INVITATION TO BID
ITB #4269

2013 STREET RESURFACING PROJECT

Due Date: February 25, 2013 by 10:30 a.m.

Issued By:
City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48107

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ADVERTISEMENT TO BID
CITY OF ANN ARBOR, MICHIGAN

ITB# **4269**

Sealed Bids will be received by the Procurement Unit, Fifth (5th) Floor, Guy Larcom Building, on or before **February 25, 2013 by 10:30 a.m.** for construction of the **2013 Street Resurfacing Project**. Bids will be publicly opened and read aloud at this time.

Work to be done includes the **reconstruction, resurfacing, patching, and repair/replacement of various streets, sidewalks, curbs, and driveways within the City of Ann Arbor** and all related work.

Bid documents, specifications, plans and addendum shall be downloaded by vendors at either of the following web sites, Michigan Inter-governmental Trade Network (MITN) www.mitn.info or City of Ann Arbor web site www.A2gov.org.

Each proposal shall be accompanied by a certified check, or Bid Bond by a recognized surety, in the amount of 5% of the total of the bid price. A proposal, once submitted, becomes the property of the City. In the sole discretion of the City, the City reserves the right to allow a bidder to reclaim submitted documents provided the documents are requested and retrieved no later than 48 hours prior to the scheduled bid opening.

Precondition for entering into a contract with the City of Ann Arbor is compliance with Chapter 112 of Title IX of the Code of the City of Ann Arbor. The successful Bidder may also be required to comply with Chapter 23 of Title I of the Code of the City of Ann Arbor. Further information is outlined in the contract documents.

After the time of opening, no Bid may be withdrawn for a period of 90 days. The City reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

Any further information may be obtained from the Procurement Unit, (734) 794-6576.

CITY OF ANN ARBOR, MICHIGAN

NOTICE OF PRE-BID CONFERENCE

A pre-bid conference for this project will be held:

Thursday, February 14, at 9:30 a.m.

Sixth Floor Conference Room
Guy C. Larcom Building
City Hall
301 E. Huron Street
Ann Arbor, Michigan 48107

Attendance at this conference is optional, but highly recommended. Administrative and technical questions regarding this project will be answered at this time. If any questions arise whose answers constitute modifications to the bid documents, an addendum will be issued.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specification contained within the Service Contract and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

The City shall make available to all prospective Bidders, prior to receipt of the Bids, access to the area in which the work is to be performed. Advance notice should be given to the Administering Service Area/Unit in cases where access to the site must be arranged by the City.

Any Bid which does not conform fully with these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed in ink by the person signing the Bid.

Bids must be submitted on the "Bid Forms" provided, with each blank properly filled in. If forms are not fully completed it may disqualify the bid.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarification on ITB Specifications

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before February 15, 2013 by 3:00 p.m. and should be addressed as follows:

Specification/Scope of Work questions emailed to erolla@a2gov.org.
Bid Process and HR Compliance questions emailed to Lnewton@a2gov.org.

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before February 25, 2013 by 10:30 a.m. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and one (1) Bid copy(ies) in a sealed envelope clearly marked: **ITB 4269 – 2013 Street Resurfacing Project.**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit, 5th Floor
301 East Huron Street
P.O. Box 8647
Ann Arbor, MI 48107

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

Bids should be date/time stamped/signed at the address above in order to be considered. Normal business hours are 9:00 a.m. to 300 p.m. Monday through Friday. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines that circumstances warrant it.

Award

The City intends to award a Contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize discounts offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the contract will be awarded based upon the lump sum and unit prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the forms, or other alternates which the Bidder may wish to submit, but preference will be given to Base Bid Bids.

The City reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

Official Documents

The City of Ann Arbor shall accept no changes to the bid documents made by the Bidder unless those changes are set forth in the "Alternate" section of Bid form.

The City of Ann Arbor officially distributes bid documents from the Purchasing Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not considered Official copies. Only those Bidders who obtain bid documents from MITN system are guarantees access to receive addendum information if issued. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of days specified in the Advertisement.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements cannot be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

The Contract Time specified above is referred to as a one-year period or term. This Contract shall also include an option to extend the contract for up to two (2) additional one-year periods, subject to agreement by the City and the Contractor. An extension of the Contract will be at the same terms and conditions, including the same unit prices, in the original Contract. An extension will be dependent on the availability of funding.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

Section 5, beginning at page GC-3, outlines the requirements for fair employment practices under City of Ann Arbor Contracts. To establish compliance with this Ordinance, the Bidder should be completed and return with its bid completed copies of the Human Rights Division Contract Compliance Forms (see Appendix A) or an acceptable equivalent. In the event the Human Rights forms are not submitted with vendors bid they will have 24 hours to submit upon notice from the City.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages or of a "living wage" to employees providing service to the City under this contract. The successful bidder must comply with all applicable requirements and provide documentary proof of compliance when requested.

Major Subcontractors

The Bidder shall identify **each subcontractor** it expects to engage for this Contract, on the Bid Form pages provided. **The Bidder shall also identify the work to be subcontracted to each subcontractor, and the approximate dollar value of each subcontract.**

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

All information in a submitter's bid is subjected to disclosure under the provisions of Public Act No. 442 of 1976 know as the "Freedom of Information Act". This act also provides for the

complete disclosure of contracts and attachments thereto except where specifically exempted under the Freedom of Information Act.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The vendor must clearly state the reasons for the protest. If a vendor contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/ Unit shall refer the vendor to the Purchasing Agent. The Purchasing Agent will provide the vendor with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including Advertisement, Human Rights Division Contract Compliance Forms, Instructions to Bidders, Bid, Bid Forms, Contract, and all Addenda. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:319 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and reporting requirements stated in the City Code provisions cited. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 201__.

_____
Bidder's Name

_____
Authorized Signature of Bidder

_____
Official Address

_____
(Print Name of Signer Above)

_____
Telephone Number

_____
Email Address for Award Notice

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other two.)

Bidder declares that it is:

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* A corporation organized and doing business under the laws of the state of _____, for whom , bearing the office title of_____, whose signature is affixed to this proposal, is authorized to execute contracts.

---

* A partnership, list all members and the street and mailing address of each:

Also identify the County and State where partnership papers are filed:

County of _____, State of

---

* An individual, whose signature with address, is affixed to this proposal

(initial here)

BID FORM - SECTION 1
PROJECT: 2013 STREET RESURFACING PROJECT
FILE NO: 2013-004 BID NO: ITB 4269

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
201	PROJECT SUPERVISION, MAX $75,000	L.S.	1	$	
202	GENERAL CONDITIONS, MAX $75,000	L.S.	1	$	
203	MINOR TRAFFIC DEVICES, MAX $40,000	L.S.	1	$	
205	REMOVE HMA PAVEMENT ALLEYS	TON	260	$	
206	REMOVE HMA PAVEMENT	S.Y.	250	$	
207	COLD MILLING PAVEMENT	TON	17,990	$	
208	COLD MILLING PVMT, CURB REVEAL	TON	93	$	
209	SUBGRADE UNDERCUTTING - TYPE II	C.Y.	7,698	$	
210	STABILIZATION GEOTEXTILE	S.Y.	3,600	$	
218	STRESS ABSORBING MEMBRANE INTERLAYER, TYPE I	S.Y.	6,581	$	
219	MACHINE GRADING	C.Y.	250	$	
220	HMA PATCHING	TON	80	$	
221	HMA PAVEMENT FINISH WEDGING	TON	42	$	
222	HMA PAVEMENT LEVELING, REGULAR	TON	5,850	$	
223	HMA PAVEMENT WEARING, REGULAR	TON	3,920	$	
226	HMA PAVEMENT WEARING - 5E3	TON	3,030	$	
227	HMA PAVEMENT BASE OR LEVELING - 4E3	TON	5,490	$	
230	REM. CURB AND GUTTER, ANY TYPE	L.F.	16,971	$	
232	REM. CONC. SIDEWALK & DRIVE - ANY THICKNESS	S.F.	87,524	$	

Total This Page $_____

(Also to be entered on Page BF-5)

BID FORM - SECTION 1
PROJECT: 2013 STREET RESURFACING PROJECT
FILE NO: 2013-004 BID NO: ITB 4269

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
233	PVMT JOINT & CRACK REPAIR - DETAIL 7	L.F.	200	$	
234	PVMT JOINT & CRACK REPAIR - DETAIL 8	L.F.	200	$	
237	CONC. CURB & GUTTER - ANY TYPE - FIXED FORM	L.F.	7,431	$	
238	CONC. CURB & GUTTER - ANY TYPE - FIXED FORM - HIGH EARLY	L.F.	630	$	
239	CONC. CURB & GUTTER - ANY TYPE - SLIP FORM	L.F.	8,746	$	
240	4" SIDEWALK OR RAMP	S.F.	9,785	$	
241	6" DRIVE, SIDEWALK OR RAMP	S.F.	13,920	$	
242	6" DRIVE, SIDEWALK OR RAMP - HIGH EARLY	S.F.	336	$	
243	8" DRIVE, SIDEWALK OR RAMP - HIGH EARLY	S.F.	500	$	
245	DETECTABLE WARNING, CAST IN PLACE	S.F.	1,170	$	
246	INTEGRAL SIDEWALK RET. WALL (< 6")	S.F.	40	$	
247	INTEGRAL SIDEWALK RET. WALL (6"-18")	S.F.	40	$	
249	FLAT INLET STRUCTURE COVER	EACH	7	$	
250	2-FOOT DIAM. STRUCTURE	EACH	72	$	
252	RECONSTRUCT STRUCTURE	EACH	7	$	
253	ADD'L DEPTH STRUCTURE ADJ/REPAIR	V.F.	20	$	
254	LOWER STRUCTURE COVER	EACH	156	$	
255	LOWER MON./GATE VALVE BOX	EACH	53	$	
256	ADJUST STRUCTURE COVER	EACH	159	$	
257	ADJUST CURB INLET STRUCTURE COVER	EACH	106	$	

Total This Page $_____

(Also to be entered on Page BF-5)

BID FORM - SECTION 1
PROJECT: 2013 STREET RESURFACING PROJECT
FILE NO: 2013-004 BID NO: ITB 4269

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
258	ADJ. MONUMENT OR GATE VALVE BOX	EACH	54	$	
259	MANHOLE FLANGE & COVER (MDOT TYPE A)	EACH	114	$	
260	INLET STRUCTURE COVER (MDOT TYPE K)	EACH	19	$	
261	POINT STRUCTURE	EACH	5	$	
264	12" SEWER, TRENCH DETAIL I, MODIFIED	L.F.	830	$	
266	SEWER BULKHEAD - 4"-18" DIAM.	EACH	5	$	
267	6" WRAPPED UNDERDRAIN	L.F.	3,300	$	
268	FLOWABLE FILL	C.Y.	100	$	
270	CLASS II SAND - C.I.P.	C.Y.	50	$	
271	21AA LIMESTONE - C.I.P.	C.Y.	6,540	$	
272	AGG. BASE COURSE, 21AA - C.I.P.	C.Y.	150	$	
273	SAND SUBBASE COURSE, CLASS II - C.I.P.	C.Y.	50	$	
278	SPEED HUMP (STANDARD)	S.Y.	160	$	
280	RAISED CROSSWALK	S.Y.	50	$	
281	ARROW PANEL - FURNISH & OPERATE	EACH	4	$	
282	PLASTIC DRUM - LIGHTED - FURN. & OPER.	EACH	1,140	$	
283	BARRICADE TYPE III - FURN. & OPERATE	EACH	45	$	
284	TEMPORARY SIGN - TYPE B	S.F.	3,330	$	
285	NO PARKING SIGN	EACH	350	$	
286	SIGN, PORABLE CHANGEABLE MESS., FURN.	EACH	7	$	

Total This Page $_____

(Also to be entered on Page BF-5)

BID FORM - SECTION 1
PROJECT: 2013 STREET RESURFACING PROJECT
FILE NO: 2013-004 BID NO: ITB 4269

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)
287	SIGN, PORABLE CHANGEABLE MESS., OPER.	EACH	7	$	
291	4-FOOT DIAM. STRUCTURE	EACH	1	$	
295	TUBULAR MARKERS, 36", FURN. & OPER.	EACH	100	$	
297	COLD PLASTIC BIKE SYMBOL - "SHARROW"	EACH	3	$	
386	SEWER STRUCTURE ABANDONMENT	EA	3	$	
580	REM. PAVEMENT MARKING, 4" & 6"	L.F.	7,500	$	
587	WATERBOURNE PAINT, PVMT. MKG., 4" WHITE OR YELLOW	L.F.	6,400	$	
590	THERMOPL. PVMT. MKG., RAILROAD SYMBOL	EACH	1	$	
594	THERMOPL. PVMT. MKG., 4" WHITE	L.F.	1,920	$	
595	THERMOPL. PVMT. MKG., 4" YELLOW	L.F.	12,600	$	
596	THERMOPL. PVMT. MKG., 6" WHITE OR YELLOW	L.F.	8,570	$	
597	THERMOPL. PVMT. MKG., 24" WHITE	L.F.	1,221	$	
598	THERMOPL. PVMT. MKG., SYMBOL OR LEGEND	EACH	40	$	
882	TOPSOIL, SEED, AND MULCH- 4 INCH	S.Y.	500	$	

Total This Page $_____

(Also to be entered on Page BF-5)

BID FORM - SECTION 1
PROJECT: 2013 STREET RESURFACING PROJECT
FILE NO: 2013-004 BID NO: ITB 4269

ITEM	DESCRIPTION	UNITS	ESTIM. QUANT.	UNIT PRICE	AMOUNT ($)

Total From Page BF-1 $ _____

Total From Page BF-2 $ _____

Total From Page BF-3 $ _____

Total From Page BF-4 $ _____

TOTAL BASE BID $ _____

Total This Page $_____
(Also to be entered on Page BF-5)

BID FORM

Section 2 - Material and Equipment Alternates

The Base Bid proposal price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

Item Number	Description	Add/Deduct Amount

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the contract.

_____

Signature of Authorized Representative of Bidder

BID FORM

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the contract.

_____

Signature of Authorized Representative of Bidder

BID FORM

Section 4 - Subcontractors

For purposes of this contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

For the work outlined in these documents the Bidder expects to engage the following **subcontractors** to perform the work identified:

Type of Work	Name and Address	Value of Subcontract
Asphalt Paving	_____	$_____
Pavement Milling	_____	$_____
Earthwork & Grading	_____	$_____
Concrete Curb/Sidewalks #1	_____	$_____
Concrete Curb/Sidewalks #2	_____	$_____
Drainage Structure Repairs and Reconstructions	_____	$_____

Section 4 - Subcontractors, continued

Type of Work	Name and Address	Value of Subcontract
Drainage Structure Adjustments	_____	$_____
Underground Utilities	_____	$_____
Barricades and Signs	_____	$_____
Pavement Markings	_____	$_____
Sawcut & Seal Joints in HMA Pavement	_____	$_____
Other	_____	$_____

If the Bidder does not expect to engage any **subcontractor**, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any **subcontractor** to perform work under the contract.

_____

Signature of Authorized Representative of Bidder

CONTRACT

THIS AGREEMENT is made on the ____ day of _____, 2013, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 E. Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor") a _____ _____, _____

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled **" 2013 Street Resurfacing Project"** in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Human Rights Division Contract Compliance Forms
Living Wage Declaration of Compliance Forms (if applicable)
Bid Forms
Proposal
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means **Public Services Area**.

Contract Administrator means the **Project Management Services Unit Manager**, acting personally or through any assistants authorized by the Administrator/Manager of the Administering Service Area/Unit

Project means **2013 Street Resurfacing Project**, Bid No. **4269**.

ARTICLE III - Time of Completion

(A) The work to be completed under this Contract shall begin **in accordance with the "Detailed Specification for Project Schedule and Construction Limits" contained elsewhere herein, and only** after the Contractor's receipt of a fully executed Contract.

(B) The entire work for this Contract shall be completed within **165** consecutive calendar days. **Intermediate Completion Dates, Intermediate Times of Completion, Restricted Starting Dates, and Other Special Requirements for certain portions of the work are specified in the "Detailed Specification for Project Schedule and Construction Limits."**

(C) Failure to complete all the work within the time**(s)** specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, **the amount(s) specified in the "Detailed Specification for Project Schedule and Construction Limits" contained elsewhere herein** for each calendar day of delay in the completion of all the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

As an independent requirement, where the Detailed Specifications identify certain portions of the work to be completed within a shorter period of time and the Contractor fails to complete each portion within the shorter period specified for each portion, including any extension granted in writing by the Project Supervisor, the City is entitled to deduct from the monies due the Contractor, as liquidated damages and not as a penalty, the amount identified in the Detailed Specifications for each portion of the work not timely completed for each calendar day of delay in completion of each portion of the work.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Liquidated damages under this section are in addition to any liquidated damages due under Section 5 of the General Conditions.

ARTICLE IV - The Contract Sum

(A)The City shall pay to the Contractor for the performance of the Contract, the unit prices as given in the Bid Forms for the estimated total of:

_____($_____)

(B)The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the contract documents.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted without the written consent of the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract.

Whenever possible, each provision of the contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a contract of employment but is a contract to accomplish a specific result. Contractor is an independent contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the contract documents or other address the Contractor may specify in writing..

ARTICLE IX - Indemnification

To the fullest extent permitted by law, for any loss not covered by insurance under this contract, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this contract, by the Contractor or anyone acting on the Contractor's behalf under this contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations or agreements whether written or oral. Neither party has relied on any prior representations in entering into this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By _____

Its:

By _____

Its:

FOR THE CITY OF ANN ARBOR

By_____
John Hieftje, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____
Steve Powers, City Administrator

By_____
Craig Hupy
Public Services Area Administrator

Approved as to form and content

By_____
Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____ of _____(referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for $_____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written contract with the City dated _____, 2013, for: 2013 Street Resurfacing Project and this bond is given for that contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 2013.

_____ (Name of Surety Company)

By_____ (Signature)

Its _____ (Title of Office)

_____ (Name of Principal)

By _____ (Signature)

Its_____ (Title of Office)

Name and address of agent:

Approved as to form:

_____
Stephen K. Postema, City Attorney

LABOR AND MATERIAL BOND

(1) _____ of _____, (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of $_____ for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written contract with the City, dated _____, 2013, for 2013 Street Resurfacing Project; and this bond is given for that contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;

(3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the contract, the Surety shall pay those claimants.

(4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 2013.

_____ (Name of Surety Company)	_____ (Name of Principal)
By_____ (Signature)	By_____ (Signature)
Its _____ (Title of Office)	Its_____ (Title of Office)
Approved as to form:	Name and address of agent:
Stephen K. Postema, City Attorney	

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Proposal.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery, and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section."

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

Further, to the extent that any employees of the Contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with Section 1:319 of Chapter 14 of Title I of the Code of the City of Ann Arbor, the Contractor agrees to conform to Chapter 23 of Title I of the Code of the City of Ann Arbor, as amended, which in part states:

1:814. Applicability.

(1) This Chapter shall apply to any person that is a contractor/vendor or grantee as defined in Section 1:813 that employs or contracts with five (5) or more individuals; provided, however, that this Chapter shall not apply to a non-profit contractor/vendor or non-profit grantee unless it employs or contracts with ten (10) or more individuals.

(2) This Chapter shall apply to any grant, contract, or subcontract or other form of financial assistance awarded to or entered into with a contractor/vendor or grantee after the effective date of this Chapter and to the extension or renewal after the effective date of this Chapter of any grant, contract, or subcontract or other form of financial assistance with a contractor/vendor or grantee.

1:815. Living Wages Required.

(1) Every contractor/vendor or grantee, as defined in Section 1:813, shall pay its covered employees a living wage as established in this Section.

(a) For a covered employer that provides employee health care to its employees, the living wage shall be $9.42 an hour, or the adjusted amount hereafter established under Section 1:815(3).

(b) For a covered employer that does not provide health care to its employees, the living wage shall be $10.91 a hour, or the adjusted amount hereafter established under Section 1:815(3).

(2) In order to qualify to pay the living wage rate for covered employers providing employee health care under subsection 1:815(1)(a), a covered employer shall furnish proof of said health care coverage and payment therefor to the City Administrator or his/her designee.

(3) The amount of the living wage established in this Section shall be adjusted upward no later than April 30, 2002, and every year thereafter by a percentage equal to the percentage increase, if any, in the federal poverty guidelines as published by the United States Department of Health and Human Services for the years 2001 and 2002. Subsequent annual adjustments shall be based upon the percentage increase, if any, in the United States Department of Health and Human Services poverty guidelines when comparing the prior calendar year's poverty guidelines to the present calendar year's guidelines. The applicable percentage amount will be converted to an amount in cents by multiplying the existing wage under Section 1.815(1)(b) by said percentage, rounding upward to the next cent, and adding this amount of cents to the existing living wage levels established under Sections 1:815(1)(a) and 1:815(1)(b). Prior to April 1 of each calendar year, the City will notify any covered employer of this adjustment by posting a written notice in a prominent place in City Hall, and, in the case of a covered employer that has provided an address of record to the City, by a written letter to each such covered employer.

Section 5 - Non-Discrimination

The Contractor agrees to comply with the nondiscrimination provisions of Chapter 112 of the Ann Arbor City Code and to take affirmative action to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate any inequality based upon race, national origin or sex. The Contractor agrees to comply with the provisions of Section 9:161 of Chapter 112 of the Ann Arbor City Code and in particular the following excerpts:

9:161 NONDISCRIMINATION BY CITY CONTRACTORS

(1) All contractors proposing to do business with the City of Ann Arbor shall satisfy the nondiscrimination administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All contractors shall receive approval from the Director prior to entering into a contract with the City, unless specifically exempted by administrative policy. All City contractors shall take affirmative action to insure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon race, national origin or sex.

(2) Each prospective contractor shall submit to the City data showing current total employment by occupational category, sex and minority group. If, after verifying this data, the Director concludes that it indicates total minority and female employment commensurate with their availability within the contractor's labor recruitment area, i.e., the area from which the contractor can reasonably be expected to recruit, said contractor shall be accepted by the Director as having fulfilled affirmative action requirements for a period of one year at which time the Director shall conduct another review. Other contractors shall develop an affirmative action program in conjunction with the Director. Said program shall include specific goals and timetables for the hiring and promotion of minorities and females. Said goals shall reflect the availability of minorities and females within the contractor's labor recruitment area. In the case of construction contractors, the Director shall use for employment verification the labor recruitment area of the Ann Arbor-Ypsilanti standard metropolitan statistical area. Construction contractors determined to be in compliance shall be accepted by the Director as having fulfilled affirmative action requirements for a period of six (6) months at which time the Director shall conduct another review.

(3) In hiring for construction projects, contractors shall make good faith efforts to employ local persons, so as to enhance the local economy.

(4) All contracts shall include provisions through which the contractor agrees, in addition to any other applicable Federal or State labor laws:

(a) To set goals, in conference with the Human Resources Director, for each job category or division of the work force used in the completion of the City work;

(b) To provide periodic reports concerning the progress the contractor has made in meeting the affirmative action goals it has agreed to;

(c) To permit the Director access to all books, records and accounts pertaining to its employment practices for the purpose of determining compliance with the affirmative action requirements.

(5) The Director shall monitor the compliance of each contractor with the nondiscrimination provisions of each contract. The Director shall develop procedures and regulations consistent with the administrative policy adopted by the City Administrator for notice and enforcement of non-compliance. Such procedures and regulations shall include a provision for the posting of contractors not in compliance.

(6) All City contracts shall provide further that breach of the obligation not to discriminate shall be a material breach of the contract for which the City shall be entitled, at its option, to do any or all of the following:

(a) To cancel, terminate, or suspend the contract in whole or part and/or refuse to make any required periodic payments under the contract;

(b) Declare the contractor ineligible for the award of any future contracts with the City for a specified length of time;

(c) To recover liquidated damages of a specified sum, said sum to be that percentage of the labor expenditure for the time period involved which would have accrued to minority group members had the affirmative action not been breached;

(d) Impose for each day of non-compliance, liquidated damages of a specified sum, based upon the following schedule:

Contract Amount	Assessed Damages Per Day of Non-Compliance
$ 10,000 - 24,999	$ 25.00
25,000 - 99,999	50.00
100,000 - 199,999	100.00
200,000 - 499,999	150.00
500,000 - 1,499,999	200.00
1,500,000 - 2,999,999	250.00
3,000,000 - 4,999,999	300.00
5,000,000 - and above	500.00

(e) In addition the contractor shall be liable for any costs or expenses incurred by the City of Ann Arbor in obtaining from other sources the work and services to be rendered or performed or the goods or properties to be furnished or delivered to the City under this contract.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to it's work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

(1) The consent of the surety to payment of the final estimate;
(2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

(1) unsettled liens;
(2) faulty work appearing within 12 months after final payment;
(3) hidden defects in meeting the requirements of the plans and specifications;
(4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and The City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

Section 28 - Contractor's Insurance

A. The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:

1. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

   Bodily Injury by Accident - $500,000 each accident
   Bodily Injury by Disease - $500,000 each employee
   Bodily Injury by Disease - $500,000 each policy limit

2. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, the following minimum limits of liability are required:

   $1,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.

   $2,000,000 Per Job General Aggregate

   $1,000,000 Personal and Advertising Injury

   $2,000,000 Products and Completed Operations Aggregate

3. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

4. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

B. Insurance required under Section A.2 and A.3 of this Contract shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.

C. In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the Administering Service Area/Unit at least ten days prior to the expiration date.

D. Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

(1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
(2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 200___, to_____, 20____, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled_____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

_____ _____

Contractor Date

By_____
(Signature)

Its_____
(Title of Office)

Past due invoices, if any, are listed below.

CONTRACTOR'S AFFIDAVIT

The undersigned Contractor,_____, represents that on _____, 20_____, it was awarded a contract by the City of Ann Arbor, Michigan to _____ under the terms and conditions of a Contract titled _____.
The Contractor represents that all work has now been accomplished and the Contract is complete.

The Contractor warrants and certifies that all of its indebtedness arising by reason of the Contract has been fully paid or satisfactorily secured; and that all claims from subcontractors and others for labor and material used in accomplishing the project, as well as all other claims arising from the performance of the Contract, have been fully paid or satisfactorily settled. The Contractor agrees that, if any claim should hereafter arise, it shall assume responsibility for it immediately upon request to do so by the City of Ann Arbor.

The Contractor, for valuable consideration received, does further waive, release and relinquish any and all claims or right of lien which the Contractor now has or may acquire upon the subject premises for labor and material used in the project owned by the City of Ann Arbor.

This affidavit is freely and voluntarily given with full knowledge of the facts.

_____
Contractor
By_____
(Signature)
Its_____
(Title of Office)

Subscribed and sworn to before me, on this _____ day of _____, 200
_____ , _____ County, Michigan
Notary Public
My commission expires on:

STANDARD SPECIFICATIONS

All All work under this contract shall be performed in accordance with the Public Services Department Standard Specifications in effect at the date of availability of the contract documents stipulated in the Advertisement. All work under this Contract which is not included in these Standard Specifications, or which is performed using modifications to these Standard Specifications, shall be performed in accordance with the Detailed Specifications included in these contract documents.

A copy of the Public Services Department Standard Specifications may be purchased from the Engineering Division, (Fourth Floor, City Hall, Ann Arbor, Michigan), for $35.00 per copy. In addition, a copy of these Standard Specifications is available for public viewing at the Project Management office, for review Monday through Friday between the hours of 8:30 a.m. and 4:00 p.m. Copies of the Standard Specifications can also be obtained on the web from:

http://www.a2gov.org/government/publicservices/project_management/privatedev/Pages/StandardSpecificationsBook.aspx

DETAILED SPECIFICATION
FOR
PROJECT SCHEDULE AND CONSTRUCTION LIMITS

The Contractor shall organize, coordinate and diligently execute the work, in the approximate order shown on the following Street List & Schedule. The Street List & Schedule details requirements for Starting Dates, Completion Dates, and Restricted Dates for each street, as well as the maximum number of calendar days allowed to complete each street. For the purpose of this Contract, "Beginning of Work" is defined as the date of installation of the "No-Parking" signs. "Completion of Work" is defined as the completion of the work as specified herein and as directed by the Engineer (including, but not limited to, driveway wedging, surface restoration, clean-up, street cleaning, underground utility structure cleaning, and the removal of all temporary traffic control devices and "No Parking" signs).

The Engineer shall limit the Contractor's work operations to a number of streets that, in the opinion of the Engineer, is reasonable to allow for proper and thorough inspection, and to reduce traffic control and/or safety problems. The contractor shall not have more than three streets "active" at any given time. A street is considered "active" if work on the street has begun but has not yet been completed.

The Contractor shall begin work on this Contract within one day of the receipt of the executed contract. The expected start date is April 16, 2012. The entire work of this Contract shall be completed by October 26, 2012, within 193 consecutive calendar days.

Prior to the start of any construction, the Contractor shall submit a detailed schedule of work for the Engineer's review. Work shall not be started until a schedule is approved in writing by the Engineer. The proposed schedule must fully comply with the scheduling requirements contained on the Street List & Schedule in this Detailed Specification. Schedules shall clearly indicate, in detail, the start and the finish date of each work task on each street.

The Contractor shall update the approved work schedule each week and present it to the Engineer at the weekly progress meeting, and must consult with the Engineer daily, for his/her review, and gain his/her approval, of any proposed deviations from the most current, approved, schedule.

The City's decision to delete streets, add streets, change the construction limits on streets, or, the City's contribution to a delay of the construction on <u>any one street</u> shall not entitle the Contractor to receive additional compensation for work on any <u>other street(s)</u>, nor shall it relieve the Contractor of any responsibilities for completion of work on any <u>other street(s).</u>

Failure to complete all work as specified herein within the times specified herein, including time extensions granted thereto as determined by the Engineer, shall entitle the City to deduct from the payments due the Contractor, the dollar amounts specified in the following Street List & Schedule as "Liquidated Damages" for delays in the completion of the work for each incomplete street, for each and every calendar day.

Costs for the Contractor to organize, coordinate, and schedule all of the work of the project, will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

2013 Street Resurfacing Project - Street List Schedule

Street	From	Work Shall Begin After*	Work Shall Be Completed By*	Restricted Dates*	Maximum Calendar Days to Complete	Liquidated Damages per Calendar Day
State Street	Oakbrook to Eisenhower		6/1/13	AF, FB	35	$1,000
Sorrento	King George to End				30	$500
Alley "Benjamin"	Sybil to Benjamin	UM	AF	UM, AF, FB	14	$500
Alley "Mary"	Benjamin to Hoover	UM	AF	UM, AF, FB	14	$500
Franklin	Stadium to Hutchins			FB,AF	30	$500
Hiscock	Brooks to Spring			AAPS, AF	30	$500
Depot[1]	Main to Carey		7/8/13	AF, FB	35	$1,000
Waldenwood	Earhart to Penberton				30	$500
Mark Hannah	Arbana to Arbana				30	$500
Arbana	Mark Hannah to Huron				21	$500
Barton[2]	Pontiac Tr to Plymouth	AF		AF	35	$1,000
Birch Hollow	Tacoma to Stone School				30	$500

* Refer to following key:

AF - No work permitted July 17 - 20 due to Ann Arbor Street Art Fairs

FB - No work permitted on University of Michigan home football game days (8/31, 9/7, 9/15, 10/5, 10/19, 11/9, 11/30)

M - No work permitted during Ann Arbor Marathon (June 9)

UM - No work permitted when Univ. of Michigan Spring/Fall terms are in session (before April 29 or after Sept 4)

AAPS - No work permitted when Ann Arbor Public Schools are in session (before June 15 or after Sept 1)

The following paving restrictions will apply to reduce traffic conflicts. Costs for weekend paving shall be included in the cost of the HMA items – no additional payment will be made:

1. Depot must be paved on two consecutive Sundays.
2. Barton must be paved on two consecutive Sundays.

The schedule for each street shall include overnight closure of the road following the placement of the wearing course, unless otherwise directed by the Engineer.

