

NOTICE

Thank you for your inquiry regarding the City of Portage project listed below:

Consolidated Drain Rehabilitation Project

If your firm plans to bid on this project, please send an e-mail response to purchasing@portagemi.gov with the following information:

Firm Name: _____

Project Name: _____

Firm's Contact Person: _____

Telephone Number: _____

Fax Number: _____

E-Mail Address: _____

Postal Address: _____

The City of Portage Purchasing Department will use this information to communicate with you in the event an addendum or change to this project is issued. If you do not send this information to the City of Portage, you will not receive any follow-up notification of any changes to the project.

Date of Issue: September 9, 2013

NOTICE TO BIDDERS

The City of Portage will open sealed bids on Thursday September 26, 2013 at 3:00 p.m. prevailing local time in the City Hall Conference Room #1 at 7900 South Westnedge Avenue for:

Consolidated Drain Rehabilitation Project

You are invited to submit a bid for this project. Sealed bids may be mailed or delivered to the City of Portage, Purchasing Department, 7900 South Westnedge Avenue, Portage, MI 49002. Envelopes should be plainly marked:

SEALED BID: Consolidated Drain Rehabilitation Project

FOR OPENING: September 26, 2013

General specifications, description and conditions upon which the bid proposal is to be based are available at the City of Portage at www.portagemi.gov. Complete bid packages will also be mailed upon request.

There will be a pre-bid meeting at the Portage City Hall Conference Room #1, 7900 South Westnedge Avenue at 11:00 a.m. on Wednesday, September 18, 2013.

The City reserves the right to reject any or all bids, to waive any irregularities, and further reserves the right to accept any bid or parts of bids which it deems to best serve the interest of the City.

If you have any questions regarding purchasing procedures, please phone the Purchasing Department at (269) 329-4534. If you have any questions regarding the specifications, please contact W. Christopher Barnes, Director of Transportation & Utilities, at (269) 329-4422.

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1. INSTRUCTIONS TO BIDDERS

- 1.1. FORM -- Each Bid shall be made on a form prepared therefor by the Purchasing Agent and included as one of the Contract Documents, and except for bids submitted via facsimile equipment, shall be submitted in a sealed envelope bearing the title of work and the name of the bidder, and shall be signed by an individual authorized to execute the proposal on behalf of the bidder.
- 1.2. MODIFICATIONS -- Proposal shall not contain any recapitulations of the work to be done. Alternate proposals will not be considered unless called for. Oral proposals or modifications will not be considered.
- 1.3. EXAMINATION OF BID DOCUMENTS AND VISIT TO SITE -- Before submitting a Proposal, Bidders shall carefully examine the Specifications, and other Contract Documents, shall visit the site of work, and shall fully inform themselves as to all existing conditions and limitations and shall indicate on the Proposal the sum to cover the cost of all items included on the proposal form.
- 1.4. DELIVERY OF PROPOSALS -- Proposals shall be delivered by the time and to the place stipulated in the Advertisement. It is the sole responsibility of the Bidder to see that his Proposal is received in proper time. Any bids received after the bid opening date and time shall be returned to the Bidder unopened.
- 1.5. WITHDRAWAL -- Any Bidder may withdraw his Proposal, either personally, by facsimile, or by written request, at any time prior to the scheduled closing time for receipt of Proposals.
- 1.6. OPENING -- Bids will be opened and publicly read aloud at the time and place set forth in the Notice to Bidders.
- 1.7. INTERPRETATION OF DOCUMENTS -- If any person contemplating submitting a Proposal is in doubt as to the true meaning of any part of any drawing or specification, he may submit to the Purchasing Agent a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the documents will be made only by Addendum duly issued and a copy of the Addendum will be mailed or delivered to each person on record as receiving as set of the Contract Document. Neither the City nor the Purchasing Agent will be responsible for any other explanations or interpretations of the Contract Documents.
- 1.8. ADDENDA -- Any addenda issued during the time of bidding, or forming a part of the Contract Documents provided to the Bidder for the preparation of his Proposal, shall be covered in the Proposal and shall be made a part of the Contract. Receipt of each Addendum shall be acknowledged in the Proposal.

- 1.9. BIDDERS INTERESTED IN MORE THAN ONE PROPOSAL -- No person, firm or corporation shall be allowed to make, file or to be interested in more than one Proposal for the same work, unless alternate Proposals are called for. A person, firm, or corporation who has submitted a sub-proposal to a Bidder is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders.
- 1.10. NONDISCRIMINATION The Contractor agrees to comply with the Federal Civil Rights Act of 1964 as amended; the Federal Civil Rights Act of 1991 as amended; the Americans With Disabilities Act of 1990 as amended; the Elliott-Larsen Civil Rights Act, Article 2, Act no. 453, Public Act of 1976 as amended; the Michigan Handicapper's Civil Rights Act, Article 2, Act. No. 220; Public Act of 1976, as amended and all other applicable Federal, State and Local laws and regulations. Specifically, contractors and subcontractors are required not to discriminate against any employee or applicant for employment with respect to such person's hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment because of such person's height, weight, race, color, religion, national origin, ancestry, age, marital status, sex or disability, as defined by law. Breach of this covenant may be regarded as a material breach of the contract.

The City of Portage in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 USC 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of gender, disability, race, color or national origin in consideration for an award.

- 1.11. PROPOSAL GUARANTEE -- Each proposal shall be accompanied by a certified check or bid bond acceptable to the City in an amount equal to at least five percent (5%) of the proposal, payable without condition to the City as a guaranty that the bidder, if awarded the Contract, will promptly execute the Agreement in accordance with the proposal and the other contract documents, and will furnish good and sufficient bond for the faithful performance of the same, and for the payment to all persons supplying labor and material for the work. Bids that do not include a certified check or bid bond will be considered non-responsive and will be rejected. Company or personal checks will not be accepted as substitute for a certified check or bid bond. Bids offering personal or company checks in lieu of a certified check or bid bond will be considered non-responsive and will be rejected. The Proposal Guarantees of all Bidders, except the three lowest, will be returned promptly after the canvass of Proposals.

1.12. PERFORMANCE, MAINTENANCE AND LABOR & MATERIAL BONDS --

The successful Bidder, simultaneously with the execution of the contract, will be required to furnish a faithful Performance Bond in an amount equal to one hundred percent (100%) of the Contract Amount, a Maintenance and Guarantee Bond equal to twenty-five percent (25%) of the Contract Amount which shall be effective for two years beyond the date of final payment, and a Labor and Material Payment Bond equal to one hundred percent (100%) of the Contract Amount; said bonds shall be secured from an insurance company satisfactory to the City. Typical Bond forms are included in the Contract Documents.

1.13. DURATION OF PROPOSAL -- Each proposal shall be considered binding and in effect for a period of ninety (90) days after the date of opening set forth in the advertisement.

1.14. BIDS SUBMITTED VIA FACSIMILE EQUIPMENT -- Bids may be submitted via facsimile equipment in the following manner to 269 – 329-4535

1.14.1. Transmittal page must be plainly marked:

“Sealed Bid _____ for opening _____.”
Bid Name Date

1.14.2. When bids are submitted via facsimile equipment, both the original document and the facsimile printout are counterpart originals.

1.14.3. Whenever a proposal guaranty/bond is required, bids submitted via facsimile equipment can comply with this provision by submitting a facsimile copy of the bond document. When a cashier’s check is elected to meet the proposal guaranty/bond requirement, the cashier’s check must be physically in the possession of the City by the date and time outlined on the Notice to Bidders, or such bid may be considered non-responsive.

1.14.4. **In electing to use the facsimile option, the bidder assumes full responsibility for any and all errors, omissions, or mistakes that result in a bid not being submitted in a timely manner, whether or not the mistake was the fault of the bidder.**

1.15. CITY OF PORTAGE CONTRACT CONDITIONS AND SPECIFICATIONS

All bids submitted shall be in full compliance with the Contract Conditions and Specifications of the City of Portage. The Contract Conditions and Specifications can be obtained from the Purchasing Department. The first set will be provided to the Firm at no cost and subsequent sets or copies must be purchased for \$25.00. Contract Conditions and Specifications are also available at www.portagemi.gov.

1.16. INSURANCE REQUIREMENTS

Prior to commencement of the Work, the Contractor shall purchase and maintain during the entire term of the project such insurance as will protect the Contractor, the City, and the Engineer(s) from claims arising out of the Work described in this contract and performed by the Contractor, Subcontractor(s), or Sub-subcontractor(s). The certificate of insurance must contain the following statement: The City of Portage, its agents, elected officials, and employees, is included as an additionally insured party. This insurance must consist of:

1.16.1. Workers Compensation

Workers Compensation insurance, including Employer's Liability to cover employee injuries or disease compensable under the Workers Compensation statutes of the states in which work is conducted under this contract.

1.16.2. Comprehensive General Liability

A Comprehensive General Liability policy to cover bodily injury to persons other than employees and for damage to tangible property, including loss of use thereof, including the following exposures.

- A) All premises and operations.
- B) Explosion, collapse and underground damage.
- C) Protective coverage for Independent Contractors or Subcontractors employed by the Contractor.
- D) Contractual Liability for the obligation assumed in the Indemnification or Hold Harmless agreement found in the contract.
- E) Personal Injury Liability endorsement with no exclusions pertaining to employment.
- F) Products and Completed Operations coverage. This coverage shall extend through the contract guarantee period.

1.16.3. Comprehensive Automobile Liability

A Comprehensive Automobile Liability policy to cover bodily injury and property damage arising out of the ownership, maintenance or use of any motor vehicle, including owned, non-owned, and hired vehicles. In the light of standard policy provisions concerning (a) loading and unloading and (b) definitions pertaining to motor vehicles licensed for road use vs. unlicensed or self-propelled construction equipment, it is strongly recommended that the

Comprehensive General Liability and the Comprehensive Auto Liability be written by the same insurance carrier, though not necessarily in one policy.

1.16.4. Umbrella or Excess Liability

The City, or representatives of the City, may for certain projects, require limits higher than those stated as follows. The Contractor is granted the option of arranging coverage under a single policy for the full limit required or by a combination of underlying policies with the balance provided by an Excess or Umbrella Liability policy equal to the total limit(s) requested. Umbrella or Excess policy wording shall be at least as broad as the primary or underlying policy and shall apply to both the general liability, and to the automobile liability insurance of the Contractor.

1.16.5. Limits of Liability

The required limits of liability for insurance coverage shall not be less than the following:

- | | | |
|----|--|-------------|
| A. | Workers Compensation | Statutory |
| B. | Comprehensive General Liability
Combined Single Limit (including sub-contractors) | \$1,000,000 |
| C. | Comprehensive Automobile Liability
Combined Single Limit (Injury and Property Damage) | \$1,000,000 |
| D. | Umbrella or Excess Liability | \$2,000,000 |

1.16.6. Notice of Cancellation or Intent not to Renew

Policies will be endorsed to provide a prior written notice be given to the City and to the Engineer of cancellation or of intent not to renew.

1.16.7. Evidence of Coverage

The Insurance Certificates referenced in Paragraph 1 above must be submitted within ten (10) working days of notification of award and prior to the execution of any Work under this contract.

It shall be the responsibility of the Contractor to provide similar insurance for each Subcontractor, or to provide evidence that each Subcontractor carries insurance in like amounts, prior to the time such Subcontractor proceeds to perform under the contract.

1.17. Retainage Requirement

In accordance with the State of Michigan Public Act 524 of 1980, retainage will be withheld for any construction contract in excess of \$30,000. Ten percent (10%) retainage will be withheld from the first fifty percent (50%) of the contracted amount.

1.18. Basis of Award

Award will be made to a responsive and responsible bidder whose Grand Total is determined by the City to be in the best interest of the City. Each proposal shall have the unit prices and extensions checked for correctness. If discrepancies appear between the unit prices and extensions submitted, the unit price submitted for the particular pay item shall govern, and the dollar amount of the proposal adjusted accordingly. The estimated quantities of items of unit price work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial contract price.

1.19. Indemnification

To the fullest extent permitted by Laws and Regulations, the Contractor, at its sole cost and expense, shall indemnify and hold harmless the City and its officers, directors, employees, agents and consultants (hereinafter referred to as "Indemnified Parties") from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work or from the failure to comply with any covenant or term of the contract, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom or (ii) is caused in whole or in part by any act or omission of the Contractor, its agents, officers, contractors, subcontractors, employees, invitees, suppliers or any other person or entity, directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable. Provided, however, that the Contractor shall not be required to indemnify the Indemnified Party for injury, death, loss or damage caused by the sole negligence of the Indemnified Party. If such injury or damage is caused in whole or in part by the acts or omissions of the Indemnified Parties, then the indemnification obligation shall be reduced in proportion to the Indemnified Party's percentage of responsibility for such injury or damage.

In any and all claims against the City or any consultants, agents, officers, directors or employees of the City by any employee (or the survivor or personal representative of such employee) of the Contractor, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation above shall not be limited in

any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any such Subcontractor, Supplier or other person or organization under workers' compensation Acts, disability benefit Acts or other employee benefit Acts.

Insurance coverage required by the contractor constitutes the minimum requirements and those requirements shall in no way lessen or limit the liability of the contractor under the terms of the contract. The contractor shall procure and maintain at contractor's own cost and expense any additional claims or amounts of insurance that, in the judgment of the City, may be necessary for contractor's proper protection in the prosecution of the work.

1.20. Liquidated Damages

If the contractor does not complete the work within by the final completion date, the City of Portage is authorized to retain \$100.00 for each calendar day by which the Contractor shall fail to complete the work. The sum shall constitute liquidated damages and is not a penalty.

2. SCOPE OF WORK

- 2.1. The City of Portage Department of Transportation and Utilities is soliciting sealed bids for repairs/upgrades to be made to the Consolidated Drain located behind 349 Romence Road. Work includes the replacement of the 42" HDPE storm pipe. Due to the nature of the soils in the area, this project also includes the installation of a timber pile supported platform for the new pipe to be installed upon. The Contractor is to provide all equipment, labor, and materials necessary to perform the specified work. Drawings showing the proposed work are included in the bid package.
- 2.2. All work shall be constructed as shown on the plans.
- 2.3. All disturbed driveways, sidewalks, curbs and gutters, and pavement will be replaced by the contractor as specified in the City of Portage Contract Conditions and Specifications.
- 2.4. Asphalt, concrete or other materials requiring removal from the job site shall be disposed of in a proper manner.
- 2.5. Progress Schedule: The work shall begin within 10 days after receiving a Notice to Proceed. In no case shall any work be commenced prior to receipt of formal Notice to Proceed by the City of Portage. The project shall be substantially completed by December 20, 2013. Final completion by June 21, 2014. For this project, substantial completion shall be defined as a complete fully functioning project with rough finish crease. Final completion shall include all final restoration and seeding as well as trail repaving.

3. SPECIFICATIONS

- 3.1. Standard Contract Conditions and Specifications: All work shall be done according to the City of Portage Standard Contract Conditions and Specifications, unless otherwise specified in the Special Provisions contained in Section 4.

4. SPECIAL PROVISIONS

- 4.1. Connections to Existing Storm Sewer Pipe: There will be no separate pay items for this work. Connections shall be considered incidental to the Storm Sewer pay items. Contractor is required to provide a watertight connection to the existing storm sewer or structures.
- 4.2. Soil Erosion and Sedimentation Control Measures: Contractor will be required to install and maintain adequate soil erosion and sedimentation control measures to protect the adjacent wetlands area and drain.
- 4.3. Site Access: Contractor shall access the construction site via the vacant property at 401 Romence Road. Construction of a new drive approach at the location per City of Portage Standard Detail SD-116 will be part of this contract. Driveway shall be located approximately 80' west of the existing Sonic driveway. Contractor shall coordinate with the landowner and the City of Portage. Access shall be limited to a 20' strip of land between Romence Road and the project area, which shall be delineated with protective fencing installed by the contractor. The Sonic parking lot or driveway shall not be used at any time for access or storage.
- 4.4. Slope Restoration: See Attached Special Provision
- 4.5. Storm Sewer: See Attached Special Provision
- 4.6. Structural Concrete: See Attached Special Provision
- 4.7. Structural Steel: See Attached Special Provision
- 4.8. Pressure-Treated Timber Piling: See Attached Special Provision
- 4.9. Construction Signing and Traffic Control
 - 4.9.1. General Requirements: Local traffic shall be maintained on all roads at all times throughout the construction. The Contractor is advised that the current Michigan Manual of Uniform Traffic Control Devices is hereby established as governing all work in connection with traffic control devices, barricade lighting, etc., required on this project. The Contractor shall coordinate this work with other contractors performing work within the construction influence area or adjoining areas to avoid conflicts in the maintenance of traffic, construction signing and the orderly progress

of work.

The Contractor shall furnish, erect, maintain and upon completion of the work, remove all traffic control devices and barricade lights within the Construction Influence Area for the safety and protection of through and local traffic. This includes, but is not limited to, advance, regulatory and warning signs, barricades and channeling devices at the intersecting street on which traffic is to be maintained and all other traffic control devices required to maintain traffic as called for on the plans. Trail closing signage shall be maintained for the duration of the Trail closure.

- 4.9.2. Project – General: The Contractor shall provide barrels, barricades and other necessary signage during construction operations, whenever one or more lanes which are open to traffic will be temporarily blocked.

Necessary emergency work performed by the City will be billed against the Contractor.

- 4.9.3. Traffic Control Devices: All traffic control devices and their usage shall be in accordance with provisions in the Michigan Manual of Uniform Traffic Control Devices (MMUTCD), 1994 Edition as revised. All construction signs, unless otherwise noted, shall be 48 x 48 inches, mounted at a bottom height of 5 feet and placed as indicated on the plans. When signs are no longer applicable, they shall be removed or have their legend completely covered with plywood or approved equal. When signs are mounted on Type III barricades, all signs shall be mounted above the Type III barricade.

Channeling devices shall be used to separate traffic from the work and if directed by the Engineer or shown in the plan sheets to separate opposing traffic lanes. Type II Lighted Barricades (plastic drums) may be used during both daytime and night time operations.

Plastic cones may be used as channeling devices only during daylight hours. If plastic cones are used, they shall be a minimum of 28 inches in height and placed as directed by the Engineer. Metal drums or metal barrels shall not be used as traffic control devices.

All signs, unless otherwise noted, shall be placed on 3 pound driven posts and each Type III Barricade (8 foot and 12 foot) shall be weighted with a minimum of 12 sandbags each weighing 30 pounds.

- 4.9.4. Basis of Payment: Payment for all work of maintaining traffic shall be incidental to the contract.

4.10. Public Utilities – Utility Coordination

4.10.1. The following utility owners have facilities located within the public right-of-way:

Natural Gas & Electric MI	Consumers Energy Company 2500 East Cork Street, Kalamazoo, (269) 381-6130
Cable	Charter Communications 4176 Commercial Avenue, Portage, MI
Telephone	AT&T 2919 Millcork Street, Kalamazoo, MI (269) 323-0003
Sewer & Water	City of Portage, United Water, Contract Operator 7719 S. Westnedge Ave, Portage, MI (269) 324-9235

4.10.2. The Contractor shall call “Miss Dig” a minimum of three working days prior to beginning construction operations. Saturday, Sundays and Holidays shall not be included as a working day. On all projects:
“3 Days before you Dig – Call Miss Dig – Toll Free” (800) 482-7171

4.10.3. The owners of existing service facilities that are within grading or structure limits will move them to locations designated by the Engineer or will remove them entirely from the highway right-of-way. Owners of Public Utilities will not be required by the City to move additional poles or structures in order to facilitate the operation of construction equipment unless it is determined by the Engineer that such poles or structures constitute hazard to the public or are extraordinarily dangerous to the Contractor’s operations.

4.10.4. No additional compensation will be paid to the Contractor for delays due to material shortages or other reasons beyond the control of the City, or for delays of construction due to the encountering of existing utilities that are, or are not, shown on the plans.

4.10.5. Work stoppage by employees of utility companies which results in a delay of utility revisions on any portion of this project may be considered the basis for a claim for an extension of time for completion, but will not be considered the basis for a claim for extra compensation or an adjustment in contract unit prices.

