CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

South Bend One-Way to Two-Way Street Conversion

Project No. 116-001

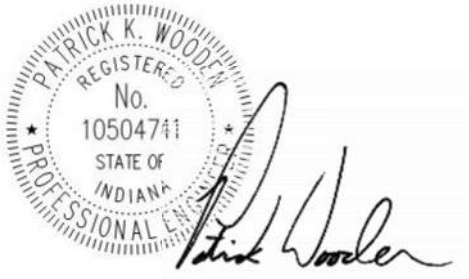
January 8, 2016

Prepared for

CITY OF SOUTH BEND, INDIANA
BOARD OF PUBLIC WORKS

By

American Structurepoint, Inc.



Registered Professional Engineer
State of Indiana No. **10504741**

FOR BIDS DUE: **February 23, 2016**

RESCHEDULED FROM: February 9, 2016

City of South Bend, Indiana
Department of Public Works

South Bend One-Way to Two Way Street Conversion
Project No. 116-001

shall be understood to include all supplemental specifications in force for lettings effective after September 1, 2015.

These **SPECIAL PROVISIONS** will list only "Additions" or "Deletions" to the **PREVAILING SPECIFICATIONS** and are to be used only in conjunction with the **PREVAILING SPECIFICATIONS.**

In the event of conflict between the **SPECIAL PROVISIONS** and the **PREVAILING SPECIFICATIONS**, the **SPECIAL PROVISIONS** will govern.

III. DEFINITION OF TERMS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 101

B. Additions:

1. Where the term "or equal" is used in these specifications, the Bid provider deviating from specified item shall file with his/her Bid a letter fully explaining and justifying his/her proposed article or equal. The City of South Bend shall be the sole judge in determining if the “or equal” offered meets the specification.

IV. BIDDING REQUIREMENTS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 102

B. Additions:

1. Each Bid provider shall completely execute and submit the following documents with the Bid:

   a. City of South Bend Contractor’s Bid for Public Work Form

   b. Bid Bond stating 5% of the total Bid or Certified Check of 5% of the bid.

   c. Contractor’s Non-Collusion and Non-Debarment Affidavit, Certification Regarding Investment with Iran, Employment Eligibility Verification, Non-Discrimination Commitment and Certification of use of United States Steel Products or Foundry Products.

2. Questions from Bidders regarding the Contract Documents, Plans, and / or Bid Documents will not be accepted after February 15, 2016.

3. An electronic spreadsheet of the itemized proposal may be provided to attendees of the mandatory Pre-Bid Conference for use in completing the Bid Package documents. Any use of electronic files provided by the Owner are for the Bidder’s convenience.

   a. These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. Consultant makes no representation regarding the accuracy or completeness of the electronic files Recipient receives. In the event a conflict arises between the signed or sealed hard-copy construction documents prepared by the Engineer and the electronic files, the signed or sealed hard-copy construction documents shall govern. Recipient is responsible for determining if any conflict exists.

   b. Any use or reuse of electronic files by the Bidder or by others will be at Bidder’s sole

VIII. AWARD OF CONTRACT

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 103

B. Additions:

1. A Bidder may submit a Bid for either Division of the Project or for both Divisions. Award will be made to the lowest, responsive, responsible Bidder for each separate Division (A & B), as determined by the Owner. The award of the Contract may be made on the Base Bid only or any combination of the Base Bid and selected Alternate Bids.

   a. Alternate Bid No. 1 includes items related to bi-directional, in-pavement lighting located at pedestrian crosswalks as identified in the proposal and as shown in the plans for Division B (Parts 2 and 3 of 3).

2. All Bids will remain subject to acceptance for sixty (60) calendar days after the day of the Bid opening, but the City of South Bend may, in its sole discretion, release any Bid and return the Bid security prior to that date.

3. Successful bidder from award notice will have fourteen (14) calendar days to submit a fully executed contract, Certificated of Insurance, and other require documents from either the awarded contactor and/or the subcontractors. Failure to comply within the award period may be cause for the Board of Public Works to rescind the award.

4. The Owner may waive any informalities or minor defects, or may reject any and all bids.

5. A bid will be rejected if an authorized representative from the interested Bidder does not attend in person the mandatory Pre-Bid Conference.

   a. **The Pre-Bid Conference will be held on January 19, 2016 at 11:00 a.m. Local Time** at the Office of the Board of Public Works, County-City Building, 13th Floor Conference Room, 227 West Jefferson Blvd, South Bend, Indiana, 46601.

IX. BONDING REQUIREMENTS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 103

1. Additions:

   a. The successful Bid provider shall supply the following bonds:

      (i) Payment Bond within seven (7) days of Notification of Award for an amount equal to one hundred percent (100%) of the contract amount.

      (ii) Performance Bond within seven (7) days of Notification of Award for an amount equal to one hundred twenty-five percent (125%) of the contract amount.

      (iii) Maintenance bond within ten (10) days of acceptance of the project by the City of South Bend, for an amount equal to ten percent (10%) of the final contract price, guaranteeing for a period of three (3) years after the date of acceptance of the project by the City of South Bend.

X. RAILROAD COORDINATION

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 103.

B. Additions:

1. The Contractor shall carry, with respect to the operations performed and those performed by others, for and in behalf of the Norfolk Southern Railway Company, Railroad Protective

Railway right-of-way. Requirements for insurance are provided in Appendix A.

2. The Owner will only pay reimbursement for actual charges received towards providing the necessary railroad insurance. The pay request for this item shall include sufficiently detailed invoices, from the actual entity that provided the services, with an incurred cost.

3. The quantity for RAILROAD INSURANCE will be on a lump sum basis.

XI. CONTROL OF WORK

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 105

B. Additions:

1. The complete responsibility for this project lies with the Director of Public Works of the City of South Bend, Indiana acting through his authorized representatives.

2. Construction Engineering - The Contractor shall provide all the necessary, qualified personnel, equipment and supplies to perform all work required under this item. Construction Engineering as specified herein will be paid for at a contract lump sum price.

3. The contractor is responsible to maintain the site which includes but is not limited to; dust control, site security, erosion control, and protecting adjacent properties.

4. Work hours for the Project shall be from 7:00 a.m. through 7:00 p.m., Monday through Saturday. No work shall be permitted on Sundays, Holidays, or after hours unless approved by the City of South Bend Department of Public Works. The Contractor shall provide a minimum 48 hour notice for requests to work outside the specified work hours.

a. The following events are scheduled during the anticipated construction period. The Contractor will be permitted to work on these dates, but must provide safe and appropriate access to these events. The Contractor shall coordinate with event managers to determine the appropriate means of access. The Contractor will not be required to shut down controlling operations for these events or allow the use of its construction zone for use of the events, other than temporary access:

(i) Think Green – March 4, 2016
(ii) St. Pat's Tent Party – March 11, 2016
(iii) Eggstravaganza – March 19, 2016
(iv) Downtown Renaissance – April 1, 2016
(v) Vintage Downtown & Architecture Walking Tour – May 6, 2016
(vi) Wed. Wine Walks – May 11, June 8, July 6, August 10, and September 14, 2016
(vii) Notre Dame Graduation – May 13-15, 2016
(viii) Mayors Bike Ride – May 22, 2016
(ix) Red Table Plaza – June 1 through September 29, 2016 (Mon – Thu only)
(x) Sunburst – June 3-4, 2016
(xi) Kids' Night Out & Architecture Walking Tour – June 3, 2016
(xii) Summer Fitness Series – June 4 through September 24, 2016 (Sat only)
(xiii) Leeper Art Fair – June 18, 2016
(xiv) Summer Restaurant Week – June 20 through July 3, 2016
(xv) As American As & Architecture Walking Tour – July 1, 2016
(xvi) Arts Alive & Architecture Walking Tour – August 5, 2016
(xvii) Art Beat – August 20, 2016
(xviii) Dog Days of Summer & Architecture Walking Tour – September 2, 2016
(xix) Notre Dame Football Events –
    (i) September 10, 17, and 24, 2016
    (ii) October 15 and 29, 2016
    (iii) November 19, 2016
(xx) Downtown Oktoberfest – October 7, 2016

(xxi) Downtown Flavor – November 4, 2016
(xxii) Outdoor Film Series – TBA

XII. LEGAL RELATIONS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 107

B. Additions:

1. The Owner, where mentioned in these documents, is the City of South Bend. The Engineer, where mentioned in these documents, is as follows:

a. Division A, Part 1 of 2 (Project 114-045) – Lawson-Fisher Associates, P.C.

b. Division A, Part 2 of 2 (Project 115-019 Div. A) – American Structurepoint, Inc.

c. Division B, Part 1 of 3 (Project 115-019 Div. B) – American Structurepoint, Inc.

d. Division B, Part 2 of 3 (Project 114-035) – Lawson-Fisher Associates, P.C.

e. Division B, Part 3 of 3 (Project 114-032B) – Jones Petrie Rafinski Corp.

2. The Contractor shall apply for and obtain any and all required permits for the work from local, state, and federal agencies and shall comply with permit requirements, including the Indiana Department of Transportation, St. Joseph County / City of South Bend Building Department.

3. If the Contractor awarded this contract is not a resident of Indiana, within thirty days, the Contractor shall provide the Engineer with proof that the Contractor is duly licensed, qualified and registered with the Secretary of State of Indiana to engage in business within the State of Indiana.

XIII. SUBMITTALS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 106

B. Additions:

1. Submit four (4) copies or an electronic version of the submittals for all equipment or materials used in this project to the South Bend Department of Public Works for approval. All submittals must be delivered within 7 calendar days from the notice to proceed.

2. The Department of Public Works will review and return two (2) copies or an electronic version of the submittals within five (5) working days.

3. The review of the submittal information by the Department of Public Works is to facilitate the satisfactory acceptance of the equipment. This review shall neither relieve the contractor from the responsibility for deviations from the Specifications, nor from errors and omissions in the shop drawings or literature. Parts found not meeting the requirements of these Specifications shall be removed, repaired or replaced at no cost to the OWNER.

4. Submittals shall include complete manufacturer's descriptive information and shop drawings for all the parts furnished under this contract.

5. Upon completion of project, the Contractor will supply one (1) conformed set of all submittals to the City of South Bend.

XIV. PROSECUTION AND PROGRESS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Sec. 108

B. Additions:

1. The project, both Division A and Division B, will have a completion date of November 15, 2016. The contract time will start when the Notice to Proceed is delivered and signed.

2. The project will have an intermediate completion date of October 15, 2016 for substantial completion, including all asphalt and concrete work, structures, traffic control devices,

lighting, permanent pavement markings, and landscaping plantings complete and in place, and all travel lanes and pedestrian / non-vehicular facilities open to traffic.

3. The project will have an intermediate completion date of September 7, 2016 for roads open to bi-directional traffic along Main Street between Chippewa Avenue and Marion Street, and along Michigan Street / St. Joseph Street between Chippewa Avenue and Bartlett Street. A minimum of one travel lane in each direction on each corridor street shall be open to traffic on or before the specified date. Once bi-directional traffic is established on each corridor street, bi-directional traffic shall be maintained on each corridor street for the duration of the project.

4. The project will have an intermediate completion date of September 7, 2016 for lane closure along Michigan Street between Monroe Street and LaSalle Avenue. The work specified shall be arranged and prosecuted such that a minimum of two travel lanes are open to traffic on or before the specified date. The identified roads shall maintain a minimum of two travel lanes prior to May 17, 2016. A minimum of one travel lane shall be open to traffic during the specified lane closure period.

5. The project will have an intermediate completion date of September 7, 2016 for road closure along Main Street between LaSalle Avenue and Marion Street, and along Michigan Street between LaSalle Avenue and Bartlett Street. The work specified shall be arranged and prosecuted such that these roads are open to traffic on or before the specified date. The identified roads shall not be closed before May 7, 2016. A minimum of two lanes must be provided on each street prior to May 7, 2016.

6. The project will have an intermediate completion date of August 5, 2016 for road closure along Main Street at Chippewa Avenue, and along Michigan Street at Chippewa Avenue. The work specified shall be arranged and prosecuted such that these roads are open to traffic on or before the specified date. The identified roads shall not be fully closed before June 6, 2016.

7. The project will have an intermediate completion date of May 27, 2016 for lane closure along Main Street between Sample Street and Monroe Street The work specified shall be arranged and prosecuted such that a minimum of two travel lanes are open to traffic on or before the specified date. The identified roads shall maintain a minimum of two travel lanes prior to April 18, 2016. A minimum of one travel lane shall be open to traffic during the specified lane closure period.

8. The City, Engineer, and Contractor will hold a pre-construction meeting following award of the contract. The date of the Notice to Proceed will be agreed upon at that meeting.

9. Contractor shall provide a schedule to the Owner prior to beginning any work on the site.

XV. CHANGE OF CONTRACT TIME

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 108

B. Additions:

1. The Contract Time may only be changed by Change Order. Any Claim for an extension in the Contract Time shall be based on written notice delivered to the Department of Public Works within seven (7) calendar days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within fourteen (14) calendar days after such occurrence unless an official of the Public Works Department allows an additional period of time to ascertain more accurate data. The Contract Time will be extended in an amount equal to time lost to delays beyond the control of the

services, with an incurred cost.

4. Upon completion of the project, a change order will be issued to decrease the contract amount to account for any remaining (unused) portions of the allowances.

5. Allowances for the project are set as follows:

   a. The Utility Relocation Allowance shall be $40,000.

   b. The Sprinkler Repair Allowance shall be $5,000.

   c. The Undistributed Allowance shall be $35,000.

6. The quantities for these allowances will be in units of dollars. The dollars shown shall be the amount of the allowances of the types specified.

XXIX. MAINTENANCE OF TRAFFIC

A. Prevailing Specifications: 2016, INDOT Standard Specifications Sections 105 & 801

B. Additions:

1. Maintenance of traffic during construction shall conform to the "Indiana Manual on Uniform Traffic Control Devices" and the City of South Bend Design and Construction Standards.

2. The attached "Traffic Closure Request" form is to be used for any lane restrictions or closures and required to be filled out and sent to the Department of Public Works.

3. The Contractor shall arrange and prosecute the work specified for this contract. The Engineer shall approve the method of traffic control. The Engineer's approval of the method of traffic control shall not relieve the Contractor of responsibility for providing sufficient effective and safe traffic control. No construction equipment, vehicles, materials, supplies or temporary facilities shall be left unattended in the right-of-way of any street or left parked overnight without proper marking and lighting.

4. After the award of the contract and before beginning the work, the Contractor shall submit his proposed schedule of operations for the review of the Engineer. The schedule of operations, as approved by the City, shall be maintained at all times.

5. Any traffic control devices damaged, while being moved or handled, shall be replaced with no additional payment. All other traffic control devices necessary to maintain safe traffic operations and routings shall not be removed, changed, or relocated, except as authorized. Traffic control devices removed without authorization shall be replaced with no additional payment.

6. Maintenance of Traffic shall be the sole responsibility of the Contractor. Access to all businesses and residences for all postal deliveries and all emergency traffic such as police, fire, medical, etc., within the project limits, shall be maintained at all times. Asphalt base and binder courses shall be completed prior to reopening to traffic. Drive construction in halves may be required to maintain access.

7. The facilities and operations of Memorial Hospital will be significantly impacted by changes in traffic patterns during maintenance of traffic operations. The Contractor shall communicate closure schedules with the above listed and other adjacent businesses at

(v)	Sewer Lateral, Private Building, Reinstatement	2 EA
(vi)	Pavement Removal	100 SYS

b. Division B, Project 115-019

(i)	Road Closure Sign Assembly	20 EA
(ii)	Detour Route Marker Assembly	50 EA
(iii)	Sign, Sheet, Remove and Reset	20 EA
(iv)	Conduit, PVC Schedule 80, 2-Inch	100 LFT
(v)	Conduit, HDPE, Schedule 80, 3-Inch	1,500 LFT
(vi)	Conduit, HDPE, Schedule 80, 4-Inch	400 LFT

c. Division B, Project 114-035

(i)	Inspection Hole	10 EA
(ii)	Adjust Water Service Line, Commercial	2 EA
(iii)	Tap, Water Service, 1-Inch (City Tap Fee)	2 EA
(iv)	Cap Existing Water Service Line	2 EA
(v)	Sewer Lateral, Private Building, Reinstatement	2 EA

d. Division B, Project 114-032B

(i)	Video Inspection for Pipe	100 LFT
(ii)	Casting, Adjust to Grade	2 EA

3. The Itemized Proposal and Declarations include the above noted quantities.

XXXV. INSPECTION HOLE

A. Prevailing Specifications/INDOT Standard Specification Section: 105.03, 105.06, 107.20

B. Additions:

1. This work shall consist of digging inspection holes in accordance with 105.03, to verify the exact location of underground utilities that are in potential conflict with the proposed construction.

2. Materials, tools, equipment, labor and incidentals shall be provided as required.

3. Once utility locates are marked in the field, inspection holes shall be dug at critical locations as agreed upon by the Department along the marked locates where the utility is within 2 feet of the proposed construction. The inspection holes shall be dug to a depth to either the underground utility or to a depth 1 foot below the proposed construction elevation, whichever is shallower. The inspection hole shall be as large as necessary to search for the marked underground utility within 2 feet horizontally of each side of the marked locate. If the utility is found, as directed, outside the 2 feet horizontal distance from the locate mark, then it shall be considered as an additional inspection hole.

4. The results of inspection holes shall be plotted on the plan sheets and provided in .pdf

d. Construction Cameras: The Contractor shall place a webcams near the construction site showing the active construction site, as well as cameras showing current traffic conditions as directed, for a total of four (4) cameras. See Special Provision **CLXVIII** for details.

e. Response to Inquiries: The Contractor shall maintain a log of Community inquiries for all requests at the project level. The log shall include inquiry date and individual, current status and follow-up action required. Anticipated inquiries include: requests for information, requests for changes and claim requests. The Project Engineer will determine the significance of the inquiry and the necessity to document it in the log. The log will be made available to the City Engineering Department, Department of Community Investment and Customer Service Coordinator.

4. Payment of costs of performing the work described above shall be included in the cost of the other contract items. Specific payment for furnishing and installing the Business Service Construction Signs shall be made at the unit price set forth in the proposal on a per each basis for: CONSTRUCTION SIGN, BUSINESS SERVICE, TYPE C.

XL. PUBLIC SAFETY

A. Prevailing Specifications: 2016, INDOT Standard Specifications Sections 107.08

B. Additions:

1. It shall be the Contractor's responsibility to secure the construction site against unauthorized entrance by persons and vehicles outside of and during work hours. This includes securing the site against dumping and public safety of the Owner, Owner's representatives, pedestrians, bystanders and neighborhood residents.

XLI. STREET CLEANING

A. Prevailing Specifications: 2016, INDOT Standard Specifications Sections 107.08(b)

B. Additions:

1. The Contractor shall provide effective dust control. Loader-mounted pick up, power sweepers, or other types of pull type models shall be used in all phases of street cleaning of streets adjacent to the limits of active construction.

2. Street cleaning will not be paid directly, but shall be included in the cost of various items of the contract.

XLII. EROSION CONTROL PLAN AND PROOF OF PUBLICATION (SWPPP)

A. Prevailing Specifications: 2016, INDOT Standard Specifications Sections 107.15

B. Additions:

1. The Owner shall supply all requirements of 327 IAC 15-5 and submit the Stormwater Pollution Prevention Plan (SWPPP) to the St. Joseph County Soil and Water Conservation District (SWCD).

B. Additions:

1. Structure excavation shall not be measured directly, but shall be included in the cost of the various other pay items.

LXVI. BORROW AND BACKFILL

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 211

B. Additions:

1. The Contractor shall furnish all the necessary equipment, labor and materials to complete backfill of excavations with approved Borrow material.

2. The Contractor shall test the existing material and document that it is acceptable for use as structure backfill. Once satisfactory test results have been received, the Engineer may visually approve excavated material for use as structure backfill, or request additional analyses. It is anticipated that there will be enough excavated soil that meets the specified requirements for structure backfill (904.05) and that additional structure backfill will not be required; however an undistributed quantity for Structure Backfill has been included in the Contract. See Special Provision **XXXIV** for additional details.

3. The cost of providing Borrow for backfill and Structure Backfill, wasting or stockpiling excavated materials testing or excavated materials and the compaction of the backfill material shall not be paid for separately but shall be included in the cost of various other pay items. Payment for structure backfill obtained from an off-site source will be made at the Unit Price set forth in the Proposal for STRUCTURE BACKFILL, TYPE ____ (CYS).

LXVII. COMPACTED AGGREGATE

A. Prevailing Specifications: City of South Bend Design and Construction Standards / 2016, INDOT Standard Specifications Section 301

B. Additions:

1. All coarse aggregate shall be Class D or higher of the specified size. The cost of placing, compacting, water and necessary incidentals shall be included in the cost of the compacted aggregate.

2. The use of crushed concrete shall not be allowed.

3. The depth of compacted aggregate shall be 6-inches below proposed pavement and drives. Quantity shall be based on plan neat lines.

4. Plan quantities are based on an assumed compacted density of 1.9 tons/cubic yard.

5. Payment for compacted aggregate for construction entrance, pipe and structure bedding will be considered incidental to furnishing and installing the respective Pay Item.

6. The condition of the subgrade at the time paving material is placed is required to be in accordance with INDOT Standard Specifications 105.03 and 207.03.

7. Prior to placing the base course of asphalt on the prepared aggregate subgrade, proof rolling in accordance with INDOT Standard Specifications 203.09 and 203.26 is required.

5. Decorative brick pavers system will be measured by the square yard, complete in place.

6. Excavation, backfill, subgrade preparation, furnishing and installing the completed base, leveling course, edge restraints, labor, materials, and all necessary incidentals shall be included in the cost of brick pavers.

7. All cutting of pavers or special paver placement to fit with castings or other features as directed by the City shall be incidental to the cost of the work.

8. The accepted quantity of decorative brick will be paid for at the contract unit price per square yard for DECORATIVE BRICK as indicated on the itemized proposal sheet.

LXXXIV. PCCP FOR APPROACHES

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 610

B. Additions:

1. All driveway approaches shall be built according to the details as shown on City of South Bend's "Design and Construction Standards" and as shown on the Plans.

2. The use of slag or local aggregate will not be permitted.

3. Tooled joints shall be placed in all driveways to match the sidewalk jointing pattern as shown on the plans or as directed. The cost of providing the tooled joint pattern will not be paid for separately but shall be included in the cost of the driveway.

4. The accepted quantities of PCCP for approaches will be paid for at the contract unit price per square yard for PCCP FOR APPROACHES, (thickness) IN as indicated on the itemized proposal sheet.

LXXXV. PERMEABLE PAVEMENT

A. Prevailing Specifications: none

B. Additions:

1. This work includes all labor, materials, equipment, and incidentals required and perform all operations in connection with the installation of the permeable pavement in accordance with the lines, grades, design and dimensions shown on the plans, as specified herein, and as directed.

2. The permeable pavement shall be PaveDrain® System as represented by:

LOCAL	**NATIONAL**
D2 Land & Water Resources	PaveDrain, LLC
info@d2lwr.com	info@pavedrain.com
PH. (800) 597-2180	PH. (888) 575-5339
www.d2lwr.com	www.pavedrain.com

3. Subgrade shall be prepared in accordance with the plans and Manufacturer's approved recommendations.

4. Geotextile separator material shall be TenCate Mirafi RS580i in accordance with Manufacturer's approved recommendations.

5. Quarried aggregate or crushed concrete shall not be allowed. Aggregate material shall be INDOT approved #8 ACBF Coarse Aggregate Class AP from a Manufacturer's approved source. Cuurent Manufacturer's approved source is Phoenix Services, LLC. Approved aggregate material shall be placed and compacted in accordance with the Standard Specifications.

6. Underdrains shall be dual wall HDPE perforated Pipe and installed in accordance with the details shown on the plans and in accordance with the Standard Specifications.

7. Geogrid separator material shall be Tensar BX-1100 in accordance with the manufacturer's recommendations.

8. Immediately prior to placing mats, the prepared area shall be inspected by the Engineer. No mats shall be placed thereon until that area has been approved.

9. The mats shall be placed on the geogrid separator so as to produce a smooth plane surface. No individual block within the plane of placed articulating concrete mats shall protrude more than one-quarter of an inch or as otherwise specified by the Engineer. No individual block shall be scored and split. Each individual block's four sides shall be plumb and square with smooth faces.

10. Mats shall be attached to a spreader bar or other conventional device to aid in the lifting and placing of the mats in their proper position by the use of a large, tracked excavator or other appropriate equipment. The equipment used shall be adequate capacity to place the mats without bumping, dragging, or otherwise damaging the aggregate bedding layer. The mats shall be "zippered" together forming a seamless mat to mat connection.

11. Joints do not require backfilling with smaller aggregates or sand in order to function properly. The joints are meant to be left open.

12. Upon completion of the permeable pavement installation, the surface infiltration rate of the pavement shall be verified by ASTM C1701M-09 to confirm the required infiltration rate of the pavement. If the system fails to perform as recommended by the manufacturer, it shall be removed and replaced at no cost to the Owner.

13. The manufacturer's representative shall provide a minimum 36 month maintenance program; including a visual inspection report with photos and a recommended cleaning schedule with the PaveDrain® Vac Head and associated combination sanitation vac truck. Maintenance shall be required when either of the following are reached:

    a. The surface infiltration rates of more than 75% of the surface area fall below 10% of the rate required by the manufacturer.
    b. Surface ponding remains for 24 hours in an area larger than 10 square feet.

14. Subgrade treatment will be measured and paid in accordance with the Standard Specifications.

15. The cost of supplying and installing geotextile separator, INDOT & Manufacturer's Approved #8 ACBF Class AP aggregate, dual wall HDPE perforated pipe, geogrid separator, permeable pavement mats, 36 month maintenance program and all appurtenances necessary for a complete installation will not be paid for separately, but shall be included in the cost of the permeable pavement.

16. Payment will be made at the Unit Prices set forth in the Proposal for PERMEABLE PAVEMENT (SYS).

LXXXVI. DECORATIVE FENCE

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 603.

B. Additions:

1. Description:

12. The cost of connecting to downstream existing manholes, inlets, or catch basins will be included in the cost of the pay items.

CII. STRUCTURE CONNECTIONS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 715, 720

B. Additions:

1. Pipe connections to existing structures shall be made by coring a circular hole of the appropriate size to accept the new pipe connection and boot. Oversized holes and grouting shall not be used.

2. The cost of coring, boot installation, pipe installation and all appurtenances necessary for a complete installation shall be included in the cost per Each for CONNECT TO EXISTING STRUCTURE.

CIII. PRECAST CONCRETE HEADWALL

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 715

B. Additions:

1. Precast Concrete Headwall will be paid for at the contract unit price for "Precast Concrete Headwall….EACH" as indicated on the itemized proposal sheet.

CIV. SANITARY SEWER LATERALS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 715 & City Standard Drawings, Sheets WW-1 through WW-8

B. Additions:

1. This work shall entail the removal of conflicting portions of existing sanitary laterals and the reinstatement of said laterals encountered in the progress and prosecution of the work.

2. Where proposed work conflicts with existing private building sewer laterals, a segment of the existing sewer lateral, in conflict, shall be removed and replaced/reinstated. Removal of existing sanitary laterals shall be limited to the first joint upstream and downstream of the portion of work in conflict with the proposed improvements, or as required to tie into existing lateral locations. This work will be measured on a per instance basis for conflicting laterals encountered during the course of the Work and shall include all labor, equipment and materials (including pipe, fittings and couplings).

