SPECIFICATIONS

MACOMB COUNTY
2024 PAVING PROJECTS
PROJECT NUMBER: 242034
MACOMB COUNTY BID ITEM #11-24
JULY 1, 2024

PROJECT

MACOMB COUNTY
2024 PAVING PROJECTS
VARIOUS SITES

OWNER
Macomb County Office of the Executive
Administration Building, 9th Floor
1 South Main Street
Mt. Clemens, MI 48043

ARCHITECT
Wakely Associates, Inc.
30500 Van Dyke Ave., Suite 209
Warren, Michigan 48093

SPECIFICATIONS

PROJECT NUMBER 242034
BID ITEM #11-24
JULY 1, 2024

PROJECT
MACOMB COUNTY
2024 PAVING PROJECTS
VARIOUS SITES

OWNER
MACOMB COUNTY OFFICE OF THE EXECUTIVE
ADMINISTRATION BUILDING
1 SOUTH MAIN – 8TH FLOOR
MT. CLEMENS, MI 48043

ARCHITECT
WAKELY ASSOCIATES, INC.
30500 VAN DYKE, SUITE 209
WARREN, MICHIGAN 48093
586-573-4100

TABLE OF CONTENTS

Mark A. Hackel
County Executive

MACOMB COUNTY PURCHASING DEPARTMENT
REQUEST FOR BID

BID ITEM NO.: **11-24**

BID TITLE: **Macomb County**
2024 Paving Projects-Various Sites

REQUEST FOR BID

The Macomb County Purchasing Department will be receiving sealed proposals for the Macomb County 2024 Paving Projects-Various Sites (Wakely Project Number 242034).

A. The project consists of all work necessary to remove and replace portions of concrete slabs and walks, curbs, asphalt paving, parking lot striping, provide crack fill, seal coat, trench drain work, traffic bearing waterproof coating, associated sealant work and all associated work including landscape restoration at the following sites:

1. Macomb County Jail, Mt. Clemens
2. Macomb County Health Department, Mt. Clemens
3. Robert A. Verkuilen Building, Clinton Township
4. Macomb County Dept. of Public Works, Clinton Township
5. 42nd District Court-Division II, New Baltimore
6. Macomb County Administration Building Parking Deck, Mt. Clemens

Note: A single lump sum proposal is being entertained for the work of this proposal. Partial or segregated bids or assignments for individual parts of the project will not be considered. Bidder shall include quotes for all alternates (if any) and unit prices; failure to do so may result in rejection of proposal.

Work shall be substantially complete on or before September 27, 2024.

Mark A. Hackel
County Executive

INDEX

BID ITEM #11-24
MACOMB COUNTY
2024 PAVING PROJECTS-VARIOUS SITES

Mark A. Hackel
County Executive

OBJECTIVE

The purpose of this Request for Bid (RFB) is to select a vendor to provide renovations to the Macomb County Administration Building. The goal is to select the most capable vendor offering the most competitive price. This proposal is in accordance with the Macomb County Procurement Policy.

SUBMISSION PROCEDURES

Date Due: **Thursday, July 25, 2024 at 2:00 PM (local time)**
Bids will be publicly opened and read.
DELIVER via FEDEX, UPS, or hand deliver DIRECTLY TO 44900 Vic Wertz Dr. Clinton Township, MI 48036 PURCHASING DEPARTMENT BY DUE DATE & TIME.

IF HAND DELIVERED – MAKE SURE TO GET A DATE AND TIME STAMPED RECEIPT FOR PROOF OF DELIVERY.

If USPS utilized for submissions, there is no guarantee of a timely delivery as the Post Office does not deliver to individual County Buildings.

NO LATE BIDS ACCEPTED.

Mail to:
Macomb County Purchasing
Mark Chomontowski, Purchasing Manager
ATTN: Mary Schultz
44900 Vic Wertz Dr.
Clinton Township, MI 48036

Return:
One (1) hard copy original
Two (2) copies of the Bid
Clearly mark on the envelope **SEALED BID ITEM 2024 PAVING PROJECTS-VARIOUS SITES**
Label all submission envelopes with the company name on the outside.
Complete and return all pages requiring vendor response.

All Bids must be submitted on the forms provided, properly executed and with all items filled out in ink or typed. Do not change or add words to the forms. Unauthorized conditions, limitations, or provisions on or attached to the forms may be cause for rejection of the Bid. Any Bidder information that is altered by erasure or by inter-lineation prior to submittal must be initialed and explained by notation above the signature of the Bidder.

Macomb County vendors should be registered on the Michigan Inter-governmental Trade Network (MITN) website www.bidnetdirect.com/mitn.

QUESTIONS

Due: **Thursday, July 18, 2024 at 12:00 PM (local time)**
Submit to: Email: Mary.Schultz@macombgov.org

Questions regarding bid specifications may be directed in writing only, by email. All questions or clarifications must be directed to the Purchasing Department. Any attempt to contact a county department, other than purchasing, regarding current bids may be grounds for disqualification as a vendor. Answers will be posted to MITN.

Mark A. Hackel
County Executive

MODIFICATIONS

Macomb County vendors should be registered on the Michigan Inter-governmental Trade Network (MITN) website www.bidnetdirect.com/mitn. Clarifications, modifications, or amendments may be made to this document at the discretion of the Macomb County Purchasing Department prior to the opening of the solicitations. Should any such changes be made, an addendum will be issued and posted on the MITN website. It is the responsibility of each Bidder to check the website and verify that he/she has received all Addenda prior to submitting a Bid.

It is also the responsibility of each Bidder to verify that all sub-Bidders and material suppliers whose prices are incorporated in the Bidder's Bid are familiar with the Bidding Documents in their entirety, including all Addenda issued up to the time of the Bid opening. *(See also ERRORS, OMISSIONS, AND/OR DISCREPANCIES, below.)*

All addenda issued to Bidders prior to date of receipt of Bids shall become a part of these specifications, and all Bids are to include the Work therein described.

DEFINITIONS

A. *Bidding Documents* include this Request for Bid, (including drawings, specifications and all Addenda issued prior to execution of the Contract) and the proposed Contract Documents.

B. *Addenda* are written or graphic instruments issued by Macomb County prior to the execution of the Contract that modify or interpret the Bidding Documents.

C. *The Base Bid* is the sum state in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted.

D. *A Unit Price* is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work as described in the Bidding Documents.

E. *A Bidder* is a person or entity who submits a Bid to Macomb County, and who meets the requirements set forth in the Bidding Documents.

F. *Default* is the failure of the Bidder to fulfill the obligations of the contract, including but not limited to, failure to deliver on time or the unauthorized substitution of articles other than those quoted and specified on the contract; or failure to deliver specified quantities (repetitive shortages).

G. *Owner* is the County of Macomb.

H. *Contractor* is a person or business which provides goods or services to the County of Macomb under terms specified in a contract.

BIDDING DOCUMENTS

All Bidding Documents are available on the Michigan Inter-governmental Trade Network (MITN) website www.bidnetdirect.com/mitn. Bidders shall use complete sets of Bidding Documents in preparing Bids. Macomb County assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

All Bidding Documents are the property of the Architect.

EXAMINATION OF BIDDING DOCUMENTS AND SITE

Before submitting a Bid, the Bidder shall carefully examine the drawings, read the specifications and all other Bidding Documents; and visit the site of the Work. Each Bidder shall inspect the site of the proposed Work to arrive at a clear understanding of the conditions under which the Work is to be performed. The Bidder shall fully inform himself/herself prior to bidding as to all existing conditions and limitations under which the Work is to be performed and he/she shall include in the Bid a sum to cover the cost of all items necessary to perform the Work as set forth in the Bidding Documents. No allowance will be made to the Bidder because of lack of such examination or knowledge. The submission of a Bid shall be construed as conclusive evidence that the Bidder has made such examination. Claims for extra payments based on lack of knowledge of existing circumstances will not be allowed.

BIDDER'S QUALIFICATIONS

Bidders must be properly licensed under the state laws governing their respective trades. Bidders shall meet qualifications indicated in the Bidding Documents. Macomb County may make such investigations as necessary to determine the ability of the Bidder to perform the Work, and the Bidder shall furnish to Macomb County all such information and data for this purpose as Macomb County may request. Macomb County reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy Macomb County that such Bidder is not properly qualified to carry out the obligations of the Contract.

Submission of a Bid shall serve as evidence that the Bidder has confirmed that the Bidder is properly qualified to perform the work and is capable of obtaining the required bonds and insurance.

COMPONENT/PRODUCT RESPONSIBILITY

The successful Bidder will provide field instructions for Macomb County's operators, mechanics and/or supervisors. The successful Bidder shall be responsible to insure that all components delivered operate properly and with the intent and details of these specifications.

STATUS OF BIDDERS

Proprietors submitting Bids shall indicate their status as proprietors.

Bidders submitting Bids for partnerships shall indicate their status as partners and shall submit, upon request of Macomb County within (24) hours following receipts of Bids, a certified copy of the power of attorney authorizing the executor of the Bid to bind the partnership.

Bidders submitting Bids for corporations shall indicate their status as corporations and shall submit, upon request of the Owner within (24) hours following receipt of Bids, a certified copy of the board of directors' authorization for the Bidder to bind the corporation and shall affix the corporate seal on the Bid.

Bidders shall provide, upon request of Macomb County, within 24 hours following receipt of Bids, the following:

1. Names and addresses of proprietors, of all members of a partnership, or of the corporation's officers.
2. Name of county or state where the partnership is registered or where the corporation is incorporated. Corporations must be licensed to do business in the project state at the time of executing the contract.

ERRORS, OMISSIONS, AND/OR DISCREPANCIES

Bidder shall not be allowed to take advantage of errors, omissions, and/or discrepancies found in the Bidding Documents. In the event a conflict or omission is discovered in the Bidding Documents after the issuing of the last addendum such that an interpretation cannot be issued by Macomb County prior to bidding, the Bidder is directed to estimate on and provide the quantity and quality of material and labor consistent with the overall represented work so as to provide all materials, equipment, labor, and services necessary for the completion of the Work.

SUBSTITUTION OF MATERIALS AND EQUIPMENT

Whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided that the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance appearance and function.

To obtain approval to use unspecified products, Bidders shall submit written requests at least ten (10) days before the bid date. Requests received after this time will not be considered. Requests shall clearly describe the product for which approval is asked, including all data necessary to demonstrate acceptability.

If the product is acceptable, the Architect will approve it in an Addendum which will be posted on the MITN website. The product shall not be purchased or installed by the Contractor without the Architect's written approval.

Voluntary alternates or qualifications contrary to the Contract requirements made by the Bidder in or accompanying his/her Bid as a condition for the acceptance of the Contract will not be considered in the award of the Contract and will cause the rejection of the entire Bid.

TERMINATION

Macomb County reserves the right to terminate any award to the Bidder without any liability, upon a 30-day notice from Macomb County.

DEFAULT (refer to Section: Definitions, Item F)

If continued abuse of any/or all of the default conditions persist, Macomb County will notify the Contractor in writing. The Contractor will be given thirty (30) days to correct this default condition. Failure to correct within the specified period will result in Macomb County canceling the Contract and procuring the articles or services from other sources. The Contractor will be responsible for any excess costs occasioned thereby.

RIGHT TO REJECT

Macomb County reserves the right to reject any or all Bids in whole or in part and to waive any informalities therein or accept any Bid it may deem in the best interest of the County.
Note: Past experience and performance may be a factor in making an award.

MODIFICATION AND WITHDRAWAL OF BIDS

A Bid may be withdrawn on personal requests received from Bidder prior to submission time. A Bid being withdrawn may be re-submitted up to submission time. Negligence or error on the part of the Bidder in preparing his/her Bid confers no right for withdrawal of the Bid after it has been opened.

OFFER PERIOD

Bids will remain firm for a period of (30) days after official opening of Bids.

BID BREAKDOWN CONSTRUCTION INFORMATION

Upon notice from the Architect, the low Bidders shall submit a detailed cost breakdown of all work covered by the Bidding Documents. The breakdown shall show quantity of material and labor, units of material and labor, material cost, labor cost and total cost.

EXECUTION OF CONTRACT

Macomb County reserves the right to accept any and all Bids, or to negotiate contract terms with the various Bidders when such is deemed by Macomb County to be Macomb County's best interest.

SCHEDULE - TIME OF COMPLETION

Work is to commence on a date specified in a written "Notice to Proceed", and the Work shall be fully complete within the required time allowed. Macomb County requires the Work to be substantially complete no later than September 27, 2024.

BASIS OF BID

A single lump sum Bid is being entertained for the Work of the Bid.

SALES AND EXCISE TAXES

All prices stated in the Bid response will include all Federal, State, County and Municipal taxes, including Michigan State Sales and Use Taxes, or contributions required by Bidder's business.

PERMITS

Any needed city permits, and bonds will be required prior to award of Contract and commencement of Work.

INDEMNIFICATION

Macomb County will not be responsible for injury to Contractor's employees, Sub-Contractors, or to third parties caused by the Contractor's agents, servants or employees. Therefore, the Contractor agrees to incorporate the below hold harmless agreement into the required insurance and to be evidenced by being contained in the certificate of insurance. Further, the below listed indemnification is incorporated and is part of the subject contract.

The Contractor agrees to protect, defend, indemnify and hold the County of Macomb and its commissioners, officers, employees and agents free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, or other expenses or liabilities of every kind and character arising out of or relating to any and all claims, legal fees, liens, demands, court costs, obligations, actions, proceedings or causes of action of every kind and character in connection with or arising directly or indirectly out of this agreement and/or the performance hereof. Without limiting the generality of the foregoing, any and all such claims, etc. relating to personal injury, death, damage to property, defects in materials or workmanship, or any actual or alleged violation of any applicable statute, ordinance, administrative order, rule or regulation, or decree of any court, shall be included in the indemnity hereunder.

The Contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, etc. at his sole expense and agrees to bear all other costs and expenses related hereto, even if it (claims, etc.) is groundless, false or fraudulent. In any case in which this indemnification would violate legal prohibition, the foregoing provision concerning indemnification shall not be construed to identify the County for damage arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence of the County, its commissioners, officers, employees or agents.

BID BOND/GUARANTEE

All Bids must be accompanied by a certified check, cashier's check, or a satisfactory Surety Bid Bond in an amount not less than five percent (5%) of the total Bid price. Checks shall be made payable to County of Macomb. No Bid shall be considered unless it is accompanied by a certified check, cashier's check or a satisfactory Surety Bid Bond.

Checks will be returned to all except the three (3) lowest Bidders for each contract within five (5) days after the opening of the Bids, and the remaining checks will be returned promptly after Macomb County and the accepted Bidders have executed the Contract, or if no award has been made, within one hundred twenty (120) days after the date of the opening of the Bids, upon demand of the Bidder at any time thereafter, so long as he has not been notified of the acceptance of his/her Bid.

The Bid Bond/Guarantee may be forfeited to Macomb County, if the successful Bidder refuses to enter into a Contract within ten (10) days upon award of Contract from Macomb County.

Bid Bonds shall be accompanied by a Power-of-Attorney authorizing the signer of the bond to do so on behalf of the Surety Company.

PERFORMANCE AND PAYMENT BOND

The successful Bidder will be required to furnish a satisfactory performance and payment bond each in an amount equal to 100 percent of the Contract Sum, within five (5) days after notification of intent to enter into Contract. Bonds, in the full amount of the contract, are required so that the County has a guarantee that the Contractor will faithfully perform the contract and the Contractor will make all payments for all labor and material costs or claims covered or furnished under the contract.

All bonds and policies or certificates of insurance must meet with the approval of Macomb County before the Contractor will be allowed to commence the Work. Failure or refusal to furnish bonds or insurance policies or certificates in a form satisfactory to Macomb County shall subject the Bidder(s) to forfeiture of Bid Bond.

The Performance and Payment Bond must be from a surety company licensed to do business in the State of Michigan, and will be in Compliance with all the requirements of MCL 129.201 et seq.

CONTRACTS WITH SUB-CONTRACTORS

All contracts made by the Bidder with Sub-Contractors shall be covered by the terms and conditions of the Contract. The Bidder shall inform all Sub-Contractors of these terms and conditions. Macomb County reserves the right to require of the Bidders tentatively selected for consideration in the awarding of the Contract, a list of the Sub-Contractors whom the Contractor intends to employ.

Macomb County reserves the right to disapprove the use of any proposed Sub-Contractor, and in such event, the Bidder submitting such Sub-Contractor shall submit another such Sub-Contractor in like manner within the time specified by Macomb County. Macomb County reserves the right to reject any proposal if such information required by Macomb County is not submitted as above indicated.

INSURANCE

COMMERCIAL GENERAL LIABILITY INSURANCE
Shall be written on an occurrence basis with limits of Liability of not less than $1,000,000 (one million dollars) as combined single limit for each occurrence of bodily injury and personal injury with an annual aggregate of not less than $2,000,000 (two million dollars). The policy shall include:

a. Contractual Liability
b. Products and Completed Operations
c. Independent Contractors Coverage
d. Broad Form General Liability Extensions or equivalent

WORKERS' COMPENSATION
Workers' Compensation Insurance meeting Michigan statutory requirements. Employer's Liability Insurance with minimum limits of $500,000 each accident, $500,000 bodily injury by disease policy limit, $500,000 bodily injury by disease each employee.

AUTOMOBILE LIABILITY INSURANCE
Motor Vehicle Liability Insurance including Michigan NO-FAULT Coverage for all vehicles, owned and non-owned, leased and hired used in the performance of this contract with limits of $1,000,000 (one million dollars) as the combined single limit for each occurrence for bodily injury and property damage.

PROFESSIONAL LIABILITY/ERRORS & OMISSIONS
Professional Liability Insurance with minimum limits of $1,000,000 (one million dollars) each occurrence and $2,000,000 (two million dollars) aggregate.

INSURANCE INSTRUCTIONS
All certificates of insurance and duplicate policies shall contain the following:

The County of Macomb shall be named additional insured on all policies (excluding Worker's Compensation) and the underwriters will have no right of recovery or subrogation against the County of Macomb including its agents, employees, elected and appointed officials and agencies. It being the intention of the parties that the insurance policy so effected will protect both parties in primary coverage for any and all losses covered by the subject policy. The insurance carrier(s) must have an A.M. Best rating of no less that an A-, VII.

The insurance company(s) issuing the policy or policies will have no recourse against the County of Macomb for payment of any premiums or for assessments under any form of policy.

The Contractor will assume any and all deductibles in the above any and all deductibles in the above-described insurance policies.

The term "INSURED" is used severally, not collectively, but the inclusion in this policy of more than one insured will not operate to increase the limit of the Owner's liability.

All certificates are to provide a thirty (30) day notice of material change or cancellation. Certificates of insurance must be provided no less than ten (10) working days before commencement of work to the County of Macomb, 120 North Main Street, Mt. Clemens, Michigan 48043 Attention: Department of Risk Management.

FORMS

INSTRUCTIONS

All Proposals must be submitted on the forms provided, properly executed and with all items filled out in ink or typed. Do not change or add words to the forms. Unauthorized conditions, limitations, or provisions on or attached to the forms may be cause for rejection of the proposal. Any Bidder information that is altered by erasure or by inter-lineation prior to submittal must be initialed and explained by notation above the signature of the Bidder.

LIST

The following is a list of forms that are to be completed and returned:

Mark A. Hackel
County Executive

County of Macomb, Michigan
VENDOR DISCLOSURE FORM

The Macomb County ethics ordinance requires vendors of the County to complete and file a disclosure statement, the purpose of which is to disclose any financial relationships or other conflicts of interest that may exist between vendors and employees or elected officials (or their appointees) of the County. Once filed, the disclosure form does not need to be updated unless there is a change in circumstance that would cause the answer to any of the questions to change, at which time an amended disclosure form must be filed. Filing of the disclosure form is considered a condition of payment.

PLEASE RETURN THE COMPLETED FORM TO:
Macomb County Purchasing Department
ATTN: Vendor Disclosure/Mary Schultz
44900 Vic Wertz Dr.
Clinton Township, MI 48036

VENDOR NAME: _____

1. Does the vendor currently employ a relative of any employee, elected official or appointee of an elected official of Macomb County? Relative is defined as husband or wife, father or mother, son or daughter, brother or sister, uncle or aunt, first cousin, nephew or niece, great uncle or great aunt, grandfather or grandmother, grandson or granddaughter, father-in-law or mother-in-law, son-in-law or daughter-in-law, brother-in-law or sister-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister, half-brother or half-sister, the parents or grandparents of the individual's fiancée.

☐ **YES** ☐ **NO**

If yes, please answer the following:

A. Name of County employee or elected official (or appointee): _____

B. County Position/Title: _____

C. County Department or Agency: _____

2. Does any employee or elected official of Macomb County have an interest in the vendor organization in any of the following capacities, either compensated or non-compensated: director, officer, partner, beneficiary, trustee, member, employee or contractor.

☐ **YES** ☐ **NO**

If yes, please answer the following:

A. Name of County employee or elected official (or appointee): _____

B. County Position/Title: _____

C. County Department or Agency: _____

D. Position/Title with Vendor: _____

3. Does any current employee or elected official of Macomb County have legal or beneficial ownership of 10% or more of the outstanding stock of the vendor organization?

☐ **YES** ☐ **NO**

If yes, please answer the following:

A. Name of County employee or elected official (or appointee): _____

B. County Position/Title: _____

C. County Department or Agency: _____

D. % of Ownership of Vendor Organization: _____

4. In the last five calendar years, has the vendor failed to perform or otherwise deliver on the terms of a contract or agreement with Macomb County, or any other public entity, including suspensions or debarments?

☐ **YES** ☐ **NO**

If yes, please provide further explanation:

_____

_____

_____

_____

_____

I hereby certify that the information included on this form is complete, true and accurate to the best of my knowledge and belief. I understand that either myself or the organization to which this form applies may be subject to sanctions and/or penalties as set forth in the ethics ordinance if any information has been falsified or omitted.

_____ _____
Name (Please Print) *Title*

_____ _____
Signature *Date*

Mark A. Hackel
County Executive

NON-COLLUSION AFFIDAVIT

STATE OF)
) ss
COUNTY OF)

_____, being first duly sworn, deposes and says that he/she is authorized on behalf of _____ (Bidder Name) who is making the foregoing proposal(s) that:

1) Such proposals are genuine and not collusive or a sham.

2) This Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder or person to submit a proposal which is a sham.

3) This Bidder has not in any manner agreed with any other persons or businesses to fix the proposed price, overhead, profit, or any cost element of the submitted proposal.

4) This Bidder has not attempted to secure any advantage against any other Bidders through collusion with any other Bidder or employees or representative of the County.

5) That the proposals submitted are true and accurate to the best of my knowledge and belief and are made in good faith.

6) This Bidder has not directly or indirectly submitted or disclosed its proposal or its contents or divulged information or data relative thereto to any association or to any member or agent of any other Bidder to this proposal.

Further, Affiant sayeth not.

_____

Subscribed and sworn to before me
this ___ day of _____, 20___.

_____
Notary Public
County of _____,
State of _____,
My Commission Expires: _____

BIDDER: THIS AFFIDAVIT MUST BE COMPLETED, SIGNED, NOTARIZED AND INCLUDED IN YOUR PROPOSAL SUBMISSION.

Mark A. Hackel
County Executive

MACOMB COUNTY BASED PREFERENCE

A local preference percentage credit from the following allowance table will be applied to the bid of any County-based Enterprise. This credit will be subtracted from the bid of the County-based Enterprise. In comparing bids, the bid of the County –based Enterprise after subtraction of the credit shall be considered the official bid. However, if the County-based Enterprise is awarded the Contract, the bid without the equalization percentage credit shall be the Contract price.

Contract Amount	Local Preference Percentage
Up to $50,000.00	5
$50,000.00 to $200,000.00	3
$200,000.00 and over	1

1. No business shall receive these credits unless it has been certified by the Purchasing Manager.
2. Any business who claims entitlement to any local preference credit shall disclose the records necessary to establish eligibility to the County.
3. After applying any local preference credits as provided above, the Contract shall be awarded to the lowest Responsible Bidder thus evaluated.

IN ORDER TO DETERMINE IF YOUR BUSINESS IS ENTITLED TO RECEIVE A LOCAL PREFERENCE PERCENTAGE CREDIT, PLEASE ANSWER THE FOLLOWING QUESTIONS:

1. Is your business headquarters physically located within Macomb County, or has it been conducting business at a location with a permanent street address in the County of Macomb on an ongoing basis for not less than one taxable year prior to your bid or response to this Request for Proposal? **YES_____ NO _____**
2. Has your business paid property taxes on real or personal property within the past year on property which is ordinarily needed to perform the proposed contract? **YES _____ NO _____**
3. Are at least 50 percent of your regular full-time employees based at the County location to perform the proposed contract? **YES _____ NO _____**
4. Has your business been dealing for at least one year on a regular commercial basis in the kind of goods or services which are the subject of this bid or proposal? **YES _____ NO _____**

Drug Screening

To the extent not prohibited by law, all contracts for construction, repair, alteration, or rebuilding of a County building or other property shall include a provision requiring the contractor and any subcontractor providing services under the contract to conduct pre-hire screening for illegal drug use by their employees who provide services under the contract.

