accordance with ASTM D1556, ASTM D1557, ASTM D698, AASHTO T180, ASTM D2167, ASTM D2922, and ASTM D3017.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Tests: To be determined by Owner's testing consultant.

### 3.7 SCHEDULES

- A. Compaction and depth of each lift shall be as referred to in Sections 02200 and 02970, and as called out hereinafter, or as called for on the Contract Drawings.
- B. Structural Fill:
  - 1. Fill Type-Clay: Maximum 12 inches compacted depth for each lift.
  - 2. Compact to minimum 95 percent of maximum density.

- C. Pervious Structural Fill:
  - 1. Fill Type-MDOT Class II Maximum 12 inches compacted depth for each lift.
  - 2. Compact to minimum 95 percent of maximum density.

END OF SECTION

---

SECTION 02220

SOIL EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

The purpose of this specification is to provide requirements, techniques, and measures to minimize erosion from construction activities and any potential associated impacts to lakes, streams, or other surface waters.

1.02 GENERAL

- A. All temporary stabilization work shall be coordinated with related specification sections so that this work is integrated with construction sequencing.
- B. Construction activities shall be phased and conducted in such a manner as to minimize the duration of exposed soil to the shortest practicable period of time. Any sediment from work on this site shall be contained on the site and not allowed to migrate to or collect on any offsite areas or in waterways. Waterways include both natural and manmade ditches, storm drains, streams, wetlands, lakes and ponds. Particular care should be taken when working around site perimeters and waterways.
- C. Temporary seeding and mulching provides protection for no more than one year, after which time permanent stabilization measures should be initiated. The Contractor shall remove temporary sediment control measures as soon as permanent stabilization of disturbed areas has been completed unless otherwise directed on the Contract Drawings or by the Engineer.
- D. Per Part 91 of P.A. 451, all disturbed areas shall be stabilized within 5 calendar days following the completion of final grading. The Contractor is responsible for providing final grading and permanent stabilization of all disturbed areas as soon as practicable. Temporary soil erosion and sediment control measures shall be maintained until permanent stabilization is achieved.

1.03 RELATED SECTIONS

- A. Section 02200 – Earthwork

1.04 PERMITS

The Contractor's activities shall adhere to the provisions of Part 91 of P.A. 451 and all other applicable state and local regulations. If a Soil Erosion and Sediment Control Permit is not required, the Contractor is still responsible for containing sediment and any other pollutants on site during any earth disturbance. Where these specifications are more stringent than Part 91 of P.A. 451, these specifications shall govern. The Contractor shall hold the Owner harmless from any violations, civil action, or penalties arising from the Contractor's actions.

Y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
2  
0  
-  
s  
o  
i  
l  
-  
e  
r  
o  
s  
i  
o  
n  
.  
d  
o  
c  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
4  
:  
3  
8  
P  
M

1.05 BASIS OF PAYMENT

All temporary erosion and sediment control measures shall be included in the unit prices bid. All temporary erosion control applications shall be paid on a per unit basis following the next pay request. The Contractor shall be paid according to the following pay schedule for all temporary sediment control measures (i.e. silt fencing, catch basin inserts, etc.): 25% of total cost upon installation, 25% of cost upon removal and the remaining fifty percent (50%) will be paid incrementally with each subsequent pay estimate. The Contractor shall not remove any temporary sediment control measures prior to approval by the Engineer.

Due to weather conditions, changes in grading or construction sequencing, additional controls not listed on the Contract Drawings may be required. The Contractor shall be prepared to submit price quotes and shop drawings for additional materials, as required by the City's Representative in the field. All costs associated with additional controls not listed as specific bid items that are required to maintain compliance with all applicable permits shall be paid as individual line items and must be pre-approved.

PART 2 - MATERIALS

2.01 GENERAL

The Contractor shall install all materials required on the Contract Drawings unless otherwise directed by the Engineer. Any substitutions of specified materials must be pre-approved by the Engineer.

2.02 TEMPORARY SEEDING AND MULCHING

Table I lists the approved materials for temporary seeding and seasons for use. Table II lists the approved materials for temporary erosion control materials. The Contractor may select any of the approved materials (or combination of seed) necessary to prevent erosion based on the site conditions and soils unless specific materials are identified on the Contract Drawings or Specifications.

Temporary or permanent stabilization of all disturbed areas with slopes steeper than 3:1 (H:V), detention basins, ditches, or waterways shall be completed with approved erosion control blankets or other measures as specified.

y  
:  
\ 2  
0  
1  
6  
0  
3  
\ 2  
0  
1  
6  
0  
3  
1  
\ 0  
4  
-  
d  
e  
s  
i  
g  
n  
\ s  
p  
e  
c  
s  
\ 2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\ 0  
2  
2  
2  
0  
-  
s  
o  
i  
l  
-  
e  
r  
o  
s  
i  
o  
n  
.  
d  
o  
c  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
4  
:  
3  
8  
P  
M

TABLE I  
 MATERIALS FOR TEMPORARY SEEDING OF DISTURBED  
 CONSTRUCTION AREAS

<u>Material</u>	<u>Large Site Amount (lbs/acre)</u>	<u>Small Site Amount (lbs/1,000 ft<sup>2</sup>)</u>	<u>Season</u>
Oats or Barley	95	2	Apr. 1 to Sept. 15
Annual Ryegrass	120	3	Apr. 1 to Oct. 15
Buckwheat	75	2	June 1 to July 15
Winter Wheat	120	3	Sept. 20 to Oct. 15
Perennial Ryegrass (dormant seeding)	75	2	Oct. 16 to Freeze up

Seed in a moist firm seed bed. Place seed from ¼ to not over ½ inch in depth.

TABLE II  
 MATERIALS FOR TEMPORARY EROSION CONTROL OF DISTURBED  
 CONSTRUCTION AREAS

<u>Material</u>	<u>Amount</u>	<u>Season</u>
Weed free, small grain straw	2 tons/acre (two 45 lb bales/1,000 ft <sup>2</sup> )	All Year
Wood chips or shredded bark	10 ton (50 yd <sup>3</sup> )/acre	All Year
Compost	2" cover	All Year
Polyacrylamide (PAM) solution	0.025-0.5% solution based on the results of field testing	All Year

2.03 MULCH ANCHORING

A. Coir Fiber Netting

Straw mulching for temporary stabilization of disturbed areas with slopes steeper than 3:1 (H:V), detention basins, ditches, or waterways may be permissible if used in conjunction with an approved erosion control netting.

The coir fiber netting shall be a 100% organic natural bristle coir (coconut) fiber twine woven into an open weave textile for temporary shear protection. The weighting of coir netting shall be medium if not otherwise specified on the Contract Drawings.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
2  
0  
-  
s  
o  
i  
l  
-  
e  
r  
o  
s  
i  
o  
n  
-  
d  
o  
c  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
:  
3  
8  
P  
M

The following products meet the specifications for medium weight coir fiber netting lines:

1. Belton Industries Inc. (1-800-225-4099), DeKoWe 700,
2. RoLanka International Inc.(1-800-760-3215), BioD-Mat 70,
3. BonTerra America (1-800-882-9489), CF7,
4. Approved equal.

Material Properties –

	<u>Light</u>	<u>Medium</u>	<u>Heavy</u>	<u>Units</u>
Weight (ASTM D3776)	11.8	20.6	26.6	oz/sq yd
Thickness (ASTM D1777)	--	0.3	--	in
Max. Open Area	65	50	39	%
Wet Tensile Strength (ASTM D4595)	38/24	86/41	122/39	lbs/in

Material Composition – Open weave, 100% biodegradable natural coir fiber.

B. Securing Devices

All temporary mulch netting shall be secured with hardwood or biodegradable pegs that are a minimum 6 inches in length. The Contractor shall insure that all netting is installed using manufacturer’s recommended securing pattern and peg density.

C. Tackifiers

Guar based tackifiers may be used for straw tacking at rates recommended by the manufacturer.

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor shall install and maintain the temporary soil erosion and sediment control measures in the manner and sequence outlined in the approved Contract Drawings unless otherwise directed by the Engineer or superceded by supplemental specifications.
- B. In general, temporary soil erosion control measures shall be installed as a primary line of defense and temporary sediment controls shall be applied as a secondary perimeter defense against sediment leaving the site.
- C. Temporary seeding and mulching shall be applied to all topsoil stockpiles, as a 20 ft. wide buffer around the site, on disturbed areas on which no further work is anticipated for 30 days or more, or as required on the Contract Drawings. Between October 20 and April 1, the Contractor shall provide grading of disturbed areas to provide positive drainage and dormant seeding practices shall be used (Table I).

- D. All de-watering operations shall discharge to a temporary settling basin or through an approved geotextile filter bag on a surface stabilized with aggregate or sod unless otherwise directed by the Engineer.
- E. Control measures shall be constructed to limit conveyance of runoff water from the site to non-erosive velocities.
- F. Daily inspection shall be made by the Contractor to determine the effectiveness of erosion and sediment control measures and any necessary repairs shall be performed without delay. All mud/dirt tracked onto existing roads from the site due to construction shall be removed at the end of each work day by the Contractor.
- G. Due to unforeseen weather conditions, discrepancies in as-built grades, and altered drainage, additional controls may be required by the Owner's Representative in the field or the Project Engineer.

3.02 APPLICATION OF TEMPORARY STABILIZATION

- A. Structural practices such as scarification, diversions, sediment traps, and sediment basins shall be constructed, seeded, and stabilized with mulch or approved erosion control blankets prior to any other grading at the construction site.
- B. The seedbed shall not be rain-compacted or so firm as to prevent the seed from securing adequate germination or root penetration. No topsoil is required for temporary stabilization. Based on the results of site soil testing, soil amendments may be required to ensure adequate vegetative stabilization.
- C. Where erosion control blankets are not specified, mulch shall be applied during or immediately after seeding. Mulch shall be immediately anchored to minimize losses by wind or water using one of the following methods:
  - 1. Mechanical – a disk, crimper, or similar tool shall be set straight to punch or anchor the mulch material into the soil. Mechanically anchored straw shall not be finely chopped.
  - 2. Mulch Nettings – Nettings shall be install per the manufacturer's recommendations. Medium coir fiber netting shall be used per Subsection 2.03A unless otherwise specified on the Contract Drawings.
  - 3. Tackifiers – Guar or approved synthetic tackifiers may be used at rates recommended by the manufacturer.
- D. The Contractor shall apply water to the new seedings daily or as necessary in order to insure that the seed bed is moist enough to allow adequate germination and growth.
- E. Several applications of temporary seeding and/or mulching are typically necessary during the life of the project. Additional applications shall be promptly installed by the Contractor as

required by the regulatory agency or the Owner's Representative in the field at no additional cost to the Owner.

3.03 EROSION PROTECTION – OPEN CUT CONSTRUCTION

- A. In order to limit the length of time that the exposed area is subject to the elements and subsequent conditions causing erosion, the Contractor shall adhere to the following requirements.
1. Geotextile Filter Fabric (or equivalent) shall be placed between the frame and cover of all manholes, catch basins, and gate wells in the construction area. The filter fabric shall be periodically replaced if silt buildup causes the trap to function improperly.
  2. Underground piping and conduit construction, including installation of pipe, backfilling, surface restoration and removal of excess excavation shall be accomplished in one continuous operation. Backfilling, removal of excess excavated material and final or temporary stabilization (according to seasonal limitation) shall follow pipe laying and conduit construction by no more than 100 feet.
  3. Excess excavated materials shall be removed from the job site. Excess excavated material shall be disposed of in accordance with Section 02200-Earthwork. A soil erosion plan must be prepared by the Contractor for each fill area and it shall be approved by a proper authorized agency and implemented before starting filling operations.

3.04 ENFORCEMENT

Should the above requirements be violated, the Owner shall require the contractor to immediately correct all sources of violations. This may involve temporarily ceasing construction operations until these requirements are met.

Per Part 91, if the required control measures or maintenance of existing controls are not properly completed by the Contractor within five (5) working days of written Notification and the installed costs are not more than \$10,000.00, the Owner may hire a sub-contractor to complete the required work and deduct the costs from the Contractor's Performance Bond. If the installed costs are more than \$10,000.00, the Owner may hire a sub-contractor to complete the required work if not completed by the Contractor within ten (10) working days of Notification.

END OF SECTION

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
2  
2  
0  
-  
s  
o  
i  
l  
-  
e  
r  
o  
s  
i  
o  
n  
.  
d  
o  
c  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
4  
:  
3  
8  
P  
M

SECTION 02510

BITUMINOUS PAVING

This specification covers the construction of Bituminous Base Courses, Bituminous Surface Courses and Pavements and related Miscellaneous Construction. Excavation and subgrade preparation shall be accomplished in accordance with Specifications Site Preparation and Earthwork or as otherwise shown on the Plans or specified. Materials, equipment and construction methods shall be in accordance with the current edition of Michigan Department of Transportation Standard Specifications for Construction, or as specified herein.

Prior to starting work the Contractor may be required to submit to the Engineer two copies of a sworn statement giving the name, source of supply and complete analysis by an approved testing laboratory of any bituminous materials proposed to be used in the work. All expenses involved in procuring this statement shall be paid by the Contractor.

The Contractor will secure scale approval from an official sealer of weights and measures for the platform truck scale for weighing bituminous mixtures. At any time during the weighing operations, check weights of random loads can be required to be made on independent scales to provide a continual check on accuracy. This random checking will be at the Contractor's expense.

Each load of bituminous mixture accepted for delivery to the project shall be weighed on the approved platform truck scale. The weight of each load shall be recorded on forms furnished by the Contractor and approved by the Engineer. One copy of the weight ticket shall be given to the project inspector. The weight tickets shall be numbered serially and shall provide space for the following information: Contractor's name, date, project name or number, type of bituminous material, load number, number of batches, batch weight, plant temperature, time leaving plant, gross weight, tare weight, net weight, inspector's signature, and truck number. Tare weight of the delivery vehicle shall be taken twice daily or as directed by the Engineer.

The contractor shall furnish samples at the place of manufacture, or point of placement or samples cut from the completed work when required by the Engineer for testing purposes. The contractor shall have all samples tested at his expense by an approved independent testing laboratory.

**BASE COURSES**

**Bituminous Aggregate Base Stabilization**

This work shall consist of scarifying, pulverizing, crushing, adding new material, as required, and shaping to the plan grade for stabilizing with bituminous material, and shaping, rolling, and compacting the stabilized aggregate to the proper elevation and slope.

The bituminous material shall be applied at the rate as determined by the Engineer so that the residual bitumen will be between 3 and 5 percent, by weight, of the bituminous mixture, unless otherwise specified by the Engineer.

The bituminous material to be used and additional aggregate, if required, will be specified on the plans or in the proposal.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
-  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

The mixer, crushing equipment (when required), and rollers shall be of sufficient size and design to perform the work in an acceptable manner and shall be maintained in a satisfactory working condition during construction, as approved by the Engineer.

After the material has been balanced with additional aggregate added, if required, it shall be thoroughly mixed, windowed, spread and shaped to a uniform crown and grade.

The bituminous material shall be added through the mixer at the required rate and temperature. The mixer shall then make as many mixing passes as required to thoroughly mix the bituminous material with the aggregate.

Aeration of the mixture shall continue until it is dried to the moisture content required by the Engineer.

Mixing, shaping, and compacting shall be done while the bituminous material is in a workable state. The mixed material shall be shaped and rolled to the established grade and compaction necessary to provide a base for the placing of the surfacing. Initial rolling shall be done with a pneumatic-tired roller and final rolling shall be done by a steel-wheeled roller as directed by the Engineer.

The base may be opened to traffic for a period of time to be determined by the Engineer prior to placing of the surface. Any imperfections in the base course shall be repaired at the Contractor's expense.

Bituminous material shall not be applied when rain is threatening or when the temperature in the shade is lower than 60 deg. F.

The method of measurement and payment shall be as shown on the plans or in the proposal or otherwise described within the specifications.

### **Bituminous Base Course**

This work shall consist of preparing the foundation and constructing one or more courses of plant mixed bituminous mixture as a base course on the grade or as a separation course on an existing pavement, prior to the placing of bituminous surface courses.

The amount of residual asphalt shall be 4.5 percent, by weight, of the mixture. If a highly absorptive aggregate is used, the Engineer may require a higher bitumen content when required, without any change in the contract unit price.

The equipment requirements, as specified under Bituminous Concrete Pavement, shall apply except as follows: The bituminous plant shall conform to the requirements of M.D.O.T. Bituminous Mixture No. 5. Unless otherwise specified on the plans or in the proposal, automatically controlled and activated screed and strikeoff assembly will not be required on the paver. Joint heaters will not be required. Pneumatic-tired rollers may be used when approved by the Engineer and will not be required to meet 80 pounds per square inch ground contact pressure requirement.

The construction methods as specified under Bituminous Concrete Pavement shall apply except as specified herein.

When bituminous base course is placed directly on the subgrade, the subgrade shall be compacted to 95 percent of the maximum unit weight of ASTM D1557 for a depth of 9 inches. The foundation shall be constructed to the grade and cross section as shown on the plans and trimmed to within 3/4 inch of the established grade.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

The bituminous base course shall be placed in layers of not more than 5 inches in thickness or 550 pounds per square yard, unless otherwise approved by the Engineer.

Rolling shall be performed as specified under Bituminous Concrete Pavement except that a pneumatic-tired roller will not be permitted as a breakdown roller but may be used for intermediate and final rolling, when approved by the Engineer. A berm of shoulder material at least 6 inches wide shall be banked against the outside edge of each layer of mixture placed unless the sequence of operations is such that the edges of the material are adequately confined and supported in some other manner.

After initial breakdown rolling, bituminous hauling units may be permitted on the freshly laid mat as directed by the Engineer.

Bond cost will not be paid for separately unless otherwise provided in the Proposal.

## **SURFACE COURSE AND PAVEMENTS**

### **Bituminous Surface Treatment (Seal Coat)**

This work shall consist of one or more applications of bituminous material applied to the prepared surface and one or more coverings of coarse or fine aggregate applied to the bituminous material, as provided.

The bituminous materials and the aggregate to be used will be specified on the plans or in the proposal.

The suitability and condition of all equipment shall meet the approval of the Engineer before the work is started. The pressure distributor, chip spreader, drag, compacting equipment and miscellaneous equipment shall be as specified in M.D.O.T. Section 4.06.

Bituminous material for hot treatment shall be heated in such a manner as to insure even heating of the entire mass with an efficient and positive control at all times. It shall be heated to a degree consistent with the type of material used and only to such temperature as will insure the necessary fluidity. Excessive temperatures shall be avoided. Any bituminous material which has been overheated will be rejected.

Cover material shall be sufficiently dry when it comes in contact with bituminous material so that a satisfactory bond or coating is obtained. In any case, the moisture content shall not exceed 4 percent by weight, dry basis. The Contractor shall provide satisfactory means for protection against excessive moisture by covering stockpiles, by aeration through manipulation or by other approved methods.

The preparation of the foundation shall be as specified under Bituminous Concrete Pavement.

The bituminous prime coat shall be uniformly applied as specified under Bituminous Concrete Pavement.

The bituminous material specified for surface coat shall be uniformly applied by means of the pressure distributor in the number of applications provided and in the amount per square yard directed by the Engineer. Each application of bituminous material shall cure sufficiently to prevent displacement or pickup by traffic or construction equipment before succeeding application of bituminous material is made.

Immediately following each application of bituminous surface coat material, the particular aggregate provided for cover material shall be uniformly spread over the surface, in the amount per square yard provided, or as

directed by the Engineer, by means of approved mechanical spreaders. Truck wheels shall ride on spread cover material and not on bituminous material.