3. Replacement work materials shall be PVC SDR 35 per ASTM D3034. New sanitary laterals and fittings shall be 6-inch diameter PVC SDR 35 per ASTM D3034 unless otherwise directed by the Owner.

4. The work performed with this Pay Item shall conform to the current City Standards and IDEM's requirements.

5. Watertight joints shall be provided at all connections.

6. Installation of the sanitary sewer pipe shall be in accordance with the pipe manufacturer's

(ii) Personnel Training

(i) The Contractor shall be responsible for the training of as many personnel as the Owner shall deem necessary.

(ii) Contractor shall be responsible for one starting and one winterizing of the system during the appropriate times of the year after final acceptance by the Engineer.

(iii) Contractor shall include general troubleshooting and operation of the system with reference to head, valve, and controller operation.

(iv) Contractor shall furnish a complete operation and maintenance manual to the Owner's personnel. This manual shall include repair parts lists, assembly instructions, trouble-shooting guides, programming instructions, and recommended precipitation rates.

l. Adjustment

(i) After completion of grading, seeding or sodding, if applicable, the Contractor shall return to the job site to perform any final adjustments to the system which might be deemed necessary.

(ii) The Contractor shall be responsible for any pressure testing and start up of the system when construction is complete. The Contractor shall also be responsible for the winterization of the system after the first season of operation.

4. Basis of Payment

a. The costs for the irrigation system shall include all labor, materials and equipment needed to furnish and install the irrigation system. All necessary work shall be provided including piping, conduit, pumps, sensors, control wires, controls, spray heads, sleeves, drip lines, excavating, backfill, trenching, start up, adjustments, winterization, testing, owner training, utility tap on fees, utility labor and material costs for meter installations, and related work.

b. Irrigation will be paid for at the contract unit price for “Irrigation, Landscape…SYS” as indicated on the itemized proposal sheet. The irrigation system will be paid for at the contract unit price per Square Yards for the entire installed system.

CXIV. IRRIGATION REPAIR

A. Prevailing Specifications: None

B. Additions:

1. Description:

a. This work shall consist of the replacement, adjustment, and / or repairs to the existing irrigation system damaged or to be altered by construction-related activities for site improvements as indicated on the plans.

2. Products:

a. The replacement components of the irrigation system shall consist of equal or better materials unless approved in writing by the City of South Bend. The replacement lines and components shall match the existing lines and components with regard to their

manufacturer, diameter, capacity, and functionality.

3. Execution:

   a. The Contractor shall verify that existing irrigation systems exist with the areas identified on the plans to be adjusted, relocated as necessary and repaired. Areas that are found to not have an existing irrigation system are not to receive a new or repaired system.

   b. During construction activities, when the Contractor encounters a portion of an irrigation system that is damaged or is to be altered as shown on the plans, the Contractor shall immediately notify the Engineer. When approved in writing by the Engineer, the Contractor shall carefully terminate the irrigation line at a point where the damage to the system will be minimized (i.e. at the closest valve, junction, or upstream sprinkler head).

   c. Upon completion of the substantial land disturbing activities, but before final grading efforts, the Contractor shall revise or repair the identified portions or areas of the irrigation system. The Contractor shall furnish all materials, connections, fittings, and any other materials necessary to complete the replacement. The Contractor shall be responsible for removing and disposing the damaged irrigation lines in accordance with Federal, State, and local requirements.

   d. The Contractor shall work closely with the City and the Engineer to verify that the irrigation system is fully functional and provides 100 percent coverage. Any portions of the irrigation system that fail to work as expected during the test shall be identified by the Contractor in writing and shall be repaired.

4. Basis of Payment:

   a. The cost of furnishing all equipment, labor (including trenching and backfilling activities), disposal fees, and materials including, mainline and lateral pipe, sleeves, sprinklers, valves, controllers, sensors, and connectors/joints/elbows to repair the proposed irrigation system will not be paid for separately, but shall be included in the cost of irrigation repair.

   b. Irrigation, Repair will be measured per Square Yard, based on the coverage area of the repaired / replaced irrigation system. Irrigation, Repair will be paid for at the unit contract unit price for “Irrigation, Repair…..SYS”, complete in place, as indicated on the itemized proposal sheet.

CXV. IRRIGATION, TREE WATERING SYSTEM

A. Prevailing Specifications: None

B. Additions:

1. Description:

   a. The tree watering system work shall include furnishing all necessary labor, equipment, materials as described below and in accordance with 105.03.

2. Materials:

   a. All tree plantings shall be provided with a portable drip irrigation system utilizing one of the following or approved equal:

      (i) Ooze Tube – 25 Gallon capacity, brown. Available from: Engineered Water Solutions 800-951-8123

      (ii) Tree Gator Original - 20 Gallon capacity, Available from: Spectrum Products, Inc. 1-866-TREEGATOR (873-3428)

      (iii) Tree Watering Bags – 20 Gallon capacity, Available from: King Bag &

CXLIV. <PROVISION DELETED>

CXLV. SIGNAL FIBER OPTIC INTERCONNECT CABLE

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. The contractor shall maintain the existing traffic signal interconnect between adjacent traffic signals cabinets/controllers and the City of South Bend network.

2. The existing interconnect type is fiber optic. The location of the interconnect is not known throughout the project limits due to the detail and limits of survey obtained for this job, therefore, extreme care shall be used to verify and maintain existing interconnect without damage.

3. In locations where traffic signal cabinets are to relocated, the existing interconnect shall be located/verified and relocated/reconnected as necessary. The City shall provide splicing details as needed for all new drop cables. New drop cables will be paid for at the contract unit price per linear foot for SIGNAL INTERCONNECT, FIBER OPTIC. The cost of all splices, splice kits, and connectors necessary for complete installation of the drop cables shall be included in the cost of the pay item.

4. In locations where traffic signal cabinets are to be removed, the existing interconnect shall be maintained to allow for the traffic signal system continuity of operations.

CXLVI. <PROVISION DELETED>

CXLVII. WIRELESS VEHICLE DETECTION SYSTEM

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. This work shall consist of furnishing and installing wireless vehicle detection systems for vehicle detection at traffic signals as identified on the plans.

2. The wireless vehicle detection system (WVDS), is comprised of wireless magnetometer detectors, contact closure cards, receiver processors, and wireless repeaters installed for a signalized intersection. The system shall be capable of monitoring vehicles on a roadway via detection of changes in inductance caused by the presence or passage of a vehicle and shall provide detector outputs to a traffic signal controller.

3. The WVDS shall include magnetometer detectors, a minimum of two receiver processors, the required mounting equipment, cables, rack mounted cards, set-up and operating software, all connectors, and miscellaneous equipment necessary for the installation and operation of the system. If required, the WVDS shall also include wireless repeaters.

4. Only models from the Department's approved materials list for traffic signal control equipment shall be used.

5. Ethernet cable for wireless vehicle detectors shall be outdoor rated and UV shielded.

6. Prior to the installation, the Contractor shall test all wireless magnetometer detectors and demonstrate proper operation and communication between the wireless magnetometer detectors and the receiver processor and wireless repeater, if required.

7. Prior to the installation, the Contractor shall demonstrate that each wireless magnetometer detector is within range of its corresponding receiver processor, using wireless repeaters as necessary. All wireless magnetometer detectors assigned to either a receiver processor or wireless repeater shall be located within a 120° arc measured from the receiver processor or wireless repeater.

8. The Contractor shall install each wireless magnetometer detector in the roadway according to the manufacturer's recommendations with one wireless magnetometer detector programmed to count vehicles for each through travel lane. Holes cored in the pavement shall be cleaned and dried before installing wireless magnetometer detectors. The cored pavement shall be backfilled according to the manufacturer's recommendations.

9. Receiver processors and wireless repeaters shall be mounted on traffic signal steel strain, or cantilever poles, or signal pedestals on type A foundations. The mounting height of receiver processors above the pavement surface shall be between 20 ft and 35 ft. The mounting height of wireless repeaters above the pavement surface shall be between 13 ft and 35 ft.

CLII. LOOP DETECTION

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. The contractor shall perform loop tagging, testing and vehicle simulator testing in accordance with 805.09. Loop tagging tables are provided in the appendix. Documentation of loop testing results shall utilize the form on INDOT recurring special provision 805-T-039d.

CLIII. SIGNAL CANTILEVER STRUCTURE, HAND HOLE COVERS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. The contractor shall replace missing or repair damaged mast arm hand hole covers on all existing mast arms as necessary prior to painting. The cost of replacing covers shall be considered incidental and included with the cost of other pay items.

2. These items will be paid for at the contract price for SIGNAL CANTILEVER STRUCTURE, HAND HOLE COVERS (EACH).

CLIV. SIGNAL CANTILEVER STRUCTURE, RELOCATE

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. The contractor shall relocate existing mast arm assemblies as detailed in the plans. Relocated mast arms shall be installed in accordance with the INDOT Standard Specifications.

2. This work shall be paid for at the contract price for SIGNAL CANTILEVER STRUCTURE, RELOCATE (EACH). The cost of removing any existing signs mounted to existing signal cantilever structures, as shown on the plans, shall be included in the contract unit price of the listed pay item.

CLV. SIGNAL CANTILEVER STRUCTURE

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. All new signal cantilever structures located along Sample Street shall be single arm type per current INDOT standard drawings. All signal cantilever structures of this type shall have a galvanized finish and be paid for at the contract price for SIGNAL CANTILEVER STRUCTURE, SINGLE ARM (EACH). Said structures shall utilize a Type B foundation per the current INDOT Standard Drawings which shall be paid for at the contract price for SIGNAL CANTIELVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE B.

   a. Including Intersection Numbers 28 and 46 as shown on the plans.

2. All new signal cantilever structures locate south of Sample Street and north of Chippewa Avenue shall be cantilever truss type arms per INDOT 1998 standard drawings (See Appendix) and shall match the style of existing signal cantilever structures located within this portion of the project limits. All signal cantilever structures of this type shall be painted in accordance with Special Provision **CLXIX** and be paid for

at the contract price for SIGNAL CANTILEVER STRUCTURE, SINGLE TRUSS ARM (EACH). Foundations for these structures shall be, constructed per the details provided in said standard drawings and paid for at the contract unit price for SIGNAL CANTIELVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE A.

a. Including Intersection Numbers 32, 50, and 51 as shown on the plans.

3. All new signal cantilever structures located north of Sample Street and south of Marion Street shall be cantilever truss type arms per INDOT 1998 standard drawings and shall match the style of existing signal cantilever structures located within this portion of the project limits. All signal cantilever structures of this type shall be painted per Special Provision **CLXIX**, and be paid for at the contract price for SIGNAL CANTILEVER STRUCTURE, SINGLE TRUSS ARM (EACH). Foundations for these structures shall be, constructed per the details provided in said standard drawings and paid for at the contract unit price for SIGNAL CANTIELVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE A.

   a. Including Intersection Numbers 20 through 27, 38, 43 through 45, and 54 through 58 as shown on the plans

4. The contractor is advised to order new signal cantilever structures as soon as possible due to the project schedule.

CLVI. CONDUIT, HDPE, SCHEDULE 80

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. An undistributed quantity of 3 IN HDPE Schedule 80 conduit is included for connection of conduit from new service pedestals with single meters to the existing service points.

2. An undistributed quantity of 4 IN HDPE Schedule 80 conduit is included for connection of conduit from new service pedestals with dual meters to the existing service points.

3. Conduit will be paid for at the contract price per linear foot for CONDUIT, HDPE, SCHEDULE 80, (diameter) as indicated on the itemized proposal sheet.

CLVII. TRAFFIC SIGNAL HEAD, 3 SECTION, 12" RED AMBER GREEN BIKE SIGNALS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. Traffic signal head shall consist of a standard 3 section signal head with 12 inch lenses each depicting a bicycle symbol as indicated in the plans.

2. This bike traffic signal will be measured and paid for at the contract price per each installation for BIKE TRAFFIC SIGNAL HEAD, 3 SECTION, 12 IN as indicated on the itemized proposal sheet. The cost of required mounting equipment, connectors, and miscellaneous equipment necessary for proper installation and operation shall be included in the cost of the pay item.

CLVIII. DECORATIVE SIGNAGE FOR CYCLE TRACK

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 802.

B. Additions:

1. This work shall consist of fabricating and placing cycle track signs as indicated on plans. This signage package consists of custom exterior architectural signage. Sign contractor to furnish all labor, materials, services, equipment and apparatus whether necessary or incidental to complete installation of all sign types required for the project as shown in construction plans and specified herein.

and applicable NCMA “Tek” bulletins.

(iv) Protection: Provide final protection and maintain conditions in a manner acceptable to installer, which ensures unit masonry work is without damage.

8. Measurement and Payment:

a. Measurement and payment of masonry features shall be by the established pay items units of measure for portions completed in place. Incidental construction, such as mortar, grout, etc., shall be included in the cost of the established pay items as bid.

b. Masonry features will be paid at the contact unit prices as follows, and as indicated on the itemized proposal sheet:

(i) “Roundabout – Modular Face Brick……LFT”

(ii) “Precast Concrete Wall Cap, 24”……..…LFT”

(iii) “Precast Concrete Cap, 56” SQ…...……EACH”

(iv) “Precast Concrete Cap, 68” SQ……..…EACH”

(v) “Precast Concrete Planter…..…….….EACH”

CLXVIII. WORK ZONE CAMERAS

A. Prevailing Specifications: None.

B. Additions:

1. The Contractor shall provide a High Definition Megapixel Web Camera which shall provide a full view of the work area on the construction jobsite. The Web Camera shall allow users to remotely view the project on a secure connection via a network connection.

2. The Vendor of Choice is: Work Zone Cam; 877-966-3101; www.workzonecam.com

3. The web camera shall meet or exceed the following requirements:

a. Thermostatically controlled enclosure with heater and blower
b. Powder coated aluminum housing with stainless steel fittings for padlocks
c. Canon digital SLR camera with 18 Megapixel images (5184 x 3456 pixels), APS-C Imager
d. Angle of view: wide 63° horizontal - 44° vertical, full zoom 22° horizontal – 15° vertical
e. Auto Features: ISO speed, metering mode, white balance, and focus
f. EF-S 18mm-55mm f/3.5-5.6 Image Stabilization STM lens
g. Professional photo grade lens window
h. Omni-directional power indicator lamp will illuminate green
i. Two UL rated compression glands, gas spring lid, adjustable camera sled
j. Compression: JPEG/RAW
k. 4GB onboard storage
l. 120VAC or 12VDC Solar Power
m. Communications:10base-T/100base-TX Ethernet, IP Addressing: Dynamic or Static
n. Wireless cellular modem EVDO REV.A full duplex transceiver with GPS and exterior outdoor antenna

4. Online Web Interface: The Web Camera will function via a web based interface to allow the viewing of all High Definition still images captured and stored from any location with internet access.

5. The Online Web Interface shall include:

a. Company logo and project name
b. Multiple tabs option for accessing multiple cameras from one page
c. Digital Pan, Tilt, and Zoom capability within a High Definition image
d. Easy navigation with intuitive image calendar control
e. Automated image geotagging with camera location
f. Downloadable up-to-date high quality time-lapse movies with embed code for adding the time-lapse to websites
g. Image Comparison Tool for overlaying two images from different dates and times for comparison
h. Share Image Tool for saving and emailing
i. Local weather data
j. Map integration of GPS data showing camera location
k. Multiple website themes with option to personalize background
l. Administrative controls for the client, allowing them to customize public access page, including project name, camera name configuration and username management with three levels of password protection

6. The system shall capture and upload images every 30 minutes, 24 hours per day.

7. The System Vendor will maintain images on their servers for reference available at all times during the life of the project. All images will be protected on secure fully redundant servers at multiple locations owned and operated by the System Vendor.

8. The System Vendor shall provide an embed code or web interface link with Contactor's project details for unlimited public or private access.

9. The Contractor shall secure a nearby structure for camera mounting or provide a fixed pole (40 feet /12 meters height recommended and 3 inches / 8 centimeters minimum diameter) as per System Vendor's instruction. The Contractor shall supply all equipment required for safe and secure access to the camera location, including building access, bucket truck and/or lift, for technicians performing installation and maintenance services.

10. The web cameras are to be placed in the following general locations. Final placement of the cameras will be as directed by the Owner:

    a. Division A
        (i) On a utility pole south of the Michigan / Chippewa intersection

    b. Division B
        (i) Atop the Memorial Hospital building in the southwest quadrant of the Michigan / Bartlett intersection
        (ii) Atop the parking garage in the north-northwest quadrant of the Michigan / Marion intersection
        (iii) Atop the Century Center building in the southeast quadrant of the St. Joseph / Washington intersection

CLXIX. PAINTING OF TRAFFIC SIGNAL EQUIPMENT

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. All existing and proposed pedestrian crossing poles, pedestrian pedestals, mast arms, mast arm poles, strain poles, traffic signal heads, and pedestrian signal indications identified herein that are to remain shall be painted black with a Sherwin Williams two step paint process.

a. The two application painting procedure shall include “Macropoxy 646” for the first application and “Acrolon 218HS” for the second application.

b. All work shall be in accordance with the recommendations and equipment as per Sherwin Williams guidelines.

c. The Contractor shall provide an authorized Sherwin Williams Representative on site to ensure proper paint mixing, application, weather conditions, etc.

d. The Contractor shall use a wire brush or other approved equipment to remove any rust or loose coatings prior to painting.

2. Painting shall be performed on the above mentioned traffic signal equipment at the following signalized intersections:

a. Division A
(i) Main Street & Chippewa Avenue
(ii) Main Street & Ewing Avenue
(iii) Michigan Street & Donmoyer Avenue
(iv) Michigan Street & Ewing Avenue

b. Division B
(i) Main Street & Indiana Avenue
(ii) Main Street & Bronson Street
(iii) Main Street & South Street
(iv) Main Street & Monroe Street
(v) Main Street & Western Avenue
(vi) Main Street & Wayne Street
(vii) Main Street & Jefferson Boulevard
(viii) Main Street & Washington Street
(ix) Main Street & Colfax Avenue
(x) Michigan Street & Indiana Avenue
(xi) Michigan Street & Bronson Street
(xii) Michigan Street & Monroe Street
(xiii) St Joseph Street & Western Avenue
(xiv) St Joseph Street & Wayne Street
(xv) St Joseph Street & Jefferson Boulevard
(xvi) St Joseph Street & Washington Street
(xvii) St Joseph Street & Colfax Avenue
(xviii) St Joseph Street & LaSalle Avenue

3. Painting of pedestrian crossing poles, pedestrian pedestals, mast arms, mast arm poles, traffic signal heads and pedestrian signal indications will be paid for at the contract unit price for each intersection, complete and in place. The cost of all labor, material, and equipment necessary to complete the Work shall be included in the contract unit price for PAINTING TRAFFIC SIGNALS (Each) measured on a per intersection basis.

CLXX. PEDESTRIAN SIGNAL HEAD, COUNTDOWN

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. Countdown signal heads will be paid for at the contract unit price for “PEDESTRIAN SIGNAL HEAD, COUNTDOWN, 18” (EACH) as indicated on the itemized proposal sheet.

CLXXI. SIGNAL TIMINGS

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 805.

B. Additions:

1. Signal timings for the proposed two-way streets will be provided by the Engineer.

2. The contractor shall notify the City and the Engineer one week in advance of opening street(s) to two-way traffic to provide time for the signal timings to be implemented.

CLXXII. FIELD OFFICE

A. Prevailing Specifications: 2016, INDOT Standard Specifications Section 628.

B. Additions:

1. Temporary Right-of-Way located in Division B, Part 2, Parcel 35 has been identified as excess land and a potential location for the Field Office.

2. Field Office, C will be paid for at the contract unit price per month, complete in place until released.

BID / PROPOSAL
CITY OF SOUTH BEND

Project Name South Bend One-Way to Two-Way Conversion
Project No. 116-001 Div. A
For Bids Due February 18, 2016

