

PROJECT MANUAL



2024 Local Street Crushing and Resurfacing

January 2024

Project Owner:

Meridian Township
5151 Marsh Road
Okemos, Michigan 48864
(517) 853-4000

Design Engineer:

Spalding DeDecker
313 N. Capitol Avenue, Suite 100
Lansing, MI 48933
(517)-679-4400

TABLE OF CONTENTS

The Contract Documents consists of three parts as follows:

- PART I BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONTRACT CONDITIONS
- PART II SPECIFICATIONS
- PART III DRAWINGS

This Table of Contents lists the main divisions of Parts I and II and all drawings under this Contract in Part III.

PART I BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONTRACT CONDITIONS

<u>Title</u>	<u>Page</u>
Advertisement for Bids	4
Instructions to Bidders	6
Bid Form	15
Bid Bond	21
Notice of Award.....	23
Agreement.....	24
Notice to Proceed.....	31
Performance Bond	32
Maintenance & Guarantee Bond.....	36
Payment Bond.....	38
 <u>Contract Conditions</u>	
00 02 00 – General Conditions	41
00 03 00 – Supplementary General Conditions	115

PART II SPECIFICATIONS

<u>Title</u>	<u>Pages</u>
01 01 00 – General Requirements.....	123
01 02 00 – Site and Miscellaneous Work	149
Appendix A.....	Permits
Appendix B.....	Progress Clause
Appendix C.....	Special Provisions

Appendix D.....Soil Boring Logs
Appendix ESupplemental Specifications
Appendix F..... Special Details

**PART III
DRAWINGS**

All drawings under this Contract have the following general caption:

Meridian Township
2024 Local Street Crushing and Resurfacing

1. COVER SHEET
2. NOTES AND DETAILS
3. NOTES AND DETAILS
4. EXISTING AND PROPOSED TYPICAL SECTION 1
5. EXISTING AND PROPOSED TYPICAL SECTION 2
6. EXISTING AND PROPOSED TYPICAL SECTION 3
7. PAVING AND REMOVALS – GOSSARD AVE
8. PAVING AND REMOVALS – BIBER ST
9. PAVING AND REMOVALS – BIBER ST AND HARDY AVE
10. PAVING AND REMOVALS – PORTER AVE
11. PAVING AND REMOVALS – SUNHOLLOW CT AND BAKER ST
12. PAVING AND REMOVALS – HIGH ST AND MICHAEL ST
13. PAVING AND REMOVALS – SUNHOLLOW LN
14. PAVING AND REMOVALS – W REYNOLDS RD
15. PAVING AND REMOVALS – W REYNOLDS RD, LEE ST AND MACK AVE
16. PAVING AND REMOVALS – LEE ST AND ROE ST
17. PAVING AND REMOVALS – HICKORY ISLAND ST
18. PAVING AND REMOVALS – CARLTON ST
19. MAINTAINING TRAFFIC – CARLTON ST TO HICKORY ISLAND ST
20. MAINTAINING TRAFFIC – SUNHOLLOW CT TO W REYNOLDS RD
21. MAINTAINING TRAFFIC – GOSSARD AVE TO HARDY AVE

**ADVERTISEMENT FOR BIDS
MERIDIAN TOWNSHIP
2024 LOCAL STREET CRUSHING AND RESURFACING**

General Notice

Meridian Township (the Owner) is requesting Bids for the construction of the following Project:

**2024 Local Street Crushing and Resurfacing
MD23001
Meridian Township, Michigan**

Bids will be received by the **Clerk’s Office at the Meridian Township Hall** located at **5151 Marsh Road, Okemos, Michigan 48864** until **Thursday, February 1, 2024, at 11:00 AM**. At that time the Bids received will be publicly opened and read.

The Project includes the following Work:

Crush and shape existing local roads and repave with new asphalt. Cleanout and regrade existing ditches along local roads.

The approximate quantities of the major items of Work are:

26754 SYD	HMA Base Crushing and Shaping
6188 SYD	Base Stabilization, Chemical
2000 TON	HMA 36A
4000 TON	HMA 13A
10 STA	Ditch Cleanout

Bids are requested for the following Contract:

2024 Local Street Crushing and Resurfacing

Obtaining the Bidding Documents

Information and Bidding Documents for the Project can be found at the following location:

MITA Ads website: [www.https://www.mitaads.com/](https://www.mitaads.com/)

Please see separate files uploaded which consist of the Project Manual and the Drawings.

To be placed on the planholders list, and all bidder’s inquiries shall be directed to:

Dan Troia, PE – Senior Municipal Engineer
Spalding DeDecker
Email: dtroia@sda-eng.com
Phone: (517) 679-4404

Instructions to Bidders.

Bid Security in the amount, form, and subject to the conditions provided in the Instructions to Bidders must be submitted with each Bid.

Bids may not be withdrawn for a period of 120 days after the actual date of opening thereof. This time period may be extended by mutual agreement of the OWNER and any Bidder or Bidders.

The Township reserves the right to accept any or all alternative Bids and award the contract to other than the lowest bidder, to waive any irregularities or informalities or both; to reject any or all Bids; and in general to make the award of the Contract in any manner deemed by the Township, in its sole discretion, to be in the best interest of Meridian Township.

This Advertisement is issued by:

Owner: **Meridian Charter Township**

By: **Younes Ishraidi, PE**

Title: **Chief Engineer**

Date: **January 11th, 2024**

INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1— Defined Terms.....	7
Article 2— Bidding Documents.....	7
Article 3— Qualifications of Bidders.....	8
Article 4— Pre-Bid Conference.....	8
Article 5— Site and Other Areas; Existing Site Conditions; Examination of Site; Owner’s Safety Program; Other Work at the Site.....	8
Article 6— Bidder’s Representations and Certifications.....	9
Article 7— Interpretations and Addenda.....	9
Article 8— Bid Security.....	9
Article 9— Contract Times.....	10
Article 10— Substitute and “Or Equal” Items.....	10
Article 11— Subcontractors, Suppliers, and Others.....	10
Article 12— Preparation of Bid.....	11
Article 13— Basis of Bid.....	12
Article 14— Submittal of Bid.....	12
Article 15— Modification and Withdrawal of Bid.....	12
Article 16— Opening of Bids.....	13
Article 17— Bids to Remain Subject to Acceptance.....	13
Article 18— Evaluation of Bids and Award of Contract.....	13
Article 19— Bonds and Insurance.....	14
Article 20— Signing of Agreement.....	14

ARTICLE 1—DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.04 *Electronic Documents*
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the

Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 Bidder is to submit the following information upon request of the Owner prior to the Award to demonstrate Bidder's qualifications to perform the Work:
- A. Written evidence establishing its qualifications including, previous experience with reference contacts, and present commitments.
 - B. Subcontractor and Supplier qualification information.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A pre-bid conference will not be conducted for this Project.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

- 5.01 *Site and Other Areas*
- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.
- 5.02 *Existing Site Conditions*
- A. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- 5.03 *Site Visit and Testing by Bidders*
- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas.
 - B. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

- C. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder’s examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:
 - A. Email to Taylor Reynolds at Spalding DeDecker (treynolds@sda-eng.com)
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda and issued on the bidding document website. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder’s maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a

penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.

- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 11.02 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 11.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder.

Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder’s name and official address.
- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.08 All names must be printed in ink below the signatures.
- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder’s authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

13.02 *Allowances*

- A. For cash allowances the Bid price must include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 14—SUBMITTAL OF BID

- 14.01 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.
- 14.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the

date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

- 15.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *Evaluation of Bids*
- A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those

portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

- 19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

- 1.01 This Bid is submitted to: Meridian Township, 5151 Marsh Road, Okemos, Michigan, 48864
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

- 2.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security;
 - B. List of Proposed Subcontractors;
 - C. Required Bidder Qualification Statement with supporting data; and

ARTICLE 3—BASIS OF BID

- 3.01 *Unit Price Bids*
 - A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Spec	Description	Quantity	Unit	Unit Price	Bid Amount
1	1100001	Mobilization, Max 10%	1	LSUM	\$	\$
2	2030001	Culv, Rem, Less than 24 Inch	4	Ea	\$	\$
3	2040050	Pavt, Rem	500	Syd	\$	\$
4	2050006	Ditch Cleanout	10	Sta	\$	\$
5	2050030	Machine Grading	183	Sta	\$	\$
6	2080020	Erosion Control, Inlet Protection, Fabric Drop	32	Ea	\$	\$
7	2080026	Erosion Control, Maintenance, Sediment Rem	10	Cyd	\$	\$
8	2080036	Erosion Control, Silt Fence	1000	Ft	\$	\$
9	2087001	Erosion Control, Straw Wattle, 9 Inch	100	Ft	\$	\$
10	3027011	Aggregate Base, Recycled, 4 inch	3500	Syd	\$	\$
11	3050002	HMA Base Crushing and Shaping	26754	Syd	\$	\$
12	3057011	Base Stabilization, Chemical	6188	Syd	\$	\$
13	3057012	Stabilization Chemical, Manufactured	187	Ton	\$	\$
14	3057021	Material, Surplus and Unsuitable, Rem, LM	250	Cyd	\$	\$
15	3060021	Maintenance Gravel, LM	150	Cyd	\$	\$
16	3070046	Approach, CI III, 4 inch	750	Syd	\$	\$
17	3070048	Approach, CI III, 6 inch	194	Syd	\$	\$
18	3070146	Shld, CI III, 4 inch	2623	Syd	\$	\$
19	4010607	Culv, CI F, 12 inch	210	Ft	\$	\$
20	4030390	Dr Structure, Temp Lowering	43	Ea	\$	\$
21	4037050	Dr Structure Cover, Adj, Case 1, Modified	8	Ea	\$	\$
22	4040061	Underdrain, Subbase, 4 inch	1000	Ft	\$	\$
23	5010005	HMA Surface, Rem	600	Syd	\$	\$
24	5010025	Hand Patching	40	Ton	\$	\$
25	5010033	HMA, 13A	4000	Ton	\$	\$
26	5010034	HMA, 36A	2000	Ton	\$	\$
27	5010061	HMA Approach	400	Ton	\$	\$
28	5017031	HMA Additive, RTR	2882	Ton	\$	\$
29	8010005	Driveway, Nonreinf Conc, 6 inch	400	Syd	\$	\$
30	8050010	Curb Slp, HMA	748	Ft	\$	\$
31	8070095	Post, Mailbox	50	Ea	\$	\$

32	8127051	Temporary Traffic Control Devices	1	LSUM	\$	\$
33	8167011	Slope Restoration, Type II	8000	Syd	\$	\$
34	8230381	Water Shutoff, Adj, Case 1	2	Ea	\$	\$
35	8230431	Gate Box, Adj, Case 1	3	Ea	\$	\$
36	8252144	Sanitary Structure, Adj, Add Depth	20	Ft		
37	8257010	Sanitary Structure, Chimney Seal, External	600	Sft	\$	\$
38	8257050	Sanitary Structure Cover	2	Ea	\$	\$
39	8257050	Sanitary Structure Cover, Adj, Case 1, Modified	32	Ea	\$	\$
40	8507040	Recycled Aggregate Delivery	40	Hr	\$	\$
TOTAL:						\$

B. Bidder acknowledges that:

1. Each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
2. Estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4—TIME OF COMPLETION

- 4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder’s (Contractor’s) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder 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 Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

Bidder's Contact:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address: _____

Bidder's Contractor License No.:
(if applicable) _____

BID BOND

<p>Bidder Name: Address:</p>	<p>Surety Name: Address:</p>
<p>Owner Name: Meridian Township Address: 5151 Marsh Road, Okemos, Michigan, 48864</p>	<p>Bid Project: 2024 LOCAL STREET CRUSHING AND RESURFACING</p> <p>Bid Due Date: Thursday, February 1st, 2024, at 11:00 AM</p>
<p>Bond Bond Amount: Date of Bond:</p>	
<p>Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Bidder</p> <p style="text-align: center;"><i>(Full formal name of Bidder)</i></p> <hr/> <p>By: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>	<p>Surety</p> <p style="text-align: center;"><i>(Full formal name of Surety) (corporate seal)</i></p> <hr/> <p>By: _____ <i>(Signature) (Attach Power of Attorney)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>
<p>Attest</p> <p style="text-align: center;"><i>(Signature)</i></p> <hr/> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>	<p>Attest:</p> <p style="text-align: center;"><i>(Signature)</i></p> <hr/> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>
<p><i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i></p>	

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder that submitted a responsive Bid, as determined by Owner, for the work required by the Contract Documents, provided that:
 - 1.1. If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the bond amount set forth on the face of this Bond, and
 - 1.2. In no event will Bidder's and Surety's obligation hereunder exceed the bond amount set forth on the face of this Bond.
 - 1.3. Recovery under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner, or
 - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions will not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond must be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

NOTICE OF AWARD

Date of Issuance:

Owner: Meridian Township Project No.: MD23001

Engineer: Spalding DeDecker

Project: 2024 Local Street Crushing and Resurfacing

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated _____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

2024 LOCAL STREET CRUSHING AND RESURFACING

The Contract Price of the awarded Contract is \$ _____. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

Five (5) unexecuted Agreements accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner Five (5) Agreements, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.

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

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **Meridian Township**

By (signature): _____

Name (printed): _____

Title: _____

Copy: Engineer

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

This Agreement is by and between the Meridian Township (“Owner”) and _____ (“Contractor”).

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **Crush and shape local roads and repave.**

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **2024 LOCAL STREET CRUSHING AND RESURFACING**

ARTICLE 3—ENGINEER

3.01 The Owner has retained Spalding DeDecker (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Spalding DeDecker.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.03 *Contract Times: Days*

A. The Work will be substantially complete and open to traffic by October 10th, 2024, with final completion of punch list items, project cleanup, and acceptance of slope restoration by October 31st, 2024.

4.04 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, 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):

1. *Substantial Completion:* Contractor shall pay Owner \$1500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$1500.00 for each day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

4.05 *Progress Payments*

- C. A. The OWNER shall pay to the CONTRACTOR, as partial payment under this Contract, the value as estimated by the ENGINEER of the work done, less the aggregate of the previous payments, less that retainage permitted pursuant to Michigan Public Act 524 of 1980, as amended. Prior to the disbursement of any progress payment or final payment, the CONTRACTOR must provide the OWNER with waivers of lien and sworn statements as set forth in the General Conditions. The OWNER may reserve and retain out such partial payment a sum sufficient to meet any undischarged obligations of the CONTRACTOR for labor and materials incorporated in the work, or any other sums as provided for in the Contract Documents.

ARTICLE 5—CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

ARTICLE 7—CONTRACT DOCUMENTS**7.01** *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual.
 - 6. Drawings listed on the attached sheet index.
 - 7. Addenda (numbers **[number]** to **[number]**, inclusive).
 - 8. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
 - e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS**8.01 Contractor's Representations**

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
 7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 8. 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.
 9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
 11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner:

Meridian Township

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

(typed or printed)

Title:

(typed or printed)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

5151 Marsh Road, Okemos,

Michigan, 48864

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

Contractor:

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

(typed or printed)

Title:

(typed or printed)

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

License No.:

(where applicable)

State:

NOTICE TO PROCEED

Owner: Meridian Township Project No.: MD23001

Engineer: Spalding DeDecker

Contractor: _____

Project: **2024 LOCAL STREET CRUSHING AND RESURFACING**

Contract Name: _____

Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____ (date) pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The project must be substantially complete (including turf restoration) and open to vehicle and pedestrian traffic by the open to traffic date of **October 10, 2024**. The entire project must be completed by the final completion date of **October 31, 2024** for completion of punch list items, project cleanup, and acceptance of slope restoration (turf establishment).

Before starting any Work at the Site, Contractor must comply with the following:

Owner: Meridian Township

By (*signature*): _____

Name (*printed*): _____

Title: _____

Date Issued: _____

PERFORMANCE BOND

<p>Contractor Name: Address:</p>	<p>Surety Name: Address:</p>
<p>Owner Name: Meridian Township Mailing address: 5151 Marsh Road, Okemos, Michigan, 48864</p>	<p>Contract Description: 2024 LOCAL STREET CRUSHING AND RESURFACING Contract Price: Effective Date of Contract:</p>
<p>Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Contractor as Principal</p>	<p>Surety</p>
<p>_____ <i>(Full formal name of Contractor)</i></p>	<p>_____ <i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____ <i>(Signature)</i></p>	<p>By: _____ <i>(Signature)(Attach Power of Attorney)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____ <i>(Signature)</i></p>	<p>Attest: _____ <i>(Signature)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and 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 when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. 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 does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. 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:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. 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 a contractor selected with the Owners 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 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven 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 Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. 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 5; and
 - 7.3. 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.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. 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 will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
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. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of 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 periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
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 will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *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 for the Contractor for any amounts 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.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows:

MAINTENANCE AND GUARANTEE BOND

<p>Contractor</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>	<p>Surety</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>
<p>Owner</p> <p>Name: Meridian Township</p> <p>Address <i>(principal place of business)</i>: 5151 Marsh Road, Okemos, Michigan, 48864</p>	<p>Construction Contract</p> <p>Description <i>(name and location)</i>: 2024 LOCAL STREET CRUSHING AND RESURFACING</p> <p>Contract Price: _____</p> <p>Effective Date of Contract: _____</p> <p>Contract's Date of Substantial Completion: _____</p>
<p>Bond</p> <p>Bond _____</p> <p>Date of Bond: _____</p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 9</p>	
<p>Bond Period: Commencing 364 days after Substantial Completion of the Work under the Construction Contract, and continuing until two years after such Substantial Completion.</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth herein, do each cause this Maintenance and Guarantee Bond to be duly executed by an</p>	
<p>Contractor as Principal</p>	<p>Surety</p>
<p>By: _____ <i>(Full formal name of Contractor)</i></p> <p>By: _____ <i>(Full formal name of Surety) (corporate seal)</i></p>	<p>By: _____ <i>(Signature)</i></p> <p>By: _____ <i>(Signature) (Attach Power of Attorney)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____ <i>(Signature)</i></p>	<p>Attest: _____ <i>(Signature)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract's Correction Period Obligations. The Construction Contract is incorporated herein by reference.
2. If the Contractor performs the Correction Period Obligations, the Surety and the Contractor shall have no obligation under this Maintenance and Guarantee Bond.
3. If Owner gives written notice to Contractor and Surety during the Bond Period of Contractor's obligation under the Correction Period Obligations, and Contractor does not fulfill such obligation, then Surety shall be responsible for fulfillment of such Correction Period Obligations. Surety shall either fulfill the Correction Period Obligations itself, through its agents or contractors, or, in the alternative, Surety may waive the right to fulfill the Correction Period Obligations itself, and reimburse the Owner for all resulting costs incurred by Owner in performing Contractor's Correction Period Obligations, including but not limited to correction, removal, replacement, and repair costs.
4. The Surety's liability is limited to the amount of this Maintenance and Guarantee Bond. Renewal or continuation of the Maintenance and Guarantee Bond will not modify such amount, unless expressly agreed to by Surety in writing.
5. The Surety shall have no liability under this Maintenance and Guarantee Bond for obligations of the Contractor that are unrelated to the Construction Contract. No right of action will accrue on this Maintenance and Guarantee Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
6. Any proceeding, legal or equitable, under this Maintenance and Guarantee 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 must be instituted within two years after the Surety refuses or fails to perform its obligations under this Maintenance and Guarantee Bond.
7. Written notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown in this Maintenance and Guarantee Bond.
8. Definitions
 - 8.1. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page of this Maintenance and Guarantee Bond, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 8.2. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
 - 8.3. *Correction Period Obligations*—The duties, responsibilities, commitments, and obligations of the Contractor with respect to correction or replacement of defective Work, as set forth in the Construction Contract's Correction Period clause, EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), Paragraph 15.08, as duly modified.
 - 8.4. *Substantial Completion*—As defined in the Construction Contract.
 - 8.5. *Work*—As defined in the Construction Contract.

PAYMENT BOND

<p>Contractor Name: Address <i>(principal place of business)</i>:</p>	<p>Surety Name: Address <i>(principal place of business)</i>:</p>
<p>Owner Name: Meridian Township Mailing address <i>(principal place of business)</i>: 5151 Marsh Road, Okemos, Michigan, 48864</p>	<p>Contract Description <i>(name and location)</i>: 2024 LOCAL STREET CRUSHING AND RESURFACING Contract Price: Effective Date of Contract:</p>
<p>Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, <u>agent, or representative.</u></p>	
<p>Contractor as Principal</p>	<p>Surety</p>
<p>_____ <i>(Full formal name of Contractor)</i></p>	<p>_____ <i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____ <i>(Signature)</i></p>	<p>By: _____ <i>(Signature)(Attach Power of Attorney)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____ <i>(Signature)</i></p>	<p>Attest: _____ <i>(Signature)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and 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, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or

7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will 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 satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. 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 the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. 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.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, 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 will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. 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 will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;

- 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;
 - 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *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 Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the 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.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows:

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1—Definitions and Terminology.....	46
1.01 Defined Terms.....	46
1.02 Terminology.....	51
Article 2—Preliminary Matters.....	52
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	52
2.02 Copies of Documents.....	52
2.03 Before Starting Construction.....	52
2.04 Preconstruction Conference; Designation of Authorized Representatives.....	53
2.05 Acceptance of Schedules.....	53
2.06 Electronic Transmittals.....	53
Article 3—Contract Documents: Intent, Requirements, Reuse.....	54
3.01 Intent.....	54
3.02 Reference Standards.....	54
3.03 Reporting and Resolving Discrepancies.....	55
3.04 Requirements of the Contract Documents.....	55
3.05 Reuse of Documents.....	56
Article 4—Commencement and Progress of the Work.....	56
4.01 Commencement of Contract Times; Notice to Proceed.....	56
4.02 Starting the Work.....	56
4.03 Reference Points.....	56
4.04 Progress Schedule.....	57
4.05 Delays in Contractor’s Progress.....	57
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions.....	58
5.01 Availability of Lands.....	58
5.02 Use of Site and Other Areas.....	59
5.03 Subsurface and Physical Conditions.....	60
5.04 Differing Subsurface or Physical Conditions.....	60

5.05 Underground Facilities..... 62

5.06 Hazardous Environmental Conditions at Site 64

Article 6—Bonds and Insurance..... 66

6.01 Performance, Payment, and Other Bonds..... 66

6.02 Insurance—General Provisions..... 67

6.03 Contractor’s Insurance..... 69

6.04 Builder’s Risk and Other Property Insurance..... 69

6.05 Property Losses; Subrogation 70

6.06 Receipt and Application of Property Insurance Proceeds 71

Article 7—Contractor’s Responsibilities 72

7.01 Contractor’s Means and Methods of Construction 72

7.02 Supervision and Superintendence 72

7.03 Labor; Working Hours 72

7.04 Services, Materials, and Equipment 72

7.05 “Or Equals”..... 73

7.06 Substitutes 74

7.07 Concerning Subcontractors and Suppliers..... 75

7.08 Patent Fees and Royalties..... 77

7.09 Permits 77

7.10 Taxes 77

7.11 Laws and Regulations..... 77

7.12 Record Documents..... 78

7.13 Safety and Protection 78

7.14 Hazard Communication Programs 79

7.15 Emergencies..... 79

7.16 Submittals 80

7.17 Contractor’s General Warranty and Guarantee 82

7.18 Indemnification 83

7.19 Delegation of Professional Design Services 84

Article 8—Other Work at the Site..... 85

8.01 Other Work 85

8.02 Coordination 85

8.03 Legal Relationships..... 86

Article 9—Owner’s Responsibilities 87

 9.01 Communications to Contractor 87

 9.02 Replacement of Engineer 87

 9.03 Furnish Data 87

 9.04 Pay When Due..... 87

 9.05 Lands and Easements; Reports, Tests, and Drawings..... 87

 9.06 Insurance..... 87

 9.07 Change Orders 87

 9.08 Inspections, Tests, and Approvals..... 87

 9.09 Limitations on Owner’s Responsibilities 87

 9.10 Undisclosed Hazardous Environmental Condition..... 88

 9.11 Evidence of Financial Arrangements..... 88

 9.12 Safety Programs 88

Article 10—Engineer’s Status During Construction 88

 10.01 Owner’s Representative..... 88

 10.02 Visits to Site..... 88

 10.03 Resident Project Representative..... 88

 10.04 Engineer’s Authority 89

 10.05 Determinations for Unit Price Work 89

 10.06 Decisions on Requirements of Contract Documents and Acceptability of Work 89

 10.07 Limitations on Engineer’s Authority and Responsibilities 89

 10.08 Compliance with Safety Program..... 90

Article 11—Changes to the Contract 90

 11.01 Amending and Supplementing the Contract 90

 11.02 Change Orders 90

 11.03 Work Change Directives..... 91

 11.04 Field Orders..... 91

 11.05 Owner-Authorized Changes in the Work..... 91

 11.06 Unauthorized Changes in the Work..... 92

 11.07 Change of Contract Price 92

 11.08 Change of Contract Times..... 93

 11.09 Change Proposals..... 93

 11.10 Notification to Surety..... 94

Article 12—Claims..... 94

 12.01 Claims..... 94

Article 13—Cost of the Work; Allowances; Unit Price Work 96

 13.01 Cost of the Work 96

 13.02 Allowances 99

 13.03 Unit Price Work..... 99

Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work 100

 14.01 Access to Work..... 100

 14.02 Tests, Inspections, and Approvals..... 100

 14.03 Defective Work 101

 14.04 Acceptance of Defective Work..... 102

 14.05 Uncovering Work 102

 14.06 Owner May Stop the Work 103

 14.07 Owner May Correct Defective Work..... 103

Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period 103

 15.01 Progress Payments..... 103

 15.02 Contractor’s Warranty of Title 107

 15.03 Substantial Completion..... 107

 15.04 Partial Use or Occupancy 108

 15.05 Final Inspection 108

 15.06 Final Payment..... 108

 15.07 Waiver of Claims 110

 15.08 Correction Period 110

Article 16—Suspension of Work and Termination 111

 16.01 Owner May Suspend Work 111

 16.02 Owner May Terminate for Cause..... 111

 16.03 Owner May Terminate for Convenience..... 112

 16.04 Contractor May Stop Work or Terminate 112

Article 17—Final Resolution of Disputes 113

 17.01 Methods and Procedures..... 113

Article 18—Miscellaneous 113

 18.01 Giving Notice 113

 18.02 Computation of Times..... 113

18.03 Cumulative Remedies 114

18.04 Limitation of Damages 114

18.05 No Waiver 114

18.06 Survival of Obligations 114

18.07 Controlling Law 114

18.08 Assignment of Contract..... 114

18.09 Successors and Assigns 114

18.10 Headings..... 114

STANDARD GENERAL CONDITIONS

OF THE CONSTRUCTION CONTRACT

ARTICLE 9—ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.
22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
- a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor’s plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the

Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
 - a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;
2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words

“furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 Before Starting Construction

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE**3.01 Intent**

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 Reference Standards**A. *Standards Specifications, Codes, Laws and Regulations***

- 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
- 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Contract Documents

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding

on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in

grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. Abnormal weather conditions;
3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;
2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to

be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 Subsurface and Physical Conditions

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 Differing Subsurface or Physical Conditions

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. Engineer's Review: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. Owner's Statement to Contractor Regarding Site Condition: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. Early Resumption of Work: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
2. complying with applicable state and local utility damage prevention Laws and Regulations;
3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in

connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be

included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification,

provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of \$ coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to

identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 Contractor's Insurance

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;
2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 Builder's Risk and Other Property Insurance

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 Property Losses; Subrogation

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR’S RESPONSIBILITIES**7.01 Contractor’s Means and Methods of Construction**

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor’s responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor’s expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor’s determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor’s employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor’s own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner’s written consent, which will not be unreasonably withheld.

7.04 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 "Or Equals"

A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
 - b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an

approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request:* If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

A. *Contractor's Request; Governing Criteria:* Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

- c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
- d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. Engineer's Evaluation and Determination: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. Reimbursement of Engineer's Cost: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. Effect of Engineer's Determination: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 Concerning Subcontractors and Suppliers

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 Permits

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.
3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

- a. Contractor shall submit the number of Samples required in the Specifications.
- b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as

Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Engineer's Review of Shop Drawings and Samples

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.
5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two

resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;
2. Recommendation by Engineer or payment by Owner of any progress or final payment;
3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. Use or occupancy of the Work or any part thereof by Owner;
5. Any review and approval of a Shop Drawing or Sample submittal;
6. The issuance of a notice of acceptability by Engineer;
7. The end of the correction period established in Paragraph 15.08;
8. Any inspection, test, or approval by others; or
9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or

any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;
2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE**8.01 Other Work**

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
2. An itemization of the specific matters to be covered by such authority and responsibility; and
3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of

engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER’S RESPONSIBILITIES

9.01 Communications to Contractor

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 Replacement of Engineer

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer’s status under the Contract Documents will be that of the former Engineer.

9.03 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings

A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance

A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 Change Orders

A. Owner’s responsibilities with respect to Change Orders are set forth in Article 11.

9.08 Inspections, Tests, and Approvals

A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 Limitations on Owner’s Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor’s failure to perform the Work in accordance with the Contract Documents.

9.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 Safety Programs

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Resident Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the

responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer's Authority

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor

under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 Compliance with Safety Program

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 Owner-Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or
2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision:* Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion:* Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 Claims

A. *Claims Process:* The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**13.01 Cost of the Work**

A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.
 - c. *Construction Equipment Rental*
 - 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - a. f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with

the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

- b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 Tests, Inspections, and Approvals

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in

connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
3. by manufacturers of equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 Uncovering Work

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then

Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work

completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in

progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work;

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 Final Payment

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;

- b. consent of the surety, if any, to final payment;
- c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
- d. a list of all duly pending Change Proposals and Claims; and
- e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. Engineer's Review of Final Application and Recommendation of Payment: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Notice of Acceptability: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. Completion of Work: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. Final Payment Becomes Due: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to

such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
2. agree with the other party to submit the dispute to another dispute resolution process; or
3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 Computation of Times

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a

Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 Limitation of Damages

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 No Waiver

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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.

18.09 Successors and Assigns

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 2— Preliminary Matters	116
Article 3— Contract Documents: Intent, Requirements, Reuse	116
Article 5— Site, Subsurface and Physical Conditions, Hazardous Environmental Conditions.....	116
Article 6— Bonds and Insurance.....	117
Article 7— Contractor’s Responsibilities	119
Article 17— Final Resolutions of Disputes	120
1.01 Definitions.....	121

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

ARTICLE 1—PRELIMINARY MATTERS

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:
 Owner shall furnish to Contractor one printed copy of the Contract Documents.

ARTICLE 2—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01 Delete Paragraph 3.01.C in its entirety.

ARTICLE 4—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
none		

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

- 4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely: **[If there are no such reports, so indicate in the table]**

Report Title	Date of Report	Technical Data
none		

ARTICLE 5— BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.B:

1. The warranty bond must be issued by the same surety that issues the performance bond required under Paragraph 6.01.A of the General Conditions.

6.03 *Contractor’s Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: INGHAM COUNTY
- E. *Workers’ Compensation and Employer’s Liability:* Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance, including, as applicable.

Workers’ Compensation and Related Policies	Policy limits of not less than:
Workers’ Compensation	
State	Statutory
Employer’s Liability	
Each accident	\$1,000,000
Each employee	\$1,000,000
Policy limit	\$1,000,000

- F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
 1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor’s commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
 1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, including but not limited to coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
 2. Any exclusion for water intrusion or water damage.
 3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
 4. Any exclusion of coverage relating to earth subsidence or movement.
 5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
 6. Any limitation or exclusion based on the nature of Contractor’s work.
 7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000
Bodily Injury and Property Damage—Each Occurrence	\$2,000,000

- J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	\$2,000,000
Each Accident	\$2,000,000
Property Damage	
Each Accident	\$2,000,000

- K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$3,000,000
General Aggregate	\$3,000,000

- L. *Contractor’s Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor’s Professional Liability	Policy limits of not less than:
Each Claim	\$1,000,000
Annual Aggregate	\$1,000,000

ARTICLE 6—CONTRACTOR’S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be 7am to 7 pm, Monday through Saturday.
2. Owner's legal holidays are New Year’s Day, Martin Luther King Day, President’s Day, Easter, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving, Christmas Eve, Christmas Day, New Year’s Eve.

SC-7.03 Amend the first and second sentences of Paragraph 7.03.C to state "...all Work at the Site must be performed during regular working hours, Monday through Saturday. Contractor will not perform Work on a Sunday or any legal holiday without Owner approval."

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

- D. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 16—FINAL RESOLUTIONS OF DISPUTES

17.02 Arbitration

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 Arbitration

- A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of \$100,000 or less will be settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.
- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.

- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.
- H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

1.01 Definitions

SC-1.01 Add to the list of definitions in Paragraph 1.01.A by inserting the following as numbered items in their proper alphabetical positions:

1. *Geotechnical Baseline Report (GBR)*—The interpretive report prepared by or for Owner regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR's own terms. The GBR is a Contract Document.
2. *Geotechnical Data Report (GDR)*—The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical

Baseline Report. The GDR's content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.

01 01 00 – GENERAL REQUIREMENTS

01.01 SUMMARY OF THE WORK 3
A. WORK COVERED BY CONTRACT DOCUMENTS 3
B. CONTRACTOR'S USE OF PREMISES 3
C. EXISTING FACILITIES OPERATIONS 3
D. HOURS OF WORK 3
E. CUTTING AND PATCHING 4
F. SUBSURFACE EXPLORATION 4
01.02 PROJECT MEETING(S) 4
A. PRECONSTRUCTION MEETING 4
B. PROGRESS MEETINGS 4
01.03 SUBMITTALS 5
A. MATERIALS CERTIFICATION 5
B. SHOP DRAWINGS 5
C. SAMPLES 6
D. OPERATIONS AND MAINTENANCE DATA 7
E. RECORD (AS-BUILT) DOCUMENTS BY THE CONTRACTOR 7
F. CONTRACTOR'S PROGRESS SCHEDULE 8
G. CONSTRUCTION PHOTOGRAPHS 8
01.04 QUALITY CONTROL 9
A. GRADES, LINES, AND LEVELS 9
B. INSPECTION OF PARTS OF THE WORK BY PERMIT AGENCIES 10
C. INSPECTION CREW DAYS 10
D. CONSTRUCTION CONTRACT ADMINISTRATION BY OWNER'S REPRESENTATIVE 13
E. MATERIALS TESTING & INSPECTION 13
01.05 TEMPORARY FACILITIES 14
A. SOIL EROSION AND SEDIMENTATION CONTROL 14
B. SILTATION AND EROSION CONTROL AT STREAM CROSSINGS 15
C. TEMPORARY ACCESS ROADS AND DRIVES 17
D. TEMPORARY TRAFFIC CONTROL DEVICES 17
E. PUMPING, MAINTAINING SEWAGE FLOW, AND DRAINAGE 18
F. TEMPORARY SANITARY FACILITIES 19
G. PROJECT SIGN 19
H. BULKHEADS 20
I. AIR QUALITY AND VENTILATION 20
J. TEMPORARY UTILITIES 21
K. MATERIALS AND EQUIPMENT STORAGE ON SITE 21
L. FENCES, MAILBOXES AND OTHER PHYSICAL FEATURES 21
01.06 EXISTING PROPERTIES, STRUCTURES, AND UTILITIES 21
A. NOTIFICATION OF GOVERNING AGENCIES AND UTILITIES 21
B. PRESERVATION OF PROPERTY, TREES, MONUMENTS, ETC. 22
C. CLEANLINESS OF THE PROJECT 22
D. TRUCK ROUTES 22
E. RIGHTS-OF-WAY AND EASEMENTS 23
F. HIGHWAY AND STREET REQUIREMENTS 23
G. WORK WITHIN RAILROAD RIGHTS-OF-WAY 24
H. OVERHEAD UTILITIES 24

I. UNDERGROUND UTILITIES..... 24
J. STRUCTURES..... 25
01.07 PROJECT CLOSE OUT 25
A. FINAL INSPECTION OF THE COMPLETED WORK AND ENGINEER'S PUNCH LIST 25
B. CONTRACTOR'S CLOSE OUT SUBMITTALS 25

01 01 00 – GENERAL REQUIREMENTS

01.01 SUMMARY OF THE WORK

A. Work Covered By Contract Documents

The following Specifications for Contract Work, Divisions 1 thru 30, as included, set forth conditions or requirements peculiar to the Work to be performed under this Contract. The Work to be performed shall be as described in Division 30 - Supplemental Specifications. The method of measurement and basis of payment for Work performed shall be as indicated in the Proposal and described in the following divisions. Under each item of Work listed in the Proposal and herein described, the Contractor shall furnish: all labor, equipment, and materials; tools, plant, supplies, and bonds; costs of heating, lighting, and power; tests of construction materials as required under any section of these Specifications; and all Work that may be specifically described and included in the following divisions (under the respective items, whether incidental or otherwise) necessary to complete the Work in accordance with the obvious or expressed intent of the Contract.

B. Contractor's Use of Premises

The Contractor shall confine his operations at the site to areas permitted by Law, Ordinances, Permits, and the Contract Documents.

The Contractor shall not load or permit any part of any existing or proposed structure to be subjected to any forces that will endanger its safety.

The Contractor shall not discharge any smoke, dust, or other contaminants into the atmosphere, or discharge any fluids or materials into any waterway as will violate regulations of any legally constituted authority.

The Contractor shall assume full responsibility for protection and safekeeping of any products stored on the premises. The Contractor shall move any stored products which interfere with the operations of the Owner or other Contractors. The Contractor shall obtain and pay for any additional storage or work areas needed for his operations.

C. Existing Facilities Operations

The existing facilities are to be operated as described in the Supplemental Specifications. The Contractor shall plan and conduct the construction operations to avoid disturbing the existing facilities, piping, equipment, and services in any manner that will interrupt or impair operations, except as approved by the Engineer.

The Contractor shall submit for approval a construction sequence, detailed Drawings, and written explanations of all temporary facilities and appurtenances intended to be used in maintaining the uninterrupted operations of the existing facilities, if described in the Supplemental Specifications.

D. Hours of Work

The Contractor is required to prosecute Work done under this Contract during the hours between 7 am to 7 pm, and no Work will be permitted at night, on Sundays, or on holidays unless specifically authorized by the Engineer and by written approval of the local unit of government. Should the

Contractor elect to work at night, Sundays, or on holidays, a copy of the written approval of the local unit of government and regulatory agencies shall be submitted to the Owner and to the Engineer prior to commencing said Work.

E. Cutting and Patching

The Contractor shall do all cutting, fitting, or patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by Work of other Contractors shown upon, or reasonably implied by, the Drawings and Specifications for the completed Work as the Engineer may direct.

F. Subsurface Exploration

The Contractor shall assume all risk and responsibility because of existing soil conditions. The Contractor shall make his own determination as to soil conditions and he shall complete the Work in whatever manner and under whatever conditions he may encounter or create. This shall apply whether or not borings are included in the Contract Documents. Any soil information shown in the Contract Documents, or attached in the Appendix, is given solely for the Contractor's information and is to be used at his own discretion.

It shall be the Contractor's responsibility to evaluate data provided, along with making any onsite inspections which he may consider necessary, to protect his interests in the Project. It will also be the responsibility of the Contractor to report to the Engineer as soon as possible any subsurface conditions found to be contradictory to those outlined in the above-mentioned report.

There will be no compensations made to the Contractor for soil explorations and/or analysis thereof. All Work, either incidental or directly related to the Contract, shall be performed at the Contract Prices regardless of soil conditions encountered.

01.02 PROJECT MEETING(S)

A. Preconstruction Meeting

After receipt of the "Notice to Proceed," the Contractor shall have the audiovisual DVD coverage of construction area performed (if listed in the Proposal as a bid-item) and shall submit to the owner a construction progress schedule showing in a clear graphical manner, satisfactory to the Owner, the proposed dates for commencement, progress, and completion for the Work. The audiovisual DVDs and construction schedule shall be submitted to the Owner for review 1 week prior to the scheduled preconstruction meeting. After the Contractor's schedule has been approved and the audiovisual DVDs have been reviewed and found acceptable, the Owner shall schedule a preconstruction meeting. The Contractor shall attend the preconstruction meeting at the time and place arranged by the Owner, at which various utility companies, the Engineer, the designated inspection agencies, local municipal officials, governmental agency representatives and the Owner's Representatives will be present to discuss the Project.

B. Progress Meetings

Periodic progress meetings shall be conducted, as determined necessary by the Owner, during the life of the Contract. The Contractor shall attend these progress meetings and their Subcontractor shall also attend these meetings when requested. The purpose of these meetings shall be to update the

construction schedule, discuss and resolve construction related problems, and obtain and exchange Project related information from the Owner and the Engineer.

01.03 SUBMITTALS

A. Materials Certification

Where called for in the Specifications or requested by the Engineer, the Contractor shall secure and submit to the Engineer two copies of materials certificates or submit material certificates electronically when determined an acceptable format by the Owner.

B. Shop Drawings

The Contractor shall submit to the Engineer four copies of any Shop Drawings, required by the Specification sections. The Contractor may submit shop drawings electronically when determined an acceptable format by the Owner. The Contractor shall review Shop Drawings, product data, and samples for general compliance with the Contract Documents prior to submission to the Engineer.

The Contractor shall verify field measurements, field construction criteria, catalog numbers, and similar data.

The Contractor shall coordinate each submittal with the requirements of the Contract Documents and shall submit Shop Drawings for major equipment items in one package to permit checking complete installation details in all involved trades. The Engineer's review of a separate item does not constitute approval of an assembly in which the item functions.

After the Shop Drawings have been reviewed by the Contractor, in a clear space above the title block or on the back in the upper right-hand corner, hand stamp the following and enter the required information:

Owner's Name
Project Title
Contractor's Name
Date _____
Identification _____
Contract Drawing No. _____
Specification Section _____ Paragraph No. _____

This document has been checked for accuracy of content and for compliance with the Contract Documents. The information contained herein has been fully coordinated with all involved Subcontractors.

Subcontractor _____

Signed for Contractor _____

(Signature)

(Print Name and Title)

The Contractor's responsibility for errors, omissions, and deviations from requirements of the Contract Documents in submittals is not relieved by the Engineer's review of Shop Drawings. The

Contractor shall notify the Engineer, in writing at time of submission, of any deviations on the Shop Drawings from the requirements of the Contract Documents.

The Contractor shall not install materials or equipment which require submittals until the submittals are returned with the Engineer's signature.

Shop Drawings that indicate material, equipment, or details that do not conform with the Contract Documents will be rejected and returned to the Contractor with an explanation given why the Shop Drawings are unsatisfactory. The Engineer shall review and return one copy of all submittals to the Contractor within 15 days after the date the submittals have been received. The Contractor shall make the necessary corrections or obtain the necessary information or data and resubmit until the Shop Drawings comply with the Contract Documents.

After the Shop Drawings have been determined to be acceptable, the Contractor shall submit the number of copies he requires for distribution plus four copies which will be retained by the Engineer.

All Shop Drawings shall be folded to an approximate size of 8-1/2 by 11 inches in such a manner that the title block will be located in the lower right-hand corner of the exposed surface and provide a one inch margin on the left-hand side for binding purposes.

The Contractor may submit shop drawings electronically when determined an acceptable format by the Owner.

C. Samples

All samples called for in the Specifications or required by the Engineer shall be furnished by the Contractor and shall be submitted to the Engineer for his review. Samples shall be furnished so as not to delay fabrication, allowing the Engineer reasonable time for the consideration of the samples submitted. Contractor shall furnish such samples of material as may be required for examination and test. All materials for tests shall be taken according to methods provided in the Specifications. The Contractor shall furnish such assistance and facilities as the Engineer may require for collecting, storing, and forwarding the samples. The entire cost of taking the samples and delivering them to the testing authority shall be paid for by the Contractor at no cost to the Owner. The physical cost of testing by the testing authority shall be paid for by the Owner at no cost to the Contractor.

Failure of samples to meet Contract requirements shall be sufficient cause for refusal to consider any further samples of the same brand from the manufacturer whose equipment has failed.

Any of the materials or equipment delivered on the site or in place may be taken by the Owner or Engineer for testing. Materials or equipment which fail to meet Contract requirements will automatically void previous approvals of the items tested. The Contractor shall replace all such disapproved materials or equipment at his own cost.

Tests will be made by such methods and in such numbers as the Engineer determines to be adequate and equitable. When materials are required to conform to Federal, NCPI, AWWA, or ASTM specifications, and such specifications are accepted as establishing the technical qualities and testing methods, they shall not necessarily govern the number of tests required to be made. The Engineer may require laboratory tests on samples submitted or may approve materials on the basis of data submitted in certificates with the samples.

If the tests of the samples submitted indicate that the proposed material will not conform to the Contract requirements, the Engineer will notify the Contractor that the proposed material is unacceptable and rejected and will furnish the Contractor the basic reasons for such rejection. However, the Engineer will not be required to furnish the Contractor with copies of all the test data and results.

All materials rejected by the Owner or his Representative shall be indelibly marked and immediately removed from the site of the Work.

D. Operations and Maintenance Data

The Contractor shall furnish three copies of complete catalog data for every manufactured item of equipment and all components to be used in the Work, including specific performance data, material description, rating, capacity, working pressure, material gauge or thickness, brand name, catalog number, and general type.

1. This submission shall be compiled by the Contractor and reviewed by the Engineer for general compliance with the Contract Documents before any of the equipment is ordered. The Engineer's review does not relieve the Contractor of his responsibility for correctness of dimensions or details.

2. Each data sheet or catalog in the submission shall be indexed according to Specifications section and paragraph for easy reference.

3. If the Engineer's review determines the submitted data to be in general compliance with the Contract Documents, the submitted data shall become a part of the Contract and may not be deviated from except upon written approval of the Engineer.

4. Catalog data for equipment reviewed by the Engineer does not in any case supersede the Contract Documents. The review of the Engineer shall not relieve the Contractor of responsibility for deviations from Drawings or Specifications, unless he has in writing called the Engineer's attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in the items submitted.