DETAILED SPECIFICATION
FOR
ITEM #201 - PROJECT SUPERVISION, MAX $75,000

DESCRIPTION

The Contractor shall designate a full-time Project Supervisor to act as the Contractor's agent/representative, and to be responsible for scheduling and coordination of all subcontractors, suppliers, other governmental agencies, and all public and private utility companies.

The Project Supervisor shall not be an active crew member of the Contractor, shall not be an active member or employee of any subcontractor's work force, and shall not perform general or specialized labor tasks.

The Project Supervisor shall work exclusively on this project, and shall put forth his/her full effort into the organization and coordination of the work of this project.

Prior to the pre-construction meeting, the Contractor shall designate a proposed Project Supervisor by name, and shall furnish the City with a current, thorough, detailed summary of the proposed Project Supervisor's work history, outlining all previous supervisory experience on projects of a similar size and nature. The detailed work history shall include personal and professional references (names and phone numbers) of persons (previous owners or agents) who can attest to the qualifications and work history of the proposed Project Supervisor. Proposed candidates for Project Supervisor shall have a demonstrated ability to work harmoniously with the City, the public, subcontractors, and all other parties typically involved with work of this nature. The Supervising Professional will have the authority to reject a proposed Project Supervisor whom he/she considers unqualified.

The Project Supervisor shall be available 24 hours-per-day to provide proper supervision, coordination and scheduling of the project for the duration of the Contract. The Contractor shall furnish the City with telephone numbers of the Project Supervisor in order to provide 24 hour-per-day access during business and non-business hours, including weekends and holidays. While work is ongoing, the Project Supervisor or approved designee must be on site at all times.

The Project Supervisor shall be equipped by the Contractor with a mobile telephone to provide the City with 24 hour-per-day access to him/her during daily construction activities, during transit to and from the construction site, and during all non-business hours including weekends and holidays.

The Project Supervisor shall be equipped with assistants as necessary to provide project supervision as specified herein, and in accordance with the Contract.

DUTIES AND RESPONSIBILITIES

The Project Supervisor work harmoniously with the City, the public, subcontractors, and all other parties typically involved with work of this nature.

The Project Supervisor is responsible to notify and coordinate access to affected properties. This includes notifying and coordinating mail delivery and garbage pick-up and notifying businesses and residents at least 48 hours prior to restricting access to their street and property.

The Project Supervisor shall have a thorough, detailed understanding and working knowledge of all construction practices and methods specified elsewhere herein, as well as the handling, placement, testing and inspection of aggregates, aggregate products, HMA concrete, and portland cement concrete materials.

The Project Supervisor shall be responsible for all of the work of all of the Contractor's, subcontractors' and suppliers' work forces.

The Project Supervisor shall be responsible for proper and adequate maintenance (emissions, safety, and general operation) of all of the Contractor's, subcontractors' and suppliers' equipment and vehicles.

The Project Supervisor shall be responsible for the legal, proper and safe parking/storage of all of the Contractor's, subcontractors' and suppliers' equipment, work vehicles, and employee's vehicles.

The Project Supervisor shall schedule and coordinate the work of all parties involved in the project, including utility companies, testing agencies, governmental agencies, all City departments (such as Utilities and Transportation), and City inspectors.

The Project Supervisor shall coordinate with both Testing inspectors and City inspectors in a timely manner, to assure proper and timely testing and inspection of the work.

The Project Supervisor shall review the Inspector's Daily Reports (IDRs) for agreement, and shall sign all IDRs on a daily basis as the representative of the Contractor. Items to be reviewed include descriptions, locations and measurements of quantities of work performed, workforce, equipment, and weather. The Project Supervisor shall also be responsible for its subcontractors' review and initialing of IDRs containing work items performed by each respective subcontractors.

The Project Supervisor shall submit to the Engineer, an updated, detailed schedule of the proposed work on a weekly basis, and an update of all proposed changes on a daily basis, all in accordance with the Detailed Specification for Project Schedule contained elsewhere herein.

The Project Supervisor shall schedule and chair a weekly progress meeting with the Engineer and all subcontractors to discuss the work. Upon the completion of each meeting, the Project Supervisor shall prepare and distribute, to all present, a written summary of the meeting's minutes. Those in attendance shall review the minutes and, if necessary, comment on any deficiencies or errors prior to or at the next scheduled progress meeting.

ADDITIONAL PERFORMANCE REQUIREMENTS

If, in the sole opinion of the Supervising Professional, the Project Supervisor is not adequately performing the duties as outlined in this Detailed Specification, the following system of notices will be given to the contractor with the associated penalties:

First Notice – A warning will be issued in writing to the contractor detailing the deficiencies in the Project Supervision. The contractor must respond within 7 calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within 7 calendar days will result in the issuing of a second notice.

Second Notice – A second warning will be issued in writing to the contractor further detailing the deficiencies in the Project Supervision. The contractor must respond within 7 calendar days in writing with a plan to correct the stated deficiencies. Failure to respond within 7 calendar days will result in the issuing of a third notice. A deduction of 10% will be made from the original Project Supervision contract amount. At this time, the City reserves the right to meet with personnel with the necessary authority within the Contractor's organization to discuss the deficiencies in the Project Supervision.

Third Notice – An additional deduction of 25% will be made from the original Project Supervision contract amount, and the Project Supervisor shall be removed from the project, and replaced immediately with another individual to be approved by the Supervising Professional.

Should, in the sole opinion of the Supervising Professional, the Project Supervisor fail to perform his/her duties and responsibilities as described herein to such a degree that the successful completion of the project is put in jeopardy, the above system of notices may be foregone, and the Contractor shall immediately replace the Project Supervisor upon receipt of written notice. Failure to provide adequate project supervision, as determined by the Engineer, shall be considered basis for the Supervising Professional to suspend work without extension of contract time or additional compensation.

MEASUREMENT AND PAYMENT

This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum, minus any deductions incurred for inadequate performance as described herein. This amount will not be increased for any reason, including extensions of time, extras, and/or additional work.

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	**PAY UNIT**
Project Supervision, Max $75,000	Lump Sum

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #202 - GENERAL CONDITIONS, MAX $75,000

DESCRIPTION

This item shall include all work described and required by the Plans and Specifications for which no item of work is listed in the Bid Form, including but not limited to:

- Scheduling and organization of all work, subcontractors, suppliers, testing, inspection, surveying, and staking
- Coordination of, and cooperation with, other contractors, agencies, departments, and utilities
- Protection and maintenance of Utilities
- Placing, maintaining, and removing all soil erosion and sedimentation controls using filter bags and as required by the SESC permit.
- Maintaining drainage
- Maintaining drives, drive openings, sidewalks, bikepaths, mail deliveries, and solid waste/recycle pick-ups
- Storing all materials and equipment off lawn areas
- Temporary relocation and final replacement/re-setting of mailboxes
- Site clean-up
- Coordination efforts to furnish various HMA mixtures as directed by the Engineer
- Coordination efforts to furnish and operate various-size vehicles/equipment as directed by the Engineer
- Furnishing and operating vacuum-type street cleaning equipment as directed by Engineer
- Furnishing and operating vacuum-type utility structure cleaning equipment as directed by Engineer
- Furnishing and operating both vibratory plate and pneumatic-type (“pogo-stick”) compactors
- Furnishing and operating a backhoe during all work activities
- Furnishing and operating a jackhammer and air compressor during all work activities
- Noise and dust control
- Mobilization(s) and demobilization(s)
- Furnishing submittals and certifications for materials and supplies
- Disposing of excavated materials and debris
- All miscellaneous and incidental items such as overhead, insurance, and permits.

MEASUREMENT AND PAYMENT

This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum.

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
General Conditions, Max $75,000	Lump Sum

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #203 – MINOR TRAFFIC DEVICES, MAX $40,000

DESCRIPTION

The work of Minor Traffic Devices shall include, but not be limited to:

- The furnishing and operating of miscellaneous signs, warning devices, certified flag-persons, and cones;
- The operation of additional signs furnished by the City;
- Coordinating with the City to have meter heads removed and reinstalled;
- Maintaining pedestrian traffic, including furnishing and installing sidewalk closed/detour signs;
- Temporarily covering traffic controls;
- Temporarily covering existing signs as directed;
- Any and all other miscellaneous and/or incidental items which are necessary to properly perform the work.

Where there is metered parking, the Contractor shall either rent and install meter bags, or, with the Engineer's authorization, coordinate with the City Transportation Division to have meter heads removed and reinstalled.

The Contractor shall maintain vehicular and pedestrian traffic during the work by the use of flag-persons, channelizing devices, and signs as necessary, as directed by the Engineer, and in accordance with MMUTCD. Typical applications for maintaining pedestrian traffic in accordance with the MMUTCD are included in this detailed specification.

MEASUREMENT AND PAYMENT

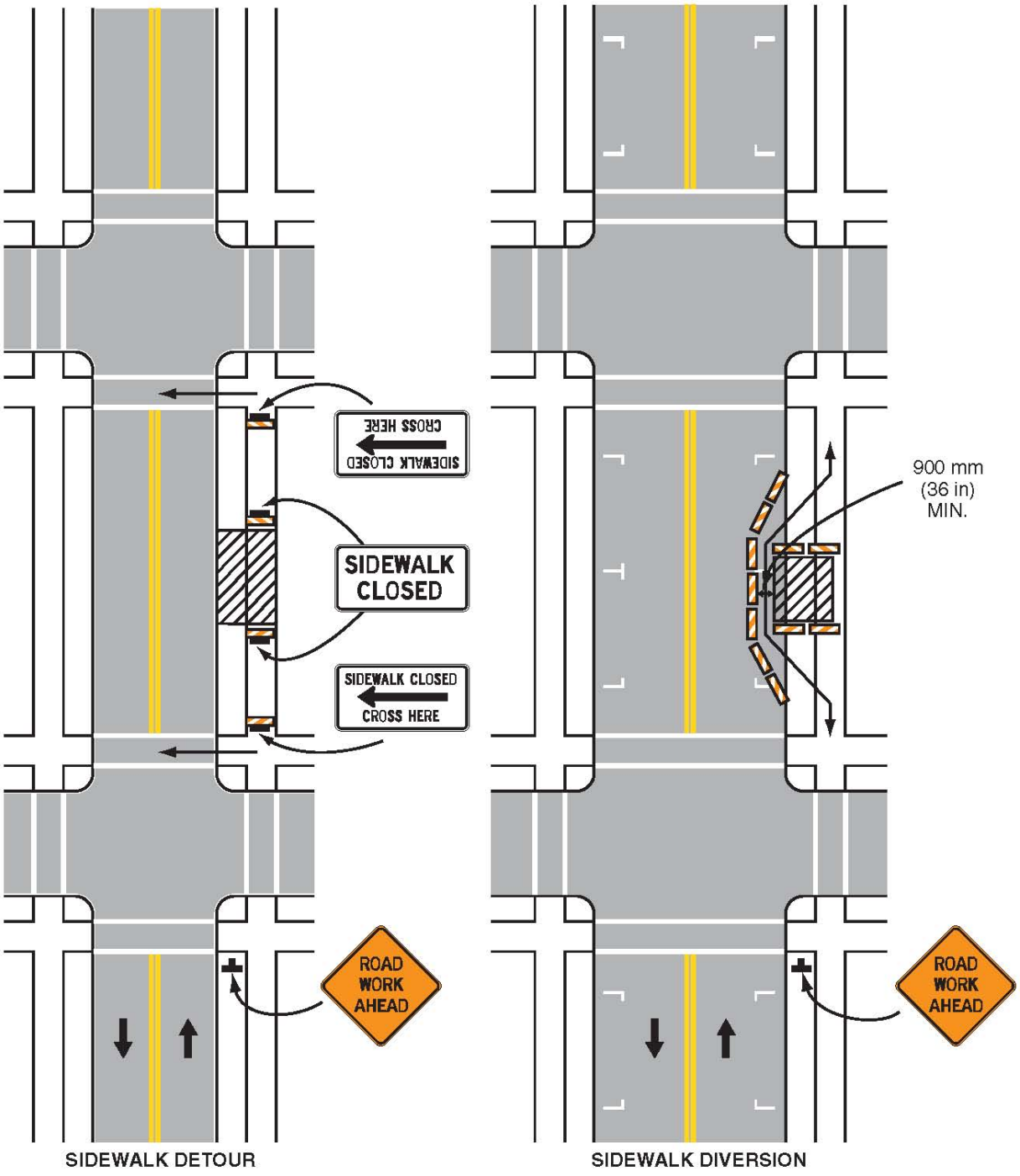
This item of work will be paid for on a pro rata basis at the time of each progress payment. Measurement will be based on the ratio between work completed during the payment period and the total contract amount. When all of the work of this Contract has been completed, the measurement of this item shall be 1.0 Lump Sum.

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Minor Traffic Devices, Max $40,000	Lump Sum

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

Figure 6H-28. Sidewalk Detour or Diversion (MI) (TA-28)



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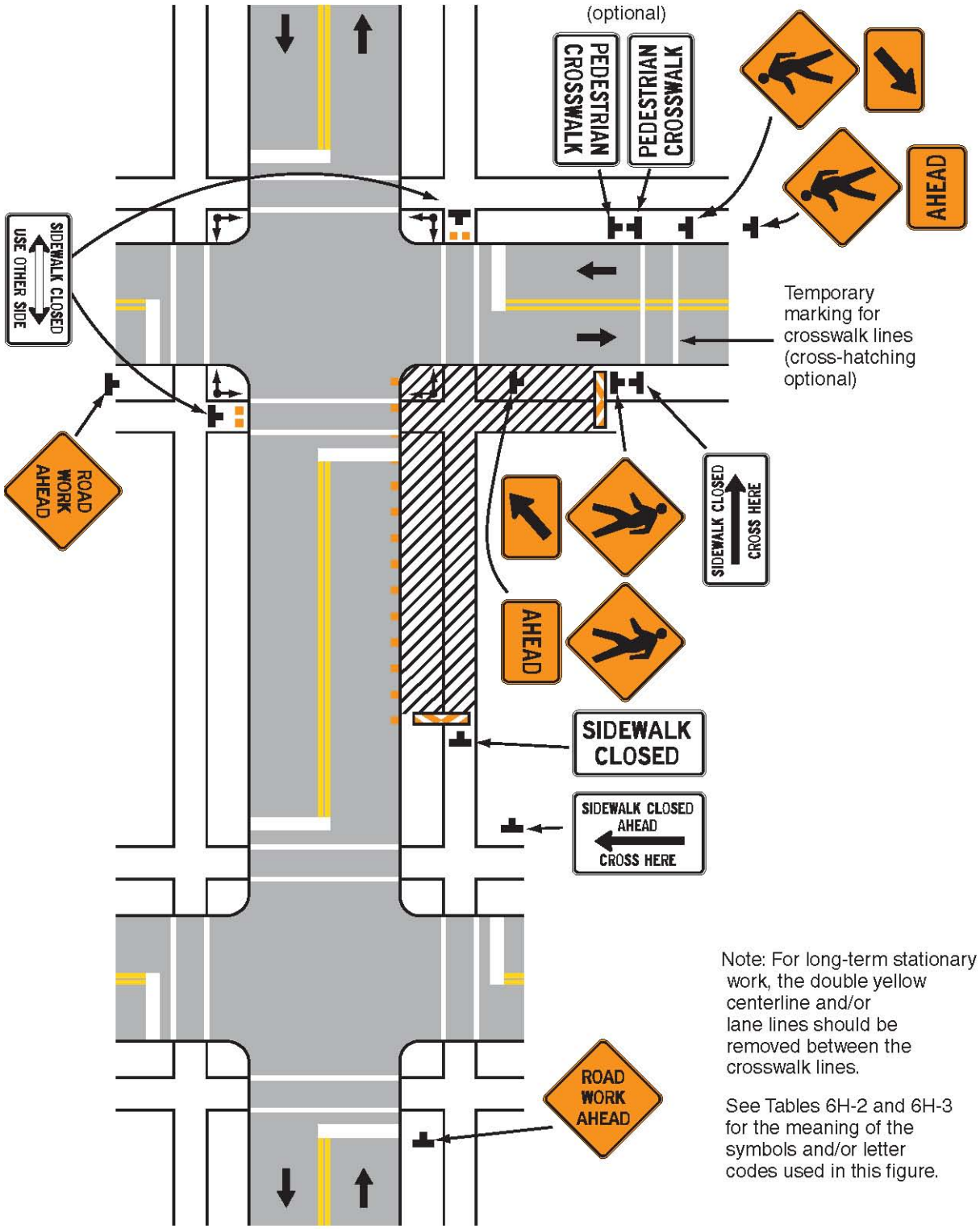
Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Figure 6H-29. Cross walk Closures and Pedestrian Detours (MI) (TA-29)



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DETAILED SPECIFICATION
FOR
ITEM #205 – REMOVE HMA PAVEMENT, ALLEYS
ITEM #206 - REMOVE HMA PAVEMENT

DESCRIPTION

This work shall consist of removing HMA surface/base as described in Section 204 and Division 5 of the 2012 edition of the MDOT Standard Specifications for Construction, current supplemental MDOT specifications, and the City of Ann Arbor Standard Specifications, except as modified herein, and as directed by the Engineer.

CONSTRUCTION METHOD

The Contractor shall remove HMA surfaces, HMA bases, and brick bases of any thickness from any aggregate and/or concrete base course, without the removal of the aggregate or concrete base, all as shown on the Plans, as marked in the field, and as directed by the Engineer.

In the two alleys, the existing HMA pavement shall be removed using an excavator or other similar equipment if approved by the Engineer. No vibratory machinery shall be used in the alleys. Milling equipment will not be allowed. This work will be paid as "Remove HMA Pavement, Alleys."

The Contractor shall remove, salvage, deliver to any location within the City limits or City-owned property, and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

The Contractor shall remove and properly dispose of all excavated material and debris, including all asphalt and concrete. The Contractor shall not stockpile excavated material overnight on, or adjacent to, the site.

Excavated areas shall not be left open overnight, but shall be properly backfilled and compacted to grade with HMA patching material. This work will be paid as either "HMA Patching".

HMA surfaces/pavements shall be cut for removal by the use of saws, jackhammers and/or other methods approved by the Engineer. Backhoe teeth, jackhammers equipped with spike points, and backhoe-mounted wheel cutters shall not be used for cutting the edges of patches, but may be used to break up pavement within patch areas for removal.

The edges of patches shall be cut horizontally and vertically straight and uniform (as judged by the Engineer), without damaging adjacent pavement.

Damage to adjacent pavement, pavement base, subbase, curb, gutter, sidewalk, utility structures, or other site features, due to removal operations shall be repaired by the Contractor, at the Contractor's expense, as directed by the Engineer.

The Contractor shall remove pavement/pavement base full-depth or to a depth of 3-inches, whichever is greater. Removal of all granular or clay material located within the 3-inch minimum thickness is included in this item of work. Any additional aggregate or clay base removed without written approval of the Engineer shall be replaced by the Contractor at the Contractor's expense with 21AA Aggregate compacted-in-place, or with HMA asphalt, as directed by the Engineer.

The Contractor shall remove and/or re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer. Use of each specific piece of equipment is subject to the approval of the Engineer.

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work:

"Aggregate Base Course 21AA - C.I.P." or "21AA Limestone - C.I.P.", as appropriate. Where the Engineer directs such materials to be removed, they will not be paid for separately, but shall be included in the Item of Work: "Remove HMA Pavement".

The Contractor shall construct butt-joints, and trim butt-joints just prior to HMA paving as shown on the Plans, and as directed by the Engineer.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

MEASUREMENT AND PAYMENT

The areas to be removed shall be marked and measured prior to the removal of any material. Measurement shall take place with both the Engineer and the Contractor (or their agents) present. Both parties shall come to an agreement regarding removal quantities prior to the actual removal of HMA pavement.

The completed work as measured for these items of work will be paid at the Contract Unit Prices for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Remove HMA Pavement, Alleys	Ton
Remove HMA Pavement	Square Yard

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #207 - COLD MILLING PAVEMENT
ITEM #208 - COLD MILLING PAVEMENT, CURB REVEAL

DESCRIPTION

This work shall consist of removing HMA, aggregate, and concrete pavement materials from roadbeds and/or other paved areas, by use of cold milling equipment.

These items are not intended to be used for the general milling of concrete streets. These items are intended to be used to pay for all of the milling (HMA, aggregate, and concrete layers) on HMA paved streets with either an aggregate or concrete base.

CONSTRUCTION METHODS

HMA, aggregate, and concrete surface(s), shall be milled to the depths, widths, grades, profiles, and cross sections, all as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. After a location is milled, the work will be inspected by the Engineer. The number of intersections and areas to be milled may be increased or decreased by the City, with no adjustment to unit prices for changes in quantities of these items of work.

In areas where the existing concrete gutter pan has been overlaid with HMA material, the Engineer may direct the Contractor to perform localized cold milling at the edge-of-metal to reveal a vertical face at the edge-of-metal of the curb. This localized milling shall be paid for at the Unit Price for Contract Pay Item "Cold Milling of Pavement, Curb Reveal." Subsequent handwork and machine work to remove and dispose of existing HMA overlays from the gutter pan will not be paid for separately, but will be paid for with this item.

After milling, the Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work: "Aggregate Base Course 21AA - C.I.P.", or "21AA Limestone - C.I.P.", as appropriate. Where such materials are directed to be removed, they shall be paid for as the Item of Work: "Cold Milling Pavement."

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

Where the Contractor removes material below the grade(s) specified, the resulting voids or depressions shall be backfilled and compacted by the Contractor, at the Contractor's expense, by hand patching, with a HMA mixture approved by the Engineer, in accordance with section 502.03.C.5 of the 2012 edition of the MDOT Standard Specifications for construction.

Handwork required to remove HMA, aggregate, and/or concrete surfaces from around manholes, structures, and utility covers, and to remove HMA curbing, HMA driveway wedges, and HMA surfaces around other miscellaneous unremoved areas within the milling limits, will not be paid for separately, however the tonnage of material removed by handwork will be paid for as these items of work.

Prior to placing asphalt, all milled areas, including joints and cracks, shall be cleaned of all loose material with vacuum type street cleaning equipment.

The Contractor shall remove, salvage, deliver to any location within the City limits, and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

EQUIPMENT

Cold milling machines shall have continuously variable depth controls, capable of removing, in a single pass, HMA, aggregate, and concrete materials having a combined thickness of up to 4-inches. Cold milling machines shall be capable of accurately removing the HMA, aggregate, and concrete surface(s), in one or more passes, to the grades and cross sections shown on the Plans, and as directed by the Engineer.

The equipment shall have enclosed cutting drums with a water sprinkling system around the reduction chamber for pollution control, and shall remove excess material from the surface, while preventing dust from escaping into the air.

MEASUREMENT AND PAYMENT

The completed quantities of these items of work will be measured by weighing the millings at a location approved by the Engineer. The Contractor shall provide the Engineer with computerized weight tickets for milled material. Each load ticket must include the truck number; gross, tare, and net weight; time of day, and date. The Contractor shall provide a daily tabulation of tare weights for all trucks used. The tare weights on each load ticket will be checked against the tare weights provided on the daily tabulation, and their compliance will also represent basis for payment. All trucks shall have their tare weight checked daily.

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Cold Milling Pavement	Ton
Cold Milling Pavement, Curb Reveal	Ton

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #209 - SUBGRADE UNDERCUTTING - TYPE II

DESCRIPTION

This work includes removal of unsuitable granular base, subbase or clay material(s) to depths as specified by the Engineer.

CONSTRUCTION METHOD

After the pavement has been removed, and/or after rough/finish grading, and/or at the time of proofrolling, the Engineer may inspect the grade to determine the need for, and the limits of, undercuts. After undercut areas are excavated to the depths as directed by the Engineer, the areas shall be trimmed, shaped, evenly graded and recompacted to not less than 95% of the soils maximum unit weight as determined by the AASHTO T-180 test. The Contractor shall properly dispose of all excess materials.

Subgrade Undercutting - Type II shall be backfilled with 21AA Limestone, Class II Sand, or other material(s), as directed by the Engineer. The backfill material shall be compacted to not less than 98% of its maximum unit weight as determined by the AASHTO T-180 test. The fill material(s) for Subgrade Undercutting Type II shall be paid at the Contract unit price for the corresponding items of work as used which are (Class II Sand - C.I.P., and 21AA Limestone - C.I.P.).

The Contractor shall remove, salvage, deliver to any location within the City limits, and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

The Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

MEASUREMENT AND PAYMENT

These items of work shall be measured for payment by calculating the volume of the undercut excavation prior to the placement of backfill.

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Subgrade Undercutting - Type II	Cubic Yard

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #210 – STABILIZATION GEOTEXTILE

DESCRIPTION

This work shall consist of furnishing, installing, stabilization geotextile as directed by the Engineer, in accordance with the manufacturer's installation guidelines and in accordance with the 2012 edition of the MDOT Standard Specifications for Construction and the City Standard Specifications, except as modified herein.

MATERIALS

Materials must meet the requirements of Section 910 of the 2012 edition of the MDOT Standard Specifications for Stabilization Geotextile.

CONSTRUCTION METHODS

Install the stabilization geotextile on prepared grades in accordance with the manufacturer's recommendations. Do not operate equipment required to place backfill or cover materials directly on the geotextile. Eliminate wrinkles or waves which may develop in the geotextile during placement. Either shingle-lap (minimum of 2 feet) or seam all longitudinal and transverse joints in the geotextile. Field or factory seams, sewn or sealed, must meet specified grab tensile strength. Install seams facing upward to facilitate inspection.

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Stabilization Geotextile	Square Yard

Payment for Stabilization Geotextile will be measured in place to the limits specified by the Engineer. Overlap areas are not included in the measurement for payment. The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #218 - STRESS ABSORBING MEMBRANE INTERLAYER, TYPE I

a. Description.- This work shall consist of furnishing all materials, equipment, labor and preparation necessary for the application of Stress Absorbing Membrane Interlayer. The applied material shall completely seal the entire pavement surface and provide a uniform textured surface, suitable for placement of hot mixed asphalt, micro-surfacing or as a finished surface. Alternate specifications may be submitted to the Engineer for review 3 weeks prior to application. Approval of alternate specifications will be at the sole discretion of the Engineer.

b. Materials.-

POLYMER MODIFIED BITUMINOUS BINDER

EMULSION PROPERTY	MIN.	MAX.	TEST METHOD
S.F. VISCOSITY, 50 C (sec)	50	400	ASTM D 244
PERCENT SOLIDS (%)*	70		ASTM D 244
STORAGE STABILITY, 24 hrs. (%)		1.0	ASTM D 244
SIEVE TEST, #20 mesh (%)		0.1	ASTM D 244

RESIDUE PROPERTY	MIN.	MAX.	TEST METHOD
PENETRATION, 100g, 5 sec, 25 C (dmm)	70	100	ASTM D 5
SOFTENING POINT, RING & BALL (C)	65		ASTM D 36
ELASTIC RECOVERY, 4 C, 10 cm (%) **	70		ASTM D 113
FORCE DUCTILITY, 4 C, 40 cm ***	25 lbs./sq. in.		ASTM D 4

* By distillation or evaporation

** The specimen is extended 10 cm. The extended area is severed in the middle using a pair of shears. After 1 hour, at the test temperature the severed ends are returned to contact and the ductilometer reading is made again. The sample must recover at least 70 percent of the original 10 cm distance.

*** ASTM D 113 as modified by the addition of a load cell to the standard ductility apparatus. The load cell is calibrated in pounds per square centimeter. Reading is measured at 40 cm. Reading is multiplied by 6.45 to yield pounds per square inch force required to extend the test specimen.

The asphalt modifier shall be a SBS type polymer, Styrene-Butadiene-Styrene. The modifier shall be added to the asphalt cement prior to the emulsification process.

COARSE AGGREGATE
The coarse aggregate shall be 100% crushed material from quarried stone, natural gravel or other high quality aggregate and meet the following requirements:

PHYSICAL REQUIREMENTS (TEST SPECIFICATION: AASHTO T96)
L.A. Abrasion Test 40% max. S1029* Deleterious Material 1.0 max.
S1021* Crushed Pieces 100%
AASHTO T104 Sodium Sulfate Soundness Test, 5 Cycle 15

GRADING REQUIREMENTS – ASTM C-117

SIEVE SIZE		PERCENT PASSING
1 inch	(25mm)	100
¾ inch	(19mm)	100
½ inch	(12.5mm)	95-100
No. 4	(4.75mm)	5-25
No. 8	(2.36mm)	0-10
No. 200	(75um)	2

EQUIPMENT

All equipment required for performance of the work shall be approved before construction is to begin, and shall be maintained in satisfactory operating condition. The Contractor shall furnish an accurate thermometer, hand brooms and other small tools and equipment essential for the completion of the work.

PRESSURE DISTRIBUTOR

The pressure distributor shall have a computerized rate control that automatically adjusts the distributor's pump to the ground speed. The pressure distributor shall be capable of heating and re-circulating the bituminous binder to the specified temperature. The proper nozzles shall be used for the material and rate specified.

AGGREGATE SPREADER

The aggregate spreader shall be self-propelled and shall be equipped with hoppers, revolving cylinders and adjustments necessary to produce a uniform distribution of material at the specified rate.

PNEUMATIC TIRE ROLLER

The pneumatic tire rollers shall conform to CMS 401.12 type P-2.

WEATHER LIMITATIONS

The stress absorbing membrane interlayer shall be placed when the pavement and atmospheric temperature is 50° F or above. Placement is not permitted if it is raining, when the pavement surface is wet, or when temperatures are forecasted to be below 32° F within 24 hours of placement.

c. Construction Methods.- The Contractor shall follow the construction methods as described below and as instructed by the Engineer.

1. The Contractor shall establish stations, at 1,000 foot intervals on the entire project, prior to placing the stress absorbing membrane interlayer. The stations shall be maintained until the project is completed.
2. The surface shall be cleaned by the Contractor and shall be dry when the bituminous binder is applied. Material cleaned from the surface shall be disposed of properly.
3. The specified aggregate shall be spread uniformly onto the bituminous binder within 30 seconds of the bituminous spray.
4. Projects greater than 12,000 sy2 shall use a minimum of two rollers. Rollers shall proceed at maximum speed of 5 mph. The entire surface shall receive a minimum of two roller passes. The first roller pass shall be performed within one minute of aggregate spreading.
5. Brooming of the completed surface shall be accomplished prior to unrestricted use by traffic. The entire surface shall be clean of all loose material within 24 hours and prior to placement of surface course material.
6. The Contractor shall protect all utility castings using tarpaper or other approved material. All covers shall be properly fitted to the casting and removed prior to sweeping.

Application of Bituminous Binder and Course Aggregate

The bituminous binder shall be heated to specified temperature and uniformly placed to prevent ridges or streaks in the surface.

BITUMINOUS BINDER
The bituminous binder shall be applied at a temperature of 150 F to 180 F, and at the rate specified.

COARSE AGGREGATE
Stockpiling and loading methods shall permit ready identification of material and to minimize segregation and contamination of the aggregate. The moisture content of the coarse aggregate shall be below 4% and maintained throughout the project. Coarse aggregate shall be spread uniformly without ridges or gaps at the specified rates. Spreading of the aggregate shall be adjusted to produce a minimum of excess loose particles and shall provide complete coverage after rolling.

The spreading operation shall be accomplished in such a manner that the tires of trucks or the spreader at no time comes into contact with the newly applied bituminous material.

