

**INVITATION TO BID
BID NO. 9906
NILES CENTER DEMOLITION PROJECT
FOR THE TROY SCHOOL DISTRICT**

The Troy School District will receive firm, sealed bids for all labor, material, equipment and all other services to complete Bid No. 9906 Niles Center Demolition for the Troy School District.

Specifications and proposal forms can be obtained online at <http://www.troy.k12.mi.us>. From the main page click the "Business Services" tab listed under "Departments", then click "Purchasing" and scroll down to locate and access the bid document.

Your proposal and two copies marked "**Bid No. 9906 Niles Center Demolition Project**" must be delivered no later than 2:00 p.m., Thursday, March 19, 2020, Troy School District Maintenance/Operations and Purchasing Offices, 1140 Rankin, Troy, MI 48083, at which time all bids will be publicly opened and read aloud immediately thereafter. Bid proposals received after this time will not be considered or accepted.

A pre-bid walk through has been scheduled for 3:15 p.m., Monday, March 9, 2020, at Niles Center, 201 West Square Lake Road, Troy, MI 48098. All questions regarding the services specified, the bid specified, or the bid terms and conditions will be accepted in writing ONLY and subsequently answered through an addendum to all interested parties. Questions must be received no later than noon, Friday March 13, 2020; at no other time prior to the bid opening will questions/concerns be addressed or accepted and may be faxed to: 248.823.4077, or emailed as a Word document to: PurchasingOffice@troy.k12.mi.us.

All bidders must provide familial disclosure in compliance with MCL 380.1267 and attach this information to the bid proposal. The bid proposal will be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the owner or any employee of the bidder and any member of the Troy School Board or the Troy School Districts Superintendent. Also, a sworn and notarized Affidavit of compliance for the Iran Economic Sanctions Act certifying the vendor does and will comply with Public Act 517 of 2012 shall accompany all proposals. Both forms will be enclosed in the specification's booklet that shall be used for this purpose. The District will not accept a bid proposal that does not include these sworn and notarized disclosure statement.

In accordance with Michigan Compiled Laws Section 129.201, successful bidders whose proposals are \$50,000 or more, for any bid category, will be required to furnish a U.S. Treasury Listed Company Performance and Payment Bond in the amount of 100% of their bid. The cost of the Bond shall be identified within each proposal.

The Troy Board of Education reserves the right to accept or reject any or all bids, either in whole or in part; to award contract to other than the low bidder; to waive any irregularities and/or informalities; and in general to make awards in any manner deemed to be in the best interest of the owner.

Purchasing Department
Troy School District
1140 Rankin
Troy, MI 48083

INSTRUCTIONS TO BIDDERS

PROPOSAL/INTENT

1. The Troy School District will receive firm, sealed bids for all labor, material, equipment and all other services to complete Bid No. 9906 Niles Center Demolition.
2. Proposals will be submitted only on the forms provided, will be enclosed in a sealed envelope marked with the name of the bidder, the title of the work and must be delivered to Troy School District Maintenance/Operations and Purchasing Offices, 1140 Rankin, Troy, MI 48083, no later than 2:00 pm, Thursday, March 19, 2020, at which time all bids will be publicly opened and read aloud immediately thereafter. Bid proposals received after this time will not be considered or accepted. Oral, telephone, fax or electronic mail bids are invalid and will not receive consideration. Submit one original and two copies.
3. Proposals will be made in conformity with all the conditions set forth in the specifications. All products must conform to the specifications.
4. A pre-bid walk through has been scheduled at 3:15 p.m., March 9, 2020, at Niles Center, 201 West Square Lake Road, Troy, MI 48098. Questions must be received no later than noon, Friday, March 13, 2020.
5. Bidder shall be reputable and a recognized organization, with at least five (5) years successful experience on work of this type and scope, of equal or better quality than this project.
6. References in the specifications to any article, product, material, fixture, form or type of construction, etc., by proprietary name, manufacturer, make or catalog number will be interpreted as establishing a standard quality of design and will not be construed as limiting proposals.
7. Bid bond or certified check, for an amount not less than five (5%) percent of the amount of the bid, must accompany each bid. Failure to submit proper bid security shall constitute rejection of bid.
8. A performance bond shall be required for the project if the cost is in excess of \$50,000 and must be listed separately on the proposal form as an individual line item.
9. A completed Familial Disclosure and an Iran Economic Sanctions form must be included with each proposal submitted or the proposal will not be accepted, please note these forms must be notarized.
10. The Troy Board of Education reserves the right to accept or reject any or all proposals either in whole or in part; to waive any irregularities and/or informalities; and in general to make awards or cancel this proposal, if deemed to be in the best interests of the owner.

SCOPE

This bid includes Niles Center Demolition per the attached documents. Proposals will be on a line item lump sum basis, according to the schedule listed below and where specified only the qualified products listed will be considered in this proposal.

WARRANTY

All material and equipment will be guaranteed to be free from defects in both workmanship and materials for no less than two years from date of receipt/installation. If manufacturer warranty exceeds this minimum requirement, the manufacturer warranty will prevail. Any item(s) found to be defective will be replaced or repaired within seven working days at Vendor(s) expense.

WITHDRAWAL OF BIDS

Any bidder may withdraw their bid at any time prior to the scheduled time for receipt of bids. No proposal may be withdrawn until after 45 days after bid opening.

FIRM PRICING

Unit pricing will prevail when computing total quantity on bids. No price allowance or extra consideration on behalf of the bidder will subsequently be allowed by reason of error or oversight on the part of the bidder. The successful bidder(s) will hold bid prices firm for all purchase orders placed for a period of approximately one full year.

PERMITS, FEES AND REGULATIONS

The Contractor shall obtain and pay for all permits, assessments, fees, bonds, and other charges as necessary to perform and complete the work of this contract, including disconnection charges, capping and unplugging utilities.

The Contractor shall be responsible for obtaining all permits and licenses necessary for the proper completion of project. Permits and licenses are available from the appropriate agencies having jurisdiction. The Contractor shall give all notices, pay all fees and comply with all laws, ordinances, rules and regulations bearing on the work. At the completion of the project, the Contractor will provide to the District all paperwork related to the full execution of the permits(s), including all payments and inspections.

If any of the work of the Contractor is done contrary to such laws, ordinance rules and regulations without such notice, he shall bear all costs arising therefrom. The Contractor shall include all cost and taxes in its bid, and make proper provisions for payment of all other State and Federal applicable taxes, fees or other costs.

TAXES

Troy School District is not automatically exempt from State of Michigan Sales and Use Taxes. The District must pay these taxes when materials are to be incorporated into reality. Materials that are permanently attached i.e lockers, built-in, incorporated or otherwise made part of the structure all applicable taxes shall be paid by the Vendor. Troy School District shall not be responsible for any taxes that are imposed on the Vendor. Furthermore, the Vendor understands that it cannot claim exemption from taxes by virtue of any exemption that is provided to Troy School District.

DELIVERY/INSTALLATION

Time of delivery is part of the consideration. It is understood that the bidder agrees to deliver prepaid to the schools, specified from the resulting contract, all items. All cost of delivery, drayage, freight, packing, unpacking, and setup are to be included in the prices bid.

The Contractor is responsible for removing from the project all waste materials and rubbish resulting from his operations and installation including all packing cartons and debris. Removal is to occur on a daily basis. Failure to do so will result in the Owner doing so and the cost thereof shall be charged to the Contractor as a deduction in his contract price.

The Contractor shall provide an adequate number of qualified, experienced installers, in harmony with other works at the site.

BID SECURITY

Bid Bond or certified check, for an amount not less than five (5%) percent of the amount of the bid, must accompany each bid. The check or bond of each unsuccessful bidder will be returned within ten (10) days after the bid is awarded. Failure of any accepted bidder to enter into a contract to complete the specified work may forfeiture of his bid security. Failure to submit proper bid security shall constitute rejection of bid.

PERFORMANCE BOND/PAYMENT BOND

Within fourteen (14) days after date of issuance of written notice of selection for the award of a contract, which shall be considered as the notice to proceed, the successful bidder shall enter into a contract with the Owner and shall execute and file with the Owner, the following in the amount 100% equal to full contract sum.

A performance bond shall be required for the project if the cost is in excess of \$50,000 and must be listed separately on the proposal form as an individual line item. The Performance Bond must insure the faithful performance of all provisions of the contract and satisfactory completion of the specified work, within the time agreed upon.

The payment bond must insure the payment and protection of claimants supplying labor or materials to the principal contractor or his subcontractors in the prosecution of the work provided for in the contract. The successful contractor's bond company must be listed by the State of Michigan as a licensed carrier and have an excellent or superior rating from AM Best Company.

SAFETY

Under the "General Conditions of the Contract for Construction" of the contract to be awarded, the Contractor;

- a) shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures;
- b) shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the contract;
- c) shall take reasonable precautions for safety of all persons who may be affected, including employees of the Contractor and Subcontractor; and
- d) shall have an accident prevention representative at the site.

The general conditions of the contract for construction and the agreement also require that the Contractor indemnify the Owner in the event of certain claims arising out of the performance of the work.

INSURANCE REQUIREMENTS

The Contractor shall protect, defend and indemnify the Owner, its officers, agents, servants, volunteers, and employees from any and all liabilities, claims, liens, demands, and costs of whatsoever kind and nature which may result in injury or death to any persons, and for any result in injury or death to any person, and for loss or damage to any property, including property owned or in the care, custody, or control of the Owner in connection with or in any way incident to or arising out of the occupancy, use, with this Agreement resulting in whole or in part from negligent acts or omissions of the Contractor, any Subcontractor, or any employee, agent or representative of the Contractor or any Subcontractor.

The Contractor shall maintain, at its expense, during the term of this contract the following insurance:

- a) Worker's Compensation Insurance with statutory limits and Employer's Liability Insurance with a minimum limit of \$1,000,000 each occurrence.
- b) Comprehensive General Liability Insurance with a minimum combined single limit of \$1,000,000 per occurrence, \$1,000,000 aggregate, in the same amount made for bodily injury and property damage. The policy is to include products and completed operations, cross liability, broad form property damage, independent contractors, and contractual liability coverage. The policy shall be endorsed to provide sixty (60) days written notice to the District of any material change of coverage, cancellation, or non-renewal of coverage.
- c) If Subcontractors are likely to be used, the Comprehensive General Liability policy shall include coverage for independent Contractors.
- d) Owner's Contractor's Protective Policy-comprehensive in the name of the Owner, with a minimum combined single limit of \$1,000,000 per occurrence in the same amount for bodily injury or property damage.
- e) Automobile Liability insurance covering all owned, hired, and non-owned vehicles with personal protection insurance and property insurance to comply with the provisions of the Michigan no-fault Insurance Law, including residual liability insurance with a minimum combined single limit of \$1,000,000 each occurrence of bodily injury and property damage.
- f) All insurance policies shall be issued by companies licensed to do business in the State of Michigan. The companies issuing the policies must be domestic (on-shore) companies and have an A rating by AM Best.
- g) The Contractor shall be responsible for payment of all deductibles contained in any insurance policy required in this contract.

COMPLIANCE WITH SCHOOL SAFETY INITIATIVE LEGISLATION

Meeting the requirements of the School Safety Initiative Legislation, being MCL 380.1230, 80.1230a, 380.1230c, 380.1230d and 380.1230g.

The Bidder acknowledges and agrees that the Bidder will have any and all of its installation personnel (including sub-contractors) subjected to criminal history and background checks. **Personnel that fall into this group will be working on District premises for more than one continuous week.** Criminal history and background checks will be done within a year of the beginning of the project and should be completed before worked begins on this project.

The Bidder is required to provide written documentation listing all personnel who fall into the group indicated in the above paragraph. The documentation will also verify that none of the personnel have a "listed offense" as indicated below. This documentation is to be provided before the beginning of the project and updated as necessary for any additions or subtractions from the list as long as the project lasts.

The Bidder shall indemnify, defend and hold the District, its employees, Board of Education, and each member thereof, agents and consultants, harmless from and against any and all claims, counter-claims, suits, debts, demands, actions, judgments, liens, liabilities, costs, expenses, including actual attorney's fees and actual expert witness fees, arising out of or in connection with any violation of, or the Bidder's failure to comply with the above paragraphs.

The Bidder shall be responsible for all costs and expenses associated with the above-required criminal history and background checks.

LISTED OFFENSES

1. MCL 750.145a - Accosting, enticing or soliciting child (less than 16 years of age) for immoral purposes.
2. MCL 750.145b - Accosting, enticing or soliciting child (less than 16 years of age) immoral purposes – second or subsequent offenses.
3. MCL 750.145c - Involvement in child sexually abusive activity or material, including possession of child sexually abusive material ("child" is a person less than 18 years of age who has not been legally emancipated.)
4. MCL 750.158 - Crime against nature (i.e., sodomy and bestiality) if the victim is an individual less than 18 years of age.
5. A third of subsequent violation of any combination of the following:
 - a. MCL 750.167(1)(f) - indecent or obscene conduct in a public place;
 - b. MCL 750.335a - indecent exposure;
 - c. A local ordinance of a municipality substantially corresponding to a section described in (a) or (b), *supra*.
6. Except for juvenile disposition or adjudication, a violation of:
 - a. MCL 750.338 - gross indecency between males; fellatio or masturbation;
 - b. MCL 750.338a - gross indecency between females; oral sex;
 - c. MCL 750.338b - gross indecency between male and female persons;if the victim is an individual less than 18 years of age.
7. MCL 750.349 - Kidnapping, if victim is an individual less than 18 years of age.
8. MCL 750.350 - Kidnapping; child under 14 years of age with intent to detain or conceal from child's parent or legal guardian.
9. MCL 750.448 - Soliciting or accosting by a person 16 years of age or older, if victim is an individual less than 18 years of age.
10. MCL 750.455 - Pandering
11. MCL 750.520b - First degree criminal sexual conduct.
12. MCL 750.520c - Second degree criminal sexual conduct.
13. MCL 750.520d - Third degree criminal sexual conduct.
14. MCL 750.520e - Fourth degree criminal sexual conduct.
15. MCL 750.520g - Assault with intent to commit criminal sexual conduct.

16. Any other violation of a law of the state or a local ordinance of municipality that by its nature constitutes a sexual offense against an individual who is less than 18 years of age.
17. MCL 750.10a - Offense by sexually delinquent person (i.e., "any person whose sexual behavior is characterized by repetitive or compulsive acts which indicate a disregard of consequences or the recognized rights of others, or by the use of force upon another person in attempting sexual relations of either a heterosexual or homosexual nature, or by the commission of sexual aggressions against children under the age of 16").
18. An attempt or conspiracy to commit an offense described in (1) through (17).
19. An offense substantially similar to an offense described in (1) through (17) under a law of the United States, any state, or any country or any tribal or military law.

TERMINATION BY THE DISTRICT FOR CONVENIENCE

The District may, at any time, terminate the Contract for the District's convenience and without cause.

Upon receipt of written notice from the District of such termination for the District's convenience, the Contractor shall:

- a) Cease operations as directed by the District in the notice;
- b) Take actions necessary, or that the District may direct, for the protection and preservation of the Work; and
- c) Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.

Owner Is An Equal Opportunity Employer

The Owner is an Equal Opportunity Employer. Pursuant to the Executive Order 11246 as amended, you are advised that under the provisions of this order, Contractors and Subcontractors are obligated to take affirmative action to provide equal opportunity without regard to race, creed, color, national origin, age or sex.

Michigan Right to Know Law

Troy School District will comply with the Michigan Right to Know Law by informing Contractors of hazardous chemicals to which they may be exposed. All Contractors will be required to provide Material Safety Data Sheets for any hazardous chemicals brought to the workplace. The Contractor shall comply with all applicable provisions of the Occupational Safety and Health Act for the duration of the specified work.

Asbestos Hazard Emergency Response Act

As required by the Environmental Protection Agency Asbestos Hazard Emergency Response Act, each school district is responsible for providing contractors with information regarding locations of known or assumed asbestos containing material prior to the Contractor entering a building under the school district's jurisdiction. The successful bidder will be required to complete the school district's Contractor Notification forms.

Notification of Assumed Lead-Containing Materials

The intent of this section is to formally notify all Contractors and Sub-Contractors applying for or bidding on work covered within this specification that, due to the age of the facilities within this District, there is the presumption that building components do contain lead-based paint pursuant to OSHA definition. The District has not conducted lead-based paint inspections. As a result, all Contractors and Sub-Contractors bidding must assume that building components do contain lead-based paint.

Furthermore, all awarded Contractors and Sub-Contractors shall be responsible to comply with all applicable Federal and Michigan State lead regulations including, but not limited to, 29 CFR Part 1926.62 of the OSHA Lead Construction Standard, (Part 603 of the Michigan State Standards). All costs associated with regulatory compliance shall be borne by the Contractor and/or Sub-Contractor.

General Conditions

The District reserves the right to accept or reject any or all proposals, to waive irregularities, and to accept a proposal which, in the District's opinion, is in the District's best interest.

The District reserves the right to declare as non-responsive, and reject, any bid which is incomplete or where material information requested is not furnished, or where indirect or incomplete answers or information is provided.

In the event, the Administration Building is closed due to unforeseen circumstances on the day Proposals are due, Proposals will be due at the same time on the next day that the District and/or the Administration Building is open.

Negligence in preparation, improper preparation, errors in, or omissions from, proposal shall not relieve a bidder from fulfillment of any and all obligations and requirements of the proposed Contract Documents.

The District expects that the awarded bidder will complete the work as outlined in the specifications for the amount bid by the bidder. Any additional costs above the amount bid and awarded, must be approved by the District in advance of any work.

Voluntary alternates for bids are acceptable but should NOT be put in the space for the Base Bid on the Bid Response Form but on an attached sheet, clearly labeled Voluntary Alternative. Such Alternates should be described in enough detail for the District to understand the Bidder's intent.

Owner may choose to conduct testing to verify correct products and installation. If the materials and installation are found not to be per spec, owner will require subsequent tests to be performed by Owners testing company at contractors' expense.

Any exceptions to the terms and conditions contained in this RFP or any special considerations or conditions requested or required by the Contractor MUST be specifically enumerated by the Contractor and be submitted as part of its Proposal, together with an explanation as to the reason such terms and conditions of this RFP cannot be met by, or in the Contractor's opinion should not be applicable to, the Contractor. The Contractor shall be required and expected to meet the specifications and the requirements as set forth in this RFP in their entirety, except to the extent exceptions or special considerations or conditions are expressly set forth in the Contractor's Proposal and those exceptions or special considerations or conditions are expressly accepted by the District.

No responsibility shall attach to the District, or the authorized representatives of either one, for the premature opening of any proposal, which is not properly addressed and identified.

The Contract Documents, as outlined in the executed Agreement, shall imply the inclusion of the entire agreement between the parties thereto, and the Contractor shall not claim any modification thereof resulting from any representation or promise made at any time by an officer, agent or employee of the District or by any other person.

Opening and Awarding of Bids

Bids will be publicly opened and read aloud at the Troy School District Maintenance/Operations and Purchasing Offices, 1140 Rankin, Troy, MI 48083, at 2:00 p.m. Thursday, March 19, 2020.

The recommendation for award will be submitted to the Board of Education at the regular Board of Education Meeting to be held on Tuesday, April 21, 2020.

Scope of Work \ Specifications

Work Schedule

- New Continuing Education Building Complete 7/13/20.
- Niles Center Move Out Week of 7/13/20.
- Niles Center Abatement Week of 7/20/20 to Week of 8/10/20.
- Niles Center Demolition Week of 8/17/20 to Week of 9/14/20.
- Niles Center Site Work Week of 9/21/20 to Week of 9/28/20.
- Niles Center Final Clean Up Week of 10/5/20.
- Niles Center Substantial Completion 10/9/20.
- Niles Center Final Closeout 45 days after Substantial Completion

Drawings and Specifications

Drawings

<u>#</u>	<u>Description</u>	<u>Date</u>
C-0.0	Cover Sheet	01/30/20
C-1.0	Topographic Survey	01/30/20
C-2.0	Demolition Plan	01/30/20
C-3.0	Site Plan	01/30/20
C-4.0	Grading Plan	01/30/20
C-5.0	Soil Erosion Control Plan	01/30/20
C-6.0	Utility Plan	01/30/20

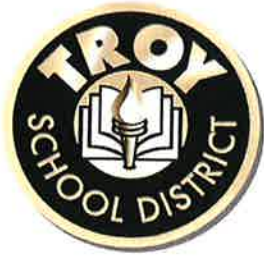
Specifications

<u>#</u>	<u>Description</u>	<u>Pages</u>
014213	Abbreviations	6
014216	Standards and Definitions	4
016000	Product Requirements	5
017300	Execution Requirements	4
017301	Field Engineering	2
017329	Cutting and Patching	5
017836	Warranties	4
024116	Structure Demolition	7
024119	Selective Site Demolition	4
024120	Selective Demolition	9
310516	Soils and Aggregates	6
311000	Site Clearing	6
312213	Rough Grading	4
312316	Excavation	3
312317	Trenching	5
312323	Fill	3
312513	Soil Erosion	3
321216	Asphalt Paving	7
321313	Concrete Paving	13
321723	Pavement Markings	5
330513	Manholes and Structures	6
334100	Storm Utility Drainage Piping	5

WORK SCOPE

OTHER ITEMS TO INCLUDE:

1. Provide a temporary fence at the same location as the soil erosion fence.
2. Provide 2 10' gates for temporary fence over the quantity shown on the documents.
3. Must maintain all adjacent areas outside the construction site in a clean and dust free fashion.
4. Include in your base bid an allowance of \$10,000. This is to be used at the Owner's discretion.
5. Include removal of all items on the site shown on the plan.
6. Fill areas where foundations are removed see plans for details.
7. Owner will remove miscellaneous bathroom accessories prior to demolition activities.
8. Owner will remove various doors and hardware prior to demolition activities.
9. Owner will remove miscellaneous small HVAC equipment such as exhaust fans, pumps and motors.
10. Contactor must remove all refrigerant and universal materials.
11. DTE and Consumers costs will be paid directly by Troy School District.
12. Contractor to include in demolition cost the cost to dispose of 25% of the loose furniture and equipment in the building as seen at pre-bid walk-through.
13. Contractor to bid project per specs if you have a voluntary alternate you would like TSD to consider add separate sheet for this including scope and cost.
14. Contractor shall consider all roofing to be ACM. The demolition contractor is responsible for this abatement.
15. **At the completion of the building demolition, the contractor to dig 6 test holes at locations determined by the owner to confirm the site is clean and debris has not been buried. It is the expectation of TSD the site shall be free of ALL construction materials.**



DUE: 2:00 pm., Thursday, March 12, 2020
PROPOSAL: BID 9906 Niles Center Demolition Project

PROPOSAL FORM

We propose to furnish all material, labor and equipment, as per the specifications, for the Troy School District, and all other services to complete BID 9906 Niles Center Demolition Project.