The Contractor shall check the Work described by the catalog data for conformance with the Contract Documents.

5. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those for connections, and shall order such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the Drawings and Specifications.

6. Where equipment requiring different arrangement of connections from those shown is approved, it shall be the responsibility of the Contractor to install the equipment to operate properly, and in harmony with the intent of the Drawings and Specifications, and to make all changes in the Work required by the different arrangement of connections.

E. Record (As-Built) Documents by The Contractor

The Contractor will keep one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process.

These record documents shall be available to the Engineer and shall be delivered to the Owner upon completion of the Project.

F. Contractor's Progress Schedule

The Contractor shall prepare a detailed construction progress schedule in graphic form showing the proposed dates of starting and completing each major Division of the Work. The schedule shall be consistent with the time, order of Work and requirements of the Specifications, and shall be the basis of the Contractor's proposed operations. Information included on the progress schedule shall include, but not be limited to the following:

- Beginning and completion dates for major items of Work
- Contractor's proposed method of construction
- Designation of the Project Superintendent
- Proposed number of crews
- Estimated date of completion
- Contractor's proposed Construction Safety Program to include weekend, emergency, traffic, and maintenance telephone numbers. Personnel listed for contact should be fully qualified to act on behalf of the Contractor as his agent
- The name, address, telephone number, and specialty of any Subcontractors proposed to conduct Work
- The source and Supplier of materials and equipment to be furnished

The Contractor shall submit 1 reproducible copy of the proposed progress schedule to the Engineer for review 2 weeks prior to the scheduled preconstruction meeting. If requested by the Engineer, the Contractor will revise and resubmit the progress schedule prior to the preconstruction meeting. If during the execution of the Work the Contractor falls behind or advances ahead of the proposed schedule, said schedule, upon request by the Engineer, will be revised by the Contractor based on the current status of the Work.

G. Construction Photographs

If required by the Supplemental Specifications (Division 30), the Contractor shall furnish photographs in the number, type, and stage as enumerated below.

For each contract, the Contractor shall have 2 photographs taken of the Work every 2 weeks as it progresses. The photographs shall be of such views and taken at such times as the Engineer directs. All photographic work shall be done by a qualified, established commercial photographer acceptable to the Owner. The electronic files shall be furnished to the Owner.

Each photograph shall have a permanent negative title block in the lower right-hand corner, approximately 2-1/4 inches wide by 1-3/4 inches high, stating therein in neat lettering:

1. Owner's Name
2. Project Title
3. Contractor's Name
4. Description of View
5. Photo Number and Date
6. Consulting Engineer's Name
7. Project Number

01.04 QUALITY CONTROL

A. Grades, Lines, and Levels

1. General

All Work under this Contract shall be built in accordance with the lines and grades shown on the Drawings or as altered or modified by the authority of the Owner.

All construction survey work provided by the Contractor shall be performed under the supervision and direction of a Registered Land Surveyor licensed to practice in the State of Michigan.

The Contractor shall have the responsibility to carefully preserve and protect the United States Government corners, established reference points, benchmarks, property corners, monuments, and construction stakes. The Contractor shall notify the Engineer whenever any of these points are lost, disturbed, or require relocation. In case of loss or disturbance of these points during the construction period, the Contractor shall pay the cost of replacement and restaking and shall be responsible for any mistakes that may be caused by such loss or disturbance.

Wherever in the Contract Documents there are given survey stations, bearings, or similar survey designations for the location of structures, or portions of structures, it is understood that they are approximate only, and no change of such designations caused by the developments of construction shall be made the basis of claims for payment other than provided for in the Contract.

2. Construction Surveys to be Furnished by Owner

a. Building Construction

The Owner will provide construction control baselines and will provide a Master Benchmark at the site. The Contractor shall be responsible for the layout and location of all new construction, including the proper elevation of such construction.

b. Tunnel Construction

The Owner will provide vertical and horizontal control points. The Contractor shall accurately locate his Work from these reference points and shall be responsible for the installation of all Work to the lines and grades as shown on the Drawings.

The Contractor shall provide the Engineer with reasonable and necessary opportunities to check the accuracy of all Work as to the lines and grades shown on the Drawings. This shall consist of the placement and removal of alignment points and furnishing such materials and

giving such assistance to the Engineer as may be necessary to check the Work. It may be necessary to stop construction during the checking operation. No compensation shall be paid to the Contractor for any Work, materials, labor, or delays as a result of making these checks or other necessary measurements. If it is found necessary to carry on these operations at any time other than normal working hours (namely, over 8 hours a day, Saturday, Sunday, and holidays), the Contractor shall pay the Owner all additional overtime cost of such checking Work.

3. Open Cut Construction

The Owner will provide all surveys, lines, and grades reasonably necessary for the control of the Work. The Contractor shall be responsible for making careful and accurate measurements and for constructing all Work accurately to the lines and grades as shown on the Drawings.

B. Inspection of Parts of the Work by Permit Agencies

Inspection of that part of the Work requiring special permits from agencies such as road commissions, drain commissions, railroads, Michigan Department of Transportation (MDOT), and the Michigan Department of Environmental Quality (MDEQ) may be performed by that agency. The cost of inspection of special permit work by agencies other than the Owner shall be at the Contractor's expense.

C. Inspection Crew Days

CONSTRUCTION INSPECTION OF MATERIAL AND WORK TO BE PERFORMED

1. This project shall require full-time construction inspection by the Engineer. Construction inspection is shown in the Bid Form as the bid item "Crew Days". This item is included in the Bid Form in order to expedite construction and ensure the Contractor's expedient pursuit of completion of the Contract.
2. Each bidder shall enter, as the estimated quantity of inspection, the number of crew days he will require for completion of the project. This number shall then be multiplied by the unit price noted, and the extension entered as the amount for this item of work.
3. The basis of computing crew days shall be as follows:
 - a. Crew days shall be defined as one construction inspector working 8 hours, and shall be billed in 4-hour increments rounded to the next half day as defined below:

i.	0 through 4 hours	1/2 crew day
ii.	Over 4 hours through 8 hours	1 crew day
iii.	Over 8 hours through 12 hours	1-1/2 crew day
iv.	Over 12 hours through 16 hours	2 crew days
 - b. If the Contractor cancels work for any given scheduled workday and the Contractor does not provide notice to the Engineer before 5:00 p.m. the day prior to the work stoppage, 0.25 crew days (2 hours) shall be accrued against the Crew Days bid item. It is the Contractor's sole responsibility to assure that any cancellation notification has been received.

- c. If the Contractor proceeds with work without having an inspector present for inspection of work items listed in Subsection K, below, 1.0 crew day (8 hours) shall be accrued against the Crew Days bid item and that work may be rejected or not considered for payment until properly rectified with the Engineer.
4. The Foreman present for the Contractor shall sign the construction inspector's report at the end of each working day, agreeing to the number of Crew Days reported for that day.
5. The Contractor shall notify the Engineer a minimum of seventy-two (72) hours prior to starting work. If the Contractor should move offsite for a period of more than two days, excluding weekends and holidays, the Engineer shall be notified. The Contractor shall then notify the Engineer a minimum of forty-eight (48) hours prior to returning to the site. The Engineer, Spalding DeDecker, shall be contacted at the following phone number: (248) 844-5400.
6. If the contractor utilizes more than one crew to complete tasks listed below requiring full time inspection, the Owner may require that one (1) inspector be assigned to each construction crew. Crew days will be charged for any one operation requiring full time inspection (See Subsection K for types of operations requiring a full-time inspector). The Contractor shall give the Engineer at least 48 hours' notice, exclusive of Saturdays, Sundays, or holidays, when the project requires an increase or decrease in the number of construction inspectors. The Engineer and/or the Owner shall determine when multiple construction inspectors are necessary. Extra construction inspectors are to be approved by the Owner. The contractor will need to anticipate the need for multiple crews per day, if applicable, and account for the additional inspection crew days in the bid.
7. On pay estimates the actual number of crew days accumulated, up to the quantity bid, will be entered and extended. This amount will be deducted from the estimate and retained by the Owner for construction inspection services performed.
8. If the Contractor completes the work using fewer crew days than the number stated in his proposal, his final payment shall include, in addition to the balance due him for the items of work completed, an amount equal to the number of unused crew days multiplied by the unit price for crew days as provided. If additional crew days are awarded by change order, and the contractor uses fewer crew days than the added by change order, these unused additional crew days added by change orders will NOT be paid to the Contractor.
9. If the work under the contract is incomplete when the Contractor has expended the number of crew days stated in his proposal, subsequent payments to the Contractor shall include a deduction item for excess crew days, at the unit price given, for each excess crew day of construction inspection used during the period covered by the payment, independent of and in addition to other provisions in the contract pertaining to retainage or liquidated damages.
10. If, by change order, the quantity of work under the contract varies significantly from that stated in the proposal, the number of crew days shall be increased or decreased, as appropriate, in said change order. If the change order contains no increase or decrease in the number of crew days of construction inspection, then no adjustment is to be made in the number of crew days for construction inspection. Any increase in crew days shall be applied only to the specific work associated with the change order and shall not be transferred to other work items. Furthermore, any unused crew days associated with a change order will not be included as additional payment to the Contractor.

11. Full time inspection shall be required for construction tasks that are generally related traffic safety, work to resolve property owner complaints, testing, and construction of all work that will become the property of the Owner upon completion. These tasks may include, but are not limited to, the following:
 - a. General
 - i. Material Testing (not the operations done by a geotechnical firm).
 - ii. Checking barricades and lighting.
 - iii. Checking maintenance of traffic.
 - iv. Emergency conditions, as determined by the Engineer.
 - v. Measuring quantities when said measurements are taken during one of the operations included with this list.
 - b. Clean-Up and Complaints
 - i. Replacement of driveways, sidewalks, pavement, etc.
 - ii. Checking grade for final restoration and answering complaints.
 - c. Water Mains and Appurtenances
 - i. Excavation.
 - ii. Laying of Mains.
 - iii. Installing Valves and Hydrants.
 - iv. Tunneling, Jacking or Boring of Water Mains.
 - v. Backfilling of Trenches.
 - vi. Pressure Testing.
 - vii. Cleansing and Disinfecting.
 - viii. Checking final installation for conformance to specifications prior to releasing for connections to be made.
 - d. Concrete Pavement
 - i. Excavation and Preparation of the Site.
 - ii. Mucking and filling ditches.
 - iii. Pavement Removal.
 - iv. Subgrade Preparation and Fine Grading.
 - v. Adjusting and Reconstructing Existing Structures.
 - vi. Sub-Base Construction.
 - vii. Checking Form Alignment and Grade.
 - viii. Placing Concrete.
 - ix. Preparing Compression Cylinders.
 - x. Finishing of Concrete.
 - xi. Placing of Cold Weather Protection.
 - xii. Sawing and Sealing.
 - xiii. Finish Grading.
 - xiv. Adjusting Existing Driveways and Sidewalks.
 - xv. Checking final pavement prior to final acceptance for conformance to specifications.
 - e. Sanitary Sewers, Storm Sewers, and Appurtenances
 - i. Excavation and Preparation of the Site.
 - ii. Checking Sewer Pipe.
 - iii. Installing Pipe Bed.
 - iv. Laying Pipe.
 - v. Installing House Leads.
 - vi. Tunneling, Jacking or Boring of Sewer.
 - vii. Constructing Manholes, Catch Basins, Inlets.
 - viii. Backfilling.

- ix. Infiltration or Ex-Filtration Tests.
 - x. Final checking of sewers prior to releasing for connections to be made or placing in service.
- f. Reinforced Concrete Structures
- i. Excavation for Structure.
 - ii. Sheeting.
 - iii. Checking Forms and Re-steel.
 - iv. Placing of Concrete.
 - v. Backfilling Around Structures.
 - vi. Checking Installation of Equipment.
- g. Asphalt Paving and Pavement Resurfacing
- i. Excavation.
 - ii. Preparation of Subgrade.
 - iii. Construction of Base.
 - iv. Preparation of Existing Pavement.
 - v. Priming Base Course.
 - vi. Laying of Bituminous Concrete Pavement or Surface.
 - vii. Checking of Material.
 - viii. Checking of Asphalt Plants.
 - ix. Checking of Final Pavement for Conformance to Specifications.

12. All Sunday work shall multiply the number of crew days by a factor of 1.5 and with prior approval given by the Engineer.

13. All holiday work shall multiply the number of crew days by a factor of 1.5 and with prior approval given by the Engineer. A holiday is defined as New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, the day after Thanksgiving, Christmas Eve, Christmas Day and New Year's Eve.

14. No payment on inspector crew days shall occur while the project is in progress. Upon final evaluation and inspection approval of inspector crew days will be calculated and paid along with the final payment of the project to the contractor.

D. Construction Contract Administration by Owner's Representative

During the execution of the Work, the Owner will provide one or more Representatives designated to perform Construction Contract Administration (CCA). These Representatives will make periodic visits to the Project site to observe the progress and quality of the executed Work and will determine in general if the Work is proceeding in accordance with the Contract Documents. CCA by the Owner's Representatives will not assume any of the Contractor's responsibility for the construction means, methods, techniques, sequences, procedures, or safety precautions incidental thereto or the Contractor's obligation to perform the Work in accordance with the Contract Documents. The intention of CCA is to provide assurance to the Owner that the Work is executed, and when completed will conform essentially to the requirements of the Contract Documents.

E. Materials Testing & Inspection

All materials and equipment used in the construction of the Project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents. Material tests and inspection may be made by the Engineer or his authorized representative during manufacture and/or upon delivery. All material rejected after delivery shall be

removed from the job site within 5 days after notification of rejection. The Contractor shall pay all costs for such removal and replacement with acceptable material, including all handling, loading, and transportation charges.

The Owner will provide, at his expense, the testing services required by the Contract Documents. The Contractor shall pay for all re-testing.

If the Contract Documents, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by someone other than the Owner, the Contractor will give the Engineer timely notice of readiness. The Contractor shall then furnish the Engineer the required certificates of inspection, testing, or approval.

Inspections, tests, or approvals by the Engineer or others shall not relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

Approval of any material or equipment shall be only for the characteristics of uses named in such approval and shall not constitute a change or modification of the Contract or a waiver of the Owner's right to demand full compliance with the Drawings and Specifications.

When materials or equipment have been approved, no change or substitution will be permitted.

01.05 TEMPORARY FACILITIES

A. Soil Erosion and Sedimentation Control

The Contractor shall construct this Project in compliance with Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act (NREPA) under the control of the local permit agency charged with administering the provisions of this Act. The Contractor shall follow the procedures delineated below and construct and maintain the facilities shown on the Drawings to control water and wind erosion during construction of this Project.

All disturbed surface areas (including utility trenches) shall be temporarily graded and/or ditched to direct all water runoff from such areas to sedimentation control devices so as to prevent water carrying soil from entering a watercourse, sewer, or adjacent lands. Such sedimentation control devices shall include, but not be limited to: protective ditches, sediment traps, sediment filters, ditch traps, pipe barriers, straw bale berms, and filters, as detailed and required and located on the Drawings. After the Project Work has been completed, inspected, and approved, the Contractor shall remove all sedimentation control devices, material, and their collected silt and debris and complete the Project Work in accordance with the Drawings.

In roadway areas temporary aggregate surfacing shall be placed immediately after the backfilling operation has been completed. Positive dust control measures shall be taken at all times.

Within 15 days from the date a Project improvement is installed, the Contractor shall proceed with final cleanup and restoration of the Project area disturbed (including spill areas) and complete such operations within the next 15 days. If seasonal conditions prevent final cleaning and restoration, the Contractor shall proceed with temporary stabilization of the disturbed area. Final cleanup and restoration shall consist of final grading, top soiling, seeding and mulching, and/or sodding of all disturbed areas of the Project. Temporary stabilization shall consist of rough grading the disturbed area to a condition ready to receive topsoil, seeding with 70 pounds per acre of perennial rye grass, and mulching the disturbed area in accordance with these Specifications. Temporary stabilization

materials shall be removed and disposed of and final cleanup and restoration shall be completed no later than 60 days after seasonal conditions allow performance of the required Work.

Mulch blanket shall be placed at all locations where the slope is greater than 1 on 6. Mulch Blanket specifications shall meet the following:

- Straw - 0.5 lbs/sq. yd. (0.27 kg/sq.mi.)
- Net - Lightweight Degradable Both Sides
- Thread - Bio-Degradable
- Longevity - 12 Months

All Soil Erosion and Sedimentation Work described herein and shown on the Drawings will be incidental to the Contract.

B. Siltation and Erosion Control at Stream Crossings

The Contractor shall comply with the following excerpts from the Michigan Department of Natural Resources Specifications for erosion and siltation control at stream crossings. All costs in connection with these requirements shall be borne by the Contractor and shall be considered as Incidental to the Contract.

The Owner shall secure required permits from the MDEQ for all stream crossings and the Contractor shall pay the cost of any inspection charges by that agency for Work done under those permits.

1. Notice for Inspection

The Contractor shall give 10 days notice to the Engineering Division of MDEQ before the beginning of Work so that arrangements can be made for field inspection by the Department.

2. Notice of Work Adjacent to a Stream

Five days notice of crossing or ditching within 50 feet of any stream shall be given to the MDEQ Engineering Division.

3. Prevention of Damage to Fish and Wildlife Habitat

The Contractor shall take necessary steps in carrying out the Contract to prevent damage to fish and game habitat, and to preserve the natural resources of the state. Excavation shall be carried out so as to prevent discharge of damaging material into any stream, lake, or reservoir.

4. Time of Construction

Construction Work across major streams shall be done following special weekend holidays (Memorial Day - Labor Day) rather than just before and during such times.

5. Need for Expeditious Completion of Work

The work of clearing, grading, ditching, backfilling, and final cleanup in close proximity to streams, lakes, and reservoirs shall be completed as soon as possible in order to prevent erosion occurring from wind and precipitation.

6. Settling Basins

Temporary settling basins may be required at some crossings. Settling basins when required shall be constructed prior to any other Work at the site crossing. Cofferdams will be in the same category. Cold water streams will in most cases require this type of treatment.

7. Cofferdams

Cofferdams are to be removed, including any materials trapped by them in the control of siltation. Intermittent removal of silt or sand during construction may be required for proper operation of settling basins.

8. Trench Excavation

All pipe trenches shall be excavated to a depth that will provide a minimum depth of 30 inches from bed of stream to top of pipe.

Appropriate trench excavation methods shall be employed to minimize the entry of material from the trench into the stream, giving due consideration to the soil, terrain, cover, side slope, and weather conditions involved.

The pipe trench excavation shall stop some distance from the stream to leave a 10- to 20-foot-long protective plug of unexcavated material at each bank. These plugs shall be left in place until the pipe laying operation across the stream is begun.

Trench excavation across the stream shall be done first. The landward portion of the plug shall be next. The plugs shall not be completely removed until absolutely necessary. They shall be protected from ditch erosion by sheet piling, sandbagging, or side cut diversion openings.

Earth plugs shall be replaced on each bank as soon as the pipe is laid and protected, as specified above.

The trench in the stream bed shall not be backfilled except where necessary to provide a foundation for the stream bank riprap, or to protect the pipeline from possible damage by partially filling the trench with coarse aggregate. In no event shall any type of backfill be used which will cause excessive siltation.

Construction water shall be prevented from entering the stream by construction of diversion ditches or by pumping water from trench excavations to appropriate sedimentation basins on private lands secured from landowners.

9. Final Cleanup

Final cleanup shall consist of reshaping the stream to its original configuration, width and depth and bottom material; protection of the stream banks as specified and removing all construction material and debris from the crossing site, including any material and debris deposited downstream from the site as a result of the pipeline construction. Exposed beds and banks of streams shall not remain unprotected over 7 days.

10. Stream Bank Protection

All disturbed stream banks with raw soil exposure shall have a finished slope no steeper than one on two (one vertical to two horizontal) to prevent sloughing until stabilized by vegetative cover or riprap. The one on two slope shall be graded back to the top of the natural bank. If the top of the natural bank is more than 3 feet above the high-water line, a 10-foot berm may be placed at this level and the remaining slopes constructed upward parallel with the natural bank.

All raw soil exposed above the water line shall be sodded, riprapped, or seeded, fertilized, and mulched with Type SS-1S Emulsion.

Mulch is to consist of 3 inches of straw or other approved material. Mulch on slopes greater than 10 percent shall be held in place by a spray of asphalt Type SS-1S Emulsion mixed with an equal amount of water.

Seeding and fertilizing rates shall be as follows: Fertilizer - 200 lbs. of 6-24-24 per acre; Seed - 10 lbs. Kentucky 31 fescue, 3 lbs. Birdsfoot trefoil, and 3 lbs. white clover per acre.

At crossings through or near stream bends permanent riprap shall be used from the stream bed up to the high-water line. Permanent riprap shall also be used on any disturbed stream bank where the stream velocity measured within 10 feet of the bank is greater than 5 feet per second. Permanent riprap shall be 5 to 1 mix of sand, to cement in burlap or canvas bags. Sackcrete may be used instead of the above mix.

At crossings on straight sections of streams permanent type riprap shall be placed along the stream bank from the stream bed up to an elevation 2 rows of riprap above the normal water line. Sandbags shall be placed from this elevation to the high-water line.

Deflection dikes reinforced by 1 row of sandbags shall be used to divert runoff from steep slopes to undisturbed areas adjacent to the right-of-way where the contributing runoff could be great enough to cause slope erosion.

These dikes shall be placed along the top of all stream banks where the entire slope is not protected with riprap. They shall also be placed at the top of and at 100-foot intervals or less on slopes greater than 20 percent.

C. Temporary Access Roads and Drives

The Contractor shall, where necessary, construct and maintain temporary access roads and drives as directed by the Engineer.

These roads and drives shall serve as access for local public or private use or as access to the construction site both for the Contractor's equipment and for the delivery or removal of materials.

The temporary access roads and drives shall be removed by the Contractor when directed by the Engineer. The areas shall be restored as near the condition found as is practical and shall be compatible with the adjacent undisturbed areas.

D. Temporary Traffic Control Devices

All traffic control devices and their usage shall conform to the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), 2011 edition, as amended, and as specified herein. The Contractor

shall furnish, erect and maintain all traffic control devices within the construction influence area as the construction operations required.

Traffic shall be maintained as indicated on the Drawings, and as herein described. Other staging may be performed by the Contractor provided that the Contractor has obtained the approval of the Engineer and has supplied and placed sufficient maintaining traffic control devices and other temporary items to maintain traffic.

Existing pedestrian routes shall be maintained, or pedestrian route detours provided. All detours and/or closures of pedestrian routes must meet the current ADA standards. All pedestrian routes closed in conjunction with the construction of this project must be barricaded properly with ADA compliant barricades.

Any channelizing devices used in the right of way shall be plastic drums with white retroreflective sheeting bands. Lights are required for any drums remaining in the right of way after dark.

Unlighted temporary tubular markers in lieu of plastic drums may be used as channelizing devices for work outside the right of way where a narrow device is desired by the Contractor. The markers shall be a minimum of 36" tall and have at least two bands of white retroreflective sheeting near the top of the device with a minimum height of three inches per band. Devices such as the "Grabber Tube / Cone" and the "Looper Tube / Cone" are manufactured in configurations meeting these requirements.

Signs, barricades, and channelizing devices other than those shown on the drawings may be required to maintain traffic or restrict traffic and will be placed as directed by the Engineer or at the discretion of the Contractor with the approval of the Engineer. Part-width construction of the roadway will be required in order to maintain traffic to driveways. Where information was available, the Drawings indicate special access requirements. The information is not guaranteed to be accurate at the time of construction. Access to each driveway will require case-by-case coordination with the owner or operator.

E. Pumping, Maintaining Sewage Flow, and Drainage

Adequate pumping and drainage facilities shall be provided, and all water from whatever sources entering the Work during any stage of construction shall be promptly removed and disposed of. 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, vehicular traffic, or the Work of other Contractors. Dewatering shall be done in such a manner that the soil under or adjacent to existing structures shall not be disturbed, removed or displaced.

The overloading or obstructing of existing drainage facilities will not be permitted and the Contractor shall be solely responsible for damage caused by his operations.

Both dry weather sewage flow and storm flows in all existing sewers, ditches, streams, rivers and drains, which may in any way be affected by the new construction, shall be adequately maintained. Only such methods shall be used in maintaining flows as will prevent raising the levels of the sewage in upstream sewers to the extent to cause basement flooding or other damage. All gutters, ditches, catch basins, and other surface water inlets and drains shall be kept clear for proper surface drainage. Surface water inlets and drains that interfere with the Contractor's operations shall be temporarily altered or relocated by the Contractor as directed or approved by the Engineer.

The Contractor shall take all necessary precautions to assure that no raw sewage is bypassed to a receiving stream as a result of his operations.

All alterations, relocation, or use of any existing facilities shall be approved by the proper governing agency and shall be restored to the original location, and to as good a condition as found; all as approved by the governing agency.

Should the Contractor desire to place or remove any restrictions (such as bulkheads, curtain walls, dams, sandbags, or flumes) or to leave temporary openings in any sewer wall, approval shall first be obtained from the Engineer. Any temporary obstruction so placed shall be promptly removed when no longer needed. Any temporary opening made in an existing sewer structure shall, likewise, be promptly closed when no longer needed. Such closure shall be made as directed by the Engineer to provide structural and hydraulic conditions equivalent to those originally existing.

Should flooding or damage to construction Work result from storm conditions, the Contractor will not be entitled to any extra compensation for such loss as he may sustain, or for the extra Work that may result therefrom.

F. Temporary Sanitary Facilities

The Contractor shall provide and maintain during the life of the Contract sanitary conveniences for the use of all persons employed on the Work, including his Subcontractors, in sufficient number, in such manner and at such places as shall be approved by the Engineer, and all persons connected with the Work shall be obligated to use them. The Contractor shall prohibit the committing of a nuisance within the Work or upon lands about the Work. Any employee found violating these provisions shall be discharged and not again employed without the written consent of the Engineer.

In addition, the Contractor shall provide separate sanitary conveniences for the use of the Engineer and Inspectors. This facility shall be located at the site designated for the Inspector's field office.

The facilities shall be maintained in a sanitary condition, frequently cleaned and disinfected, and promptly removed from the site when directed by the Engineer.

G. Project Sign

When required by the Supplemental Specifications, the Contractor shall provide, erect, and maintain in good condition throughout the life of the Project, a Project Sign in the location selected by the Owner. The Project Sign shall be constructed in accordance with the following Specifications:

- Size: 4 feet x 8 feet
- Material: The panels shall be exterior type high density overlaid 3/4-inch plywood. The frame shall be 1-1/4-inch by 4-inch fir dressed on all 4 sides.
- Assembly: 1-1/4-inch by 4-inch fir frame to fit 4-foot by 8-foot by 3/4-inch plywood panel with 2 center braces.
- Mounting: The sign shall be mounted to 4-inch by 4-inch wood posts with four 3/8-inch bolts and nuts including washers on each side of the sign.

- Erection: The 4-inch by 4-inch posts shall be set in concrete 12 inches in diameter to a depth of 3 feet below grade.
- Paint: The face of the panel shall receive 3 coats of exterior enamel (sprayed). The rear of the panel shall receive 1 coat of exterior enamel (sprayed). The frame and posts shall receive 3 coats of blue exterior enamel.
- Lettering: Silk screen enamels where possible or hand painted enamels.

The information to be shown on the Project Sign, and the format to be used, will be provided by the Owner after the award of the Contract.

H. Bulkheads

Bulkheads shall be built or removed at locations shown on the Drawings. Other complete or partial bulkheads or temporary dams may be built as an aid to the construction operations when approved as to location, type and size by the Engineer. Such bulkheads or dams shall be removed prior to the completion of the Work, or when directed by the Engineer.

A brick bulkhead, with the natural soil removed is not designed to withstand air pressures. If air is being used in a tunnel approaching an existing brick bulkhead the pressure shall be reduced or entirely removed. If air pressure is being used in the tunnel or in the adjacent section, then a reinforced concrete bulkhead, designed to withstand 25 psi air pressure or as specified by the Engineer, shall be constructed in place of a brick bulkhead.

The cost associated with the construction of bulkheads shall be incidental to the Contract unless otherwise specified in the Supplemental Specifications.

I. Air Quality and Ventilation

Means and equipment shall be provided as may be required for detection of and protection against gas encountered in the Work and to safeguard the men employed. Such means and equipment shall comply with all applicable requirements of the United States Bureau of Mines and the U.S. Department of Labor.

In any shaft, tunnel, sewer, or excavation, a positive and approved means shall be provided for testing the air quantitatively for carbon monoxide, nitrogen dioxide, flammable or toxic gases, dusts, mists, fumes, and oxygen deficiency. If gas above allowable limits is encountered, the men shall be ordered to withdraw from the shaft, tunnel, sewer or excavation. Ventilating equipment of sufficient capacity and suitable type to adequately and quickly dilute the gas shall be promptly installed and operated. Gas in gas pockets shall be removed by bleeders to the main exhaust line of the ventilating system till such time that the gas pocket is sealed off. The men shall not return to Work until the shaft, tunnel, sewer, or excavation has been thoroughly examined for harmful or dangerous gas and oxygen deficiency and found to be within the allowable limits. Suitable signs shall be conspicuously placed at hazardous locations prohibiting smoking and the use of open flame.

No open flame or other open light shall be used in the tunnels, shafts, sewers, or gas producing excavations to which entry is necessary. Should an open flame be necessary for Work such as cutting existing steel and the like, it shall be used only after satisfactory gas test and as limited by the authorization of the Engineer.

Such regulations shall be rigidly enforced by the Contractor, who shall promptly discharge any employee who violates such safety requirements.

J. Temporary Utilities

Except as specifically noted, the Contractor shall furnish and pay for all required labor, materials and equipment, tools, construction equipment and machinery, samples, shipping costs and tests, all necessary utilities, such as water, electric power, telephones, roads, fences, and sanitary facilities, including maintenance thereof, and any other facilities and services necessary for proper execution and completion of the Work.

K. Materials and Equipment Storage on Site

Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the Work. When considered necessary, they shall be placed on wooden platforms or other hard, clean surfaces, and not on the ground, and/or they shall be placed under cover. Stored materials shall be located so as to facilitate prompt inspection. Private property shall not be used for storage purposes without the written permission of the Owner or lessee.

All materials and equipment shall be handled in a manner to avoid damage or breakage and delay in the completion of the Work. The Contractor shall repair or replace, without cost to the Owner and to the satisfaction of the Engineer, all items damaged or broken as a result of his operation.

All materials shall be so delivered, stored, and handled as to prevent the inclusion of foreign materials and/or damage by water, breakage, or other causes. Packaged materials shall be delivered in original unopened containers and shall be stored until ready for use. Packages or materials showing evidence of damage or contamination, regardless of cause, will be rejected. All materials which have been stored shall be subject to retest and shall meet the requirements of these Specifications at the time they are used in the Work and at the time of final acceptance of the Work.

All materials to be incorporated in the Work shall be properly arranged, covered, and protected and the Contractor shall be solely responsible for the safety of the same. Material improperly stored shall not be included in estimates for partial payment, or if already included, shall be deducted for subsequent estimates.

Private property shall not be used for storage purposes without written permission of the Owner or lessee.

L. Fences, Mailboxes and Other Physical Features

All fences, mailboxes and other physical features disturbed or damaged during the Work under this Contract shall be maintained and if damaged, repaired or replaced in a workmanlike manner with materials satisfactory to the property owner affected and the Engineer. In addition, the Contractor shall furnish, erect and maintain any temporary construction fencing required during the performance of the Work or ordered by the Engineer.

01.06 EXISTING PROPERTIES, STRUCTURES, AND UTILITIES

A. Notification of Governing Agencies and Utilities

At least a week in advance of beginning Work, the Contractor shall notify all public bodies and other Owners of such facilities of the proposed location of his operations, advising them that their property may be affected and that such measures as they may deem necessary should be promptly taken to protect, adjust, remove and/or rebuild them.

B. Preservation of Property, Trees, Monuments, etc.

The Contractor shall be responsible for the preservation of all public and private property affected by operations within his control. He shall use the precautions necessary to prevent damage or injury thereto. All such protective and corrective work shall be in accordance with the Contract Documents.

The Contractor shall be responsible for the damage or destruction of property of any character resulting from neglect, misconduct, or non-execution of the Work, or caused by defective work or the use of unsatisfactory materials.

The Contractor shall not injure or destroy trees or shrubs nor remove or cut them without authorization by the Owner. All trees and shrubs except those ordered to be removed shall be adequately protected by boxes or otherwise by the Contractor. No excavated material shall be placed so as to injure such trees and shrubs. Trees and shrubs destroyed by negligence of the Contractor, or its employees shall be replaced by him with new stock, or with other stock satisfactory to the Owner, at the proper season, and at the sole expense of the Contractor.

Parkways shall be left in as good condition as before the commencement of the Work. Where sod is removed, it shall be carefully preserved and later replaced with sod of equivalent quality to that removed.

When or where any direct or indirect damage or injury is done to public or private property resulting from the Contractor's operations, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before commencement of his work.

C. Cleanliness of the Project

The Contractor shall keep the Work area and all property occupied by him in a neat and orderly condition at all times. Waste materials, rubbish, and debris shall not be allowed to accumulate. The Contractor's equipment, temporary buildings, scaffolding, and excess materials shall be promptly removed as they become no longer needed for the progress of the Work. At the completion of the Work, the Work area shall be restored to as good as, if not better than, that prior to construction.

If, in the opinion of the Engineer, cleanliness of the Project is not progressing in a reasonable manner, he shall have the right to direct the Contractor to proceed with such Work, or any portion thereof, immediately. In the event the Contractor does not then immediately proceed with this Work, the Engineer may order any or all other operations of the Contractor, under this Contract, to cease until the cleanliness of the Project is proceeding in an acceptable manner.

D. Truck Routes

The Contractor shall work with the appropriate government agency(ies) in determining truck routes on this Project and shall have such routes approved by the same before the routes can be used. It may further be required that truck routes be audio visually taped before, during, and after construction by the Contractor when so requested by the Engineer. It shall thereafter be the responsibility of the Contractor to maintain the truck routes for the period of time such routes are used by the Contractor.

The Contractor shall keep clean all streets used in his operations. Trucks hauling excavated materials, cement, sand, stone, or other loose materials from or to the site, shall be tight so that no spilling will occur. Before trucks start away from the site, their loads shall be carefully trimmed to prevent spillage.

The above requirements likewise apply to Suppliers making deliveries to the site, and the Contractor will be held responsible for compliance by his Suppliers.

E. Rights-of-Way and Easements

All available rights-of-way and easements have been shown on the Drawings. If the Contractor requires additional easements for his construction operations, he shall obtain such easements and furnish copies of such to the Owner and Engineer. In carrying out the Work within private rights-of-way and easements, the Contractor shall take due and proper precautions against any injury to adjacent properties and structures and shall comply with the conditions outlined in the easement and/or right-of-way Agreements included in the Contract. Prior to performing any Work, the Contractor shall obtain any required permits and furnish bonds that may be required to construct within any public right-of-way.

F. Highway and Street Requirements

The highway and street requirements contained herein shall be considered requirements for the use of both public and private roads in this Project. All costs in connection with these requirements shall be borne by the Contractor and shall be considered as incidental to the Project.

Snow fencing, unless otherwise specified, shall be the minimum provided to preclude the entrance of the public into the construction area. Where the construction disrupts or interferes with the normal walkways used by pedestrians, they shall be duplicated in kind so that pedestrians may traverse the construction area safely.

Trench excavation shall be done so as to minimize interference to the operating roadway and where trench sides are within 5 feet or closer to the traveled portion of the roadway, bypasses shall be constructed. All signing construction of bypasses, and construction of permanent restoration shall be in accordance with the governing agency, municipality, or MDOT Specifications.

In all primary roads where open cut crossings will be made, the Contractor shall submit Plans for re-routing of traffic to the Road Commission or Municipal Traffic Engineer for approval before proceeding with construction across primary road.

The Contractor shall rough grade, and open, road ditches and other waterways every night before closing down the job.

Existing ditches disturbed during construction shall be re-ditched in the location and to the cross section, as determined by the Engineer prior to final grading. The cost of such re-ditching shall be incidental to the Project and no separate payment will be made therefor.

Materials and equipment shall not be stockpiled within the right-of -ways so as to obstruct or cause a problem to any driveway or side street.

All obstruction within 8 feet of pavement edge shall be lighted from sunset to sunrise.

If it is necessary to direct motorists more than 3 feet laterally, street lighting shall be provided.

Temporary pavement parking, in addition to signing, shall be required at all lateral displacements of traffic. The placing of the pavement markings, the covering of the old lines, and restoration shall be performed by the Contractor in accordance with the governing agency's requirements.

The Contractor shall maintain the traveled portion of the roadway clear from mud, dirt, debris, and other materials. The Contractor shall maintain the road surface in the working area safe for the motoring public, shall salt when hazardous ice or snow conditions require it, and shall chloride the roads to alleviate dust conditions engendered by his operations whenever necessary.

All signs, lighting, and other necessary safety requirements shall comply with the governing agency and the state highway department Specifications. In addition, the Contractor shall take all necessary precautions as directed by the governing agency as are deemed necessary to protect the public.

Unless otherwise indicated in the Supplemental Specifications, the Contractor shall pay all permit fees and inspection charges for Work performed by all governing agencies, the MDOT and railroads.

G. Work Within Railroad Rights-of-Way

All Work within railroad rights-of-way shall be conducted in accordance with the requirements of the railroad company having jurisdiction over the right-of-way.

The Contractor, to protect his and the Owner's interest, shall keep a detailed record of all services and materials furnished by the railroad. Daily reports of such Work and material should be signed both by the Owner's Inspector and any representative of the railroad present on the Project. Seventy-two hours notice, exclusive of Saturdays, Sundays, and holidays, shall be given to the railroad superintendent before any Work is performed within a railroad right-of-way. Since the railroad requires that all Project communications be forwarded through the Owner, the Contractor shall notify the Owner sufficiently in advance to allow him to make necessary arrangements with the railroad.

H. Overhead Utilities

All utility poles and overhead lines may not be shown or identified on the Drawings. The Contractor shall make his own determination of existing utility poles and facilities attached thereto and overhead lines. Where overhead utilities are encountered in the Work, Contractor shall arrange with the utility Owner for the necessary relocation or protection of their facilities. Protection, removal and replacement, tunneling or supporting of existing utility poles and protection and removal and replacement of utilities which are installed on the poles shall be provided either by the Contractor or by the utility at the Contractor's expense, all in accordance with requirements of the utility owner.

I. Underground Utilities

All underground utilities as shown on the Drawings have been plotted utilizing the best information available. Prior to excavating in any area, the Contractor shall notify MISS DIG or the involved utility companies and request verification of the utility locations as shown. Any variances in location which occur shall be brought to the attention of the Engineer prior to the commencement of any digging operations. In the event that the installation of a proposed utility is depended upon knowing the exact elevation or location of any existing utility, the Contractor shall excavate and locate such utilities in advance of the Work and inform the Engineer of their exact location.

Should the Contractor discover conflicts that exist between the location of the existing utility and those proposed, he shall notify the Engineer in writing in advance of any Work so that adjustments can be made.

Where underground utilities are encountered in the Work, the Contractor shall arrange with the utility owner for any necessary protection or relocation of their facilities.

All protection, maintenance of service, removal and replacement etc., shall be in conformance with the requirements of the utility owner. Protection, maintenance of service, removal and replacement, and supporting of existing underground utilities, shall be provided by the Contractor or by the utility at the Contractor's expense unless relocation or removal and replacement of certain utilities are specifically covered by a separate pay item in the Proposal.

J. Structures

The Contractor shall assume full responsibility for the protection of all buildings, utilities, or other structures and their foundations, as well as other improvements, such as pavement, etc., that might be encountered during, or affected by, his operations. Should settlement or lateral movement of adjacent structures or surface features occur, such conditions shall be rectified at the Contractor's expense. If damage to any structures, utilities, or other improvements occurs by reason of the Contractor's operations, even though special precautions have been employed, the Contractor shall be entirely responsible for such damage.

01.07 PROJECT CLOSE OUT

A. Final Inspection of the Completed Work and Engineer's Punch List

When the Contractor considers the Work to be complete, he shall submit written certification to the Owner (copies should be forwarded to Engineer, and governing agency representatives) that:

1. The Contract Documents have been reviewed in reference to the completed Work.
2. All Work has been completed in accordance with the Contract Documents or written clarification and modifications thereof.
3. All equipment and systems have been tested in the presence of the Owner's Representative and are operational in the manner set forth in the plans and/or specifications.

B. Contractor's Close Out Submittals

When the Engineer finds that the Work is acceptable and conforms to the Contract Documents, the Contractor shall make the following close out submittals:

1. Evidence of compliance with requirements of governing agencies
2. Operation and maintenance data
3. Record documents
4. Keys and key schedule
5. Guarantees
6. Spare parts and maintenance materials

7. Final request for payment with supporting data (i.e. Contractor's Declaration, Contractor's Affidavit, Release and Waivers of Liens, Agencies' Releases, etc.).

END OF DIVISION

01 02 00 – SITE AND MISCELLANEOUS WORK

02.01 FOREWORD 2

02.02 PRECONSTRUCTION WORK 2

A. Bonds, Insurance, and Mobilization..... 2

B. Audio/Visual Coverage of Construction Area 2

02.03 SURFACE WORK 3

A. Clearing and Grubbing..... 3

B. Tree, Remove (of Sizes Specified)..... 4

C. Tunneling Trees 4

D. Dust Control (CaCl)..... 5

02.04 PROJECT SURFACE RESTORATION 5

A. General 5

B. Seeding and Mulching 5

C. Class "A" Sodding..... 7

D. Tree Replacement 8

01 02 00 – SITE AND MISCELLANEOUS WORK
FOR SEWER, WATER, TUNNEL, AND PAVING WORK

02.01 FOREWORD

The Division provides descriptive detailed Specifications for areas of Work generally common to various other areas of Work described in other Divisions of these Specifications.

Six Items of Work -- namely "Audio/Visual Coverage of Construction Area", "Engineer's Field Office", "Furnishing Storm Sewer or Culvert Pipe", "Aggregate Surface Course", "Bituminous Concrete Wearing Course", and "Bituminous Surface Treatment (Seal Coating)" -- will only be required if the items are listed in the Proposal as Bid Items. All other items in this Division shall be performed if required by the Plans and Specifications, or if made necessary by the Contractor's construction methods or operations; and the cost thereof shall be included in the Project, unless the items are specifically listed in the Proposal as Bid Items.

All Work in this Division shall be performed in conformance with the following detailed Specifications.

02.02 PRECONSTRUCTION WORK

A. Bonds, Insurance, and Mobilization

"Bonds, Insurance, and Mobilization" is an Item of Work which includes costs associated with its named sub-items.

The cost of all Work under this Item shall be Included in the Project unless listed in the Proposal as a Bid Item.

If listed in the Proposal as a Bid Item, the Lump Sum Amount for this Item as determined by the Contractor shall not exceed ten percent (10%) of the Gross Proposal Amount for this Contract. Any costs in excess of this limitation shall be included in the Contract. The Lump Sum Amount of this Item will not be changed due to an increase or a reduction of the Contract Price.

The Contract Lump Sum (LS) Price for "Bonds, Insurance, and Mobilization" will be payment in full for furnishing all labor, equipment, and material necessary to provide the complete services described. Payment for this Item will be made when 10 percent of the Work is done, as shown on the Engineer's Certificate of Payment.

B. Audio/Visual Coverage of Construction Area

The Work under this Item will only be required if this Item is listed in the Proposal as a Bid Item.

The Contractor shall furnish to the Owner two copies of color audio/video recordings of the construction site for the purpose of establishing a record of existing conditions prior to construction. The audio/video recording shall be of a professional quality that will clearly log an accurate visual description of existing conditions and be indexed by number and street.

Audio/video recording must be of sufficient clarity and quality acceptable to the Engineer for reviewing the project site. To preclude the possibility of tampering or editing, all video recordings must, by electronic means, display continuously and simultaneously generated transparent digital information to

include the date and time of recording. The date information shall include the month, day, and year. The time information shall consist of hours, minutes, and seconds.

Audio video coverage shall include all surface features located within the zone of influence of construction and shall be supported by appropriate audio description. Audio description shall be made simultaneously with video coverage. Such coverage shall include, but not be limited to, all existing driveways, sidewalks, curbs, ditches, roadways, landscaping, trees, culverts, headwalls, retaining walls, buildings (located on both sides of the right-of-way or easement within such zone of influence), and any haul routes designated by the Engineer. Homes and buildings shall be identified visually by street and number when visible.

Where conventional wheeled vehicles can be used, the distance from the camera lens to the ground shall not be less than 12 feet to insure proper perspective. Where conventional wheeled vehicles cannot be used, the camera coverage shall be obtained by walking or by special conveyance to secure the required result. The rate of speed of the conveyance used during recording shall not exceed 48 feet per minute. Panning rates and zoom-in/zoom-out rates shall be controlled sufficiently to ensure clarity of the object viewed.

All recording shall be done during times of good visibility or with the use of sufficient artificial lighting. No recording shall be done during periods of visible precipitation, or when more than 10 percent of the ground area is covered with snow. All recording shall be done within a two (2) week period prior to placement of materials on the site. The Contractor shall furnish one (1) copy of the recording to the Owner and one (1) copy of the recording to the Engineer one week prior to the date of the preconstruction meeting.

The Engineer shall have the authority to reject any recordings which in his judgement do not properly indicate the existing conditions in conformance with those Specifications.

The item of work "Audio/Visual Coverage of Construction Area" will be measured by Lump Sum (LS) and shall be considered payment in full for all labor, equipment, and material necessary to complete the work.

02.03 SURFACE WORK

A. Clearing and Grubbing

Clearing and grubbing in designated areas shown on the Drawings shall consist of the removal and disposal of all brush and trees (including stumps and roots), except trees and bushes specifically noted on the Drawings or in the Specifications or directed by the Engineer to be saved. Such trees and bushes to be saved shall be protected from damage by the Contractor's operations. Disposal of brush and trees shall be by the Contractor off the site by a method in conformance with existing laws and ordinances of the State of Michigan and its governmental subdivisions.