If applicable, is your business compliant with this requirement? **YES _____ No_____**

BID ITEM #11-24
MACOMB COUNTY
2024 PAVING PROJECTS-VARIOUS SITES

Mark A. Hackel
County Executive

GENERAL INFORMATION

In further description of this Bid, we desire to submit sheets marked as follows:

_____

Bidding under the name of: _____

DUNS Number: _____
Federal Employer Identification Number: _____
which is (check one of the following):

( ) Corporation, incorporated under the laws of the State of:

_____

( ) Partnership, consisting of (list partners):

_____

_____

_____

( ) Assumed Name (Register No.) _____

( ) Individual

AUTHORIZED SIGNATURE: _____

Printed or typed signature: _____

Title: _____

Address: _____

City, State: _____

Date: _____

Telephone Number: _____

Fax Number: _____

Email: _____

****

When payment on such order or contract is to be directed to the same company at an address different from above, please list the address to be used below:

BID ITEM #11-24
MACOMB COUNTY
2024 PAVING PROJECTS-VARIOUS SITES

Mark A. Hackel
County Executive

WORK REFERENCES

BIDDER'S COMPANY NAME _____

Please list at least three (3) companies or public agencies for which you have done similar work.

Macomb County reserves the right to reject low Bids for poor past performance or inadequate references.

NAME OF COMPANY _____

CONTACT PERSON _____

ADDRESS _____

TELEPHONE NO. _____

NAME OF COMPANY _____

CONTACT PERSON _____

ADDRESS _____

TELEPHONE NO. _____

NAME OF COMPANY _____

CONTACT PERSON _____

ADDRESS _____

TELEPHONE NO. _____

NAME OF COMPANY _____

CONTACT PERSON _____

ADDRESS _____

TELEPHONE NO. _____

FEDERAL E-VERIFY PROGRAM

The Macomb County Board of Commissioners has established a policy regarding the Federal E-Verify Program. This policy states that future contracts (including both new and reviewing contracts) between Macomb County and contractors and vendors who provide services in excess of twenty-thousand dollars ($20,000) shall require the contractors and vendors to register with, participate in, and utilize the E-Verify Program (or any successor program implemented by the federal Department of Homeland Security and Social Security Administration) when hiring their employees and require the County's Human Resources Department to utilize the E-Verify Program (or any successor program implemented by the federal Department of Homeland Security and Social Security Administration) when hiring new employees.

For more information about E-Verify, go to www.uscis.gov. Click on the E-Verify icon on the bottom left-hand corner of page.

ACKNOWLEDGMENT OF MACOMB COUNTY'S POLICY REQUIRING PARTICIPATION IN THE FEDERAL E-VERIFY PROGRAM AND CERTIFICATION OF COMPLIANCE

The undersigned hereby acknowledges receipt of a copy of the policy of the Macomb County Board of Commissioners requiring contractors, including those providing professional services, who provide services **in excess of $20,000 a year** to the County to register and participate in the Federal E-Verify Program.

The undersigned hereby certifies that (he/she/it) will comply with this policy and will register with, participate in and utilize the E-Verify Program or any successor program implemented by the Federal Department of Homeland Security and Social Security Administration when hiring employees.

DATED: _____

_____
Authorized Signature

_____
Printed or Typed Signature

_____
Name of Company

Mark A. Hackel
County Executive

CERTIFICATION OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

The undersigned, the owner or authorized officer of the below-named Bidder _____, hereby certifies, represents and warrants that the Bidder, including its officers, directors and employees, is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the "Act"), and that in the event Bidder is awarded a contract, the Bidder will not become an "Iran linked business" at any time during the course of performing any services under the contract.

BIDDER: _____
Name of Bidder

By: _____

Its: _____

Date: _____

BID ITEM #11-24
MACOMB COUNTY
2024 PAVING PROJECTS-VARIOUS SITES

BID FORM

Bid Item #11-24
Macomb County
2024 Paving Projects
Various Sites

Bidder:_____
(print or type company name)

County of Macomb
Mount Clemens, Michigan

OWNER

_____
(Telephone Number)

MACOMB COUNTY
MT. CLEMENS, MICHIGAN 48043

ARCHITECT
WAKELY ASSOCIATES INC.
30500 VAN DYKE AVENUE, SUITE 209
WARREN, MI 48093

GENERAL AGREEMENTS

A. The Bidder acknowledges that he/she has had the opportunity to examine the site and locality where the Work is to be performed and has become familiar with the legal requirements, laws, rules, regulations and conditions affecting the cost, progress and performance of the Work; and has made such independent investigations as Bidder deemed necessary to prepare the Bid. Further, Bidder hereby states that the Base Bid set forth in this Bid Response is true and correct.

B. The Bidder agrees that this Bid shall not be withdrawn for a period of 30 calendar days after the scheduled closing time for receiving Bids.

C. The Bidder declares that in preparing this Bid, Bidder is assured of the availability of all labor, materials and products to meet the substantial completion date.

D. The Bidder acknowledges that the price stated below includes all taxes of whatever character or description.

E. The Bidder agrees to execute a Contract for work covered by this Bid, provided that he/she be notified of its acceptance within thirty (30) days after the opening of Bids.

SCHEDULE - TIME OF COMPLETION

The undersigned agrees to commence the Work of the Contract Documents on a date specified in a written "Notice to Proceed", and shall fully complete the Work within the required time allowed. Owner requires work to be substantially complete no later than September 27, 2024. The proposed Bid is in full consideration of this.

ACKNOWLEDGEMENT OF ADDENDA

The Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

Addendum No. 1, dated _____, Addendum No. 3, dated _____

Addendum No. 2, dated _____, Addendum No. 4, dated _____

BID FORM SUPPLEMENTS
Attached to this Bid Form and incorporated herein are the following documents, completed in full by the undersigned:

Base Bid Form Supplement – Unit Prices/Supplemental Fees

BASE BID
The undersigned Bidder, having carefully examined the Bidding and Contract Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, all as issued by the Owner, and being familiar with all conditions and requirements of the Work, hereby proposes and agrees to furnish all material, labor, equipment, tools and supervision; and to furnish all services necessary to complete the Work required in accordance with the Bidding Documents for the following projects, in the following amount:

_____ Dollars $_____
(Sum to be written out)

The undersigned acknowledges that he/she has included the sum of FIFTY THOUSAND DOLLARS ($50.000.00) in the base bid for use as a Construction Contingency. This amount, when unused, will be returned to the Owner. These allowances will only be used after written authorization of the Owner's representative.

VOLUNTARY ALTERNATES
The following voluntary alternates are offered by the Bidder. The undersigned agrees that the amounts indicated below shall be added to or deducted from the Base Bid, as the case may be for each alternate which is accepted.

	Description of Voluntary Alternates	Add	Deduct
1.	_____	$ _____	$ _____
2.	_____	$ _____	$ _____
3.	_____	$ _____	$ _____
4.	_____	$ _____	$ _____

Mark A. Hackel
County Executive

Respectfully submitted this ____ day of _____, 20____.

By: _____
(Name of bidding firm or corporation)

Witness:

By: _____
(Signature)

Attest: _____

_____
(Type or print name)

(Signature)

By: _____

Title: _____
(Owner/Partner/President/Vice Pres.)

(Type or print name)

Title: _____

Address: _____

(Corporate Secretary or Assistant Secretary Only)

Phone: _____

License: _____

Federal ID No.: _____

(Affix Corporate Seal Here)

_____
Company Name

_____
Company Representative

_____
Title

_____
Date

BID ITEM #11-24
MACOMB COUNTY
2024 PAVING PROJECTS-VARIOUS SITES

Mark A. Hackel
County Executive

BID FORM SUPPLEMENT - UNIT PRICES/SUPPLEMENTAL FEES

This form is required to be attached to the Base Bid Form.

Bid Item #11-24
Macomb County
2024 Paving Projects
Various Sites

Bidder:_____
(print or type company name)

County of Macomb
Mount Clemens, Michigan

UNIT PRICES

Unit Price 1A: Additional 4" concrete removal and replacement per square foot that may exceed the quantities given on the documents. Such unit price to include the cost of material and earthwork preparation required and related work where applicable, including OH&P, insurance, bond and taxes.

ADD_____Dollars/Sq. Foot($_____per s.f.)

Unit Price 1B: Additional 6" concrete removal and replacement per square foot that may exceed the quantities given on the documents. Such unit price to include the cost of material and earthwork preparation required and related work where applicable, including OH&P, insurance, bond and taxes.

.

ADD_____Dollars/Sq. Foot($_____per s.f.)

Unit Price 1C: Additional 8" concrete removal and replacement per square foot that may exceed the quantities given on the documents. Such unit price to include the cost of material and earthwork preparation required and related work where applicable, including OH&P, insurance, bond and taxes.

.

ADD_____Dollars/Sq. Foot($_____per s.f.)

Unit Price 2A: Expansion joint backing rod and sealant per lineal foot, which may exceed the quantities given on documents or unforeseen areas which may require sealant. Such unit price to include the cost of materials, preparation required and related work where applicable, including OH&P, insurance, bond and taxes.

.

ADD_____Dollars/l.ft.($_____per l.ft.)

Unit Price 3A: Amount per cubic yard for removal off site and legal disposal of existing unsuitable soils, and/or existing base, including OH&P, insurance, bond and taxes.

.

ADD_____Dollars/c.y.($_____per c.y.)

Unit Price 3B: Amount per cubic yard for additional amounts of 21AA limestone installed beyond that indicated on drawings, including OH&P, insurance, bond and taxes.
.

ADD_____Dollars/c.y.($_____per c.y.)

Unit Price 3C: Amount per square yard to install Tensar Triax tx160 grid-min. 2' overlap-includes pinning, including OH&P, insurance, bond and taxes.
.

ADD_____Dollars/s.y.($_____per s.y.)

SUPPLEMENTAL FEES
For additional work performed upon instruction of Macomb County, by Sub-Contractors of the Undersigned, add to the Sub-Contractor's prices for such work a fee of _____**%**, which includes all the charges of the undersigned for overhead and profit.

Any additional work performed upon instruction of Macomb County by persons other than the Sub-Contractors of the undersigned, the charges will be actual cost of the labor, and materials, (less all discounts) plus the fee of _____**%**, which includes all the charges of the undersigned for overhead and profit, and to which shall be added the actual cost of insurance & taxes.

Each Bid covering extra work, shall be accompanied with complete itemized material & labor breakdowns.

For all revisions involving the deletion of contract work, it is agreed that the full credit shall be given Macomb County for such work deleted, including overhead and profit as quoted hereinbefore.

NEGOTIATION
The undersigned agrees that, should the overall cost exceed the funds available, he/she will be willing to negotiate with Macomb County and Architect; for the purpose of making further reductions in the Contract work, and shall agree to give full credit for all such reductions in the work requested by Macomb County, including full value of labor, materials, and Sub-Contract work and reasonable proportionate reductions in overhead and profit, thereby arriving at an agreed upon Contract price.

Submitted this___day of_____, 20____

By: _____
(Name of bidding firm or corporation)

By: _____
(Signature)

_____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice Pres.)

Mark A. Hackel
County Executive

BID FORM SUPPLEMENT - LIST OF SUB-CONTRACTORS

All sealed bids for construction contracts shall provide a list of preferred sub-contractors and identify, with documentation, whether each subcontractor is a County-based Enterprise.

NAME OF BIDDER: ______________________________

NAME OF SUB-CONTRACTOR ______________________________

CONTACT PERSON ______________________________

ADDRESS ______________________________

TELEPHONE NO. ______________________________

MACOMB COUNTY BASED ENTERPRISE (Y/N) ______________________________

NAME OF SUB-CONTRACTOR ______________________________

CONTACT PERSON ______________________________

ADDRESS ______________________________

TELEPHONE NO. ______________________________

MACOMB COUNTY BASED ENTERPRISE (Y/N) ______________________________

NAME OF SUB-CONTRACTOR ______________________________

CONTACT PERSON ______________________________

ADDRESS ______________________________

TELEPHONE NO. ______________________________

MACOMB COUNTY BASED ENTERPRISE (Y/N) ______________________________

NAME OF SUB-CONTRACTOR ______________________________

CONTACT PERSON ______________________________

ADDRESS ______________________________

TELEPHONE NO. ______________________________

MACOMB COUNTY BASED ENTERPRISE (Y/N) ______________________________

Mark A. Hackel
County Executive

COUNTY OF MACOMB

VENDOR CERTIFICATION DEBARMENT

All information requested in this section must be completed and the document notarized. Any information omitted, or erroneously reported, may result in disqualification for current or future bidding and supply on behalf of the County of Macomb.

The undersigned warrants and presents that they have full complete authority to make representations for and on behalf of the undersigned company and that their representations are fully binding upon the undersigned company.

1. The undersigned are not presently debarred, suspended, proposed for debarment, declared ineligible, or excluded from transactions by any federal department or agency, or any state, county or local municipality, department or agency.

2. The undersigned has not within a three (3) year period preceding this bid been convicted of, or had a civil judgment rendered against them for the commission of fraud, a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction, or a contract a public transaction, violation of federal or state antitrust statutes, or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

3. The undersigned are not presently indicted for or otherwise criminally or civilly charged by any governmental entity (federal, state or local) with commission of any of the offenses set forth in paragraph 2.

4. The undersigned have not within a three (3) year period preceding this bid, had one or more public transactions (federal, state or local) terminated or attempted to be terminated for cause or default.

IF THE APPLICANT IS UNABLE TO CERTIFY TO ANY OF THE STATEMENTS IN THIS CERTIFICATION, CERTIFICATION AND EXPLANATION SHALL BE ATTACHED AND PRESENTED WITH THIS CERTIFICATION.

THE UNDERSIGNED CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED MADE ON BEHALF OF THE UNDERSIGNED BIDDER.

Bidder: _____

Bidder Address: _____

Applicant/Bidder Representative: _____

Signature: _____
(Print full name)

Subscribed and sworn to before me this
_____ day of _____, 20___.

_____
Notary Public
County of _____,
State of _____
My Commission expires: _____

Mark A. Hackel
County Executive

GOOD HOUSEKEEPING AND BEST MANAGEMENT PRACTICES

Bidder shall comply with the Good Housekeeping and Best Management Practices as outlined in SEMCOG's LID that can be found at:

https://semcog.org/Reports/LID/files/assets/basic-html/page-1.html#.

Where applicable, Bidder to annually certify their trucks and tanks to ensure that materials extracted stay within the truck until it reaches the permitted disposal site.

All equipment utilized in the cleaning process will abide by manufacturers recommendations.

_____
Initial

_____
Date

SECTION 00710 - GENERAL CONDITIONS

DOCUMENTS:

"The General Conditions of the Contract for the Construction" A.I.A. Documents A-201, 2017 Edition, Forms a part of these Specifications and shall have the same effect as if bound herein.

This Document is modified as described in Modifications of the General Conditions.

Contractors shall be held responsible for having familiarized themselves with this Document and all other documents affecting their contracts in this Specification.

END OF SECTION 00710

SECTION 00810 - MODIFICATIONS OF THE GENERAL CONDITIONS

The following modify, change, delete from, or add to the "General Conditions of the Contract for Construction" AIA Document A201, 2017 Edition. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

ARTICLE 1, GENERAL PROVISIONS

Add the following Subparagraph to Paragraph 1:

1.2.4 Work not covered in the Contract Documents will not be required, unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Where reference is made to specifications of manufacturers, trade associations or the like, such is understood to be made a part of this Specification to have the same effect as if fully reproduced herein. Approval or equal, acceptable, and words of similar definition are understood to mean in the judgment of Architect.

Add the following Subparagraph to Paragraph 1:

1.2.5 Computed dimensions take precedence over scaled dimensions, large scale details over smaller; should disagreements occur in the drawings, or the Specifications describe a higher quality of work or material, the better quality shall be estimated, unless otherwise directed by the Architect. The Architect shall be notified at once, in writing, of any and all discrepancies.

ARTICLE 3, CONTRACTOR

Add the following Subparagraph to paragraph 3.4.2:

3.4.2 After the Contract has been executed, the Owner and the Architect will consider a formal written request for the substitution of products in place of those specified only under the conditions set forth herein.

3.4.2.2 By making requests for substitutions based on Clause 3.1.3. above, the Contractor:

(a) represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;

(b) represents that he will provide the same warranty for the substitution that he would for that specified;

(c) certifies that the cost data presented is complete and includes all related costs under this Contract, but excludes cost under separate contract, and excludes the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently becomes apparent; and

(d) will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects, without any request for additional compensation.

ARTICLE 5, SUBCONTRACTORS
Revise 5.2.1 as follows:

5.2.1. No later than (5) five days after the opening of bids and prior to award of contract the Contractor shall furnish, in writing to the Owner through the Architect the names of persons or entities proposed or manufacturers for each of the products identified in the General Requirements (Division 1 of the Specifications) and where applicable, the name of the installing subcontractor within (5) five days of x of the information, the architect may notify the contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) required additional time for review. Failure of the Architect to provide notice within the (14) fourteen day period shall constitute notice of no reasonable objection.

5.2.4.5 Adding further subcontractors by the contractor shall only allowed upon written recommendation by the Architect and final consent of the Owner.

Article 7, CHANGES IN THE WORK
Add the following sentence to paragraph 7.3.7

7.3.7.6 The Contractor shall not incur any cost to be reimbursed as part of the adjustment in the contract sum prior to the commencement of the construction phase.

7.3.4.1. Delete reference “fringe benefit required by degree or custom.” Replace with “Fringe benefit only when agreed to ahead of time.”

7.3.4.2 Delete “including cost of transportation”

7.3.4.3 Revise to read “Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others shall be limited only for work actually used and not kept idle;

7.3.4.4 Revise to read: Costs of premiums for all bonds and insurances (only for extension of time for the overall project)...

7.4.5. Revise to read costs of supervision (only for an extension of time for the overall project)

ARTICLE 8, TIME

8.3.1 Substitute litigation in place of binding dispute resolution.

ARTICLE 9, PAYMENTS AND COMPLETION
Add the following sentence to Subparagraph 9.3.1.:

The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for payment, supported by AIA Document G703, Continuation Sheet.

Add the following Clause 9.3.4:

Until the work is 50% complete, the Owner shall pay 90% of the amount due the Contractor on account of progress payments. After the work is 50% in place, additional retainage shall not be withheld unless the public agency determines that the contractor is not making satisfactory progress, or for other specific cause relating to the contractor’s performance under the contract. If the public agency so determines, the public agency may retain not more than 10% of the dollar value of work more than 50% in place.

ARTICLE 11, INSURANCE AND BONDS

Add the following Subparagraphs:

11.1.1 Insurance shall only be issued by a best A-rated company or better.

11.1.1.1. Liability Insurance shall include all major divisions of coverage on a comprehensive basis including:

(1) Premised-Operations (including X-C-U)

(2) Independent Contractors Protective

(3) Products and Completed Operations

(4) Personal Injury Liability with Employment Exclusion deleted.

(5) Contractual-including specified provisions for Contractor's Obligation under Paragraph 3-18

(6) Owned, non-owned, and hired motor vehicles.

(7) Broad Form Property Damage, including Complete Operations.

Add the following Subparagraph:

11.1.1.2. If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with subparagraph 9.10.2.

Add the following Subparagraph:

11.1.2.1. The Insurance required by Subparagraph 11.1.1. shall be written for not less than any limits of liability specified in the Contract Documents, or required by law, whichever is greater. Provide minimum limits as indicated in the request for bid:

Add the following sentence to Subparagraph 11.1.1.:

If this Insurance is written on the Comprehensive General Liability Policy form, the Certificates shall be AIA Document G705, Certificates of Insurance. If this Insurance is written on a Commercial General Liability Policy form, ACORD form 255 will be acceptable.

Add the following sentence to Subparagraph 11.1.1.1.:

The form of policy for this coverage shall be Complete Value.

Add the following Subparagraph:

11.3.1.2 The Contractor shall provide insurance coverage for portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the Work in transit.

11.5.2 Revise fourth sentence to read:

Upon receipt, the Owner shall deposit in a separate account, the insurance proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with a mediation or litigation award in which case the procedure shall be as directed by the mediator or the Court.

11.5.1 Revise first sentence to read:
The Owner as fiduciary shall in the case of mediation or litigation make settlement with insureds in accordance with the directions of the mediator or the Court. If distribution of insurance proceeds by mediation or litigation is required the mediator or the Court will direct such distribution.

11.1, PERFORMANCE BOND AND PAYMENT BOND

Delete Subparagraph 11.1.2 and substitute the following paragraphs:

11.1.2 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising hereunder. The contractor shall purchase an maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in jurisdiction where the project is located and the cost thereof shall be included in the Contract Sum. Bonds shall only be issued by a Best A-rated company or better. All bonds must meet with the approval of Macomb County before the Contractor will be allowed to commence the work.
The amount of each bond shall be equal to 100% percent of the Contract Sum.

11.1.2.1 The Contractor shall deliver the required bonds to the Owner not later than five days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

11.1.2.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

Add the following Paragraph 13.8 to Article 13:

13.6 EQUAL OPPORTUNITY

13.6.1 The Contractor shall maintain policies of employment as follows:

13.6.1.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

13.6.1.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, sexual preference or national origin.

ARTICLE 15, CLAIMS AND DISPUTES

15.3 Mediation

15.3.2 Revise paragraph to read:

The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association in effect on the date of this agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the American Arbitration Association. The request may be made concurrently with the filing for litigation but, in such event, mediation shall proceed in advance of litigation or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or Court order.

15.4 Delete reference to arbitration. Binding dispute resolution shall be by litigation in the Macomb County 16th Circuit Court, Mt. Clemens, Michigan.

15.4.4 CONSOLIDATION OR JOINDER

15.4.4.1, 15.4.4.2, 15.4.4.3
Delete reference to arbitration and substitute mediation

END OF SECTION 00810

SECTION 00851 - INDEX OF DRAWINGS

TITLE SHEET

The following drawings, dated July 1, 2024, are issued for Macomb County, 2024 Paving Projects-Various Sites , Bid Item #11-24, Mt. Clemens, Michigan. Architect's Project Number 242034.

TITLE SHEET

ARCHITECTURAL DRAWINGS:

G0.0	COVER SHEET, SHEET INDEX, LOCATION MAPS
AS1.0	MC JAIL SITE - ARCHITECTURAL SITE PLAN
AS2.0	DEPT. OF PUBLIC WORKS & VERKUILEN BUILDING - ARCHITECTURAL SITE PLAN & DETAILS
AS3.0	HEALTH DEPT. BUILDING - ARCHITECTURAL SITE PLAN & DETAIL
AS4.0	42nd DISTRICT COURT - NEW BALTIMORE
AS5.0	MC ADMINISTRATION BUILDING - PARKING DECK DEMO
AS5.1	MC ADMINISTRATION BUILDING - RESTRIPING PLAN
AS5.2	MC ADMINISTRATION BUILDING - DETAILS
AS5.3	MC ADMINISTRATION BUILDING - DETAILS
M0.00	MECHANICAL GENERAL INFORMATION
P1.00	SITE PLUMBING DEMOLITION AND NEW WORK PLAN

END OF SECTION 00851

SECTION 01010 - SUMMARY OF WORK

PART I - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this section.

1.02 PROJECT:

A. The project consists of all work necessary to remove and replace portions of concrete slabs and walks, curbs, asphalt paving, parking lot striping, provide crack fill, seal coat, trench drain work, traffic bearing waterproof coating, associated sealant work and all associated work including landscape restoration at the following sites:

1. Macomb County Jail, Mt. Clemens
2. Macomb County Health Department, Mt. Clemens
3. Robert A. Verkuilen Building, Clinton Township
4. Macomb County Dept. of Public Works, Clinton Township
5. 42nd District Court-Division II, New Baltimore
6. Macomb County Administration Building Parking Deck, Mt. Clemens

Note: A single lump sum proposal is being entertained for the work of this proposal. Partial or segregated bids or assignments for individual parts of the project will not be considered. Bidder shall include quotes for all alternates (if any) and unit prices; failure to do so may result in rejection of proposal.

Work shall be substantially complete on or before September 27, 2024.

PARTS 2 & 3 - PRODUCT AND EXECUTION

Not applicable

END OF SECTION 01010

SECTION 01041 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to other Sections of Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION:

A. Contractor shall provide the services of a full time Project Coordinator for the duration of the construction work.

1. Employ someone with not less than (10) ten years experience performing coordination work on projects of similar size and scope.