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
	BASE BID PAY ITEMS				
1	CONSTRUCTION ENGINEERING	1	LS		
2	CPM SCHEDULE	1	LS		
3	CMP SCHEDULE, MONTHLY UPDATE	8	EACH		
4	MOBILIZATION AND DEMOBILIZATION	1	LS		
5	VIDEO RECORD	1	LS		
6	UTILITY ALLOWANCE	10,000	DOL	$1.00	$10,000.00
7	<Pay Item Deleted>			---	---
8	UNDISTRIBUTED ALLOWANCE	35,000	DOL	$1.00	$35,000.00
9	CLEARING RIGHT OF WAY	1	LS		
10	TESTING FOR ASBESTOS	2	EACH		
11	PAVEMENT REMOVAL	8,396	SYS		
12	CURB, CONCRETE, REMOVE	226	LFT		
13	HOUSES AND BUILDINGS, REMOVE, PARCEL NO 13	1	LS		
14	HOUSES AND BUILDINGS, REMOVE, PARCEL NO 14	1	LS		
15	SIDEWALK, CONCRETE, REMOVE	1,458	SYS		
16	INLET, REMOVE	11	EACH		
17	MANHOLE, REMOVE	1	EACH		
18	<Pay Item Deleted>			---	---
19	EXCAVATION, COMMON	2,000	CYS		
20	BORROW	1,800	CYS		
21	DEWATERING AND PROTECTION OF EXISTING STRUCTURES	1	LS		
22	TEMPORARY INLET PROTECTION	67	EACH		
23	TEMPORARY SILT FENCE	2,244	LFT		
24	NO 2 STONE	100	TON		
25	SUBGRADE TREATMENT, TYPE I	8,504	SYS		
26	SUBGRADE TREATMENT, TYPE II	542	SYS		
27	SUBGRADE TREATMENT, TYPE III	227	SYS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
28	SUBGRADE TREATMENT, TYPE IC	401	SYS		
29	STRUCTURAL BACKFILL, TYPE 2	552	CYS		
30	COMPACTED AGGREGATE, NO. 53, BASE	1,209	TON		
31	SUBBASE FOR PCCP	1,376	CYS		
32	WIDENING WITH HMA, TYPE D	31	TON		
33	MILLING, ASPHALT, 1 1/2 IN	55,363	SYS		
34	MILLING, PROFILE	2,355	SYS		
35	QC/QA-HMA, 3, 70, SURFACE, 9.5 mm	538	TON		
36	QC/QA-HMA, 3, 70, INTERMEDIATE, 19.0 mm	634	TON		
37	QC/QA-HMA, 3, 64, BASE, 25.0 mm	1,065	TON		
38	JOINT ADHESIVE, SURFACE	3,482	LFT		
39	JOINT ADHESIVE, INTERMEDIATE	2,252	LFT		
40	LIQUID ASPHALT SEALANT	3,482	LFT		
41	ASPHALT FOR TACK COAT	4	TON		
42	QC/QA-PCCP, 10 IN	4,532	SYS		
43	CORING, PCCP	1	LS		
44	PCCP, 10 IN , DECORATIVE	438	SYS		
45	PCCP, 6 IN	401	SYS		
46	PCCP, COLORED, 6 IN	200	SYS		
47	6" PCCP BANDING	35	LFT		
48	D-1 CONTRACTION JOINT	3,376	LFT		
49	SLEEPER SLAB	485	LFT		
50	<Pay Item Deleted>			---	---
51	DECORATIVE PICKET FENCE	72	LFT		
52	HMA FOR SIDEWALK	41	TON		
53	SIDEWALK, CONCRETE, 4"	1,094	SYS		
54	CURB RAMP, CONCRETE, A	20	SYS		
55	CURB RAMP, CONCRETE, C	72	SYS		
56	CURB RAMP, CONCRETE, D	8	SYS		
57	CURB RAMP, CONCRETE, G	9	SYS		
58	CURB RAMP, CONCRETE, L	27	SYS		
59	CURB, CONCRETE	1,669	LFT		
60	CURB AND GUTTER, COMBINED	923	LFT		
61	CENTER CURB, D, CONCRETE	22	SYS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
62	PCCP FOR APPROACHES, 6 IN	33	SYS		
63	PCCP FOR APPROACHES, 9 IN	509	SYS		
64	MAILBOX ASSEMBLY, SINGLE	6	EACH		
65	BENCH MARK POST, RESET	1	EACH		
66	INSPECTION HOLE	10	EACH		
67	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	4	EACH		
68	FERTILIZER	1	TON		
69	<Pay Item Deleted>			---	---
70	SODDING, NURSERY AND TOPSOIL	4,585	SYS		
71	BRICK PAVERS	445	SYS		
72	IRRIGATION, TREE WATERING SYSTEM	23	EACH		
73	OVERSTORY TREE, 2" CALIPER	23	EACH		
74	ORNAMENTAL TREE, 2", CALIPER	6	EACH		
75	PERENNIAL, NO. 1 CONTAINER	266	EACH		
76	ORNAMENTAL GRASS, NO. 1 CONTAINER	67	EACH		
77	SHRUB, NO.3 CONTAINER	171	EACH		
78	GROUNDCOVER, PLUG	1,670	EACH		
79	SHREDDED HARDWOOD MULCH	35	CYD		
80	LANDSCAPE EDGING	105	LFT		
81	GATOR WATERING BAG	23	EACH		
82	IRRIGATION, LANDSCAPE	4,645	SFT		
83	REINFORCING STEEL	1	TON		
84	MODULAR FACE BRICK	1,425	SFT		
85	UPPER RETAINING WALLS	75	LFT		
86	LOWER RETAINING WALLS	110	LFT		
87	CONCRETE COLUMNS	60	CYS		
88	CONCRETE MONUMENT FOOTING	17	CYS		
89	4" MONUMENT RING CONCRETE	20	SYS		
90	24" WIDE PRECAST CONCRETE WALL CAP	182	LFT		
91	56" SQ PRECAST CONCRETE CAP	4	EACH		
92	68" SQ PRECAST CONCRETE CAP	4	EACH		
93	PRECAST CONCRETE PLANTER	4	EACH		
94	METER PIT	1	LS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
95	ADJUST WATER SERVICE LINE, RESIDENTIAL	2	EACH		
96	TAP, WATER SERVICE, 1-INCH (CITY TAP FEE)	2	EACH		
97	CAP EXISTING WATER SERVICE LINE	2	EACH		
98	PIPE, TYPE 2 CIRCULAR 12 IN (WATER MAIN GRADE)	103	LFT		
99	PIPE, TYPE 2 CIRCULAR 15 IN (WATER MAIN GRADE)	188	LFT		
100	PIPE, TYPE 2 CIRCULAR 18 IN (WATER MAIN GRADE)	37	LFT		
101	PIPE, TYPE 2 CIRCULAR 12 IN	629	LFT		
102	PIPE, TYPE 2 CIRCULAR 15 IN	356	LFT		
103	PIPE, TYPE 2 CIRCULAR 18 IN	176	LFT		
104	HMA FOR STRUCTURE INSTALLATION, TYPE A	57	TON		
105	PIPE, PLUG EXISTING	4	EACH		
106	DRYWELL	3	EACH		
107	CASTING, ADJUST TO GRADE , MANHOLE	9	EACH		
108	CASTING, ADJUST TO GRADE, INLET	3	EACH		
109	CASTING, NEENAH R-1801-G, FURNISH AND ADJUST TO GRADE	2	EACH		
110	CASTING, NEENAH R-3457-C2, FURNISH AND ADJUST TO GRADE	5	EACH		
111	INLET, R13	3	EACH		
112	PIPE CATCH BASIN, 24 IN	3	EACH		
113	STRUCTURE, MANHOLE, RECONSTRUCTED	5	LFT		
114	STRUCTURE, INLET, RECONSTRUCTED	3	LFT		
115	INLET, B15	11	EACH		
116	INLET, C15	19	EACH		
117	CONSTRUCTION SIGN, C	5	EACH		
118	CONSTRUCTION SIGN, BUSINESS SERVICE, TYPE C	4	EACH		
119	TEMPORARY PAVEMENT MARKING, 4 IN	23,270	LFT		
120	TEMPORARY PAVEMENT MARKING, REMOVABLE, 4 IN	3,210	LFT		
121	TEMPORARY PAVEMENT MESSAGE MARKING, REMOVABLE, LANE INDICATION ARROW	6	EACH		
122	CONSTRUCTION SIGN, A	78	EACH		
123	CONSTRUCTION SIGN, B	14	EACH		
124	MAINTAINING TRAFFIC	1	LS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
125	BARRICADE, III-B	48	LFT		
126	SIGNAL HEAD, RELOCATE	9	EACH		
127	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	646	LFT		
128	SIGN POST, SQUARE, TYPE 2, UNREINFORCED ANCHOR BASE	72	LFT		
129	SIGN, SHEET ASSEMBLY, RELOCATE	19	EACH		
130	CABLE SPAN SIGN STRUCTURE FOUNDATION, IV	2	EACH		
131	SIGN, SHEET, WITH LEGEND 0.080"	258	SFT		
132	SIGN, SHEET, WITH LEGEND 0.100 IN	353	SFT		
133	SIGN, SHEET, WITH LEGEND 0.125 IN THICKNESS	77	SFT		
134	SIGN STRUCTURE, SALVAGE	2	EACH		
135	OVERHEAD SIGN STRUCTURE, MONOTUBE, REMOVE	1	EACH		
136	OVERHEAD SIGN STRUCTURE, CABLESPAN	1	EACH		
137	ILUMINATED WALL LETTERING	1	LS		
138	TESCO CABINET W/DUAL SERVICE, FOUNDATION, WIRING & ETC	1	EACH		
139	TRAFFIC SIGNAL EQUIPMENT, REMOVE	4	EACH		
140	TESCO CABINET W/SINGLE SERVICE, FOUNDATION, WIRING & ETC	3	EACH		
141	SIGNAL POLE FOUNDATION, 36 IN X 144 IN	4	EACH		
142	HANDHOLE, SIGNAL, TYPE 1	12	EACH		
143	SIGNAL HANDHOLE ADJUST TO GRADE	4	EACH		
144	CONDUIT, HDPE, SCHEDULE 80, 2 IN	823	LFT		
145	PEDESTRIAN SIGNAL HEAD, 12 IN., RELOCATE	3	EACH		
146	PEDESTRIAN SIGNAL HEAD WITH INTERNATIONAL SYMBOLS, 12 IN, COUNTDOWN	8	EACH		
147	SIGNAL PEDESTAL FOUNDATION, A	4	EACH		
148	PVC SCHEDULE 80 CONDUIT, 3/4"	475	LFT		
149	SIGNAL POLE, PEDESTAL, 12FT	1	EACH		
150	<Pay Item Deleted>			---	---
151	<Pay Item Deleted>			---	---
152	<Pay Item Deleted>			---	---
153	SIGNAL CANTILEVER STRUCTURE, SINGLE TRUSS ARM 25 FT.	1	EACH		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
154	SIGNAL CANTILEVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE A	3	EACH		
155	THERMAL DETECTION CAMERA	6	EACH		
156	THERMAL DETECTION SYSTEM	3	LS		
157	TRAFFIC SIGNAL HEAD, 3 SECTION, 12 IN	7	EACH		
158	TRAFFIC SIGNAL HEAD, 5 SECTION, 12 IN	1	EACH		
159	SPAN, CATENARY, AND TETHER	4	EACH		
160	DISCONNECT HANGER	4	EACH		
161	SIGNAL CABLE, ROADWAY LOOP, COPPER 1C/14GA	480	LFT		
162	SIGNAL CABLE, CONTROL, COPPER 5C/14GA	4,103	LFT		
163	<Pay Item Deleted>			---	---
164	SIGNAL CABLE, CONTROL, COPPER 7C/14GA	1,042	LFT		
165	SIGNAL CABLE, DETECTOR LEAD-IN COPPER 2C/16GA	164	LFT		
166	SIGNAL DETECTOR HOUSING	1	EACH		
167	SAW CUT FOR ROADWAY LOOP AND SEALANT	160	LFT		
168	SIGNAL STRAIN POLE, STEEL, 30 FT	4	EACH		
169	HANDHOLE, LIGHTING	2	EACH		
170	LIGHTING FOUNDATION	18	EACH		
171	STREET LIGHT	20	EACH		
172	PEDESTRIAN LIGHT	2	EACH		
173	WIRE NO. 4	3,130	LFT		
174	TRAFFIC SIGNAL CABLE, FIBER OPTIC, SINGLE-MODE	5,990	LFT		
175	TRAFFIC SIGNAL CABLE, FIBER OPTIC, MULTI-MODE	1,540	LFT		
176	CONDUIT, PVC, 2 IN, SCHEDULE 80	8,471	LFT		
177	NEW PANEL AND LIGHTING CONTACTOR	1	EACH		
178	LANDSCAPE LIGHTS, LED, TYPE 'F', NEW	21	EACH		
179	LANDSCAPE LIGHTS, LED, TYPE 'G', NEW	4	EACH		
180	NO. 3 WIRE	320	LFT		
181	NO. 8 WIRE	160	LFT		
182	WIRE NO. 10	3,900	LFT		
183	NO. 12 WIRE	225	LFT		
184	HANDHOLE, TRAFFIC	20	EACH		
185	CABLE-DUCT MARKER	4	EACH		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
186	CONSTRUCTION LIGHTING	200	DAY		
187	LINE, THERMOPLASTIC, BROKEN, WHITE, 4 IN	168	LFT		
188	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	3,688	LFT		
189	LINE, REMOVE	4,945	LFT		
190	LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN	47	LFT		
191	LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN	1,612	LFT		
192	<Pay Item Deleted>			---	---
193	LINE, MULTI-COMPONENT, SOLID, YELLOW, 4 IN	1,684	LFT		
194	<Pay Item Deleted>			---	---
195	<Pay Item Deleted>			---	---
196	<Pay Item Deleted>			---	---
197	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK	1,820	LFT		
198	PAVEMENT MESSAGE MARKINGS, MULTI-COMPONENT, LANE INDICATION ARROW	4	EACH		
199	<Pay Item Deleted>			---	---
200	TRANSVERSE MARKINGS, MULTI-COMPONENT, CROSSWALK, WHITE, 24 IN.	234	LFT		
201	TRANSVERSE MARKING, MULTI-COMPONENT, SOILD, YELLOW, CROSSHATCH, 8 IN.	206	LFT		
202	PAVEMENT MESSAGE MARKINGS, THERMOPLASTIC, BIKE SYMBOL	27	EACH		
203	TRANSVERSE MARKINGS, MULTI-COMPONENT , YIELD LINE CHEVRON	90	LFT		
204	LINE, MULTI-COMPONENT, DOTTED, WHITE, 4 IN.	43	LFT		
205	LINE, THERMOPLASTIC, DOTTED, WHITE, 4 IN.	25	LFT		
206	LINE, THERMOPLASTIC, SOLID, WHITE, 6 IN	530	LFT		
207	LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN	4,701	LFT		
208	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN	20,968	LFT		
209	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 8"	94	LFT		
210	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, 24 IN	303	LFT		
211	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, LANE INDICATION ARROW	77	EACH		
212	FIBER OPTIC, CITY PARK RECONNECTION	1	LS		
213	NATIONAL GEODETIC SURVEY MONUMENT, REESTABLISH	1	LS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
214	8" STANDARD CURB, CONCRETE	545	LFT		
215	CURB RAMP, CONCRETE, B	59	SYS		
216	FIRE HYDRANT ASSEMBLY	1	EACH		
217	TEMPORARY TRANSVERSE PAVEMENT MARKING, REMOVABLE, STOP LINE, 24"	136	LFT		
218	DETOUR ROUTE MARKER ASSMEBLY	19	EACH		
219	FLASHING ARROW SIGN	540	DAY		
220	PORTABLE CHANGEABLE MESSAGE SIGN	1,080	DAY		
221	SIGNAL HEAD, COVER	8	EACH		
222	SIGNAL HEAD, TEMPORARY	4	EACH		
223	SOLAR POWERED FLASHING BEACON ASSEMBLY, RELOCATE	2	EACH		
224	MISCELLANEOUS EQUIPMENT FOR LIGHTING	1	LS		
225	PIPE, REMOVE EXISTING STORM SEWER	404	LFT		
226	PCCP, 5 IN.	33	SYS		
227	QC/QA-HMA, 4, 76, SURFACE, 9.5 mm	4,423	TON		
228	CURB RAMP, CONCRETE, F	8	SYS		
229	PEDESTRIAN PUSH BUTTON, NON-APS	24	EACH		
230	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, SHARE THE ROAD	27	EACH		
231	TRAFFIC SIGNAL HEAD, 3-SECTION, RELOCATE	7	EACH		
232	SIGNAL POLE, PEDESTAL, 4 FT.	3	EACH		
233	SEWER LATERAL, PRIVATE BUILDING, REINSTATEMENT	2	EACH		
234	SIGNAL CANTILEVER STRUCTURE, RELOCATE	2	EACH		
235	CONNECT TO EXISTING STRUCTURE	11	EACH		
236	LINE, THERMOPLASTIC, DOTTED, WHITE, 6 IN.	169	LFT		
237	PAINTING TRAFFIC SIGNALS	4	EACH		
	BASE BID TOTAL				

Bidder (Firm): _____

Address: _____

City/State/Zip: _____ Telephone Number: ( )

By _____
(Signature)

_____
(Printed Name of Person Signing)

BID / PROPOSAL
CITY OF SOUTH BEND

Project Name South Bend One-Way to Two-Way Conversion
Project No. 116-001 Div. B
For Bids Due February 18, 2016

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
	BASE BID PAY ITEMS				
1	CONSTRUCTION ENGINEERING	1	LS		
2	RAILROAD INSURANCE	1	LS		
3	CPM SCHEDULE	1	LS		
4	CPM SCHEDULE, MONTHLY UPDATE	12	EACH		
5	MOBILIZATION AND DEMOBILIZATION	1	LS		
6	VIDEO RECORD	1	LS		
7	UTILITY ALLOWANCE	40,000	DOL	$1.00	$40,000.00
8	<Pay Item Deleted>			---	---
9	UNDISTRIBUTED ALLOWANCE	35,000	DOL	$1.00	$35,000.00
10	MATERIAL TESTING	1	LS		
11	TREE, REMOVE	30	EACH		
12	CLEARING RIGHT OF WAY	1	LS		
13	TESTING FOR ASBESTOS	1	EACH		
14	PAVEMENT REMOVAL	29,987	SYS		
15	CURB, CONCRETE, REMOVE	15,421	LFT		
16	CURB AND GUTTER, REMOVE	7,367	LFT		
17	HOUSES AND BUILDINGS, REMOVE, PARCEL NO. 35	1	LS		
18	SIDEWALK, CONCRETE, REMOVE	16,764	SYS		
19	INLET, REMOVE	98	EACH		
20	LIGHT STANDARD AND FOUNDATION, REMOVE	140	EACH		
21	TRAFFIC SIGNAL EQUIPMENT, REMOVE	255	EACH		
22	<Pay Item Deleted>			---	---
23	FIRE HYDRANT ASSEMBLY, REMOVE	11	EACH		
24	FLAG POLE AND FOUNDATION, REMOVE	2	EACH		
25	EXCAVATION, COMMON	16,254	CYS		
26	BORROW	3,099	CYS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
27	SEDIMENT, REMOVE	8	CYS		
28	TEMPORARY INLET PROTECTION	385	EACH		
29	TEMPORARY MULCH	10	TON		
30	TEMPORARY SILT FENCE	1,184	LFT		
31	NO 2 STONE	400	TON		
32	TEMPORARY SEED MIXTURE	1,104	LBS		
33	SUBGRADE TREATMENT, TYPE I	10,725	SYS		
34	SUBGRADE TREATMENT, TYPE II	1,063	SYS		
35	SUBGRADE TREATMENT, TYPE IV	6,440	SYS		
36	SUBGRADE TREATMENT, TYPE IB	8,669	SYS		
37	STRUCTURAL BACKFILL, TYPE 1	3,420	CYS		
38	STRUCTURAL BACKFILL, TYPE 5	557	CYS		
39	COMPACTED AGGREGATE, NO. 53, BASE	5,211	TON		
40	DENSE GRADED SUBBASE	881	CYS		
41	<Pay Item Deleted>			---	---
42	HMA PATCHING, TYPE D	637	TON		
43	WIDENING WITH HMA, TYPE D	2,271	TON		
44	MILLING, ASPHALT, 1 1/2 IN	69,177	SYS		
45	MILLING ASPHALT, 3 1/2 IN	1,344	SYS		
46	MILLING ASPHALT, 4 1/2 IN	1,005	SYS		
47	MILLING ASPHALT, 2 1/2 IN	7,101	SYS		
48	MILLING, APPROACH	1,790	SYS		
49	MILLING, ASPHALT, 2 IN	5,707	SYS		
50	QC/QA-HMA, 2, 70, SURFACE, 9.5 mm	207	TON		
51	QC/QA-HMA, 4, 76, SURFACE, 9.5 mm	6,657	TON		
52	QC/QA-HMA, 4, 76, SURFACE, 12.5 mm	1,281	TON		
53	QC/QA-HMA, 2, 70, INTERMEDIATE, 19.0 mm	345	TON		
54	QC/QA-HMA, 4, 76, INTERMEDIATE, 19.0 mm	1,494	TON		
55	QC/QA-HMA, 2, 64, BASE, 19.0 mm	414	TON		
56	QC/QA-HMA, 4, 64, BASE, 19.0 mm	2,048	TON		
57	HMA SURFACE, TYPE B	630	TON		
58	HMA INTERMEDIATE, TYPE B	175	TON		
59	HMA BASE, TYPE B	410	TON		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
60	JOINT ADHESIVE, SURFACE	52,148	LFT		
61	JOINT ADHESIVE, INTERMEDIATE	6,523	LFT		
62	LIQUID ASPHALT SEALANT	52,206	LFT		
63	ASPHALT FOR TACK COAT	30	TON		
64	QC/QA PCCP, 10 IN.	13,482	SYS		
65	<Pay Item Deleted>			---	---
66	PCCP, 9 IN	1,365	SYS		
67	PCCP, 6 IN	65	SYS		
68	PCCP, 5 IN.	118	SYS		
69	PCCP, 4 IN.	599	SYS		
70	PCCP, COLORED, 10 IN	1,467	SYS		
71	PCCP, COLORED, 8 IN 9 IN	69	SYS		
72	PCCP, COLORED, 6 IN	415	SYS		
73	<Pay Item Deleted>			---	---
74	<Pay Item Deleted>			---	---
75	PERMEABLE PAVEMENT	2,295	SYS		
76	D-1 CONTRACTION JOINT	9,639	LFT		
77	SLEEPER SLAB	358	LFT		
78	PREFORMED JOINT MATERIAL	358	LFT		
79	GUARDRAIL, REMOVE	199	LFT		
80	GUARDRAIL END TREATMENT, MS	2	EACH		
81	<Pay Item Deleted>			---	---
82	SIDEWALK, CONCRETE, 4"	7,679	SYS		
83	SIDEWALK, CONCRETE, 5"	10,868	SYS		
84	SIDEWALK, CONCRETE, 6"	596	SYS		
85	SIDEWALK, CONCRETE, DECORATIVE	1,796	SYS		
86	MOW STRIP, CONCRETE	8	LFT		
87	CURB RAMP, CONCRETE, A	741	SYS		
88	CURB RAMP, CONCRETE, C	558	SYS		
89	<Pay Item Deleted>			---	---
90	CURB RAMP, CONCRETE, E	87	SYS		
91	CURB RAMP, CONCRETE, F	95	SYS		
92	CURB RAMP, CONCRETE, G	215	SYS		
93	CURB RAMP, CONCRETE, H	148	SYS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
94	CURB RAMP, CONCRETE, K	126	SYS		
95	CURB RAMP, CONCRETE, L	73	SYS		
96	CURB RAMP, CONCRETE, UNIQUE	94	SYS		
97	<Pay Item Deleted>			---	---
98	CURB, INTEGRAL, CONCRETE	8,878	LFT		
99	CURB, INTEGRAL, B, CONCRETE, MODIFIED	781	LFT		
100	CURB, CONCRETE	7,348	LFT		
101	<Pay Item Deleted>			---	---
102	<Pay Item Deleted>			---	---
103	CENTER CURB, D, CONCRETE	46	SYS		
104	CURB AND GUTTER, B, CONCRETE	15,639	LFT		
105	HMA FOR APPROACHES, TYPE B	957	TON		
106	PCCP FOR APPROACHES, 9 IN	1,283	SYS		
107	PCCP FOR APPROACHES, 8 IN	279	SYS		
108	PCCP FOR APPROACHES, 6 IN	988	SYS		
109	<Pay Item Deleted>			---	---
110	HEADER, CONCRETE	2,760	LFT		
111	GEOTEXTILES	100	SYS		
112	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	2	EACH		
113	<Pay Item Deleted>			---	---
114	SODDING, NURSERY AND TOPSOIL	18,114	SYS		
115	CURB IDENTIFICATION MARKER	194	EACH		
116	BRICK, DECORATIVE	1,471	SYS		
117	BRICK, DECORATIVE, PERMEABLE	6,007	SYS		
118	OVERSTORY TREE, 2" CALIPER	217	EACH		
119	ORNAMENTAL TREE, 2", CALIPER	22	EACH		
120	EVERGREEN TREE, 6'-8' HEIGHT	14	EACH		
121	SHRUB, NO.3 CONTAINER	602	EACH		
122	PERENNIAL, NO. 1 CONTAINER	1,498	EACH		
123	ORNAMENTAL GRASS, NO. 1 CONTAINER	444	EACH		
124	GROUNDCOVER, PLUG	2,441	EACH		
125	SHREDDED HARDWOOD MULCH	2,351	CYS		
126	TRASH ENCLOSURE	1	EACH		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
127	TRASH RECEPTACLE	17	EACH		
128	BACKFILL MIX FOR PLANTINGS	460	CYS		
129	BENCH	4	EACH		
130	BICYCLE RACK	14	EACH		
131	SIGN, DECORATIVE, TWO WAY CYCLE TRACK	4	EACH		
132	SIGN, DECORATIVE, TWO WAY CYCLE TRACK WITH SUPPLEMENT	1	EACH		
133	SIGN, DECORATIVE, SHARED USE PATH	2	EACH		
134	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, SHARED CYCLE TRACK	8	EACH		
135	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, CYCLE TRACK SYMBOL	30	EACH		
136	PRECAST CONCRETE PLANTER	12	EACH		
137	TREE GRATE	71	EACH		
138	LANDSCAPE EDGING	415	LFT		
139	IRRIGATION, TREE WATERING SYSTEM	156	EACH		
140	IRRIGATION, LANDSCAPE	13,028	SYS		
141	IRRIGATION, REPAIR	4,750	SYS		
142	GABION RENO MATTRESS	16	SYS		
143	MASONRY WALL	62	CYS		
144	ROUNDABOUT - REINFORCING STEEL	4,000	LBS		
145	ROUNDABOUT - MODULAR FACE BRICK	3,075	SFT		
146	ROUNDABOUT - UPPER RETAINING WALLS	170	LFT		
147	ROUNDABOUT - LOWER RETAINING WALLS	220	LFT		
148	ROUNDABOUT - CONCRETE COLUMNS	120	CYS		
149	CONCRETE MONUMENT FOOTING	38	CYS		
150	<Pay Item Deleted>			---	---
151	24" WIDE PRECAST CONCRETE WALL CAP	364	LFT		
152	56" SQ PRECAST CONCRETE CAP	8	EACH		
153	68" SQ PRECAST CONCRETE CAP	8	EACH		
154	<Pay Item Deleted>			---	---
155	PRECAST CONCRETE HEADWALL	1	EACH		
156	METER PIT	2	EACH		
157	<Pay Item Deleted>			---	---
158	PIPE, TYPE 2 CIRCULAR 8 IN	42	LFT		
159	PIPE, TYPE 2 CIRCULAR 10 IN	18	LFT		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
160	PIPE, TYPE 2 CIRCULAR 12 IN	5,497	LFT		
161	PIPE, TYPE 2 CIRCULAR 15 IN	182	LFT		
162	PIPE, TYPE 2 CIRCULAR 18 IN	474	LFT		
163	PIPE, TYPE 2 CIRCULAR 21 IN	103	LFT		
164	PIPE, TYPE 2 CIRCULAR 24 IN	279	LFT		
165	PIPE, TYPE 2 CIRCULAR 30 IN	294	LFT		
166	PIPE, TYPE 2 CIRCULAR 36 IN	416	LFT		
167	PIPE, TYPE 2 CIRCULAR 42 IN	28	LFT		
168	HMA FOR STRUCTURE INSTALLATION, TYPE B	20	TON		
169	VIDEO INSPECTION FOR PIPE	7,957	LFT		
170	<Pay Item Deleted>			---	---
171	CASTING, ADJUST TO GRADE	73	EACH		
172	CASTING, 2, FURNISH AND ADJUST TO GRADE	5	EACH		
173	CASTING, 4, FURNISH AND ADJUST TO GRADE	17	EACH		
174	CASTING, 10, FURNISH AND ADJUST TO GRADE	6	EACH		
175	CASTING, 13, FURNISH AND ADJUST TO GRADE	2	EACH		
176	INLET, A3	2	EACH		
177	INLET, R13	4	EACH		
178	INLET, A2, MODIFIED	3	EACH		
179	CATCH BASIN, J15	7	EACH		
180	CATCH BASIN, K10	92	EACH		
181	CATCH BASIN, S14	1	EACH		
182	CATCH BASIN, F7	2	EACH		
183	CATCH BASIN, M10	17	EACH		
184	CATCH BASIN, B15	9	EACH		
185	CATCH BASIN, C15	1	EACH		
186	PIPE CATCH BASIN, 12 IN	3	EACH		
187	MANHOLE, C4	22	EACH		
188	MANHOLE, D4	1	EACH		
189	MANHOLE, D15, MODIFIED	10	EACH		
190	MANHOLE, F4	2	EACH		
191	MANHOLE, H4	3	EACH		
192	MANHOLE, H10, MODIFIED	1	EACH		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
193	MANHOLE, J10, MODIFIED	2	EACH		
194	MANHOLE, C15, MODIFIED, DOGHOUSE	1	EACH		
195	MANHOLE, D15, MODIFIED, DOGHOUSE	1	EACH		
196	INLET, B15, MODIFIED	4	EACH		
197	INLET, C15, MODIFIED	8	EACH		
198	INLET, B15	8	EACH		
199	INLET, C15	1	EACH		
200	TRENCH DRAIN	287	LFT		
201	STRUCTURE, MANHOLE, RECONSTRUCTED	3	LFT		
202	FIRE HYDRANT ASSEMBLY	12	EACH		
203	FIRE HYDRANT, RESET	9	EACH		
204	WATER MAIN, D.I., 6"	84	LFT		
205	WATER QUALITY STRUCTURE	1	EACH		
206	WATER MAIN, D.I. 20"	481	LFT		
207	<Pay Item Deleted>			---	---
208	MECHANICAL JOINT RESTRAINT FOR 20" DI WATER MAIN	30	EACH		
209	<Pay Item Deleted>			---	---
210	TEMPORARY PAVEMENT MESSAGE MARKING, REMOVABLE, LANE INDICATION ARROW	36	EACH		
211	CONSTRUCTION SIGN, C	30	EACH		
212	ROAD CLOSURE SIGN ASSEMBLY	48	EACH		
213	TEMPORARY PANEL SIGNS	759	SFT		
214	TEMPORARY PANEL SIGN SUPPORTS	248	LFT		
215	TEMPORARY PAVEMENT MARKING, 4 IN	53,007	LFT		
216	TEMPORARY PAVEMENT MARKING, REMOVABLE, 24"	420	LFT		
217	DETOUR ROUTE MARKER ASSEMBLY	280	EACH		
218	CONSTRUCTION SIGN, A	329	EACH		
219	CONSTRUCTION SIGN, B	28	EACH		
220	FLASHING ARROW SIGN	1,410	DAY		
221	CHANGEABLE MESSAGE SIGN	7	EACH		
222	TUBULAR MARKER, PERMANENT	12	EACH		
223	MAINTAINING TRAFFIC	1	LS		
224	BARRICADE, III-A	1,030	LFT		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
225	BARRICADE, III-B	1,724	LFT		
226	BOLLARD, DECORATIVE, ILLUMINATED	33	EACH		
227	HOSPITAL SIGN REMOVAL	1	EACH		
228	SIGN POST, SQUARE, TYPE 1, REINFORCED ANCHOR BASE	1,803	LFT		
229	<Pay Item Deleted>			---	---
230	PROJECT INFORMATION SIGN	1	EACH		
231	SIGN, SHEET ASSEMBLY, RELOCATE	71	EACH		
232	SIGN, SHEET, WITH LEGEND 0.080"	800	SFT		
233	SIGN, SHEET, WITH LEGEND 0.100 IN	339	SFT		
234	SIGN STRUCTURE, SALVAGE	1	LS		
235	SIGNAL EQUIPMENT, SALVAGE	1	LS		
236	<Pay Item Deleted>			---	---
237	TRANSPORTATION OF SALVAGEABLE SIGNAL EQUIPMENT	25	EACH		
238	TESCO CABINET W/DUAL SERVICE, FOUNDATION, WIRING, ETC.	6	EACH		
239	TESCO CABINET W/SINGLE SERVICE, FOUNDATION, WIRING & ETC	16	EACH		
240	MAST ARM HAND HOLE COVERS	36	EACH		
241	WIRELESS MAGNETOMETER DETECTOR, RELOCATE	24	EACH		
242	SIGNAL CABLE INTERCONNECT, FIBER OPTIC	875	LFT		
243	SIGNAL POLE, PEDESTAL, 15 FT	7	EACH		
244	LOOP DETECTOR DELAY COUNTING AMPLIFIER, 2 CHANNEL	49	EACH		
245	LOOP DETECTOR RACK	11	EACH		
246	CONTACT CLOSURE CARD	1	EACH		
247	RECEIVER PROCESSOR	1	EACH		
248	<Pay Item Deleted>			---	---
249	<Pay Item Deleted>			---	---
250	HANDHOLE, SIGNAL, TYPE 1	68	EACH		
251	HANDHOLE, SIGNAL, ADJUST TO GRADE	34	EACH		
252	RELOCATE CONTROLLER CABINET	7	EACH		
253	CONTROLLER, RELOCATE AND REWIRE	7	EACH		
254	TRAFFIC SIGNAL HEAD, 3-SECTION, RELOCATE	95	EACH		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
255	PEDESTRIAN SIGNAL HEAD, 12 IN., RELOCATE	4	EACH		
256	PEDESTRIAN SIGNAL HEAD, COUNTDOWN, 18 IN	144	EACH		
257	SIGNAL PEDESTAL FOUNDATION, A	54	EACH		
258	SIGNAL POLE, PEDESTAL, 12FT	47	EACH		
259	<Pay Item Deleted>			---	---
260	PVC SCHEDULE 80 CONDUIT, 3/4"	6,225	LFT		
261	CONDUIT, PVC, 2 IN, SCHEDULE 80	12,349	LFT		
262	PVC SHEDULE 80 CONDUIT, 3"	160	LFT		
263	CONDUIT, HDPE, 2 IN, SCHEDULE 80	21,065	LFT		
264	CONDUIT, STEEL, 2 IN, GALVANIZED	55	LFT		
265	<Pay Item Deleted>			---	---
266	<Pay Item Deleted>			---	---
267	<Pay Item Deleted>			---	---
268	<Pay Item Deleted>			---	---
269	SIGNAL CANTILEVER STRUCTURE, SINGLE TRUSS ARM 35 FT.	4	EACH		
270	SIGNAL CANTILEVER STRUCTURE, SINGLE ARM, 45 FT.	1	EACH		
271	SIGNAL CANTILEVER STRUCTURE, SINGLE ARM, 50 FT.	1	EACH		
272	SIGNAL CANTILEVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE A	41	EACH		
273	SIGNAL CANTILEVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE B	3	EACH		
274	SIGNAL CANTILEVER STRUCTURE, RELOCATE	33	EACH		
275	PAINTING TRAFFIC SIGNALS	18	EACH		
276	THERMAL DETECTION CAMERA	8	EACH		
277	THERMAL DETECTION SYSTEM	4	EACH		
278	TRAFFIC SIGNAL HEAD, 3 SECTION, 12", RED AMBER GREEN BIKE SIGNALS	8	EACH		
279	TRAFFIC SIGNAL HEAD, 5 SECTION, 12", RED AMBER GREEN, AMBER ARROW, GREEN ARROW	23	EACH		
280	<Pay Item Deleted>			---	---
281	PEDESTRIAN PUSH BUTTON, NON-APS	82	EACH		
282	<Pay Item Deleted>			---	---