This work includes removal of items including signs, fencing, planter boxes, rock gardens, boulders, landscape walls, and stumps (less than 6 inches in diameter) determined to be within the grading limits of the Project.

The cost of all Work under this Item shall be Included in the Project unless listed in the Proposal as a Bid Item.

When listed in the Proposal as a Bid Item, "Clearing and Grubbing" will be paid for as a Lump Sum (LS)

Unit. The Contract Lump Sum Price for "Clearing and Grubbing" will be payment in full for removal and disposal of all brush, trees, stumps, and roots from the designated areas as shown in the Drawings, all in accordance with the Contract Documents. This Item shall also include protection of bushes and trees to be saved.

B. Tree, Remove (of Sizes Specified)

Trees shall be removed when so indicated on the Drawings or when directed to do so by the Engineer. Trees located beyond the limits of excavation shall be saved and protected. The Work included under this Item shall include removal and disposal of the entire tree, including stump and major roots.

Sometimes, the plans will indicate ornamental trees and shrubs that must be temporarily removed, planted elsewhere, and then replanted in approximately their original location. When this is necessary, the cost thereof shall be included in the Project.

The cost of removal and disposal of trees less than 6 inches in diameter and removal and disposal of all stumps shall be Included in the Project. The size of trees will be determined by the average diameter of the tree trunk, measured to the nearest full inch, at a point 4-1/2 feet above the base of the tree at the ground line. Trees having major limbs lower than 4-1/2 feet from the ground shall be measured at the smallest diameter below such limbs.

The cost of all Work under this Item shall be Included in the Project unless listed in the Proposal as a Bid Item.

When listed in the Proposal as a Bid Item, "Tree, Remove (of Sizes Specified)" will be measured by units Each (EA) for the number of such trees required to be removed. "Tunneling Trees" is not included in Work under this Item. The Contract Unit Price per each will be payment in full for removing each tree and disposing of same as described herein.

C. Tunneling Trees

When the Drawings so indicate, or when the Contractor is directed by the Engineer to tunnel under trees, the Contractor shall construct the proposed utility in tunnel and shall protect and save that tree from damage. The pay limits for "Tunneling Trees" for each tree tunneled will be one foot in length for every one (1) inch in diameter of the tree; however, the pay limit will not be less than 12 feet for any tree.

The size of trees will be determined by the average diameter of the tree trunk, measured to the nearest full inch, at a point 4-1/2 feet above the base of the tree at the ground line. Trees having major limbs lower than 4-1/2 feet from the ground shall be measured at the smallest diameter below such limbs. The total length of tunnel determined by the above method shall be centered on the trees to be tunneled. The Contractor will be required to insure that at least this length of tunnel per tree is effectively followed.

The cost of all Work under this Item shall be Included in the Project unless listed in the Proposal as a Bid Item.

When listed in the Proposal as a Bid Item, "Tunneling Trees" will be measured by the length in lineal feet (LF) for the total number of feet of tunnel as above determined for this Project. The Contract Unit Price per lineal foot for "Tunneling Trees" will be payment in full for furnishing all labor, equipment, and material necessary to construct the tunnel under said trees.

D. Dust Control (CaCl)

The Work under this Item consists of furnishing and applying a calcium chloride (CaCl) solution to the Project area to control dust. Calcium chloride (CaCl) in a 35 to 38 percent (5 pounds per gallon) solution shall be placed at a rate of 1 gallon per 20 square feet. Calcium chloride shall meet the requirements of ASTM D98. The Contractor shall arrange for dust control no later than 24 hours after notification by the Owner. The solution shall be applied uniformly by a suitable tank truck distributor. The Contractor shall supply the Inspector with delivery tickets, and the Inspector shall verify the date, location, and amount of application shown on the tickets.

The cost of all Work under this Item shall be Included in the Project unless listed in the Proposal as a Bid Item.

When listed in the Proposal as a Bid Item, "Dust Control (CaCl)" will be measured by the volume in 1000-gallon-units (TGU) of solution actually applied in accordance with the Contract Documents. The Contract Unit Price per 1000-gallon-unit (TGU) for "Dust Control (CaCl)" will be payment in full for furnishing all labor, equipment, and material necessary to complete this Item.

02.04 PROJECT SURFACE RESTORATION

A. General

All Items of Work in this Section 02.04 are describing the Work necessary to restore any type of construction damage encountered in the Work. Although the Contractor shall conduct his operations so as to minimize damages, it shall be his responsibility to repair such damage in accordance with repair or replacement directions contained herein.

The cost of any or all of the Items in this Section 02.04 shall be Included in the Project unless the specific Item affected is listed in the Proposal as a Bid Item. However, when any such Item is listed in the Proposal as a Bid Item to be paid for separately, the basis of measurement for unit payment shall be the number of units of that Item actually constructed within the Limits of Measurement. This Limit of Measurement is described as the width determined by the smaller of:

- a. The street Right-of-Way width
- b. Easement width
- c. A width equal to twice the utility's depth as measured from the top of the utility to the surface of the ground -- such width being centered on the centerline of the utility. This width shall be not less than 16 feet.

The cost of any replacement Items necessary outside the above described Limits of Measurement will not be paid for separately but shall be Included in the Project.

B. Seeding and Mulching

All grass areas disturbed by the construction of the Work under this Contract which are not sodded with Class A sod shall be restored by Seeding and Mulching as described herein. Seeding and Mulching shall consist of grading the subgrade, furnishing and placing topsoil, preparing the seedbed, furnishing and placing fertilizer, seed and mulch, watering, and all other Work necessary to secure a dense, well-rooted, living growth of grass.

The area to be seeded shall be graded to a smooth even subgrade to an elevation three inches below the prepared finished grade.

After approval by the Engineer of the grading of the subgrade as above described, three inches of topsoil shall be placed thereon. After spreading of topsoil to the prepared finished grade, any large clods or lumps shall be broken with a pulverizer or other effective means and all foreign matter shall be removed and disposed of off the site. Immediately before fertilizing and seeding, the topsoil shall be brought to a friable condition by disking and harrowing to a depth of three inches.

A chemical fertilizer shall be uniformly applied on the prepared topsoil surface at a rate of 80 pounds per acre (0.016 pounds per square yard) of 12-12-12 fertilizer.

Immediately after the fertilizer has been placed the grass seed shall be sown. Seed shall meet MDOT's requirements for THM Turf Loamy to Heavy Seed Mixture, in accordance with Section 816 of the MDOT Standard Specifications.

- 20% Perennial Rye (having a minimum purity of 98% and minimum germination of 90%),
- 30% Kentucky Bluegrass (having a minimum purity of 90% and a minimum germination of 75%)
- 50% Creeping Red Fescue (having a minimum purity of 98% and a minimum germination of 48%)

Seeds shall not be sown through mulch. The seed mixture required shall be sown, or resown, at a rate of 220 pounds per acre with either mechanical drills, broadcast, or hydro-seeder type equipment. Areas that are sown by hydro-seeder or the broadcast method will be visually inspected for uniformity of application. Areas sown by hydro-seeder, or the broadcast method shall be floated and lightly compacted to incorporate the seed into the uppermost 1/4 inch of the soil.

Seed shall be sown in the period from April 15 to October 10. No seed shall be sown outside this period unless approved by the Engineer.

Immediately after completion of the seeding operation, the seeded areas shall be mulched. Mulch shall consist of straw spread over the surface to a uniform thickness at a rate of 2 tons per acre (0.83 pounds per square yard) or as approved by the Engineer. Unless otherwise specified, the mulch shall be held in place by a spray coating of adhesive material approved by the Engineer or by using a notched disk that punches and anchors the mulch material. The Contractor shall protect all traffic signs, structures, and other objects from being marked or disfigured by the adhesive material. The mulch shall be loose enough to allow sunlight to penetrate and air to slowly circulate, but thick enough to shade the ground, reduce the rate of water evaporation, and prevent or reduce water and wind erosion. Mulch that has become displaced shall be replaced at the Contractor's expense.

During the period from June 1 to November 1, all areas seeded shall be watered as necessary until the grass has been established.

It shall be the responsibility of the Contractor to obtain a final result that will provide a well rooted growth, resistant to normal washing and drought. Should the first attempt at seeding fail to produce the required result, the Contractor will be responsible for repeating the necessary operations to produce the designed results, at no additional cost to the Owner.

The cost of all Work under this Item shall be Included in the Project unless shown in the Proposal as a Bid Item. When shown in the Proposal as a Bid Item, "Seeding and Mulching" will be measured by area in Square Yards (SY) in place for the number of square yards of seeding and mulching actually installed

within the Limits of Measurement as described in this Section (02.04.01) of the Specifications. The Contract Unit Price per square yard for "Seeding and Mulching" will be payment in full for furnishing all labor, equipment, and material required to perform all the Work described in this subsection.

C. Class "A" Sodding

In areas where existing lawn areas (defined as those areas that are maintained and mowed or cut as lawns, regardless of the existing kind of grass) are disturbed, the Contractor shall sod the disturbed areas as well as other areas where required by the Specifications or Drawings, or as directed by the Engineer. This Work shall consist of furnishing and placing approved viable Class "A" Sod on topsoil, and shall also include preparation of the subgrade, furnishing and placing topsoil, fertilizing, excavation and disposal of surplus material, watering the sod as necessary, and all Incidental Work.

The area to be sodded shall be excavated to the proper cross section to take into consideration the placement of the topsoil and the thickness of the sod. The area shall then be made smooth, uniform, and parallel to the finished grade. Fill areas must be compacted enough to prevent uneven settlement. Cut areas must be loosened, if needed, to allow for root penetration. The tops and bottoms of all slopes shall be rounded to blend into the natural ground or adjacent areas. All debris including roots, stones, and loose clods of earth shall be removed. The smoothness of the surface finish shall be established with a template or stringline. Topsoil shall be placed on the prepared foundation to a depth of 3 inches. Fertilizer shall be applied on the prepared surface at the rate of 60 pounds per acre (0.012 lbs per square yard) of 12-12-12, or equivalent.

Immediately before placing the sod, the prepared topsoil shall be loosened to a depth of 1 inch and thoroughly dampened. Sod shall not be permitted to dry out and shall be laid within 24 hours after cutting. The sod shall be carefully placed by hand in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. Pitchforks shall not be used to handle sod and dumping from vehicles will not be permitted. Edge of sodded areas shall extend at least 2 inches into the ground or ditch bottom.

The transverse joints of sod strips shall be broken, and the sod carefully laid to produce tight joints. When the sod may be displaced by sodding operations, the workmen shall work from ladders or planks. The sod shall be firmly compacted by tamping or rolling (immediately after it is placed) to a smooth, even surface.

The Contractor shall water the sod immediately after placing it, and thereafter at 3-day intervals (or as needed) until the sod is rooted in the topsoil.

Sodding may have to be suspended during a drought when directed by the Engineer.

Sod that washes out for reasons attributable to the Contractor's activities or his failure to take proper precautions shall be replaced at the Contractor's expense.

Sod installed shall be a densely rooted bluegrass or other approved perennial grasses, free from weeds. Merion bluegrass will not be acceptable in excess of 20 percent of a blend or mixture unless the lawn being replaced was entirely Merion bluegrass. The sod shall be cut to a uniform thickness of not less than 1/2 inch, nor more than 2 inches, and have an area of not less than 1/2 square yard per piece.

On slopes steeper than 1 vertical to 3 horizontal, or in areas such as ditch bottoms where high velocity flows are likely, the sod shall be pegged with wooden pegs or anchored with commercial netting. The pegs shall be spaced not over 2 feet apart in any direction and shall be driven flush with the surface of the

sod. Pegs shall be made of sound wood, at least 8 inches long, and shall have a cross-sectional area of approximately 0.75 square inches. In lighter soils, longer pegs may be required.

If the initial sodding operation does not result in a rooted and living lawn area, the non-living sod shall be removed and replaced with viable sod until the sodded lawn area becomes rooted and living.

The cost of all Work described in this Item shall be Included in the Project unless shown in the Proposal as a Bid Item.

When listed in the Proposal as a Bid Item, "Class "A" Sodding" will be measured by area in Square Yards (SY) in place for the number of square yards of sod actually installed within Limits of Measurement as described in Section 02.04.01. The Contract Unit Price per Square Yard for "Class "A" Sodding" will be payment in full for furnishing all labor, equipment, and material necessary to furnish and place sod, including the preparation of the foundation material, topsoil, water, fertilizer, final cleanup, resodding, and all other Incidental Work.

D. Tree Replacement

Where indicated on the plans or when ordered by the Engineer, the Contractor shall furnish, plant, and maintain trees as a replacement for those trees removed during the Contractor's operations. The Contractor shall submit to the Engineer, in advance of delivery of stock, complete information concerning the sources of all plant materials, so inspection of the stock can be arranged. The Owner or his Agent reserves the right to select, inspect, or reject all trees in the nursery row, at the job site, or after planting. All trees furnished shall be nursery stock certified to be of the type and name specified, as established in the current edition of Standardized Plant Names published by the American Joint Committee on Horticultural Nomenclature. Stock shall be clearly labeled as to species and variety giving both the common name and scientific names of the trees. All stock shall be well formed, and the trunks shall be uniform and straight. All stock shall qualify under the AAN Horticultural Standards of the current USA Standard for Nursery Stock, ANSI Specification Z60.1.

The selection and planting of trees shall be performed in strict conformance with SHD Specification Sections 6.50 and 8.21 including all Specifications for watering, bracing, cultivating, and establishing plantings. The use of collected stock or local stock will not be permitted.

The cost of all Work under this Item shall be Included in the Project unless listed in the Proposal as a Bid Item.

When listed in the Proposal as a Bid Item, "Tree Replacement" will be measured by units each (EA) for the particular type, size, and species of tree listed in the Proposal and actually placed in accordance with the conditions of this Contract Document. The Contract Unit Price per Each for "Tree Replacement" will be payment in full for furnishing all labor, equipment, and material necessary to furnish, plant and maintain (until established) trees of the types specified.

END OF DIVISION

PROJECT MANUAL



Appendix A

Permits

PROJECT MANUAL



Appendix B

Progress Clause

PROGRESS CLAUSE

The Engineer anticipates that construction can begin no earlier than 10 calendar days after award or as directed by the Engineer.

In no case shall any work be commenced prior to receipt of formal notice of award by the Owner. The Contractor shall prepare and submit a complete, detailed, signed Progress Schedule to the Engineer.

Once work is started on any road or street (or group of streets), work continuously until completion of the street(s). Place HMA leveling course within 15 calendar days of crushing, milling, or removing the existing HMA surface. Place HMA top course within 15 calendar days of completion of leveling course.

Once public road approach and private driveway surfaces are removed, place temporary ramps by the end of the workday, and maintain temporary ramps until the public road approach or driveway is resurfaced, according to the Special Provision for Maintaining Traffic. Removed approaches and driveways not ramped within 24 hours of removal, or temporary ramps not maintained within 48 hours of written direction by the Engineer to maintain will be subject to penalties of up to \$500 per occurrence per day at the discretion of the Engineer.

The project must be substantially complete (including turf restoration) and open to vehicle and pedestrian traffic by the **open to traffic date of October 10, 2024**.

The entire project must be completed by the **final completion date of October 31, 2024** for completion of punch list items, project cleanup, and acceptance of slope restoration (turf establishment).

Unless specific pay items are provided in the contract any extra costs incurred by the Contractor due to cold- weather protection and winter grading will not be paid separately but will be included in the payment of other pay items in the contract.

After award and prior to the start of work, the Contractor must attend a preconstruction meeting with the Engineer. The Engineer will determine the day, time, and place for the preconstruction meeting. The meeting will be conducted after the project award and may be rescheduled if there are delays in the award of the project.

The named subcontractor(s) for Designated and/or Specialty Items, as shown in the Proposal, should attend the preconstruction meeting if such items materially affect the work schedule.

Restore access to commercial and residential driveways with Maintenance Gravel immediately upon removal of driveway surface unless concrete placement is scheduled within 48 hours of surface removal. Place concrete within 48 hours of enacting traffic restrictions on private driveways (i.e. closure of residential driveways, or part-width closure of commercial driveways).

Failure by the Contractor to meet interim completion, open to traffic, and/or final completion dates will result in the assessment of liquidated damages in accordance with subsections 108.10.C.1 and 108.10.C.2 of the Standard Specifications for Construction.

PROJECT MANUAL



Appendix C

Special Provisions

CHARTER TOWNSHIP OF MERIDIAN

SPECIAL PROVISION FOR MAINTAINING TRAFFIC

SD:DJT

1 of 4

01-10-2024
2024 Meridian LRP

a. Description. Except as otherwise specified herein, always MAINTAIN LOCAL TRAFFIC ON SUBDIVISION STREETS, AND MAINTAIN THROUGH TRAFFIC on intersecting primary roads including Marsh Road, Lake Drive, and Towar Avenue using a single lane closure or shoulder closures as necessary for all project work. Once traffic restrictions are implemented, work diligently to restore full access to public traffic and private driveways as soon as possible. Schedule proposed work to minimize the impact to all traffic. Coordinate all aspects of traffic control activities with the Engineer.

Implement all maintaining traffic operations according to the plans, Sections 104 & 812 of the MDOT 2020 Standard Specifications for Construction, including any Supplemental Specifications, Special Provisions, the attached MDOT Traffic & Safety Work Zone Traffic Control Typical, and as specified herein. Furnish, install, and maintain traffic control elements, traffic control devices (TCD's), barricade lighting, channelizing devices, spacing, taper lengths, etc. required for this project according to the 2011 edition of the Michigan Manual of Uniform Traffic Control Devices, as amended, and as specified herein. Remove the TCD's in a prompt, safe and orderly manner upon completion of the work and when directed by the Engineer.

Where overnight lane closures are approved, furnish and place all necessary TCD's necessary to implement an overnight closure to protect the open excavation left at the end of the workday, including but not limited to barricades, plastic drums, 42-inch channelizing devices, lighted arrows, safety fence and additional signing.

Once public road approach and driveway surfaces are removed, place temporary ramps by the end of the workday and maintain temporary ramps using *Maintenance Gravel* or *Hand Patching*, as directed until the permanent pavement surface has been completed. Perform maintenance on temporary ramps as needed until the finished driveway surface has been placed. When the Engineer provides written direction to maintain temporary ramp(s) at specific location(s), perform the directed maintenance within 48 hours. Failure to place and maintain temporary ramp(s) according to this section may be subject to penalties as described in the Progress Clause.

During all phases of construction, maintain a maximum 2-inch vertical differential along active lane lines and at public road and commercial driveway approaches. Maintain a maximum 3-inch vertical differential for residential driveways. Maintain 3 ft minimum traffic offset from excavations greater than 3-inch depth.

1. Traffic Control Plan/Phasing. At the preconstruction meeting, submit a detailed traffic control plan corresponding to staging of proposed work, including a work progress schedule, to be reviewed and approved by the Engineer. Design traffic control to accommodate work staging. Schedule work stages for optimum progress, with the least possible overall impact to prevailing traffic. Maintain two-way traffic to the greatest extent possible. Always maintain local traffic. Implement all traffic restrictions according to the

plans, attached MDOT Maintaining Traffic Typical(s), and the approved traffic control plan. Furnish, place, and maintain all necessary TCD's.

Notify the Project Engineer at least 5 business days in advance of work requiring removal of existing signs, or erection or removal of overlays on existing signs. Notify the Engineer a minimum of 3 working days prior to the implementation of all major traffic shifts and lane closures.

2. Construction Influence Area (CIA). The Construction Influence Area (CIA) extends approximately 1,500 ft in advance of the work limits on Marsh Road, Lake Drive, Towar Avenue, all streets included in the project plans, and approximately 250 feet in advance of public and private intersecting streets and driveways.

3. Traffic Restrictions. Perform no work during recognized holidays, including Memorial Day, July 4th, or Labor Day holiday periods, as defined by the Progress Clause, maintaining two- way through traffic during holiday periods.

Once lane restrictions are initialized, perform continuous and efficient work until the lane restrictions can be reopened to traffic. Remove lane restrictions as soon as possible after the work that required the lane restrictions is complete. Unless otherwise approved by the Engineer, remove and replace lane restrictions for cessation of work activity to restore traffic during peak traffic periods.

Always maintain pedestrian and vehicle access, especially for emergency vehicles, to all businesses. At the end of each workday, properly maintain driveways and walkways to provide vehicular and pedestrian access to all private property.

When practical, remove all lane restrictions at the end of each workday, except where approved by the Engineer. Place temporary pavement markings as directed upon removal of restrictions.

Night-time work will not be permitted.

Protect any uncompleted work area overnight with lighted advance signs (W20-1; "ROAD WORK AHEAD," W21-5b 'RIGHT SHOULDER CLOSED AHEAD,' or W20-5/ W4-2; "LANE CLOSED AHEAD") and plastic drums, according to the plans and Work Zone Traffic Control Typical. At the end of each work period, restrict undercuts or excavations immediately adjacent to active traffic lanes to a one-on-four slope from the edge of the roadway. If this condition is not met, implement a night-time lane closure according to the appropriate MDOT Traffic Control Typical at no additional cost.

b. Materials. Furnish traffic control devices as described herein:

1. Temporary Signs. Place advance warning signs, as shown on the plans and the following attached Work Zone Standard Plans and Traffic Control Typical below.

Distances between construction warning, regulatory and guide signs (D) shown on the Work Zone Traffic Control Typical are approximate and may require field adjustment.

Furnish 48" x 48" or diamond-shaped warning signs mounted at a 5-foot minimum bottom height in uncurbed areas, and 7-foot minimum bottom height in curbed or pedestrian areas. Fabricate all temporary signs with legends and symbols flush to the sign face and not extending beyond the sign borders or edges.

WZ TYPICAL/STD PLAN	DESCRIPTION
101-GEN-SPACING- CHARTS-1	Typical Numbering Key, "B, "D" and "L" Tables, Channelizing Device Spacing, Sign Border Key, and Roll- Ahead Spacing
102-GEN-NOTES	Traffic Control Typical's Note Sheet
103-GEN-SIGN	Traffic Control Typical's Sign Sheet
110-TR-NFW-2L	Lane Closure Utilizing Traffic Regulators on a 2-Lane Undivided Roadway
122-NFW-SHL-(R)	Shoulder Closure on a 2-Lane, Undivided Roadway
WZD-125-A	Temporary Traffic Control Devices

2. Channelizing Devices. Furnish TCD's according to MDOT Work Zone Device Special Detail WZD-125-E. Furnish 42-inch Channelizing Devices to delineate opposing traffic, for all lane shift tapers, closures, or restrictions. Use plastic drums to isolate work areas with > 3-inch vertical drop and at obstructions such as arrow boards, portable changeable message signs, vehicles, and equipment within normally traveled lane areas.

3. Maintenance Gravel. Furnish, place, and maintain public and private approaches using Maintenance Gravel according to Section 306.

c. Installation and Maintenance of Traffic Control Devices. Place channelizing devices at maximum intervals of 1 x speed limit in taper sections and 2 x speed limit in tangent sections (spacing in feet; speed limit in mph).

Upon request of the Engineer, provide additional, replacement, repair, relocation, or removal of traffic control devices within 24 hours. Where the requested work is not completed, the Engineer will present written notice for the requested traffic control device maintenance. If the work specified in the written notice is not completed within an additional 24 hours, the Contractor may be subject to a penalty or deduction from traffic control contract item unit price(s).

d. Measurement and Payment. All work to maintain traffic and protect the work as described in the contract documents will be measured and paid for at the contract unit price using the following pay item:

Pay Item

Pay Unit

Temporary Traffic Control DevicesLump Sum

Payment for **Temporary Traffic Control Devices** will include all equipment, tools, materials, and labor to furnish, place, maintain, relocate, and remove Traffic Control Devices throughout the project duration, and all efforts as necessary to maintain traffic according to the plans, specifications, and as directed by the Engineer. The estimate of quantities for maintaining traffic shown on the plans is for information only. Payment will be based on the following schedule at the discretion of the Engineer, unless otherwise agreed to by both the Contractor and Engineer in an amendment:

- 1) 50% Payment - Initial placement of signs and barricades as indicated on the Plans.
- 2) Remaining 50% payment - All signs and barricades removed.

Temporary aggregate and HMA surfaces constructed as directed to maintain traffic will be paid for separately by the Cubic Yard as *Maintenance Gravel, LM* and by the Ton for *Hand Patching*, respectively.

Any additional signing or TCD's not shown on the plans, implemented at the Contractor's discretion to expedite the work or for the Contractor's convenience, including devices implemented for an approved night-time closure, will be included with payment for **Temporary Traffic Control Devices** and will not be paid for separately.

DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
D (FEET)	250	300	350	400	450	500	550	600	650	700	750

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"

"B" LENGTHS	SPEED*, MPH (PRIOR TO WORK AREA)											
	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	329	411	476	542	625

* POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

MINIMUM MERGING TAPER LENGTH, "L" (FEET)

OFFSET (FEET)	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
1	11	15	21	27	45	50	55	60	65	70	75
2	21	30	41	54	90	100	110	120	130	140	150
3	32	45	62	80	135	150	165	180	195	210	225
4	42	60	82	107	180	200	220	240	260	280	300
5	53	75	103	134	225	250	275	300	325	350	375
6	63	90	123	160	270	300	330	360	390	420	450
7	73	105	143	187	315	350	385	420	455	490	525
8	84	120	164	214	360	400	440	480	520	560	600
9	94	135	184	240	405	450	495	540	585	630	675
10	105	150	205	267	450	500	550	600	650	700	750
11	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
13	136	195	266	347	585	650	715	780	845	910	975
14	146	210	286	374	630	700	770	840	910	980	1050
15	157	225	307	400	675	750	825	900	975	1050	1125

NOT TO SCALE

	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING, SIGN BORDER KEY, AND ROLL-AHEAD SPACING	DATE: MAY 2021
		NO: 101-GEN-SPACING-CHARTS		SHEET: 1 OF 3

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" = $\frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = W X S WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
 S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
 W = WIDTH OF OFFSET

TYPES OF TAPERS

UPSTREAM TAPERS

- MERGING TAPER
- SHIFTING TAPER
- SHOULDER TAPER
- 2 TO 1 LANE ROAD TAPER

TAPER LENGTH

- L - MINIMUM
- 1/2 L - MINIMUM
- 1/3 L - MINIMUM
- 100' - MAXIMUM

DOWNSTREAM TAPERS
 (USE IS RECOMMENDED)

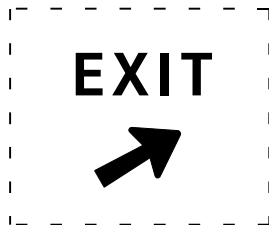
100' (PER LANE)

MAXIMUM SPACING FOR CHANNELIZING DEVICES

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)		NIGHTTIME 42" DEVICE SPACING (FT)	
	TAPER	TANGENT	TAPER	TANGENT
< 45 MPH	1 x SPEED LIMIT	2 x SPEED LIMIT	25 FEET	50 FEET
≥ 45 MPH	50 FEET	100 FEET	25 FEET	50 FEET

SIGN OUTLINE KEY

DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.



SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT



NOT TO SCALE

	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING SIGN BORDER KEY AND ROLL-AHEAD SPACING	DATE: MAY 2021
		NO: 101-GEN-SPACING-CHARTS		SHEET: 2 OF 3

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES – TEST LEVEL 2

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	25 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 4,410 POUND IMPACT VEHICLE WEIGHT.

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES – TEST LEVEL 3

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5 TONS (MOBILE)	45 MPH	100 FT
	50-55 MPH	150 FT
	60-75 MPH	175 FT
12 TONS (STATIONARY)	45 MPH	25 FT
	50-55 MPH	25 FT
	60-75 MPH	50 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 10,000 POUND IMPACT VEHICLE WEIGHT.



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO: 101-GEN-SPACING-CHARTS

"B", "D" AND "L" TABLES
CHANNELIZING DEVICE SPACING
SIGN BORDER KEY AND ROLL AHEAD SPACING

DATE: MAY 2021

SHEET:

3 OF 3

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

GENERAL NOTES

- G1: SEE GEN-SPACING-CHARTS FOR COMMON VALUES INCLUDING:
 D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
 L = MINIMUM LENGTH OF TAPER
 B = LENGTH OF LONGITUDINAL BUFFER
 ROLL AHEAD DISTANCE
- G2: DISTANCE BETWEEN SIGNS, "D", THE VALUES FOR WHICH ARE SHOWN IN TYPICAL GEN-KEY ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.
- G3: ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP 350) TEST LEVEL 3, OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) TL-3 AS WELL AS THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.
- G4: DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFER AREAS.
- G5: ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR TRAFFIC PATTERNS FOR WORK LESS THAN THREE DAYS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

SIGN NOTES

- S1: ALL NON-APPLICABLE SIGNING WITHIN THE CIA MUST BE MODIFIED TO FIT CONDITIONS, COVERED, OR REMOVED. FOR GUIDANCE SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, SECTIONS 6.01.09 AND 6.01.10.
- S2: R5-18b SIGNS ARE ONLY REQUIRED ON FREEWAY PROJECTS WITH A DURATION OF 15 DAYS OR LONGER OR NON-FREEWAY PROJECTS WITH A DURATION OF 90 DAYS OR LONGER. TO APPLY THIS TYPICAL WITHOUT R5-18b SIGNS, REMOVE THE SIGNS AND CONSOLIDATE THE SEQUENCE AS APPROPRIATE.
- S3: R5-18c IS ONLY REQUIRED IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. OMIT THIS SIGN IN SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE.
- S4: ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W20-5 SIGNS.
- S5: PLACE ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE WORK ZONE SPEED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK ZONE, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT. PLACE ADDITIONAL SPEED LIMIT SIGNS AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS ARE MORE THAN 2 MILES APART. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, PLACE ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED BEYOND THE LIMITS OF THE WORK AREA AS INDICATED. IF PERMANENT SIGNS DISPLAYING THE CORRECT SPEED LIMIT ARE POSTED, OMIT ALL W3-5b AND R2-1 SIGNS AND REDUCE SPACING ACCORDINGLY.
- S6: FABRICATE SPECIAL SIGNS IN ACCORDANCE WITH CURRENT SIGNING DESIGN STANDARDS.
- S7: PLACE ADDITIONAL R8-3 SIGNS AT A MAXIMUM 500' SPACING THROUGHOUT THE WORK ZONE.
- S8: WHEN SPEED LIMIT SIGNS CANNOT BE PLACED SIDE BY SIDE AS SHOWN, PLACE THEM "D" DISTANCE APART.
- S9: STOP SIGNS NOT REQUIRED IF SIGNALS ARE ON 4-WAY FLASHING RED. STOP AHEAD SIGNS ARE NOT REQUIRED IF THERE IS ADEQUATE VISIBILITY OF THE STOP SIGN OR IF SIGNALS ARE BEING USED TO CONTROL TRAFFIC.
- S10: PLACE REDUCED SPEED ZONE AHEAD SIGN (W3-5b) HERE WHEN USING A SPEED REDUCTION IN THIS DIRECTION.
- S11: THE NUMBER OF W1-6 SHIFT SIGNS TO PLACE FOR A SHIFT IS AS FOLLOWS:
 SHIFTS 4FT OR LESS, PLACE ONE W1-6(R)(L)
 SHIFTS 5FT TO 12FT, PLACE TWO W1-6(R)(L)
 SHIFTS MORE THAN 12FT, PLACE THREE OR MORE W1-6(R)(L) SIGNS DEPENDING UPON LENGTH OF SHIFT AND AS PER THE ENGINEER.
- S12: PLACE R2-1 SIGNS AS DETAILED IN NOTE S5 WHEN THERE IS A SPEED REDUCTION IN THIS DIRECTION

TRAFFIC REGULATOR NOTES

- TR1: TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT VERSIONS OF THE TRAFFIC REGULATOR'S INSTRUCTION MANUAL AND THE VIDEO "HOW TO SAFELY REGULATE TRAFFIC IN MICHIGAN". THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADT, GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.
- TR2: PROVIDE APPROPRIATE BALLOON LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATOR'S STATIONS WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS.

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

- TC1: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 1.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT.
- TC2: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED TWICE THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 100 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TANGENTS ARE NOT TO EXCEED 50 FEET AT NIGHT.
- TC3: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.
- TC4: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.
- TC5: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER (R-53, AND R-126) WHEN USED WITH A TEMPORARY SIGNAL SYSTEM. THE OBJECT MARKERS MUST BE A MINIMUM OF 12 INCHES IN WIDTH AND 36 INCHES IN HEIGHT AND HAVE ORANGE AND WHITE RETROREFLECTIVE SHEETING. THE RETROREFLECTIVE SHEETING MUST HAVE ALTERNATING DIAGONAL ORANGE AND WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION VEHICULAR TRAFFIC IS TO PASS.
- TC6: PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS WHEN PHYSICAL LIMITATIONS RESTRICT PLACEMENT. IN CURBED SECTIONS, IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSED LANE AS CLOSE TO THE BEGINNING OF TAPER AS POSSIBLE.
- TC7: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.
- TC8: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (W24-1) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN, AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.
- TC9: RUMBLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE RUMBLE STRIPS AS SHOWN, AND IN ACCORDANCE WITH THE RUMBLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARRAY OF RUMBLE STRIPS CONTAINS THREE RUMBLE STRIPS. PLACE THE RUMBLE STRIPS IN THE ARRAY AT A CONSISTENT DISTANCE, BETWEEN 10' AND 20' APART.
- TC10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECOMMENDED AND CORRECT PCMS MESSAGING. STAGGER PCMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

RAMP NOTES

- RMP1: WHEN CONDITIONS ALLOW, E5-1 SIGNS MUST BE REMOVED OR COVERED AND CHANNELIZING DEVICES MUST BE POSITIONED TO ENABLE RAMP TRAFFIC TO DIVERGE IN A FREE MANNER
- RMP2: STOP AND YIELD CONDITIONS SHOULD BE AVOIDED WHENEVER PRACTICAL. WHEN CONDITIONS WARRANT, R1-1 SIGNS MAY BE USED IN PLACE OF R1-2 SIGNS. WHEN R-1 SIGNS ARE USED, W3-1 SIGNS MUST BE USED IN PLACE OF W3-2 SIGNS. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP TO COMPLETE WORK TO ALLOW AN ADEQUATE MERGE DISTANCE. WORK SHOULD BE EXPEDITED TO AVOID THE STOP AND/OR YIELD CONDITIONS.

	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	TRAFFIC TYPICALS NOTE SHEET	DATE: APRIL 2022
		NO: 102-GEN-NOTES		SHEET: 1 OF 2
FILE: 102-GEN-NOTES.dgn				

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

SIGNAL NOTES

- SIG1: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.
- SIG2: SIGNAL IS IN OPERATION.
- SIG3: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.
- SIG4: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.
- SIG5: THE LOWEST POINT OF THE BUCKET MAY NOT TRAVEL BELOW 14 FOOT VERTICAL CLEARANCE. THE CONTRACTOR MUST UTILIZE AN ALTERNATE SET UP, OR PLACE THE INTERSECTION IN A 4 WAY STOP IF THE 14 FOOT VERTICAL CLEARANCE IS COMPROMIZED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.
- SIG6: DELINEATE THE TRUCK WITH CHANNELIZING DEVICES. THE POSITION OF THE TRUCK MAY BE MOVED TO FACILITATE WORK.

MAINTENANCE AND SURVEYING NOTES

- MS1: WHENEVER STOPPING SIGHT DISTANCE EXISTS TO THE REAR, THE SHADOW VEHICLES SHOULD MAINTAIN THE RECOMENDED DISTANCE FROM THE WORK AREA AND PROCEED AT THE SAME SPEED. THE SHADOW VEHICLE SHOULD SLOW DOWN AND TRAVEL AT A FARTHER DISTANCE TO PROVIDE ADEQUATE SIGHT DISTANCE IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES.
- MS2: WORKERS OUTSIDE OF VEHICLES SHOULD WORK WITHIN 150' OF WORK VEHICLES WITH AN ACTIVATED BEACON, BETWEEN THE "BEGIN WORK CONVOY" SIGN AND THE "END WORK CONVOY" SIGN, OR BETWEEN THE "WORK ZONE BEGINS" AND "END ROAD WORK" SIGN.
- MS3: WORK OR SHADOW VEHICLES WITH OR WITHOUT A TMA MAY BE USED TO SEPARATE THE WORK SPACE FROM TRAFFIC. IF USED, THE VEHICLES SHOULD BE PARKED ACCORDING TO THE ROLL AHEAD DISTANCE TABLES.
- MS4: WORK AND SHADOW VEHICLES SHALL BE APPROPRIATELY EQUIPPED WITH AN ACTIVATED AMBER BEACON.
- MS5: WHEN WORKERS ARE OUTSIDE THEIR VEHICLES IN AN EXISTING LANE WHILE A MOBILE OPERATION IS OCCURRING DURING THE NIGHTTIME HOURS, CHANNELIZING DEVICES TO DELINEATE OPEN OR CLOSED LANES AT 50 FT SPACING MUST BE USED. AN EXAMPLE OF AN OPERATION (BUT NOT LIMITED TO) IS THE LAYOUT OF CONCRETE PATCHES.
- MS6: W21-6 AND W20-1 SIGNS MAY BE SUBSTITUTED AS DETERMINED BY THE TYPE OF WORK TAKING PLACE AS PER THE ENGINEER.



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO: 102-GEN-NOTES

TRAFFIC TYPICALS
NOTE SHEET

DATE: APRIL 2022
SHEET:

2 OF 2

SIGN NUMBER KEY



E5-1f
48" x 48"
60" x 48"



E5-2
48" x 36"



E5-2a
48" x 36"



E5-3
48" x 36"



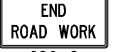
E13-1P
VAR x 24"



E13-1aP
36" x 24"



G20-1
60" x 24"



G20-2
48" x 24"



G20-4
36" x 18"



I-6a
18" x 18"
24" x 24"
30" x 30"



M1-1
18" x 18"
24" x 24"
36" x 36"
48" x 48"



M1-1
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"



M1-2
18" x 18"
24" x 24"
36" x 36"
48" x 48"



M1-2
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"



M1-3
18" x 18"
24" x 24"
36" x 36"
48" x 48"



M1-3
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"



M1-4
18" x 18"
24" x 24"
36" x 36"
48" x 48"



M1-4
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"



M1-5
18" x 18"
24" x 24"
30" x 30"
36" x 36"



M1-5a
18" x 18"
24" x 24"



M1-6
18" x 18"
24" x 24"
36" x 36"



M1-6
22.5" x 18"
30" x 24"
45" x 36"



M3-1
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M3-2
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M3-3
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M3-4
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-1
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-1a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-2
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-3
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-4
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-5
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-6
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-7
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-7a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M4-8
12" x 6"
18" x 9"
24" x 12"
30" x 15"



M4-8a
24" x 18"



M4-8b
24" x 12"



M4-9L
30" x 24"
48" x 36"
60" x 48"



M4-9R
30" x 24"
48" x 36"
60" x 48"



M4-9j
30" x 24"
48" x 36"
60" x 48"



M4-9kL
30" x 30"
48" x 42"
60" x 54"



M4-9kR
30" x 30"
48" x 42"
60" x 54"



M4-9mL
30" x 30"
48" x 42"
60" x 54"



M4-9mR
30" x 30"
48" x 42"
60" x 54"



M4-9dL
12" x 18"



M4-9dR
12" x 18"



M4-9e
12" x 18"



M4-9f
12" x 18"



M4-9gL
12" x 18"



M4-9gR
12" x 18"



M4-9h
12" x 24"



M4-9i
12" x 18"



M4-10L
48" x 18"



M4-10R
48" x 18"



M4-11a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"



M5-1L
12" x 9"
21" x 15"
30" x 21"



M5-1R
12" x 9"
21" x 15"
30" x 21"



M5-2L
12" x 9"
21" x 15"
30" x 21"



M5-2R
12" x 9"
21" x 15"
30" x 21"



M5-3
12" x 9"
21" x 15"
30" x 21"



M6-1L
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-1R
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-2L
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-2R
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-3
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-4
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-5
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-6L
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-6R
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-7L
12" x 9"
18" x 12"
21" x 15"
30" x 21"



M6-7R
12" x 9"
18" x 12"
21" x 15"
30" x 21"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

103-GEN-SIGN

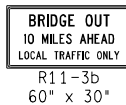
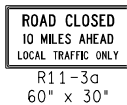
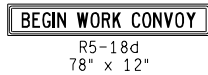
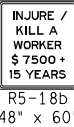
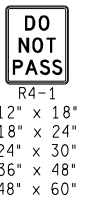
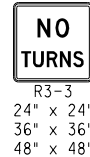
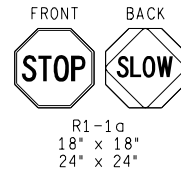
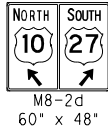
TRAFFIC TYPICALS
SIGN SHEET

DATE:
JUNE 2021

SHEET:

1 OF 5

SIGN NUMBER KEY



SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO: 103-GEN-SIGN

TRAFFIC TYPICALS SIGN SHEET

DATE: JUNE 2021

SHEET:

2 OF 5

SIGN NUMBER KEY



W1-1L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-1R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-2L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-2R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-2bL
36" x 36"
48" x 48"



W1-2bR
36" x 36"
48" x 48"



W1-3L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-3R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-4L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-4R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-4bL
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-4bR
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-4cL
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W1-4cR
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W24-1L
30" x 30"
36" x 36"
48" x 48"

ALL LANES

W24-1cP
24" x 18"
30" x 24"



W24-1R
30" x 30"
36" x 36"
48" x 48"



W24-1aL
30" x 30"
36" x 36"
48" x 48"



W24-1aR
30" x 30"
36" x 36"
48" x 48"



W24-1bL
30" x 30"
36" x 36"
48" x 48"



W24-1bR
30" x 30"
36" x 36"
48" x 48"



W1-6L
24" x 12"
36" x 18"
48" x 24"
60" x 30"
96" x 48"



W1-6R
24" x 12"
36" x 18"
48" x 24"
60" x 30"
96" x 48"



W1-8L
12" x 18"
18" x 24"
24" x 30"
30" x 36"
36" x 48"



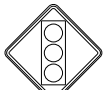
W1-8R
12" x 18"
18" x 24"
24" x 30"
30" x 36"
36" x 48"



W3-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W3-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W3-3
18" x 18"
30" x 30"
36" x 36"
48" x 48"



W3-4
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W3-4b
30" x 30"
36" x 36"
48" x 48"



W3-5
36" x 36"
48" x 48"



W3-5a
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W3-5b
30" x 30"
36" x 36"
48" x 48"



W4-1L
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W4-1R
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W4-2L
30" x 30"
36" x 36"
48" x 48"



W4-2R
30" x 30"
36" x 36"
48" x 48"



W4-3L
30" x 30"
36" x 36"
48" x 48"



W4-3R
30" x 30"
36" x 36"
48" x 48"



W4-5L
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W4-5R
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W4-5P
18" x 24"
24" x 30"



W4-6L
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W4-6R
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W4-7L
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W4-7R
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W5-1
30" x 30"
36" x 36"
48" x 48"



W5-2
18" x 18"
30" x 30"
36" x 36"
48" x 48"



W5-3
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W5-4
30" x 30"
36" x 36"
48" x 48"



W6-1
30" x 30"
36" x 36"
48" x 48"



W6-2
30" x 30"
36" x 36"
48" x 48"



W6-3
30" x 30"
36" x 36"
48" x 48"



W6-4
12" x 18"



W7-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W7-1a
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

103-GEN-SIGN

TRAFFIC TYPICAL
SIGN SHEET

DATE:
JUNE 2021

SHEET:

3 OF 5

SIGN NUMBER KEY



W8-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-3
18" x 18"
30" x 30"
36" x 36"
48" x 48"



W8-4
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-5
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-5P
24" x 18"
30" x 24"
36" x 30"



W8-7
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-8
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-9
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-11
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-12
30" x 30"
36" x 36"
48" x 48"



W8-14
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-15
24" x 24"
30" x 30"
36" x 36"
48" x 48"



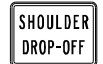
W8-15P
24" x 18"
30" x 24"
36" x 30"



W8-17L
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-17R
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-17P
24" x 18"
30" x 24"
36" x 30"



W8-18
24" x 24"
36" x 36"
48" x 48"



W8-23
24" x 24"
36" x 36"
48" x 48"



W8-24
30" x 30"
36" x 36"
48" x 48"



W8-25
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W8-26
36" x 36"
48" x 48"



W9-1L
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W9-1R
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W9-2L
30" x 30"
36" x 36"
48" x 48"



W9-2R
30" x 30"
36" x 36"
48" x 48"



W9-3C
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W9-3L
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W9-3R
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W9-3a
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W9-3b
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W11-10
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W11-10a
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W11-24
36" x 36"
48" x 48"



W12-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"



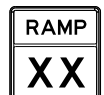
W12-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W13-1P
18" x 18"
24" x 24"
30" x 30"



W13-2
24" x 30"
36" x 48"
48" x 60"



W13-3
24" x 30"
36" x 48"
48" x 60"



W13-4P
24" x 24"
36" x 36"



W13-6
24" x 42"
36" x 60"
48" x 84"



W13-6a
24" x 42"
36" x 60"
48" x 84"



W13-7
24" x 42"
36" x 60"
48" x 84"



W13-7a
24" x 42"
36" x 60"
48" x 84"



W14-3
36" x 24"
40" x 30"
48" x 36"
64" x 48"



W16-2P
18" x 12"
24" x 18"
30" x 24"



W16-4aP
18" x 12"
24" x 18"
30" x 24"
36" x 30"



W16-12P
24" x 18"



W16-13P
24" x 18"
30" x 24"



W20-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W20-1a
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W20-1b
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W20-1c
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W20-1d
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W20-2
30" x 30"
36" x 36"
48" x 48"