CITY OF PORTAGE
SPECIAL PROVISION

FOR

STORM SEWER, SANITITE HP OR EQUAL

DAI:JMT

1 of 1

08-23-2013

a. Description. This work consists of furnishing all labor, equipment and material to install polypropylene sewer of the size specified, in accordance with the City of Portage Contract Conditions and Specifications, this special provision and as directed by the Engineer.

b. Materials. Use materials in accordance with the City of Portage Contract Conditions and Specifications, except as specified herein.

Pipe must have smooth interior and exterior surfaces with annular inner corrugations. Pipe shall have a minimum pipe stiffness of 46 pii when tested in accordance with ASTM D2412.

12 inch through 30 inch pipe shall meet ASTM F2736 and ASTM D3212, and shall be joined with a gasketed integral bell & spigot joint meeting the requirements of ASTM F2736. Spigot shall have two gaskets meeting the requirements of ASTM F477. Polypropylene compound for pipe production shall be an impact modified copolymer meeting the material requirements of ASTM F2736, Section 4.

30 inch through 60 inch pipe shall meet ASTM D3212, and shall be joined with a gasketed integral bell & spigot joint. Spigot shall have two gaskets meeting the requirements of ASTM F477. Polypropylene compound for pipe production shall be an impact modified copolymer meeting the material requirements of ASTM D4101.

Pipe shall have a reinforced bell with a polymer composite band installed by the manufacturer. Gaskets shall be installed by the manufacturer and covered with a removable, protective wrap until ready for installation. Joints shall be lubricated with a manufacturer-approved lubricant immediately prior to assembly.

c. Construction. Installation shall be in accordance with ASTM D2321, ADS recommended installation guidelines, the City of Portage Contract Conditions and Specifications, and as directed by the engineer.

d. Measurement and Payment. The completed work as measured will be paid for at the contract unit price for the following pay item:

Pay Item	Pay Unit
Storm Sewer, Sanitite HP or Equal.....	Lineal Foot

Storm Sewer, Sanitite HP includes excavation and backfill and will be measured in place, by length in feet, from center of manhole to center of manhole, or to end of pipe where no manhole exists.

CITY OF PORTAGE
SPECIAL PROVISION
FOR
SLOPE RESTORATION

DAI:JMT

1 of 2

08-23-2013

a. Description.-This work consists of preparing all areas designated for slope restoration on the plans or by the Engineer, and applying topsoil, fertilizer, seed, mulch blanket and mulch to those areas.

b. Materials.-The materials and application rates specified in Sections 816 and 917 of the 2012 Standard Specifications for Construction apply unless modified by this special provision or otherwise directed by the Engineer.

1. Seeding Mixture TDS (Turf Dry Sandy) shall be used on this project.
2. Fertilizer, Chemical Nutrient, Class A shall be used on this project.
3. Straw Mulch Blanket and Mulch shall be used on this project at locations described below.
4. Topsoil Surface shall be 4" minimum thickness on this project.

c. Construction.- Begin this work as soon as possible after final grading of the areas designated for turf establishment but no later than the maximum time frames stated in Subsection 208.03 of the standard specifications. Critical ditches and slopes steeper than 1 on 3 shall be restored within 5 working days of completion of earthwork at these locations. It may be necessary, as directed by the Engineer, to place materials by hand.

Prior to placing topsoil, shape and compact all areas to be seeded. Place topsoil to the minimum depth indicated above, to meet proposed finished grade. If the area being restored requires more than the minimum depth of topsoil to meet finished grade, this additional depth must be filled using topsoil or, at the Contractor's option, embankment. Furnishing and placing this additional material is included in this item of work.

If an area washes out after this work has been properly completed and approved by the Engineer, make the required corrections to prevent future washouts and replace the topsoil, fertilizer, seed and mulch. This replacement shall be paid for as extra work.

If an area washes out for reasons attributable to the Contractor's activity or failure to take proper precautions, replacement shall be at the Contractor's expense.

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

Contract Item (Pay Item)	Pay Unit
Slope Restoration, Type A	Square Yard
Slope Restoration, Type B	Square Yard

Slope Restoration, Type A shall be placed in locations designated on the plans or as directed by the Engineer. Slope Restoration, Type A shall be measured by area by the square yard in place.

CITY OF PORTAGE

SPECIAL PROVISION
FOR
SLOPE RESTORATION

DAI:JMT

1 of 2

08-23-2013

Payment for Slope Restoration, Type A includes all materials, labor, and equipment required to complete the work as described. Topsoil Surface, Furnished or Salvaged, Fertilizer, Chemical Nutrient, Class A, Seeding, Mixture TDS, and Mulch Blanket shall not be paid for separately but shall be considered included in the contract unit price bid for Slope Restoration, Type A.

Slope Restoration, Type B shall be placed in locations designated on the plans or as directed by the Engineer. Slope Restoration, Type B shall be measured by area by the square yard in place. Payment for Slope Restoration, Type B includes all materials, labor, and equipment required to complete the work as described. Topsoil Surface, Furnished or Salvaged, Fertilizer, Chemical Nutrient, Class A, Seeding, Mixture TDS, Mulch and Anchoring Mulch shall not be paid for separately but shall be included in the contract unit price bid for Slope Restoration, Type B.

**SPECIAL PROVISIONS
FOR
PRESSURE-TREATED TIMBER PILING**

Description

This work consists of the driving of timber piles to required capacity at the locations shown the plans. The PILE CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install timber piling. Included are furnishing, driving, cutting-off, and all other Work for piling.

Construction Methods

Timber piles shall be fresh cut on the butt end just before placing in the leads for driving. When the area of the head of any timber pile is greater than that of the face of the hammer, the pile shall be snipped or chamfered for at least the depth of the sapwood of the pile.

Steel anvil blocks that fit snugly over the head of the pile may be used when driving timber piles, however, all timber piles shall be driven by striking directly on the head of the pile without the use of cushions or blocks, insofar as practicable and approved by the engineer.

Hammers used for driving shall be either steam, air, or diesel hammer capable of developing 15,000 foot-pounds of energy per blow.

All piles shall be driven with leads. Hanging or swinging leads can be used provided the pile can be held in a fixed position during the driving operations. When driving treated timber piles, the use of spuds and chocks in the leads shall be kept at a minimum in order that the protective treatment will not become bruised or broken.

The driving of piling with followers shall be avoided if practicable and shall be done only under written permission of the project engineer.

All piles shall be driven to a minimum ultimate capacity of 65 kips, as determined by a wave equation analysis. The pile contractor shall submit a wave equation analysis prior to commencing pile installation, indicating the driving resistance required to achieve an ultimate pile capacity of 65 kips with a factor of safety of 3 (i.e., allowable load capacity of 20 kips after subtracting downdrag load of 5 kips).

Templates or other suitable methods shall be used to insure the required degree of accuracy. Pulling or stressing of piles to bring them into suitable line and position for cut-off and capping will be permitted only upon approval of the project engineer. The contractor will be required to remove and redrive piles driven too far out of line. Pile tolerances shall be no more than 3 inches from the plan location, and vertical tolerance shall be 1 percent or less of the total pile length.

Any pile driven too far out of line or so injured by driving or straightening so as to impair its structural value as a pile under the conditions of use shall be pulled and replaced by a new pile at contractor's expense. Any piles pushed up by the driving of adjacent piles or by other cause shall be driven down again.

After driving, cut of top of pile at design cut-off elevation.

Purchaser of piling shall have the right to employ an independent inspection service to inspect and test all treated piling. The independent inspector shall have the authority to reject any piling not conforming to this specification. Piling supplier shall furnish a certificate stating compliance with this specification.

The pile contractor shall submit pile driving records for each pile installed, including the final set of the pile. The project geotechnical engineer will review the driving records, pile locations, and condition of the piles after installation. The project geotechnical engineer reserves the right to reject any pile damaged during driving or any pile not within the stated project tolerances.

Materials

All piling shall conform to timber pile specifications depicted in the 2012 Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

Measurement and Payment

The complete work as measured for the TIMBER PILING will be paid for at the contract unit price for the following pay items and includes materials, equipment and labor to complete this work.

Pay Item

Install TIMBER PILES

Pay Unit

PER PILE

**SPECIAL PROVISIONS
FOR
STRUCTURAL STEEL**

Description

General:

Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice".

Furnish all materials, labor, and equipment to provide and install the steel sheet piling and steel channels, and miscellaneous structural and metal items shown on Drawings, and all required connections.

Construction shall be in accordance with the details shown on the Drawings and as specified herein.

Quality Assurance:

The material and work shall comply with the latest editions of the following standard specifications unless otherwise specified:

- ASTM A6 General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use.
- ASTM A36 Structural Steel
- ASTM A307 Carbon Steel Externally Threaded Standard Fasteners.
- ASTM A328 Steel Sheet Piling
- ASTM A668 Steel Forgings, Carbon and Alloy, for General Industrial Use.
- AWS D1.1 Code for Welding in Building Construction "Building Commissioner" as used therein is interpreted to mean the Consultant.
- AWS A5.1 Mild Steel Covered Arc-Welding Electrodes.

The standard specifications listed shall be referred to in this Specification Section by basic numerical designation only.

The Contractor shall establish and maintain a quality control system for all operations performed under this Section to provide compliance with contract operations performed, including, but not limited to, the following.

Welder Certification: Shop and field welders shall be qualified in accordance with par. 5.3 of the AWS Code, by an independent agency within one (1) year before their employment on the Project. File one (1) copy of each certificate with the Owner's Representative before commencing fabrication or erection, respectively. Costs of qualification, or of confirmation of previous qualification, are included within the scope of this Section

Submittals:

The Contractor shall submit to the Owner's Representative the following items in triplicate within thirty (30) days after award of contract for this project:

- Mill certifications for steel materials.
- Notarized copies of chemical and physical test results of steel piling to show compliance with ASTM A328.
- Name, address, etc. and standard descriptive literature of manufacturer of steel sheet piling listing product information and recommended installation procedures.
- Notarized test reports indicating that the material has met the specified minimum interlock strength of the interlocked joint.
- Submit manufacturer's test reports per AWS A5.1 or AWS A5.5, as applicable for electrodes of the same class, size and brand, manufactured by the same process and with the same materials as the electrodes furnished. Tests shall be made within one (1) year of manufacture of the electrodes furnished.

Submittals must be reviewed and accepted prior to start of any structural steel operations.

Product Delivery, Storage, and Handling:

Store and handle materials carefully to prevent damage to steel sheet piling, steel channels and miscellaneous metal and piling structural units.

Store piles in orderly groups above ground and blocked during storage to minimize possible distortion of members. Piles exhibiting variation beyond factory tolerance levels will be considered distorted and not be used in the work.

Blocking shall be spaced at distances sufficiently short to prevent excessive sag, and between lifts placed directly over each preceding blocking series. At the ends, piles shall not overhang more than two feet from the blocking.

Store materials only in areas designated by the Owner's Representative.

Connectors and other miscellaneous loose items shall be stored in cartons, in a facility protected from the weather.

Provide handling holes in sheet piling per manufacturer's standard. When lifting piles, slings should be positioned so that there is no concentration of weight at any one point.

Electrodes shall be received on the site in unbroken packages bearing the manufacturer's label.

Construction Methods

Steel Channels:

After timber piles have been driven in place, channels shall be carefully located as shown on the drawings.

Holes shall be provided in the channels for bolts at the locations and of sizes shown on the Drawings.

The holes shall be drilled or punched in place, by methods acceptable to the manufacturer, which will not injure remaining metal.

Steel Sheet Piling:

After steel channels have been installed and bolted to the timber piles, sheet piles shall be carefully located as shown on the drawings.

Each steel pile shall be interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm, throughout the length of the alignment. The interlocks of the steel sheet piling shall be properly engaged with the thumb of each pile gripped by the thumb and finger of the adjacent pile.

Welded Connections:

No welding will be done if ambient temperature is below 0° F.

Weld by the shielded arc method, per AWS D1.1. Pre-heat material to be welded and maintain interpass temperatures as required. Protect all finished material from damage due to welding.

All inspection of control the quality of welds shall conform with the AWS code. The quality of welds and the standards of acceptability shall be in accordance with Article 8.15 and Section 6 of the Code. The costs of such interim inspections are included within the scope of this Section.

Bolted Connections:

Bolted connections shall be made in accordance with the AISC Specification "Structural Joints Using ASTM A307 Bolts" and shall be spaced as shown on the Drawings.

Field Erection:

Surfaces in contact shall be thoroughly clean when assembled.

Adjustment and Cleaning:

Upon completion of the operations under this Section, remove all excess material and debris, clean and repair all damaged surfaces, and obtain the Owner's Representative's approval of the completed installation.

Materials

General:

Fabricate in accordance with the standards specified under the Quality Assurance Section and with normal fabrication practices to provide complete assemblies as detailed, capable of being erected into a complete safe, well built structure.

DO NOT SUBSTITUTE sections or modify details except upon written approval from the Consultant. Sections shall be full length pieces between connections or splices indicated on the Drawings. Sections shall not be warped or damaged. All steel shall be free from surface defects in accordance with the applicable ASTM Standard.

Steel Sheet Piling:

Steel sheet piling shall be new, manufactured by a single source, and of a design that assures continuous interlock throughout the entire length when in place.

Steel sheet piles and interlocks shall not have excessive kinks, camber or twist that would prevent the pile from reasonably free sliding.

Steel sheet piles shall conform to ASTM A572, Grade 50.

Steel Channels:

Steel channels shall conform to ASTM A36.

Other:

Special shapes shall be cut from the specified pile sections.

Other structural shapes shall conform to ASTM A 36.

Welding electrodes shall conform to the requirements of AWS A5.1, Class E70 or approved equal.

Connectors shall conform to ASTM A307.

Measurement and Payment

The complete work as measured for the STRUCTURAL STEEL will be paid for at the contract unit price for the following pay items and includes materials, equipment, and labor to complete this work. Welding and filter fabric required for the cradle support depicted on the project drawings shall be included in the SHEET PILES pay item. Hardware for CHANNELS is included in the CHANNELS pay item.

Pay Item

Pay Unit

Install SHEET PILES

LINEAL FOOT

Install CHANNELS

PER PAIR AT EACH SUPPORT

**SPECIAL PROVISIONS
FOR
STRUCTURAL CONCRETE**

Description

Structural concrete work includes the construction of the concrete pile caps to support the new manholes.

Furnish all materials, labor, and equipment to construct the reinforced concrete piles caps as shown on the Drawings. All concrete work shall conform to the requirements of Section 706 of the MDOT 2012 Standard Specifications for Construction, except for measurement and payment.

All structural concrete shall consist of Concrete, Grade S2.

Measurement and Payment

The complete work as measured for STRUCTURAL CONCRETE will be paid for at the contract unit price for the following pay items and includes materials, equipment, and labor to complete this work. The cradle support, including all hardware, at the transition into the manholes is included in the construct REINFORCED CONCRETE PILE CAP pay item.

Pay Item

Pay Unit

Construct REINFORCED CONCRETE
PILE CAP

EACH

CITY OF PORTAGE PROPOSAL FORM

The undersigned has examined the specifications and sites of the work and is fully informed of the nature of the work and understands that the quantities shown are approximate and are subject to increase or decrease.

The undersigned hereby proposes to furnish all labor, construction equipment, materials and supplies; and to do all the work in strict accordance with the plans and specifications applying to the work specified for which prices are submitted.

The undersigned hereby acknowledges the fact that the City of Portage will award the project to the successful bidder conditional upon the availability of funds.

The City of Portage reserves the right to accept or reject any or all bids in the best interest of the City. Each division may be awarded separately or jointly as may be determined to be in the best interest of the City. The Contractor's qualifications to complete the work in a timely and satisfactory manner will be considered in making the award.

The undersigned affirms that in making such Proposal neither he nor any company that he may represent, nor anyone in behalf of him or company, directly or indirectly, has entered into any combination, collusion, undertaking or agreement with any other bidder or bidders to maintain the prices of said work, and further affirms that such proposal is made without regard or reference to any other bidder or Proposal and without any agreement or understanding or combination, either directly or indirectly, with any other person or persons with reference to such bidding in any way or manner whatsoever.

The undersigned hereby agrees that if the foregoing proposal shall be accepted by the City, he will within ten (10) consecutive calendar days after receiving notice of the acceptance of such proposal, enter into contract in the appropriate form to furnish the labor, materials and equipment necessary for the full and complete execution of the work, at and for the price named in his proposal; and, he will furnish the labor, materials and equipment necessary for the full and complete execution of the work, at and for the price named in his proposal; and, he will furnish the labor, materials and equipment necessary for the full and complete execution of the work, at and for the price named in his proposal.

The undersigned affirms that he has examined the surface and subsurface conditions where the work is to be performed, the legal requirements and conditions affecting cost, progress or performance of the work and has made such independent investigations as the contract deems necessary.

The undersigned attaches hereto a bidder's bond in the sum of _____ Dollars (\$_____) as required in the Instructions to Bidders, and the undersigned agrees that, in case he shall fail to fulfill his obligations under the foregoing Proposal and agreement, the City may, at its option, determine that the undersigned has abandoned his rights and interests in such Proposal and that the certified check or bidder's bond accompanying his proposal has been forfeited to the City; but otherwise, the Certified check or bidder's bond shall be returned to the undersigned upon the rejection of his Proposal.

Disclosure: Asphalt, concrete or other material(s) requiring removal from the job site will be disposed of at: _____
 (address of disposal site*)

Name & Address of _____
 Disposal Site Owner _____

*Attach separate Sheet(s) for multiple disposal sites.

Item	Description	Est. Qty.	Unit	Unit Price	Extension
1	Mobilization	1	LS	\$	\$
2	Project Cleanup	1	LS	\$	\$
3	Video Taping Sewer and Culvert Pipe	327	FT	\$	\$
4	Erosion Control, Inlet Protection	2	EA	\$	\$
5	Erosion Control, Silt Fence	400	LFT	\$	\$
6	Erosion Control, Maintenance, Sediment Rem	150	CYD	\$	\$
7	Slope Restoration, Type A	270	SYD	\$	\$
8	Slope Restoration, Type B	100 0	SYD	\$	\$
9	Riprap, Salvage	40	SYD	\$	\$
10	Riprap, Plain	60	SYD	\$	\$
11	Riprap, Heavy	20	SYD	\$	\$
12	Dewatering	1	LS	\$	\$
13	Fence, Protective	100 0	LFT	\$	\$
14	Curb and Gutter, Rem	88	LFT	\$	\$
15	Sidewalk, Rem	36	SYD	\$	\$
16	Driveway, Nonreinf Conc, 6 inch	34	SYD	\$	\$
17	Curb and Gutter, Conc, Det C4	16	LFT	\$	\$

18	Driveway Opening, Conc, Det M	88	LFT	\$	\$
19	Sidewalk, Conc, 6 inch	325	SFT	\$	\$
20	Clearing	0.03	ACRE	\$	\$
21	Tree, Rem, 6 inch - 18 inch	2	EA	\$	\$
22	Dr Structure, 72 inch dia	2	EA	\$	\$
23	Dr Structure, 24 inch dia	2	EA	\$	\$
24	Sewer Sanitie HP or equal, 42 inch	287	LFT	\$	\$
25	Sewer Sanitie HP or equal, 12 inch	40	LFT	\$	\$
26	Sewer, Rem, 24 inch - 48 inch	284	LFT	\$	\$
27	Sewer, Rem, less than 24 inch	40	LFT	\$	\$
28	HMA Surface, Rem	78	SYD	\$	\$
29	HMA, 36A	1.2	TON	\$	\$
30	Aggregate Base, 6 inch	62	SYD	\$	\$
31	Embankment, CIP	100	CYD	\$	\$
32	Install Timber Piles	44	EA	\$	\$
33	Construct Reinforced Concrete Pile Cap	2	EA	\$	\$
34	Install Sheet Pile Cradle	280	LFT	\$	\$
35	Install Channels, Pair	19	EA	\$	\$
GRAND TOTAL					\$

I, the undersigned, acknowledge receipt of addenda numbers _____ issued for this contract and which are considered a part of said contract.