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
283	<Pay Item Deleted>			---	---
284	<Pay Item Deleted>			---	---
285	CONSTRUCTION LIGHTING	1,400	DAY		
286	SIGNAL CABLE, SERVICE, COPPER. 3C/8GA	400	LFT		
287	SIGNAL CABLE, ROADWAY LOOP, COPPER 1C/14GA	39,445	LFT		
288	SIGNAL CABLE, CONTROL, COPPER 5C/14GA	27,742	LFT		
289	SIGNAL CABLE, CONTROL, COPPER 7C/14GA	8,858	LFT		
290	SIGNAL CABLE, DETECTOR LEAD-IN COPPER 2C/16GA	11,324	LFT		
291	SIGNAL DETECTOR HOUSING	88	EACH		
292	<Pay Item Deleted>			---	---
293	ILLUMINATED WALL LETTERING	1	LS		
294	SAW CUT FOR ROADWAY LOOP AND SEALANT	14,953	LFT		
295	HANDHOLE, LIGHTING	34	EACH		
296	LIGHT STANDARD FOUNDATION, 2FT DIAMETER X 6FT	178	EACH		
297	LUMINAIRE, ORNAMENTAL	187	EACH		
298	LIGHT POLE, ORNAMENTAL, SINGLE	83	EACH		
299	LIGHT STANDARD TYPE 'D'	10	EACH		
300	LIGHT STANDARD TYPE 'E'	29	EACH		
301	LIGHT STANDARD TYPE 'A'	5	EACH		
302	LIGHT STANDARD TYPE 'B'	4	EACH		
303	LIGHT STANDARD TYPE 'C'	6	EACH		
304	<Pay Item Deleted>			---	---
305	<Pay Item Deleted>			---	---
306	LANDSCAPE LIGHTS, LED, TYPE 'F'	42	EACH		
307	LANDSCAPE LIGHTS, LED, TYPE 'G'	8	EACH		
308	NEW PANEL AND LIGHTING CONTACTOR	1	EACH		
309	MISCELLANEOUS EQUIPMENT FOR LIGHTING	1	LS		
310	3/0 WIRE	320	LFT		
311	NO. 3 WIRE	640	LFT		
312	NO. 4 WIRE, COPPER, 1/C	61,980	LFT		
313	NO. 6 WIRE, COPPER, 1/C	46,053	LFT		
314	NO. 8 WIRE	20,990	LFT		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
315	NO. 10 WIRE	24,200	LFT		
316	NO. 12 WIRE	3,720	LFT		
317	<Pay Item Deleted>			---	---
318	CABLE, POLE CIRCUIT THWN, NO 10 COPPER, STRANDED, 1/C	5,578	LFT		
319	WIRE, NO 6 COPPER IN PLASTIC DUCT, 4 1/C	714	LFT		
320	WIRE, NO 6 COPPER IN PLASTIC DUCT, IN TRENCH, 4 1/C	4,625	LFT		
321	CONNECTOR KIT, UNFUSED	256	EACH		
322	CONNECTOR KIT, FUSED	256	EACH		
323	MULTIPLE COMPRESSION FITTING, NON-WATERPROOFED	361	EACH		
324	MULTIPLE COMPRESSION FITTING, WATERPROOFED	224	EACH		
325	INSULATION LINK, NON-WATERPROOFED	23	EACH		
326	INSULATION LINK, WATERPROOFED	262	EACH		
327	<Pay Item Deleted>			---	---
328	LINE, REMOVE	48,085	LFT		
329	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, BIKE SYMBOL	94	EACH		
330	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, BIKE SYMBOL	13	EACH		
331	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	37,662	LFT		
332	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN	58,843	LFT		
333	LINE, THERMOPLASTIC, BROKEN, WHITE, 4 IN	3,607	LFT		
334	LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN	5,429	LFT		
335	LINE, THERMOPLASTIC, SOLID, WHITE, 6 IN	22,381	LFT		
336	LINE, THERMOPLASTIC, SOLID, YELLOW, 6 IN	651	LFT		
337	LINE, THERMOPLASTIC, SOLID, YELLOW, 8"	734	LFT		
338	LINE, THERMOPLASTIC, DOTTED, WHITE, 6 IN.	686	LFT		
339	LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN	745	LFT		
340	LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN	7,924	LFT		
341	LINE, MULTI-COMPONENT, SOLID, YELLOW, 4 IN	5,978	LFT		
342	LINE, MULTI-COMPONENT, BROKEN, YELLOW, 4 IN	1,304	LFT		
343	LINE, MULTI-COMPONENT, SOLID, WHITE, 6 IN	2,128	LFT		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
344	LINE, MULTI-COMPONENT, DOTTED, WHITE, 8 IN.	296	LFT		
345	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 8"	860	LFT		
346	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 12"	195	LFT		
347	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, 6"	11,053	LFT		
348	TRANSVERSE MARKING THERMOPLASTIC CROSSWALK, WHITE 24"	3,116	LFT		
349	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, 24 IN	3,880	LFT		
350	TRANSVERSE MARKING, THERMOPLASTIC, YIELD, WHITE, 24 IN.	117	LFT		
351	TRANSVERSE MARKING, MULTI-COMPONENT, WHITE, CROSSHATCH, 8 IN.	349	LFT		
352	TRANSVERSE MARKINGS MULTI-COMPONENT, CROSSHATCH LINE, WHITE,12"	247	LFT		
353	TRANSVERSE MARKING, MULTI-COMPONENT, CROSSWALK LINE, 6"	1,071	LFT		
354	TRANSVERSE MARKING MULTI-COMPONENT, STOP LINE, 24"	306	LFT		
355	TRANSVERSE MARKINGS, MULTI-COMPONENT, CROSSWALK, WHITE, 24 IN.	429	LFT		
356	TRANSVERSE MARKINGS, MULTI-COMPONENT, YIELD LINE, WHITE, 24 IN.	92	LFT		
357	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, LANE INDICATION ARROW	404	EACH		
358	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, (ONLY)	47	EACH		
359	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, HANDICAP SYMBOL	4	EACH		
360	PAVEMENT MESSAGE MARKINGS, MULTI-COMPONENT, LANE INDICATION ARROW	27	EACH		
361	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, (ONLY)	4	EACH		
362	PAVEMENT MESSAGE MARKINGS, MULTI-COMPONENT HANDICAP SYMBOL	13	EACH		
363	PAVEMENT MARKING, SOLID, MULTI-COMPONENT, GREEN	202	SYS		
364	PAVEMENT MARKING, SOLID, MULTI-COMPONENT, RED	50	SYS		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
365	HMA FOR PATCHING, TYPE B	390	TON		
366	<Pay Item Deleted>			---	---
367	POROUS CONCRETE	298	SYS		
368	FENCE, TEMPORARY	560	LFT		
369	CURB RAMP, CONCRETE, G, MODIFIED	13	SYS		
370	CONCRETE STAIR	30	LFT		
371	STAIR RAILING	14	LFT		
372	CURB, CONCRETE, 8 IN	1,108	LFT		
373	CASTING, FURNISH, INSTALL & ADJUST TO GRADE	7	EACH		
374	TEMPORARY TRANSVERSE PAVEMENT MARKING, STOP LINE, 24"	30	LFT		
375	TEMPORARY PAVEMENT MARKING, REMOVABLE, 4"	10,190	LFT		
376	BARRICADE, II	12	LFT		
377	SIGNAL HEAD, COVER	8	EACH		
378	MISCELLANEOUS ELECTRICAL EQUIPMENT	1	LS		
379	MISC ELECTRICAL REVISIONS	1	LS		
380	CONTROLLER CABINET FOUNDATION, P1	7	EACH		
381	FIBER OPTIC, RELOCATE	175	LFT		
382	WIRELESS MAGNETOMETER DETECTOR, NEW	18	EACH		
383	PEDESTRIAN PUSH BUTTON, RELOCATE	4	EACH		
384	LIGHT STANDARD FOUNDATION, 2FT DIAMETER X 8FT	10	EACH		
385	ELECTRICAL DEVICES AND POST	33	EACH		
386	LINE, THERMOPLASTIC, SOLID, WHITE, 12 IN.	760	LFT		
387	LINE, THERMOPLASTIC, SOLID, WHITE, 24 IN.	35	LFT		
388	LINE, MULTI-COMPONENT, SOLID, WHITE, 8 IN.	600	LFT		
389	LINE, MULTI-COMPONENT, SOLID, WHITE, 12 IN	2,050	LFT		
390	LINE, MULTI-COMPONENT, SOLID, WHITE, 24 IN	15	LFT		
391	CATCH BASIN, E7	1	EACH		
392	SIGN, SHEET, REMOVE	51	EACH		
393	LIGHT POLE, ORNAMENTAL. TWIN	52	EACH		
394	SIGNAL CABLE, CONTROL, COPPER 3C/14GA	106	LFT		
395	TRAFFIC SIGNAL HEAD, 5-SECTION, RELOCATE	1	EACH		
396	TRAFFIC SIGNAL CABLE, FIBER OPTIC, MULTI-MODE	2,060	LFT		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
397	PAVEMENT MARKING, SOLID, THERMOPLASTIC, GREEN	1,625	SYS		
398	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, PED. SYMBOL	19	EACH		
399	POLE FOUNDATION, REMOVE	10	EACH		
400	WATER MAIN, D.I., 8"	123	LFT		
401	WATER MAIN, TESTING TAP, 2 IN.	3	EACH		
402	WATER SERVICE, COPPER, 2 IN.	65	LFT		
403	WATER SERVICE, D.I., 4 IN.	24	LFT		
404	CONNECT TO EXISTING WATER SERVICE, 4 IN.	1	EACH		
405	CONNECT TO EXISTING WATER MAIN, 6 IN.	1	EACH		
406	CONNECT TO EXISTING WATER MAIN, 8 IN.	2	EACH		
407	TRANSITION COUPLING, 20 IN.	12	EACH		
408	45 DEGREE ELBOW, 2 IN.	4	EACH		
409	45 DEGREE ELBOW, 8 IN.	4	EACH		
410	90 DEGREE ELBOW, 20 IN.	8	EACH		
411	CAP, 6 IN.	1	EACH		
412	CAP, REMOVE EXISTING, 6 IN.	1	EACH		
413	TEE, 6 IN. X 6 IN. X 4 IN.	1	EACH		
414	CORPORATION STOP, 2 IN.	2	EACH		
415	GATE VALVE AND BOX, 4 IN.	1	EACH		
416	BUTTERFLY VALVE AND BOX, 20 IN.	4	EACH		
417	INSERT VALVE AND BOX, 8 IN.	2	EACH		
418	TEMPORARY LINE STOP VALVE, 20 IN.	4	EACH		
419	MANHOLE, REMOVE	3	EACH		
420	CURB RAMP, CONCRETE, B	30	SYS		
421	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, WHITE, 8"	60	LFT		
422	ADJUST WATER SERVICE LINE, COMMERCIAL	2	EACH		
423	INSPECTION HOLE	10	EACH		
424	TAP, WATER SERVICE, 1 IN. - CITY TAP FEE	2	EACH		
425	CAP EXISTING WATER SERVICE LINE	2	EACH		
426	SEWER LATERAL PRIVATE BUILDING, REINSTATEMENT	2	EACH		
427	SIGNAL POLE, PEDESTAL, 4 FT.	6	EACH		

Item No.	Description	Quantity	Unit	Unit Price	Total Amount
428	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, SHARE THE ROAD	21	EACH		
429	CONDUIT, HDPE, SCHEDULE 80, 3 IN.	260	LFT		
430	CONDUIT, HDPE, SCHEDULE 80, 4 IN.	80	LFT		
431	SIGN, SHEET ASSEMBLY, NEW	38	EACH		
432	<Pay Item Deleted>			---	---
433	CONNECT TO EXISTING STRUCTURE	32	EACH		
434	MECHANICAL JOINT RESTRAINT FOR 8" DI WATER MAIN	10	EACH		
435	MECHANICAL JOINT RESTRAINT FOR 6" DI WATER MAIN	3	EACH		
436	MECHANICAL JOINT RESTRAINT FOR 4" DI WATER MAIN	3	EACH		
437	TRANSVERSE MARKING, MULTI-COMPONENT, YELLOW, CROSSHATCH LINE, 12"	85	LFT		
438	FIELD OFFICE, C	12	MOS		
	BASE BID TOTAL				

	ALTERNATE NO. 1 BID PAY ITEMS				
501	CROSSWALK SYSTEM - FLUSH BI-DIRECTIONAL FIXTURE	34	EACH		
502	CROSSWALK SYSTEM - FLASHING PEDESTRIAN SIGN	12	EACH		
503	CROSSWALK SYSTEM CONTROLLER	2	EACH		
504	CROSSWALK SYSTEM - PEDESTRIAN PUSH-BUTTON STATION	8	EACH		
505	NO. 8 WIRE	3,270	LFT		
506	NO. 12 WIRE	2,904	LFT		
507	HANDHOLE, SIGNAL, TYPE 1	4	EACH		
508	CONDUIT, PVC, 2 IN, SCHEDULE 80	835	LFT		
509	CONDUIT, PVC, 1 IN, SCHEDULE 80	1,095	LFT		
	ALTERNATE NO. 1 BID TOTAL				

Bidder (Firm): _____

Address: _____

City/State/Zip: _____ Telephone Number: ( )

By _____
(Signature)

_____
(Printed Name of Person Signing)

January 25, 2016
Project No. 3671-350-32-01

INDOT

GEOTECHNICAL EXPLORATION

SR 933 Reconstruction

South Bend, Indiana
Project # R – 35265
Des # 1006671

Prepared for

Mr. Athar Khan
INDOT – Materials and Tests Division
120 South Shortridge Road
Indianapolis, IN 46219

PREPARED BY

Weaver Consultants Group

7121 Grape Road
Granger, Indiana 46530
574.271.3447 • wcgrp.com

Weaver Consultants Group

January 25, 2016
Project No: 3671-350-32-01

Mr. Athar Khan
Indiana Department of Transportation – Materials and Tests Division
120 South Shortridge Road
Indianapolis, IN 46219-0389

RE: REPORT - GEOTECHNICAL EXPLORATION
SR 933 Reconstruction
South Bend, Indiana
Project No. R-35265
Des No. 1006671

Dear Mr. Khan:

In compliance with your request, **Weaver Consultants Group** *(WCG)* has completed our geotechnical exploration at the site of the above-referenced project. This work was completed in general accordance with our Proposal dated September 8, 2015. The purpose of this study was to explore the stratification and engineering properties of the subsurface soils and to provide recommendations for pavement design and construction of southbound SR 933 beginning just south of at the intersection of Bronson Street and ending just north of South Street in South Bend, Indiana. We were not retained to address environmental or land use restriction concerns for this study.

This report contains the results of our subsurface exploration, recommendations pavement design and construction, and related construction considerations. A summary of our findings is presented in **Section 1.0** "**Executive Summary**." Supporting details are presented in subsequent sections of the report and the appendices.

Thank you for selecting our firm to assist in this phase of the project. Please call us if there are any questions concerning this report.

Very truly yours,
Weaver Consultants Group

Annaji Chillarige, Ph.D., P.E.
Sr. Geotechnical Engineer

Mark Pittman, M.B.A., P.E.
Senior Project Manager

GEOTECHNICAL EXPLORATION

SR 933 Reconstruction
South Bend, Indiana

TABLE OF CONTENTS

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

It was proposed to resurface SR 933 between SR 23 and Angela Boulevard in South Bend, Indiana. SR 933 runs north along Michigan Street and runs south along Main Street within the project limits. A short segment of the project includes the reconstruction of the pavement below the railroad viaduct that is just north of SR 23 on SR 933 southbound.

For the design and construction of SR 933 at the viaduct, a geotechnical study was proposed and performed. The study included drilling four borings along its alignment. Two Borings were drilled along Northbound SR 933 at the site and two borings were performed along Southbound SR 933. Borings were terminated at depths of 7.5 feet to 10 feet. The Northbound evaluation was included at the request of the LaPorte District in the event that the reconstruction of the Northbound segment under the viaduct is warranted as well.

Beneath the surficial asphalt and concrete, borings encountered medium dense sand (fill) and natural very loose to loose sand. No groundwater was encountered in the borings during and after drilling.

Pavement

We understand that the roadway work is planned to include, but not necessarily be limited to: new pavement for the main roadway, drainage improvements, raising the grade, if required, and undercutting the soils for the construction of roadway at a few locations. The maximum fill to achieve the pavement design grade will be less than a foot at some locations and the maximum cut at some locations will be less than a foot.

The pavement may be supported on a suitably prepared (compacted then proof-rolled) subgrade.

Due to the urban nature of the project area and based on INDOT Subgrade Treatment Recommendations, in cut and at-grade sections, 'Type IC' subgrade treatment is recommended. A Resilient Modulus of 7,500 psi for the subgrade soils is recommended for use in pavement design. An undistributed quantity of subgrade improvement that is equal to 10% of the area to receive new pavement should be included in the contract.

Due to the presence of sandy subsurface soils, no subsurface drains will be required. However, if there are any existing subsurface drains on either end of the project limits, subsurface drains should be installed throughout the project, on both sides of the roadway. Filter fabric is not required. Based on particle size for D_{10}, it could be estimated that the subsurface sand would have an approximate coefficient of permeability of 2.0×10^{-2} cm/sec.

Site Preparation

After stripping the pavement, and prior to placement of new B Borrow material or structural fill such as INDOT Coarse Aggregate (IN-53), the exposed subgrade soils should first be proof-rolled, to detect localized loose or soft materials within new embankment fill and pavement areas.

B Borrow material, as per INDOT Standards Section 211.01, is material of acceptable quality, free from large or frozen lumps, wood, or other extraneous matter. Sand, gravel, crushed stone, air cooled blast furnace slag or granulated blast furnace slag are sometimes used for B Borrow. The material is required to contain no more than 10% passing the No. 200 sieve and be otherwise suitably graded.

B Borrow or structural fill should be compacted to at least 95 percent of its maximum standard Proctor dry density. The aggregate base material should likewise be compacted to 95 percent of the maximum standard Proctor dry density.

A more detailed discussion of design parameters and construction considerations is included in subsequent sections of this report.

2.0 INTRODUCTION

2.1 Project Identification

It was proposed to resurface SR 933 between SR 23 and Angela Boulevard in South Bend, Indiana. SR 933 runs north along Michigan Street and runs south along Main Street within the project limits. A short segment of the project includes the reconstruction of the pavement below the railroad viaduct that is just north of SR 23 on SR 933 Southbound. The existing pavement at these locations is cracked and filled with asphalt patches. Moreover, the drainage at the viaduct is poor during rains. The LaPorte District currently plans to replace the southbound pavement and is considering the replacement of the Northbound pavement for these small areas within the overall project. Therefore, a geotechnical investigation was proposed and performed to evaluate the subsurface conditions for the proposed reconstruction. For this investigation, four borings were drilled, two for northbound and two for southbound. The project is located in Portage Township in St. Joseph County, Indiana.

Topography of the SR 933: Based on "GOOGLE" maps, the existing ground elevation along the proposed alignment of SR 933 ranges from 722 feet to 724 feet along the northbound lanes and on the order of 722 to 723 feet along the south bound lanes. Based on our field observations, ground cover in the area of the proposed reconstruction consists of pavement.

The scope of services did not include an environmental assessment for assessing the presence or absence of wetlands or hazardous or toxic materials in the soil, groundwater, or air on or below, or around this site. Any statement in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for the informational purposes only.

2.2 USDA Soil Survey

St. Joseph County in the north-central part of Indiana has an area of about 467 square miles. The county is bordered on the north by Michigan, on the west by La Porte County, on the east by Elkhart County and on the south by Marshall County. The county was established in 1830 by the Indiana State and South Bend was incorporated in 1835.

As per USDA Soil Conservation Survey of the St. Joseph County, the soils at the project site are of Urban land-Tyner complex, 0 to 1 percent (UgvA). These soils are excessive drained sandy soils. The upper 20 inches of soils are loamy sand, which is followed by sand to depth of about 80 inches.

2.3 Field Exploration Program

The exploration consisted of drilling four soil borings (B-1, B-2, B-3 and B-4) along the SR 933. The approximate locations of the borings are shown on Figure 1.

The borings were performed by a truck-mounted Diedrich D-120. Continuous hollow stem augers were used to advance each borehole. Representative subsoil samples were obtained using Split-Spoon Sampling Procedure in accordance with ASTM D 1586. The SPT values are shown on the **Soil Boring Logs (Appendix A)**.

Observations were made for ground water during and after drilling. The soil borings were backfilled subsequently.

Soil samples obtained from soil borings were logged, labeled, sealed and transported to our laboratory for further testing. A laboratory testing program was conducted to further evaluate the physical properties of the soils encountered in the borings.

2.4 Laboratory Testing Program

Representative samples of the soils were selected and tested in our laboratory for the purpose of soil classification. The soil samples were also visually classified in general conformance with the Unified Soil Classification System (ASTM D 2487).

The laboratory tests included particle-size analyses (i.e., sieve analysis on the fine-grained soils) on a select sand samples.

The results of the classification tests are presented in **Classification Tests (Appendix B)** and are summarized in the following table.

Table 1: Summary of Classification of Soil Samples

Boring #	Sample Depth (ft)	Sample #	AASHTO Classification
RB-2	6.0 - 7.5 & 8.5 - 10.0	3 & 4	Sand A-1- b (0)
RB-4	1.0-2.5	1	Sand A-1- b (0)

3.0 SUBSURFACE CONDITIONS

3.1 Subsurface Conditions

The following discussion is general; for more specific information, refer to the boring logs presented in the **Appendix – Boring Logs.**

Borings were proposed to be drilled to 7.5 feet below ground surface (bgs). Borings B-1, B-2 and B-4 were extended to depths of 10 feet, due the presence of very loose sand at depth of 7.5 feet.

Surface Conditions: Pavement cores were obtained at each boring. The results are presented in Table 2.

Table 2: Thickness of Pavement at Core Locations

Boring #	Pavement Type	Thickness (inches)
B-1	Asphalt/Concrete	4” Asphalt/7” Concrete
B-2	Asphalt	7”
B-3	Concrete	9”
B-4	Concrete	9”

Subsurface Conditions: The subsurface soil profile beneath the surficial pavement, in general, consisted of mostly two (2) distinct soil layers. These layers include medium dense sand fill and loose to very loose natural sand. A more detailed description of the encountered soil layers is provided below.

- **Sand Fill** – Immediately beneath the surficial materials, Sand fill was encountered to depth of 6 feet in Borings RB-1 and RB-2and to a depth of about 3 feet Borings RB-3 and RB-4. The Standard Penetration Test resistances (SPT “N” values) in the fill stratum ranged from 11 to 29 blows per feet (bpf).
- **Natural Sand** – In all borings, the fill sand was underlain by natural sand to corresponding termination depths. The SPT values in the natural sand varied from 2 bpf to 10 bpf indicating very loose to loose density conditions.

3.2 Groundwater Observations

Observations were made for groundwater during and shortly following completion of the drilling operations. Borings were observed to be dry during and after drilling operations.

However, it should be noted that the groundwater levels are subject to seasonal and long-term variations in response to climatic conditions and man-made influences.

Soil boring logs are appended to this report in Appendix B. The soil profiles described above are generalized descriptions of the conditions encountered at the boring locations and soil conditions may vary between boring locations. The individual boring logs should be consulted for specific information. The stratification depths shown on the boring logs are intended to indicate a zone of transition from one soil type to another, not to indicate exact depths of change from one soil type to another.

4.0 PAVEMENT DESIGN RECOMMENDATIONS

4.1 Basis

Our recommendations are based on soil borings data presented in this report, which included four (4) roadway borings. It should be recognized that subsurface variations can exist on a site which may not be indicated by the borings. If such variations or unexpected conditions are encountered during construction, or if the project information is incorrect or changed, we should be informed immediately since the validity of our recommendations may be affected. Refer to **Qualifications Appendix** for additional qualifications and contractual considerations.

We assume that the roadway work is planned to include, but not necessarily be limited to: new pavement for the main roadway, drainage improvements and raising/undercutting the grade, if required. The maximum fill to achieve the pavement design grade appears to be less than a foot at some locations and the maximum cut at some locations will be less than a foot.

4.2 Pavement Design Considerations

The present and projected traffic data at the project site is not available to us. Based on the traffic data (https://entapps.indot.in.gov/TrafficCounts/) at the project site, the average annual daily traffic (A.A.D.T.) on SR 933 Northbound would be approximately 17,652 vehicles per day (VPD) with truck traffic of 1,871 VPD by year 2013, and, on SR 933 Southbound the AADT would be approximately 22,904 VPD with truck traffic of 2,586 VPD by Year 2013.

Due to urban nature of the project area and based on INDOT Subgrade Treatment Recommendations, in cut and at-grade sections (Section 207.04), 'Type IC' subgrade treatment is recommended. A Resilient Modulus of 7,500 psi is recommended for use in pavement design. Pavement design parameters for SR 933 at the project site are presented in Table 3. An undistributed quantity of subgrade improvement that is equal to 10% of the area to receive new pavement should be included in the contract (if needed).

Table 3. Pavement Design Parameters

Parameter	Recommended Value
Resilient Modulus (M_r) of prepared subgrade	7,500 psi
Resilient Modulus of natural subgrade	4,500 psi
Type of Soil	Sand A-1-b (0)

Parameter	Recommended Value
Depth of water table	More than 6 feet
Subgrade Treatment	Type IC

The on-site soils are suitable for the proposed reconstruction of the road. We anticipate that INDOT specified B Borrow materials (Section 203.08) or on-site excavated sandy soils may be reused as a structural fill to raise the grade. Our recommendations are based on the assumption that the paved areas will be constructed on a stabilized (compacted) subgrade, or on structural fill overlying the same (see **Section 5.1** of this report).