MATERIAL APPLICATION RATES

	BINDER APPLICATION RATE (Gallons per Square Yard)	
APPLICATION TYPE	TYPE I	TOLERANCE
Finished Surface	0.40 – 0.45	± 0.2
Prior to Micro-Surfacing	0.45 – 0.50	± 0.2
Prior to 1 inch min. Overlay	0.50 – 0.55	± 0.2

Aggregate application rate shall be as determined by the supplier of the SAMI binder and shall produce a completed surface with no exposed binder. The supplier of the SAMI binder shall determine the application rate for emulsion and aggregate, based on the existing pavement condition and aggregate size. This information shall be reported to the Engineer prior to beginning work and shall include an aggregate gradation on the job specific materials.

Quality Control
The Contractor to measure compliance shall use the methods described in this section.
- Aggregate gradation
- Aggregate Moisture Content
- Yield Check on Bituminous Binder
- Temperature Check on Bituminous Binder

If the Contractor's test results exceed any of the identified quality control tolerances, the Engineer shall be immediately notified. The Engineer will review the explanation and the corrective action taken by the Contractor. Another test will be taken and if the results still exceed the quality control tolerance, placement shall stop. The Contractor shall immediately notify the Engineer, and identify the cause of the excessive deviation and detail corrective action necessary to bring the deficiency into compliance. The Engineer will give approval prior to resuming work.

BITUMINOUS BINDER
The application rate shall not exceed a tolerance of 0.02 gallons per square yard from the specified rate, and within the temperature range as specified above.

COURSE AGGREGATE
The aggregate shall be clean and uniform, and shall be within the gradation range as specified herein. Moisture content shall not exceed the tolerance as specified in above.

Documentation

The Contractor shall provide the Engineer a daily report with the following information:

Control Section/Project Number/County/Route
Date/Air Temperature/Pavement Temperature
Bituminous Binder Temperature (3 per day)
Station Location per Test
Beginning and Ending Stations
Yield Check on Bituminous Binder (3 per day)
Aggregate Gradation & Moisture (1 per day)
Length/Width/Total Area

Acceptance

The Contractor shall inspect the completed Stress Absorbing Membrane Interlayer during the application process for any deficiencies. The deficiencies will be limited to flushing, surface patterns and loss of stone retention.
Workmanship shall be inspected for the following:

Untreated areas (missed)
No overlap on longitudinal joints
No overlap on construction joints

All corrective work shall be accomplished prior to resurfacing with bituminous materials, or within 24 hours. The Contractor shall furnish materials, equipment and labor to make corrections at no additional cost to the Contract. The Engineer shall give final approval on inspection and corrective work.

Placement of Asphalt Overlay

If the SAMI application is used as an intermediate layer for an asphalt overlay, a minimum period of 24 hours shall be observed prior to the placement of the asphalt surface course after placement of the SAMI material. This time limit may be increased or decreased by the Engineer dependent on ambient temperatures and conditions.

Method of Measurement

Stress absorbing membrane interlayer will be measured by the square yard as provided for in the Contract Documents. The accepted quantities, measured as provided for above, will be paid for at the contract unit price for stress absorbing membrane interlayer.

d. Measurement and Payment.- The completed work, as measured, shall be paid for at the contract unit price for the following contract items:

Contract Item (Pay Item)	Pay Unit
Stress Absorbing Membrane Interlayer, Type I….	……Square Yard

The unit prices for these items shall include all labor, material and equipment costs associated with the installation of the stress absorbing membrane interlayer, as specified herein.

DETAILED SPECIFICATION
FOR
ITEM #219 - MACHINE GRADING

DESCRIPTION

This work shall consist of removing pavement, removing gravel parking lot, constructing earth grades by excavating, cutting, filling, trimming, and grading; furnishing and placing a 3-inch thick layer of topsoil; seeding and mulching; turf establishment and general restoration in accordance with the Detailed Specifications elsewhere herein; and maintaining the work in a finished condition until such time that it is accepted by the Engineer. This work shall be done as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer, and in accordance with Sections 204 and 205 of the 2012 edition of the MDOT Standard Specification for Construction, except as specified herein.

CONSTRUCTION METHOD

The Contractor shall remove roadway pavement, regardless of depth of if it is a composite section and construct earth grades as required to develop the typical and/or detailed cross-section(s) as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer. This shall include, but not be limited to, the removal of concrete, HMA and/or brick pavement, the excavation of soil, rocks of any size, stumps, logs and bricks; the removal and proper disposal off-site of surplus excavated material and material which is determined by the Engineer to be unsuitable for re-use; the scarifying, plowing, disking, moving and shaping of earth: the trimming, grading, compaction and proof-rolling of the prepared subgrade; the importing, furnishing, placement and compaction of embankment and/or fill materials; the full depth saw-cutting of pavement at the removal limits; the grading of sideslopes; the furnishing and placing of a 3-inch thick layer of topsoil; seeding, turf establishment and general restoration in accordance with the Detailed Specifications elsewhere herein and the general items of the work as specified herein.

The Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

The Contractor shall remove other surface features located within the grading limits and not otherwise identified, as directed by the Engineer.

The Contractor shall move excavated and/or imported materials longitudinally and/or transversely where necessary, and as directed by Engineer.

The Contractor shall keep the work well graded and drained at all times.

The Contractor shall not use rubber-tired equipment on the subgrade, when its use causes or may cause, in the opinion of the Engineer, damage to the subgrade. The Contractor shall conduct its operation(s), and provide all necessary equipment, to insure the satisfactory completion of the work without damaging the subgrade. This includes the transporting, stockpiling, rehandling, and movement of materials over additional distances, in lieu of driving on an unprotected, or partially unprotected, subgrade.

The Contractor is solely responsible for the maintenance and protection of the subgrade. Further, any damage to the subgrade which, in the opinion of the Engineer, is caused as a result of the Contractor's operation(s), or its subcontractors' or suppliers' operation(s), shall be repaired by the Contractor at the Contractor's expense. This includes any additional earthwork and/or maintenance materials as directed by the Engineer, for the purposes of the Contractor's maintenance and protection of the subgrade. The Contractor shall not be entitled to any additional compensation for the implementation of these procedures.

The Contractor shall perform all rough and/or finish grading and compaction to the grades shown on the Plans, as detailed in the Specifications, and as directed by the Engineer.

The Contractor shall proofroll all graded and compacted surfaces in the presence of the Engineer. The Engineer will monitor the proofrolling operation to locate deleterious and/or uncompacted materials, and will direct undercuts as necessary.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

The Contractor shall continuously maintain all drive entrances located within the construction limits.

The Contractor shall take any and all steps necessary to avoid interruption in the mail delivery, and solid waste, recycling, and compostable pick-up within the project limits (this shall include the temporary relocation of mailboxes, where required by the Engineer).

Brick Roadway

The Contractor shall remove, salvage, and neatly stack/stockpile all bricks, if present, as directed by the Engineer. The brick roadway shall be removed without damage, and the bricks shall be cleaned so that all surfaces are free of debris, neatly stacked on pallets, and delivered to any City facility as directed by the Engineer.

The Contractor shall demonstrate that the methods of removal, cleaning, and storage utilized will protect the salvaged bricks from damage through all phases of construction. If the Contractor's operations are deemed too damaging to the bricks, the Engineer will require operations to cease until other methods are successfully demonstrated.

Bricks which are broken or cannot be reused shall become the property of the Contractor and shall be properly disposed of offsite.

MEASUREMENT AND PAYMENT

This item of work shall be paid by the unit "Station", or portion thereof, as measured along the longitudinal axis of the street, as indicated on the Plans. The pay unit "Station" is defined as an area of land with a length of 100-feet, and a width of the entire construction limits as shown on the Plans, or as directed by the Engineer. Pavement removal, hauling and disposing excess material, embankment, fill, subgrade protection/maintenance, drainage maintenance, topsoil, seeding, and restoration quantities will not be paid for separately, and are included in this item of work.

Sand subgrade and aggregate base courses are not included in this item of work, but shall be paid for separately as "Sand Subbase Course, Class II – C.I.P" and "Aggregate Base Course, 21AA – C.I.P."

Curb and gutter removal is not included in this item of work, and shall be paid for separately as "Remove Concrete Curb or Curb and Gutter, Any Type".

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	**PAY UNIT**
Machine Grading	CY

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #220 - HMA PATCHING

DESCRIPTION

This work shall consist of patching existing HMA and concrete pavements as specified in Division 5 of the 2012 edition of the MDOT Standard Specifications, current supplemental MDOT specifications, and the City of Ann Arbor Standard Specifications, except as modified herein, and as directed by the Engineer.

MATERIALS

The HMA mixtures to be used for this work shall be MDOT No. 11A, 36A, 13A, 2C, 3C, or 4C, as directed by the Engineer.

Asphalt Binders shall be grade PG 52-28, PG 58-22, PG 58-28, or PG 64-22, as directed by the Engineer, and shall meet the requirements specified in Section 904 of the 2012 edition of the MDOT Standard Specifications, and any current supplemental MDOT specifications.

The Aggregate Wear Index (AWI) number for this project is 260. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

CONSTRUCTION METHODS

All areas excavated on any given day shall be patched, compacted and opened to traffic, that same day.

The Contractor shall provide a 10-foot long straight-edge during all paving operations.

The aggregate base and/or subgrade of all patch areas which are, or become, damp or wet, shall be dried by aerating, or by other methods approved by the Engineer.

The aggregate base and/or subgrade of each patch shall be evenly graded and trimmed, and shall be compacted by the use of a vibratory plate compactor or other approved method(s) to not less than 98% of its maximum unit weight.

Prior to placing HMA patching material, all patch areas shall be cleaned with compressed air, and/or vacuum type street cleaning equipment (Vac-all), to remove dirt and loose material. Compressed air shall be from a source which provides a minimum of 90 psi and 150 cubic feet per minute of air at the nozzle.

All asphalt and concrete surfaces within all patch areas shall be covered with MDOT SS-1h bond coat, applied at a rate of 0.05 gallons/square yard. The bond coat shall be applied with a power distributor hand sprayer.

The Contractor shall use an asphalt paver or spreader box to place HMA mixtures. The Contractor shall not use a grader, front-end loader or any similar device to place HMA mixtures. For small areas, where approved by the Engineer, the Contractor may place the material by hand directly into patch areas. The Contractor shall not place HMA materials on adjacent pavement surfaces.

HMA mixtures shall be placed in lifts not exceeding 3-inches (approximately 3½-inch loose). Each layer of HMA mixture shall be compacted to between 92 to 96 percent (or as determined acceptable by the engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula.

HMA mixtures shall be compacted by the use of an approved vibratory roller. At small patches, an approved vibratory plate compactor shall be used.

Spot Wedging, Spot Leveling, and Finish Patching shall be performed in accordance with this Detailed Specification and as directed by the Engineer, using the HMA mixture(s) directed by the Engineer.

The completed work of patching, spot wedging, spot leveling and finished patching shall provide a smooth riding surface, to the satisfaction of the Engineer.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

MEASUREMENT AND PAYMENT

Measurement shall be by the ton, in place. Unused HMA material shall be returned to the plant and re-weighed, and a corrected weight slip shall be provided to the Engineer. Weight slips shall include the type of mixtures (codes are not acceptable), as well as the truck number, gross weight, tare weight and net weight.

Price adjustments shall be enforced as described at Section 4.00.19 MDOT Standard Specifications (1990 edition), and will be based on testing reports provided by the City's testing representatives.

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
HMA Patching	Ton

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #221 - HMA FINISH WEDGING

DESCRIPTION

This work shall consist of constructing HMA finish wedges at drive approaches, sidewalk ramps, and any other locations, in accordance with Division 5 of the 2012 edition of the MDOT Standard Specifications, current supplemental MDOT specifications, and the City of Ann Arbor Standard Specifications, except as modified herein, and as directed by the Engineer.

MATERIALS AND EQUIPMENT

The HMA mixture to be used for this work shall be MDOT No. 1300T-36A, 1300T-36A (Modified), or an acceptable substitute as directed by the Engineer.

Asphalt Binders shall be grade PG 52-28, PG 58-22, PG 58-28, or PG 64-22, as directed by the Engineer, and shall meet the requirements specified in Section 904 of the 2012 edition of the MDOT Standard Specifications, and any current supplemental MDOT specifications.

The Aggregate Wear Index (AWI) number for this project is 260. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

CONSTRUCTION METHOD

The Contractor shall complete all finish wedging within two days of placement of the wearing course.

The Contractor shall have a 10-foot long straight-edge, backhoe, air-compressor and jackhammer available during all paving operations.

Finish wedges shall provide good vertical and horizontal transitions between old and new construction, shall eliminate areas of standing water in the wearing surface, and shall provide positive drainage.

The Contractor shall construct feather joints at the edges of all finish wedges (including the raking out of all large pieces of aggregate), so as to provide a high quality, smooth riding surface.

Prior to placement of wedging material, the surface shall be cleaned with compressed air and/or vacuum type street cleaning equipment.

Each layer of HMA mixture shall be compacted to between 92 to 96 percent (or as determined acceptable by the engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

MEASUREMENT AND PAYMENT

Measurement shall be by the ton, in place. Unused portions of material loads shall be returned to the plant and re-weighed and the corrected weight slip shall be provided to the Engineer. All weight slips must include type of mixture delivered to the site (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

Price adjustments shall be enforced as described at Section 4.00.19 MDOT Standard Specification for Construction (1990 edition) and will be based on testing reports provided by the City's testing representatives.

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
HMA Finish Wedging	Ton

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #222 - HMA PAVEMENT LEVELING - REGULAR
ITEM #223 - HMA PAVEMENT WEARING – REGULAR
ITEM #226 - HMA PAVEMENT WEARING – 5E3
ITEM #227 - HMA PAVEMENT BASE OR LEVELING – 4E3

DESCRIPTION

This work shall consist of constructing HMA pavement base, leveling, and surface courses in accordance with Division 5 and Section 806 of the 2012 edition of the MDOT Standard Specifications, current supplemental MDOT specifications, and the City of Ann Arbor Standard Specifications, except as modified herein, and as directed by the Engineer.

MATERIALS AND EQUIPMENT

General

The HMA mixtures to be used for this work shall be as follows:

WORK ITEM	MDOT HMA MIXTURE #
HMA Pavement Leveling - Regular	13A
HMA Pavement Wearing - Regular	13A
HMA Pavement Leveling or Base – 4E3	4E3 (Superpave)
HMA Pavement Wearing – 5E3	5E3 (Superpave)

Asphalt Binders for the 13A shall be PG 58-28, as directed by the Engineer, and shall meet the requirements specified in Section 904 of the 2012 edition of the MDOT Standard Specifications, and any current supplemental MDOT specifications. Binders for Superpave mixes shall be PG 58-22 for base and leveling courses, and PG 70-28(p) for the wearing course.

The Contractor shall have a 10-foot long straight-edge, backhoe, air-compressor and jackhammer available during all paving operations.

The Aggregate Wear Index (AWI) number for this project is 260. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

Reclaimed Asphalt Pavement (RAP) in HMA Mixtures

The use of Reclaimed Asphalt Pavement (RAP) in HMA mixtures shall be in accordance with Section 501.02.A.2 of the 2012 edition of the MDOT Standard Specifications, and the City of Ann Arbor Standard Specifications.

CONSTRUCTION METHODS

All concrete work shall be completed prior to placing HMA mixtures.

The Contractor shall have a 10-foot long straight-edge, backhoe, air-compressor and jackhammer available during all paving operations.

Prior to placing the bond coat, the Contractor shall kill all vegetation (within the area to be paved) by applying an approved weed killer ("Round-Up" by Monsanto, or equal), shall thoroughly clean all joints & cracks in the existing pavement (and any gutter to be overlaid) with compressed air and/or vacuum-type street cleaning equipment to remove all dirt and debris to a depth of at least 1-inch, and shall thoroughly clean the entire surface to be paved, with a Vac-All or similar vacuum-

type street cleaning equipment.

MDOT SS-1h bond coat shall be applied at a uniform rate of 0.05 gallons/square yard, on all exposed, existing HMA and concrete surfaces which will come in contact with the new HMA material. The Contractor shall take extra care to avoid covering surfaces which are not to be paved. After September 15, SS-1h bond coat shall not be diluted by more than 25%.

The Contractor shall place HMA wedges using the base, leveling, and wearing mixtures specified herein, as directed by the Engineer, prior to placing the wearing course. Such wedging shall be measured and paid for at the respective unit price of the appropriate HMA Pavement item.

Construction of butt joints, where directed by the Engineer, shall be measured and paid for as "Remove HMA Pavement."

The Contractor shall schedule the paving operation to avoid longitudinal cold joints.

HMA wearing and leveling courses shall be placed in lifts of 2-inches or less; base courses shall be placed in lifts of 3-inches or less.

All specified HMA thickness dimensions are compacted-in-place.

The Contractor shall construct the pavement courses to provide the final cross-slopes (crowns) specified by the Engineer.

The Contractor shall construct feather joints, and shall feather the leveling and wearing courses at structures, in drive approaches, and at intersection joints, as directed by the Engineer. Feather joints shall vary the thickness of the asphalt from 0.0-inches to the required full paving thickness (approximately 1½-inches) over a 5-foot to 15-foot distance, or as directed by the Engineer. The Contractor shall rake all large aggregates out of the HMA mixture in feather joints, prior to compaction.

The Contractor shall provide a minimum of two rakers during the placement of all wearing and leveling courses. Further, the Contractor shall provide, when directed by the Engineer, a second "Break-Down" roller in order to achieve the specified asphalt densities.

The Contractor shall provide a minimum of 24-hours notice to the Engineer prior to paving, and shall obtain a "Permit To Pave" from the Engineer in advance of scheduling paving.

The Contractor and Engineer shall carefully observe the paving operation for signs of faulty mixtures. Points of weakness in the surface shall be removed or corrected by the Contractor, at his/her expense, prior to paving subsequent lifts of HMA material. Such corrective action may include the removal and replacement of thin or contaminated sections of pavement, including sections that are weak or unstable. Once the Contractor or his representative is notified by the Engineer that the material being placed is out of allowable tolerances, or there is a problem with the paving operation, the Contractor shall stop the paving operation at once, and shall not be permitted to continue placing HMA material until again authorized by the Engineer.

During the placement of leveling and wearing courses, the speed of the paving machine(s) shall not exceed 50-feet per minute.

The Contractor shall furnish and operate enough materials and equipment so as to keep the paving machine(s) moving continuously at all times. Failure to do so shall be cause for the suspension of the paving operation until the Contractor can demonstrate to the satisfaction of the Engineer, that sufficient resources have been dedicated to perform the work in accordance with the specifications.

Each layer of HMA mixture shall be compacted to between 92 to 96 percent (or as determined acceptable by the engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

MEASUREMENT AND PAYMENT

Measurement of these HMA paving items shall be by the ton, in place. Unused portions of material loads shall be returned to the plant and re-weighed, and the corrected weight slip shall be provided to the Engineer. All weight slips must include the type of mixture (codes are not acceptable), as well as vehicle number, gross weight, tare weight and net weight.

Corrective action shall be enforced as described at Division 5 of the 2012 MDOT Standard Specifications and will be based on the City's testing reports.

All costs for furnishing and operating vacuum-type street cleaning equipment, backhoes, jackhammers, and air compressors shall be included in the bid prices for these items of work or in the item of work "General Conditions."

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
All HMA Pavement Items	Ton

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION FOR:
ITEM #230 - REMOVE CONCRETE CURB OR CURB & GUTTER - ANY TYPE
ITEM #231 - REMOVE CONCRETE PAVEMENT (REPAIR) - ANY THICKNESS
ITEM #232 - REMOVE CONCRETE SIDEWALK AND DRIVE - ANY THICKNESS

DESCRIPTION

This work shall consist of removing concrete curb, gutter, curb and gutter, integral curb, concrete pavement, sidewalk, sidewalk ramps, drive openings, and drives as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer, in accordance with Section 204 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, and as directed by the Engineer.

CONSTRUCTION METHOD

Curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and drives shall be replaced the same day they are removed.

The Contractor shall remove concrete curb, gutter, curb & gutter, integral curb, pavement, sidewalk, sidewalk ramps, drive openings, and drives, all regardless of the type and thickness, and all as shown on the Plans, as detailed in the Specifications, and as directed by the Engineer.

Prior to the start of removals, the Engineer and Contractor together shall field measure all removals.

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide MDOT Type M drive openings, and including those necessary to provide for the partial removal of existing drive approaches as shown on the Plans, as directed by the Engineer, and as marked for removal. The Contractor shall cut steel reinforcement bars as directed by the Engineer at all areas of removal.

The Contractor shall remove, salvage, deliver to any location within the City limits, and neatly stack/stockpile all bricks, if present, as directed by the Engineer.

The Contractor shall excavate, cut, remove stumps, remove brush, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact granular material as needed to: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

The Contractor shall coordinate with the City Forester prior to the removal of any tree roots.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

The Contractor shall re-shape, re-grade, and re-compact the existing roadbed materials to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer. The use of each specific piece of equipment is subject to the approval of the Engineer.

The Engineer may direct aggregate base materials to be either removed from or added to the job-site, to properly complete the work. Where the Engineer directs the addition of such materials, they shall be paid for as either the Item of Work: "21AA Limestone - C.I.P.". Where the Engineer directs such materials to be removed, they will not be paid for separately, but shall be included in the appropriate concrete removal item.

Concrete pavement removals shall be performed in accordance with the MDOT (2012) Specification 603.03, except as modified herein. The item of work "Remove Concrete Pavement (Repair) - Any Thickness" refers to the removal of existing concrete pavement and concrete pavement base within the width of the street (i.e. edge-of-metal to edge-of-metal). Concrete removal outside the edge-of-metal shall be paid for as the appropriate item of either "Remove Concrete Curb or Curb & Gutter - Any Type", or "Remove Concrete Sidewalk & Driveways - Any Thickness".

Where existing concrete curb & gutter is to be replaced on a street with a concrete (or brick) base, the Engineer may direct the Contractor to remove a 1-to-2-foot wide, full-depth section of pavement and pavement base from immediately in front of the curb & gutter. As part of this pavement/base removal, the Contractor shall perform additional (double) full-depth saw-cutting along the entire removal limits, and shall take sufficient care so as not to damage and/or disturb any adjacent pavement, pavement base, and/or any other site feature, all as directed by the Engineer. The removals shall be to a sufficient width and depth to allow for the placement and removal of the curb & gutter formwork. After the removal of the formwork, the Contractor shall replace the concrete base to its original thickness and elevation(s).

The Contractor shall remove composite pavement (HMA pavement overlaid on concrete/brick pavement or concrete/brick pavement base) of any thickness(es) as directed by the Engineer. This work shall be paid for as "Remove Concrete Pavement (Repair) - Any Thickness". The work of removing HMA pavement overlays where concrete/brick pavement or concrete/brick pavement base is to be removed, will not be paid for separately.

Excavated/removal areas shall be adequately protected with barricades or fencing at all times.

Removed or excavated materials which are not incorporated into the work shall become the property of the Contractor and shall be immediately removed and properly disposed of off-site. Removed or excavated materials may not be stockpiled overnight on, or adjacent to, the site.

Subbase or subgrade removed without authorization by the Engineer, shall be replaced and compacted by the Contractor at the Contractor's expense, with materials specified by the Engineer.

The Contractor shall restore all disturbed areas to better than or equal to their original condition. This includes the placement and compaction of 2.5 inches of topsoil, followed by the placement of grass seed, followed by the placement of 0.5 inches of topsoil at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. All restoration work and materials shall be in accordance with the City Standard Specifications. Restoration work must be performed within one week of the placement of the wearing course for each street.

MEASUREMENT AND PAYMENT

Sidewalk ramp removal shall be measured and paid for as “Remove Concrete Sidewalk and Driveways - Any Thickness”.

Integral curb and gutter that is removed as part of “Remove Concrete Pavement (Repair)” shall be measured and paid for by the square yard, along with the pavement removal quantity.

Payment for saw cutting to create or modify Type M openings, and to allow for the partial removal of existing drives shall be included in the price of the item of work, “Remove Concrete Sidewalk & Driveways - Any Thickness”, and will not be paid for separately.

All sawcutting required for removals shall be included in the appropriate item of work, and will not be paid for separately.

Restoration work, including backfilling, compacting, HMA patching adjacent to concrete items, topsoiling and seeding will not be paid for separately, but shall be included in the appropriate associated items of work.

Concrete removal items shall be field measured and paid for at the Contract Unit Prices for their respective Contract (Pay) Items as follows:

PAY ITEM	**PAY UNIT**
Remove Concrete Curb or Curb & Gutter - Any Type	Lineal Foot
Remove Concrete Pavement (Repair) - Any Thickness	Square Yard
Remove Concrete Sidewalk & Driveways - Any Thickness	Square Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #233 – PAVEMENT JOINT AND CRACK REPAIR – DETAIL 7
ITEM #234 – PAVEMENT JOINT AND CRACK REPAIR – DETAIL 8

DESCRIPTION

This work shall consist of constructing pavement joint and crack repairs and hand patching in accordance with Section 502 of the 2003 edition of the MDOT Standard Specifications for Construction and MDOT Standard Detail R-44-E (Details 7 and 8), except as modified herein, and as directed by the Engineer.

MATERIALS

Materials must meet the requirements of Section 502 of the 2003 edition of the MDOT Standard Specifications for Construction.

CONSTRUCTION METHODS

Construction shall be in accordance with Section 502 of the 2003 edition of the MDOT Standard Specifications for Construction and MDOT Standard Detail R-44-E (Details 7 and 8), the City Standard Specifications, this Detailed Specification, and as directed by the Engineer.

Removed material shall be replaced with a HMA wearing course mixture approved by the Engineer. The HMA shall be compacted with a machine vibrator or approved roller with base lift thicknesses not to exceed 3 inches and with the top lift thickness not to exceed 2 inches. The final surface of the repair shall be flush with the existing pavement.

MEASUREMENT AND PAYMENT

Payment for hand patching with an approved HMA mixture in repair areas shall be included in the unit price for the Items of work, "Pavement Joint and Crack Repair – Detail 7" and "Pavement Joint and Crack Repair – Detail 8" and will not be paid for separately.

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Pavement Joint and Crack Repair – Detail 7	Foot
Pavement Joint and Crack Repair – Detail 8	Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR

ITEM #237 CONCRETE CURB OR CURB & GUTTER - ANY TYPE - FIXED FORM
ITEM #238 CONCRETE CURB OR CURB & GUTTER - ANY TYPE - FIXED FORM - HIGH-EARLY
ITEM #239 CONCRETE CURB OR CURB & GUTTER - ANY TYPE - SLIP FORM
ITEM #240 4-INCH SIDEWALK OR RAMP
ITEM #241 6-INCH DRIVE, SIDEWALK OR RAMP
ITEM #242 6-INCH DRIVE, SIDEWALK OR RAMP - HIGH-EARLY
ITEM #243 8-INCH DRIVE, SIDEWALK OR RAMP - HIGH-EARLY

DESCRIPTION

This work shall consist of constructing concrete items including curb, gutter, curb and gutter, sidewalks, drive approaches, MDOT Type M drive openings, and pavement repairs with mechanical anchors and hook bolts, all of any type and/or dimensions, all of either regular, fibermesh reinforced, and/or high-early concrete, in accordance with Sections 601, 602, 603, 801, 802, and 803 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, as shown on the Plans, as shown in this Detailed Specification, and as directed by the Engineer.

The Contractor is responsible to construct all sidewalks, sidewalk ramps, curbs, and all other concrete items within ADAAG compliance. All sidewalks and curb ramps must be constructed in accordance with MDOT Standard Detail R-28-F (version in place at time of the bid letting).

MATERIALS

Concrete mixtures shall be as follows (or as directed by the Engineer), and concrete materials shall meet the requirements specified in the referenced sections of the MDOT Standard Specifications:

Concrete Item	Concrete Mixture	MDOT Section
Curb or Curb & Gutter	P1, 6-sack	601
Curb or Curb & Gutter - High-Early	HE, 8.4-sack	601
4" or 6" Sidewalk or Ramp	P1, 6-sack	601
6" or 8" Sidewalk/Ramp/Drive - High-Early	HE, 8.4-sack	601

CONSTRUCTION METHODS

General

Curb, gutter, curb and gutter, sidewalk, sidewalk ramps, drive openings, and drives shall be replaced the same day they are removed.

Concrete items, including sidewalk, non-integral curb/gutter, drives, and structure adjustments shall be completed prior to the placement of pavement.

All subgrade work shall be completed prior to placing concrete items, unless directed or approved by the Engineer.

The subbase shall be trimmed to final elevation before placing curb. Curb shall not be placed on a pedestal or mound.

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact Class II granular material and 21AA Aggregate material as needed to: construct new concrete items; to repair or replace existing concrete items; to relocate existing concrete items to their new specified/directed elevations/locations, including all necessary grading at elevation changes of curb and gutter, sidewalks and ramps; and at locations where existing concrete items are to be removed and turf is to be established in its place.

At locations where the subgrade, subbase or base becomes either disturbed, saturated or otherwise damaged, and where

directed by the Engineer, the Contractor shall remove a minimum 6-inch thick layer of the subgrade, subbase or base, and replace it with approved 21AA Aggregate material, compacted in place.

The Contractor shall coordinate with the City Forester prior to the removal of any tree roots.

The Contractor is responsible for any damage to concrete items, including but not limited to vandalism; vehicular, pedestrian and/or miscellaneous structural damage; surface texture damage; and rain damage.

The Contractor shall maintain on-site at all times, a sufficient quantity of adequate materials to protect concrete items. The Engineer may suspend or defer concrete placement if rain protection is not available. The Contractor shall not be entitled to any additional compensation due to work suspension or deferral resulting from a lack of adequate rain protection.

The Contractor shall perform full-depth saw cutting at removal limits, including those necessary to construct 2-foot wide Type M drive openings, and including those necessary to provide for the partial removal of existing drive approaches, as shown on the Plans, as directed by the Engineer, and as marked for removal.

The subbase and adjacent concrete shall be sufficiently wet-down with water prior to placing concrete, to prevent water loss from the new concrete, and to form a better bond between old and new concrete. If a cold-joint becomes necessary, (the) existing concrete surface(s) shall be cleaned with compressed air to expose the aggregate in the concrete.

Where it is necessary to remove existing pavement to provide space for concrete formwork, a sufficient amount of the existing pavement shall be removed to allow for the use of a vibratory plate compactor in front of the curb.

Where concrete items are placed in areas adjacent to existing pavement that is beyond the general resurfacing (pavement removal and/or milling) limits, the adjacent pavement area shall be backfilled and permanently patched within 48-hours of the removal of concrete formwork. The backfill material shall be MDOT 21AA aggregate compacted in place to 95%, up to the elevation of the proposed bottom of pavement. The pavement patching material(s) shall be as specified and as directed by the Engineer.

Where concrete items are placed adjacent to existing pavement that is within areas scheduled for subsequent pavement removal and/or milling, the adjacent pavement area shall, within 48-hours of the removal of concrete formwork, be backfilled with MDOT 21AA aggregate compacted in place to 95% up to the elevation of the bottom of the adjacent pavement.

Prior to compacting backfill in front of curb and gutter, the back of curb shall be backfilled with approved material and compacted by mechanical means to 95%.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

Restoration

The Contractor shall restore all disturbed areas to better than or equal to their original condition within two calendar days from the date of concrete placement. This includes the placement and compaction of 2.5 inches of topsoil, followed by the placement of grass seed, followed by the placement of 0.5 inches of topsoil, at all turf restoration locations, and at locations where concrete items are removed and turf is to be established. **Restoration shall also include the replacement of any brickwork, decorative stone, or other adjacent materials.** All restoration work and materials shall be in accordance with the City Standard Specifications.

Contraction Joints in Sidewalk

Contraction joints shall be placed at 5-foot intervals and may be tooled or sawed. The method of forming joints and spacing shall be approved by the Engineer prior to construction.