Base Bid Amount - \$ _____

Bond Amount – \$ _____

Grand Total \$ _____

BIDDER'S FIRM NAME _____

ADDRESS _____

CITY/STATE _____ ZIP _____

CELL NUMBER _____ FAX # _____

SIGNED BY _____ TITLE _____

TYPED NAME _____ DATE _____

E-MAIL ADDRESS _____

VENDOR: LIST FIVE RECENT REFERENCES, PREFERABLY SCHOOL DISTRICTS:

School District

Person to Contact

Phone Number

School District

Person to Contact

Phone Number

School District

Person to Contact

Phone Number

School District

Person to Contact

Phone Number

School District

Person to Contact

Phone Number

Interested vendors will note in this space only any additional information, criteria or contingencies affecting their proposal, understanding that this additional information, criteria or contingency may be utilized in the evaluation process and subsequent award.

**SWORN AND NOTARIZED FAMILIAL DISCLOSURE STATEMENT
FAMILIAR DISCLOSURE AFFIDAVIT**

The undersigned, the owner or authorized office of the below-named contractor (the 'Contractor'), pursuant to the familial disclosure requirement provided to Troy Schools, hereby represents and warrants that, excepts as provided below, no familial relationship exists between the owner or key employee of the Contractor, and any member of the Troy School Board or the Troy School Superintendent. A list of the School District's Board of Education Members and its Superintendent may be found at <http://www.troy.k12.mi.us>.

List any Familial Relationships:

Contractor:

Print Name of Contractor

By: _____

Its: _____

Subscribed and sworn before me, this _____ Seal:

day of _____, 20 ____, a Notary Public

in and for _____ County, _____

(Signature)
NOTARY PUBLIC

My Commission expires _____

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 Company, pursuant to the compliance certification requirement provided in Troy School District's Request For Proposal, the "RFP", hereby certifies, represents, and warrants that the Company and 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 the Company is awarded a contract by Troy School District as a result of the aforementioned RFP, the Company is not and will not become an "Iran Linked Business" at any time during the course of performing any services under the contract.

The Company further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of Troy School District's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date the it is determined that the person has submitted the false certification.

NAME OF COMPANY

NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

SIGNATURE

DATE

Acceptance of Proposal

The undersigned agrees to execute a Contract for work covered by this Proposal provided that he is notified of its acceptance within thirty days after the opening of the Proposal.

It is agreed that this bid will not be withdrawn until after forty-five (45) days after receipt of bids.

The undersigned affirms that the bid was developed without any collusion, undertaking, or agreement, either directly or indirectly, with any other bidder(s) to maintain the prices of indicated work or prevent any other bidder(s) from bidding the work.

BIDDER'S FIRM NAME

BUSINESS ADDRESS

TELEPHONE NUMBER

CELL NUMBER

FAX NUMBER

BY (SIGNATURE)

PRINTED NAME

TITLE

SIGNED THIS

DAY OF , 20

E-MAIL ADDRESS

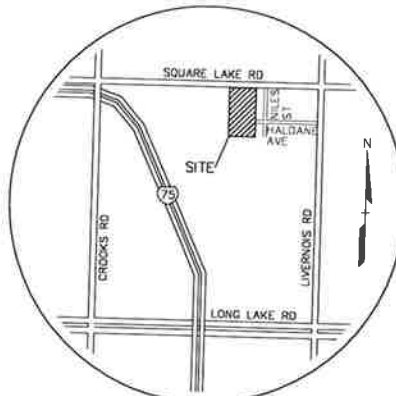
CONSTRUCTION PLANS FOR
NILES CENTER DEMOLITION
 PART OF THE NORTHEAST 1/4 OF SECTION 9, T2N, R11E
 CITY OF TROY, OAKLAND COUNTY, MICHIGAN

OWNER:

TROY SCHOOL DISTRICT
 1140 RAVEN DRIVE
 TROY, MICHIGAN 48063
 CONTACT: BOB CARSON
 PHONE: (248) 823-4087

CIVIL ENGINEER:

PEA, INC.
 2430 ROCHESTER CT, SUITE 100
 TROY, MICHIGAN 48063
 CONTACT: GREGORY BOND, P.E.
 PHONE: (248) 889-9090 EXT. 1148



LOCATION MAP
 NO SCALE

INDEX OF DRAWINGS:

- C-0.0 COVER SHEET
- C-1.0 EXISTING CONDITIONS
- C-2.0 DEMOLITION PLAN
- C-3.0 SITE PLAN
- C-4.0 GRADING AND UTILITY PLAN
- C-5.0 SOIL EROSION CONTROL PLAN
- C-6.0 NOTES AND DETAILS

CITY OF TROY STANDARD DETAIL SHEETS

- CD-1 STANDARD SOIL EROSION & GENERAL CONSTRUCTION
- CD-2 STANDARD STORM SEWER DETAILS
- CD-3 STANDARD LOCAL ROAD PAVING DETAILS

REVISIONS

NO.	DATE	DESCRIPTION
1	11/11/11	ISSUED FOR PERMIT

811
 CALL BEFORE YOU DIG
 1-800-4-A-DIG

PEA, Inc.
 4025 HURON ST. SUITE 100
 TROY, MI 48063-1111
 1-248-889-9090
 WWW.PEA-INC.COM

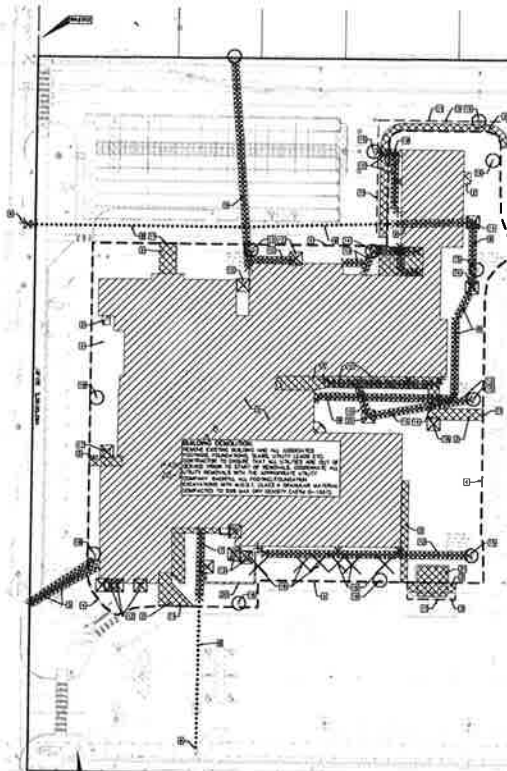
TROY SCHOOL DISTRICT
 COVER SHEET
 NILES CENTER DEMOLITION
 PART OF THE NORTHEAST 1/4 OF SECTION 9, T2N, R11E
 CITY OF TROY, OAKLAND COUNTY, MICHIGAN

DATE: 11/11/11
 DRAWN BY: GREGORY BOND
 CHECKED BY: BOB CARSON
 SCALE: AS SHOWN
 SHEET NO. C-0.0

BENCHMARKS
 10% SLOPED - NAVD83
 BM 421
 CORNER ON HYDRAULIC NORTHWEST
 SQUARE LAKE ROAD AND
 BLACKWALL DRIVE
 ELEV. = 701.44
 BM 422
 CORNER ON HYDRAULIC NORTHEAST
 CORNER OF SITE
 ELEV. = 726.82
 BM 423
 10% REMOTE SOUTH FACE OF
 POWER PILE
 ELEV. = 725.81
 BM 424
 CORNER ON HYDRAULIC WEST SIDE OF
 SITE, 400 FEET SOUTH OF SQUARE
 LAKE ROAD
 ELEV. = 723.11
 BM 425
 CORNER ON HYDRAULIC NORTHWEST
 OF FARMING LOT
 ELEV. = 723.35

FLOODPLAIN NOTE:
 BY DRAWING PLATING, SITE IS WITHIN 100' OF
 AREA DETERMINED TO BE SUBJECT OF THE 0.1%
 ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE
 RATE MAP NUMBER 170000000, DATED SEPTEMBER
 28, 2006.

SQUARE LAKE ROAD
 (MAY VARY)



CONSTRUCTION NOTE:
 THE SITE IS TO BE FULLY REDEVELOPED
 AND ALL EXISTING STRUCTURES AND UTILITIES
 SHALL BE REMOVED OR RELOCATED AS SHOWN
 ON THE PLANS.

EX. UTILITY SYMBOLS
 EX. UTILITY SYMBOLS ARE SHOWN FOR
 INFORMATION ONLY. THE CONTRACTOR SHALL
 VERIFY THE LOCATION AND DEPTH OF ALL
 UTILITIES PRIOR TO CONSTRUCTION.

- DEMOLITION LEGEND:**
- 1. REMOVE AND DISPOSE OF ALL BUILDING COMPONENTS COMPLETELY
 INCLUDING THE FLOOR, CEILING, AND EXTERIOR WALLS.
 - 2. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 3. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 4. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 5. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 6. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 7. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 8. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 9. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 10. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 11. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 12. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 13. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 14. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 15. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 16. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 17. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 18. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 19. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 20. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 21. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.
 - 22. REMOVE AND DISPOSE OF EXISTING CONCRETE FOUNDATION
 TO THE BASE OF THE FOUNDATION.

- GENERAL DEMOLITION NOTES:**
1. ALL MATERIALS TO BE REMOVED MUST BE PROPERLY STORED OR PLACED IN A DESIGNATED AREA PRIOR TO DEMOLITION.
 2. ALL DEMOLITION WORK SHALL BE COMPLETED BY THE DATE SHOWN ON THE PLANS.
 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.
 22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT.



- LEGEND**
- 1. EX. UTILITY SYMBOLS
 - 2. EX. UTILITY SYMBOLS
 - 3. EX. UTILITY SYMBOLS
 - 4. EX. UTILITY SYMBOLS
 - 5. EX. UTILITY SYMBOLS
 - 6. EX. UTILITY SYMBOLS
 - 7. EX. UTILITY SYMBOLS
 - 8. EX. UTILITY SYMBOLS
 - 9. EX. UTILITY SYMBOLS
 - 10. EX. UTILITY SYMBOLS
 - 11. EX. UTILITY SYMBOLS
 - 12. EX. UTILITY SYMBOLS
 - 13. EX. UTILITY SYMBOLS
 - 14. EX. UTILITY SYMBOLS
 - 15. EX. UTILITY SYMBOLS
 - 16. EX. UTILITY SYMBOLS
 - 17. EX. UTILITY SYMBOLS
 - 18. EX. UTILITY SYMBOLS
 - 19. EX. UTILITY SYMBOLS
 - 20. EX. UTILITY SYMBOLS
 - 21. EX. UTILITY SYMBOLS
 - 22. EX. UTILITY SYMBOLS

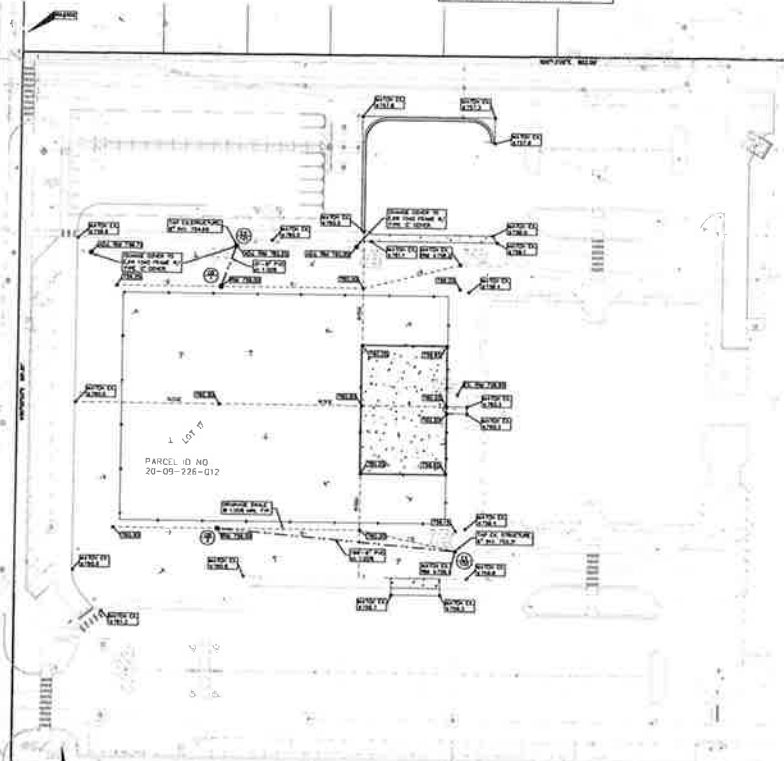


PEA, Inc.
 2150 N. 10th Ave., Suite 100
 Troy, MI 48063-1111
 Phone: 313.486.1111
 Fax: 313.486.1112
 www.pea.com

DEMOLITION PLAN
 NILES CENTER DEMOLITION
 1000 NILES CENTER DRIVE
 NILES, MI 48164
 PROJECT NO. 1000-001
 DATE: 10/1/10

C-2.0

C-4.0



18" x 48" STANDARD CONCRETE CURB AND GUTTER

CONCRETE SIDEWALK

STANDARD DUTY CONCRETE DETAIL

CHAIN LINK FENCE DETAIL

STANDARD DUTY ASPHALT DETAIL

REVISIONS

NO.	DATE	DESCRIPTION
1	01/15/10	ISSUED FOR PERMIT
2	02/10/10	REVISED TO ADD CHAIN LINK FENCE DETAIL
3	03/10/10	REVISED TO ADD STANDARD DUTY ASPHALT DETAIL

811
Call before you dig

PEA, Inc.
10000 Highway 101, Box 100
Troy, MI 48068-1000
734.246.8000
www.pea-inc.com

TROY SCHOOL DISTRICT
NOTES AND DETAILS
MILES CENTER DEMOLITION
10000 Highway 101, Box 100
Troy, MI 48068-1000

10/15/10

10/15/10

C-6.0



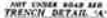
CENTRAL PIPE, BRIDGING A FRENCH ROVER

- Deflection was defined as that material placed from four (4) inches below the deck to a point twelve (12) inches above the deck.

NOTE: Check out someone **else's** car to avoid an accident at home with a stranger. It's not your car, so don't drive it.



CRUSHED STONE BEDDING



THREE UNDER ROAD BED
THEN THE INFLUENCE OF ROAD AND
TRENCH DETAIL 'B'

STORM SEWER
TRENCH DETAIL

[illegible]

TYPICAL CONCRETE ALICE BRIDGE

NOTE: unless otherwise authorized by the Copyright Clearance Center, all rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission from the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923.



Steel Grates for End Sections
See current VDDI detail
Required for 12" dia. and greater

GENERAL NOTES

- [illegible]



STANDARD STORM SEWER DETAILS
ENGINEERING DEPARTMENT

QUILLEY J HAYES CIV DOCKET



811
 Call before you dig
 1-800-4-A-DIG

For liability of conditions, complete and return this form to the appropriate authority. This form is not valid unless it is signed by the owner or authorized representative of the owner. The owner is the person or entity who is responsible for the condition. The authorized representative is the person or entity who is authorized to act on behalf of the owner. The authorized representative must be a resident of the State of New York. The authorized representative must be a resident of the State of New York. The authorized representative must be a resident of the State of New York.

CONTRACT NO. XX-XX
 PROJECT NO. XX-XX



100



© 2006 The Authors
Journal compilation © 2006 Blackwell Publishing Ltd


$$-A$$


Full working day
811
Call before you dig
1-800-4-A-DIG
www.811.org

811

1.1 The following is a list of abbreviations utilized throughout the Contract Documents.

C

B

SECTION 014213
ABBREVIATIONS

C.W.R.	Condensing Water Return	DISCONT.	Discontinuous	E/E	End-to-End
C.W.S.	Condensing Water Supply	DW.	Dishwasher	E.A.T.	Entering Air Temperature
COND.	Condensate	DISP.	Dispenser	ENTR.	Entrance/Entry
COND.	Conduit	DIST.	Distance	EP.	Epoxy
CONF.	Conference	D.P.	Distribution Panel	EQ.	Equal
CONN.	Connect	DO.	Ditto	EQUIP.	Equipment
C.A.V.	Constant Air Volume	DIV.	Divider/Division	EQUIV.	Equivalent
CONST.	Construction	DR.	Door	ESC.	Escalator
C.J.	Control Joint	D.O.	Door Opening	EST.	Estimate
CONT.	Continue/Continuous	DR.OP.	Door Operator	EXC.	Excavated
CONTR.	Contractor	DBL.	Double	EXH.	Exhaust
C.P.	Control Panel	D.A.	Double Acting	E.D.	Exhaust Duct
CONV.	Convactor	D.H.	Double Hung	E.F.	Exhaust Fan
CNVYR.	Conveyor	DWL.	Dowel	E.G.	Exhaust Grille
COR.	Corner	DN.	Down	E.R.	Exhaust Register
C.G.	Corner Guard	D.S.	Downspout	EXIST.	Existing
CORR.	Corridor/Corrugated	D.S.B.	Downspout Boot	EXP.	Expansion
CPR.	Copper	DRN.	Drain	EXP.B.	Expansion Bolt
CNTR.	Counter	D.T.	Drain Tile	E.J.	Expansion Joint
CTSK.	Countersink/Countersunk	D.T.C.	Drain Tile Connector	EXPL.P.	Explosion Proof
CRS.	Course	DWR.	Drawer	EXP'D.	Exposed
COV.	Cover	DWG.	Drawing	EXT'N.	Extension
COV.PL.	Cover Plate	D.F.	Drinking Fountain	EXT.	Exterior
C.C.T.	Cubical Curtain Track	D.B.	Dry Bulb	E.H.	Extra Heavy
CU.FT.	Cubic Feet/Cubic Foot	D.S.P.	Dry Stand Pipe	EXTR.	Extruded
C.F.M.	Cubic Feet Per Minute	DBWTR.	Dumbwaiter	E.S.P.	External Static Pressure
C.Y.	Cubic Yard	DUP.	Duplicate		
CULV.	Culvert	D.DR.	Dutch Door		
C.D.	Cup Dispenser				
CYL.	Cylinder				
CYC.	Cycles				
	D		E		F
DMPR.	Damper	EA.	Each	FAB.	Fabricated/Fabric
DMPFG.	Dampproofing	E.F.	Each Face	F/F	Face-to-face
D.L.	Dead Load	E.W.	Each Way	F. FIN.	Factory Finish
DB.	Decibel	E	East	F.C.U.	Fan Coil Unit
D.	Deep	ELAST.	Elastomeric	F.S.	Far Side
DEG.	Degree	FLASH.	Flashing	FAS.	Fastener
DMT.	Demountable	ELAST W.P.	Elastomeric Waterproofing	FDR.	Feeder
PARTN.	Partition	E.S.R.	Elastomeric Sheet Roofing	FT.	Feet/Foot
DEPT.	Department	E.D.H.	Electric Duct Heater	F.P.M.	Feet Per Minute
DEPR.	Depressed	ELEC.	Electric/Electrical	FN.	Fence
DES.	Design	ELEC. CL.	Electric Closet	FBD.	Fiberboard
DET.	Detail	ELEC.CAB.	Electrical Cabinet	FIG.	Figure
D.E.CO.	Detroit Edison Co.	E.C.	Electrical Contractor	FIN.	Finish/Finished
DIAG.	Diagonal	E-	Electrical Drawing	FIN.FLR/ F.F.	Finish Floor
DGM.	Diagram	E.P.	Electrical Panel	F.T.R.	Finned Tube Radiation
DIA.	Diameter	E.R.P.	Electric Radiant Panel	F.A.	Fire Alarm
DIFF.	Diffuser	E.U.H.	Electric Unit Heater	F.A.C.P.	Fire Alarm Control Panel
DIM.	Dimension	EWC.	Electric Water Cooler	F. BRK.	Fire Brick
D.R.	Dining Room	E.W.H.	Electric Water Heater	F.D.	Fire Damper
DIR.	Directory	ELEC.OPER.	Electrically Operated	F.E.	Fire Extinguisher
D.D.C.	Direct Digital Control	EL.	Elevation	F.E.C.	Fire Extinguisher Cabinet
DISC.	Disconnect	ELEV.	Elevator	F.H.C.	Fire Hose Cabinet
		EMERG.	Emergency	F.H.	Fire Hydrant
		ENCL.	Enclosure	F.L.	Fire Line
		ENGR.	Engineer	F.R.	Fire Retardant/ Fire Rated

SECTION 014213
ABBREVIATIONS

F.V.C. Fire Valve Cabinet
FP. Fireplace
FPRFG. Fireproofing
FIXT. Fixture
FLG. Flange
FLASH. Flashing
F.H.M.S. Flat Head Machine Screw
F.H.W.S. Flat Head Wood Screw
F.C. Flexible Connection
FLR. Floor
F.CO. Floor Cleanout
F.D. Floor Drain
FLR.FIN. Floor Finish
FLUOR. Fluorescent
FLDG. Folding
FTG. Footing
FMBD. Formboard
FDN. Foundation
FR. Frame
FRMG. Framing
F.A.I. Fresh Air Intake
FRZR. Freezer
F.L.A. Full Load Amperes
F.S. Full Size
FURN. Furnish/ Furnished

G

GA. Gauge
GAL. Gallon
G.P.H. Gallons Per Hour
G.P.M. Gallons Per Minute
GALV. Galvanized
GALV.I. Galvanized Iron
G. Gas
GKT. Gasket
G.V. & B. Gate Valve And Box
GA. Gauge
GEN'L. General
GL. Glass
GLZ. Glazing
G.H.T. Glazed Hollow Tile
G.B. Grab Bar
GR. Grade/Grille
GB. Grade Beam
GRAT. Grating
G.L. Grid Line
GRN. Granite
G.S. Grease Separator
G.T. Grease Trap
GND. Ground
G.F. Ground Fault
GT. Grout
GYP. Gypsum
GYP.BD. Gypsum Board