4.3 Subsurface Drains Recommendations

Due to the presence of sandy subsurface soils, no subsurface drains will be required. However, if there are any existing subsurface drains on either end of the project limits, subsurface drains should be installed throughout the project, on both sides of the roadway. Filter fabric is not required. Based on particle size for D_{10}, it could be estimated that the subsurface sand would have an approximate coefficient of permeability of 2.0×10^{-2} cm/sec.

4.4 Settlement and Slope Stability Considerations

Based on the information obtained from the boring logs, the bearing soils are suitable for the reconstruction of the pavement with the subgrade treatment as discussed in above. It is also expected that the settlement of bearing soils would be within the tolerable limits.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site/Subgrade Preparation – Pavement Area

It is expected that the asphalt/concrete and any crushed stone will be removed. During the subgrade preparation, any topsoil, dark colored soils and organic soils (if found) have to be undercut to the competent soil. The undercut areas should then be brought back to desired grade with engineered fill, compacted to a minimum of 95 percent of maximum dry density obtained in accordance with AASHTO T-99 and INDOT Specifications. The excavated sand could be used, if it meets the requirements for B Borrow/Structural backfill materials. It is also important to compact/densify the backfill behind any utility during its placement, so that, any further settlements could be avoided.

Upon removal of the existing pavement and any unsuitable material, proofrolling of the ground surface should be performed in accordance with INDOT Standard Specifications, Section 203.26 within all areas where new fill will be placed. The proof-rolling operations should be observed by the Geotechnical Engineer or his authorized representative. If any unstable soils are observed during the proofrolling operations, the soils should be removed and replaced with B borrow/structural fill.

Groundwater may not be encountered during the reconstruction.

Where fill is required to backfill excavations or to raise existing site grade, we recommend that it meets the requirements for B borrow material or structural fill discussed in **Section 5.2** of this report and that it be placed, compacted and observed in accordance with **Sections 5.3** and **5.4.**

B Borrow material, as per INDOT Standards Section 211.01, is the material of acceptable quality, free from large or frozen lumps, wood, or other extraneous matter. Sand, gravel, crushed stone, air cooled blast furnace slag or granulated blast furnace slag are sometimes used for B Borrow. The material is required to contain no more than 10% passing the No. 200 sieve and be otherwise suitably graded.

5.2 Structural Fill

The following text can be followed, if sewer pipes, inlets and manholes are being replaced.

Structural fill, defined as any fill which will support structural loads, should be free of organic material and have a plasticity index (PI) less than 25, a maximum particle size no larger than 3 in., and a maximum dry density in excess of 100 lbs/cu. ft (pcf), as determined by the standard Proctor compaction test (AASHTO T 99). We recommend that structural fill have an organic content by loss-on-ignition (LOI) of no more than 3 percent below structural areas

(including below the new embankment fill, pavements and shoulders). Structural fill should also not be frost susceptible in areas that can be adversely affected by frost heave (e.g., below the pavement and adjacent to below-grade walls).

Structural fill should be compacted to at least 95 percent of its maximum standard Proctor dry density. The aggregate base material should likewise be compacted to 95 percent of the maximum standard Proctor dry density. A vibratory roller should be used to compact the granular soils.

The sand encountered by the borings appears to be suitable for use as structural fill. Some wetting or drying of these soils may be necessary to achieve the proper moisture content range for compaction.

It is prudent to use imported clean sand, gravel, crushed stone, crushed concrete, or combinations of these materials as fill below structural areas, where required. IN-53 Coarse Aggregate is suitable to be used. We further recommend that imported materials used for structural fill be sampled and tested prior to construction.

5.3 Fill Placement Control

Where necessary, we recommend that structural fill, meeting the requirements of **Section 5.2** above, be used to achieve the design grades in the structural areas and to backfill excavations/undercut areas and against below-grade structures, such as manholes, if they are proposed. The structural fill should be placed in relatively thin uniform layers and mechanically compacted to achieve the required minimum density using a vibratory roller.

Below the pavement and shoulders, we recommend that the backfill be placed in relatively thin layers (i.e., not exceeding 8 in. in loose lift thickness) and compacted to at least 95 percent of the standard Proctor density. The aggregate base material should be similarly compacted to at least 95 percent of the maximum dry density.

Hand-guided compaction equipment is recommended to accomplish compaction of the backfill adjacent to the below-grade manhole structure to avoid over-stressing its walls. Additionally, to monitor compliance with the above recommended density standards and check the adequacy of the compactive effort, we recommend that periodic in-place density tests be performed for each lift of compacted fill placed.

5.4 Erosion Control

Based on our field observations, it is believed that there will not be any embankment rising above the existing grade. If an embankment is required, the following measures may be observed.

In our opinion, if proposed, the stability of the slopes at 3H:1V, should be adequate provided the subgrades are suitably prepared (Section 5.1). To prevent erosion of the surface soils, the finished slope surfaces should be seeded, sodded, or covered by an erosion control blanket with an establishment of vegetation as soon as possible after construction. If seeded, the slopes should be temporarily protected to allow for the seeds to germinate.

5.5 Groundwater Concerns

Groundwater was not encountered during our exploration. Therefore, we do not expect temporary construction excavations at this site to experience dewatering issues.

5.6 Excavation Stability

The Contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of all the excavations as required to maintain the stability of the excavation sides and bottom. All excavations should comply with applicable local, state and federal regulations including the current OSHA Excavation and Trench Safety Standards.

Temporary excavation slopes greater than 5 feet in depth should conform to OSHA regulations. In general, such slopes should not be steeper than 1.5 horizontal to 1 vertical unless shoring is used. We further recommend that any surcharge fill or heavy equipment be kept at a distance greater than the cut depth away from the edge of the excavation. However, current OSHA standards must be met and may be more restrictive.

Construction site safety generally is the sole responsibility of the Contractor, who shall also be responsible for the means, methods and sequencing of construction operations. We are providing this information solely as a service to our client. Under no circumstances should the information provided herein be interpreted to mean that WCG is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

5.7 Limitations

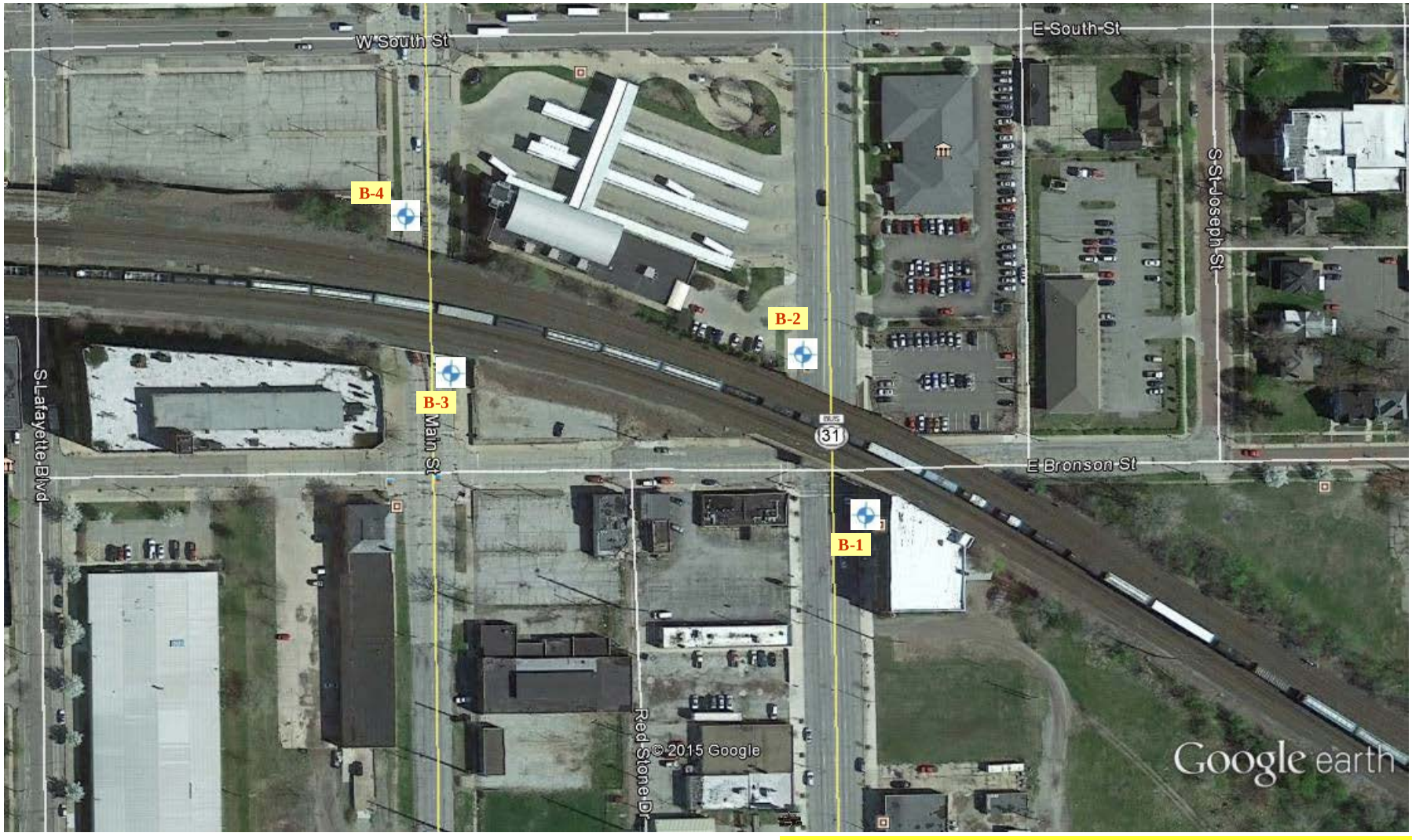
WCG has prepared this report in accordance with generally accepted geotechnical engineering practices to aid in the evaluation of the site subsurface soils. No other warranty, expressed or implied, is made.

The scope of this report is limited to the specific project and location described herein, and our description of this project represents our understanding of the project. The geotechnical engineering analysis and recommendations presented herein were developed based on the information obtained during the subsurface investigation. It should be noted that the borehole data reflects the subsurface conditions only at the specific locations designated on the borehole logs, and that soil and groundwater conditions could vary widely throughout the site. If variations do appear during construction activities, it may become necessary to re-evaluate the recommendations of this report.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of any additional service, please do not hesitate to contact us.

APPENDICES

APPENDIX A – SITE & BORINGS LOCATION



Note: Borings B-1 and B-2 are North Bound East and West Lanes, respectively
Borings B-3 and B-4 are South bound East and West lanes, respectively

Weaver Consultants Group

Scale: **NTS**	Drawn by: **AC**	**FIGURE 1 – BORINGS LOCATION PLAN** **SR 933 IMPROVEMENTS** **SOUTH BEND, ST. JOSEPH COUNTY, IN**
N	Legend: BORING LOCATION	
	Date: **9/4/15**	

APPENDIX B – BORING LOGS

INDOT BORING LOG

BORING NO.: **RB-1**
SHEET 1 OF 1
NORTHING :
EASTING :
DATUM :
DATE STARTED : 10-27-15
DATE COMPLETED : 10-27-15

GEOTECHNICAL CONSULTANT : Weaver Consultants Group
DES NO. : 1006071 STRUCTURE #
PROJECT TYPE: Roadway Rehabilitation
LOCATION : South Bend
COUNTY : St. Joseph PROJECT NO.: 3671-350-32-01

ELEVATION	: 718.1	BORING METHOD	: HSA	HAMMER	: Auto
STATION	: 138+10	RIG TYPE	: D-120, Truck	DRILLER/INSP	: Carlos/Annaji
OFFSET	: 25.0 ft Right	CASING DIA.	: 3 1/4" I.D.	TEMPERATURE	: °F
LINE	: 'SR 933'	CORE SIZE	:	WEATHER	:
DEPTH	: 10.0 ft				

GROUNDWATER: ▽ Encountered at None ▼ At completion None

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS LL	PL	PI	REMARKS
		Asphalt (VISUAL) 0.3											
		Concrete (VISUAL) 0.9											
	2.5		SS 1	8-9-10	78								
715.0		**Sand A-1-b**, Brown, Slightly Moist, Medium Dense, (Lab No. 2)											
	5.0		SS 2	3-5-6	56								
		6.0											
	7.5		SS 3	2-1-1	67								
710.0		**Sand A-1-b**, Brown, Slightly Moist, Very Loose, (Lab No. 1)											
	10.0		SS 4	2-1-2	67								
		10.0											
		Bottom of Boring at 10.0 ft											
	12.5												
705.0													
	15.0												

INDOT BORING LOG

BORING NO.: **RB-2**
SHEET 1 OF 1
NORTHING :
EASTING :
DATUM :
DATE STARTED : 10-29-15
DATE COMPLETED : 10-29-15

GEOTECHNICAL CONSULTANT : Weaver Consultants Group
DES NO. : 1006071 STRUCTURE # :
PROJECT TYPE: Roadway Rehabilitation
LOCATION : South Bend
COUNTY : St. Joseph PROJECT NO.: 3671-350-32-01

ELEVATION	: 717.9	BORING METHOD	: HSA	HAMMER	: Auto
STATION	: 139+80	RIG TYPE	: D-120, Truck	DRILLER/INSP	: Carlos/Annaji
OFFSET	: 25.0 ft Right	CASING DIA.	: 3 1/4" I.D.	TEMPERATURE	: °F
LINE	: 'SR 933'	CORE SIZE	:	WEATHER	:
DEPTH	: 10.0 ft				

GROUNDWATER: ▽ Encountered at None ▼ At completion None

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS LL	PL	PI	REMARKS
		Asphalt (VISUAL) 0.6											
715.0	2.5	**Sand A-1-b**, Brown, Slightly Moist, Medium Dense, (Lab No. 2)	SS 1	3-6-13	78								
	5.0		SS 2	3-5-6	100								
		6.0											
710.0	7.5	**Sand A-1-b (0)**, Brown, Slightly Moist, Very Loose, (Lab No. 1)	SS 3	2-1-2	67								
	10.0	10.0	SS 4	2-1-2	67								
		Bottom of Boring at 10.0 ft											
705.0	12.5												
	15.0												

INDOT BORING LOG

BORING NO.: **RB-3**
SHEET 1 OF 1

GEOTECHNICAL CONSULTANT : Weaver Consultants Group
DES NO. : 1006071 STRUCTURE #
PROJECT TYPE: Roadway Rehabilitation
LOCATION : South Bend
COUNTY : St. Joseph PROJECT NO.: 3671-350-32-01

NORTHING :
EASTING :
DATUM :
DATE STARTED : 10-29-15
DATE COMPLETED : 10-29-15

ELEVATION	: 718.0	BORING METHOD	: HSA	HAMMER	: Auto
STATION	: 22+00	RIG TYPE	: D-120, Truck	DRILLER/INSP	: Carlos/Annaji
OFFSET	: 25.0 ft Right	CASING DIA.	: 3 1/4" I.D.	TEMPERATURE	: °F
LINE	: 'SR 933'	CORE SIZE	:	WEATHER	:
DEPTH	: 7.5 ft				

GROUNDWATER: ▽ Encountered at None ▼ At completion None

ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS LL	PL	PI	REMARKS
		Asphalt (VISUAL) 0.8											
	2.5	**Sand A-1-b**, Brown, Slightly Moist, Medium Dense, (Lab No. 2)	SS 1	10-13-16	89								
715.0		3.0											
	5.0	**Sand A-1-b**, Brown, Slightly Moist, Loose, (Lab No. 1)	SS 2	3-4-4	67								
	7.5	7.5	SS 3	4-5-5	78								
710.0		Bottom of Boring at 7.5 ft											
	10.0												
	12.5												
705.0													
	15.0												

INDOT BORING LOG

BORING NO.: **RB-4**
SHEET 1 OF 1

GEOTECHNICAL CONSULTANT : Weaver Consultants Group
DES NO. : 1006071 STRUCTURE #
NORTHING :
EASTING :
PROJECT TYPE: Roadway Rehabilitation
DATUM :
LOCATION : South Bend
DATE STARTED : 10-29-15
COUNTY : St. Joseph PROJECT NO.: 3671-350-32-01
DATE COMPLETED : 10-29-15

ELEVATION	: 717.0	BORING METHOD	: HSA	HAMMER	: Auto
STATION	: 24+20	RIG TYPE	: D-120, Truck	DRILLER/INSP	: Carlos/Annaji
OFFSET	: 25.0 ft Right	CASING DIA.	: 3 1/4" I.D.	TEMPERATURE	: °F
LINE	: 'SR 933'	CORE SIZE	:	WEATHER	:
DEPTH	: 10.0 ft				

GROUNDWATER: ▽ Encountered at None ▼ At completion None

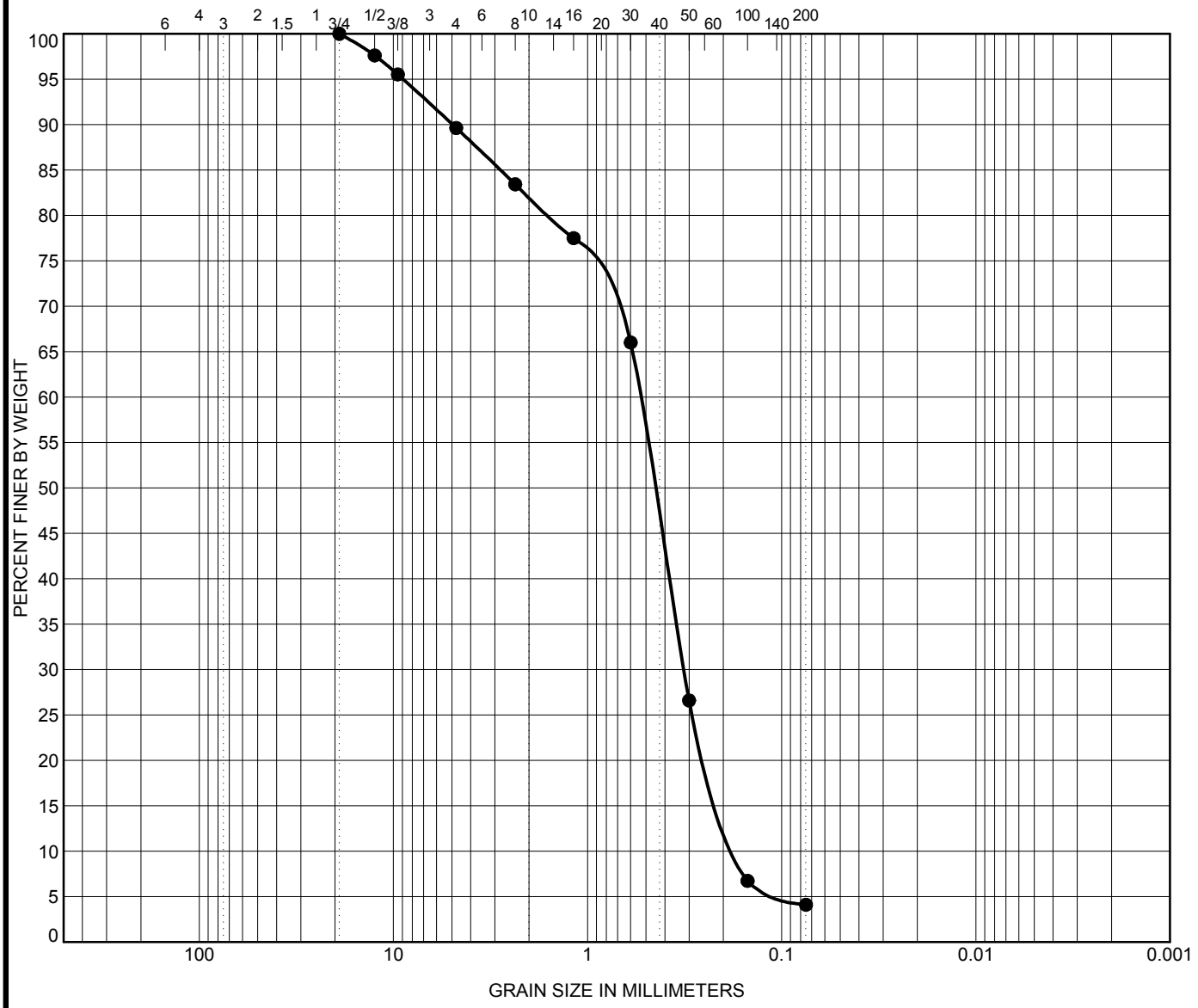
ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	SAMPLE NUMBER	SPT per 6"	% RECOVERY	MOISTURE CONTENT	DRY DENSITY, pcf	POCKET PEN., tsf	UNCONF. COMP., tsf	ATTERBERG LIMITS LL	PL	PI	REMARKS
		Concrete (VISUAL) 0.8											
715.0	2.5	**Sand A-1-b (0)**, Brown, Slightly Moist, Medium Dense, (Lab No. 2) 3.0	SS 1	6-8-9	100								
	5.0		SS 2	2-2-2	78								
710.0	7.5	**Sand A-1-b**, Brown, Slightly Moist, Very Loose, (Lab No. 1)	SS 3	2-2-2	67								
	10.0	10.0	SS 4	1-2-1	100								
		Bottom of Boring at 10.0 ft											
705.0	12.5												
	15.0												

APPENDIX C – Classification Test Results

SR 933 Reconstruction
South Bend, Indiana
Project No. R-35265
Des No. 1006671

Table 4: Summary of Classification Tests

Laboratory No.	Boring No. Sample #	Boring No. Sample Depth	Classification	% Passing			% Gravel	% Sand	% Silt	% Clay	Atterberg Limits		
				No. 10	No. 40	No. 200					LL	PL	PI
1	B-2, S-3 & S-4	B-1, 6.0 ft & 8.5 Ft	Sand A-1-b (0)	82	55	4.1	18.0	77.9	4.1	0.0	NP	NP	NP
2	B-4, S-1	B-4, 1.0	Sand A-1-b (0)	87.5	53	6.0	12.5	81.5	6.0	0.0	NP	NP	NP



COBBLES	GRAVEL	SAND		SILT	Clay
		coarse	fine		

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**RB-2 S-3 & S-4 6.0**	**SAND**				**1.12**	**3.21**

	Specimen Identification	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	%Colloid
●	**RB-2 S-3 & S-4 6.0**	**0.54**	**0.318**	**0.168**	**18.0**	**77.9**	4.1		

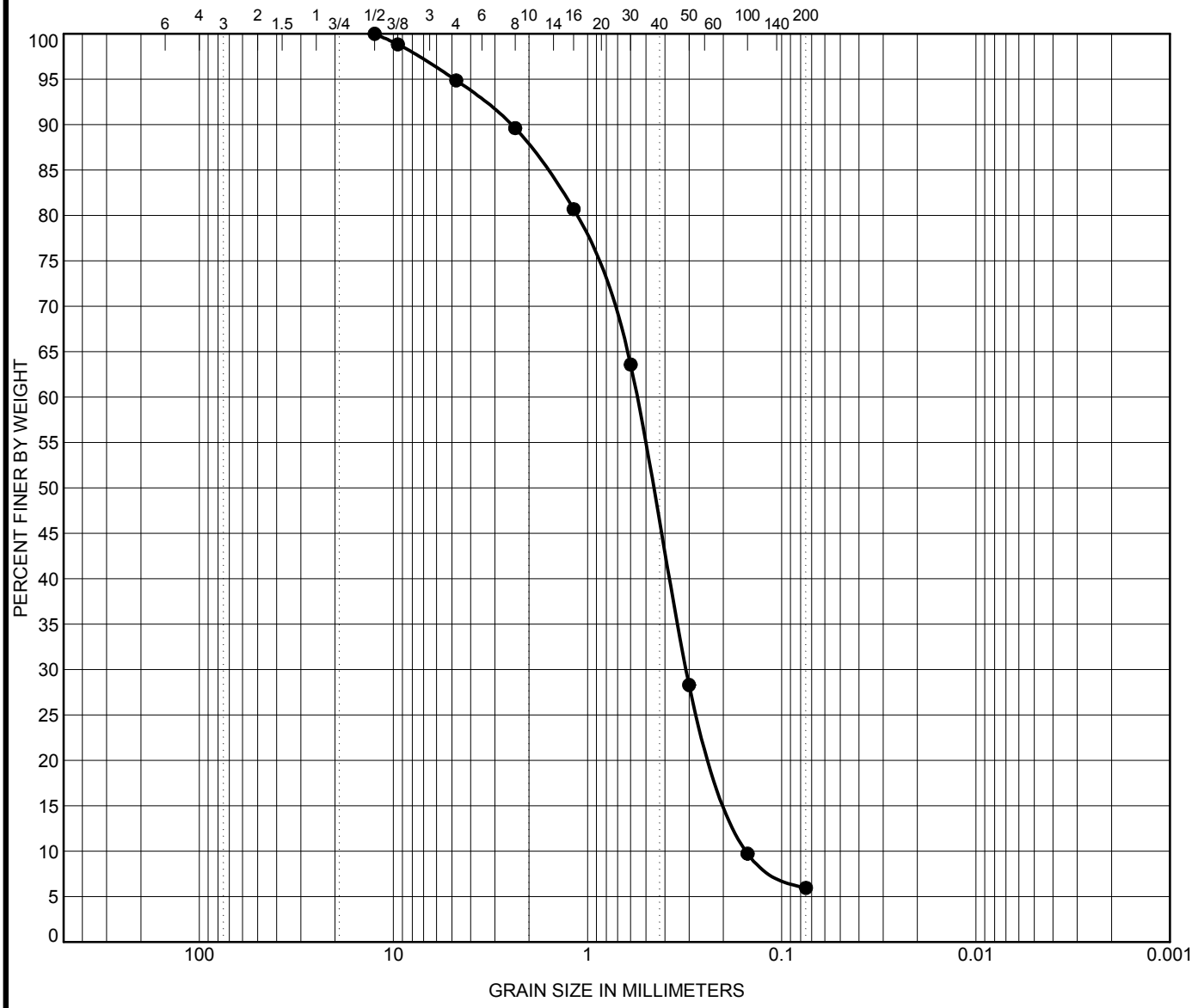
Weaver Consultants Group

Telephone:
Fax:

GRAIN SIZE DISTRIBUTION TEST REPORT

DES #: 1006071 Structure #:
Project #: 3671-350-32-01
County: St. Joseph
Location: South Bend

INDOT_GRAIN_SIZE_SR 933.GPJ_US_LAB.GDT_1/8/16



COBBLES	GRAVEL	SAND		SILT	Clay
		coarse	fine		

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**RB-4 S-1 1.0**	**SAND**				**1.14**	**3.69**

	Specimen Identification	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	%Colloid
●	**RB-4 S-1 1.0**	**0.559**	**0.31**	**0.152**	**12.5**	**81.5**	6.0		

Weaver Consultants Group

Telephone:
Fax:

GRAIN SIZE DISTRIBUTION TEST REPORT

DES #: 1006071 Structure #:
Project #: 3671-350-32-01
County: St. Joseph
Location: South Bend

INDOT GRAIN SIZE SR 933.GPJ US_LAB.GDT 1/8/16

APPENDIX D – FIELD EXPLORATION AND LABORATORY TESTING PROCEDURES

FIELD EXPLORATION APPENDIX

WEAVER CONSULTANTS GROUP
☐ 35 East Wacker Drive, Suite 1250, Chicago, IL 60601 • (312) 922-0201
☐ 6420 Southwest Boulevard, Suite 206, Fort Worth, TX 76109 • (817) 735-9770
☒ **7121 Grape Road, Granger, IN 46530** • **(574) 271-3447**

LOG OF SOIL BORING - GENERAL NOTES

In order to provide uniformity throughout our projects, the following system has been adopted to describe each soil sample. Rock, shale and other materials will be described in detail as encountered.