Expansion Joints in Sidewalks

¾-inch wide expansion joints shall be placed through concrete sidewalks in line with the extension of all property lines, at all expansion joints in the abutting curb, gutter, and combination curb and gutter, and as directed by the Engineer. Transverse expansion joints shall be placed through the sidewalks at uniform intervals of not more than 300-feet.

½-inch wide expansion joints shall be placed between the sidewalk and back of abutting curb or gutter, at the juncture of two sidewalks, between the sidewalk and buildings and other rigid structures, and as directed by the Engineer.

Expansion Joints in Curb and Gutter

¾-inch wide expansion joints shall be placed at all street returns, at all expansion joints in an abutting pavement, at each side of all driveways (at radius points), elsewhere at 300-foot maximum intervals, and as directed by the Engineer.

Expansion joint material shall extend to the full depth of the joint. After installation, the top shall not be above the concrete nor be more than ½-inch below it. No reinforcing steel shall extend through expansion joints.

Plane of Weakness Joints in Curb and Gutter

Intermediate plane of weakness joints shall be placed to divide the structure into uniform sections, normally 10-feet in length, with a minimum being 8-feet in length, and shall be placed opposite all plane of weakness joints in the abutting concrete base course.

Plane of weakness joints shall be formed by narrow divider plates, which shall extend 3-inches into the exposed surfaces of the curb or curb and gutter. Plates shall be notched, if necessary, to permit the steel reinforcement to be continuous through the joint.

MEASUREMENT AND PAYMENT

No additional compensation will be paid for the construction of concrete items adjacent to existing concrete curb, gutter, pavement, or any other pavement or surface feature(s).

No additional compensation will be paid for the removal of a 6-inch thick layer of the subgrade, subbase or base, and replacement with approved 21AA aggregate material, compacted in place.

A deduction in length for catch basins and inlet castings will be made to measurements of Curb and Gutter.

Curb, gutter, curb and gutter, and MDOT type M openings, shall be paid as "Curb & Gutter."

On streets where curb and gutter is to be placed with the item “Concrete Curb & Gutter – Any Type – Slip Form”, all miscellaneous hand work associated with the slip form placement shall be included in this item of work and shall not be paid for separately.

Restoration work, including backfilling, compacting, HMA patching adjacent to concrete items, topsoiling and seeding will

not be paid for separately, but shall be included in the appropriate associated items of work.

Payment for saw cutting for Type M openings and for partial removal of existing drives shall be included in the price for the item of work, "Remove Concrete Sidewalk & Driveways - Any Thickness", and will not be paid for separately.

Payment for the removal of HMA pavement and aggregate base to provide space for concrete formwork and vibratory plate compactor shall be included in the price for the item of work, "Remove Concrete Curb and Gutter - Any Type", and will not be paid for separately.

Completed work as measured for these items of work will be paid for at Contract Unit Price for the following Contract (Pay) Items:

PAY ITEMS	**PAY UNIT**
Concrete Curb or Curb & Gutter - ALL TYPES	Lineal Foot
4 or 6-Inch Sidewalk, Ramp, or Drive	Square Foot
6-Inch Drive, Sidewalk, or Ramp - High Early	Square Foot
8-Inch Drive, Sidewalk, or Ramp - High Early	Square Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #245 –DETECTABLE WARNING, CAST IN PLACE

DESCRIPTION

This work shall consist of furnishing and installing cast in place detectable warning units in compliance to the Americans with Disability Act (ADA). All work shall be in accordance with MDOT Standard Detail R-28- F (version in place at time of the bid letting).

MATERIALS AND CONSTRUCTION METHODS

The detectable warning tiles shall be ceramic cement or composite polymer concrete (CRC), colored as Federal Number 22144 (frequently referred to as "Colonial Red" or "Brick Red"). The detectable warning tiles shall meet the following dimensions and tolerances:

1. Dimensions: Cast In Place Detectable/tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:

   Length: 24"
   Width: The full width of the approaching walk (60" for typical sidewalk)
   Depth: 1.375 (1-3/8") (+/-) 5% max.
   Face Thickness: 0.1875 (3/16") (+/-) 5% max. Warpage of Edge: 0.5% max.
   Embedment Flange Spacing: shall be no greater than 3.1"

2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
3. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.
4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.
5. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.
6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.
7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.
9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
10. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.
11. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. lbf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.
12. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result -ΔE <4.5, as well as no deterioration, fading or chalking of surface.
13. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.
14. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.

15. AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Cast In Place Tile shall be mounted on a concrete platform with a ½" airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.
16. Embedment flange spacing shall be no greater than 3.1" center to center spacing as illustrated on the product Cast In Place drawing.

CONSTRUCTION METHODS

The contractor shall follow manufacturer specifications for installation, except where they conflict with MDOT Standard Detail R-28- F (version in place at time of the bid letting).

MEASUREMENT AND PAYMENT

The completed work as measured for this item of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Detectable Warnings, Cast In Place	Square Foot

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #246 – INTEGRAL SIDEWALK RETAINING WALL (6" OR LESS)
ITEM #247 – INTEGRAL SIDEWALK RETAINING WALL (6"-18")

DESCRIPTION

This work shall consist of constructing concrete retaining walls (i.e., dividers) adjacent to sidewalks, in accordance with Sections 802 and 803 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein, as shown in this Detailed Specification, and as directed by the Engineer.

MATERIALS

Concrete mixtures shall be High Early, 8.4-sack concrete (or as directed by the Engineer), and concrete materials shall meet the requirements specified in the appropriate sections of the MDOT Standard Specifications.

CONSTRUCTION METHODS

General

The Contractor shall construct the Item "Integral Sidewalk Retaining Wall (6" or less)" in accordance with MDOT standard plan R-30-E, detail E2. Curb face exposure shall be 6 inches or less.

The Contractor shall construct the Item "Integral Sidewalk Retaining Wall (6"-18")" as shown on the following Detail.

All subgrade work shall be completed prior to placing concrete items, unless directed or approved by the Engineer.

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact any materials needed to perform the work.

At locations where the subgrade, subbase or base becomes either disturbed, saturated or otherwise damaged, and where directed by the Engineer, the Contractor shall remove a minimum 6-inch thick layer of the subgrade, subbase or base, and replace it with approved 21AA Aggregate material, compacted in place.

The Contractor shall coordinate with the City Forester prior to the removal of any tree roots 2 inches in diameter or greater.

The Contractor is responsible for any damage to concrete items, including but not limited to vandalism; vehicular, pedestrian and/or miscellaneous structural damage; surface texture damage; and rain damage.

The Contractor shall maintain on-site at all times, a sufficient quantity of adequate materials to protect concrete items. The Engineer may suspend or defer concrete placement if rain protection is not available. The Contractor shall not be entitled to any additional compensation due to work suspension or deferral resulting from a lack of adequate rain protection.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

Restoration

The Contractor shall restore all disturbed areas to better than or equal to their original condition within two calendar days from the date of concrete placement. This includes the placement of any fill necessary to match the grade of the retaining wall, placement and compaction of 2.5 inches of topsoil, placement of grass seed, followed by the placement of 0.5 inches of topsoil, at all turf restoration locations, and at locations where concrete items are removed and turf is to be established.

Restoration shall also include the replacement of any miscellaneous brickwork, decorative stone, or other adjacent materials.

All restoration work and materials shall be in accordance with the City Standard Specifications.

MEASUREMENT AND PAYMENT

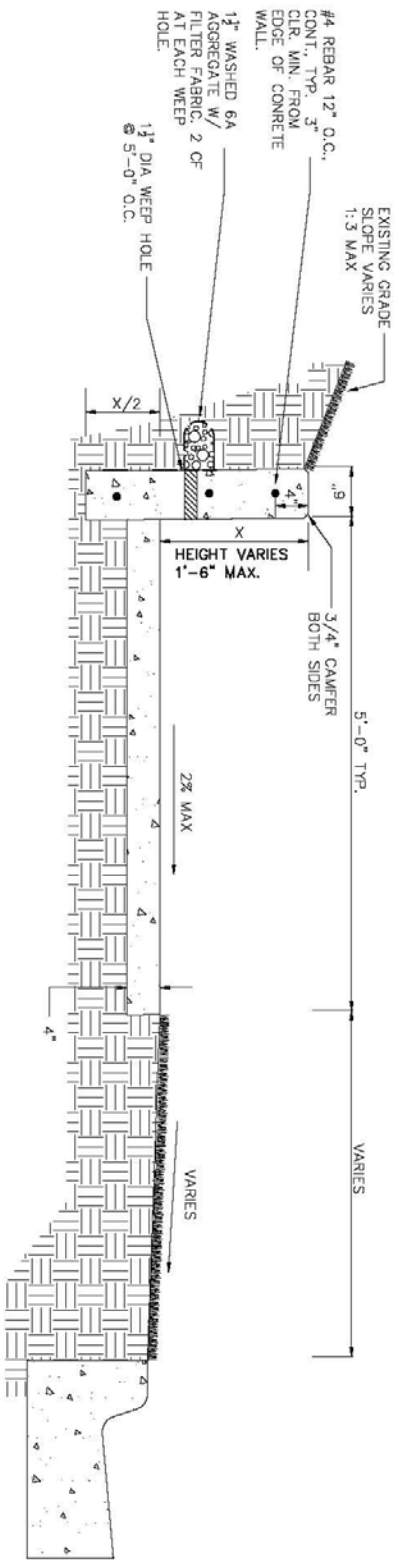
Payment shall be measured by the exposed face area of the retaining wall in square feet. The sidewalk section will be paid for separately under the appropriate item. If grade separations are less than 6" in vertical height, construction of a concrete barrier shall be paid for as the appropriate Concrete Curb & Gutter item.

Completed work as measured for this item of work will be paid for at Contract Unit Price for the following Contract (Pay) Item:

PAY ITEMS	PAY UNIT
Integral Sidewalk Retaining Wall (6" or less)	Square Foot
Integral Sidewalk Retaining Wall (6"-18")	Square Foot

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

INTEGRAL SIDEWALK RETAINING WALL (6” – 18”) DETAIL



DETAILED SPECIFICATION
FOR
ITEM #250 - 2-FOOT DIAMETER STRUCTURE
ITEM #251 – DOUBLE INLET STRUCTURE

DESCRIPTION

This work shall consist of:

- Constructing 2-foot (inside diameter) and double inlet structures of portland cement concrete block masonry, or brick masonry;
- Furnishing, installing, and adjusting metal castings to their approximate final location;
- Furnishing and installing covers;
- Removing existing structures;
- Temporarily patching adjacent sections of curb;
- Excavating and backfilling as necessary, including the furnishing and placement of flowable fill material.

The work shall be performed in accordance with Section 403 of the 2012 edition of the MDOT Standard Specification for Construction, as shown on the Plans, as detailed in the City Standard Specifications, and as directed by the Engineer.

MATERIALS

The materials shall meet the requirements as referenced for this work in Section 403 of the 2012 edition of the MDOT Standard Specification for Construction, and those of the City of Ann Arbor Standard Specifications.

Castings and/or covers shall be as Specified in the Detailed Specification for Structure Covers, elsewhere herein.

CONSTRUCTION METHODS

Construction shall be in accordance with Section 403 of the 2012 edition of the MDOT Standard Specification for Construction, the City Standard Specifications, this Detailed Specification, and the Plans, and, as directed by the Engineer.

This work shall include the removal of existing structures/drop inlets at structure relocations, and as needed to construct new structures. This work shall also include the furnishing, placement, and compaction of MDOT Class II sand backfill or flowable fill at removed structures and at connections between new structures and new and/or existing storm sewer leads. This work shall also include the proper disposal off-site of all excavated/removed materials and debris, and the salvaging and transporting of castings and/or covers to the City Field Operations Services Unit, all as directed by the Engineer.

Upon completing the installation of a drainage structure, the Contractor shall temporarily patch the curb adjacent to the drainage structure with either HMA or a cold patch bituminous mixture.

All structures, inlets, and manholes shall be maintained free of accumulations of silt, debris, and other foreign matter throughout construction, until the time of final acceptance.

MEASUREMENT AND PAYMENT

Payment for furnishing and installing 12-inch Sewer is not included in these items, but will be measured and paid for separately at the unit price for the Contract item “12-inch Sewer, Trench Detail I, Modified”

Furnishing and installing castings and covers will not be paid separately, but shall be included in the bid price for this item of work.

Furnishing and placing flowable fill as backfill for this item will not be paid separately, but shall be included in the bid price for this item of work.

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	**PAY UNIT**
All Inlet Structures	Each

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #249 – FLAT INLET STRUCTURE COVER
ITEM #252 – RECONSTRUCT STRUCTURE
ITEM #253 – ADDITIONAL DEPTH STRUCTURE ADJUSTMENT/REPAIR
ITEM #254 – LOWER STRUCTURE COVER
ITEM #255 – LOWER MONUMENT BOX OR GATE VALVE BOX
ITEM #256 – ADJUST STRUCTURE COVER
ITEM #257 – ADJUST CURB INLET STRUCTURE COVER
ITEM #258 – ADJUST MONUMENT BOX OR GATE VALVE BOX
ITEM #259 – MANHOLE FLANGE & COVER (MDOT TYPE A)
ITEM #260 – INLET STRUCTURE COVER (MDOT TYPE K)
ITEM #261 – POINT STRUCTURE
ITEM #262 – RECONSTRUCT GATE VALVE BOX
ITEM #263 – CLEAN OUT DISCOVERED MANHOLE

DESCRIPTION

This work shall consist of reconstructing, repairing, adjusting, cleaning, and lowering structures, valve wells or boxes, and monument boxes of concrete and concrete block masonry; the replacing, salvaging and transporting of new and existing metal covers, and/or castings; including all excavation, backfilling, patching and the removal and proper disposal off-site of all excavated material and debris, all in accordance with Division 4 of the 2012 edition of the MDOT Standard Specifications for Construction, and the City Standard Specifications, except as specified herein, and except as directed by the Engineer.

MATERIALS

Materials shall meet the requirements of sections 403 and 601 of the 2012 edition of the MDOT Standard Specifications, except that concrete shall be MDOT HE, 8.4-sack per Section 601 of the 2012 MDOT Standard Specifications.

CONSTRUCTION METHODS

General

Materials shall be stored by the Contractor at locations arranged by the Contractor, subject to the approval of the Engineer. The Contractor shall not store materials or equipment, including metal castings and steel plates, on any lawn area.

Hidden, or unknown utility structures may be encountered during the work. It is the Contractor's responsibility to inform the respective utility owner(s) of such findings. In such instances, the City may direct the Contractor to adjust the structure(s) to grade. This work will be paid as "Adjust Structure Covers" and/or "Additional Depth Structure Adjustment/Repair" as applicable.

Reconstruct Structure

This item is the complete reconstruction of a catch basin, inlet, double inlet, or manhole structure of any depth and diameter, from the lowest pipe invert to the top of the structure. It shall include the salvaging/transporting of castings to the City yard, and the backfilling of the structure with Class II sand compacted to 95% of its maximum unit weight as determined by the AASHTO T-180 test, all as directed by the Engineer.

Furnishing and installing 12-inch C-76 CL IV R.C.P. or 12-inch C-700 ES V.C.P. is not included in this item, but will be measured and paid for separately at the unit price for the Contract item "12-inch C-76 CL. IV R.C.P."

Furnishing and installing castings and covers is not included in this item, but will be measured and paid for separately at the unit price for the Contract item "Structure Covers."

Adjusting structure covers is not included in this item, but will be measured and paid for separately at the unit price for the Contract item "Adjust Structure Covers."

Adjust Structure Cover

This item includes the final adjustment of castings of any type (including drop inlets) to their respective finished elevations, up or down a maximum of 15-inches.

Covers shall be adjusted after the leveling, skin leveling and/or patching course has been placed, unless otherwise authorized or directed by the Engineer.

All underground structure covers shall be adjusted such that their finished surface elevation is within ¼-inch of the finished surface sections, grades, slopes, and elevations, as shown on the Plans, and as directed by the Engineer. The work shall be verified by the use of a 10-foot straight-edge placed parallel with the pavement centerline. Structures not meeting the ¼-inch tolerance shall be readjusted and finish patched, as directed by the Engineer, at the Contractor's expense.

The Contractor is responsible to coordinate and arrange for the adjustment of all non-City utility manholes and valves (Edison, Gas, Cable, Ameritech, etc.) during this project. The Contractor will not be given any additional compensation for delays due to other utilities work. The work of coordinating with other utilities shall be paid for under the Contract Item "General Conditions."

All structure covers, utility covers, valve boxes or monument boxes shall be backfilled with MDOT HE, 8.4-sack concrete from the depth of excavation necessary for adjustment, up to an elevation 2-inches below the top flange of the adjusted casting. This work shall be included in the respective items of work, and will not be paid for separately.

Adjust Monument Box or Gate Valve Box

This item includes the final adjustment of existing or new covers/castings up or down a maximum of 15-inches and to their finished elevations. This also includes the replacement of the top half of the water valve boxes and monument boxes (furnished by the City) where required, and shall be included in this item of work.

Additional Depth Structure Adjustment/Repair

Where the required adjustment on a structure is more than 15 inches from the existing elevation, the amount of the adjustment in excess of the first 15 inches shall be measured as additional depth by the vertical foot or fraction thereof. This shall also cover the repair of manholes and structures where less than the substantial rebuilding of the structure, as determined by the Engineer, is required. This work shall be paid by the vertical foot or fraction thereof, at the Contract Unit Price.

Lower Structure Cover, and Lower Monument Box or Gate Valve Box

The Contractor shall remove and lower structure covers, monument boxes and gate valve boxes prior to the milling and pulverizing operations, and as directed by the Engineer.

Prior to the milling and pulverizing operations, the Project Supervisor shall coordinate and schedule the work of any independent survey crews which may be retained by the City to witness and reset existing and new geographic/benchmark monuments. Failure to have existing monuments witnessed and reset may result in delays to the Contractor's work. Costs for such delays will be the Contractor's sole responsibility.

After removing a structure's casting, the Contractor shall cover the structure's opening with a steel plate, in accordance with the details shown on the Plans. Plates shall be properly and carefully placed such that there is no slippage or shifting due to

traffic or construction machinery movements. It is the Contractor's responsibility to prevent construction debris from infiltrating into the structure. The Contractor shall cover the plate with either 21AA gravel or HMA pavement millings, and then place a 4-inch minimum thickness HMA patch up to the adjacent surface elevation. The furnishing and placement of 21AA gravel, HMA pavement millings, and HMA patching material will not be paid for separately, but is included in these items of work.

Structures shall be thoroughly cleaned of any and all debris prior to placing steel plates. The Contractor shall coordinate and schedule an inspection by the Engineer, after the cleaning and prior to the plating, of all structures.

Steel plates shall be sufficiently strong and thick enough to carry the traffic and construction equipment with no deflection, and shall be secured in place (pegged) as shown on the Plans, in order to prevent their shifting/moving.

After the completion of HMA leveling course, the Contractor shall excavate and remove the steel plates, and shall immediately thereafter install and adjust the new/reused steel casting.

Steel plates are the property of the Contractor and shall be removed by the Contractor upon completion of the work.

If the Contractor anticipates a time period of five days or more between lowering and adjusting of casting(s), then the cover(s) shall be removed from the site and stored by the Contractor, until the expected adjustment time.

Clean Out Discovered Manhole

Where a hidden utility structure is discovered, the City may direct the Contractor to remove all the existing debris and thoroughly clean the structure at the Contract Unit Price. The City may also choose to have the Utilities Department or another contractor clean the structures, in which case the Contractor shall not be compensated. If the City chooses a third party to clean the structure, the Contractor shall coordinate with said third party. Payment for Coordinating with others is included in the pay item "General Conditions."

Structure Covers

This item shall consist of replacing covers and/or castings for structures, gate wells and inlet structures as shown on the Plans and as directed by the Engineer. All covers and/or castings shall conform to the model(s) specified, as follows:

Type of Casting	MDOT Designation	NEENAH No. (Weight, Lbs)	EJIW No. (Weight, Lbs)
Flat Inlet Structure Cover			5000 Catch Basin Inlet w/Type M2 Sinusoidal Grate "Dump No Waste" lettering and fish image
Manhole Flange and Cover	A	R-1642 w/ Type C cover Type D cover (380 lbs.)	1040 w/ Type A cover Type M1 (300 lbs.)
Curb Inlet or Catch Basin	K	R-3249F (410 lbs.)	7045 (500 lbs.)

Frames and covers shall have machined bearing surfaces. Covers shall have two, 1-inch vent holes located opposite each other and 6-inches from the edge. Each cover shall have "SEWER" or "W" cast in the surface, whichever is applicable.

Castings and covers for monument and water-valve boxes will be provided by the City. The Contractor shall transport these new castings and covers to the site from the City Utilities Department yard at 4251 Stone School Road (Wheeler Center).

The Contractor shall deliver all salvaged covers and castings to the Wheeler Center within two days of their removal.

Point Structure

This item consists of pointing structures where shown on the Plans and as directed by the Engineer.

Reconstruct Gate Valve Box

This item consists of exposing the gate valve assembly and installing a complete new gate valve box (furnished by the City), where shown on the Plans and as directed by the Engineer.

MEASUREMENT AND PAYMENT

Payment for transporting new and salvaged castings and covers to and from the Wheeler Center is included in the appropriate items of work.

Furnishing and placing flowable fill as backfill for these items will not be paid separately, but shall be included in the bid prices for these items of work.

Completed work as measured for these items of work will be paid for at Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Flat Inlet Structure Cover	Each
Reconstruct Structure	Each
Additional Depth Structure Adjustment/Repair	Vertical Foot
Lower Structure Cover	Each
Lower Monument Box or Gate Valve Box	Each
Adjust Structure Cover	Each
Adjust Curb Inlet Structure Cover	Each
Adjust Monument Box or Gate Valve Box	Each
Manhole Flange & Cover (MDOT Type A)	Each
Inlet Structure Cover (MDOT Type A)	Each
Point Structure	Each
Reconstruct Gate Valve Box	Each
Clean Out Discovered Manhole	Each

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #264 - 12-INCH SEWER, TRENCH DETAIL I, MODIFIED
ITEM #266 - SEWER BULKHEAD, 4-INCH THROUGH 18-INCH DIAMETER

DESCRIPTION AND MATERIALS

This work shall consist of constructing 12-inch Sewer, Trench Detail I, Modified storm sewers, and constructing sewer bulkheads, including the removal of existing storm sewers, as specified herein, as shown on the Plans, and as directed by the Engineer.

Materials shall meet the requirements of the City of Ann Arbor Standard Specifications. The sewer pipe may be either C-76 CL. IV R.C.P. or HDPE ADS N-12 or Hancor Titeline meeting AASHTO M-294 or ASTM F-892 as specified in Division III.2B of the City of Ann Arbor Standard Specifications. For connection of HDPE to existing RCP, an internal coupler spigot adapter shall be used and the connection and backfill shall be per ASTM D2321, including Class I bedding (or Engineer approved equal), non-woven geotextile wrapped around connection, and cast in place concrete encasement.

CONSTRUCTION METHODS

The Contractor shall install 12-inch Storm Sewer, and Sewer Bulkheads, as shown on the Plans, as detailed in the City Standard Specifications, and as directed by the Engineer.

The Contractor shall remove and properly dispose of all excavated materials, removed storm sewer and debris, and shall make connections between new and existing pipe and/or structures by means of appropriate "Fernco" type joint fasteners/couplings (or other methods approved by the Engineer), and bulkhead or abandon existing pipe and structures, all as directed by the Engineer.

The Contractor shall maintain line and grade of the sewer by means of a laser. The Engineer will establish line and grade for the sewer construction and will provide cut sheets for the Contractor's use.

All sewer removals shown on the Plans shall be included in the item of work “12-Inch Sewer, Trench Detail I, Modified”.

In areas where the road is to be reconstructed, the Contractor may elect to perform sewer work prior to the removal of pavement and subgrade preparation. In such cases, the work associated with pavement removal, excavation, backfill, and the temporary patching of the trench as necessary for traffic maintenance, will not be paid for separately, but shall be included in these items of work. The Contractor shall place and compact Class II sand backfill in the trench up to the elevation where the prepared base or subbase is to begin, or as directed by the Engineer.

MEASUREMENT AND PAYMENT

Furnishing and placing flowable fill as backfill for these items will not be paid separately, but shall be included in the bid prices for these items of work.

The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
12-Inch Sewer, Trench Detail I, Modified	Lineal Foot
Sewer Bulkhead, 4-Inch Through 18-Inch Diameter	Each

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #267 - 6-INCH WRAPPED UNDERDRAIN

DESCRIPTION

This work shall consist of furnishing and installing 6-inch diameter geotextile-wrapped, perforated or slotted underdrain pipe, using MDOT 2NS and MDOT 21AA, as directed by the Engineer, for all backfill material.

MATERIALS

The materials shall meet the requirements referenced in Section 404 of the 2012 edition of the MDOT Standard Specifications, except as specified herein.

The Geotextile Filter Fabric for encasing the underdrain pipe shall be an approved material such as nylon, polypropylene, fiberglass, or polyester, and shall be either woven, heat bonded, knitted, or of continuous fibers. The geotextile shall completely cover and be secured to the pipe. In an un-stretched condition, knitted polyester fabrics shall weigh at least 3.0 ounces per square yard, and all other geotextiles shall weigh at least 3.5 ounces per square yard. The fabric shall be strong and tough and have a porosity such that the fabric will retain soil particles larger than 0.106 mm (no. 140 sieve) and shall pass aggregate particles finer than 0.025 mm. Geotextiles shall be stored and handled carefully and in accordance with the both the manufacturer's recommendations and the Engineer's direction, and shall not be exposed to heat or direct sunlight. Torn or punctured geotextiles shall not be used.

CONSTRUCTION METHODS

Geotextile wrapped underdrain shall be installed as shown on the Plans or as directed by the Engineer, and in accordance with Section 404 of the 2012 edition of the MDOT Standard Specifications, except as specified herein.

The installation of underdrain shall precede all other construction activities including but not limited to pavement milling, pavement pulverization, pavement removal, pavement patching, and curb repair.

The Contractor shall excavate, cut, remove stumps, remove brush, remove pavement, grade, and trim as needed and as directed, and shall import, furnish, fill, place, grade, and compact MDOT 2NS fine aggregate, Class II granular, and 21AA coarse aggregate materials as needed to construct underdrain as specified on the Plans, and as directed by the Engineer.

HMA pavement shall be cut full-depth, vertically straight, and horizontally straight, to the specified width by means of saw, jackhammer or other cutting method(s) approved by the Engineer. The use of backhoe mounted wheel-type pavement cutters may not be used on this project.

The trench shall be constructed to have a minimum width of 18-inches, and shall be typically excavated to a depth of between 36 and 54 inches, or to the depth specified in the Plans or directed by the Engineer.

The underdrain shall be installed at the line, grade, and depth specified on the Plans or as directed by the Engineer. The minimum percent grade shall be 0.5%, and the minimum cover from top-of-pipe to finished top-of-pavement grade shall be 2-feet. The Contractor shall maintain line and grade by means of a laser. The Engineer will not provide line, grade or staking.

Upgrade ends of the pipe shall be closed with suitable plugs to prevent entrance of trench backfill material. All couplings, tees, plugs, and other fittings shall be manufactured and installed so as to prevent any infiltration of trench backfill material.

The Contractor shall tap at least one end of the underdrain into a storm sewer structure, as directed by the Engineer.

During the construction of underdrain runs, the Engineer may direct the Contractor to terminate or modify underdrain construction due to conflicts with buried obstructions or if the minimum 2-foot cover cannot be maintained. There will be no adjustment to the Contract Unit Price due to changes in quantity.

The first lift (bedding) of backfill shall be MDOT 2NS material to a maximum thickness of 3-inches. Subsequent lifts shall be MDOT 2NS material to a maximum thickness of 12 inches. The final lift of backfill shall consist of a layer of MDOT 21AA crushed limestone, and shall extend a minimum of 8 inches below the bottom of the adjacent pavement elevation. When compacted, the top of this final lift shall be at the same elevation as the adjacent pavement. All materials shall be compacted as specified in the City Standard Specifications.

The Contractor shall place MDOT HMA mixtures (as specified elsewhere herein), in the locations and to the elevations as directed by the Engineer. HMA pavement shall be placed with a maximum lift thickness of 2 inches, and each lift shall be compacted to between 92 to 96 percent (or as determined acceptable by the engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula. The Contractor shall be paid for the HMA patching materials separately, at the Contract Unit Price for Contract Pay Item, "HMA Patching."

Removed or excavated materials which are not incorporated into the work shall become the property of the Contractor and shall be immediately removed and properly disposed of off-site. Removed or excavated materials may not be stockpiled overnight on, or adjacent to, the site.

All structures, inlets and manholes shall be maintained free of accumulations of silt, debris, and other foreign matter throughout construction, until the time of final acceptance.

MEASUREMENT AND PAYMENT

Connecting (tapping) underdrain(s) into drainage structure(s) will not be paid for separately, but shall be included in the bid price for this item of work.

Pavement removal to construct underdrain will not be paid for separately, but shall be included in the bid price for this item of work. Backfilling of the excavation to the top of the adjacent pavement will not be paid for separately, but shall be included in the bid price for this item of work.

Underdrain will be measured in-place by length in lineal feet.

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
6-Inch Wrapped Underdrain	Lineal Foot

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #268 - FLOWABLE FILL

DESCRIPTION AND MATERIALS

This work shall consist of furnishing and placing flowable fill as backfill material at miscellaneous locations as shown on the Plans, and as directed by the Engineer.

Flowable fill shall meet the requirements of the City of Ann Arbor Standard Specifications.

CONSTRUCTION METHODS

The Contractor shall furnish and place flowable fill at miscellaneous locations as shown on the Plans and as directed by the Engineer.

The Contractor shall remove and properly dispose of all debris, all surplus materials, and all excavated materials.

MEASUREMENT AND PAYMENT

Flowable fill used at the Contractor's option will not be paid for separately, but shall be included either in the bid price(s) for the associated work item(s), or in the bid price for the item of work "General Conditions".

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	PAY UNIT
Flowable Fill	Cubic Yard

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #270 - CLASS II SAND - C.I.P.
ITEM #271 - 21AA LIMESTONE - C.I.P.
ITEM #272 - AGGREGATE BASE COURSE, 21AA - C.I.P.
ITEM #273 - SAND SUBBASE COURSE, CLASS II - C.I.P.

DESCRIPTION

This work shall consist of constructing an aggregate subbase or base course on an existing aggregate surface, or on a prepared subgrade in accordance with Sections 301, 302 and 307 of the 2012 edition of the MDOT Standard Specifications for Construction, except as specified herein.

MATERIAL

The materials used for this work shall be MDOT 21AA and Class II granular material meeting the requirements of the City of Ann Arbor Standard Specifications.

CONSTRUCTION METHOD

Sand or aggregate courses shall not be placed if, in the opinion of the Engineer, there are any indications that they may become frozen before their specified densities are obtained.

Sand or aggregate courses shall not be placed on a frozen base, subbase or subgrade.

The Contractor shall not use rubber-tired equipment on the grade, when its use causes, or may cause, in the opinion of the Engineer, damage to the grade. The Contractor shall conduct his/her operation(s), and provide all necessary equipment, to insure the satisfactory completion of the work without damaging the grade. This includes the transporting, stockpiling, rehandling, and movement of materials over additional distances, in lieu of driving on an unprotected, or partially unprotected, grade.

The Contractor is solely responsible for the maintenance and protection of the grade. Further, any damage to the grade which, in the opinion of the Engineer, is caused as a result of the Contractor's operation(s), or his/her subcontractors' or suppliers' operation(s), shall be repaired by the Contractor at the Contractor's expense. This includes any additional earthwork and/or maintenance materials as directed by the Engineer, for the purposes of the Contractor's maintenance and protection of the grade.