BIDDER FIRM: _____

BY: _____

Signature

DATE: _____ BY: _____

Print or Type

POSITION: _____

ADDRESS: _____

PHONE: _____ FAX: _____



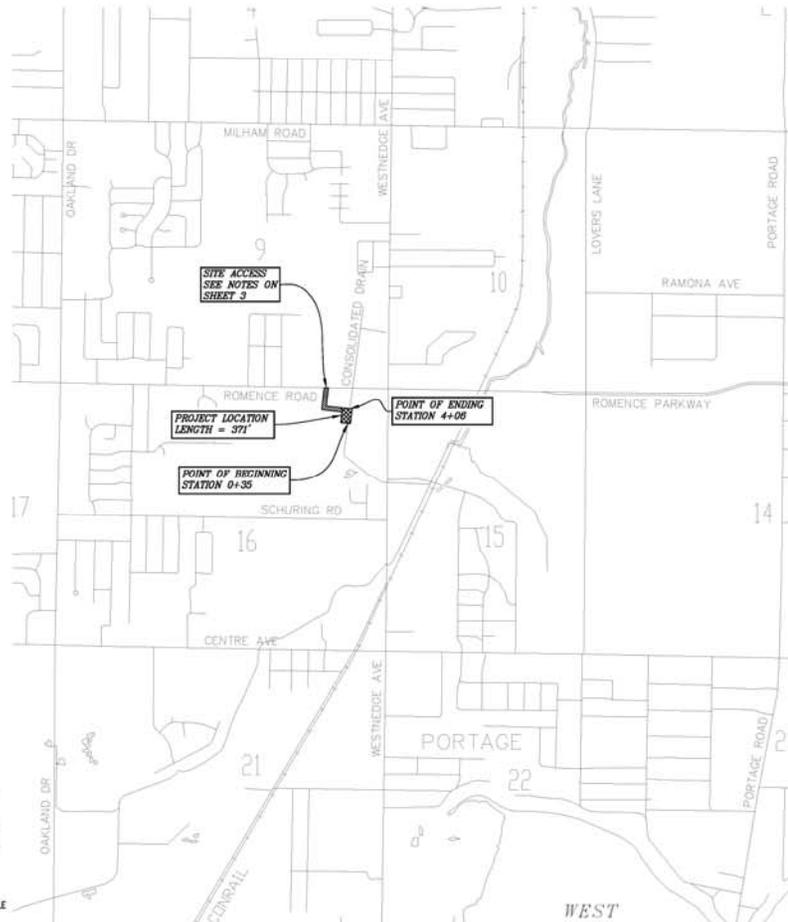
*FULL SIZE DRAWINGS ARE AVAILABLE
FOR PICK-UP BY CONTACTING
CITY OF PORTAGE PURCHASING DEPARTMENT
(269) 324-9284*

CITY OF PORTAGE
CONSOLIDATED DRAIN IMPROVEMENTS
 FROM 680' SOUTH OF ROMENCE ROAD TO 309' SOUTH OF ROMENCE ROAD

PLAN INDEX

SHEET NUMBER	SHEET DESCRIPTION
1	TITLE SHEET
2	MISCELLANEOUS DETAILS
3	NOTE SHEET
4	REMOVAL, CONSTRUCTION & PROFILE SHEET
5	PILE SUPPORTED UTILITY PLAN
6	PILE SUPPORTED UTILITY DETAILS

NOTE:
 COMPLETE SOIL BORING LOGS ARE INCLUDED IN THE JANUARY 23, 2013 GEOTECHNICAL ENGINEERING REPORT PREPARED BY SME WHICH IS FOUND IN THE PROJECT MANUAL.



THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE CITY OF PORTAGE CONTRACT CONDITIONS AND SPECIFICATIONS, INCLUDING GENERAL CONDITIONS, GENERAL SPECIFICATIONS, AND STANDARD DETAILS, AND WHERE APPLICABLE, THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

CONTRACT FOR : STORM SEWER RECONSTRUCTION INCLUDING PILES, EARTH EXCAVATION, BACKFILL, STORM SEWER, NON-MOTORIZED PATH RECONSTRUCTION AND RESTORATION.

CITY COUNCIL

MAYOR COUNCIL PETER J. STRAZDAS
 CLAUDETTE REID
 ELIZABETH CAMPBELL
 JIM PEARSON
 PATRICIA RANDALL
 EDWARD SACKLEY
 TERRY R. URBAN
 MANAGER MAURICE S. EVANS

MUNICIPAL APPROVAL

W. CHRISTOPHER BARNES, P.E.
 CITY ENGINEER - CITY OF PORTAGE

DATE _____

PLANS PREPARED UNDER THE SUPERVISION OF

ENGINEER #LICENSE _____ DATE _____

DRIESENKA & ASSOCIATES, INC.
 ORGANIZATION
 455 E. 8TH STREET, STE. 100
 HOLLAND, MI. 49423
 ADDRESS
 (616) 396-0255
 TELEPHONE NO.

DRIESENKA & ASSOCIATES, INC.
 Engineering • Surveying • Testing
 455 E. 8th Street • Suite 100, Holland, MI 49423
 (616) 396-0255
 www.driesenka.com

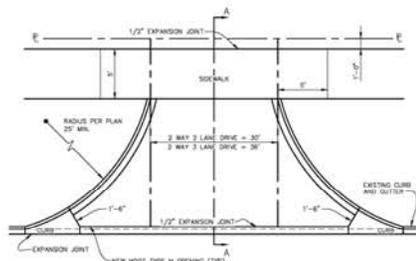
REVISIONS

NO.	DATE	DESCRIPTION

CONSOLIDATED DRAIN IMPROVEMENTS
 AT PORTAGE, Kalamazoo Co.
 CITY OF PORTAGE
 7719 SOUTH WESTNEDGE AVENUE
 PORTAGE, MICHIGAN 49002

TITLE SHEET

Designed by: J. TENPAS
 Drawn by: A.J.N./AQA
 Checked by: [] Date: []
 Date: 08-23-2013
 Plot: N.T.S.
 Scale: 08-23-2013
 File: 1250547.1B
 Job No.:
 Sheet No.: **1** of 6



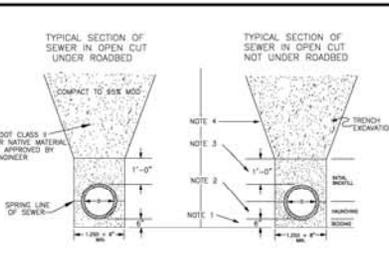
PLAN OF DRIVEWAY APPROACH WITH CURB



CROSS-SECTION DRIVE THRU A-A

CITY OF PORTAGE STANDARD
COMMERCIAL & INDUSTRIAL
DRIVEWAY APPROACH WITH
CURBED STREET
DETAIL SD-116

NO SCALE



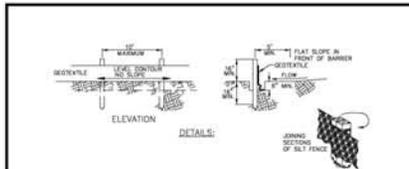
GRADING REQUIREMENTS FOR GRANULAR MATERIALS AND MOOT 17A

MATERIAL	4"	3"	2"	1 1/2"	1"	3/4"	3/8"	20-40	100	TEST METHOD
CLASS I	100	100	100	100	100	100	100	100	100	C-13
CLASS II	100	95-100	80-100	60-100	40-100	20-100	10-100	5-30	0-15	T-8

PER MOOT 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION, FOR ADDITIONAL INFORMATION, SEE TABLES 902-2 AND 902-3

NOTES:
 (1) SOILING SHALL BE REMOVED FROM SURFACE OF A CONCRETE CURB OR CURB APPROACH TO PAVE WITH...
 (2) GRADING FROM THE BOTTOM OF THE CUT TO THE FINISH GRADE...
 (3) SEWERS SHALL BE PROTECTED FROM THE EFFECTS OF THE FREEZING...
 (4) THE FINISH GRADE SHALL BE MAINTAINED AT A MINIMUM OF 2" ABOVE THE TOP OF THE SEWER PIPE...
 (5) THE FINISH GRADE SHALL BE MAINTAINED AT A MINIMUM OF 2" ABOVE THE TOP OF THE SEWER PIPE...
 (6) THE FINISH GRADE SHALL BE MAINTAINED AT A MINIMUM OF 2" ABOVE THE TOP OF THE SEWER PIPE...

CITY OF PORTAGE
STANDARD TRENCH
DETAIL
SD-122



- NOTES:
- SILT FENCE SHALL BE CONSTRUCTED BEFORE UPLIFT (LAND DISTURBANCE) BEGINS.
 - ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE CONTAINMENT AS POSSIBLE SO THAT MATERIAL SHALL NOT BE BLOWN BY THE WIND THROUGH THE FENCE AND SO THAT SMALL CONCENTRATED FLOWS TO THE SILT FENCE ARE DISPERSED ALONG ITS LENGTH.
 - TO PREVENT WATER INJECTED BY THE SILT FENCE FROM FLOWING BACKWARD, EACH END SHALL BE CONSTRUCTED UPLIFT SO THAT THE ENDS ARE AT A HIGHER ELEVATION.
 - WHERE POSSIBLE, SILT FENCE SHALL BE PLACED ON THE LEAST AREA AVAILABLE.
 - WHERE POSSIBLE, VEGETATION SHALL BE MAINTAINED FOR 7 FT OR AS MUCH AS POSSIBLE UPLIFT FROM THE SILT FENCE. IF VEGETATION IS REMOVED, IT SHALL BE REESTABLISHED WITHIN 7 DAYS FROM THE INSTALLATION OF THE FENCE.
 - SOIL STIPPLES OR OTHER SOURCES OF SOILING SHALL HAVE SILT FENCE PROTECTION.
 - THE SILT FENCE SHALL BE PLACED IN A TRENCH CUT A MINIMUM OF 2" DEEP. THE TRENCH SHALL BE CUT WITH A BENCHER, CABLE LAYING MACHINE, OR OTHER SUITABLE DEVICE WHICH WILL ENSURE AN ADEQUATELY UNIFORM TRENCH BOTTOM.
 - SEAMS BETWEEN SECTIONS OF SILT FENCE SHALL BE OVERLAPPED WITH THE END SEAM OF EACH SECTION WRAPPED TOGETHER BEFORE SPRING INTO THE SOILING.
 - MAINTENANCE - SILT FENCE SHALL ALLOW READY TO ALLOW ONLY AN OPENED FLOW THROUGH THE SECTORS. IF ALREADY OPENED, THE SILT FENCE FLOW UNDER OR AROUND THE ENDS, OR IN ANY OTHER WAY BECOME A CONCENTRATED FLOW, ONE OF THE FOLLOWING SHALL BE PRACTICED:
 (1) THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED.
 (2) ADEQUATELY SEAMANT SHALL BE REMOVED.
 (3) OTHER PRACTICES SHALL BE INSTALLED.
 - CRITERIA FOR SILT FENCE MATERIALS:
 (1) FENCE POSTS - THE LENGTH SHALL BE A MINIMUM OF 24" LONG. WOOD POSTS WILL BE 2" X 4" DIMENSIONS OF SUFFICIENT STRENGTH. METAL POSTS SHALL BE 2" X 2".
 (2) SILT FENCE FABRIC (EVIDENCE 24"/48" OR EQUAL USE TABLE BELOW)

SILT FENCE
N.T.S.

FABRIC PROPERTIES	VALUES	TEST METHOD
GRAB TENSILE STRENGTH	100 LB. MINIMUM	ASTM D 4832
TWIST/TORQUE STRENGTH	85 LB. MINIMUM	ASTM D 4533
PERMEABILITY	25% MINIMUM	ASTM D 4481
APPROXIMATE OPENING SIZE (SHAPE)	1/8" DIA. MAXIMUM	ASTM D 4791

CITY OF PORTAGE
SEDIMENTATION CONTROLS
SILT FENCE
SD-120
NO SCALE

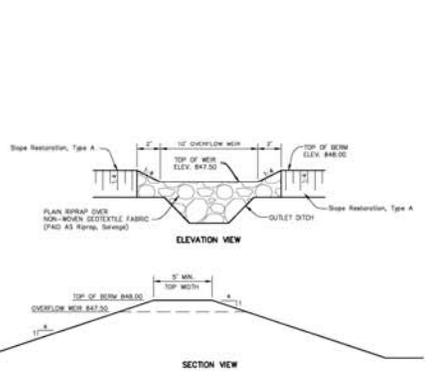
DRIESING & ASSOCIATES, INC.
Engineering • Surveying • Testing
5051 9th Street, Suite 100, Portage, MI 49783
(616) 236-2205
www.driesing.com

REVISIONS

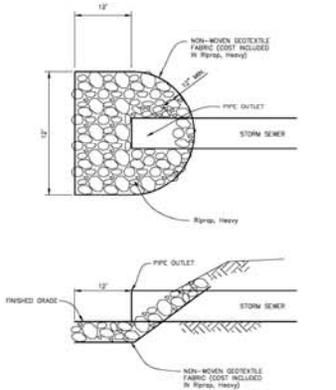
NO.	DATE	DESCRIPTION
1	08-23-2013	ISSUED FOR PERMITS
2	08-23-2013	ISSUED FOR PERMITS
3	08-23-2013	ISSUED FOR PERMITS

CONSOLIDATED DRAIN IMPROVEMENTS
SEC. 16, TRS. R11V CITY OF PORTAGE, KALAMAZOO CO.
7719 SOUTH OGDON AVENUE
PORTAGE, MICHIGAN 49702
MISCELLANEOUS DETAILS

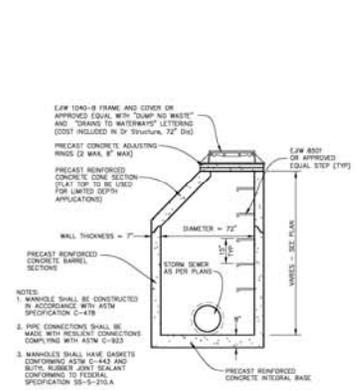
Checked By: J. TENPAS
Drawn By: A.N./A.G.
Checked By: J. Tenpas
Date: 08-23-2013
N.T.S.
Date: 08-23-2013
Scale: 1250547.1B
Job No.:
Sheet No.:
2 of 6



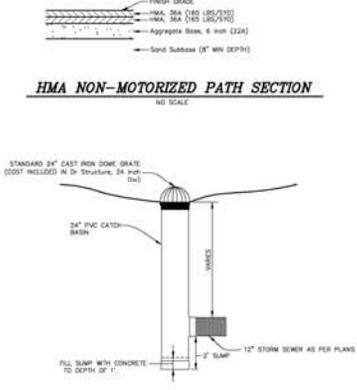
OVERFLOW WEIR DETAILS
NO SCALE



PIPE OUTLET - RIPRAP TREATMENT
NO SCALE



72" DRAINAGE STRUCTURE
NO SCALE



24" DRAINAGE STRUCTURE
NO SCALE

GENERAL PLAN NOTES

UNDERGROUND UTILITIES

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, 1974, THE CONTRACTOR SHALL CALL 1-800-480-7171 OR 811 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THIS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

EXISTING UTILITY ELEVATIONS

IT IS BROUGHT TO THE CONTRACTORS ATTENTION THAT THE EXACT LOCATION AND ELEVATIONS OF THE VARIOUS UTILITIES ARE NOT KNOWN. THE CONTRACTOR MAY BE REQUIRED TO DO SOME EXPLORATORY EXCAVATION TO VERIFY THE LOCATION AND ELEVATIONS. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT WILL BE CONSIDERED AS INCLUDED IN THE PAYMENT FOR THE PAY ITEMS ASSOCIATED WITH THE PROJECT.

EARTHWORK

UNLESS OTHERWISE INDICATED, EARTHWORK WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN OTHER ITEMS OF WORK.

TOPSOIL STRIPPING

STRIP EXISTING TOPSOIL TO THE LIMITS OF CONSTRUCTION PRIOR TO PLACING EMBANKMENT OR EXCAVATION OF EARTH. TOPSOIL STRIPPING IS INCLUDED IN PAYMENT FOR OTHER ITEMS OF WORK.

INLETS, CATCH BASINS & MANHOLES

OFFSETS SHOWN TO INLETS & MANHOLES ARE TO THE CENTER OF THE MANHOLE CASTING. OFFSETS SHOWN FOR CATCH BASINS ARE TO THE BACK OF CURB.

DEWATERING

IT IS ANTICIPATED THAT DEWATERING WILL BE REQUIRED FOR THIS PROJECT. ALL LABOR MATERIALS, AND EQUIPMENT FOR DEWATERING, AS NECESSARY TO COMPLETE THE WORK, WILL BE PAID FOR BY LUMP SUM.

SAWCUTTING

PAYMENT FOR ALL SAW CUTS SHALL BE INCLUDED IN PAVEMENT REMOVAL, CURB AND GUTTER REMOVAL OR EARTHWORK / GRADING ITEMS AND WILL NOT BE PAID FOR SEPARATELY.

SOIL BORINGS

THE SOIL BORINGS REPRESENT POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME OTHER THAN THE EXACT LOCATION OF THE BORINGS. SOIL BORING LOGS ARE LOCATED IN THE PROPOSAL.

PAVEMENT REMOVAL

PAVEMENT REMOVAL AS SHOWN ON THE PLANS SHALL BE AT THE DISCRETION OF THE ENGINEER. IF IN HIS JUDGMENT, AREAS OF PAVEMENT MAY BE LEFT IN PLACE, OR ADDITIONAL AREAS ADDED TO PROVIDE THE PROPER CROSS-SECTION AND BASE, CHANGES CAN BE MADE IN THE QUANTITIES.

SOIL EROSION MEASURES

PLACE SEED AND MULCH AS SOON AS POSSIBLE. CRITICAL DITCH GRADES SHOULD BE PROTECTED WITH EITHER SOD OR SEED/MULCH AS DIRECTED BY THE ENGINEER. PAVED STREETS SHALL BE KEPT REASONABLY CLEAN AND THE CONTRACTOR SHALL REMOVE ACCUMULATIONS OF DEBRIS CAUSED BY HIS OPERATIONS. THE PAVEMENT SHALL BE CLEANED AT THE END OF EACH DAY. ALL CATCH BASIN INLETS SHALL BE PROTECTED WITH INLET PROTECTION DEVICES.

STORM SEWER

PRIOR TO FINAL ACCEPTANCE BY THE CITY OF PORTAGE, ALL NEW STORM SEWERS SHALL BE CLEANED OUT AND INSPECTED PER SECTION 402.03.K OF THE MOST 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

EMERGENCY & GENERAL ACCESS

THE CONTRACTOR SHALL AT ALL TIMES PROVIDE EMERGENCY ACCESS TO THE PROPERTY IN THE MONEY OF THE CONSTRUCTION FOR POLICE AND FIRE EQUIPMENT. REASONABLE ACCESS AS DETERMINED BY THE ENGINEER, MUST BE MAINTAINED TO COMMERCIAL ESTABLISHMENTS AND RESIDENCES AT ALL TIMES. THE CONTRACTOR SHALL GIVE PROPERTY OWNERS WRITTEN NOTICE 3 WORKING DAYS PRIOR TO DRIVEWAY CONSTRUCTION OR CLOSURES.

SITE ACCESS

ACCESS TO THE SITE WILL BE AVAILABLE VIA THE VACANT PROPERTY AT 401 ROMANCE ROAD. CONSTRUCTION OF NEW DRIVE APPROACH AT THAT LOCATION PER CITY OF PORTAGE STANDARD DETAIL 52-119 WILL BE PART OF THIS CONTRACT. DRIVEWAY SHALL BE LOCATED APPROXIMATELY 80' WEST OF EXISTING SONIC DRIVEWAY. CONTRACTOR SHALL COORDINATE WITH LANDOWNER AND CITY OF PORTAGE.