2. Submit name and qualifications to Architect.

B. Provide additional administrative and supervisory personnel as required for the performance of the work including coordination of the various subcontractors.

C. Related Requirements Specified in Other Sections:

1. Summary of Work: Section 01010.

1.03 PROJECT COORDINATOR'S DUTIES:

A. Coordinate the work of the various subcontractors:

1. For temporary utilities.

2. With the work of trades specified in Division 2 through 7.

B. Coordinate the schedules of subcontractors.

1. Verify timely deliveries of products for installation by other trades.

2. Verify that labor and materials are adequate to maintain schedules.

C. Maintain conferences among subcontractors and other concerned parties, as necessary to:

1. Maintain coordination and schedules.

2. Resolve matters in dispute.

D. Participate in project meetings:

1. Report progress of work.

2. Recommend needed changes in schedule.

E. Temporary Utilities:

1. Coordinate installation, operation and maintenance, to verify compliance with project requirements and with Contract Documents.

2. Verify adequacy of service at required locations.

F. Shop Drawings, Product Data and Samples:

1. Prior to submittal, review for compliance with Contract Documents.

a. Check field dimensions and clearance dimensions.

b. Check relation to available space.

c. Review the effect of any changes on the work of other contracts or trades.

d. Check compatibility with equipment and work of other trades.

G. Coordination Drawings:

1. Prepare, as required to assure coordination of work or to resolve conflicts.

2. Submit for review and transmittal.

3. Reproduce and distribute approved copies to all concerned parties.

H. Observe required testing; maintain a record of tests:

1. Testing agency and name of inspector.

2. Subcontractor.

3. Manufacturer's representative present.

4. Date and time of testing.

5. Type of product or work.

6. Type of test and results.

7. Retesting required.

I. Verify that subcontractors maintain accurate record documents.

J. Substitutions and Changes:

1. Review proposals and requests.

a. Check for compliance with Contract Documents.

b. Verify compatibility with work and equipment of other trades.

K. Assemble documentation for handling of claims or disputes.

L. Inspection and Acceptance of Work:

1. Prior to inspection, check that work is complete and ready for acceptance

2. Assist Inspector: Prepare list of items to be completed or corrected.

3. Should acceptance of work constitute the beginning of the specified guarantee period, prepare and transmit written notice to Contractor for the Owner.

M. Assemble record documents from subcontractors.

END OF SECTION 01041

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2SUMMARY

A. This Section specifies administrative and procedural requirements for cutting and patching.

B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching is to be performed.
5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.

7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
1. Before proceeding, meet at the site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Take all precautions necessary to avoid cutting existing pipe or conduit serving the building.

3.3PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete using a cutting machine such as a carborundum saw or diamond core drill.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.4 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely any excess patching materials, excess sealant, and items of a similar nature.

END OF SECTION 01045

SECTION 01090 - REFERENCE STANDARDS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Quality assurance.

B. Schedule of references.

1.02 QUALITY ASSURANCE:

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date for receiving bids.

C. Obtain copies of standards when required by Contract Documents.

D. Maintain copy at job site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.04 SCHEDULE OF REFERENCE:

AA Aluminum Association
900 19th Street, N.W. – Suite 300
Washington, DC 20006

AABC Associated Air Balance Council
1518 K Street N.W.
Washington, DC 20005

AASHTO American Association of State Highway
and Transportation Officials
444 North Capitol Street, N.W. – Suite 249
Washington, DC 20001

ACI American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333-9094

ADC Air Diffusion Council
1901 N. Roselle Rd., Suite 800
Schaumburg, IL 60195

AF&PA American Forest & Paper Association
1111 19th Street, NW, Suite 800
Washington, DC 20036

AGC Associated General Contractors of America
2300 Wilson Blvd., Suite 400
Arlington, VA 22201

AI Asphalt Institute
2696 Research Park Drive
Lexington, KY 40511-8480

AIA American Institute of Architects
1735 New York Avenue, N.W.
Washington, DC 20006-5292

AISC American Institute of Steel Construction
One East Wacker Drive
Suite 3100
Chicago, IL 60601-2001

AISI American Iron and Steel Institute
1140 Connecticut Ave - Suite 705
Washington, DC 20036

AITC American Institute of Timber Construction
7012 S. Revere Parkway – Suite 140
Englewood, CO 80112

AMCA Air Movement and Control Association
30 West University Drive
Arlington Heights, IL 60004

ANSI American National Standards Institute
25 West 43rd Street, Fourth Floor
New York, NY 10036

APA American Plywood Association
Box 11700
Tacoma, WA 98411-0700

ARI Air Conditioning and Refrigeration Institute
4100 North Fairfax Drive – Suite 200
Arlington, VA 22203

ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers
1791 Tullie Circle, N.E.
Atlanta, GA 30329

ASME American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

ASTM American Society for Testing and Materials
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

AWI Architectural Woodwork Institute
46179 Westlake Drive, Suite 120
Potomac Falls, VA 20165

AWPA American Wood-Preservers' Association
P.O. Box 5690
Grandbury, TX 76049

AWS American Welding Society
550 N.W. LeJeune Road
Miami, FL 33126

AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

BIA Brick Institute of America
1350 Centennial Park Drive, Suite 301
Reston, VA 20191

CDA Copper Development Association
260 Madison Avenue - 16th Floor
New York, NY 10016

CLFMI Chain Link Fence Manufacturers Institute
10015 Old Columbia Road, Suite B-215
Columbia, MD 21046

CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Road
Schaumburg, IL 60173-4758

CSSB Cedar Shake and Shingle Bureau
P.O. Box 1178
Sumas, WA 98295-1178

DHI Door and Hardware Institute
14150 Newbrook Drive, Suite 200
Chantilly, VA 20151

EJCDC Engineers' Joint Contract Documents Committee
American Council of Engineering Companies
1015 15th Street, N.W., 8th Floor
Washington, DC 20005

EJMA Expansion Joint Manufacturers Association
25 North Broadway
Tarrytown, NY 10591

FGMA Flat Glass Marketing Association
3310 Harrison
White Lakes Professional Building
Topeka, KS 66611

FM Factory Mutual System
Standards Laboratories Department
1151 Boston-Providence Turnpike
Norwood, MA 02062

FS Federal Specification
General Services Administration
Specifications and Consumer Information
Distribution Section (WFSIS)
1800 F Street, NW
Washington, DC 20405

GA Gypsum Association
810 First Street N.W. #510
Washington, DC 20002-4268

ICC International Code Council
5203 Leesburg Pike, Suite 600
Falls Church, VA 22041

IEEE Institute of Electrical and Electronics Engineers
345 East 47th Street
New York, NY 10017

IMIAC International Masonry Industry All-Weather Council
International Masonry Institute
815 15th Street, N.W.
Washington, DC 20005

MBMA Metal Building Manufacturer's Association
1300 Sumner Avenue
Cleveland, OH 44115-2351

MFMA Maple Flooring Manufacturers Association
60 Revere Drive
Northbrook, IL 60062

MIL Military Specification
Naval Publications and Forms Center
700 Robbins Avenue, Building 4, Section D
Philadelphia, PA 19111-5093

ML/SFA Metal Lath/Steel Framing Association
Division of National Association of Architectural Metal Manufacturers (NAAMM MLIFSA)
600 South Federal Street, Suite 400
Chicago, IL 60605

NAAMM National Association of Architectural Metal Manufacturers
800 Roosevelt Road, Building C, Suite 312
Glen Ellyn, IL 60137

NCMA National Concrete Masonry Association
2302 Horse Pen Road
Herndon, VA 22071-3499

NEBB National Environmental Balancing Bureau
8575 Grovement Circle
Gaithersburg, MD 20877

NEMA National Electrical Manufacturers' Association
1300 North 17th Street, Suite 1752
Rosslyn, VA 22209

NFPA National Fire Protection Association
#1 Battery March Park
Quincy, MA 02269-9101

NSWMA National Solid Wastes Management Association
4301 Connecticut Avenue, N.W., Suite 300
Washington, DC 20008-2304

NTMA National Terrazzo and Mosaic Association
201 North Maple, Suite 208
Purceliville, VA 20132

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 60077

PCI Precast Prestressed Concrete Institute
175 W. Jackson Blvd.-Suite 1859
Chicago, IL 60604-9773

PS Product Standard
U.S. Department of Commerce
1401 Constitution Avenue, N.W.
Washington, DC 20230

RIS Redwood Inspection Service
Division of California Redwood Association)
405 Enfrente Drive
Novato, CA 94949

SDI Steel Deck Institute
P.O. Box 25
Fox River Grove, IL 60021

SDI Steel Door Institute
c/o Wherry Associates
30200 Detroit Road
Cleveland, OH 44145-1967

SIGMA Sealed Insulating Glass Manufacturers Association
401 N. Michigan Avenue
Chicago, IL 60611

SJI Steel Joist Institute
3127 10th Avenue North
Myrtle Beach, SC 29577-6760

SMACNA Sheet Metal and Air Conditioning Contractors'
National Association
4201 Lafayette Center Drive
Chantilly, VA 20151-1209

SSPC Society for Protective Coatings
40 24th Street, 6th Floor
Pittsburgh, PA 15222-4656

TCNA Tile Council of North America, Inc.
100 Clemson Research Blvd.
Anderson, SC 29625

TPI Turfgrass Producers International
2 East Main Street
East Dundee, IL 60118

UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062-2096

WCLIB West Coast Lumber Inspection Bureau
6980 S.W. Varns Road
Tigard, OR 97223

WDMA Window & Door Manufacturers Associations
1400 W. Touhy Avenue, Suite 470
Des Plaines, IL 60018

WWPA Western Wood Products Association
522 SW Fifth Avenue, Suite 500
Portland, OR 97204-2122

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 01090

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.1RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
   1. Pre-Construction Conference.
   2. Pre-Installation Conferences.
   3. Coordination Meetings.
   4. Progress Meetings.

B. Construction schedules are specified in Spec Section 01310 “Construction Schedules”.

1.3PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than (10) ten calendar days after execution of the Agreement and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: The Owner, Facility Representatives, Architect and their consultants, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the work.

C. Agenda: Discuss items of significance that could affect progress including such topics as:

   1. Tentative construction schedule.
   2. Critical work sequencing.
   3. Designation of responsible personnel.
   4. Procedures for processing field decisions and Change Orders.
   5. Procedures for processing Applications for Payment.
   6. Distribution of Contract Documents.

7. Submittal of Shop Drawings, Product Data and Samples.
8. Preparation of record documents.
9. Use of the premises.
10. Office, Work and storage areas.
11. Equipment deliveries and priorities.
12. Safety procedures.
13. First aid.
14. Security.
15. Housekeeping.
16. Working hours.

1.4 PRE-INSTALLATION CONFERENCES

A. Conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:

a. Contract Documents.
b. Options.
c. Related Change Orders.
d. Purchases
e. Deliveries.
f. Shop Drawings, Product Data and quality control Samples.
g. Possible conflicts.
h. Compatibility problems.
i. Time schedules.
j. Weather limitations.
k. Manufacturer's recommendations.
l. Compatibility of materials.
m. Acceptability of substrates.
n. Temporary facilities.
o. Space and access limitations.
p. Governing regulations.
q. Safety.
r. Inspection and testing requirements.
s. Required performance results.
t. Recording requirements.
u. Protection.

2. Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Architect.
3. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5COORDINATION MEETINGS

A. Conduct Project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.

B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.6PROGRESS MEETINGS

A. Conduct progress meetings at the Project site at regularly scheduled intervals. Notify the Owner, Facility Representatives, and Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner, Courts, and Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including such items as:

    a. Interface requirements.
    b. Time.
    c. Sequences.
    d. Deliveries.
    e. Off-site fabrication problems.
    f. Access.
    g. Site utilization.
    h. Temporary facilities and services.
    i. Hours of Work.
    j. Hazards and risks.
    k. Housekeeping.
    l. Quality and Work standards.
    m. Change Orders.
    n. Documentation of information for payment requests.

D. Reporting: No later than (3) three work days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

    1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

SECTION 01310 - CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to other Sections of Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF REQUIREMENTS:

A. General: This section specifies the particular administrative and procedural requirements for progress time scheduling and progress reporting for the performance of the work, as indicated in the General Conditions and elsewhere in the Contract Documents. Refer also to the General Conditions and to the "Contractor" for definition and specific dates of the Contract Time.

B. Scheduling Responsibility: Submission of Contractor's progress schedule to the Owner or Architect shall not relieve the Contractor of his total responsibility for scheduling, sequencing and pursuing the work to comply with the requirements of the Contract Documents, including adverse effects such as delays resulting from ill-timed work; refer to General Conditions.

1.03 FORM OF SCHEDULES:

A. Contractor shall prepare a "Plan of Operations and Progress Schedule" which shall show concisely the manner in which different phases of the work are to be started, methods and speed for the inter-relationship of the work under the various contracts, times upon which different phases of the work are to be started, methods and speed for progressing the different phases and dates upon which the certain subcontractors are dependent upon that under other subcontracts.

B. The plan of operations and progress schedule shall be "weighed" to schedule each trade in proportion to the entire project, both physically and financially.

C. In preparing the above plan of operations and progress schedule, the Contractor shall assure that the methods, dates and other pertinent matters are acceptable to the Architect and, when completed, he shall submit to and obtain approval from the Architect.

D. After approval of the above plan of operations and progress schedule, the Contractor shall be responsible for seeing that it is adhered to and for ascertaining that proper coordination is maintained between work of all Contracts.

1.04 PROGRESS REVISIONS:

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:

1. Major changes in scope.

2. Activities modified since previous submission.

3. Revised projections of progress and completion.

4. Other identifiable changes.

C. Provide a narrative report as needed to define:

1. Problem areas, anticipated delays, and the impact on the schedule.

2. Corrective action recommended and its effect.

3. The effect of changes on schedules of other contractors.

1.05 SUBMISSIONS:

A. Submit initial schedules within (10) ten calendar days after award of Contract.

1. Architect, Owner and the Facility Representatives will review schedules and return review copy within 10 days after receipt.

2. Resubmit within (10) ten calendar days after return of review copy.

B. Submit revised progress schedules and narratives with each application for payment.

1.06 DISTRIBUTION:

A. Distribute copies of the reviewed schedules and narratives to:

1. Job site file.

2. Subcontractors.

3. Other concerned parties.

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

1.07 DAILY REPORTS:

A. Contractor shall prepare a daily report, recording the following information concerning events at the site and submit duplicate copies to the Architect and Owner at regular intervals not exceeding weekly intervals.

1. List of subcontractors at the site.

2. List of separate contractors at the site.

3. Count of personnel at the site.

4. High/low temperatures, general weather conditions.

5. Accidents (refer to accident reports).

6. Meetings and significant decisions.

7. Unusual events.

8. Stoppages, delays, shortages, losses.

9. Emergency procedures, field orders.

10. Orders/requests by governing authorities.

11. Change orders received, implemented.

PART 2 and 3 - PRODUCTS AND EXECUTION - Not Applicable

END OF SECTION 01310

SECTION 01340 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to other Sections of Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION:

A. Submit shop drawings, product data and samples as required by the Contract Documents. Individual submittal requirements are specified in applicable sections for each unit of work. Receive, check and coordinate all submittals of contractors as provided herein.

B. Definitions:

1. Shop Drawings are drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or any subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

2. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.

3. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the work will be judged.

1.03 SUBMITTAL REQUIREMENTS:

A. Coordinate preparation and processing of submittals with performance of the work so that work will not be delayed by submittals. Coordinate and sequence different categories of submittals for the same work, and for interfacing units of work, so that one will not be delayed for coordination with another. No extension of time will be allowed because of failure to properly coordinate and sequence submittals.

B. Submit at minimum a PDF version of each shop drawing, including fabrication, erection, layout and setting drawings and such other drawings as required under various sections of the Specifications, until final acceptance is obtained.

Prepare drawings legible, drawing plans, elevations, sections and details in scales required and printable at 100% scale on sheets. Sheets not larger than 30" x 42" nor smaller than 8-1/2” x 11”. Photo reproductions of contract documents are not an acceptable submittal. Submit copies of manufacturer's descriptive data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagrams and controls, schedules, and other pertinent information as required. Where materials describe more than one product or model, clearly identify which is to be furnished.

C. Shop drawings, product data and samples shall be dated including Contractor and Subcontractor dates of submittal and approval, and marked to show the names of the Project, Architect, Contractor, origination Subcontractor, manufacturer or supplier, and separate detailer if pertinent. Shop drawings shall completely identify Specification section and locations at which materials or equipment are to be installed. Reproductions of Contract Drawings are acceptable as Shop Drawings only when specifically authorized in writing by the Architect.

D. Submission of shop drawings, product data and samples shall be accompanied by a copy of a transmittal letter containing Project name, Contractor's name, number of drawings, and samples, titles and other pertinent data. Transmittal shall bear signature of the Contractor as evidence he checked same and found them in conformance with the Contract Documents.

E. The Contractor shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate contractor, all Shop Drawings, Product Data and Samples required by the Contract Documents.

F. By approving and submitting Shop Drawings, Product Data and Samples, the contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

G. The Contractor shall not be relieved of responsibility for the deviation from the requirements of the Contract Documents by the Architect's acceptance of Shop Drawings, Product Data or Samples under Paragraph 13.12 of the 2017 edition of the AIA A201 General Conditions, unless the Contractor has

specifically informed the Architect in writing of such deviation at the time of sub-deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Architect's acceptance thereof.

H. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Architect on previous submittals.

I. No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been accepted by the Architect as provided in Paragraph 13.12 of the 2017 edition of the AIA A201 General Conditions. All such portions of the Work shall be in accordance with approved submittals.

J. Architect will review Shop Drawings, Product Data and Samples as provided in Paragraph 13.12 of the 2017 edition of the AIA A201 General Conditions. He will mark each such submittal as follows:

1. Accepted - Where no comment made.

2. Accepted as Noted - Where comments indicated on submittal qualifying, modifying, or otherwise changing it; however, submittal can be used for ordering, fabrication and erection at contractor's own risk until revised submittals have been made, reviewed and stamped approved.

3. Revise & resubmit – Where comments indicated on submittal require revisions and resubmission prior to ordering and/or fabrication and erection.

4. Rejected – Where proposed submittals do not conform to the contract documents.

K. Contractor is responsible for obtaining and distributing required prints of shop drawings to his subcontractors and material suppliers; after as well as before final approval. Prints of reviewed shop drawings shall be made from transparencies which carry the Architect's appropriate stamp.

L. Obtain copies of all shop drawings, product data and samples submitted to date and accepted from other contractors.

PARTS 2 and 3 - PRODUCT AND EXECUTION

Not applicable.

END OF SECTION 01340

SECTION 01370 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to other Sections of Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. Submit to the Architect a Schedule of Values allocated to the various portions of the work, within (10) ten calendar days after award of contract.

B. Upon request of the Architect, support the values with data which will substantiate their correctness.

C. The Schedule of Values, unless objected to by the Architect or Owner, shall be used only as the basis for the Contractor's Applications for Payment.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES:

A. Use AIA Form G702.

B. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.

C. Follow the table of contents of Sections as the format for listing component items.

1. Identify each line item with the number and title of the respective major section of the specifications.

D. For each major line item list sub-values of major products or operations under the item.

1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.

E. The sum of all values listed in the schedules shall equal the total Contract Sum.

PARTS 2 AND 3 - PRODUCTS AND EXECUTION - Not Applicable

END OF SECTION 01370

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION:

A. Specific quality control requirements for the work are indicated throughout the contract documents. The term "Quality Control" includes, but is not necessarily limited to, inspection and testing and associated requirements. This section does not specify or modify Architect's duties relating to quality control and Contract enforcement.

B. Coordinate quality control programs of separate contractors including submittals, conferences and on site programs.

1.03 RESPONSIBILITY:

A. Residual Contractor Responsibility: Whatever required, inspection, testing and similar quality control provisions to be performed by independent agencies (not directly by the Contractor), and not indicated to be Owner's responsibility, shall be the Contractor's responsibility. The costs for those required services by independent testing laboratories are recognized to be included in Contract Sum. All test results shall be reported promptly to Architect/Engineer and the Owner.

B. Contractor's General Responsibility: No failure of test agencies, whether engaged by Owner or Contractor, to perform adequate inspections or tests or to properly analyze or report results, shall relieve Contractor of responsibility for fulfillment of requirements of contract documents. It is recognized that required inspection and testing program is intended to assist the Contractor, Owner, Architect, and governing authorities in nominal determination of probable compliances with requirements for certain elements of work. The program is not intended to limit the Contractor's regular quality control program, as needed for general assurance of compliances.

1.04 QUALITY ASSURANCE:

A. General Workmanship Standards: Comply with recognized workmanship quality standards within the industry as applicable to each unit of work, including ANSI standards where applicable. It is a requirement that each category of trades person or installer performing the work be prequalified, to the extent of being familiar with applicable and recognized quality standards for that category of work, and being capable of workmanship complying with those standards.

B. Qualification of Quality Control Agencies: Except where another qualification standard is indicated, and except where it is specifically indicated that use of prime product manufacturer's test facilities is acceptable, engage independent testing laboratories complying with "Recommended Requirements for Independent Laboratory Qualifications" as published by American Council of Independent Laboratories, and specializing in type(s) of inspections and tests required.

1.05 SUBMITTALS:

A. General: Refer to Section 01340, “Shop Drawings, Product Data and Samples” for requirements applicable to inspection and test reports, quality control samples, maintenance agreements, warranties, and similar documentation of quality compliances as required. Refer to individual work sections of Division 2 through 9 for specific certification and submittal requirements.

B. Copies and Distribution: Where inspection and test reports and certifications are required by governing authorities, provide additional copies as required, and where required, send copies directly from inspection or testing agency to governing authority.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING:

A. General: Handle, store and protect materials and products, including fabricated components, by methods and means which will prevent damage, deterioration and losses including theft (and resulting delays), thereby ensuring highest quality results as performance of the work progresses. Control delivery schedules so as to minimize unnecessary long-term storage at project site prior to installation.

PART 2 - PRODUCTS
Not applicable.

PART 3 - EXECUTION:

3.01 PREPARATION FOR INSTALLATION:

A. Pre-Installation Conferences: Well in advance of installation of every major unit of work which requires coordination with other work, meet at the project site with installers and representatives of manufacturers and fabricators who are involved in or affected by the unit of work, and in its coordination or integration with other work which has proceeded or will follow. Advise Architect and Owner of scheduled meeting dates. At each meeting, review progress of other work and preparations for particular work under consideration, including requirements of contract documents, options, related change orders, purchases, deliveries, shop drawings, product data, quality control samples, possible conflicts, compatibility problems, time schedule, weather limitations, temporary facilities, space and access limitations, structural limitations, governing regulations, safety, inspection and testing requirements required performance results, recording requirements, and protection. Record significant discussions of each conference, and agreements and disagreements along with final plan of action. Distribute record of meeting promptly to everyone concerned, including Architect and Owner.

1. Do not proceed with the work if associated pre-installation conference cannot be concluded successfully. Instigate actions to resolve impediments to performance of the work, and reconvene conference at earliest data feasible.

B. Installer's Inspection of Conditions: Require Installer of each major unit of work to inspect substrate to receive the work, and conditions under which the work will be performed, and to report (in writing to Contractor) unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 COORDINATION OF TEST AGENCY WORK:

A. Coordination with Owner's Agencies: Afford access and reasonable time in construction sequence for Owner's inspection and tests to be performed. Cooperate with agencies and provide incidental labor and services needed for the removal and delivery of test samples, and for

inspections and taking measurements. Provide patching and restoration services where test samples have been removed, complying with individual technical sections of Divisions 2 through 9.

1. Except for specialized laboratory sampling equipment, and except as otherwise indicated, supply and operate tools and construction equipment needed to obtain test samples from the work, including cutting devices for sawing, drilling, flame-cutting, coring and similar operations. Assist agencies in labeling and packing of test samples removed from the work.

B. Coordination with Contractor's Independent Agencies: Except for required independent agency activities of inspection, measuring, testing, analyzing, reporting and similar activities, the assignment of labor, equipment, cutting, Patching and similar necessary activities associated therewith are Contractor's option recognizing that entire activity is Contractor's responsibility.

C. Test Agency Responsibilities:

1. Test agencies, regardless of whether engaged by Owner or Contractor, are not authorized to change or negate requirements of Contract Documents. Each agency shall coordinate its assigned work with construction schedule as maintained by Contractor, and shall perform its work promptly so as not to delay the work. Observances (by agencies) having a bearing on the work shall be reported to Architect in most expeditious way possible, and shall be recorded in writing by agency. Agency personnel shall not interfere with or assume duties of Contractor.