W20-3
30" x 30"
36" x 36"
48" x 48"



W20-3a
30" x 30"
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

103-GEN-SIGN

TRAFFIC TYPICALS
SIGN SHEET

DATE:
JUNE 2021

SHEET:

4 OF 5

SIGN NUMBER KEY



W20-3b
30" x 30"
36" x 36"
48" x 48"



W20-4
30" x 30"
36" x 36"
48" x 48"



W20-4c
36" x 36"
48" x 48"



W20-5C
30" x 30"
36" x 36"
48" x 48"



W20-5L
30" x 30"
36" x 36"
48" x 48"



W20-5L1
30" x 30"
36" x 36"
48" x 48"



W20-5L2
30" x 30"
36" x 36"
48" x 48"



W20-5R
30" x 30"
36" x 36"
48" x 48"



W20-5R1
30" x 30"
36" x 36"
48" x 48"



W20-5R2
30" x 30"
36" x 36"
48" x 48"



W20-5aL2
30" x 30"
36" x 36"
48" x 48"



W20-5aL3
30" x 30"
36" x 36"
48" x 48"



W20-5aR2
30" x 30"
36" x 36"
48" x 48"



W20-5aR3
30" x 30"
36" x 36"
48" x 48"



W20-7a
30" x 30"
36" x 36"
48" x 48"



W20-8
24" x 18"



W20-9
54" x 48"



W20-10
48" x 24"
66" x 30"



W20-11
12" x 18"



W20-12P
VARIABLE x 12"



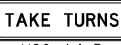
W20-13P
VARIABLE x 12"



W20-14L
36" x 36"
48" x 48"



W20-14R
36" x 36"
48" x 48"



W20-14dP
36" x 12"
48" x 12"



W20-14bP
36" x 12"
48" x 12"



W20-15
36" x 36"
48" x 48"



W20-15a
36" x 36"
48" x 48"



W20-15c
48" x 54"



W20-15d
48" x 54"



W20-16
36" x 36"
48" x 48"



W20-17
36" x 36"
48" x 48"



W21-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W21-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W21-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W21-3
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W21-4
36" x 18"



W21-5
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W21-5aL
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W21-5aR
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W21-5bL
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W21-5bR
30" x 30"
36" x 36"
48" x 48"
60" x 60"



W21-6
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W21-7
30" x 30"
36" x 36"
48" x 48"



W21-8
30" x 30"
36" x 36"
48" x 48"



W22-1
30" x 30"
36" x 36"
48" x 48"



W22-2
42" x 36"



W22-3
36" x 30"
42" x 36"



W23-1
48" x 24"



W23-2
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS



NOT TO SCALE

MAINTAINING TRAFFIC TYPICAL

NO:

103-GEN-SIGN

TRAFFIC TYPICAL
SIGN SHEET

DATE:
JUNE 2021

SHEET:

5 OF 5

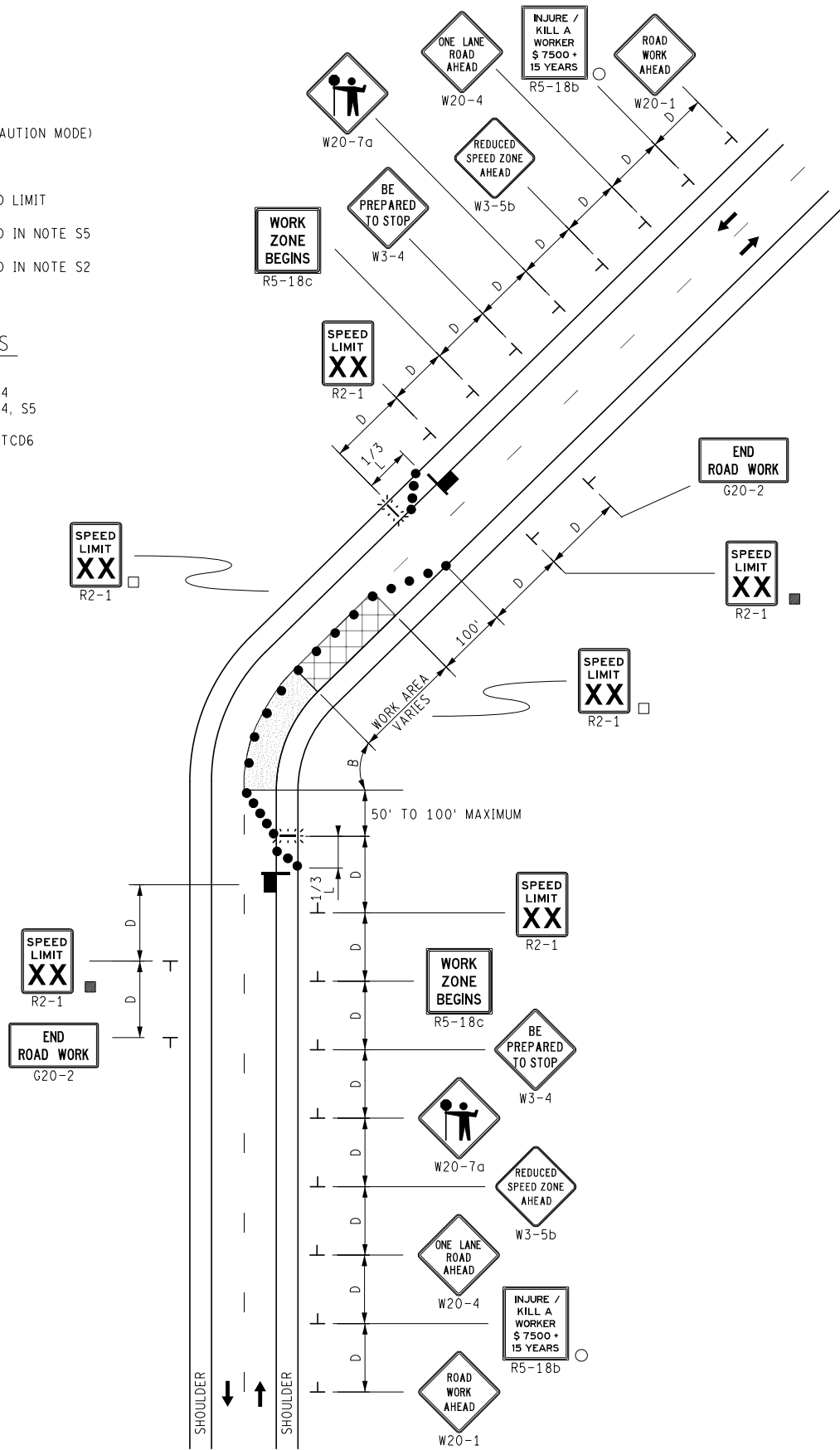
KEY

- TRAFFIC REGULATOR
- CHANNELIZING DEVICES
- ⚡ LIGHTED ARROW PANEL (CAUTION MODE)
- ← TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- PLACE SIGN AS INDICATED IN NOTE S5
- PLACE SIGN AS INDICATED IN NOTE S2

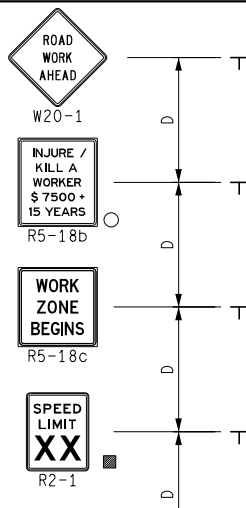
STANDARD NOTES

(SEE GEN-NOTES)

GENERAL: G1, G2, G3, G4
 SIGNING: S1, S2, S3, S4, S5
 TRAF REG: TR1, TR2
 DEVICES: TCD1, TCD2, TCD6

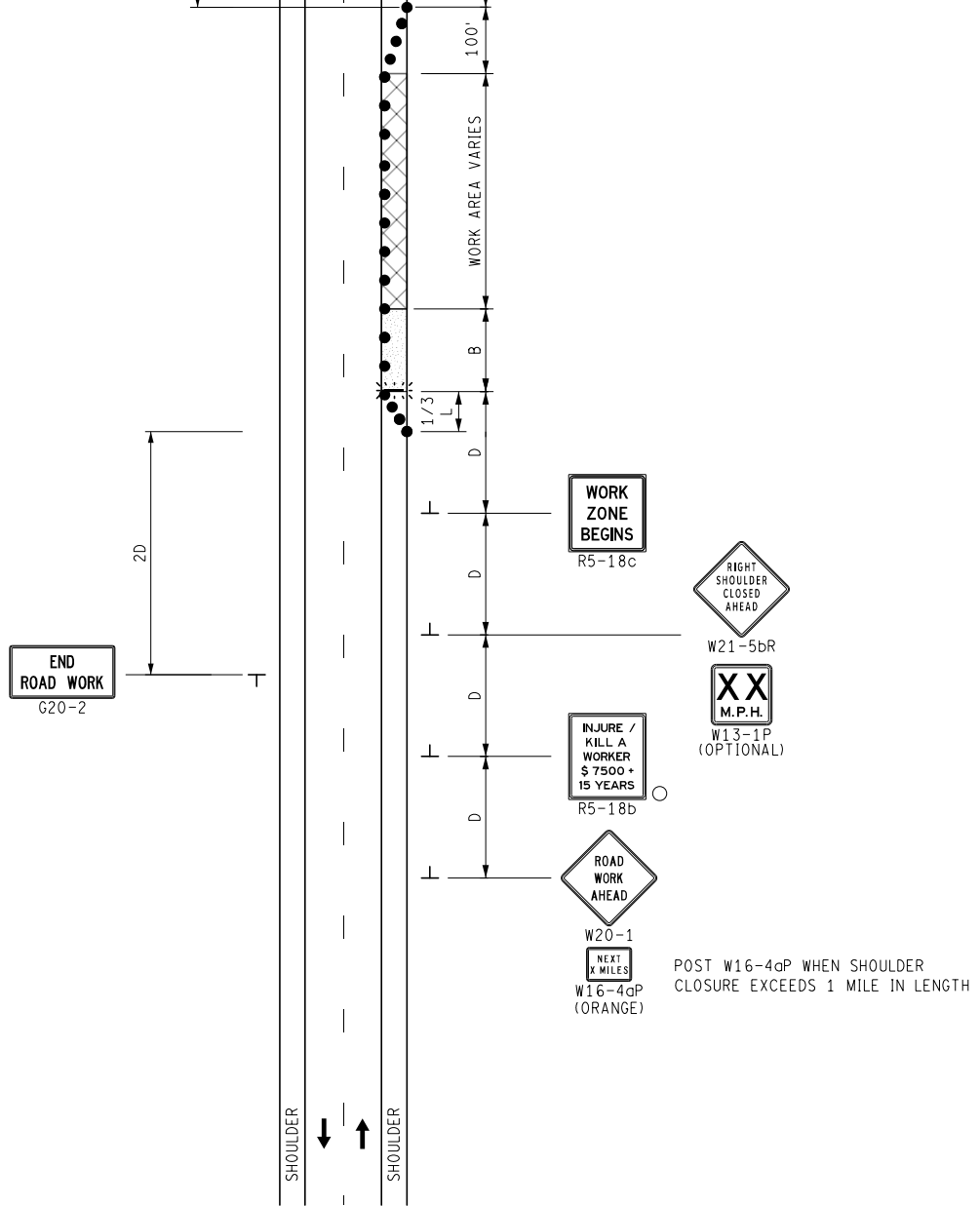


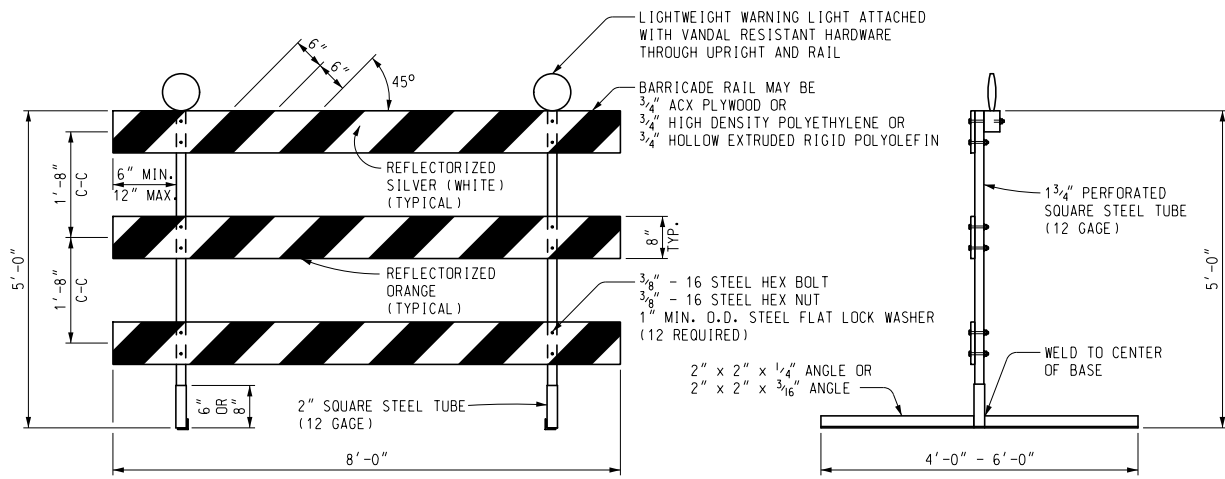
	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	LANE CLOSURE UTILIZING TRAFFIC REGULATORS ON A 2-LANE UNDIVIDED ROADWAY	DATE: MAY 2021
		NO: 110-TR-NFW-2L		SHEET: 1 OF 1



- KEY**
- CHANNELIZING DEVICES
 - ⚡ LIGHTED ARROW PANEL (CAUTION MODE)
 - ← TRAFFIC FLOW
 - REFLECTS EXISTING SPEED LIMIT
 - PLACE SIGN AS INDICATED IN NOTE S2

STANDARD NOTES
 (SEE 102-GEN-NOTES)
 GENERAL: G1, G2, G3, G4
 SIGNING: S1, S2, S3, S5
 DEVICES: TCD1, TCD2, TCD6, TCD7

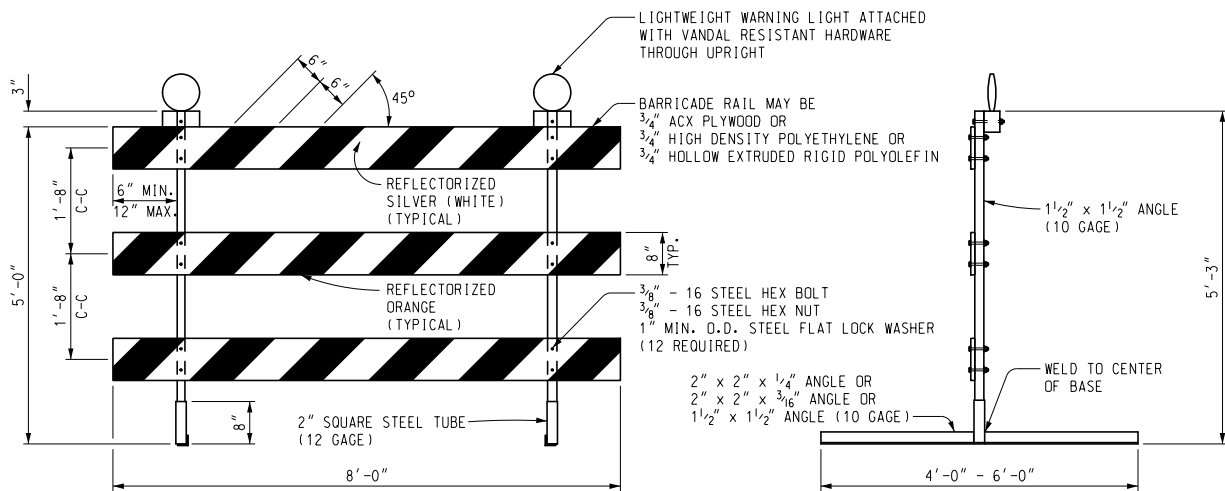




FRONT ELEVATION

SIDE VIEW

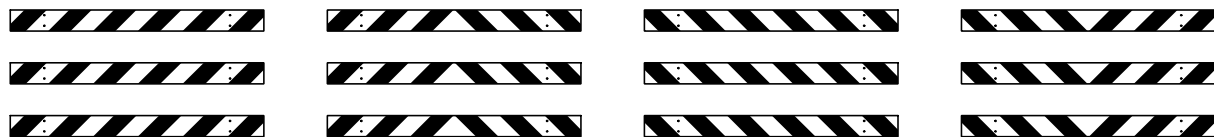
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

RIGHT DIRECTIONAL

CLOSURES

**BARRICADE RAIL SHEETING OPTIONS
TYPE III BARRICADES**

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

MDOT
Michigan Department of Transportation

PREPARED BY
OPERATIONS
FIELD SERVICES

DRAWN BY: ECH

CHECKED BY: MWB

DEPARTMENT DIRECTOR
Paul C. Ajegba

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
(SPECIAL DETAIL)
DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF FIELD SERVICES SPECIAL DETAIL FOR

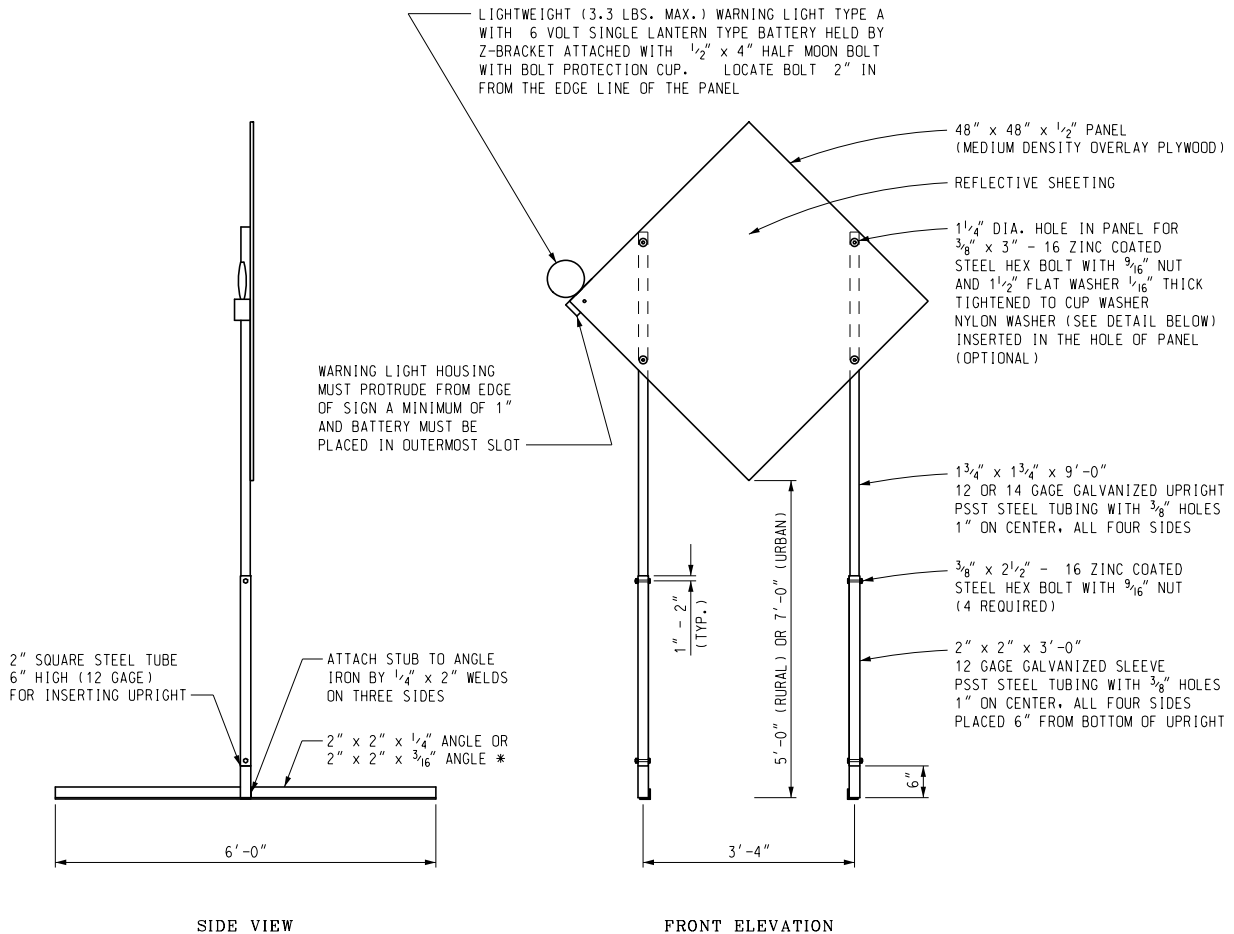
Temporary
Traffic Control Devices

F.H.W.A. APPROVAL _____

6/16/22
PLAN DATE

WZD-125-E

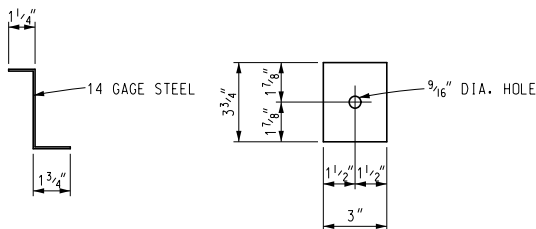
SHEET
1 OF 3



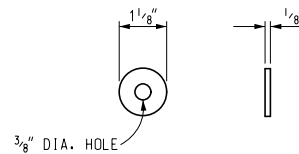
TEMPORARY SIGN SUPPORT

(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END. UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Z-BRACKET DETAIL



OPTIONAL NYLON WASHER

Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF FIELD SERVICES SPECIAL DETAIL

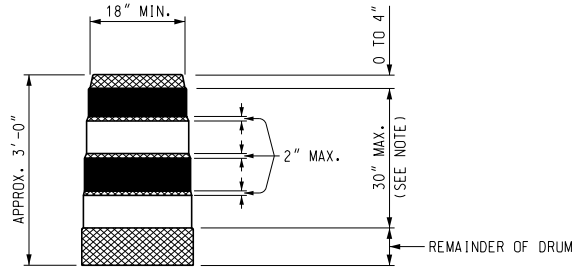
SPECIAL DETAIL
F.H.W.A. APPROVAL

6/16/22
PLAN DATE

WZD-125-E

SHEET
2 OF 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



- REFLECTORIZED ORANGE
- REFLECTORIZED WHITE
- NON REFLECTORIZED ORANGE

NOTE:
 DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NON REFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

PLASTIC DRUM

NOTES:

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARRICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMPORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF FIELD SERVICES SPECIAL DETAIL

(SPECIAL DETAIL)
 F.H.W.A. APPROVAL

6/16/22
 PLAN DATE

WZD-125-E

SHEET
 3 OF 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

INGHAM COUNTY ROAD DEPARTMENT

SPECIAL PROVISION
FOR
BASE/SUBGRADE STABILIZATION, CHEMICAL

SD:DJT

1 of 6

12-27-2023

a. Description. This work consists of constructing a compacted uniform layer of chemically stabilized subgrade or road base material to the depth specified on the plans or as directed, to be performed by a (sub)contractor experienced in performing chemical subgrade stabilization on a variety of soil types and moisture conditions. Perform this work only where directed by the Engineer, at locations where unstable base or poor subgrade conditions have been identified and delineated by the Engineer. Perform this work according to this specification, the plans, the 2020 Michigan Department of Transportation Standard Specifications for Construction, and as directed by the Engineer. Subgrade stabilization requires temporary removal of existing aggregate base material, and replacement of temporarily stockpiled aggregate base material to the depth shown on the plans.

b. Materials.

1. Lime. Furnish quicklime according to the requirements of ASTM C 977 specifications with the modification that all quicklime shall pass the 3/8 inch size sieve. For each production lot of quicklime delivered to the project, furnish a "Test Data Certification" according to the MDOT Materials Quality Assurance Procedures Manual.

2. Cement. Furnish Cement according to section 901.

3. Cement Kiln Dust (CKD) and Lime Kiln Dust (LKD). Furnish CKD and LKD according to the requirements of ASTM D 5050. Furnish a "Test Data Certification" according to the MDOT Materials Quality Assurance Procedures Manual. Additionally, test all CKD materials prior to using on the project, according to the appropriate sections of ASTM C 25 and AASHTO T 105 to determine the total alkalis (K_2O+Na_2O) and total sulfates (SO_3). Furnish CKD only after testing confirms that all CKD materials are within the following limits:

PROPERTY	LIMIT, % maximum
Total alkalis (K_2O+Na_2O)	10
Total sulfates (SO_3)	15

4. Water. Water for mixing and curing shall meet the requirements of subsection 911.02.

5. Soils (In-Situ). Soils for the base/subgrade stabilization as used in this specification are the existing aggregate or pulverized HMA base and in-situ subgrade soil material. Obtain Engineer approval prior to placing a chemical stabilizing agent compatible with in-situ soils.

c. Equipment, Machines and Tools. Use suitable equipment, machines and tools as approved by the Engineer to perform the specified work. A sheepsfoot (padfoot) roller will be required for initial compaction of stabilized depths greater than six (6) inches. Pneumatic tire rollers may be used for initial rolling of stabilized depths less than six inches and intermediate rolling patterns. Use a steel drum roller for finish rolling. Use alternate compacting equipment as directed where the specified mixing or compaction cannot be attained. Provide protective equipment, apparel and barriers to protect the eyes, respiratory system and the skin of workers who are exposed to chemical stabilizing agent dust.

d. Construction. Where an Engineer provided mix design including material(s), application rate(s), and optimum moisture content(s) are shown on the plans, perform initial stabilization using the specified design. Adjust the materials and rates as directed by the Engineer.

Where a mix design is not specified on the plans, perform a level of preliminary testing commensurate with the area delineated for stabilization, and the quantity of chemical stabilization that is anticipated based upon a visual inspection of the unstable soils. Based upon experience and results of testing performed, select an appropriate chemical stabilization agent, and propose a trial application rate for the soil types and conditions delineated, as approved by the Engineer. Adjust the trial application rate as directed, based upon the ability to achieve the specified density.

Perform chemical base stabilization directly upon existing aggregate or pulverized HMA base material up to the depth indicated on the plans or as directed. Do not mix underlying subgrade soils with the stabilized base materials. On Asphalt Base Stabilization projects, perform this work prior to the asphalt stabilizing operation.

Perform chemical subgrade stabilization directly on in-situ subgrade materials, cut and graded to the lines and grades shown on the plans, to a depth of 12 to 18 inches, as directed.

On HMA Base Crushing and Shaping or Full Depth Reclamation (FDR) projects, remove and temporarily stockpile existing aggregate base or pulverized HMA base material to expose existing subgrade prior to chemical stabilization. Following completion of chemical subgrade stabilization, place and re-compact stockpiled aggregate or pulverized HMA base course to the depth shown on the plans.

1. Work Plan. Prior to commencing the work, evaluate the existing subgrade soils and moisture condition. This evaluation may include, at the discretion of the Contractor, soil and moisture field and laboratory testing to characterize the soil conditions sufficiently to determine the most suitable chemical stabilizing agent, and to determine the appropriate application rate to effectively stabilize the in-situ soils. Perform moisture and density testing during the work to assure that the required density is attained.

Submit a written work plan for the approval by the Engineer, including, but not limited to a description of the equipment and materials to be used, methods of determining and adjusting chemical agent application rate, moisture content, and depth, and personnel responsible for monitoring production.

2. Stabilization Adjustment. If the Engineer determines, during construction, that certain locations have soils that are unsuitable for the selected stabilization process, the Engineer may request a modification of the accepted stabilization procedure to change the selected stabilization chemical, application rate, or compaction method, for the purpose of improving either the performance or cost effectiveness of the stabilization method.

3. General. Perform stabilization work when the air temperature is 40 degrees Fahrenheit or above and rising. Do not apply chemical stabilization agent to frosted subgrade under any circumstances. Perform all work between April 1st and October 31st. Provide adequate positive drainage during the entire construction period to prevent water from collecting or standing on the area to be modified or on pulverized, mixed, or partially mixed material. Finish completed chemically stabilized subgrade according to the lines, grades, cross sections, and dimensions indicated in the plans or as otherwise directed.

4. Chemical Agent Application. Apply and spread the selected chemical stabilizing agent uniformly on a scarified subgrade, on a dry weight basis. Submit verification testing to show that the desired application rate is maintained, and provide the results to the Engineer at the end of each workday. Do not apply chemicals when the wind conditions are such that blowing material would become objectionable to the adjacent property owners or create potential hazards to traffic. Limit the spreading of chemical material to an area that can be incorporated and mixed, within the same working day. Minimize dusting and impact to the traffic by periodic water sprinkling.

5. Mixing. Immediately after the chemical stabilizing agent has been spread, thoroughly mix the stabilizing chemical into the base/subgrade to the specified depth using an approved rotary mixer. Uniformly mix the approved proportion of the stabilizing materials through the entire stabilized depth, and compact subgrade to a minimum 95% of maximum density. The Engineer will verify that uniformly stabilized and compacted subgrade is achieved by digging test holes at representative intervals.

Determine the in-situ and optimum moisture content of the stabilized soil mixture to determine the quantity of water required to achieve the target moisture content. Add water as necessary to raise the moisture content of the soil mixture to $\pm 3\%$ above the optimum moisture content. Continue mixing until the chemicals have been homogeneously incorporated into the required depth of subgrade to produce a friable condition, with soil clumps broken down to pass a 2-inch screen and at least 60% passing the No. 4 sieve, exclusive of rock particles. Complete initial chemical mixing within 4 hours of spreading. A waiting period of 1 to 24 hours or longer after initial mixing may be necessary to permit hydration of all the applied chemicals.

After the waiting period, remix the soil, adding water as needed to raise the moisture content to 2% to 3% above optimum. Accomplish final mixing within 5 days of initial mixing. Do not start compaction if there are un-hydrated chemical pebbles present before compaction operations start.

Gradation and moisture testing for quality assurance will be performed at the discretion of the Engineer.

6. Compaction. Begin compaction immediately after final mixing is approved by the Engineer. Add water or aerate the subgrade to bring the soil-chemical mixture to optimum moisture content, plus or minus 2%. Continue final compaction until the stabilized subgrade has a density of not less than 95% of maximum density established stabilized soil mixture. Begin rolling at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half width of the roller, or as otherwise determined by the Engineer based upon construction staging. Do not cause displacement of the mixture to occur due to rolling. Use mechanical tampers to compact areas inaccessible to rollers. Shape and finish these areas by hand methods. Final compaction shall be done with steel wheel smooth drum rollers. Finish the completed stabilized subgrade soil layer to within $\frac{1}{2}$ inch of the specified thickness

The Engineer will test the compacted stabilized subgrade for density and moisture for acceptance according to the Quality Assurance Procedures Manual.

7. Curing. After passing density tests are attained on the compacted, stabilized subgrade, protect against rapid drying for 7 days by periodic sprinkling, or other approved method, unless covered by a subsequent pavement section layer (subbase or aggregate base).

8. Re-stabilization. If an approved stabilized area shows failure, tenderness or damage after curing, the Engineer may require re-stabilization to be performed, where appropriate. Other than chemical stabilization material that will be paid for at the contract unit price, no additional compensation will be made for re-stabilization.

9. Verification. The Engineer will verify the depth of stabilized subgrade. When the measured thickness of the stabilized subgrade soil is more than ½ inch deficient, such areas shall be corrected by scarifying, adding additional material, remixing and re-compacting as directed. Where the measured thickness of the stabilized subgrade layer is more than ½ inch thicker than required, it shall be considered conforming to the specified thickness requirement, provided the elevation of finished subgrade is within the tolerance as per the Standard Specifications for Construction. The thickness of stabilized subgrade layer will be measured for each 4000 square yards, at least one per day, or as otherwise determined by the Engineer.

e. Construction Traffic. Protect the completed surface from marring or distorting until the subsequent pavement section is placed. Place the first subsequent pavement section layer (except HMA) as soon as practicable, on or following the day after compaction of the stabilized subgrade. Operating construction traffic directly on the stabilized subgrade will be at the Contractor's own risk. Correct and re-stabilize any damaged areas as determined by the Engineer at no cost to the Department.

f. Measurement and Payment. The completed work as described will be paid for at the contract unit price for the following contract items (pay items):

<u>Pay Item</u>	<u>Pay Unit</u>
Aggregate Base, Existing, Stockpile and Replace	Square Yard
(___) Stabilization, Chemical	Square Yard
Stabilization Chemical, Manufactured	Ton
Stabilization Chemical, By-Product	Ton

On HMA Base Crushing and Shaping or Full Depth Reclamation (FDR) projects, removal and temporary stockpiling of existing aggregate or pulverized HMA base material, and replacement and re-compacting of temporarily stockpiled base material following subgrade stabilization will be paid for as **Aggregate Base, Existing, Stockpile and Replace**.

Base Stabilization, Chemical and **Subgrade Stabilization, Chemical**, will be measured and paid for in square yards. Payment includes all equipment, tools and labor to perform the work as specified herein, with no additional compensation for re-stabilization of areas to meet specified density or repair improper curing, or failures, tenderness or damage sustained after curing. Compensation includes, but is not limited to all necessary sampling and testing, scarifying, pulverizing, placing and spreading stabilization chemical, mixing, grading, shaping, compacting, water, and any curing and protection measures implemented.

Chemical Stabilization agent will be measured and paid for by the ton as **Stabilization Chemical, Manufactured** and/or **Stabilization Chemical, By-Product**. Payment will be based upon certified delivery tickets furnished to the Engineer at the point of delivery. **Stabilization Chemical, Manufactured** consists of lime or cement, as described in subsections b.1 and b.2 above. **Stabilization Chemical, By-Product** consists of Cement Kiln Dust (CKD) or Lime Kiln Dust (LKD), as described in subsections b.3 and b.4 above.

For the bidding purposes, the total plan quantity of chemical stabilization agents is based upon an estimate of 5% on a dry weight basis of the area of soil to be treated. When more than one chemical agent pay item is bid (to have contract items available to treat differing soil conditions), the anticipated quantity may be equally proportioned among the bid items. The actual quantity of chemical stabilizing agent(s) necessary for this work will be adjusted at the sole discretion of the Engineer to account for unknown and/or varying soil conditions.

Payment will be made only for the actual quantity of each stabilizing agent used (The quantity will be adjusted to zero if a stabilizing agent is not used or if this work is not performed).

INGHAM COUNTY ROAD DEPARTMENT

SPECIAL PROVISION
FOR
STRAW WATTLE

ICRD:DJT

1 of 2

01-10-2024

a. Description. Furnish and install Straw Wattles as Soil Erosion/Sedimentation Control measure(s) according to the plans and as directed. Perform this work according to Division 2 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and applicable supplemental specifications and special provisions, and as specified herein.

b. Materials. Furnish Straw Wattles manufactured from 100% weed seed free agricultural straw, completely encased in a tight, tubular, biodegradable netting, cinched or knotted on each end in lengths suitable for the intended use to minimize splicing. Furnish biodegradable Wattle netting with 18 month duration and with ½-inch nominal aperture size. Furnish Wattles of the diameter shown on the plans, with corresponding minimum density specified below:

Diameter (inches)	9	12	20
Minimum Density (lbs/ft ³)	3.2	3.3	2.4

Furnish 1 inch by 1 inch nominal rectangular wood stakes, minimum 30 inches long. Furnish the Manufacturer's published installation guidelines at least 3 business days prior to installation. Furnish General Certification for material acceptance.

c. Construction Methods. Install Straw Wattles according to the Manufacturer's installation guidelines and as specified herein. Place the Wattle parallel to contours along slopes (toe and/or mid-slope, per plans) and across ditch bottoms. Countersink the Wattle in a 2 inch trench, with the ends turned up 1 to 2 feet up-slope to prevent water flow around the ends. In ditches, grade a low point to cause the weir elevation at the middle of ditch bottom. Secure the Wattle with wood stakes driven through the center of Wattle to 24 inch embedment, and 2 inch maximum protrusion above the wattle. Place stakes along the Wattle at 4 foot maximum spacing, not greater than 2 feet from Wattle ends. Transition between Wattle segments with a staked, 6 inch overlap, or butt joints secured with organic (e.g. coir) twine.

Maintain Straw Wattles in place, replacing broken or deteriorated Wattles as directed. Remove accumulated settlement as directed. Except as otherwise directed, remove Straw Wattles upon full vegetation establishment. Restore un-vegetated areas as directed upon removal.

d. Measurement and Payment. The completed work for ***Erosion Control, Straw Wattle, _ inch dia*** will be measured in place and paid for by the foot at the contract unit price, exclusive of splice overlaps.

<u>Contract Item (Pay Item)</u>	<u>Pay Unit</u>
Erosion Control, Straw Wattle, _ inch dia	Foot

Payment for ***Erosion Control, Straw Wattle, _ inch dia*** includes all equipment, labor, and materials to furnish and install wattles as specified, and except as otherwise directed, to remove wattles upon vegetation establishment. Except where damaged by the Contractor's activities, broken and/or deteriorated Straw Wattles replaced as directed will be paid for separately.

Sediment removal will be paid for separately as ***Erosion Control, Maintenance, Sediment, Removal; Ditch Cleanout***, or as otherwise specified on the plans. Restoration of un-vegetated areas upon removal of Straw Wattles will be paid for separately as the specified type of ***Slope Restoration***.

INGHAM COUNTY ROAD DEPARTMENT

SPECIAL PROVISION
FOR
RECYCLED AGGREGATES

ICRD:DJT

1 of 6

12-27-2022

a. Description. This work consists of furnishing and placing aggregate bases and surfaces with recycled aggregate materials generated on this project or approved off-site sources. Perform this work according to the Michigan Department of Transportation 2020 Standard Specifications for Construction, applicable special provisions, and as specified herein.

b. Materials. Generate recycled aggregates suitable for re-use by cold milling or pulverizing existing hot mix asphalt (HMA) surfaces, trenching, excavation, and/or crushing and processing removed concrete pavement. Recycled aggregates are intended for use on the project as Recycled Aggregate Base and for Class III Shoulder and Approach pay items. Produce or furnish material according to Table 1 requirements below, and subject to Engineer approval for the specific contract pay item for which it is to be used. The Engineer may test materials to determine suitability for use. Revise recycling equipment and/or means and methods as necessary to produce recycled materials meeting the requirements herein, with the highest quality and consistency possible. Remediate recycled aggregates that do not meet project requirements due to deficiencies in the Contractor's production equipment, means, and methods.

The following recycled aggregates may be produced and/or utilized on this project:

1. Recycled Asphalt Pavement (RAP). Aggregate consisting of 100% recycled HMA pavement, produced from cold milling HMA surfaces.

2. Pulverized (Crushed) Asphalt Pavement. A blend of pulverized/crushed HMA pavement and a portion of existing aggregate base. When pulverizing HMA pavements for Asphalt Stabilized Base, blend $\pm 80\%$ by volume pulverized HMA with $\pm 20\%$ existing aggregate base.

3. Salvaged Aggregate Base. Uncontaminated aggregate base material, free of organic matter and subgrade soils, sourced from trenching or careful removal and stockpile of existing aggregate bases and surfaces.

	Sieve Size and Percent Passing			
	3 in. (76 mm)	2½ in. (63.5 mm)	1½ in. (38 mm)	#200 (75 µm)
Gradation	100	98 -100	95 -100	≤ 10

Re-crush or remove particles exceeding the maximum size. Properly dispose of materials produced or removed from the project deemed unsuitable and designated by the Engineer to remain the property of the Contractor.

When insufficient recycled aggregates are generated on the project, the Engineer may furnish materials at the project site or other specified location. When required, furnish transportation as described herein to import Department furnished recycled aggregates from other Department project(s) or stockpile(s) according to the plans and as directed.

When specified, furnish approved recycled or processed aggregates from off-site sources. Obtain Engineer approval for prepared stockpiles of imported recycled aggregates prior to delivery to the project. If unprocessed recycled aggregates are not available, furnish processed aggregates meeting 23A Gradation for Class III work items. For mainline aggregate base work items, furnish processed aggregates comparable to 21AA Gradation, as determined by the Engineer.

When the pay items *Cold Milling HMA Surface, Special* and/or *HMA Surface, Rem, Special* are specified, surplus suitable recycled aggregates produced on the project shall remain the property of the Department. This material will be removed from the project by the Contractor, Department, or a third party as directed. Deliver surplus recycled aggregates to the off-site location(s) according to the plans and/or as directed. The Engineer will have the sole discretion to determine the quantity of material delivered by the Contractor.

When the standard pay items *Cold Milling HMA Surface* and/or *HMA Surface, Rem* are specified, surplus recycled aggregates generated on the project will remain the property of the Contractor.

c. Construction Methods.

1. Removals. Trench existing aggregate shoulders where shown on the plans. Cold mill or pulverize/crush existing HMA surfaces to the limits and depth shown on the plans and typical sections.

A. Cold Milling Requirements. Cold mill HMA pavements according to Section 501 except as described herein. Where milling is intended to expose original concrete pavement remaining in place, then additional hand or machine work may be necessary to remove any remaining veneer of HMA pavement left in place behind the milling machine.

Additional milled surface texture (smoothness) requirements will apply when paving fabric is to be placed directly on the milled surface. Limit operation speed (fpm) to drum (rpm) ratio to obtain the desired surface texture described herein, not to exceed 0.5 at startup. Greater speeds will be permitted provided consistent satisfactory surface texture is attained. Desired surface texture requirements include:

- i. Transverse Striations; 18 per ft minimum average
- ii. Longitudinal Striations; 3 per ft minimum average
- iii. Striation Length, 1.5 – 2 inches
- iv. Flat, coplanar surfaces between striations in both directions
- v. Other striation pattern as approved

B. Full Depth HMA Surface Removal. Remove existing HMA surface full depth by cold milling or crushing/pulverizing the existing HMA to produce suitable recycled aggregate material for use on this project or for delivery to the specified off-site location(s).

Saw cut or cold mill existing pavement for butt joints at intersections and work limits shown on the plans or as otherwise directed.

Remove and/or trim, shape, and compact recycled aggregate materials in place per typical sections to the lines and grades shown on the plans. Where existing HMA surfaces and/or underlying base materials are removed completely or in part, trim, shape, and compact remaining surfaces within the proposed roadway and approach footprint per typical cross sections according to section 205.

2. Stockpile and Disposal. Temporarily stockpile recycled aggregates as necessary to be used for other contract pay items. Load surplus material onto Department, third party, or Contractor trucks as directed for delivery to the location(s) shown on the plans. Dispose of unsuitable materials as determined by the Engineer.

3. HMA Base Crushing and Shaping. Crush existing HMA pavements to the limits and depth shown on the plans. Add recycled aggregates as necessary to meet the lines and grades shown on the plans. Shape and compact the final recycled aggregate surface according to section 305.

4. Aggregate Bases. Place and compact approved recycled aggregate material used for aggregate base(s) according to section 302. When specified, install geosynthetic materials according to the plans and typical sections.

5. Approaches and Shoulders. Place, grade, and compact approved recycled aggregate material for shoulder and approaches according to section 307. Where existing shoulders are to be salvaged or conditioned, first remove and dispose of organic material by grading or trimming. Unless otherwise shown on the plans or directed, do not plow or grade shoulder material downslope. Condition shoulders by grading, shaping, and compacting surplus crushed, trenched, and/or in-situ materials to finished grades.

d. Measurement and Payment.

<u>Pay Item</u>	<u>Pay Unit</u>
Aggregate Base, Conditioning, Special	Square Yard
Aggregate Base, RAP	Ton
Aggregate Base, RAP, __ inch	Square Yard
Aggregate Base, RAP, Furnish Only	Ton
Aggregate Base, Recycled	Ton
Aggregate Base, Recycled, __ inch	Square Yard
Aggregate Base, Recycled, Furnish Only	Ton
Aggregate Surface Cse, Recycled, __ inch	Square Yard
HMA Base Crushing and Shaping, Special	Square Yard
Cold Milling __ Surface, Special	Square Yard
HMA Surface, Rem, Special	Square Yard
Recycled Aggregate Delivery	Hour

Payment for **Aggregate Base, Conditioning, Special** includes grading, shaping, and compacting existing aggregate base remaining in place, as well as placing and incorporating supplemental recycled aggregate material produced on or delivered to the project. Payment for this item also includes the addition of water to achieve the optimum moisture as necessary to meet the specified density requirements.

Furnishing and installing geosynthetic materials, when shown on the plans and typical sections, will be paid for separately. No additional compensation will be made for work associated to embed the geosynthetic within the completed aggregate base layer(s) as shown on typical section(s).

Aggregate Base, RAP, __ inch and **Aggregate Base, Recycled, __ inch**, and **Aggregate Surface Cse, Recycled, __ inch** will be paid for by the square yard, measured in place.

When specified, **Aggregate Base, RAP** and **Aggregate Base, Recycled** furnished from off-site sources will be paid for by the Ton. Payment for these items includes placing, grading, shaping, and compacting recycled aggregates according to the plans and standard specifications, including the addition of water to achieve the optimum moisture as necessary to meet the specified density requirements. Where applicable, payment for these items also includes any extra work associated with loading and transporting recycled material within the project limits. No additional compensation will be made for remediating recycled aggregates that do not meet project requirements due to deficiencies in the Contractor's production equipment, means, and methods.

When specified to supplement on-site recycled aggregates, **Aggregate Base, RAP, Furnish Only** and **Aggregate Base, Recycled, Furnish Only**, measured and paid for by the Ton, will include furnishing and delivering Contractor supplied recycled

aggregates from off-site sources. Payment for placing, grading, shaping, and compacting this material will be paid for separately by the Square Yard as described above or included with payment for other grading items paid for by the square yard.

The work for **HMA Base Crushing and Shaping, Special** as described herein will be measured and paid for by the square yard, according to Section 305.04, except payment for this work includes placing, grading, shaping, and compacting additional aggregate material necessary to meet the lines and grades specified on the plans. Additional aggregate furnished by the Contractor will not be paid for separately unless otherwise specified on the plans.