ACCESS SHALL BE LIMITED TO A 20' STRIP OF LAND BETWEEN ROMANCE ROAD AND THE PROJECT AREA, WHICH SHALL BE DELINEATED WITH PROTECTIVE FENCING INSTALLED BY CONTRACTOR.

CONTRACTOR SHALL NOT UTILIZE THE SONIC PARKING LOT OR DRIVEWAY FOR ACCESS OR STORAGE.

SEDIMENT REMOVAL

CONTRACTOR SHALL COORDINATE WITH CITY OF PORTAGE AND WITH OWNER OF VACANT PLOTS AT 401 ROMANCE ROAD FOR ON-SITE DISPOSAL OF SEDIMENT. IF ON-SITE DISPOSAL IS REFUSED BY LANDOWNER, CONTRACTOR SHALL REMOVE AND DISPOSE OF SEDIMENT OFF-SITE. SEDIMENT MUST BE PLACED IN AN UPLAND AREA OUTSIDE OF REGULATED WETLANDS OR FLOOD PLAINS.

MISCELLANEOUS ESTIMATES

THE FOLLOWING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEETS.

MISCELLANEOUS ITEMS	
1 LS	Mobilization
1 LS	Project Cleanup
327 Ft	Video Taping Sewer and Curb Pipe
2 Ea	Erosion Control, Inlet Protection
400 Ft	Erosion Control, Site Fence
100 Syd	Slope Restoration, Type A
1000 Syd	Slope Restoration, Type B
50 Syd	Riprap, Plain
1 LS	Dewatering

THE FOLLOWING ITEMS OF WORK SHALL BE DONE FOR SITE ACCESS. THESE ITEMS ARE NOT INCLUDED ON THE PLAN AND PROFILE SHEETS.

SITE ACCESS ITEMS	
1,000 Ft	Fence, Protective
80 Ft	Curb and Gutter, Rem
36 Syd	Sidewalk, Rem
14 Syd	Driveway, Nonrain Conc, 6 Inch
18 Ft	Curb and Gutter, Conc, Det C4
88 Ft	Driveway Grading, Conc, Det M
325 Sft	Sidewalk, Conc, 6 Inch

TOPOGRAPHIC SURVEY

THE EXISTING TOPOGRAPHIC FEATURES SHOWN ON THESE PLANS ARE BASED UPON A FIELD SURVEY PERFORMED BY DRIESENGA & ASSOCIATES, INC. DATED NOVEMBER 2012.

PUBLIC UTILITIES

THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE AS OBTAINED ON OUR SURVEYS. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO BE SATISFIED AS TO ITS ACCURACY AND THE LOCATION OF EXISTING UTILITIES.

NAME OF OWNER	KIND OF UTILITY
CITY OF PORTAGE 7719 S. WESTEDGE PORTAGE, MI 49002 PHONE: (269) 324-9226 M. CHRISTOPHER BARNES, P.E.	STORM SEWER STREETS
AT&T 2819 MILLCORK ROAD KALAMAZOO, MI 49001 PHONE: (269) 304-4475 / (269) 304-4472 ROD WILLIAMS/LACEY JOHNSON	TELEPHONE (EAST OF US-131) FIBER OPTIC
AT&T 2819 MILLCORK ROAD KALAMAZOO, MI 49001 PHONE: (269) 304-4472 LACEY JOHNSON	TELEPHONE (WEST OF US-131) FIBER OPTIC
CHARTER COMMUNICATIONS 4178 COMMERCIAL AVENUE KALAMAZOO, MI 49001 PHONE: (269) 217-8152 MARK BURKE	CABLE TELEVISION
CONSUMERS ENERGY 2500 EAST CORK STREET KALAMAZOO, MI 49001 PHONE: (269) 337-2330 JASON STANGE	ELECTRIC
CONSUMERS ENERGY 2500 EAST CORK STREET KALAMAZOO, MI 49001 PHONE: (269) 337-2314 MARK KLECZYNSKI	GAS
UNITED WATER 7719 S. WESTEDGE PORTAGE, MI 49002 PHONE: (269) 324-9235 KIM REEDER	WATER & SEWERS (CONTRACTOR OPERATOR)
MIDWEST COMMUNICATION SERVICES, INC. 7255 TOWER ROAD BATTLE CREEK, MI 49014 PHONE: (269) 963-7173 LARRY POWELL	AERIAL FIBER CABLE
CTS TELECOM, INC. 110 N MAIN CUMART, MI 49034 PHONE: (269) 209-4833 CELL KEN DELGRO	TELEPHONE

LEGEND

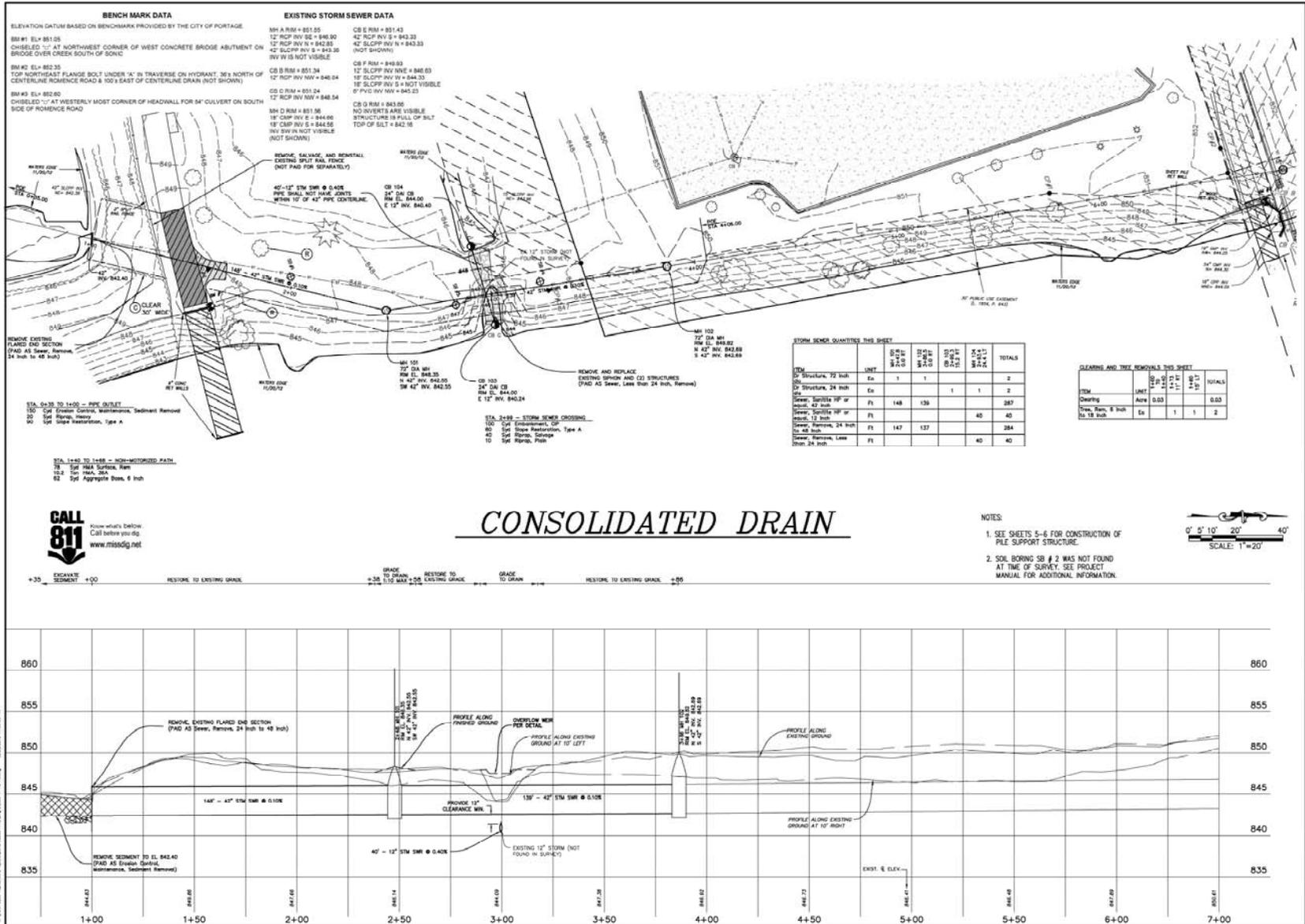
	EXISTING	PROPOSED
LIGHT POLE		
GUY ANCHOR		
UTILITY POLE		
CLEANOUT		
VALVE (WATER & GAS)		
STORM SEWER MANHOLE		
SANITARY SEWER MANHOLE		
CATCH BASIN		
FIRE HYDRANT		
TRANSFORMER		
UTILITY RISER		
MAIL BOX		
ELECTRIC METER		
GAS METER		
SOIL BORING		
ELECTRIC		
TELEPHONE		
CABLE TV		
FIBER OPTIC		
GAS LINE		
EXISTING WATER LINE		
PROPOSED WATER LINE		
EXISTING STORM SEWER		
PROPOSED STORM SEWER		
EXISTING SANITARY SEWER		
PROPOSED SANITARY SEWER		
RAILROAD		
ROAD		
CLEANING		
RELOCATE BY OTHERS		
ADJUST DRAINAGE STRUCTURE		
ADJUST DRAINAGE STRUCTURE W/COVER		
ADJUST BY OTHERS		
USED WITH UNDERGROUND GAS & ELECTRICAL LINES		
NEW/ING PAVEMENT		
NEW/ING CURB & GUTTER		

DRIESENGA & ASSOCIATES, INC.
Engineering • Surveying • Testing
6515 16th Street, N.E. Grand Rapids, MI 49508
Phone: (616) 386-2200
www.driesenga.com

REVISIONS
NO. DATE BY DESCRIPTION
1 08-23-2013 J.T./A.A. 10' WIDENING
2 08-23-2013 J.T./A.A. 10' WIDENING
3 08-23-2013 J.T./A.A. 10' WIDENING
4 08-23-2013 J.T./A.A. 10' WIDENING
5 08-23-2013 J.T./A.A. 10' WIDENING
6 08-23-2013 J.T./A.A. 10' WIDENING
7 08-23-2013 J.T./A.A. 10' WIDENING
8 08-23-2013 J.T./A.A. 10' WIDENING
9 08-23-2013 J.T./A.A. 10' WIDENING
10 08-23-2013 J.T./A.A. 10' WIDENING

CONSOLIDATED DRAIN IMPROVEMENTS
SEC. 16, T8S. 18N. W1W. CITY OF PORTAGE, KALAMAZOO CO.
7719 SOUTH WESTEDGE AVENUE
PORTAGE, MICHIGAN 49002

Designed By: J. TENPAS
Drawn By: A.N./A.A.
Checked By: J.T./A.A.
Date: 08-23-2013
N.T.S.
Scale: 08-23-2013
Sheet No.: 1250547.1B
JOB NO.:
Sheet No.: **3** of 6



BENCH MARK DATA

ELEVATION DATUM BASED ON BENCHMARK PROVIDED BY THE CITY OF PORTAGE
 BM #1 EL: 851.25
 CHISELED "L" AT NORTHWEST CORNER OF WEST CONCRETE BRIDGE ABUTMENT ON BRIDGE OVER CREEK SOUTH OF ROAD
 BM #2 EL: 852.35
 TOP NORTHEAST FLANGE BOLT UNDER "A" IN TRAVERSE ON HYDRANT, 36" NORTH OF CENTERLINE ROMENCE ROAD & 100' EAST OF CENTERLINE DRAIN (NOT SHOWN)
 BM #3 EL: 852.40
 CHISELED "L" AT WESTERLY MOST CORNER OF HEADWALL FOR 8" CULVERT ON SOUTH SIDE OF ROMENCE ROAD

EXISTING STORM SEWER DATA

MH A RIM = 851.55
 12" RCP INV 82 = 846.90
 42" SLOPP INV N = 842.95
 INV N IS NOT VISIBLE
 CB B RIM = 851.34
 12" RCP INV N = 846.04
 12" RCP INV N = 846.04
 CB C RIM = 851.24
 12" RCP INV N = 846.54
 MH D RIM = 851.56
 18" CMP INV S = 844.00
 18" CMP INV S = 844.56
 INV S IS NOT VISIBLE (NOT SHOWN)
 CB E RIM = 851.43
 42" RCP INV S = 842.33
 42" SLOPP INV N = 843.33
 (NOT SHOWN)
 CB F RIM = 849.93
 12" SLOPP INV N = 846.63
 18" SLOPP INV N = 844.33
 18" SLOPP INV S = NOT VISIBLE
 6" PVC INV N = 845.23
 CB G RIM = 843.86
 NO INVERTS ARE VISIBLE
 STRUCTURE IS FULL OF SILT
 TOP OF SILT = 842.16

STORM SEWER QUANTITIES THIS SHEET

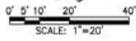
ITEM	UNIT	QUANTITY	TOTALS
24" Structure, 72 inch	Ex	1	1
24" Structure, 24 inch	Ex	1	1
Manhole, 24 inch	Ft	148	136
Manhole, 12 inch	Ft		40
Manhole, 24 inch	Ft	147	137
Manhole, 12 inch	Ft		40
Manhole, 24 inch	Ft		40

CLEARING AND TREE REMOVALS THIS SHEET

ITEM	UNIT	QUANTITY	TOTALS
Tree, 6 to 18 inch	Acres	0.03	0.03
Tree, 18 to 24 inch	Acres	1	1
Tree, 24 to 36 inch	Acres	1	1

CONSOLIDATED DRAIN

- NOTES:**
- SEE SHEETS 5-6 FOR CONSTRUCTION OF PILE SUPPORT STRUCTURE.
 - SOL BORING SB # 2 WAS NOT FOUND AT TIME OF SURVEY. SEE PROJECT MANUAL FOR ADDITIONAL INFORMATION.



DRIESENGA & ASSOCIATES, INC.
 Engineering • Surveying • Testing
 431 E. 8th Street, Portage, Michigan 49802
 Phone: 231.221.4444
 Fax: 231.221.4444
 www.driesenga.com

REVISIONS

NO.	DATE	DESCRIPTION
1	08-23-2013	ISSUED FOR PERMITS
2	08-23-2013	ISSUED FOR PERMITS
3	08-23-2013	ISSUED FOR PERMITS
4	08-23-2013	ISSUED FOR PERMITS

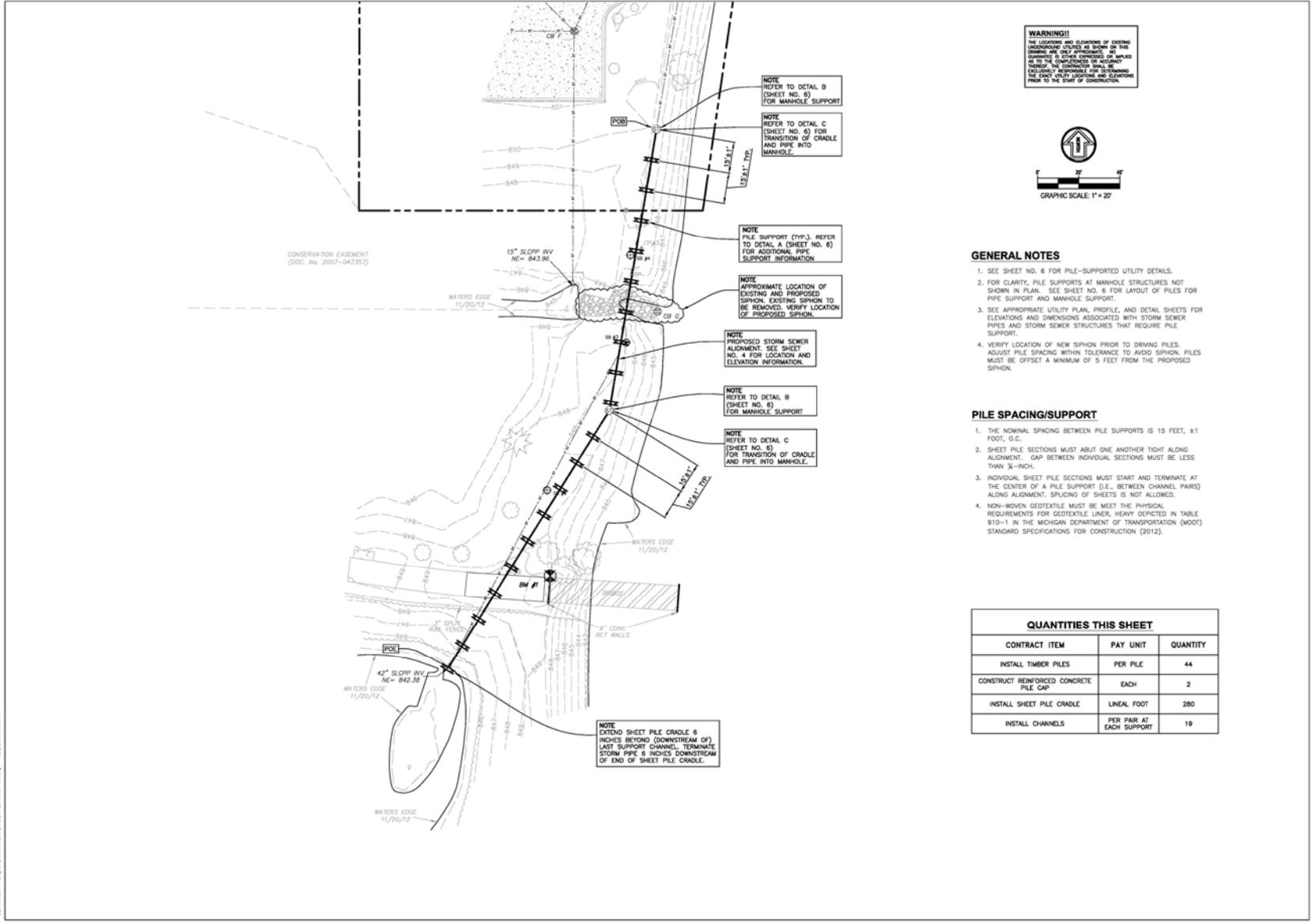
CONSOLIDATED DRAIN IMPROVEMENTS
 SEC. 16, T8S, R17E, CITY OF PORTAGE, KALAMAZOO CO.
 CITY OF PORTAGE
 7719 SOUTH FORTY-SEVEN AVENUE
 PORTAGE, MICHIGAN 49802

REMOVAL, CONSTRUCTION & PROFILE

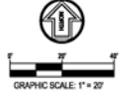
Designed By: J. TENPAS
 Drawn By: A. P. ZADA
 Checked By: J. TENPAS
 Date: 08-23-2013

1" = 5' VERT.
 1" = 20' HORIZ.
 08-23-2013
 1250547.1B
 JTB

Sheet No. **4** of 6



WARNING!!
 THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE FIELD APPROXIMATE. NO GUARANTEE IS MADE AS TO THE ACCURACY OF ANY INFORMATION OR DATA. CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



GENERAL NOTES

- SEE SHEET NO. 6 FOR PILE-SUPPORTED UTILITY DETAILS.
- FOR CLARITY, PILE SUPPORTS AT MANHOLE STRUCTURES NOT SHOWN IN PLAN. SEE SHEET NO. 6 FOR LAYOUT OF PILES FOR PIPE SUPPORT AND MANHOLE SUPPORT.
- SEE APPROPRIATE UTILITY PLAN, PROFILE, AND DETAIL SHEETS FOR ELEVATIONS AND DIMENSIONS ASSOCIATED WITH STORM SEWER PIPES AND STORM SEWER STRUCTURES THAT REQUIRE PILE SUPPORT.
- VERIFY LOCATION OF NEW SIPHON PRIOR TO DRIVING PILES. ADJUST PILE SPACING WITHIN TOLERANCE TO AVOID SIPHON. PILES MUST BE OFFSET A MINIMUM OF 5 FEET FROM THE PROPOSED SIPHON.