H

HNDCP. Handicapped
H.R. Handrail
H.BD. Hardboard
HDWE. Hardware
HDWD. Hardwood
HD. Head
HDR. Header
H.O.A. Hands-Off-Auto
HD. Head
H.A.GL. Heat Absorbing Glass
H.R.U. Heat Recovery Unit
HTR. Heater
HTG. Heating
H/V Heating And Ventilating
H.V.A.C. Heating, Ventilating, and Air Conditioning
H.H.W.R. Heating Hot Water Return
H.H.W.S. Heating Hot Water Supply
HGT. Height
HEX. Hexagon
H. High
H.I.D. High Intensity Discharge
H.P. High Point
H.PR. High Pressure
H.S. High Strength
H.S.B. High Strength Bolt
H.V. High Voltage
HWY. Highway
HSTWY. Hoistway
H.C. Hollow Core
H.M. Hollow Metal
HK. Hook
HORIZ. Horizontal/
Horizontally
HP. Horsepower
H.B. Hose Bibb
H.S.P. Hose Stand Pipe
H.V.C. Hose Valve Cabinet
HOSP. Hospital
H.W. Hot Water
H.W.R. Hot Water Return
H.W.S. Hot Water Supply
HR. Hour
H.O. Hub Outlet
HYD. Hydrant/Hydraulic
H. Hydrogen

I

I.D. Identification
INCAND. Incandescent
IN. or " Inch/ Inches
INCIN. Incinerator
INCL. Include/ Including
I.W. Indirect Waste
INFO. Information

I.D. Inside Diameter
I.F. Inside Face
INST'L. Install/ Installation
INSUL. Insulate/ Insulation
I.H. Intake Hood
INT. Interior
INTER. Intermediate
INV. Invert
I.E. Invert Elevation

J

J.C. Janitor Closet
JT. Joint
JST. Joist
J.B. Junction Box
JR. Junior

K

K.P. Kick Plate
KV. Kilovolt
KV.A. Kilovolt Ampere
KW. Kilowatt
K. Kip (1000#)
KIT. Kitchen
K.D. Knock Down
K.O.P. Knock-Out Panel

L

LBL. Label
LAB. Laboratory
LAD. Ladder
L.B. Lag Bolt
LAM. Laminate/ Laminated
LDG. Landing
L- Landscape Drawing
Number
LGE. Large
LDRY. Laundry
LAV. Lavatory
L.A.T. Leaving Air
Temperature
L.H. Left Hand
L.H.R.B. Left Hand Reverse
Bevel
LGTH. Length
LEV. Level
LIB. Library
LT. Light
LPRF. Lightproof
LTG. Lighting
L.P. Lighting Panel
L.R.P. Lighting Receptacle
Panel
LTWT. Lightweight

TMP13176B
014213-4

05/09/19 ISSUED FOR BIDS
BID PACKAGE NO. 25

SECTION 014213
ABBREVIATIONS

P.S.F. Pounds Per Square Foot
P.S.I. Pounds Per Square Inch
P.C.F. Pounds Per Cubic Foot
P.P. Power Panel
P/C Precast
P.T.C. Precast Terrazzo Receptor
PREFAB. Prefabricated
PFN. Prefinished
P.C.T./C.M. Pressure Control Terminal/Control Module
P.G. Pressure Gauge
P.R.G. Pressure Relief Grille
P.R.V. Pressure Reducing Valve
PRIM. Primary
PROJ. Project/ Projection
PROP. Property/ Proposed
P.L. Property Line
P.A. Public Address
P.S. Purse Shelf
P.B. Push Button

Q

QTY. Quantity
Q.T. Quarry Tile
QTR. Quarter
QTR.RD. Quarter Round

R

RBT. Rabbet
R.C.P. Radiant Ceiling Panel
RAD. or R. Radius
R.W.C. Rain Water Conductor
R.R. Railroad
RECV. Receive/ Receiving
RECPT. Receptacle
R.P. Receptacle Panel
REC. Recess
RECIRC. Recirculation
RECT. Rectangle / Rectangular
RED. Reducer
RWD. Redwood
REF. Refer/Reference
REFL. Reflected/Reflective
REFRIG. Refrigerant
REFR. Refrigerator
REG. Register
RH.C. Reheat Coil
REINF. Reinforce/Reinforcing Reinforcement

R.H. Relief Hood
REM. Remove/ Removable
REP. Repair
REQ'D. Required
RESIL. Resilient
RET. Return
R.A. Return Air
R.A.D. Return Air Duct
R.A.F. Return Air Fan
REV. Revised/Revision
R.P.M. Revolutions Per Minute
R. Riser
R.H. Right Hand
R.H.R.B. Right Hand Reverse Bevel
R.O.W. Right Of Way
RVT. Rivet
RD. Road
R.S.C. Rolling Steel Curtain
RF. Roof
R.C. Roof Conductor
R.D. Roof Drain
RF.H. Roof Hatch
R.T.U. Roof Top Unit
R.S. Roof Sump
R.V. Roof Ventilator
RFG. Roofing
R.W.C. Rain Water Conductor

RM. Room
R.O. Rough Opening
RND. or O Round
R.H.M.S. Round Head Machine Screw
R.H.W.S. Round Head Wood Screw
R.T. Rubber Tile

S

SAN. Sanitary
S.N.D. Sanitary Napkin Dispenser
S.N.R. Sanitary Napkin Receptacle
SCHED. Schedule
SCN. Screen
STG. Seating
SECT. Section
SERV. Service
S.S. Service Sink
SHTHG. Sheathing
SHT. Sheet
SHT.MET. Sheet Metal
SH. & P. Shelf And Pole
SHWR. Shower
S.C.R. Shower Curtain Rod
S.DR. Shower Door
SW. Sidewalk
SIM. Similar

SGL. Single
SK. Sink
S.D. Soap Dispenser
S.C. Solid Core
S.T.C. Sound Transmission Class
S. South
SP. Space
SPR. Spare
SPKR. Speaker
SPEC. Specifications
S.D. Splitter Damper
SPRYD. Sprayed
SPKLR. Sprinkler
SQ. Square
S.F. Square Feet/ Square Foot

STAG. Staggered
ST.STL. Stainless Steel
STD. Standard
SP. Standpipe
S.P. Static Pressure
STA. Station
STM. Steam
STL. Steel
STL.PL. Steel Plate
STIFF. Stiffener
STO.FR. Storefront
STOR. Storage
ST. Storm
STR. Straight
ST. Street
STRUCT. Structural Drawing
S.G.F.T. Structural Glazed Facing Tile
S.STL. Structural Steel
SS.D. Subsoil Drain
SS.D.C. Subsoil Drain Connection

SUB. Substation
S.A.G. Supply Air Grille
S.D. Supply Diffuser/ Duct
SUBST. Substitute
S.A.R. Supply Air Register
S.F. Supply Fan
S.A. Supply Air
S.A.D. Supply Air Diffuser
SUPP. Support
SURF. Surface/Surfacing
SUSP. Suspend/Suspension
SW. Switch
SWBD. Switchboard
SWGR. Switchgear
SYM. Symbol/Symmetrical
SYS. System

T

T.BD. Tackboard
TAN. Tangent
TECH. Technical

SECTION 014213
ABBREVIATIONS

TEL. Telephone
TEL.CAB. Telephone Cabinet
TV Television
TV.M. Television Monitor
TEMP. Temperature
TEMP.GL. Tempered Glass
T.W. Tempered Water
T.U. Terminal Unit
TERR. Terrazzo
T.B. Test Boring
T. Thermostat
THK. Thick/Thickness
T.S. Thickened Slab
M (1000) Thousand
K (KIP) Thousand Pounds
THD. Thread/Threaded
THRESH. Threshold
THRU. Through
T. Tile
T./TOIL. Toilet
T.P.D. Toilet Paper Dispenser
T.P.H. Toilet Paper Holder
T & G Tongue And Groove
T & B Top & Bottom
T/C Top Of Cover/Curb
T/EL. Top Elevation
T/F Top Of Footing
T/M Top Of Masonry
T/P To Of Pavement
T/R Top of Rail
T/R Top of Rim
T/S Top of Steel
T/W Top of Wall
T.B. Towel Bar
T.D. Towel Dispenser
T.D. & W.R. Towel Dispenser & Waste Receptacle
T.G. Transfer Grille
TRFR. Transformer
TRAN. Transom
T Tread
T.D. Trench Drain
T.S. Tube Section
T.V. Turning Vane
T.T. Twin Tee
TYP. Typical

U

U.C. Undercut
U.G. Underground
U.L. Underwriters' Laboratories, Inc.
ULT. Ultimate
UNFIN. Unfinished
U.H. Unit Heater
U.SUB. Unit Substation
U.V. Unit Ventilator
U.S.G.S. United States Geological Survey

U.O.N. Unless Otherwise Noted
U.S.A. Untempered Supply Air
UR. Urinal

V

VAC. Vacuum
V.B. Vacuum Breaker
V.C.O. Vacuum Cleaner Outlet
V.BARR. Vapor Barrier
VAR. Variable
V.A.V. Variable Air Volume
VARN. Varnish
VNR Veneer
V. PLAS. Veneer Plaster
V. Vent
V.T.R. Vent Thru Roof
VENT. Ventilate/ Ventilation
V.I.F. Verify In Field
VS. Versus
VERT. Vertical/Vertically
VERT.C. Vertical Curve
VEST. Vestibule
V.I. Vibration Isolator
VNY. Vinyl
V.C.T. Vinyl Composition Tile
VIN.FAB. Vinyl Fabric
V.R.S. Vinyl Reducer Strip
VIT. Vitreous
V.C.P. Vitrified Clay Pipe
VOL. Volume
V.D. Volume Damper
V Volts

W

WAINS. Wainscot
W.CAB. Wall Cabinet
W.CO. Wall Cleanout
W.H. Wall Hydrant
W/W Wall-to-wall
W.V. Wall Vent
WHSE. Warehouse
W.F. Wash Fountain
W. Waste/Watts
W & V Waste And Vent
W.R. Waste Receptacle
W.C. Water Closet
W.G. Water Gauge
W.H. Water Heater
WP. Waterproofing
W.P. Weatherproof
W.STPG. Weatherstripping
WT. Weight
W.W.F. Welded Wire Fabric

W West
W.B. Wet Bulb
W. Wide/Width
W-x- Wide Flange Section
WT Wide Flange Tee Section
W.O. Window Opening
W.GL. Wire Glass
W.M. Wire Mesh
W/ With
W/O Without
WD. Wood
W.L. Working Line
W.PT. Working Point
W.I. Wrought Iron

Y

YD. Yard
Y.P. Yield Point
Y.S. Yield Strength
YR. Year

Z

Z.C. Zinc-Coated

STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: Standards and Definitions
Definitions
Specification Content
Quality Standard of the Industry

1.2 DEFINITIONS

- A. Certain terms used in the Contract Documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to extent not stated more explicitly in another provision of the Contract Documents.
- B. Indicated: A cross-reference to details, notes or schedules on the drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- C. Furnish: Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- D. Install: Perform operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning and similar operations, as applicable in each instance.
- E. Provide: Furnish and install, complete and ready for intended use, as applicable in each instance.
- F. Installer: The entity (person or firm) engaged by the Contractor or its subcontractor or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.

1.3 FORMAT AND SPECIFICATION EXPLANATIONS

- A. Specification Production: None of these explanations will be interpreted to modify substance of requirements. Portions of these Specifications have been produced by Architect's/Engineer's standard methods of editing master Specifications, and may contain minor deviations from traditional writing formats. Such deviations are a normal result of this production technique, and no other meaning will be implied or permitted.

SECTION 014216
STANDARDS AND
DEFINITIONS

- B. **Format Explanation:** The format of principal portions of these Specifications can be described as follows; although other portions may not fully comply and no particular significance will be attached to such compliance or non-compliance:
1. **Sections and Divisions:** For convenience, basic unit of Specification text is a "section", each unit of which is named and numbered. These are organized into related families of sections, and various families of sections are organized into "divisions", which are recognized as the present industry-consensus on uniform organization and sequencing of Specifications. The section title is not intended to limit meaning or content of section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.
 2. Each section of specifications has been subdivided into 3 (or less) "parts" for uniformity and convenience (Part 1 - General, Part 2 - Products, and Part 3 - Execution). These do not limit the meaning of and are not an integral part of text that specifies requirements.
 3. **Imperative Language:** Requirements expressed imperatively shall be performed by Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities that must be fulfilled indirectly by Contractor, or when so noted, by others.
 4. **Section Numbering:** Used to facilitate cross-reference in Contract Documents. Sections are placed in Project Manual in numeric sequence; however, numbering sequence is not complete, and listing of sections at beginning of project Manual must be consulted to determine numbers and names of specification sections in the Contract Documents.
 5. **Page Numbering:** Numbered independently for each section; recorded in listing of sections (Index or Table of Contents) in Project Manual. Section number is shown with page number at bottom of each page, to facilitate location of text in Project Manual.

1.4 SPECIFICATION CONTENT

- A. **Specifying Methods:** The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic-descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit or work.
- B. **Overlapping and Conflicting Requirements:** Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping of these different standards or requirements establishes different or conflicting minimums of levels of quality, most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into the Contract Documents (not by way of reference to an industry standard) clearly indicated that a less stringent requirement is to be fulfilled. Refer apparently equal but different requirements, and uncertainties as to which level of quality is more stringent, to Architect for a decision before proceeding.
1. **Contractor's Options:** Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether specifically indicated as such.
- C. **Specified Quality Standards:** The fact that a specified product or model number is in conflict with specified quality requirements such as "concealed fasteners" or "special colors" such specification shall be construed to mean that acceptance is contingent upon manufacturer or fabricator modifying the product to comply with the Specifications.

- D. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or a appropriate for context of requirements. Refer instances of uncertainty to Architect for decision before proceeding.
- E. Specialists; Assignments: In certain instances, specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work. These must be recognized as special requirements over which Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application of regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment or entire set of requirements remains with Contractor.
- F. Abbreviations: The language or Specifications and other Contract Documents is of the abbreviated type in certain instances, and implies word and meanings that will be appropriately interpreted. Actual work abbreviations of a self-explanatory nature have been included in the text. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of Specification requirements with notations on drawings and in schedules. These are frequently defined in sections at first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the Contract Documents so indicates.

1.5 QUALITY STANDARDS OF THE INDUSTRY

- A. General Applicability of Standards: Applicable standards of construction industry have same force and effect (and are made a part of Contract Documents by reference) as if copied directly into Contract Documents, or as if published copies were bound herewith.
 - 1. Reference standards (referenced directly in Contract Documents or by governing regulations) have precedence over non-referenced standards.
 - 2. Non-referenced standards have no particular applicability except as a measure of compliance with standards recognized in construction industry.
- B. Copies of Standards:
 - 1. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.
 - 2. The Architect reserves the right to reasonably require the Contractor to submit, or maintain at the jobsite, copies of all applicable standards as needed for enforcement of the requirements.
- C. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

SECTION 014216
STANDARDS AND
DEFINITIONS

- D. Abbreviations and Names: Acronyms or abbreviations used in Contract Documents mean the industry recognized name applicable to context of text provision.

1.6 DRAWINGS, DETAILS, SCHEDULES

- A. Large scale details are provided to show arrangement, attachment, and otherwise indicate relationships of component materials and for purposes of clarify often do not show all materials. The fact that a material is, or is not indicated on such details shall not act to relieve the Contractor of responsibility for providing a specified item.
- B. Schedules are provided for convenience of reference only. In the event of an omission or conflict between schedules and other documents, the more restrictive document shall govern as directed by the Architect.

1.7 CODES AND STANDARDS

- A. Comply with latest revisions to date of all Governing Codes and with all other legal provisions relating to the Work. Other standards and references shall be current edition as of date of issue of Bidding Documents.
- B. Conform to all laws, ordinances and regulations affecting the erection, sequence of erection, and completion of the whole or any part of the work; and conform to the requirements of the Owner and of public authorities having lawful or customary jurisdiction.
- C. These requirements shall take precedence over the Contract Documents except where the Contract Documents require higher standards also acceptable to the authorities.

1.8 PERMITS, CODES, ORDINANCES AND NOTICES

- A. See General Conditions for permits.
- B. Obtain and keep available at the job, copy of building ordinances pertinent to the work.
- C. Inform the Owner and the Architect, in writing, of the manner and time in which each of the requirements of the General Conditions concerning permits are complied with.
- D. Make all necessary arrangements and obtain permits for blockage of streets and for all interference with the public right of way.
- E. Special Inspections: All special inspections required to be made under provisions by building code of utility company regulations shall be arranged and paid for by the Contractor whose work requires such inspection.

END OF SECTION

PRODUCT REQUIREMENTS

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 work of this section.

1.2 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if presented to the Architect at least 10 days in advance of bid due date.
 - 1. Identify the product, or the fabrication to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
 - e. A Statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including all related costs under this Contract and excluding Architect's redesign costs, net change, if any, in the Contract Sum, and waiving all claims for additional costs related to the substitution which subsequently became apparent.
 - g. Certification by the Contractor that the substitution proposed is appropriate in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
- B. Product Presentation: Conduct a presentation at the Architect's office if required by the Architect to prove appropriateness to the specified product.
- C. Architect's Action: Within one (1) week of receipt of Bids, the Architect may request additional information or documentation necessary for evaluation of the request. Within two (2) weeks of receipt of the request, or one (1) week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute is not made or obtained within the time allocated, use the product specified by name. If acceptance is made prior to award, it will be included in the Contract Amount. If acceptance is made after Award, it will be in the form of a Change Order.

1.3 GENERAL REQUIREMENTS FOR SUBSTITUTIONS

A. Substitutions During Bidding:

1. Substitutions shall be included in the proposal under the following conditions only and shall follow all requirements of "Acceptance of Substitutions."
 - a. When the Contractor is unable to obtain competitive prices from more than one of the specified manufacturers.
 - b. When the Contractor knows of another product of equal or better quality and performance.
 - c. When the Contractor has had unsatisfactory experience with one or more of the specified products or has reason to believe that the specified Manufacturer will not provide the necessary guarantees or assume responsibility for performance.

B. Substitutions After Contract:

1. Substitutions proposed after Award of the contract will only be considered for the following reasons.
2. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

C. Acceptance of Substitutions:

1. Substitutions will be considered for any manufacturer except those followed by the words "No Substitutions" in the Specifications.
2. In all cases where substitutions are proposed by the Contractor, it shall be the sole responsibility of the Contractor to provide adequate data and samples as required by the Architect to evaluate the substitution.
3. The Architect shall not be obliged to justify his reason for rejecting a proposed substitution.
4. In the event that a substitution is accepted conditionally on the Contractor's agreement to assume full responsibility for equality and performance, the Contractor shall provide a full value warranty and agree to make good all damages resulting from the failure of the substitute product.

1.4 ACCEPTANCE OF MATERIALS AND MANUFACTURERS

A. Standard Materials:

1. Architect's acceptance applies to the Manufacturer only and shall not act to permit any deviation from other requirements of the Specifications.

SECTION 016000
PRODUCT
REQUIREMENTS

2. Acceptance will be based on the Manufacturer's specifications at time of issuance of Bidding Documents. Deviations from such specifications shall be considered as a substitution.
 3. Requests for acceptance shall be in tabular form stating Specification paragraph and material selected, except as otherwise provided.
 4. Shop Drawings shall not indicate any material for which acceptance has not been received, unless accompanied by a separate request for approval. In no case shall Architect's review and return of Shop Drawings constitute and acceptance of either specified or substitute manufacturers or materials.
- B. Materials Involving Supplementary Warranty of Maintenance Contract:
1. These materials shall be submitted as a request for acceptance over the signature of a qualified technical representative in the direct employ of the Manufacturer of such other person as the manufacturer may authorize in writing. Request for acceptance shall contain the following information.
 - a. Name of project.
 - b. Name of Contractor, Subcontractor or other party to whom material is furnished.
 - c. Reference to Specification Section and Article where material is specified and other Contract Documents necessary for identification.
 - d. Statement of acceptance of documents, conditions, and performance requirements:
 - 1) Statement that documents as issued are in accordance with manufacturer's recommendations for use of specified materials, or
 - 2) Recommended modification of detail, use, application or for substitution of different product by same manufacturer as being more suitable for the performance requirements of the warranty.
 - e. Statement that detailed installation instructions will be provided.
 - f. Extent of job site technical services, consultants or instructors proposed, if any.
 - g. Statement that warranty will be provided.
 - h. Special provisions required to keep warranty in force.
 2. Requests for acceptance may be in the form of a letter including the above items and addressed to the subcontractor responsible for installation of the material, or may be according to a sample form of Material Proposal, provided by the Architect.
 3. Upon receipt of the manufacturer's proposal, the subcontractor shall add his own statement agreeing to comply with the manufacturer's requirements and warranting his own workmanship.
 4. The Contractor shall submit letter of endorsement of copies of all documents, including letters of comment, to the Architect for approval. In the event that the request for approval recommends a change in the work, modification of detail, or substitution of material, the Contractor shall indicate his concurrence with the change as being within the scope of the Contract or indicate the change in the Contract Sum for making such change, or state his objections to the change.

SECTION 016000
PRODUCT
REQUIREMENTS

SUBSTITUTION REQUEST

Project: _____ Substitution Request Number: _____

To: _____ From: _____

Re: _____ Date: _____

A/E Project Number: _____
Contract for: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No.: _____
Installer: _____ Address: _____ Phone: _____

History: ☐ New Product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

☐ Point-by-point comparative data attached - < REQUIRED BY A/E >

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
Address: _____ Owner: _____
Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes: explain _____

Savings to Owner for accepting substitution (if applicable): _____ (\$ _____)

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports
<REQUIRED BY A/E>

SUBSTITUTION REQUEST (CONT'D)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND ACTION

Note: Should the Architect not respond within Twelve (12) calendar days of the date of Request, the proposed substitution is considered rejected.

- ☐ Substitution approved – Make submittals in accordance with Specification Section 013300.
- ☐ Substitution approved as noted – Make submittals in accordance with Specification Section 013300.
- ☐ Substitution rejected – Use specified materials.
- ☐ Substitution Request received too late – Use specified materials.

Signed by: _____ Date: _____

Printed name: _____ Title: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E

****END OF SECTION****

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: General Requirements for standards of construction operations and procedures of a repetitive or general nature.