2. Reports: The testing agency shall prepare reports of inspections and laboratory tests, including analysis and interpretation of test results where applicable. Properly identify each report and, where required, provide agency's certification of test results. Describe test methods used, and compliance with recognized test standards (if any). Complete and submit report at earliest possible date in each case.

3. A copy of all testing reports shall be transmitted to the Architect/Engineer and Owner in a timely manner.

3.03 INSTALLATION QUALITY CONTROL:

A. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicate in contract documents.

B. Inspect each item of materials or equipment, immediately prior to installation, and reject damaged and defective items.

C. Provide attachment and connection devices and methods for securing work properly as it is installed; true to line and level, and within recognized industry tolerances, if not otherwise indicated. Allow for expansions and building movements. Provide uniform joint widths in exposed work, organized for best possible visual effect. Refer questionable visual effect choices to Architect for final decision.

D. Recheck measurements and dimensions of the work, as an integral step of starting each installation.

E. Install work during conditions of temperature, humidity, exposed, forecasted weather, and status of project completion which will ensure best possible results for each unit of work, in coordination with entire work. Isolate each unit of work from non-compatible work, as required to prevent deterioration.

F. Adjust, clean, restore, marred finishes, and protect newly installed work, to ensure that it will remain without damage or deterioration during the remainder of construction period.

END OF SECTION 01400

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division O, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION:

A. Material and equipment incorporated into the work:

1. Conform to applicable specifications and standards.

2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Architect.

3. Manufactured and Fabricated Products:

a. Design, fabricate and assemble in accord with the best engineering and shop practices.

b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.

c. (2) Two or more items of the same kind shall be identical, by the same manufacturer.

d. Products shall be suitable for service conditions.

e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.03 MANUFACTURER'S INSTRUCTIONS:

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such, including three copies to Architect.

1. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Architect for further instructions.

2. Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit preparatory step or installation procedure unless specifically modified or exempted by contract documents.

1.04 TRANSPORTATION AND HANDLING:

A. Arrange deliveries of products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.

1. Immediately on delivery, inspect shipments to assure compliance with requirements of contract documents and approved submittals, and that products are properly protected and undamaged.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.05 STORAGE AND PROTECTION:

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weathertight enclosures.

2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

B. EXTERIOR STORAGE:

1. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.

2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

D. Preparation After Installation:

1. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

1.06 SUBSTITUTIONS AND PRODUCT OPTIONS:

A. Products List:

1. Within (14) fourteen calendar days after contract date, submit to Architect a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor. Comply with provisions for Contractor's Options and Substitutions.

B. Contractor's Options:

1. For products specified only by reference standard, select any product meeting that standard.

2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.

3. For products specified by naming one or more products or manufacturers and "or equal," Contractor must submit a request as for substitutions for any product or manufacturer not specifically named.

4. For products specified by naming only one product and manufacturer, there is no option.

C. Substitutions:

1. For a period of (14) fourteen calendar days after contract date, Architect will consider written requests from Contractor for substitution of products.

2. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:

    a. Comparison of the qualities of the proposed substitution with that specified.

    b. Changes required in other elements of the work because of the substitution.

    c. Effect on the construction schedule.

    d. Cost data comparing the proposed substitution with he product specified.

    e. Any required license fees or royalties.

    f. Availability of maintenance service, and source of replacement materials.

3. Architect shall be the judge of the acceptability of the proposed substitution except where a change in cost is involved.

D. Contractor's Representation:

1. A request for a substitution constitutes a represent-ation that Contractor:

    a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.

    b. Will provide the same warranties or bonds for the substitution as for the product specified.

    c. Will coordinate the installation of an accepted substitution into the work, and meet such other changes as may be required to make the work complete in all respects.

    d. Waives all claims for additional costs, under his responsibility which may subsequently become apparent.

E. Architect will review requests for substitutions with reasonable promptness, and notify the Contractor, in writing, of the decision to accept or reject the requested substitution.

PARTS 2 AND 3 PRODUCTS AND EXECUTION

Not applicable.

END OF SECTION 01600

SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Inspection procedures.
2. Project record document submittal.
3. Operating and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions-2 through 9.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

    a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise Owner of pending insurance change-over requirements.

3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.

5. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
   a. Requests for additional inspections by Contractor when work/punch list is not substantially complete will result in charge of $1,000.00 for each occurrence against the Contractor.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
4. Submit consent of surety to final payment.
5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.
   1. Requests for additional inspections by Contractor when work/punch list is not substantially complete will result in charge of $1,000.00 for each occurrence against the Contractor.
   2. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
   3. If necessary, reinspection will be repeated.
      a. Requests for additional inspections by Contractor when work/punch list is not substantially complete will result in charge of $1,000.00 for each occurrence against the Contractor.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

   1. Mark record sets in red or other colors (other than black) to distinguish between variations in separate categories of the Work.
   2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
   3. Note related Change Order numbers where applicable.
   4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

C. Record Specifications: Maintain (1) one complete copy of the Project Manual, including addenda, and (1) one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

D. Record Product Data: Maintain (1) one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.

E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

G. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Copies of warranties.
3. Recommended maintenance.
4. Inspection procedures.
5. Product Data.

H. In addition to the binder, provide a PDF on a thumb drive of the Maintenance manuals, Shop Drawings, As-built record drawings, record Specs, etc.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Hazards.
4. Cleaning.
5. Warranties and bonds.
6. Maintenance agreements and similar continuing commitments.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Clean transparent materials, including glass in doors and windows from any construction debris. Replace chipped or broken glass (from construction debris) and other damaged (during construction activities) transparent materials.
2. Clean existing exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances resulting from construction activities.
3. Clean the construction site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.

C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01700

SECTION 01800 - GUARANTEE - WARRANTY

PART ONE - GENERAL

1.01 GUARANTEE PERIOD

A. The General Contractor shall and hereby does guarantee and warrant that all work for this building, under this Contract, shall be free from defects or faulty labor and/or materials for a period of **one (1) year** from the date of Final Acceptance of same, except when longer periods are herein specified, which develop within any guarantee periods.

1.02 FINAL PAYMENT

A. Final payment is contingent upon the Owner's Representative's receipt of such guarantees and/or warranties from the General Contractor.

END OF SECTION 01800

SECTION 02220 – SITE DEMOLITION

PART 1 - GENERAL

1.1 REGULATORY REQUIREMENTS

A. Conform to applicable codes for demolition of structures, safety of adjacent structures, dust control, and disposal of materials.

B. Obtain required permits from authorities.

C. Notify affected utility companies prior to starting work and comply with their requirements.

D. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

E. Rules, regulations or laws of any controlling Governmental Agency shall govern, when they are more stringent than the requirements of this Section.

1.2 DESCRIPTION

A. Provide all labor, materials, and equipment necessary for the completion of all Demolition as shown on the Drawings and specified herein.

B. All on and offsite Work included consists of but is not limited to:

1. Removal of existing sidewalks, concrete walkways, drives, curbs, pavement and associated items as noted.

2. Removal, disconnecting or capping off of existing utilities, underground structures, etc., where indicated or required for new work.

3. Removal from Site and disposal of all excess and unusable material.

1.3 DEFINITIONS

A. Remove: Remove items from existing construction and legally dispose of them off-site.

B. Remove and Reinstall: Carefully remove items indicated from existing construction, prepare them for reuse, and reinstall them where indicated. Prior to reinstalling the item, the Contractor shall make a determination as to its soundness. Items which exhibit signs of wear or deterioration shall only be discarded on agreement with the Owner's Representative, Architect and Owner.

C. "Remove and Salvage" or indicated "Return to Owner": Remove items from existing construction and deliver them to owner.

1.4 QUALITY ASSURANCE

A. The Contractor shall visit the Site so that a full understanding of the difficulties and restrictions for execution of the Contract are made. Verify the location of all pertinent items. No additional compensation will be allowed for failure to be so informed.

B. The Contractor shall submit a schedule indicating proposed sequence of operations for selective demolition Work to the Owner's Representative for review prior to commencing Work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise control protection.

C. Comply with regulatory requirements and notification regulations before beginning selective demolition.

D. Comply with hauling and disposal regulations of the Authorities Having Jurisdiction. A receipt indicating acceptance of hazardous wastes from a landfill facility licensed to accept such materials shall be submitted to the owner.

1.4 JOB CONDITIONS

A. Existing structures, utilities, drives, walks, etc., have been shown on the plans in their approximate location, others may exist and may be found upon visiting the site. It shall be the responsibility of the Contractor to accurately locate all facilities and to determine their extent. If such facilities obstruct the progress of the Work and are not indicated to be removed or relocated, they shall be removed or relocated only as directed by the Owner.

B. Owner assumes no responsibility for the actual condition of items or structures to be demolished.

C. Protect trees, plants, and natural features which are to remain as final landscaping.

D. Replace to new conditions any pavement or public right-of-way that is disturbed by the Work under this Section. All pavement replacement work in public rights-of-way shall be performed to the proper satisfaction of the governmental agencies having jurisdiction thereover.

E. If cutting torches are used, take all necessary precautions to prevent setting of fires, including the use of fireproof tarpaulins and fire extinguishing apparatus adjacent to cutting area.

F. Notify utility companies if removal or relocation of any existing utilities is required.

G. Promptly repair damages caused to adjacent facilities by demolition Work.

H. Do not close, block, or otherwise obstruct access to existing streets, sidewalks, driveways, and other adjacent occupied or used facilities during demolition. Any proposed closures shall have written permission from the authority having jurisdiction.

I. Maintain existing utilities and protect them against damage during demolition operations.

1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by the Authorities Having Jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

2. Maintain fire protection services during demolition operations.

J. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

1.5 DRAINAGE MAINTENANCE

A. During the entire course of operations, all existing drainage ways, both into and from the Project area shall be maintained in a functional condition.

B. At all times during the clearing operation, the exposed areas of subgrade shall be maintained in a condition compatible with positive drainage of the Work area. Failure to maintain such drainage shall be considered adequate cause for the Owner’s Representative to order temporary suspension of the Work.

C. Cut drainage swales and provide temporary grading to carry storm water away from the demolition area. No water will be permitted to stand in open excavations.

PART 2 - PRODUCTS

A. Use repair materials identical to existing materials. If identical materials are unavailable, use new materials whose performance is equal to or surpasses that of the existing material.

B. Comply with material and installation requirements specified in the individual sections of this contract.

PART 3 - EXECUTION

3.1 PREPARATION

A. Locate, identify, and protect all known utilities which are to remain. If utilities are uncovered that are not shown on the plans, notify the owner and cease work in the immediate areas until instructed to how to proceed.

B. Cease operations and notify the Owner's Representative, Architect and Owner immediately if safety of structure or adjacent structures appear to be endangered. Take precautions to support structure and **DO NOT** resume operations until a determination is made for continuing operations.

1. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building.

2. Check with the water and sewer departments, Gas Company, and private utility companies to assure that all utilities and services are inoperative prior to their removal.

3.2 DEMOLITION

A. Perform demolition Work in a systematic manner. Use such methods as required to complete Work indicated on Drawings in accordance with demolition schedule and governing regulations.

1. Sawcut asphalt pavement full depth at limits indicated for removal.

2. Concrete walkways and pavement shall be sawcut full depth and removed to the joint nearest the indicated removal limit or where specifically directed.

3. Where piping is to be bulkheaded, provide a permanent, water-tight plug consisting of brick and concrete mortar, one foot thick or prefabricated plugs intended for this purpose.

4. Maintain in operating conditions all active utilities, sewers and drains encountered.

5. The Contractor shall use extreme caution in removing any structures and utilities above and below grade to prevent damage to existing utilities which are to remain in service. Any existing utilities to remain, which are in any way damaged, shall be replaced at no additional cost to the Owner.

6. Conduct operations in such a manner as to minimize noise, dust and other disturbances.

3.3 DISPOSAL OF DEMOLISHED MATERIALS

A. Demolished material not indicated for turning over to the owner or specified for reuse, including rubble and other debris, shall become the property of the contractor and shall be removed daily from the project site and legally disposed of off the project site, at no expense to the Owner.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.

2. Burning of materials shall not be permitted on Site.

3.4 CLEANUP AND REPAIR

A. Upon completion of demolition Work, remove tools, equipment, and demolished materials from Site.

B. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start of operations. Repair adjacent construction damaged by demolition Work.

END SECTION 02220

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Preparing subgrades for slabs-on-grade, walks, pavements.
   2. Proof-rolling subgrade.
   3. Granular fill course for slabs-on-grade.
   4. Base course for concrete walks and pavements.
   5. Base course for asphalt paving.

B. Related Sections include the following:
   1. Section 02220 "Site Demolition" for sidewalk, curb and paving demolition.
   2. Section 02740 “Hot Mix Asphalt Paving.”
   3. Section 02752 “Concrete Slabs on Grade”
   4. Section 02951 “Landscape Restoration”

1.3 DEFINITIONS

A. Backfill: Soil materials used to fill an excavation.

B. Base Course: Layer placed between the subgrade and asphalt or concrete paving.

C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.

E. Compacted: Material at the required compaction or higher.

F. Excavation: Removal of material encountered above subgrade elevations.
   1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
   2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Maximum Density: The dry density at optimum moisture content in accordance with ASTM D1557 (Modified Proctor).

I. Required Compaction: The ratio of in-place density to maximum density, expressed as a percentage.

J. Structures: Footings, foundations, slabs, curbs, or other man-made stationary features constructed above or below the ground surface.

K. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.

L. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

M. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. **Test Reports:** Testing laboratory shall submit the following reports directly to the Architect/Engineer and shall copy the contractor:

1. Analysis of soil materials, whether procured on or off site, and including fill, backfill, and borrow materials.

2. Verification of each footing subgrade.

3. In-place density test reports.

4. Moisture-density relationship test reports.

5. Compressive strength or bearing test reports.

B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

1. Comply with Michigan Department of Transportation (MDOT), 2020 Standard Specifications for Construction.

B. Testing Laboratory Services

1. The Owner will secure and pay for the services of a qualified, independent geotechnical engineer to classify existing soil materials, to recommend and to classify proposed borrow materials when necessary, to verify compliance of materials with specified requirements, and to perform required field and laboratory testing. Geotechnical engineer shall be acceptable to the architect and the owner and shall be licensed to practice in the state in which the project is located.

C. Pre-excavation Conference: Conduct conference at Project site to comply with Division 1 requirements.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Owner's Representative, Architect, and Owner and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner's Representative and Owner not less than (72) hours in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's Representative written permission.
3. Contact MISS DIG and a utility locator service for areas where projects are located before excavating.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials without additional cost to Owner when sufficient satisfactory soil materials are not available from excavations. Contractor is responsible for making an independent calculation to determine if satisfactory soils must be imported.

B. Satisfactory Soil Material (ASTM D 2487): Free of stones larger than 1” in any dimension, trash, debris, organic material, other objectionable material and classified as follows. For topsoil requirements, refer to Section 02951 “Landscape Restoration”.

1. GW (well-graded gravel).
2. GP (poorly graded gravel).
3. GM (silty gravel).
4. GC (clayey gravel).
5. SW (well-graded sand).
6. SP (poorly graded sand).
7. SM (silty sand).

C. Unsatisfactory Soil Material (ASTM D 2487):

1. SC (clayey sand).
2. CL (lean clay).
3. ML (silt).

4. OL (organic clay).

5. OL (organic silt).

6. CH (fat clay).

7. MH (elastic silt).

8. OH (organic clay).

9. OH (organic silt).

10. PT (peat).

D. Backfill and Fill: Satisfactory soil materials.

E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch (38-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve; or as noted on the Plans.

F. Base: Naturally or artificially graded mixture of natural or crushed gravel or crushed stone complying with MDOT Table 902-1 21AA Dense Graded Aggregate.

G. Engineered Fill: Granular soil material complying with MDOT Table 902-3, Class II Granular Material.

H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

I. Granular Fill: Granular soil material complying with MDOT Table 902-3, Class II Granular Material.

J. Pea Gravel: Clean, hard, durable, free flowing, naturally rounded particles of rock, free from clay lumps, with 100% passing a 3/8" sieve and not over 5% passing a #8 sieve.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

D. Subgrade is prone to disturbance during construction operations. Subgrade soils may also become disturbed due to ponding water and channeled construction traffic. Disturbed subgrade soils must be properly improved prior to floor slab and pavement construction or placement of engineered fill.

3.2 PROOF-ROLLING

A. Areas of unsuitable subgrade shall be dried and recompacted in-place or remove and replaced with engineered fill.

B. Special care shall be exercised when proofrolling adjacent to the existing building to minimize disturbance to existing footings and floor slabs.

1. Use light proofrolling equipment for a strip approximately (10) ten feet wide along the existing building.

C. Prior to concrete slab placement the prepared subgrade shall again be thoroughly proof-rolled. Disturbed areas shall be recompacted or removed and replaced with engineered fill.

D. Proof-rolling operations must be done in presence of the Testing Agency.

3.3 DEWATERING

A. Subgrade soils are prone to disturbance due to ponded water.

B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
   1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
   2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.4 EXCAVATION, GENERAL

A. General: Excavation includes the removal of any materials necessary to achieve the required subgrade elevations and includes reuse or disposal of such materials.

B. Unnecessary Excavation: The expense of excavation of

materials outside of limits indicated or ordered in writing by the Architect/Engineer and the correction thereof to the satisfaction of the Architect/Engineer shall be borne by the contractor.

1. Unnecessary excavation other than under footings: Either place compacted fill or otherwise correct conditions, as required by the Architect/Engineer.

C. Approval of Subgrade: Notify the Architect/Engineer when required elevations have been reached.

1. When required by the Architect/Engineer due to the unforeseen presence of unsatisfactory materials or other factors, perform additional excavation and replace with approved compacted fill material in accordance with the architect's instructions.

2. Payment for unforeseen additional work will be made in accordance with established unit prices or, if none, in accordance with provisions for changes in the work. No payment will be made for correction of subgrades improperly protected against damage from freeze-thaw or accumulation of water, or for correction of otherwise defective subgrades.

D. Excavation Stabilization: Slope faces of excavations to maintain stability in compliance with requirements of governing authorities. Do not use shoring and bracing where faces can be sloped.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.6 APPROVAL OF SUBGRADE

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines based on the Testing Agency's recommendation that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

3.7 Storage of Soil Materials

D. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:
1. Construction below finish grade including but not limited to perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Inspecting and testing underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.

3.9 FILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations as follows:
   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use granular fill or approved engineered fill as indicated on the drawings.

3.10 MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
   1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF BACKFILLS AND FILLS

A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D698 and ASTM D 1557:
   1. Under pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
   2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 95 percent.

   3. Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 85 percent.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Lawn or Unpaved Areas: Plus or minus 1 inch.
   2. Walks: Plus or minus 1 inch.
   3. Pavements: Plus or minus 1/2 inch.

3.13 BASE COURSES

A. Under pavements and walks, place base course on prepared subgrade and as follows:
   1. Compact base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
   2. Shape base to required crown elevations and cross-slope grades.
   3. When thickness of compacted base course is 6 inches or less, place materials in a single layer.
   4. When thickness of compacted base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.14 AGGREGATE FILL COURSE

A. In areas below concrete or hot-mix asphalt pavements, place 21AA crushed limestone aggregate fill course on prepared subgrade and as follows:

   1. Compact aggregate fill course to required thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

2. Place materials equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.15 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing as set forth in Section 01400 "Quality Control"

B. Allow Testing Agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Testing agency shall test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests shall be performed at the following locations and frequencies:

1. Paved Areas: At Subgrade and at each compacted fill and backfill layer, at least one test for every 1000 sf or less of paved areas, but in no case fewer than three tests.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.16 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property. Contractor is responsible for making an independent calculation to determine if satisfactory soils must be exported.

END OF SECTION 02300

SECTION 02370 - SOIL EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Sedimentation Control Fencing

B. Catch Basin / Inlet Protection

C. Temporary and Permanent Sedimentation Control Measures

1.2 REGULATORY REQUIREMENTS

A. Work under this Section includes all work necessary for effective soil erosion and sedimentation control in conformance with Part 91, Act 451, PA 1994, the Soil Erosion and Sedimentation Control Act.

B. Rules, regulations or laws of any controlling governmental agency shall govern, when they are more stringent than the requirements of this Section.

C. All earth changes shall be made in such a manner as to minimize the area of disturbed land exposed and unprotected against erosion and the duration of such exposure.

D. Sediment caused by accelerated soil erosion shall be restricted to a non-polluting minimum (as determined by the agency designated in accordance with, and having jurisdiction and responsibility for the enforcement of sedimentation control).

E. All sedimentation control measures shall be maintained in an operating condition satisfactory to the designated agency, for the period of time, which that agency deems necessary. This provision applies to all facilities that directly receive waters from the earth-change area, whether such facilities are a part of the proposed construction or existed prior to proposed construction.

F. Temporary stabilization measures shall be repeated when, and as often as, required by the aforementioned agency.

G. Any facility constructed for the conveyance of water around, through or from the earth-change area shall limit the water flow to a non-erosive velocity.

H. Temporary sedimentation control devices and facilities shall be removed upon completion of the primary construction. The land surface area formerly occupied by such facilities shall then be graded and restored in accordance with the Plans and Specifications.

1.3 PERMITS

A. Obtain all pertinent permits including a Soil Erosion Control Permit from the MDEQ, county or local governing agency having jurisdiction of the Erosion Control.

B. Submit an NPDES Notice of Coverage, if required, when the soil erosion permit is received.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Straw bales and mulch shall be clean wheat straw or marsh hay. Straw shall be clean and free of weeds and weed seed. Hay will be allowed only when straw is not available. Bales are to be standard rectangular shape held together with 2 strands of hemp rope.

B. Sediment control / silt fence shall be a geotextile filter fabric capable of containing sediment, attached to wooden stakes capable of supporting the geotextile fabric.

C. Acceptable geotextile catch basin filter wrap

PART 3 - EXECUTION

3.1 CONSTRUCTION SEQUENCE

A. To minimize the area of unstabilized land surface over which storm waters must flow, construction shall proceed from lower ground toward higher ground whenever possible.

3.2 TEMPORARY STOCKPILES

A. The General Contractor shall take steps to prevent, or contain on-site, erosion from material stockpiles.

3.3 SEDIMENTATION CONTROL

A. The General Contractor shall provide a suitable temporary sedimentation control facility at any connection to an existing enclosed storm drain, to minimize deposition of sediment in the existing storm drain during construction.

B. To prevent sediment from entering existing storm drains during the construction period, the General Contractor shall provide suitable control facilities around storm water inlet facilities.

C. All open ditches and natural watercourses intercepted by the proposed construction shall be temporarily re-routed, provided with temporary sedimentation control facilities within their cross-section, and/or diverted into a newly-established drain via non-erosive channels.

D. Temporary sedimentation control devices and/or facilities shall be as designated on the Plans. Modifications to the Plan requires prior approval of the Architect and local permitting agency.

E. In all cases, such facilities, whether permanent or temporary, shall be provided prior to any significant clearing, grading or surface disruption of the tributary area.

3.4 DE-WATERING

A. Pumped water from well points or de-watering wells installed to lower the water table to facilitate the proposed construction shall not discharge onto unstabilized areas. Such discharge shall be conveyed by pipe, hose or stabilized channel to a settling basin or other suitable sedimentation control facility.

3.5 WATERCOURSE PROXIMITY

A. Where natural streams, marshes or existing drainage watercourses are encountered within, or are situated within 500' of the proposed construction, special care shall be exercised to minimize erosive losses and water contamination. These shall include, but not be limited to, the following:

1. Prompt completion of Work (including clean-up operations) in all areas adjacent to streams, marshes or watercourses.

2. Use of temporary or permanent erosion control devices during construction to minimize erosion and the resultant deposition of sediment into any stream, marsh or watercourse.

3.6 VEHICULAR CONTROLS

A. Where vehicles or heavy equipment must cross streams, ditches or other existing watercourses, installation of culverts or bridges at approved locations will generally be required. Where frequent use of improved roads by off-the-road vehicles is encountered, suitable cleaning methods shall be used to minimize the transfer of sediment-producing materials from the wheels of the vehicles onto the improved surface. The General Contractor shall keep adjacent roads free of debris.

3.7 RESTABILIZATION OF TERRAIN

A. Final cleanup shall leave the property in equal or better condition than it was at the beginning of construction. Cleanup operations including at least rough grading and temporary stabilization shall be started as soon as feasibly possible where:

1. Substantial completion of the base, the curb, or the curb and gutter, whichever first occurs, in a road, street, highway, parking area or sidewalk construction project; and shall be completed within the next fifteen (15) days.

B. Temporary stabilization applied during freezing weather shall consist of hay or straw mulch applied at the rate of 2 tons per acre, "tacked" in place by locally approved methods. Temporary stabilization applied during other than freezing weather shall consist of perennial rye grass applied at the rate of 25 pounds per acre with hay or straw mulch applied at the rate of 2 tons per acre, "tacked" in place with locally approved methods.