PILE SPACING/SUPPORT

- THE NOMINAL SPACING BETWEEN PILE SUPPORTS IS 15 FEET, 8 1/2 FOOT, O.C.
- SHEET PILE SECTIONS MUST ABUT ONE ANOTHER TIGHT ALONG ALIGNMENT. GAP BETWEEN INDIVIDUAL SECTIONS MUST BE LESS THAN 3/8-INCH.
- INDIVIDUAL SHEET PILE SECTIONS MUST START AND TERMINATE AT THE CENTER OF A PILE SUPPORT (I.E., BETWEEN CHANNEL PAIRS) ALONG ALIGNMENT. SPACING OF SHEETS IS NOT ALLOWED.
- NON-WOVEN GEOTEXTILE MUST MEET THE PHYSICAL REQUIREMENTS FOR GEOTEXTILE LINER, HEAVY DEPICTED IN TABLE 910-1 IN THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION (2012).

QUANTITIES THIS SHEET		
CONTRACT ITEM	PAY UNIT	QUANTITY
INSTALL TIMBER PILES	PER PILE	44
CONSTRUCT REINFORCED CONCRETE PILE CAP	EACH	2
INSTALL SHEET PILE CRADLE	LINIAL FOOT	280
INSTALL CHANNELS	PER PAIR AT EACH SUPPORT	19

DRIESENGA & ASSOCIATES, INC.
 Engineering • Surveying • Testing
 435 E. 8th Street - 3rd Floor, Grand Rapids, MI 49503
 Grand Rapids, MI
 www.driesenga.com

Soils and Materials Engineers, Inc.
 2304 Frank Circle Drive
 Kalamazoo, MI 49001-0411
 Ph (269) 333-8861
 Fax (269) 333-8553

REVISIONS
 1. ISSUED FOR OWNER REVIEW
 08-23-2013
 2. ISSUED FOR BIDDING
 08-23-2013

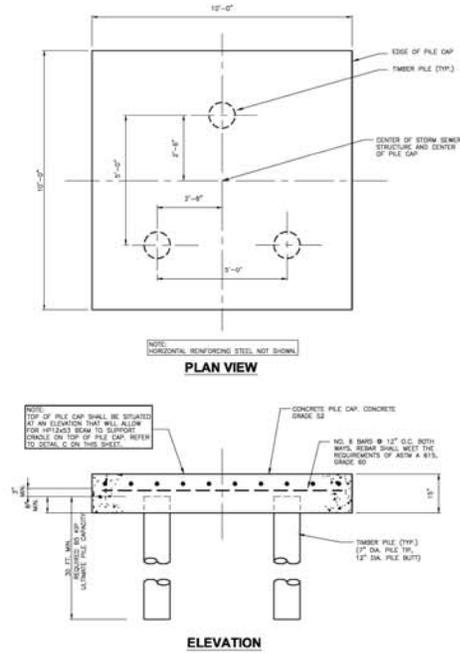
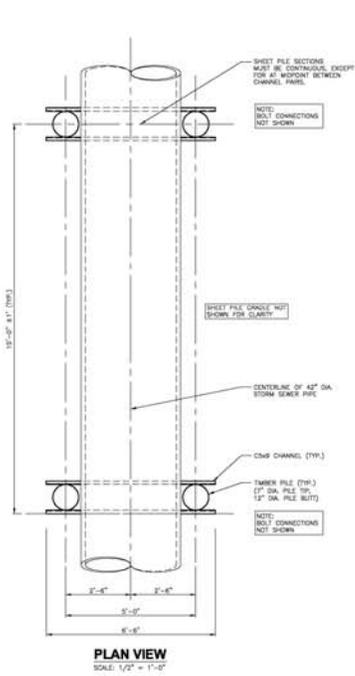
CONSOLIDATED DRAIN REPAIR
 SSC 16, CON. BLDG. CITY OF PORTAGE KALAMAZOO CO.
 7719 SOUTH WESTBRIDGE AVENUE
 PORTAGE, MICHIGAN 49602
PILE-SUPPORTED UTILITY PLAN

Design By: ATB/THB
 Drawn By: SDC/CRK
 Check By: JPH
 Date: 08-23-2013

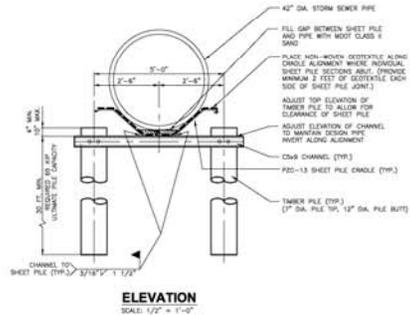
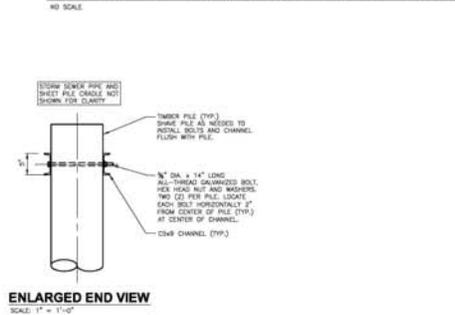
AS NOTED
 Size: 08-02-2013
 Date: 1250547.1B
 Job No.:

5

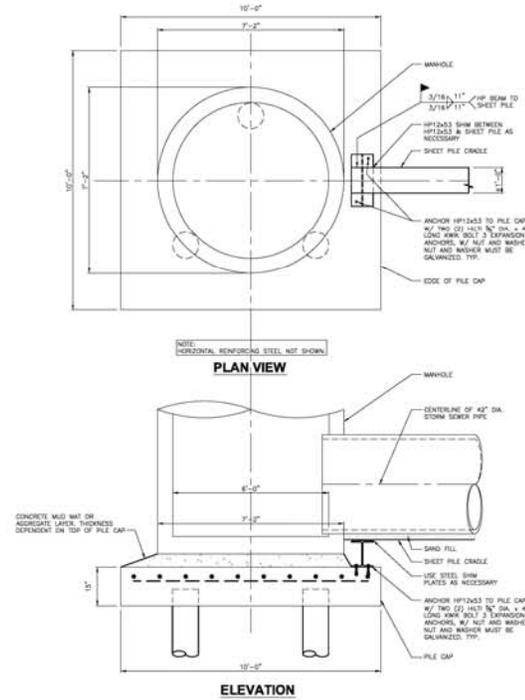
of 6



DETAIL B - MANHOLE SUPPORT



DETAIL A - PIPE SUPPORT



DETAIL C - CRADLE AND PIPE TRANSITION INTO MANHOLE

NO SCALE

NOTES:
1. HOLE DIMENSIONS NOMINALLY 8" LARGER THAN BOLT DIMENSIONS.
2. INSTALL HEX HEAD BOLT 3 EXTENSION ANCHORS PER MANUFACTURER RECOMMENDATIONS.
3. WEDGE FIT TRANS TOPPER ALL BOLT CONNECTIONS.
4. PIPE INVERT AT MANHOLE MUST BE MIN. 12" BELOW BOTTOM OF SHEET PILE. REFER TO DETAIL B FOR ADDITIONAL INFORMATION REGARDING MANHOLE BEARING ELEVATION.
5. DETAIL C APPLIES TO TRANSITIONS BETWEEN BOTH ENDS OF MANHOLES. ONLY ONE TRANSITION SHOWN IN DETAIL C FOR CLARITY.

DRIESENKA & ASSOCIATES, INC.
Engineering • Surveying • Testing
455 E. 8th Street - 3rd Floor, Grand Rapids, MI 49503
Phone: 616-941-1100
www.driesenka.com

smc
Soils and Materials Engineers, Inc.
2381 Tank Creek Drive
Kalamazoo, MI 49001-4611
PH (269) 333-8581
FX (269) 333-8555

REVISIONS

1	ISSUED FOR SHEET REVIEW
2	ISSUED FOR BIDDING
3	REVISION
4	REVISION
5	REVISION
6	REVISION

CONSOLIDATED DRAIN REPAIR
SSC 16, FOR 811
CITY OF PORTAGE 6344200 CO.
7719 SOUTH WESTBRIDGE AVENUE
PORTAGE, MICHIGAN 49602

PILE-SUPPORTED UTILITY DETAILS

Designed by: ATR/THB
Drawn by: SDC/CRK
Checked by: JMK
Date: 08-23-2013

AS NOTED
Scale: 08-02-2013
DWG: 12505471B
REV: 6

The following report is provided on an information only basis. It is the responsibility of the contractor to read and utilize the report in its entirety at his/her discretion. For any further information or questions regarding this report, contact Soil and Materials Engineers, Inc.



Soil and Materials Engineers, Inc.
3301 Tech Circle Drive
Kalamazoo, MI 49008-5611

tel (269) 323-3555
fax (269) 323-3553
www.sme-usa.com

Kenneth W. Kramer, PE
Founder

Mark K. Kramer, PE
Timothy H. Bedenis, PE
Gerald M. Belian, PE
Andrew J. Emmert, CPA
Chuck A. Gemayel, PE
James M. Harless, PhD, CHMM
Larry P. Jedele, PE
Cheryl A. Kehres-Dietrich, CGWP
Gerard P. Madej, PE
Timothy J. Mitchell, PE
Robert C. Rabeler, PE
Daniel O. Roeser, PG

Christopher R. Byrum, PhD, PE
Daniel R. Cassidy, CPG
John E. Dingeldein, PE
Sheryl K. Fountain, SPHR
Davie J. Hurlburt, PE
Anthony L. Jarem, PE
Laurel M. Johnson, PE
Jeffery M. Krusinga, PE, GE
Jeffrey R. Lanier, PE
Michael S. Meddock, PE
Louis J. Northouse, PE
Bradley G. Parlato, PE
Rohan W. Perera, PhD, PE
Joel W. Rinkel, PE
Jason A. Schwartzberger, PE
Larry W. Shook, PE
Thomas H. Skotzke
Michael J. Thelen, PE
Anthony B. Thomas, PE
Keith D. Toro, PE
John C. Zarzecki, CET, CDT, NDE

January 23, 2013

Mr. W. Christopher Barnes, P.E.
Director of Transportation and Utilities
City of Portage
7719 South Westnedge Avenue
Portage, Michigan 49002

Via e-mail: barnesc@portagemi.gov (PDF file)

RE: Concept-Level Design
Consolidated Drain Pipe Repair
City of Portage, Michigan
SME Project No. 066697.00

Dear Mr. Barnes:

Soil and Materials Engineers, Inc. (SME) has completed the concept-level design for two potential repair alternatives for the referenced project. This report summarizes our evaluation procedures and provides a description of two concept-level alternatives for support of the reconstructed pipe, along with a preliminary cost opinion associated with each alternative. This report also presents a short discussion on our opinion as to why the affected drain pipe may have failed.

Our services for this project were performed in general accordance with the scope of services outlined in SME Proposal No. P03139.12 dated December 28, 2012. Our services were authorized by the City of Portage.

SITE AND PROJECT DESCRIPTION

The project site is generally located south of the existing Sonic restaurant addressed as 349 Romence Road in the City of Portage, Michigan. More specifically, the site generally extends from the restaurant property south to an existing regional stormwater basin located on the south side of an existing City of Portage railway (Millennium Trail).

An existing 42-inch-diameter, high-density polyethylene (HDPE) storm sewer (drain) pipe extends through the site and outlets into the stormwater basin. The storm drain was constructed in 2000 and conveys the "first flush" stormwater flow from Crossroads Mall to the sediment forebay of the stormwater basin. A section of the HDPE drain pipe failed in 2012 and the City of Portage is in the process of moving forward with repair of the affected pipe. The approximate location of the existing drain pipe and the approximate location of the pipe failure are depicted on the Boring Location Diagram attached to this report.

SME completed four geotechnical borings along the pipe alignment within the project area in November 2012, performed laboratory testing on the

OFFICES
Indiana
Michigan
Ohio

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consultants in the geosciences, materials, and the environment

recovered samples, and prepared boring logs. More information about the completion of the borings and the testing performed on the recovered samples is presented below under “Field Exploration and under “Laboratory Testing”.

After completion of the field exploration and laboratory testing, SME transmitted draft logs of the borings and a draft Boring Location Diagram to the City of Portage. SME then met with the City of Portage on November 30, 2012, to review the geotechnical information and to discuss potential alternatives for repair of the affected areas of the drain pipe. Mr. Aaron Neitling, P.E. from Driesenga & Associates, Inc. (Driesenga) was also present at the meeting and participated in the discussion regarding potential repair alternatives. Based on the discussions at the meeting, the City of Portage plans to pursue one of four potential alternatives to repair the affected pipe. These alternatives are designated as “A”, “B”, “C”, and “D” in this report to correspond to the designations used in the minutes for the referenced meeting prepared by Driesenga. The four alternatives are briefly described as follows:

- Alternative A:** Undercut (i.e., excavate) the organic soils from below the pipe alignment, backfill the undercut with inorganic fill, and then place a new pipe.
- Alternative B:** Place a new utility pipe supported by deep foundations (e.g., piles) spaced at discrete intervals with continuous support for the pipe spanning between adjacent pile supports.
- Alternative C:** Implement a ground improvement technique to improve the poor subgrade so that the reconstructed utility can be supported directly on or above the improved subgrade.
- Alternative D:** Leave the poor soils in-place below the utility alignment and install a new flexible pipe (e.g., composed of HDPE or steel) with fused or welded joints, and use lightweight backfill around and above the new pipe.

The repair alternatives outlined above are expected to range in cost and potential performance (i.e., risk of future settlement of the pipe). Therefore, the City of Portage requested a concept-level design with an associated preliminary opinion of cost be prepared for each alternative to assist with the selection of the final alternative for repair of the affected pipe. SME was requested to provide concept-level design for Alternatives B and C. We understand Driesenga is currently providing concept-level design for Alternatives A and D.

Based on our discussions at the meeting, we assume the affected area where the utility will be reconstructed extends over a distance of 300 feet, beginning at the stormwater basin and going 300 feet north. Based on our review of an existing topographic survey drawing prepared by Driesenga, we estimate site grades directly over the pipe along the project alignment are near elevation 848 feet. We understand the drain pipe has an invert elevation of 842.38 feet at the basin outlet, and that the slope of the pipe is about 0.1 percent. For purposes of this report, we have assumed an invert elevation for the drain pipe at 842 feet. Therefore, there is about 2.5 feet of soil cover above the pipe.

EVALUATION PROCEDURES

Field Exploration

SME completed four borings (B1 through B4) at the site on November 8, 2012. Each boring extended 30 feet below the existing ground surface elevation for a total of 120 feet of drilling. The approximate locations of the borings are depicted on the Boring Location Diagram.



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SME determined the number, locations, and depth of the borings. Prior to SME mobilizing to the site for drilling, SME staked the locations of the borings in the field. SME estimated the existing ground surface elevations at the boring locations to the nearest 1-foot based on linear interpolation of topographic contours depicted on the topographic survey drawing prepared by Driesenga.

The borings were drilled using a rotary-type drill rig mounted on an all-terrain vehicle (ATV) and were advanced using continuous-flight, solid-stem augers. The borings included soil sampling based upon the Split-Barrel Sampling procedure. Recovered split-barrel samples were sealed in glass jars by the driller.

Groundwater level measurements were recorded during and immediately after completion of each boring. The boreholes were backfilled with auger cuttings upon completion. Therefore, long-term groundwater levels were not obtained from the borings.

Soil samples recovered from the field exploration were returned to the SME laboratory for further observation and testing.

Laboratory Testing

The laboratory testing program consisted of performing visual soil classification on recovered samples in accordance with the Unified Soil Classification System (USCS). Moisture content tests were also performed on portions of organic soil samples obtained. The attached Laboratory Testing Procedures provides general descriptions of laboratory test procedures.

Upon completion of the laboratory testing, boring logs were prepared that include information on materials encountered, penetration resistances, pertinent field observations made during the drilling operations, and the results of the laboratory tests. The approximate existing ground surface elevations at the boring locations are also provided on the boring logs. The boring logs are attached to this report. The soil descriptions included on the boring logs were developed from both visual classification and the results of laboratory tests, where applicable.

Soil samples retained over a long time, even sealed in jars, are subject to moisture loss and are no longer representative of the conditions initially encountered in the field. Therefore, soil samples are normally retained in our laboratory for 60 days and then disposed, unless instructed otherwise.

SUBSURFACE CONDITIONS

Soil Conditions

The soil conditions encountered at boring locations B1 through B4 generally consisted of existing sand fill extending to depths between about 7 and 11 feet. The fill was underlain by organic soils (e.g., organic silt and peat) extending to depths between about 22 and 23 feet, underlain by natural sands extending to the explored depths of the borings.

The organic silt (also sometimes called “marl”) encountered at the borings had measured moisture contents in the range of about 48 to 184 percent and is considered moderately to highly compressible, based on these moisture contents. The peat encountered at the borings had measured moisture contents in the range of about 101 to 380 percent and is considered moderately to highly compressible, based on these moisture contents. The natural sands



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underlying the organic soils at the borings were in a loose to medium dense condition, with Standard Penetration Test (SPT) resistances (N-values) ranging from 6 to 16 blows per foot of penetration (bpf).

The soil profile described above and included on the attached boring logs is a generalized description of the conditions encountered. The stratification depths described above and shown on the boring logs are intended to indicate a zone of transition from one soil type to another. They are not intended to show exact depths of change from one soil type to another.

The soil descriptions are based on visual classification of the soils encountered. Soil conditions may vary between or away from the boring locations. Please refer to the boring logs for the soil conditions at the specific boring locations.

Groundwater Conditions

Groundwater was encountered in the borings during drilling at depths ranging from about 3 to 4.5 feet below the existing ground surface, or between about elevations 843.5 and 845 feet. Upon completion of drilling (“at end of boring”), groundwater was observed in the boreholes at depths ranging from about 3 to 6 feet below the existing ground surface, or between about elevations 842 and 845 feet. The groundwater was encountered within the existing sand fill overlying the less permeable organic soils. Based on the relatively permeable nature of the existing sand fill encountered, we believe the groundwater conditions reported herein are representative of the site groundwater levels/elevations at the time of the field exploration.

Hydrostatic groundwater levels and groundwater seepage rates encountered in excavations should be expected to fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater levels indicated on the boring logs, and presented in this section, represent conditions at the time the readings were taken. The actual groundwater levels at the time of construction may vary.

ANALYSIS AND CONCEPT-LEVEL DESIGN

Organic soils (e.g., organic silt and peat) were encountered below existing sand fill at the boring locations and extended to depths ranging from about 22 feet to 23 feet. The organic soils exhibited relatively high moisture contents and are considered moderately to highly compressible. Organic soils, such as those encountered in the borings, will compress or settle when stresses in the soil mass are increased (e.g., from placement of overlying fill).

We are not aware of existing grades prior to construction of the existing drain pipe or when the existing sand fill was placed. However, we estimate between about 3 and 4 feet of settlement of the organic soils at this site could have occurred over a 50-year time period as a result of placement of up to 11 feet of fill. Most of the settlement would occur relatively rapidly (e.g., within about 1 to 2 years after fill placement), with the rate of settlement tapering off, but not completely ceasing over time. The amount of settlement is a function of the soil properties (e.g., moisture content, thickness, etc.) and sand fill thickness. At this site, we anticipate at least some of the sand fill was already in place before construction of the storm drain, and that only a portion of the overall fill was placed during the construction of the utility back in 2000. Regardless of how much fill was in place prior to construction of the utility, it is our opinion the existing drain pipe failed due to differential settlements that occurred after construction as a result of settlement or compression of the organic soils below the pipe. This pipe settlement



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resulted in the failure of a pipe joint. Once a pipe joint failed, we believe additional settlements were realized as sand fill from around and below the pipe migrated into the failed pipe, further undermining the pipe.

Presented below is our concept-level design for two alternatives for the reconstructed pipe. The alternatives include both a pile-supported utility (Alternative B) and a utility with ground improvement technique (Alternative C).

Pile Supported Utility (Alternative B)

For this alternative, we believe the use of timber piles will be the most economical pile type (compared to steel pipe piles or auger-cast piles) for support of the new pipe. Driven timber piles are commonly available in lengths up to about 40 feet, but slightly longer lengths (up to about 50 feet) can also be obtained. Typically, a timber pile will have a taper to the pile diameter, thus the pile will have larger pile butt compared to the tip, which increases frictional resistance along the length of the pile. Timber piles are typically driven into the subgrade with an impact hammer. The following image depicts the generalized installation method.