The Contractor shall shape the base, subbase and subgrade to the elevations, crowns, and grades as specified on the Plans and as directed by the Engineer. This may include regrading the subbase to provide different crown grades than those existing prior to the construction.

The Contractor shall remove, add to, re-shape, re-grade, and re-compact the existing roadbed materials, and shall construct the roadway to the cross-section(s) as indicated on the Plans, as detailed in the Specifications, and as directed by the Engineer. The Contractor shall use blade graders, maintainers, vibratory rollers, and/or other equipment as necessary, and as directed by the Engineer, for this work. Use of each specific piece of equipment is subject to the approval of the Engineer.

The Contractor shall maintain the base, subbase and subgrade in a smooth, well drained condition at all times.

Sand and aggregate courses shall be placed in uniform layers such that when compacted, they have the thicknesses shown on the Plans, or as directed by the Engineer. The loose measure of any layer shall not be more than 9-inches nor less than 4-inches.

Sand subbase and aggregate base courses shall be compacted to not less than 98% of their respective maximum unit

weights, as determined by the AASHTO T-180 test.

All granular materials shall be deposited from trucks or through a spreader in a manner that will minimize segregation of material.

Manholes, valve boxes, inlet structures and curbs shall be protected from damage. Manholes & inlet structures shall be continuously cleaned of construction debris and properly covered at all times during the construction. Upon completion of each days work, manholes, water valve boxes, inlets and catch basins shall be thoroughly cleaned of all extraneous material.

At various times throughout the work, the Engineer may direct the Contractor to use smaller and/or lighter equipment, and to defer certain work tasks, in order to protect the grade and/or adjacent areas. The Contractor shall not be entitled to any additional compensation for the use of smaller equipment, lighter equipment, or work task deferral.

MEASUREMENT AND PAYMENT

Where granular materials are used as base, as subbase, or as fill for excavations in Machine Grading areas, items of work "Aggregate Base Course 21AA -C.I.P." and "Sand Subbase Course CL II - C.I.P." shall be measured and paid accordingly.

Where granular materials are used as fill for undercuts at locations other than Machine Grading areas, items of work "CL II Sand - C.I.P." and "21AA Limestone - C.I.P." shall be measured and paid accordingly.

Aggregate shoulders shall be paid for according to the dimensions shown on the plans.

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Class II Sand - C.I.P.	Cubic Yard
21AA Limestone - C.I.P.	Cubic Yard
Aggregate Base Course 21AA - C.I.P.	Cubic Yard
Sand Subbase Course Class II - C.I.P.	Cubic Yard

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #278 - SPEED HUMP (STANDARD)
ITEM #280 – RAISED CROSSWALK

DESCRIPTION

This work shall consist of constructing traffic calming devices in accordance with this detailed specification, Division 5 of the 2012 edition of the MDOT Standard Specifications, current supplemental MDOT specifications, the City of Ann Arbor Standard Specifications, the project plans, and as directed by the Engineer. Refer to the Traffic Calming Details in the project plans for further details.

MATERIALS

The HMA mixtures to be used for this work shall be MDOT No. 13A, 36A, or an acceptable substitute as directed by the Engineer.

Asphalt Binders shall be grade PG 52-28, PG 58-22, PG 58-28, or PG 64-22, as directed by the Engineer, and shall meet the requirements specified in Section 904 of the 2012 edition of the MDOT Standard Specifications, and any current supplemental MDOT specifications.

The Aggregate Wear Index (AWI) number for this project is 260. This AWI number applies to all aggregates used in all top course mixtures. Blending aggregates to achieve this AWI requirement is permitted in accordance with current MDOT Standards, and Supplemental Specifications.

CONSTRUCTION METHODS

The Contractor shall provide a 10-foot long straight-edge and a 10-foot long level during all paving operations. Prior to placing HMA material, all areas shall be cleaned with compressed air, and/or vacuum type street cleaning equipment (Vac-all), to remove dirt and loose material. Compressed air shall be from a source which provides a minimum of 90 psi and 150 cubic feet per minute of air at the nozzle.

All asphalt and concrete surfaces within all patch areas shall be covered with MDOT SS-1h bond coat, applied at a rate of 0.05 gallons/square yard. The bond coat shall be applied with a power distributor hand sprayer. The Contractor shall use an asphalt paver or, where approved by the Engineer, the Contractor may place the material by hand directly. The Contractor shall not place HMA materials on adjacent pavement surfaces.

Traffic calming devices shall be constructed in two layers. Each layer of HMA mixture shall be compacted to between 92 and 96 percent (or as determined acceptable by the engineer) of the theoretical maximum density, as listed on the approved Job Mix Formula. Placement of permanent thermoplastic pavement markings in accordance with this Detailed Specification and the project plans shall be included in this item of work.

MEASUREMENT AND PAYMENT

The completed work as measured for these items of work will be paid for at the Contract Unit Prices for the following Contract (Pay) Items:

PAY ITEM	PAY UNIT
Speed Hump (Standard)	Square Yard
Raised Crosswalk	Square Yard

The unit prices for these items of work shall include all labor, material, and equipment costs to perform all work, including pavement markings, specified in the Standard Specifications and as modified and as shown on this Detailed Specification.

DETAILED SPECIFICATION
FOR
ITEM #281 – ARROW PANEL - FURNISH AND OPERATE
ITEM #282 – PLASTIC DRUM - LIGHTED – FURNISH & OPERATE
ITEM #283 – BARRICADE TYPE III - LIGHTED - FURNISH AND OPERATE
ITEM #284 – TEMPORARY SIGN - TYPE B
ITEM #285 – NO PARKING SIGN
ITEM #286 – SIGN, PORTABLE CHANGEABLE MESSAGE, FURNISH
ITEM #287 – SIGN, PORTABLE CHANGEABLE MESSAGE, OPERATE
ITEM #295 – TUBULAR MARKERS, 36", FURN & OPERATE

DESCRIPTION

This work shall consist of protecting and maintaining vehicular and pedestrian traffic, in accordance with Sections 103.05, 103.06, and 812, of the 2012 MDOT Standard Specifications for Construction; Part 6 of the Michigan Manual of Uniform Traffic Control Devices, Latest Revised Edition (MMUTCD); and the City Standard Specifications, except as modified herein.

MATERIALS, EQUIPMENT, AND CONSTRUCTION METHODS

General

Materials and equipment shall meet the requirements specified in the above-designated sections of the MDOT Standard Specifications.

The Contractor shall maintain two-way traffic on major streets, access for local traffic on local streets, and keep all intersections open to traffic at all times, unless specifically authorized in writing by the Engineer.

The Contractor shall maintain traffic such that no vehicle shall be required to drive into active work areas. Patch areas which extend more than halfway across the roadway shall be removed and replaced so as to provide a minimum of half the pavement width at all times for maintaining traffic.

The Contractor shall keep all driveways open at all times, unless specifically authorized in writing by the Engineer.

The Contractor shall maintain pedestrian traffic at all times. For maintaining normal pedestrian traffic while performing sidewalk and driveway repair, Type I barricades shall be placed by the Contractor, as directed by the Engineer. "Sidewalk Closed" and/or "Cross Here" signs shall be placed, by the Contractor, when directed by the Engineer.

All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices immediately, at no additional cost to the City.

All existing signs, and signs erected by the City of Ann Arbor on this project shall be preserved, protected, and maintained by the Contractor. Existing City owned signs which are damaged by the Contractor during the work will be repaired by the City at the Contractor's expense.

A lane-closure permit shall be obtained by the Contractor from the City Transportation Division, at least 48 hours in advance of any proposed lane or street closing.

The hours of work on all Local streets are 7:00 a.m. to 8:00 p.m., Monday through Saturday, or as specified on the lane-closure permit. No equipment will be allowed in the street before or after these hours. Local streets may only be closed to through traffic (local access only) with written authorization of the Engineer. Work must be completed each day such that

all streets are re-opened to through traffic by 8:00 p.m. unless otherwise specified, directed, or authorized in writing by the Engineer. All major changes in traffic control shall be made either between 9:30 a.m. and 3:30 p.m., or between 7:00 p.m. and 6:30 a.m. in order to minimize interference with rush-hour traffic. All traffic controls must be in-place and ready for traffic each day by 6:30 a.m. and 3:30 p.m.

The Contractor shall temporarily cover conflicting traffic and/or parking signs when directed by the Engineer.

Parking violation citations issued to the Contractor, subcontractor and material suppliers, including their employees, shall be enforced under appropriate City Code.

The Contractor shall replace missing or damaged traffic control devices, as directed by the Engineer. When traffic control devices have been damaged by, or due to, the negligence of the Contractor, his subcontractors or material suppliers, the traffic control devices shall be replaced at the Contractor's expense.

Lighted Arrow; Lighted Plastic Drums; III Barricades; Type B Temporary Signs

The Contractor shall furnish and operate these items as directed by the Engineer.

Lighted Arrows shall be type A or B as directed by the Engineer, and shall be electric powered (either battery or solar). Motor generators using gasoline, diesel, LP gas, or other such fuel are not approved for use.

Type III Barricades shall have standard orange-and-white stripes on both sides of the barricade.

Sufficient signs shall be provided by the Contractor to insure the safety of the workers and the general public in accordance with the current MMUTCD.

"Construction Ahead" warning signs shall be placed, as indicated on the Plans, or as directed by the Engineer, prior to the start of work, regardless of the nature, magnitude or duration of the work.

No-Parking Signs and Posts

Prior to the commencement of any construction activity, the Contractor shall place No-Parking signs as directed by the Engineer. The Contractor shall obtain a permit for “Temporary Permission of Reserve Parking Lane for Work Related Purposes” from the City of Ann Arbor Project Management Services Unit. This permit shall be obtained a minimum of 5 days prior to the posting of No-Parking signs.

The City will furnish No-Parking signs to the Contractor at no cost. The Contractor shall furnish the signposts and shall securely bolt the signs to the signposts as directed by the Engineer. The Contractor shall install the signposts at least 2-feet deep into the ground, and there shall be a minimum 6-feet and maximum 7-feet clearance maintained between the bottom of the sign and the ground. The signs shall be placed at 75-foot intervals (or as necessary) to eliminate parking in the construction area.

The installation of No-Parking signs shall be in accordance with the permit. No-Parking signs shall be installed by the Contractor, as directed by the Engineer, **at least 48 hours prior to the proposed start-of-work/enforcement date**.

No-Parking signs shall be returned to the City at the completion of the work. The cost of unreturned signs will be back charged to the Contractor.

No-Parking signs shall be covered by the Contractor, thereby allowing on-street parking, until between 48 and 36 hours prior to the start of the work. No-Parking signs shall be covered by the Contractor whenever there is no work being performed for a period of time longer than 72 hours.

Tubular Markers

The Contractor shall furnish and operate these items as directed by the Engineer. Markers shall conform with Section

6F.60 of Part 6 of the Michigan Manual on Uniform Traffic Control Devices (MMUTCD), except as modified herein. Markers shall be 36 inches in height, and shall be affixed to the pavement by an approved adhesive. The Contractor shall be responsible for resetting any markers that have become detached from the pavement in a timely manner.

MEASUREMENT AND PAYMENT

General

All temporary traffic/pedestrian control devices furnished by the Contractor shall remain the property of the Contractor. The City shall not be responsible for stolen or damaged signs, barricades, barricade lights or other traffic maintenance items. The Contractor shall replace missing traffic control devices immediately, at no additional cost to the City.

Costs for transporting barricades and other traffic control devices shall be included in the bid prices for the individual items of work.

Lighted Arrow - Furnish and Operate

Payment for Type A or B Lighted Arrows shall be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

Barricade Type III - Lighted - Furnish and Operate

Payment for furnishing and operating lighted Type III barricades shall be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

Temporary Sign - Type B

Payment for Type B signs shall be for the maximum quantity used on each street.

Plastic Drum - Lighted – Furnish and Operate

There will be a one-time payment for each street for the maximum number of lighted drums in-place (operated) at any one time, as directed by the Engineer.

No-Parking Signs

No-Parking Signs will be measured as the maximum number installed on each street at any one time. The unit price includes the removal and return of No-Parking signs to the City upon completion of the project. The Contractor shall be backcharged for the replacement costs for damaged or unreturned signs.

Portable Changeable Message Signs

Measurement for Furnish will be based on the maximum number of units required for the entire project at any one time. Measurement for Operate will be based on the maximum number of units in operation at any one time and will be paid after the initial installation and for every relocation that follows to another street.

Tubular Markers

Payment for furnishing and operating tubular markers shall be for the maximum quantity in-place at any one time during the work of the entire project (all streets).

The completed work as measured for these items of work will be paid for at the Contract Unit Price for the following Contract (Pay) Items:

PAY ITEM	**PAY UNIT**
Lighted Arrow - Furnish and Operate	Each
Plastic Drum - Lighted - Furnish& Operate	Each
Barricade Type III - Lighted - Furnish and Operate	Each
Temporary Sign, Type B	Square Foot
No-Parking Sign	Each
Sign, Portable Changeable Message, Furnish	Each
Sign, Portable Changeable Message, Operate	Each
Tubular Markers, 36”, Furnish & Operate	Each

DETAILED SPECIFICATION
FOR
ITEM #291 - 4-FOOT DIAMETER STRUCTURE

DESCRIPTION

This work shall consist of:

- Constructing 4-foot (inside diameter) structures of portland cement concrete block masonry, or brick masonry;
- Furnishing, installing, and adjusting metal castings to their approximate final location;
- Furnishing and installing covers;
- Removing existing structures;
- Temporarily patching adjacent sections of curb;
- Excavating and backfilling as necessary, including the furnishing and placement of flowable fill material.

The work shall be performed in accordance with Section 403 of the 2012 edition of the MDOT Standard Specification for Construction, as shown on the Plans, as detailed in the City Standard Specifications, and as directed by the Engineer.

MATERIALS

The materials shall meet the requirements as referenced for this work in Section 403 of the 2012 edition of the MDOT Standard Specification for Construction, and those of the City of Ann Arbor Standard Specifications.

Castings and/or covers shall be as Specified in the Detailed Specification for Structure Covers, elsewhere herein.

CONSTRUCTION METHODS

Construction shall be in accordance with Section 403 of the 2012 edition of the MDOT Standard Specification for Construction, the City Standard Specifications, this Detailed Specification, and the Plans, and, as directed by the Engineer.

This work shall include the removal of existing structures/drop inlets at structure relocations, and as needed to construct new structures. This work shall also include the furnishing, placement, and compaction of MDOT Class II sand backfill or flowable fill at removed structures and at connections between new structures and new and/or existing sewer leads. This work shall also include the proper disposal off-site of all excavated/removed materials and debris, and the salvaging and transporting of castings and/or covers to the City Field Operations Services Unit, all as directed by the Engineer.

Upon completing the installation of a drainage structure, the Contractor shall temporarily patch the curb adjacent to the drainage structure with either HMA or a cold patch bituminous mixture.

All structures, inlets, and manholes shall be maintained free of accumulations of silt, debris, and other foreign matter throughout construction, until the time of final acceptance.

MEASUREMENT AND PAYMENT

Payment for furnishing and installing 12-inch Sewer is not included in these items, but will be measured and paid for separately at the unit price for the Contract item “12-inch Sewer, Trench Detail I, Modified”

Furnishing and installing castings and covers will not be paid separately, but shall be included in the bid price for this item of work.

Furnishing and placing flowable fill as backfill for this item will not be paid separately, but shall be included in the bid price for this item of work.

The completed work as measured for this item of work will be paid for at the Contract Unit Price for the following Contract (Pay) Item:

PAY ITEM	**PAY UNIT**
4-Foot Diameter Structure	Each

The unit price for this item of work shall include all labor, material, and equipment costs to perform all the work specified in the Standard Specifications and as modified by this Detailed Specification.

DETAILED SPECIFICATION
FOR
COORDINATION AND COOPERATION WITH OTHERS
AND
WORK BY OTHERS

The Contractor is reminded as to the requirements of article 104.07 of the 2012 edition of the MDOT Standard Specifications, "Cooperation by the Contractor."

The Contractor shall directly coordinate his/her work with individual City Departments/Divisions/Units.

The Contractor is hereby notified that the City of Ann Arbor Field Services Unit may be installing traffic control conduits, traffic signal sensors, and the like, at various locations.

No additional compensation will be paid to the Contractor, and no adjustments to contract unit prices will be made, due to delays and/or the failure of others in the performance of their work, nor for delays due to the encountering of existing utilities that are, or are not, shown on the Plans.

The following Utility Owners may have overhead and/or underground facilities located within the Right-of-Way:

The City of Ann Arbor
DTE - MichCon (Michigan Consolidated Gas Company)
DTE - Edison (Detroit Edison Company)
SBC - (Ameritech)
Comcast
MCI Communications
Sprint Communications
The University of Michigan

On all projects:

"3 Working Days before you Dig - Call MISS DIG - Toll Free" Phone No. 1-800-482-7171.

The Owners of public or private utilities which will not interfere with the completed project and which do not present a hazard to the public or an extraordinary hazard to the Contractor's operations will not be required to move their facilities on or from the street right-of-way.

Stoppages created solely by the operations of the utility companies which delay utility revisions on any portion of this project may be considered as a basis of claim for an extension of time for project completion.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
DISPOSING OF EXCAVATED MATERIAL

The Contractor shall dispose of, at the Contractor's expense, all excavated material. Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
PROTECTION OF UTILITIES

Damages to utilities by the Contractor's operations shall be repaired by the utility owner at the Contractor's expense. Delays to the work due to utility repairs are the sole responsibility of the Contractor.

The Contractor shall keep construction debris out of utilities at all times. The Contractor shall be back charged an amount of $50.00 per day for each manhole/inlet/utility pipe that contains construction debris caused as a result of the Contractor's (including subcontractors and suppliers) work.

The Contractor is solely responsible for any damages to the utilities or abutting properties due to construction debris.

Certain sanitary and storm sewers within the influence of construction may have been cleaned and videotaped prior to construction. The City may also choose to videotape utility line(s) during or after the work of this Contract to inspect them for damages and/or construction debris. If such inspection shows damage and/or debris, then all costs of such inspection, cleaning, repairs, etc, shall be the Contractor's sole responsibility. If such inspection is negative, the City will be responsible for the costs of such inspection.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
SOIL EROSION CONTROL

The Contractor shall furnish, place, maintain and remove soil erosion and sedimentation control measures, including but not limited to, fabric filters at all drainage structures, all in accordance with all applicable City (and other governmental agencies) codes and standards, as directed by the Engineer, as detailed in the Standard Specifications, and as shown on the Plans.

The Contractor will be required to obtain and follow all requirements of a City of Ann Arbor Soil Erosion & Sedimentation Control permit.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
VACUUM TYPE STREET AND UTILITY STRUCTURE CLEANING EQUIPMENT

The Contractor shall furnish and operate throughout the construction period, vacuum type street cleaning and utility structure cleaning equipment (Vac-All, Vactor, etc.) approved by the Engineer, as and when directed by the Engineer for dust control, for dirt/debris control, and for street cleaning immediately prior to, and for street and utility structure cleaning after any and all paving. The cleaning equipment shall be of sufficient power to remove dust, dirt, and debris from the pavement and from utility structures in and adjacent to the construction area.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
SITE CLEAN-UP

Immediately after completion of construction on each street, the Contractor shall clean the entire area within the influence of construction, including but not limited to all pavement, sidewalks, lawn areas, and underground utility structures, of all materials which may have accumulated prior to or during the construction.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
MATERIALS AND SUPPLIES CERTIFICATIONS

The following materials and supplies shall be certified by the manufacturer or supplier as having been tested for compliance with the Specifications:

HMA materials
Hot-poured Joint Sealants
Cements, coatings, admixtures and curing materials
Sands and Aggregates
Steel and Fabricated metal
Portland Cement Concrete Mixtures
Reinforcing Steel for Concrete
Reinforcing Fibers for Concrete
Pre-cast Concrete products
Sanitary Sewer Pipe
Storm Sewer Pipe
Water Main Pipe
Corrugated Metal Pipe
High Density Polyethylene Pipe
Timber for retaining walls
Modular Concrete Block for retaining walls
Edge Drain and Underdrain Pipe
Geotextile Filter Fabric and Stabilization Fabric/Grids

The Contractor shall submit all certifications to the Engineer for review and approval a minimum of three business days prior to any scheduled delivery, installation, and/or construction of same.

Costs for this work will not be paid for separately, but shall be included in the bid price of the Contract Item "General Conditions."

DETAILED SPECIFICATION
FOR
CONTRACT DRAWINGS/PLANS

The Contractor shall carefully check and review all Drawings/Plans and advise the Engineer of any errors or omissions discovered. The Drawings/Plans may be supplemented by such additional Drawings/Plans and sketches as may be necessary or desirable as the work progresses. The Contractor shall perform all work shown on any additional or supplemental Drawings/Plans issued by the Engineer.

DETAILED SPECIFICATION
FOR EXISTING
SOIL BORING AND PAVEMENT SECTION DATA

Data pertaining to existing soil borings and pavement sections which may be included in these Contract Documents are provided to help the Engineer and Contractor determine the soil conditions existing within the construction area. The City in no way guarantees existing conditions to be the same as shown in the data. The Contractor is solely responsible for any and all conclusions he/she may draw from the data.

DETAILED SPECIFICATION
FOR
WORKING IN THE RAIN

The Contractor shall not work in the rain unless authorized in writing by the Engineer.

The Engineer may delay or stop the work due to threatening weather conditions.

The Contractor shall not be compensated for unused materials or downtime due to rain, or the threat of rain.

The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties, which are caused as a result of working in the rain.

DETAILED SPECIFICATION
FOR
WORKING IN THE DARK

The Contractor shall not work in the dark except as approved by the Engineer and only when lighting for night work is provided as detailed elsewhere in this contract.

The Engineer may stop the work, or may require the Contractor to defer certain work to another day, if, in the Engineer's opinion, the work cannot be completed within the remaining daylight hours, or if inadequate daylight is present to either properly perform or inspect the work.

The Contractor will not be compensated for unused materials or downtime, when delays or work stoppages are directed by the Engineer for darkness and/or inadequate remaining daylight reasons.

The Contractor is solely responsible for repairing all damages to the work and to the site, including road infrastructures, road subgrades, and any adjacent properties, which are caused as a result of working in the dark.

DETAILED SPECIFICATION
FOR
QUANTITIES AND UNIT PRICES

Quantities as given are approximate and are estimated for bidding purposes. Quantities are not guaranteed and may vary by any amount. While it is the City's intent to complete the project substantially as drawn and specified herein, quantities may be changed or reduced to zero for cost savings or other reasons. **The City reserves the right to change the quantities, delete streets, or add streets, and no adjustment in unit price will be made for any change in any quantity.**

DETAILED SPECIFICATION
FOR
GENERAL CONSTRUCTION NOTES

The following notes pertain to all Plan sheets issued as part of this Contract, and these notes shall be considered part of each Plan sheet or Detailed Information Sheet.

1. All work shall conform to latest revision of the City Standard Specifications.

2. The Contractor shall maintain access to all drives throughout the course of construction. Drives shall never be closed during non-working hours, unless otherwise authorized in writing by the Engineer.

3. The Contractor shall completely restore all existing site features to better than, or equal to, their existing condition.

4. The Contractor shall be aware that there are above-ground and below-ground utilities existing in and on these streets which include, but are not limited to: gas mains and service leads; water mains and service leads; storm sewer mains and service leads; sanitary sewer mains and service leads; telephone poles, wires, cables and conduits; electrical poles, wires, cables and conduits; cable television wires, cables and conduits, and other various utilities. The Contractor shall conduct all of its work so as not to damage or alter in any way, any existing utility, except where specified on the Plans or where directed by the Engineer. The City has videotaped and cleaned all sanitary and storm sewers, including storm sewer inlet leads, and has found all of these facilities to be in good condition, with the exception of those shown on the Plans for repairs or replacement.

5. The Contractor is solely responsible for any delays, damages, costs and/or charges incurred due to and/or by reason of any utility, structure, feature and/or site condition, whether shown on the Plans or not, and the Contractor shall repair and/or replace, at its sole expense, to as good or better condition, any and all utilities, structures, features and/or site conditions which are impacted by reason of the work, or injured by its operations, or injured during the operations of its subcontractors or suppliers.

6. No extra payments or adjustments to unit prices will be made for damages, delays, costs and/or charges due to existing utilities, structures, features and/or site conditions not shown or being incorrectly shown or represented on the Plans.

DETAILED SPECIFICATION
FOR
CONCRETE DURABILITY

DESCRIPTION

The Contractor shall furnish a Portland cement concrete mixture for this project that has been tested under this specification and shown to be resistant to excessive expansion caused by alkali-silica reactivity (ASR) and provides adequate air entrainment for freeze thaw durability. The Contractor shall construct the project with practices outlined in this specification.

MATERIALS

The materials provided for use on this project shall conform to the following requirements:

Portland cement	ASTM C 150
Fine Aggregate	ASTM C 33*
Coarse Aggregate	ASTM C 33*
Fly Ash, Class F	ASTM C 618
Slag Cement, Grade 100, 120	ASTM C 989
Silica Fume	ASTM C 1240
Blended Cements	ASTM C-595
Air Entraining Admixtures	ASTM C-260
Chemical Admixtures	ASTM C-494
White Membrane Cure	ASTM C-309 Type 2

* Fine and coarse aggregates shall consist of natural aggregates as defined in the 2012 MDOT Standard Specifications Section 902.02.A.1.

The Contractor shall provide documentation that all materials to be incorporated into proposed mixed designs meet the requirements of this section.

Alkali-Silica Reactivity

The Contractor shall supply to the Engineer preliminary concrete mix designs including a list and location of all suppliers of concrete materials. The Contractor shall evaluate the mixtures for the potential for excessive expansion caused by ASR and provide documentation to the Engineer. The Contractor's evaluation shall include a review of any previous testing of the material sources intended to be used for both the fine and coarse aggregates for the concrete mixtures. The previous testing may be from other projects or records provided by the material suppliers.

Aggregates shall be tested under ASTM C-1260. If the expansion of the mortar bars is less than 0.10%, at 14 days, the aggregates shall be considered innocuous and there are no restrictions for ASR mitigation required with this material.

Previous aggregate test data may be used. If no previous test data is available, for the concrete mix, that shows that it is resistant to ASR, a concrete mixture that will mitigate the potential for ASR must be designed using either method 1 or 2 as described below.

Method 1. Substitution of a portion of the cement with Class F Fly Ash, Slag Cement Grade 100 or 120 or a ternary mix (blended cement) containing a blend of Portland cement and slag cement, or Class F fly ash, or silica fume.

The maximum substitution of cement with the fly ash permitted shall be 25% by weight of total cementitious material (cement plus fly ash). Additional requirements for the Fly Ash, Class F are that the Calcium Oxide (CaO) percent shall be less than 10 % and the available alkalis shall not exceed a maximum of 1.5%. A copy of the most recent mill test report shall be submitted to verify. Note: a Class C fly ash with a minimum total oxides ($SiO_2 + Al_2O_3 + Fe_2O_3$) of 66% and a minimum SiO_2 of 38% may be used in lieu of Type F fly ash.

The maximum substitution of cement with the Slag Cement permitted shall be 40% by weight of total cementitious material (cement plus Slag Cement). The minimum replacement rate with Slag Cement shall be 25%.

For a ternary blend the total replacement of supplementary cementitious materials is 40% with a blend consisting of a maximum of 15% type F fly ash, and/or 8% silica fume and/or slag cement.

For method 1, the effectiveness of the proposed mix combination to resist the potential for excessive expansion caused by ASR shall be demonstrated using current or historic data. To demonstrate the effectiveness of the proposed mix the Contractor shall construct and test mortar bars per ASTM C1567 (14 day test) using both the fine and coarse aggregate along with the proposed cementitious material for the concrete mixture. If a mortar bar constructed of these materials produces an expansion of less than 0.10%, concrete mixture will be considered to be resistant to excessive expansion due to ASR.

If a mortar bar constructed produces an expansion of 0.10% or greater, concrete mixtures containing these materials shall not be considered resistant to the potential for excessive expansion due to ASR and shall be rejected. Additional testing, including alternate proportions or different materials will be required.

Method 2. Use low alkali cement and maintain the total alkali content from the cementitious at no more than 3.0 lbs/cyd (Na_2Oeq). The total alkali contribution is calculated by the quantity contained in the Portland cement only.

Requirements for Low Alkali Cement are that the alkali content does not exceed 0.60% expressed as Na_2O equivalent. Equivalent sodium oxide is calculated as: (percent Na_2O + 0.658 x percent K_2O).

For either method 1 or 2, if the Contractor intends to change any component material supplied after the mix design has been approved all concrete work will be suspended with no cost to the project or extensions of time, unless approved, until evaluation of the new mixtures and testing of the new materials demonstrates that it is resistant to excessive expansion due to ASR.

The Engineer and Contractor shall monitor the concrete that is delivered to the project site so as to insure that the approved mix design is being followed. The supplier shall include on the delivery ticket for each batch of concrete delivered to the job, the identification and proportions of each material batched.

When concrete is placed during cold weather, defined for the purposes of this Detailed Specification to be, air temperatures below 40º F, the use of accelerators, heated aggregates, silica fume and/or additional forms of cold weather protection will be required. Cold weather will not eliminate the requirement for furnishing and placing a

concrete mix that is considered resistant to ASR attack.

Prior to cool weather placement, defined for the purposes of this detailed specification to be, air temperatures between 40º and 60º F, the set time of the proposed mix shall be verified under anticipated field conditions. This information shall be used when scheduling pours and saw crews.

Air Entrainment

Air entrainment shall be accomplished by addition of an approved air entraining agent. Air content as determined by ASTM C 231 or ASTM C 173, shall be determined on each day of production as early and as frequently as necessary until the air content is consistently acceptable. If during the period of time while adjustments are being made to the concrete to create a mixture that is consistently acceptable, concrete is produced that does not meet the requirements of this Detailed Specification, the Engineer may reject the material and direct it to be removed from the jobsite. Any rejected material shall be removed from the jobsite at the Contractor's sole expense. Quality Control testing performed by the Contractor to ensure compliance with the project specifications shall be performed on the grade ahead of the placement operation.

Paver placement: During production, the plastic concrete material shall be tested for acceptance at a point ahead of the paver. The air content of the concrete mixture that the Contractor shall provide shall be known as the Acceptance Air Content (AAC). The Contractor shall also provide additional entrained air in the concrete mixture to account for the air loss which occurs in the concrete mixture experienced during transportation, consolidation and placement of the concrete. The "air loss" shall be added to the air content of the concrete mixture as established on the approved concrete mix design. The AAC for the project will be 6.0% plus an amount equal to the air loss.

For up to the first four loads, the air content measured on-site prior to placement shall be at least 8.0% and no more than 12.0%. To establish the initial AAC on the first day of paving, the air content of the first load shall be tested at the plant. After initial testing at the plant the Contractor shall provide at least two sample sets to determine the actual air loss during placement. A sample set shall consist of two samples of concrete from the same batch, one taken at the point of discharge and the other from the in-place concrete behind the paver. The air loss from the two sample sets shall be averaged and added to 6.0% to establish the AAC (rounded to the next higher 0.5%). After the testing and adjustment procedure(s) have been completed, the project acceptance air tests shall be taken prior to placement. The Contractor shall provide concrete to the jobsite that has an air content of plus 2.0%, or minus 1.0%, of the AAC.

After the AAC has been established, it shall be verified and/or adjusted through daily checks of the air loss through the paver. The Contractor shall check the air loss through the paver a minimum of two times a day. A Revised AAC shall be required to be established by the Contractor if the average air loss from two consecutive tests deviates by more than 0.5% from the current accepted air loss. The testing operations performed by the Contractor to establish a revised AAC shall be performed to the satisfaction of the Engineer. The Contractor shall be solely responsible for any delays and/or costs that occur to the project while establishing revised AACs.