1.2 MANUFACTURER'S REVIEW

- A. Manufacturer's review of documents and conditions of use is a statement by the manufacturer or a representative or agent thereof that it has reviewed the documents pertaining to the work and verified the proposed use of the material including details and instructions for applications or installation, is suitable for the intended purpose, and under similar conditions of use.
- B. Obtain and submit a statement from the manufacturer indicating that they have no objection to the proposed details or method of installation, and that instructions for applications or installation are in conformance with manufacturer's recommendations. Statement shall include any additional precautions or protective measures that should be taken.
- C. Manufacturer's review shall recognize adjacent materials and state if there is, in its opinion, a serious question of compatibility including possibility of damage to other materials, or damage to the material or assembly by other materials. Such conditions shall be reconsidered and adjustments made, previous approvals notwithstanding.

1.3 APPROVED APPLICATOR

- A. An approved applicator or installer is one whom the manufacturer has reason to believe is experienced and qualified in the work and is familiar with the product and with the manufacturer's recommendations for use and installation.
- B. Obtain and submit a statement from the manufacturer that the proposed applicator or installer is approved and indicate whether or not this approval is subject to review and observation of the work by the manufacturer's representative.
- C. Manufacturer shall not approve an installer or applicator if, because of past history of performance or other reasons, there is a reasonable doubt that it can be relied upon to perform in accordance with the Contract Documents.
- D. Upon completion of the work, manufacturer shall certify that approved material in the proper quantities have been delivered to the approved applicator for use on the Project.
- E. In the event that manufacturer declines to approve proposed applicator, submit a statement as to whether or not on-site instruction or manufacturer's supervision is recommended.

1.4 MATERIAL HANDLING, STORAGE AND DELIVERY

- A. Where applicable, deliver all packaged materials to the site in manufacturer's original unopened containers.

SECTION 017300
EXECUTION
REQUIREMENTS

- B. Properly pack all materials in appropriate containers for shipment. Identify contents with piece marks referenced to shop drawings and as far as possible in some sequence as erection. Provide packing, wrapping and other protection as required to insure satisfactory condition of materials and finishes at time of erection.
- C. Inspection and acceptance will be made on the basis of materials as delivered to the job site.
- D. Provide adequate quantities to allow for damage and breakage during shipment and delivery and for replacement of all materials damaged prior to final acceptance. All such replacement of damaged materials shall be at no additional cost to the Owner.
- E. Store materials and equipment that are subject to degradation by outside exposure in a weathertight enclosure.

1.5 MIXING, THINNING AND STORAGE

- A. Store and mix paints only in areas designated, and provide proper protection for walls and floors.
- B. Mix and thin paints in strict accordance with recommendations of the manufacturer.
- C. Deliver and store paints and flammable materials in the manufacturer's original unopened containers, as far as practicable. Keep partially used materials in tightly closed containers.
- D. Do not store oil or paint soaked rags inside the building. Do not store materials in any room containing a direct-fired heating unit.

1.6 ON SITE INSTRUCTION

- A. On-site instruction shall consist of inspection and instruction performed by a qualified representative of the manufacturer.
- B. Obtain and submit a statement from the manufacturer that its authorized representative will provide the specified inspection and instruction and submit a record of the date on which specified services were provided.
- C. Service shall consist of:
 - 1. Preliminary inspection of substrates and all other conditions that would affect the performance of the work.
 - 2. Give notice of all unacceptable conditions and recommend remedial action.
 - 3. Recommend proper procedures for conditions as encountered at the site.
 - 4. Verify that workers are qualified and have received proper instructions.

1.7 MANUFACTURER'S SUPERVISION

- A. Manufacturer's supervision, in addition to all services specified for on- site instruction, consists of continuing inspection and verification that the work has been performed in accordance with the Contract.
- B. Obtain and submit a statement from the manufacturer that complete supervision will be provided.

SECTION 017300
EXECUTION
REQUIREMENTS

- C. Where supervision is specified, all costs shall be included in the Base Bid. Where supervision is recommended as a modification, submit a proposal indicating the extent and additional cost, if any, of such service.
- D. Upon completion submit a report giving dates of inspections and include pertinent information as applicable to the particular trade such a procedures, coats, coverages, tests as necessary to verify conformance and certify that the proper types and quantities of materials were installed.

1.8 WORKMANSHIP

- A. Employ skilled mechanics and fabricate all work in the best and most workman-like manner and in strict accordance with the detail drawings, by fabricating contractors regularly engaged in the particular type or work.
- B. Conform to the acceptable fabrication and erection standards of the manufacturer and to the applicable rulings of Code Authorities.

1.9 FABRICATION

- A. Fabricate and install all items plumb, true, straight, square, level and in proper elevations, plane, locations and alignment with other work. Design all work for adjustment to field connection, fitted with proper joints and intersections, adequately anchored in place. Complete work in every detail.
- B. Design and anchor work so that work will not be distorted not fasteners overstressed from expansion and contraction due to temperature change.
- C. All fasteners for exposed surface where not otherwise indicated shall be concealed.
- D. Fabricated Items:
 - 1. Model numbers of Manufacturers as listed herein are intended to indicate design and detail for each item. Variations affecting function or appearance will not be accepted.
 - 2. Identifying Markings: Where the manufacturer's name, patent number, model number or similar identifying marks are required, locate such markings in as inconspicuous as possible location. In no case will such marks be acceptable as part of the basic design.
 - 3. Hardware for all Units: Concealed fasteners and hardware. Butt hinges are not acceptable as a substitute where item scheduled in Specification is manufactured with concealed pivots or piano hinges.

1.10 INSTALLATION

- A. Accurately locate, carefully plumb and level, and securely attach all accessories.
- B. Provide concealed grounds and backing or other anchorages devices, properly located, as required for fastening.
- C. Use manufacturer's standard mounting devices as best suited to installation conditions and as accepted by the Architect. Make all attachments by positive mechanical fastening devices, except where other installation methods are indicated.

SECTION 017300
EXECUTION
REQUIREMENTS

- D. Where so recommended by the manufacturer, install the work under direct supervision of the authorized representative of the manufacturer. Employ workers experienced and qualified in the trade.
- E. Install units true and plumb in the opening maintaining proper contact with frames or adjacent materials and fitting closely to detail at intersection with other materials to provide for proper operation.
- F. Connect and properly adjust all operating devices and equipment to operate smoothly and perfectly.
- G. Upon completion or when directed, conduct careful inspection and correct defective work. Perform necessary adjustments as required to leave the completed installation in efficiently operable condition.

1.11 PREPARATION OF SURFACES FOR COATINGS AND COVERINGS

- A. Inspect all surfaces and verify that all required cants and chamfers are provided, and that all surfaces are free from irregularities of projections that would interfere with proper application.
- B. Thoroughly clean surfaces; remove all loose materials, grease, oil and foreign matter.
- C. Allow surfaces to completely dry before applying materials.
- D. Report all unsatisfactory surface to contractor for correction before proceeding. Otherwise proceeding will constitute acceptance of surface by Contractor.
- E. Note: Interior application of solvent type adhesives and systems require special ventilation or special solvents if ventilation is not possible.

1.12 BUILDING-IN, ANCHORS, INSERTS

- A. Unless otherwise stipulated, each trade generally shall promptly furnish anchorage and insert devices, together with adequate setting information, where necessary for building into the work by other trades.
- B. Verify the accuracy of all built-in anchors and inserts.
- C. Delays and errors shall be corrected by the trade responsible therefor.
- D. Power driven anchors of equivalent capacity and function may be accepted, subject to written acceptance, where approved by local jurisdictional authorities.
- E. Do not endanger or alter the work of any other trade without obtaining prior written consent.
- F. Furnish all supports necessary for proper installation of equipment.

END OF SECTION

FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 WORK INCLUDED

- A. Provide and pay for field engineering services required including all survey work.
- B. All survey work related to the project shall be completed by one (1) Surveyor.

1.3 QUALIFICATIONS

- A. Registered Professional Surveyor, acceptable to Owner, Construction Manager and Engineer.

1.4 SURVEY REFERENCE POINTS

- A. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
- B. Make no changes or relocation without prior written notice to Owner's Representative, Construction Manager, and Engineer.
- C. Report to Owner's Representative, Construction Manager, and Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- D. Require Surveyor to replace project control points which may be lost or destroyed.
 - 1. Establish replacement control points based on original survey.

1.5 SURVEY/ EXISTING CONDITIONS PLAN

- A. Survey documents provided are based on past survey work and historic drawings. Contractor shall field verify horizontal and vertical site conditions. Any discrepancies in documents shall be immediately reported to Owner's Representative, Construction Manager, and Engineer.

1.6 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.

1.7 SUBMITTALS

- A. Submit name and address of Surveyor to Construction Manager.
- B. On request of Construction Manager, Owner's Representative or Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by Registered Surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.
- D. Provide "As-Built" drawings reflecting any changes to the existing survey.
- E. Refer to drawings for survey requirements during construction.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION – Not Applicable

****END OF SECTION****

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Division 02 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 2. Divisions 02 through 35 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 15 and 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

SECTION 017329
CUTTING AND
PATCHING

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

- A. Roofing: When modifying an existing roof and adding new penetrations comply with the following requirements:
 1. Notify original roof manufacturer prior to beginning any work and comply with all manufacturer guidelines and requirements.
 2. Provide original roof manufacturer with a brief description of the proposed work, including any required submittals.
 3. Work shall not begin until written approval is received from original roof manufacturer.
 4. Work must be done by an approved roofing manufacturer's contractor.
 5. Original roof manufacturer shall inspect all modifications to the original roof system.
- B. Structural Elements: Do not cut and patch the following structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.
 - d. Structural steel.
 - e. Lintels.
 - f. Timber and primary wood framing.
 - g. Structural decking.
 - h. Stair systems.
 - i. Miscellaneous structural metals.
 - j. Shoring, bracing and sheeting.
 - k. Structural systems of special construction in Division 13 Sections.
- C. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related elements:
 - a. Primary operational systems and equipment.
 - b. Air or smoke barriers.
 - c. Fire-protection systems.
 - d. Control systems.
 - e. Communication systems.
 - f. Conveying systems.
 - g. Electrical wiring systems.

- h. Operating systems of special construction in Division 13 Sections.
- D. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
- 1. Water, moisture, or vapor barriers.
 - 2. Membranes and flashings.
 - 3. Exterior curtain-wall construction.
 - 4. Equipment supports.
 - 5. Piping, ductwork, vessels, and equipment.
 - 6. Noise- and vibration-control elements and systems.
- E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- 1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
 - a. Processed concrete finishes.
 - b. Stonework and stone masonry.
 - c. Ornamental metal.
 - d. Matched-veneer woodwork.
 - e. Preformed metal panels.
 - f. Roofing.
 - g. Firestopping.
 - h. Window wall system.
 - i. Stucco and ornamental plaster.
 - j. Terrazzo.
 - k. Finished wood flooring.
 - l. Fluid-applied flooring.
 - m. Aggregate wall coating.
 - n. Wall covering.
 - o. Swimming pool finishes.
 - p. HVAC enclosures, cabinets, or covers.
 - q. Acoustical Ceilings
 - r. Carpeting
- F. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.
 - 1. Existing Roof: The existing roof is a roof system which is still under warranty. Comply with the requirements stated in the "Quality Assurance" paragraph above.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- 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 Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers 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, and subsequently patch as required to restore surfaces to their original condition.

SECTION 017329
CUTTING AND
PATCHING

- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: 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. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

END OF SECTION

WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Specified Herein: Warranties and continuing services required to be provided by manufacturers of materials and systems where required for proper performance.
- B. The word "Guarantee" when appearing in any Contract Document or construction correspondence shall be defined as warranty in accordance with Article 9.4 of the General Conditions.

1.2 SUBMITTALS

- A. Submit warranties in accordance with Article 9.4 of the General Conditions as modified by Supplementary Conditions and additional requirements specified under the individual Trade Sections.
- B. Required types of warranties and additional services are scheduled and listed in the Trade Sections.
- C. In all cases where "Special Warranties" or "Service Contracts" are required, the request for approval of materials will be accepted by the Owner and the Architect on the understanding that manufacturer agrees to provide the specified warranty or other service unless stated otherwise in the request.
- D. The Owner will not be bound to accept any limitations or variations from the specified warranty that was not filed with the request for acceptance and accepted prior to purchase of materials.
- E. Warranties shall be submitted prior to request for payment for 100% completion in each case, shall acknowledge the responsibilities defined under Supplementary Conditions and shall include:
 - 1. Manufacturer's warranty that all materials comply with its published standards, comply with the requirements of the Specifications and where specified, are adequate for the proposed use.
 - 2. Subcontractor's warranty that all workmanship complies with the requirements of the Specifications and of the manufacturer
 - 3. Contractor's warranty covering the entire work and accepting responsibility for all limitations imposed by the manufacturer or sub- contractor except where such limitations have been previously accepted by the Architect.
 - 4. Certification and verification of previously submitted information including statement of all limitations, required maintenance and similar conditions of the warranty.

1.3 STANDARD WARRANTIES

- A. A standard warranty is a warranty whose terms are essentially the same as normally offered by the manufacturer of standard with the industry.
- B. General Conditions require that standard warranties apply as a minimum requirement notwithstanding the fact that submittal of a copy of the warranty is not required.
- C. Unless otherwise specified a standard warranty shall be for a period on one (1) year from Date of Substantial Completion.

SECTION 017836
WARRANTIES

- D. Contractor shall obtain and furnish to the Owner from each manufacturer of materials or equipment incorporated into the Work a warranty at least as favorable to Owner as that customarily given by such manufacturer to others. Contractor shall inform itself as to any conditions precedent to the effectiveness of each manufacturer's warranty and comply with all such conditions (or obtain waivers thereof from the manufacturer) so that such warranty shall be fully effective. If any event occurs which might invalidate any manufacturer's warranty, Contractor shall promptly notify the Owner and the Architect.
- E. All warranty periods shall commence on the Date of Substantial Completion except that, if it is discovered after said date that certain work or materials were not in fact in conformance with the requirements of the Contract Documents, the applicable warranty period shall re-commence from the completion of the repair or replacement of such Work to make it so conform.
- F. The fact that a manufacturer's warranty differs in its terms from those of the Contractor or any Subcontractor, the acceptance by the Owner of any warranty of a manufacturer or Subcontractor, or the fact that the Owner has claimed initially on such warranty, shall not in any way release Contractor from his warranty obligations under the Contract.

1.4 SPECIAL WARRANTIES

- A. A special warranty is one whose terms, in addition to the standard coverage offered by the manufacturer, contain other special provisions, including:
 - 1. Acknowledgment of specified list of items that shall be specifically noted as being covered by the warranty.
 - 2. Acknowledgment of specific conditions for use or exposure.
 - 3. Extension of warranty to waive standard exceptions or to extend limits including time.
 - 4. Requirements for specific performance by other trades including method of separation and protection from, or assurance of compatibility with, adjacent materials.
 - 5. Assemblies and systems that may include products of other manufacturers.
 - 6. Conditions where certain performance criteria are specified and must be either acknowledged or actual limits are required to be determined by performance testing subject to Owner's review and acceptance.
 - 7. Conditions where manufacturer's continuing involvement such as maintenance or advisory service is required.
- B. Maintenance Service During Warranty Period:
 - 1. Reference to routine maintenance required to be performed by the Owner during the warranty period shall be listed in the original submittal of proposed warranty.
 - 2. All other administration and maintenance service required during the warranty period, including installation of items repaired or replaced under the terms of the warranty shall be included in the original Contract.

1.5 SERVICE CONTRACTS

- A. Required types of Service Contract Proposals are scheduled under Schedule of Required Submittals and are listed in the Trade Sections.

SECTION 017836
WARRANTIES

- B. Where specified, the Subcontractor or Manufacturer originally supplying services and skills required for proper maintenance and agreeing to maintain availability of replacement parts and materials.
- C. The Service Contract is in addition to, and independent of, the Warranty and shall not act to either extend the Warranty or to reduce the Contractor's responsibilities thereunder.
- D. Unless otherwise specified or agreed, Service Contracts shall be written for a period of five (5) years starting with the termination of similar services included under the warranty and shall include cancellation privilege annually when exercised at least 60 days prior to anniversary date.
- E. The Contractor shall:
 - 1. Prior to submittal of Manufacturer of Subcontractor for approval, verify that specified service is available and will be offered.
 - 2. Secure from the Manufacturer of Subcontractor a bona fide proposal to perform the specified services.
 - 3. When so directed, assist the Architect in obtaining proposals for the performance of the specified services by other competent parties.

1.6 ADVISORY AND INSPECTION SERVICE

- A. Advisory and Inspection Service consists of:
 - 1. Periodic inspection on a regular scheduled basis. Include schedule of proposed inspections in the agreement.
 - 2. All necessary information, including special training, where required to adequately instruct Owner's maintenance personnel in preventative maintenance procedures, and periodic inspection to verify that such procedures are adequate.
 - 3. Providing recommendations for additional preventative maintenance repairs and treatments. If such maintenance work is recommended:
 - a. Obtain or submit price quotations for recommended work.
 - b. When so instructed by the Owner, make all necessary arrangements for the performance of the Work.
- B. Parts and Materials Agreement:
 - 1. Where standard commercially available parts of materials are suitable for maintenance or repair, inform Owner concerning trade name or description and location where they may be obtained.
 - 2. Where parts or materials are not readily available maintain replacement stocks at a location as required to prevent undue delay in repairs or loss of use of equipment pending delivery.

1.7 MAINTENANCE SERVICE

- A. A Maintenance Service Contract is an agreement that in addition to Advisory and Inspection Service, the Manufacturer will provide, or otherwise make available through his agent, a regular maintenance service program scheduled during normal working hours.
- B. Proposals shall schedule proposed times for servicing and list the services to be performed.

SECTION 017836
WARRANTIES

- C. Maintenance service of equipment shall be performed solely by the original Equipment Contractor and shall not be assigned or transferred to any agent or subcontractor without the approval of the Owner.
- D. Repairs:
 - 1. Permanent repairs shall be started within seven (7) days after notification by the Owner.
 - 2. In the event that emergency and permanent repairs are not started within the specified time limits, or if the work is stopped without the Owner's consent, the Owner shall have the same options to have repairs performed by others as specified under Warranties without invalidating this agreement.
- E. Equipment maintenance shall include systematic examinations, and adjustments and lubrication of all equipment. The Equipment Maintenance Contractor shall repair and replace electrical and mechanical parts whenever required using only genuine standard parts recommended or produced by the manufacturer of the equipment.
- F. Addition work when so directed by the Owner shall be included under the work of the Maintenance Contract and the Contractor shall be reimbursed at the then prevailing rate for the cost of materials, labor and services. Such additional work shall include:
 - 1. Repairs or replacement required as a result of negligence, abuse, or other actions contrary to the Equipment Contractor's operating instructions.
 - 2. Improvement or additional equipment required by the Owner, Insurance Companies, or Governmental Authorities.
 - 3. Except for emergency service, the additional cost for overtime work based on the difference between regular and overtime labor when the Owner requests that such work be performed outside of regular working and so authorized in writing.
- G. Additional requirements for specific maintenance contracts are specified in the various Trade Sections.

1.8 CERTIFICATION

- A. Product Certification: See Division 1.
- B. Workmanship Certification is a statement by the applicator or installer that all materials and workmanship in connection with the system have been furnished and installed in complete conformance with Contract Documents, and with the manufacturer's specifications and requirements for the particular type of use specified.
- C. A product certification where specified as a requirement shall be in a form similar to the following:

"We, the (Manufacturing Company), certify that the complete system as detailed and specified can be installed and will perform in accordance with the requirements of the specifications and the ASTM Standards referenced therein for the guarantee period of one year or such longer period as may be negotiated between the Owner and the (Manufacturing Company).

Upon completion of the Project we will inspect the work and certify to the Owner that the system as installed is in accordance with the Manufacturer's requirements or indicated in writing what remedial action is necessary in order that it does so conform."

END OF SECTION

STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Demolition and removal of buildings and site improvements.
- 2. Removing below-grade construction.
- 3. Disconnecting, capping or sealing, and removing site utilities.
- 4. Salvaging items for reuse by Owner.

B. Related Requirements:

- 1. Section 013200 "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
- 2. Section 024119 "Selective Demolition" for partial demolition of buildings, structures, and site improvements.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse. Include fasteners or brackets needed for reattachment elsewhere.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
1. Inspect and discuss condition of construction to be demolished.
 2. Review structural load limitations of existing structures.
 3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review and finalize protection requirements.
 5. Review procedures for noise control and dust control.
 6. Review procedures for protection of adjacent buildings.
 7. Review items to be salvaged and returned to Owner.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain.
- D. Schedule of Building Demolition Activities: Indicate the following:
1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 2. Temporary interruption of utility services.
 3. Shutoff and capping or re-routing of utility services.
- E. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before the Work begins.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

1.9 FIELD CONDITIONS

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
 - 1. Provide not less than **72** hours' notice of activities that will affect operations of adjacent occupied buildings.
 - 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
 - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. On-site storage or sale of removed items or materials is not permitted.

1.10 COORDINATION

- A. Arrange demolition schedule so as not to interfere with Owner's on-site operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

2.2 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 312000 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- D. Inventory and record the condition of items to be removed and salvaged.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.
- B. Salvaged Items: Comply with the following:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Utilities to be Disconnected: Locate, identify, disconnect, and seal or cap off utilities serving buildings and structures to be demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 - 3. Cut off pipe or conduit a minimum of **24 inches (610 mm)** below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
 - 4. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.4 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

SECTION 024116
STRUCTURE
DEMOLITION

1. Strengthen or add new supports when required during progress of demolition.
- C. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.
1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
 - a. Provide at least **72** hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 015000 "Temporary Facilities and Controls."
1. Protect adjacent buildings and facilities from damage due to demolition activities.
 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- E. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.5 DEMOLITION, GENERAL

- A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
 2. Maintain fire watch during and for at least 12 hours after flame-cutting operations.
 3. Maintain adequate ventilation when using cutting torches.
 4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide

SECTION 024116
STRUCTURE
DEMOLITION

- alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- C. Explosives: Use of explosives is not permitted.

3.6 DEMOLITION BY MECHANICAL MEANS

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C. Salvage: Items to be removed and salvaged are indicated **below**:
 - 1. None.
- D. Below-Grade Construction: Demolish foundation walls and other below-grade construction.
 - 1. Remove below-grade construction, including basements, foundation walls, and footings, completely.
- E. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

3.7 SITE RESTORATION

- A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 312000 "Earth Moving."
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

- A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

SECTION 024116
STRUCTURE
DEMOLITION

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.
 1. Clean roadways of debris caused by debris transport.

****END OF SECTION****

SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of building or structure.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site.
- B. Existing to Remain: Existing items of construction that are not to be removed.