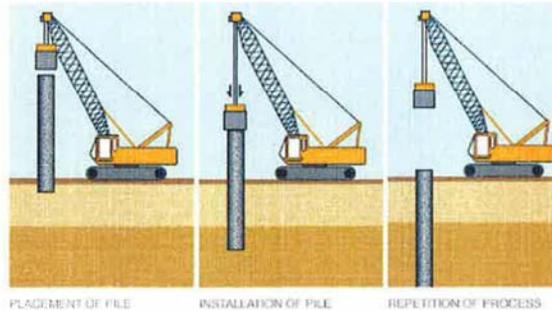


Image provided by: www.civilthought.com

Our preliminary design of a pile-supported utility consists of the use of timber piles installed as a pair spaced 5 feet apart at each support point along the pipe alignment. The supports are spaced 15 feet apart with continuous structural support for the pipe spanning between supports. A steel channel extends between the top of the timber piles at each support point. Two pair of continuous steel sheet piles (laid horizontal) are used to form a cradle that will serve as the structural support for the pipe between pile supports. The sheet piles are supported on the steel channel that extends between the pairs of timber piles at each support point. The pipe will then rest on a layer of engineered fill placed between the sheet pile cradle and the pipe. Please refer to the drawing titled “Pile-Supported Utility – Conceptual Design” (Figure No. 2) attached to this report for a plan view and section detail of the pile-supported utility concept-level design.

Timber piles should extend a sufficient distance into the inorganic natural sands encountered in borings B1 through B4. The final pile lengths will vary based on the suitability of the underlying granular soils, and can be determined by the number of blows required to achieve final set during driving. Preliminarily, SME calculated estimated pile penetrations for timber piles driven near borings B1 through B4 to provide a working capacity in compression of 25 kips per pile. This working capacity accounts for a reduction in capacity of 5 kips per pile as a result of negative skin friction or downdrag, which will act as an additional load on the pile as the soil around the



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pile settles due to on-going compression of the organic soils. Preliminarily, for a tapered timber pile with a minimum pile tip diameter of 7 inches, the pile would have to extend about 25 feet below the invert level of the pipe, or to about elevation of 817 feet, to achieve the required working capacity.

SME had telephone conversations with several contractors experienced in timber pile installation and steel sheeting production. Based on those discussions, we preliminarily estimate the concept-level design described above and depicted on Figure No. 2 would cost between about **\$70,000** and **\$90,000** to be installed. The estimated cost includes material and installation costs associated with the driven piles and steel sheeting and channels. The estimated cost does not include costs associated with the new drain pipe, or construction considerations required to install the drain pipe (e.g., excavation of a trench to install the piles and structural support, backfilling, or construction dewatering).

For this alternative, a variety of pipe types could be used for the new storm drain (i.e., special joints or materials would not be required) since the pipe would be continuously supported by the cradle system. Since the new pipe is supported by deep foundations that extend below the existing organic soils, the reconstructed storm drain would not be at risk of future settlements due to ongoing compression of the organic soils left in place.

Ground Improvement Technique (Alternative C)

Controlled Modulus Columns™ (CMC's) is a patented ground improvement technology developed by Menard (www.dgi-menard.com), which is a specialty geotechnical contractor based in Bridgeville, Pennsylvania. CMC's are installed with specially designed augers, powered by equipment with large torque capacity and high static down thrust, which displaces the soil laterally as the augers extended into the subsurface, with virtually no spoil or vibration. The augers are extended through the poor soils and into the underlying suitable subgrade, creating a cylindrical space in the ground. During auger extraction, the cylindrical space or column is filled with a cement-based grout under pressure. The diameter, spacing, and pressure-grouting procedures for the CMC's are designed to be a composite soil/cement ground improvement and improve the overall subgrade modulus to control post construction settlement (deformation). The following image depicts the generalized installation method.

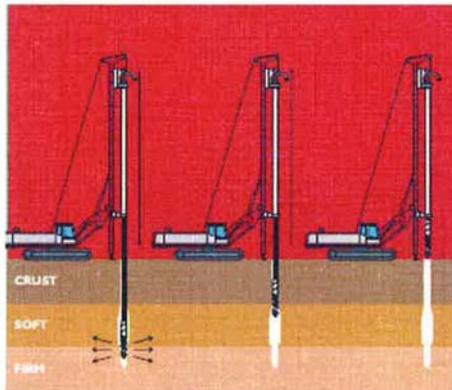


Image provided by: www.menardusa.com



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The drain pipe can be constructed over the ground improved with the CMC's. Typically, a compacted, aggregate layer with a minimum specified thickness is placed between the top of the CMC's and the invert of the drain pipe. Please refer to the drawing titled "Utility with Ground Improvement Technique – Conceptual Design" (Figure No. 3) attached to this report for a plan view and section detail of the new drain pipe supported on an improved subgrade.

Menard preliminarily estimated the concept-level design described above and depicted on Figure No. 3 would cost between about **\$100,000** and **\$140,000** to be installed. The estimated cost includes material and installation costs associated with the CMC's. The estimated cost does not include costs associated with the new drain pipe or the aggregate bedding layer, or construction considerations required to install the drain pipe (e.g., excavation to establish the trench level at which the CMC's start, or construction dewatering).

As with the pile alternative, a variety of pipe types could be used for the new storm drain (i.e., special joints or materials would not be required) since the pipe would be continuously supported on the improved subgrade. For this alternative, the reconstructed storm drain would not be at risk of excessive settlements associated with the organics since the subsoils would be improved by the installation of the CMC's.

General Comments

The cost opinions for each alternative presented above are intended for preliminary planning purposes to assist the City of Portage in the selection of a suitable alternative based on cost and future risk of poor performance. A more refined cost opinion for the selected alternative should be prepared once schematic design is completed. The cost opinions presented above do not include costs for final design and engineering, bidding, or construction observation and quality control. Fees for these services should be factored into the overall anticipated project cost.

SME can assist you in performing a final design and preparing construction plans for the project. The fees for this service will vary depending on the alternative selected by the City of Portage. Please inform SME of the selected alternative for reconstruction of the pipe, and we can provide an associated fee for performing a final design and preparing construction plans.

As indicated above, the cost opinions for each alternative are based on the assumption that the affected area of the existing pipe alignment extends over a distance of 300 feet, beginning at the existing stormwater basin and extending north to about the southeast corner of the Sonic restaurant property. The extents of the project have been estimated only by visual observations of settlements at the ground surface and have not been verified by a detailed inspection of the existing pipe. Consideration should be given to performing an inspection of the pipe to assist with the determination of the northern limit of the project. Additional borings or soil probes could also be performed to the north of the existing borings to assist with the evaluation of the project limits.

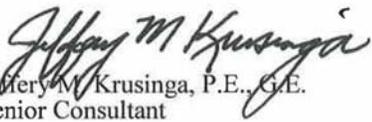


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We appreciate the opportunity to assist you with this project. If you have any questions regarding this report, or if we can be of further service, please contact us.

Very truly yours,

SOIL AND MATERIALS ENGINEERS, INC.


Jeffrey M. Krusinga, P.E., G.E.
Senior Consultant

Report Prepared By:
Andrew T. Bolton, P.E.
Project Engineer

Report Reviewed By:
Timothy H. Bedenis, P.E.
Chief Geotechnical Engineer

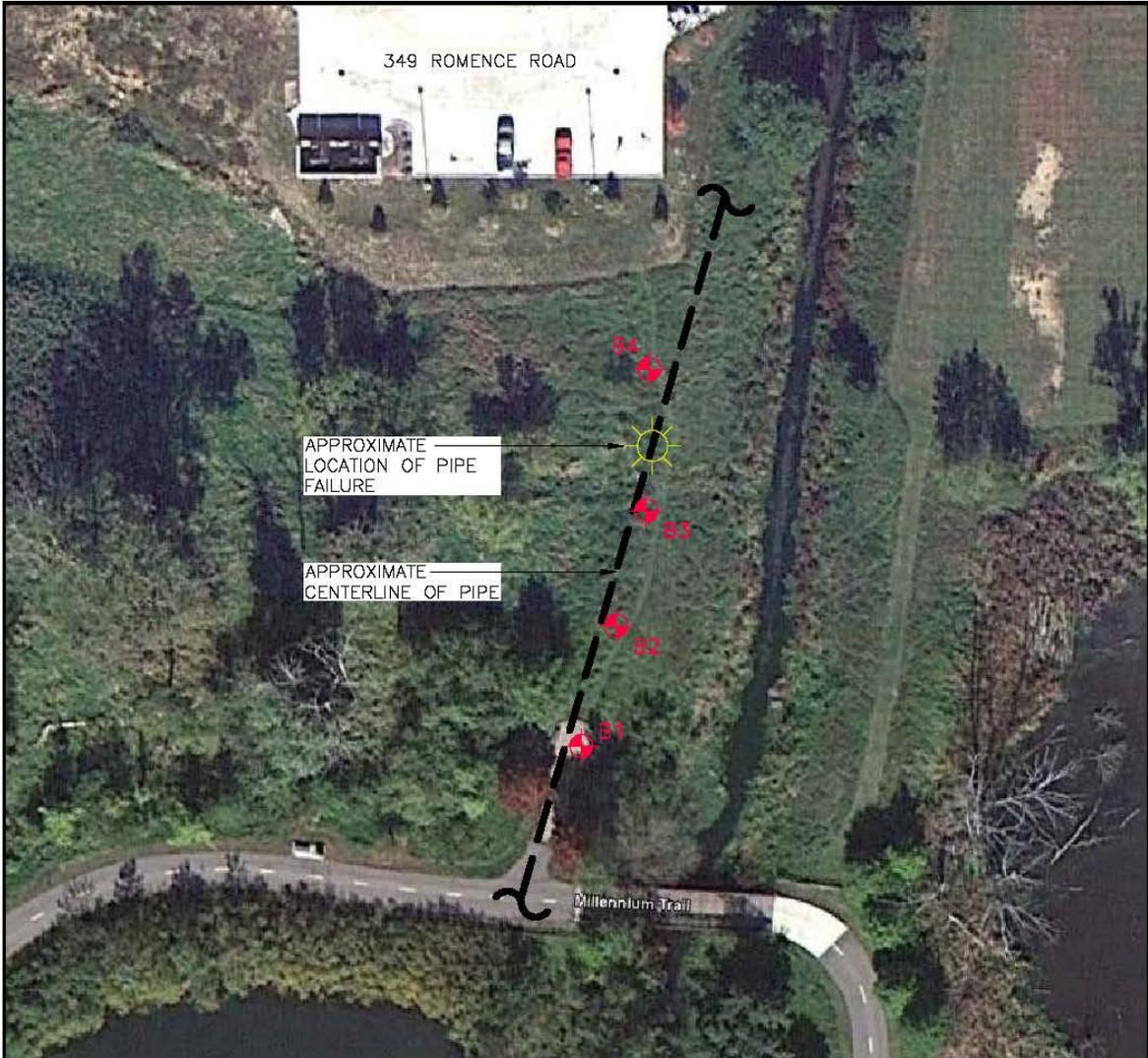
Attachments: Boring Location Diagram (Figure No. 1)
Pile-Supported Utility – Conceptual Design (Figure No. 2)
Utility with Ground Improvement Technique – Conceptual Design (Figure No. 3)
Geotechnical Notes
Unified Soil Classification System (USCS)
Boring Logs (B1 through B4)
Laboratory Testing Procedures
General Comments
Important Information about your Geotechnical Engineering Report

Enclosures: Two Original Reports

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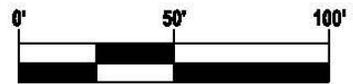
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LEGEND

 APPROXIMATE BORING LOCATION

NOTE:
DRAWING INFORMATION TAKEN FROM GOOGLE EARTH PRO.



GRAPHIC SCALE: 1" = 50'

Jan 18, 2013 - 11:33am - good S:\PROJECTS\066000.00\CAD\066697.00\DWG\Srev\066697.00-02.dwg

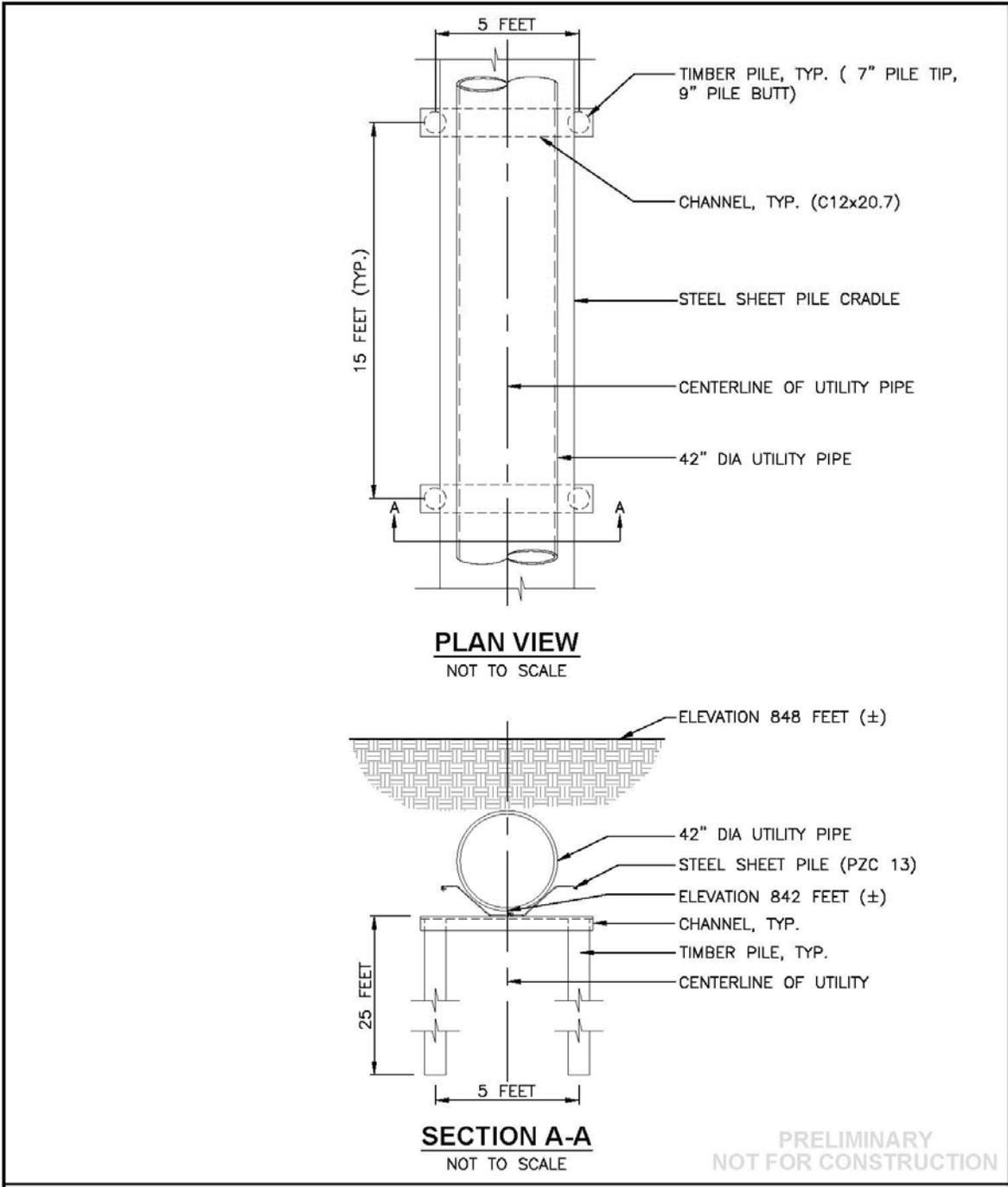


Date	11/14/2012
Drawn By	HJC
Designed By	ATB
Scale	1" = 50'
Project	066697.00

**BORING LOCATION DIAGRAM
CONSOLIDATED DRAIN PIPE REPAIR
CITY OF PORTAGE, MICHIGAN**

No.	Revision Date

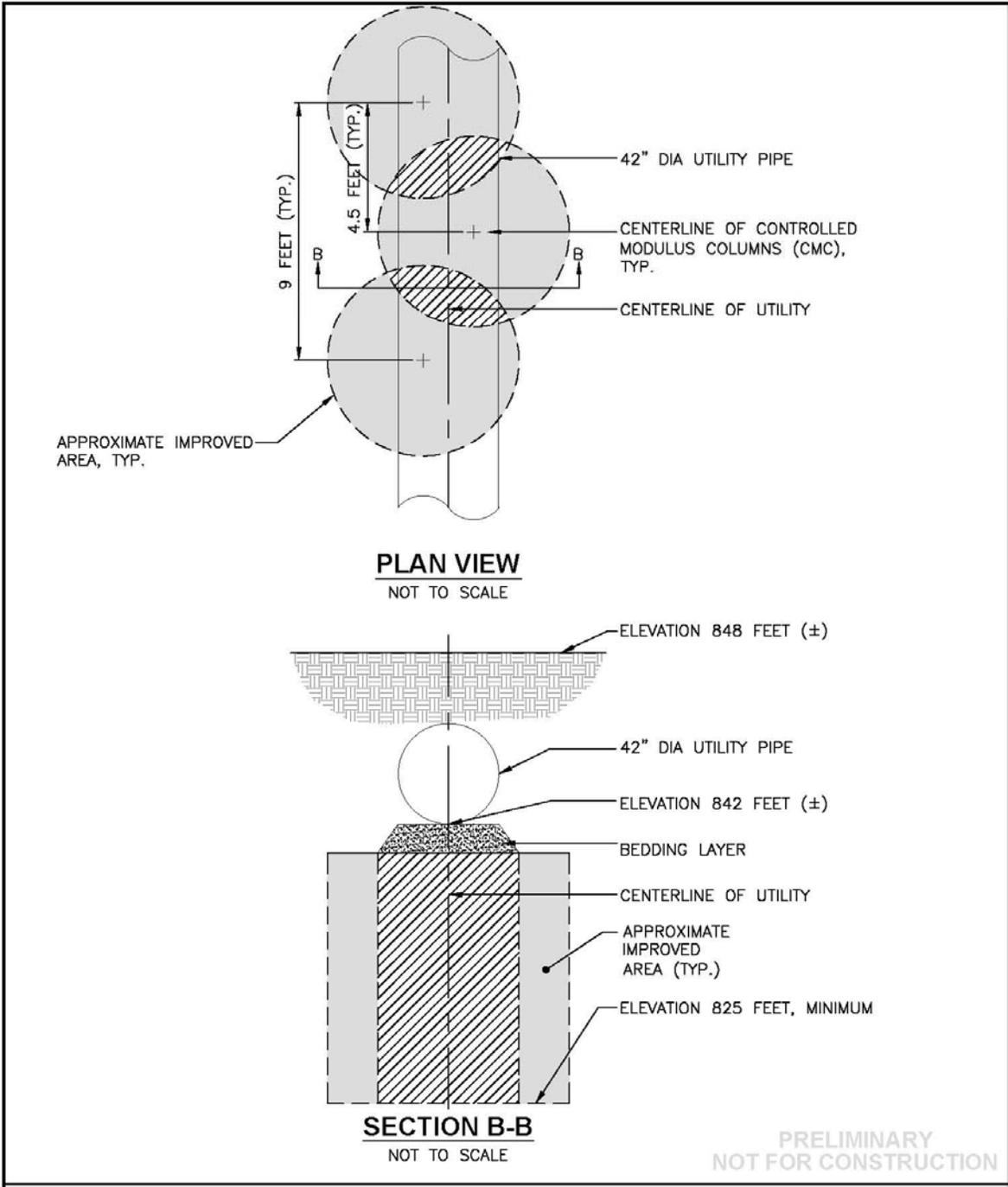
Figure No. 1



Jan 17, 2013 - 1:39pm - good S:\PROJECTS\0668000.00\CAD\066897.00\DWGS\rev\0\066897.00-01.dwg

 www.sme-usa.com © 2013	Date	01/15/2013	PILE-SUPPORTED UTILITY-CONCEPTUAL DESIGN CONSOLIDATED DRAIN PIPE REPAIR CITY OF PORTAGE, MICHIGAN	No.	Revision Date
	Drawn By	HJC			
	Designed By	ATB			
	Scale	NTS			
	Project	066897.00			

Figure No. 2



Jan 17, 2013 - 1:43pm - good S:\PROJECTS\0668000.00\CAD\066897.00\DWGS\rev\0\066897.00-01.dwg

 <p>www.sme-usa.com © 2013</p>	Date	01/15/2013	UTILITY WITH GROUND IMPROVEMENT TECHNIQUE-CONCEPTUAL DESIGN CONSOLIDATED DRAIN PIPE REPAIR CITY OF PORTAGE, MICHIGAN	No.	Revision Date
	Drawn By	HJC			
	Designed By	ATB			
	Scale	NTS			
	Project	066897.00			

Figure No. 3

**Sampling Symbols**

2ST	-	Shelby Tube – 2" O.D.
3ST	-	Shelby Tube – 3" O.D.
AS	-	Auger Sample
CS	-	Continuous Sample
GS	-	Grab Sample
LS	-	Liner Sample
NR	-	No Recovery
RC	-	Rock Core diamond bit. NQ size, except where noted
SS	-	Split-Spoon 1-3/8" I.D., 2" O.D. except where noted
VS	-	Vane Shear
WS	-	Wash Sample

Typical Abbreviations

WOH	-	Weight of Hammer
WOR	-	Weight of Rods
SP	-	Soil Probe
PID	-	Photo Ionization Device
FID	-	Flame Ionization Device

Standard Penetration 'N-value' – Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split spoon, except where noted.