Hand placed concrete: The air content for non-slip-form paving shall be 7.0% plus 1.5%, or minus 1.0%, at the point of placement.

CONSTRUCTION METHODS

Aggregate Control

Gradation control – The supplier shall provide a detailed stockpile management plan, describing their process control procedure for shipping, handling, and stockpiling of each aggregate including workforce training.

Moisture control – All aggregate materials must be conditioned to a moisture content of not less than saturated surface dry (SSD) prior to batching. A watering process using an effective sprinkler system designed and operated by the Contractor shall be required on all coarse aggregate material stockpiles.

The Contractor shall provide verification that these processes have been performed by the supplier. The Engineer reserves the right to independently verify that the supplier has complied with these standards.

Mixing

Central mix plants - The total volume of the batch shall not exceed the designated size of the mixer or the rated capacity as shown on the manufacturer's rating plate.

Drum Mix Plants: After all solid materials are assembled in the mixer drum; the mixing time shall be a minimum of 60 seconds and a maximum of 5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall start after the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer through out the charging cycle. Any additional slump water required shall be added to the mixing chamber by the end of the first 25% of the specified mixing time. Mixers shall not be used if the drum is not clean or if the mixing blades are damaged or badly worn

Ribbon mixers: After all solid materials are assembled in the mixer; the mixing time shall be a minimum of 30 seconds and a maximum of 2.5 minutes. The mixing time may be decreased if the ASTM C-94 11.3.3 mixer efficiency tests show that the concrete mixing is satisfactory. The Engineer may require an increase in the minimum mix time if the mixer efficiency test determines that the concrete is not being mixed satisfactorily. The minimum mixing time shall be indicated by an accurate timing device which is automatically started when the mixer is fully charged. Mixers shall be operated at the speed recommended by the manufacturer as mixing speed. The mixer shall be charged so that a uniform blend of materials reached the mixer through out the charging cycle. After any additional slump water is added to the mixing chamber the mixing shall continue for a minimum of 10 seconds. Mixers shall not be used if the mixer is not clean or if the mixing blades are damaged or badly worn.

Truck Mixers -The capacities and mixing capabilities shall be as defined in ASTM C 94, and each unit shall have an attached plate containing the information described therein. The plate may be issued by the Truck Mixer Manufacturer. The mixer capacity shall not be exceeded, and the mixing speeds shall be within the designated limits. Truck mixers shall be equipped with a reliable reset revolution counter. If truck mixers are used for mixing while in transit, the revolution counter shall register the number of revolutions at mixing speed.

An authorized representative of the concrete producer shall certify that the interior of the mixer drum is clean and reasonably free of hardened concrete, that the fins or paddles are not broken or worn excessively, that the other parts are in proper working order, and that the unit has been checked by the representative within the previous 30 calendar day period to substantiate this certification. The current, signed certification shall be with the unit at all times.

The required mixing shall be between 70 and 90 revolutions. The mixing shall be at the rate designated by the manufacturer and shall produce uniform, thoroughly mixed concrete.

The Engineer may inspect mixer units at any time to assure compliance with certification requirements, and removal of inspection ports may be required. Should the Engineer question the quality of mixing, the Engineer may check the slump variation within the batch. Should the slump variation between two samples taken, one after approximately 20% discharge and one after approximately 90% discharge of the batch, show a variation greater than 3/4 inch (20 mm) or 25% of the average of the two, whichever is greater, the Engineer may require the mixing to be increased, the batch size reduced, the charging procedure be modified or the unit removed from the work.

The practice of adding water on the site shall be discouraged. After the slump of the concrete in the first round of trucks has been adjusted on-site, the amount of water added at the plant shall be adjusted accordingly for that day's work. All additions of water on site shall be approved by the Engineer.

Curing

Apply liquid curing compound in a fine atomized spray to form a continuous, uniform film on the horizontal surface, vertical edges, curbs and back of curbs immediately after the surface moisture has disappeared, but no later than 30 minutes after concrete placement. With approval of the Engineer, the timing of cure application may be adjusted due to varying weather conditions and concrete mix properties.

The cure system shall be on site and tested prior to concrete placement.

Apply a curing compound at a rate of application not less than 2 gallons per 25 square yards. The Contractor shall keep the material thoroughly mixed per the Manufacturer's recommendations. The curing compound shall not be diluted.

The finished product shall appear as a uniformly painted solid white surface. Areas exhibiting a blotchy or spotty appearance shall be recoated immediately.

COMPLIANCE WITH STANDARDS

The Engineer will review and approve all material test reports and mix designs supplied by the Contractor before any placement of concrete. The Engineer will visually inspect the placed concrete and review the concrete test reports prior to final acceptance.

Acceptance sampling and testing will be performed using the sampling method and testing option selected by the Engineer. Acceptance testing will be performed at the frequency specified by the Engineer. Quality control measures to insure job control are the responsibility of the Contractor. The Engineer's testing and/or test results will not relieve the Contractor from his/her responsibilities to produce, deliver, and place concrete that meets all project requirements. The Engineer's test results are for acceptance purposes only.

If the results of the testing are not in compliance with the project specifications, the Engineer shall determine appropriate corrective action(s). Time extensions will not be granted to the Contractor during the time that the Engineer is determining the necessary corrective actions.

If, in the Engineer's judgment, the rejected material must be replaced, the material in question will be removed and replaced at the Contractor's sole expense. The removal costs will be deemed to include all relevant and associated costs including, but not limited to; re-mobilization, traffic control, re-grading the aggregate base course, if required, placement of material meeting the project specifications, and all other expenses. Time extensions will not be granted to the Contractor for any required repair work to meet the requirements of this specification.

If the Engineer decides that the material in question can remain in place, an adjustment to the contract unit price(s) may be made of up to 100% of the bid price(s) for the affected items of work.

MEASUREMENT AND PAYMENT

The cost associated with complying with the requirements as described herein, including any required remedial action(s), shall be included in the cost of other items of work and shall not be paid for separately.

APPENDIX A

HUMAN RIGHTS COMPLIANCE FORMS & LIVING WAGE

CITY OF ANN ARBOR PROCUREMENT OFFICE ***Form #1***

HUMAN RIGHTS CONTRACT COMPLIANCE FORM

Entire Organization (Totals for All Locations where applicable)

Name of Company/Organization_____ Date Form Completed_____

Name and Title of Person Completing this Form_____ Name of President _____

Address_____ County_____ Phone #_____
(Street address) (City) (State) (Zip) (Area Code)

Fax#_____ Email Address_____
(Area Code)

EMPLOYMENT DATA

Job Categories	Number of Employees (Report employees in only one category)												
	Male						Female						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaskan Native	TOTAL COLUMNS A-L
	A	B	C	D	E	F	G	H	I	J	K	L	
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

CITY OF ANN ARBOR PROCUREMENT OFFICE **Form #2**

HUMAN RIGHTS CONTRACT COMPLIANCE FORM

Local Office (Only those employees that will do local or on-site work, if applicable)

Name of Company/Organization_____ Date Form Completed_____

Name and Title of Person Completing this Form_____ Name of President _____

Address_____ County_____ Phone #_____
(Street address) (City) (State) (Zip) (Area Code)

Fax#_____ Email Address_____
(Area Code)

EMPLOYMENT DATA

Job Categories	**Number of Employees (Report employees in only one category)**												
	Male						**Female**						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaskan Native	**TOTAL COLUMNS A-L**
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

1/12

Questions about this form? Call Procurement Office: (734) 794-6576

AAF-2

City of Ann Arbor Procurement Office

INSTRUCTIONS FOR CONTRACTORS

For Completing CONTRACT COMPLIANCE FORM

City Policy

The "non discrimination in contracts" provision of the City Code, (Chapter 112, Section 9:161) requires contractors/vendors/grantees doing business with the City not to discriminate on the basis of actual or perceived race, color, religion, national origin, sex, age, condition of pregnancy, marital status, physical or mental limitations, source of income, family responsibilities, educational association, sexual orientation, gender identity or HIV status against any of their employees, any City employee working with them, or any applicant for employment. It also requires that the contractors/vendors/grantees include a similar provision in all subcontracts that they execute for City work or programs.

This Ordinance further requires that each prospective contractor/vendor submit employment data to the City showing current total employee breakdown by occupation, race and gender. This allows the Human Rights Office to determine whether or not the contractor/vendor has a workforce that is reflective of the availability of women and under-represented minorities within the contractor's labor recruitment area (the area where they can reasonably be expected to recruit employees). ***This data is provided to the City on the Human Rights Contract Compliance Forms (attached).***

To complete the form:

1) **If a company has more than one location, then that company must complete 2 versions of the form.**

- **Form #1** should contain the employment data for the **entire corporation**.
- **Form #2** should contain the employment data for those employees:
  - who will be working on-site;
  - in the office responsible for completing the contract; or,
  - in the case of non-profit grantees, those employees working on the project funded by the City grant(s).

2) If the company has only one location, fill out Form #1 only.

3) Complete all data in the upper section of the form including the name of the person who completes the form and the name of the company/organization's president.

4) Complete the Employment Data in the remainder of the form. Please be sure to complete all columns including the Total Columns on the far right side of the form, and the Total row and Previous Year Total row at the bottom of the form.

5) Return the completed form(s) to *your contact* in the City Department for whom you will be conducting the work.

For assistance in completing the form, contact:
Procurement Office of the City of Ann Arbor
734/794-6576

If a contractor is determined to be out of compliance, the Procurement Office will work with them to assist them in coming into compliance.

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE MAY 1, 2012 - ENDING APRIL 30, 2013

$12.17 per hour
If the employer provides health care benefits*

$13.57 per hour
If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than $10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

For Additional Information or to File a Complaint Contact:

Linda Newton, Procurement Officer
734/794-6576 or Lnewton@a2gov.org

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE
DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that employers providing services to the City or recipients of grants for financial assistance (in amounts greater than $10,000 in a twelve-month period of time) pay their employees who are working on the City project or grant, a minimum level of compensation known as the **Living Wage**. This wage must be paid to the employees for the length of the contract/project.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from the Ordinance. If this exemption applies to your firm, please check below:

_____ This **company** is exempt due to the fact that we employ or contract with fewer than 5 individuals.
_____ This **non-profit agency** is exempt due to the fact that we employ or contract with fewer than 10 employees.

The Ordinance requires that all contractors/vendors and/or grantees agree to the following terms:

a) To pay each of its employees performing work on any covered contract or grant with the City, no less than the living wage, which is defined as $12.17/hour when health care is provided, or no less than $13.57/hour for those employers that do *not* provide health care. It is understood that the Living Wage will be adjusted each year on April 30, and covered employers will be required to pay the adjusted amount thereafter. The rates stated above include any adjustment for 2012.

b) Please check the boxes below which apply to your workforce:

Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage without health benefits Yes_____ No_____

OR

Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage with health benefits Yes_____ No_____

c) To post a notice approved by the City regarding the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

d) To provide the City payroll records or other documentation as requested; and,

e) To permit access to work sites to City representatives for the purposes of monitoring compliance, investigating complaints or non-compliance.

The undersigned authorized representative hereby obligates the contractor/vendor or grantee to the above stated conditions under penalty of perjury and violation of the Ordinance.

Company Name	Address, City, State, Zip
Signature of Authorized Representative	Phone (area code)
Type or Print Name and Title	Email address
Date signed	

Questions about this form? Please contact:
Procurement Office City of Ann Arbor
Phone: 734/794-6576

APPENDIX B

SOIL BORINGS

Client: City of Ann Arbor	PSI Project #: 381-65141	Boring Log Number: C-3 WA
	Sheet: 1 of 1	
Project: 2007 Annual Local Street Resurfacing Program Waldenwood Avenue	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

Surface Elevation: N/A

Sample No./Type	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
	10 inches of ASPHALT.						
1SS	SILTY CLAY (CL) - few gravel, trace sand, occasional silt partings, mottled brown and gray, moist, hard.		13 (3,6,7,8)	15			
2SS			22	15			
		5	(6,10,12)				
	END OF BORING						
	Note: Boring performed in front of 3955 Waldenwood Drive.						

⊗ "N" Blows Per Foot (0, 20, 40, 60)

● Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf) (0, 2, 4, 6)

4.5+

4.5+

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

Boring Started: 12/8/2006	Completed: 12/8/2006		Engineer: TMM
Drilling Method: 3-1/4 inch HSA		Office: Plymouth	Drawn By: TMM
Driller: P. Cody	Drill Rig: CME-75	Hole Depth (ft): 5	Approved:

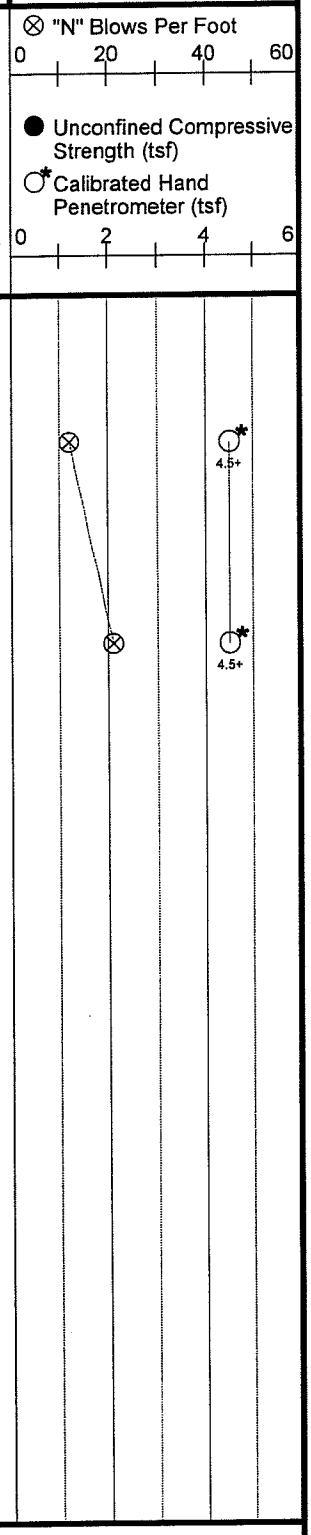
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.

Client: City of Ann Arbor	PSI Project #: 381-65141	Boring Log Number: C-2 WA
	Sheet: 1 of 1	
Project: 2007 Annual Local Street Resurfacing Program Waldenwood Avenue	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

Surface Elevation: **N/A**

Sample No./Type	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
	9-1/2 inches of ASPHALT.						
1SS	SILTY CLAY (CL) - few gravel, trace sand, frequent silt partings, occasional hair roots, mottled brown and gray, moist, hard.		12 (4,5,7,8)	14			
2SS			21 (14,10,11)	12			
		5					
	END OF BORING						
	Note: Boring performed in front of 3930 Waldenwood Drive.						



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

Boring Started: 12/8/2006	Completed: 12/8/2006		Engineer: TMM
Drilling Method: 3-1/4 inch HSA		Office: Plymouth	Drawn By: TMM
Driller: P. Cody	Drill Rig: CME-75	Hole Depth (ft): 5	Approved:
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.			

Client: City of Ann Arbor	PSI Project #: 381-65141	Boring Log Number: C-1 WA
	Sheet: 1 of 1	
Project: 2007 Annual Local Street Resurfacing Program Waldenwood Avenue	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

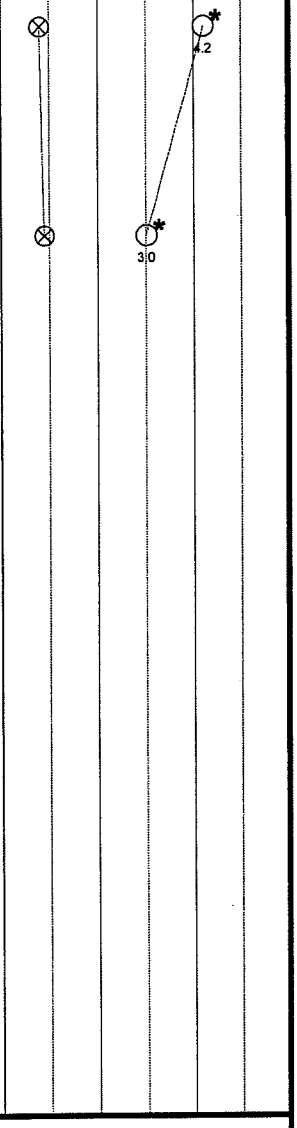
Surface Elevation: **N/A**

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
				8-1/4 inches of ASPHALT.						
1SS				SILTY CLAY (CL) - few gravel, trace sand, occasional silt partings and hair roots, mottled brown and gray, moist, hard to very stiff.		8 (3,4,4,6)	15			
2SS						9 (3,4,5)	16			
					5					
				END OF BORING						
				Note: Boring performed in front of 3890 Waldenwood Drive.						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

Boring Started: **12/8/2006**	Completed: **12/8/2006**		Engineer: **TMM**
Drilling Method: **3-1/4 inch HSA**		Office: **Plymouth**	Drawn By: **TMM**
Driller: **P. Cody**	Drill Rig: **CME-75**	Hole Depth (ft): **5**	Approved:

Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.

Client: City of Ann Arbor	PSI Project #: 381-65141	Boring Log Number: C-4 WA
	Sheet: 1 of 1	
Project: 2007 Annual Local Street Resurfacing Program Waldenwood Avenue	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

Surface Elevation: **N/A**

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
				8 inches of ASPHALT.						
1SS				SAND (SP) - fine to coarse, some gravel, trace silt, brown, moist, medium dense.		18 (15,8,10,12)	6			
2SS						13 (5,5,8)	6			
					5					
				END OF BORING						
				Note: Boring performed in front of 3985 Waldenwood Drive.						

⊗ "N" Blows Per Foot: 0 20 40 60

● Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

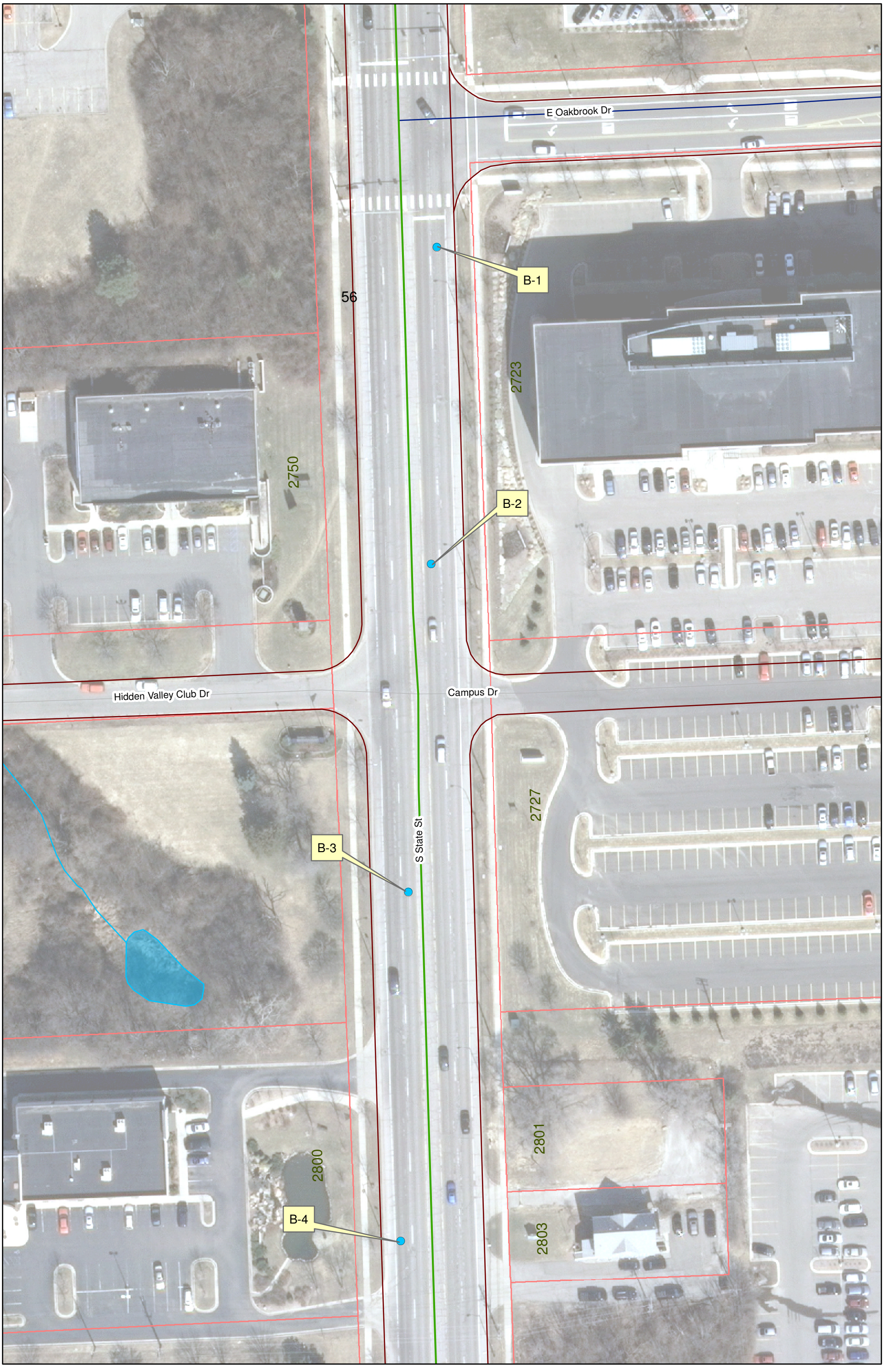
▼ Water Level At Completion Dry

_____ After Completion

Boring Started: **12/8/2006**	Completed: **12/8/2006**		Engineer: **TMM**
Drilling Method: **3-1/4 inch HSA**		Office: **Plymouth**	Drawn By: **TMM**
Driller: **P. Cody**	Drill Rig: **CME-75**	Hole Depth (ft): **5**	Approved:
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.			

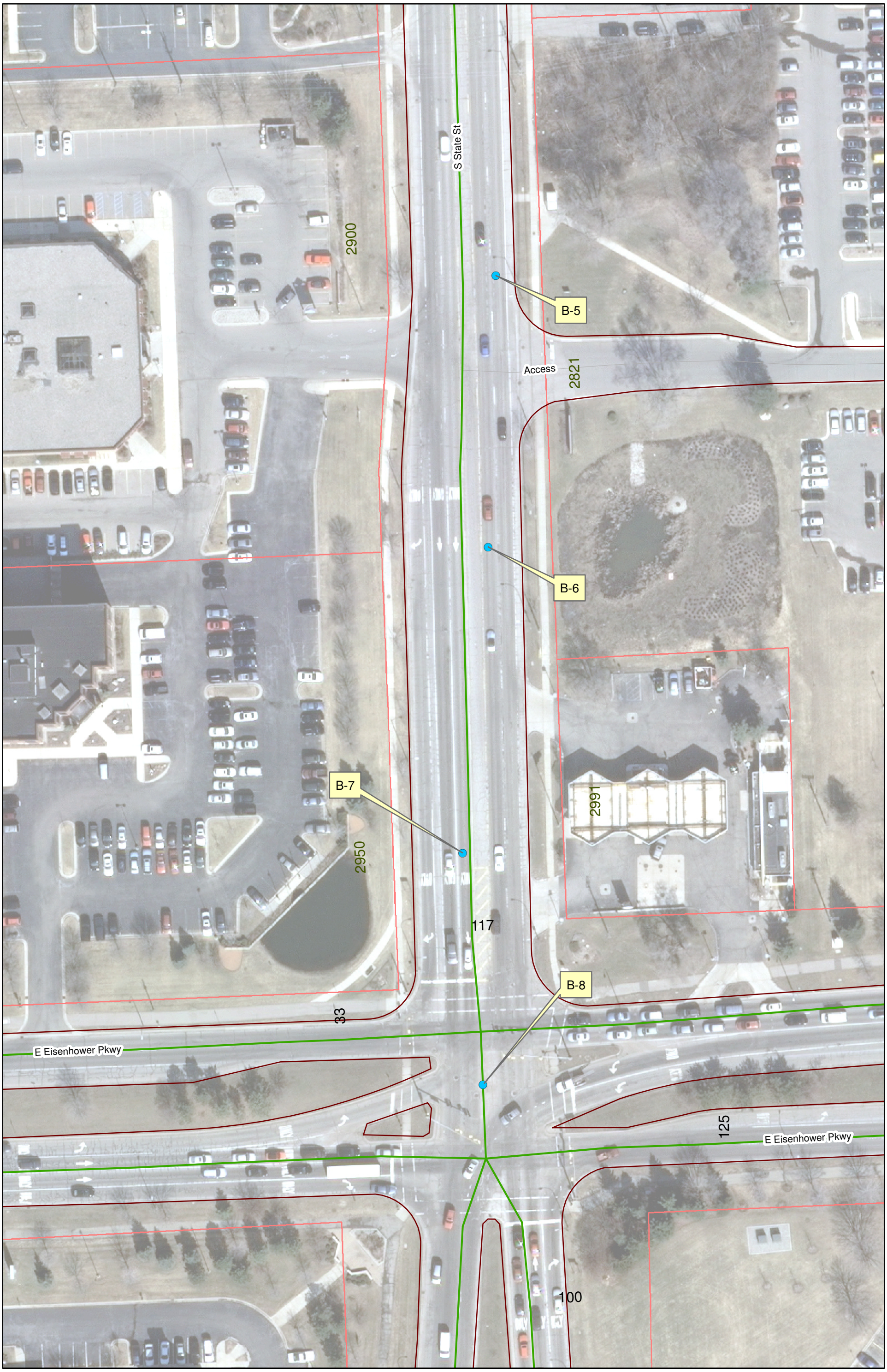
S. State Street

1" = 60'



S. State Street

1" = 60'



Professional Service Industries, Inc.
45749 Helm Street
Plymouth, MI 48170
Telephone: (734) 453-7900
Fax: (734) 453-0724

LOG OF BORING B-7

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS
Location:	South State Street	Hammer Type:	Automatic
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Southbound Inside Lane
	City of Ann Arbor, Michigan		Approx. 26' East of Curb

WATER LEVELS

While Drilling	None feet
Upon Completion	None feet
	feet

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft; Moisture; PL; LL (0, 25, 50); STRENGTH, tsf Qu; Qp (0, 2.0, 4.0)	Additional Remarks
	0			1	11	11.0" ASPHALT PAVEMENT; intact core recovered					
				2	7	10" SAND BASE, fine to coarse, trace gravel and silt, brown					
				3	18	FILL - CLAYEY SAND, fine to coarse, trace gravel and seams of sandy clay, brown and reddish brown, moist	CL	12,8,7 N=15	11		
	5			4	18	SANDY CLAY, trace gravel, mottled brown, moist, hard	CL	5,5,5 N=10	14	>>+	Qp = 4.5+ tsf
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started:	11/16/11	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed:	11/16/11	Split-Spoon	Calif. Sampler	Drill Rig: CME 75
Logged By:	JDH	Rock Core	Texas Cone	Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion
Drilling Contractor:	PSI - Mike Dubnicki			

The stratification lines represent approximate boundaries. The transition may be gradual.

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LOG OF BORING B-6

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS
Location:	South State Street	Hammer Type:	Automatic
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Northbound Inside Lane
	City of Ann Arbor, Michigan		

WATER LEVELS

While Drilling	None	feet
Upon Completion	None	feet
		feet

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ Moisture ◪ PL ✚ LL (0 25 50) STRENGTH, tsf ▲ Qu ✳ Qp (0 2.0 4.0)	Additional Remarks
	0			1	12	12.4" ASPHALT PAVEMENT; intact core recovered					
				2	6	17.5" SILTY SAND BASE, fine to coarse, with gravel, brown					
				3	18	FILL - ASPHALT, trace brown large gravel, moist		14,12,28 N=40	5		
						FILL - SANDY CLAY,with organics, trace gravel, dark gray and olive gray, moist					
						LOI = 5.9%	CL				
	5			4	18			8,12,28 N=40	16	>>✳ Qp = 4.5+ tsf	
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started:	11/16/11		Auger Cutting	Hand Auger	Longitude:
Date Boring Completed:	11/16/11		Split-Spoon	Calif. Sampler	Drill Rig: CME 75
Logged By:	JDH		Rock Core	Texas Cone	Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion
Drilling Contractor:	PSI - Mike Dubnicki				

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LOG OF BORING B-5

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger	WATER LEVELS	
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS	While Drilling	None feet
Location:	South State Street	Hammer Type:	Automatic	Upon Completion	None feet
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Northbound Outside Lane		feet
	City of Ann Arbor, Michigan		Approx. 11.5' West of Curb		

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft / Moisture / PL / LL (0, 25, 50) / STRENGTH, tsf Qu / Qp (0, 2.0, 4.0)	Additional Remarks
	0			1	13	12.5" ASPHALT PAVEMENT; intact core recovered					
				2	6	9" SILTY SAND BASE, fine to coarse, with gravel, reddish brown					
				3	18	FILL - SAND, fine to coarse, brown and light brown, with seams of dark gray and red silty clayey sand and black asphalt, moist	CL	14,19,18 N=37	4		
	5			4	11	SANDY CLAY, trace gravel, mottled brown, moist, very stiff to hard	CL	10,5,5 N=10	10		
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started:	11/15/11	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed:	11/15/11	Split-Spoon	Calif. Sampler	Drill Rig: CME 75
Logged By:	JDH	Rock Core	Texas Cone	Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion
Drilling Contractor:	PSI - Mike Dubnicki			

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LOG OF BORING B-4

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger	WATER LEVELS	
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS	While Drilling	None feet
Location:	South State Street	Hammer Type:	Automatic	Upon Completion	None feet
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Southbound Outside Lane		feet
	City of Ann Arbor, Michigan		Approx. 10.5' East of Curb		

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ Moisture ◪ PL ✚ LL (0 25 50) STRENGTH, tsf ▲ Qu ✳ Qp (0 20 40)	Additional Remarks
	0			1	11	10.5" ASPHALT PAVEMENT; intact core recovered					
				2	8	17.5" SAND BASE, fine to coarse, trace gravel and silt, brown					
				3	18	FILL - SILTY CRUSHED LIMESTONE, trace clay, light brownish gray		15,18,16 N=34	6	✕ ◎	
						FILL - SAND, fine to coarse, trace gravel, silt and seams of sandy clay, brown, moist	SP				
	5			4	16			14,17,18 N=35	3	✳ ◎	
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started:	11/15/11	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed:	11/15/11	Split-Spoon	Calif. Sampler	Drill Rig: CME 75
Logged By:	JDH	Rock Core	Texas Cone	Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion
Drilling Contractor:	PSI - Mike Dubnicki			

The stratification lines represent approximate boundaries. The transition may be gradual.

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LOG OF BORING B-3

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger	WATER LEVELS	
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS	While Drilling	None feet
Location:	South State Street	Hammer Type:	Automatic	Upon Completion	None feet
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Southbound Inside Lane		feet
	City of Ann Arbor, Michigan		Approx. 27.5' East of Curb		

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0			1	11	10.7" ASPHALT PAVEMENT; intact core recovered					
				2	7	16" SAND BASE, fine to coarse, trace gravel and silt, brown					
				3	18	FILL - SILTY CRUSHED LIMESTONE, trace clay, light gray		12,17,15 N=32	7		
						FILL - SANDY CLAY, with organics, trace gravel, dark gray and dark olive, moist LOI = 5.4%	CL				
	5			4	12			4,7,9 N=16	9	>>✳ Qp = 4.5+ tsf	
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started:	11/15/11	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed:	11/15/11	Split-Spoon	Calif. Sampler	Drill Rig: CME 75
Logged By:	JDH	Rock Core	Texas Cone	Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion
Drilling Contractor:	PSI - Mike Dubnicki			

The stratification lines represent approximate boundaries. The transition may be gradual.