The work for **Cold Milling __ Surface, Special** as described herein will be measured and paid for by the square yard, according to Section 501.04.D, except the work for hauling and disposal will not be included, but will be paid for separately. Extra work required to meet the milled surface texture requirements specified herein are included with payment for this item, and will not be paid for separately. The item **Cold Milling Conc Surface, Special** will be used when milling HMA over existing concrete pavement to remain in place. The item **Cold Milling HMA Surface, Special** will be used for all other cold milling work.

Where existing recycled aggregates are removed in part or entirely after crushing or full depth milling, the items **HMA Surface, Rem, Special** and **Cold Milling HMA Surface, Special** include trimming, shaping, and compacting the residual grade and disposal of unsuitable material. Payment for these items also includes temporary stockpiling recycled aggregates and the loading surplus aggregates on trucks, regardless of whether the Contractor hauls the materials, or the Engineer furnishes trucking from the Department or a third party.

Recycled aggregate materials furnished by the Department or a third party and transported to the project by the Contractor, and surplus materials generated by the project delivered by the Contractor to the Department at off-site location(s) specified on the plans, will be measured to the nearest ¼ hour and paid for as **Recycled Aggregate Delivery**. Furnish time sheet(s) to the Engineer for each truck for each day worked, with check-in and check-out times recorded and initialed by the Engineer's on-site representative (inspector).

The Engineer will have sole discretion whether to remove some, all, or no surplus aggregate(s) generated on this project utilizing the **Recycled Aggregate Delivery** contract item, or otherwise furnishing trucks by a third party. The Engineer will provide guidance to the Contractor at the Preconstruction Meeting regarding the anticipated use of this item. The Contract quantities will be adjusted accordingly. If the Engineer furnishes transportation for all surplus materials, no compensation for this contract item will be made. Extreme adjustments in the quantity of this item will not be grounds for extra compensation or extension of time.

Recycled aggregate approaches and shoulders will be paid for separately according to Section 307. Shoulder trenching will be paid for with other contract pay items according to Section 205 or Section 307 as specified on the plans and/or pertinent contract special provisions.

CHARTER TOWNSHIP OF MERIDIAN

SPECIAL PROVISION
FOR
HMA APPLICATION ESTIMATE

SD:DJT

1 of 2

12-27-2023
2024 Local Road Program

a. Description. Perform this work according to Division 5 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and applicable supplemental specifications and special provisions, and as specified herein.

b. Materials. Furnish and place HMA Bond Coat material per Section 501.02, at an application rate of 0.05 to 0.15 gallons per square yard. Except as otherwise shown on the plans, use asphalt cement (AC) binder meeting requirements for Performance Grade PG 58-28 for all mixtures. Furnish AC binder not exceeding 17% RAP Binder by weight of total binder (MDOT Tier 1) for all mainline mixtures. Furnish aggregates used for top course mixtures with 260 minimum aggregate wear index (AWI).

1. Hand Patching (HP). Furnish and place HMA, 13A or approved alternate HMA mixture for Hand Patching placed in equal lifts as directed for maintenance of traffic and/or driveway approaches. Place at maximum application rate per Table 501-4. Other mixes may be approved depending upon location and application rate.

2. HMA Approach.

i. **Public Roads.** Furnish and place HMA, 13A mixture for HMA Approach base course, at a yield of 275 lbs per square yard. Other mixes may be approved depending upon location and application rate. Place at maximum application rate per Table 501-4. Leveling course and top course placed parallel to centerline alignment on approach base course will be measured and paid for as mainline HMA mixture(s).

ii. **Residential Driveways.** Furnish and place HMA, 13A, HMA 36A, or approved alternate HMA mixture for HMA Approach as directed, at a total yield of up to 330 lbs per square yard, placed in equal lifts. Place at maximum application rate per Table 501-4. Other mixes may be approved depending upon location and application rate.

iii. **Commercial Driveways.** Furnish and place HMA, 13A, HMA 36A, or approved alternate HMA mixture for HMA Approach as directed, at a total yield of up to 440 lbs per square yard, placed in two lifts at a maximum application rate per Table 501-4. Other mixes may be approved depending upon location and application rate.

3. Mainline HMA Mixtures.

i. HMA Leveling Course. Where shown on the plans, furnish and place HMA, 13A mixture for leveling course at a yield of 275 lbs per square yard, placed in a single lift.

ii. HMA Top Course. Regress air voids to 3% for all top course mixtures.

A. Two Lift HMA Pavements on Aggregate Base. Where shown on the plans, furnish and place HMA, 36A mixture for top course on the leveling course of two lift pavements at a yield of 165 lbs per square yard.

B. Single Lift HMA Pavements on Stabilized Base. Where shown on the plans, furnish and place HMA, 13A mixture for top course on chemical stabilized bases at a yield of 250 lbs per square yard.

c. Measurement and Payment. HMA mixtures will be measured and paid for according to standard specifications and pertinent project specific special provisions at the contract unit price(s).

CHARTER TOWNSHIP OF MERIDIAN

SPECIAL PROVISION
FOR
**DEVULCANIZED RECYCLED TIRE RUBBER
ASPHALT CEMENT BINDER ADDITIVE**

SD:DT

1 of 2

01-10-2024

a. Description. This work consists of furnishing all materials, equipment, tools, labor, and incidentals necessary to furnish and incorporate devulcanized recycled tire rubber additive into asphalt cement (AC) binder specified for certain hot mix asphalt (HMA) mixtures to produce mixtures with enhanced Performance Grade AC binder and superior durability compared to mixtures with neat AC binders.

Perform this work according to Division 5 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and applicable supplemental specifications and special provisions, and as specified herein.

b. Materials. Furnish devulcanized recycled tire rubber manufactured by an approved supplier from Table 1. Submit alternate devulcanized rubber suppliers for consideration by the Engineer at least 90 days prior to anticipated use. Use Performance Grade PG 58 -28 as the base binder for the devulcanized rubber modified (DRM) AC binder to meet the specifications for PG 70 -28P and the additional requirements listed in Table 2.

Manufacture the DRM asphalt cement binder with some or all the following components:

- i PG 58 -28 base binder (neat).
- ii Devulcanized Rubber - 15% maximum, by weight of the base binder.
- iii Styrene Butadiene Styrene (SBS) Content - 2% maximum by weight of the base binder.
- iv Styrene-Butadiene Rubber (SBR) - 2% maximum by weight of the base binder.
- v Cross-Linker - 0.6% maximum by weight of whole binder mix.
- vi Additional components as approved by the Engineer.

Unless prior approval from the Engineer for an alternate supplier, furnish DRM asphalt binder as described herein, produced by:

Table 1. Devulcanized Rubber Suppliers

Contact	Company	Phone	Email
Hari Chandra	Full Circle Technologies	216-255-6621	haricc@gmail.com
David Parker	New Rubber Technologies	415-297-1362	dparker@newrubbtech.com

A nominal amount of crumb rubber (6% maximum by weight of the base binder) processed from recycled tire rubber (RTR) may be added to the asphalt cement binder as approved by the

Engineer, provided that laboratory testing shows the addition of the crumb rubber improves the Elastic Recovery properties of the DRM asphalt cement binder.

Table 2. Properties of DRM Asphalt Cement Binder

Property	Value
Performance Grade (AASHTO M320)	PG 70-28P
Recovery ³⁻¹ (AASHTO M 332-14), min (%)	40
J _{nr,3.2} ³⁻¹ (AASHTO M 332-14), Max (kPa ⁻¹)	0.5
J _{nr,diff} ³⁻¹ (AASHTO M 332-14), Max (%)	75

³⁻¹ MSCR test temperature @ 58°C.

e. Construction Methods. Use a 3rd party company recommended by the devulcanized rubber supplier to blend the DRM asphalt cement binder. Blend the additive components with the base AC binder using portable asphalt blending equipment manufactured by D & H Equipment LTD (Blanco, TX; 830-833-5366) or other approved manufacturer specializing in liquid asphalt blending equipment. Use high shear capable blending equipment suitable for fully blending pelletized polymers into a homogeneous mixture.

Connect the delivery tanker truck(s) to the HMA mixture production facility batch tower for mixing purposes. Do not offload the DRM modified binder into storage tanks containing residual (un-modified) binder. Do not reheat DRM binder more than once before using in the DRM modified HMA mixture.

Limit HMA plant production mixing temperatures to 300°F maximum.

f. Measurement and Payment. The work for **HMA Additive, RTR** will be measured and paid for at the contract unit price per ton of HMA mixture placed with additive incorporated into the mixture. **Payment for this item will be IN ADDITION TO the contract unit price for the specified HMA pay item.**

Contract Item (Pay Item)

Pay Unit

HMA Additive, RTR

Ton

Payment for **HMA Additive, RTR** includes full compensation for furnishing all material, labor, tools, equipment, QA/QC mixing, and incidentals, including furnishing the certified technician required for metering and feeding the treated recycled tire rubber additive necessary to treat the base HMA mixture as specified herein.

Payment will be made only for the actual quantity of **HMA Additive, RTR** used (the quantity will be adjusted to zero if **HMA Additive, RTR** is not used). **HMA mixtures will be paid for separately by the ton**, regardless of the use of the **HMA Additive, RTR** item.

CHARTER TOWNSHIP OF MERIDIAN

SPECIAL PROVISION
FOR
SLOPE RESTORATION

SD:DJT

1 of 6

12-18-2023

a. Description. This work consists of preparing disturbed areas and installing turf restoration and/or stabilization materials, including topsoil, fertilizer, seed, mulch, mulch anchoring, erosion control blanket, high velocity erosion control blanket, permanent turf reinforcement mat (TRM), geotextiles, and stone (Open Graded Aggregate) to those areas. Perform this work as shown on the plans, according to the Michigan Department of Transportation 2020 Standard Specifications for Construction and Standard Plan R-100 Series, except as modified herein or otherwise directed by the Engineer.

b. Materials. Furnish materials and follow application rates as specified in sections 816 and 917, except as modified herein.

1. Seed. Furnish the permanent seed mixture(s) specified on the plans, selected from the Approved Manufacturer's list. If the seed mixture is not specified on the plans, use THV seed mixture.

2. Fertilizer. Furnish Fertilizer, Chemical Nutrient, Class A.

3. Topsoil. Furnish processed or salvaged Topsoil Surface, free of roots, debris, and stones greater than 1 inch diameter.

4. Straw Mulch. Furnish Straw Mulch as approved by the Engineer. Furnish *Mulch Anchoring* from the Qualified Products List.

5. Erosion Control (Turf Mulch) Blankets.

A. Short-Term Temporary Blankets. Furnish short-term temporary erosion control *Mulch Blanket* with single-sided netting (Type II) and temporary erosion control *High Velocity Mulch Blanket* with double-sided netting (Type III) with excelsior or straw mulch and accelerated photodegradable netting from the Qualified Products List.

Spray-on Bonded Fiber Matrix (BFM) products may be substituted for short-term temporary rolled erosion control blankets, to be approved by the Engineer on an individual project basis.

B. Long-Term Temporary Blankets. Long-term temporary erosion control blankets are desirable in critical areas where moderate root reinforcement is beneficial or areas where vegetation establishment may be difficult or prolonged. Where specified, furnish excelsior or straw mulch blankets using single sided UV-stabilized netting (Type II-LT).

Furnish excelsior, straw, and/or coconut mulch blankets with double sided UV-stabilized netting (Type III-LT) as approved by the Engineer.

C. Environmentally Sensitive Blankets. Polypropylene (plastic) net blankets will not be permitted for use in environmentally sensitive areas. Where specified in or near threatened or endangered species habitat areas, furnish net-free or single-sided organic net erosion control blankets (Type II-ES), and high velocity double-sided organic net erosion control blankets (Type III-ES) from the lists below, or furnish an approved equal.

Single Net (Type II) Environmentally Sensitive Blankets:

- i. BioNet® S75BN™; Tensar/North American Green, Alpharetta, GA
- ii. Curlex® NetFree™; American Excelsior Company, Arlington TX
- iii. EXCEL SR-1™ All Natural; Western Excelsior Corp., Loveland, CO
- iv. Futerra® F4 Netless®; Profile Products, LLC, Buffalo Grove IL
- v. Premier Straw® Single FibreNet™; American Excelsior Co., Arlington TX

Double Net (Type III) Environmentally Sensitive Blankets:

- i. BioNet® S150BN™; Tensar/North American Green, Alpharetta, GA
- ii. EXCEL SS-2™ All Natural; Western Excelsior Corp., Loveland, CO
- iii. Premier Straw® Double FibreNet™; American Excelsior Co., Arlington TX

Spray-on Bonded Fiber Matrix (BFM) products may be substituted for environmentally sensitive rolled erosion control blankets, to be approved by the Engineer on an individual project basis.

6. Turf Reinforcement Mat (TRM). Furnish TRM consisting of 100 percent ultraviolet (UV) stabilized polyolefin synthetic fibers sewn between two layers of black UV stabilized polypropylene netting with polyolefin thread. The TRM shall meet the following “minimum average roll value” requirements:

<u>Property</u>	<u>Test Method</u>	<u>Requirement</u>
Mass/Unit Area	ASTM D 5261	10 oz/syd
Ultraviolet Stability @ 1000 hrs	ASTM D 4355	80 percent
Tensile Strength (MD)	ASTM D 5035	165 lbs/ft

Acceptance. Furnish ‘Test Data Certification’ for permanent TRM prior to installation, except the following manufacturer’s products will be accepted by General Certification:

- i. Recyclex®; American Excelsior Company, Arlington, TX
- ii. EroNet® P300®; Tensar/North American Green, Alpharetta, GA
- iii. Landlok® 450; Propex, Inc., Chattanooga, TN
- iv. PP5-10™; Western Excelsior Corp., Loveland, CO

7. Hydroseed Mixture. Furnish hydroseed mixture according to Section 816.

8. Natural Aggregate. Furnish Coarse Aggregate, 4AA or approved alternate gradation per section 902. Furnish rounded stone of neutral/granite mixed color appearance suitable for landscaping purposes unless otherwise shown on the plans.

9. Geotextiles. Furnish Geotextile Separator, consisting of either woven or spun-bonded fibers, according to Standard Specification Section 910.

c. Construction. Construct according to subsection 816 and as specified herein. Begin this work as soon as possible after final grading of the areas designated for slope restoration but no later than the maximum time frames stated in subsection 208. Where directed, place slope restoration materials by hand to prevent spill-over beyond specified work limits.

Prior to placing topsoil, shape, compact and assure all areas to be restored are weed free. Except for Type V Slope Restoration, place topsoil at 4 inch minimum depth to meet proposed finished grades. If the restoration area requires more than the minimum depth of topsoil to meet finished grade, fill the additional depth using embankment or topsoil. Furnishing and placing this additional material will be paid for separately as Embankment, (CIP or LM).

Prior to placing seed, furnish and place friable, weed and seed free topsoil. Remove all stones greater than one (1) inch diameter from the finished topsoil surface. Apply seed mixture and fertilizer to the prepared soil surface according to subsection 816.03.C.

Apply Mulch at a rate of 2 tons per acre. Place Mulch Anchoring over the mulch at a rate specified in subsection 816.03.F.

Place and anchor manufactured rolled blankets (Mulch Blanket, High Velocity Mulch Blanket, and TRM's) according to the manufacturer's published installation guidelines, subsection 816.03.H, and as shown on Standard Plan R-100 Series. Use wood stakes only. Metal pins and staples are prohibited. On slopes and ditches, anchor the top edge of TRM's in a 6 inch deep trench. Do not operate equipment on the installed TRM.

Install components of Slope Restoration according to the types described herein, where indicated on the plans or as directed by the Engineer:

1. Slope Restoration, Type I, consists of topsoil, chemical fertilizer, seeding mixture, mulch and mulch anchoring. Place Type I Slope Restoration on all disturbed areas not restored with other types of restoration or permanent soil erosion and sedimentation control (SESC) treatments.

2. Slope Restoration, Type II, consists of topsoil surface, chemical fertilizer, seeding mixture, and short-term temporary *Mulch Blanket* (single-sided, accelerated photodegradable netting from the QPL). In general, place Type II Slope Restoration as directed on 1 on 3 and flatter slopes, ditch bottoms flatter than 1.5 percent slope, and in a single roll width strip along roadside curbs and shoulders.

Where **Slope Restoration, Type II-LT** is specified, place long-term *Mulch Blanket* (single-sided, UV-stabilized netting), on the fertilized, seeded topsoil.

Where **Slope Restoration, Type II-ES** is specified, place short-term *Mulch Blanket* (net free or single-sided organic netting), on the fertilized, seeded topsoil.

3. Slope Restoration, Type III, consists of topsoil surface, chemical fertilizer, seeding mixture, and short-term temporary *High Velocity Temporary Mulch Blanket* (double-sided, accelerated photodegradable netting from the QPL). In general, place Type III Slope Restoration as directed on 1 on 2 and steeper slopes and ditch bottoms flatter than 4 percent slope.

Where **Slope Restoration, Type III-LT** is specified, place long-term *High Velocity Mulch Blanket* (double-sided, UV-stabilized netting) on the fertilized, seeded topsoil.

Where **Slope Restoration, Type III-ES** is specified, place short-term *High Velocity Mulch Blanket* (double-sided organic netting) on the fertilized, seeded topsoil.

4. Slope Restoration, Type IV, consists of TRM placed in conjunction with Type I, Type II, or Type III slope restoration, as directed. In general, place TRM blankets on bare soil, prior to mulch blanket in areas of concentrated flow or discharge, high flow or steep ditches, and extended steep slopes.

5. Slope Restoration, Type V, consists of stone placed on Geotextile Separator. In general, place Type V Slope Restoration in urban areas where turf will be difficult to establish or maintain, or in areas with existing stone landscaping.

Place Geotextile Separator on prepared grades, anchored sufficiently to resist displacement upon spreading the stone. Place and uniformly spread 3 inches of coarse graded aggregate 4AA on the geotextile. Grade finished surface approximately 1 inch below top of curb or as directed. Match finished surface to all other adjacent surfaces (e.g. sidewalk). Where applicable, overlap placement of stone to adjacent existing stone landscaping left-in-place to blend existing and proposed stone appearance.

6. Slope Restoration, Type VI, consists of topsoil and hydroseeding mixture consisting of chemical fertilizer and seed and paper or fiber mulch. When specified, place Type VI Slope Restoration on all disturbed areas not restored with other types of restoration or permanent soil erosion and sedimentation control (SESC) treatments.

If an area washes out after slope restoration work has been properly completed and approved by the Engineer, make the required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and mulch. This replacement will be paid for as additional work using the applicable contract items.

If an area washes out for reasons attributable to the Contractor's activity or failure to take proper precautions, replacement will be at the Contractor's expense.

The Engineer will inspect the seeded turf to ensure the end product is well established, weed free, in a vigorous growing condition, and contains the species called for in the seeding mixture.

If the seeded turf is not well established at the end of the first growing season, the Contractor will be responsible to re-seed until the turf is well established and approved by the Engineer.

If weeds cover more than ten percent of the total area of slope restoration, as determined by the Engineer, provide weed control according to subsection 816.03.J. Weed control will be at the Contractor's expense, with no additional charges to the project for materials, labor or equipment.

d. Measurement and Payment. When specified for projects of limited scope at specific locations (e.g. intersection projects), the completed work for **Slope Restoration, (Location), Type __**, will be paid for by the Lump Sum.

The completed work for **Slope Restoration, Type __**, will be measured in place by the square yard. No credit or additional compensation will be made for splices, overlaps, embedment, or wasted material will be made for mulch blankets, TRM's, and geotextiles.

Full payment for Types IV and V Slope Restoration will be made upon the Engineer's acceptance of the completed installation. Payment for remaining Slope Restoration items specified herein will be made at fifty (50) percent of the contract bid price upon completion of installation per this specification. The remaining fifty percent payment will be made after vegetation is established, as determined by the Engineer.

The completed work as described will be paid for at the contract unit price for the following contract item (pay item):

Contract Item (Pay Item)	Pay Unit
Slope Restoration, (Location), Type __	Lump Sum
Slope Restoration, Type __	Square Yard

Except for Type IV and V Restoration, Payment for **Slope Restoration, Type __**, includes all materials, labor and equipment required to prepare grades, furnish and place topsoil, chemical fertilizer, seed, mulch, mulch anchoring, mulch blankets, and stakes as specified herein.

Payment for ***Slope Restoration, Type IV***, includes all materials, labor and equipment necessary to furnish, place, and anchor **only the the TRM material** prior to placing mulch blanket. Topsoil, seed, fertilizer, and mulch blanket will be included with payment for Type I, Type II, or Type III Restoration, paid for separately.

Payment for ***Slope Restoration, Type V***, includes all materials, labor and equipment necessary to furnish, and place geotextiles and Open Graded Aggregate, as described herein.

INGHAM COUNTY ROAD DEPARTMENT
 SPECIAL PROVISION
 FOR
SANITARY STRUCTURE, SEAL, EXTERNAL

ICRD:DJT

1 of 1

03-31-2016

a. Description. This work consists of installing woven polypropylene infiltration sealing tape on sanitary structure chimney and casting joints according to the requirements of Section 403 of the 2020 Michigan Department of Transportation Standard Specifications for Construction, and as specified herein.

Furnish sealing tape from one of the following manufacturers, or approved equal:

<p>Boa Tape Garlock Sealing Technologies N666 Division Street Palmyra, NY 14522 800.448.6688 www.garlock.com</p>	<p>Infi-Shield Sealing Systems, Inc. 9350 County Road 19 Loretto, MN 55357 800.478.2054 www.ssisealingsystems.com</p>	<p>EZ Wrap Press-Seal Coporation 2424 West State Blvd Fort Wayne, IN 46808 800.348.7325 www.press-seal.com</p>	<p>Creutex Wrap Creutex Specialty Products N25 W23790 Commerce Cir, Suite E Waukesha, WI 53188 800.345.3764 www.cretexseals.com</p>
--	--	--	--

b. Materials. Furnish a wraparound sealing product designed for external use on manhole structure meeting the following criteria:

Adhesive	ASTM Test	Test Results
Softening Point	ASTM E-28	116°C (240°F)
Dielectric Strength	ASTM D-1000	350 volts/mil
Tape	ASTM Test	Test Results
Tensile Strength	ASTM D-1000	75 lbs./inch width
Elongation	ASTM D-1000	40%
Puncture Resistance	ASTM E 164	200 lbs.
Water Absorption	ASTM D-570	0.05%
Penetration Resistance	ASTM G-9	PASS
Fungal Resistance	ASTM G-21	Growth-None

c. Installation. Install the seal over the entire chimney area, overlapping at least four (4) inches of the manhole cone, and at least two (2) inches of the manhole casting. Install the product according to the Manufacturer's specifications. Furnish product data sheet including certification of the specified properties to the Engineer prior to installation. The Contractor shall clear all debris from the operation out of the manhole. Sealant shall be applied prior to placing final pavement.

d. Measurement and Payment. The complete work for **Sanitary Structure, Chimney Seal, External**, will be measured by area in square feet (perimeter x vertical depth) of the external manhole chimney surface. Payment for **Sanitary Structure, Chimney Seal, External** will be at the contract unit price includes all material, equipment, and labor to complete this item.

<u>Pay Item</u>	<u>Pay Unit</u>
Sanitary Structure, Chimney Seal, External	Square Foot

CHARTER TOWNSHIP OF MERIDIAN

SPECIAL PROVISION
FOR
**ADJUSTING DRAINAGE AND SANITARY
STRUCTURE COVERS**

SD:DJT

1 of 3

12-28-2023

a. Description. Adjust existing drainage and sanitary structure covers and furnish and place new sanitary structure covers (castings) according to the plans, Section 825 and divisions 2, 3, 4, 6, 7, and 10 of the Michigan Department of Transportation 2020 Standard Specifications for Construction, and as specified herein.

b. Materials.

<u>Item</u>	<u>Section</u>
Dense Graded Aggregate, 22A, 21AA	902
Lane Tie, Epoxy Anchored (#5 bar)	905
Reinforcement, Epoxy Coated (#5 bar)	905
Concrete Masonry Units	913
Sealant, Hot-Poured Rubber	914
Concrete, Grade 3500, 3500HP	1004

Furnish epoxy coatings for reinforcing steel and lane ties selected from the Qualified Products List (7.12.03.J).

Where specified, furnish 1045W manhole frame(s) and 1040 cover(s) for new sanitary structure covers from EJIW (East Jordan Iron Works) with a watertight rubber gasket and bearing the Meridian Township Logo and include the words "SANITARY" and "MERIDIAN TOWNSHIP." Furnish general and "Buy America" certifications. Castings may be furnished by the Engineer at the discretion of the utility owner.

c. Construction Methods. Open all structure lids for inspection by the Engineer and/or the utility owner and to confirm item quantities prior to starting the work and following completion of the work for final inspection. Provide 48 hours notice prior to starting work on structures to allow the utility owner the opportunity to observe the work. Provide written acceptance of the completed work from the utility owner prior to acceptance by the Engineer for payment.

Record the location of all structure covers to allow final adjustment at the original cover location. Furnish a written copy of each structure cover location to the Engineer; however, the placement of core locations will remain the responsibility of the Contractor.

Except as described herein, temporarily lower and adjust drainage structures according to Section 403 and sanitary structures according to Section 825. Perform all adjustments per the plans as directed by the Engineer. For structure covers within existing pavement where a portion of existing pavement is to remain, remove pavement adjacent

to structure covers using a rotary coring method. Following completion of the top course of HMA paving, core the temporarily lowered structure with a 54-inch diameter core for casting frames greater than 36-inch diameter. Use a 48-inch diameter core for casting frames 36-inch and smaller diameter.

Remove deteriorated portions of structures as directed. Reconstruct removed portions of structures using precast masonry units. Use blocks only for structure barrel repairs. Reconstruct the top 6 inches of chimneys with pre-cast reinforced concrete adjusting rings to the elevations indicated on the plans or as directed by the Engineer. Use at least 2 adjusting rings beneath the casting with mortar placed between all rings and precast units. Where the chimney will exceed 2 feet measured from the top of cone or lid to the finished rim elevation, raise the structure below the chimney with like materials as directed (e.g. use precast barrel or cone units on precast structures).

Where the bottom flange of the structure cover will be below the bottom of existing/proposed (completed) pavement, place two perimeters of butyl rope on the top of the final concrete adjustment ring just prior to placement of casting (with no mortar) as shown on the *Special Detail for Structure Cover Adj with Butyl Rope Joint*.

Where the bottom flange of the cover is above the bottom of completed pavement, place the butyl rope on the surface of the last adjusting ring below the bottom of pavement. Place adjusting rings and the cover to finished grade with mortar placed between the rings and on the top ring under the cover. See Special Detail.

Set the cover to final grade within $\frac{1}{4}$ inch of the final pavement surface elevation using the 10-foot straight edge method, taking compression of the butyl rope into account. Apply a $\frac{1}{2}$ inch thick plaster coat of mortar to all inner and outer surfaces of adjusted and repaired areas as directed. Where specified, apply External Chimney Seal according to separate special provision requirements.

Prior to placing concrete to backfill the core, furnish, place, and compact aggregate base flush with the top of the cover flange. Where adjacent pavement is composite (concrete base), install epoxy anchored lane ties according to Section 603. Install circular epoxy coated bar per the *Special Detail for Structure Adj Using the Coring Method*. Place concrete to match the finished elevation and cross-slope of the pavement surface. Construct plane of weakness joints to match existing base concrete joints and at square structure cover corners. Do not overcut into adjacent paving when constructing plane of weakness joints.

Immediately remove any debris that falls into structures due to Contractor operations.

d. Measurement and Payment. The completed work as described herein will be measured and paid for at the contract unit price using the following pay items:

<u>Pay Item</u>	<u>Pay Unit</u>
Dr Structure Cover, Adj, Case 1, Modified	Each
Sanitary Structure Cover	Each
Sanitary Structure Cover, Adj, Case 1, Modified	Each

Payment for ***Dr Structure Cover, Adj, Case 1, Modified*** and ***Sanitary Structure Cover, Adj, Case 1, Modified*** includes all materials, equipment, tools, and labor to complete this work as specified herein including, but not limited to:

1. Furnishing and placing of all specified and incidental materials.
2. Removal and disposal of existing pavement and debris.
3. Cost of repairs to top of structure to ensure uniform contact of temporary steel plate.
4. Salvaging and reusing existing cover and frame.
5. Disposal of replaced structure covers.
6. Constructing plane of weakness joints per Special Detail.
7. Cleaning and sealing joints with hot-poured joint sealant.
8. Provisions for pre- and post-construction structure inspection by the owner.

Sanitary Structure Cover will not be paid for separately when the casting is furnished by the utility owner. Structure covers furnished by the utility owner to replace existing covers damaged due to Contractor carelessness or negligence will be back charged to the Contractor at the utility company's invoice cost.

Temporary lowering of all structures will be measured and paid for separately as ***Dr Structure, Temp Lowering***.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
EROSION CONTROL, INLET PROTECTION, FABRIC DROP

COS:DMG

1 of 2

APPR:TWK:CP:03-11-20
FHWA:APPR:03-13-20

a. Description. This work consists of furnishing and installing acceptable alternatives to inlet protection devices (devices) listed in the *Soil Erosion and Sedimentation Control Manual* when the pay item Erosion Control, Inlet Protection, Fabric Drop is included in the contract.

This work consists of furnishing, installing, maintaining, disposing of collected material and removing devices at the locations shown on the plans or as directed by the Engineer.

b. Materials. The following devices are approved for use as acceptable alternatives:

1. Siltsack Type B, Regular Flow, by ACF Environmental, Inc.
2. Inlet Pro Sediment Bag, Standard Flow, with optional foam deflector by Hanes Geo Components.
3. Dandy Curb Bag, Dandy Bag, Dandy Curb Sack, Dandy Sack, or Dandy Pop by Dandy Products, Inc.
4. Basin Bag, Regular Flow by CSI Geoturf.
5. Flexstorm Catch-It and Flexstorm Pure used with filter bag types FX, FX+, FXO, PC, PC+ or IL.

Ensure provided devices are sized appropriately for the drainage structures in which they will be installed.

c. Construction. Install, maintain and remove the devices in accordance with the manufacturer's guidelines. Remove material collected by the devices in accordance with the manufacturer's guidelines or as directed by the Engineer.

Dispose of collected material in accordance with subsection 205.03.P of the Standard Specifications for Construction. Those devices that are no longer needed and have been removed may be reused elsewhere on the project as approved by the Engineer.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Erosion Control, Inlet Protection, Fabric Drop.....	Each

Erosion Control, Inlet Protection, Fabric Drop will be paid for as one each for each time the alternate device listed herein is installed, maintained, and removed at a separate location within the project limits.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
SAMPLING ASPHALT BINDER ON LOCAL AGENCY PROJECTS

CFS:TRC

1 of 1

APPR:JWB:KPK:02-19-20
FHWA:APPR:02-19-20

a. Description. This work consists of the Contractor taking samples of the asphalt binder and delivering the samples to the Engineer prior to incorporation into the hot mix asphalt mixture.

b. Materials. For informational purposes, original samples of asphalt binder will be taken by the Contractor and delivered to the Engineer prior to incorporation into the mixture. The frequency of sampling will be determined by the Engineer.

The Contractor must certify in writing that the materials used in the HMA mixture are from the same source as the materials used in developing the HMA mixture design and the bond coat is from an approved supplier as stated in the *Material Quality Assurance Procedures Manual*.

c. Construction. None specified.

d. Measurement and Payment. The cost of obtaining and delivering the samples to the Engineer will be included in the hot mix asphalt (HMA) pay items in the contract.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
RECYCLED HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 2

APPR:JWB:CJB:02-26-20
FHWA:APPR:03-02-20

Add the following subsection to subsection 501.02.A.2 of the Standard Specifications for Construction.

- c. **Reclaimed Asphalt Pavement (RAP) and Binder Grade Selection.** The method for determining the binder grade in HMA mixtures incorporating RAP is divided into three categories designated Tier 1, Tier 2 and Tier 3. Each tier has a range of percentages that represent the contribution of the RAP binder toward the total binder, by weight. The tiers identified below apply to HMA mixtures with the following exception: Superpave mixture types EML, EML High Stress, EMH, EMH High Stress, and EH, EH High Stress used as leveling or top course must be limited to a maximum of 27 percent RAP binder by weight of the total binder in the mixture.

Recycled materials may be used as a substitute for a portion of the new materials required to produce HMA mixtures in accordance with contract.

- **Tier 1 (0% to 17% RAP binder by weight of the total binder in the mixture).** No binder grade adjustment is made to compensate for the stiffness of the asphalt binder in RAP.
- **Tier 2 (18% to 27% RAP binder by weight of the total binder in the mixture).** For all mixtures no binder grade change will occur in Tier 2 for all shoulder and temporary road mixtures.

Ensure the required asphalt binder grade is at least one grade lower for the low temperature than the design binder grade required for the specified project mixture type. Lowering the high temperature of the binder one grade is optional. For example, if the design binder grade for the mixture type is PG 58-22, the required grade for the binder in the HMA mixture containing RAP would be a PG 52-28 or a PG 58-28.

For Marshall Mixes, no binder grade change will be required when Average Daily Traffic (ADT) is above 7000 or Commercial Average Daily Traffic (CADT) is above 700. No binder grade change will occur for EL mixtures used as leveling or top course.

The asphalt binder grade can also be selected using a blending chart for high and low temperatures. Supply the blending chart and the RAP test data used in determining the binder selection according to *AASHTO M323*.

- **Tier 3 ($\geq 28\%$ RAP binder by weight of the total binder in the mixture).** The binder grade for the asphalt binder is selected using a blending chart for high and low temperatures per *AASHTO M323*. Supply the blending chart and the RAP test data

used in determining the binder selection.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
MARSHALL HOT MIX ASPHALT MIXTURE

CFS:JWB

1 of 2

APPR:KPK:CJB:03-04-20
FHWA:APPR:03-13-20

a. Description. This work consists of furnishing a hot mix asphalt (HMA) mixture, designed using Marshall Mixture Design Methods, in accordance with the standard specifications except as modified by this special provision.

b. Mix Design. Submit the mix design for evaluation in accordance with the Department's *HMA Production Manual*. Use a 50 blow Marshall hammer when compacting mixtures for developing Marshall mix designs.

c. Recycled Mixtures. Substituting reclaimed asphalt pavement (RAP) for a portion of the new material required to produce the HMA mixture is allowed provided that the mixture is designed and produced to meet all criteria specified herein, unless otherwise prohibited. Ensure RAP materials are in accordance with the standard specifications.

d. Materials. Table 1 provides the mix design criteria and volumetric properties. Table 2 provides the required aggregate properties. Use aggregates of the highest quality available to meet the minimum specifications. Use the mixture designation number shown in the pay item name when determining mix design properties from Tables 1 and 2.

e. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
HMA, <u>(type)</u>	Ton

Table 1: Mix Design Criteria and Volumetric Properties

	Mixture No.				
	2C	3C	4C	13A	36A
Target Air Void, % (a)	3.00	4.00	4.00	4.00	4.00
VMA (min) (b)	11.00	13.00	14.00	14.00	15.00
VFA	65-78	65-78	65-78	65-78	65-78
Fines to Binder Ratio (max) (c)	1.2	1.2	1.2	1.2	1.2
Flow (0.01 inch)	8-16	8-16	8-16	8-16	8-16
Stability (min), lbs	1200	1200	1200	900	900

- a. Lower target air voids by 1.00% if used in a separate shoulder paving operation. Consider reducing air void targets to 3.00% for lower traffic volume roadways when designing 13A and 36A mixtures for local agency use.
- b. VMA calculated using Gsb of the combined aggregates.
- c. Ratio of the weight of aggregate passing the No. 200 sieve to total asphalt binder content by weight; including fines and binder contributed by RAP.

Table 2: Aggregate Properties

	Mixture No.				
	2C	3C	4C	13A	36A
	Percent Passing Indicated Sieve or Property Limit				
1½ inch	100				
1 inch	91-100	100			
¾ inch	90 max.	91-100	100	100	
½ inch	78 max.	90 max.	91-100	75-95	100
⅜ inch	70 max.	77 max.	90 max.	60-90	92-100
No. 4	52 max.	57 max.	67 max.	45-80	65-90
No. 8	15-40	15-45	15-52	30-65	55-75
No. 16	30 max.	33 max.	37 max.	20-50	
No. 30	22 max.	25 max.	27 max.	15-40	25-45
No. 50	17 max.	19 max.	20 max.	10-25	
No. 100	15 max.	15 max.	15 max.	5-15	
No. 200	3-6	3-6	3-6	3-6	3-10
Crushed (min), % (MTM 117)	90	90	90	25	60
Soft Particle (max), % (a)	12.0	12.0	8.0	8.0	8.0
Angularity Index (min) (b)	4.0	4.0	4.0	2.5	3.0
L.A. Abrasion (max), % loss (c)	40	40	40	40	40
Sand Ratio (max) (d)	-	-	-	50	50
<p>a. The sum of the shale, siltstone, structurally weak, and clay-ironstone particles must not exceed 8.0 percent for aggregates used in top course. The sum of the shale, siltstone, structurally weak, and clay-ironstone particles must not exceed 12.0 percent for aggregates used in base and leveling courses.</p> <p>b. The fine aggregate angularity of blended aggregates, determined by MTM 118, must meet the minimum requirement. In mixtures containing RAP, the required minimum fine aggregate angularity must be met by the virgin material. NAA fine aggregate angularity must be reported for information only and must include the fine material contributed by RAP if present in the mixture.</p> <p>c. Los Angeles abrasion maximum loss must be met for the composite mixture, however, each individual aggregate must be less than 50</p> <p>d. Sand ratio for 13A and 36A no more than 50% of the material passing the No. 4 sieve is allowed to pass the No. 30 Sieve.</p>					

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS

CFS:KPK

1 of 7

APPR:CJB:JWB:02-26-20
FHWA:APPR:03-13-20

a. Description. This special provision provides sampling and testing requirements for local agency projects using the roller method and the nuclear density gauge testing. Provide the hot mix asphalt (HMA) mixture in accordance with the requirements of the standard specifications, except where modified herein.

b. Materials. Provide aggregates, mineral filler (if required), and asphalt binder to produce a mixture proportioned within the master gradation limits shown in the contract, and meeting the uniformity tolerance limits in Table 1.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

Parameter		Top and Leveling Course		Base Course		
Number	Description	Range 1 (a)	Range 2	Range 1 (a)	Range 2	
1	% Binder Content	-0.30 to +0.40	±0.50	-0.30 to +0.40	±0.50	
2	% Passing	# 8 and Larger Sieves	±5.0	±8.0	±7.0	±9.0
		# 30 Sieve	±4.0	±6.0	±6.0	±9.0
		# 200 Sieve	±1.0	±2.0	±2.0	±3.0
3	Crushed Particle Content (b)	Below 10%	Below 15%	Below 10%	Below 15%	
a. This range allows for normal mixture and testing variations. The mixture must be proportioned to test as closely as possible to the Job-Mix-Formula (JMF).						
b. Deviation from JMF.						

Parameter number 2 as shown in Table 1 is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerance categories. If more than one sieve is exceeding Range 1 or Range 2 tolerances, only the one with the largest exceedance will be counted as the gradation parameter.

The master gradation should be maintained throughout production; however, price adjustments will be based on Table 1. Aggregates which are to be used in plant-mixed HMA mixtures must not contain topsoil, clay, or loam.

c. Construction. Submit a Mix Design and a JMF to the Engineer. Do not begin production and placement of the HMA until receipt of the Engineer's approval of the JMF. Maintain the binder content, aggregate gradation, and the crushed particle content of the HMA mixture within the Range 1 uniformity tolerance limits in Table 1. For mixtures meeting the definition of top or leveling course, field regress air void content to 3.5 percent with liquid asphalt cement unless specified otherwise on HMA application estimate. For mixtures meeting the definition of base course, field regress air void content to 3.0 percent with liquid asphalt cement unless specified

otherwise on HMA application estimate.

Ensure all persons performing Quality Control (QC) and Quality Assurance (QA) HMA field sampling are "Local Agency HMA Sampling Qualified" samplers. At the pre-production or preconstruction meeting, the Engineer will determine the method of sampling to be used. Ensure all sampling is done in accordance with *MTM 313 (Sampling HMA Paving Mixtures)* or *MTM 324 (Sampling HMA Paving Mixtures Behind the Paver)*. Samples are to be taken from separate hauling loads.

For production/mainline type paving, obtain a minimum of two samples, each being 20,000 grams, each day of production, for each mix type. The Engineer will sample and maintain possession of the sample. Sampling from the paver hopper is prohibited. Each sample will be divided into two 10,000 gram parts with one part being for initial testing and the other part being held for possible dispute resolution testing. Obtain a minimum of three samples for each mix type regardless of the number of days of production.

Obtain samples that are representative of the day's paving. Sample collection is to be spaced throughout the planned tonnage. One sample will be obtained in the first half of the tonnage and the second sample will be obtained in the second half of the tonnage. If planned paving is reduced or suspended, when paving resumes, the remaining sampling must be representative of the original intended sampling timing.

Ensure all persons performing testing are Bit Level One certified or Bit QA/QC Technician certified.

Ensure daily test samples are obtained, except, if the first test results show that the HMA mixture is in specification, the Engineer has the option of not testing additional samples from that day.

At the pre-production or preconstruction meeting, the Engineer and Contractor will collectively determine the test method for measuring asphalt content (AC) using *MTM 319 (Determination of Asphalt Content from Asphalt Paving Mixtures by the Ignition Method)* or *MTM 325 (Quantitative Extraction of Bitumen from HMA Paving Mixtures)*. Back calculation will not be allowed for determining asphalt content.

Ensure all labs performing local agency acceptance testing are qualified labs per the *HMA Production Manual and the Michigan Quality Assurance Procedures Manual*, and participate in the MDOT round robin process, or they must be *AASHTO Materials Reference Laboratory (AMRL)* accredited for *AASHTO T30* or *T27*, and *AASHTO T164* or *T308*. Ensure on non-National Highway System (NHS) routes, Contractor labs are made available, and may be used, but they must be qualified labs as previously stated. Contractor labs may not be used on NHS routes. Material acceptance testing will be completed by the Engineer within 14 calendar days, except holidays and Sundays, for projects with less than 5,000 tons (plan quantity) of HMA and within 7 calendar days, except holidays and Sundays, for projects with 5,000 tons (plan quantity) or more of HMA, after the Engineer has obtained the samples. QA test results will be provided to the Contractor after the Engineer receives the QC test results. Failure on the part of the Engineer or the laboratory to provide QA test results within the specified time frame does not relieve the Contractor of their responsibility to provide an asphalt mix within specifications.

The correlation procedure for ignition oven will be established as follows. Asphalt binder content based on ignition method from *MTM 319*. Gradation (*ASTM D5444*) and Crushed particle content (*MTM 117*) based on aggregate from *MTM 319*. The incineration temperature will be established

at the pre-production meeting. The Contractor will provide a laboratory mixture sample to the acceptance laboratory to establish the correction factor for each mix. Ensure this sample is provided to the Engineer a minimum of 14 calendar days prior to production.

For production/mainline type paving, the mixture may be accepted by visual inspection up to a quantity of 500 tons per mixture type, per project (not per day). For non-production type paving defined as driveways, approaches, and patching, visual inspection may be allowed regardless of the tonnage.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter, (for Parameter 2, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to a price adjustment per the Measurement and Payment section of this special provision.

Contractor operations will be suspended when the mixture is determined to be out-of-specification, but contract time will continue to run. The Engineer may issue a Notice of Non-Compliance with Contract Requirements (Form 1165), if the Contractor has not suspended operations and taken corrective action. Submit a revised JMF or proposed alterations to the plant and/or materials to achieve the JMF to the Engineer. Effects on the Aggregate Wear Index (AWI) and mix design properties will be taken into consideration. Production and placement cannot resume until receipt of the Engineer's approval to proceed.

Pavement in-place density will be measured using one of two approved methods. The method used for measuring in-place density will be agreed upon at a pre-production or preconstruction meeting.

Pavement in-place density tests will be completed by the Engineer during paving operations and prior to traffic staging changes. Pavement in-place density acceptance testing will be completed by the Engineer prior to paving of subsequent lifts and being open to traffic.

Option 1 - Direct Density Method

Use of a nuclear density gauge requires measuring the pavement density using the Gmm from the JMF for the density control target. The required in-place density of the HMA mixture must be 92.0 to 98.0 percent of the density control target. Nuclear density testing and frequency will be in accordance with the *MDOT Density Testing and Inspection Manual*.

Option 2 - Roller Method

The Engineer may use the Roller Method with a nuclear or non-nuclear density gauge to document achieving optimal density as discussed below.

Use of the density gauge requires establishing a rolling pattern that will achieve the required in-place density. The Engineer will measure pavement density with a density gauge using the Gmm from the JMF for the density control target.

Use of the Roller Method requires developing and establishing density frequency curves, and

meeting the requirements of Table 2. A density frequency curve is defined as the measurement and documentation of each pass of the finished roller until the in-place density results indicate a decrease in value. The previous recording will be deemed the optimal density. The Contractor is responsible for establishing and documenting an initial or QC rolling pattern that achieves the optimal in-place density. When the density frequency curve is used, the Engineer will run and document the density frequency curve for each half day of production to determine the number of passes to achieve the maximum density. Table 5, located at the end of this special provision, can be used as an aid in developing the density frequency curve. The Engineer will perform density tests using an approved nuclear or non-nuclear gauge per the manufacturer's recommended procedures.

Table 2: Minimum Number of Rollers Recommended Based on Placement Rate

Average Laydown Rate, Square Yards per Hour	Number of Rollers Required (a)	
	Compaction	Finish
Less than 600	1	1 (b)
601 - 1200	1	1
1201 - 2400	2	1
2401 - 3600	3	1
3601 and More	4	1

a. Number of rollers may increase based on density frequency curve.
b. The compaction roller may be used as the finish roller also.

After placement, roll the HMA mixture as soon after placement as the roller is able to bear without undue displacement or cracking. Start rolling longitudinally at the sides of the lanes and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the drum. Ensure each required roller is 8 tons minimum in weight unless otherwise approved by the Engineer.