C. Temporary stabilization shall be provided during the non-growing season for all areas to be seeded / sodded. This time period is generally from October 15 through April 15, both inclusive.

D. Temporary stabilization shall be provided for all uncompleted areas where significant earth disruption ceases for more than 30 days.

E. All areas which have been temporarily stabilized shall be permanently stabilized no later than 30 days following commencement of the planting season immediately following substantial completion of construction.

F. All mulch used for temporary stabilization shall be removed prior to permanent stabilization.

G. Permanent Stabilization is hereby defined as the Work described elsewhere in the Specifications under Section 02951 "Landscape Restoration".

3.8 GENERAL CONTRACTOR'S GENERAL RESPONSIBILITY

A. The General Contractor shall be responsible for the proper implementation of the "Soil Erosion and Sedimentation Control Plan" as a part of this Contract, unless noted otherwise. If a Soil Erosion and Sedimentation Control plan is supplied in the project drawings, the General Contractor shall install the proposed Soil Erosion and Sedimentation Control measures per the plan. If a plan is not supplied, it is the responsibility of the General Contractor to meet all local and state ordinances. A regular inspection program and a thorough maintenance program shall be developed and implemented by the Contractor to insure the effectiveness of the erosion and sedimentation control practices.

END OF SECTION 02370

SECTION 02740 - HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. All work to be performed under this Section shall be in accordance with the City of Mt. Clemens Paving Standard Detail Sheets for the Macomb County Jail, Macomb County Administration Building and Macomb County Health Dept. and the Clinton Township Paving Standard Detail Sheets for the Robert Verkuilen Building and Macomb County Dept. of Public Works, and New Baltimore Paving Standard Detail Sheets for the New Baltimore Court (42nd District Court-Division II).

1.2 SUMMARY

A. Work under this Section includes the following:

1. Hot-mix asphalt paving.
2. Hot-mix asphalt patching.

B. Related Sections include the following:

1. Section 02300 "Earthwork"
2. Section 02752 "Concrete Slabs on Grade"
3. Section 02760 “Pavement Markings”
4. Section 02770 “Curb and Gutter”

1.3 DEFINITIONS

A. Hot-Mix Asphalt Paving Terminology: Refer to MDOT 2020 Standard Specifications for Construction.

B. MDOT: Michigan Department of Transportation.

C. HMA: Hot Mix Asphalt

1.4 SYSTEM DESCRIPTION

A. Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements of standard specifications of the following:

1. Standard Specification: State of Michigan, Department of Transportation (MDOT), 2020 Standard Specification for Construction.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: For each job mix proposed for the Work.

C. Material Test Reports: For each paving material.

D. Material Certificates: For each paving material, signed by manufacturers.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Manufacturer shall be a paving-mix manufacturer registered with and approved by authorities having jurisdiction or the Michigan Department of Transportation.

B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as documented according to ASTM E 548.

C. Regulatory Requirements: Comply with State of Michigan, Department of Transportation (MDOT), and 2020 Standard Specification for Construction.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply HMA materials if subbase is wet or excessively damp or if the following conditions are not met:

1. Prime and Tack Coats: Minimum surface temperature of 60 deg F.
2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Mineral Filler: ASTM D 242, rock or slag dust, hydraulic cement, or other inert material.

B. Paving Mixture Aggregates

1. Fine Aggregates shall conform to MDOT Designation 1100T, 1100L, 3C & 4C as indicated on drawings.
2. Mineral Filler shall conform to MDOT Designation 3MF.

2.2 ASPHALT MATERIALS

A. Bond Coat: SS-1H.

2.3 MIXES

A. Hot-Mix Asphalt: Provide dense, hot-laid, hot-mix asphalt plant mixes designed according to procedures in Michigan Department of Transportation “2020 Standard Specifications for Construction”.

B. Emulsified-Asphalt Slurry: ASTM D 3910, Type I, consisting of emulsified asphalt, fine aggregate, and mineral fillers.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PATCHING

A. Hot-Mix Asphalt Pavement: Sawcut perimeter of patch to full depth and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated.

B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances and surroundings. Remove spillages and clean affected surfaces.

C. Patching: Place and compact asphalt pavement per paving sections shown on construction drawings. Finish flush with adjacent surfaces.

3.3 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

3.4 PLACING HOT-MIX ASPHALT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to

areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in the number of lifts and thicknesses indicated.
2. Place hot-mix asphalt wearing course in single lift.
3. Spread mix at minimum temperature of 250 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.
5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints as described in MS-22, "Construction of Quality Hot Mix Asphalt Pavements."

5. Compact joints as soon as hot-mix asphalt will bear roller weight without displacement.
6. Compact HMA at joints to a density within 2 percent of specified course density.

3.6 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to AASHTO T 245, but not less than 94 percent nor greater than 100 percent.
2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.7 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Leveling Course: Plus or minus 1/2 inch.
2. Wearing Course: Plus 1/4 inch, no minus.

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Leveling Course: 1/4 inch.
2. Wearing Course: 1/8 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: The Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.

a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than (3) three cores taken.
b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.9 DISPOSAL

A. Remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow excavated materials to accumulate on-site.

END OF SECTION 02740

SECTION 02752 – CONCRETE SLABS ON GRADE

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Concrete Sidewalks & Concrete Pavement.

1.2 REFERENCES

A. Michigan Department of Transportation 2020 Standard Specifications for Construction

B. American Society for Testing and Materials (ASTM)

C. American Concrete Institute (ACI)

D. Concrete Reinforcing Steel Institute (CRSI)

E. Americans with Disabilities Act (ADA)

1.3 DESCRIPTION

A. Provide all materials, labor, equipment, and services necessary to complete the concrete improvements as indicated in the Construction Documents.

1.4 QUALITY ASSURANCE

A. Installer shall be qualified with at least three (3) years in business and has completed pavement work similar in material, design, and extent to that indicated for this Project.

B. Manufacturer shall be certified in the production of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

C. Submit concrete mix designs for proposed slabs on grade.

D. Submit shop drawings and certified copies of mill report of reinforcement materials analysis.

1.5 TESTING

A. The General Contractor shall arrange testing and sampling of concrete materials proposed for use in the work per the requirements of Spec Section 01400 “Quality Control”.

1. An independent testing laboratory (engaged by the Owner) meeting the requirement of Recommended Practice for inspection and Testing Agencies for Concrete and Steel as used in Construction ASTM E-329 shall determine the quality of all aggregate and concrete for compliance with the Contract Documents.

2. The testing laboratory shall test all concrete pavement. The laboratory personnel shall take the samples and adequately protect all samples during storage and transporting. The testing laboratory shall perform the following:

   a. Check batching and mixing operation periodically for compliance with the Contract Documents.

   b. Mold and test concrete field cylinders as required.

3. Concrete materials shall be tested as follows:

   a. Aggregate shall be tested in accordance with test requirements ASTM C-33.

   b. Cement shall be tested in accordance with ASTM C-150. All cement used on the job shall be accomplished by a certificate, by testing agency, indicating compliance of cement to all tests.

4. Concrete shall be tested for slump and strength as follows:

   a. Secure composite samples in accordance with ASTM C-172.

b. Samples shall be taken from each mix design placed in any one (1) day or from each 100 cu. yards of concrete placed in continuous pours, whichever is the lesser.

c. Cast (3) three cylinder specimens from each sample. Cure two cylinders in the laboratory and one cylinder in the field. The field cured cylinder shall be tested for 7-day strength and the (2) two laboratory-cured cylinders shall be tested for 28-day strength. Make and cure cylinders in accordance with ASTM C-31; test in accordance with ASTM C-39. Test reports shall include temperature of air and concrete at site. Mix proportions and other data as necessary to determine compliance with the Contract Documents.

d. Determine slump of the concrete for each sample and whenever consistency of concrete appears to vary, test in accordance with ASTM C-143.

e. A portion of the air entrained concrete samples taken, shall be tested to determine the amount of entrained air. Determination shall be made in accordance with either ASTM C-231 or ASTM C-173. Should these tests indicate at any time the concrete being produced does not have any air content within the specified limits, the General Contractor shall modify the materials as may be necessary for compliance, at the General Contractor’s expense.

B. Submit, to the Architect, PDF copy of materials certificates signed by Material Producer and the General Contractor. Certificates shall state that each material item meets specified requirements.

C. Submit, to the Architect, job-mix formulas for each required cement-aggregate mixture. Mix designs shall be within allowable tolerances as specified for the particular application.

1.6 TRAFFIC CONTROL

A. Maintain vehicle and pedestrian traffic during paving and repair operations in such a manner as to not disrupt normal traffic activities unless special notification has been distributed.

1.7 WEATHER LIMITATIONS

A. Construct pavement surface course only when ground temperature is above 40 degrees F. and base is dry. Base course may be laid when temperature is above 40 degrees F. and rising. Do not place pavement when base or surface is wet or frozen.

B. Cold Weather Protection: When the temperature of the atmosphere is 40-degrees F. and below, the concrete shall be protected by heating, insulation covering, housing or combination thereof as required to maintain the temperature of the concrete at or above 50-degrees F. and in a moist condition continuously for the concrete curing period. Cold weather protection shall meet the requirements of ACI 306R "Cold Weather Concreting."

C. Hot Weather Protection: When the temperature of the atmosphere is 90-degrees F. and above, or during other climatic conditions which will cause too rapid drying of the concrete, the concrete shall be protected by windbreaks, shading, fog spraying light-colored moisture-retaining covering, or a combination thereof as required to maintain the temperature of the concrete below 80-degrees F. and in a moist condition continuously for the concrete curing period. Hot weather protection shall meet the requirements of ACI 305R "Hot Weather Concreting."

1.8 SUBMITTALS

A. Concrete Mix Designs

1. Prior to any concrete pavement placement the contractor shall submit a design mix for approval by the engineer for each pavement mix proposed. Include alternate mix designs when characteristics

of materials, project conditions, weather, test results or other circumstances warrant adjustments.

2. Proportion mixes to provide concrete for pavement and gutter and spillways with the following properties.
   a. Compressive Strength (28 days): 3,500 psi, unless otherwise indicated
   b. Maximum Aggregate Size : 1.5 inches
   c. Slump : 3 inches (for formed concrete), 1.5 inches (for slipform placement)
   d. Total Air Content by Volume : 4% to 8%

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials used in concrete pavement and spillway construction shall be in accordance with Section 801.02 of the MDOT 2020 Standard Specifications for Construction.

B. The fine aggregate shall meet all requirements of the MDOT 2020 Standard Specification for No. 2NS Natural Sand.

C. The coarse aggregate shall meet of requirements of the MDOT 2020 Standard Specification for No. 6AA Coarse Aggregate.

D. Water used in concrete shall be clean, free from oil, acids strong alkalies or vegetable matter and potable. If City water is used in the concrete, all necessary permits shall be obtained from the City or Township Water Department.

E. Joint and waterproofing materials for use in concrete pavement shall conform to Section 914 of the MDOT 2020 Standard Specifications for Construction

F. The curing compound shall be white membrane type and conform with ASTM C-309, Type 2.

2.2 READY-MIXED CONCRETE MANUFACTURER'S QUALIFICATIONS

A. All ready-mixed concrete suppliers must be approved by the Owner. Concrete shall be manufactured and delivered to the job Site by a ready-mixed concrete manufacturer meeting the requirements of the National Ready Mixed Concrete Association (NRMCA) certification program.

2.3 READY-MIXED CONCRETE

A. All production, handling of materials and distribution of ready-mixed concrete shall meet the requirements set forth in Section 602 of the MDOT 2020 Standard Specifications for Construction.

B. Ready-mixed concrete shall be mixed and delivered to the point of discharge at the job by means of a ready-mix concrete truck. Delivery tickets in accordance with Section 16 of ASTM C94 for each concrete load delivered to and used at the site shall be signed by the owner’s designated representative. The delivery tickets shall provide at minimum the following information:

1. Date
2. Name of ready mix concrete plant
3. Contractor
4. Job location
5. Type (Standard or H.E.S.) and brand of cement
6. Cement content in bags per cubic yards of concrete
7. Truck number
8. Time dispatched and time unloaded
9. Amount of concrete in load in cubic yards
10. Admixtures in concrete
11. Maximum allowable slump in inches
12. Amount of water added at job in gallons, if any

B. No water from the truck water system or elsewhere shall be added after the initial introduction of the mixing water for the batch. Under no circumstances shall the approved maximum water content be exceeded nor shall the slump exceed the maximum specified.

C. Discharge of the concrete shall be completed in compliance with Table 1001-1 of the MDOT 2020 Standard Specifications for Construction.

D. Concrete delivered in cold weather (air temperature 45-degrees F. and lower) shall have a temperature not less than 60-degrees F. at the point of discharge at job, and in compliance with ACI 306 R "Cold Weather Concreting". Concrete placing will not be permitted when the air temperature is 35-degrees F. or lower.

E. Concrete delivered under hot weather conditions contributing to quick stiffening of concrete, or in air temperature of 80-degrees F. and over, shall have a temperature between 60- and 80-degrees F. at the point of discharge at job, and in accordance with ACI 305 R "Hot Weather Concreting."

2.4 REINFORCEMENT MATERIALS

A. Reinforcing Bars: ASTM A615-84A, Grade 60 Deformed Billet-Steel Bars.

B. Epoxy-Coated Reinforcement Bars: ASTM A775 with ASTM A615, Grade 60, deformed bars.

C. Plain Steel Welded Wire Fabric: ASTM A185 plain type, flat sheet fabrication.

D. Reinforcing Steel Bar and Rod Mats: ASTM A704, ASTM A615, Grade 60, deformed bars

E. Epoxy-Coated Joint Dowel Bars: ASTM A615 with ASTM A615, Grade 60, plain steel bars.

F. Hook Bolts per ASTM A307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations and to permit removal without damage to concrete or hook bolt.

G. Tie Wires to be black, annealed steel wire, not less than 16-gauge.

H. Supports for Reinforcements: Bar supports conforming to "Bar Support Specifications" contained in ACI "Manual of Standard Practice". Provide chairs, spacers and other devices suitable for proper spacing, supporting and fastening reinforcing bars.

I. Shop fabricate reinforcing bars to conform to the shapes and dimensions shown on the reviewed Shop Drawings and in accordance with ACI "Manual of Standard Practice," current edition.

2.5 FORMS

A. All forms shall extend 1” deeper than full depth of the proposed pavement section and cleaned before each use.

B. Fixed forms shall be of sufficient strength to resist springing during concrete-placing operations, and of an approved section with flat surface on top.

C. Flexible form materials may consist of plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

D. A commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces shall be applied to the forms before concrete installation.

PART 3 - EXECUTION

3.1 GRADING

A. All new pavement shall be placed on a prepared subgrade, smoothed and leveled to the grades indicated on the Plans.

B. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction and repair as required. In clay soils the subgrade shall be excavated 4 inches below the sidewalk base and filled with approved sand meeting MDOT Class II granular fill.

C. Grade all sidewalk ramps to achieve current ADA and barrier free requirements.

3.2 SETTING FORMS

A. Compact and cut-to-grade subgrade under forms so that forms when set will be uniformly supported for the entire length. Securely stake and brace or tie forms to prevent leakage of concrete. Bracing with piles of earth will not be permitted.

B. Coat surfaces of forms to be in contact with concrete with a light clear paraffin oil or parting compound which will not stain the concrete.

C. Before start of concrete placing, form Work shall be complete and approved by the Soils Engineer.

D. Hardened concrete, debris and foreign material shall be removed from interior of forms.

3.3 PLACING REINFORCEMENT

A. Provide reinforcement for concrete slabs on grade as shown on the Drawings. Reinforcement shall be kept clean and free from objectionable rust. Bends or kinks in reinforcing bars shall be corrected before placing. All reinforcement shall be accurately located in forms and securely held in place, before and during concrete placing, by supports adequate to prevent displacement during the course of construction.

B. Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.5 CONTRACTION JOINTS

A. Provide contraction joints in concrete sidewalk T/4 inches deep by 3/16" wide at 5 foot intervals, unless a more detailed jointing pattern is called for.

B. For other contraction joints form by tooling or sawing a ¼" wide joint T/4 inches deep in a checkerboard pattern. In no case shall the joints be greater than 10 feet in any direction. Joints shall be cut perpendicular to the surface and at right angles to the edge of pavement, unless a more detailed jointing pattern is called for.

3.6 EXPANSION (OR ISOLATION) JOINTS

A. Provide expansion joints for concrete sidewalks and ramps at tangent points, radius returns, at intersections and in straight runs at uniform intervals not exceeding 100 linear feet.

B. Separate slabs on grade from vertical surfaces with ¾" thick joint filler.

C. Provide expansion joints between concrete pavement and adjacent rigid structures not specified herein before.

3.7 CONCRETE PLACING

A. Unless indicated otherwise (on Standard Paving Sheets for work scheduled for that jurisdiction), concrete slabs on grade shall comprise of the following thickness:

1) sidewalks: 4" thick

2) sidewalks across drives: 6" thick

3) sidewalk ramps: 6" thick

4) residential driveways: 6" thick

5) commercial/industrial driveways: 8" thick

6) dumpster pads: 8" thick

B. Concrete shall be handled from the point of delivery and to concrete conveying equipment, and to the location of final deposit by methods, which will prevent segregation and loss of concrete mix materials and in a manner which will assure that the required quality of concrete is maintained.

C. Before placing pavement, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

D. Cold-Weather concrete placement shall comply with ACI 306.1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

E. Hot-Weather concrete placement shall be according to recommendations in ACI 305R when hot-weather conditions exist.

F. Equipment for Conveying Concrete:

1. Runways for wheeled concrete conveying equipment shall be provided for the ready-mix concrete delivery point to the locations of final deposit.

2. The interior surfaces of concrete conveying equipment shall be maintained free of hardened concrete, debris, water, snow, ice and other deleterious materials.

G. When the temperature of steel forms is greater than 120-degrees F., the steel surfaces shall be sprayed with water just prior to placing the concrete.

H. Concrete shall be deposited continuously. Concrete which has partly hardened or has been contaminated by foreign materials shall not be placed; such concrete shall be properly disposed of in a approved manner.

I. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.

3.8 CONCRETE FINISHING

A. Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.

B. Float pavement surface by hand floating. Cut down high spots, and fill low spots.

C. Apply a light broom finish in a longitudinal direction to concrete slabs on grade

3.9 CURING CONCRETE

A. Apply curing compound uniformly in continuous operation by power spray.

B. Newly placed concrete shall be protected as required to maintain the temperature of the concrete at not less than 50 degrees F. nor more than 80 degrees F. and in a moist condition continuously for a period of time necessary for the concrete to cure. Changes in temperature of the concrete during curing shall be as uniform as possible and shall not exceed 5 degrees F. in any one hour, nor 50 degrees F. in any 24 hour period.

3.10 REMOVAL OF FORMS

A. All forms, rails and stakes shall be removed within 48-hours after placing the pavement.

B. Any and all “honey combing” noticed upon removal of the forms shall be hand grouted.

C. Upon removal of the forms, the remaining excavated area shall be backfilled with approved material, compacted thoroughly, and left in a neat condition.

3.11 CLEANUP

A. After completion of concrete curing in an area, remove all weather protection materials and rubbish and debris resulting from specified Work. Sweep concrete pavements clean.

B. In no case shall the mixer or truck be flushed out onto the street pavement, in a catch basin or sewer manhole, or in any public right-of-way.

END OF SECTION 02752

SECTION 02760 – PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Furnishing and applying permanent pavement markings.

1.2 DESCRIPTION

A. Provide all materials, labor, equipment, and services necessary to complete all traffic lane and parking lot striping as indicated in the Construction Documents.
   1. Reapply all existing permanent pavement markings at asphalt areas and curbs that are replaced under this contract, unless noted otherwise.

B. Work includes, but not limited to painting of letters, markings, stripes and islands on the pavement surface applied in accordance with this Section and at the locations shown on the Plans or as directed by the Architect and/or Owner.

1.3 QUALITY ASSURANCE

A. All work under this section shall be performed in accordance with the current 2020 MDOT Standard Specifications for Construction, unless otherwise indicated on the drawings.

B. All physically handicapped / barrier free markings shall be in accordance with current ADA requirements and the ANSI A117.1 – 2017, Accessible and Usable Buildings and Facilities.

C. Each paint container shall be clearly marked showing the name and address of manufacturer, description of material, date of packaging, and volume and weight of contents.

D. Use only personnel completely trained and experienced in installation of materials and equipment.

1.4 SUBMITTALS

A. Manufacturer's literature: Submit descriptive product data of materials, installation methods and procedures.

B. Certification of compliance: Furnish a certification from manufacturer that material for this project has been sampled, tested and complies with requirements of specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The paint shall meet the specifications set forth in Section 920 of the 2020 MDOT Standard Specifications for Construction, unless otherwise indicated on the drawings.

B. Color shall be as Specified on the Plans or as follows:

Striping Item	Color	Stripe Width
Stop Bars	White	12”
Traffic Lanes	Yellow	4”
Bus Lanes	White	4”
Standard Parking Stalls	Yellow	4”
Barrier Free Parking Stalls	Blue	4”
No Parking Areas	Yellow	6”
Barrier Free Access Areas	Blue	4”
Curbs–Match existing in field		Paint face of curb

PART 3 - EXECUTION

3.1 WEATHER LIMITATIONS

A. The painting shall be performed only when the existing surface is dry and clean, when the minimum atmospheric temperature is in accordance with Table 811-2 of the 2020 MDOT Standard Specifications for Construction, and when the weather is not excessively windy, dusty or foggy.

3.2 EQUIPMENT

A. All equipment for the Work shall be approved by the Contractor and pavement markings paint manufacturer and shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, and such auxiliary hand painting equipment as may be necessary to satisfactorily complete the job.

B. The mechanical marker shall be an approved self-propelled marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross-sections and clear-cut edges without running or spattering and within the limits for straightness set forth herein.

C. Suitable adjustments shall be provided on the sprayer/sprayers of a single machine or by furnishing additional equipment for painting the width required.

3.3 PREPARATION OF EXISTING SURFACE

A. Immediately before application of the paint, the existing surface shall be cleaned, dry and entirely free from dirt, grease, oil, acids, laitance, or other foreign matter which could reduce the bond between the coat of paint and the pavement. Areas which cannot be satisfactorily cleaned by brooming and blowing shall be scrubbed as directed with a water solution of tri-sodium phosphate or an approved equal solution. After scrubbing, the solution shall be rinsed off and the surface dried prior to painting.

B. Existing markings or stripes, which are to be abandoned or removed, shall be obliterated or obscured by the best methods suited for the purpose and to the satisfaction of the Owner.

3.4 LAYOUTS AND ALIGNMENT

A. The Contractor is responsible for laying out proposed striping, which is to be approved by the Owner's Representative, before the Contractor is to proceed with the striping procedure. The Contractor is to insure that all subsequent striping meets the quality of the approved application.

B. On those sections of pavements where no previously applied figures, markings, or stripes are available to serve as a guide, suitable layouts and lines of proposed stripes shall be spotted in advance of the paint application. Control points shall be spaced at such intervals as will ensure accurate location of all markings.

C. The Contractor shall provide an experienced Technician to supervise the location, alignment, layout, dimensions and application of the paint.

3.5 APPLICATION

A. Markings shall be applied at the locations and to the dimensions and spacing indicated on the Plans or as specified. Paint shall not be applied until the indicated alignment is laid out and the conditions of the existing surface have been approved by the Owner's Representative.

C. The paint shall be mixed in accordance with the manufacturer's instructions before application. The paint shall be thoroughly mixed and applied to the surface of the pavement with the marking machine at its original consistency without the addition of thinner. If the paint is applied by brush, the surface shall receive (2) two coats; the first coat shall be thoroughly dry before the second coat is applied.

C. Prior to marking of the pavement, (14) fourteen days shall elapse from the application of the bituminous seal coat, slurry seal or the placement of the HMA surface course.

D. In the application of straight stripes, any deviation in the edges exceeding 1/2-inch in 50-feet shall be obliterated and the marking corrected. The width of the markings shall be as designated within a tolerance of (5%) 5 percent.

3.6 PROTECTION

A. After applications of the paint, all markings shall be protected while the paint is drying. The fresh paint shall be protected from injury or damage of any kind. The Contractor shall be directly responsible and shall erect or place suitable warning signs, flags, or barricades, protective screens or coverings as required. Markings defaced by traffic or pedestrians shall be reinstalled at the contractor’s expense.