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LOG OF BORING B-2

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger	WATER LEVELS	
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS	While Drilling	None feet
Location:	South State Street	Hammer Type:	Automatic	Upon Completion	None feet
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Northbound Inside Lane		feet
	City of Ann Arbor, Michigan		Approx. 28' West of Curb		

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @ Moisture PL LL (0 25 50) STRENGTH, tsf Qu Qp (0 2.0 4.0)	Additional Remarks
	0			1	13	12.8" ASPHALT PAVEMENT; intact core recovered					
				2	5	9" SAND BASE, fine to coarse, trace gravel and silt, brown					
				3	14	FILL - SANDY CLAY, trace gravel and organics, olive gray, moist	CL	7,8,10 N=18	9	>> Qp = 4.5+ tsf	
	5			4	18	SANDY CLAY, trace gravel, mottled brown, moist, hard	CL	4,5,6 N=11	11	>> Qp = 4.5+ tsf	
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube	Latitude:
Date Boring Started:	11/15/11	Auger Cutting	Hand Auger	Longitude:
Date Boring Completed:	11/15/11	Split-Spoon	Calif. Sampler	Drill Rig: CME 75
Logged By:	JDH	Rock Core	Texas Cone	Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion
Drilling Contractor:	PSI - Mike Dubnicki			

The stratification lines represent approximate boundaries. The transition may be gradual.

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LOG OF BORING B-1

PSI Job No.:	0381411-2 (K)	Drilling Method:	2.25" Solid Stem Auger	WATER LEVELS	
Project:	Miscellaneous Geotechnical Services	Sampling Method:	2" SS	While Drilling	1 feet
Location:	South State Street	Hammer Type:	Automatic	Upon Completion	None feet
	Between E. Oakbrook Drive and Eisenhower Pkwy	Boring Location:	Northbound Outside Lane		feet
	City of Ann Arbor, Michigan		Approx. 9' West of Curb		

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft; Moisture; PL; LL (0, 25, 50); STRENGTH, tsf: Qu; Qp (0, 2.0, 4.0)	Additional Remarks
	0			1	12	12.0" ASPHALT PAVEMENT; intact core recovered					
				2	6	6" SILTY SAND BASE, fine to coarse, with gravel, brown, wet					
				3	12	FILL - SANDY CLAY, trace gravel and organics, olive gray, moist LOI = 4.1%	CL	5,8,9 N=17	10	>>	Qp = 4.5+ tsf
	5			4	16	SANDY CLAY, trace gravel, brown, moist, hard	CL	6,9,10 N=19	15	>>	Qp = 4.5+ tsf
						End of Boring					

Completion Depth:	5.5 ft	Sample Types:	Shelby Tube
Date Boring Started:	11/15/11	Auger Cutting	Hand Auger
Date Boring Completed:	11/15/11	Split-Spoon	Calif. Sampler
Logged By:	JDH	Rock Core	Texas Cone
Drilling Contractor:	PSI - Mike Dubnicki		

Latitude:
Longitude:
Drill Rig: CME 75
Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
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Plymouth, MI 48170
Telephone: (734) 453-7900
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LOG OF BORING B-8

PSI Job No.: 0381411-2 (K)
Project: Miscellaneous Geotechnical Services
Location: South State Street
Between E. Oakbrook Drive and Eisenhower Pkwy
City of Ann Arbor, Michigan

Drilling Method: 2.25" Solid Stem Auger
Sampling Method: 2" SS
Hammer Type: Automatic
Boring Location: State Street/Eisenhower Intersection
Approx. 37' West of Curb

WATER LEVELS
While Drilling None feet
Upon Completion None feet
feet

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ Moisture ◪ PL ✚ LL 0 25 50 STRENGTH, tsf ▲ Qu ✳ Qp 0 2.0 4.0	Additional Remarks
	0			1	10	10.1" ASPHALT PAVEMENT; intact core recovered					
				2	8	19" SAND BASE, fine to coarse, trace gravel and silt, brown					
				3	16	FILL - SANDY CLAY, trace gravel and organics, brown, reddish brown and dark grayish brown, moist	CL	15,16,9 N=25	7	✳ >> ✳	Qp = 4.5+ tsf
	5			4	10	FILL - SANDY CLAY, trace gravel and organics, olive brown and grayish brown, moist	CL	5,6,6 N=12	19	✳	
						End of Boring					

Completion Depth: 5.5 ft
Date Boring Started: 11/15/11
Date Boring Completed: 11/15/11
Logged By: JDH
Drilling Contractor: PSI - Mike Dubnicki

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger
Calif. Sampler
Texas Cone

Latitude:
Longitude:
Drill Rig: CME 75
Remarks: Borehole backfilled with auger cuttings and pavement patched upon completion

The stratification lines represent approximate boundaries. The transition may be gradual.

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **SO-1**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (1-1/2 inches) 0.1						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 6-1/2 inches) 0.7		AS-1	23			
		Medium Compact Brown Sand with trace silt and gravel 2.0		AS-2	21			
		Medium Compact Brown Clayey Sand with trace gravel			17			
					16			
5		5.0	5	AS-3	21			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed at Station 6+45, 12 feet east of West Curbline

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 97

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **SO-2**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3 inches) 0.3						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 6 inches) 0.8		AS-1				
				AS-2	17			
		Medium Compact Brown Sand with trace silt and gravel			15			
		3.0			18			
		Medium Compact Brown Clayey Sand with trace gravel			16			
5		5.0	5	AS-3	19			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed at Station 3+50, 7 feet east of West Curbline

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 98

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **SO-3**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (4 inches) 0.3		AS-1				
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 7 inches) 0.9		AS-2	17			
		Medium Compact Brown Clayey Sand with trace gravel			13			
		3.0			13			
		Stiff Brown Sandy Clay with trace gravel			7			
5		5.0	5	AS-3	9	19.4		3500*
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed at Station 0+65, 30 feet west of East Curbline
* Calibrated Hand Penetrometer

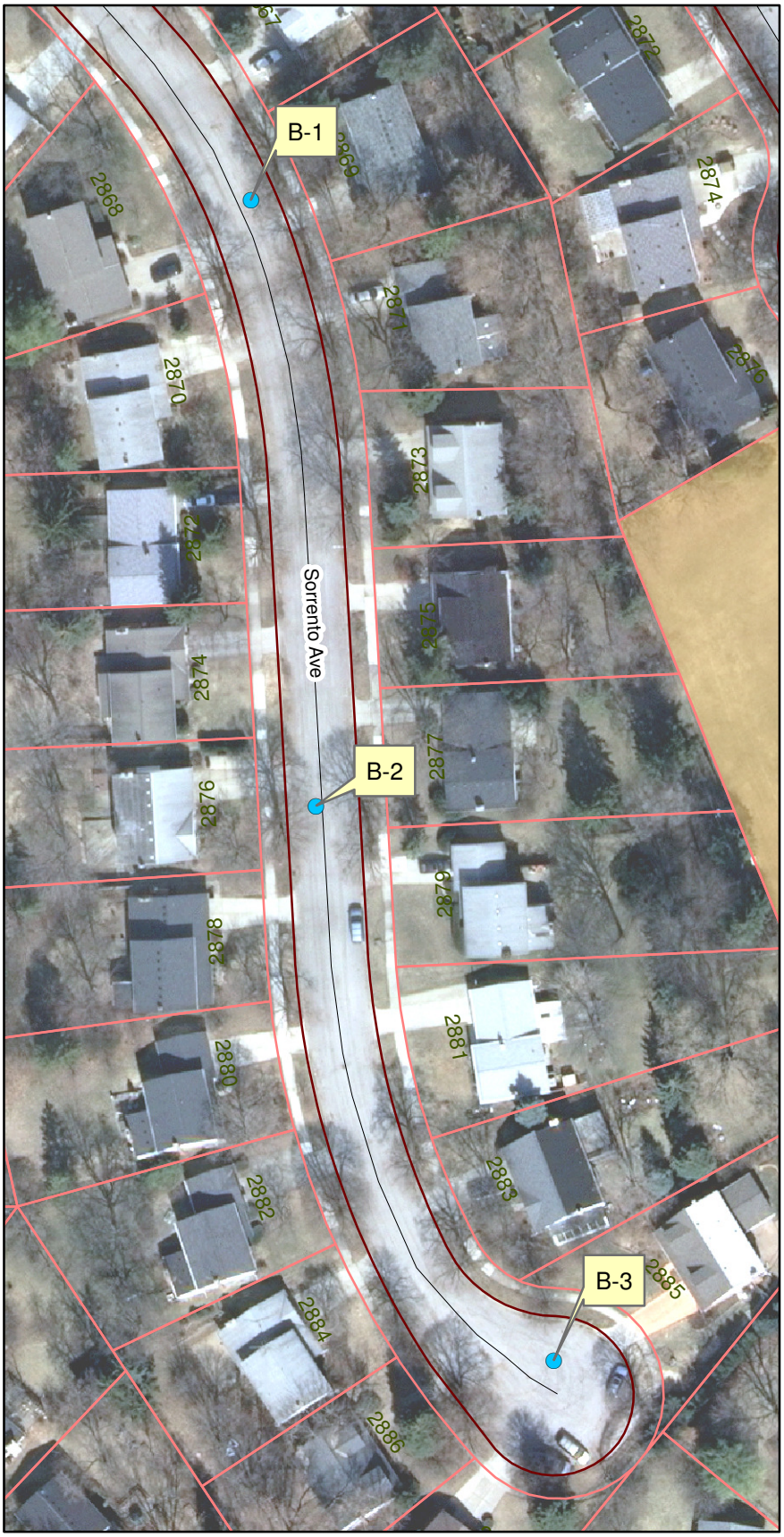
Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 99

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Sorrento Ave.

1 inch = 80 feet



Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **MH-1**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3 inches) 0.3						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 8 inches) 0.9		AS-1				
				AS-2	21			
					30			
		Medium Compact Brown Sand with trace silt and gravel			27			
					26			
5		5.0	5		18			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 26, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 8 feet south of North Curbline, Station 12+45

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 38

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **MH-2**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (2-3/4 inches) 0.2						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 5-1/4 inches) 0.7		AS-1	18			
				AS-2				
					23			
		Medium Compact to Compact Brown Sand with trace silt and gravel			21			
					15			
5		5.0	5		31			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 26, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 8 feet west of East Curbline, Station 9+20

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 39

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **MH-3**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3 inches) 0.3						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 7 inches) 0.8		AS-1				
				AS-2	18			
		Medium Compact Brown Sand with trace silt and gravel			12			
		3.0		AS-3	15			
		Medium Compact Brown Silty Sand with trace clay and gravel			11			
5		5.0	5		15			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 26, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 12 feet west of East Curbline, Station 6+75

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 40

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **MH-4**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3 inches) 0.3						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 5 inches) 0.7		AS-1	21			
				AS-2				
		Medium Compact Brown Sand with trace silt and gravel						
		2.0			18			
				AS-3	11			
		Loose to Medium Compact Brown Clayey Sand with trace silt and gravel						
					8			
5		5.0	5		9			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 26, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 11 feet west of East Curbline, Station 4+10

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 41

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **MH-5**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (2-1/4 inches) 0.2						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 7-1/4 inches) 0.8		AS-1				
		Medium Compact Brown Sand with trace silt and gravel		AS-2	17			
		2.0			13			
		Loose Brown Clayey Sand with trace silt and gravel		AS-3	8			
					9			
5		5.0	5		8			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 26, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 9 feet north of South Curbline, Station 1+35

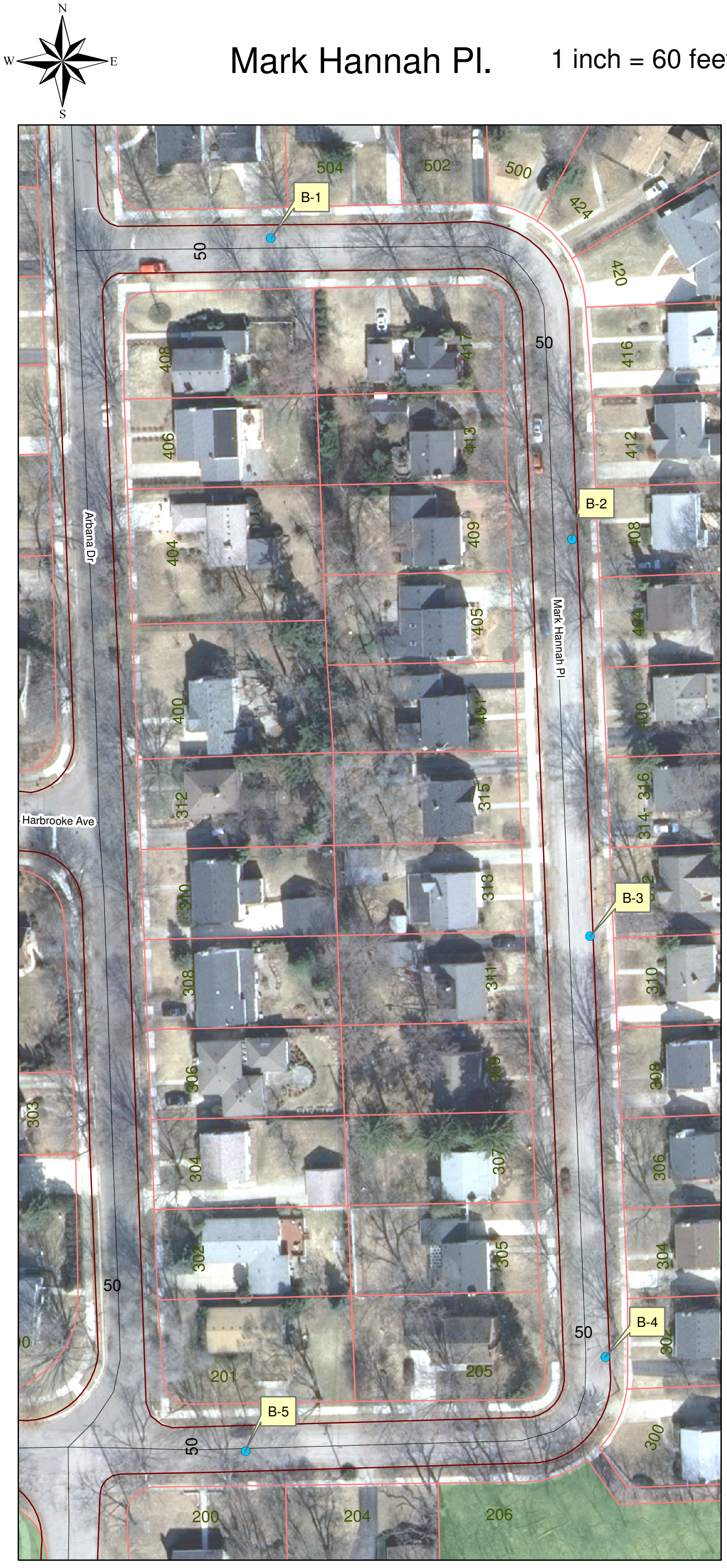
Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 42

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Mark Hannah Pl.

1 inch = 60 feet



CTI and Associates Inc

BORING NUMBER: Hiscock B-1

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/10/12 **COMPLETED** 10/10/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		4 inches of ASPHALT PAVEMENT						
		4 inches of RED BRICK						
		Brown moist loose clayey fine SAND with some gravel and occasional clay seams - (SC)	GB	100				
			SS 1	100	4-4-3 (7)			
2.5								
		Light brown moist loose fine SAND with some silt - (SP-SM)	SS 2	100	3-4-5 (9)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 7' north of curb, 12' east of Brooks Street

CTI and Associates Inc

BORING NUMBER: Hiscock B-2

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/10/12 **COMPLETED** 10/10/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		7 inches of ASPHALT PAVEMENT						
		5 inches of brown moist silty fine to medium SAND with some gravel - (FILL)	GB	100				
		Reddish--brown moist loose clayey fine to medium SAND with trace of gravel - (SC)	SS 1	100	7-5-4 (9)			
2.5								
		Brown moist loose fine to medium SAND with traces of gravel and silt - (SP)	SS 2	100	3-3-6 (9)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 9' north of curb, 35' west of Gott Street

CTI and Associates Inc

BORING NUMBER: Hiscock B-3

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/10/12 **COMPLETED** 10/10/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		4 inches of ASPHALT PAVEMENT						
		14 inches of brown moist silty fine SAND with some gravel - (FILL)	GB	100				
		Brown moist medium dense fine to medium SAND with traces of gravel and silt - (SP)	SS 1	100	9-6-7 (13)			
2.5								
			SS 2	100	3-5-5 (10)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 10' north of curb, 10' west of Miner Street

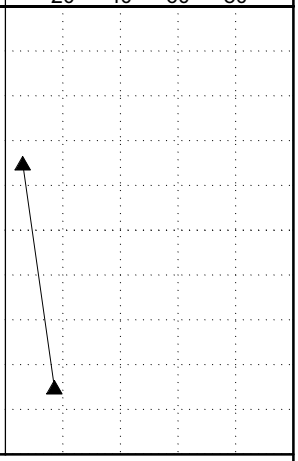
CTI and Associates Inc

BORING NUMBER: Hiscock B-4

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/10/12 **COMPLETED** 10/10/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		5 inches of ASPHALT PAVEMENT					
		7 inches of brown moist silty fine SAND with gravel - (FILL)	GB	100			
		Red-brown moist sandy CLAY with silt, trace of gravel and occasional sand seams - (FILL)	SS 1	94	5-3-3 (6)		
2.5							
		Brown moist medium dense fine SAND with traces of gravel and silt - (SP)	SS 2	94	5-8-9 (17)		
5.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 5.0 feet.

Boring performed 12' south of curb, 18' west of driveway to 618 Hiscock Street

CTI and Associates Inc

BORING NUMBER: Hiscock B-5

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/10/12 **COMPLETED** 10/10/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		4 inches of ASPHALT PAVEMENT						
		8 inches of brown moist silty fine to medium SAND with some gravel - (FILL)	GB	100				
		Brown moist medium dense clayey fine SAND with trace of gravel and occasional fine sand partings - (SC)	SS 1	100	5-4-9 (13)			
2.5								
		Brown moist dense fine to medium SAND with some gravel and silt - (SP-SM)	SS 2	100	10-20-20 (40)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 12' south of curb, 40' east of Fountain Street

CTI and Associates Inc

BORING NUMBER: Hiscock B-6

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/10/12 **COMPLETED** 10/10/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		4 inches of ASPHALT PAVEMENT						
		8 inches of brown moist silty fine to medium SAND with gravel - (FILL)	GB	100				
		Brown moist medium dense clayey fine SAND with trace of gravel and occasional clay seams - (SC)	SS 1	100	5-6-8 (14)			
2.5		Brown moist medium dense fine to medium SAND with some gravel and silt and occasional clay seams - (SP-SM)						
			SS 2	100	8-10-10 (20)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 8' south of curb, 30' west of Spring Street

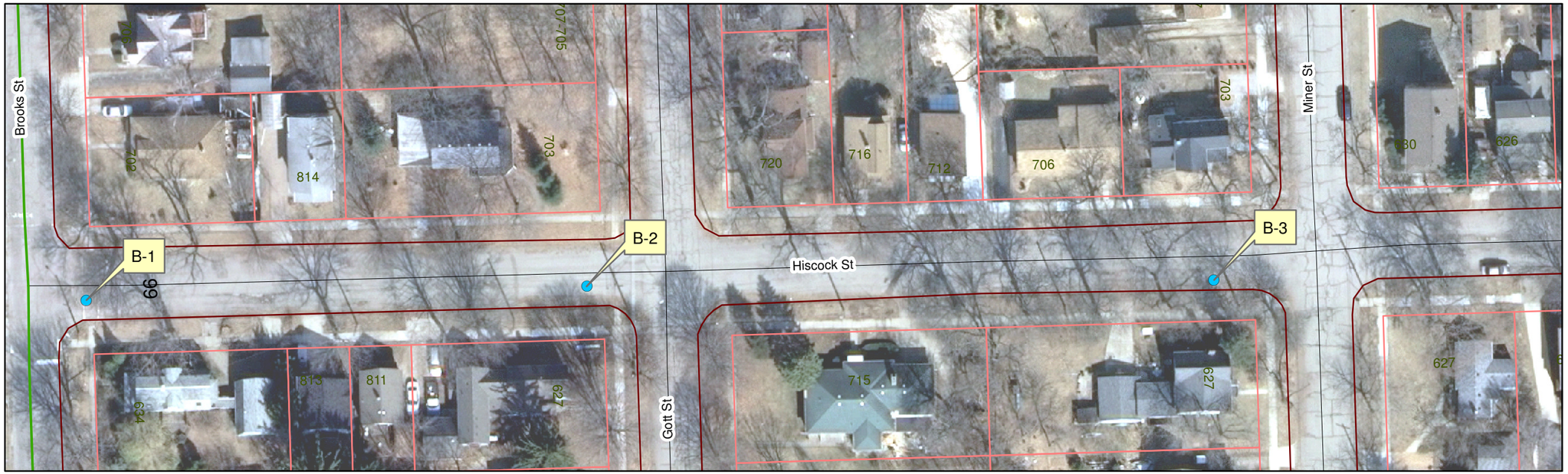
N

W E

S

Hiscock St.

1 inch = 60 feet



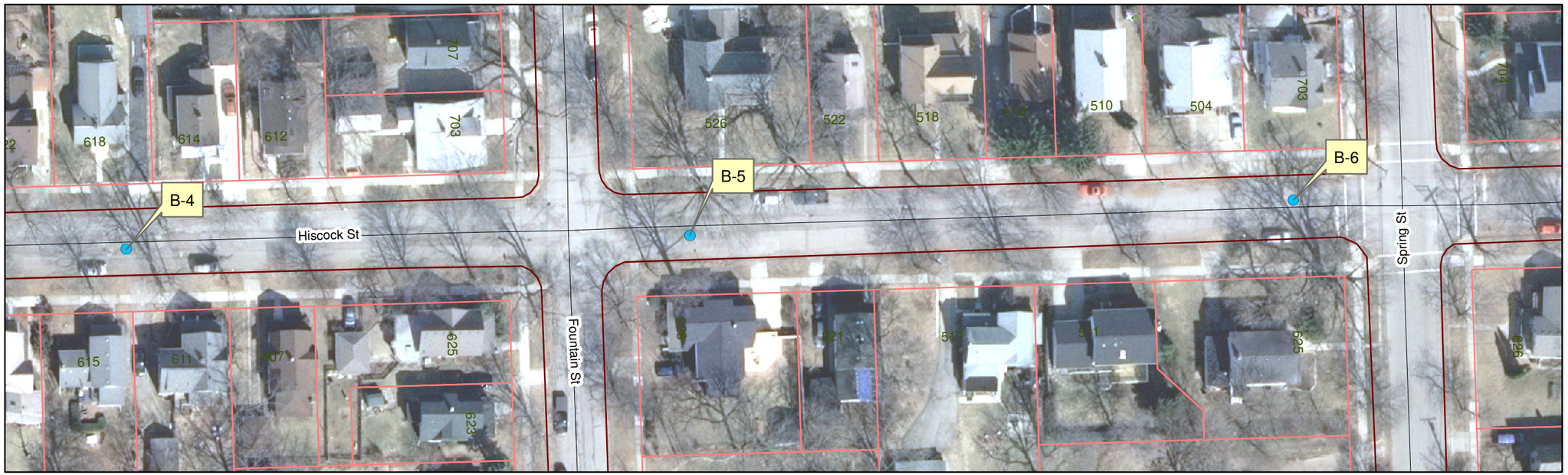
N

W E

S

Hiscock St.

1 inch = 60 feet



Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **FR-1**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (4-1/2 inches) 0.4		AS-1				
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 7-1/2 inches) 1.0		AS-2	8	24.8		
		Fill: Loose Dark Brown Clayey Sand with trace organic matter (Organic Matter Content = 4.8%) 2.0		AS-3	8	23.9		3500*
		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel			10			
					9			
5		5.0	5	AS-4	11	23.2		4000*
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 5 feet west of East Curbline
* Calibrated Hand Penetrometer

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 20

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **FR-2**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (4 inches) 0.3		AS-1				
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 6 inches) 0.8		AS-2	11	14.8		4000*
		Very Stiff Brown Sandy Clay with trace gravel			10			
		3.0			15			
		Very Stiff Brown and Gray Silty Clay with trace sand and gravel			16			
5		5.0	5	AS-3	15	15.3		7000*
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 9 feet east of West Curbline
* Calibrated Hand Penetrometer

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 21

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **FR-3**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (6 inches) 0.5						
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 5 inches) 0.9		AS-1	12	18.8		5500*
				AS-2	10			
		Very Stiff Brown and Gray Silty Clay with trace sand and gravel			13			
					12			
5		5.0	5	AS-3	13	17.1		5000*
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 7 feet west of East Curbline
* Calibrated Hand Penetrometer

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 22

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **FR-4**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (3-1/2 inches) 0.3		AS-1				
		Fill: Brown Sand and Gravel with trace silt (Natural Aggregate Base, 5-1/2 inches) 0.8		AS-2	8	16.3		3000*
					8			
		Stiff to Very Stiff Brown and Gray Silty Clay with trace sand and gravel			11			
					12			
5		5.0	5	AS-3	12	15.7		4500*
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 25, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 7 feet east of West Curbline
* Calibrated Hand Penetrometer

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 23

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Franklin Blvd.

1 inch = 80 feet

CTI and Associates Inc

BORING NUMBER: Depot B-1

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/11/12 **COMPLETED** 10/11/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		8 inches of ASPHALT PAVEMENT						
		Brown moist silty fine to medium SAND with some gravel and occasional cobbles - (FILL)	GB	100				
			SS 1	100	12-14-15 (29)			
2.5								
			SS 2	28	6-5-4 (9)			
5.0		Dark brown moist loose silty fine SAND with some organics - (SM)						

Bottom of borehole at 5.0 feet.

Boring performed 25' north of curb, 3' west of driveway to 106 Depot Street

CTI and Associates Inc

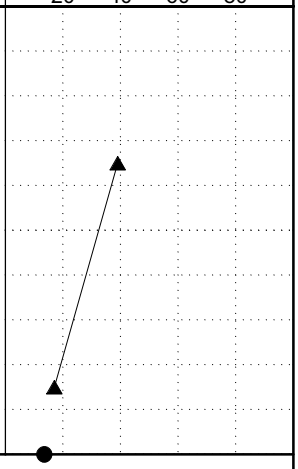
BORING NUMBER: Depot B-2

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/11/12 **COMPLETED** 10/11/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		8 inches of ASPHALT PAVEMENT					
		4 inches of brown moist silty fine to medium SAND with some gravel - (FILL)	GB	100			
		Brown moist fine to medium SAND with some gravel and silt - (FILL)	SS 1	100	16-21-18 (39)		
2.5		Brown moist silty fine to coarse SAND with gravel - (FILL)	SS 2	94	9-11-6 (17)		
5.0		Dark brown and brown variegated moist CLAY with silt, some organics and trace of sand - (CL-OL) Organic Content = 8.4%					14

Bottom of borehole at 5.0 feet.

Boring performed 5' south of curb, 6' west of east side of Fourth Avenue



CTI and Associates Inc

BORING NUMBER: Depot B-3

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/11/12 **COMPLETED** 10/11/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		7 inches of ASPHALT PAVEMENT						
		Brown moist silty fine to medium SAND with gravel - (FILL)	GB	100				
			SS 1	100	20-28-26 (54)			
2.5		Brown moist fine to medium SAND with some gravel and silt - (FILL)						
		Dark brown moist medium dense silty fine SAND with some organics - (SM)	SS 2	100	11-5-5 (10)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 10' south of curb, 40' west of Fifth Avenue

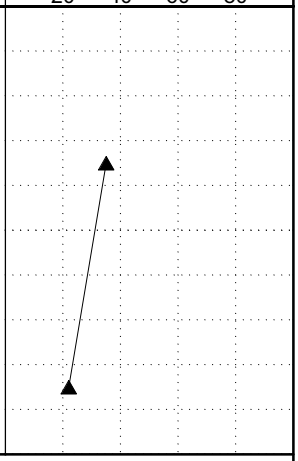
CTI and Associates Inc

BORING NUMBER: Depot B-4

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/11/12 **COMPLETED** 10/11/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		8 inches of ASPHALT PAVEMENT					
		8 inches of brown moist silty fine to medium SAND with some gravel - (FILL)	GB	100			
		Brown moist fine to medium SAND with some gravel and silt - (FILL)	SS 1	100	13-15-20 (35)		
2.5		Brown moist medium dense silty fine to coarse SAND with gravel - (SM)	SS 2	89	16-12-10 (22)		
5.0		Bottom of borehole at 5.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Boring performed 28' north of curb, 5' west of Amtrak Station parking lot entrance

N

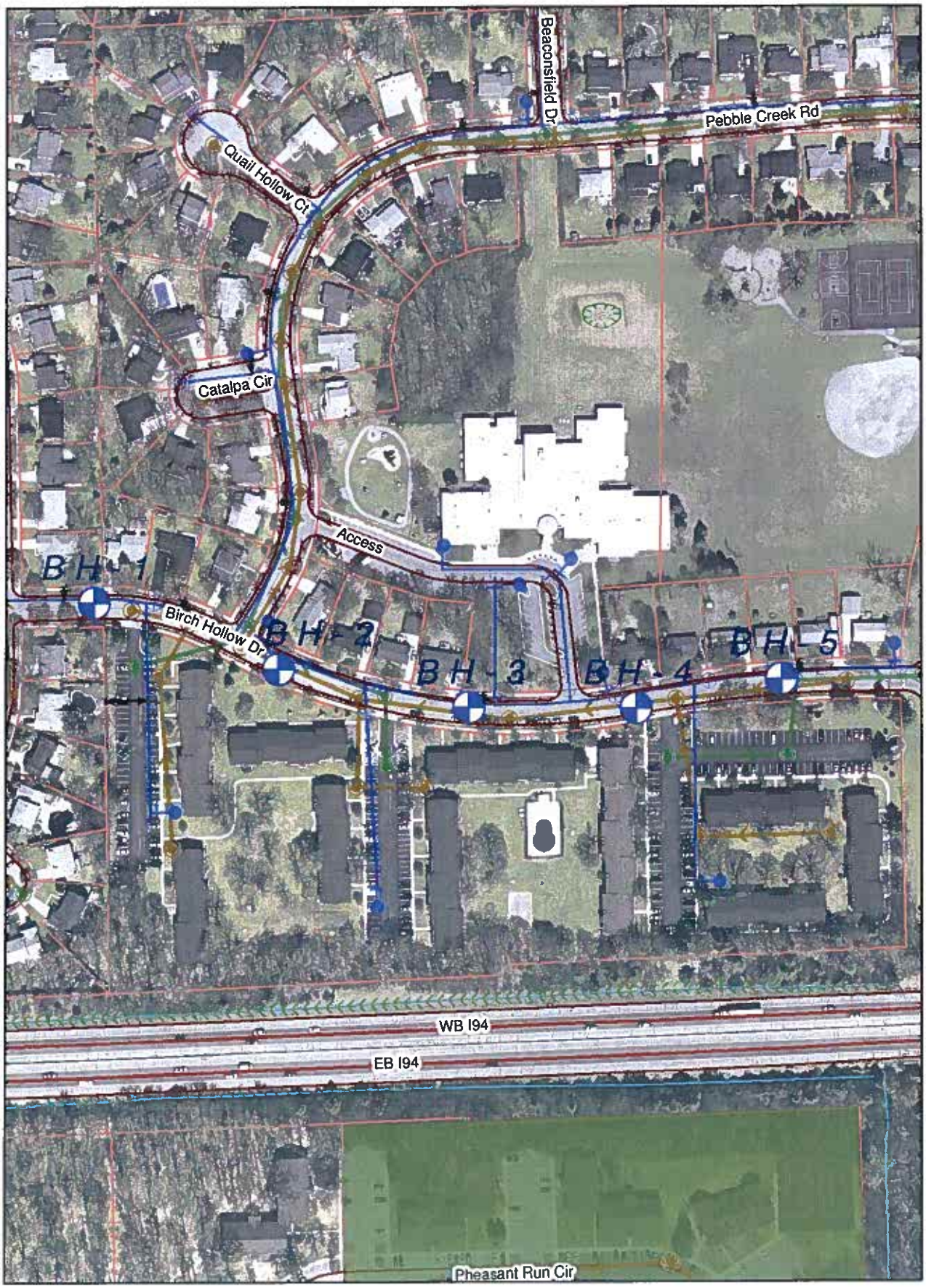
W E

S

Depot St.