CONSISTENCY OF COHESIVE SOILS

UNCONFINED COMPRESSIVE STRENGTH, Q_U (tsf)	CONSISTENCY
<0.25	Very Soft
0.25 - 0.49	Soft
0.50 - 0.99	Medium Stiff
1.00 - 1.99	Stiff
2.00 - 3.99	Very Stiff
4.00 - 8.00	Hard
>8.00	Very Hard

RELATIVE DENSITY OF GRANULAR SOILS

SPT "N" VALUE*		RELATIVE DENSITY
Safety Hammer	Automatic Hammer	
<4	<3	Very Loose
4 - 9	3 - 7	Loose
10 - 29	8 - 21	Medium Dense
30 - 50	22 - 35	Dense
51 - 80	36 - 60	Very Dense
>80	>60	Extremely Dense

*Number of blows per foot required to drive a 2-in. O.D. split-spoon sampler using a 140-lb. weight falling freely for 30 in., except where otherwise noted.

COLOR - AS DETERMINED ON THE FRESH, MOIST SAMPLES

PREDOMINATE COLORS

Black	Yellow
Brown	Red
Gray	Blue

SHADES	MODIFYING ADJECTIVES
Light	Vari-colored
Dark	Streaked
	Mottled

GRADATION DESCRIPTION AND TERMINOLOGY

COMPONENTS	SIZE RANGE
Boulders	Over 8 inches
Cobbles	8 inches to 3 inches
Gravel	3 inches to # 4 sieve (4.75 mm)
Sand	#4 sieve to #200 sieve (0.075 mm)
Silt	Passing #200 sieve to 0.005 mm
Clay	Smaller than 0.005 mm

DESCRIPTION OF COMPONENT PRESENT IN SAMPLE	ALSO	PERCENT BY DRY WEIGHT
Trace		1 - 9
Little		10 - 19
Some		20 - 34
And		35 - 50

GROUNDWATER LEVELS

Water levels are those observed when borings were drilled, or as noted. Porosity of soil strata, variations of rainfall, site topography, etc., may cause changes in these levels.

ABBREVIATIONS

DRILLING AND SAMPLING

A.D. - After Drilling
BA - Bucket Auger (3¼-in. O.D.), except where noted
CFA - Continuous Flight Auger
C.I. - Cave-In Depth
CS - Continuous Sampling
DP - Direct Push
GP - Geoprobe
HA - Hand Auger
HSA - Hollow Stem Auger
HPR - Hollow Probe Rod
MR - Mud Rotary
NR - No Recovery
PMT - Pressuremeter Test
Q_C - Static Cone Penetrometer Reading (tsf)
RC - Rock Core with diamond bit NX size, except where noted
RQD - Rock Quality Designation
SPT - Standard Penetration Test
SS - 1 3/8-in. I.D. Split-Spoon Sample (2-in.O.D.)
ST - 3-in. O.D. Thin-Walled Shelby Tube Sample, except where noted
WOH - Weight of Hammer

LABORATORY TESTS

DD - Dry Density (pcf)
LL - Liquid Limit %
LOI - Loss-on-Ignition, Organic Content (%)
MC - Moisture Content (%)
P200 - Percentage of Soil Particles, by dry weight, Passing a No. 200 U.S. Standard Sieve
MD - Moist Density (pcf)
pH - Soil Alkalinity/Acidity
PID - Photoionization Detector (ppm)
PI - Plasticity Index (%)
PL - Plastic Limit (%)
Q_P - Calibrated Hand Penetrometer Reading (tsf)
Q_U - Unconfined Compressive Strength (tsf)

WATER LEVEL MEASUREMENTS

BF - Backfilled
D - Dry
D@C.I. - Dry at Cave-In Depth
NE - Not Encountered

ORGANIC CLASSIFICATION BY LOSS-ON-IGNITION [1]

Category	Name	Organic Content (% by dry weight)	Group Symbols	Category	Name	Organic Content (% by dry weight)	Group Symbols
ORGANIC MATTER	FIBROUS PEAT (woody, mats, etc.)	75 to 100 % Organics either visible or inferred	PT	ORGANIC SOILS	Clayey ORGANIC SILT	5 to 30% Organics either visible or inferred	OH
	FINE GRAINED PEAT (amor-phous)				Organic SAND or SILT		OL
HIGHLY ORGANIC SOILS	Silty Peat	30 to 75% Organics either visible or inferred	PT	SLIGHTLY ORGANIC SOILS	SOIL FRACTION add slightly Organic	Less than 5% Organics combined visible and inferred	Depend upon inorganic fraction
	Sandy Peat						

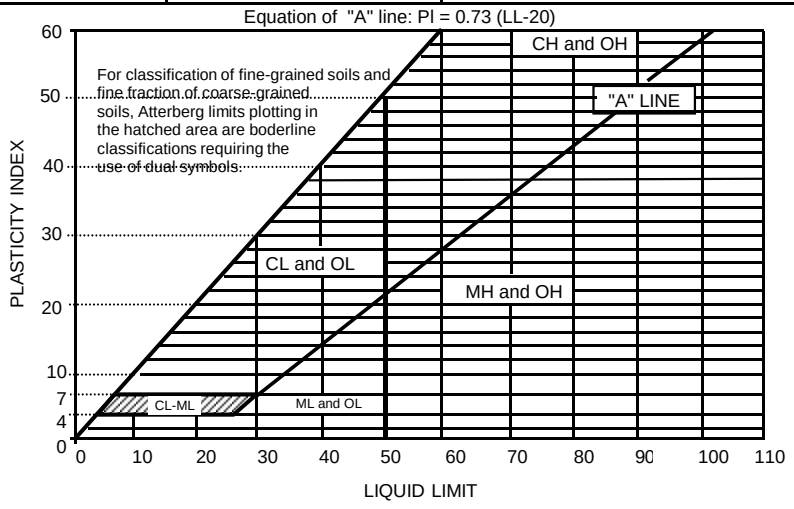
[1] U.S. Navy, (May 1982), Naval Facilities Engineering Command, Design Manual DM 7.1, *"Soil Mechanics,"* Dept. of Navy, Alexandria, VA.

WEAVER CONSULTANTS GROUP

- ☐ 35 East Wacker Drive, Suite 1250, Chicago, IL 60601 • (312) 922-0201
- ☐ 6420 Southwest Boulevard, Suite 206, Fort Worth, TX 76109 • (817) 735-9770
- ☒ **7121 Grape Road, Granger, IN 46530** • **(574) 271-3447**

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Group Symbol	Typical Names	Classification on basis of percentage of fines by dry wt.	Laboratory Classification Criteria	
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve	GRAVELS 50% or more of coarse fraction retained on #4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	< 5% passing #200 sieve= GW, GP, SW, SP	$C_u = D_{60}/D_{10}$ Greater Than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW	
		Gravels w/fines	GM	Silty gravels, gravel-sand-silt mixtures	> 12% passing #200 sieve= GM, GC, SM, SC	Atterberg limits plot below "A" line or plasticity index less than 4	Atterberg limits plotting in hatched area are borderline classification requiring use of dual symbols
			GC	Clayey gravels and gravel-sand-clay mixtures		Atterberg limits plot above "A" line and plasticity index greater than 7	
	SANDS More than 50% of coarse fraction passes #4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines	5% to 12% passing #200 sieve= Borderline Classifications requiring use of dual symbols	$C_u = D_{60}/D_{10}$ Greater Than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			SP	Poorly-graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW	
		Sands w/fines	SM	Silty sands and sand-silt mixtures		Atterberg limits plot below "A" line and platicity index less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands and sand-clay mixtures		Atterberg limits plot above "A" line and plasticity index greater than 7	
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	SILTS & CLAYS Liquid Limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands			
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays silty clays, lean clays			
			OL	Organic silts and organic silty clays of low plasticity			
	SILTS & CLAYS Liquid Limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts			
			CH	Inorganic clays of high plasticity Fat clays			
			OH	Organic clays of medium to high plasticity			
HIGHLY ORGANIC SOILS			PT	Peat, Muck and other highly organic soils			



Plasticity Chart

FIELD EXPLORATION PROCEDURES

Standard Penetration Test Soil Borings

General

We wish to point out that the soils actually recovered from our borings for observation and testing represent a very small percentage of the site soils. Our records depict subsurface conditions only at specific locations and at the particular time when drilling. Soil conditions at other locations may differ from conditions occurring at these boring locations. The passage of time may result in a change in the subsurface soil and groundwater conditions at the boring locations. The interface between differing subsurface materials on the logs and profiles represent approximate boundaries. The transition between materials may be gradual. Also, thin strata that occur between sample depths may be present, but remain undetected by routine sampling procedures.

Drilling Procedures

Soil borings were performed at the approximate locations shown on the attached boring plan. The soil borings were advanced by mechanically twisting a continuous steel-flight, hollow-stem auger into the soil. The inside diameter (I.D.) of the hollow-stem auger is typically 3-¼ in. (sometimes a 6-in. I.D. auger is used, particularly when installing 4-in. diameter monitoring wells).

The auger is turned into the ground, which displaces the soil upwards as it advances. Once the desired sample depth is achieved, the advancement of the hollow-stem auger is stopped. The hollow-stem is then cleaned of any soil and the sampling tools are inserted, and the sampling is performed. When drilling below the water table in pervious soils, a head of water is maintained in the hollow-stem, to prevent a "quick" condition at the auger tip.

Penetration Testing and Split-Barrel Sampling

Standard Penetration Testing and split-barrel sampling are normally conducted in the borings to provide relative density information and soil samples for visual classification and laboratory testing. The standard split-barrel (commonly called split-spoon) sampler is a 2-in. O.D., 1.375-in. I.D., typically 18 to 24 in. long and is connected to an AW or N size drilling rod. The sampler is then driven into the soil with a force of a 140 lb. hammer free-falling a distance of 30 in. The number of hammer blows required to drive the sampler into the soil is recorded for each 6-in. interval. The sampler is typically driven a total of 18 in., and the last two 6-in.

interval blow counts are added together and commonly referred to as the "N" value, blow count or penetration resistance. Representative samples are placed in airtight glass jars and returned to our laboratory for further observation and testing. Descriptions of the spilt-barrel samples and the penetration resistances are shown on the boring logs.

Shelby Tube Sampling Procedure

In the Shelby tube sampling procedure, a thin-walled steel seamless tube with a sharp cutting edge is pushed hydraulically into the soil and a relatively undisturbed sample is obtained. This procedure is generally employed in cohesive soils. The tubes are carefully handled in the field to avoid excessive disturbance and are returned to the laboratory for extrusion and further analysis and testing.

Calibrated Pocket Penetrometer Testing

The strength of cohesive soils does not correlate as well as granular materials with the Standard Penetration Testing described above. Typically, we test split-barrel samples of cohesive soils with a calibrated pocket penetrometer in the field. This test involves pushing a spring-loaded piston, 0.25-in. in diameter, into the sample and measuring the spring deflection, which has been correlated to shear strength. This test is used as a rough approximation method only. More refined results require undisturbed Shelby tube sampling and laboratory unconfined compressive strength testing.

Water Level Readings

When the drilling crew notices groundwater or significant variations in soil moisture, they are recorded on the boring logs. Generally, the level of water at the time of drilling is measured and recorded. The readings may indicate the approximate level of the hydrostatic water table at the time of our drilling activities.

Where low permeability soils are encountered, the water seeps into the borings at a slow rate, and it is generally not possible to establish accurate groundwater level readings in an open borehole during the drilling operations. If water-drilling methods are used, a local groundwater "mound" could be created, taking several days to dissipate. Also, the groundwater level typically fluctuates on a long-term or seasonal basis, due to variations in precipitation, surface run-off, evaporation, etc. When these long-term readings are required, piezometers or monitoring wells are necessary to maintain an open hole.

Boring Log Preparation

The subsurface conditions encountered during drilling are reported on a field log recorded by the chief driller. The driller's field record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations between samples. Therefore, these records contain both factual and interpretive information. The field logs are on file in our office.

The soil samples, plus the field logs, are reviewed by a geotechnical engineer, geologist, or geotechnician. The engineer/geologist/geotechnician then classifies the soil in general accordance with the Unified Soil Classification System and prepares the final boring logs, which are the basis for our evaluations and recommendations. The group symbol for each soil type is indicated in parentheses following the soil descriptions on the boring logs. The final boring logs represent our interpretation of the contents of the field logs based on the results of the engineering review and laboratory testing of the field samples. The final boring logs are included in this section.

LABORATORY TESTING PROCEDURES

Representative soil samples were selected and tested in our laboratory in order to check field classifications and to evaluate pertinent engineering properties. The laboratory testing program included visual classification of all samples and hand penetrometer tests on all cohesive samples. In the hand penetrometer test, the unconfined compressive strength of a cohesive soil is estimated by measuring the resistance of the soil sample to penetration by a small spring calibrated cylinder. Any additional tests are described below or on the following sheet(s). Appropriate data obtained from laboratory tests are also included on the respective boring logs.

A geotechnical engineer classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System (ASTM D 2487 and/or ASTM D 2488). The group symbol for each soil type is indicated in parentheses following the soil descriptions on the boring logs. A brief explanation of the Unified System is included with this report.

Data obtained from the field logs and appropriate laboratory tests have been shown on the boring logs. The procedures used in preparing the final boring logs are described on the sheet entitled "Field Exploration Procedures."

It should be noted that the geotechnical engineer grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earthen materials shown on the boring logs and profiles are approximate; in-situ, the transitions may be gradual.

All samples will be retained in our Granger, Indiana laboratory for a period of thirty (30) days after which they will be discarded unless other instructions as to their disposition are received.

Calibrated Pocket (Hand) Penetrometer Testing

This test involves pushing a spring-loaded piston, 0.25-in. in diameter, into the sample and measuring the spring deflection, which has been correlated to shear strength. This test is used as a rough approximation method only. More refined results require undisturbed Shelby tube sampling and laboratory unconfined compressive strength testing.

Moisture Content

Moisture content tests were performed on selected soil samples. The moisture content has a significant effect on the strength, compressibility and general behavior of the soil.

Grain-Size Tests

Grain-size tests are performed to determine the soil classification and the grain-size distribution. The soil samples are prepared for testing according to ASTM D 421 (dry preparation) or ASTM D 2217 (wet preparation). The grain-size distribution of soils coarser than a No. 200 U.S. Standard sieve (0.074 mm opening) is determined by passing the samples through a standard set of nested sieves. Materials passing the No. 200 U.S. Standard sieve are suspended in water and the grain-size distribution calculated in accordance with ASTM D 422, or washed over the No. 200 sieve in accordance with ASTM D 1140.

QUALIFICATIONS APPENDIX

GENERAL QUALIFICATIONS

This report has been prepared at the request of our client for his use on this project. The work, including the field work, laboratory testing, and engineering analysis, was performed in accordance with generally accepted Geotechnical Engineering practices. For this study, we were not retained to address environmental or land use restriction concerns. This warranty is in lieu of all other warranties either expressed or implied.

This report may not contain sufficient information for purposes of other parties or other uses. Should there be any sufficient differences in structural arrangement, loading or location of the structure, our analysis should be reviewed.

The analysis, conclusions, and recommendations contained in our report are based on site conditions as they existed at the time of our exploration and further assume that the borings are representative of the subsurface conditions throughout the site.

If during construction, different subsurface conditions from those encountered during our exploration are observed or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We urge that we be retained to review those portions of the plans and specifications that pertain to earthwork and foundations to determine whether they are consistent with our recommendations. In addition, we are available to observe construction, particularly the compaction of structural backfill and preparation of the foundations, and such other field observations as may be necessary.

In order to fairly consider changed or unexpected conditions that might arise during construction, we recommend the following verbiage to be included in the project contract.

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

The owner has had a subsurface exploration performed by a Geotechnical consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the exploration. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions as described in that report. It is recognized that a subsurface exploration may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface exploration and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

GEOTECHNICAL EVALUATION

ROUNDABOUT INTERSECTION IMPROVEMENTS
CHIPPEWA / MICHIGAN / MAIN
SOUTH BEND, INDIANA

PROJECT NO. 114-045

Prepared for

LAWSON-FISHER ASSOCIATES P.C.
525 WEST WASHINGTON AVENUE
SOUTH BEND, INDIANA 46601

By

EARTH EXPLORATION, INC.
2204 YANKEE STREET
NILES, MI 49120

July 16, 2015

EARTH EXPLORATION, Inc.

July 16, 2015

Mr. Michael J. Guzik, P.E.
Lawson-Fisher Associates P.C.
525 West Washington Avenue
South Bend, IN 46601

EARTH EXPLORATION INC.

7770 West New York Street
Indianapolis, IN 46214-2988
317-273-1690 (FAX) 317-273-2250

2204 Yankee Street
Niles, MI 49120
269-262-4320 (FAX) 269-262-4479

Re: Geotechnical Evaluation
Roundabout Intersection Improvements
Chippewa / Michigan / Main
South Bend, Indiana
Project No. 114-045
EEI Project No. 2-14-136

Dear Mr. Guzik:

We are pleased to submit our geotechnical evaluation for the above-referenced project. This report presents the results of our subsurface exploration and provides geotechnical recommendations for design and construction of the proposed roadway improvements. The work for this project was authorized via an agreement and has been performed in accordance with Earth Exploration, Inc. (EEI) Proposal No. P2-14-049. For your information, we are enclosing three paper copies and an electronic copy (sent by electronic mail) of our report for your review and distribution and can provide additional copies, if requested. Unless you notify us otherwise, we will retain the soil samples from the exploratory program for 60 days and then discard them.

The opinions and recommendations submitted in this report are based, in part, on our interpretation of the subsurface information revealed at the exploratory locations as indicated on an attached plan. Understandably, this report does not reflect variations in subsurface conditions between or beyond these locations. Therefore, variations in these conditions can be expected, and fluctuation of the groundwater levels will occur with time. Other important limitations of this report are discussed in Appendix A.

PROJECT DESCRIPTION

We understand that the city of South Bend is planning to make improvements to include a roundabout at the intersection of Chippewa Avenue at Michigan and Main Streets. Maximum earth cuts and fill depths are anticipated to be nominal. Traffic data for design of the pavement was not provided.

From information provided on the previously-mentioned plans, the drainage improvements are planned to consist of a new 12 in. to 15 in. dia. storm sewer pipes connected to an existing stormwater sewer system. The invert of the pipes is planned to be established about 4 to 6 ft below the existing ground surface.

At this time, other information such as the anticipated construction schedule is not known. In the event that the nature, design or location of the proposed construction changes, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions are modified or confirmed in writing.

FIELD EXPLORATION AND LABORATORY TESTING

Subsurface conditions for the improvements were explored by performing five road borings (designated B-1 through B-5) to a depth of 15 ft below the existing ground surface. The number, location and depths of the test borings and pavement cores were selected by EEI. Additionally, the borings were located in the field by EEI personnel referencing identifiable features shown on the previously mentioned plans. Furthermore, ground surface elevations at the exploratory locations were interpolated to the nearest 1 ft based on topographic information provided on these same plans. The exploratory locations and elevations should be considered accurate only to the degree implied by the methods used.

Exploratory field activities were performed by EEI on May 5 and 6, 2015. In general, exploratory activities were performed using hollow stem augers to advance the boreholes, and samples of the soil conditions were obtained at predetermined intervals using Standard Penetration Test (SPT) procedures (AASHTO T 206). After obtaining final groundwater observations, each borehole was backfilled with auger cuttings. In addition, a concrete patch was placed at the surface of the borings performed within the existing roadway. Additional details of the drilling and sampling procedures are provided in Appendix B.

Following the field activities, the soil samples were visually classified by an EEI engineering technician and later reviewed by an EEI geotechnical engineer. After visually classifying the soils, representative samples of the granular soil were selected and submitted for grain size analysis (AASHTO T 88). The results of these tests are provided on the boring logs in Appendix C and/or respective summary sheets in Appendix D. For your information, soil descriptions on the boring logs are in general accordance with the AASHTO system [AASHTO designation, e.g., A-1-b(0)] and the INDOT Standard Specifications (ISS[1]) (textural classification, e.g., sand). The final boring logs represent our interpretation of the individual samples and field logs and results of the laboratory tests. The stratification lines on the boring logs represent the approximate boundary between soil types; although, the transition may actually be gradual.

[1] References the Indiana Department of Transportation (INDOT) Standard Specifications.

SITE CONDITIONS

Surface Conditions

The project site is located on the south side of South Bend. The topography of the ground surface along the project is relatively flat with a gradual rise from the west to east and south to north. The ground surface at the boring locations range from about Elevation 805 to about 813. The pavement section along Main, Michigan and Chippewa (west) consisted of asphaltic concrete overlying Portland cement concrete with a total pavement thickness ranging from 13 to 21 in. Along the east leg of Chippewa Street the pavement consisted of asphaltic concrete with a total thickness of 17 in. Refer to the individual boring logs for the pavement section at each location. Furthermore, surface drainage along the existing roadways is provided curb and gutter and an existing stormwater sewer system.

Subsurface Conditions

The subsurface profile (beneath the surficial components) at the exploratory locations was somewhat similar and typically consisted of sandy loam and sand (naturally occurring or soil fill) to maximum depths explored.

From our observations, the relative density of the granular soils just below the pavement ranged from loose to medium dense with SPT N-values ranging from 8 to 19 blows/ft (bpf). From a depth of about 3 ft to 10 ft the relative density of the granular soil is very loose to loose with SPT N-values ranging from 2 to 7 bpf. Thereafter the relative density was medium dense to very dense with SPT N-values ranging from 16 to more than 50 bpf. The transition depth varied from about 8 to 12 ft between the loose and medium dense strata. An exception to this was at Boring B-5 where the relative density was very loose to loose for the entire depth of the borings.

Groundwater Conditions

Groundwater level observations made during and at completion of the test boring are noted at the bottom of the boring logs. Groundwater was not encountered within the depth explored. Given the presence of primarily granular soil, it is our opinion that the groundwater level is below the depth of our exploration. It should be recognized that groundwater levels either piezometric or perched can fluctuate due to changes in precipitation, infiltration, surface run-off, the level of the St. Joseph River, and other hydrogeological factors.

DISCUSSION AND RECOMMENDATIONS

General

Based on our understanding of the improvements and information obtained from the test boring locations, it is our opinion that the subsurface conditions are conducive for the support of the proposed roadway improvements provided the subgrade is prepared as discussed herein. Considering the very loose to loose relative density of the granular soil, improvement of the subgrade and/or foundation soils will be required throughout the project. Subgrade improvements will also be necessary to facilitate construction and/or provide adequate support of the pavement. Given the granular nature of the soil anticipated at the pavement and pipe subgrade levels, water entering excavations is expected to infiltrate at a rather rapid rate. Where sandy loam type soil exists at the subgrade, the permeability (k) of the soil is anticipated to be in the range of 10^{-3} to 10^{-4} cm/s. Where sand is encountered, the permeability of the soil is anticipated to be in the range of 10^{-2} to 10^{-3} cm/s. Additional discussion and recommendations regarding these issues are provided in the following paragraphs.

Subgrade Preparation

In all areas to receive pavement components and earth fill, we recommend all topsoil, wet or soft near-surface soils, and existing pavement components, be removed from within the construction limits, as necessary. In addition, we recommend that existing underground utilities be appropriately relocated. Where utilities are relocated, we recommend that the resulting excavations be backfilled with "B" Borrow in accordance with Section 203.09 of the ISS.

After removal of surface elements, the subgrade is generally anticipated to consist of granular soils (sandy loam or sand). Sandy loam type soils were encountered at the boring locations in the northern half of the project. The sandy loam soil contains 10 to 12 percent fines which reduces the soil permeability. While water infiltrates through these soils, the rate of infiltration can be rather slow. Therefore, following rain events, subgrade conditions can be wet and become unstable. Care in working on wet subgrade soil in the northern half of the project should considered. Where granular soils are exposed at the subgrade, they should be adequately compacted to densify the loose soils and those soils loosened during the construction activities. The final decision regarding stabilization should be made at the time of construction, based on the observed actual conditions.

Earth Cut and Fill Considerations

As mentioned previously, earth cuts and fill depths are anticipated to be nominal. Based on the information obtained at the boring locations, we anticipate that very loose to loose soil will be encountered in subgrade areas of cut and fill placement for roadway improvements. Standard embankment construction practices outlined in the ISS should provide an adequate subgrade for

embankment construction provided the subgrade is prepared as discussed above. However, if soft soils or otherwise unstable soils are encountered during the fill placement operations which will not readily compact, we recommend they be improved as discussed previously. We recommend that fill used to raise grades or backfill of undercut areas be placed in loose lift thicknesses not exceeding 8 in. and be compacted to 95 percent of the maximum density obtained in accordance with AASHTO T 99 as specified in the ISS.

Pavement Design Considerations

Based on the proposed pavement grades and the profile of the existing ground surface, it appears that the roadway subgrade will consist of sandy loam or sand. Due to the relatively short length of the project, a subgrade resilient modulus test was not performed. Based on the subsurface conditions, our experience in the area, and the nature of project, we recommend that the information in Table 1 be considered for pavement design.

TABLE 1: PAVEMENT DESIGN CONSIDERATIONS	
M_r for Improved Subgrade	7,500 psi
M_r for Natural Subgrade	4,000 psi
Subgrade Material	Sandy Loam (A-2-4)
Depth to Water	>10 ft
Subgrade Treatment	Type I

In any areas of narrow widening, we recommend Subgrade Treatment Type IC. It is important to provide positive drainage during construction in order to reduce the risk of wet (yielding) soil conditions. Given the granular nature of the subgrade soil, we do not recommend underdrains be included in the typical pavement sections.

Storm Sewer Considerations

Based on the information obtained at the boring locations, it appears that the subsurface conditions at the anticipated invert elevation of the storm sewer pipe (4 to 6 ft below the existing ground surface) will consist of very loose to loose granular soils. In our opinion, these soils are generally adequate for support of the pipes (i.e., the net load on the supporting conditions is anticipated to be nominal [possibly less than the overburden]). Where very loose to loose soils are encountered at the base of the trenches, it is our opinion they should be compacted to reduce the risk of settling during pipe construction.

In our opinion, a minimum 6-in. thick bedding layer, consisting of structure backfill material should be provided for pipe support. However, given that the subgrade is anticipated to consist of granular soil, a separate bedding layer is not necessary. We recommend that the trenches be

backfilled to grade with structure backfill material. In our opinion, the structure backfill material should be compacted to 95 percent of maximum dry density obtained in accordance with AASHTO T 99 and INDOT Specifications. Hand or remote guided vibratory compactors are recommended for compacting the bedding material and material on either side of the pipe. The first several lifts of backfill over the pipe should also be compacted with small vibratory compactors to assure proper compaction is achieved and to prevent damage to the pipe from heavier, high-energy compactors.

CONSTRUCTION CONSIDERATIONS

Excavations

We anticipate that excavations will require: 1) cut slopes adequate to prevent cave-ins/subsidence; or 2) excavation support for safe construction operation. In areas where the excavations take place adjacent to existing features that cannot be disturbed such as other utilities or roadways, excavation support will likely be required. All excavations should conform with Occupational Safety and Health Administration (OSHA) requirements (i.e., 29 CFR Part 1926). The contractor is solely responsible for constructing and maintaining stable excavations. Additionally, soil should not be stockpiled immediately adjacent to the top of the excavation. In our opinion, the cohesive soil on this project may be classified as Type C (according to OSHA) and should be treated accordingly. Based on our observations, groundwater is not anticipated to be encountered during excavations.