Ensure the initial breakdown roller is capable of vibratory compaction and is a maximum of 500 feet behind the paving operations. The maximum allowable speed of each roller is 3 miles per hour (mph) or 4.5 feet per second. Ensure all compaction rollers complete a minimum of two complete rolling cycles prior to the mat temperature cooling to 180 degrees Fahrenheit (F). Continue finish rolling until all roller marks are eliminated and no further compaction is possible. The Engineer will verify and document that the roller pattern has been adhered to. The Engineer can stop production when the roller pattern is not adhered to.

d. Measurement and Payment. The completed work, as described, will be measured and paid for using applicable pay items as described in subsection 501.04 of the Standard Specifications for Construction, or the contract, except as modified below.

Base Price. Price established by the Department to be used in calculating incentives and adjustments to pay items and shown in the contract.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 1, but not the Range 2, tolerance limits, that mixture parameter will be subject to a 10 percent penalty. The 10 percent penalty will be assessed based on the acceptance tests only unless the Contractor requests that the 10,000 gram sample part retained for possible dispute resolution testing be tested. The Contractor has 4 calendar days from receipt

of the acceptance test results to notify the Engineer, in writing, that dispute resolution testing is requested. The Contractor's QC test results for the corresponding QA test results must result in an overall payment greater than QA test results otherwise the QA tests will not be allowed to be disputed. The Engineer has 4 calendar days to send the dispute resolution sample to the lab once dispute resolution testing is requested. The dispute resolution sample will be sent to an independent lab selected by the Local Agency, and the resultant dispute test results will be used to determine the penalty per parameter, if any. Ensure the independent lab is a MDOT QA/QC qualified lab or an AMRL HMA qualified lab. The independent lab must not have conflicts of interest with the Contractor or Local Agency. If the dispute testing results show that the mixture parameter is out-of-specification, the Contractor will pay for the cost of the dispute resolution testing and the contract base price for the material will be adjusted, based on all test result parameters from the dispute tests, as shown in Table 3 and Table 4. If the dispute test results do not confirm the mixture parameter is out-of-specification, then the Local Agency will pay for the cost of the dispute resolution testing and no price adjustment is required.

If acceptance tests, as described in section c. of this special provision, show that a Table 1 mixture parameter exceeds the Range 2 tolerance limits, the 10,000 gram sample part retained for possible dispute resolution testing will be sent, within 4 calendar days, to the MDOT Central Laboratory for further testing. The MDOT Central Laboratory's test results will be used to determine the penalty per mixture parameter, if any. If the MDOT Central Laboratory's results do not confirm the mixture parameter is out-of-specification, then no price adjustment is required. If the MDOT Central Laboratory's results show that the mixture is out-of-specification and the Engineer approves leaving the out-of-specification mixture in place, the contract base price for the material will be adjusted, based on all parameters, as shown in Table 3 and Table 4.

In the case that the Contractor disputes the results of the test of the second sample obtained for a particular day of production, the test turn-around time frames given would apply to the second test and there would be no time frame on the first test.

The laboratory (MDOT Central Laboratory or independent lab) will complete all Dispute Resolution testing and return test results to the Engineer, who will provide them to the Contractor, within 13 calendar days upon receiving the Dispute Resolution samples.

In all cases, when penalties are assessed, the penalty applies to each parameter, up to two parameters, that is out of specification.

Table 3: Penalty Per Parameter

Mixture Parameter out-of-Specification per Acceptance Tests	Mixture Parameter out-of-Specification per Dispute Resolution Test Lab	Price Adjustment per Parameter
No	N/A	None
Yes	No	None
	Yes	Outside Range 1 but not Range 2: decrease by 10% Outside Range 2: decrease by 25%

The quantity of material receiving a price adjustment is defined as the material produced from the time the first out-of-specification sample was taken until the time the sample leading to the first in-specification test was taken.

Each parameter of Table 1 is evaluated with the total price adjustment applied to the contract base price based on a sum of the two parameter penalties resulting in the highest total price adjustment as per Table 4. For example, if three parameters are out-of-specification, with two parameters outside Range 1 of Table 1 tolerance limits, but within Range 2 of Table 1 limits and one parameter outside of Range 2 of Table 1 tolerance limits and the Engineer approves leaving the mixture in place, the total price adjustment for that quantity of material is 35 percent.

Table 4: Calculating Total Price Adjustment

Cost Adjustment as a Sum of the Two Highest Parameter Penalties		
Number of Parameters Out-of-Specification	Range(s) Outside of Tolerance Limits of Table 1 per Parameter	Total Price Adjustment
One	Range 1	10%
	Range 2	25%
Two	Range 1 and Range 1	20%
	Range 1 and Range 2	35%
	Range 2 and Range 2	50%
Three	Range 1, Range 1 and Range 1	20%
	Range 1, Range 1 and Range 2	35%
	Range 1, Range 2 and Range 2	50%
	Range 2, Range 2 and Range 2	50%

Table 5: Density Frequency Curve Development

Tested by: _____ Date/Time: _____

Route/Location:		Air Temp:
Control Section/Job Number:		Weather:
Mix Type:	Tonnage:	Gauge:
Producer:	Depth:	Gmm:

Roller #1 Type:

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #2 Type:

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Roller #3 Type:

Pass No.	Density	Temperature	Comments
1			
2			
3			
4			
5			
6			
7			
8			
Optimum			

Summary: _____

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
INSURANCE

CSD:LFS

1 of 1

APPR:KF:DBP:02-01-18

Add the following after the first paragraph in subsection 107.10.C.4, on page 60 of the Standard Specifications for Construction:

In addition to the above insurance requirements, the following agencies must be listed as additional insured:

Ingham County
Ingham County Road Department
Charter Township of Meridian

CHARTER TOWNSHIP OF MERIDIAN

**NOTICE TO BIDDERS
UTILITY COORDINATION**

SD:DJT
MD23001

1 of 2

12-04-2023
Meridian 2024 LRP

a. Description. The Contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the 2020 MDOT Standard Specifications for Construction (hereinafter Standard Specifications).

For protection of underground utilities and in conformance with Section 107.12 of the Standard Specifications, the Contractor shall call Miss Dig at 1-800-482-7171 a minimum of three (3) full working days, excluding Saturdays, Sundays and holidays, prior to beginning each excavation in areas where public utilities have not been previously located. Miss Dig member utilities will thus be routinely notified. This does not relieve the Contractor of the responsibility of notifying utility owners who may not be part of the “Miss Dig” alert system.

b. Utilities. The following Public/Private Utilities have facilities located within the Right-of-Way:

Meridian Township	Water and Sanitary Sewer	517-853-4440 dpw@meridian.mi.us
Ingham County Drain Commissioner	Storm Sewer	Eric Daldos 517-719-4914 edaldos@ingham.org
Consumers Energy	Gas	Adam Bertram 517-614-8570 adam.bertram@cmsenergy.com
Consumers Energy	Electric	Jacob Chalut 517-580-2049 jacob.chalut@cmsenergy.com
AT&T	Phone/ Fiber	Christopher Way 517-708-9589 Cw2638@att.com
Advance Communications & Data	Fiber	Evan Unverferth 517-999-3276 Unverferth.evan@acd.net
Comcast	Cable	Jeff Dobies 734-359-1669

Metronet	Fiber	Lori Kemper 812-213-1050 Lori.kemper@metronet.com
Wolverine Pipe Line Company	Oil	Doug Mellinger 269-377-3828 doug_mellinger@wplco.com

c. Measurement and Payment. Contractor delay claims resulting from a utility conflict will be determined based upon Section 108.09 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

INGHAM COUNTY ROAD DEPARTMENT

**NOTICE TO BIDDERS
COORDINATION CLAUSE**

ICRD:DJT
MD23001

1 of 2

12-04-2023
Meridian 2024 LRP

a. Description. In addition to the public and private utility companies listed in the Utility Coordination Clause, the private entities and/or public agencies listed below may be performing work within the construction influence area during the progress of the project. Coordinate work schedules, construction activities, and traffic control with the entities listed below. The work to be performed will include, but not be limited to the following:

Project:	Contact:
Ingham County Road Department Preventative Maintenance (PM) Work: Cornell Road, Greenman St, Buckthorn Dr, Cypress St, Harvey St, Pepper Ridge Dr, Martinus St (Patching, Chip Seal)	Andrew Dunn Director of Operations, (517) 719-1371 adunn@ingham.org
Ingham County Road Department Tree Trimming Work	Andrew Dunn Director of Operations, (517) 719-1371 adunn@ingham.org
Meridian Charter Township 2024 Local Road Program (Mill/Overlay)	Nyal Nunn Project Engineer (517) 316-6935 nunn@meridian.mi.us Contractor T.B.D
Meridian Charter Township Curb and Gutter Replacements	Nyal Nunn Project Engineer (517) 316-6935 nunn@meridian.mi.us Contractor T.B.D
Meridian Charter Township Residential Sanitary Sewer Lateral Replacements	Nyal Nunn Project Engineer (517) 316-6935 nunn@meridian.mi.us Contractor T.B.D

Provide at least 5 business day advance notice, access and accommodation for the above entities to perform the work for removal or relocation of permanent signing. Provide at least 3 work day notice prior to scheduling of other work listed above. Provide additional advance notice for contracted work that requires staking, layout or prerequisite work by the agency listed.

Contractor delay claims, resulting from a coordinated work, will be determined based upon Section 108.09 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

PROJECT MANUAL



Appendix D

Soil Boring Logs



Ann Arbor • Muskegon • Traverse City • Upper Peninsula
(800) 933-9959

TEST BORING LOCATION DIAGRAM

Project Name: Meridian Township – Multiple Roads Pavement Investigation

Location: Meridian Charter Township, Ingham County, Michigan

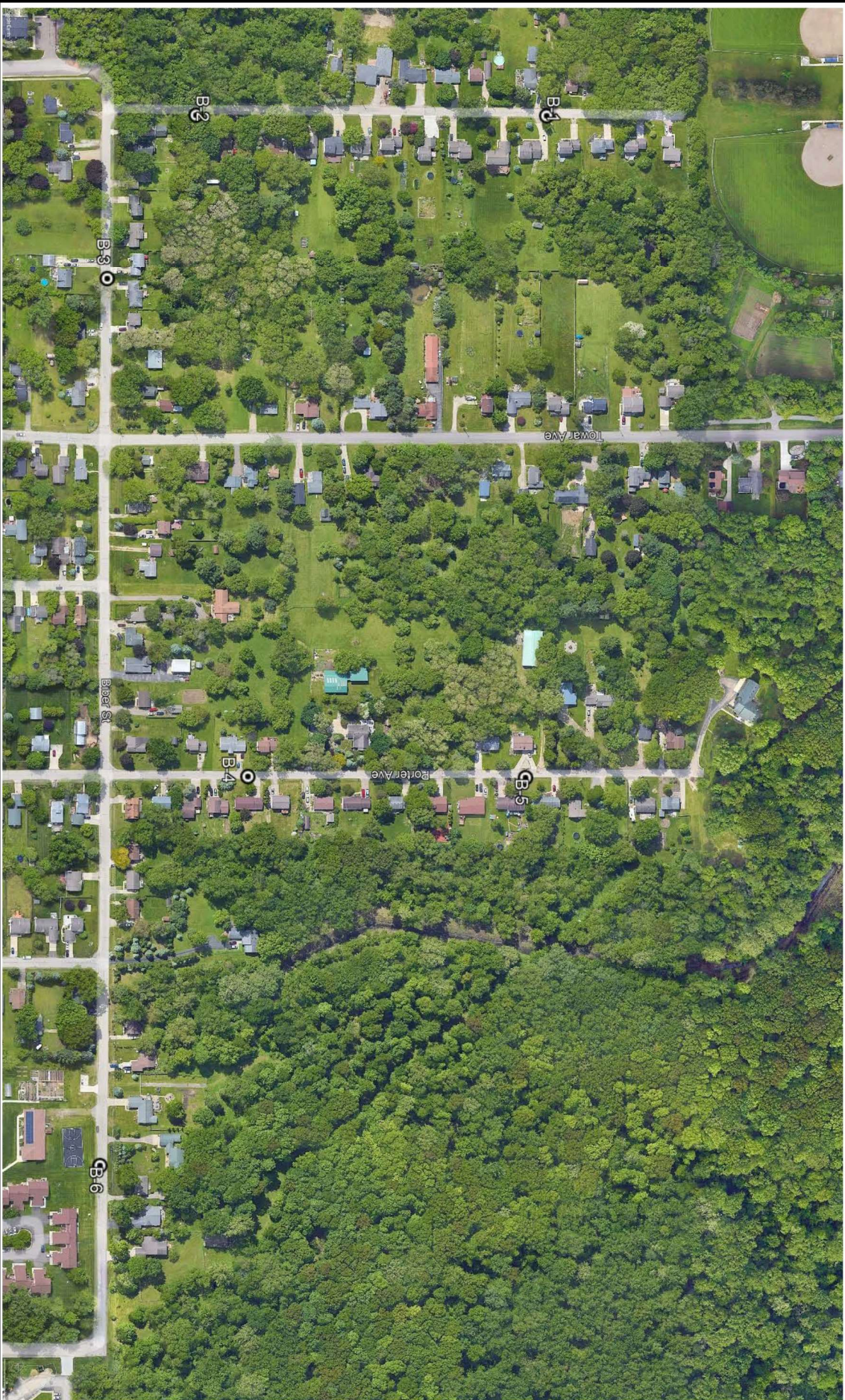
Project Number: 2023.1624 Date: 09.25.2023

Note: The background image is an aerial photograph of the site.

Locations are approximate.



Not to Scale



TEST BORING LOCATION DIAGRAM

Project Name: Meridian Township – Multiple Roads Pavement

Investigation

Location: Meridian Charter Township, Ingham County, Michigan

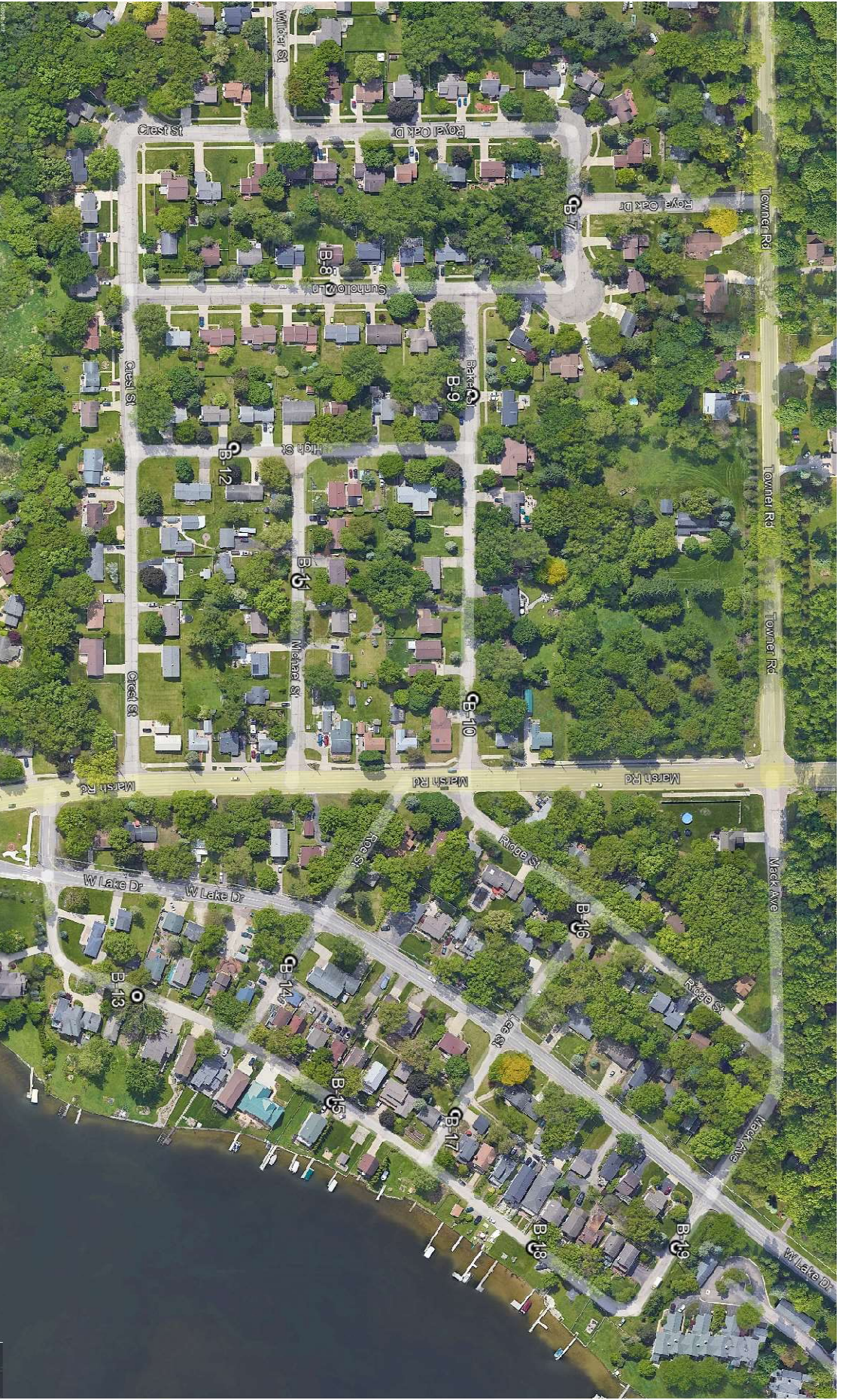
Project Number: 2023.1624 Date: 09.25.2023

Note: The background image is an aerial photograph of the site.

Locations are approximate.



Not to Scale





Ann Arbor • Muskegon • Traverse City • Upper Peninsula
(800) 933-2959

TEST BORING LOCATION DIAGRAM

Project Name: Meridian Township – Multiple Roads Pavement Investigation

Location: Meridian Charter Township, Ingham County, Michigan

Project Number: 2023.1624 Date: 09.25.2023

Note: The background image is an aerial photograph of the site.

Locations are approximate.



Not to Scale

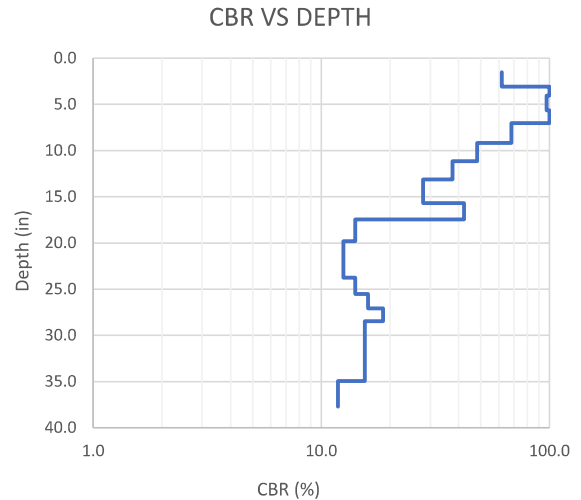




Boring ID B-15
 DCP Starting Depth (in) 1.5

Project Name Meridian Township - Multiple Roads Pavement Investigation
 Project Number 2023.1624
 Date 9/29/2023
 Client Spalding DeDecker
 Boring Type Geoprobe®
 Location See BLD, W Reynolds Ave

# of Blows	Cumulative Penetration (mm)	Hammer Type	Soil Type	CBR %	Cumulative Penetration (inch)
0	130	1	SM		1.5
10	170	1	SM	61.8	3.1
10	195	1	SM	100.0	4.1
15	235	1	SM	97.3	5.6
15	270	1	SM	100.0	7.0
15	325	1	SM	68.1	9.2
10	375	1	SM	48.1	11.1
8	425	1	SP	37.5	13.1
8	490	1	SP	27.9	15.7
8	535	1	SP-SM	42.2	17.4
4	595	1	SP-SM	14.1	19.8
3	645	1	SP-SM	12.5	21.8
3	695	1	SP-SM	12.5	23.7
3	740	1	SP-SM	14.1	25.5
3	780	1	SP-SM	16.0	27.1
3	815	1	SP-SM	18.6	28.5
4	870	1	SP-SM	15.5	30.6
4	925	1	SP-SM	15.5	32.8
4	980	1	SP-SM	15.5	35.0
4	1050	1	SP-SM	11.8	37.7



From	To	Thickness	Description	Classification
0	1	1	ASPHALT WEARING COURSE - Deteriorated	
1	1.5	0.5	ASPHALT LEVELING COURSE - Deteriorated	
1.5	12.75	11.25	AGGREGATE BASE - Fine-to-Coarse Silty SAND with Natural Gravel, brown	SM
12.75	16	3.25	Fine-to-Medium SAND with trace Organics, black	SP
16	48	32	Fine-to-Medium SAND with Silt, brown	SP-SM

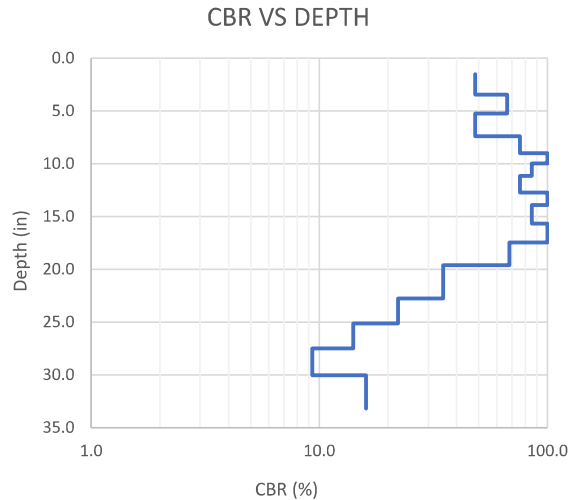
Comments: Groundwater not encountered.



Boring ID B-16
 DCP Starting Depth (in) 1.5

Project Name Meridian Township - Multiple Roads Pavement Investigation
 Project Number 2023.1624
 Date 9/29/2023
 Client Spalding DeDecker
 Boring Type Geoprobe®
 Location See BLD, Lee St

# of Blows	Cumulative Penetration (mm)	Hammer Type	Soil Type	CBR %	Cumulative Penetration (inch)
0	215	1	SM		1.5
10	265	1	SM	48.1	3.5
12	310	1	SM	66.4	5.2
11	365	1	SM	48.1	7.4
12	405	1	SM	75.8	9.0
12	430	1	SM	100.0	10.0
10	460	1	SM	85.3	11.1
12	500	1	SM	75.8	12.7
12	530	1	SM	100.0	13.9
15	575	1	SM	85.3	15.7
12	605	1	SM	100.0	16.9
6	620	1	SM	100.0	17.4
15	675	1	SM	68.1	19.6
12	755	1	SM	34.9	22.8
6	815	1	ML	22.2	25.1
4	875	1	ML	14.1	27.5
3	940	1	ML	9.3	30.0
3	980	1	ML	16.0	31.6
3	1020	1	ML	16.0	33.2



From	To	Thickness	Description	Classification
0	1.5	1.5	ASPHALT WEARING COURSE - Deteriorated	
1.5	23	21.5	AGGREGATE BASE - Fine-to-Coarse Silty SAND with Natural Gravel, brown	SM
23	41	18	SILT with trace Sand, brown	ML
41	48	7	Fine Silty SAND with Gravel, brown	SM

Comments: Groundwater not encountered. Lens of fine Silty SAND at 32 inches.

PROJECT MANUAL



Appendix E

Supplemental Specifications

MICHIGAN
DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
FOR
ERRATA TO THE 2020 STANDARD SPECIFICATIONS

1 of 10

06-30-23

Page	Subsection	Errata
1-06	101.02	Delete the second abbreviation of the list on this page reading: "IES Illuminating Engineering Society
1-06	101.02	Add the abbreviation to the list on this page reading: "IESNA Illuminating Engineering Society of North America
1-83	108.05.A.2	In the first paragraph of this subsection change the language "MDOT Form 1130" to read "MDOT Form 1130A".
1-88	108.08.D	Move the last paragraph of this subsection to the left one indent to align with the first paragraph of the subsection and not with the subsection 108.08.D.3.
2-29	205.03.P.1	Delete the first sentence of this subsection and replace with the following: "Do not dispose of material, temporarily or permanently, beyond the normal plan fill slope across wetlands or floodplains."
2-30	205.03.P.2	Delete the first sentence of this subsection and replace with the following: "Do not dispose of material, temporarily or permanently, in wetlands or floodplains."
2-30	205.03.P.3	Delete the second paragraph of this subsection and replace with the following: "Contact the appropriate regulatory agencies to determine whether an area is a regulated wetland or floodplain before disposing of surplus or unsuitable material in areas outside the right-of-way and not shown on the plans as disposal sites."
2-30	205.03.P.3	Delete the first sentence of the third paragraph of this subsection and replace with the following: "Immediately move to an upland site any surplus or unsuitable material that was disposed of in portions of wetlands or floodplains not shown on the plans as disposal sites, at no additional cost to the Department."
2-30	205.03.P.4	Delete the first sentence of this subsection and replace with the following:

“The Department will notify the applicable regulatory agencies if the Department becomes aware that the Contractor disposed of surplus or unsuitable material in portions of a wetland or floodplain not shown on the plans.”

- | | | |
|------|------------|--|
| 3-31 | 308.04.D | Change the subsection title from “D. General. ” to read “A. General. ” |
| 4-7 | 401.03.E | Delete the third sentence of the second paragraph of this subsection and replace with the following:
“Use precast or cast-in-place footings for precast end sections as required.” |
| 4-8 | 401.03.E | Delete the first sentence of this subsection and replace with the following:
“When discharging stormwater directly to waters of the state, permanently label all end sections or other piped points of stormwater entry with “MDOT” or the local agency’s name in a conspicuous location that will remain visible after construction. |
| 4-11 | 401.04 | Change the eighth pay item from the bottom of the list on this page to read as follows:
Culv End Sect __ inch, Grate.....Each |
| 4-12 | 401.04.C.4 | Change this subsection to read:
“The Engineer will measure Culv End Sect __ inch, Grate by each as shown on the plans for the size of grate required.” |
| 4-21 | 402.03 | Add a new subsection to the end of subsection 402.03 on this page reading as follows:
“K. Outfall Labeling. Label all stormwater outfalls directly discharging to waters of the state in accordance with subsection 401.03.E. |
| 4-39 | 406.02 | Change the third line in the list of materials to read:
Coarse Aggregate 6A, 6AA, 17A.....902 |
| 4-41 | 406.03.A.3 | Delete the third paragraph of this subsection and replace with the following:
“Design joints between adjacent box culvert sections in accordance with Section 9 of ASTM C1577 and to accommodate the joint sealing material in accordance with section 914 as applicable.” |
| 4-50 | 406.03.G.3 | Change the first sentence of the first paragraph to read:
“Unless otherwise shown on the plans, construct culvert bedding for box culverts by placing a 9-inch-thick layer of 46G aggregate, covered with a 3-inch-thick layer of 34G, 34R aggregate, or approved equal.” |
| 4-51 | 406.03.G.3 | Add the following sentence to the end of the second paragraph of this subsection: |

“The cold applied joint sealer must completely cover the external rubber gasket with the placement limits matching the width of the geotextile blanket.”

- 4-52 406.04.B In the second paragraph of this subsection delete the first sentence and replace with the following:
“The Department will pay separately for cast-in-place concrete, other than for culvert segments, headwalls, wingwalls, aprons, and curtain walls.”
- 5-26 502.02 Delete the first sentence of the subsection and the listed materials in this subsection.
- 5-26 502.02.A Add the following to the end of the first sentence in this subsection:
“(914.04A)”
- 5-26 502.02.B Add the following to the end of the first sentence in this subsection:
“(502.02B)”
- 5-35 503.04 Change the first paragraph to read:
“The unit price for **Paver-Placed Surface Seal**, of the type required, includes the cost of preparing the surface, and placing a membrane and paver placed surface seal course for full-width coverage, except that the Department will pay separately for removing pavement markings in accordance with subsection 812.04”
- 5-46 504.04.A Change the first paragraph to read:
“A. **General**. The unit prices for **Micro-Surface**, regardless of the type required, include cleaning existing pavement, applying a bond coat, stationing, corrective action, and traffic control to complete corrective action.”
- 6-20 602.04 Delete the fifteenth pay item of the list on this page reading:
“Shoulder, Reinf Conc..... Square Yard
- 6-20 602.04 Change the sixteenth thru the eighteenth pay items on this page to read as follows:
Shld, Nonreinf Conc..... Square Yard
Shld, Nonreinf Conc, High Performance Square Yard
Shld, Freeway..... Square Yard
- 6-21 602.04.B.1 Delete this subsection and replace with the following:
“**Shld, Nonreinf Conc**; and **Shld, Nonreinf Conc, High Performance**. The Engineer will measure, and the Department will pay for, **Shld, Nonreinf Conc**; and **Shld, Nonreinf Conc, High Performance** by area, based on plan quantities in accordance with subsection 109.01.”
- 6-21 602.04.B.2 Delete this subsection and replace with the following:
“**Shld, Freeway**. The Engineer will measure, and the Department will pay for, **Shld, Freeway** based on plan quantities in accordance

with subsection 109.01. If the Contractor uses concrete for the shoulder, the unit price for **Shld, Freeway** includes the cost of the transverse joints in the shoulder and the external longitudinal pavement joints.”

6-23	602.04.F	Add the following sentence to the end of the first paragraph of this subsection: Temporary concrete pavement, pavement within 4 feet of an obstruction, pavement areas less than 300 square yards, or pavement less than 3 feet wide will not be cored.
6-23	602.04.F	Delete the following language from this subsection on this page: “The Engineer will not core the following: 1. Temporary concrete pavement; 2. Pavement within 4 feet of an obstruction; 3. Pavement areas less than 300 square yards; or 4. Pavement less than 3 feet wide.”
6-24	602.04	Rename the following subsections as follows: “1. Initial Core.
6-24	602.04	2. Additional Cores.
6-24	602.04	3. Price Adjustment for Thickness.
6-25	602.04	4. Price Adjustments for Steel Locations within the Pavement.
6-26	602.04	5. Remove and Replace.”
7-107	709.04	Change the Pay Unit on the second pay item from the top of the list on this page to read as follows: Thousand Board Foot
8-12	804.03.B.2	Change the first sentence in this subsection to read: “Cast in place light standard and sign support foundations using fixed forms in accordance with the <i>MDOT Standard Plan R-50 series.</i> ”
8-27		Change the last pay item at the bottom of this page to read as follows: Guardrail Anch, Bridge, Det __, Curved.....Each
8-44	810.03.J.9	Add a period to the end of the third sentence in this subsection.
8-53	810.03.V	Add a period to the end of the second sentence of the first paragraph of this subsection.
8-53	810.04	Change the fourth pay item from the top of the list on this page to read as follows: Post, Steel, __ pound.....Foot

- 8-53 810.04 Change the last four pay items at the bottom of this page to read as follows:
 Fdn, Truss Sign Structure Type __, __ inch dia, Cased.....Foot
 Fdn, Truss Sign Structure Type __, __ inch dia, Uncased.....Foot
 Fdn, Cantilever Sign Structure Type __, __ inch dia, CasedFoot
 Fdn, Cantilever Sign Structure Type __, __ inch dia, Uncased.Foot
- 8-55 810.04.B.1 Delete the second paragraph of this subsection and replace with the following:
 “The unit prices for **Fdn, Truss Sign Structure Type __, __ inch dia, Cased** and **Fdn, Cantilever Sign Structure Type __, __ inch dia, Cased** include the cost of concrete, slurry, steel reinforcement, permanent casings, anchor bolts, excavation, and disposal of excavated material.”
- 8-55 810.04.B.2 Delete this subsection and replace with the following:
“Foundation, Truss Sign Structure, Uncased and Foundation, Cantilever Sign Structure, Uncased. The unit prices for **Fdn, Truss Sign Structure Type __, __ inch dia, Uncased** and **Fdn, Cantilever Sign Structure Type __, __ inch dia, Uncased** include the cost of concrete, slurry, steel reinforcement, temporary casings, anchor bolts, excavation, and disposal of excavated material.”
- 8-57 810.04.I Delete the first paragraph of this subsection and replace with the following:
 “The unit price for **Sign, Rem** of the type required includes the cost of removing signs from supports and stacking by shape and size.”
- 8-57 810.04.I Delete the second paragraph of this subsection and replace with the following:
 “The unit prices for **Ground Mtd Sign Supports, Rem; Cantilever, Rem** and **Truss, Rem** include the cost of removing ground mounted sign supports, cantilever or truss supports.”
- 8-57 810.04.L Change this subsection to read:
 “The unit price for Sign, Erect, Salv of the type required includes erecting the salvaged sign on a new sign support or existing sign support, as shown on the plans, and attaching devices, and hardware, including brackets.”
- 8-58 810.04.N Delete this subsection in its entirety.
- 8-110 812.04 Change the fifth and sixth pay item from the top of the list on this page to read as follows:
 Sign, Type B, Temp, Prismatic, Spec, Furn Square Foot
 Sign, Type B, Temp, Prismatic, Spec, Oper..... Square Foot
- 8-141 815.04.C.1.b Delete this subsection in its entirety.
- 8-141 815.04.C.1.c Rename and change this subsection as follows:

“b. Removal and disposal of unacceptable plants including the root ball.

8-141	815.04.C.1.d	Delete this subsection in its entirety.
8-142	815.04.C.2.d	Change this subsection to read: "During the first watering of the second growing season, remove and dispose of the guying material, identification tags, and inspection tags."
8-144	816.03.A	Change the third sentence in this subsection to read: "Use topsoil from within the project limits; or from off-site sources meeting the requirements in subsection 917.06."
8-167	818.04	Add the pay item to the bottom of the list on this page as follows: Power Company (Estimated Cost to Contractor)..... Dollar
8-170	818.04.G	Delete this subsection in its entirety.
8-170	818.04	Rename the following subsections as follows: G. Handholes (Hh).
8-171	818.04	H. Service Disconnect.
8-171	818.04	I. Metered Service.
8-171	818.04	J. Unmetered Service.
8-172	818.04	K. Wood Pole.
8-172	818.04	L. Concrete Pole, Fit Up.
8-172	818.04	M. Steel Pole, Fit Up.
8-172	818.04	N. Bracket Arm."
8-171	818.04.J	Delete the second paragraph of this subsection and replace with the following: "The pay item, Power Company (Estimated Cost to Contractor) , establishes a budgeted amount in the contract to cover the cost of reimbursing the Contractor for payments made to the power company for providing electrical power at the locations shown on the plans. The Department will estimate the reimbursement costs to the Contractor and establish a budgeted amount as shown on the plans. The Department will pay the Contractor for power company invoices paid, as submitted to the Engineer."
8-176	819.03.B.5.b	In the second paragraph of this subsection delete the first sentence and replace with the following: "Tighten bolts connecting the pole to the frangible base to a snug tight condition in accordance with subsection 707.03.E.6.c."
8-185	820.01.B	Add a period to the end of the first sentence of this subsection.
8-187	820.02	Change the first line in the list of materials on this page to read: Conduit Material.....918

8-196	820.03.O	In the fourth paragraph of this subsection delete the last sentence and replace with the following: "Use smooth wall, Schedule 80, rigid PVC conduit, or coilable, Schedule 80 PE conduit in accordance with section 818."
8-199	820.04	Add the pay item to the list on this page: TS, (number) Way (type) Mtd (LED) Optic
8-200	820.04	Change the second pay item from the top of the list on this page to read as follows: TS Head, TempEach
8-200	820.04	Change the eleventh pay item from the top of the list on this page to read as follows: TS, Lens, Pedestrian Sym (LED)Each
8-200	820.04	Delete the following pay items from the list: Strain Pole, Steel, 6 bolt, __ foot.....Each Mast Arm Pole, Cat.....Each Mast Arm, __Foot, Cat.....Each
8-200	820.04	Change the eleventh pay item from the bottom of the list on this page to read as follows: Mast Arm, Rem.....Each
8-201	820.04	Delete the following pay item from the list: Power Co. (Est Cost to Contractor)..... Dollar
8-202	820.04	Add the following pay item to the list: Bracket, Truss, Salv.....Each
8-204	820.04.C	Delete the last paragraph of this subsection in its entirety.
8-204	820.04.D	Delete the first paragraph of this subsection in its entirety.
9-9	902.03.C.1.b	Delete the first sentence in this subsection and replace with the following: "The physical requirements for the coarse aggregate are as specified in Table 902-2 and as follows:"
9-16	Table 902-2	Delete the superscript footnote in the first through fourth rows under the header row that reads "(m)" in the column Loss, % max, LA Abrasion (MTM 102).
9-16	Table 902-2	Add the superscript footnote in the header row that reads "(m)" in the column Loss, % max, LA Abrasion (MTM 102).
9-15	Table 902-2	Delete the footnote (d) in one location in the table.
9-17	Table 902-2	Delete the footnote (d) in one location in the table.

tests referenced in AASHTO's LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals."

- | | | |
|----------|----------------|--|
| 9-170 | 920.02.C | Change the reference to Table 920-2 to read Table 920-3 in two locations. |
| 9-222 | 922.10.A.3 | Delete this subsection and replace with the following:
"Conform to the wind load requirements specified by AASHTO's LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals with all equipment mounted without the need for additional ballast;" |
| 10-23 | 1003.03.B | Delete the last sentence of this subsection and replace with the following:
"Aggregate sampling for concrete will be performed by an MCAT-certified Aggregate Technician Level II." |
| 10-43 | Table 1006-02 | Replace Table 1006-02 with the Table 1006-02 below. |
| 1A - 20A | Pay Item Index | Replace the Pay Item Index in its entirety. |

**Table 1006-2:
Overlay Mixtures**

Mixture Type	Aggregate	Slump (inch)	Air Content	Admixture Required	Mixture Proportions lb/yd ³ , dry weight					
					Cement ^(a)	Dry Densified Silica Fume ^(b)	Net Mix Water	Fine Agg	Coarse Agg	Latex Admixture
SFMC	2NS and 26A ^(c)	4-6	6.5 ± 1.5%	(d),(e),(f)	618	40	273 ^(g)	1273	1601	—
LMC	2NS and 26A ^(c)	(h)	4.5 ± 1.5%	—	658	—	(h)	1490 ^{(i),(j)}	1300 ^{(i),(j)}	206

(a) Use only Type I Portland cement.

(b) For SFMC mixtures, the Contractor may use a blended silica fume Portland cement. However, if the silica fume content of the blended material is greater than 8% of the total cementitious material, submit to the Engineer modified mix proportions with Type I Portland cement added to the blended material to achieve the equivalent individual cementitious material mixture proportions.

(c) Provide coarse aggregate, 95% minimum crushed materials in accordance with Michigan Test Method (MTM) 117, with an absorption no greater than 2.5%, in accordance with ASTM C127.

(d) Water-reducing high-range admixture or water-reducing high-range and retarding admixture.

(e) Virgin polypropylene collated fibers at 2 lb/yd³.

(f) Air-entraining admixture.

(g) Provide a net water to cementitious material ratio of 0.41 (cementitious material includes cement and silica fume).

(h) Add water in addition to water in the latex admixture to control slump to within 3 to 5 inches. Measure slump from 4 to 5 minutes after discharge from the mixer. During the waiting period, deposit concrete on the deck and do not disturb. If placing mixtures on sections within superelevated curves, the Contractor may need to use the lower allowable range of the slump requirement, as determined by the Engineer. Do not exceed water-cement ratio, by weight, of 0.30 including water contained in the latex emulsion.

(i) Aggregate proportions are approximate; due to gradation changes, the Contractor may increase proportions by no greater than 5% by weight of total aggregate if reducing coarse aggregate by an equivalent volume.

(j) Aggregate weights specified in the table are based on a dry bulk specific gravity of 2.65 for gravel and stone. Adjust the weights if the specific gravity of the materials used varies by more than 0.02 from the specified values.