Any irregularities or deficiencies in the uniformity of the cover aggregate on the surface shall be corrected by supplemental hand spreading and dragging, when directed by the Engineer.

Following the spreading of each course of cover material, the surface shall be compacted by means of approved rollers.

Compaction of the cover material shall be performed immediately after application of the asphalt emulsion surface coat and before the emulsion has set. At no time shall the compacted surface be more than 500 feet from the chip spreader, and no cover material shall be left unrolled for more than 10 minutes.

Sufficient compaction shall be done to imbed the cover material in the bituminous material. The compaction equipment shall not be so heavy as to crush the aggregate, nor shall compaction be continued long enough to pulverize the aggregate.

When areas are deficient in cover material after completion of the surface treatment, the material which has been disturbed or thrown off the surface by traffic shall be broomed back in place. Additional cover material shall be added where required. Fat spots shall be removed and replaced as directed by the Engineer. If there are areas having an excess of cover material, such excess shall be removed.

Unless otherwise provided for in the proposal or on the plans, the Contractor shall perform this work while the road is in use by traffic. Only one half of the road shall be treated at a time, and no traffic shall be allowed on the part being treated until after the application and rolling of cover material. If it is impossible to take care of two way traffic safely by use of the shoulders, the Contractor shall arrange controlled one way traffic around the section being treated as directed by the Engineer. Warning signs, barricades, flares and watchmen shall be provided by the Contractor in sufficient number to keep traffic off sections being treated and provide for safe travel at all times.

The shoulders or other areas which have been disturbed through the Contractor's construction operations or maintenance of traffic shall be restored to their original condition at the Contractor's expense.

No bituminous material shall be applied during rainy or threatening weather, or when the moisture on the surface to be treated would prevent satisfactory bond, or when the air temperature in the shade is less than 60 deg. F., except with approval of the Engineer.

The completed surface shall be maintained with a drag, broom or other approved equipment to keep the material well distributed on the road until all cover material possible has been embedded in the bituminous material. The length of time required for this maintenance will be from 2 to 5 days, as directed by the Engineer, depending on the weather and the materials used.

The method of measurement and payment shall be as shown on the plans or in the proposal or otherwise described within the specifications.

**Bituminous Aggregate Surface Course, Plant Mix**

This work shall consist of preparing the foundation and constructing thereon one or more courses of plant-mixed bituminous aggregate surface course.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
P  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

The materials to be used will be specified on the plans or in the proposal.

The amount of bituminous material in mixtures shall be between 5 and 8 percent of mixture, by weight, as determined by the Engineer except if a highly absorptive aggregate is used, a higher bitumen content may be specified without any change in the contract unit price.

The equipment requirements as specified under Bituminous Concrete Pavement shall apply except as follows: The bituminous plant shall conform to the requirements of M.D.O.T. Bituminous Mixture No. 900. Unless otherwise specified on the plans or in the proposal, automatically controlled and activated screed and strikeoff assembly will not be required on the paver. Joint heaters will not be required. Pneumatic-tired rollers may be used when approved by the Engineer and will not be required to meet the 80 pounds per square inch ground contact pressure requirement.

The construction methods as specified under Bituminous Concrete Pavement shall apply except as specified herein.

Preparation of Bituminous Materials, Aggregate and Bituminous Aggregate Mixture shall be in accordance with M.D.O.T. Bituminous Mixture No. 900.

When the application rate of the bituminous aggregate mixture is more than 200 pounds per square yard, the mixture shall be placed in two or more courses, or as otherwise specified on the plans or in the proposal. When specified, a berm of shoulder material at least 12 inches wide shall be banked against the outside edge of each layer of mixture placed prior to rolling the bituminous mixture.

After the mixture is placed, each layer shall be rolled as directed by the Engineer. Additional smoothing of surface irregularities and rolling may be required to eliminate traffic marks and provide a smooth riding surface. When specified, a portion of the berm, at least 6 inches in width shall be compacted by rolling in conjunction with the compaction of the bituminous mixture.

When liquid asphalt or asphalt cements of higher than 200 penetration are used in the mixture, only one roller will be required for each paver, unless otherwise directed by the Engineer.

When asphalt cements of lower than 200 penetration grade are used in the mixture, two rollers will be required for a single paver and three rollers will be required for two pavers operating in echelon.

Bituminous Aggregate Surface Course will be measured by weight in tons. When blast furnace slag is used in the bituminous mixture, the pay weight in tons will be determined by dividing the actual tons measured by a factor of 0.95.

Bond coat will not be paid for separately unless otherwise provided in the proposal.

### **Bituminous Aggregate Pavement**

This work shall consist of preparing the foundations and constructing thereon one or more courses of hot plant mixed bituminous aggregate pavement.

The materials to be used will be specified on the plans or in the proposal.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
-  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

When aggregates 20AA or 20A are used, the amount of asphalt cement shall be between 5 and 7 percent of the mixture, by weight, as determined by the Engineer except if a highly absorptive aggregate is used, the Engineer may specify a higher bitumen content, when required, without any change in the contract unit price.

The equipment requirements as specified under Bituminous Concrete Pavement shall apply except that the bituminous plant shall conform to the requirements of M.D.O.T. Bituminous Mixture No. 1100.

The construction methods, as specified under Bituminous Concrete Pavement, shall apply except as specified herein.

Preparation of Aggregate and Bituminous Aggregate Mixture shall be in accordance with M.D.O.T. Bituminous Mixture No. 1100.

When 200-250 penetration asphalt cement is used in the mixture, not more than two rollers will be required, unless otherwise directed by the Engineer.

### **Bituminous Concrete Pavement**

This work shall consist of preparing the foundation and constructing thereon a bituminous concrete pavement.

When specified or required, this work may include either or both a binder course and a leveling course.

The materials to be used will be specified on the plans or in the proposal.

Coarse aggregate, fine aggregate, mineral filler, if required, and bitumen shall be combined in such proportions as to produce a mixture conforming to the composition limits specified in the table shown on this sheet.

The mixture proportions shall be varied as directed by the Engineer between the limits designated in the table except that if highly absorptive aggregate is used, the Engineer may specify a higher bitumen content without any change in the contract unit price.

The Bituminous Plant and its various components shall be in accordance with M.D.O.T. Bituminous Mixture No. 13.

The Pressure Distributor shall be mounted upon a vehicle which is capable of maintaining the uniform speeds required for proper application of the bituminous material. The vehicle shall be equipped with an accurate tachometer which is calibrated to indicate speed in feet per minute.

The pressure distributor shall have a capacity of at least 800 gallons. It shall be equipped with heating facilities capable of maintaining the bituminous material at the specified temperature. A positive displacement type pump, installed so as to permit circulation of the material in the tank and between the tank and the spray bar, shall be provided. The pump power shall be independent of the vehicle power or the pump shall be operated by a power key-off from the vehicle motor in such a manner that uniform distribution of the bituminous material, at the rate specified, will be obtained. The distributor shall be equipped with a tachometer calibrated in revolutions per minute or gallons per minute. Full circulating spray bars shall be available for application widths of 3 to 24 feet in one foot increments. The nozzles shall produce a uniform fan spray, and the shutoff shall be instantaneous, with no dripping. Nozzles in various sizes between 1/8 and 1/4 inch, inclusive, shall be available, and the size used shall meet the approval of the Engineer.

y  
:\  
2  
0  
1  
6  
0  
3  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f\  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

The paver shall be an approved self-powered machine having adjustments for uniformly placing the mixture without segregation, in thickness up to 3 inches and in widths of 8 feet to 12 feet by one foot increments. Approved modifications will be permitted at the discretion of the Engineer for paving widths over 12 feet. The use of any machine outmoded in design, of an obsolete model, or in poor mechanical or worn condition, will not be permitted. The paver shall be of such design that the supporting wheels, treads, or other devices will ride on the prepared subgrade or finished surface. The paver shall be equipped with a Hopper and distributing screws to place the mixture evenly in front of the screed. The full width of surface being applied up to 12 feet shall be screed by an oscillating or vibrating screed.

The paver shall at all times produce a uniformly finished surface, free from tearing or other blemishes that would require hand work. The screed shall be adjustable to provide for tilting to secure the proper drag or compressive action necessary to produce the desired surface texture. Wheels, treads, or other devices riding on the finished surface shall be equipped with spraying equipment to prevent adherence of mixture and shall not produce marks or depressions which cannot be eliminated.

The paver shall be operated with an automatic material depth control device so that each distributing auger and corresponding feeder shall respond automatically to provide for a constant level of mix ahead of the screed unit to the full width of the lane being paved.

In order to insure that adequate material shall be fed to the center portion of the lane being paved, reverse pitch augers or paddles shall be installed at the inside of one or both ends of the auger shafts to force the mix to the middle portion of the lane. If necessary to prevent segregation of the mix as it drops off the feed conveyor, baffle plates shall be installed at the required location.

When extensions are added to the paver, they shall be provided with the same vibrating screed or tamper action as the main unit of the paver. The extensions shall also be equipped with a continuation of the automatically controlled spreading augers. The screed and any extensions shall be provided with an approved method of heat distribution.

When surfacing aggregate bases, the bituminous paver shall be equipped with an automatically controlled and activated screed and strikeoff assembly capable of grade reference and transverse slope control. The grade reference shall be a manufacturer approved ski-type attachment or traveling string line, not less than 30 feet in length, for all courses.

When surfacing existing pavement or shoulders, or when the grade of concrete gutter or other existing installation must be met, the manner of use of the automatic grade reference and slope control devices shall be determined by the Engineer.

This equipment will not be required for intersections, variable width sections or sections of pavement less than 1000 feet in length.

Infra-red or other approved joint heaters shall be equipped with an automatic ignition and extinguishing system to insure that the heater operates only when the paver or equipment is operating. The bituminous pavement shall not be heated by a direct open flame. Heating units shall produce at least 240,000 BTU per hour.

The number of rollers required will depend on the method of paving and the rate of production as specified under Rolling. Self-propelled steel tandem rollers weighing not less than 8 tons each will be required unless rollers of other types are specifically permitted.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
-  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

Steel rollers shall be free from back lash, faulty steering mechanism, or worn king bolts. The steering device shall respond readily and permit the roller to be directed on the alignment desired. Rollers shall be equipped with wheel sprinklers and scrapers. Roller wheels shall be smooth and free from openings or projections which will mar the surface of the pavement. Approved self-propelled 3 wheel rollers meeting the above requirements may be permitted by the Engineer only for the initial rolling of the bituminous mixture.

The pneumatic tired roller shall be of the self propelled type with a total weight, including ballast, not greater than 30 tons. It shall be equipped with a minimum of 7 wheels situated on the axles in such a way that the rear group of tires will not follow in the tracks of the forward group, but will be so spaced that a minimum tire path overlap of 1/2 inch is obtained. The tires shall be smooth and shall be capable of being inflated to or adopted to achieve a pressure necessary to provide ground contact pressures of at least 80 pounds per square inch. The tire pressures shall not vary by more than 5 pounds per square inch between individual tires. The contractor shall furnish a tire gage which shall be available at all times to enable the Engineer to check the tire pressures. The Contractor shall furnish the Engineer charts or tabulations showing the contact areas and the contact pressures for the full range of tire inflation pressures and tire loadings for the type and size roller used. The roller shall be equipped with a mechanism capable of reversing the motion of the roller smoothly. The roller shall be equipped with wheel sprinklers and scrapers or mats.

Straightedges for testing the pavement and all other small tools to completely and satisfactorily finish the work shall be provided by the contractor.

Preparation of asphalt, cement and aggregates, proportioning mixtures, and preparation of mixtures shall be in accordance with M.D.O.T. Bituminous Mixture No. 1300.

The bituminous mixtures shall be transported from the mixing plant to the work by pneumatictired trucks equipped with tight dump bodies which have been previously cleaned of all foreign material and sprayed with distillate oil. When the air temperature is below 50 deg. F., trucks shall be suitably insulated to prevent the chilling of mixtures where they are in contact with the truck body. The trucks shall be equipped with waterproof canvas covers or other suitable material of sufficient size to protect the mixture from the weather, which shall be used at all times. Unless artificial light satisfactory to the Engineer is provided, no mixtures shall be delivered at the work that cannot be spread and compacted during the daylight hours. The amount of binder course or wearing course mixture transported in any truck load shall not exceed the capacity of the paver to push the load, while maintaining the proper alignment and thickness. The mixtures shall be delivered at the location of the work at the temperature designated by the Engineer, between 275 deg. F. and 350 deg. F., and shall not vary more than 20 deg. F., plus or minus, from that temperature except that no mixture shall exceed a temperature of 350 deg. F. The temperature will be checked at the work just before the mixture is dumped into the spreader. No semitrailer or truck units will be allowed for hauling mixtures to be spread by mechanical spreaders.

Before placing the bituminous mixture, the surface of the foundation shall be swept clean and all foreign material removed. Catch basins, manhole covers and monument boxes in the existing surface shall be adjusted to final grade.

The prepared foundation shall be treated with bituminous material for prime coat or bond coat as specified. A bond coat shall be applied to each layer of bituminous mixture before the succeeding layer is placed when directed by the Engineer.

The bituminous material shall be applied uniformly by means of a pressure distributor, and only in such areas as may be inaccessible to the regular distributor operation shall the bituminous material be applied by means

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

of the hand spraying apparatus of the distributor. Where necessary to accommodate traffic, the surface shall be treated half width or as directed by the Engineer. The foundation shall be free from moisture when the treatment is applied. Under no circumstances shall pools of bituminous material be allowed to remain on the surface.

The amount of prime coat applied per square yard shall be as shown in the proposal, or on the plans, or as directed by the Engineer.

When prime coat is applied, the surface course shall not be placed until the prime coat has been properly cured. The curing period shall be 24 hours, or longer, if necessary, except that when asphalt emulsions are used, the curing period may be decreased as approved by the Engineer. No blotting of the prime coat with aggregate in lieu of proper curing will be permitted.

The prime coat may be omitted or reduced when authorized by the Engineer.

The amount of bond coat applied per square yard shall be 0.10 gallon per square yard, or less if directed by the Engineer.

When asphalt emulsion is used for bond coat, the material shall be applied immediately ahead of paving operations for distances of 1000 feet to 1500 feet, depending on traffic conditions. When asphaltic oils are used for bond coat, the material shall be applied far enough ahead of paving operations so as to provide for a curing period of 24 hours, or longer if necessary, as directed by the Engineer.

The bituminous mixture shall be placed by an approved self-propelled mechanical paver to such a depth that when compacted, it will have the thickness specified or ordered by the Engineer. The mixture shall be dumped into the center of the hopper and care shall be exercised to avoid overloading the paver and spilling the mixture upon the base. The paver speed shall be adjusted at the discretion of the Engineer to that speed which, in his opinion, gives the best results for the type of paver being used and which coordinates satisfactorily with the rate of delivery of the mixture to the paver to provide a uniform rate of placing the mixture without intermittent operation of the paver.

The bituminous mixture shall be placed in one or more layers to the required cross section and as called for on the plans. When necessary to take out irregularities in the existing road surface, patching or wedging with bituminous mixture shall be done by hand, by placing several layers with the paver, or as directed by the Engineer. Any corrections requiring additional bituminous mixture shall be rolled far enough ahead of paving operations to permit proper compaction.

The mixture shall be placed using two pavers in echelon or one paver equipped with an approved type joint heater. Echelon paving will not be permitted on two lane projects where traffic is being maintained. Cold joints will be permitted along acceleration and deceleration lanes, sections less than a full lane in width, irregularly shaped sections and at traverse joints. The edges of the initial mat for all cold joints shall be painted with bituminous material before the mixture is placed in the adjacent section. In placing the mixture adjacent to all joints, hand raking or brooming will be required to provide a dense smooth connection.

Connections with existing surfaces at the beginning and ending of resurfacing sections and at intersections shall be made by feathering out the mix, unless otherwise specified.

After the mixture is placed, each layer shall be rolled with approved rollers. One roller will be required for each paver for each 50 tons of production or fraction thereof per hour. When production exceeds 150 tons per hour per paver, additional rollers shall be used, as specified by the Engineer. A minimum of three rollers

shall be used for two pavers operating in echelon. Four rollers shall be used for two pavers in ecelon placing more than 100 tons per hour. Rolling of the mixture shall begin as soon after placing as it will bear the roller without undue displacement or hair cracking. Rolling shall start longitudinally at the extreme sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drivewheel of the roller. Alternate trips of the roller shall be of slightly different lengths. Approved three wheel rollers, immediately following the paver, may be permitted by the Engineer for initial compaction of the bituminous mixtures. Approved pneumatic tired rollers may be permitted by the Engineer to be used as an intermediate roller for wearing courses and may be required as initial or intermediate roller for other courses. Tandem rollers only will be permitted to finish and back rolling.

The motion of the roller shall, at all times, be slow enough to avoid displacement of the mixture. Rolling shall proceed continuously until all roller marks are eliminated and no further compression is possible. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but an excess of water will not be permitted. In all places not accessible to the roller, the mixture shall be compacted by hot hand tampers. Skin patching on an area that has been rolled will not be permitted. Any mixture that becomes mixed with foreign material or is in any way defective shall be removed, replaced with fresh mixture and compacted to the density of the surrounding area.

The pneumatic tired roller shall be ballasted to obtain the required ground contact pressures as directed by the Engineer. In order to obtain a uniformly textured mat and the desired pavement density, the Engineer may direct the Contractor to raise or lower tire pressures at any time during the rolling operations. The roller operations shall be conducted in such a manner as to prevent scuffing or chatter marks in the pavement surface. The number of passes made by the pneumatic tired roller shall be as directed by the Engineer but not less than two round trip passes over each area will be required. Pneumatic tired rolling of longitudinal joints shall overlap the hot joint. Pneumatic tired roller shall be operated in a competent manner and shall not mark or rut the surface or displace the pavement edges. After final rolling, the surface may be tested by the Engineer using a 10 foot straightedge at selected locations. The variation of the surface from the testing edge of the straightedge between any two contacts with the surface shall at no point exceed 1/4 inch. Variations in excess of the specified tolerance shall be corrected as directed by the Engineer.

No traffic shall be allowed on the surface being placed until rolling has been completed and the surface has cooled sufficiently to prevent damage from traffic. Bituminous mixtures shall not be placed nor the prime coat or bond coat applied when rain is threatening or when the surface to be treated is wet. Bituminous courses having a nominal application rate of 100 pounds per square yard or less shall not be placed when the air temperature is less than 50 deg. F and courses of greater weight per square yard shall not be placed when the air temperature is lower than 40 deg. F. unless otherwise approved by the Engineer.

When medium curing liquid asphalt or tars are used for priming materials, they shall be MC-70 or RT-3 during the period June 1 to September 1, and MC-30 or RT-2 during other times of the year, unless otherwise directed by the Engineer.

Bituminous Concrete Wearing Course, Bituminous Concrete Leveling Course, and Bituminous Concrete Binder Course will be measured by weight in tons. When blast furnace slag is used in the bituminous mixture, the pay weight in tons will be determined by dividing the actual tons measured by a factor of 0.95.

Bituminous Prime Coat will be measured by volume in gallons at a temperature of 60 deg. F.

Bituminous bond coat will not be paid for separately unless otherwise provided in the Proposal.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

---

## MISCELLANEOUS CONSTRUCTION

### Adjusting Structure Covers

Manhole, catch basin, gate well and inlet covers and monument boxes and water shutoff risers shall be adjusted after the binder course has been placed and prior to placing of the wearing course.

Covers shall be adjusted to the proper elevation by removing the castings and setting them to the required elevation by supporting them on a portland cement collar, on masonry, or by inserting a variable adjustable casting, meeting the approval of the Engineer, into the existing frame.