CONCLUDING REMARKS

In closing, we recommend that EEI be provided the opportunity to review the final design and project specifications to confirm that earthwork and subgrade requirements have been properly interpreted and implemented in the design and specifications. We also recommend that EEI be retained to provide construction observation services during the earthwork and subgrade construction phases of the project. This will allow us to verify that the construction proceeds in compliance with the design concepts, specifications and recommendations. It will also allow design changes to be made in the event that subsurface conditions differ from those anticipated. In addition, environmental issues or concerns were not part of the work scope for this evaluation. Therefore, this report does not address the project site from an environmental perspective.

We appreciate the opportunity to provide our services to you on this project. Please contact our office if you have any questions or need further assistance with the project.

Sincerely,

EARTH EXPLORATION, INC.

Kenneth P. Miller, P.E.
Michiana Regional Manager

APPENDICES

APPENDIX A- Important Information about Your Geotechnical Report
APPENDIX B- Field Methods for Exploring and Sampling Soils and Rock
APPENDIX C- Exploratory Location Plan (Drawing No. 2-14-136.B1)
Log of Test Boring - General Notes
Log of Test Boring - Road Borings (5)
APPENDIX D- Summary of Classification Test Results
Grain Size Distribution Curve (3)

APPENDIX A

IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL ENGINEERING REPORT

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 Geotechncial 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.

ASFE
The Best People on Earth

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

IIGER06045.0M

APPENDIX B

FIELD METHODS FOR EXPLORING AND SAMPLING SOILS AND ROCK

FIELD METHODS FOR EXPLORING AND SAMPLING SOILS AND ROCK

A. Boring Procedures Between Samples

The boring is extended downward, between samples, by a hollow stem auger (AASHTO* Designation T251-77), a continuous flight auger, driven and washed-out casing, or rotary boring with drilling mud or water.

B. Penetration Test and Split-Barrel Sampling of Soils (AASHTO* Designation: T206-87)

This method consists of driving a 2-inch outside diameter split-barrel sampler using a 140 pound weight falling freely through a distance of 30 inches. The sampler is first seated 6-inches into the material to be sampled and then driven 12 inches. The number of blows required to drive the sampler the final 12 inches is known as the Standard Penetration Resistance or N-Value. The blow counts are reported on the Test Boring Records per 6 inch increment. Recovered samples are first classified as to texture by the driller. Later, in the laboratory the driller's classification is reviewed by a soils engineer who examines each sample.

C. Thin-walled Tube Sampling of Soils (AASHTO* Designation: T207-87)

This method consists of pushing a 2-inch or 3-inch outside diameter thin wall tube by hydraulic or other means into soils, usually cohesive types. Relatively undisturbed samples are recovered.

D. Soil Investigation and Sampling by Auger Borings (AASHTO* Designation: T203-82)

This method consists of augering a hole and removing representative soil samples from the auger flight or bucket at 5-foot intervals or with each change in the substrata. Relatively disturbed samples are obtained and its use is therefore limited to situations where it is satisfactory to determine approximate subsurface profile.

E. Diamond Core Drilling for Site Investigation (AASHTO* Designation: T225-83)

This method consists of advancing a hole in bedrock or other hard strata by rotating downward a single tube or double tube core barrel equipped with a cutting bit. Diamond, tungsten carbide, or other cutting agents may be used for the bit. Wash water is used to remove the cuttings. Normally, a 3-inch outside diameter by 2-inch inside diameter coring bit is used unless otherwise noted. The rock or hard material recovered within the core barrel is examined in the field and laboratory. Cores are stored in partitioned boxes and the length of recovered material is expressed as a percentage of the actual distance penetrated.

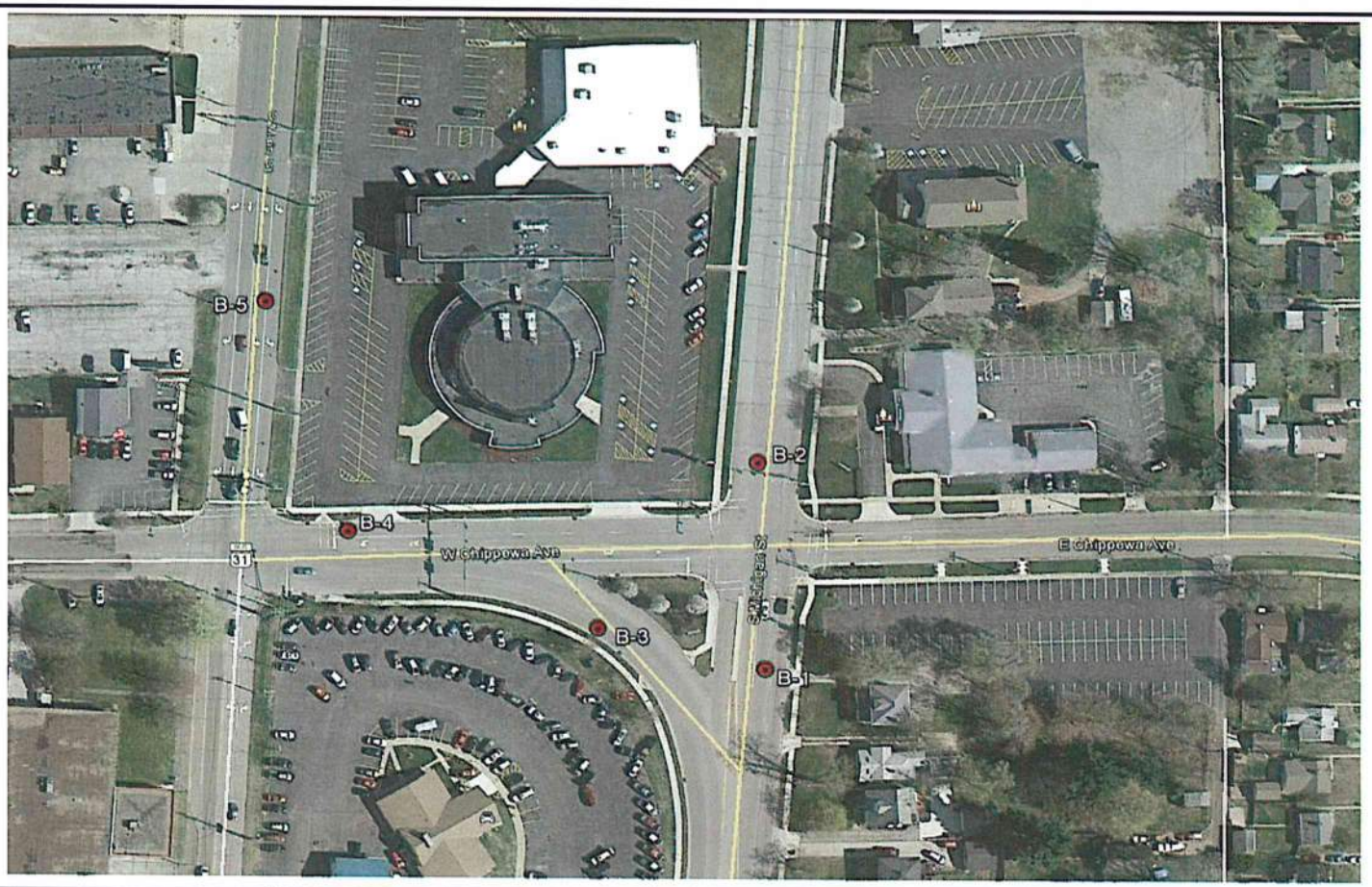
* American Association of State Highway and Transportation Officials, Washington D.C.

APPENDIX C

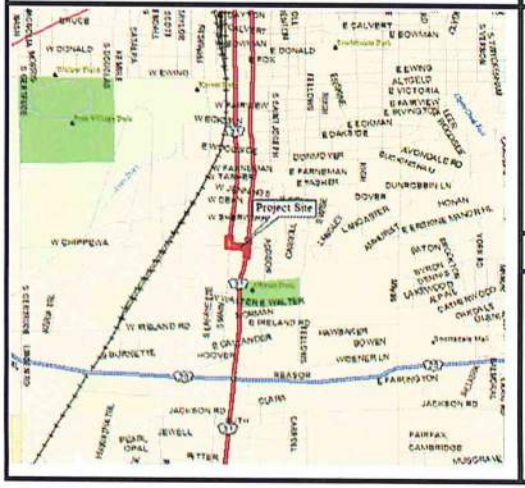
EXPLORATORY LOCATION PLAN
(Drawing No. 2-14-136.A1)

LOG OF TEST BORING - GENERAL NOTES

LOG OF TEST BORING - ROAD BORINGS (5)



VICINITY MAP
N.T.S.



NOTES

1. Base map developed from an aerial image from google.com/maps.
2. Vicinity map was generated using commercially available software by DeLorme (i.e., Street Atlas USA 5.1).
3. Refer to the Log of Test Boring (5) in Appendix C for a description of the subsurface conditions encountered at the test boring locations
4. Borings were located in the field by representatives from EEI on April 23, 2015.
5. Ground surface elevations at the test boring locations were interpolated to the nearest 0.1 ft from the project plan and profile drawings.

LEGEND

● B-1 Test Boring Location and Designation

TEST BORING LOCATION PLAN

PROJECT: Roundabout Intersection Improvements at Chippewa Avenue at Main and Michigan Streets

LOCATION: South Bend, Indiana

CLIENT: Lawson-Fisher Associates P.C.

EEI PROJECT NO: 2-14-136

PROJECT ENG: KPM
APPROVED BY: KPM
DRAWN BY: KPM
DATE: 07/16/15
DRAWING NO: 2-14-136.A1

EARTH EXPLORATION, Inc.

LOG OF TEST BORING – GENERAL NOTES

DESCRIPTIVE CLASSIFICATION

GRAIN SIZE TERMINOLOGY

Soil Fraction	Particle Size	US Standard Sieve Size
Boulders	Larger than 75 mm	Larger than 3"
Gravel	2.00 to 75 mm	#10 to 75 mm
Sand: Course	0.425 to 2.00 mm	#40 to #10
Fine	0.075 to 0.425 mm	#200 to #40
Silt	Smaller than 0.002 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

GENERAL TERMINOLOGY

Physical Characteristics
- Color, moisture, grain shape fineness, etc.

Major Constituents
- Clay silt, sand, gravel

Structure
- Laminated, varved, fibrous, stratified, cemented, fissured, etc.

Geologic Origin
- Glacial, alluvial, eolian, residual, etc.

RELATIVE PROPORTIONS OF COHESIONLESS SOILS

Term	Defining Range by % of Weight
Trace	1 – 10%
Little	11 – 20%
Some	21 – 35%
And	36 – 50%

ORGANIC CONTENT BY COMBUSTION METHOD

Soil Description	LOI
w/ trace organic matter	1 – 6 %
w/ little organic matter	7 – 12%
w/ some organic matter	13 – 18%
Organic Soil (A-8)	19 – 30%
Peat (A-8)	More than 30%

The penetration resistance, N, is the summation of the number of blows Required to effect two successive 6-in. penetrations of the 2-in. split-barrel Sampler. The sampler is driven with a 14-lb weight falling 30 in. and is Seated to a depth of 6 in. before commencing the standard penetration test.

RELATIVE DENSITY

Term	"N" Value
Very loose	0 – 5
Loose	6 – 10
Medium dense	11 – 30
Dense	31 – 50
Very Dense	51+

CONSISTENCY

Term	"N" Value
Very soft	0 – 3
Soft	4 -5
Med stiff	6 – 10
Stiff	11 – 15
Very Stiff	16 – 30
Hard	31+

PLASTICITY

Term	Plastic Index
None to slight	0 – 4
Slight	5 – 7
Medium	8 – 22
High/Very High	Over 22

SYMBOLS

DRILLING AND SAMPLING

AS – Auger Sample
BS – Bag Sample
C – Casing Size 2½", NW, 4", HW
COA - Clean-Out Auger
CS – Continuous Sampling
CW – Clear Water
DC – Driven Casing
DM – Drilling Mud
FA – Flight Auger
FT – Fish Tail
HA – Hand Auger
HAS – Hollow Stem Auger
NR – No Recovery
PMT – Borehole Pressuremeter Test
PT – 3" O.D. Piston Tube Sample
PTS – Peat Sample
RB – Rock Bit
RC – Rock Coring
REC – Recovery
RQD – Rock Quality Designation
RS – Rock Sounding
S – Soil Sounding
SS – 2" O.D. Split–Barrel Sample
2ST – 2" O.D. Thin-Walled Tube Sample
3ST – 3" O.D. Thin-Walled Tube Sample
VS – Vane Shear Test
WPT – Water Pressure Test

LABORATORY TESTS

qp – Penetrometer Reading, tsf
qu – Unconfined Strength, tsf
W – Moisture Content, %
LL – Liquid Limit, %
PL – Plastic Limit, %
PI – Plasticity Index
SL – Shrinkage Limit, %
LOI – Loss on Ignition, %
- Dry Unit Weight, pcf
pH – Measure of Soil Alkalinity/Acidity

WATER LEVEL MEASUREMENT

BF – Backfilled upon Completion
NW – No Water Encountered

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

EARTH EXPLORATION, Inc.

LOG OF TEST BORING

Project: **Roundabouts at Chippewa, Michigan & Main**
Location: **South Bend, Indiana**
Client: **Lawson-Fisher Associates P.C.**

2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: B-1
Elevation: 810.1
Datum: NAVD 88
EEI Proj. No. 2-14-136
Sheet: 1 of 1

Proj. No.:	114-045	Station	36+31	Weather:	Cloudy	Driller:	C.N.
Struct. No.:	---	Offset:	15 ft Rt. "C"	Temp.:	55° F	Inspector:	K.M.

SAMPLE No.	Type	Rec %	N Value	Depth ft	Elev	DESCRIPTION/CLASSIFICATION and REMARKS	q_p tsf	q_u tsf	γ_d pcf	W %	LL %	PL %	PI %
					810	**ASPHALTIC CONCRETE** (pavement - 6½-in.)							
						PORTLAND CEMENT CONCRETE (pavement - 9-in.)							
SS-1	X	50	11										
						SANDY LOAM, medium dense, moist, pale yellowish brown, A-2-4(0) Lab No. 93742SL							
SS-2	X	80	3						10.3				
				5	805								
SS-3	X	80	5										
						FINE SAND, loose, moist, yellowish brown, A-3 (visual)							
SS-4	X	80	16										
				10	800								
SS-5	X	80	18			**FINE SAND**, medium dense, moist, yellowish brown, A-3 (visual)							
SS-6	X	80	30			**FINE SAND**, dense, moist, yellowish brown, A-3 (visual)							
				15		End of Boring at 15 ft							

WATER LEVEL OBSERVATIONS

Depth ft	▽ While Drilling	▼ Upon Completion	▽ After Drilling
To Water	NW	NW	BF
To Cave-in		8½	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

GENERAL NOTES

Start 5/6/15 End 5/6/15 Rig CME 75
Drilling Method 3¼" I.D. HSA Truck
Remarks: Backfilled with auger cuttings and concrete plug at surface.

EARTH EXPLORATION, Inc.

LOG OF TEST BORING

Project: **Roundabouts at Chippewa, Michigan & Main**
Location: **South Bend, Indiana**
Client: **Lawson-Fisher Associates P.C.**

2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: B-2
Elevation: 812.8
Datum: NAVD 88
EEI Proj. No. 2-14-136
Sheet: 1 of 1

Proj. No.:	114-045	Station	38+24	Weather:	Partly Sunny	Driller:	C.N.
Struct. No.:	---	Offset:	12 ft Lt. "C"	Temp.:	62° F	Inspector:	K.M.

SAMPLE No.	Type	Rec %	N Value	Depth ft	Elev	DESCRIPTION/CLASSIFICATION and REMARKS	q_p tsf	q_u tsf	γ_d pcf	W %	LL %	PL %	PI %
						ASPHALTIC CONCRETE (pavement - 11-in.)							
						PORTLAND CEMENT CONCRETE (pavement - 10-in.)							
SS-1	X	65	8		810								
SS-2	X	80	4	5					11.8				
SS-3	X	80	7		805	**SANDY LOAM**, loose, moist, yellowish brown, A-2-4(0) Lab No. 93743SL							
SS-4	X	80	4	10									
SS-5	X	80	6		800	**FINE SAND**, loose to dense, moist, yellowish brown, A-3 (visual)							
SS-6	X	80	36	15									
						End of Boring at 15 ft							

WATER LEVEL OBSERVATIONS

Depth ft	While Drilling	Upon Completion	After Drilling
To Water	NW	NW	BF
To Cave-in		10	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

GENERAL NOTES

Start 5/6/15 End 5/6/15 Rig CME 75
Drilling Method 3¼" I.D. HSA Truck
Remarks: Backfilled with auger cuttings and concrete plug at surface.

EARTH EXPLORATION, Inc.

LOG OF TEST BORING

Project: **Roundabouts at Chippewa, Michigan & Main**
Location: **South Bend, Indiana**
Client: **Lawson-Fisher Associates P.C.**

2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: B-3
Elevation: 808.3
Datum: NAVD 88
EEI Proj. No. 2-14-136
Sheet: 1 of 1

Proj. No.:	114-045	Station	53+00	Weather:	Cloudy	Driller:	C.N.
Struct. No.:	---	Offset:	62 ft Rt. "D"	Temp.:	64° F	Inspector:	K.M.

SAMPLE No.	Type	Rec %	N Value	Depth ft	Elev	DESCRIPTION/CLASSIFICATION and REMARKS	q_p tsf	q_u tsf	γ_d pcf	W %	LL %	PL %	PI %
				0		**ASPHALTIC CONCRETE** (pavement - 5½-in.)							
						PORTLAND CEMENT CONCRETE (pavement - 10-in.)							
SS-1	X	80	19										
					805								
SS-2	X	80	6										
				5		**FINE SAND**, loose to medium dense, moist, yellowish brown, A-3 (visual)							
SS-3	X	80	5										
					800								
SS-4	X	80	7			**SANDY LOAM**, loose, moist, yellowish brown, A-2-4 Lab No. 93743SL							
				10									
SS-5	X	65	17										
					795	**FINE SAND**, medium dense, moist, yellowish brown, A-3 (visual)							
SS-6	X	35	29										
				15		End of Boring at 15 ft							

WATER LEVEL OBSERVATIONS

Depth ft	▽ While Drilling	▼ Upon Completion	▽ After Drilling
To Water	NW	NW	BF
To Cave-in		8½	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

GENERAL NOTES

Start 5/5/15 End 5/15/15 Rig CME 75
Drilling Method 3¼" I.D. HSA Truck
Remarks: Backfilled with auger cuttings and concrete plug at surface.

EARTH EXPLORATION, Inc.

LOG OF TEST BORING

Project: **Roundabouts at Chippewa, Michigan & Main**
Location: **South Bend, Indiana**
Client: **Lawson-Fisher Associates P.C.**

2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: B-4
Elevation: 805.0
Datum: NAVD 88
EEI Proj. No. 2-14-136
Sheet: 1 of 1

Proj. No.:	114-045	Station	50+95	Weather:	Cloudy	Driller:	C.N.
Struct. No.:	---	Offset:	17 ft Lt. "D"	Temp.:	67° F	Inspector:	K.M.

SAMPLE No.	Type	Rec %	N Value	Depth ft	Elev	DESCRIPTION/CLASSIFICATION and REMARKS	q_p tsf	q_u tsf	γ_d pcf	W %	LL %	PL %	PI %
						ASPHALTIC CONCRETE (pavement - 17-in.)							
SS-1		80	9										
SS-2		80	6						8.6				
				5	800	**SAND**, loose, moist, dark brown, A-1-b(0) Lab No. 93744SL							
SS-3		80	7										
SS-4		80	25										
				10	795								
SS-5		NR*	50/4"			**FINE SAND**, medium dense to dense, moist, yellowish brown, A-3 (visual)							
SS-6		35	34										
				15	790								
						End of Boring at 15 ft * Drove sampler on large gravel or cobble							

WATER LEVEL OBSERVATIONS

Depth ft	▽ While Drilling	▼ Upon Completion	▽ After Drilling
To Water	NW	NW	BF
To Cave-in		9½	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

GENERAL NOTES

Start 5/5/15 End 5/15/15 Rig CME 75
Drilling Method 3¼" I.D. HSA Truck
Remarks Backfilled with auger cuttings and concrete plug at surface.

EARTH EXPLORATION, Inc.

LOG OF TEST BORING

Project: Roundabouts at Chippewa, Michigan & Main
Location: South Bend, Indiana
Client: Lawson-Fisher Associates P.C.
2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: B-5
Elevation: 805.7
Datum: NAVD 88
EEI Proj. No. 2-14-136
Sheet: 1 of 1

Proj. No.:	114-045	Station	41+10	Weather:	Rainy	Driller:	C.N.
Struct. No.:	---	Offset:	7 ft Rt. "B1"	Temp.:	60° F	Inspector:	K.M.

SAMPLE No.	Type	Rec %	N Value	Depth ft	Elev	DESCRIPTION/CLASSIFICATION and REMARKS	q_p tsf	q_u tsf	γ_d pcf	W %	LL %	PL %	PI %
					805	**ASPHALTIC CONCRETE** (pavement - 7½-in.)							
						PORTLAND CEMENT CONCRETE (pavement - 5½-in.)							
SS-1	X	80	11										
SS-2	X	80	6										
				5	800								
SS-3	X	35	2			**FINE SAND**, loose to medium dense, moist, yellowish brown, A-3 (visual)							
SS-4	X	80	2										
				10	795								
SS-5	X	80	8										
SS-6	X	80	3			**SANDY LOAM**, very loose, moist to wet, dark brown, A-2-4 Lab No. 93743SL							
				15		End of Boring at 15 ft							

WATER LEVEL OBSERVATIONS

Depth ft	▽ While Drilling	▼ Upon Completion	▽ After Drilling
To Water	NW	NW	BF
To Cave-in		11	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

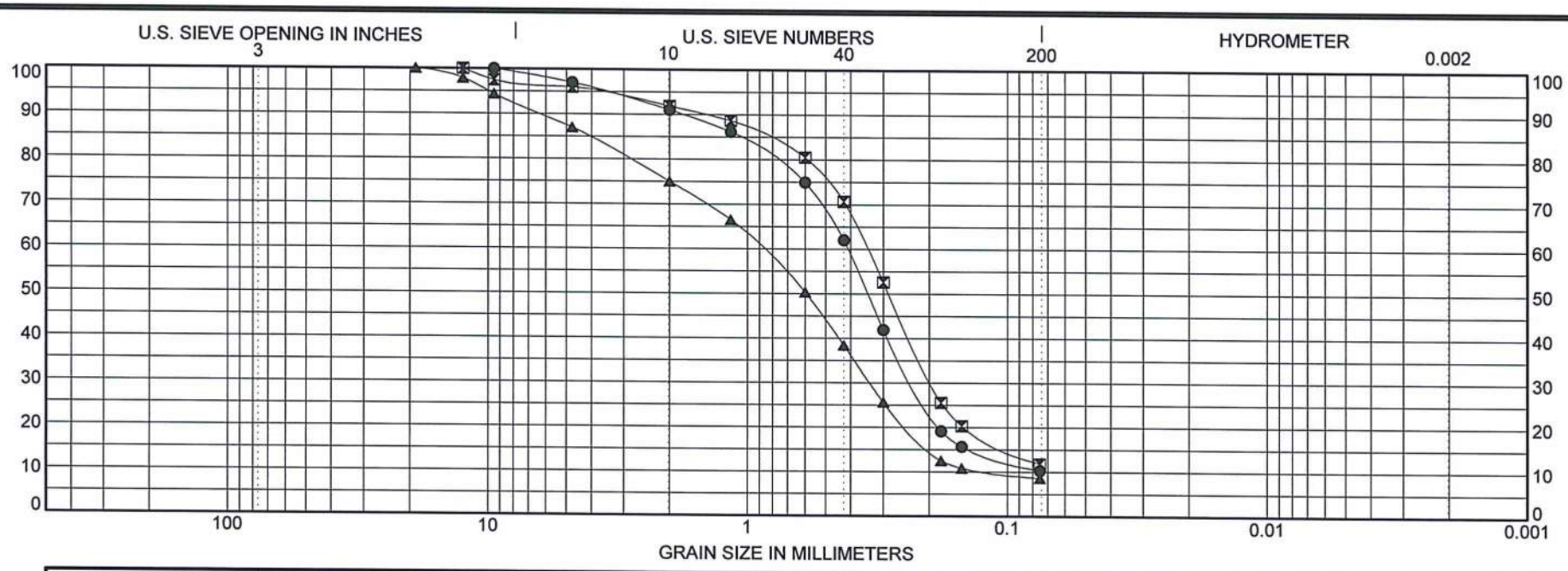
GENERAL NOTES

Start 5/5/15 End 5/15/15 Rig CME 75
Drilling Method 3¼" I.D. HSA Truck
Remarks: Backfilled with auger cuttings and concrete plug at surface.

APPENDIX D

SUMMARY OF CLASSIFICATION TEST RESULTS

GRAIN SIZE DISTRIBUTION CURVE (3)



	Lab No.	Boring	Station/Offset/Line	Sample No.	Depth ft	Classification	% Passing No.10	% Passing No.40	% Passing No.200	% Gravel	% Sand	% Silt	% Clay	% Coll.	LL	PL	PI	Opt. Moist.	γ max pcf	* CBR at 93%	* CBR at 97%
●	93742SL	B-1	36+31 15 ft Rt. "C"	SS-2	3.5 - 5.0	Sandy Loam A-2-4(0)	91.0	62.0	10.3	9.0	80.7		10.3		NP	NP	NP				
⊠	93743SL	B-2	38+24 12 ft Lt. "C"	SS-2	3.5 - 5.0	Sandy Loam A-2-4(0)	91.9	70.7	11.8	8.1	80.0		11.8		NP	NP	NP				
▲	93744SL	B-4	50+95 17 ft Lt. "D"	SS-2	3.5 - 5.0	Sand A-1-b(0)	75.0	38.4	8.6	25.0	66.4		8.6		NP	NP	NP				

EARTH EXPLORATION, Inc.