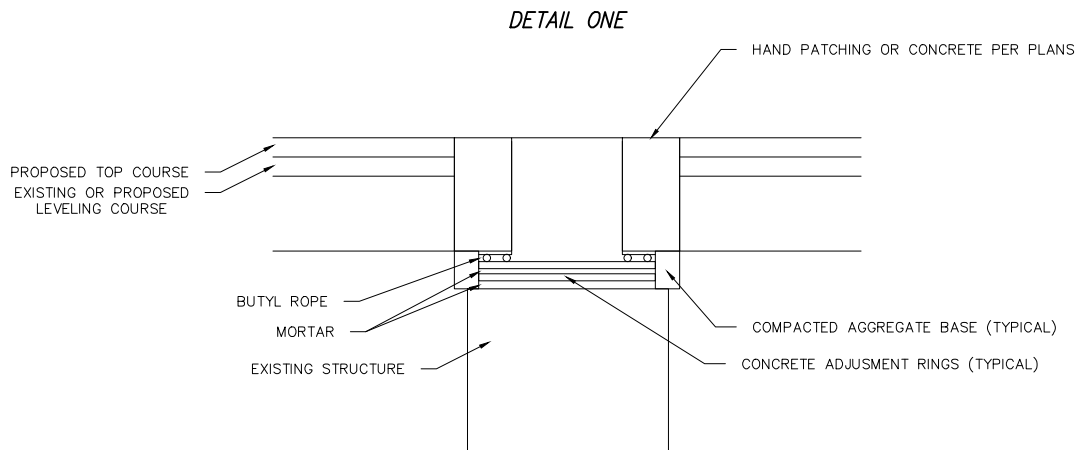
PROJECT MANUAL



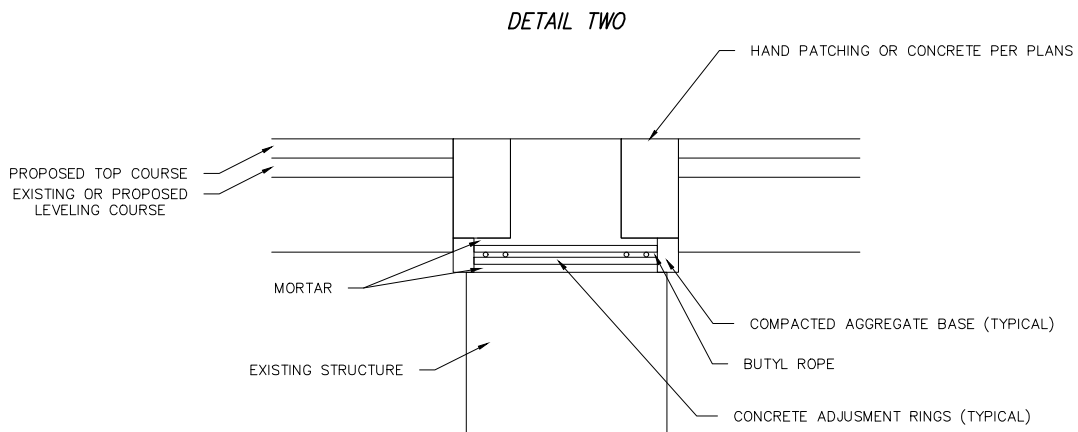
Appendix F

Special Details

SPECIAL DETAIL FOR STRUCTURE COVER ADJ WITH BUTYL ROPE JOINT



STRUCTURE COVER EDGE – ELEVATION VIEW
FLANGE BELOW BOTTOM OF PAVEMENT



STRUCTURE COVER EDGE – ELEVATION VIEW
FLANGE ABOVE BOTTOM OF PAVEMENT



A PRIME COMMUNITY



313 N. Capitol Ave, Suite 100
Lansing, MI 48933
Phone: (517) 679-4400
Fax: (248) 844-5440

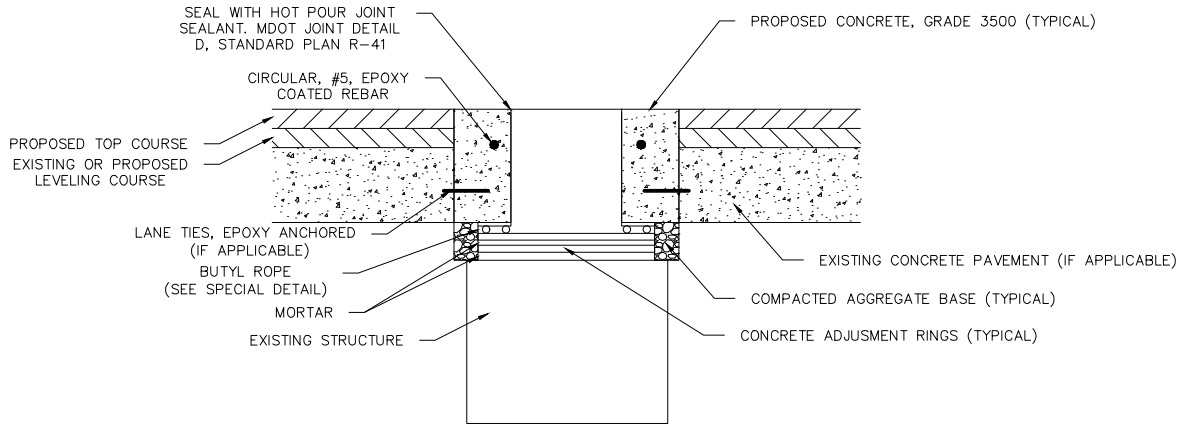
www.sda-eng.com
(800) 598-1600

SPECIAL DETAIL FOR STRUCTURE ADJ USING THE CORING METHOD

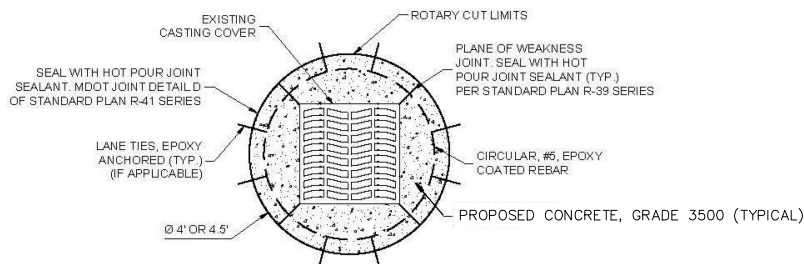
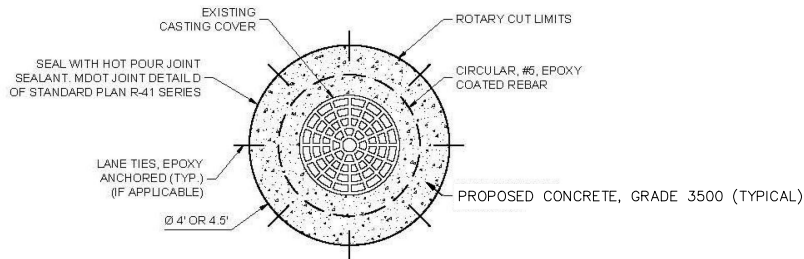
APPLIES TO:

DR STRUCTURE COVER, ADJ, CASE 1, MODIFIED

SANITARY STRUCTURE, ADJ, CASE 1, MODIFIED



PAVEMENT AREA – ELEVATION VIEW
FLANGE BELOW BOTTOM OF PAVEMENT



PAVEMENT AREAS - PLAN VIEW

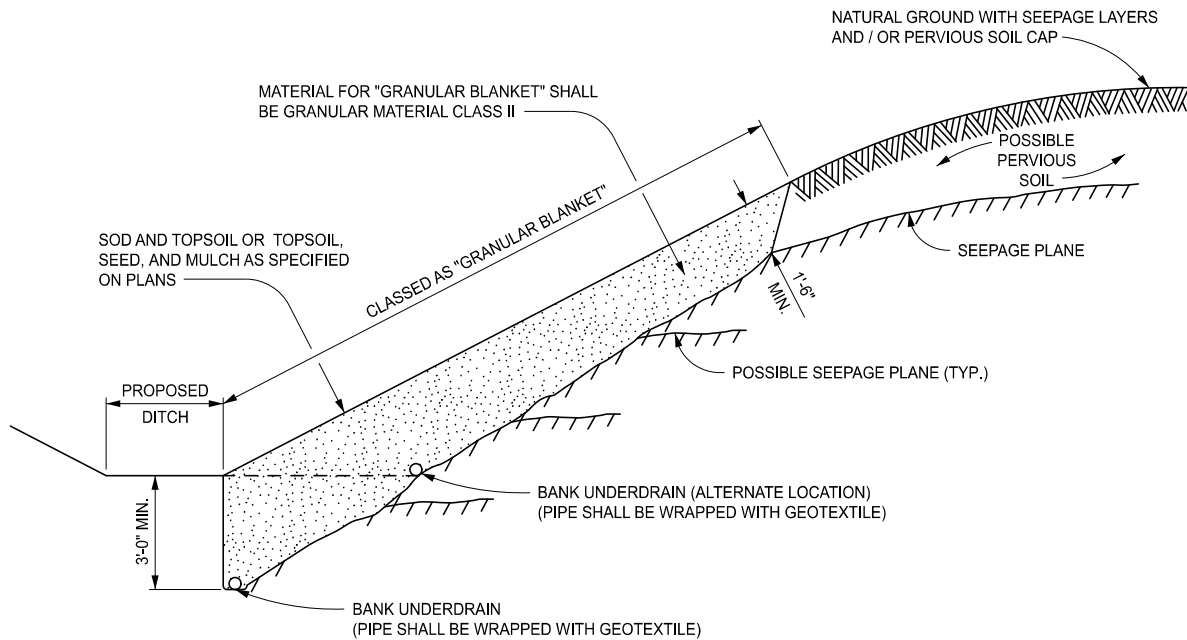


A PRIME COMMUNITY

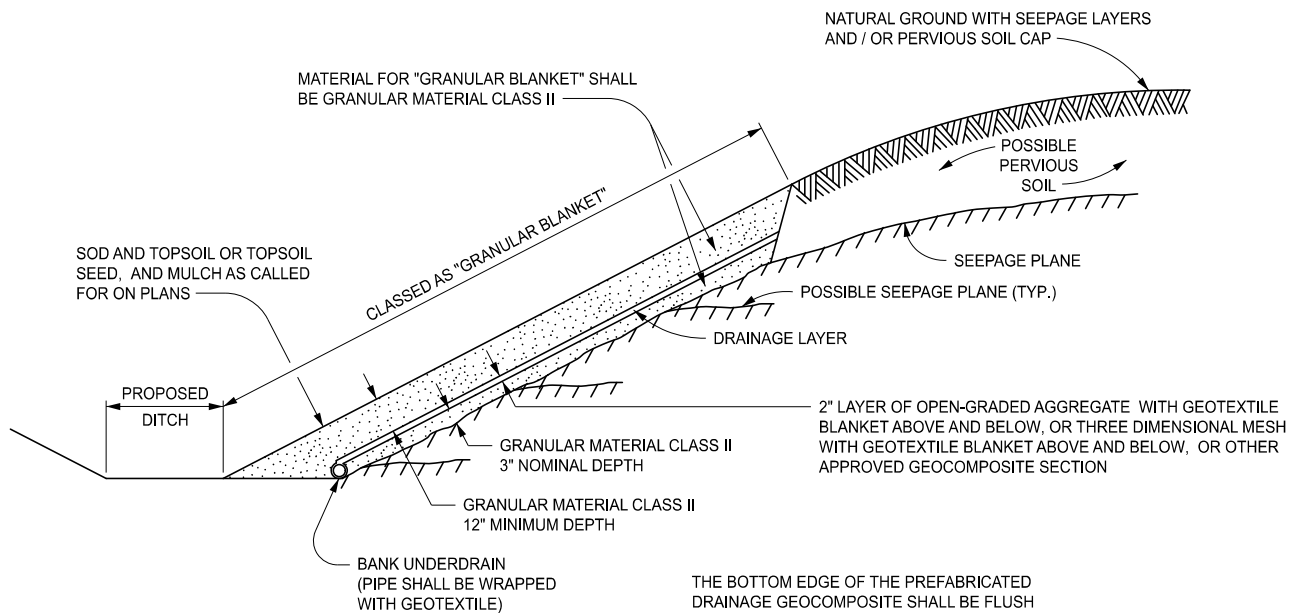


313 N. Capitol Ave, Suite 100
Lansing, MI 48933
Phone: (517) 679-4400
Fax: (248) 844-5440

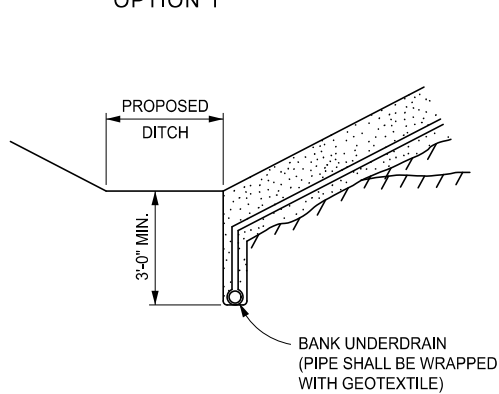
www.sda-eng.com
(800) 598-1600



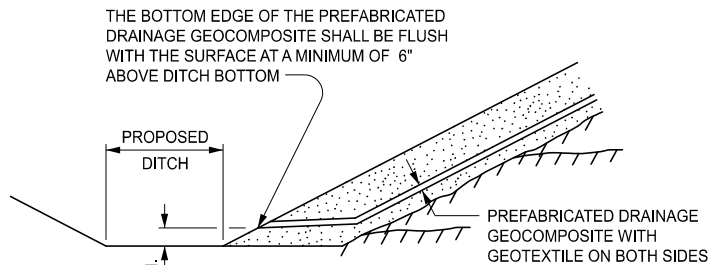
GRANULAR BLANKET TYPE 1



OPTION 1



OPTION 2



OPTION 3

NOTE: OPTION 1, 2, OR 3 WILL BE DETERMINED BY THE ENGINEER BASED ON THE PROJECT CONDITIONS.

GRANULAR BLANKET TYPE 2

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

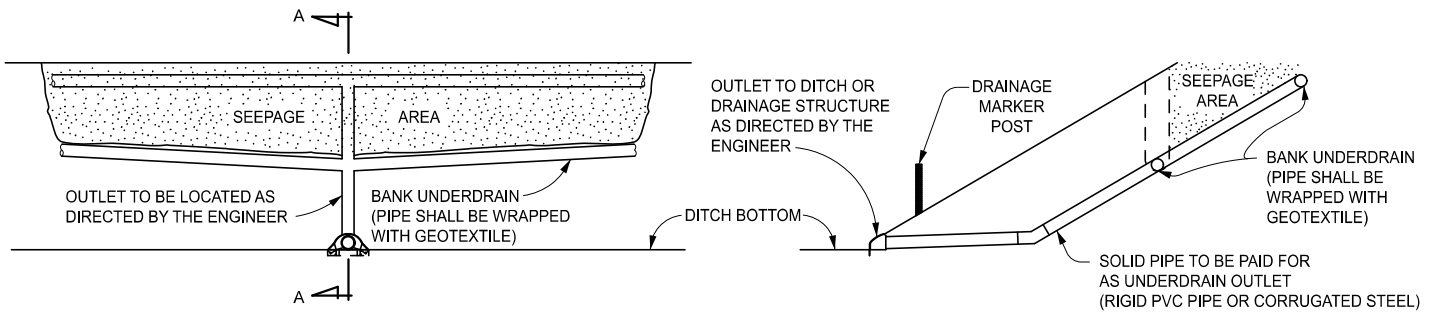
STANDARD PLAN FOR
GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS
FOR UNDERDRAINS, AND SEWER BULKHEADS

(SPECIAL DETAIL)
FHWA APPROVAL

06/28/2021
PLAN DATE

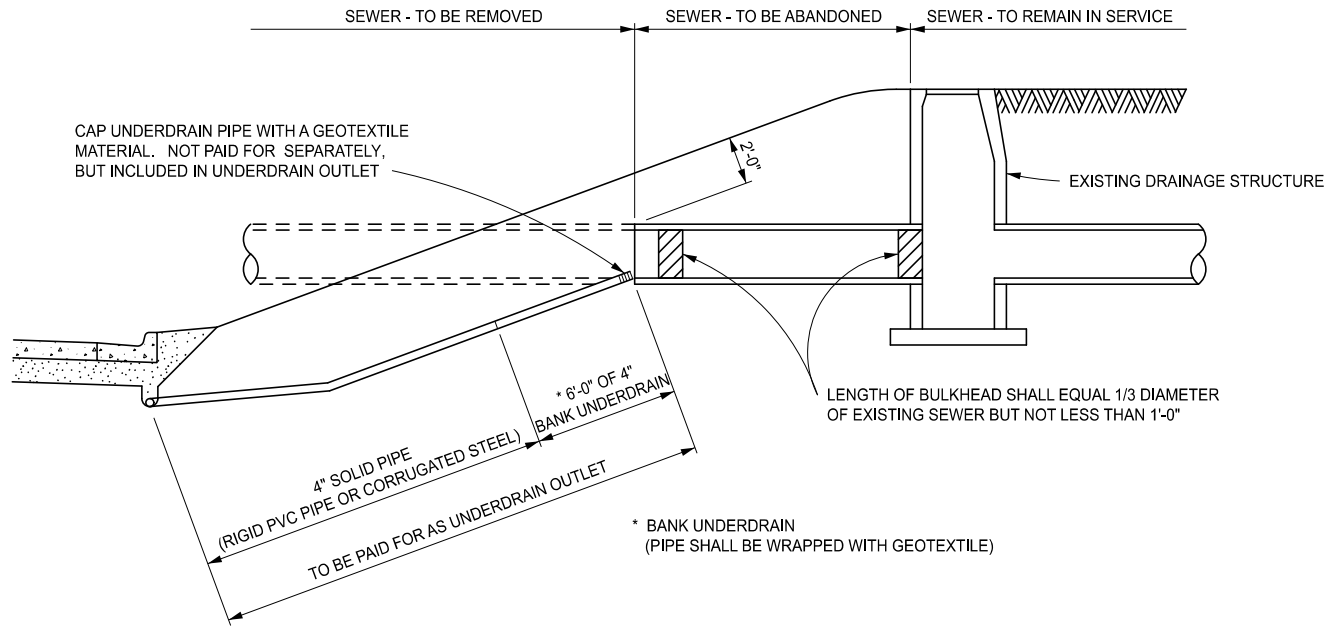
R-80-F

SHEET
1 OF 8



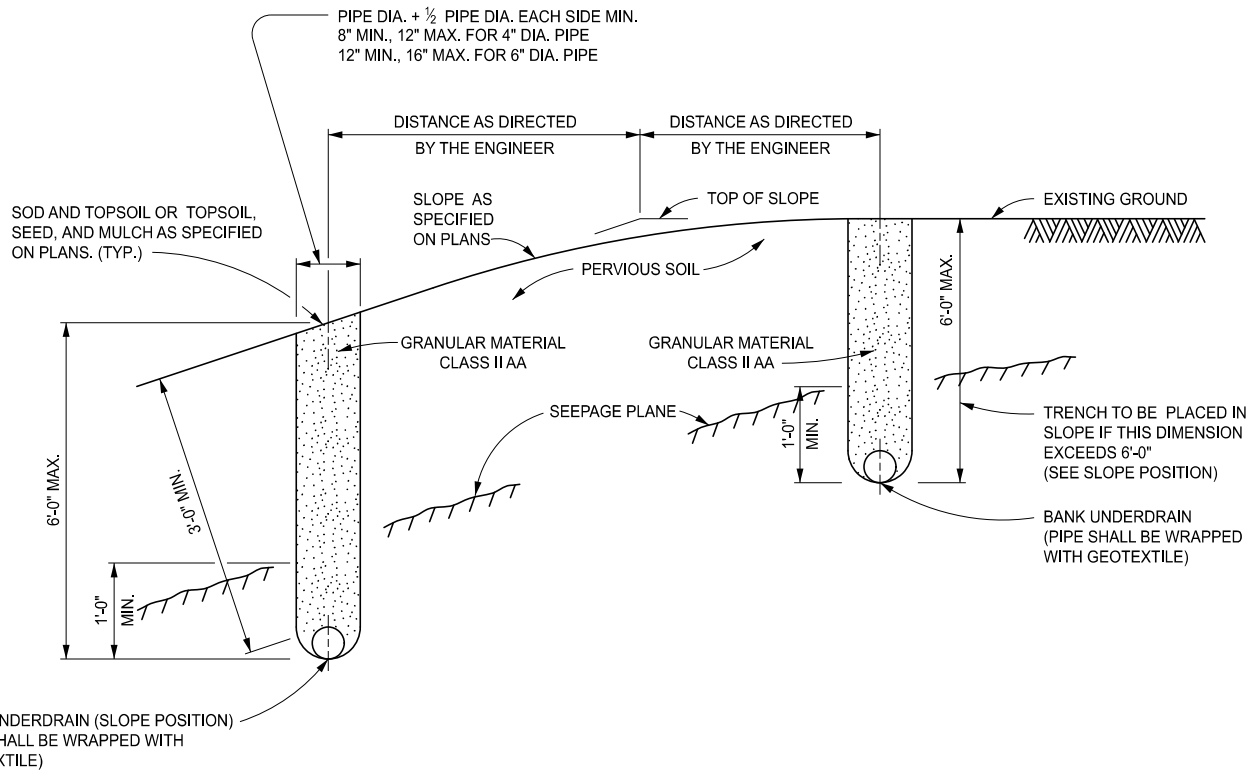
SECTION A - A

BANK UNDERDRAIN OUTLET

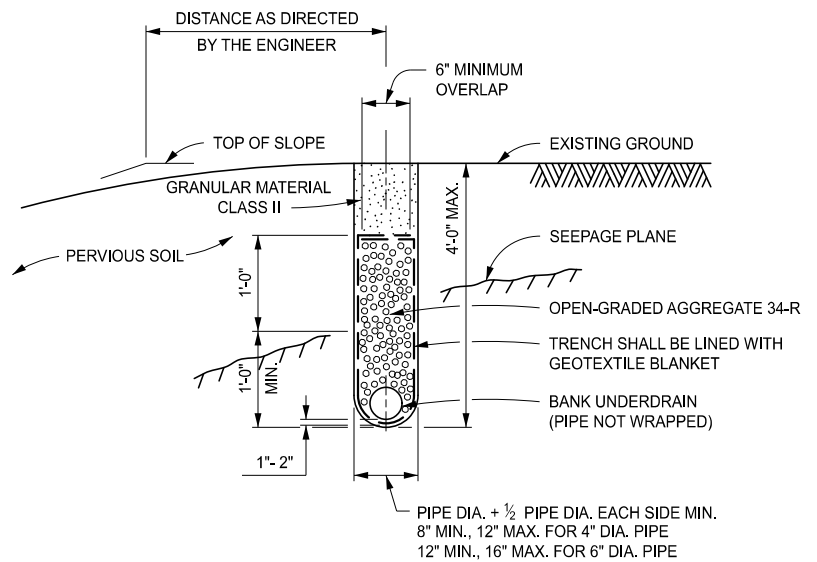


WEEPER UNDERDRAIN AND BULKHEADING SEVERED SEWER

<p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	STANDARD PLAN FOR GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS		R-80-F	SHEET 2 OF 8
	(SPECIAL DETAIL) FHWA APPROVAL	06/28/2021 PLAN DATE		



BANK UNDERDRAINS



BANK UNDERDRAIN, OPEN-GRADED



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

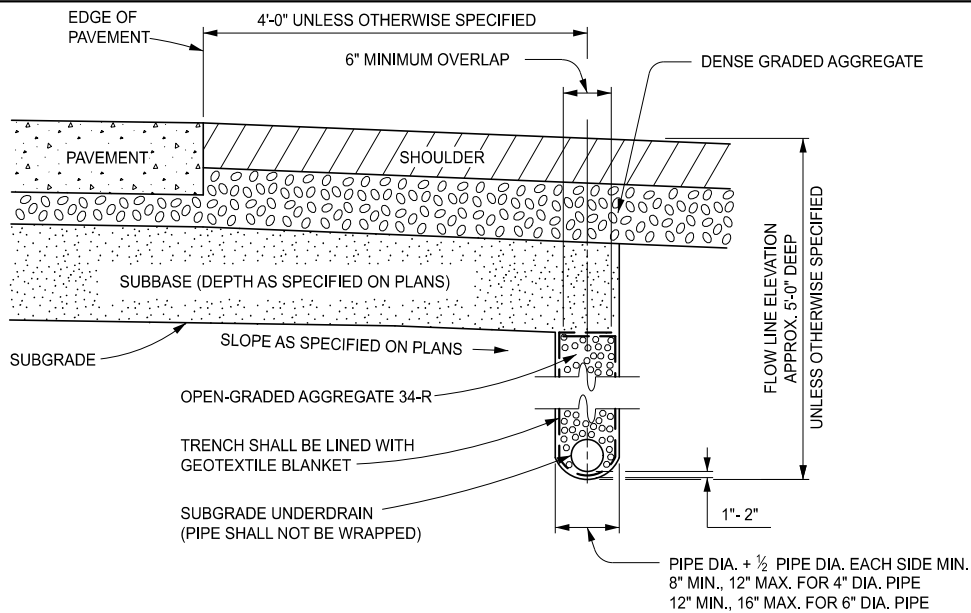
STANDARD PLAN FOR GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS

(SPECIAL DETAIL)
FHWA APPROVAL

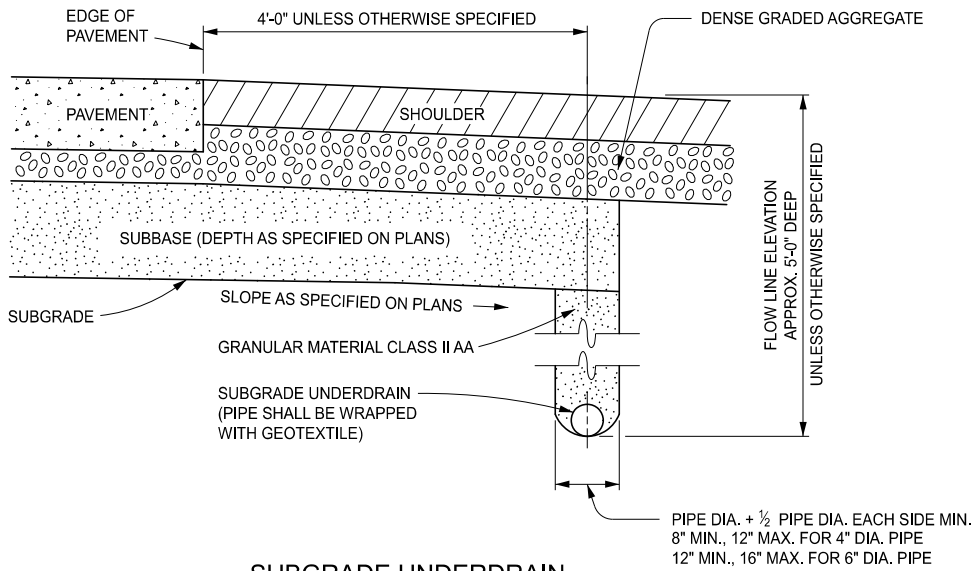
06/28/2021
PLAN DATE

R-80-F

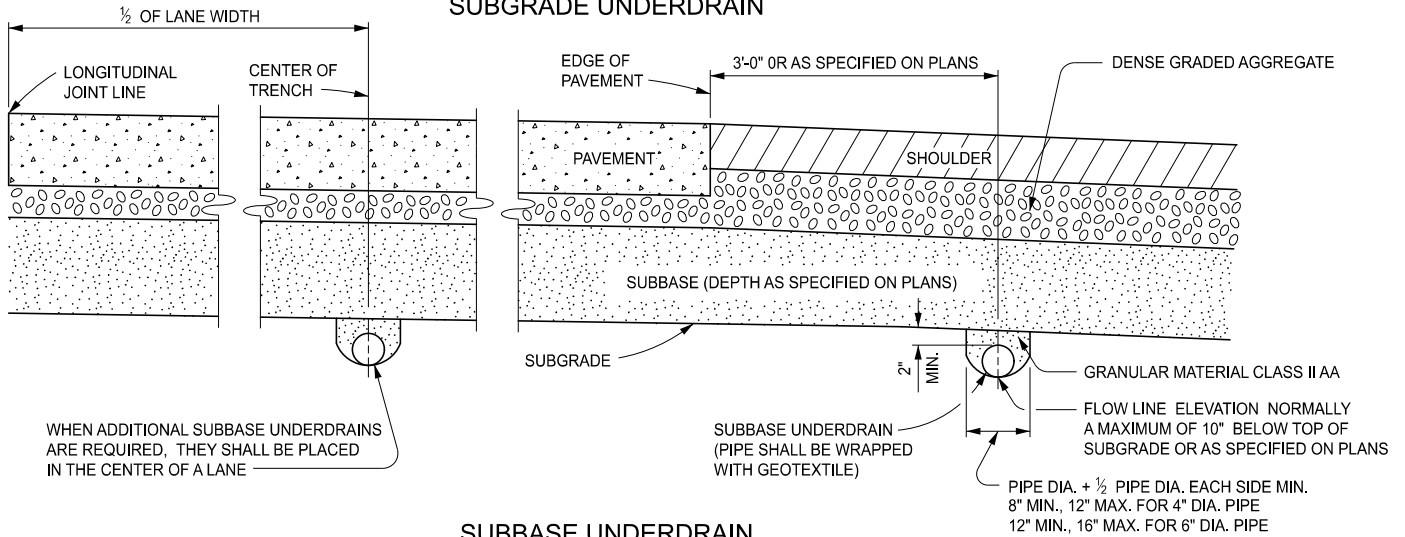
SHEET
3 OF 8



SUBGRADE UNDERDRAIN - OPEN-GRADED

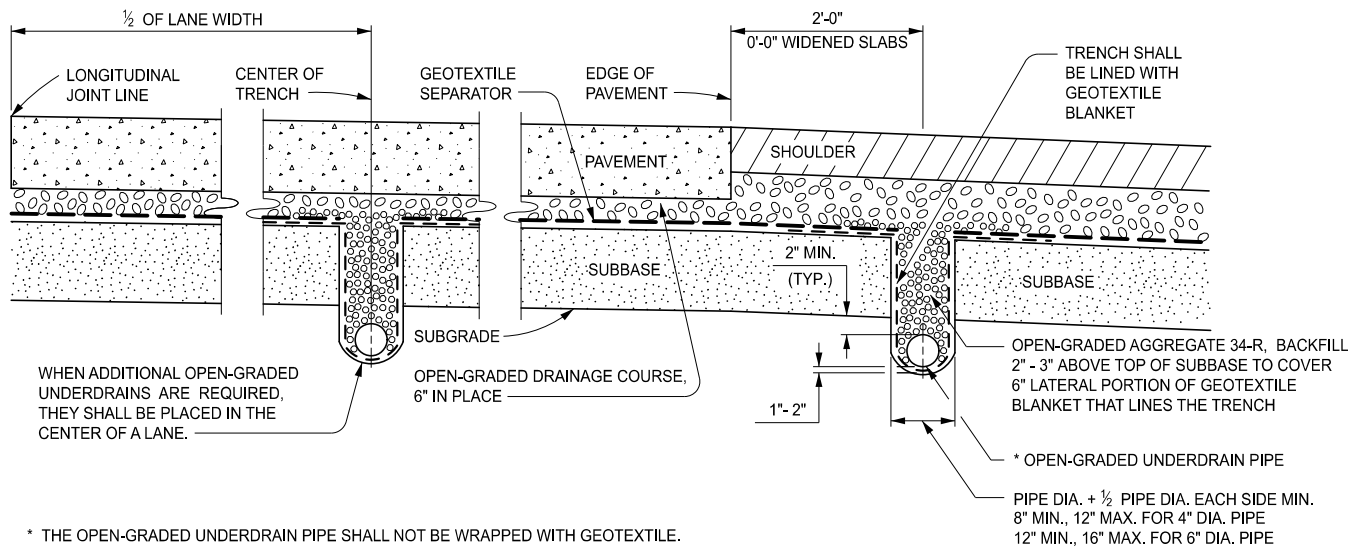


SUBGRADE UNDERDRAIN

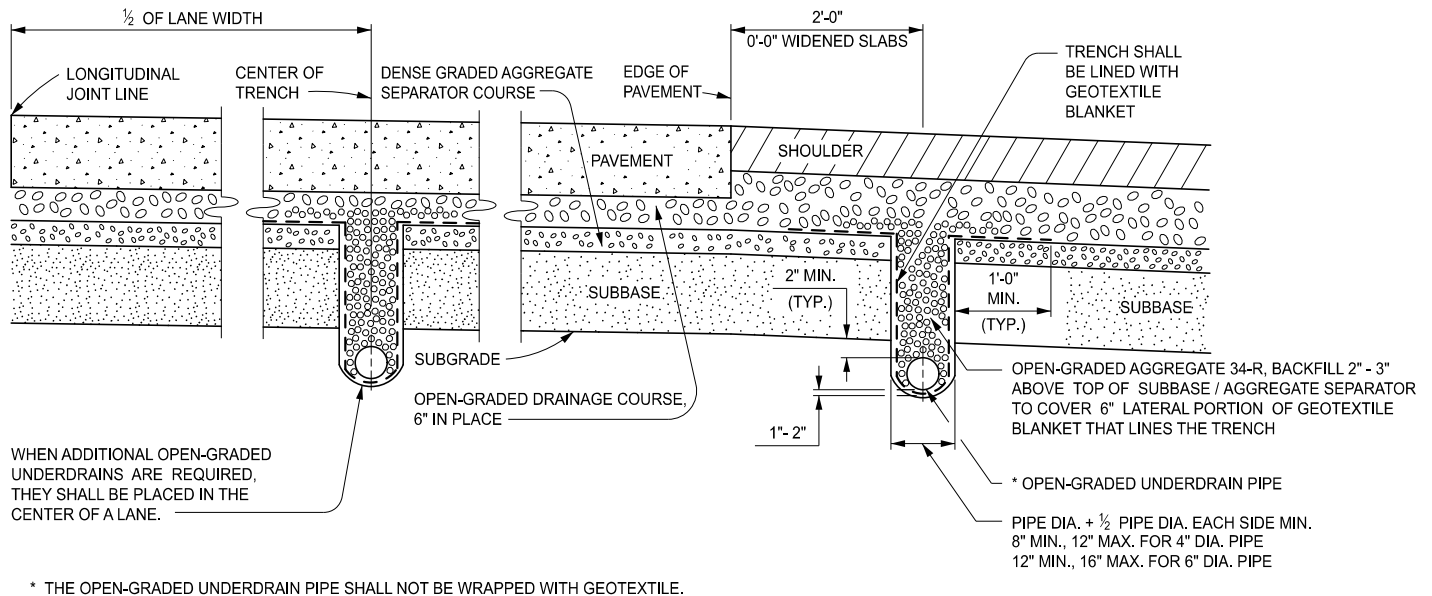


SUBBASE UNDERDRAIN

<p>MDOT Michigan Department of Transportation</p> <p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	STANDARD PLAN FOR GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS		R-80-F	SHEET 4 OF 8
	(SPECIAL DETAIL) FHWA APPROVAL	06/28/2021 PLAN DATE		



**OPEN-GRADED UNDERDRAIN PIPE
WITH GEOTEXTILE SEPARATOR**

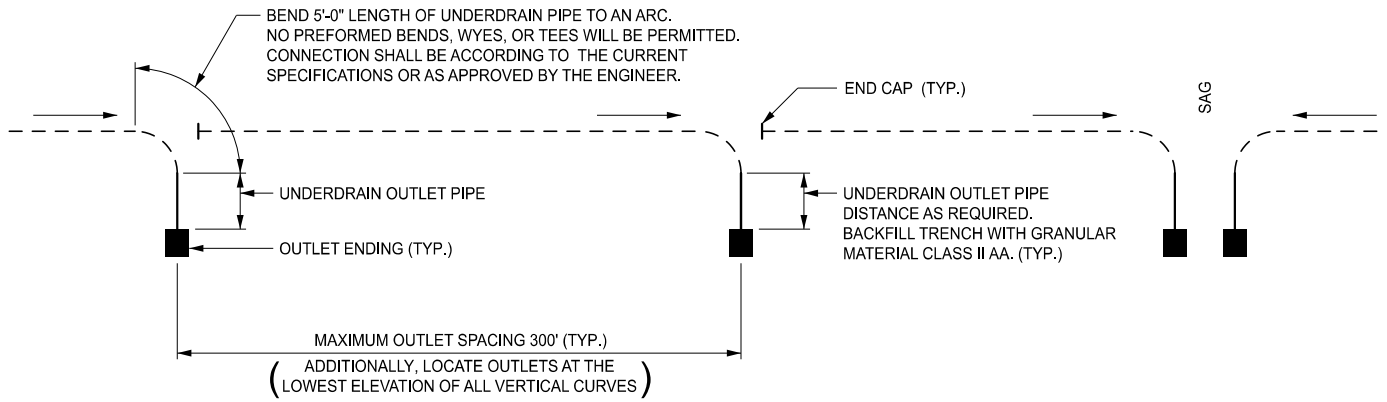


**OPEN-GRADED UNDERDRAIN PIPE
WITH DENSE GRADED AGGREGATE SEPARATOR COURSE**

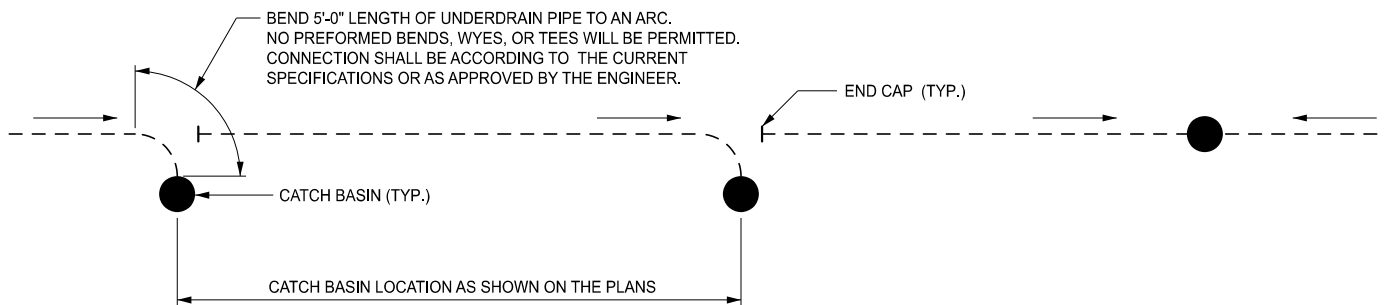
MDOT
Michigan Department of Transportation

DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

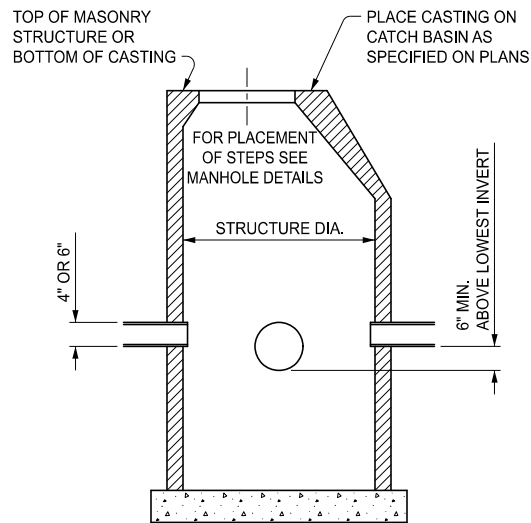
STANDARD PLAN FOR GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS		
(SPECIAL DETAIL)	06/28/2021	R-80-F
FHWA APPROVAL	PLAN DATE	
		SHEET 5 OF 8



PLAN SHOWING OUTLETS FOR UNDERDRAINS

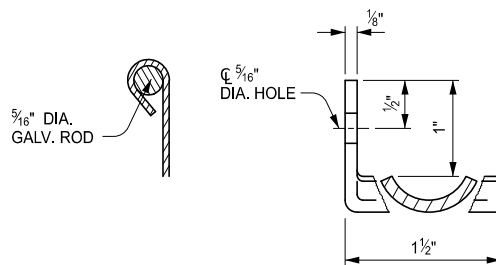
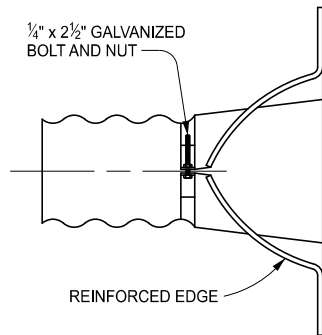
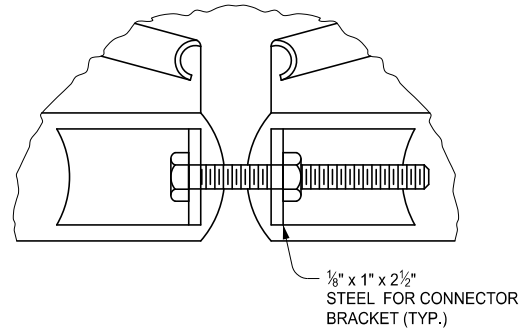


PLAN SHOWING UNDERDRAINS TAPPED INTO CATCH BASINS

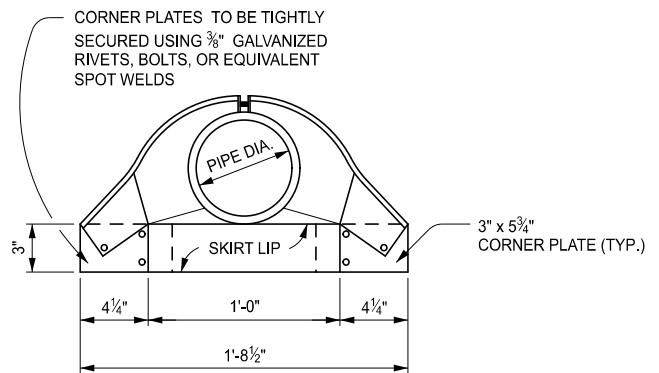
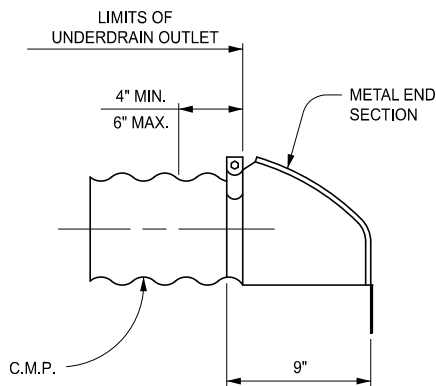


PROFILE VIEW

<p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	STANDARD PLAN FOR GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS FOR UNDERDRAINS, AND SEWER BULKHEADS		R-80-F	SHEET 6 OF 8
	(SPECIAL DETAIL) FHWA APPROVAL	06/28/2021 PLAN DATE		



REINFORCED EDGE DETAIL CONNECTOR BRACKET DETAIL



STEEL END SECTION FOR 4" OR 6" PIPE



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

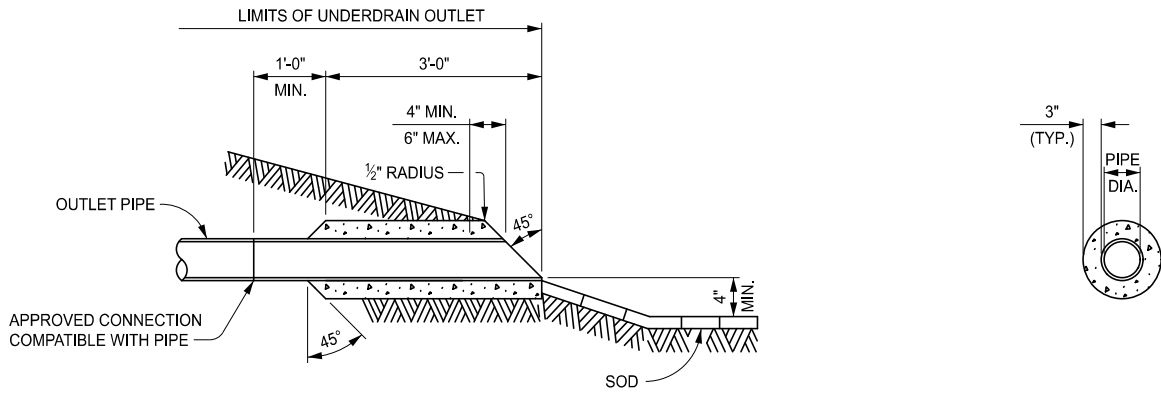
STANDARD PLAN FOR
GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS
FOR UNDERDRAINS, AND SEWER BULKHEADS

(SPECIAL DETAIL)
FHWA APPROVAL

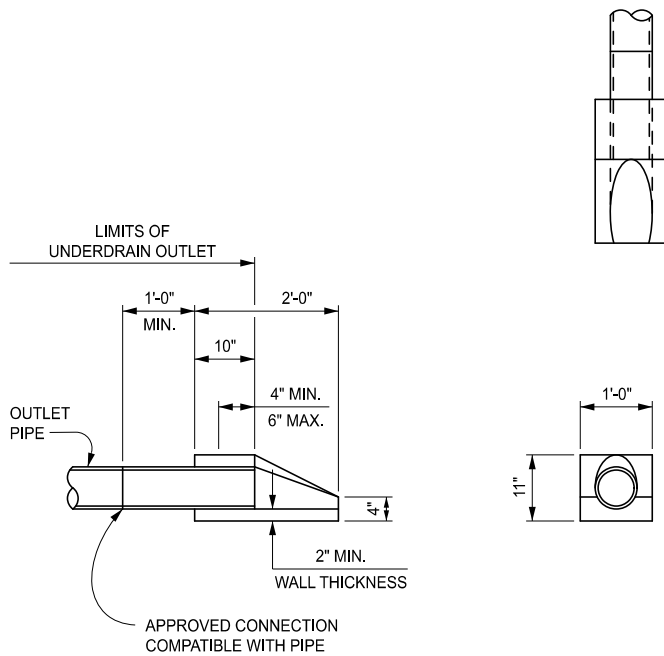
06/28/2021
PLAN DATE

R-80-F

SHEET
7 OF 8



CONCRETE RING FOR 4" OR 6" PIPE



CONCRETE END SECTION FOR 4" OR 6" PIPE

NOTES:

POSITIVE DRAINAGE SHALL BE PROVIDED FOR UNDERDRAINS AND UNDERDRAIN OUTLETS.

UNDERDRAIN PIPE SIZES SHALL BE AS SPECIFIED ON THE PLANS.

CONNECTIONS BETWEEN UNDERDRAIN PIPE AND UNDERDRAIN OUTLET PIPE SHALL BE CONSTRUCTED ACCORDING TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION AND AS APPROVED BY THE ENGINEER.

CONNECTIONS, IF REQUIRED WITHIN THE OUTLET PIPE, SHALL BE ACCORDING TO APPLICABLE ASTM SPECIFICATIONS REFERENCED IN THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. THEY SHALL BE WATER TIGHT, AND OF THE SAME MATERIAL AS THE OUTLET PIPE.

OUTLET CONNECTIONS TO DRAINAGE STRUCTURES SHALL BE ACCORDING TO STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR DRAINAGE STRUCTURES.

UNDERDRAIN OUTLET PIPE SHALL BE RIGID PVC OR CORRUGATED METAL ONLY.

THE CONCRETE RING OR CONCRETE END SECTION SHALL BE CAST AROUND THE SAME TYPE OF PIPE AS THAT USED FOR UNDERDRAIN OUTLET PIPE.

STEEL END SECTIONS SHALL BE ATTACHED TO THE ENDS OF CORRUGATED METAL PIPE AS SPECIFIED ON THIS STANDARD PLAN, BY STANDARD METAL BANDS, OR BY OTHER CONNECTING DEVICES AS APPROVED BY THE ENGINEER.

STEEL END SECTIONS ARE NOT ALLOWED ON PVC OUTLET PIPE. CONCRETE END SECTIONS ARE REQUIRED.

HELICALLY CORRUGATED PIPE (EXCEPT PERFORATED PIPE) SHALL HAVE THE ENDS OF THE PIPE REROLLED TO FORM ANNULAR CORRUGATIONS FOR CONNECTING THE END SECTION.

GRANULAR MATERIAL PRODUCED FROM CRUSHED PORTLAND CEMENT CONCRETE IS NOT PERMITTED FOR ANY BACKFILL MATERIAL.



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

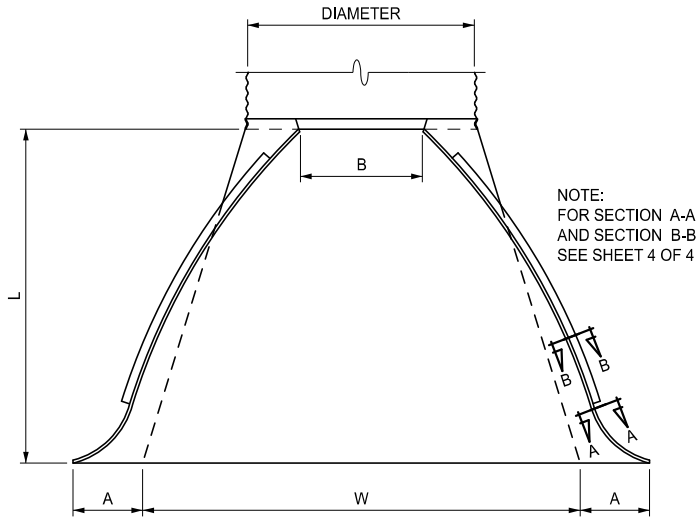
STANDARD PLAN FOR
GRANULAR BLANKET, UNDERDRAINS, OUTLET ENDINGS
FOR UNDERDRAINS, AND SEWER BULKHEADS

(SPECIAL DETAIL)
FHWA APPROVAL

06/28/2021
PLAN DATE

R-80-F

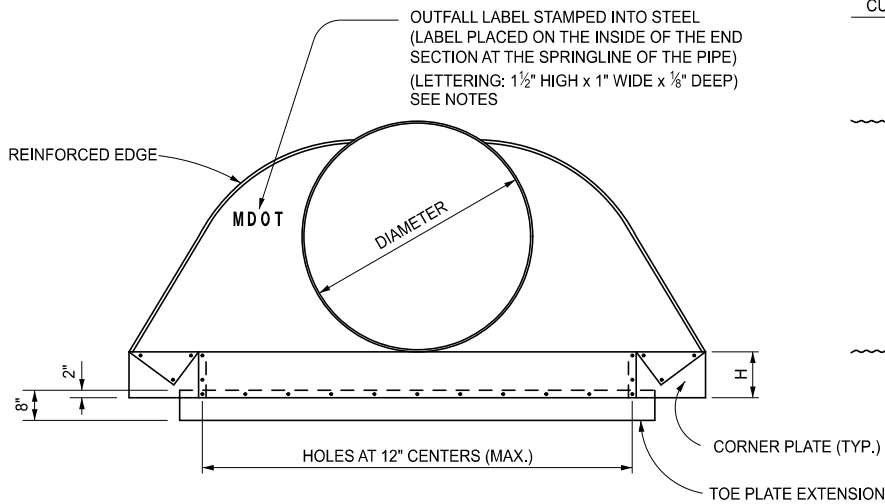
SHEET
8 OF 8



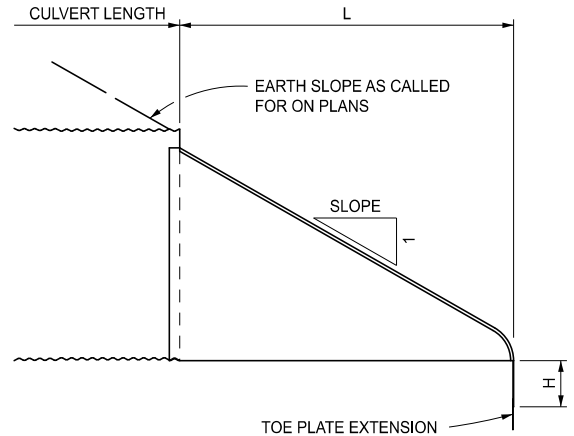
PLAN VIEW

DIMENSIONS									
DIMENSIONS IN INCHES							APPROX SLOPE	BODY	
PIPE DIAMETER	MIN. THK.	A ± 1"	B MAX.	H ± 1"	L ± 1½"	W ± 2"			
12	0.064	6	6	6	21	24	2.50	1 Pc	
15	0.064	7	8	6	26	30	2.50	1 Pc	
18	0.064	8	10	6	31	36	2.50	1 Pc	
21	0.064	9	12	6	36	42	2.50	1 Pc	
24	0.064	10	13	6	41	48	2.50	1 Pc	
30	0.079	12	16	8	51	60	2.50	1 Pc	
36	0.079	14	19	9	60	72	2.50	2 Pc	
42	0.109	16	22	11	69	84	2.50	2 Pc	
48	0.109	18	27	12	78	90	2.25	2 Pc	
54	0.109	18	30	12	84	102	2.00	2 Pc	
* 60	0.109	18	33	12	87	114	1.75	3 Pc	
* 66	0.109	18	36	12	87	120	1.50	3 Pc	
* 72	0.109	18	39	12	87	126	1.33	3 Pc	
* 78	0.109	18	42	12	87	132	1.25	3 Pc	
* 84	0.109	18	45	12	87	138	1.16	3 Pc	

* ALL THREE PIECE BODIES HAVE 0.109" SIDES AND 0.138" CENTER PANELS. WIDTH OF CENTER PANEL TO BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 3/8" DIAMETER GALVANIZED RIVETS OR BOLTS.