1.4 SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Locations of proposed dust- and noise-control temporary partitions and means of egress.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
 - 6. Means of protection for items to remain and items in path of waste removal from building.
- B. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

- D. Standards: Comply with ANSI A10.6 and NFPA 241.

1.5 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area.
Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of
 - 4. hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.
 - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

SECTION 024119
SELECTIVE SITE DEMOLITION

- 8. Dispose of demolished items and materials promptly.
 - B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition.
- 3.2 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS
- A. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
 - B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- 3.3 DISPOSAL OF DEMOLISHED MATERIALS
- A. General: Except for items or materials indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - B. Burning: Do not burn demolished materials.
 - C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.
- 3.4 CLEANING
- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
 - 1. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
 - 2. Division 23 Sections for demolishing, cutting, patching, or relocating mechanical items.
 - 3. Division 26 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

SECTION 024120
SELECTIVE
DEMOLITION

1.5 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of temporary partitions and means of egress.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- E. Predemolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI A10.6 and NFPA 241.

SECTION 024120
SELECTIVE
DEMOLITION

- E. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1. Review methods and procedures related to selective demolition including, but not limited to, the following:
1. Inspect and discuss condition of construction to be selectively demolished.
 2. Review structural load limitations of existing structure.
 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for condition of areas to be selectively demolished.
1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.
 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
 - 1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.
 - a. Ornamental metal.
 - b. Preformed metal panels.
 - c. Roofing.
 - d. Firestopping.
 - e. Window wall system.
 - f. Terrazzo.
 - g. Finished wood flooring.
 - h. Swimming pool finishes.
 - i. HVAC enclosures, cabinets, or covers.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

SECTION 024120
SELECTIVE
DEMOLITION

- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - 1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
 - 5. Refer to Divisions 23 and 26 for other applicable requirements and limitations.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

SECTION 024120
SELECTIVE
DEMOLITION

- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 - 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - a. Remove debris from elevated portions by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
 10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
 11. Explosives: Use of explosives is not permitted.
- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.

SECTION 024120
SELECTIVE
DEMOLITION

3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area on-site .
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- F. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.
- G. Structural Steel: Dismantle field connections without bending or damaging steel members. Do not use flame-cutting torches unless otherwise authorized by Architect.
1. Transport steel trusses and joists as whole units without dismantling them further.
- H. Below-Grade Construction: Demolish in sections. Remove below-grade construction, including basements, foundation walls and footings, completely to at least 12 inches below grade unless otherwise indicated on Drawings.
- I. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- J. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- K. Building Components: Remove metal gratings, metal ladders, doors, windows, door hardware, cabinets, mirrors, chalkboards and marker boards, tackboards, toilet accessories, plumbing fixtures, and light fixtures, as whole units, intact and undamaged.
- L. Elevators: Remove as whole units as much as practical.
- M. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.
- N. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

SECTION 024120
SELECTIVE
DEMOLITION

- O. Carpet and Pad: Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, and tack strips.
- P. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
 - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- Q. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.
- R. Existing Utilities: Unless otherwise indicated on Drawings, demolish existing utilities and below-grade utility structures that are within 5 feet (1.5 m) outside of footprint indicated for new construction. Abandon utilities outside this area.
 - 1. Fill abandoned utility structures with satisfactory soil materials according to backfill requirements in Division 2 Section "Earthwork."
 - 2. Piping: Disconnect piping at unions, flanges, valves, or fittings.
 - 3. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

3.6 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Items and Construction to Be Removed: As indicated on Drawings.
- B. Existing Items to Be Removed and Salvaged: As indicated on Drawings.
- C. Existing Items to Be Removed and Reinstalled: As indicated on Drawings.
- D. Existing Items to Remain: As indicated on Drawings.

END OF SECTION

SOILS AND AGGREGATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Subsoil materials.
2. Topsoil materials.
3. Coarse aggregate materials.
4. Fine aggregate materials.

B. Related Sections:

1. Section 31 22 13 - Rough Grading.
2. Section 31 23 17 - Trenching.
3. Section 31 23 23 - Fill.
4. Section 32 91 19 - Landscape Grading.
5. Section 33 11 16 - Site Water Utility Distribution Piping.
6. Section 33 41 00 - Storm Utility Drainage Piping.
7. Section 33 46 00 - Subdrainage: Filter aggregate.
8. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 REFERENCES

A. ASTM International:

1. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils
2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
4. ASTM D2974 - Standard Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
5. ASTM C4972 - Test Method for PH of Soils.

1.3 SUBMITTALS

- A. Samples: Submit 2, 20lb samples of each type of material to be tested, to the testing company.
- B. Materials Source: Submit name of imported materials supplier(s).
- C. Manufacturer's Certificate: The Contractor shall submit to the Owner, two copies of material certificates signed by the Material Producer and Contractor. Certificates shall state that each material item meets specified requirements.
- D. Gradation Reports: The Contractor shall submit to the Owner, two copies of the gradations for each of the required aggregate mixtures. Mix designs shall be within allowable tolerances as specified for the particular section.

1.4 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with local governing agency standards.
- C. Testing and Inspection: The Owner may engage a testing agency to sample and test materials proposed for use in the Work.

PART 2 PRODUCTS

2.1 SUBSOIL MATERIALS

- A. Subsoil Type S1:
 - 1. Excavated and re-used material, imported borrow and select or local borrow.
 - 2. Graded.
 - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, organic material, and debris.

2.2 TOPSOIL MATERIALS

- A. Topsoil Type S2:
 - 1. Fertile, friable, natural topsoil of loamy character, obtained from well drained arable site.
 - 2. Reasonably free of clay, lumps, coarse sands, plants, roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
 - 3. Acidity range pH of 5.0 to 7.5.
 - 4. Containing minimum of 10 percent organic matter.

2.3 AGGREGATE MATERIALS

- A. Crushed Stone Fill, Type A1: Dense-graded crushed concrete or crushed aggregate shall meet the requirements of Section 902 of the Michigan Department of Transportation Standard Specification for Construction, and shall consist of 21AA Crushed Aggregate.
- B. Granular Fill, Type A2: Granular material shall consist of natural sand, stone screenings, gravel or a blend of natural sand, gravel and stone screenings. It shall be composed of rough surfaced and angular grains of quartz or other hard durable rock and meet the requirements of Section 902 of the Michigan Department of Transportation Standard Specification for Construction, and shall consist of Class II granular material.
- C. Open-Graded Drainage Course Aggregate Materials (OGDC), Type A3: for use in Temporary Construction Access Drives, Drainage Course under Pavement Aggregate Base Courses and other miscellaneous uses shall consist of crushed stone, crushed gravel or crushed concrete free from organic matter or other deleterious substances with material sized between 1" and 3" in diameter, with less than 6% fine material (#200 sieve). Such materials are usually referred to as "1x3" or "OGDC".
- D. Crushed Aggregate Surface Course (CASC), Type A4: shall meet the requirements of Section 306 of the Michigan Department of Transportation Standard Specification for Construction, and shall consist of 23A Crushed Aggregate.

2.4 SOURCE QUALITY CONTROL

- A. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D1557.
- B. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D2974 and ASTM D4972.
- C. When tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials from same source throughout the Work.

PART 3 EXECUTION

3.1 EXCAVATION

- A. Excavate subsoil and aggregates from areas designated. Strip topsoil to full depth of topsoil in designated areas.
- B. Stockpile excavated material meeting requirements for subsoil materials, topsoil materials and aggregates.
- C. Remove excess excavated subsoil and topsoil not intended for reuse, from site.
- D. Remove excavated materials not meeting requirements for subsoil materials, topsoil materials and aggregates from site.

3.2 EXAMINATION

- A. Verify compacted substrate is dry and ready to support paving and imposed loads.
- B. Subgrade preparations shall consist of the final machining of the subgrade immediately prior to placing the aggregate subbase or base materials. The surface shall be true to line and grade. Proof roll in areas to receive aggregate materials with a 25-ton rubber-tired roller, a loaded front-end loader or loaded dump truck to locate all soft surface areas. Replace soil that deflects and will not compact with acceptable fill material and compact such fill in accordance with these Specifications.
- C. Verify substrate has been inspected, gradients and elevations are correct.

3.3 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place fill on soft, muddy, or frozen surfaces.

3.4 AGGREGATE TRANSPORTING AND PLACEMENT

- A. The aggregate shall be transported from the crushing plant to the point of use in hauling vehicles which are covered. Deliveries shall be scheduled so that spreading and compaction of all aggregate delivered that day can be completed during daylight hours, unless adequate artificial lighting is provided, or stockpile locations are provided. Hauling over freshly placed material shall not be permitted until the material has been compacted as specified.
- B. Upon arrival, the aggregate shall be spread to a thickness not to exceed 6 inches by an approved grading method. It shall be struck off in a uniform layer of such depth that, when the Work is completed, it shall have the required thickness and conform to the grade and contour indicated.
- C. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the aggregate may be spread, raked, leveled and compacted by using hand tools.
- D. After spreading, the aggregate shall be thoroughly and uniformly compacted by approved compaction equipment. The speed of the compaction equipment shall at all times be sufficiently slow enough to avoid displacement of the aggregate. Any displacement occurring as a result of reversing direction of the compaction equipment or from any other cause shall be corrected at once. Rolling shall continue until all roller marks are eliminated, the surface is of uniform texture and true to grade and cross-section and the required field-density is obtained.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.5 MINIMUM QUALITY REQUIREMENTS

- A. The Contractor shall at no expense to the Owner test in-place aggregate surface, base course and subbase materials for compliance with the requirements for density and thickness.
- B. Maximum dry density shall be determined per ASTM D1557 modified proctor.
- C. In-place compacted minimum thickness is as shown in the cross-sectional details on the Plans. Any thickness less than shown on the plans is not acceptable.

3.6 TOLERANCES

- A. Maximum Variation From Flat Surface: 1/2 inch measured with 10 foot straight edge.
- B. Maximum Variation From Thickness: No less than shown on the Plans.
- C. Maximum Variation From Elevation: 1/2 inch.

3.7 FIELD QUALITY CONTROL

- A. Quality Control During Aggregate Placement: Perform the following sampling and testing of aggregate mixtures for quality control during operations. Record the locations where samples are taken to correlate with subsequent testing.
- B. Test uncompacted aggregate for gradation distribution per ASTM D422 and for compaction per ASTM D1557 modified proctor.
- C. Perform three tests for each day's aggregate placement, unless otherwise specified or directed.
- D. Test in-place, compacted aggregate for density and thickness. Perform five tests for each day's aggregate placement unless otherwise specified or directed.
- E. Additional testing may be required if any of the previous tests indicate insufficient values. If two successive tests indicate insufficient values, contact the Owner for a course of action.
- F. Aggregate materials not complying with specified requirements shall be removed and replaced with new aggregate.
- G. Upon completion of the construction Work and after spoils and debris have been removed, re-grade any areas disturbed by the operations.

SECTION 310516
SOILS AND
AGGREGATES

3.8 STOCKPILING

- A. Stockpile materials on site at locations designated by Owner.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching, until disposed of.

3.9 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing above- and below-grade site improvements.
7. Temporary erosion and sedimentation control.

1.3 DEFINITIONS

- A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow.
- D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.
- E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings.
- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

- A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or video recordings.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.
- B. Topsoil stripping and stockpiling program.
- C. Rock stockpiling program.
- D. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.
- E. Burning: Burning on site is not allowed.

1.7 QUALITY ASSURANCE

- A. Topsoil Stripping and Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.
- B. Rock Stockpiling Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work. Include dimensioned diagrams for placement and protection of stockpiles.

1.8 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Architect.
- C. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises at location directed by the owner.
- D. Utility Locator Service: Three full working days before construction begins, call the Miss Dig system at 811.

SECTION 311000
SITE CLEARING

- E. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.
- F. Tree- and Plant-Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- G. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312010 "Building Earthwork."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to plan requirements.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Protect trees and plants remaining on-site according to according to plan requirements.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to plan requirements.

3.4 EXISTING UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed. Retain one of two subparagraphs below.
 - 1. Arrange with utility companies to shut off indicated utilities.
 - 2. Owner will arrange to shut off indicated utilities when requested by Contractor.
- C. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- D. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect not less than 3 days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Architect's written permission.
- E. Excavate for and remove underground utilities indicated to be removed.
- F. Removal of underground utilities is included in earthwork sections; in applicable fire suppression, plumbing, HVAC, electrical, communications, electronic safety and security, and utilities sections; and in Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition."

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Grind down stumps and remove roots larger than 3 inches (75 mm) in diameter, obstructions, and debris to a depth of 24 inches (450 mm) below exposed subgrade.
 - 3. Use only hand methods or air spade for grubbing within protection zones.
 - 4. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to required depth in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 - 1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
 - 2. Do not stockpile topsoil within protection zones.
 - 3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
 - 4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 STOCKPILING ROCK

- A. Remove from construction area naturally formed rocks that measure more than 1 foot (300 mm) across in least dimension. Do not include excavated or crushed rock.
 - 1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.
- B. Stockpile rock at location directed by the owner without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.
 - 1. Limit height of rock stockpiles to 36 inches (900 mm).
 - 2. Do not stockpile rock within protection zones.
 - 3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.
 - 4. Stockpile surplus rock to allow later use by the Owner.

3.8 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically. If possible, adjust line of demolition to the nearest joint.
 - 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Burning tree, shrub, and other vegetation waste is permitted according to burning requirements and permitting of authorities having jurisdiction. Control such burning to produce the least smoke or air pollutants and minimum annoyance to surrounding properties. Burning of other waste and debris is prohibited.
- C. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

****END OF SECTION****

ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating subsoil.
2. Cutting, grading, filling, rough contouring, and compacting site for site structures, building pads, and pavements.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 10 00 - Site Clearing: Excavating topsoil.
3. Section 31 23 16 - Excavation: Building excavation.
4. Section 31 23 17 - Trenching: Trenching and backfilling for utilities.
5. Section 31 23 23 - Fill: General building area backfilling.

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
2. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

A. Materials Source: Submit name of imported materials suppliers.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the Geotechnical Report by Soil & Materials Engineers (SME).
- B. The services of a full-time Soils Engineer and Soils Laboratory may be retained by the Owner to observe earthwork operations, analyze soil materials and perform applicable laboratory and field tests.
- C. The Contractor shall arrange and pay for any other test or required inspections necessary to meet the requirements set forth in these Construction Documents.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: Type S2 as specified in Section 31 05 16.
- B. Subsoil Fill: Type S1 as specified in Section 31 05 16.
- C. Crushed Stone Fill: Type A1 as specified in Section 31 05 16.
- D. Granular Fill: Type A2 as specified in Section 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.
- C. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- D. Control datum for survey is that shown on Drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

3.2 PREPARATION

- A. Call Local Utility Line Information service, MISS DIG at 1-800-482-7171 or 811, not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company prior to removing or relocating utilities.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, relandscaped, or regraded.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. Remove excess subsoil not intended for reuse, from site.
- D. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.
- E. Stability: Replace damaged or displaced subsoil as specified for fill.

3.4 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Place material in continuous layers as follows:

<u>Compaction Method</u>	<u>Maximum Loose Lift Thickness</u>
Hand-operated vibratory plate or light roller in confined areas	4 inches
Hand-operated vibratory roller weighing at least 1,000 pounds	6 inches
Vibratory roller drum roller, minimum dynamic force, 2,000 pounds	9 inches
Vibratory drum roller, minimum dynamic force, 30,000 pounds	12 inches
Sheeps-foot roller	8 inches

SECTION 312213
ROUGH GRADING

- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. Make grade changes gradual. Blend slope into level areas.
- E. Repair or replace items indicated to remain damaged by excavation or filling.

3.5 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.6 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density and Moisture Tests: ASTM D-6938.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Tests: Provide one density test for every lift.

3.7 SCHEDULES

- A. Fill in the upper 12 inches under pavement and sidewalks :
 - 1. Compact uniformly to minimum 95 percent of maximum density per ASTM D-1557.
- B. Fill below 12 inches under pavement and sidewalks :
 - 1. Compact uniformly to minimum 92 percent of maximum density per ASTM D-1557.
- C. Fill in landscape areas :
 - 1. Compact uniformly to minimum 88 percent of maximum density per ASTM D-1557.

END OF SECTION

EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Soil densification.
2. Excavating for paving, roads, and parking areas.
3. Excavating for slabs-on-grade.
4. Excavating for site structures.
5. Excavating for landscaping.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
3. Section 31 23 17 - Trenching: Excavating for utility trenches.
4. Section 31 23 23 - Fill.
5. Section 33 11 16 - Site Water Utility Distribution Piping.
6. Geotechnical report; bore hole locations and findings of subsurface materials.

1.2 REFERENCES

- ##### A. Local utility standards when working within 24 inches of utility lines.

1.3 SUBMITTALS

- ##### A. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.
- ##### B. Shop Drawings: Indicate soil densification grid for each size and configuration footing requiring soils densification.

1.4 QUALITY ASSURANCE

- ##### A. Perform Work in accordance with local governing agency standards.

1.5 QUALIFICATIONS

- ##### A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Michigan.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Local Utility Line Information service, Miss Dig at 1-800-482-7171 or 811, not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company prior to the removal and relocation of utilities.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.2 SOIL DENSIFICATION - VIBRO-COMPACTION

- A. Densify existing subsoils with relative density rating of compact to dense to attain relative density rating of very dense.
- B. Densification Equipment:
 - 1. Depth Vibrator: Poker type with follower tubes with visible marking every 12 inches to enable insertion depth measurement.
 - 2. Motion: radial in horizontal plane.
 - 3. Data Acquisition System: Record amps or pressure of the vibrator motor over time and depth.
- C. Insert vibrator to maximum specified depth. Densify soils for 30 seconds or other time as directed by Geotechnical Engineer. Withdraw vibrator every 12 inches increments and repeat densification at each increment.
 - 1. When subsurface obstruction prevents vibrator insertion to specified depth, request instructions from Geotechnical Engineer to compensate for obstruction.
- D. Tolerances:
 - 1. Maximum Deviation from Center of Completed Compaction: 8 inches from indicated position.
 - 2. Maximum Deviation from Vertical: 4 degrees during vibrator insertion.

3.3 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work.
- B. Excavate subsoil to accommodate slabs-on-grade, paving and site structures.
- C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23 and Section 31 23 17.
- D. Slope banks with machine to angle of repose or less until shored.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Remove larger material as specified in Section 31 23 23.
- H. Notify Architect/Engineer of unexpected subsurface conditions.
- I. Correct areas over excavated with crushed stone fill Type A1 specified in Section 31 05 16 or as directed by the Geotechnical Engineer.
- J. Remove excess and unsuitable material from site.
- K. Stockpile subsoil to be re-used on-site in area designated on site to depth not exceeding 8 feet and protect from erosion.
- L. Repair or replace items indicated to remain damaged by excavation.

3.4 FIELD QUALITY CONTROL

- A. Request inspection of excavation and controlled fill operations in accordance with applicable code and local governing agency requirements.
- B. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

3.5 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

TRENCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities from 5 feet outside building to utility service.
2. Compacted fill from top of utility bedding to subgrade elevations.
3. Backfilling and compaction.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.
3. Section 31 23 16 - Excavation: General building excavation.
4. Section 31 23 23 - Fill: General backfilling.
5. Section 32 91 19 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.
6. Section 33 11 16 - Site Water Utility Distribution Piping
7. Section 33 41 00 - Storm Utility Drainage Piping
8. Section 33 46 00 – Subdrainage

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
2. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
3. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- ##### A. Utility: Any buried pipe, duct, conduit, or cable.

1.4 SUBMITTALS

- A. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- B. Materials Source: Submit name of imported fill materials suppliers.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.6 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.7 COORDINATION

- A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type S1 as specified in Section 31 05 16.
- B. Crushed Stone Fill: Type A1 as specified in Section 31 05 16.
- C. Granular Fill: Type A2 as specified in Section 31 05 16.

2.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable, non-woven.
 - 1. Mirafi; Model 140N Filter Fabric or approved equal.

PART 3 EXECUTION

3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
 - 1. Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.2 PREPARATION

- A. Call Local Utility Line Information service, Miss Dig, at 1-800-482-7171 or 811, not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Maintain and protect above and below grade utilities indicated to remain.

3.3 TRENCHING

- A. Excavate subsoil required for utilities to utility service.
- B. Remove lumped subsoil, boulders, and rock up of 1/6 cubic yard, measured by volume.
- C. Perform excavation within 24 inches of existing utility service or in accordance with utility's requirements.
- D. Do not advance open trench more than 200 feet ahead of installed pipe.
- E. Cut trenches to width indicated on Drawings. Remove water or materials that interfere with Work.
- F. Excavate bottom of trenches maximum 12 inches wider than outside diameter of pipe.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- H. Do not interfere with 45 degree bearing splay of foundations.
- I. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls can not be sloped, provide sheeting and shoring to protect excavation as specified in this section.
- J. Cut out soft areas of subgrade not capable of compaction in place. Backfill with bedding material and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim excavation. Remove loose matter.
- L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation.
- M. Remove excess subsoil not intended for reuse, from site.

SECTION 312317
TRENCHING

- N. Stockpile subsoil for reuse in area designated on site to depth not exceeding 8 feet and protect from erosion.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- D. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place material in continuous layers as follows:
 - 1. Common Fill: Maximum 4 inches compacted depth.
 - 2. Granular Fill: Maximum 4 inches compacted depth.
- D. Employ placement method that does not disturb or damage foundation perimeter drainage and utilities in trench.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than 50 feet of trench open at end of working day.
- G. Protect open trench to prevent danger to Owner and the public.

3.6 TOLERANCES

- A. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

3.7 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.8 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic during construction.

****END OF SECTION****

FILL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Backfilling site structures to subgrade elevations.
2. Fill under slabs-on-grade.
3. Fill under paving.
4. Fill for over-excavation.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 22 13 - Rough Grading: Site filling.
3. Section 31 23 16 - Excavation.
4. Section 31 23 17 - Trenching: Backfilling of utility trenches.
5. Section 32 91 19 - Landscape Grading.
6. Section 33 11 16 - Site Water Utility Distribution Piping.
7. Section 33 46 00 – Subdrainage.

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
2. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
3. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- C. Materials Source: Submit name of imported fill materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Common Fill: Type S1 as specified in Section 31 05 16.
- B. Crushed Stone Fill: Type A1 as specified in Section 31 05 16.
- C. Granular Fill: Type A2 as specified in Section 31 05 16.

2.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable, woven in areas of undercutting.
 - 1. Tensar TX5 or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Administrative Requirements: Coordination and project conditions.