Particle Sizes

Boulders	-	Greater than 12 inches (305 mm)
Cobbles	-	3 inches (76.2 mm) to 12 inches (305 mm)
Gravel-Coarse	-	3/4 inches (19.05 mm) to 3 inches (76.2mm)
Fine	-	No. 4 (4.75 mm) to 3/4 inches (19.05 mm)
Sand- Coarse	-	No. 10 (2.00 mm) to No. 4 (4.75 mm)
Medium	-	No. 40 (0.425 mm) to No. 10 (2.00 mm)
Fine	-	No. 200 (0.074 mm) to No. 40 (0.425 mm)
Silt	-	0.005 mm to 0.074 mm
Clay	-	Less than (0.005 mm)

Depositional Features

Parting	-	as much as 1/16 inch (1.6 mm) thick
Seam	-	1/16 inch (1.6 mm) to 1/2 inch (12.7 mm) thick
Layer	-	1/2 inch (12.7 mm) to 12 (305 mm) inches thick
Stratum	-	greater than 12 inches (305 mm) thick
Pocket	-	small, erratic deposit of limited lateral extent
Lens	-	lenticular deposit
Varved	-	alternating seams or layers of silt and/or clay and sometimes fine sand
Occasional	-	one or less per foot (305 mm) of thickness
Frequent	-	more than one per foot (305 mm) of thickness
Interbedded	-	applied to strata of soil or beds of rock lying between or alternating with other strata of a different nature

Groundwater levels indicated on the boring log are the levels measured in the boring at the times indicated. The accurate determination of groundwater levels may not be possible with short term observations, especially in low permeability soils. The groundwater levels shown may fluctuate throughout the year with variation in precipitation, evaporation and runoff.

Classification**Cohesionless Soils (Blows per foot or 0.3 m)**

Very Loose	:	0 to 4
Loose	:	5 to 9
Medium Dense	:	10 to 29
Dense	:	30 to 49
Very Dense	:	50 to 80
Extremely Dense	:	Over 80

Soil Constituents

Trace	:	Less than 5%
Trace to Some	:	5% to 12%
Some	:	12% to 25%
Use Descriptor	:	25% to 50%
(i.e., Silty, Clayey, etc.)		

Cohesive Soils

	<u>Consistency</u>	<u>Shear Strength</u>
Very Soft	:	0.25 kips/ft ² (12.0 kPa) or less
Soft	:	0.25 to 0.49 kips/ft ² (12.0 to 23.8 kPa)
Medium	:	0.50 to 0.99 kips/ft ² (23.9 to 47.7 kPa)
Stiff	:	1.00 to 1.99 kips/ft ² (47.8 to 95.6 kPa)
Very Stiff	:	2.00 to 3.99 kips/ft ² (95.7 to 191.3 kPa)
Hard	:	4.00 kips/ft ² (191.4 kPa) or greater

Soil description

If clay content sufficiently dominates soil properties, then clay becomes the primary noun with the other major soil constituent as modifier: i.e. silty clay. Other minor soil constituents may be added according to estimates of soil constituents present, i.e., silty clay, trace to some sand, trace gravel.

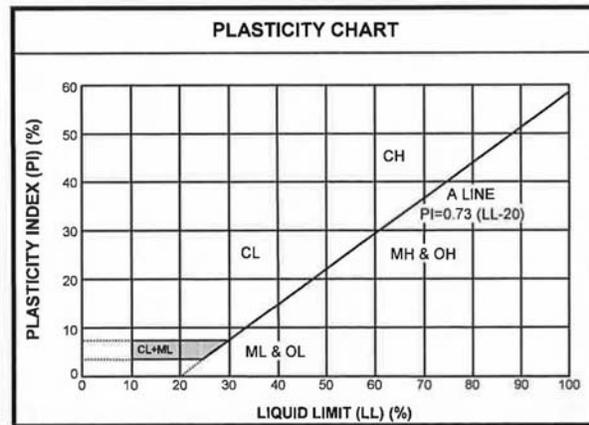


UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
Clean Gravels (Less than 5% fines)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size		GW Well-graded gravels; sandy gravels, little or no fines
		GP Poorly-graded gravels; sandy gravels, little or no fines
	Gravels with fines (More than 12% fines)	
		GM Silty gravels, some sand or sandy gravels, some silt
		GC Clayey gravels, some sand or sandy gravels, some silt
Clean Sands (Less than 5% fines)		
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size		SW Well-graded sands, gravelly sands, little or no fines
		SP Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
		SM Silty sands or sands, some silt
		SC Clayey sands or sands, some clay
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size)		
SILTS AND CLAYS Liquid limit less than 50%		ML Inorganic silts, sandy silts or clayey silts with slight plasticity
		CL Inorganic clays of low plasticity, sandy clays, silty clays
		OL Organic silts and organic clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH Inorganic silts of high plasticity
		CH Inorganic clays of high plasticity
		OH Organic silts and organic clays of high plasticity
HIGHLY ORGANIC SOILS		PT Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA	
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3
GP	Not meeting all gradation requirements for GW
GM	Atterberg limits below "A" line or PI less than 4
GC	Atterberg limits above "A" line with PI greater than 7
	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3
SP	Not meeting all gradation requirements for SW
SM	Atterberg limits below "A" line or PI less than 4
SC	Atterberg limits above "A" line with PI greater than 7
	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
 Less than 5 percent.....GW, GP, SW, SP
 More than 12 percent.....GM, GC, SM, SC
 5 to 12 percent.....Borderline cases requiring dual symbols





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BORING B1

PAGE 1 OF 1

PROJECT NAME: Consolidated Drain Pipe Repair

PROJECT NUMBER: 066697.00

CLIENT: City of Portage

PROJECT LOCATION: Portage, Michigan

DATE STARTED: 11/8/12

COMPLETED: 11/8/12

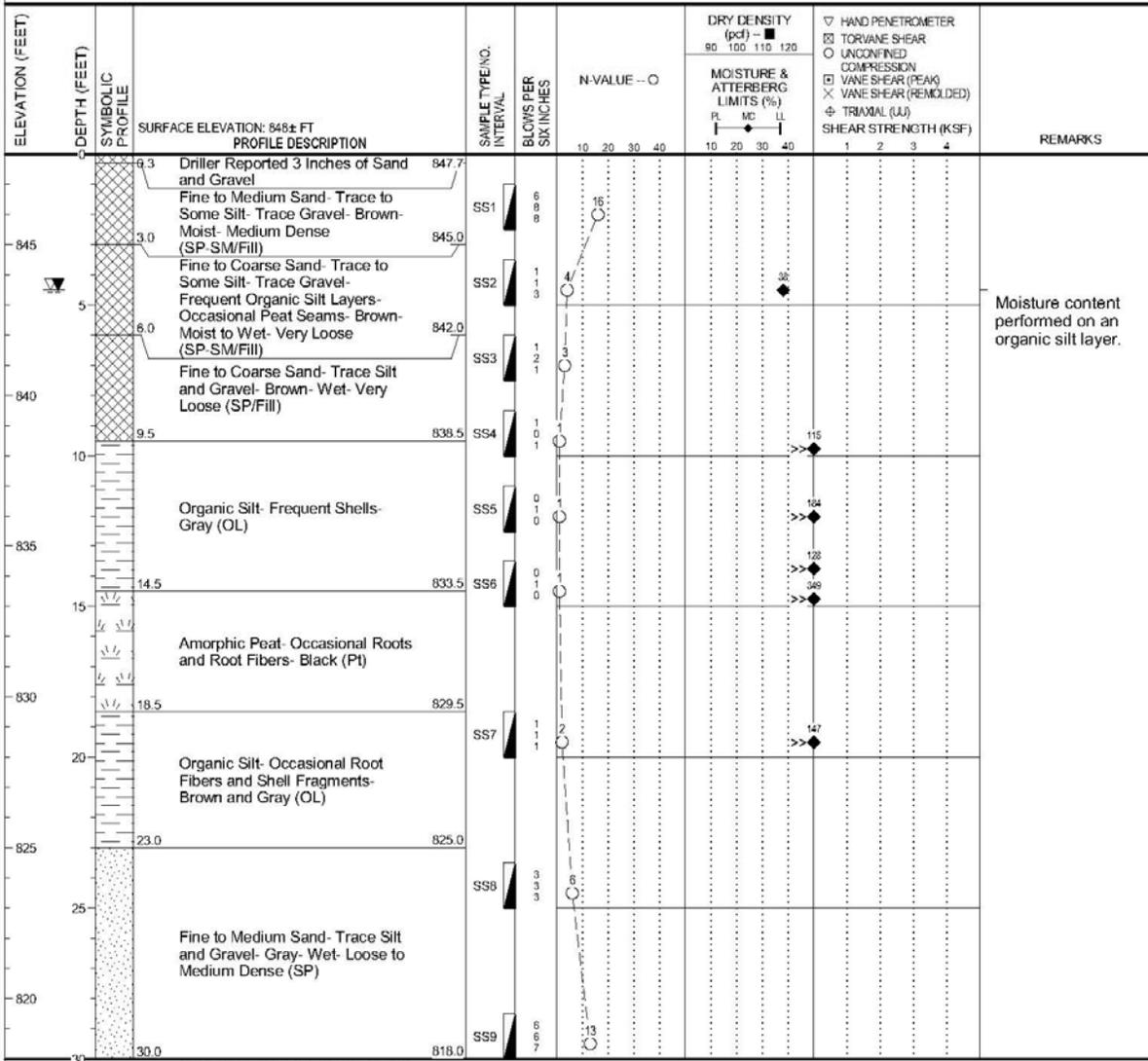
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: ATV

LOGGED BY: ATB

CHECKED BY: MLB



GROUNDWATER & BACKFILL INFORMATION		
	DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	4.5	843.5
▽ AT END OF BORING:	4.5	843.5
BACKFILL METHOD: Auger Cuttings		

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

January 22, 2013



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BORING B2

PAGE 1 OF 1

PROJECT NAME: Consolidated Drain Pipe Repair

PROJECT NUMBER: 066697.00

CLIENT: City of Portage

PROJECT LOCATION: Portage, Michigan

DATE STARTED: 11/8/12

COMPLETED: 11/8/12

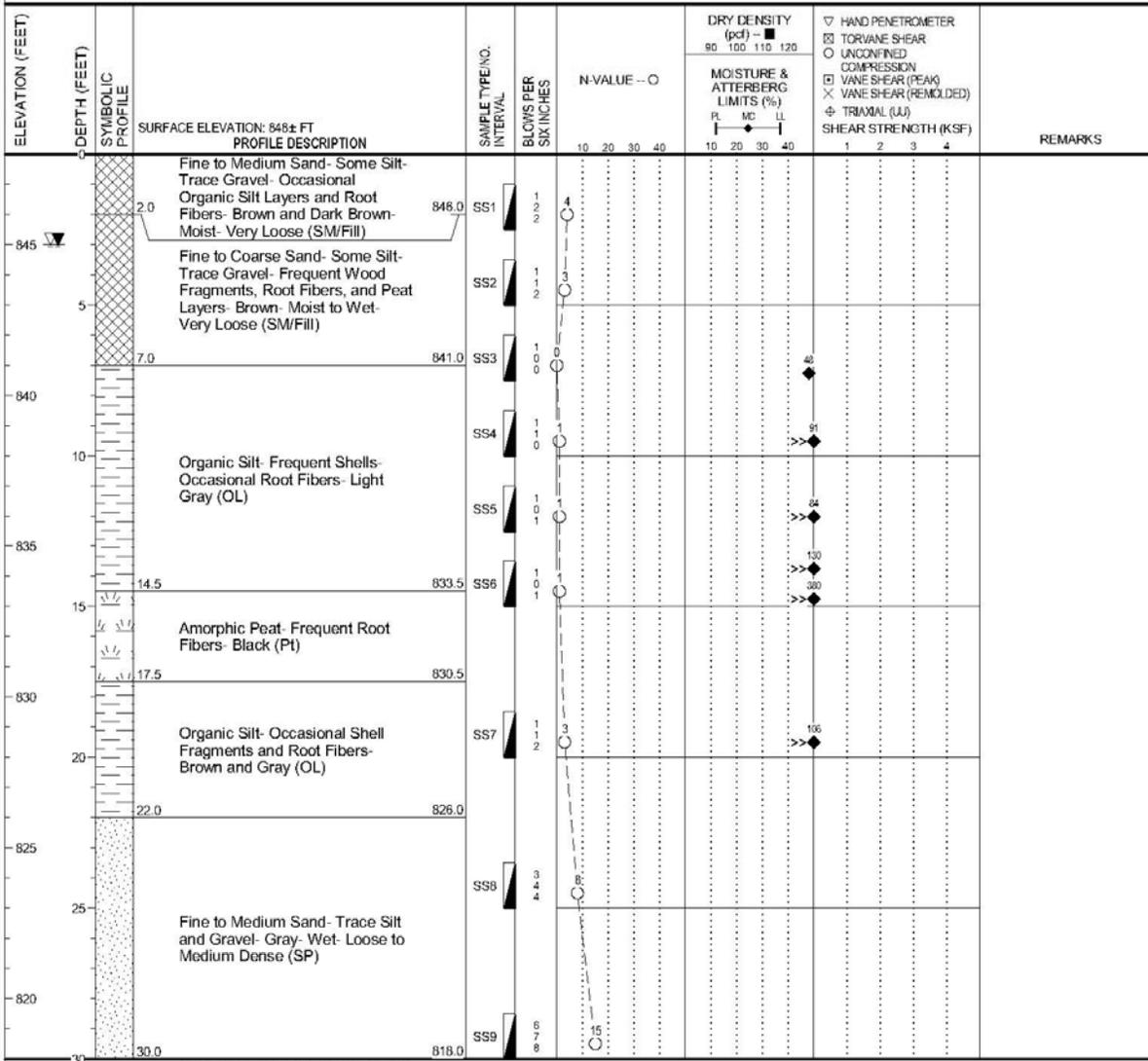
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: ATV

LOGGED BY: ATB

CHECKED BY: MLB



END OF BORING AT 30.0 FEET.

GROUNDWATER & BACKFILL INFORMATION		
	DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	3.0	845.0
▽ AT END OF BORING:	3.0	845.0
BACKFILL METHOD: Auger Cuttings		

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

January 22, 2013



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BORING B3

PAGE 1 OF 1

PROJECT NAME: Consolidated Drain Pipe Repair

PROJECT NUMBER: 066697.00

CLIENT: City of Portage

PROJECT LOCATION: Portage, Michigan

DATE STARTED: 11/8/12

COMPLETED: 11/8/12

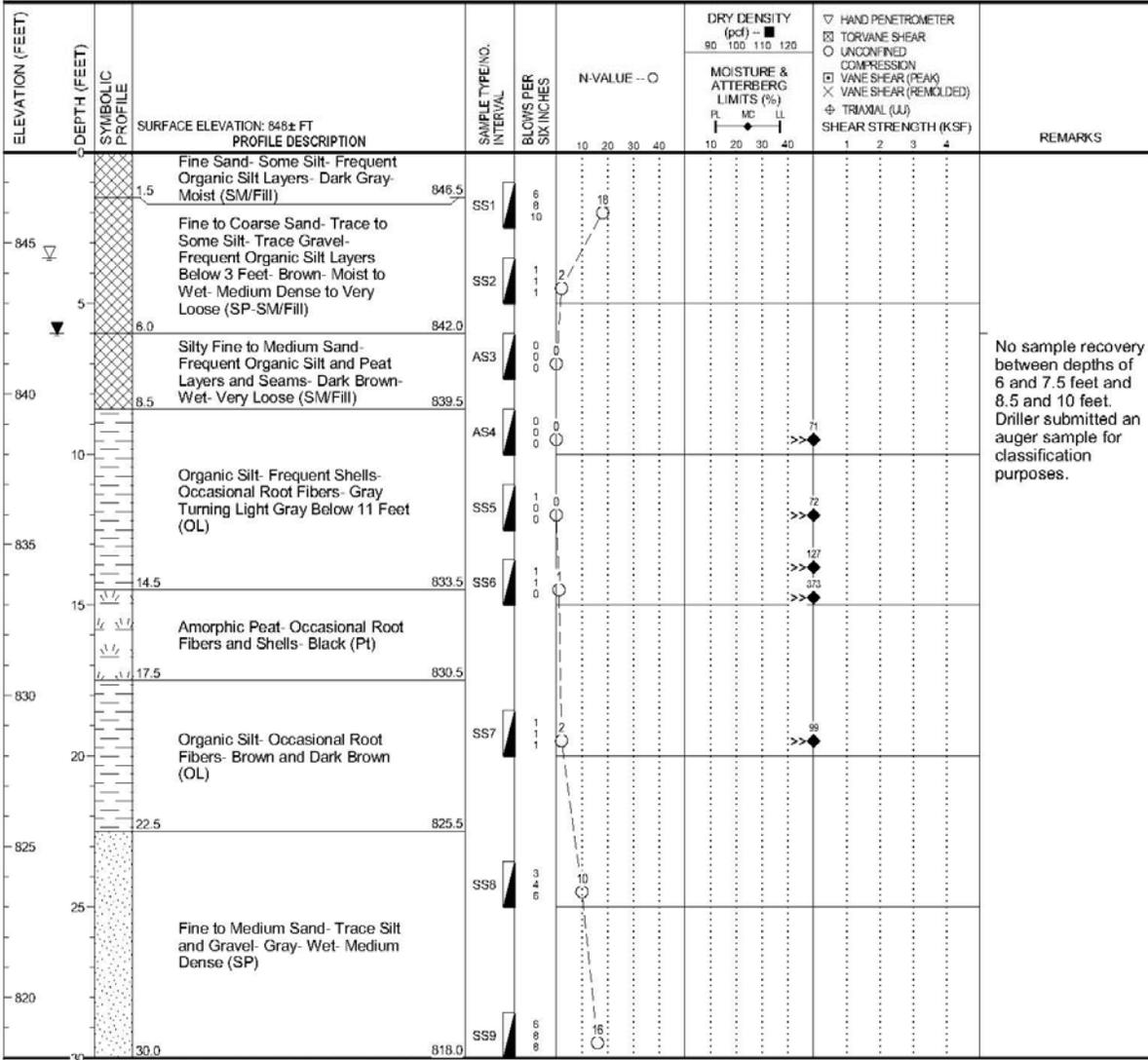
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: ATV

LOGGED BY: ATB

CHECKED BY: MLB



No sample recovery between depths of 6 and 7.5 feet and 8.5 and 10 feet. Driller submitted an auger sample for classification purposes.