END VIEW



LONGITUDINAL VIEW

NOTE: SEE SHEET 3 FOR CONNECTION DETAILS

STEEL END SECTION FOR CORRUGATED STEEL CIRCULAR PIPE

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

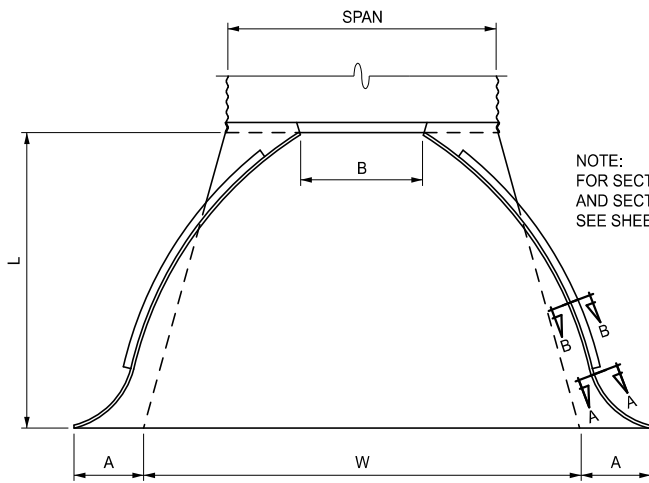
STANDARD PLAN FOR
STEEL END SECTION

(SPECIAL DETAIL)
FHWA APPROVAL

03/07/2023
PLAN DATE

R-88-E

SHEET
1 OF 4

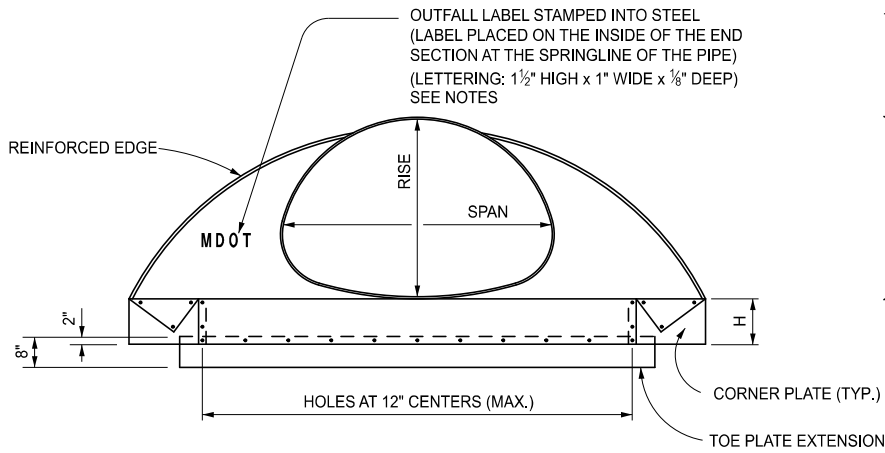


NOTE:
FOR SECTION A-A
AND SECTION B-B
SEE SHEET 4 OF 4

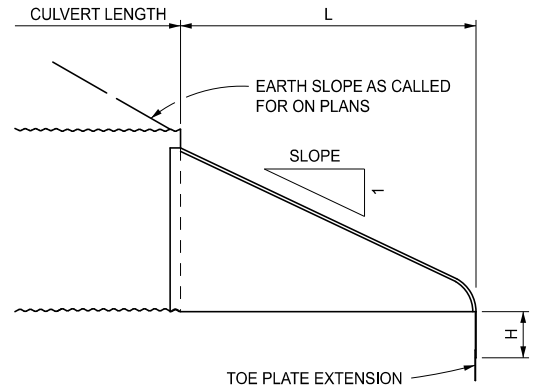
PLAN VIEW

DIMENSIONS								
DIMENSIONS IN INCHES							APPROX SLOPE	BODY
SPAN / RISE	MIN. THK.	A ± 1"	B MAX.	H ± 1"	L ± 1½"	W ± 2"		
17 x 13	0.064	7	9	6	19	30	2.50	1 Pc
21 x 15	0.064	7	10	6	23	36	2.50	1 Pc
24 x 18	0.064	8	12	6	28	42	2.50	1 Pc
28 x 20	0.064	9	14	6	32	48	2.50	1 Pc
35 x 24	0.079	10	16	6	39	60	2.50	1 Pc
42 x 29	0.079	12	18	8	46	75	2.50	1 Pc
49 x 33	0.109	13	21	9	53	85	2.50	2 Pc
57 x 38	0.109	18	26	12	63	90	2.50	2 Pc
64 x 43	0.109	18	30	12	70	102	2.25	2 Pc
* 71 x 47	0.109	18	33	12	77	114	2.25	3 Pc
* 77 x 52	0.109	18	36	12	77	126	2.00	3 Pc
* 83 x 57	0.109	18	39	12	77	138	2.00	3 Pc

* ALL THREE PIECE BODIES HAVE 0.109" SIDES AND 0.138" CENTER PANELS. WIDTH OF CENTER PANEL TO BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES TO HAVE LAP SEAMS WHICH ARE TO BE TIGHTLY JOINED BY 3/8" DIAMETER GALVANIZED RIVETS OR BOLTS.



END VIEW



LONGITUDINAL VIEW

NOTE: SEE SHEET 3 FOR CONNECTION DETAILS

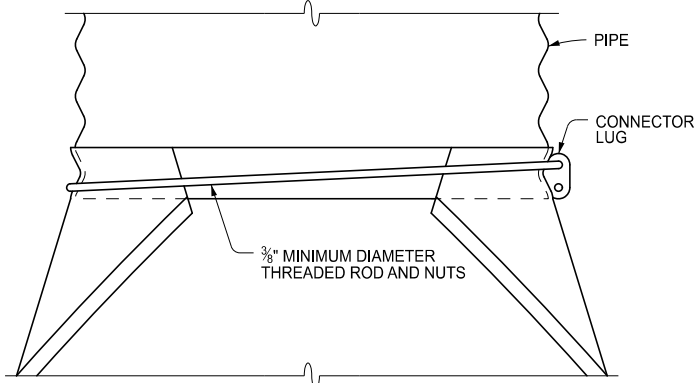
STEEL END SECTION FOR CORRUGATED STEEL PIPE ARCHES

MDOT
Michigan Department of Transportation

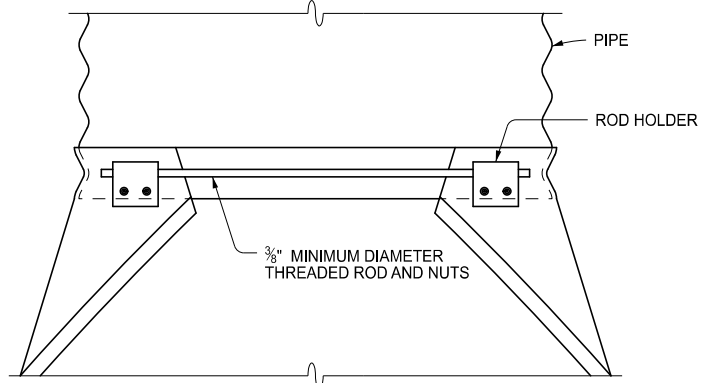
DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR
STEEL END SECTION

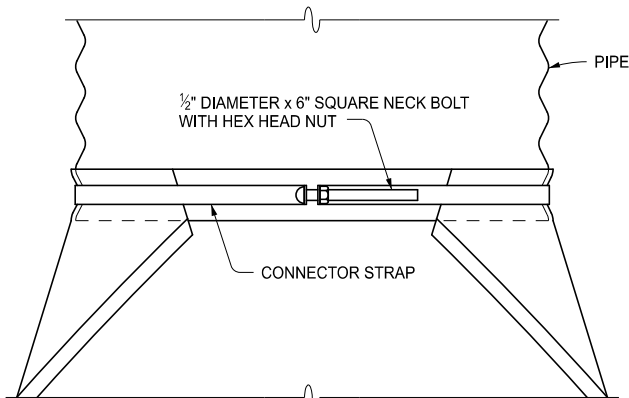
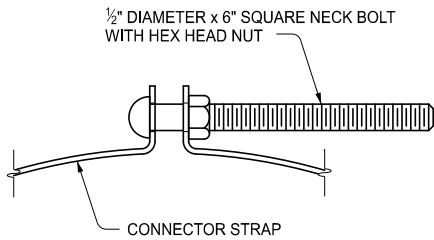
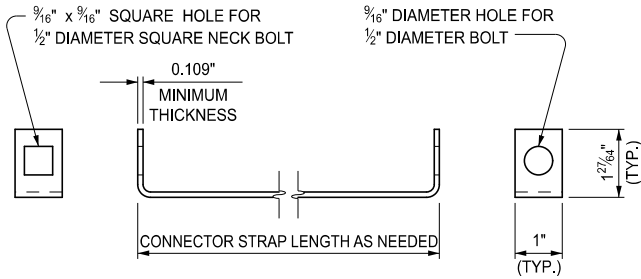
(SPECIAL DETAIL)	03/07/2023	R-88-E	SHEET 2 OF 4
FHWA APPROVAL	PLAN DATE		



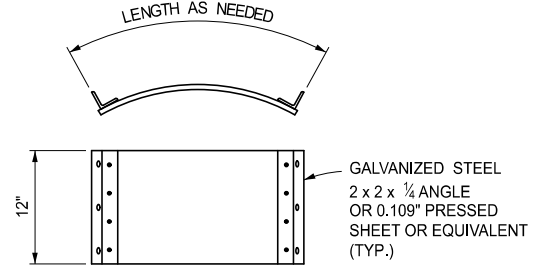
TYPE 1 CONNECTOR
FOR USE ON CIRCULAR PIPE DIAMETERS 12" THROUGH 24"



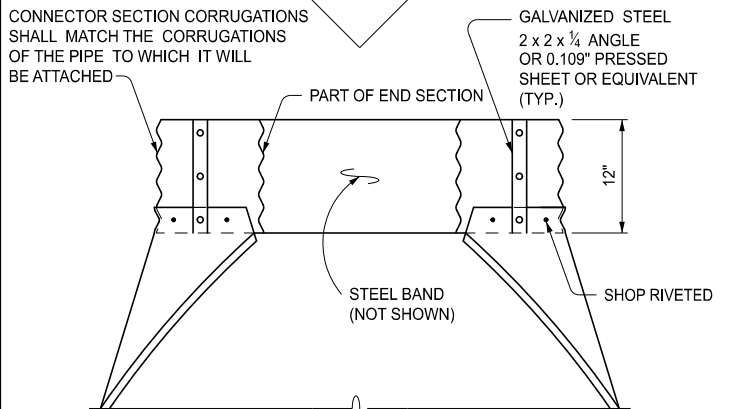
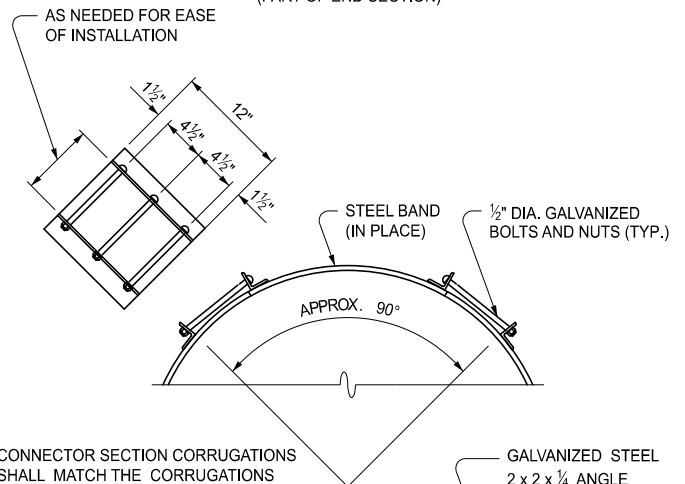
TYPE 2 CONNECTOR
FOR USE ON CIRCULAR PIPE DIAMETERS 30" AND 36"
AND FOR ARCH PIPE SIZES 35" x 24" AND 42" x 29"



TYPE 1A CONNECTOR
FOR USE ON CIRCULAR PIPE DIAMETERS 12" THROUGH 24"
AND FOR ARCH PIPE SIZES 17" x 13" THROUGH 28" x 20"



STEEL BAND
(PART OF END SECTION)



TYPE 3 CONNECTOR
FOR USE ON CIRCULAR PIPE DIAMETERS 42" THROUGH 84"
AND FOR ARCH PIPE SIZES 49" x 33" THROUGH 83" x 57"



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

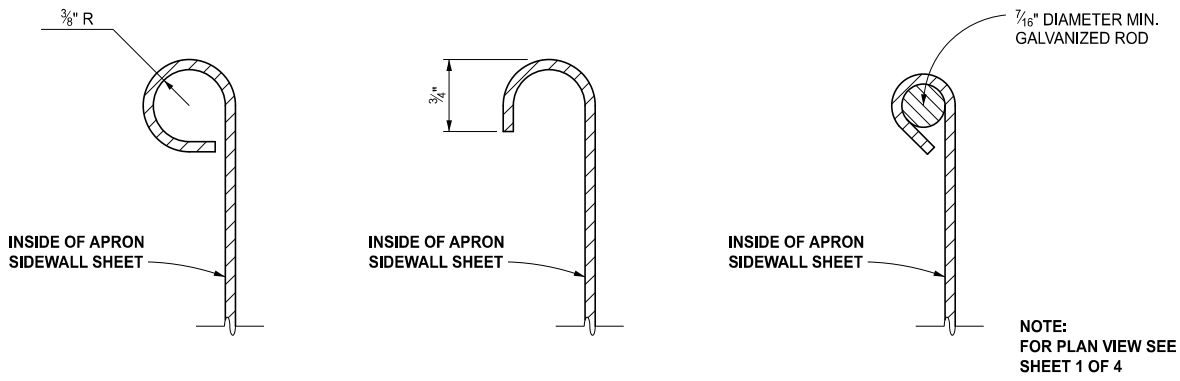
STANDARD PLAN FOR
STEEL END SECTION

(SPECIAL DETAIL)
FHWA APPROVAL

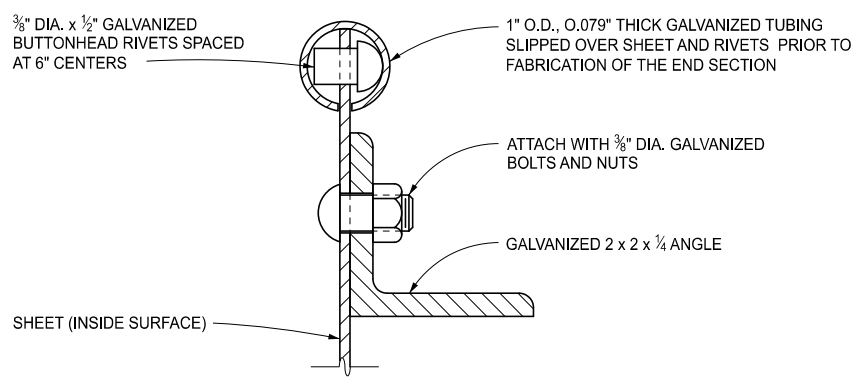
03/07/2023
PLAN DATE

R-88-E

SHEET
3 OF 4



SECTION A - A
REINFORCED EDGE ALTERNATIVES



SECTION B - B
TO BE USED ON CIRCULAR PIPE DIAMETERS 60" THROUGH 84"
AND FOR ARCH PIPE SIZES 77" x 52" AND 83" x 57"

NOTES:

GALVANIZED STEEL SHALL MEET THE REQUIREMENTS SPECIFIED IN THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

GALVANIZED TOE PLATE EXTENSIONS ARE REQUIRED ON STEEL END SECTIONS AS FOLLOWS:

1. WHEN INDICATED ON THE PLANS.
2. WHEN AUTHORIZED BY THE ENGINEER.
3. WHEN THE HEIGHT OF FILL IS 10' OR MORE.
4. WHEN THE CULVERT GRADE IS 10% OR MORE.

GALVANIZED TOE PLATE EXTENSIONS SHALL BE MATCH PUNCHED TO FIT HOLES IN THE TOE PLATE AND SUPPLIED LOOSE, COMPLETE WITH 3/8" DIAMETER GALVANIZED BOLTS. LENGTH OF THE TOE PLATE EXTENSION IS W + A FOR ALL SIZES.

CONNECTOR SECTIONS, TOE PLATE EXTENSIONS AND CORNER PLATES SHALL BE THE SAME THICKNESS AS THE APRON CENTER PANEL, AND SHALL BE GALVANIZED.

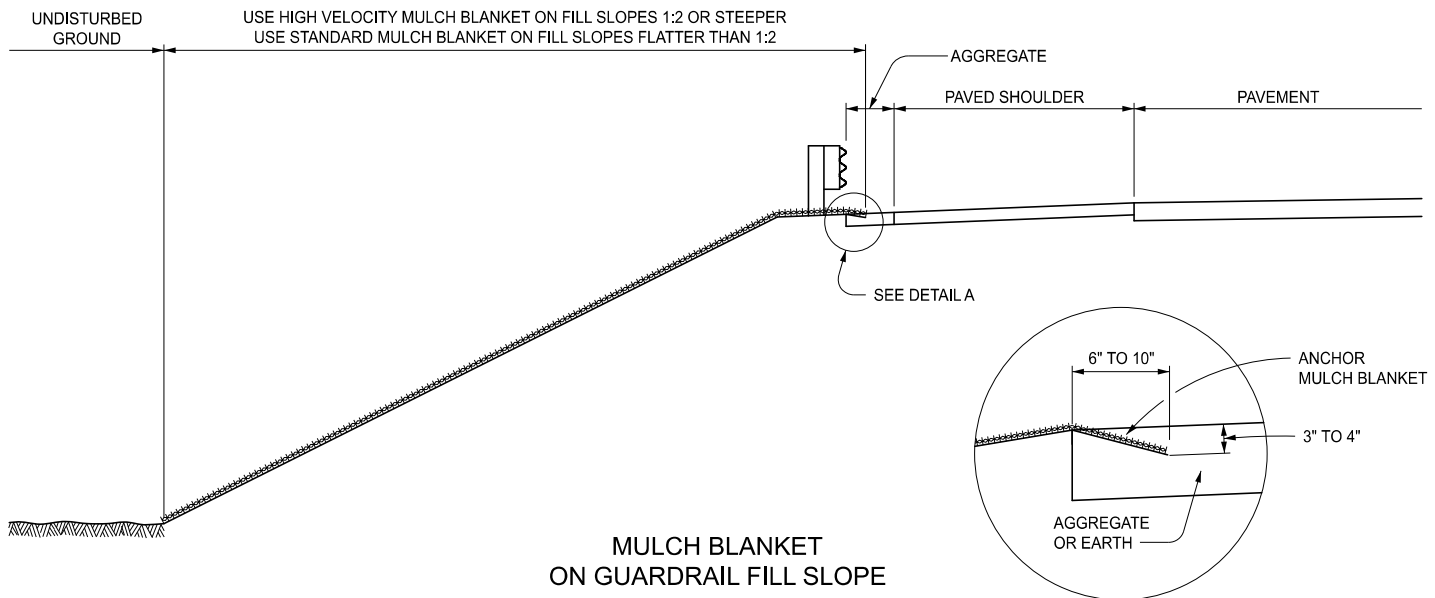
CONNECTOR TYPES DESIGNATED FOR LARGER CORRUGATED STEEL PIPES MAY BE USED ON SMALLER CORRUGATED IPES.

CIRCULAR AND ARCH PIPE SIZES SHOWN ON THIS PLAN HAVE 2 3/8" x 1/2" CORRUGATIONS; EQUIVALENT PIPE SIZES WITH 3" x 1" OR 5" x 1" CORRUGATIONS WILL BE ALLOWED.

ALTERNATE DESIGNS THAT HAVE PRIOR APPROVAL BY THE DEPARTMENT WILL BE ACCEPTED.

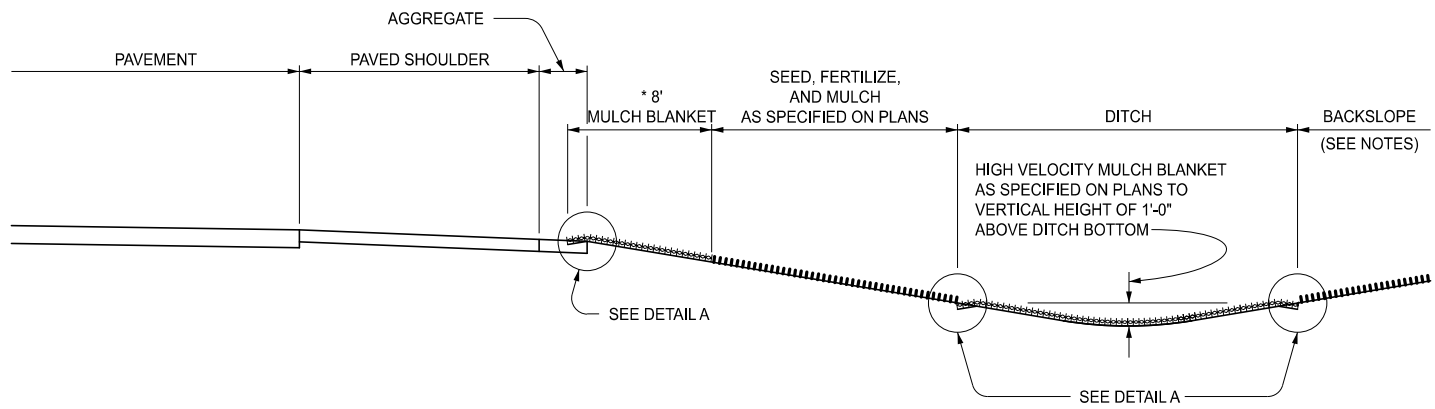
OUTFALL LABEL TO BE USED ONLY WHERE STORMWATER WILL DISCHARGE DIRECTLY TO THE WATERS OF THE STATE.

 DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	STANDARD PLAN FOR STEEL END SECTION			R-88-E	SHEET 4 OF 4
	(SPECIAL DETAIL) FHWA APPROVAL	03/07/2023 PLAN DATE			

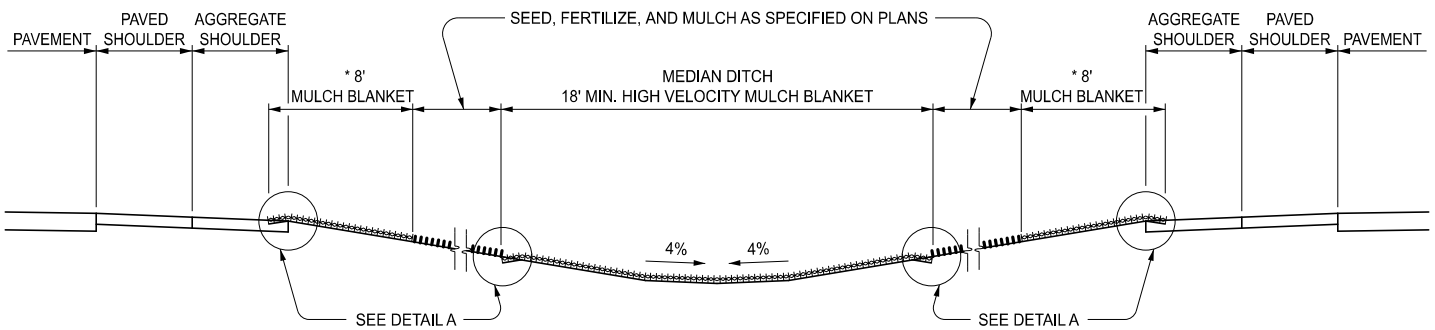


MULCH BLANKET ON GUARDRAIL FILL SLOPE

DETAIL A



TYPICAL SLOPE AND DITCH PROTECTION



MULCH BLANKET SPILLWAY DITCH

* NOTE:

MULCH BLANKET SHALL BE USED ON BOTH SIDES OF NORMAL SECTIONS, HIGH SIDES OF ALL SUPERELEVATED SECTIONS, AND LOW SIDES OF PAVEMENTS HAVING A SUPERELEVATION OF 5% OR LESS. HIGH VELOCITY MULCH BLANKET SHALL BE USED ON THE LOW SIDE OF PAVEMENTS HAVING A RATE OF SUPERELEVATION GREATER THAN 5%.

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

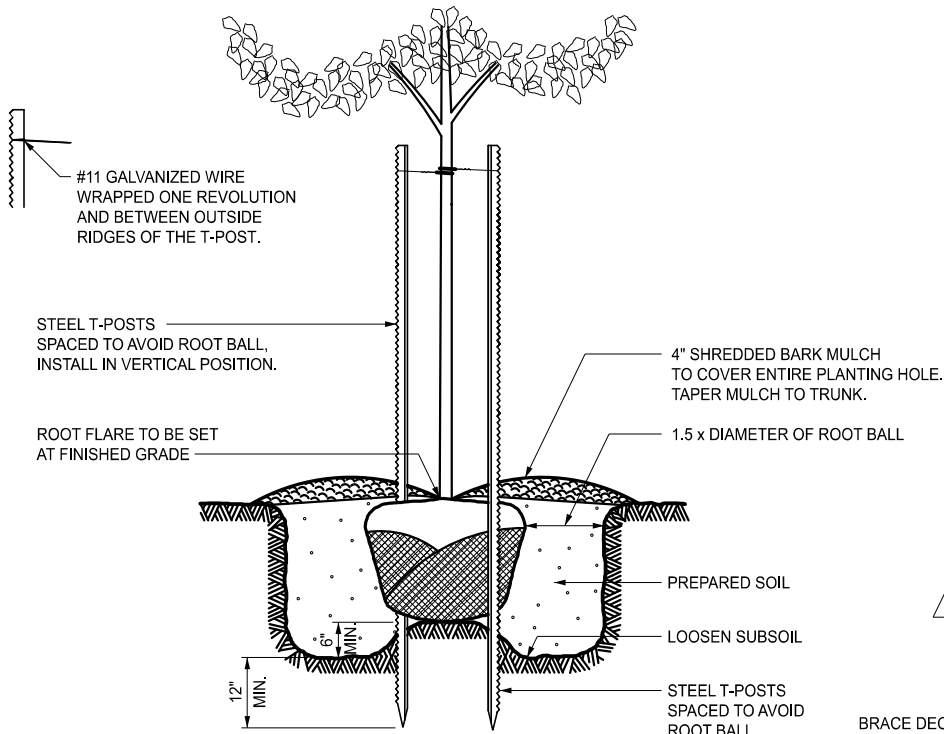
STANDARD PLAN FOR
SEEDING AND TREE PLANTING

(SPECIAL DETAIL)
FHWA APPROVAL

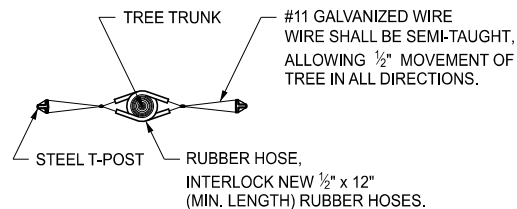
08/03/2021
PLAN DATE

R-100-I

SHEET
1 OF 4



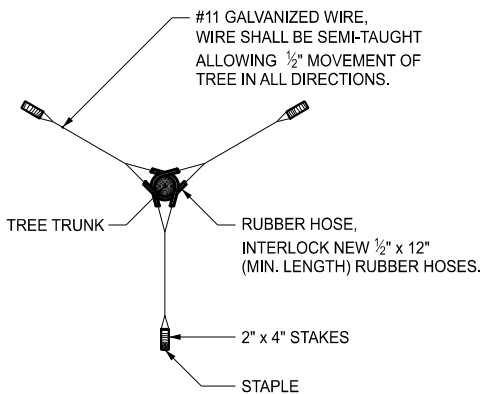
BRACING - VERTICAL STAKES



BRACING DETAIL

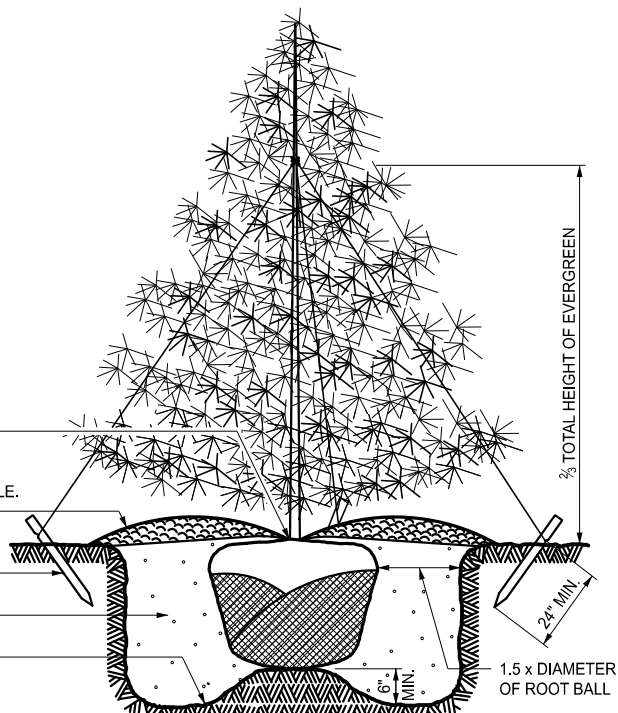
BRACE DECIDUOUS TREES 2" TO 4" IN CALIPER OR 8' OR MORE IN HEIGHT WITH TWO STAKES.

BRACE DECIDUOUS TREES LESS THAN 2" IN CALIPER OR 8' IN HEIGHT WITH ONE STAKE ON THE WESTERLY SIDE OF THE PLANT.

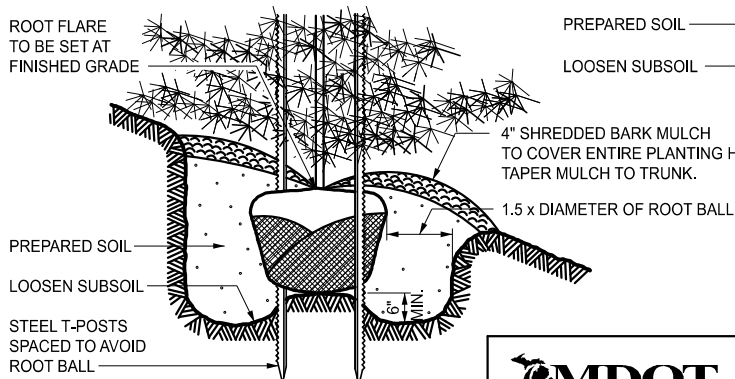


TRIPOD GUYING DETAIL

GUY EVERGREENS OVER 4" IN CALIPER OR 6' IN HEIGHT WITH THE TRIPOD METHOD AND UNDER 6' IN HEIGHT WITH TWO STAKES.



GUYING - TRIPOD METHOD



SLOPE PLANTING



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

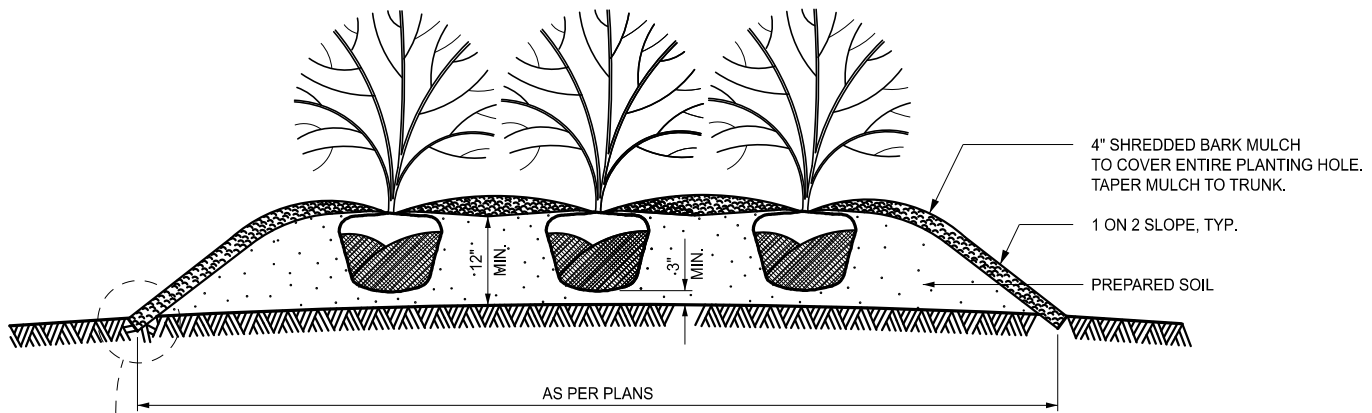
STANDARD PLAN FOR
SEEDING AND TREE PLANTING

(SPECIAL DETAIL)
FHWA APPROVAL

08/03/2021
PLAN DATE

R-100-I

SHEET
2 OF 4



RAISED SHRUB BED DETAIL

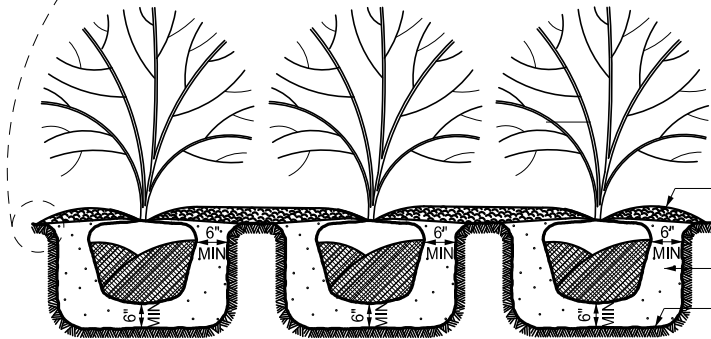
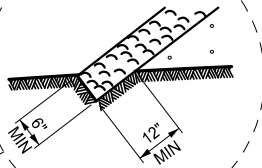
FIRST AND SECOND WATERING AND CULTIVATION SHALL INCLUDE SHRUB BEDS.

CUT 6" x 12" (MIN.) EDGING AROUND THE PERIMETER OF ALL SHRUB BEDS SHOWN ON THE PLANS. SPRAY A NON-PERSISTANT GLYPHOSATE HERBICIDE TO ENTIRE SHRUB BEDS PRIOR TO PLANTING AND BARK PLACEMENT.

SHRUB BEDS ARE TO BE PAID FOR BY THE PAY ITEM 'SITE PREPARATION'.

ALL PLANTS SHALL BE SET PLUMB AND HAVE THE BEST SIDE OF PLANT FACING THE MAIN VIEWING DIRECTION.

SHRUB BED EDGING DETAIL

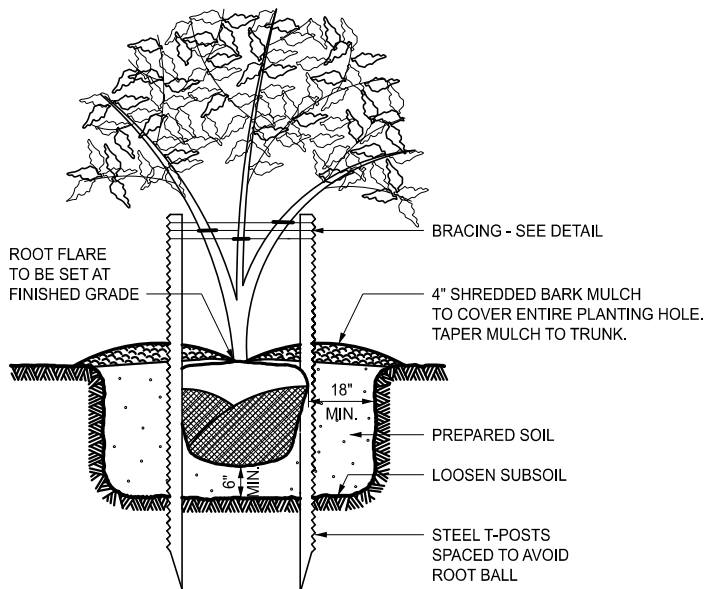


SHRUB BED DETAIL

4" SHREDDED BARK MULCH COVER ENTIRE PLANT BED. TAPER MULCH TO TRUNK.

PREPARED SOIL

LOOSEN SUBSOIL



MULTIPLE STEM TREES

PLANTING NOTES:

ALL EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE - IMMEDIATELY.

LOOSEN SUBSOIL TO A DEPTH OF 4". LOOSEN EARTH ON SIDES OF PLANT POCKET TO BREAK ANY GLAZING CAUSED BY DIGGING.

FILL PREPARED SOIL TO 1/2 THE DEPTH OF THE ROOT BALL, PACK FIRMLY, AND PUDDLE WITH WATER.

BACKFILL WITH PREPARED SOIL WHICH, AFTER COMPACTION, IS FLUSH WITH SURROUNDING GROUND LEVEL.

COVER ENTIRE PLANT POCKET AREA WITH 4" MULCH. PRUNE AND BRACE AND GUY.

WHEN PLANTS ARE FURNISHED IN CONTAINERS, CONTAINERS SHALL BE COMPLETELY REMOVED AT THE TIME OF PLANTING.

TREE HEIGHTS ARE SHOWN BEFORE PRUNING. TREE PLANTING DEPTHS ARE SHOWN AFTER SETTLING.

TREES AND SHRUBS SHALL NOT BE PLANTED WITHIN 50' AND 30' RESPECTIVELY OF THE NEAREST EDGE OF METAL - EXCEPT WHERE INACCESSIBLE TO VEHICLES.



DEPARTMENT DIRECTOR
BRADLEY C. WIEFERICH, PE

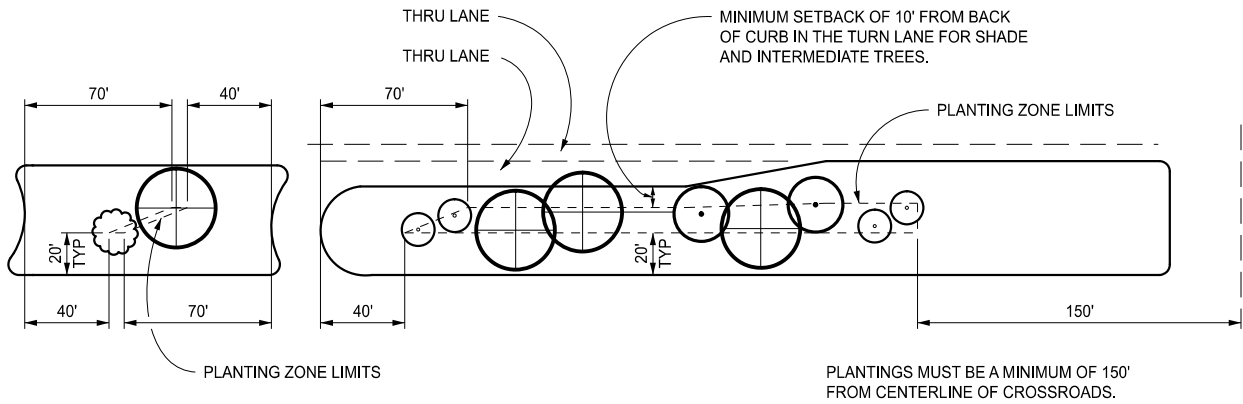
STANDARD PLAN FOR
SEEDING AND TREE PLANTING

(SPECIAL DETAIL)
FHWA APPROVAL

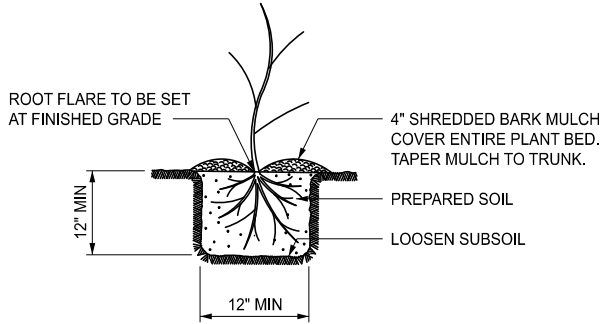
08/03/2021
PLAN DATE

R-100-I

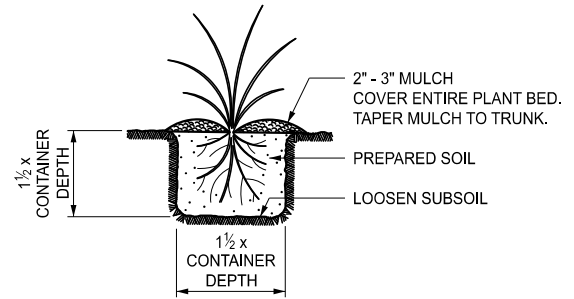
SHEET
3 OF 4



MEDIAN PLANTING
NOT TO SCALE



BARE ROOT PLANTS



PERENNIAL PLANTS

PLANTING BARE ROOT PLANT MATERIAL

REFER TO THE "SPECIAL PROVISIONS FOR BARE ROOT PLANTING" FOR SHIPPING, STORAGE AND HANDLING REQUIREMENTS.

MAINTAIN ROOT MOISTURE BY KEEPING ROOTS IMMersed IN WATER PRIOR TO PLANTING.

ROOT PRUNE AS NECESSARY TO REMOVE ALL DAMAGED OR BROKEN ROOTS, AND AS REQUIRED BY THE DISTRICT FORESTER OR RESOURCE SPECIALIST.

DIG PLANTING HOLES AT LEAST 12" WIDE AND 12" DEEP TO ACCOMMODATE ROOT MASS.

SET PLANTS PLUMB WITH THE ROOTS SPREAD PUT IN A NATURAL POSITION AT A DEPTH EQUAL TO THE DEPTH AT THE NURSERY.

HOLD PLANT FIRMLY AND PUDDLE (NOT TAMP) THE BACKFILL AROUND THE ROOTS WITH WATER. SUFFICIENT WATER SHALL BE USED TO ENSURE SATURATION OF THE BACKFILL, BUT CARE SHOULD BE TAKEN NOT TO OVERWATER, CAUSING A FLOATING SOIL MASS THAT PREVENTS COMPACTION AND MAY RESULT IN AIR POCKETS ADJACENT TO THE ROOTS. BACKFILL SHOULD BE FLUSH WITH THE GROUND AFTER COMPACTION.

COVER ENTIRE PLANT POCKET AREA WITH 4" MULCH AS SHOWN.

FIRST AND SECOND WATERING AND CULTIVATION SHALL INCLUDE PERENNIAL BEDS.

PERENNIALS ARE TO BE FULLY DEVELOPED TWO YEAR #2 CONTAINER PLANTS.

ENTIRE PERENNIAL BED SHALL BE EXCAVATED DOWN 12" AND REPLACED WITH 12" OF PREPARED SOIL.

PERENNIAL BEDS ARE TO BE PAID FOR BY THE PAY ITEM 'SITE PREPARATION'.

SEEDING NOTES:

THIS STANDARD ILLUSTRATES THE TYPICAL USE OF SEEDING WITH MULCH, AS THESE ITEMS RELATE TO ROADWAY CONSTRUCTION. THE ACTUAL DESIGN AND MATERIALS USED TO CONSTRUCT THE COMPLETE SECTION, WHICH INCLUDES SEEDING WITH MULCHING, WILL BE ACCORDING TO THE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

ITEMS CALLED FOR ON THIS STANDARD MAY ALSO BE USED DURING CONSTRUCTION AS AN EROSION CONTROL MEASURE. SEE STANDARD PLAN R-96-SERIES.

ALL DITCHES SHOULD HAVE HIGH VELOCITY MULCH BLANKET FOR EROSION CONTROL.

THE FIRST 8' BEHIND THE CURB OR SHOULDER IN URBAN MEDIAN AREAS WILL BE SEEDED, FERTILIZED, AND MULCHED WITH MULCH BLANKET. THE REMAINING AREAS WILL BE SEEDED, FERTILIZED, AND MULCHED WITH MULCH BLANKET OR STANDARD MULCH ANCHORED IN PLACE WITH A MULCH ADHESIVE OR WITH A MULCH NET.

ALL AREAS WHERE MULCH BLANKET IS CALLED FOR SHALL BE SEEDED, FERTILIZED, AND TOPSOILED AS SPECIFIED ON PLANS. NO MULCH OR ANCHORING MULCH IS REQUIRED WHERE MULCH BLANKET IS INSTALLED.

BACKSLOPE RESTORATION TREATMENT SHALL BE THE SAME AS THE FRONT SLOPE.

<p>DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE</p>	<p>STANDARD PLAN FOR SEEDING AND TREE PLANTING</p>		<p>R-100-I</p>	<p>SHEET 4 OF 4</p>
	<p>(SPECIAL DETAIL) FHWA APPROVAL</p>	<p>08/03/2021 PLAN DATE</p>		