Monument boxes shall be adjusted to the proper elevation by placing an approved cast iron ring to support the cover at the correct elevation, or by removing or chipping enough adjacent pavement to remove the casting, raising it to the proper elevation and supporting it on concrete. The adjacent pavement shall be replaced to the original elevation, condition and type of construction.

Water shutoffs shall be adjusted by chipping adjacent pavement as necessary and adjusting the casting and replacing the pavement.

The work of adjusting covers, monument boxes and shutoffs shall be done by the contractor, and unless otherwise called for in the proposal, it shall be considered as incidental work for which no special payment will be made.

### Concrete Curb and Gutter

This work shall consist of constructing portland cement concrete curb, gutter, or combination curb and gutter, with or without steel reinforcement as provided on the prepared base.

The construction shall follow the construction of concrete base course but shall be in advance of the construction of non-rigid types of pavement or base course.

The materials shall be as specified in MDOT 6.09.

The subgrade shall be prepared in accordance with Specifications Site Preparation and Earthwork and shall be maintained as prepared, true to the required grade and cross section, until the concrete has been placed thereon.

Forms shall be of metal, straight and free from distortion, and of sufficient strength to resist springing during the process of depositing concrete against them. They shall be of an approved section with a flat surface on top. Wood forms may be used on sharp turns and for special sections when approved by the Engineer. The forms shall be of the full depth of the structure and shall be so constructed as to permit the inside forms to be securely fastened to the outside form. Face and back forms will be required when constructing straight curb, and back forms with templates of the required curb shape shall be used when constructing roll curb. Approved flexible forms will be required where the radius to the back of curb is less than 200 feet.

Forms shall be well built, substantial and unyielding. They shall be securely staked and braced to the required line and grade, and sufficiently tight to prevent the leakage of mortar. The forms shall be thoroughly cleaned and oiled with a light clear paraffin oil which will not stain the concrete.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
P  
d  
f  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
-  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

No concrete shall be placed until the subgrade and forms have been approved by the Engineer. The subgrade shall be wetted and the concrete deposited to the proper depth. The concrete shall be spaded sufficiently to eliminate all voids, after which it shall be finished smooth and even by means of a float.

The placing and finishing of concrete curb and gutter by the use of a mechanical curb and gutter paver will be permitted, provided the required cross section and finish is obtained. Should the use of such mechanical paver produce curb or curb and gutter having an unsatisfactory cross section or finish, the use of such machine shall be discontinued and the construction shall be done as otherwise required by these Specifications.

When steel reinforcement or tie bars are called for on the plans, the bars shall be properly spaced and held in the correct position during the placing of concrete by the use of bar chairs or other approved devices.

Joints shall be constructed with their faces perpendicular to the surfaces of the structure, and shall not vary more than 1/4 of an inch from their true designated position.

The concrete at the faces of all joints shall be thoroughly spaded and compacted to fill all voids and all exposed surfaces shall be finished smooth and true to grade.

Expansion joints of 1 inch thickness shall be placed through the curb, or gutter, or combination curb and gutter at the springline of all street returns and elsewhere as shown on the plans.

The expansion joint material shall be precut so as to conform to the geometric shape and cross sectional area of the structure.

The joint filler shall extend to the full depth of the joint and the top shall be flush with the finished surface of the structure. No reinforcing steel shall extend through an expansion joint.

Plane of weakness joints shall be placed through the structure at a uniform interval of 10 feet unless otherwise directed by the Engineer. No curb or curb and gutter section shall be less than 5 feet in length.

Plane of weakness joints shall be formed by steel templates 1/8 inch in thickness, shaped to conform with the required cross section of the structure, which shall not extend below the top of the steel reinforcement or which shall be notched to permit the steel reinforcement to be continuous through the joint. The templates shall be left in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place.

Construction joints shall be placed at the end of each day's pour, unless the pour ends at an expansion joint.

Construction joints shall be formed by steel templates 1/8 inch in thickness, shaped to conform with the required cross section of the structure. The templates shall be left in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place. No reinforcing steel shall extend through the construction joint.

The edges of the gutter, the back top edge of the curb and all transverse joints shall be rounded with an approved finishing tool having a radius of 1/4 inch. The face of the curb, at the top and bottom, shall be rounded with approved finishing tools having the radii shown on the plans.

The exposed surfaces of the concrete curb, gutter, or combination curb and gutter, shall be finished smooth and even by means of a moistened wooden float or other means having the approval of the Engineer. The finished

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
P  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f\  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

surfaces shall not vary more than 1/8 inch in 10 feet from the established grade. Neat cement or mortar shall not be used to facilitate the finishing of surfaces.

Immediately after the forms are removed, all visible areas of honeycomb and minor defects shall be filled with mortar, composed of one part portland cement and two parts fine aggregate from the same sources as used in the structure, applied with a wooden float. Immediate steps shall be taken by the Contractor to correct the conditions contributing to these defects.

After the finishing operations have been completed and immediately after the free water has left the surface, the surface of the concrete shall be completely coated and sealed with a uniform layer of white membranous curing compound. The compound shall be applied in one or two applications as directed by the Engineer. When the compound is applied in two increments, the second application shall follow the first application within 30 minutes.

The compound shall be applied in a continuous uniform film by means of mechanically pumped pressure sprayer equipment at the rate directed by the Engineer, but not less than one gallon per 200 square feet of surface. The equipment shall provide adequate stirring of the compound during application. The equipment for applying the compound must be on the project and approved by the engineer before work is started.

If the compound is too thick for satisfactory application during cold weather, the material may be warmed in a water bath at temperatures not over 100 deg. F. Thinning with solvents will not be permitted.

If rain falls on the newly coated pavement before the film has dried sufficiently to resist damage, or if the film is damaged in any other way, the Contractor will be required to apply a new coat of material to the affected areas equal in curing value to that specified for the original coat. The treated surface shall be protected by the Contractor from injury for a period of at least 7 days. Immediately after the forms are removed, the entire area of the sides of the curb shall be coated with the curing compound.

The Contractor shall provide on the project sufficient burlap or cotton coverings for the protection of the pavement in case of rain or breakdown of the spray equipment. If hair checking develops before the curing compound can be applied, the procedure as specified herein shall be modified in that preliminary curing with wetted burlap or cotton coverings, as specified under the general requirements for curing, shall be performed before curing compound is applied.

After the concrete has set sufficiently, the curb, gutter or combination curb and gutter, shall be backfilled to the required elevation with approved material, which shall be compacted and left in a neat and workmanlike condition.

Concrete curb, gutter and curb and gutter will be measured in place, by length in lineal feet, along the base of the curb face or along the flow line of the gutter, with no deductions in length for catch basins or inlet castings.

"Concrete Curb," "Concrete Gutter," and "Concrete Curb and Gutter," will be paid for at the contract unit price per lineal foot, which price shall be payment in full for furnishing the materials, including steel reinforcement, where called for on the plans, and for performing the work complete as herein specified.

### **Bituminous Concrete Curb**

This work shall consist of constructing a bituminous concrete curb of the design specified and shall include conditioning and treating the surface on which the curb is to be laid.

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
5  
1  
0  
-  
b  
i  
t  
u  
m  
i  
n  
o  
u  
s  
-  
p  
a  
v  
i  
n  
g  
:  
d  
o  
c  
0  
7  
/  
1  
0  
/  
9  
6  
1  
1  
:  
3  
9  
:  
0  
0  
A  
M

The materials and composition of the mixture shall be as specified in M.D.O.T. 6.08, 8.02 and 8.04.

The equipment used on this work shall conform to the requirements specified under Bituminous Concrete Pavement with the following addition: BITUMINOUS CONCRETE CURB MACHINE. The bituminous concrete curb machine shall be self-propelled and compacting curved and straight line curb to the cross section specified in accordance with the plans. It shall be equipped with templates for the cross section required.

The mixture shall be placed in the paver hopper with care being exercised to avoid overloading or slopping over of the mixture on the base. The curb shall have a tight surface texture capable of resisting the infiltration of moisture, and shall be free from raveling. The paver shall be capable of compacting the mixture in the template form to a satisfactory density. Curb which shows segregation, slumping, misalignment or other defects shall be removed by the Contractor and replaced with satisfactory curb at his own expense.

When required, the area behind the curb shall be backfilled with approved material. Unless otherwise approved by the Engineer, backfilling shall not commence until the mixture has been allowed to cure for approximately 24 hours. The backfill shall be placed and thoroughly tamped as directed by the Engineer and left in a neat and workmanlike manner.

Bituminous Concrete Curb will be measured in place, by length in lineal feet along the base of the curb face with no deductions in length for catch basin or inlet castings. The contract unit price shall be payment in full for preparing the foundation, furnishing the material, including prime coat or bond coat, constructing the curb, backfilling and performing the work complete, as herein specified.

END OF SECTION

SECTION 02550

MAINTAINING TRAFFIC

**TABLE OF CONTENTS**

1. Definitions.....	1
2. Construction Influence Area .....	1
3. Responsibilities .....	1
4. General Provisions .....	2
5. Traffic Control Devices.....	3
6. Method of Payment .....	4

The work covered by this Specification shall consist of measures necessary to protect and maintain traffic and protect the work while the Contract is in force

The Michigan Manual on Uniform Traffic Control Devices, current edition, including all subsequent revisions thereto, is hereby established as part of these Specifications.

**1. DEFINITIONS**

Where the following terms are used in these specifications or on the plans, they are defined as follows:

CIA (Construction Influence Area) - The project and the area surrounding the project, as shown on the plans which has been determined by the Municipality to define the limits of responsibility for traffic control as specified herein.

Traffic Control Devices - Signs, signals, lighting devices, barricades, delineators, pavement markings, traffic regulators and all other equipment shown on the plans or determined by the Engineers as necessary for protecting and regulating traffic.

Local Traffic - The traffic which has origin or destination within the CIA.

Project Limits - The boundaries of the area in which the items under contract are being placed.

Traffic Lane - The portion of the traveled way for the movement of a single line of vehicles.

Traffic Regulator - A person properly dressed and equipped with the necessary signs as specified in the current Michigan Manual on Uniform Traffic Control Devices.

**2. CONSTRUCTION INFLUENCE AREA (CIA)**

The CIA shall include the Drain right-of-way and sufficient distance on all adjacent roads to the extent of the furthest placed construction signs, which include any advance informational signs related to the project. In addition, the CIA includes the area within the right-of-way of all crossroads within the project limits and designated detour routes, to the furthest placed construction sign.

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 \_ d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 \_ c o m b i n e d \_ p d f \ 0 2 5 5 0 \_ m a i n t a i n i n g \_ t r a f f i c . d o c

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
5  
5  
0  
-  
m  
a  
i  
n  
t  
a  
i  
n  
i  
n  
g  
-  
t  
r  
a  
f  
f  
i  
c  
.  
d  
o  
c

**3. RESPONSIBILITIES**

The Contractor shall furnish, install and maintain electrical devices requiring connections to public utilities when they are specifically called for on the plans.

The Contractor shall place and maintain all pavement markings, unless otherwise specified.

The Contractor shall normally fabricate, furnish, install and maintain all special signs that may be required for an individual project, unless otherwise specified. Where lighting devices are called for on special signs provided by the Contractor, they shall be furnished, installed and maintained by the Contractor.

The Contractor shall furnish, install and maintain all traffic control devices inside the CIA, unless otherwise specified; and shall remove such traffic control devices from the project when no longer required, as determined by the Engineer. All traffic control shall be in place and approved by the Engineer prior to construction activities.

The Contractor shall be responsible for the actions of his Subcontractors in relation to placement, maintenance and removal of traffic control devices.

The Contractor shall designate, in writing, to the Engineer, a Safety Supervisor and an alternate. The identity of these persons, including their addresses and telephone numbers, shall also be made known to the municipal Police and Fire Departments, as well as the municipality's Sheriff's Department and the State Police, where applicable, in order that immediate communication may be possible in emergencies, at night, over weekends, during the holiday periods and at such other times when construction operations are not in progress. Changes in the designation of the Safety Supervisor or the alternate shall immediately be made known, in writing, to the Engineer.

The Contractor's designated Safety Supervisor, or his alternate, shall be available at all times to the Engineer. He shall meet with the Engineer before work on the project is started to review plans for the protection of traffic in the CIA and shall meet with him periodically as the work progresses to discuss such modifications of these plans and may be required.

The Contractor's Safety Supervisor shall review the safety activities of each subcontractor and shall see that they are properly coordinated with those of the Contractor.

**4. GENERAL PROVISIONS**

In all cases, the Contractor shall provide reasonable access and reasonable facilities for local traffic to property along the project by means of temporary roadways, culverts, bridges or other means approved by the Engineer.

Where traffic is to be maintained over pavement to be removed during a succeeding stage of construction, breaking operations shall not begin until immediately before pavement removal.

When equipment and materials to be used in the work are located within the right-of-way of any street or road, the traveling public shall be safeguarded by suitable and sufficient signs, lights, barricades, or other means furnished and maintained by the Contractor. Such protection will be considered as incidental to construction. No materials or equipment shall be stored within 15 feet of a traveled roadway, unless otherwise provided or specifically authorized.

The Contractor shall notify the Engineer and the Municipality before starting any work that might inconvenience or endanger traffic in sufficient time so that arrangements may be made for publicizing the impending construction, closing the road and providing detours, signs and barricades for the maintenance of traffic. No road or section thereof shall be closed to traffic unless provided on the plans, in the specifications, or as permitted by the Municipality.

Should the Contractor wish to make minor stage construction deviations from the plans, he shall submit his request and proposed plan revision to the Engineer and Municipality not less than five (5) working days prior to changing traffic patterns for review and approval. Additional traffic control devices within the CIA required because of approved deviations from stage construction shall be furnished, installed and maintained by the Contractor at no additional cost to the Municipality, and must be properly placed before any such deviating stage construction can commence.

Unless otherwise provided, the Contractor shall conduct operations and use of equipment in such a manner that one-way northbound traffic is provided at all times throughout the entire length of the project. Temporary structures, bridges over pavement, pavement gaps or other means approved by the Engineer and the Municipality shall be employed where required. Bridges over pavement shall be of a design approved by the Engineer. The length of pavement gaps shall be as directed by the Engineer and gaps shall remain open until the adjacent concrete pavement has attained a modulus of rupture of at least 550 p.s.i.

Where shoulders, detours and/or temporary roads are used to maintain traffic, they shall be graded, surfaced and treated for dust at such times and locations and in such amounts as directed by the Engineer.

The roadway shall be graded and maintained in a condition satisfactory for traffic during the construction of the project. Should the construction work be suspended due to weather conditions or for any other reason, sufficient labor, materials and equipment shall be ready for immediate use at all times for proper maintenance.

When temporary road and drives are no longer needed, they shall be obliterated as part of this work. Restoration shall be considered incidental to the Contract unless a provision is provided elsewhere in this Contract. No additional compensation will be allowed.

All moving equipment operating in traffic areas shall operate with headlights turned on provided such headlights are included as original vehicle standard equipment.

Detours shall be provided as shown on the plans and in accordance with Sections 104.07, 104.11, 812 and 922 of the Michigan Department of Transportation Standard Specifications for Highway Construction, 2012 Edition including any supplemental Specifications and any special provisions in this proposal.

**5. TRAFFIC CONTROL DEVICES**

All traffic control devices placed by the Contractor shall conform to the design, condition, placement and lighting requirements specified in the Michigan Manual on Uniform Traffic Control Devices and the plans.

Only traffic control devices appropriate to conditions at the time shall be displayed. Advance warning signs shall be placed on all cross streets, where construction activities may be encountered as directed by the Engineer.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
\_  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
\_  
c  
o  
m  
b  
i  
n  
e  
d  
\_  
p  
d  
f  
\  
0  
2  
5  
5  
0  
\_  
m  
a  
i  
n  
t  
a  
i  
n  
i  
n  
g  
\_  
t  
r  
a  
f  
f  
i  
c  
.  
d  
o  
c

All traffic control devices shall be cleaned, repainted, re-reflectorized or replaced, as determined by the Engineer to continually provide adequate visibility and legibility, and shall be maintained in place in proper condition until the work is completed or until no longer required.

In addition to the traffic control devices shown on the plans, the Contractor shall furnish temporary traffic control devices which conform to the Michigan Manual on Uniform Traffic Control Devices to provide protection to traffic from open trenches, excavations, obstructions and any other hazardous conditions or situations as may exist. When the shoulders at the edges of pavement are low, high, soft or rough, while maintaining traffic on pavement, the Contractor shall place and maintain a sufficient number of approved lighted devices to warn traffic adequately during the hours of darkness. The lights shall be placed along the edge of the pavement with a maximum distance of 50 feet between lights or as specified by the Engineer. Lights shall be spaced more closely on curves, at intersections and/or where required for safety.

Road closure barricades shall be provided with warning lights which shall be lighted from one hour before sunset to one hour after sunrise.

Temporary or permanent traffic signs, in addition to those placed within the CIA by the Contractor may be placed within the CIA by the Municipality or another Contractor working in the same area or on an adjacent project, or other authorized agency, when approved by the Engineer. Such temporary or permanent signs shall only be those required for the safety and direction of traffic because of operations other than the Contractor's operations. Such signs shall be the responsibility of the agency placing them and shall be protected from damage and shall not be removed unless authorized by the Engineer.

When, in the opinion of the Engineer, Traffic Control Devices are deficient, inadequate or improper, or conditions within the CIA are such that safety is adversely affected, the Contractor or his Safety Supervisor will be immediately notified. Such notice will be accomplished by a statement of the corrective action to be taken. If the Contractor fails to comply promptly with such instructions, the Engineer may stop any or all work on the project until satisfactory corrective action is taken. In the event that the Contractor neglects to take any corrective action, the Engineer may order such work as is deemed necessary to insure public safety done by the Municipality or outside forces at the Contractor's expense.

When, in the opinion of the Engineer, an emergency condition exists that requires immediate action to protect life or property, the Engineer, without notice to the Contractor, may order such work as deemed necessary to be done by Municipality or outside forces at the Contractor's expense.

## 6. METHOD OF PAYMENT

Payment shall be Lump Sum under unit bid price for "Traffic Control" and shall include all necessary traffic control devices, flag control, detouring, etc. necessary to complete the project while providing continual, safe, access along roads, highways, private drives, etc.

END OF SECTION

SECTION 02730

OPEN CUT SEWERS

1.1 TABLE OF CONTENTS

1.1	TABLE OF CONTENTS .....	1
1.2	GENERAL.....	1
1.3	BASIS OF PAYMENT .....	1
1.4	EXCAVATION.....	2
1.5	LAYING OF CONCRETE AND CLAY PIPE .....	3
1.6	LAYING OF TRUSS PIPE, ABS AND PVC .....	4
1.7	CONCRETE CRADLE FOR PIPE .....	5
1.8	BACKFILL.....	6
1.9	MANHOLES AND CATCH BASINS.....	6
1.10	STUBS, CONNECTIONS, BULKHEADS & MISCELLANEOUS ITEMS OF WORK .....	7
1.11	WYES AND RISERS.....	7
1.12	HOUSE LEADS .....	7
1.13	TUNNELING .....	8
1.14	ACCEPTANCE TESTS .....	8

1.2 GENERAL

- A. Sewers shall be considered to mean the pipes or conduits between extreme ends of this project, including branch lines, but excluding special structures, as indicated on the drawings.
- B. All labor, tools and all materials necessary to excavate for, lay, join, backfill and finish the sewer shall be considered as part of the sewer construction.
- C. Unless otherwise allowed under specific specifications for a particular type of sewer or unless permitted by the Owner, construction shall begin at the outlet end of sewer and proceed upgrade.