3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural or granular fill per Geotechnical Report and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify subgrade surface to a minimum depth of 8 inches.
- D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Place geotextile fabric in areas of undercutting as directed by the Geotechnical Engineer.

- D. Place material in continuous layers as follows:

<u>Compaction Method</u>	<u>Maximum Loose Lift Thickness</u>
Hand-operated vibratory plate or light roller in confined areas	4 inches
Hand-operated vibratory roller weighing at least 1,000 pounds	6 inches
Vibratory roller drum roller, minimum dynamic force, 2,000 pounds	9 inches
Vibratory drum roller, minimum dynamic force, 30,000 pounds	12 inches
Sheeps-foot roller	8 inches

- E. Employ placement method that does not disturb or damage other work.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Make gradual grade changes. Blend slope into level areas.
- H. Remove surplus backfill materials from site.
- I. Leave fill material stockpile areas free of excess fill materials.

3.4 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Perform laboratory material tests in accordance with ASTM D1557.
- B. Perform in place compaction tests in accordance with the following:
1. Density Tests: ASTM D2922.
 2. Moisture Tests: ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Proof roll compacted fill surfaces under slabs-on-grade and paving.

3.6 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic

END OF SECTION

EROSION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Check Dams.
2. Inlet Filter.
3. Silt Fencing

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates.
2. Section 31 10 00 - Site Clearing.
3. Section 31 23 16 - Excavation.
4. Section 31 23 23 - Fill.
5. Section 32 91 19 - Landscape Grading.
6. Section 32 92 19 - Seeding and Soil Supplements.

1.2 REFERENCES

A. ASTM International:

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).

1.3 SUBMITTALS

- A. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not place grout when air temperature is below freezing.

PART 2 PRODUCTS

2.1 ROCK MATERIALS

- A. Rock: Sound, tough, durable fractured rock, free from decompressed stones or other defects impairing its durability. Broken concrete or rounded stones are not acceptable.

2.2 PLANTING MATERIALS

- A. Seeding and Soil Supplements: as specified in Section 32 92 19.
- B. Mulch: as specified in Section 32 92 19

2.3 ACCESSORIES

- A. Inlet Filter Fabric: Geotextile fabric with minimum flow rate of 100 gal/min./s.f. meeting local governing agency requirements.
- B. Silt Fencing: Geotextile filter fabric with minimum flow rate of 10 gal/min./s.f., Amoco Pro Pex 2130 or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.

3.2 CHECK DAM

- A. Determine length required for ditch or depression slope and excavate, compact and foundation area to firm, even surface.
- B. Produce an even distribution of rock pieces, with minimum voids to the indicated shape, height and slope.

3.3 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 8 feet. Slope stockpile sides at 2: 1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.

- 1. During non-germinating periods, apply mulch at recommended rates.

SECTION 312513
EROSION CONTROLS

2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 32 92 19 at 50 percent of permanent application rate with no topsoil.
3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 32 92 19 permanent seeding specifications.

E. Stabilize stockpiles immediately.

3.4 FIELD QUALITY CONTROL

- A. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.
- B. Compaction Testing: In accordance with ASTM D1557.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.5 CLEANING

- A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- B. Do not damage structure or device during cleaning operations.
- C. Do not permit sediment to erode into construction or site areas or natural waterways.
- D. Clean channels when depth of sediment reaches approximately one half channel depth.

END OF SECTION

ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Asphalt materials.
2. Aggregate materials.
3. Aggregate subbase.
4. Asphalt paving base course, binder course, and wearing course.
5. Asphalt paving overlay for existing paving.

B. Related Sections:

1. Section 31 22 13 - Rough Grading: Preparation of site for paving [and base].
2. Section 31 23 23 - Fill: Compacted subbase for paving.
3. Section 31 05 16 – Soils and Aggregates: Product requirements for aggregate for placement by this section.
4. Section 32 17 23 - Pavement Markings: Painted pavement markings, lines, and legends.
5. Section 33 05 13 - Manholes and Structures

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO M140 - Standard Specification for Emulsified Asphalt.
2. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

B. Asphalt Institute:

1. AI MS-19 - Basic Asphalt Emulsion Manual.

C. ASTM International:

1. ASTM D977 - Standard Specification for Emulsified Asphalt.
2. ASTM D979 - Standard Practice for Sampling Bituminous Paving Mixtures.
3. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples.

4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
5. ASTM D1559 – Test Method for Resistance of Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.
6. ASTM D2172 - Standard Test Methods for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures.
7. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
8. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
9. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
10. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
11. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal.
12. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

1.3 SUBMITTALS

- A. Product Data:
 1. Submit product information for asphalt and aggregate materials.
 2. Submit mix design with laboratory test results supporting design.
- B. Manufacturer's Certificate: Certify that materials specified in this section meet or exceed the specified requirements.
- C. The paving contractor shall execute the Guarantee for Bituminous Pavement form located at the end of this section per the requirements set forth on the form.

1.4 QUALITY ASSURANCE

- A. Mixing Plant: Certified by State of Michigan.
- B. Obtain materials from same source throughout.
- C. Perform Work in accordance with Michigan Department of Transportation (MDOT) standards.

1.5 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum of five (5) years documented experience.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Apply bituminous tack coats only when temperature has not been below 35 degrees F for 12 hours immediately prior to application. Construct asphalt surface course only when atmospheric temperature is above 40 degrees F and base is dry. Asphalt binder and base courses may be laid when the atmospheric temperature is above 35 degrees F and rising.

PART 2 PRODUCTS

2.1 ASPHALT MATERIALS

- A. Asphalt Cement: Shall comply with the requirements of ASTM D3381 for viscosity graded asphalt cement AC-10 (85-100 penetration grade) and meet the requirements of Section 501 of the Michigan Department of Transportation Standard Specifications for Construction (latest edition).
- B. Tack Coat: Shall be emulsified asphalt meeting the requirements of ASTM D977, AASHTO M140 and the Asphalt Institute for type SS-1h.
- C. Reclaimed Asphalt Pavement (RAP): Processed material obtained by milling or full depth removal of existing asphalt paving.

2.2 AGGREGATE MATERIALS

- A. Coarse Aggregate: Shall consist of crushed stone, crushed gravel, a mixture of uncrushed gravel with either crushed stone or crushed gravel, or other inert material having similar characteristics. It shall be composed of clean, tough, durable fragments free from an excess of flat or elongated pieces and shall be free of organic matter and deleterious substances and meet the requirements of Section 902 of the Michigan Department of Transportation Standard Specifications for Construction (latest edition).
- B. Fine Aggregate: Shall be well graded from coarse to fine and consist of natural sand, stone screenings or a blend of natural sand and stone screenings. It shall be composed of rough surfaced and angular grains of quartz or other hard durable rock and meet the requirements of Section 902 of the Michigan Department of Transportation Standard Specifications for Construction (latest edition).
- C. Mineral Filler: Shall be limestone dust, dolomite dust, slag or hydrated lime meeting the requirements of Section 902 of the Michigan Department of Transportation Standard Specifications for Construction (latest edition).

2.3 MIXES

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Asphalt Paving Mixtures: Designed in accordance with the Michigan Department of Transportation Standard Specifications for Construction (latest edition).
- 3. Binder and Levelling Course: MDOT 13A
- 4. Wearing Course: MDOT 36A

2.4 SOURCE QUALITY CONTROL

- A. Submit proposed mix design of each class of mix for review prior to beginning of Work.
- B. Test samples in accordance with ASTM D979, D2172 and D2950.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- C. Verify compacted subgrade, aggregate base course and subbase is dry and ready to support paving and imposed loads.
- D. Verify gradients and elevations of base are correct.
- E. Verify all manhole, catch basin and inlet grates and frames (and any other type of casting within the area to be paved) are installed in correct position and at correct elevation.

3.2 SUBBASE AND BASE COURSE

- A. Aggregate Subbase and/or Base Course to be installed per Section 31 05 16.

3.3 EXISTING WORK

- A. Saw cut existing paving as indicted on Drawings.
- B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.
- C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

3.4 TACK COAT

- A. Apply tack coat to contact surfaces of previously constructed surfaces abutting or projecting into the area to be paved with new asphalt.
 - 1. New Surfaces: 0.02-0.08 gal/sq yd.
 - 2. Existing Surfaces: 0.02-0.08 gal/sq yd.
- B. Apply tack coat to contact surfaces of curbs, gutters and sidewalks etc. as required.
- C. Coat surfaces of manholes, catch basin and any other casting frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

3.5 SINGLE COURSE ASPHALT PAVING

- A. Install Work in accordance with Section 502 of the Michigan Department of Transportation Standard Specifications for Construction (latest edition).
- B. Place asphalt within 24 hours of applying tack coat.
- C. Place asphalt wearing course to the thickness as indicated on Drawings.
- D. Compact paving by rolling to specified density (Ninety-seven (97) percent of the recorded laboratory specimen density per ASTM D1559). Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.6 DOUBLE COURSE ASPHALT PAVING

- A. Place asphalt binder course within 24 hours of applying tack coat.
- B. Place binder course to the thickness as indicated on Drawings.
- C. Place wearing course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
- D. Place wearing course to the thickness as indicated on Drawings.
- E. Compact each course by rolling to specified density (Ninety-seven (97) percent of the recorded laboratory specimen density per ASTM D1559). Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
- F. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.7 ASPHALT PAVING OVERLAY

- A. Apply tack coat to existing paving milled surface at rate recommended of 0.02 – 0.08 gal/sq yd.
- B. Place wearing course to the thickness as indicated on Drawings.
- C. Compact overlay by rolling to specified density (Ninety-seven (97) percent of the recorded laboratory specimen density per ASTM D1559). Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.8 ERECTION TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch as measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: No less than specified on the Drawings.
- C. Variation from Indicated Elevation: Within 1/4 inch.

3.9 FIELD QUALITY CONTROL

- A. Record the locations where samples are taken to correlate with subsequent testing.
- B. Sample asphalt paving in accordance with ASTM D979
- C. Asphalt Cement Content: ASTM D2172; three tests for each days paving unless otherwise directed or specified by the Owner.
- D. Asphalt Paving Mix Temperature: Measure temperature at time of placement.
- E. Asphalt Paving Thickness: ASTM D3549; perform five tests for each days paving unless otherwise directed or specified by the Owner.
- F. Asphalt Paving Density: ASTM D2950 nuclear method; perform five tests for each days paving unless otherwise directed or specified by the Owner.
- G. Additional testing may be required if any of the previous tests indicate insufficient values. If two successive tests indicate insufficient values, contact the Owner for a course of action.
- H. Asphalt concrete materials not complying with specified requirements shall be repaired or removed and replaced with new paving.

3.10 PROTECTION OF FINISHED WORK

- A. Immediately after placement, protect paving from mechanical injury for at least 6 hours or until surface temperature is less than 140 degrees F.

DATE:

CONTRACTOR:

STREET ADDRESS:

CITY, STATE, ZIP:

AGENT:

GUARANTEE FOR BITUMINOUS PAVEMENT

We hereby guarantee that the Asphalt Pavement which we have installed at _____ for has been done in strict accordance with the Drawings and Specifications. We will repair or replace, or agree to have repaired or replaced, all Work which may prove to be defective in workmanship or materials. We will repair or replace, or agree to have repaired or replaced, any adjacent Work which required repair or replacement because of our defective Work. We guarantee the Work for two years from the date of acceptance by the Owner

Failure to comply with the above paragraph within 10 days after receipt of written notice from the Owner, or failure to Work with diligence authorizes the Owner to proceed with repair of the defective Work. We shall pay the costs and charges for the repairs along with interest at the maximum rate permitted by law upon demand. If we fail to fulfill the preceding obligation, and if the Owner brings an action to enforce this guarantee, we agree to pay the Owner's reasonable attorney fees incurred.

CONTRACTOR'S SIGNATURE

- (a) The Paving Contractor shall execute the Guarantee Form as shown above.
- (b) All Manufacturer's Warranties for materials shall be filled out, dated, signed and submitted to Owner.

****END OF SECTION****

CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete paving for:
 - a. Concrete sidewalks.
 - b. Concrete curbs and gutters.
 - c. Concrete parking areas and roads.

B. Related Sections:

1. Section 32 17 23 - Pavement markings.
2. Section 31 22 13 - Rough Grading
3. Section 31 23 23 - Fill
4. Section 32 05 16 – Soils and Aggregates
5. Section 32 12 16 - Asphalt Paving
6. Section 32 91 19 - Landscape Grading
7. Section 33 05 13 - Manholes and Structures

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO M213 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

B. American Concrete Institute:

1. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
2. ACI 305R - Hot Weather Concreting.
3. ACI 306R - Cold Weather Concreting.
4. ACI 315 - Manual of Standard Practice for Detailing Reinforced Concrete Structures.

C. ASTM International:

1. ASTM A184 - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.

SECTION 321313
CONCRETE PAVING

2. ASTM A185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
3. ASTM A497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
4. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
5. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
6. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
7. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
8. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
9. ASTM C150 - Standard Specification for Portland Cement.
10. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
11. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
13. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
14. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
15. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
16. ASTM C994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
17. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
18. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

1.3 SUBMITTALS

A. Submittal of On-Site Mixed Concrete:

1. The contractor will keep record of each batch mixed, which will include:
 - a. Type and brand of cement used.
 - b. Amount of cement in sacks per cu. yd.
 - c. Maximum size of aggregate.
 - d. Total water content in W/C ratio (lbs./lbs.)
 - e. Total amount of mixing time, starting at placement of water in the mixer.

SECTION 321313
CONCRETE PAVING

- f. Location of placement of each batch.
 - g. Copies of these records shall be furnished to the Owner, the Testing Laboratory and the Engineer at the completion of each day's work or on demand.
- 2. One copy of each delivery ticket for the aggregate used shall be submitted to the Owner and the Engineer.
- B. Submittal of Ready-Mixed Concrete Information
 - 1. Statement of Purchase for Ready-Mixed Concrete: Prior to actual delivery of concrete, submit, to the Owner, four copies of Statement of Purchase, giving the dry weights of cement and saturated surface dry weights of fine and coarse aggregates and quantities, type and name of admixtures (if any) and of water per cu. yd., that will be used in the manufacture of the concrete. The Contractor shall also furnish evidence satisfactory to the Owner that the materials to be used and proportions selected will produce concrete of the quality specified. Whatever strengths are obtained, the quality of cement used shall not be less than the minimum specified.
 - 2. Reports: Submit four copies of reports, to the Owner, for ready-mix concrete slump, air content, unit weight, yield and strength tests as specified in Section 15 and 17 of ASTM C94.
 - 3. Ready-Mixed Concrete Delivery Tickets: Submit one copy of each delivery ticket to the Owner and Contractor in accordance with Section 16 of ASTM C94.
 - 4. Submit manufacturers complete technical data sheet for colored admixtures and curing compounds for any colored concrete pavement and sidewalk areas. Include color charts for initial selection of color by Owner.
- C. The paving contractor shall execute the Guarantee for Concrete Pavement, Guarantee for Concrete Curb, and Guarantee for Concrete Sidewalk forms located at the end of this section per the requirements set forth on the forms.
- D. Design Data:
 - 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
 - a. Hot and cold weather concrete work.
 - 2. Identify mix ingredients and proportions, including admixtures.
 - 3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

1.4 QUALITY ASSURANCE

- A. Testing and Inspection Service: The Owner may engage a testing agency to sample and test concrete materials proposed for use in the Work, perform tests and calculations for concrete mixtures and perform testing during paving operations.

SECTION 321313
CONCRETE PAVING

- B. Submit to the Owner, 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 Owner, job-mix formulas for each required cement-aggregate mixture. Mix designs shall be within allowable tolerances as specified for the particular application.
- D. Obtain cementitious materials from same source throughout.
- E. Perform Work in accordance with local governing agency standards.

1.5 QUALIFICATIONS

- A. Manufacturer: 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 thoroughly experienced in ready-mixed concrete. If requested by the Owner, submit a written description of proposed ready-mixed concrete Manufacturer, giving qualifications of Personnel, location of batching plant, list of Projects similar in scope to specified Work, and other information as may be requested by the Owner.
- B. Installer: All concrete installers must be approved by the Owner. If requested by the Owner, submit a written description of proposed ready-mixed concrete Installer, giving qualifications of Personnel, list of Projects similar in scope to specified Work, and other information as may be requested by the Owner.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Construct concrete surface course only when ground temperature is above 35-degrees F and base is dry. Base course must be laid when temperature is above 35-degrees F and rising.

1.7 TRAFFIC CONTROL

- A. Maintain vehicle and pedestrian traffic during paving and repair operations in such a manner as to not disrupt normal business activities of adjacent enterprises.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Wood, steel or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required.
- B. 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. The forms shall be of the full depth of the section. Curb and gutter forms shall be so constructed as to permit the inside of the form to be securely fastened to the outside forms.

2.2 JOINT MATERIALS

- A. Asphalt Expansion Joint Filler: ASTM D994 pre-formed bituminous type, ¾-inch thick unless otherwise shown on the Drawings; such as W.R. Meadows Inc. "Asphalt Expansion Joint", W.R. Grace & Co. "Servicised Code 1301", Celotex Corp. "Elastite" or approved equal.

SECTION 321313
CONCRETE PAVING

- B. Hot Poured Joint Sealer: Fed. Spec. SS-5-164(4) rubber asphalt type; such as W.R. Meadows, Inc. "Sealtight 164," W.R. Grace & Co. "Servicised Para-Plastic Code 2341," Celotex Corp. "Standard Carelastic Sealing Compound" or approved equal.
- C. Cold Applied Joint Sealer: Fed. Spec. SS-5-158A(1) liquefier type; such as W.R. Meadows, Inc. "Sealtight 158", W.R. Grace & Co. "Servicised Zero-Lastic Code 2377", Celotex Corp. "Carelastic Cold Seal" or approved equal.
- D. Expansion papers shall be of the pre-molded non-extruding, asphalt impregnated type, not less than ½-inch thick. The length shall be equal to the width of the slab and the depth equal to the thickness of the slab plus 1-inch.

2.3 REINFORCING

- A. Deformed Reinforcing Bars: Steel: ASTM A615, 60 ksi yield grade, deformed billet-steel bars, epoxy coated finish.
- B. Deformed Bar Mats: ASTM A184; fabricated from ASTM A615; 60 ksi yield strength, steel bars, epoxy coated finish.
- C. Welded Deformed Wire Fabric: ASTM A497; in flat sheets; epoxy coated finish.
- D. Welded Plain Wire Fabric: ASTM A185; in flat sheets; epoxy coated finish.
- E. Dowels: ASTM A615; 60ksi yield strength, plain steel bars; cut to length indicated on Drawings, square ends with burrs removed; epoxy coated finish.
- F. Tie Wire: Black, Minimum 16 gauge annealed steel type, epoxy coated.
- G. Epoxy Coating Patching Material: Type as recommended by coating manufacturer.
- H. Supports for Reinforcements: Bar supports conforming to "Bar Support Specifications" contained in the 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".

2.4 CONCRETE MATERIALS

- A. Cement: All cement used in pavement construction shall be Portland Cement, ASTM C150, Type I – Normal or Type IA.
- B. Fine and Coarse Aggregates:
 - 1. The fine aggregate shall meet all requirements of Section 902 of the Michigan Department of Transportation Specification for 2NS-Natural Sand
 - 2. The coarse aggregate shall meet all requirements of Section 902 of the Michigan Department of Transportation Specification for No. 6A Coarse Aggregate.
- C. Air Entrainment: Air-entraining admixture shall be in accordance with ASTM C260.
- D. Chemical Admixture: ASTM C494.

- E. Concrete can be either mixed on-site or be ready-mixed concrete.

2.5 ACCESSORIES

- A. Curing Compound: The curing compound ASTM C309, Type II, Class B, or approved equal. It shall not allow a moisture loss of more than 0.055 gr./sq. cm. when applied at 200 sq.ft./gallon.

2.6 CONCRETE MIX

A. Production of Concrete Mixed On Site:

1. All concrete shall be mixed in mechanical mixers except when permitted by the Engineer. Mixers shall have a legible, permanently attached plate showing manufacturer's rated capacity, mixing speed and serial number.
2. The Contractor shall, at his expense, furnish samples of fresh concrete and provide safe and satisfactory facilities for obtaining the samples.
3. The temperature of materials as placed into the mixer shall be such that the temperature of the mixed concrete at the time it is placed in final position is not less than 40 degrees F. or more than 90-degrees F. Aggregates and water used for mixing shall not exceed 150-degrees F.
4. Mixing time, measured from the time the ingredients, including water, are in the drum, shall be a minimum of 1.5 minutes for the first cubic yard, plus 0.5 minutes for each additional cubic yard of capacity. The maximum amount of mixing time will be allowed to continue is three times the minimum mixing time. Mixing of the batch any longer than the maximum amount of time allowed will constitute immediate rejection of that batch. The total elapsed time between the intermingling of damp aggregates and cement and the start of mixing shall not exceed 30 minutes.
5. Cement and other materials used in the batch shall be placed in the mixer in such a manner as to prevent any loss due to the effects of wind or an accumulation of cement on surfaces of conveyors or hoppers, or in other conditions which may vary the required quantity of cement in the concrete mixture.
6. Water shall be measured to the correct amount for the required water/cement ratio prior to placement into the mixer. No more water will be allowed to be added. No water will be placed in the mixer by use of pressurized hoses or any other unmeasured means.
7. Mixers and agitators shall be clean and free of any accumulated hard concrete or mortar. Mixer blades shall be in good working order. If a mixer does not meet these requirements, it must be cleaned and repaired prior to use or a new mixer used.

B. Production of Ready-Mixed Concrete:

1. Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C94, and comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete," except as otherwise specified herein.
2. Ready-mixed concrete shall be mixed and delivered to the point of discharge at the job by means of a ready-mix concrete truck.

SECTION 321313
CONCRETE PAVING

3. 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.
 4. Discharge of the concrete shall be completed within 1-1/2 hours or before the drum has revolved 300 revolutions, whichever comes first, after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates.
 5. In hot weather (air temperature 80-degrees F. and above) or under conditions contributing to quick stiffening of the concrete, the time shall be reduced to one hour.
 6. 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.
 7. 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."
- C. Provide concrete to the following criteria:
1. Compressive Strength: 3500 psi minimum at 28 days unless otherwise noted.
 2. Slump: 3 inches maximum.
 3. Total air content by volume: 5% to 8%.
- D. Use calcium chloride only when approved by the Engineer in writing.