1 inch = 80 feet

Birch Hollow Dr 1



Client: City of Ann Arbor	PSI Project #: 0381193	Boring Log Number: BH-1	Professional Service Industries, Inc.
	Sheet: 1 of 1		
Project: 2010 Road Construction Projects Birch Hollow Dr, Tacoma to Stone Schoo	Location: City of Ann Arbor, Washtenaw County, Michigan		

Sample No./Type	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
	Surface Elevation:						
1PC	5.8" of ASPHALT						
	3" of SAND and GRAVEL BASE, fine to coarse, some silt, dark brown, moist						
	SANDY CLAY (CL) - few gravel, occasional silt partings, mottled brown and orangish brown, moist, very stiff						
2SS			11 (4.4.7)	13			
	SAND (SP) - fine to medium, few gravel, trace silt, light brown, moist, medium dense						
3SS	SILTY SAND (SM) - fine, occasional clay seams, brown, moist, medium dense	5	23 (9.12.11)	12			
	END OF BORING						

⊗ "N" Blows Per Foot (0, 20, 40, 60)

○ Unconfined Compressive Strength (tsf)

○* Calibrated Hand Penetrometer (tsf) (0, 2, 4, 6)

2.5

Boring Location:

West Bound Birch Hollow Drive
13' South of Curb, 147' West of Centerline to Tacoma Circle

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

Boring Started: 10/14/2009	Completed: 10/14/2009		Engineer: KFD
Drilling Method: 3.25" HSA		Office: Plymouth	Drawn By: KFD
Driller: M. Dubnicki	Drill Rig: CME-75	Hole Depth (ft): 5.5	Approved:

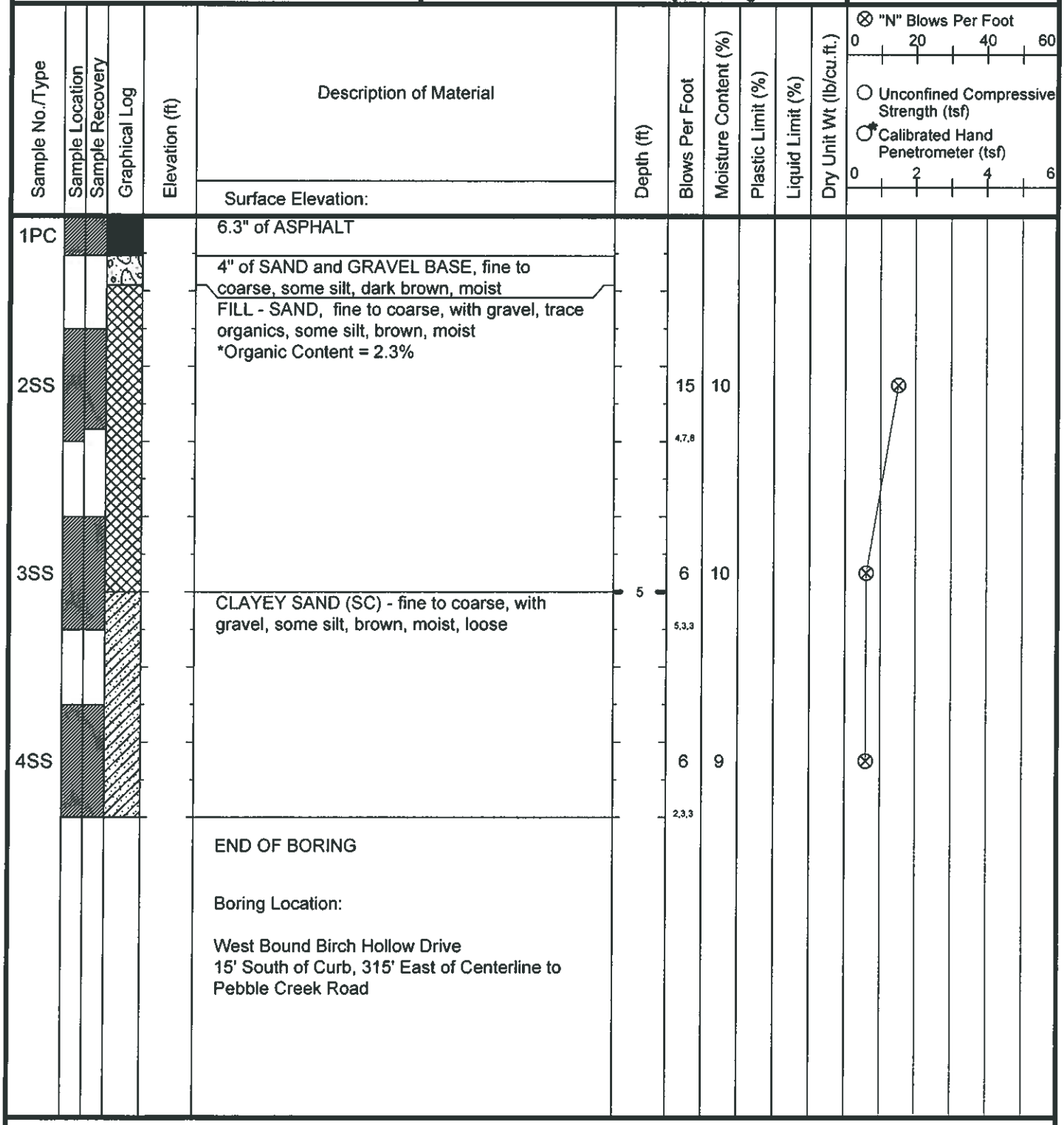
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.

Client: City of Ann Arbor	PSI Project #: 0381193	Boring Log Number: BH-3
	Sheet: 1 of 1	

Project: **2010 Road Construction Projects**
Birch Hollow Dr, Tacoma to Stone School

Location: **City of Ann Arbor, Washtenaw County, Michigan**

Professional Service Industries, Inc.



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry	Boring Started: 10/14/2009	Completed: 10/14/2009		Engineer: KFD
▼ Water Level At Completion Dry	Drilling Method: 3.25" HSA		Office: Plymouth	Drawn By: KFD
_____ After Completion	Driller: M. Dubnicki	Drill Rig: CME-75	Hole Depth (ft): 8	Approved:
	Note: Boring backfilled with auger cuttings unless otherwise noted.			

Client: City of Ann Arbor	PSI Project #: 0381193 Sheet: 1 of 1	Boring Log Number: BH-4	Professional Service Industries, Inc.
Project: 2010 Road Construction Projects Birch Hollow Dr, Tacoma to Stone Schoo	Location: City of Ann Arbor, Washtenaw County, Michigan		

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Elevation (ft)	Description of Material Surface Elevation:	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)	⊗ "N" Blows Per Foot 0 20 40 60 ○ Unconfined Compressive Strength (tsf) ♂* Calibrated Hand Penetrometer (tsf) 0 2 4 6
1PC					5.8" of ASPHALT							
					14" of SAND and GRAVEL BASE, fine to coarse, some silt, dark brown, moist							
2SS					SILTY SAND (SP-SM) - fine, brown, moist, loose		9 5,5,4	15				
3SS					SANDY CLAY (CL) - few gravel, mottled brown, orangish brown and gray, moist, stiff	5	7 3,3,4	15				⊗ ♂* 1.5
					END OF BORING							

Boring Location:

East Bound Birch Hollow Drive
8' North of Curb, 64' East of Centerline to
Jewish Community Center Access Road

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry	Boring Started: 10/14/2009 Completed: 10/14/2009		Engineer: KFD
▼ Water Level At Completion Dry	Drilling Method: 3.25" HSA	Office: Plymouth	Drawn By: KFD
After Completion	Driller: M. Dubnicki	Drill Rig: CME-75 Hole Depth (ft): 5.5	Approved: MSE
	Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.		

Client: City of Ann Arbor	PSI Project #: 0381193	Boring Log Number: BH-5
	Sheet: 1 of 1	
Project: 2010 Road Construction Projects Birch Hollow Dr, Tacoma to Stone Schoo	Location: City of Ann Arbor, Washtenaw County, Michigan	

Professional Service Industries, Inc.

Sample No./Type	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
	Surface Elevation:						
1PC	6.1" of ASPHALT						
	12" of SAND and GRAVEL BASE, fine to coarse, some silt, dark brown, moist						
2SS	SANDY CLAY (CL) - few gravel, mottled brown and orangish brown, moist, very stiff		10 (4,6,4)	15			
3SS	SAND (SP) - fine to coarse, trace silt, brown, moist, medium dense	5	16 (5,8,8)	7			
	END OF BORING						

"N" Blows Per Foot: 0 20 40 60

Unconfined Compressive Strength (tsf)

Calibrated Hand Penetrometer (tsf): 0 2 4 6

3.25

Boring Location:

West Bound Birch Hollow Drive
4' South of Curb, 217' West of Centerline to Stone School Road

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

Water Level While Drilling Dry

Water Level At Completion Dry

After Completion

Boring Started: 10/14/2009	Completed: 10/14/2009		Engineer: KFD
Drilling Method: 3.25" HSA		Office: Plymouth	Drawn By: KFD
Driller: M. Dubnicki	Drill Rig: CME-75	Hole Depth (ft): 5.5	Approved:

Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.

CTI and Associates Inc

BORING NUMBER: Barton B-1

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		5 inches of ASPHALT PAVEMENT					
		12 inches of brown moist silty fine to medium SAND with gravel - (FILL)	GB	100			
		Brown and gray variegated moist very stiff CLAY with silt, traces of gravel and sand and occasional silt partings - (CL)	SS 1	89	5-5-5 (10)	3.0	8
2.5							
			SS 2	100	2-3-4 (7)	3.5	14
5.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 5.0 feet.

Boring performed 5' north of curb, 27' east of Pontiac Trail

CTI and Associates Inc

BORING NUMBER: Barton B-2

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		6 inches of ASPHALT PAVEMENT					
		6 inches of brown fine to medium SAND with some gravel - (FILL)	GB	100			
		Brown moist fine to medium SAND with some gravel and silt - (FILL)	SS 1	100	10-7-4 (11)		
2.5							
			SS 2	100	2-1-1 (2)		
5.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 5.0 feet.

Boring performed 5' north of curb, 45' east of Hiawatha Place

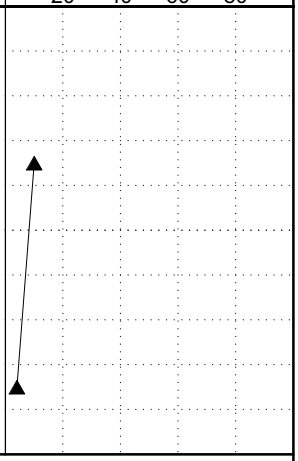
CTI and Associates Inc

BORING NUMBER: Barton B-3

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		5 inches of ASPHALT PAVEMENT					
		12 inches of brown moist silty fine to medium SAND with gravel - (FILL)	GB	100			
		Brown moist medium dense silty fine SAND with traces of gravel and occasional clay lenses - (SM)	SS 1	83	8-5-5 (10)		
2.5		Brown moist loose fine to medium SAND with some silt and frequent clay seams - (SP-SM)	SS 2	100	2-2-2 (4)		
5.0		Bottom of borehole at 5.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Boring performed 5' north of curb, 10' east of driveway to 820 Barton Drive

CTI and Associates Inc

BORING NUMBER: Barton B-4

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		6 inches of ASPHALT PAVEMENT					
		12 inches of brown moist silty fine to medium SAND with gravel - (FILL)	GB	100			
		Dark brown moist silty fine SAND with trace of organics - (FILL) Organic Content = 1.4%	SS 1	100	5-2-2 (4)		
2.5		Brown moist loose fine SAND with some silt and trace of gravel - (SP-SM)					4
			SS 2	100	3-2-2 (4)		
5.0		Bottom of borehole at 5.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Boring performed 3' east of curb, at entrance drive to Northside School

CTI and Associates Inc

BORING NUMBER: Barton B-5

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		4 inches of ASPHALT PAVEMENT						
		12 inches of brown moist silty fine to medium SAND with gravel - (FILL)	GB	100				
		Brown moist medium dense silty fine SAND with trace of gravel - (SM)	SS 1	94	9-6-5 (11)			
2.5								
			SS 2	100	2-2-4 (6)			
5.0		Brown moist loose fine SAND - (SP)						

Bottom of borehole at 5.0 feet.

Boring performed 6' east of curb, opposite from driveway to 929 Barton Drive

CTI and Associates Inc

BORING NUMBER: Barton B-6

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0.0		4 inches of ASPHALT PAVEMENT						
		8 inches of brown moist silty fine to medium SAND with gravel - (FILL)	GB	100				
		Dark brown moist silty fine SAND with traces of gravel and organics - (FILL)	SS 1	100	10-4-3 (7)			
2.5								
		Brown moist very loose fine SAND with some clay and trace of gravel - (SP-SC)	SS 2	100	2-2-1 (3)			
5.0								

Bottom of borehole at 5.0 feet.

Boring performed 8' east of curb, 27' north of Traver Road

CTI and Associates Inc

BORING NUMBER: Barton B-7

CLIENT City of Ann Arbor
PROJECT NAME 2012 Ann Arbor Misc. Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		6 inches of ASPHALT PAVEMENT					
		12 inches of dark brown moist silty fine to medium SAND with gravel - (FILL)	GB	100			
		Dark brown and gray variegated moist fine to medium SAND with clay and traces of gravel and organics - (FILL)	SS 1	100	11-3-2 (5)		
2.5		Dark gray moist very soft clayey SILT - (ML)	SS 2	94	0-0-2 (2)		4
5.0		Brown moist very loose fine SAND with trace of silt - (SP)					

Bottom of borehole at 5.0 feet.

Boring performed 2-1/2' west of curb, 165' north of Traverknoll Apartments driveway

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

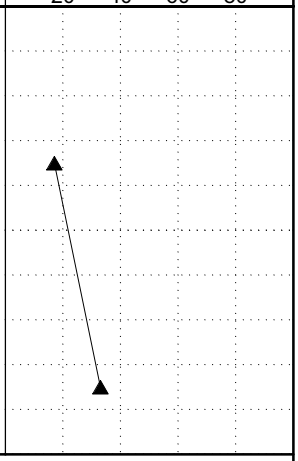
CTI and Associates Inc

BORING NUMBER: Barton B-8

CLIENT City of Ann Arbor
PROJECT NAME Miscellaneous Geotechnical Services - North Area Borings
PROJECT NUMBER 3122040060-1
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 10/8/12 **COMPLETED** 10/8/12
GROUND ELEVATION N/A
DRILLING CONTRACTOR Stearns Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch HSA
DURING DRILLING None
LOGGED BY G. Geerlings **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched.
COLLAPSE DEPTH 3' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)
0.0		5 inches of ASPHALT PAVEMENT					
		10 inches of dark gray moist crushed LIMESTONE - (FILL)	GB	100			
		Brown moist fine SAND with some silt and trace of gravel - (FILL)	SS 1	94	17-8-9 (17)		
2.5		Dark brown and gray variegated moist CLAY with silt, some sand and traces of gravel and organics - (FILL)					
		Brown moist dense silty fine to moist SAND with some gravel - (SM)	SS 2	89	12-21-12 (33)		
5.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 5.0 feet.

Boring performed 6' east of curb, 85' south of driveway to 1038 Barton Drive

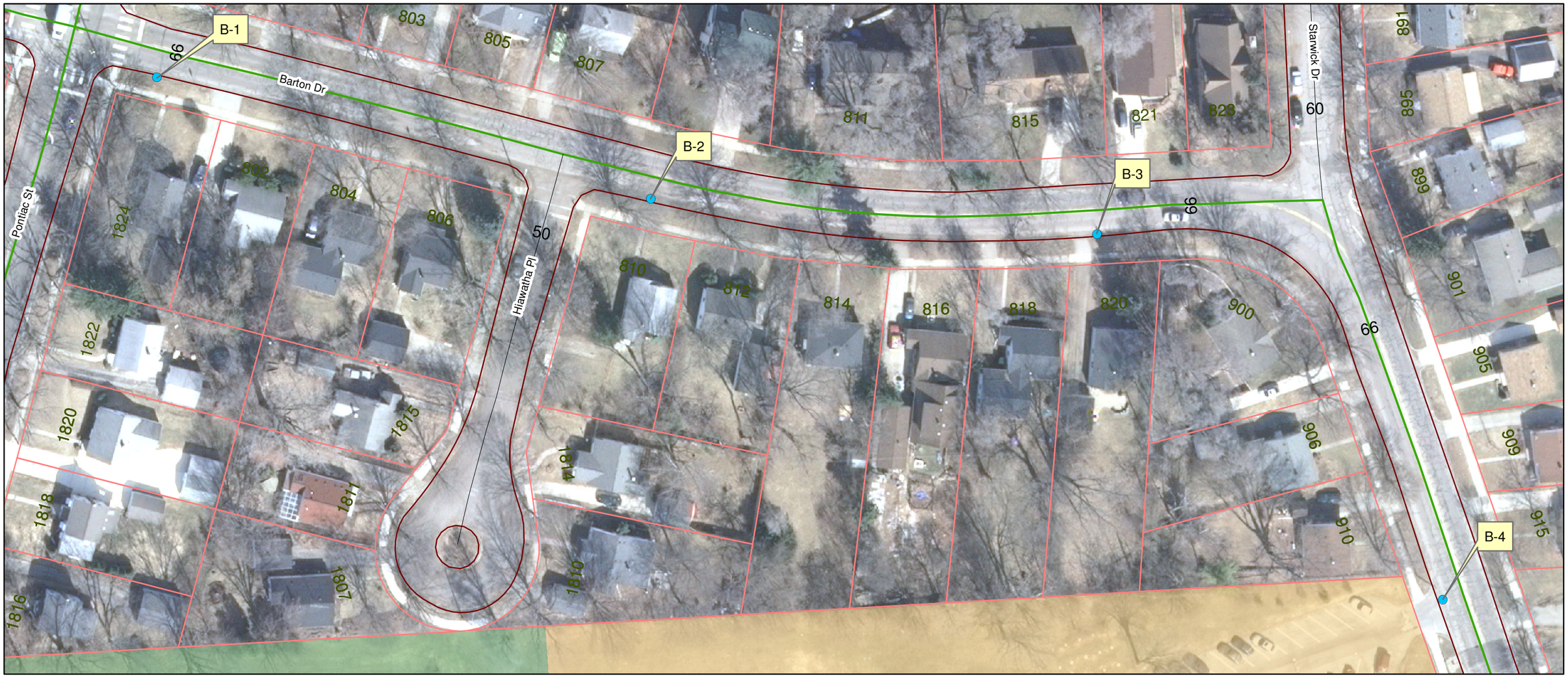
N

W E

S

Barton Dr.

1 inch = 60 feet



N
W E
S

Barton Dr.

1 inch = 60 feet

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **AL-1**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (4-1/2 inches) 0.4		AS-1	3			
		Fill: Very Loose Brown Silty Sand with trace gravel 1.3		AS-2	5			
		Loose to Medium Compact Brown Sand with trace silt and gravel and occasional clay seams			7			
					11			
5		5.0	5		11			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 21, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 16 feet southwest of existing structure

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 1

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Project Name: Ann Arbor Geotechnical

Project Location: Ann Arbor, Michigan

G2 Project No. 120547A

Latitude: N/A Longitude: N/A

Soil Boring No. **AL-2**

G2 Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Bituminous Concrete (2 inches) 0.2		AS-1				
		Fill: Brown Pea Gravel (5 inches) 0.6		AS-2	10			
		Fill: Very Loose to Loose Dark Brown Silty Sand with trace gravel and occasional clay seams		AS-3	3			
		3.0			6			
		Loose Brown Sand with trace silt and gravel and occasional clay seams			7			
5		5.0	5		8			
		End of Boring @ 5ft						
10			10					
15			15					

Total Depth: 5ft
Drilling Date: September 21, 2012
Inspector:
Contractor: G2 Consulting Group, LLC
Driller: J. Hayball, P.E.

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Water Level Observation:
Dry during and upon completion of drilling operations

Notes:
Boring performed 4 feet north of marked location

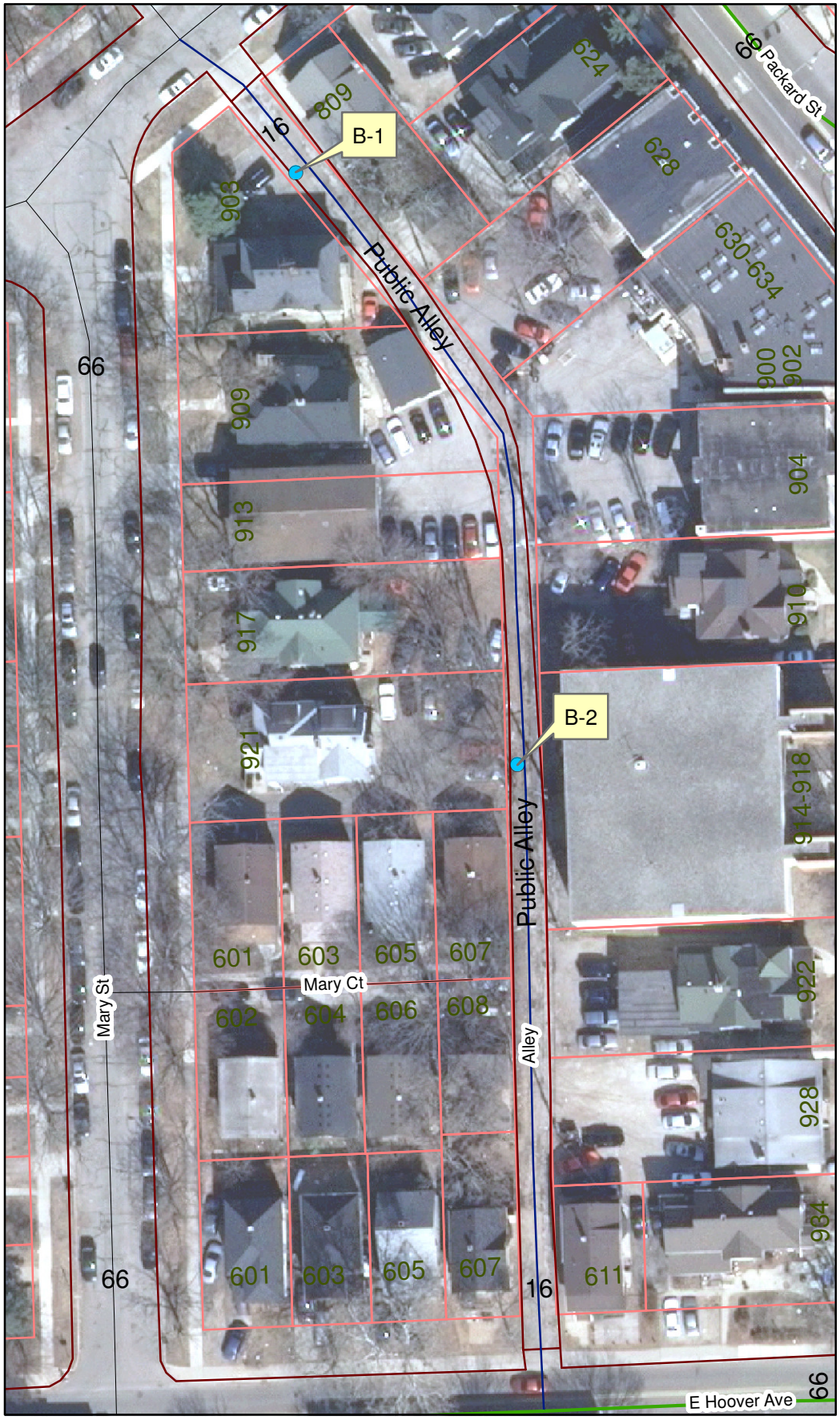
Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 2

PAVEMENT CORE DCP 120547A.GPJ G2_CONS.GDT 10/19/12

Alley Between Mary & State
(Benjamin to Hoover)

1 inch = 60 feet



Client: City of Ann Arbor	PSI Project #: 381-65141	Boring Log Number: B-3 A	Professional Service Industries, Inc.
	Sheet: 1 of 1		
Project: 2007 Annual Local Street Resurfacing Program Arbana Drive	Location: City of Ann Arbor, Washtenaw County, Michigan		

Surface Elevation: **N/A**

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
				4 inches of ASPHALT.						
				8 inches of SAND FILL, fine, few gravel, trace silt, dark brown, moist. (Aggregate Base)						
1SS				SAND (SP-SM) - fine, some silt, few gravel, brown, moist, medium dense to very loose.		10 (6,5,5,5)	7			
2SS						3	7			
				END OF BORING	5	5 (2,1,2)				

⊗ "N" Blows Per Foot: 0 20 40 60

● Unconfined Compressive Strength (tsf)

♂* Calibrated Hand Penetrometer (tsf): 0 2 4 6

Note: Boring performed in front of 304 Arbana Drive.

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

Boring Started: **12/14/2006** Completed: **12/14/2006**			Engineer: **TMM**
Drilling Method: **3-1/4 inch HSA**		Office: **Plymouth**	Drawn By: **TMM**
Driller: **P. Cody**	Drill Rig: **CME-75**	Hole Depth (ft): **5**	Approved:
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.			

Client: City of Ann Arbor	PSI Project #: 381-65141 Sheet: 1 of 1	Boring Log Number: B-2 A	Professional Service Industries, Inc.
Project: 2007 Annual Local Street Resurfacing Program Arbana Drive	Location: City of Ann Arbor, Washtenaw County, Michigan		

Surface Elevation: **N/A**

Sample No./Type	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
	5-1/2 inches of ASPHALT.						
	9-1/2 inches of SAND FILL, fine, some silt and gravel, dark brown, moist. (Aggregate Base)						
1SS	SANDY CLAY (CL) - few gravel, reddish-brown, moist, stiff.		13 7,8,5,5	13			
2SS	SAND (SP-SM) - fine to medium, some gravel and silt, brown, moist, medium dense.		10 2,4,6	7			
	END OF BORING	5					
	Note: Boring performed in front of 406 Arbana Drive.						

⊗ "N" Blows Per Foot (0, 20, 40, 60)

● Unconfined Compressive Strength (tsf)

○* Calibrated Hand Penetrometer (tsf) (0, 2, 4, 6)

1.8

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

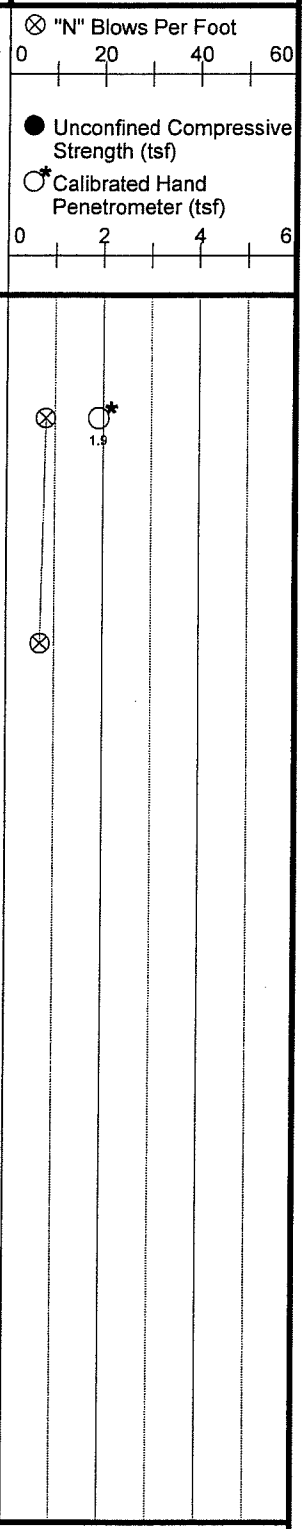
Boring Started: **12/14/2006** Completed: **12/14/2006**			Engineer: **TMM**
Drilling Method: **3-1/4 inch HSA**		Office: **Plymouth**	Drawn By: **TMM**
Driller: **P. Cody**	Drill Rig: **CME-75**	Hole Depth (ft): **5**	Approved:
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.			

Client: City of Ann Arbor	PSI Project #: 381-65141	Boring Log Number: B-1 A
	Sheet: 1 of 1	
Project: 2007 Annual Local Street Resurfacing Program Arbana Drive	Location: City of Ann Arbor, Washtenaw County, Michigan	Professional Service Industries, Inc.

Surface Elevation: **N/A**

Sample No./Type	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
	6 inches of ASPHALT.						
1SS	15 inches of SAND FILL, fine, some silt and gravel, dark brown, moist. (Aggregate Base)		8	12			
	SANDY CLAY (CL) - few gravel, occasional sand seams, reddish-brown, moist, stiff.		5,4,4,3				
2SS	SAND (SP-SM) - fine, trace to some silt, reddish-brown, moist, loose.		7	10			
	END OF BORING	5	3,4,3				

Note: Boring performed in front of 417 Arbana Drive.



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

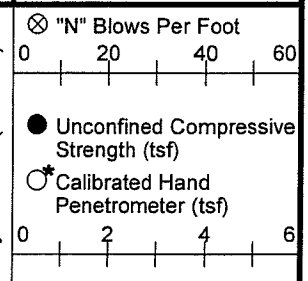
▽ Water Level While Drilling Dry	Boring Started: 12/14/2006 Completed: 12/14/2006		Engineer: TMM
▼ Water Level At Completion Dry	Drilling Method: 3-1/4 inch HSA	Office: Plymouth	Drawn By: TMM
After Completion	Driller: P. Cody	Drill Rig: CME-75	Hole Depth (ft): 5	Approved:
	Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.		

Client: City of Ann Arbor	PSI Project #: 381-65141 Sheet: 1 of 1	Boring Log Number: B-4 A	Professional Service Industries, Inc.
Project: 2007 Annual Local Street Resurfacing Program Arbana Drive	Location: City of Ann Arbor, Washtenaw County, Michigan		

Surface Elevation: **N/A**

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)	Dry Unit Wt (lb/cu.ft.)
				6 inches of ASPHALT.						
				9 inches of SAND FILL, fine, some gravel, trace silt, brown, moist. (Aggregate Base)						
1SS				SILTY CLAY (CL) - few gravel, trace sand, occasional sand seams, brown, moist, very stiff.		11 5,6,5,6	18			
2SS						21	7			
				END OF BORING	5	5,10,11				

Note: Boring performed on Arbana Drive, south of B-3 A (No address observed).



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

▽ Water Level While Drilling Dry

▼ Water Level At Completion Dry

_____ After Completion

Boring Started: **12/14/2006** Completed: **12/14/2006**			Engineer: **TMM**
Drilling Method: **3-1/4 inch HSA**		Office: **Plymouth**	Drawn By: **TMM**
Driller: **P. Cody**	Drill Rig: **CME-75**	Hole Depth (ft): **5**	Approved:
Note: Boring backfilled with auger cuttings and patched with cold bituminous patch.			