1.3 BASIS OF PAYMENT

- A. Unless specified otherwise, sewer of the diameter specified will be paid for at the contract unit price per lineal foot, measured in place, which price shall be payment in full for furnishing the materials including: stubs; connections; tees; wyes; or any other fittings shown on the drawings; all necessary excavation; removal of existing sewers or drains; sheeting or bracing; dewatering; pipe bedding; laying; jointing; new connections and connecting of existing facilities; testing; backfilling; sand and gravel backfill; restoration of pavements, walks, and drives; disposal of surplus excavated material; and all other work incidental to the construction of the sewer, as noted elsewhere in the specifications. Measurements will be taken from the start of each section to its respective ends, (center of end manholes, when they exist) with no reductions for intermediate manholes. The length of the special structures or special sewer sections for which either lump sum or unit bids have been taken will be deducted from the total length of sewer and will be paid for at the prices bid.
- B. The Contractor may be required to submit to the Owner for approval, a breakdown of his price per lineal foot of sewer showing a per foot cost for some or all of the foregoing incidental

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 \_ d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 \_ c o m b i n e d \_ p d f \ 0 2 7 3 0 \_ o p e n \_ c u t \_ s e w e r s . d o c x 1 / 1 / 1 6 2 : 5 5 : 4 4 P M

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
7  
3  
0  
-  
o  
p  
e  
n  
-  
c  
u  
t  
-  
s  
e  
w  
e  
r  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
5  
5  
:  
4  
4  
P  
M

items of work. The sum of the individual items shall not exceed the total contract price per lineal foot of sewer.

- C. The breakdown, when approved, shall be used only as a basis for preparing estimates for progress payments and shall not be considered as overruling the contract unit price per lineal foot of sewer.
- D. Unless specified otherwise, manholes and catch basins will be paid for at the contract unit price each, which price shall be payment in full for furnishing the materials, including the required fittings, frames and grates, steps and for all labor, equipment and tools, all necessary material and all work incidental to the completed structure as required elsewhere in the specifications.

1.4 EXCAVATION

- A. Excavation shall include clearing of the site, removal and disposal of all materials necessary to be removed in the construction of all work under the contract.
- B. Excavation shall be of sufficient widths and depths to provide adequate room for the construction and installation of the work to the lines, grades and dimensions called for on the drawings, except the width of a trench from the invert to a height twelve inches (12") above the top of the sewer barrel shall not be greater than as follows:

<u>Pipe Size</u>	<u>Trench Width</u>	<u>Pipe Size</u>	<u>Trench Width</u>
4-12"	32"	72"	110"
15"	36"	78"	117"
18"	39"	84"	124"
21"	43"	90"	136"
24"	46"	96"	143"
27"	50"	102"	149"
30"	53"	108"	156"
36"	68"	114"	163"
42"	75"	120"	170"
48"	82"	132"	184"
54"	89"	144"	198"
60"	96"	156"	212"
66"	103"	168"	O.D. + 30"
		& larger	

- C. If the maximum trench width is exceeded, unless specified otherwise, the Contractor shall install, at his own expense, such concrete cradling or other bedding, as is approved by the Owner to support the added load of the backfill.
- D. Where, through the Contractor's construction procedure, or because of poor existing ground conditions, it is impossible to maintain alignment and grade properly, the Contractor shall, at his own expense, excavate the unsuitable material to as deep as three (3') feet below grade and replace it with large size aggregate or slag in order to ensure that the pipe, when laid, will maintain correct alignment and grade.

- E. Excavated materials shall be removed from the site, or transferred to the trench backfill, or temporarily stored in a manner that will not cause damage to trees, shrubs, fences or other property, nor will it endanger the bank of the trench by imposing too great a load thereon. If the 3 ft. undercut does not provide sufficiently stable conditions to maintain correct pipe alignment and grade, the Contractor will cease operations until a determination has been made as to what method of corrective action is required and the cost thereof agreed to with the Owner.
- F. Open cut shaft and tunnel excavations shall be adequately braced as necessary to enable the work to be prosecuted with safety to the workers, the work, and neighboring structures. The Contractor shall ensure at all times that adequate protection for both the public and Contractor personnel exists in any excavated area, including, but not limited to barricades, temporary fencing, advance warning signs, etc. All excavations shall be completely dewatered prior to construction of the sewer or other structures. Adequate provisions shall be made to prevent water from flowing through or over newly placed concrete or brick work. Drainage shall be carried to sumps from which the water may be pumped.

1.5 LAYING OF CONCRETE AND CLAY PIPE

- A. All pipe shall be laid to the line and grade called for on the drawings. Each pipe, as laid, shall be checked by the Contractor with line and grade pole or laser beam to insure that this result is obtained. The finished work shall be straight and shall be sighted through between manholes.
- B. Each pipe shall be inspected for defects, prior to being lowered into the trench. Inside of pipe bell and outside of spigot shall be cleaned of any dirt or foreign matter.
- C. Construction shall begin at the outlet end and proceed upgrade with the spigot ends pointing in the direction of flow. Concrete and clay pipe shall be laid on a cushion of sand, gravel or slag, in accordance with requirements of the standard detail sheet of the plans. Concrete or additional bedding shall be installed, where called for on the drawings. For pipe with raised bells or collars, bellholes shall be carefully formed at proper intervals, so that no part of the load is supported by the bells.
- D. If, through carelessness, poor existing ground conditions, or to provide an underdrain for dewatering to pump sumps, the subgrade is undercut, so that refilling is necessary to bring the pipe to grade, the Contractor shall, at no extra cost to the Owner, refill with coarse aggregate, thoroughly consolidated in place to insure that the pipe, when laid, will maintain correct alignment and grade.
- E. The pipes shall be centered in the bells or grooves and pushed tight together to form a smooth and continuous invert. After laying of pipe, care shall be taken so as not to disturb its line and grade. Any pipe found off grade or out of line shall be re-laid properly by the Contractor.
- F. Where pipe is laid in wet trenches or trenches with running sand, the Contractor shall provide and use mechanical means for pulling the pipe home in making up the joint and for holding the pipe joint tight until completion of the line. Mechanical means shall consist of a cable placed inside of the pipe with suitable winch, jack, or come-along for pulling the pipe home and holding the pipe in position.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
7  
3  
0  
-  
o  
p  
e  
n  
-  
c  
u  
t  
-  
s  
e  
w  
e  
r  
s  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
6  
  
2  
:  
5  
5  
:  
4  
4  
  
P  
M

- G. Mechanical means shall be used for pulling home all rubber gasketed pipe, regardless of trench condition, where manual means will not result in pushing and holding the pipe home.
- H. Completion of the pipe bedding and backfilling the remainder of the trench shall follow closely behind the laying of the pipe.
- I. Concrete pipe 42" and larger shall have all internal joints pointed with cement mortar compound of one (1) part of cement and two (2) parts of sand.

1.6 LAYING OF TRUSS PIPE, ABS AND PVC

- A. Bedding ABS, PVC and Truss Pipe shall be in accordance with current specifications of A.S.T.M. D 2321, except only Class I and Class II embedment materials may be used; embedment shall extend to a minimum 12" above top of pipe; flooding or puddling shall not be used. Class I embedment material is angular (1/4 to 3/4 in.), graded stone, slag, cinders or crushed stone. Class II embedment material is coarse sand and gravel with maximum particle size (1 1/2 in.), including various graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. It is essential that it be recognized that the successful use of flexible and semi-flexible pipe requires bedding that provides unyielding side support and complete bedding contact under pipe haunches. See sewer detail sheet.
- B. Where unstable bottoms are encountered, the Contractor shall provide a foundation consisting of an approved graded and processed angular stone or gravel to act as an impervious mat to prevent migration or vertical movement of unstable soils or bedding materials. Where trench sheeting, plates, or a trench box are used due to unstable ground conditions, all voids to the side and below the top of the piped caused by the sheeting, plates or box withdrawal shall be completely filled or the supports left in place below the top of the pipe.
- C. Concrete cradle bedding shall not be used where allowable trench widths are exceeded. In lieu of concrete cradle bedding, standard pipe bedding shall be provided to the full width between undisturbed trench walls, or at least to 2.5 pipe diameters on both sides of the pipe.
- D. Potential damage to exterior walls of Truss Pipe, particularly under cold weather conditions can occur if rocks, frozen material, or large objects strike the pipe. The Contractor shall carefully avoid dumping any materials other than approved bedding sand or stone on the pipe until a 12" cover is placed on it. Pipe walls and joints shall also be protected from abrasion and damage during handling, and shall be fully inspected just prior to placing in the trench. Care shall be taken during bedding compaction to avoid distorting the shape of the pipe or damaging its exterior wall.
  - 1. Joints
    - a. Joints for ABS and Truss pipe shall be chemically welded, in accordance with the manufacturer's recommendation. Additionally, all ends of truss pipe shall be fully and thoroughly coated with plastic jointing cement, prior to making joints, so as to insure proper bonding. Pipes shall be rotated during joint insertion to insure a complete spread of jointing cement. ABS plastic cement and ABS plastic cement primer shall arrive at the job site in sealed and labeled containers. Johnny Mops or similar swab type applicators shall be used to apply primer and cement. Opened containers in the trench shall be protected from dirt, water and other contaminants.

- b. Joints for PVC pipe and fittings shall be of the elastomeric gasket push-on type. Gasket joints shall be installed in accordance with procedures specified by the pipe manufacturer. Care should be taken to insure all joints being pushed to the full home position and held tightly in home position during any grade or line adjustments.
- 2. Cutting & Handling
  - a. Cutting of pipe lengths, where required, shall be performed by the use of tools or equipment that will provide a neat, perpendicular cut without damage to the plastic or the filler material. Bowing or warping of pipe can occur with temperature fluctuations. The Contractor shall store and protect the pipe to minimize bowing. Nominal 12'-6" pipe lengths having deviations from straight greater than 1" shall not be used.
- 3. Special Conditions
  - a. The completed installation shall, at no point, have out-of-round pipe deflections greater than 5%. The Owner shall have the option of requiring deflectometer or go/no-go gauging tests run prior to acceptance on pipelines where high deflections are suspected. Pipe with deflections greater than 5% will be considered unacceptable and shall be re-laid by the Contractor.
  - b. Unless specified otherwise in these specifications, as a means of ensuring that pipe laying is properly done and that all joints are in a "home" position, the Contractor shall provide for television viewing of 100% of the truss pipe footage laid. The Contractor shall provide 24 hours notice to the Owner prior to television viewing, so that a representative may be present.
  - c. Flexible manhole joints shall be provided in all new manhole construction. To maintain the flexibility of the pipe materials, concrete encasement of drop connections shall not be used. Where adapters to other materials are required, only approved adapters and joints may be used. When constructing a manhole over an existing sewer, flexible joints shall not be required at the walls of the existing sewer connecting into the manhole. The existing sewer pipe within the manhole shall not be removed as required to provide the channel until the newly constructed sewer extension has been tested and approved. During removal of the existing sewer within the manhole, every effort will be taken to prevent any debris from entering the sewer line.

1.7 CONCRETE CRADLE FOR PIPE

- A. Where called for on the drawings, or otherwise required, pipe shall be installed with a concrete cradle of Grade "C" concrete. Grade "C" concrete shall be in accordance with the "Specifications-Concrete" included herein.
- B. Each pipe shall rest on a 6" minimum thickness bed of dry mix concrete, shaped to fit the bottom of the pipe. The dry mix concrete shall be Grade C concrete and shall be machine mixed. After setting the pipe, the space between the outside of the pipe and the undisturbed trench bank shall be filled to a level equal to a point 1/3 of the diameter above the pipe invert with Grade C concrete, having a 5" slump and mechanically vibrated to insure complete filling of the annular space between the excavated face of the original ground and the outside face of the pipe.
- C. The cost of concrete cradle for pipe shall be included in the contract unit price bid per lineal foot of sewer.

y  
:  
\ 2  
0  
1  
6  
0  
3  
\ 2  
0  
1  
6  
0  
3  
3  
1  
\ 0  
4  
-  
d  
e  
s  
i  
g  
n  
\ s  
p  
e  
c  
s  
\ 2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\ 0  
2  
7  
3  
0  
-  
o  
p  
e  
n  
-  
c  
u  
t  
-  
s  
e  
w  
e  
r  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
6  
2  
:  
5  
5  
:  
4  
4  
P  
M

1.8 BACKFILL

- A. Except as otherwise provided for elsewhere in the specifications and/or as noted on the drawings, selected trench backfill material, or sand, free from stones and lumps shall be placed with care where in contact with the sewer, so as not to disturb the sewer and to equalize the pressure on the sewer; and it shall be placed in layers, and each layer thoroughly compacted by power tamping until there is a cover of at least 12” over the top of the sewer. The use of frozen materials in backfill of the trench is strictly prohibited. The balance of the backfill may be pulled into the trench by machine or other means, but it must be thoroughly compacted to prevent future settlement. Backfill shall follow closely behind the laying of pipe, except where plans indicate otherwise. The Contractor shall regrade as necessary.

1.9 MANHOLES AND CATCH BASINS

- A. Manholes and catch basins shall be constructed at the locations shown on the drawings, and unless otherwise specifically called for on the drawings, shall consist of brick masonry on a concrete base, solid concrete block on a concrete base or precast sections on a concrete base. The base can be cast in place or precast slab. In the case of 48” or larger sewers, manholes shall be poured in place structures or precast manhole tees. All manholes, catch basins and accessories, including steps, frames and covers, etc. shall be done in accordance with the details shown on the standard detail sheets.
- B. Connections to manholes shall be properly supported and braced where not resting on original ground, so that any settlement will not disturb the connection.
- C. Excavation shall be carried to the depth required to permit the construction of the specified depth of base, in accordance with the requirements of the Standard Details. The excavation shall be sufficiently wide to allow for shoring, bracing or form work, should any or all be necessary. Also, this is to allow for accessibility in plastering the exterior of all brick masonry. The bottom of the excavation shall be trimmed to a uniform horizontal bed to receive the concrete base. The excavated section shall be completely dewatered before any concrete is placed therein. Concrete shall be Grade A, 3500 pounds per square inch compressive strength and shall be in accordance with the “Design and Classifications” section of the “Specification-Concrete”.
- D. All brick shall be wetted immediately before being laid. Broken or chipped brick shall not be used in the face of the structure. The brick shall be laid radially in courses in a full bed of mortar with interior joints not more than 1/4” in width. Whole bricks only shall be used, except to effect closures and to fill in the outside portion of the radial joints. Each seventh course shall be laid in “stretchers”, the intervening courses being composed of “headers”. Adjoining courses shall break joints by one half the width of a brick as nearly as practicable. All joints shall be true and smooth. The upper section of the manhole shall be domed, as indicated on the drawings, to such diameter as will fit the iron casting.
- E. All precast sections shall bear the stamp of an approved testing laboratory as having been tested and delivered from tested stock of the manufacturer, at the expense of the Contractor.
- F. Tops shall be set in a full bed of mortar or otherwise secured, as shown on the drawings, and to the required finished elevations. Manhole chimney exterior sealing shall be required on sanitary manholes if noted on the Plans or elsewhere in these specifications.

- G. When completed, manholes shall be cleared of scaffolds and cleaned of surplus mortar or other foreign materials. The interior joints shall be pointed and the entire exterior surface of brick and block manholes completely plastered with mortar.

1.10 STUBS, CONNECTIONS, BULKHEADS & MISCELLANEOUS ITEMS OF WORK

- A. The Contractor shall furnish all material and labor, and shall install and/or construct the stubs connections, bulkheads and miscellaneous items of work called for on the drawings and/or specifications. The cost of this work, unless otherwise specified, shall be included in the unit price bids for manholes and/or sewers.
- B. Unless otherwise noted on the drawings, stubs shall consist of one full length of sewer pipe, minimum length 4', with watertight bulkhead constructed of material compatible with the pipe material. No separate payment will be made for such stubs, connections, bulkheads and miscellaneous items of work covered in this section. Such work shall be considered incidental and the cost thereof shall be included in the unit price bids for manholes or sewers.

1.11 WYES AND RISERS

- A. Wye branches, risers or stubs fitted with suitable stoppers shall be set for each lot shown and at such other points, as are called for on the drawings. The cost of wye branches shall be included in the unit price bid for sewer.
- B. Risers shall be constructed where shown on the drawings with the same material used for house leads. They shall connect to wye branches constructed as a part of the sewer proper; and shall include a 45 degree bend and straight pipe laid along the side of the trench cut to reach the height specified. A pipe stopper shall be placed in the top bell, as recommended by the manufacturer, properly blocked to withstand air testing. These fittings and stoppers shall be equipped with the allowable typed of joint used on the sewer. Backfill at all risers shall be carefully placed and tamped sufficiently to insure against damage from backfill settlement. Payment at the unit price bid for house lead will be made for length of riser pipe placed, including the length of the 45 degree bend, except if payment is specified otherwise.
- C. The Contractor shall furnish and place a 2" x 2" cypress, ash or cedar marking stick at the end of each wye or house lead, whichever is constructed. The marking stick shall be of such length that it will reach from the sewer up to within six (6) inches of the ground surface. Each marker shall be set in a vertical position and held vertical, while backfilling the trench.

1.12 HOUSE LEADS

- A. The Contractor shall construct house connections where shown on the drawings. A pipe stopper shall be placed in the end of the connection, as recommended by the manufacturer and properly blocked to withstand air testing. Payment at the unit price bid for house connections built, including the length of the bend.
- B. House leads shall be constructed at a minimum grade of 1/8" per foot and at an elevation noted on the Plan, or at a depth sufficient to properly serve the adjacent property. Wherever possible, the house lead shall have a minimum depth of 10 feet from surface of ground or pavement to centerline of house lead at the right-of-way or easement line.

y  
:  
\ 2  
0  
1  
6  
0  
3  
\ 2  
0  
1  
6  
0  
3  
3  
1  
\ 0  
4  
-  
d  
e  
s  
i  
g  
n  
\ s  
p  
e  
c  
s  
\ 2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\ 0  
2  
7  
3  
0  
-  
o  
p  
e  
n  
-  
c  
u  
t  
-  
s  
e  
w  
e  
r  
s  
.  
d  
o  
c  
x  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
5  
:  
4  
4  
P  
M

- C. The Contractor shall furnish and place a 2” x 2” cypress, ash or cedar marking stick at the end of each house connection sewer of such length that it will reach from the sewer up to within six (6) inches of the ground surface. Each marker shall be set up in a vertical position and held vertical, while backfilling the trench.

1.13 TUNNELING

- A. The Contractor may, at his option (and with the approval of the Owner), construct the work in tunnel, where it crosses existing roadways, public and private utilities, walks or other structures. The work shall be constructed in tunnel where noted on the drawings or as may be required under road permits.
  - 1. Jacked-In-Place Pipe Sewers
    - a. Jacked-in-place pipe tunnel sewers shall be constructed of reinforced concrete pipe, ASTM C-76 Class 4 with 2 rings of circular reinforcement extending into the bell and into the spigot ends of the pipe. Elliptical reinforcement will not be allowed. In such construction, excavation shall not proceed ahead of the cutting edge of the pipe or shield. Voids shall be filled by means of pressure grouting with 1:3 cement-sand mortar.
    - b. All joints shall have inside cement pointing with cement mortar compound of one (1) part of cement and two (2) parts of sand.
  - 2. Pre-Tunneled Pipe Sewers
    - a. Pre-tunneled pipe sewer shall be constructed of reinforced concrete pipe as specified under Jacked-In-Place Pipe Sewers.
    - b. In such construction, the excavated tunnel shall be braced as necessary. Pipe shall be carefully set to line and grade. Voids shall be filled with tamped sand backfill, except in cases where a permit requires a cement-sand-backfill, in which cases such shall be used.
  - 3. Monolithic Concrete Tunnel
    - a. Monolithic concrete tunnel sewers shall be as detailed on the drawings.
    - b. All voids shall be filled by means of pressure grouting with 1:3 cement sand mortar.
    - c. Shaft locations shall be subject to the review of the Owner and the Contractor shall submit a schedule of desired locations of shafts for approval.
    - d. The method of constructing the shafts and the type of support are at the option of the Contractor, but subject to review by the Owner.
    - e. The Contractor will receive no extra compensation for constructing, maintaining or removing shafts, but the cost of same shall be included in the prices bid for the sewer work.