2.7 CLEANING OF THE MIXER OR TRUCK

- A. 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. The contractor will be responsible for clean-up of all wash out areas at no additional expense to the Owner.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- C. Verify compacted subgrade is dry and ready to support paving and imposed loads.
1. Proof roll subbase with a (25-ton minimum weight) rubber-tired roller, loaded front-end loader or loaded dump truck in a minimum of two perpendicular passes to identify soft spots.

2. Remove soft subbase and replace with compacted fill as specified in Section 31 23 23.
- D. Verify gradients and elevations of base are correct.
- E. Verify all manhole, catch basin and inlet grates and frames (and any other type of casting within the area to be paved) are installed in correct position and at correct elevation.
- 3.2 SUBBASE AND BASE COURSE
 - A. Aggregate Subbase and/or Base Course shall be installed per Section 32 05 16.
- 3.3 PREPARATION
 - A. Moisten substrate to minimize absorption of water from fresh concrete.
 - B. Coat surfaces of manholes, catch basins and inlets (and any other type of casting within the area to be paved) with oil to prevent bond with concrete paving.
- 3.4 LINE AND GRADE
 - A. The contractor will hire a Registered Land Surveyor to establish the line and grade from the Construction Plans.
- 3.5 PROPERTY MARKERS
 - A. All property stakes, irons, monuments, etc. shall be protected and shall not be moved without the written permission of the Property Owner.
- 3.6 FORMING
 - 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 mortar. Bracing with piles of earth will not be permitted.
 - B. Coat surfaces of forms to be in contact with concrete with light clear paraffin oil or parting compound which will not stain the concrete.
 - C. Before start of concrete placing, formwork shall be complete and approved by the Soils Engineer.
 - D. Hardened concrete, debris and foreign material shall be removed from interior of forms.
- 3.7 REINFORCING
 - A. Provide reinforcement for concrete pavement 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.

3.8 PLACING CONCRETE

- 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. 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.
- C. When the temperature of the surrounding air is expected to be below 40-degrees F. during concrete placing or within 24-hours thereafter, the temperature of the plastic concrete, as placed, shall be no lower than 60-degrees F. The temperature of the concrete as placed shall not be so high as to cause difficulty from loss of slump, flash set or cold joints, and should not exceed 90-degrees F. When the temperature of the concrete exceeds 80-degrees F., precautionary measures approved by the Engineer shall be put into effect. 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.
- D. 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 removed from the Site and disposed of in a location approved by the Owner or Governing Agency.
- E. Pavement may be constructed either by use of forms or by a mechanical paver, provided the required finish, and cross-section, as shown on Drawings, are obtained. Concrete shall be placed to provide one course monolithic structure without the use of mortar topping or sand-cement drier. Concrete shall be spaded or vibrated sufficiently to ensure satisfactory consolidation.
- F. The concrete surface shall be struck off to a plane surface with a straightedge. After the surface has been floated to an even surface, the contraction joint shall be cut and all slab edges rounded with a 1/2-inch radius edging tool that will finish to a width of 2-inches. After the concrete has slightly set, a broom shall be brushed lightly across the surface at right angles to forms so as to impart the required finish per Section 3.13.

3.9 JOINTS FOR CONCRETE PAVEMENT

- A. Provide contraction joints in concrete pavement at the end of each day's pour, unless the pour ends at an expansion joint; in line with all contraction joints and end-of-pour joints of abutting concrete placements, at 40-foot maximum intervals, and elsewhere as shown on Drawings.
- B. Form contraction joints by sawing a 1/4" wide cut perpendicular to the surface and at right angles to the edge of pavement, to a depth of at least 1/4 the slab thickness with a minimum depth of 3 inches.
- C. Longitudinal joints shall be placed parallel to edge of pavement and located at 1/3 points or as shown on the Plans. Depth and width are specified in paragraph 3.9B above.

SECTION 321313
CONCRETE PAVING

- D. Provide expansion joints in concrete pavement, at tangent points or radius returns, at intersections, and in straight runs at uniform intervals not exceeding 240-feet on centers.
- E. Provide expansion joints between concrete pavement and adjacent rigid structures not specified herein before.
- F. Fill expansion joints with expansion joint filler strips, 1-inch thick unless otherwise shown on the Drawings. The strap shall extend the full depth of the concrete complying with AASHTO M-213, Type III.
- G. Where the expansion joint will not be sealed, install joint filler strips with top flush with concrete finish elevation.
- H. All contraction joints in concrete pavement sections shall be sealed with either hot-poured joint sealer or cold-applied joint sealer.
- I. Prior to applying joint sealer, remove wood strips. Clean joint groove of foreign matter and loose particles, and dry surface.
- J. Slightly underfill joint groove with joint sealer to prevent extrusion of the sealer. Remove excess joint sealer material as soon after sealing as possible.
- K. Subsequent to joint sealing, protect sealed areas from contact with injurious substances or damage from construction traffic or operations until project completion.

3.10 JOINTS FOR CONCRETE SIDEWALK

- A. Contraction joints shall be placed at right angles to the edge of the sidewalk and perpendicular to the surface and at a depth of at least 1/4 the slab thickness with a minimum depth of 1-1/4 inches.
- B. Contraction joints shall be spaced at a minimum of every 5-foot, or as shown on the Plans.
- C. The concrete surface shall be struck off to a plane surface with a straightedge. After the surface has been floated to an even surface, the contraction joint shall be cut and all slab edges rounded with a 1/2-inch radius edging tool that will finish to a width of 2-inches.
- D. After the concrete has set, a broom shall be brushed lightly across the surface at right angles to forms so as to impart the required finish per Section 3.13.
- E. Expansion joints shall be placed at the following locations:
 - 1. At the back of the curb and front edge of the sidewalks adjacent to each driveway.
 - 2. At any place where a sidewalk abuts a building or fixed structure.
 - 3. At any other locations indicated on the Plans.

3.11 JOINTS FOR CONCRETE CURB AND GUTTER

- A. Provide contraction joints in concrete curb and gutter at the end of each day's pour, unless the pour ends at an expansion joint, in line with all contraction joints and end-of-pour joints of the abutting concrete placements, at 40-foot maximum intervals and elsewhere as indicated on the Drawings.

- B. Form contraction joints by steel templates ¼-inch in thickness, shaped to conform to the required cross-section of the curb. Leave templates in place until the concrete has set sufficiently to hold its shape.
- C. Provide expansion joints in concrete curb and gutter at tangent points of curb returns, at intersections and in straight runs at uniform intervals not exceeding 30-feet on centers.
- D. Provide expansion joints with expansion joint filler strips, 1-inch thick, unless otherwise shown on the Drawings. The strips shall extend the full depth of the concrete complying with AASHTO M-213, Type III.
- E. After the concrete has set, a broom shall be brushed lightly across the surface at right angles to forms so as to impart the required finish per Section 3.13.
- F. Install joint filler strips at the proper depth below the finished concrete construction with a slightly tapered, dressed-and-oiled wood strip temporarily secured to the top of the filler strip to form a groove not less than ¼-inch in depth.
- G. All contraction joints in concrete curb sections shall be sealed with either hot-poured joint sealer or cold-applied joint sealer.
- H. Prior to applying joint sealer, remove wood strips. Clean joint groove of foreign matter and loose particles and dry surface.
- I. Slightly underfill joint groove with joint sealer to prevent extrusion of the sealer. Remove excess joint sealer materials as soon after sealing as possible.
- J. Subsequent to joint sealing, protect sealed areas from contact with injurious substances or damage from construction traffic or operations until project completion.

3.12 FINISHING

- A. Paving: Light broom.
- B. Sidewalk Paving: Light broom, radius to 1 inch radius, and trowel joint edges.
- C. Curbs and Gutters: Light broom.
- D. Direction of Texturing: Transverse to paving direction.
- E. Place curing compound on exposed concrete surfaces immediately after finishing.

3.13 CURING AND WEATHER PROTECTION

- A. Freshly 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 per Section 3.14B and 3.14C. 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, or 50-degrees F in any 24 hour period.

- 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".

3.14 IDENTIFICATIONS

- A. Prior to the application of the curing compound, the Contractor shall clearly and neatly mark the pavement with the Contractor's name and year of construction. This identification shall be stamped in the concrete at both ends of a length of pavement construction, at intersection locations of the pavement constructed, at both ends of a length of curb constructed and once in the middle, at both ends of a length of sidewalk constructed and at one spot in a driveway approach.

3.15 REMOVAL OF FORMS AND CLEAN UP

- A. All forms, rails and stakes shall be removed within 24-hours after placing the pavement, sidewalk or curbs.
- B. After completion of concrete curing in an area, remove all weather protection materials and rubbish and debris resulting from the specified Work, sweep concrete curbs clean and seal joints as specified in Sections 3.9 through 3.11.

3.16 ERECTION TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/8 inch in 10 ft.
- B. Variation from Indicated Elevation: Within 1/4 inch.
- C. Maximum Variation From True Position: 1/4 inch.
- D. Scheduled Thickness: No less than specified on the Drawings.

3.17 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with ASTM C94 and local governing agency standards.
- B. Inspect reinforcing placement for size, spacing, location, support.
- C. Quality Control During Paving Operations:
 - 1. Sampling Procedures: ASTM C172.
 - 2. Cylinder Molding and Curing Procedures: ASTM C31, cylinder specimens.
 - 3. Sample concrete and make three cylinders for each day of paving unless otherwise specified by the Owner. Record the locations where the samples are taken to correlate with subsequent testing.
 - 4. Test one cured concrete cylinder from each sample set per ASTM C39 at 7-day and 28-day periods and report the type of failure and compressive strength at failure. Note the third cylinder is to be stored for future use.
 - 5. Test slump in-field per ASTM C143 for each sample.
 - 6. Test mix for air-entrainment per ASTM C231 for each sample.
- D. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.
- E. Additional testing may be required if any of the previous tests indicate insufficient values. If two successive tests indicate insufficient values, contact the Owner for a course of action.
- F. Concrete materials not complying with the specified requirements shall be repaired or removed and replaced with new paving.

3.18 PROTECTION

- A. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury. Refer to section 3.14 for additional detail.
- B. Do not permit vehicular traffic over paving for a minimum of 14 days after finishing.

END OF SECTION

PAVEMENT MARKINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Traffic lines and markings
2. Legends
3. Pain

B. Related Sections:

1. Section 32 12 16 - Asphalt Paving
2. Section 32 13 13 - Concrete Paving.

1.2 PERFORMANCE REQUIREMENTS

- A. Paint Adhesion: Adhere to road surface forming smooth continuous film one minute after application.
- B. Paint Drying: Tack free by touch so as not to require coning or other traffic control devices to prevent transfer by vehicle tires within two minutes after application.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit paint formulation for each type of paint.
- C. Manufacturer's Installation Instructions: Submit instructions for application temperatures, eradication requirements, application rate, line thickness, and any other data on proper installation.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

SECTION 321723
PAVEMENT
MARKINGS

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Invert containers several days prior to use when paint has been stored more than 2 months. Minimize exposure to air when transferring paint. Seal drums and tanks when not in use.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer
- C. Do not apply exterior coatings during rain or snow when relative humidity is outside humidity ranges, or moisture content of surfaces exceed those required by paint product manufacturer.
- D. Do not apply paint when temperatures are expected to fall below 40 degrees F for 24 hours after application.
- E. Volatile Organic Content (VOC). Do not exceed State or Environmental Protection Agency maximum VOC on traffic paint.

PART 2 PRODUCTS

2.1 PAINTED PAVEMENT MARKINGS

- A. Furnish materials in accordance with local governing agency standards.
- B. Color:
 - 1. Traffic lane striping shall be white or yellow reflectorized as shown on the Plans.
 - 2. Traffic marking, curb faces and lightpole bases shall be yellow reflectorized as shown on the Plans.
 - 3. Parking lot striping shall be yellow unless otherwise noted.
 - 4. Handicap stall striping meeting current ADA guidelines shall be blue unless noted otherwise.

2.2 EQUIPMENT

- A. Continuous Longitudinal Line Application Machine: Use application equipment with following capabilities.
 - 1. Dual nozzle paint gun to simultaneously apply parallel lines of indicated width in solid or broken patterns or various combinations of those patterns.
 - 2. Pressurized bead-gun to automatically dispense glass beads onto painted surface, at required application rate.
 - 3. Measuring device to automatically and continuously measure length of each line placed, to nearest foot.
 - 4. Device to heat paint as necessary for fast dry applications.
- B. Machine Calibration:
 - 1. Paint Line Measuring Device: Calibrate automatic line length gauges to maintain tolerance of plus or minus 25 feet per mile.
 - 2. Cycle Length/Paint Line Length Timer: Calibrate cycle length to maintain tolerance of plus or minus 6 inches per 40 feet; calibrate paint line length to maintain tolerance to plus or minus 3 inches per 10 feet.
 - 3. Paint Guns: Calibrate to simultaneously apply paint binder at uniform rates as specified with an allowable tolerance of plus or minus 1 mil.
- C. Other Equipment:
 - 1. For application of crosswalks, intersections, stop lines, legends and other miscellaneous items by walk behind strippers, hand spray or stencil trucks, apply with equipment meeting requirements of this section. Do not use hand brushes or rollers.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Do not apply paint to pavement surfaces until it has cured for 28 days, unless approved by Owner.

3.2 PREPARATION

- A. Maintenance and Protection of Traffic:
 - 1. Prevent interference with marking operations and to prevent traffic on newly applied markings before markings dry.

SECTION 321723
PAVEMENT
MARKINGS

2. Maintain access to existing businesses, and other properties requiring access.

B. Surface Preparation.

1. Clean and dry paved surface prior to painting.
2. Blow or sweep surface free of dirt, debris, oil, grease or gasoline or other material that would adversely affect paint bonding with pavement.

3.3 APPLICATION

- A. Agitate paint for 1-15 minutes prior to application to ensure even distribution of paint pigment.
- B. Dispense paint per manufacturer's recommendations to a wet-film thickness of 15 mils, except dispense edge markings to wet-film thickness of 12 mils.
- C. Apply markings to indicated dimensions at indicated locations.
- D. Prevent splattering and over spray when applying markings.
- E. Unless material is track free at end of paint application, use traffic cones to protect markings from traffic until track free. When vehicle crosses a marking and tracks it or when splattering or over spray occurs, eradicate affected marking and resultant tracking and apply new markings.
- F. Collect and legally dispose of residues from painting operations.
- G. Install Work in accordance with local governing agency standards.

3.4 APPLICATION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Wet Film Thickness: 1 mil.
- C. Maximum Variation from Wet Paint Line Width: Plus or minus 1/8 inch.
- D. Maintain cycle length for skip lines at tolerance of plus or minus 6 inches per 40 feet and line length of plus or minus 3 inches per 10 feet.
- E. Maximum Variation from Specified Application Temperature: Plus or minus 5 degrees F

SECTION 321723
PAVEMENT
MARKINGS

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect for incorrect location, insufficient thickness, line width, coverage, retention, uncured or discolored material, and insufficient bonding.
- C. Repair lines and markings, which after application and curing do not meet following criteria:
 - 1. Incorrect Location: Remove and replace incorrectly placed patterns.
 - 2. Insufficient Thickness, Line Width, Paint Coverage, Glass Bead Coverage or Retention: Prepare defective material by acceptably grinding or blast cleaning to remove substantial amount of beads and to roughen marking surface. Remove loose particles and debris. Apply new markings on cleaned surface in accordance with this Section.
 - 3. Uncured or Discolored Material, Insufficient Bonding: Remove defective markings in accordance with this Section and clean pavement surface one foot beyond affected area. Apply new markings on cleaned surface in accordance with this Section.
- D. When eradication of existing paint lines is necessary, eradicate by shot blast or water blast method. Do not gouge or groove pavement more than 1/16 inch during removal. Limit area of removal to area of marking plus 1 inch on all sides. Prevent damage to transverse and longitudinal joint sealers, and repair any damage according to requirements in Section 32 13 13 or Section 32 12 16.
- E. Maintain daily log showing work completed, results of above inspections or tests, pavement and air temperatures, relative humidity, presence of any moisture on pavement, and any material or equipment problems. Make legible entries in log in ink, sign and submit by end of each work day. Enter environmental data into log prior to starting work each day and at two additional times during day.

3.6 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect painted pavement markings from vehicular and pedestrian traffic until paint is dry and track free. Follow manufacturer's recommendations or use minimum of 30 minutes. Consider barrier cones as satisfactory protection for materials requiring more than 2 minutes dry time.

****END OF SECTION****

MANHOLES AND STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Monolithic concrete manhole section with masonry transition to cover frame, covers, anchorage, and accessories.
2. Modular precast concrete manhole section with tongue-and-groove joints [with masonry transition to cover frame,] covers, anchorage, and accessories.
3. Monolithic FRP manhole section with transition to cover frame, covers, anchorage, and accessories.
4. Masonry manhole section with masonry transition to cover frame, covers, anchorage, and accessories.
5. Bedding and cover materials.

B. Related Sections:

1. Section 31 05 16 - Aggregates for Earthwork: Aggregate for backfill in trenches.
2. Section 31 23 16 - Excavation: Excavating for manholes.
3. Section 31 23 23 - Fill: Backfilling after manhole installation.

1.2 REFERENCES

A. American Concrete Institute:

1. ACI 318 - Building Code Requirements for Structural Concrete.
2. ACI 530/530.1 - Building Code Requirements for Masonry Structures and Specifications for Masonry Structures.

B. ASTM International:

1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM C55 - Standard Specification for Concrete Brick.
4. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
5. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.

SECTION 330513
MANHOLES AND
STRUCTURES

6. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
8. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.
9. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells.

1.3 DESIGN REQUIREMENTS

- A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318.
- B. Design of Lifting Devices for Precast Components: In accordance with ASTM C913.
- C. Design of Joints for Precast Components: In accordance with ASTM C913; maximum leakage of 0.025 gallons per hour per foot of joint at 3 feet of head.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate manhole locations, elevations, piping with sizes and elevations of penetrations.
- B. Product Data: Submit manhole cover and frame construction, features, configuration, dimensions.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years experience.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast manholes.
- B. Store precast concrete manholes to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.
- C. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

PART 2 PRODUCTS

2.1 MANHOLES

- A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C478 with gaskets in accordance with ASTM C923.
- B. Mortar and Grout: Mortar for finishing and sealing shall be Class "C". Honeycombing less than 2 inches deep shall be repaired using Class "D" mortar.
- C. Brick Transition Reinforcement: Formed steel 8 gage wire with galvanized finish.

2.2 FRAMES AND COVERS

- A. Manufacturers:
 - 1. East Jordan Iron Works.
 - 2. Approved Equal.
- B. Product Description: ASTM A48, Class 30B Heavy Duty Cast iron construction, machined flat bearing surface, removable lid, closed or open as indicated on Drawings; sealing gasket; cover molded with identifying name and logo as required by local governing agency.

2.3 COMPONENTS

- A. Manhole Steps: M.A. Industries P.S.I. Polypropylene or approved equal.
- B. Base Pad: Cast-in-place concrete 3,000 psi at 28 days, leveled top surface.

2.4 CONFIGURATION

- A. Manhole Section Construction: Concentric with eccentric cone top section.
- B. Shape: Cylindrical.
- C. Clear Inside Dimensions: 48 inch diameter or as indicated on Drawings.
- D. Design Depth: As indicated on Drawings.
- E. Clear Lid Opening: 24 inch minimum diameter.
- F. Pipe Entry: Provide openings as indicated on Drawings.
- G. Steps: 16 inches on center vertically, set into manhole wall. As indicated on Drawings.

2.5 BEDDING AND COVER MATERIALS

- A. Bedding: Fill Type A1 as specified in Section 31 05 16.
- B. Cover: Fill Type A2, as specified in Section 31 05 16.

2.6 FINISHING - STEEL

- A. Galvanizing: ASTM A123, hot dip galvanize after fabrication.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify items provided by other sections of Work are properly sized and located.
- C. Verify built-in items are in proper location, and ready for roughing into Work.
- D. Verify correct size of manhole excavation.

3.2 PREPARATION

- A. Coordinate placement of inlet and outlet pipe required by other sections.
- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

- A. Excavation and Backfill:
 - 1. Excavate for manholes in accordance with Section 31 23 16 in location and to depth shown. Provide clearance around sidewalls of structure for construction operations.
 - 2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes in dry trench.
 - 3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.
- B. Place base pad, trowel top surface level.
- C. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.
- D. Backfill excavations for manholes in accordance with Section 31 23 16 and 31 23 23.
- E. Form and place manhole cylinder plumb and level, to correct dimensions and elevations.
- F. Cut and fit for pipe.
- G. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel as indicated on Drawings.
- H. Set cover frames and covers level without tipping, to correct elevations.

SECTION 330513
MANHOLES AND
STRUCTURES

- I. Coordinate with other sections of Work to provide correct size, shape, and location.

3.4 PRECAST CONCRETE MANHOLE INSTALLATION

- A. Lift precast components at lifting points designated by manufacturer.
- B. When lowering manholes into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.
- C. Set precast structures bearing firmly and fully on crushed stone bedding, compacted in accordance with provisions of Section 31 23 16, Section 31 23 23 or on other support system shown on Drawings.
- D. Assemble multi-section structures by lowering each section into excavation. Lower, set level, and firmly position base section before placing additional sections.
- E. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- F. Joint sealing materials may be installed on site or at manufacturer's plant.
- G. Verify manholes installed satisfy required alignment and grade.
- H. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.
- I. Cut pipe to finish flush with interior of structure.
- J. Shape inverts through manhole as shown on Drawings.

3.5 CAST-IN-PLACE CONCRETE MANHOLE INSTALLATION

- A. Prepare crushed stone bedding or other support system shown on Drawings, to receive base slab as specified for precast structures.
- B. Erect and brace forms against movement.
- C. Install reinforcing steel as indicated on Drawings.
- D. Place and cure concrete.

3.6 FRAME AND COVER INSTALLATION

- A. Set frames using mortar and masonry. Install radially laid concrete brick with 1/4 inch thick vertical joints at inside perimeter. Lay concrete brick in full bed of mortar and completely fill joints. Where more than one course of concrete brick is required, stagger vertical joints.
- B. Set frame and cover 2 inches above finished grade for manholes with covers located within unpaved areas to allow area to be graded away from cover beginning 1 inch below top surface of frame.