END OF SECTION 02760

SECTION 02764 – PAVEMENT JOINT SEALANTS (CRACK FILLING/SEALING)

1.01 GENERAL

A. This work shall include labor, equipment and material necessary to clean and seal cracks and construction joints.

B. The Contractor shall interfere as little as possible with the convenience of the public during the progress of the work. Adequate signs and barricades shall be erected for the safety and convenience of the public and the protection of the work.

1.02 PREPARATION FOR JOINT SEALING

A. The surface of the pavement at the location of the joint or crack shall be cleaned and broomed, if necessary, to remove all dirt and debris. The joint opening shall be thoroughly blown clear of dust or chips with compressed air through a nozzle from a power driven air compressor immediately before applying the filling compound to the joints. The preparation and application of the sealing compound shall be in accordance with the manufacturer's specifications.

1.03 MATERIALS

A. Hot-poured rubber-asphalt type joint sealing compound shall conform to the requirements of the Federal Specification for Sealing Compound, Hot-Poured Type, for Joints in Concrete, SS-S-140 1C (1993).

B. The compound shall be packed in substantial commercial containers of a size which can be conveniently handled on the job so that the covering may be readily removed from the material without waste. Containers shall be legibly marked with the description, manufacturer's name and brand, weight, safe heating temperature and batch number. The batch number shall be a specific designation to represent the compound manufactured from one batch of raw material, irrespective of the number of mixes involved in the production of the batch.

1.04 JOINT CLEANING EQUIPMENT

A. The equipment used for cleaning and preparing the joints and cracks for sealing may include the following:

1. Routing-Resurfacing Machine - A self-powered machine operating a rotary cutter or revolving cutting tool designed to completely remove the old joint sealer and all foreign matter and reface each side wall of the joint without spalling or otherwise damaging the edges.

2. Air Compressor - Air compressors shall be portable and capable of furnishing not less than 100 cubic feet of air per minute at a pressure not less than 90 pounds per square inch. Suitable traps shall be employed to maintain the compressed air free of oil and moisture.

3. Sand Blasting Equipment - Sand blasting equipment shall furnish a minimum of 300 cubic feet of air per minute at a pressure of not less than 90 psi.

4. Vacuum Power Sweeper-Self-propelled vacuum power sweeper of sufficient size and capacity for sweeping up debris from the joint cleaning operations will be required on the job site at all times. The parking lots and/or drives involved shall be swept clean of all such debris before traffic can be permitted to re-enter such areas.

1.05 EQUIPMENT FOR FILLING AND SEALING JOINTS

A. For Hot-Poured Rubber Asphalt Type Compound - The heating for hot-poured rubber-asphalt type sealer shall be of the indirect heating or double boiler type, using oil as the heat transfer medium. It shall have a thermostatically controlled heat source, a built-in automatic agitator, and thermometers installed to indicate both the temperature of the melted sealing material and that of the oil bath. The Contractor may be required to demonstrate that the equipment proposed for use will consistently produce a joint sealer of proper pouring consistency.

B. The hot-poured sealing materials shall be poured at the required temperature for application by the use of separate pouring pot or from the heating kettle. The pouring equipment shall force the sealing material to the bottom of the joint and completely fill it to the surface of the pavement. The pouring equipment shall be able to make a second application of the sealing material after the first application has cooled and settled below the surface of the pavement. The rate of application shall be controlled so as to completely fill the joint and not spill the material on the surface of the pavement.

C. When a separate pouring pot is used, it shall be of the indirect heating or double boiler type, using oil as the heat transfer medium. It shall have a thermostatically controlled heat source, a built-in automatic agitator and thermometers installed to indicate both the temperature of the melted sealing material and that of the oil bath. The pouring pot shall be mounted on rubber-tired wheels. On projects where the material requirements for continuous operation do not exceed the capacity of the pour pot, the mechanical pour pot may be used for both melting and applying the sealing material.

D. When the hot-poured sealing material is applied directly from the heating kettle, the kettle shall be equipped with a pressure pump, hose and nozzle suitable for forcing the sealing material to the bottom of the joint and completely filling the joint. The hose and nozzle shall maintain the temperature of the sealing material so that the loss in temperature is not over 10 degrees Fahrenheit between the nozzle and the heating tank. Heat from a direct flame on the nozzle shall not be used to maintain the proper temperatures of the sealing material. The heating equipment shall be mounted on rubber-tired wheels and only rubber-tired equipment shall be used to move the heating equipment on the pavement.

1.06 CONSTRUCTION METHODS

A. The following procedure shall be used in resealing joints and cracks in pavements:

1. Routing-Refacing Machine - In addition, at least one pass shall be made on each side of transverse joints with a joint cleaning machine equipped with a scarifying head to clean the pavement surface completely to at least one inch each side of the joint groove. The vertical faces of the joint shall then be further cleaned with a wire brush, making one pass against each joint wall. When necessary, hand tools shall be used to remove any material not removed by mechanical cleaning. All old joint material and other debris removed from the joints or cracks shall be removed from the pavement immediately and disposed of by the Contractor in a manner satisfactory to the Engineer.

2. Sandblasting - Prior to the application of the sealer material, all joints or cracks will be thoroughly cleaned by sandblasting. This operation will be performed in such a manner as to result in the complete removal of all existing joint material and other foreign matter from the sidewalls and upper edges of the joint. The sandblasting shall continue until the entire joint space is free of dust, oil, water, old joint material and/or any other objectionable foreign matter which may prevent bonding of the sealing compound to the concrete. The sand used shall be of proper size and quality necessary for the operation.

3. Air - Following sandblasting operations, all joints and cracks will be thoroughly cleaned by means of an air jet under a pressure of not less than 90 psi. Compressed air may be used at any time during joint cleaning operations; however, to insure removal of all loose materials, a jet of compressed air will be required immediately ahead of sealing operations.

4. Debris Removal - All debris and objectionable material resulting from cleaning operations will be removed from the pavement surface prior to sealing operations.

1.07 SEALING

A. As soon as the joints are cleaned with the compressed air jet, they shall be sealed with hot-poured rubber-asphalt type compound. The surface of the concrete shall be dry at the time of sealing. No joints shall be sealed until the cleaning and preparation of the joints have been inspected and approved by the Engineer.

B. Contraction joints, construction joints and expansion joints that have openings for the full depth of the slab shall be caulked with jute or oakum to prevent the sealing compound from flowing down to the subgrade. For expansion joints, the jute or oakum caulking material shall not extend above the premolded joint filler. Contraction joints and construction joints shall have a space of one inch to one and one-half inch above the caulking material that shall be filled with the sealing compound.

C. During the process of pouring the joints, the Engineer may, at this discretion, require that sufficient compound be taken from the melting unit to make flow tests in accordance with Federal Specification SS-S-1401C (1993). If the flow is greater than 2 centimeters, the Contractor will be required to so modify the method of heating or of charging the heating unit with the compound so that subsequent samples will show satisfactory results.

D. Pouring shall be done by the use of a separate pouring pot of the double boiler type or from the melting kettle equipped with a pressure pump, hose and nozzle as specified under Equipment Requirements.

E. Pouring of the sealing compound shall be done so as to completely fill the joint and overlap the pavement surface by about 1/8 inch. Any sealing compound spilled on the surface of the pavement shall be removed immediately. After the first pour has cooled to the temperature of the pavement and settled, a second pour shall be made to fill the sag or groove and bring the sealing compound flush with the surface of the pavement.

F. The compound shall not be placed when the temperature in the shade is less than 50 degrees Fahrenheit except by the approval of the Architect/Engineer.

G. Traffic shall not be permitted over the poured joint until the compound has hardened sufficiently to resist pickup.

1.08 PREPARATION OF THE SEALING COMPOUND

A. Joint Sealer (Federal Specification SS-S-1401C-1993) - This type of sealer shall be heated to and poured at temperatures recommended by the manufacturer. This compound shall not be heated in excess of 450 degrees Fahrenheit and direct heating will not be permitted at any time. Heating contrary to these conditions and limitations will be sufficient cause to reject the material so handled. If operations, including shutdown overnight, halt the pouring for extended periods, heat input into the melting kettle shall be cut off. Reheating will be permitted only once.

1.09 CONSTRUCTION

A. EQUIPMENT

1. Compressed Air System. Furnish and use a compressed air system that produces a continuous, high-volume, high pressure stream of clean dry air to prepare cracks. Equip the air compressor with a moisture separator to remove all oil and water from the air supply. Provide a compressor that can produce a minimum of 100 psi and continuous 150 cfm air flow.

2. Melter Applicator. Provide a melter applicator consisting of a boiler kettle equipped with pressure pump, hose and applicator wand. Equip the hose with a shutoff control. Place a mechanical fullsweep agitator in the kettle to provide continuous blending. Equip the unit with thermometers to monitor the material temperature and the heating oil temperature. Provide thermostatic controls that allow the operator to regulate material temperature up to 425 °F.

3. Application Wand. Apply the material by either a wand followed by a ''V'' or ''U'' shaped squeegee or a round application head having a concave underside. Apply 4 inches wide for standard coverage. With the prior written approval of the Engineer, application width may be increased to a maximum of 6 inches to provide complete and uniform coverage over multi-crack areas. Apply sealant at a thickness of 1⁄8 to 3⁄16 inch.

4. Heat Lance. Use of a heat lance is allowed to assure that no residual moisture is present in the crack or on the pavement surface where the overband is to be applied. Do not attempt to seal soaked pavement cracks by drying the pavement surface with a heat lance.

B. CRACK PREPARATION. Clean cracks using compressed air and other tools necessary to remove all loose dirt, vegetation and foreign material. Clean cracks no more than 10 minutes ahead of the filling operation.

C. APPLICATION. Apply the material to dry and thoroughly clean cracks. Apply as follows unless otherwise specified:

1. Micro-Surfacing Preparation. When preparing the pavement for a micro-surface overlay, fill all visible cracks in the roadbed.

D. MIXING PROCEDURE. When using field mixed material, add the polyester fibers to the polymer modified asphalt cement and thoroughly mix in the kettle. Do not exceed 400° F in the field mix or prepackaged material.

E. WEATHER LIMITATIONS. Place material when the pavement temperature is 40° F or greater. Do not place material if moisture is present in the crack.

F. PROTECTING THE WORK. Do not permit traffic on the overband crack filler until the material has cooled sufficiently to prevent tracking by vehicle tires. Protect the completed work with cover materials approved by the Engineer. Do not use paper products as cover material. Replace existing pavement markings obliterated by the crack treatment work with temporary pavement markings before the roadway is

opened to traffic. All costs associated with repair of work damaged by traffic and placement of temporary pavement markings will be borne by the Contractor.

G. ACCEPTANCE OF WORK. When work is complete on the project, or on a route or job included in the project, schedule an inspection of the work with the Architect/Engineer. The Architect/Engineer will note all deficiencies including areas exhibiting adhesion failure, cohesion failure, missed cracks, or other factors that show the work is not acceptable. Redo work identified by the Engineer as not acceptable. Notify the Engineer upon completion of required corrective work, or upon completion of work on the route, job, or project if corrective work is not required.

1.10 SEALING IN GENERAL

A. No joint sealing compound shall be applied in wet joints or where frost, snow, or ice is present nor when the temperatures are 50 degrees Fahrenheit and falling.

B. When joint sealing work is done during periods when the pavement is contracted, as occurs during the colder months, joints shall be filled to no more than 1/8 inch below the slab surface. When joints are sealed during hot weather periods, when the pavement is expanded, they should be poured flush with the slab surface.

1.11 METHOD OF MEASUREMENT

A. Clean and Sealing Joints and will be measured by length in lineal feet, measured along the centerline of the joint.

END OF SECTION 02764

SECTION 02770 – CURB AND GUTTER

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Concrete Curb & Gutter

1.2 REFERENCES

A. Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction

B. American Society for Testing and Materials (ASTM)

C. American Concrete Institute (ACI)

D. Concrete Reinforcing Steel Institute (CRSI)

1.3 DESCRIPTION

A. Provide all materials, labor, equipment and services necessary to complete all curbing as indicated in the Construction Documents.

1.4 QUALITY ASSURANCE

A. Installer shall be qualified with at least (3) three years in business and has completed pavement work similar in material, design, and extent to that indicated for this Project.

B. Manufacturer shall be certified in the production of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

C. Submit shop drawings and certified copies of mill report of reinforcement materials analysis.

1.5 TESTING

A. The General Contractor shall arrange testing and sampling of concrete materials proposed for use in the work per the requirements of Spec Section 01400 “Quality Control”.

1. An independent testing laboratory (engaged by the Owner) meeting the requirement of Recommended Practice for inspection and Testing Agencies for Concrete and Steel as used in Construction ASTM E-329 shall determine the quality of all aggregate and concrete for compliance with the Contract Documents.

2. The testing laboratory shall test all concrete pavement. The laboratory personnel shall take the samples and adequately protect all samples during storage and transporting. The testing laboratory shall perform the following:

   a. Check batching and mixing operation periodically for compliance with the Contract Documents.

   b. Mold and test concrete field cylinders as required.

3. Concrete materials shall be tested as follows:

   a. Aggregate shall be tested in accordance with test requirements ASTM C-33.

   b. Cement shall be tested in accordance with ASTM C-150. All cement used on the job shall be accomplished by a certificate, by testing agency, indicating compliance of cement to all tests.

4. Concrete shall be tested for slump and strength as follows:

   a. Secure composite samples in accordance with ASTM C-172.

b. Samples shall be taken from each mix design placed in any one day or from each 100 cu. yards of concrete placed in continuous pours, whichever is the lesser.

c. Cast (3) three cylinder specimens from each sample. Cure two cylinders in the laboratory and one cylinder in the field. The field cured cylinder shall be tested for 7-day strength and the two (2) laboratory-cured cylinders shall be tested for 28-day strength. Make and cure cylinders in accordance with ASTM C-31; test in accordance with ASTM C-39. Test reports shall include temperature of air and concrete at site. Mix proportions and other data as necessary to determine compliance with the Contract Documents.

d. Determine slump of the concrete for each sample and whenever consistency of concrete appears to vary, test in accordance with ASTM C-143.

e. A portion of the air entrained concrete samples taken, shall be tested to determine the amount of entrained air. Determination shall be made in accordance with either ASTM C-231 or ASTM C-173. Should these tests indicate at any time the concrete being produced does not have any air content within the specified limits, the General Contractor shall modify the materials as may be necessary for compliance, at the General Contractor’s expense.

B. Submit, to the Architect, two copies of materials certificates signed by Material Producer and Contractor. Certificates shall state that each material item meets specified requirements.

C. Submit, to the Architect, job-mix formulas for each required cement-aggregate mixture. Mix designs shall be within allowable tolerances as specified for the particular application.

1.4 TRAFFIC CONTROL

A. Maintain vehicle and pedestrian traffic during paving and repair operations in such a manner as to not disrupt normal traffic activities unless special notification has been distributed.

1.5 WEATHER LIMITATIONS

A. Construct curb surface course only when ground temperature is above 40 degrees F. and base is dry. Base course may be laid when temperature is above 40 degrees F. and rising. Do not place curbing when base or surface is wet or frozen.

B. Cold Weather Protection: When the temperature of the atmosphere is 40-degrees F. and below, the concrete shall be protected by heating, insulation covering, housing or combination thereof as required to maintain the temperature of the concrete at or above 50-degrees F. and in a moist condition continuously for the concrete curing period. Cold weather protection shall meet the requirements of ACI 306R "Cold Weather Concreting."

C. Hot Weather Protection: When the temperature of the atmosphere is 90-degrees F. and above, or during other climatic conditions which will cause too rapid drying of the concrete, the concrete shall be protected by windbreaks, shading, fog spraying light-colored moisture-retaining covering, or a combination thereof as required to maintain the temperature of the concrete below 80-degrees F. and in a moist condition continuously for the concrete curing period. Hot weather protection shall meet the requirements of ACI 305R "Hot Weather Concreting."

1.6 SUBMITTALS

A. Concrete Mix Designs

1. Prior to any concrete curb placement the contractor shall submit a design mix for approval by the engineer for each curb mix proposed. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

2. Proportion mixes to provide concrete for curb and gutter and spillways with the following properties.
   a. Compressive Strength (28 days): 3,500 psi, unless otherwise indicated
   b. Maximum Aggregate Size : 1.5 inches
   c. Slump : 3 inches (for formed concrete), 1.5 inches (for slipform placement)
   d. Total Air Content by Volume : 4% to 8%

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials used in concrete curbing construction shall be in accordance with Section 802 of the MDOT 2020 Standard Specifications for Construction.

B. The fine aggregate shall meet all requirements of the MDOT 2020 Standard Specification for No. 2NS Natural Sand.

C. The coarse aggregate shall meet of requirements of the MDOT 2020 Standard Specification for No. 6AA Coarse Aggregate.

D. Water used in concrete shall be clean, free from oil, acids strong alkalies or vegetable matter and potable. If City water is used in the concrete, all necessary permits shall be obtained from the City Water Department.

E. Joint and waterproofing materials for use in concrete curbing shall conform to Section 914 of the MDOT 2020 Standard Specifications for Construction

F. The curing compound shall be white membrane type and conform with ASTM C-309, Type 2.

2.2 READY-MIXED CONCRETE MANUFACTURER'S QUALIFICATIONS

A. All ready-mixed concrete suppliers must be approved by the Owner. Concrete shall be manufactured and delivered to the job Site by a ready-mixed concrete manufacturer meeting the requirements of the National Ready Mixed Concrete Association (NRMCA) certification program.

2.3 READY-MIXED CONCRETE

A. All production, handling of materials, and distribution of ready-mixed concrete shall meet the requirements set forth in Section 601 of the MDOT 2020 Standard Specifications for Construction.

B. Ready-mixed concrete shall be mixed and delivered to the point of discharge at the job by means of a ready-mix concrete truck. Delivery tickets in accordance with Section 16 of ASTM C94 for each concrete load delivered to and used at the site shall be signed by the owner’s designated representative. The delivery tickets shall provide at minimum the following information:

1. Date
2. Name of ready mix concrete plant
3. Contractor
4. Job location
5. Type (Standard or H.E.S.) and brand of cement
6. Cement content in bags per cubic yards of concrete
7. Truck number
8. Time dispatched and time unloaded
9. Amount of concrete in load in cubic yards
10. Admixtures in concrete
11. Maximum allowable slump in inches
12. Amount of water added at job in gallons, if any

C. No water from the truck water system or elsewhere shall be added after the initial introduction of the mixing water for the batch. Under no circumstances shall the approved maximum water content be exceeded nor shall the slump exceed the maximum specified.

D. Discharge of the concrete shall be completed in compliance with Table 1001-1 of the MDOT 2020 Standard Specifications for Construction.

E. Concrete delivered in cold weather (air temperature 45-degrees F. and lower) shall have a temperature not less than 60-degrees F. at the point of discharge at job, and in compliance with ACI 306 R "Cold Weather Concreting". Concrete placing will not be permitted when the air temperature is 35-degrees F. or lower.

F. Concrete delivered under hot weather conditions contributing to quick stiffening of concrete, or in air temperature of 80-degrees F. and over, shall have a temperature between 60- and 80-degrees F. at the point of discharge at job, and in accordance with ACI 305 R "Hot Weather Concreting."

2.4 REINFORCEMENT MATERIALS

A. Reinforcing Bars: ASTM A615-84A, Grade 60 Deformed Billet-Steel Bars.

B. Epoxy-Coated Reinforcement Bars: ASTM A775 with ASTM A615, Grade 60, deformed bars.

C. Hook Bolts per ASTM A307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

D. Tie Wires to be black, annealed steel wire, not less than 16-gauge.

E. Supports for Reinforcements: Bar supports conforming to "Bar Support Specifications" contained in ACI "Manual of Standard Practice". Provide chairs, spacers and other devices suitable for proper spacing, supporting and fastening reinforcing bars.

F. Shop fabricate reinforcing bars to conform to the shapes and dimensions shown on the reviewed Shop Drawings and in accordance with ACI "Manual of Standard Practice," current edition.

2.5 FORMS

A. All forms shall be of the full depth of the proposed curb section and cleaned before each use.

B. The use of steel forms is required for curb and gutter placement when the section exceeds 10 lineal feet.

C. Either mechanical slip forms or fixed forms may be used. Fixed forms shall be of sufficient strength to resist springing during concrete-placing operations, and of an approved section with flat surface on top.

D. When forms are used and the pavement radius is less than 200 feet, the curved alignment shall be provided for by either standard steel forms equipped with flexible liners or by flexible forms for curved conditions. Curb and gutter forms shall be so constructed as to permit the inside of the forms to be securely fastened to the outside forms.

E. Flexible form materials and materials for sections less than 10 lineal feet may consist of plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

F. A commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces shall be applied to the forms before concrete installation.

PART 3 - EXECUTION

3.1 GRADING

A. All new curbing shall be placed on a prepared subgrade, smoothed and leveled to the grades indicated on the Plans.
B. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction and repair as required. In clay soils the subgrade shall be excavated 4 inches below the sidewalk base and filled with approved sand meeting MDOT Class II granular fill.

3.2 LINE AND GRADE

A. The Contractor will hire a Registered Land Surveyor to establish the line and grade from the Construction Plans.

3.3 SETTING FORMS

A. Compact and cut-to-grade subgrade under forms so that forms when set will be uniformly supported for the entire length. Securely stake and brace or tie forms to prevent leakage of concrete. Bracing with piles of earth will not be permitted.

B. Coat surfaces of forms to be in contact with concrete with a light clear paraffin oil or parting compound which will not stain the concrete.

C. Before start of concrete placing, form Work shall be complete and approved by the Soils Engineer.

D. Hardened concrete, debris and foreign material shall be removed from interior of forms.

3.4 PLACING REINFORCEMENT

A. Provide reinforcement for concrete curbing as shown on the Drawings. Reinforcement shall be kept clean and free from objectionable rust. Bends or kinks in reinforcing bars shall be corrected before placing. All reinforcement shall be accurately located in forms and securely held in place, before and during concrete

placing, by supports adequate to prevent displacement during the course of construction.

B. Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.
C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.5 CONTRACTION JOINTS

A. Provide contraction joints in concrete curbing at 10 foot intervals, unless a more detailed jointing pattern is called for.

B. Form contraction joints by tooling or sawing a 1/2" wide cut perpendicular to the surface and at right angles to the edge of pavement.

3.6 EXPANSION (OR ISOLATION) JOINTS

A. Provide expansion joints in concrete curbing, at tangent points or radius returns, at intersections, and in straight runs at uniform intervals not exceeding 240 feet.

B. Provide expansion joints between concrete curbing and adjacent rigid structures not specified herein before.

C. Fill expansion joints with expansion joint filler strips, 3/4-inch thick unless otherwise shown on the Drawings. The strap shall extend the full depth of the concrete curbing.

C. Where the expansion joint will not be sealed, install joint filler strips with top flush with concrete finish elevation.

3.7 CONCRETE PLACING

A. Concrete shall be handled from the point of delivery and to concrete conveying equipment, and to the location of final deposit by methods, which will prevent segregation and loss of concrete mix materials and in a manner which will assure that the required quality of concrete is maintained.

B. Before placing curbing, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

C. Cold-Weather concrete curb placement shall comply with ACI 306.1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.

D. Hot-Weather concrete curb placement shall be according to recommendations in ACI 305R when hot-weather conditions exist.

E. Equipment for Conveying Concrete:

1. Runways for wheeled concrete conveying equipment shall be provided for the ready-mix concrete delivery point to the locations of final deposit.

2. The interior surfaces of concrete conveying equipment shall be maintained free of hardened concrete, debris, water, snow, ice and other deleterious materials.

F. When the temperature of steel forms is greater than 120-degrees F., the steel surfaces shall be sprayed with water just prior to placing the concrete.

G. Concrete shall be deposited continuously. Concrete which has partly hardened or has been contaminated by foreign materials shall not be placed; such concrete shall be properly disposed of in a approved manner.

H. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.

3.8 CONCRETE FINISHING

A. Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.

B. Float curb surface by hand floating. Cut down high spots, and fill low spots.

C. Apply a light broom finish in a longitudinal direction to concrete curbs

3.9 CURING CONCRETE

A. Apply curing compound uniformly in continuous operation by power spray.

B. Newly placed concrete shall be protected as required to maintain the temperature of the concrete at not less than 50 degrees F. nor more than 80 degrees F. and in a moist condition continuously for a period of time necessary for the concrete to cure. Changes in temperature of the concrete during curing shall be as uniform as possible and shall not exceed 5 degrees F. in any one hour, nor 50 degrees F. in any 24 hour period.

3.10 REMOVAL OF FORMS

A. All forms, rails and stakes shall be removed within 48-hours after placing the pavement.

B. Any and all “honey combing” noticed upon removal of the forms shall be hand grouted.

C. Upon removal of the forms, the remaining excavated area shall be backfilled with approved material, compacted thoroughly, and left in a neat condition.