1.14 ACCEPTANCE TESTS

- A. All sewers, subject to the requirements of the local agency or agencies having jurisdiction thereof, shall be subjected to infiltration, air or exfiltration tests or a combination thereof, in accordance with the following requirements, prior to acceptance of the sewer system and prior to removal of bulkheads.
- B. Where air testing is not specifically required the following requirements shall apply.
- C. Maximum infiltration shall not exceed 100 gallons per inch of diameter per mile of pipe per 24 hours for the individual runs between manholes and the overall project. In event of

infiltration in excess of these amounts, joints shall be remade, or if necessary, pipe shall be re-laid. The test shall be repeated until results show that seepage has been reduced below the above maximum.

- D. If, in the opinion of the Owner, ground water conditions at the time of test would not provide for a conclusive test of the extent of infiltration, then an exfiltration test shall be required. If an exfiltration test is determined to be necessary, the maximum exfiltration rate shall be the same as that permitted from infiltration.
- E. Method of testing and measurement shall be approved by the Owner. The Contractor shall provide the necessary equipment and labor for making test, and the cost of same shall be included in the unit price bid for completed sewer.
  - 1. Infiltration Test
    - a. All sewers over 24" diameter shall be subjected to infiltration tests. All sewers of 24" diameter or smaller where the ground water level above the top of the sewer is over 7 feet shall be subjected to an infiltration test.
    - b. Maximum allowable infiltration shall not exceed 200 gallons per inch of diameter per mile of pipe per 24 hours for an individual run between manholes and for the overall project.
  - 2. Air Test or Exfiltration Test
    - a. All sewers of 24" diameter or less, where the ground water level above the top of the sewer is 7 feet or less shall be subjected to air tests or exfiltration tests.
    - b. Exfiltration Test
      - 1) For the purpose of exfiltration testing, the internal water level shall be equal to the external water level plus seven (7) feet, as measured from the top of highest pipe in the system being tested. This could be either a house lead or a lateral. However, the maximum total height of water above the invert of the pipe at the lower end shall not exceed 20 feet. A prospective test that would exceed this 20 foot limit should not be taken. The line under construction can be broken down into smaller sections such that the maximum head of 20 feet will not be exceeded.
      - 2) The actual exfiltration or leakage from the sewer line can be measured by recording the volume of water lost over a given period of time in a stand pipe, or the upstream manhole can be used provided the test water level is below the bottom of the tapered section. It may be necessary to add a measured amount of water during the testing time interval to maintain water in the stand pipe at the specified level such that the total volume of water lost would be based upon the amount of water added and the difference in elevation of water at end of testing converted to gallons. When the stand pipe method is used, the time interval to record the difference in elevation of the water surface shall be a minimum of fifteen minutes. When the upstream manhole method is used, the time interval shall be a minimum of two (2) hours.
      - 3) Approximately four (4) hours should elapse after the test section is filled with water to permit the escape of trapped air and to allow for maximum absorption. After such absorption and escape of air has taken place, water should be added to the specified test level and the test begun.

y  
:  
\ 2  
0  
1  
6  
0  
3  
3  
\ 2  
0  
1  
6  
0  
3  
3  
1  
\ 0  
4  
-  
d  
e  
s  
i  
g  
n  
\ s  
p  
e  
c  
s  
\ 2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\ 0  
2  
7  
3  
0  
-  
o  
p  
e  
n  
-  
c  
u  
t  
-  
s  
e  
w  
e  
r  
s  
.  
d  
o  
c  
x  
  
1  
/  
1  
/  
1  
/  
6  
  
2  
:  
5  
:  
4  
4  
P  
M

c. Low Pressure Air Tests

- 1) The procedure for air testing of sewers shall be as follows:
- 2) The sewer line shall be tested in increments between two adjacent manholes. The line shall be cleaned and plugged at each manhole. Such plugs shall be designed to hold against the test pressure and shall provide an air-tight seal. One of the plugs shall have an orifice through which air can be introduced into the sewer. An air supply line shall be connected to the orifice. The air supply line shall be fitted with suitable control valves and a pressure gauge for continually measuring the air pressure in the sewer. The pressure gauge shall have a minimum diameter of 3 1/2 inches and a range of 0-10 PSIG. The gauge shall have a minimum division of 0.10 PSIG and an accuracy of +/- 0.04 PSIG.
- 3) The sewer shall be pressurized to 4 PSIG greater than the greatest back pressure caused by ground water over the top of the sewer pipe. At least 2 minutes shall be allowed for the air pressure to stabilize between 4.0 and 4.5 PSIG. If necessary, air shall be added to the sewer to maintain a pressure of 4.0 PSIG or greater.
- 4) After the stabilization period, the air supply control valve shall be closed, so that no more air will enter the sewer. The sewer air pressure shall be noted and timing for the test shall begin. The test shall not begin if the air pressure is less than 4.0 PSIG, or such other pressure as is necessary to compensate for ground water level.
- 5) The time required for the air pressure to decrease 1.0 PSIG during the test shall not be less than four (4) minutes.
- 6) Manholes on sewers to be subjected to air tests shall be equipped with a 1/2 inch diameter galvanized capped pipe nipple extending through the manhole wall and at an elevation equal to the top of the sewer pipe. Prior to the air test, the ground water elevation shall be determined by blowing air through the pipe nipple to clear it, and then connecting a clear plastic tube to the pipe nipple. The tube shall be suspended vertically in the manhole and the ground water elevation determined by observing the water level in the tube. The air test pressure shall be adjusted to compensate for the maximum ground water level above the top of the sewer pipe to be tested. After all tests are performed and the sewer is ready for final acceptance, the pipe nipple shall be plugged in an acceptable manner.
- 7) If a sewer fails to pass any of the previously described tests, the Contractor shall determine the location of the leaks, repair them and re-test the sewer. The tests shall be repeated until satisfactory results are obtained.
- 8) All visible leaks and cracks shall be repaired, regardless of test results.

3. NOTE:

- a. The air test can be hazardous under certain conditions. It is extremely important that all air plugs be properly secured and that care be exercised during the test and in the removal of plugs. A 15" plug with 4.5 psi applied to it exerts almost 800 pounds of force. This is an example of the potential hazard that exists if plugs are not correctly installed or are not completely relieved of air pressure before being removed. As a safety precaution, it is

suggested that pressurizing equipment be provided with a 10 psi pressure relief device to reduce hazards and to avoid over-pressurization of any sewer lines.

- b. All final acceptance tests under the jurisdiction of the local agency or agencies shall be witnessed by a representative of that Department.

END OF SECTION

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
7  
3  
0  
-  
o  
p  
e  
n  
-  
c  
u  
t  
-  
s  
e  
w  
e  
r  
s  
.  
d  
o  
c  
x  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
:  
4  
4  
P  
M



SECTION 02731

OPEN CUT SEWER PIPE - MATERIAL

1.1 TYPES OF SEWER PIPE AND JOINTS

- A. One type of sewer pipe and joint has been shown on the plans.
- B. Unless otherwise specified, any of the type of sewer pipe or joints listed below may be used upon approval of the Owner, provided the pipe (external load supporting) strength is equal to or exceeds that of the pipe shown on the plans.
- C. Specifications indicated shall be the current edition.
  - 1. Reinforced Concrete Pipe (ASTM C76)
    - a. Modified groove tongue joint with approved rubber gasket, ASTM C443 except as such specifications relate to infiltration limitations.
  - 2. **Reinforced Concrete Elliptical Culvert Storm Drain and Sewer Pipe**, ASTM C-507, Class HE-1 thru HE-IV or VE-II thru VE-VI, as called for on the drawings.
    - a. Tongue and groove bituminous (DeWitt #10) joint with inside cement pointing.
  - 3. **Reinforced Concrete Low-Head Pressure Pipe**, ASTM C-361 or AWWA Designation C-302, meeting strength requirements of ASTM C-76, Class 1-5 as called for on the drawings.
    - a. Steel joint rings and rubber joint with inside and outside pointing.
    - b. Lubricant, as supplied by the pipe manufacturer, shall be used on the groove and on the tongue in making up joints. The joints shall be coupled in accordance with the pipe manufacturer's requirements.
  - 4. **Plain Concrete Pipe** (ASTM C14 or concrete Pipe Assn. of Michigan Designation C14 XM).
    - a. Modified groove tongue with approved rubber gasket (ASTM C4433, except as such specifications relate to infiltration limitations).
    - b. Lubricant, as supplied by the pipe manufacturer, shall be used on the groove and on the tongue in making up joints. The joints shall be coupled in accordance with the pipe manufacturer's requirements.
  - 5. Extra Strength Vitrified Clay Pipe - ASTM Designation C-700.
    - a. **Note:** All joints must conform to current ASTM C425 except as such specifications relate to infiltration limitations.
  - 6. Truss Pipe
    - a. Truss Pipe and Fittings shall be as described under ASTM Designation D2680. Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping. Appendix X1 of said specification shall be as modified by the bedding requirements outlined elsewhere in these contract documents.

1.2 TYPES OF HOUSE LEAD SEWER PIPE AND JOINTS

- A. **Extra Strength Vitrified Clay Pipe** - ASTM Designation C-700. Sizes 4"-6".
  - 1. Types of Joints: Bell and Spigot
    - a. Tylox (Type B) Cast in the Bell with collar on spigot end

- b. Wedge Lock
- c. Ring
- d. Amvit

- B. Extra Strength Non-reinforced Concrete Sewer Pipe - ASTM Designation C-14-XS Sizes 4"-6"
  - 1. Types of Joints:
    - a. Tylox (Type B) cast in the bell with collar on spigot end.
    - b. Modified Grooved tongue with rubber gasket.
- C. Solid Wall ABS plastic, extra strength
  - 1. Solid wall ABS pipe for house connection sewers shall be Extra Strength (ES), SDR 23.5, and shall be extruded from ABS meeting the requirements for Type 1, Grade 1, or Type 4, Grade 1 materials as defined in ASTM D1788 shall have a minimum deflection at failure of 15% and shall have a minimum pipe stiffness of 150 psi.
  - 2. All other requirements shall be as specified in ASTM D2751, ABS Sewer Pipe and Fittings.
  - 3. Joints shall be chemically welded in accordance with the manufacturer's recommendations.
- D. **Schedule 40 PVC** plastic meeting the requirements of ASTM 2665.

1.3 MANHOLE, CATCH BASIN, AND INLET BLOCK AND BRICK

- A. Brick shall be made of clay or shale, and shall be whole, thoroughly and evenly burned, of close and uniform texture, free from cracks and warps, with true even faces and uniform in shape and size. Brick shall show a minimum average compressive strength of 2,000 pounds per square inch and an average absorption of water in twenty-four (24) hours of not more than 22% of the dry weight.
- B. Concrete brick shall conform to the requirements for concrete building brick of ASTM C-55, Grade N-1.
- C. Concrete block for manholes, catch basins, and inlets shall conform to ASTM C139 with the following exceptions.
  - 1. Shape
    - a. The blocks shall be solid curved blocks with the inside and outside surfaces curved to the required radii. the blocks shall have tongue and groove or other approved type of joint at the ends so that the units interlock to form a strong, rigid structure. Curved blocks shall have the inside and outside surfaces parallel.
  - 2. Size
    - a. The nominal dimensions of the block shall be 18 inches maximum for length, 8" maximum for depth (height), and 6 inches minimum for width (thickness). The length shall be measured along the chord on the convex face of the block. The tolerances of ASTM C139 shall apply. Where the specified wall thickness on the standard plans is 12 inches, a multiple block wall of two 6 inch wide blocks is permitted. All blocks in one structure shall be of the same height dimension. The blocks shall be designed for length so that only full

length or half-length blocks are required to lay the circular wall of any one course.

- b. Blocks intended for use in the cones or tops of manholes or other structures shall have shape as may be required to form the structure as shown on the plans with inside and outside joints not to exceed 1/4 in thickness.
- c. The mortar shall be composed of one (1) part of a combination of Portland cement and hydrated lime and three (3) parts of fine aggregate, by volume. The combination of cement and lime shall consist of 90% of Portland Cement and 10% of hydrated lime, by volume. In lieu of the above combination of cement and lime, a standard brick mortar cement may be used if approved by the Engineer.

#### 1.4 PRECAST MANHOLES

- A. All precast manhole sections and bases shall be 4000 lb. per square inch concrete as determined by core test or cylinders.
- B. Unless otherwise noted on the drawings or in the supplemental specifications, precast reinforced concrete manhole sections shall meet the requirements of current ASTM C478.

#### 1.5 SEWER STUBS

- A. Six inch (6") stubs shall be extra strength vitrified pipe conforming to current CNPI ER 4-67 specification, C-14 Extra Strength Concrete Pipe or Truss Pipe conforming to ASTM Designation D 2680 for ABS Composite Sewer Pipe. Stubs 12" and larger shall be ASTM C-76 Class IV Concrete Pipe or as noted on the plans.

#### 1.6 TEST OF PIPE

- A. Concrete Pipe and Clay Pipe
  - 1. All pipe and pipe joints material shall meet the current American Society for testing and Materials (A.S.T.M.) or National Clay Pipe Institute specifications designation number as called for on the plans or elsewhere in these contract documents.
  - 2. The manufacture or seller shall furnish specimens for testing equal to 0.5% of order, but not less than 2 specimens of each size and type. The specimens may be selected from the job by the testing laboratory or by the Owner if he so chooses.
  - 3. Pipe 54" in diameter and over may be tested by taking suitable core samples and subjecting the cores to strength tests.
  - 4. When approved by the owner, tests may be conducted at the pipe manufacturer's yard by the independent testing laboratory. The Owner may choose to witness the tests.
  - 5. Pipe shall be tested at the expense of the contractor by an Independent testing laboratory approved by the Owner. Copies of the tests shall be furnished to the Owner. The signature of the representative of the independent testing laboratory must appear on the test reports.
  - 6. The Owner reserves the right to visually inspect and reject any pipe at the site of the work which appears to have defects or imperfections.
  - 7. Vitrified clay pipe shall conform to the extra strength classification of the National Clay Pipe Institute Designation ASTM C700.

- B. Truss Pipe

1. All pipe and fittings shall be certified by the manufacturer to meet the current applicable ASTM specification requirements. Certification forms, together with a report of the test results, shall be provided to the inspector with the pipe deliveries and copies shall be forwarded to the Owner. Certification forms shall include project name, location, contractor and test lot number.

END OF SECTION

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 2 7 3 1 - o p e n - c u t - s e w e r - p i p e - m a t e r i a l . d o c x 1 1 / 1 1 / 1 6 2 : 5 6 : 1 2 P

SECTION 02751

CLEANING OF SEWER LINES

PART 1 GENERAL

1.1 SUMMARY

- A. It is the intent of these specifications to provide a basis by which a sanitary sewer line can be cleaned of all excess debris so that internal sewer inspections or other work can be carried out. This basis shall include methods, equipment, and payment of work. Cleaning of sewer lines shall be accomplished by trapping and collecting all sand, debris, and grease at the next manhole, upstream or downstream of the line being cleaned, and removal and proper disposal of said materials in accordance with applicable State and Local laws governing the disposal of such materials. Cleanup operations shall consist of cleaning all debris out of the manholes and off the ground around the manhole and should include removal and proper disposal of said materials. The cleaning out of culverts by mechanical or hydrologic means to protect pipe from damage.
- B. The Contractor shall provide and furnish all required skilled and unskilled labor, materials, fuel, machinery, tools, so that the contract and all work required to be done under the contract can and will be carried on continuously and expeditiously to completion, in all respects to the satisfaction of the Owner.
- C. The sewer lines for which cleaning are required are shown or identified in these Contract Documents or as directed by the Owner.

1.2 MEASUREMENT AND PAYMENT

- A. Payment for cleaning of a sanitary sewer line shall include all supervision, labor, equipment, water, electrical bills, disposal of debris, cleanup and any other applicable item and shall be included in the unit prices as described in the Specifications herein.
- B. **Normal Cleaning, \_\_-inch Diameter Sewer.....Linear Foot**  

The Owner shall pay for a “three-pass” cleaning of sewer pipelines utilizing high pressure jetting equipment, brushes and swabs to allow for passage of the CCTV; removing small amounts of loose debris such as gravel, sand, small rocks, grease and other deleterious materials within the sewer line; and removal of loose mineral deposits up to 25% of sewer diameter (height). **Normal Cleaning, \_\_-inch Diameter Sewer** will be paid for at the contact unit price per foot measured from inside of manhole to inside of manhole. Attached, or encrusted and hard compacted deposits are not included in the unit price for **Normal Cleaning, \_\_-inch Diameter Sewer**.
- C. **Heavy Cleaning, \_\_-inch Diameter Sewer.....Linear Foot**

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
7  
5  
1  
-  
s  
e  
w  
e  
r  
-  
c  
l  
e  
a  
n  
i  
n  
g  
.  
d  
o  
c  
1  
/  
1  
/  
1  
/  
1  
/  
6  
2  
:  
5  
6  
:  
3  
3  
P  
M

Should the sewer line have too much debris or blockage to allow a camera to pass through after the original three passes are made additional cleaning may be required. This work shall commence only upon the approval and direction of the Owner and/or the Owner's Representative/Engineer and will be defined as "**Heavy Cleaning**"

The Owner shall pay for an additional "three-pass" cleaning of sewer pipelines utilizing high pressure jetting equipment, and mechanical cleaners such as bucket machines, scrapers, cutters and augers to allow for passage of the CCTV; removing obstructions and medium to large amounts of debris such as gravel, sand, rocks, grease and other deleterious materials within the sewer line; removal of mineral deposits in accordance with the cleaning standards detailed in Article 1.2.D and removal of all attached, or encrusted and hard compacted deposits; and removal of roots, root balls. **Heavy Cleaning, \_\_-inch Diameter Sewer** will be paid for at the contact unit price per foot measured from inside of manhole to inside of manhole.

**D. Cleaning Types (deposits and debris)**

1. Incidental Cleaning of "Loose" Deposits and Debris (prior to cleaning)
  - a. Up to 12" diameter sewer - 25% of sewer height
  - b. 13" to 24" diameter sewer - 15% of sewer height
  - c. Over 24" diameter sewer - 10% of sewer height
2. Heavy Cleaning of "Attached/Compacted" Deposits and Debris (prior to cleaning)
  - a. Up to 12" diameter sewer – over 25% of sewer height
  - b. 13" to 24" diameter sewer - over 15% of sewer height
  - c. Over 24" diameter sewer - over 10% of sewer height
3. Heavy Cleaning of "Attached/Compacted" Deposits and Debris (following three (3) passes with jetting equipment)
  - a. Up to 15" diameter sewer – over 20% of sewer height
  - b. 16" to 36" diameter sewer - over 15% of sewer height
  - c. Over 36" diameter sewer - over 10% of sewer height

1.3 REFERENCES

A. Abbreviations and Acronyms

1. NASSCO – National Association of Sewer Service Companies
2. PACP - Pipeline Assessment and Certification Program
3. CCTV – Closed Circuit Televising

B. Definitions

1. Three-Pass Cleaning –Flushing of a sewer with a maximum of (3) passes utilizing high pressure jetting system

C. NAASCO Reference Standards

1. In accordance with NASSCO standards, heavy cleaning may require a step cleaning approach usually by accessing the downstream manhole and cleaning from downstream to upstream. Step cleaning is a systematic and efficient method of cleaning pipe with medium to large amounts of debris. Small sections or lengths of the sewer segment (steps or passes) are cleaned in each pull of the cleaning nozzle. This prevents build-up of debris downstream in the pipe and at the manhole. This also prevents the nozzle from becoming stuck in a large build-up of debris.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
7  
5  
1  
-  
s  
e  
w  
e  
r  
-  
c  
l  
e  
a  
n  
i  
n  
g  
.  
d  
o  
c  
1  
/  
1  
/  
1  
/  
1  
6  
2  
:  
5  
6  
:  
3  
3  
P  
M

2. It is common practice to follow the cleaning nozzle with visual inspection from upstream to downstream to verify that the cleaning process is effective and that the pipe is cleaned per NASSCO standards for accurate PACP coding. However, at times it may be necessary to clean a pipe from the upstream manhole to the downstream manhole (reverse set-up). The reasoning for a reverse set-up is based on the conditions, the access/location and the amount and type of debris in the pipe. Heavy cleaning may require specialized nozzles depending on the amount of debris, the type of deposit, the type of debris or obstruction and the debris location.