3.7 FIELD QUALITY CONTROL

- A. Test concrete manhole and structure sections in accordance with ASTM C497.
- B. Vertical Adjustment of Existing Manholes:
 - 1. Where required, adjust top elevation of existing manholes to finished grades shown on Drawings.
 - 2. Reset existing frames, grates and covers, carefully removed, cleaned of mortar fragments, to required elevation in accordance with requirements specified for installation of castings.
 - 3. Remove concrete without damaging existing vertical reinforcing bars when removal of existing concrete wall is required. Clean vertical bars of concrete and bend into new concrete top slab or splice to required vertical reinforcement, as indicated Drawings.
 - 4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete.

END OF SECTION

STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Storm drainage piping.
2. Accessories.
3. Catch basins.
4. Bedding and cover materials.

B. Related Sections:

1. Section 31 05 16 – Soils and Aggregates: Aggregate for backfill in trenches.
2. Section 31 23 16 - Excavation: Product and execution requirements for excavation and backfill required by this section.
3. Section 31 23 17 - Trenching: Execution requirements for trenching required by this section.
4. Section 31 23 23 - Fill: Requirements for backfill to be placed by this section.
5. Section 33 05 13 - Manholes and Structures.
6. Section 33 46 00 - Subdrainage: Termination of subdrainage tile system for connection to Work of this Section.

1.2 REFERENCES

A. ASTM International:

1. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
2. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
4. ASTM D1785 Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe
5. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

SECTION 334100
STORM UTILITY
DRAINAGE PIPING

6. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
7. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
8. ASTM D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
9. ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

1.3 SUBMITTALS

- A. Product Data: Submit data indicating pipe and pipe accessories.
- B. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
 1. Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with local governing agency standards.

1.6 COORDINATION

- A. Coordinate the Work with termination of storm sewer connection outside building, trenching, and connection to municipal sewer utility service.

PART 2 PRODUCTS

2.1 STORM DRAINAGE PIPING

- A. Reinforced Concrete Pipe: ASTM C76, Class IV unless indicated otherwise on Drawings.
 1. Fittings: Reinforced concrete.
 2. Joints: ASTM C443, rubber compression gasket.

2.2 CATCH BASINS

A. Catch Basin Lid and Frame Manufacturers:

1. East Jordan Iron Works, Inc.
2. Approved Equal.

B. Catch Basin Lid and Frame:

1. Construction: Cast iron construction as indicated on Drawings.

C. Shaft Construction and Cone Top Section: Reinforced precast Concrete pipe sections, lipped male/female joints, nominal shaft diameter as indicated on Drawings.

D. Base Pad: Cast-in-place concrete of type specified on Drawings.

2.3 CLEANOUTS

A. Cleanout Lid and Frame Manufacturers:

1. East Jordan Iron Works.
2. Approved Equal.

2.4 BEDDING AND COVER MATERIALS

A. Bedding: Fill Type A1 as specified in Section 31 05 16.

B. Cover: Fill Type A2, as specified in Section 31 05 16.

C. Soil Backfill from Above Pipe to Finish Grade: Soil Type A2, as specified in Section 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify trench cut and excavation is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 31 23 17 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Place bedding material at trench bottom, level materials in continuous layers not exceeding 6 inches compacted depth, each layer. Place compacted bedding material to elevation of paving subgrade as indicated on Drawings.
- C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321, ASTM C12 or manufacturer's published instructions, and state or local requirements. Seal joints watertight.
- B. Install pipe on minimum 6 inch bedding, ½" to 1 ½" crushed angular graded stone compacted to 95% maximum dry density per ASTM D1557.
- C. Lay pipe to slope gradients indicated on Drawings.
- D. Install aggregate at sides and over top of pipe. Provide top cover to minimum compacted thickness equal to paving subgrade indicated on Drawings.
- E. Refer to Section 31 23 23 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.
- F. Refer to Section 33 05 13 for manhole requirements.
- G. Connect to municipal storm sewer system, manholes, catch basins, and inlets as indicated on Drawings.
- H. Connect to subdrainage tile system piping. Refer to Section 33 46 00.
- I. Install site storm drainage system piping to 5 feet of building.
- J. Install Work in accordance with local government standards.

3.5 INSTALLATION - CATCH BASINS

- A. Form bottom of excavation clean and smooth to elevation indicated on Drawings.
- B. Form and place cast-in-place concrete base pad, with provision for storm sewer to be placed at required elevations.
- C. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.
- D. Establish elevations and pipe inverts for inlets and outlets as indicated on Drawings.
- E. Mount grate and frame level, in grout, secured to top section to elevation indicated.
- F. Install Work in accordance with local government standards.

3.6 FIELD QUALITY CONTROL

- A. Request inspection prior to and immediately after placing aggregate cover over pipe.
- B. Compaction Testing: In accordance with ASTM D1557.
- C. When tests indicate work does not meet specified requirements, remove work, replace and retest.
- D. Frequency of Compaction Tests: One test for each 50 lineal feet of trench.
- E. Infiltration Test: Test in accordance with applicable local Public Works Department Standard Specifications and requirements.
- F. Deflection Test: Test in accordance with applicable local Public Works Department Standard Specifications and requirements.
- G. Pressure Test: Test in accordance with applicable local Public Works Department Standard Specifications and requirements.

3.7 PROTECTION OF FINISHED WORK

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
 - 1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
 - 2. Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION



Addendum 1

Project: **BID NO. 9906 NILES CENTER DEMOLITION PROJECT**

Bid Due date: 2:00PM Thursday, March 19, 2020 (UNCHANGED)

This Addendum is issued as modifications to the RFP previously issued to provide clarifications to the scope of work. This Addendum supersedes the original RFP. This along with the RFP becomes the bid documents.

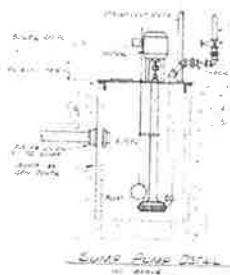
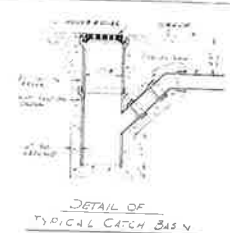
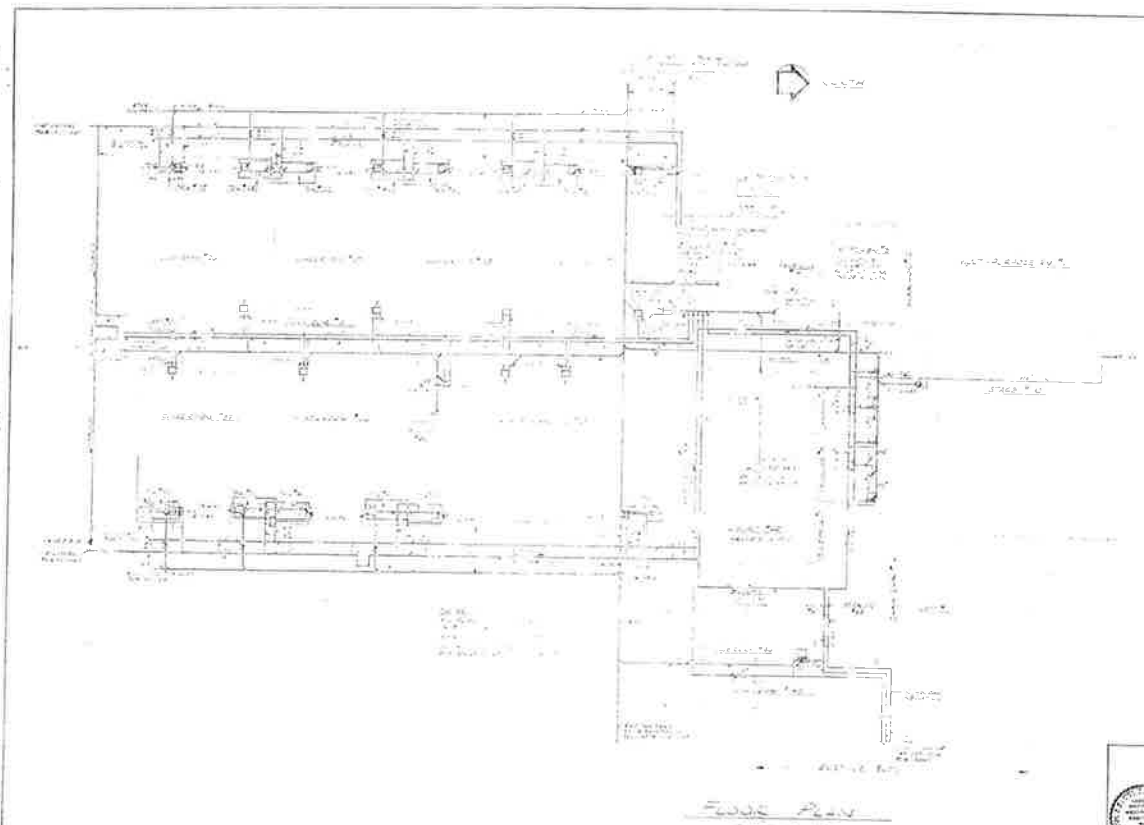
I. General Information

1. For questions e-mail purchasingoffice@troy.k12.mi.us.
2. Attached to this addendum is existing drawings M-2, M-3, M-4 and M-5.
3. Pre-bid meeting occurred on Monday, March 9, 2020.
4. If any bidders would like schedule another job site visit, contact Mark Paulus at (248) 880-6791. Do not visit the building without a scheduled visit.
5. The Niles Educational Center is a school building and all rules and laws for a school building must be followed.
6. Attached is the sign in sheet for the pre-bid meeting held on March 9, 2020.

II. Questions and Answers

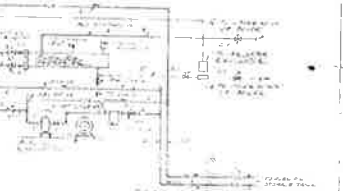
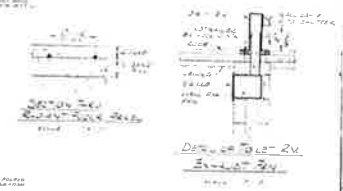
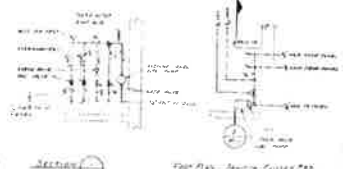
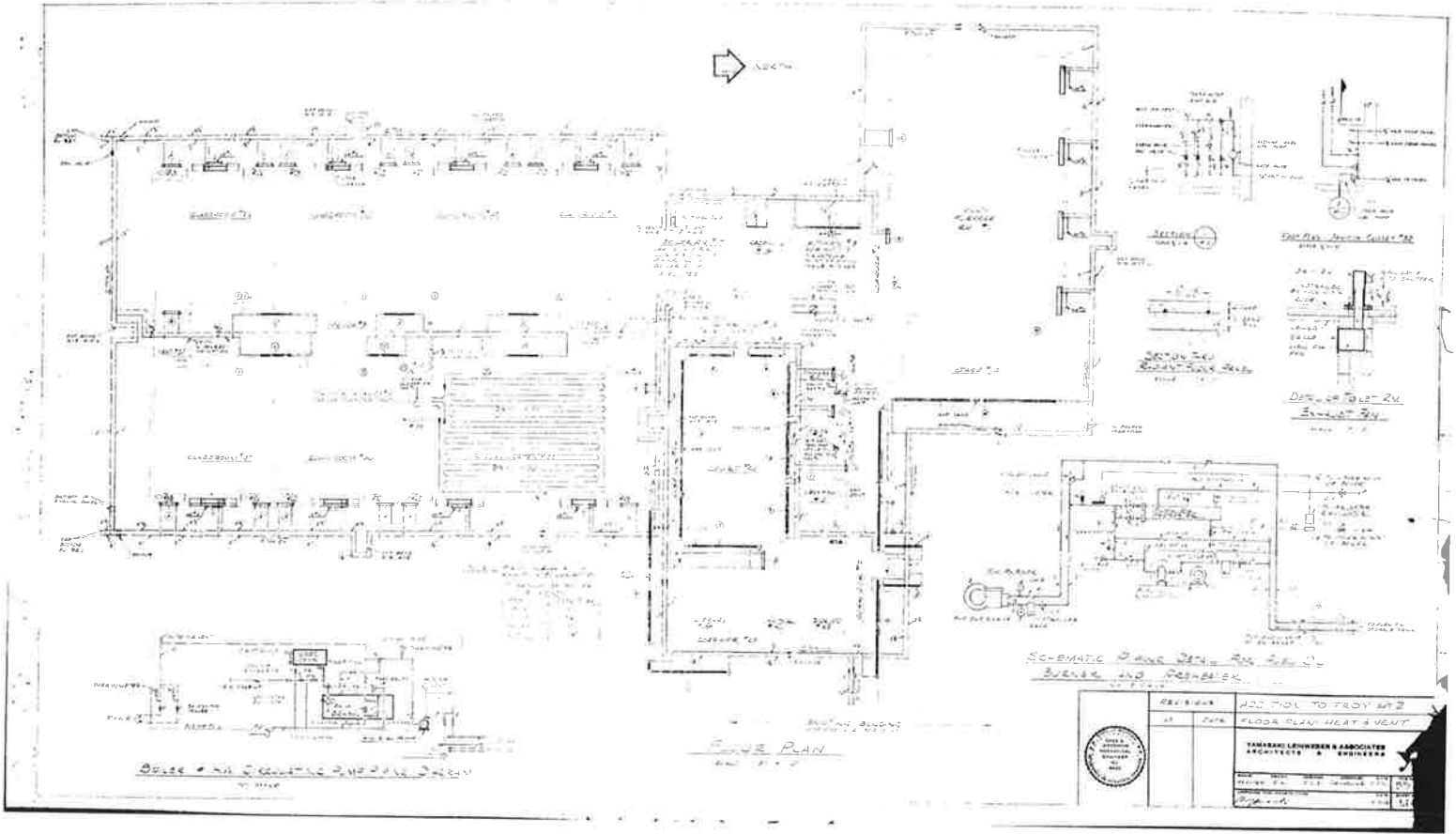
- 1Q. Who is responsible to remove the transformer on the west side of the building.
 - 1A. Per drawing C-2.0, the bidder is to remove the transformers
- 2Q. Is the bidder responsible for DTE or Consumers Power cost.
 - 2A. Per work scope item #11, Troy School District is responsible for the DTE or Consumers Power cost.
- 3Q. Is the concrete storage unit on the south side of the building to be removed?
 - 3A. The concrete storage unit shall be removed by this contractor.
- 4Q. Please confirm the backfill material?
 - 4A. Per drawing C-2.0, all footing/foundation excavations with M.D.O.T. Class II granular material compacted to 95% max dry density (ASTM D-1557)

END



FLOOR PLAN

REVISIONS		ADDITION TO TROY #2
NO.	DATE	FLOOR PLAN - PLUMBING
YAMABAKI LEONARD & ASSOCIATES		yl
ARCHITECTS & ENGINEERS		

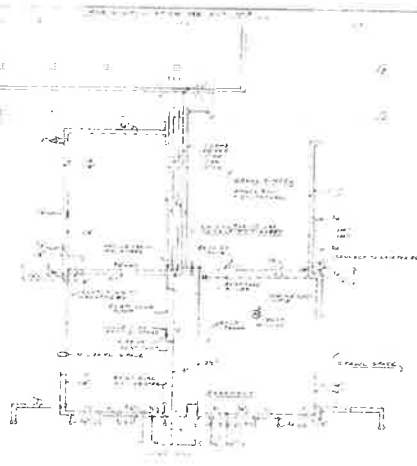


SCHEMATIC SECTION

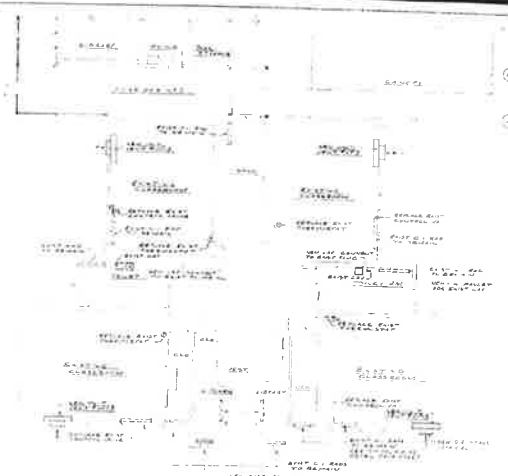
REVISIONS		ADD TOL TO TROY BLDG
NO.	DATE	FLOOR PLAN, HEAT & VENT
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		



YAMAKAWA LEWIS & ASSOCIATES
ARCHITECTS & ENGINEERS



SECOND FLOOR PLAN - EXISTING BUILDING
SCALE: 1/8" = 1'-0"



FIRST FLOOR PLAN - EXISTING BUILDING
SCALE: 1/8" = 1'-0"

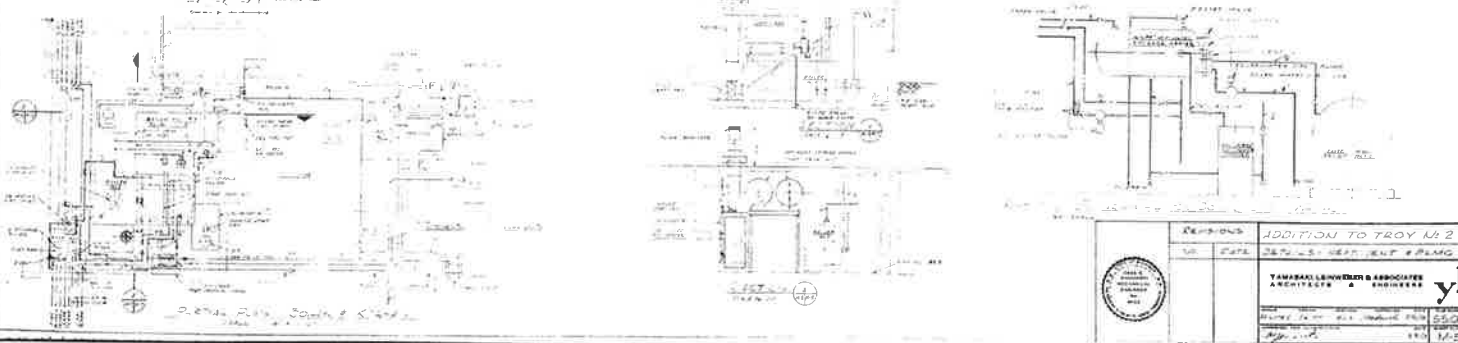
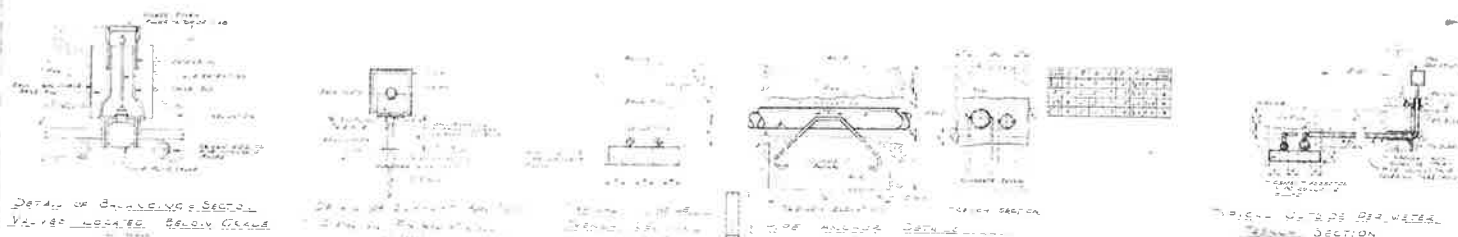
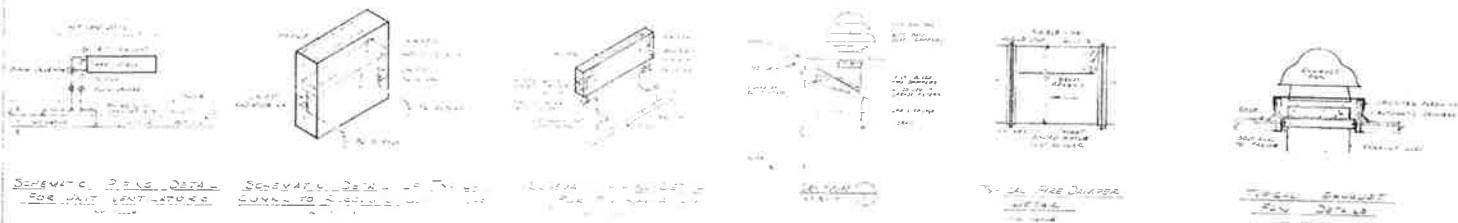


SCHEMATIC PIPING DETAIL
FOR HOT WATER PIPING IN ROOMS
BY T. H. H.



SCHEMATIC PIPING DETAIL
FOR GAS PIPING IN ROOMS
BY T. H. H.

REVISIONS		ADD. PLAN TO TROY N. 2
NO.	DATE	DESCRIPTION
1		ALTERATIONS - EXIST. SCHOOL BLDG.
		YAMASSEE LUTHERAN & ASSOCIATES
		ARCHITECTS & ENGINEERS
		Yl
		PROJECT NO. 100-100000-001
		DATE: 10-1-60
		BY: T. H. H.
		CHK: M. J.



**TROY SCHOOL DISTRICT
NILES COMMUNITY EDUCATION CENTER - BUILDING DEMOLITION
PRE BID MEETING MONDAY MARCH 9, 2020 AT 3:15 PM**

NAME	ORGANIZATION	E-MAIL ADDRESS	PHONE NUMBER
Jake Koresky	Able Demolition	jake@abledemo.net	(586) 997-3366
Tom Lantagne	Hamrich	toml@hamrich.com	(734) 654-9800
Adam Tupy	Adamo Group	atupy@adamo group.com	313-892-7330
MARTY TORILLO	SA TORILLO Inc	marty@torilloinc.com	810-6024475
Adam Bundels	Adams Group	adam@adams-incorporated.com	248.990.5207
Robert Barbier	Blue Star	estimating@bluestardemo.com	586-427-9933

PRE BID MEETING MONDAY MARCH 9, 2020 AT 3:15 PM

[illegible]

Bid Tabulation
BID 9906
Niles Center Demolition Project

Vendors	Amount
Adamo Demolition Co.	\$ 452,800.00
Ahern Contracting, Inc.	\$ 232,000.00
Blue Star, Inc.	\$ 355,600.00
Dore & Associates Contracting, Inc.	\$ 372,500.00
Homrich	\$ 529,000.00
International Contruction, Inc.	\$ 309,900.00
SC Environmental Services LLC	\$ 197,711.00
S.A. Torello, Inc.	\$ 329,688.00