3.11 CLEANUP

A. After completion of concrete curing in an area, remove all weather protection materials and rubbish and debris resulting from specified Work. Sweep concrete curbs clean.

B. In no case shall the mixer or truck be flushed out onto the street pavement, in a catch basin or sewer manhole, or in any public right-of-way.

C. Concrete patches on the face of curb will not be accepted.

END OF SECTION 02770

SECTION 02925 - CLEANUP AND RESTORATION

PART 1 – GENERAL

A. The Contractor shall restore areas disturbed by construction activities to a condition reasonably close to their condition before the project, unless shown otherwise on the plans. Restoration work should be performed as soon as possible after construction work is completed in a particular area.

B. Upon the completion of work in an area, all excess materials, debris, equipment, and similar items shall be removed from the project area by the Contractor, and disposed of properly.

PART 2 - MATERIALS

Not Applicable.

PART 3 - EXECUTION

3.01 Restoration

A. Unless otherwise provided; aggregate surfaces, bituminous pavements, and concrete pavements shall be restored by construction of similar replacement surfaces. Aggregate surfaces shall be replaced with Series 23A material per the 2020 MI Dept. of Transportation (MDOT) Standard Specification for Construction in thicknesses to match existing. Bituminous pavement shall be replaced with the cross sections(s) shown on the plans and in accordance with the Specification Section 02740 “Hot-Mix Asphalt Paving”. Concrete pavement shall be replaced with pavement in accordance with the Specification Section 02752 “Concrete Slab on Grade”.

B. Turf areas shall be restored by re-establishing the turf as described in Specification Section 02951 “Landscape Restoration”. All areas disturbed by construction that are not to be surfaced with aggregate or pavement shall be restored with turf, unless otherwise directed.

C. Mailboxes, fences, signs, ornaments, and similar items shall be replaced at the completion of construction. Posts shall be installed plumb. Items that are lost or stolen shall be repaired or replaced at the Contractor's expense. Repairs or replacements shall meet the Owner's approval.

3.02 Temporary Restoration of Driving Surfaces

A. Where a pavement or gravel surface is removed as a result of construction activities, a temporary surface shall be provided and maintained by the Contractor until the permanent surface is provided. Unless otherwise directed, the temporary surface shall be twelve inches of aggregate compacted to at least 95 percent of its maximum density (ASTM D1557) and graded to meet the adjacent, remaining surfaces. Aggregate shall meet the requirements of Series 23A as described in the 2020 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

B. The Contractor shall regrade the temporary surface and add additional aggregate at intervals necessary to maintain them in a relatively smooth condition.

END OF SECTION 02925

SECTION 02951 LANDSCAPE RESTORATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Soil Materials and Preparation

B. Restoration of Lawns (Hydroseeding)

C. Restoration of Lawns (Sod – Contractor’s Option)

D. Planting Mixes

1.2 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial

B. American Standard for Nursery Stock ANSI 260.1-2004

1.3 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight. Date of packaging and location of packaging.

B. Plant names indicated shall comply with “Standardized Plant Names” as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

C. Comply with sizing and grading standards of the latest edition of “American Standard for Nursery Stock.” A plant shall be dimensioned as it stands in its natural position.

D. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 (two) years.

E. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable at no additional cost. Larger plants shall not be cut back to size indicated.

F. Provide "specimen" plants with a special height, shape or character of growth. General Contractor to tag specimen trees or shrubs at the source of supply. The Architect will inspect specimen selections at the source of supply for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval. The General Contractor shall inspect all plant material at source prior to Architect's approval. General Contractor shall accompany Architect on final selection trip.

G. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the Work.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver landscape materials in original, unopened and undamaged containers showing weight, analysis and name of manufacturer. Store in manner to prevent wetting and deterioration.

B. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Spray deciduous plants in foliage with an approved "Anti-Dessicant" immediately after digging to prevent dehydration. Dig, pack, transport and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival. A copy of the certificates shall be filed with the Architect. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss or in a manner acceptable to the Architect. Water heeled-in plantings as required to keep root system moist until planting. No plant shall be bound

with rope or wire in a manner that could damage or break the branches.

C. Cover plants transported on open vehicles with a protective covering to prevent windburn.

1.5 COORDINATION

A. All disturbed areas shall be restored to a condition equal to or greater than the area's condition before the project began (i.e. lawns, trees, plants, shrubs).

B. Protect existing utilities, paving and other facilities from damage caused by landscaping operations.

C. Perform restoration work only after sitework has been completed and ground surface will not be affected.

D. Locate, protect and maintain the existing irrigation system (if any) during planting. Repair irrigation system components and/or piping, damaged during concrete walk/curb/asphalt work and planting as part of this contract.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Topsoil: Topsoil shall be free from roots, sticks, weeds, brush or stones larger than 1-in. in diameter or other litter or waste products. It shall be a loamy mixture having at least 90 percent passing a No. 10 sieve. A sample, free from extraneous materials, shall comply to the following requirements:

1. Organic Matter: Topsoil shall contain not less than 10 percent organic matter as determined by the test for organic matter, AASHTO T 194.

2. Clay: The topsoil shall contain not less than 12 percent clay or more than 50 percent as determined in accordance with AASHTO T 88.

3. Sand: The sand content shall not exceed 55 percent as determined in accordance with AASHTO T 88.

4. pH: The pH of the sample shall not be less than 5.0 nor higher than 8.0. The pH shall be determined with an acceptable pH meter, on that portion of the sample passing a No. 10 sieve, in accordance with ASTM D-4972, pH of soils.

B. Supplied or stockpiled topsoil shall be fertile, friable and representative of local productive soil, capable of sustaining vigorous plant growth and screened free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones greater than 1" in diameter in any dimension, roots, sticks and other extraneous materials not frozen or muddy. pH of existing or supplied soil to range between 5.0 and 7.5. Adjusted to not more than 7.0 by additives as required by soil test. Topsoil shall contain not less than 3% and not greater than 10% organic matter. Clay content as determined by Bouyoucous Hydrometer Test shall range between 5 and 15 percent. Mechanical analysis as follows:

PASSING	RETAINED ON	PERCENTAGE
1" Screen		100%
1" Screen	¼" screen (gravel)	Not more than 3%
	¼" Screen	40-60%
	No. 140 USS Mesh Sieve	
	No. 140 USS	30-35%

Percentage based on day (Very fine weight of the samples sand, silt and clay)

C. If sufficient topsoil is not available at the Site or the Landscape Contractor elects the option to secure topsoil elsewhere, the Landscape Contractor must receive the Owner's approval of material in writing prior to securing topsoil. All topsoil secured off Site must meet other requirements of this Section.

2.2 SEED MIXTURES

A. Lawn Seed: Fresh, clean and new crop proportioned by weight as follows:

	MIX	MIN. GERMINATION	MIN. PURITY
Perennial Ryegrass	30%	90%	95%
Kentucky Bluegrass	40%	75%	90%
Creeping Red Fescue	30%	80%	95%

2.3 TREES, PLANTS AND GROUND COVER

A. Provide plants typical of their species or variety with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sun scald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation.

B. All plants shall have a fully developed form without voids and open spaces. Plants held in storage will be rejected if they show signs of growth during storage. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.

C. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the “American Standard for Nursery Stock.” Cracked or mushroomed balls are not acceptable.

D. Container-grown stock shall be grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole. No plants shall be loose in the container. Container stock shall not be pot bound.

E. Plants larger than those specified in the plant list may be used when acceptable to the Engineer. If the use of larger plants is acceptable, increase the spread of roots or root ball in proportion to the size of the plant.

F. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated in the plant list.

G. Evergreen trees shall be branched to the ground.

H. Shrubs and small plants shall meet the requirements for spread and height indicated in the plant list. The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.

I. Original trees and shrubs may be removed and stored and replanted.

2.4 ACCESSORIES

A. Lawn

1. Wood fiber mulch slurry, 1200 lbs fiber per acre.
2. Fertilizer: Water soluble 20-20-20 composition.

B. Trees, Plants, Ground Cover

1. Fertilizer: Commercial complete standard product complying with state and federal fertilizer laws. Fertilizer shall be 12-12-12 composition.

2. Peat Moss: Ground or shredded horticultural grade peat moss, supplied in bales from commercial source. Acidity shall be PH 4.0-7.0. It shall contain not less than 90% organic matter by weight on oven-dry basis. It shall contain no less than 35% and no more than 55% moisture by weight. Ash content shall not exceed 10%.

3. Mulch Material: Shredded bark mulch shall consist of either mixed hardwood species or pine alone. Sixty (60) percent of shredded bark particles shall range between one (1) and three (3) inches in length; remaining forty (40) percent shall be less than one (1) inch in length. Maximum width of particles shall not exceed one and one half (1½) inches. Minimum depth of bark mulch shall be 4".

4. Stakes: 2 x 2 wood, pointed at one end, length as required to extend 18" below bottom of tree ball or root base of item being staked.

5. Guy Wire: 11 gauge pliable, galvanized guying wire.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine finish surface and grades. Do not start landscape restoration work until all unsatisfactory conditions are corrected.

3.2 PREPARATION OF SUBSOIL

A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.

3.3 PLACING TOPSOIL

A. For Trees, Plants and Ground Cover: Spread topsoil to a minimum depth of 3 inches over area to be planted. Rake smooth and free of debris.

B. For Seeding/Sodding Lawns: Spread topsoil to a depth of 2 inches over area to be seeded/sodded. Rake smooth and free of debris.

3.4 HYDROSEEDING

A. Seeding operations shall take place between March 15 and June 15 under favorable climatic conditions or August 15-September 15.

B. Treat all grassy or weedy areas with an organic herbicide acceptable to the Owner to eliminate existing vegetation. Wait 7-10 days, then apply a second application of an organic herbicide and wait another 7 days until planting.

C. Scarify ground with rake as necessary immediately before sowing seed to provide smooth, even grade and friable seed bed.

D. Use a hydromulcher (sprayer) and apply mixture(s) at the following rate. Mix in accordance with manufacturer's recommendations.

E. Apply hydroseed slurry to indicated areas. Use tackifier only on erosion prone areas. Apply fertilizer with hydro mix.

Seed: At specified seeding rates (300 pounds per acre)
Fertilizer: 400 pounds per acre
Tackifier: 60 gallons per acre
Wood Cellulose Fiber Mulch: 2000 pounds per acre

F. Use care so as not to get hydroseed materials on buildings, walks, roadways, plant beds, etc.

3.5 SODDING

A. Installation of sod shall occur between the dates indicated under Section 816 “Turf Establishment” in the MDOT 2020 Standard Specifications for Construction, unless written authorization is given by the owner or owner’s representative.

B. Sod shall be placed in areas where sod had existed prior to the project beginning.

C. Stagger sod rolls so that seams alternate. Roll sod to eliminate air pockets.

3.6 ACCEPTANCE

A. Architect shall inspect work upon written request of the General Contractor after completion of 60-day establishment maintenance period.

B. Acceptance of plant material shall be for conformance to specified size, character, and quality and shall not relieve the General Contractor of responsibility for full conformance to Contract Documents including correct species.

C. Acceptance in part: Portions of lawns and/or transplantings may be accepted in part upon Architect’s approval. Lawn area and/or transplanting may be accepted exclusive of each other in best interest of Owner.

D. The General Contractor is responsible for watering of hydroseed and sod until acceptance by Architect/Owner.

E. Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established. Damage to seeded area resulting from erosion to be repaired by the General Contractor. Scattered bare spots less than 5 percent of the total area is acceptable.

F. In event the General Contractor does not establish dense lawn during germination period, return to project to refertilize and reseed to establish dense lawn.

G. Should the seeded lawn become largely weeds after germination, the General Contractor is responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.

3.7 CLEANUP

A. Perform cleaning during installation of the work and upon completion of the work to the approval of the Architect. Remove from site all excess materials, debris and equipment. Repair damage resulting from seeding operations. Clean all areas where overspray has occurred from hydroseeding operations.

END OF SECTION 02951

SECTION 02953 - LANDSCAPE MAINTENANCE AND WARRANTY STANDARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Bidding and Contract Requirements, and to General and Supplemental Conditions, hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. The requirements of this Section include a one year warranty period from date of acceptance of installation.

B. Related Work Specified Elsewhere:

1. Section 02951: Landscape Restoration

1.03 ACCEPTANCE OF INSTALLATION:

A. At the completion of all landscape installation, or pre-approved portions thereof, the General Contractor shall request in writing an inspection for acceptance of installation in which the General Contractor, Architect and Owner's Representative shall be present. After this inspection a "Punch List" will be issued by the Architect. The Architect and Owner’s representative shall re-inspect the project and issue a written statement of acceptance of installation and establish the beginning of the project warranty period.

B. Landscape work may be inspected for acceptance in parts agreeable to Owner's Representative and Architect provided work offered for inspection is complete, including maintenance as required.

C. For work to be inspected for partial acceptance, the Contractor shall provide a drawing outlining work completed, and supply a written statement requesting acceptance of this work completed to date.

1.04 PROJECT WARRANTY:

A. The project warranty period begins upon written acceptance of the project installation by Architect and Owner's Representative.

B. The General Contractor shall guarantee seeded areas through construction and for a period of (1) one year after date of acceptance of installation against defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond the General Contractor's control.

1.05 MAINTENANCE:

A. To insure guarantee standards, the following maintenance procedures shall be executed during construction and for the full project warranty period.

B. Maintenance of Hydro-Seeded Lawn Areas:

1. The Contractor shall establish a dense lawn of permanent grasses, free from lumps and depressions or any bare spots, none of which is larger than one foot of area up to a maximum of 3% of the total hydro-seeded lawn area. Any part of the hydro-seeded lawn that fails to show a uniform growth and/or germination shall be reseeded until a dense cover is established.

2. If hydro-seeded in fall or if not considered acceptable at that time, continue maintenance the following spring until acceptable lawn is established.

3. The Contractor shall provide a minimum of two cuttings of the lawn or more as necessary until the inspection and acceptance of installation by the Owner's Representative and Architect. When the lawn reaches 3 inches in height it shall be cut to 2 inches in height. When meadow lawn reaches 6" in height it shall be cut to 4" in height.

4. The Owner assumes cutting responsibilities following the acceptance of installation by the Owner's Representative and the Architect.

5. After acceptance of installation, and for the duration of the project warranty period the General Contractor shall continue all other maintenance procedures including fertilizing and weeding, and other operations such as rolling, regrading, replanting, and applying herbicides, fungicides, insecticides as required to establish a smooth, acceptable lawn free of eroded or bare areas.

6. Repair, rework, and reseed all areas that have washed out, and eroded, or do not substantially germinate.

7. At conclusion of project warranty period and after receiving written final acceptance by Owner's Representative and Architect, the Owner shall assume all seeded lawn maintenance responsibilities.

1.06 FINAL ACCEPTANCE:

A. At the conclusion of the project warranty period the General Contractor shall request a project inspection for final acceptance in which the General Contractor, Architect and Owner's Representative shall be present. After this inspection a "Punch List" will be issued by the Architect. Upon completion of all punch list items, the Architect and Owner's Representative shall reinspect the project and issue a written statement of final acceptance. Upon final acceptance the Owner assumes all maintenance responsibilities for the landscape of the project.

PART 2 AND 3 - PRODUCTS AND EXECUTION

Not Applicable.

END OF SECTION 02953

SECTION 07181 – TRAFFIC BEARING WATERPROOFING MEMBRANE

PART 1 GENERAL

1.1 SUMMARY

A. Provide labor, materials, equipment and supervision necessary to install a fluid-applied vehicular traffic coating system as outlined in this specification to existing concrete surfaces.

B. The manufacturer's application instructions for each product used are considered part of this specification and should be followed at all times.

1.2 SYSTEM DESCRIPTION

A. AUTO-GARD® FC shall be a complete system of compatible materials supplied by NEOGARD® to create a seamless waterproof membrane.

B. AUTO-GARD® FC shall be designated for application on the specific type of deck indicated on the drawings.

1.3 SUBMITTALS

A. Product Data: Submit NEOGARD® product literature and installation instructions.

B. Project Reference List: Submit list of projects as required by this specification.

C. Samples: Submit samples of specified vehicular traffic coating system. Samples shall be construed as examples of finished color and texture of the system only.

D. Applicator Approval: Submit letter from manufacturer stating applicator is approved to install the vehicular traffic coating system.

E. Warranty: Submit copy of manufacturer's standard warranty.

1.4 QUALITY ASSURANCE

A. Supplier Qualifications: AUTO-GARD® FC, as supplied by NEOGARD®, is approved for use on this project.

B. Applicator Qualifications: Applicators shall be approved to install specified system.

C. Requirement of Regulatory Agencies: Materials used in the vehicular traffic coating system shall meet existing Federal, State and local VOC regulations.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery: Materials shall be delivered in original sealed containers, clearly marked with supplier's name, brand name and type of material.

B. Storage and Handling: Recommended material storage temperature is 75°F. Handle products to avoid damage to container. Do not store for long periods in direct sunlight.

1.6 JOB CONDITIONS

A. Environmental Conditions:
   1. Do not proceed with application of materials when deck temperature is less than 40°F.
   2. Proceed with work only when existing and forecasted weather conditions will permit the application to be performed in accordance with the manufacturer's recommendations.
   3. Do not apply materials unless surface to receive coating is clean and dry.

1.7 WARRANTY

A. Contractor shall properly execute a warranty request form to provide the manufacturer’s standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. NEOGARD® Division of JONES-BLAIR® Company, P.O. Box 35286, Dallas, TX 75235, Toll Free (800) 321-6588, Fax (214) 357-7532, www.neogard.com.

2.2 MATERIALS

A. Vehicular Traffic Coating Material:
   1. Primer: Concrete and metal primers as required by NEOGARD®.
   2. Flashing Tape: 86218 flashing tape having a minimum thickness of 30 mils.
   3. Aggregate: 7992 silica (quartz) sand or other aggregate approved by NEOGARD®.
   4. Elastomeric Base Coat: FC7500/FC7960 polyurethane coating, gray in color.
   5. Elastomeric Wear Coat: FC7510/FC7961 polyurethane coating, gray in color.
   6. Elastomeric Topcoat (Exterior Use): FC7520/FC7962 series polyurethane coating, gray in color.
   7. Sealant: 70991 or other polyurethane sealant approved by NEOGARD®.

2.3 MATERIAL PERFORMANCE CRITERIA

A. Typical physical properties of cured vehicular traffic coating system used on this project are:

PERFORMANCE REQUIREMENTS OF CURED FILM			
PHYSICAL PROPERTIES	TEST METHOD	BASE COAT	TOPCOAT
Tensile Strength	ASTM D412	1,500 psi	2,200-5,000 psi
Elongation	ASTM D412	500%	80-350%
Permanent Set	ASTM D412	<20%	<20%
Tear Resistance	ASTM D1004	150 pli	165-400 pli
Water Resistance	ASTM D471	1% @ 7 days	<=3% @ 7 days

MVT @ 20 mils	ASTM E96	5 English	0.4-1.5 English
Taber Abrasion (cs17), max	ASTM D4060	5 mg/1,000 rev	30 mg/1,000 rev
Shore A	ASTM D2240	74-79	84-94
Adhesion	ASTM D4541	400 psi	400 psi
Weathering Resistance	ASTM D822	N/A	Slight Chalk
Thermal Shock	Alternate Heat/Cold	No Loss of Adhesion	No Loss of Adhesion
"Standard Specifications for High Solids Content, Cold- Applied Elastomeric Waterproofing Membrane with Integral Wearing Surface"	ASTM C957	System Exceeds Requirements	

2.4 ACCESSORIES

A. Miscellaneous materials such as cleaning agents, adhesives, reinforcing fabric, backer rod, deck drains, etc. shall be a composite part of the deck system and shall be compatible with the specified vehicular traffic coatings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Concrete: Verify that the existing concrete deck meets the following requirements:
   1. That the concrete deck surface is free of ridges and sharp projections.
   2. That the concrete was finished by a power or hand steel trowel followed by soft hair broom to obtain light texture or “sidewalk” finish.

3. That damaged areas of the concrete deck be restored to match adjacent areas. Use 100% solids epoxy and sand for filling and leveling, NEOGARD® Products 70714 and 70715.

3.2 PREPARATION

A. Surface Preparation:
1. Cleaning: Surfaces contaminated with oil or grease shall be vigorously scrubbed with a power broom and a strong non-sudsing detergent. Thoroughly wash, clean, and dry. Areas where oil or other contaminants penetrate deep into the concrete may require removal by mechanical methods.
2. Diamond Grinding and Shot Blasting: Required surface preparation method for remedial construction. Diamond grind existing epoxy coating systems to original concrete. After diamond grinding, mechanically prepare surface by shot blasting to industry standard surface texture (ICRI's CSP3-4) without causing additional surface defects in deck surface. Shot blasting does not remove deep penetrating oils, grease, tar or asphalt stains. Proper cleaning procedures should be followed to insure proper bonding of the deck coating.
3. Cracks and Cold Joints: Visible hairline cracks (up to 1/16" in width) in concrete and cold joints shall be cleaned, primed as required and treated with thoroughly mixed FC7500/FC7960 polyurethane coating material a minimum distance of 2" on each side of crack to yield a total thickness of 30 dry mils. Large cracks (over 1/16" in width) shall be routed and sealed with 70991 sealant. Sealant shall be applied to inside area of crack only, not applied to deck surface. Detail sealed cracks with thoroughly mixed FC7500/FC7960 polyurethane coating material a distance of 2" on each side of crack to yield a total thickness of 30 dry mils.
4. Control Joints: Seal secondary control joints with 70991 sealant. Sealant shall be applied to inside area of joint only, not applied to deck surface. Detail sealed joints with thoroughly mixed FC7500/FC7960 polyurethane coating material a distance of 2" on each side of joint to yield a total thickness of 30 dry mils.
5. Flashing Tape: Install 86218 flashing tape where indicated on the drawings and/or where required by the

manufacturer prior to the application of elastomeric coating.

6. Surface Condition: Surface shall be clean and dry prior to coating.

3.3 APPLICATION

A. Seed and Lock Method (Note: For FC7520/FC7962, do not apply heavier than 40 sf/gal, per coat):
   1. Primer: Where required, thoroughly mix primer and apply at a rate of 1/3 gallon per 100 square feet (300 sf/gal) to all concrete surfaces in strict accordance with procedures outlined by NEOGARD®. Within 24 hours of application of primer, base coat must be applied. If base coat cannot be applied within 24 hours, reprime.
   2. Base Coat: Thoroughly mix FC7500/FC7960 polyurethane coating material and apply at a rate of 1.25 gallons per 100 square feet (80 sf/gal) to deck surfaces in strict accordance with procedures outlined by NEOGARD®. Extend base coat over cracks and control joints which have received treatment.
   3. Wearing Surface Coat: Thoroughly mix FC7510/FC7961 polyurethane coating material and apply at a rate of 1/2 gallon per 100 square feet (200 sf/gal) in strict accordance with procedures outlined by NEOGARD® and immediately broadcast aggregate, evenly distributed, into wet coating at the rate of 10 to 15 pounds per 100 square feet.
   4. Topcoat: When dry, remove excess aggregate and recoat surface with thoroughly mixed FC7510/FC7961 (interior or covered use) or FC7520/FC7962 (exterior use) polyurethane coating material at a rate of 3/4 gallon per 100 square feet (133 sf/gal) in strict accordance with procedures outlined by NEOGARD®. Total system coating thickness averages 40 dry mils exclusive of aggregate.

   5. Double-Texturing: For Plaza Deck areas, double-texturing is required. In such areas, apply double-texture as follows: After the wearing surface coat to receive aggregate has cured and loose aggregate removed, thoroughly mix FC7510/FC7961 polyurethane coating material and apply at a rate of 3/4 gallon per 100 square feet (133 sf/gal) in strict accordance with procedures outlined by NEOGARD® and immediately broadcast additional aggregate, evenly

distributed, into wet coating at the rate of 10 to 15 pounds per 100 square feet. When dry, remove excess aggregate and recoat surface with thoroughly mixed FC7520/FC7962 (exterior use) polyurethane coating material at a rate of 3/4 gallon per 100 square feet (133 sf/gal) in strict accordance with procedures outlined by NEOGARD®. Double-textured areas will yield an average of 52 dry mils exclusive of aggregate.

3.4 CLEANING

A. Remove debris resulting from completion of coating operation from the project site.

3.5 PROTECTION

A. After completion of application, do not allow traffic on coated surfaces for a period of at least 24 - 36 hours at 75°F. and 50% R.H., or until completely cured.

END OF SECTION

SECTION 07190 - WATER AND STAIN REPELLENTS

PART 1 - GENERAL

1.01 SUMMARY

A. **Section Includes:**
1. Exterior water repellent coatings for:
a. Concrete deck surfaces.
2. Extended written warranty.