#### 1.4 QUALIFICATIONS

- A. The Contractor performing the work shall be a company specializing in performing cleaning sanitary sewers, and shall have a minimum experience of at least three other projects of similar size and scope within the last five years that include cleaning operations as outlined herein.

#### 1.5 SUBMITTALS

- A. Prior to initiation of work, the Contractor shall submit for Owner review and approval the following:
  1. Listing of and data sheets for equipment to be used for proposed cleaning work.
  2. Proposed water source for cleaning and proposed disposal site for solids cleaned from sewer.

#### 1.6 REQUIRED DELIVERABLES

- A. All data pertinent to the line cleaned shall be duly recorded on an adequate cleaning log form as supplied by the Contractor. This form shall be turned over to and remain in the possession of the Engineer after a section of the line has been completed.
- B. Landfill disposal logs for all debris.

#### 1.7 ACCEPTANCE

- A. A daily log of work accomplished shall be duly recorded and acknowledged by the Owner or Owner's representative and the Contractor's superintendent.
- B. All inspection recordings and reports will be reviewed by the Owner. The Owner shall have the authority to reject all or any portion of recordings not conforming to Specifications. These areas shall be re-cleaned at no additional charge.

y  
:  
\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
\  
0  
2  
7  
5  
1  
-  
s  
e  
w  
e  
r  
-  
c  
l  
e  
a  
n  
i  
n  
g  
.  
d  
o  
c  
1  
1  
/  
1  
1  
/  
1  
6  
2  
:  
5  
6  
:  
3  
3  
P  
M

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. All equipment used for cleaning operations, any method, shall be equipment specifically designed for the type of work specified. Self-contained cleaning units shall be used for the work unless otherwise approved by the Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor shall be responsible for securing the site and protection of the Owner's personnel and public. Any necessary traffic control shall be in accordance with the current Michigan Manual of Uniform Traffic Control Devices.
- B. The contractor shall notify the residents/businesses one day prior to starting cleaning with a "Resident Notification Letter" informing the residents/businesses of the Contractor's cleaning activities and to provide contact information for the Contractor and Owner. The Contractor shall submit the letter for Owner review and approval prior to notification. This letter should include contact information for residents to call should clean pressures cause toilet overflows or drain backups.
- C. The Contractor shall clean in the direction of flow unless approval is received prior to reverse flow cleaning by the Owner. The liquid filtrate may be drained back into the downstream manhole and shall be disposed of in accordance with all regulations. The Contractor is responsible for providing all required water.
- D. Protection During Cleaning Operations - Satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force, or any tools which retard the flow of water in the sewer line are used, precautions shall be taken to insure that the water does not cause damage or flooding to public or private property being served by the manhole section involved. The Contractor shall reduce the pressures at the direction of the Owner, or if notified by a resident that such problems are occurring. By reducing pressure, additional cleaning time or passes through needed and shall be done at no additional cost to the Owner.

3.2 METHODS

- A. The methods of cleaning a sanitary or combined sewer line which are acceptable for use are outlined below. Approval from the Owner for the method chosen shall be obtained prior to any cleaning work.
- B. Bucket Machine Method - This method shall consist of:

1. Rodding the sewer line with a power-driven continuous steel rod of sufficient length and gauge and with the proper cleaning heads or augers, so as to loosen all solid materials. It shall also provide a means to thread a cable for the power winch.
  2. Removal of all solids, materials and other debris by means of a clam-shell type bucket and/or other appliances dragged through the sewer line with power winches of suitable size and horsepower.
  3. Brushing of the sewer line with a brush large enough to assure that the line has been cleaned sufficiently. This brush shall be mechanically driven, with the power mechanism properly sized.
  4. All electrical drops required by the Contractor shall be arranged for by the Contractor.
- C. Hydraulic Cleaning Method - This method shall consist of cleaning and flushing of the sewer line by means of water pumped into the line at a high velocity. This shall be accomplished using between 800 pounds per square inch (P.S.I.) and 1000 P.S.I. of pressure at the pump connected by a high pressure hose to deliver water to a self-propelled nozzle to do the necessary cleaning and flushing. As many passes as necessary shall be made to sufficiently clean the sewer line.

### 3.3 DISPOSAL OF DEBRIS AND CLEANUP

- A. After removal of debris out of a manhole, the Contractor shall dispose of debris at a Type II landfill. The Owner will sign the manifest for the debris as the Generator, and shall be provided with copies of the landfill invoices after delivery. Any testing required for proper disposal shall be at the Contractor's expense and included in the unit prices bid for sewer cleaning. If the testing indicates the debris is not acceptable for disposal at a Type II landfill, and disposal at a Type III landfill, or other specialized disposal facility is required, the Owner will negotiate a change order for the additional costs for the required disposal. Clean up operations shall consist of cleaning all debris out of the manhole and off the ground around the manhole. At no time shall the Contractor push the debris downstream in the sewer system.

### 3.4 CLEANUP

- A. The Contractor shall be responsible to clean up any debris or spills during each day of work and restore conditions to existing as soon as possible.

END OF SECTION



---

SECTION 02929

SEEDING

PART 1 GENERAL

1.1 SUMMARY OF WORK

- A. The extents of seeded areas are shown on drawings and by provisions of this section.
- B. Types of work required include the following:
  - 1. Soil preparation
  - 2. Top Soil
  - 3. Compost
  - 4. Seeding
  - 5. Mulching
  - 6. Maintenance
  - 7. Provisional Acceptance

1.2 RELATED WORK

- A. Related work specified elsewhere:
  - 1. Section 02200: Earthwork
  - 2. Section 02970: Landscape Maintenance and Guarantee

1.3 QUALITY ASSURANCE

- A. Seeding Subcontractor shall have a minimum 5 years' experience with installing native seeding and with hydroseeding (if required) and related work.

1.4 SUBMITTALS

- A. Submit certification of seed mixes from seed vendor for each seed mixture specified.
- B. Manufacturer's certification of fertilizer.
- C. Seeding and Hydroseeder's certification of experience.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver seed in original sealed, labeled and undamaged containers.

1.6 PROJECT CONDITIONS

- A. Work notifications: Notify Engineer at least 7 working days prior to start of seeding operation.
- B. Protect existing utilities, paving and other facilities from damage caused by seeding operations.

- C. Perform seeding work only after planting and other work affecting ground surface has been completed.
- D. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
- E. Provide hose and lawn watering equipment as required.

#### 1.7 WARRANTY

- A. Seeding shall be warranted for a period of 1 year following acceptance

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. Seed mixes;
  - 1. Fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analysts' - Rules for Testing Seeds - for purity and germination tolerances.
  - 2. Seed Mixture: Provide seed of species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on Schedules at the end of this section.
- B. Fertilizer:
  - 1. Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.
  - 2. Type A: Starter fertilizer containing 20% nitrogen, 12% phosphoric acid and 8% potash by weight or similar approved composition.
- C. Ground limestone: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20 mesh sieve. Use if determined by soil tests to be necessary.
- D. Water: Free of substance harmful to grass seed and grass growth. Hoses or other methods of transportation furnished by Contractor.
- E. Topsoil
  - 1. Topsoil shall be fertile, friable and representative of productive soil, capable of sustaining vigorous plant growth and shall be free of clay lumps, sub-soil, weeds, seeds and other foreign debris.
  - 2. Acidity range shall be between pH 5.0 and 7.5.
  - 3. Organic content shall be not less than 5% and not greater than 30%.
  - 4. Clay content shall range between 5% and 25%.
- F. Compost
  - 1. Compost shall be mature/stabilized, hummus-like material.
  - 2. Acidity range shall be between pH 5.0 and 8.5
  - 3. Organic content shall be between 30-65% dry weight basis.
  - 4. Shall be dark brown or black color and capable of supporting plant growth without on-going addition of fertilizers or other soil amendments.

- 
5. Compost shall be free of contaminants including plastics, glass, in addition to viable weed seed.

G. Seed mixes;

Regardless of which native seed mix is specified all native mixes will have an annual cover crop incorporated into it. The cover crop shall consist of a combination of Seed Oats (*Avena sativa*), Red Top Grass (*Agrostis gigantes*) and Annual Rye (*Lolium multiflorum*), in equal parts, applied at a rate of 25 lbs. per acre.

Seed mix A (drain crossing section), shall be composed of the following:

Streambank Stabilization Mix (or approved equal) as supplied by Genesis Nursery, Tampico, IL (877) 817-5325

Application rate: 50 lbs. per acre

Seed Mix B (flood plain mix in lower areas adjacent to the drain), shall be composed of the following:

Urban Wetland/Floodplain Seed mix (or approved equal) as supplied by Genesis Nursery, Tampico, IL (877) 817-5325

Application rate: 14 lbs. per acre

Seed mix C (upland areas), shall be composed of the following:

Lo Pro Dry Mesic Savanna Open Woods and flowers Mix (or approved equal) as supplied by Genesis Nursery, Tampico, IL (877) 817-5325

Application Rate: 15 lbs. per acre.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine finish surfaces, grades, topsoil quality and depth. Do not start seeding work until unsatisfactory conditions are corrected.

#### 3.2 PREPARATION

- A. Limit preparation to areas which will be immediately seeded. Spread topsoil, fine grade.
- B. Treat lawn areas with "Round Up", by Monsanto, per label directions as required to kill existing vegetation prior to seeding.
- C. Scarify surface of lawn areas to minimum depth of 3". Remove stones over 1" in any dimension and sticks, roots, rubbish and extraneous matter.
- D. Apply 3" minimum topsoil to entire area to be seeded.

- E. Grade lawn areas to smooth, free draining and even surface with a loose, uniformly fine texture. Roll and rake; remove ridges and fill depressions as required to drain.
- F. Apply limestone, if required by soil test results, at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 nor more than 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.
- G. Apply Type A fertilizer at the rate equal to 1.0 lb. of actual nitrogen per 1,000 sq. ft. (43 lbs./acre). Apply fertilizer by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with the soil to depth of 1" by discing or other approved methods. Fertilize areas inaccessible to power equipment with hand tools and incorporate it into soil.
- H. Dampen dry soil prior to seeding.
- I. Restore prepared area to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to seeding.

### 3.3 Seeding Equipment

- A. Tractors and Crawlers: Shall have low-pressure flotation tires or broad tracks so that soil compaction is minimized in areas of site preparation or seeding activities.
- B. Disc: In good repair with sound unbroken blades; weighted, as necessary to achieve required tillage depth.
- C. Rollers or Cultipackers: Minimum 6-inch diameter rollers; of sufficient weight to pulverize clods of soil. To be used following rough grading on subgrade soils as a preparation for installation of seedbed soils.
- D. No Till Drill Seeders: John Deere Rangeland or Truax Flex Drill. Weighting of this equipment should be minimal so as to avoid compaction of organic-rich common fill.
- E. Broadcast Seeders: Tractor Three Point mount or Hand carried.

### 3.4 SEEDING

- A. Seed Installation – Planting depth for seed mixes shall not be set more than 1/4 inch deep. Seeds shall be applied with a broadcast seeder in areas too wet or too steep for mechanical seeding.
- B. Roll seed with appropriate equipment, depending on soil moisture, to provide proper soil to seed contact and cover. Seed at the rate per acre specified. Spread seed in two applications,

---

50% in a north - south direction and 50% in an east – west direction, or as directed by the Engineer.

- C. Mulching – All seeded areas are to receive a cover of erosion control fabric/straw mulch blanket as specified on the plans after installation of seed mixes. Place mulch immediately after seeding.

### 3.5 MAINTENANCE

- A. Proper maintenance shall be performed to adequately establish seed.
- B. Watering – Watering shall be applied a frequency and duration to achieve germination and satisfactory growth of the desired seed mixes (whether turf grass or native habitat species).
- C. Remove any weeds or invasive species prior to seed head establishment. During the one year maintenance and warranty period following completion of the work, the **applicator** and/or **plant specialist** shall visit the site during the months of June, July and August to determine the presence of invasive species. If invasive species are found to be present at the site, the Contractor shall be notified and shall mobilize within ten days to commence with Invasive Species Control.
- D. The Contractor will supply the name of the licensed applicator and an invasive species control work plan at the pre-construction meeting.

**Invasive Species Considered Undesirable Plants for Wetland Areas:** Common Reed (*Phragmites australis*), Purple Loosestrife (*Lythrum salicaria*), Reed Canary Grass (*Phalaris arundiancea*), Garlic Mustard (*Alliaria petiolata*) and Canada Thistle (*Cirsium arvense*).

### 3.06 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris and equipment. Repair damage resulting from seeding operations.

### 3.07 INSPECTION AND ACCEPTANCE

- A. When the seeded areas have achieved a healthy/vigorous uniform catch of the specified species established without evidence of excessive weed or invasive species infestation, the contractor shall submit a written request for inspection of seeded areas by the Owner’s Representative.
- B. No seeded areas will be considered acceptable that has bare spots or cover that is unacceptable totaling more than five (5) percent any individual seeded area.
- C. Unacceptable seeded areas include poor color, lack of vigor (willowy, minimal root structure, no stolons or rhizomes) high weed content or spotty coverage.

- D. Any bare spot in a seeded area with any dimension larger than two (2) square feet shall be re-seeded and covered with an erosion control or straw mulch blanket.

END OF SECTION

SECTION 02930

GENERAL LANDSCAPE MATERIALS AND FINAL GRADING

PART 1 GENERAL

1.1 SUMMARY

- A. Grubbing stripping, scarifying, cleaning, grading, and preparing substrate.
- B. Final Grading of substrate in preparation for restoration.
- C. Restoration Preparation is included in the cost of the project.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify building and trench backfilling have been inspected.
- B. Verify subsoil has been contoured and compacted.

3.2 SUBSTRATE PREPARATION

- A. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove and replace subsoil contaminated with petroleum products.
- B. Scarify surface to a depth of 4 inches where topsoil is scheduled. Scarify in areas where equipment has compacted subsoil.
- C. Eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- D. Remove surplus subsoil from site.
- E. Re-grade and fill all areas of settlement.
- F. Leave site clean and raked ready to receive landscaping.

3.3 TOLERANCES

- A. Top of Subsoil: Plus or minus 1/2 inch.

: \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 2 9 3 0 - g e n e r a l - i n d e x - a n d - s c a p e - m a t e r i a l s - a n d - f i n a l - g r a d i n g . d o c

3.4 PROTECTION

- A. Protect existing landscaping and other features remaining as final work.
- B. Protect all other structures, utilities, paving and other above grade appurtenances.

END OF SECTION

y : \ 2 0 1 6 0 3 \ 2 0 1 6 0 3 3 1 \ 0 4 - d e s i g n \ s p e c s \ 2 0 1 6 1 1 1 1 - c o m b i n e d - p d f \ 0 2 9 3 0 - g e n e r a l - l a n d s c a p e - m a t e r i a l s - a n d - f i n a l - g r a d i n g . d o c

SECTION 02970

LANDSCAPE MAINTENANCE AND GUARANTEE STANDARDS

PART 1 GENERAL

1.1 DESCRIPTION

- A. The requirements of this section include a one year warranty period from date of final inspection performed by the Architect/Engineer for all landscape features unless a longer period is specified elsewhere in the Specifications.

1.2 PROJECT WARRANTY

- A. Warranty seeded or sodded areas through specified maintenance period.
- B. Warranty trees, transplanted trees and shrubs, for a period of one year after date of substantial completion, against defects including death and unsatisfactory growth, except for defect resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Landscape Installer's control.
- C. Based upon the opinion of Architect/Engineer, all plants found dead or unhealthy shall be removed and replaced.
- D. Based upon the opinion of Architect/Engineer, all plants in doubtful condition shall be removed and replaced or shall have an extended warranty period.
- E. The extended warranty period is one full-growing season.
- F. At the end of the extended warranty period all plants found dead, unhealthy, or in doubtful condition shall be removed and replaced, based upon the opinion of the Architect/Engineer.
- G. Make replacements during growth season following end of warranty or extended warranty season.
- H. Only one replacement will be required at the end of the warranty or extended warranty period, except for losses or replacements due to failure to comply with specified requirements.

1.3 MAINTENANCE

- A. Begin maintenance immediately after planting.
  - 1. Maintain trees, transplanted trees, shrubs and other plants until final acceptance.
  - 2. The Contractor shall be responsible for watering all plantings through the maintenance period and shall keep guy wire taut, raise tree balls which settle, furnish and apply sprays as necessary to keep the plantings free of disease and furnish and apply sprays as necessary to keep the plantings free of disease and insects until the end of the warranty period. All evergreens shall be watered thoroughly in the fall to insure they do not go into the winter dry. Arrange with Architect/Engineer to walk

the site monthly during maintenance period to review maintenance standards.  
Remove all stakes, guy wires, tree wrap paper, dead twigs and branches from tree and plant materials at the end of this maintenance warranty period.

**B. Maintain Seeded Grass Areas**

1. The Contractor shall establish a dense lawn of permanent grasses, free from lumps and depressions or any bare spots, none of which is larger than one foot of area up to a maximum of 3% of the total seeded lawn area. Any part of the seeded lawn that fails to show a uniform germination shall be reseeded until a dense grass cover is established.
2. The Contractor shall water and provide a minimum of two cuttings of the lawn or more as necessary until the final inspection and acceptance of the seeded lawn area by the Architect/Engineer. When the lawn reaches 3 inches in height it shall be cut to 2" inches in height.
3. If seeded in fall and not given full 60 days of maintenance, or if not considered acceptable at that time, continue maintenance following spring until acceptable lawn is established.
4. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, replanting, and applying herbicides, fungicides, insecticides as required to establish a smooth, acceptable lawn, free of eroded or bare areas.
5. Water as required to maintain adequate surface soil moisture for proper seed germination. Continue watering as required for not less than 30 days. Thereafter apply 1/2" of water twice weekly until acceptance. When irrigation is not present, seeding should take place in early spring or fall.
6. Repair, rework, and re-seed all areas that have washed out, are eroded, or do not catch.

**C. Maintain Sodded Grass Areas**

1. Maintain sodded lawn areas, including watering, spot weeding, mowing, application of herbicides, fungicides, insecticides, and resodding until a full, uniform stand of grass free of weed, undesirable grass species, disease, and insects is achieved and accepted by the Architect/Engineer.
2. Water sod thoroughly every 2 to 3 days, as required to establish proper rooting.
3. Repair, rework and resod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod.
4. Mow lawn areas as soon as lawn top growth areas a 3" height. Cut back to 2" height. Repeat mowing as required to maintain specified height. Not more than 40% of grass shall be removed at any single mowing.
5. The Contractor shall water and provide a minimum of two cuttings of the lawn or more as necessary until final inspection and acceptance of seeded lawn areas by the Architect/Engineer.
6. Provide a uniform stand of grass by watering, mowing, and maintaining lawn areas until final acceptance. Resod areas, with specified materials, which fail to provide a uniform stand of grass until all affected areas are accepted by the Architect.
7. Sodded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, even colored viable lawn is established, free of weeds, undesirable grass species, disease, and insects.