GROUNDWATER & BACKFILL INFORMATION

DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	3.5 844.5
▽ AT END OF BORING:	6.0 842.0

BACKFILL METHOD: Auger Cuttings

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

January 22, 2013



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BORING B4

PAGE 1 OF 1

PROJECT NAME: Consolidated Drain Pipe Repair

PROJECT NUMBER: 066697.00

CLIENT: City of Portage

PROJECT LOCATION: Portage, Michigan

DATE STARTED: 11/8/12

COMPLETED: 11/8/12

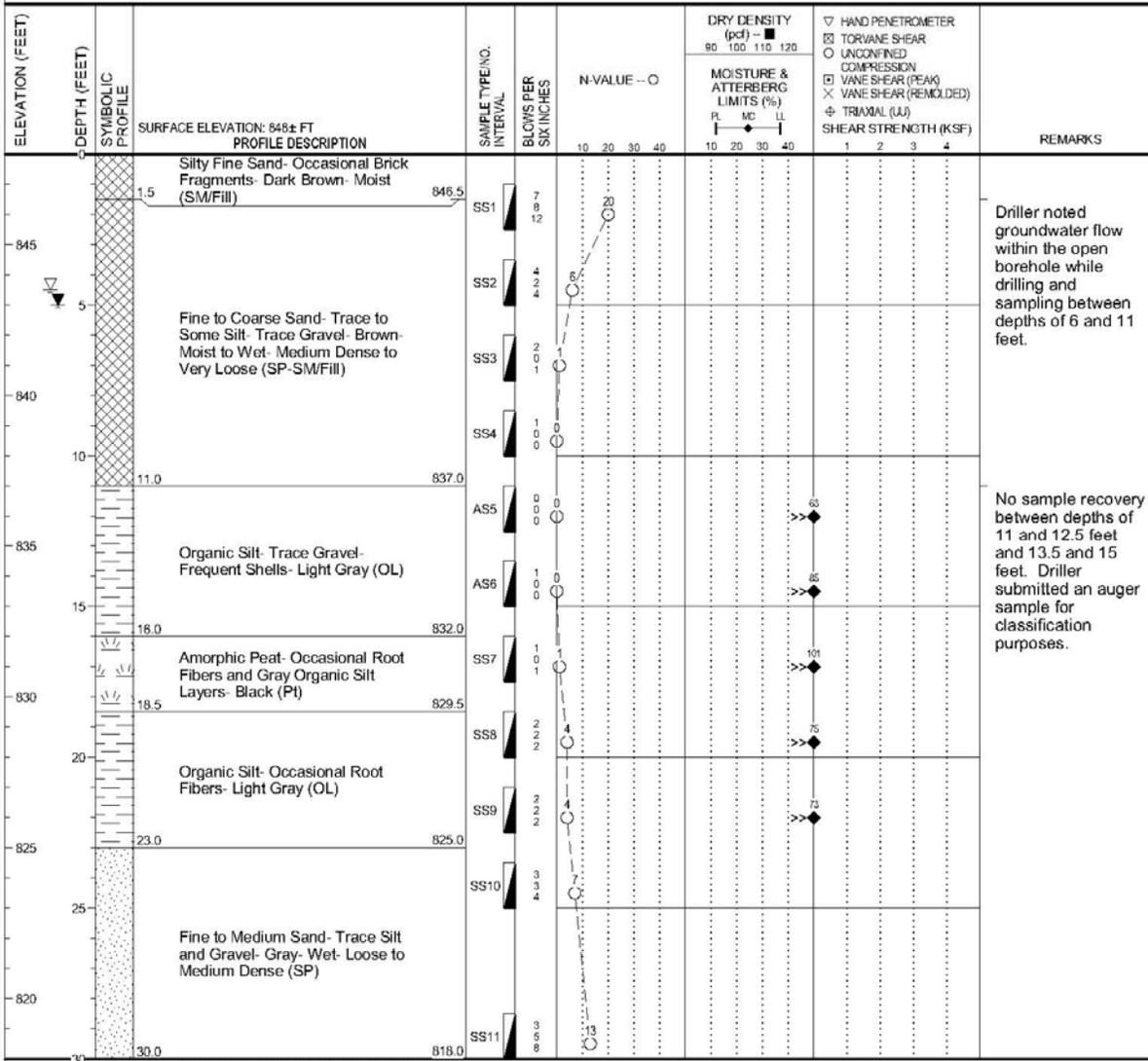
BORING METHOD: Solid-stem Augers

DRILLER: RM

RIG NO.: ATV

LOGGED BY: ATB

CHECKED BY: MLB



GROUNDWATER & BACKFILL INFORMATION		
	DEPTH (FT)	ELEV (FT)
▽ DURING BORING:	4.5	843.5
▽ AT END OF BORING:	5.0	843.0
BACKFILL METHOD: Auger Cuttings		

NOTES: 1. The indicated stratification lines are approximate. In situ, the transition between materials may be gradual.

January 22, 2013

LABORATORY TESTING PROCEDURES

Visual Engineering Classification

Visual classification was performed on recovered samples. The appended General Notes and Unified Soil Classification System (USCS) sheets include a brief summary of the general method used visually classify the soil and assign an appropriate USCS group symbol. The estimated group symbol, according to the USCS, is shown in parentheses following the textural description of the various strata on the boring logs appended to this report. The soil descriptions developed from visual classifications are sometimes modified to reflect the results of laboratory testing.

Moisture Content

Moisture content tests were performed by weighing samples from the field at their in-situ moisture condition. These samples were then dried at a constant temperature (approximately 110° C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample and the weight of the water that was expelled during drying. The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

Hand Penetrometer Tests

In the hand penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small calibrated, spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square-foot (tsf). Theoretically, the undrained shear strength of the cohesive sample is one-half the unconfined compressive strength. The undrained shear strength (based on the hand penetrometer test) presented on the boring logs is reported in units of kips per square-foot (ksf).

Torvane Shear Tests

In the Torvane test, the shear strength of a low strength, cohesive soil sample is estimated by measuring the resistance of the sample to a torque applied through vanes inserted into the sample. The undrained shear strength of the samples is measured from the maximum torque required to shear the sample and is reported in units of kips per square-foot (ksf).

Loss-on-Ignition (Organic Content) Tests

Loss-on-ignition (LOI) tests are conducted by first weighing the sample and then heating the sample to dry the moisture from the sample (in the same manner as determining the moisture content of the soil). The sample is then re-weighed to determine the dry weight and then heated for 4 hours in a muffle furnace at a high temperature (approximately 440° C). After cooling, the sample is re-weighed to calculate the amount of ash remaining, which in turn is used to determine the amount of organic matter burned from the original dry sample. The organic matter content of the specimen is expressed as a percent compared to the dry weight of the sample.

Atterberg Limits Tests

Atterberg limits tests consist of two components. The plastic limit of a cohesive sample is determined by rolling the sample into a thread and the plastic limit is the moisture content where a 1/8-inch thread begins to crumble. The liquid limit is determined by placing a 1/2-inch thick soil pat into the liquid limits cup and using a grooving tool to divide the soil pat in half. The cup is then tapped on the base of the liquid limits device using a crank handle. The number of drops of the cup to close the gap formed by the grooving tool 1/2 inch is recorded along with the corresponding moisture content of the sample. This procedure is repeated several times at different moisture contents and a graph of moisture content and the corresponding number of blows is plotted. The liquid limit is the moisture content at a nominal 25 drops of the cup. From this test, the plasticity index can be determined by subtracting the plastic limit from the liquid limit.

GENERAL COMMENTS

Basis of Geotechnical Report

This report has been prepared in accordance with generally accepted geotechnical engineering practices to assist in the design and/or evaluation of this project. If the project plans, design criteria, and other project information referenced in this report and utilized by SME to prepare our recommendations are changed, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or approved in writing by our office.

The discussions and recommendations submitted in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in the soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME should be contacted to reevaluate the recommendations of this report. SME should be retained to continue our services through construction to observe and evaluate the actual subsurface conditions relative to the recommendations made in this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of soil and foundation engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs. The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

Review of Design Details, Plans, and Specifications

SME should be retained to review the design details, project plans, and specifications to verify those documents are consistent with the recommendations contained in this report.

Review of Report Information With Project Team

Implementation of our recommendations may affect the design, construction, and performance of the proposed improvements, along with the potential inherent risks involved with the proposed construction. The client and key members of the design team, including SME, should discuss the issues covered in this report so that the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk, and expectations for performance and maintenance.

Field Verification of Geotechnical Conditions

SME should be retained to verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

Project Information for Contractor

This report and any future addenda or other reports regarding this site should be made available to prospective contractors prior to submitting their proposals for their information only and to supply them with facts relative to the subsurface evaluation and laboratory test results. If the selected contractor encounters subsurface conditions during construction, which differ from those presented in this report, the contractor should promptly describe the nature and extent of the differing conditions in writing and SME should be notified so that we can verify those conditions. The construction contract should include provisions for dealing with differing conditions and contingency funds should be reserved for potential problems during earthwork and foundation construction. We would be pleased to assist you in developing the contract provisions based on our experience.

The contractor should be prepared to handle environmental conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental Assessment reports prepared for this site should be made available for review by bidders and the successful contractor.

Third Party Reliance/Reuse of This Report

This report has been prepared solely for the use of our Client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in the project, unless specifically allowed by SME in writing. SME also is not responsible for the interpretation by other parties of the geotechnical data and the recommendations provided herein.



Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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DRAFT CONTRACT AGREEMENT

Following is a “*draft copy*” of the contract that will be executed by the City and the Firm for the completion of this project.

CITY OF PORTAGE

CONTRACT

THIS CONTRACT made the _____ day of _____, 2013, by and between _____, hereinafter called the “Contractor,” and the City of Portage, 7900 South Westnedge Avenue, Portage, Michigan 49002, hereinafter called the “City.”

WITNESSETH, THAT the Contractor and the City for the consideration stated herein agree as follows:

ARTICLE I - SCOPE OF WORK

The Contractor shall perform everything to be performed and shall provide and furnish all of the labor, materials, necessary tools, expendable equipment, and all utility and transportation services required to perform and complete in a workmanlike manner all the work required for the Consolidated Drain Rehabilitation Project all in strict accordance with the Plans and Specifications, including any and all addenda, which plans and specifications are made a part of this contract, and in strict compliance with the Contractor’s proposal and other contract documents herein mentioned which are a part of this contract; and the Contractor shall do everything required by this contract and the other documents constituting a part hereof.

ARTICLE II - COMPENSATION TO BE PAID TO THE CONTRACTOR

In consideration of the completion of the work described herein and in fulfillment of all stipulations of this contract to the satisfaction and acceptance of the City, the City shall pay and the said Contractor further agrees to receive and accept payment based on the prices bid per unit for material and labor as set forth in the conformed copy of the Contractor’s proposal (or bid) as filed with the City on the _____ day of _____, 2013, the sum of which shall be,

_____	\$ _____
(amount in words)	(in figures)

as full compensation for furnishing all the equipment and materials, and for the costs of all premiums on insurance and bonds and for doing all the work contemplated and specified in this contract; also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstructions or difficulties which may be encountered in the prosecution of the same; and for all risks of every description connected with the work; and for well and faithfully completing the work and the whole thereof, in full compliance with the Plans and Specifications and the requirements under them. Payments are to be made to the Contractor in accordance with and subject to the provisions embodied in the contract documents hereto attached.

ARTICLE III - COMPONENT PARTS OF THIS CONTRACT

This contract consists of the following component parts, all of which are as fully a part of this contract as if herein set out verbatim, or, if not attached, as if hereto attached.

1. Advertisement for Bids
2. Instructions to Bidders
3. Special Provisions
4. Plans
5. City of Portage Contract Conditions and Specifications
6. Contractor's Proposal (or bid)
7. Contract (this document)

In the event that any provision in any of the above component parts of this contract conflicts with any provision in any other of the component parts, the provision in the component part first enumerated above shall govern over any other component part which follows it numerically, except as may be otherwise specifically stated.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed in four original counterparts the day and year first above written.

(SEAL)

CONTRACTOR

Attest:

By: _____
Signature

Print name and Title

Print Name and Title

(SEAL)

CITY OF PORTAGE

Attest:

By: _____
Maurice S. Evans, City Manager

Approved as to Form:

Randall L. Brown, Portage City Attorney

INSTRUCTIONS FOR EXECUTING CONTRACT WITH CITY OF PORTAGE

A. If the contractor is a corporation, the following certificate must be executed:

I, _____, certify that I am the Secretary of
print or type name
the corporate entity named as Contractor in the contract and that such corporate entity is a corporation
in good standing in the State of _____ and has authority
print or type name of state
to transact business in the State of Michigan. I certify that the contract between the City of Portage
and _____, Inc. was validly executed on behalf of the
print or type name of corporation
corporation by _____ who was then the _____
print or type name print or type name of title
of said corporation and has the authority to bind the corporation to the contractual agreements pursuant
to the authority of its governing body and by-laws and is within the scope of its corporate powers.

Print or type name of corporation

Dated: _____, 20____ By: _____
Its: _____

B. If contractor is an LLC, the following certificate must be executed:

I, _____, certify that I am a member of the
print or type name
Limited liability company named as Contractor in the contract and that such LLC is in good standing
in the State of _____ and that the LLC has the
print or type name of state
authority to transact business in the State of Michigan. I certify that the contract between the City of
Portage and _____ LLC was validly executed on behalf
print or type name of LLC
of the LLC by _____ who was then a member of said
print or type name
LLC and has the authority to bind the LLC to contractual agreements and that such contract is within
the scope of its powers.

Print or type name of LLC

Dated: _____, 20____ By: _____
Its: _____

CITY OF PORTAGE

LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____,
hereinafter called the Principal, and _____, hereinafter called the Surety,
are held and firmly bound unto CITY OF PORTAGE, 7900 South Westnedge Avenue, Portage,
Michigan 49002, in the sum of _____ Dollars (\$_____)
lawful money of the United States of America, to the Payment whereof, well and truly to be made, we
bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally,
firmly by these presents.

Sealed with our seals and dated this _____ day of _____, _____.

WHEREAS, the above named Principal has entered into a certain contract with the CITY OF
PORTAGE dated the _____ day of _____, _____ (hereinafter called the "Contract")
for _____ (**name of project**), which contract and specifications for said work
shall be deemed a part hereof as fully if set out herein.

AND WHEREAS, this bond given in compliance with and subject to the provisions of Act No.
213 of the Public Acts of Michigan, for the year 1963.

NOW, THEREFORE, the condition of this obligation is such that if payment shall be made by
the Principal to any Subcontractor or by him or any Subcontracts as the same may become due and
payable of all indebtedness which may arise from him to a Subcontractor or a party performing labor
or furnishing materials or supplies, or any Subcontractor to any person, firm, or corporation on account
of any labor performed or materials or supplies furnished in the performance of said contract, then this
obligation shall be void, otherwise the same shall be in full force and effect.

AND PROVIDED, that any alterations which may be made in the terms of said contract, or in
the work to be done under it, or the giving by the party of the first part to said contract any extension
of

Labor and Material Bond

Page 2

time for the performance of said contract or any other forbearance on the part of either party to the other, shall not in any way release the Principal and the Surety or either of them, their heirs, executors, administrators, successors or assigns from any liability hereunder, notice to the Surety of any such alterations, extensions of time or of any forbearance being hereby waived.

IN WITNESS THEREOF, the parties thereto have caused this instrument to be executed by their respective authorized officers this _____ day of _____, _____.

Signed, sealed, and delivered in
the presence of:

:

PRINCIPAL:

Its: _____

SURETY:

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, THAT _____ Contractors,
as principal and _____, as surety,
are held and firmly bound unto the _____
in the sum of _____

Dollars (\$ _____) to be paid to the City for which payment well and truly to be made
we, jointly and severally bind ourselves, our heirs, executors, administrators, and assigns firmly by the
presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, WHEREAS, the said
_____ did, on the _____ day of _____, 20____
enter into contract with the City for
the _____.

NOW, THEREFORE, if said Contractor shall save and hold harmless the said CITY from all public
liability and damages of every description in connection therewith, shall well and faithfully in all
things fulfill the said contract according to all the conditions and stipulations therein contained in all
respects, and shall save and hold harmless the said CITY from and against all liens and claims of every
description in connection therewith, then this obligation shall be void and of no effect; but otherwise it
shall remain in full force and virtue, and, in the event that said CITY shall extend the time for
completion of said work or otherwise modify elements of the contract in accordance with provisions
thereof, such extension of item or modification of the contract shall not in any way release the sureties
of this bond.

WITNESS our hands and seal this _____ day of _____, 20____.

WITNESSES:

Principal (Seal)

Surety (Seal)

MAINTENANCE AND GUARANTEE BOND

KNOW ALL MEN BY THESE PRESENTS, that _____
_____, Contractor, as principal and
_____, as surety are held and firmly bound unto
the City of Portage, Michigan, 7900 South Westnedge Avenue, Portage, Michigan 49002, hereinafter
known as the City, in the sum of _____
_____ Dollars (\$ _____) to be paid to said City, its legal
representatives and assigns, for which payment well and truly be made, we bind ourselves, our heirs,
executors, administrators, successors and assigns, and each and every one of them jointly, firmly by
these presents.

Sealed with our seals and dated this _____ day of _____, 20____.

WHEREAS, the above named Principal has entered into a certain contract with the City of
Portage, Michigan, dated this _____ day of _____, 20____
wherein the said principal covenanted and agreed as follows, to wit:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that by and
under said contract, the above named principal has agreed with the City that for a period of two (2)
years from the date of payment of Final Estimate, to keep in good order and repair any defect in all the
work done under said contract wither by the principal or his subcontractors, or his material supplies,
that may develop during said period due to improper materials, defective equipment, workmanship or
arrangements, and any other work affected in making good such imperfections, shall also be made
good all without the consent or approval of the principal after the final acceptance of the work, and
that whenever directed to do so by the City, by notice served in writing, either personally or by mail,
on the principal at

_____ or _____
_____ legal representatives, or successors, or on the surety at

WILL PROCEED at once to make such repairs as directed by said City and in case of failure to do so
within one week from the date of service of such notice, or within reasonable time not less than one
week, as shall be fixed in said notice, then the said City shall have the right to purchase such materials
and employ such labor and equipment as may be necessary for the purpose, and to undertake, do and
make such repairs and charge the expense thereof to, and receive same, from said principal or surety.

If any repair is necessary to be made at once to protect life and property, then and in that case, the said City may take immediate steps to repair or barricade such defects without notice to the Contractor. In such accounting the said City shall not be held to obtain the lowest figures for the doing of the work, or any part thereof, but all sums actual paid therefore shall be charged to the principal surety. In this connection the judgement of the said City is Final and conclusive. If the said principal for a period of two (2) years from the date of payment of Final Estimated, shall keep said work so constructed under said contract in good order and repair, excepting only such part or parts of said work which may have been disturbed without the consent or approval of said principal after the final acceptance of the same, and shall whenever notice is given as hereinbefore specified, at once proceed to make repair as in said notice directed, or shall reimburse the City for any expense incurred by making such repairs, should the principal or surety fail to do as hereinbefore specified, and shall fully indemnify, defend and save harmless the said City from all suits and actions for damages of every name and description brought or claimed against it for or on account of any injury or damage to person or property received or sustained by any party or parties, by or from any of the acts or omissions or through negligence of said principal, servants, agents, or employees in the prosecution of the work included in said contract, and from any and all claims arising under the Worker's Compensation Act, so-called, of the State of Michigan, then the above obligation shall be void, otherwise too remain in full force and effect.

IN WITNESS THEREOF, the parties hereto have caused this instrument to be executed by their respective authorized officers this _____ day of _____, 20____.

Signed, sealed, and Delivered
in the Presence of:

Principal (Seal)

Surety (Seal)