B. **Related Items:**
1. Section 02760 "Pavement Markings"
2. Section 07181 "Traffic Bearing Waterproofing Membrane"
3. Section 07920 "Sealants & Caulking"

1.02 SUBMITTALS

A. Comply with Section 01340 "Shop Drawings, Product Data and Samples", unless otherwise indicated. Substitution requests must be submitted (10) ten days prior to the bid date.

B. **Product Data: Manufacturer's** specifications and technical data including the following:
1. Detailed specification of construction and fabrication.
2. Manufacturer's installation instructions.
3. Certified test reports indicating compliance with performance requirements specified herein.

C. **Quality Control Submittals:**
1. Statement of qualifications.
2. Statement of compliance with Regulatory Requirements.
3. Field Quality Control Submittals as specified in Part 3.
4. Manufacturer's field reports.

1.03 QUALITY ASSURANCE

A. **Manufacturer's Qualification:** Not less than (5) five years of experience in the actual production of specified products.

B. **Installer's Qualifications:** Firm experienced in installation or application of systems similar in complexity to those required for this project, plus the following:
   1. Acceptable to or licensed by manufacturer.
   2. Not less than (3) three years of experience with systems.
   3. Successfully completed not less than (5) five comparable scale projects using this system.

C. **Product Qualifications:**
   Comply with the provisions of the following specifications and standards, except as otherwise specified.
   1. Color: water white Active Ingredient: alkyltrialkoxy silane
      VOC Content: 400g/l or less Dimer or Trimer Content: less than 0.2%

   2. Surface Appearance - No change in the surface appearance or texture.
   3. NCHRP #244 Series II – minimum 86.4% reduction in water absorption
      minimum 88% reduction in chloride ion intrusion
   4. NCHRP #244 Series IV - minimum 99% reduction in chloride ion intrusion
   5. Alberta DOT type 1b Penetrating Sealer Test
      -84.6% reduction in water absorption before abrasion
      -86.1% reduction in water absorption after abrasion
   6. Resistance to automotive fluids and oils for a minimum of 7 days.
   7. Will not alter slip or skid resistance of concrete in wet and dry conditions.
      Note: All testing must be performed by an independent laboratory approved by the Architect/Engineer.

D. **Regulatory Requirements:** Products shall comply with State and local regulations concerning AIM (Architectural, Industrial and Maintenance) coatings regarding Volatile Organic Content (VOC).
   1. The use of 1,1,1 trichloroethane shall not be allowed.

1.04 DELIVERY STORAGE AND HANDLING

A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.05 PROJECT CONDITIONS

A. Environmental Requirements:
   1. Maintain ambient temperature above 40 degrees F during and 24 hours after installation.

2. Do not proceed with application on materials if ice or frost is covering the substrate.
3. Do not proceed with application if ambient temperature of surface exceeds 100 degrees F.
4. Do not proceed with the application of materials in rainy conditions or if heavy rain is anticipated with 4 hours after application.

B. Sealer Coordination:
1. Verify compatibility with curing compounds, patching materials, repair mortar, paints, sealants, etc. to be used on masonry surfaces to ensure compatibility with the water repellent.

1.06 SPECIAL WARRANTIES

A. Manufacturer shall stand behind installed system for period of (5) five years from Date of Substantial Completion against all the conditions indicated below. When notified in writing from Owner, Manufacturer shall, promptly and without inconvenience and cost to Owner correct said deficiencies.
1. Loss of water repellency:
a. Concrete: 1.0 mil/20 minutes or greater using RILEM method.
B. All defective areas shall be retreated by the system manufacture as determined by the Architect/Engineer. The required written warranty shall be provided by the system manufacturer.
C. The Sealer Manufacturer shall be responsible for providing labor and material to reseal areas of the parking deck where sealer effectiveness does not meet the specified limits.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Acceptable manufacturers and products for concrete deck surfaces:

1. Protectosil® BHN PLUS, Evonik 1-727-580-9339.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
1. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protection: Install coverings to protect adjacent surfaces.

B. Surface Preparation:
   1. Surfaces to receive sealer shall be cleaned of dirt, oil, grease, laitance, and other contaminants. Oil, grease and other automotive contaminants shall be removed with degreasers. All other surfaces shall be cleaned by high pressure water (3000 psi). High pressure water is the minimum cleaning that will be accepted, other methods, such as blastracking, mobile power scrubbing and sandblasting may be submitted.
   2. Remove dirt, dust and materials that will interfere with the proper and effective application of the penetrating sealer. It is the responsibility of the Contractor to prepare the surfaces of the concrete to a condition acceptable to the Owner.
   3. Equipment during floor slab cleaning shall not exceed the height limitation of the facility and shall not exceed a 3,000 pounds axle load or vehicle gross weight of 6,000 pounds.
   4. Check the compatibility of all caulking, patching, and traffic marking materials to be used with the penetrating sealer.
   5. Sealants shall have been installed satisfactory per manufacturers specifications.

3.03 FIELD QUALITY CONTROL

A. Manufacturer’s Field Services:
   1. Furnish written certification that surface preparation method and final condition has manufacturer’s approval and comply with the warranty.
   2. Test area: Furnish results of test area absorption on each type of substrate. Test results shall determine application rate.

B. Test Area:
   1. Before a sealer application the following field evaluation will be done. The cost of the field testing will be the responsibility of the Water and Stain Repellent Manufacturer.
   2. Prepare a five by five feet area to be sprayed with the water repellent. The area will be determined by the Architect/Engineer. Apply the water and stain repellent at the specified rate to the test area.

3. Acceptable minimum results are as stated in the warranty provisions. Coverage rate used to pass this test section must be used on entire project.

3.03 APPLICATION

A. Product shall be applied as supplied by the manufacturer without dilution or alteration.

B. Apply with a low-pressure (15 psi) airless spray equipment with a fan spray coarse nozzle, flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer.

C. Apply at a rate of not less than 175 square foot/gallon unless the field tests determine that a heavier rate of application is necessary to meet the performance requirements.

D. Apply at temperature and weather conditions recommended by the manufacturer or written in this specification.

E. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Contractor will be responsible to clean all surfaces that are contaminated by the water repellent.

F. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Contractor will be responsible for replacing all plants, grass or vegetation damaged by the water repellent.

3.05 CLEANING

A. As work progresses: Clean spillage and overspray from adjacent surfaces using materials and methods as recommended by water repellent manufacturer.

B. Remove protective coverings from adjacent surfaces when no longer needed.

3.06 COMPLETION

A. Work that does not conform to specified requirements shall be corrected and/or replaced as directed by the Owners Representative at contractor's expense without extension of time.

END OF SECTION

SECTION 07910 - JOINT FILLERS AND GASKETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. The extent of each type of joint filler and gasket work is indicated on the drawings and by provisions of this section, and is hereby defined to include required fillers and gaskets not specified in other sections of these specifications.

B. The required applications of joint fillers and gaskets include, but are not necessarily limited to, the following general types and locations:

1. Pavement/sidewalk joint fillers.

2. Joint fillers around penetrations of equipment and services through slabs/pavement.

1.03 SUBMITTALS:

A. Product Data:

1. Submit manufacturer's specifications, installation instructions and recommendations for each type of material required.

B. Samples:

1. Submit (3) three, 12 inches long samples of each joint filler or gasket.

PART 2 – PRODUCTS

2.01 MATERIALS, GENERAL:

A. Size and Shape: Provide sizes and shapes of units as shown or, if not shown, as recommended by manufacturer for joint size and condition shown. Where joint movement is a factor in a determination of size, consult with Architect to determine nature and magnitude of anticipated joint movements for the temperature and condition of project at time of installation.

B. Compressibility: Specified hardness and compressibilities are intended to establish requirements for normal or average conditions of installation and use. Where a range of hardness or compressibility is available for a product, comply with manufacturer's recommendations for specific condition of use.

C. Color: Provide each concealed material in manufacturer's standard color which has best overall performance characteristics for application shown. Provide exposed materials in black, except where another color is indicated.

D. Compatibility: Before purchase of each filler or gasket material, confirm that it is compatible with substrate, sealants and other materials in joint system.

E. Adhesives: Pressure sensitive adhesives, compatible with each material in joint system may be applied (at installer's option) to one face of joint fillers and gaskets to facilitate installation and permanent anchorage. Do not allow adhesives to contaminate sealant bond surface (if any) in joint system.

2.02 CONCRETE CONTROL/EXPANSION JOINT FILLERS:

A. Bituminous and Fiber Joint Filler:

1. Provide resilient and non-extruding type premolded bituminous impregnated fiberboard units complying with ASTM D 1751, FS HH-F-341, Type 1 and AASHO M 213.

2. Provide one of the following products:

a. Flexcell-Knight-Celotex Corporation
b. Expansion-Joint Filler; BASF/Sonneborn
c. FF-14. Asphalt Fiber-Board; Progress Unlimited
d. Fibre Expansion Joint; W.R. Meadows, Inc.
e. Conflex Fiber Expansion Control Joint Filler, JD Russell

2.03 CELLULAR/FOAM EXPANSION JOINT FILLERS:

A. Closed-Cell PVC Joint Filler:

1. Provide flexible expanded polyvinyl chloride complying with ASTM D 1667. Grade VE 41 BL (3.0 psi compression deflection); except provide higher compression deflection grades as may be necessary to withstand installation forces.

2. Provide one of the following products:

a. FF2 PVC: Progress Unlimited, Inc.
b. Vinyl "U" 1000 Series: Williams Products, Inc.

2.04 GASKETS:

A. Molded Neoprene Gasket:

1. Provide extruded neoprene or EPDM gaskets complying with ASTM D 2000, Designation 2BC 415 to 3BC 620, black (40 to 60 Shore A durameter hardness); of the profile shown or, if not shown, as required by the joint shape, size and movement characteristics to maintain a watertight and airtight seal.

2. Provide products by one of the following manufacturers:
a. D.S. Brown Company
b. Hohmann & Barnard, Inc.
c. Kirkhill Rubber Company
d. Progress Unlimited, Inc.
e. JD Russell
f. Williams Products, Inc.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Installer must examine joint surfaces of units to receive fillers or gaskets and conditions under which the work is to be performed and notify the General Contractor, in writing, of conditions detrimental to proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 INSTALLATION:

A. Comply with manufacturer's instructions and recommendations for installation of each type of joint filler or gasket required, unless more stringent requirements are shown or specified.

B. Set units at proper depth of position in joint to coordinate with other work, including installation of bond breakers, backer rods, and sealants. Do not leave voids or gaps between ends of joint filler units.

C. Recess exposed edges or faces of gaskets and exposed joint filler slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.

D. Bond ends of gaskets together with adhesive or by means as recommended by manufacturer to ensure continuous watertight and airtight performance. Miter-cut and bond ends at corners except where molded corner units are provided.

END OF SECTION 07910

SECTION 07920 - SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. The extent of each type of sealant and caulking work is indicated on the drawings, and by provisions of this section.

B. The required applications of sealants and caulking include, but are not necessarily limited to, the following general locations:

1. Isolation joints, between structure and other elements.
2. Sidewalk joints.
3. Joints at penetrations of exterior decks and slabs by piping and other services and equipment.
4. Joints between dissimilar materials.

1.03 QUALITY ASSURANCE:

A. Manufacturers: Firms with not less than 5 years of successful experience in production of types of sealants and caulking compounds required for this project.

1. Obtain elastomeric sealants from a manufacturer which will, upon request, send a qualified technical representative to the project site for purpose of advising installer on proper procedures for use of products.

B. Installer: A firm with a minimum of 5 years of successful experience in application of types of materials required.

1.04 SUBMITTALS:

A. Product Data:

1. Submit manufacturer's specifications, recommendations and installation and instructions for each type of sealant, caulking compound and associated miscellaneous material required.

B. Samples:

1. Submit (3) three, 12" long samples of each color required (except black) for each type of sealant and caulking compound exposed to view. Install sample between two strips of material similar to or representative of typical surfaces where compound will be used, held apart to represent typical joint widths.

1.05 JOB CONDITIONS:

A. Pre-Installation Meeting: At General Contractor’s direction, installer, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work shall meet with the General Contractor at the project site to review the procedures and time schedule proposed for installation of sealants in coordination with other work. Review each major sealant application required on project.

B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended temperature range for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Where joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in lower third of the manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures. Coordinate time schedule with the General Contractor to avoid delay of project.

C. Statement of Non-Compliance: Where it is necessary to proceed with installation of sealants or caulking compound under conditions which do not fully comply with requirements (because of time schedule or other reasons which the General Contractor determines to be crucial to project), prepare written statement for Owner's record

(with copy to Architect) indicating the nature of non-compliance, reasons for proceeding, precautionary measures taken to ensure best possible work, and names of individuals concurring with decision to proceed with installation.

1.06 SPECIAL PROJECT WARRANTY (GUARANTEE):

A. Sealant Warranty: Provide written warranty, signed by the General Contractor and installer, agreeing to, within warranty period of (10) ten years or longest manufacturer’s warranty available for polyurethane sealants after date of substantial completion, replace/repair defective materials and workmanship defined to include: Instances of significant leakage of water or air; failures in joint adhesion, material cohesion, abrasion resistance, strain resistance or general durability; failure to perform as required, and the general appearance of deterioration in any other manner not clearly specified in manufacturer's published product literature as an inherent characteristic of the sealant material. Warranty includes responsibility for removal and replacement of other work (if any) which conceals or obstructs the replacement of sealants.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL:

A. Colors: Provide black or other natural color where no other standard or custom color is available. Where material is not exposed to view, provide manufacturer's standard color which has best overall performance characteristics for application shown.
1. Provide manufacturer's standard colors as selected by Architect from manufacturer's standard colors.

B. Hardnesses shown and specified are intended to indicate general range necessary for overall performance. Consult manufacturer's technical representative to determine actual hardness recommended for conditions of installation and use. Upon request, Architect will furnish information concerning anticipated joint movement related to actual joint width and installation temperature. Except as otherwise indicated or recommended, provide compounds within the following range of hardness (Shore A, fully cured, at 75 degrees F.).

1. 5 to 20 for high percentage of movement and minimum exposure to weather and abrasion (including no exposure to vandalism).
2. 15 to 35 for moderate percentage of movement and moderate exposure to weather and abrasion.
3. 30 to 60 for low percentage of movement and maximum exposure to weather and abrasion (including foot traffic on horizontal joints).

C. Modulus of Elasticity: For joints subjected to movement, either thermal expansion of dynamic movement, select sealants from among available variations which have lowest modulus of elasticity which is consistent with exposure to abrasion or vandalism. For horizontal joints subject to traffic, select sealants with high modulus of elasticity as required to withstand indentation by stiletto heels. Comply with manufacturer's recommendations where no other requirements are indicated.

D. Compatibility: Before selection and purchase of each specified sealant, investigate its compatibility with joint surfaces, joint fillers and other materials in joint system. Provide only materials (manufacturer's recommended variation of specified materials) which are known to be fully compatible with actual installation conditions as shown by manufacturer's published data or certification.

2.02 SEALANTS:

A. Two-component polyurethane self-leveling sealant, complying with ASTM C 920, Type M, Grade P, Class 25.
1. Acceptable Standard
   a. Masterseal SL2; BASF Corp. Building Systems Inc.
   b. NR-200 Urexpan; Pecora Corp.
   c. THC900/THC901; Tremco
   d. Sikaflex 2cNS EZ Mix (traffic); Sika Corp.

2.03 MISCELLANEOUS MATERIALS:

A. Joint Cleaner: Provide type of joint cleaning compound recommended by sealant or caulking compound manufacturer, for joint surfaces to be cleaned.

B. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer, for joint surfaces to be primed or sealed.

C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

D. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer.

E. Provide size and shape of rod which will control joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize possibility of sealant extrusion when joint is compressed.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. The installer must examine joint surfaces, backing and anchorage of units forming sealant rabbet and condition under which sealant work is to be performed and notify the General Contractor in writing of conditions detrimental to proper completion of the work and performance by sealants. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.02 SELECTION OF MATERIAL

A. Two component elastomeric polyurethane sealants shall be used at exterior joints where weatherproofing or waterproofing is required and at exterior joints between dissimilar materials including, but not limited to, the following locations:

1. Joints in concrete site improvements (sidewalks, ramps, retaining walls, etc.) and the joint between the concrete slabs and dissimilar materials.
2. Sealant in pipe sleeves where materials perforate the exterior slab.
3. Perimeter of exterior concrete slabs or concrete curbs which abut vertical surfaces.
4. Exterior joints between dissimilar materials where the joining of the two surfaces leaves a gap between the meeting materials or components as may

be dictated by the various methods of construction to make watertight.

5. Exterior locations which are noted "caulked" or "sealant" and not specifically listed herein or included in the work of other sections of the Specifications.

B. Two part self-leveling polyurethane sealants shall be used for exterior horizontal joints subject primarily to pedestrian traffic and light and moderate vehicular traffic.

3.03 JOINT SURFACE PREPARATION:

A. Clean joint surfaces immediately before installation of sealant compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant compound.

B. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with paragraph 4.3.9. of FS TT-S-00227E has successfully demonstrated that sealant bond is not impaired by coating or treatment. If laboratory test has not been performed or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.

C. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

D. Roughen joint surfaces on vitreous coated and similar non-porous materials, where sealant manufacturer's data indicated lower bond strength than for porous surfaces. Rub with fine abrasive to produce a dull sheen.

3.04 INSTALLATION:

A. Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

B. Prime or seal joint surfaces where shown or recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

C. Install sealant backer rod for liquid sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.

D. Install bond breaker tape where shown and where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

E. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

F. Install sealants to depths as shown or if not shown as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead.
   1. For sidewalks, pavement, and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width and neither more than 5/8" deep nor less than 3/8" deep.
   2. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.
   3. For joints sealed with non-elastomeric sealants, fill joints to a depth in the range of 75% to 125% of joint width.

G. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces or to migrate into voids of adjoining surfaces including exposed aggregate panels and similar rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces but either primer/sealer or the sealant compound.

H. Remove excess and spillage of compounds promptly as the work progresses. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage without damage to adjoining surfaces or finishes.

3.05 CURE AND PROTECTION:

A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability. Do not cure in a manner which would significantly alter materials modulus of elasticity or other characteristics.

B. Installer shall advise the General Contractor of procedures required for curing and protection of sealants during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of the Owner's acceptance.

END OF SECTION 07920

SECTION 09614 – ADA REPLACEABLE CAST IN PLACE DETECTABLE WARNING SURFACES

PART 1. GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specifications Section, apply to this Section.

1.02 DESCRIPTION

A. This Section specifies furnishing and installing Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles where indicated. Note: Provide detectable/tactile warning surface tiles across all ramp locations whether indicated on drawings or not. Not recommended for asphalt applications.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer’s literature describing products, installation procedures and routine maintenance.

B. Samples for Verification Purposes: Submit (2)two tile samples minimum 6” x 6” of the kind proposed for use.

C. Shop Drawings are required for products specified showing fabrication details, composite structural system, tile surface profile, fastener and anchor locations, plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.

D. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratories to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications. All tests shall be conducted on a Replaceable Cast In Place Detectable Tactile Warning Surface Tile system as certified by a qualified independent testing laboratory and be current within a 24 month period.

E. Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory as required.

1.04 QUALITY ASSURANCE

A. Provide Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles and accessories as produced by a single manufacturer with a minimum of three (3) years experience in the manufacturing of Cast In Place Detectable/Tactile Warning Surface Tiles.

B. Installer's Qualifications: Engage an experienced installer certified in writing by Replaceable Cast In Place Detectable/Tactile Warning Surface Tile manufacturer as qualified for installation, who has successfully completed installation similar in material, design, and extent to that indicated for Project.

C. Americans with Disabilities Act (ADA): Provide Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES).

D. California Code of Regulations (CCR): Provide only approved DSAAC detectable warning products as provided in the California Code of Regulations (CCR) Title 24, Section 1112A.9 and 1127B.5 for "Curb Ramps" and Section 1133B.8.5 for "Detectable Warnings at Hazardous Vehicular Areas".

E. Vitrified Polymer Composite (VPC) Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles shall be an epoxy polymer composition with an ultra violet stabilization coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2" height, 0.9" base diameter, and 0.45" top diameter, spaced center-to-center 3.4" as measured on a diagonal and 2.35" as measured side by side. For wheelchair safety the field area shall consist of a non-slip

surface with a minimum of 40 - 90° raised points 0.045" high, per square inch; "Armor-Tile" as manufactured by Engineered Plastics Inc., Tel: 800-682-2525, or approved equal.

1. Dimensions: Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:
   Length and width: 24" x 48" nominal or as indicated on drawings.
   Depth: .50 (1/2") (+/-) 5% max.
   Face Thickness: 0.1875 (3/16") (+/-) 5% max.
   Warpage of Edge: 0.5% max.
   Fasteners/Anchors: 11 min.
2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
3. Slip Resistance of Tile when tested by ASTM C1028-96 the combined Wet and Dry Static Co-Efficient of Friction not to be less than 0.80 on top of domes and field area.
4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 PSI.
5. Tensile Strength of tile when tested by ASTM D 638-03 not to be less than 19,000 PSI.
6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 PSI.
7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining – 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
8. Abrasive Wear of Tile when tested by BYK – Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome

representing the average of three measurement locations per sample.

9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
10. Fire Resistance of Tile when tested to ASTM E84-05 flame spread shall be less than 15.
11. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. lb f/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.
12. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result-$\Delta E < 4.5$, as well as no deterioration, fading or chalking of surface of tile color No. 33538.
13. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1026 shall show no evidence of cracking, delaminating, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.
14. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.
15. AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Replaceable Cast In Place Tile shall be mounted on a concrete platform with 1/32" airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb. individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.

1.05 DELIVERY, STORAGE AND HANDLING

A. Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy plastic wrappings

to protect tile from concrete residue during installation and tile type shall be identified by part number.

B. Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles shall be delivered to location at building site for storage prior to installation.

1.06 SITE CONDITIONS

A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the general public. Provide barricades or screens to protect the general public.

1.07 GUARANTEE

A. Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of (5) five years from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. The Vitrified Polymer Composite (VPC) Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles specified is based on Armor-Tile manufactured by Engineered Plastics Inc. (800-682-2525) existing engineered and field tested products, which have been in successful service for a period of (3) three years are subject to compliance with requirements, may be incorporated in the work and shall meet or exceed the specified test criteria and characteristics.

B. Color: Color shall be homogeneous throughout the tile. Tiles are available in Yellow conforming to Federal Color No. 33538, Light Grey (Federal Color No. 26280), Dark Grey (Federal Color No. 36118), Onyx Black (Federal Color No. 17038), Pearly White (Federal Color No. 37875), Brick Red (Federal Color No. 22144), Ocean Blue (Federal Color No. 15187), Ochre Yellow (Federal Color No. 23594), and Colonial Red (Federal Color No. 20109). Color to be selected by Architect.

PART 3. EXECUTION

3.01 INSTALLATION

A. During Replaceable Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

B. Prior to placement of the Replaceable Cast In Place Detectable/Tactile Warning Surface Tile system, review manufacturer’s instructions and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Project Engineer.

C. The specifications and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.

D. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 – 7 to permit solid placement of the Replaceable Cast In Place Detectable/Tactile Warning Surface Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as sandbags shall be placed on tile.

E. The concrete pouring and finishing operations require typical mason’s tools, however, a 4’ long level with electronic slope readout, and 10lb. sandbags are specific to the installation of the Replaceable Cast In Place Detectable/Tactile Warning Surface Tile system.

F. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.

G. When preparing to set the tile, it is important that no concrete be removed in the area to accept the tile. It is imperative that that installation technique eliminates any air voids under the tile. Gaps in the tile perimeter allow air to escape during the installation process.

H. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed true and square to the curb edge in accordance with the contract drawings. The Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

I. In cold weather climates it is recommended that the Replaceable Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp. This installation will reduce the possibility of damage due to snow clearing operations. Care should be taken to finish the concrete on the side of the tile with the lower elevation, adding channels to allow water to drain from the field surface of the tile.

J. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates.

Ensure that the field surface of the tile is flush with the surrounding concrete and back of curb so that no ponding is possible on the tile at the back side of curb.

K. While concrete is workable, a 1/8” radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile’s perimeter, flush to the field level of the tile.

L. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external force placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

M. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Suitable weights of 10 to 25 lb. each may be required to be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

N. Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

O. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

3.02 REPLACING TILES, PROTECTING AND MAINTENANCE

A. Protect tiles against damage during construction period to comply with Tactile Tile manufacturer’s specification.

B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.

C. Replace tiles by method specified by Tactile Tile manufacturer.

D. Comply with manufacturer’s maintenance manual for cleaning and maintaining tile surface. It is recommended to perform annual inspections for safety and tile integrity.

END OF SECTION 09614