1  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
f  
0  
2  
9  
7  
0  
-  
l  
a  
n  
d  
s  
c  
a  
p  
e  
-  
m  
a  
i  
n  
t  
e  
n  
a  
n  
c  
e  
-  
a  
n  
d  
-  
g  
u  
a  
r  
a  
n  
t  
e  
e  
.  
d  
o  
c  
0  
1  
/  
1  
5  
/  
9  
7  
3  
:  
3  
9

- D. Inspection and Final Acceptance
1. When landscape work is completed, including maintenance, Architect/Engineer will, upon request, make a final inspection to determine acceptability.
  2. Landscape work may be inspected for acceptance in parts agreeable to Architect/Engineer provided work offered for inspection is complete, including maintenance.
  3. Where inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Architect/Engineer and found acceptable. Remove rejected plants and materials promptly from project site.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

y  
:\  
2  
0  
1  
6  
0  
3  
\  
2  
0  
1  
6  
0  
3  
3  
3  
1  
\  
0  
4  
-  
d  
e  
s  
i  
g  
n  
\  
s  
p  
e  
c  
s  
\  
2  
0  
1  
6  
1  
1  
1  
1  
-  
c  
o  
m  
b  
i  
n  
e  
d  
-  
p  
d  
\n  
0  
2  
9  
7  
0  
-  
l  
a  
n  
d  
s  
c  
a  
p  
e  
-  
m  
a  
i  
n  
t  
e  
n  
a  
n  
c  
e  
-  
a  
n  
d  
-  
g  
u  
a  
r  
a  
n  
t  
e  
e  
.  
d  
o  
c  
o  
1  
/  
1  
5  
/  
9  
7  
3  
:  
3  
9



**SPECIAL PROVISION  
FOR  
AGGREGATE BASE, 21AA, SPECIAL**

HRC

1 of 3

3/2/10

**Description**

This work shall consist of furnishing and placing an aggregate base course on a prepared subgrade as shown on the plans and as directed by the Engineer.

This work shall be done in accordance with Section 302 of the 2012 Michigan Department of Transportation Standard Specifications for Construction, except as herein specified.

**Materials**

Aggregate Base, 21AA, Special shall meet the gradation requirements specified in Table 1 and the physical requirements listed in Table 902-2 of the 2012 Michigan Department of Transportation Standard Specifications for Construction

TABLE 1 GRADATION LIMITS (Prior to Rolling and Compacting)								
Material	Total Percent Passing (Sieve Size)							
	1 1/2"	1"	3/4"	1/2"	3/8"	No. 8	No. 30	Loss by Washing
21AA	100	85 - 100	*	50 - 75	*	20 - 45	*	4.0 – 8.0

Material not meeting gradation or loss by wash limits in Table 1 will not be permitted to be placed on the grade.

Aggregate Base, 21AA, Special materials shall be obtained from natural aggregate, iron blast furnace slag, reverberatory furnace slag, or crushed concrete. Only fines produced by the crushing process shall be permissible, no plastic fines shall be added.

Aggregate Base, 21AA, Special produced by crushing Portland cement concrete must not contain building rubble as evidenced by the presence of more than 5.0 percent, by particle count, building brick, wood, plaster, hot mix asphalt, or similar materials. Sporadic pieces of steel reinforcement may be present provided they pass the maximum grading sieve size without hand manipulation.

The Contractor is solely responsible for degradation and segregation during shipment, placement, and compaction of the material.

**Construction Methods**

Construction shall conform to Section 302 of the Michigan Department of Transportation 2012 Standards Specifications for Construction. This work shall consist of installing Aggregate Base,

21AA, Special per the cross-sections listed in the specifications and as indicated on the plans and includes all material, labor and equipment used in the preparation of the base, furnishing all material, grading and compacting the material to proper finished elevations, and protecting the subgrade, sub base, and base.

Provide a finished surface, smooth and uniform in appearance that is free of loose aggregates, holes, depressions, ruts, and ridges.

Placing and Compacting with Sodium Chloride will not be required or allowed.

In-place density control testing shall be performed to verify at least 98 percent of the maximum unit weight as determined by the method in the MDOT Density Testing and Inspection Manual appropriate for the material.

The Owner will sample the aggregates at the jobsite at any time prior to rolling and compacting, for gradation and other specification compliance testing. The sampling location for materials prior to rolling and compacting shall be from an individual dump truck or a composite sample made up of several truck dumps as the 21AA aggregate is being delivered to a job site stockpile. Samples will be collected for each 1,000 tons of material delivered.

The Owner may sample and test the compacted in-place material for final acceptance. If segregation, contamination, or excessive degradation is observed, the Owner will provide written notification to the Contractor of the need for in-place testing and determine the limits of the area subject to in-place acceptance. Material placed or paved over after receipt of notification of the need for in-place testing may be deemed to be unauthorized work as specified by subsection 104.05 of the Standard Specifications for Construction.

Compacted in-place samples shall be taken from the project grade after placement, compaction, and final trimming. Mechanical methods may be used to assist in obtaining samples from the grade when the layer thickness is greater than 4 inches.

For material made by crushing Portland cement concrete, the compacted in-place gradation for any test area must conform to the specified gradation limits shown in Table 2 and the physical requirements listed in Table 902-2 of the 2012 Michigan Department of Transportation Standard Specifications for Construction. Test results outside these limits will be subject to removal and replacement.

TABLE 2 GRADATION LIMITS (After Compaction)								
Material	Total Percent Passing (Sieve Size)							
	1 1/2"	1"	3/4"	1/2"	3/8"	No. 8	No. 30	Loss by Washing
21AA	100	85 - 100	*	50 - 80	*	20 - 50	*	10.0 max

If using Portland cement crushed concrete, construct a control strip, with a minimum length of 500 feet, at the beginning of the spreading operation to establish a construction method for placement and compaction that does not cause degradation or segregation detrimental to base stability and drainability. Obtain an in-place sample from the control strip and test for Loss by

Washing and Gradation for compliance with Table 2, after placement, compaction, and final trimming. In addition, the in-place density will be verified as described previously. Do not place additional material beyond the limits of the control strip until an acceptable placement method is determined and verified by test results.

Upon completion of verified in-place density testing, evaluate the stability of the edges of the finished surface. Check edge stability using a dump truck or gravel train to run along the edge of the finished surface. Areas that slough off or rut shall be removed and a wider, thicker section of aggregate, as determined by the Engineer, shall be installed to grade, re-compacted, and re-tested.

**Measurement and Payment**

Aggregate Base will be paid for at the Contract unit price per ton for the thickness specified in the plans, which includes all work indicated in this Special Provision and related Contract References.

<b>Pay Item</b>	<b>Pay Unit</b>
Aggregate Base, 21AA, Special .....	Ton

Payment for **Aggregate Base, 21AA, Special** shall include all labor, equipment, and materials required to complete the work described including, but not limited to, furnishing the crushed aggregate, placing spreading, shaping, compacting, trimming, protecting the underdrain system, constructing control strips, and all costs associated with corrective action including corrections necessary to rectify degradation, contamination, and segregation are included in the associated item of work.

When the Owner calls for in-place testing, only those costs associated with a failing test result shall be borne by the Contractor.

**END OF SPECIAL PROVISION**



SPECIAL PROVISION  
COUNTY DRAINS

**GENERAL**

These provisions are intended to supplement local standards for Drain Maintenance and Improvement for projects performed under the Drain Code, PA 40 of 1956, as amended and used collectively with the Plans, Special Project Details, and the balance of contract specifications herein.

**I. CLEARING AND SNAGGING**

A. DESCRIPTON

This work will consist of providing the labor, materials, and equipment for removing fallen trees, log jams, and trees leaning over the Drain and either chipping on site or hauling the debris off-site. Stumps may remain for those trees cut down. On site disposal may be permitted outside of the Drain channel but within the Drain right of way with the permission of the Owner. Burying on site is not permitted. Access to areas of clearing and snagging may be difficult. Boats or barges may be required for access.

B. MATERIALS

NA

C. METHODS OF CONSTRUCTION

The means and methods of removal and hauling shall be established by the Contractor in coordination with the Project Engineer and tailored to specific conditions encountered at each section.

D. BASIS OF PAYMENT

Payment for Clearing and Snagging:

1. Basis of Measurement: At the unit price bid per linear foot as measured along the centerline of the Drain.
2. Basis of Payment: Includes labor and equipment for removal of fallen trees, log jams, and trees leaning over the Drain.

**II. CLEARING AND GRUBBING**

A. DESCRIPTON

This work will consist of providing the labor, materials, and equipment for clearing and/or clearing and grubbing of all areas which interfere with excavation, embankment, or clear drainage within top of bank to top of bank. See details on plan sheets.

B. MATERIALS

NA

C. METHODS OF CONSTRUCTION

The means and methods of clearing and grubbing are as follows:

1. Clearing shall consist of cutting, removing and disposing of all trees, stumps, brush, shrubs and other vegetation from the designated areas.
2. Clearing and grubbing shall consist of all the items or work enumerated above for clearing and shall also include removing from the ground all roots, logs, brush, matted roots and debris of any nature within the areas designated and the subsequent disposal of all spoil materials from the project.
3. Unless otherwise specified, all materials to be chipped or burned on site and left in the Drain easement. Stumps, debris, and other items which are not chipped shall be removed from the site. No burying will be permitted.
4. Grading operations shall not be started in any area until the clearing and grubbing within the area affected has been completed.
5. All trees, shrubs and other plants not designated on the plans or by the Engineer to be removed shall be carefully protected.
6. All holes remaining after the grubbing operation in embankment areas shall have the sides broken down or leveled and shall be refilled with acceptable material, moistened and properly compacted in layers by tampers or rollers to the density required under Earth Excavation. The same construction procedure shall be applied to all holes remaining in excavation areas where the depth of holes exceeds the depth of the proposed excavation.
7. If the contract includes a separate item for "Clearing" or "Clearing and Grubbing," the contract unit price per acre or per station shall be payment in full for performing all work as herein specified.
8. If the contract does not include a separate item for "Clearing" or "Clearing and Grubbing," these items will be considered as incidental to the work of Earth Excavation.

D. BASIS OF PAYMENT

Payment for Clearing and Grubbing:

1. Basis of Measurement: At the unit price bid per linear foot as measured along the centerline of the Drain.
2. Basis of Payment: Includes labor and equipment for cutting, removing, and disposing of all trees, stumps, brush, shrubs and other vegetation from the above designated areas. Clearing and grubbing shall consist of all the items or work enumerated above for clearing and shall also include removing from the ground all roots, logs, brush, matted roots and debris of any nature within the areas designated above and the subsequent disposal of all spoil materials from the project.

### **III. MAINTENANCE ACCESS**

#### **A. DESCRIPTON**

This work will consist of providing the labor, materials, and equipment for removal of trees including stumps, brush, and other vegetative debris within 20 feet from the top of bank or to the Drain right-of-way if less, to provide a clear and stable access for future Drain maintenance. Trees, brush, and stumps are to be chipped and used on-site or properly disposed of off-site if the contractor elects. Existing grade to be leveled or Drain cleanout spoils leveled in accordance with the plan details. After spoils have been spread and leveled (reference Spoil Leveling), maintenance access route shall be mulched from chipped trees and restored per plans and specifications.

#### **B. MATERIALS**

Seed Mixtures: See Section 02929 - Seeding.

#### **C. METHODS OF CONSTRUCTION**

The means and methods shall be to locate and remove trees or stumps in areas where maintenance access shall be installed. Chip and stockpile any trees or stumps that are removed. See plans for locations of maintenance access. Level and grade spoils (if applicable). Mulch and seed leveled areas. All seed to be placed per Section 02929 – Seeding.

Owner reserves the right to preserve trees within the areas to be cleared for maintenance access. Contractor to properly protect the tree(s) and work around.

#### **D. BASIS OF PAYMENT**

Payment for Maintenance Access:

1. Basis of Measurement: Included in the unit price lineal foot as measured along the centerline of the Drain, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment to clear, chip, stockpile, and place woodchips after grading access route and/or leveling placed spoils to provide a clear and stable maintenance access path.

### **IV. SIDE DRAINS (Maintenance Access)**

#### **A. DESCRIPTON**

This work will consist of providing access across side drains by stone ford or culvert and providing and placing plain Riprap on the slope of the Drain below the invert of the side Drain for the purpose of maintenance access.

---

B. MATERIALS

Culverts – New Corrugated Metal Pipes (CMP) of the gauge specified on the plans (minimum 12 ga) and in accordance with Storm Drain Materials specification.

Plain Riprap - Sound, tough, angular or crushed limestone free from structural defects. Sound pieces of concrete without reinforcement may be used in place of plain riprap, when approved by the Project Engineer. Stone shall be graded uniformly and range in dimensions from 4" x 12".

C. METHODS OF CONSTRUCTION

The means and methods shall determined by the contractor to install the side Drain improvements as shown on the plans.

D. BASIS OF PAYMENT

Payment for Side Drains:

1. Basis of Measurement: At the unit price bid for each, as stated in the proposal.
2. Basis of Payment: Includes all associated labor, material, and equipment required for a complete installation per the plans and details.

V. DRAIN CLEANOUT

A. DESCRIPTION

This work will consist of removing sediment from the bottom of the Drain and reshaping the banks to less than 2H:1V per the plan grades and representative cross sections shown on the plans. Disposing of spoils shall be paid for separately. Excavation shall be completed from the side of the Drain proposed for the Maintenance Access or as otherwise specified on the plans. Drain Cleanout shall include restoring the graded or excavated areas with salvaged or imported topsoil and seed. See sheet detail on plans.

B. MATERIALS

Seed Mixtures: See Section 02929 - Seeding

C. METHODS OF CONSTRUCTION

Excavate Drain to the dimensions and cross sections specified on drawings. Contractor shall check flow line elevations every 100 ft. (Engineer will provide Grade stakes). Over excavation of 0.3 ft. or greater will be filled with Type F-7A stone to the proposed flow line as incidental cost to the Contractor. Contractor shall remove all sediment from existing culverts to remain and remove bottom vegetation to drain flow line. Remove sparse trees and brush as defined as individual trees, brush, etc. less than 25 lineal feet of drain length. When Drain parallels a road, all excavation will be on field side slope, unless stated on drawing or

---

required by Engineer. Underpin adjacent structures, which may be damaged by excavation work, including bridges, utilities and pipe chases. Machine slope banks to required slopes. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work. Correct unauthorized excavation at no extra cost to Owner. Seed excavated areas daily in accordance with Section 02929 – Seeding. Repair and replace field tile outlets, as directed by Engineer. Match existing side slopes in reaches identified channel cleanout. Excess spoils on roadsides and lawn areas are to be hauled away. Grass vegetation should not be removed on opposite side slopes.

Work around existing footbridges. If area requires cleanout and bank reshaping, replace footbridge in previous location or provide to the adjacent landowner.

**D. BASIS OF PAYMENT**

Payment of Drain Cleanout

1. Basis of Measurement: Included in the unit price lineal foot measured along the Drain centerline, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment to construct Drain bottom and slopes as indicated on plans, to the required contours, repairing of eroded banks by shaping and filling to match the typical side slopes on banks, removal of sediment from existing culverts, and daily seeding drain banks.

**VI. SPOIL LEVELING**

**A. DESCRIPTION**

The preference of the owner is to leave all excavated materials on-site within the Drain right of way. Spoil Leveling shall include the placement of excavated materials as called for on the plans and details, grading out the spoils to the dimensions on the plans, ensuring no trapped water behind the spoils, and daily seeding the spoil areas.

**B. MATERIALS**

Seed Mixtures: See Section 02929 - Seeding

**C. METHODS OF CONSTRUCTION**

Spoils are to be leveled in Drain right-of-way, as shown on plans, unless Contractor receives written permission from landowner to stockpile. Spoils placed on tillable land shall be spread evenly as shown on plans. Spoils in wooded areas shall be leveled along maintenance access route as shown on plans. Spoils are to be kept a minimum three (3) feet from excavation area. No excavated materials shall be placed on roads without written permission of the authorities having jurisdiction of said road. Spoils excavated in areas adjacent to residential or lawn areas are to be removed from the area unless directed by the Engineer, shown on plans, or Contractor receives written permission from Landowner to level in area. No spoils are to be placed in any watercourse or Drain. Side grade outs for watercourse and ditches shall be done at the time of open Drain excavation or channel cleanout. Non-combustible

items (i.e. roots and stumps), brush, or debris shall not be mixed with leveled spoil material. Shape leveled spoils to prevent the ponding of water behind spoil pile. Level spoils on the same side of the Drain which excavation occurs. If excavation occurs from both sides of Drain, then make even spoil piles on both sides of Drain unless otherwise directed by the Engineer. In agricultural areas, root rake and hand pick sticks and rocks so that foreign debris 1' in length and/or 6" in diameter is disposed of. Prior to completion, spoil piles, especially in agricultural and residential areas, must be raked to remove wood and rocks. Topsoil must be placed on spoil piles in which the native excavated material is not suitable for establishing vegetation.

**D. BASIS OF PAYMENT**

Payment of Spoil Leveling

1. Basis of Measurement: Included in unit price per lineal foot as measured along the centerline of the Drain, as stated in the proposal.
2. Basis of Payment: Includes labor and equipment to level spoils along the drain, developed or landscape areas. No payment for spoil hauling in agricultural areas will be issued. Level spoils as indicated on drawings and specifications, removal of debris from leveled spoils in agricultural and wooded areas, root raking of spoils in agricultural areas, and daily seeding spoils.

**VII. SPOIL HAULING**

**A. DESCRIPTION**

This work will consist of providing the labor, materials, and equipment for hauling excavated materials and debris off-site. Contractor shall dispose of properly in accordance with State laws and local regulations

**B. MATERIALS**

NA

**C. METHODS OF CONSTRUCTION**

Contractor shall temporarily stockpile material for hauling operations or place directly into vehicles suitable for hauling on public roads and highways and disposing of the materials in a suitable location.

**D. BASIS OF PAYMENT**

Payment of Spoil Hauling

1. Basis of Measurement: Included in the unit price lineal foot as measured along the centerline of the Drain, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment to haul away spoils as indicated on drawings and specifications.

## VIII. SLOPE PROTECTION AND EROSION CONTROL

### A. DESCRIPTION

This work will consist of providing the labor, materials, and equipment to provide slope protection and erosion control measures at the project site as called for on the plans or directed by the Owner or Project Engineer.

### B. MATERIALS

1. Cobblestone – Sound, tough, angular crushed limestone free from structural defects. Sound pieces of concrete may be used in place of cobblestone, when approved by the Engineer. Stone shall be graded uniformly and range in dimensions from 3" x 8".
2. Plain Riprap – Sound, tough, angular or crushed limestone free from structural defects. Sound pieces of concrete may be used in place of plain riprap, when approved by the Engineer. Stone shall be graded uniformly and range in dimensions from 4" x 12".
3. Heavy Riprap – Sound, tough, durable rock or crushed limestone free from structural defects. Material to be uniform in size and not less than 16 inches in the least dimension. MDOT 8.19.03.
4. Broken Concrete – With no exposed rebar and above specified dimensions maybe used when approved by the Engineer.
5. All materials must be approved by Engineer before it is used on project.
6. Fieldstone may be accepted in certain applications when approved by Engineer at a reduced cost.
7. Filter Fabric – As specified in Section 02279 – Filter Fabric.
8. For reinforced grass spillways erosion control fabric shall be North American Green C350 or equal.
9. Pipe-Corrugated metal pipe-size, corrugations and gauge, as indicated on the plans.

### C. METHODS OF CONSTRUCTION

The location of riprap bank and grade protection, spillways, and toe of slope protection to be determined by engineer during construction.

#### 1. RIPRAP BANK, GRADE, AND TOE OF SLOPE PROTECTION

Clear topsoil and rough grade to required contours. Over excavate protection area equal to the thickness of the protection. Place filter fabric with all edges "toed in" a minimum of 12 inches. Failure to toe in fabric will result in the rip rap placement being rejected. Place protection on filter fabric; tamp protection until individual pieces are firmly bedded. Hand place stone, if necessary, to assure that there are no void spaces in protection. Upon completion, the filter fabric should not be visible. Toe of slope

---

protection shall be installed to a length described on plans along the bank of the Drain. Bank and grade protection shall be installed, as needed per location, as directed by the Engineer. Toe of slope protection shall be installed to a height of 3 vertical above the flow line of the Drain.

2. RIPRAP SPILLWAYS

Clear topsoil and rough grade to required dimensions. Over excavate spillway so that, upon completion, the flow line of the spillway is recessed 18 inches below the proposed side slope of the open Drain. Spillway shall be constructed with a 4 ft. bottom and 2 horizontal to 1 vertical side slope. Riprap should be placed to a width of 8 ft. across the spillway. Spillway shall be constructed with a 2 ft. bottom. Filter fabric shall be placed under riprap and toed-in 12" minimum, as shown on construction drawings. Failure to toe in fabric will result in the rip rap placement being rejected. Riprap should be placed starting at the toe of slope to 3 ft. beyond same side top of bank. Tamp riprap until individual pieces are firmly bedded. Hand place stone, if necessary, to assure that there are no void spaces in protection. Upon completion the filter fabric should not be visible.

3. COBBLESTONE SPLASH PADS FOR FIELD TILE OUTLETS

A splash pad shall be placed at the outlet of each tile outlet and surface outlet tube. Splash pads must be a minimum of 2 ft. wide and must be at a minimum of 1.5 ft. wider than the diameter of the tile outlet. Splash pads range from 1 to 5 square yards of riprap depending on field conditions. Splash pad must be constructed in a "V" shape with center of splash pad excavated 1 foot deeper than edges of splash pad.

4. REINFORCED GRASS SPILLWAY

Repair washouts in spillway area. Prepare side slopes as shown on plans in undisturbed area. Over excavate area equal to the thickness of required topsoil and protection. Place filter fabric with all edges extending completely under entire header and toe protection. Place topsoil as shown on plans. Rake in fertilizer; apply at the rate of 15 lbs. per 1000 sq. ft. Seed topsoil with ditch bank seeding mix at a rate of 6 pounds per 1,000. Place straw mulch over seeded areas. Place erosion control fabric with all edges extending completely under entire header and toe protection. Place header and toe protection. Tamp until individual pieces are firmly bedded. Place metal pins over entire spillway to anchor fabric at 2.0 feet on centers.

D. BASIS OF PAYMENT

Plain Riprap Splash Pad:

1. Basis of Measurement: Included in unit price bid of each, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment for installation of filter fabric, placement of riprap, excavation, and grading to provide required splash pad.

Miscellaneous Plain Riprap Protection:

1. Basis of Measurement: At the unit price per square yard, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment for installation of filter fabric, placement of riprap, excavation, and grading to provide required contours.

Plain Riprap Spillways:

1. Basis of Measurement: At the unit price bid of each, as stated in the proposal.
2. Basis of Payment: Includes materials, labor, and equipment for installation of filter fabric, placement of riprap, excavation, and grading to required contours. Riprap shall be a minimum width of 8 ft. and bowl shaped.

Plain Riprap Toe of Slope Protection:

1. Basis of Measurement: At the unit price per linear foot, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment for installation of filter fabric, placement of riprap, excavation, and grading to provide required contours. Toe of slope riprap is paid based on five (5) linear feet of placement on bank.

Grass Spillways:

1. Basis of Measurement: At the unit price bid per linear foot, as stated in the proposal.
2. Basis of Payment: Includes all labor, materials, and equipment necessary to install grass spillways for this project, as specified and/or shown on drawings.

## IX. PAVEMENT REPAIR

### A. DESCRIPTION

This work will consist of providing the labor, materials, and equipment to repair roadways. All work shall be performed in accordance with applicable requirements of the Saginaw County Road Commission, MDOT, and as shown on the plans. All material will be obtained from the same source throughout. Contractor shall perform construction within public road rights-of-way to the requirements of the Township, County, and/or MDOT Standards and complete the work in accordance with the policies of the authority, subject to their approval. Contractor shall obtain construction permits, as required by the authority having jurisdiction over the work in the public right-of-way; notifying the authority forty-eight (48) hours prior to construction. Maintain traffic control as required in Section 02550.

### B. MATERIALS

1. MDOT Grade 35 P-FS is a 9-sack mix with calcium chloride added and attains a flexural strength of 300 psi within 8 hours.
2. Crushed Stone: MDOT 22A crushed limestone. (TYPE E)
3. Concrete:

Compressive Strength	2400 psi / 2600 psi @ 7 days
Compressive Strength	3500 psi / 4000 psi @ 28 days
Slump	4 to 2 inches
Air Entrained	3.5 to 6.5 percent
4. Cold patch for temporary patches.
5. Asphalt: Conform to MDOT and Saginaw County Road Commission Standards.
  - a. Standard Roads (Per SCRC Standards):
    1. Leveling Course: 4C Mix, 220 lbs./square yd. (2")
    2. Wearing Course: 4C Mix, 165 lbs./square yd. (1.5")
  - b. All Season Roads (Per SCRC Standards):
    1. Leveling Course: 4C Mix, 220 lbs./square yd. (2")

2. Wearing Course: 3C Mix, 220 lbs./square yd. (2")
3. Base Course (2 lifts of): 11A Mix, 275 lbs./square yd. (2 ½")
6. Paint: Regular dry paint for pavement markings shall conform to MDOT Standards in accordance with the "2012 Standard Specifications for Construction."
7. Asphalt Primer to be homogenous, medium curing, liquid asphalt in accordance with County Road Commission Standards and approved by the engineer.
8. Asphalt Tack Coat to be homogenous, medium curing, liquid asphalt in accordance with County Road Commission Standards and approved by the engineer.

C. METHODS OF CONSTRUCTION

1. SOURCE QUALITY CONTROL

Provide mix design under provisions of Section 01400. Submit proposed mix design of each class of concrete to Engineer for review prior to commencement of work. Submit certification for cement and aggregates to ensure conformance with specified requirements as required by the Engineer.

2. EXAMINATION

Verify base conditions under provisions of Sections 02200 - Earthwork and Special Provision for Aggregate Base, 21AA, Special. Verify that compacted subgrade, granular base or aggregate base is dry and ready to support paving and imposed loads. Verify gradients and elevations of base are correct.

3. PREPARATION

Adjust manholes, catch basins, valve boxes, and monument boxes to grade. Sawcut and remove existing pavement a minimum of 2 feet back from top edge of undisturbed soil on both sides of trench. Sawcut concrete and asphalt full depth on straight line perpendicular to the roadway or driveway centerline as directed by Engineer. Remove pavement to an existing joint when a joint lies within 5 feet of the top edge of undisturbed soil. Notify Engineer minimum two (2) working days prior to placing paving mix. Coat surfaces of manhole and catch basin frames and valve and monument boxes with oil to prevent bond with paving mix.

For asphalt, apply primer and tack coat in accordance with manufacturer's instructions and MDOT standard requirements. Apply primer and tack coat to contact surfaces of curbs, gutters, and existing pavement.

Prepare other areas damaged during construction as determined by the Engineer according to these guidelines. Concrete: Moisten base to minimize absorption of fresh water from concrete. Road Surface shall be prepared in accordance with MDOT and County Road Commission Standards to accept pavement markings.

#### 4. PLACEMENT

Thickness:

1. Concrete Pavement: 9 inch MDOT and 6 inch thick for drives minimum or match existing pavement thickness, whichever is greater.
2. Asphalt Pavement:
  - a. Roadways: 2 inch wearing course over 2 inch leveling course over 8 inch aggregate base course over prepared sub-grade unless otherwise specified on the drawings.
  - b. Residential Driveways: match existing depth or minimum 3 inch wearing course (2 lifts) over 6 inch aggregate base course over prepared sub-grade.
3. Gravel: 8 inches minimum or match existing thickness whichever is greater.

Materials and methods to conform to MDOT and SCRC Standard Specifications for construction. Finish surfaces to match texture of adjacent pavement.

Asphalt:

Place in layers and compacted thicknesses specified. Place asphalt within twenty-four (24) hours of applying primer or tack coat. Compact pavement by rolling with a minimum 5-ton roller, unless directed otherwise by Engineer. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

Gravel:

Place in 8-inch layers and compact to 98% maximum dry density. Add small quantities of water to assist compaction.

Grade surfaces to match existing elevations and for Drainage. Apply pavement markings in compliance with MDOT and County Road Commission Standards.

#### 5. FIELD QUALITY CONTROL

Field inspection and testing will be performed under provisions of Section 01400. Three (3) concrete test cylinders will be taken for every 100 or less cubic yards of each class of concrete place each day. One (1) additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents. One (1) slump test will be taken for each set of test cylinders taken. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken. Provide copies of invoice tickets to inspector in field to monitor yield quality, mix type, haul type, etc.

#### 6. PROTECTION

Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

---

**D. BASIS OF PAYMENT**

Gravel Driveway/Farm Crossing Restoration:

1. Basis of Measurement: Included in unit price bid per linear foot of Drain crossing.
2. Basis of Payment: Includes all associated excavation, labor, material, backfill, equipment and compaction required for a complete installation.

Bituminous Road Restoration (County Road):

1. Basis of Measurement: Included in the unit bid price per linear foot of Drain crossing.
2. Basis of Payment: Includes excavation, aggregate, bituminous mix, maintenance, and all other aspects to maintain traffic to the satisfaction of the Engineer or the authority having jurisdiction over the work.

Gravel Road Shoulder:

1. Basis of Measurement: Included in unit bid price per linear foot of Drain crossing as stated in the proposal.
2. Basis of Payment: Includes equipment labor and material to construct gravel road shoulder to a depth of 4 inches. Gravel should be 21AA compacted crushed limestone.

**X. LATERAL TILE DRAINS**

**A. DESCRIPTION**

This work consists of repair or replacing existing tile drain outlets to the Drain whether shown on the plans or not.

**B. MATERIALS**

1. Field Tile Outlets – Corrugated metal pipe, 16 gauge, 2 inches larger diameter than existing field tile, 2-2/3" x 1/2" corrugations (0.064 inches thick).
2. Surface Outlet Tubes – Corrugated metal pipe, 16 gauge, 2-2/3" x 1/2" corrugations. See proposal for size.
3. Rodent Guard – Manufactured by pipe manufacturer and approved by the Engineer.
5. Cobblestone Splash Pads – Reference Section I, B if this Special Provision.

**C. METHODS OF CONSTRUCTION**

**1. PREPARATION**

Field location of all field tile outlets even if not indicated on plans. Receive direction from Engineer as to which field tile outlets are in need of repair, unless indicated on the plans. Coordinate locations of proposed surface outlet tube with Engineer prior to delivering material to site. Tubes may or may not be installed based on landowner preference.

**2. INSTALLATION**

---

- a. Field Tile Outlet installation shall be as shown on the plans. See Section 02220 – Excavation. Backfill material shall be native material. Field tile extensions are to be laid at a slope of 0.10 percent at minimum to provide for positive Drainage. Field tile outlet is to be installed at a minimum of 1 percent slope to provide for positive Drainage. All joints between like materials shall be connected with a manufactured connector. Connection between field tile and field tile outlet or other unlike materials shall be wrapped with filter fabric. Joint shall be backfilled with concrete to provide for a joint that will not leak. Clean out any field tile outlets that do not require replacement and/or extension. Cross culvert extension shall be connected to existing with prefabricated metal band and filter fabric for a soil tight joint.
- b. Surface outlet tubes may be replaced with riprap spillways based on landowner's preference. Coordinate all installations with Engineer prior to delivering materials to site. Provide a minimum of 0.5 feet of fall in tube. Provide a minimum of 2' cover. Install prefabricated metal flared end section on inlet of tube. Install cobblestone splash pad with filter fabric at the outlet of the tube. Construct as shown on detail sheet of drawings, including emergency spillway.

**D. BASIS OF PAYMENT**

Field Tile Outlets:

1. Basis of measurement: At the unit price bid for each, as stated in the proposal.
2. Basis of payment: Includes material, labor, equipment for installation, rodent guard, connection to existing field tile, 14 feet of pipe, filter fabric, and concrete.

**XI. DRAIN CROSSINGS**

**A. DESCRIPTION**

This work shall include the complete replacement or adjustment of existing Drain crossings including pipe, bedding, backfill, and surface treatments.

**B. MATERIALS**

All joints must be banded according to manufacturer's instructions and must be wrapped with filter fabric. Joints must fit with 0.15 feet. All bands will be a Contech Huggar or equal. All joints must be rerolled banded according to manufacturer's instructions and must be wrapped with filter fabric. Joints must fit with 0.15 feet. Pipe – Corrugated metal pipe – size, corrugations and gauge, as indicated on the plans, on MDOT Class B\* or equal. Backfill – See Section 02220 – Earthwork. Drive Surface – See III – Pavement Repair of this Special Provision; “Galvato!” or equal galvanizing paint. \*Reference MDOT 5.11 - Culverts for culvert classes based on height of fill requirements.

Driveway Crossings

1. Pipe – Corrugated metal pipe – size, corrugations, and gauge, as indicated on the plans, or MDOT Class B\* or equal.
  - a. \*Reference MDOT 5.11 – Culverts for culvert classes based on height of fill requirements.
2. Bedding – Type A – MDOT 6A stone for wet or poor soil conditions. Type B – MDOT Class IIA Granular Fill for dry conditions. The Engineer will determine wet, poor, or dry solid conditions.
3. Backfill – As shown on plans.
4. Drive Surface – As shown on plans and as specified herein
5. Plain Riprap – To be placed at culvert ends as shown on plans.

#### Farm Crossings

1. Pipe – Corrugated metal pipe – size, corrugations, and gauge, as indicated on the plans or MDOT Class B\* or equal.
  - a. \*Reference MDOT 5.11 – Culverts for culvert classes based upon height of fill requirements.
2. Bedding – Type A – MDOT 6A stone for wet or poor soil conditions. Type B – MDOT Class IIA Granular Fill for dry conditions. The Engineer will determine wet, poor, or dry solid conditions.
3. Backfill – as shown on plans.
4. Drive Surface – Type D – Native material, unless otherwise indicated on plans. Material to be approved by the Engineer.
5. Plain Riprap – To be placed at culvert ends as shown on plans.

#### County Road Crossings

1. Pipe – Corrugated metal pipe – size, corrugations, and gauge, as indicated on the plans or MDOT Class B\* or equal.
  - a. \*Reference MDOT 5.11 – Culverts for culvert classes based upon height of fill requirements.
2. Bedding – Type A – MDOT 6A stone for wet or poor soil conditions. Type B – MDOT Class IIA Granular Fill for dry conditions. The Engineer will determine wet, poor, or dry solid conditions.
3. Backfill – As shown on the plans.
4. Surface – Match existing, unless otherwise noted on drawings. Bituminous surface will be a minimum 1 1/2" base course and 1 1/2" wearing course.
5. C.P.T. perforated with a sock.
6. Plain Riprap – To be placed at culvert ends as shown on plans.

#### Railroad Crossings

1. Pipe - 42" spiral welded steel pipe with cement mortar lining,
  2. Grouting - Pressure grouting in concrete box culvert
  3. Steel sheeting - PZ-27 sheeting with channel gap
  4. Plain Rip Rap - backfilling with plain riprap between wingwalls and steel sheeting
  5. Cap and Fill 24"
    - a. Bulkhead – Per MDOT standards
    - b. Fill – Concrete or cement grout
    - c. Backfill – Fill in eroded area over pipe with plain rip rap
-

C. METHODS OF CONSTRUCTION

1. PREPARATION

Contact Engineer forty-eight (48) hours prior to any work on crossings to verify construction and installation schedule and to schedule necessary inspection time for installation. Verify that backfill and roadway requirements meet specifications of Authority having jurisdiction. Verify acceptability of backfill material with Engineer. Verify approval of all shop-drawing submittals with Engineer. Verify benchmarks and required culvert placement elements and alignment. Verify that all traffic and other safety requirements of the Authority having jurisdiction have been met. Transport salvaged culverts to location for reinstallation.

2. INSTALLATION

Special care shall be taken when storing, handling, and placing culverts so they are not dented, scaled, or the galvanized coating is not damaged. Excavate and backfill in accordance with Section 02200 –Earthwork. Assembly of crossings according to manufacturer's specifications. Excavate to required dimensions and remove existing culvert where applicable. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with Type A fill (wet excavation) or Type B fill (dry excavation) and compact to density equal to or greater than requirements for support of crossing and subsequent backfill material. Place bedding according to detail shown on plans. Compact all subsoil and bedding material to 95 percent of its maximum dry density in accordance with MDOT standard requirements. Place structure according to the planned elevations and alignment. Recess inverts of crossings, as shown on drawing. Backfill all areas with unfrozen materials. Crossing drive surface shall be replaced with Type A – 22A crushed limestone, unless existing drive is bituminous or concrete paved, then repair drive to original condition. Landscape areas as outlined in Section 02930 – General Landscape Materials and Final Grading and Section 02929 – Seeding.

3. FIELD QUALITY CONTROL

Field inspection and testing will be performed under provisions of Section 01400 – Quality Control. Compaction testing will be performed in accordance with MDOT standard requirements. If tests indicate work does not meet specified requirements, remove work, replace, and retest at no cost to the Owner. Frequency of the tests: at the discretion of the Engineer.

4. SALVAGING REPLACED CROSSINGS

Care shall be taken when removing, storing, handling, and placing culverts so they are not damaged. Contractor shall replace all salvaged culverts damaged during construction, due to negligence, with new or equivalent culverts. Contractor shall

transport salvaged culverts to corresponding Road Commission's and/or Public Works Commissioner's yard or to location of reinstallation.

5. UNSALVAGEABLE CROSSING

Unsalvageable crossing become property of the Contractor and removed off site. Concrete from existing crossings will be acceptable in lieu of riprap bank and grade protection, if dimension of broken concrete are in accordance with Section 02271 – Slope Protection and Erosion Control. Concrete placed in lieu of riprap bank and grade protection must have all exposed rebar trimmed off.

D. BASIS OF PAYMENT

Drive, Farm, and Road Crossings:

1. Basis of Measurement: At the unit price bid per linear foot, as stated in the proposal.
2. Basis of Payment: Includes material, labor, and equipment for installation of culvert, removal of existing crossing (if any), backfill materials, filter fabric, grout, any prefabricated tees, gravel drive (if any), concrete drive (if any), bituminous drive (if any), base coarse (if any), wearing coarse (if any), sub-base under Drains, field tile connections and/or relocations and outlets, dewatering, and transportation of salvaged pipe, guard rails and plain riprap on culvert ends. In summary crossing, complete as shown on plans and in specifications.

Remove Existing Structure:

1. Basis of Measurement: At the unit price bid per lin. ft. of Drain crossing, as stated in the proposal.
2. Basis of Payment: Includes equipment, labor, and material to remove and dispose of the existing structures complete.

**END OF SPECIAL PROVISION**