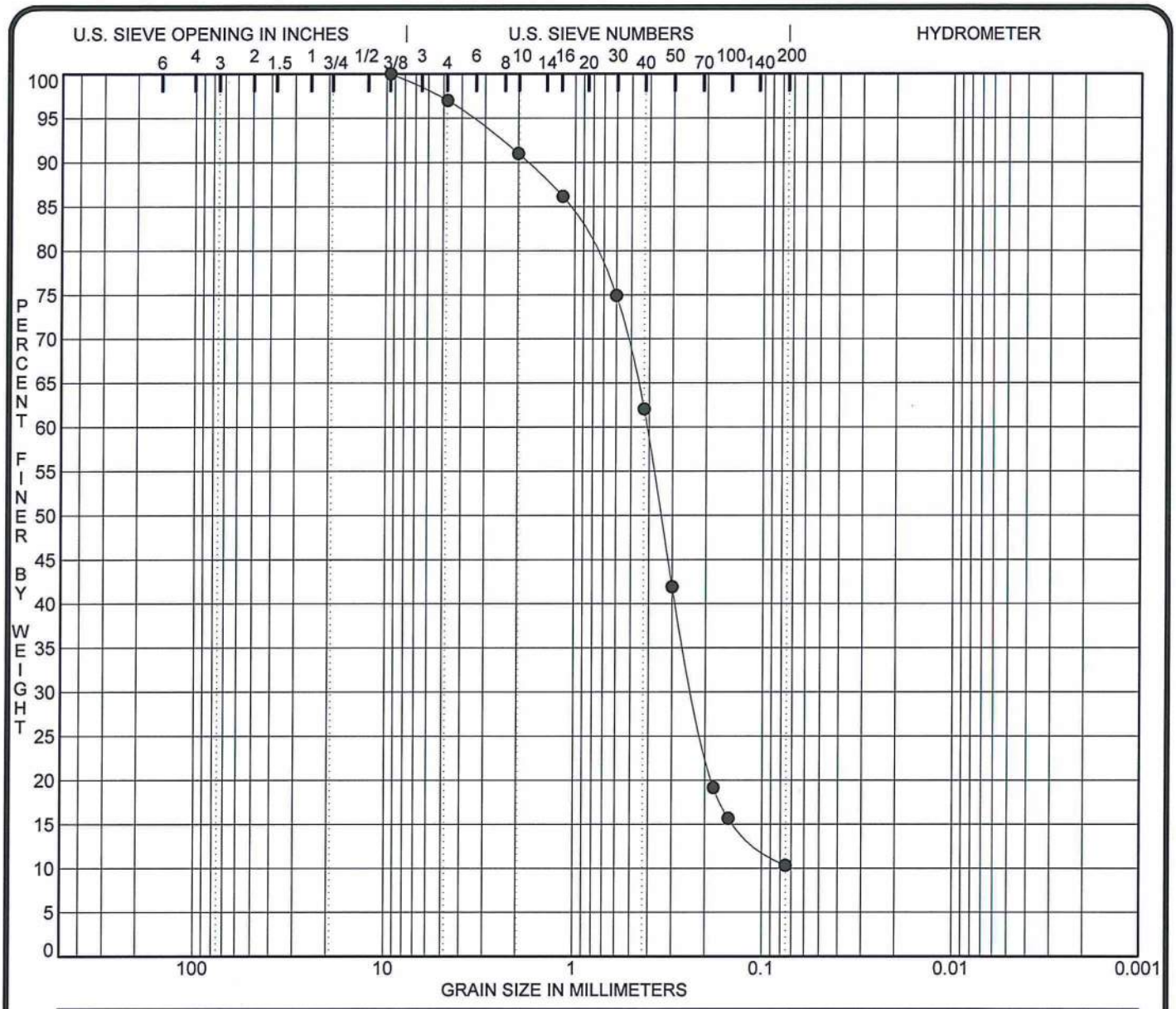
Project No. 114-045
Structure No. ---
EEI-SB Project No. 2-14-136

Project Location Roundabouts at Chippewa, Michigan & Main
South Bend, Indiana
Client Lawson-Fisher Associates P.C.

SUMMARY OF CLASSIFICATION TEST RESULTS

Earth Exploration, Inc.
2204 Yankee Street, Niles, MI 49120
269-262-4320 / 269-262-4379 (Fax)

* See text for recommended values.



BOULDERS	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Sample Identification		Station / Offset / Line	Depth, ft.	Elevation, USCGS
B-1	SS-2	36+31 15 ft Rt. "C"	3.5 - 5.0 ft.	806.6 -

Lab No.	Classification	pH	%Gravel	%Sand	%Silt	%Clay	MC%	LL	PL	PI
93742SL	Sandy Loam A-2-4(0)		9.0	80.7	10.3			NP	NP	NP

Remarks:

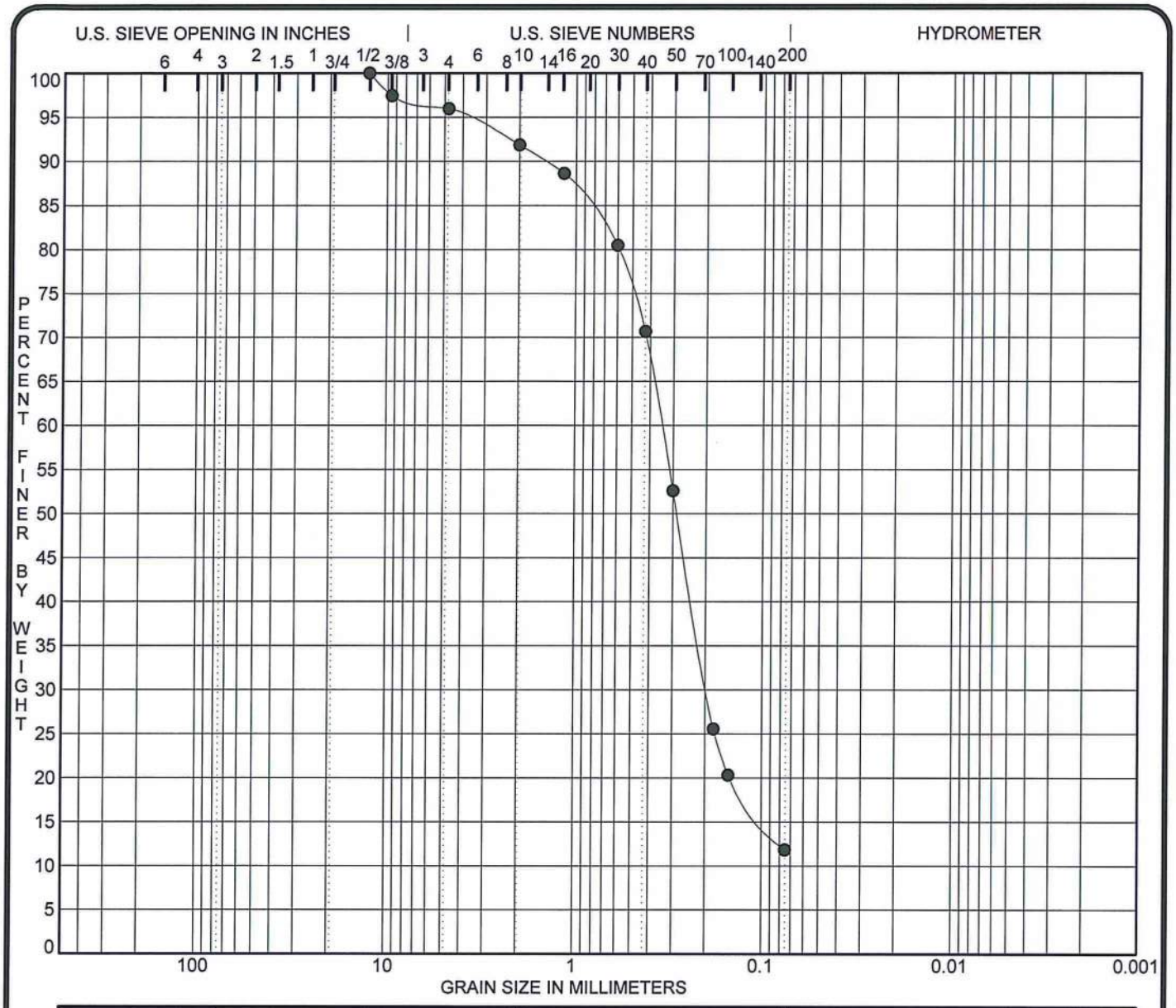
EARTH EXPLORATION Inc

Project No. 114-045
Structure No. ---
EEI-SB Proj. No. 2-14-136

Project Roundabouts at Chippewa, Michigan & Main
Location South Bend, Indiana
Client Lawson-Fisher Associates P.C.

GRAIN SIZE DISTRIBUTION CURVE

Earth Exploration, Inc.
2204 Yankee Street
269-262-4320 / 269-262-4479 (Fax)



BOULDERS	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Sample Identification		Station / Offset / Line	Depth, ft.	Elevation, USCGS
● B-2	SS-2	38+24 12 ft Lt. "C"	3.5 - 5.0 ft.	809.3 -

Lab No.	Classification	pH	%Gravel	%Sand	%Silt	%Clay	MC%	LL	PL	PI
93743SL	Sandy Loam A-2-4(0)		8.1	80.0	11.8			NP	NP	NP

Remarks:

EARTH EXPLORATION, Inc.

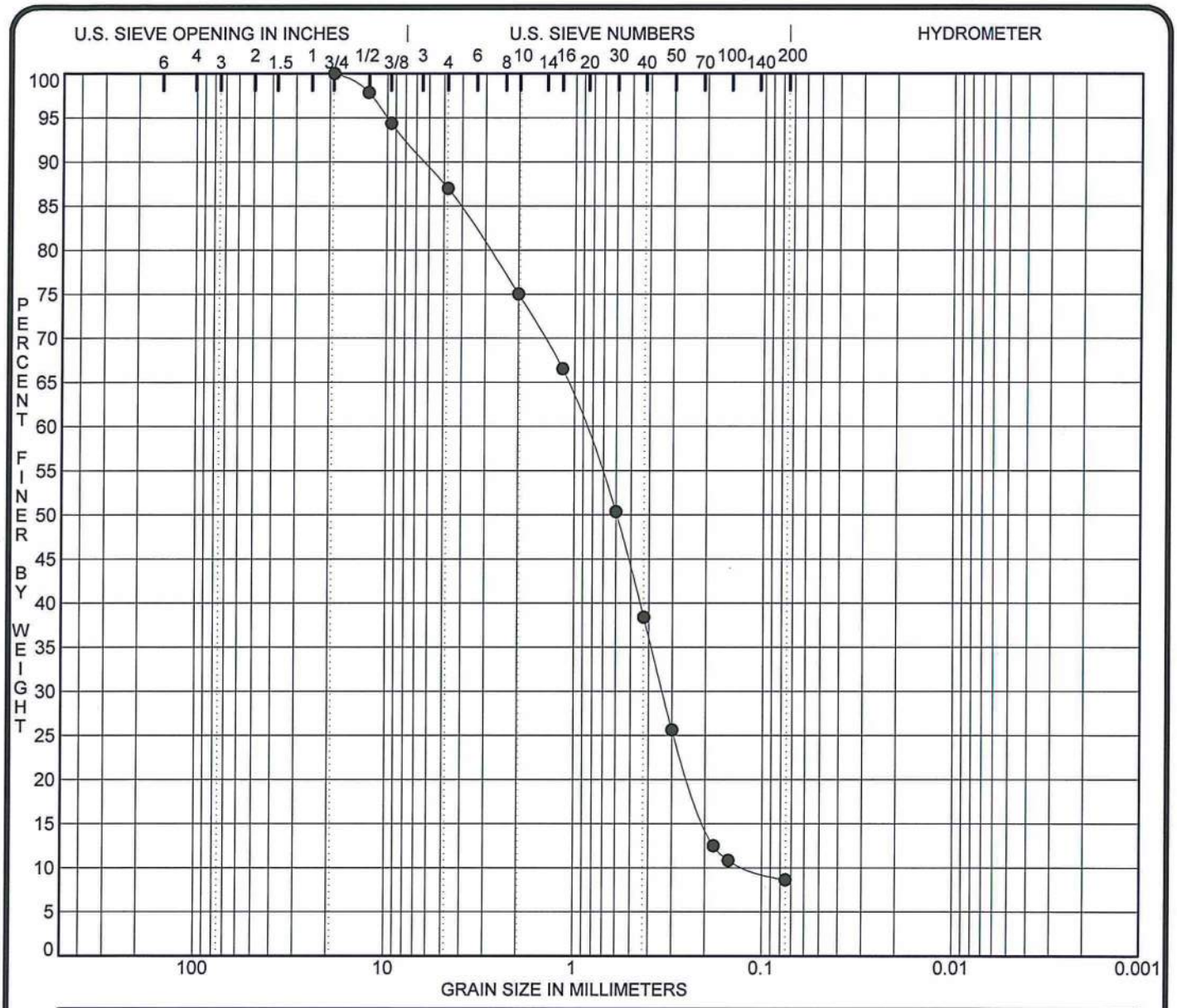
Project No. 114-045 **Project** Roundabouts at Chippewa, Michigan & Main

Structure No. --- **Location** South Bend, Indiana

EEI-SB Proj. No. 2-14-136 **Client** Lawson-Fisher Associates P.C.

GRAIN SIZE DISTRIBUTION CURVE

Earth Exploration, Inc.
2204 Yankee Street
269-262-4320 / 269-262-4479 (Fax)



BOULDERS	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Sample Identification		Station / Offset / Line	Depth, ft.	Elevation, USCGS
● B-4	SS-2	50+95 17 ft Lt. "D"	3.5 - 5.0 ft.	801.5 -

Lab No.	Classification	pH	%Gravel	%Sand	%Silt	%Clay	MC%	LL	PL	PI
93744SL	Sand A-1-b(0)		25.0	66.4	8	6		NP	NP	NP

Remarks:

EARTH EXPLORATION Inc

Project No. 114-045
Structure No. ---
EEI-SB Proj. No. 2-14-136

Project Roundabouts at Chippewa, Michigan & Main
Location South Bend, Indiana
Client Lawson-Fisher Associates P.C.

GRAIN SIZE DISTRIBUTION CURVE

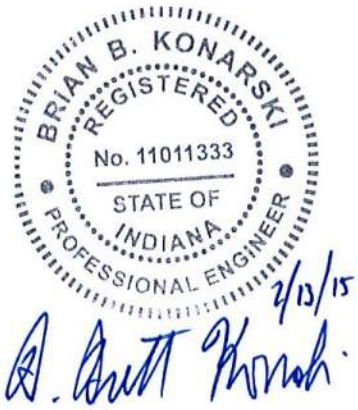
Earth Exploration, Inc.
2204 Yankee Street
269-262-4320 / 269-262-4479 (Fax)

GEOTECHNICAL INVESTIGATION
FOR PROPOSED BARTLETT STREET IMPROVEMENTS
SOUTH BEND, INDIANA

Prepared for:

CITY OF SOUTH BEND

227 West Jefferson Blvd, Suite 1300N
South Bend, IN 46601



Prepared by:
JONES PETRIE RAFINSKI
412 SOUTH LAFAYETTE BLVD.
SOUTH BEND, IN 46601

February 13, 2015

CITY OF SOUTH BEND

GEOTECHNICAL INVESTIGATION
FOR PROPOSED BARTLETT STREET IMPROVEMENTS
SOUTH BEND, INDIANA

TABLE OF CONTENTS

APPENDICES

The purpose of this geotechnical investigation is to provide geotechnical recommendations for the City of South Bend's Bartlett Street improvements, including the realignment of Bartlett Street from just east of the intersection of Lafayette Blvd. to Michigan Street, and the construction of a roundabout at the intersection of Bartlett Street and Michigan Street / State Road 933 (see attached vicinity map in Figure 1).

A soil boring location map is attached to this report (see attached Figure 2), including the planned soil borings shown by number, and a general outline of the proposed improvements, including reconfiguration of the Memorial Hospital access circulation and parking area pavement. The scope of the project includes reconstruction of pavement, curbing, sidewalks, storm sewer, municipal utilities, lighting, signage, pavement markings and appurtenances.

It is understood that the actual design of pavement and related features for the project's construction are to be done by others. The recommendations of this report are based upon the soil strata and water level observations encountered during the investigation. The geotechnical investigation of the subject property consisted of the following tasks:

1) Performing a total of four (4) soil borings to a depth of 15' below existing grade.
2) Collection of split-spoon samples at 1.5′ intervals during the initial 10′ below grade and at 5′ intervals thereafter during the performance of each soil boring according to ASTM Standard D1586-00.
3) Water level observations were encountered in all four soil borings at varying depths ranging from 6' to 12' below existing grade.

A review of the USDA Soil Conservation Services Soil Survey for St. Joseph County, Indiana shows that the subject site consists of Urban Land – Tyner Complex soils. The Tyner Complex soils are considered excessively drained with a high to very high permeability rate. The USDA soils reports indicate that these soils are not limited for use as fill in construction of roadways.

.

The soil borings were advanced through the use of hollow stem augers. During the soil sampling procedures, tests were performed to obtain the standard penetration value of the soil. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer, falling 30", required to advance a split spoon sampler 12" into the soil. The sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer. The number of blows is recorded for each of three successive increments of 6". The "N" value is obtained by adding the second and third increments. The results of the standard penetration test indicate the relative density of cohesionless soil and comparative consistency of cohesive soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile. Soil boring logs are located in Appendix A with locations shown on Figure 2, Soil Boring Location Map.

General

The four (4) soil borings of this report were performed on September 9, 2014. Each soil boring was extended to 15' below existing grade. The results of the soil borings can be summarized as follows

Soil Boring B-1 was performed at the southeast corner of the intersection of Bartlett Street and Lafayette Blvd. Soils encountered were 3" of surface topsoil, over very loose sand and gravel with black topsoil fill to 5' below grade over medium dense, coarse sand and gravel to 9' deep, over wet, medium dense, coarse sand and gravel. The water level observations were encountered at 9' below grade during and at completion of drilling. The topsoil fill is not suitable for use in roadway construction and should be removed.

Soil Boring B-2 was performed along the centerline of the proposed Bartlett Street, approximately 130' east of the intersection of North Main Street and Bartlett Street. The soils observed were 5" of asphalt pavement at the surface, over loose black topsoil fill to 1.5' below existing grade, over loose, coarse sand with pebbles and trace sandy clay to 5' below existing grade, over medium dense, coarse sand and gravel to 7.5' below existing grade. Soils below 7.5' deep were wet, medium dense coarse sand and gravel to 12' below grade, over wet, medium stiff, sandy clay. The water level observations were encountered at 6.5' below grade during drilling and 7' at completion of drilling operations. Topsoil fill is not suitable for use in roadway construction and should be removed.

Soil Boring B-3 was performed along the centerline of the proposed Bartlett Street, approximately 350' east of the intersection of North Main Street and Bartlett Street and approximately 100' west of Michigan Street. The soils observed were 4" of asphalt pavement at the surface, over medium dense sand and sandy clay fill to 2.5' below existing grade over loose, medium coarse sand and gravel to 6' below existing grade over wet, medium stiff, silty clay from 6' to the 15' depth of boring. The water level observations

were encountered at 6' during and at completion of drilling. Topsoil fill and clay soils are not suitable for use in roadway construction and should be removed.

Soil Boring B-4 was performed along the proposed Bartlett Street centerline, approximately 135' southeast of the center of the proposed roundabout on Michigan Street, to be completed during Phase 2 of this project. Soils encountered were 8" of surface topsoil, over loose, fine sand with organics to 4' below existing grade, over medium dense to loose fine sand to 12' below existing grade, over wet, medium dense silty sand to the 15' depth of boring. The water level observations were encountered at 12' during drilling and 10' at completion of drilling.

The major design concerns indicated by this investigation are the loose relative density of the sandy soil and the presence of topsoil fill, organics and clay soils in the load bearing soil layers.

In general, the sandy soils encountered at the site appear to be suitable for use as fill material for construction of the proposed roadway pavement, but any deleterious materials, including topsoil fill soils, clay soils and organic matter should be removed from the load bearing area of influence and replaced with an approved, well-draining granular fill soil material.

For proposed pavement construction, the existing loose suitable sandy subgrade soil material should be temporarily excavated to a minimum depth of sixteen (16") inches below proposed bottom of pavement elevation. In addition, any deleterious materials encountered should be removed down to suitable sandy subgrade soil, or typically 36" below proposed bottom of pavement grade. At the level below the excavation, the subgrade soil material should be thoroughly compacted in place with a heavy vibratory roller and moisture content control measures provided by the contractor as needed to achieve a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density. Proof

rolling should be performed in the presence of a qualified independent soil technician retained by the owner or contractor. Any "pumping" or yielding areas should be undercut at additional depth as directed by the soil technician. After achieving the above density, the temporarily excavated sandy material, or well-draining granular fill soil material, should be replaced in loose lifts of approximately eight (8") inches, and compacted with a heavy vibratory roller and moisture content control measures provided by the contractor as needed to achieve a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density for each lift. Any additional fill that may be needed to reach the required subgrade elevation shall be select, well-draining soil material compacted in maximum loose depth lifts of eight (8) inches with a heavy vibratory roller and moisture content control measures provided by the contractor as needed to achieve a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density. The total area of the above compaction treatments should, as a minimum, be within the pavement loading influence area, which should increase in size at a 1:1 slope to depths below the pavement subgrade elevation, (i.e. compaction of soil at 3' below the pavement should be done within an area that is a minimum three (3) horizontal feet of width beyond the edge limits outside of the proposed pavement plan view dimensions). Excavations shall be fully dewatered prior to installation of fill material and compaction.

Any unsuitable soils encountered in sidewalk construction areas should be excavated to a minimum depth of eight (8) inches below bottom of sidewalk elevation. At the level below the excavation, the subgrade soil material should be thoroughly compacted in place with a heavy vibratory roller and moisture content control measures provided by the contractor as needed to achieve a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density. Proof rolling should be performed in the presence of a qualified independent soil technician retained by the owner or contractor. Any "pumping" or yielding areas should be undercut at additional depth as directed by the soil technician. After achieving the above density, the temporarily excavated sandy material, or well-draining granular fill soil material, should be replaced in loose lifts of approximately eight (8") inches, and

compacted with a heavy vibratory roller and moisture content control measures provided by the contractor as needed to achieve a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density for each lift. Any additional fill that may be needed to reach the required subgrade elevation shall be select, well-draining soil material compacted in maximum loose depth lifts of eight (8) inches with a heavy vibratory roller and moisture content control measures provided by the contractor as needed to achieve a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density

It is understood that stormwater runoff is to be collected on-site via storm water inlets, and that all on-site storm sewer is to discharge directly into the existing municipal storm sewer, owned and operated by the City of South Bend, and there is not to be any stormwater runoff retention on the subject site. Storm sewer and structures shall be bedded and backfilled as specified in the construction plans and specifications.

Testing and inspection should be provided by a qualified soil technician as part of the project. Where any substandard test results are determined, the area of the failed test shall be reworked or addressed as needed until passing test results are achieved at the same location. The method of reworking or addressing the failed test area to achieve passing test results shall be documented with the passing test results. Due to the nature of the project and the characteristics of the encountered soils of this investigation, very thorough inspection and testing programs are critical to the recommendations and the performance of the proposed paving improvements.

Pavement

Any topsoil, miscellaneous fill, organics, and/or existing obstructions encountered should be removed. The pavement should not be placed directly on "silt, "sandy clay," or "clay" soil materials. Roadway, driveway and parking area pavement design should adhere to the applicable local guidelines and standard specifications.

All subgrade and subbase materials should be compacted to 95% of Modified Proctor (ASTM D1557) maximum dry density in maximum eight (8) inch loose lifts before pavement construction. Surface water in areas should be disposed of through surface drains or storm sewers.

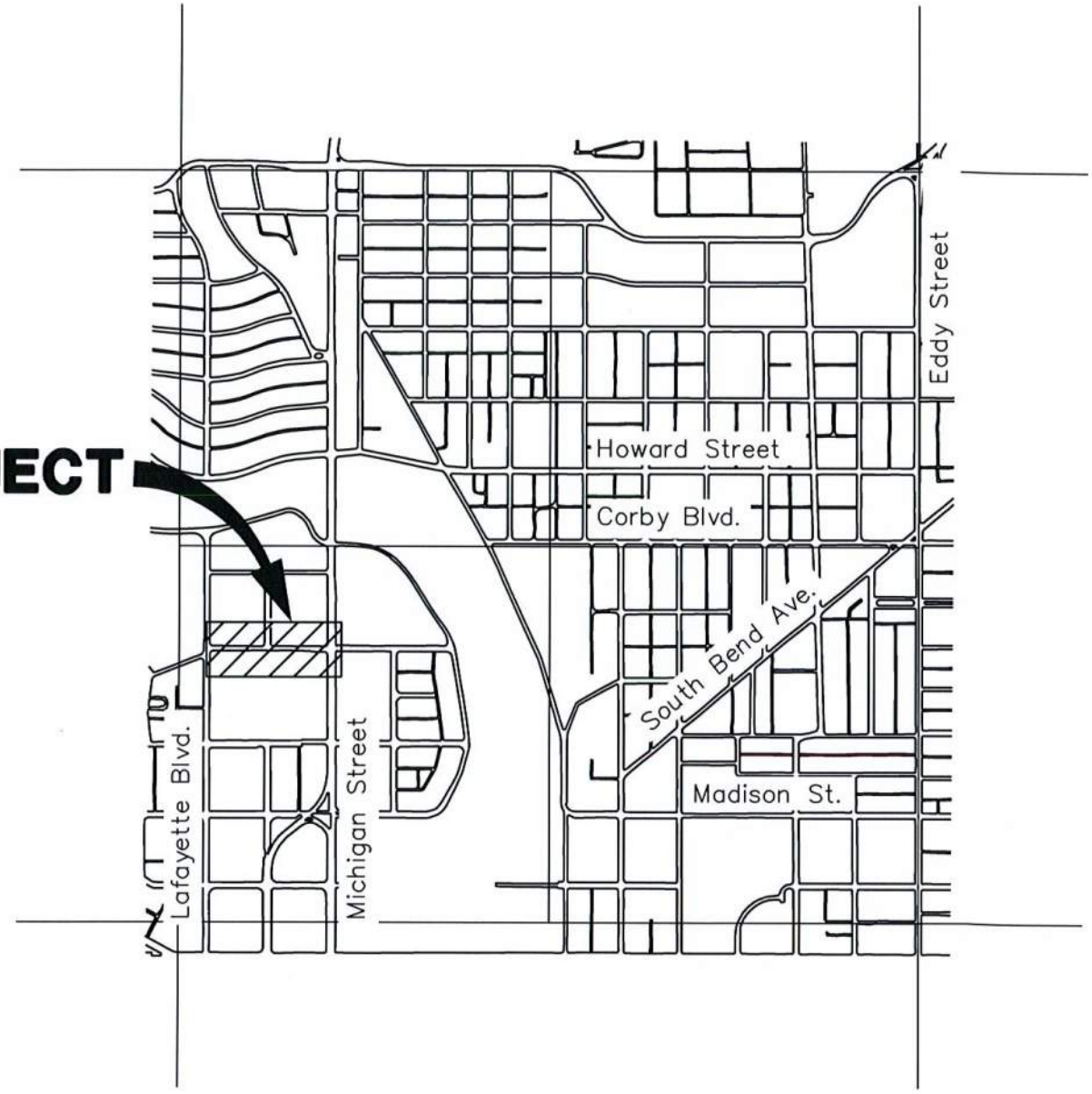
Portland cement concrete pavement should be used in lieu of asphalt pavement at loading dock ramps, trash dumpster pads, and as a pad for other special exterior equipment such as generators, etc. Portland cement concrete pavement should be considered for use at areas used frequently by trucks and heavy equipment.

All pavement construction shall be done in accordance with current City of South Bend Standard Specifications and Standard Details, which in some cases defer to INDOT Standard Specifications and Standard Details.

This geotechnical investigation has been limited to the evaluation of subsurface conditions for the support of the pavement and other related aspects of site development. The investigation does not include the assessment of possible chemical, deleterious, corrosive or other hazardous substance contamination in the subsoils. The presence or absence of such contamination is not implied or inferred by this report.

The discussion and recommendations presented in this report are based on the information and data furnished to JPR, and on the information obtained from the soil borings for this project. The soil borings do not necessarily represent the subsurface conditions between the borings. If significant changes are made in the character or location of the proposed construction, if our understanding of the proposed construction or loading conditions are not correct, or if soil conditions encountered during construction differ from those described in this report, JPR should be notified immediately in order to evaluate the effect of the new information on our recommendations. We will be glad to discuss the effect of the soil properties on your design as that design progresses.

FIGURE 1
VICINITY MAP

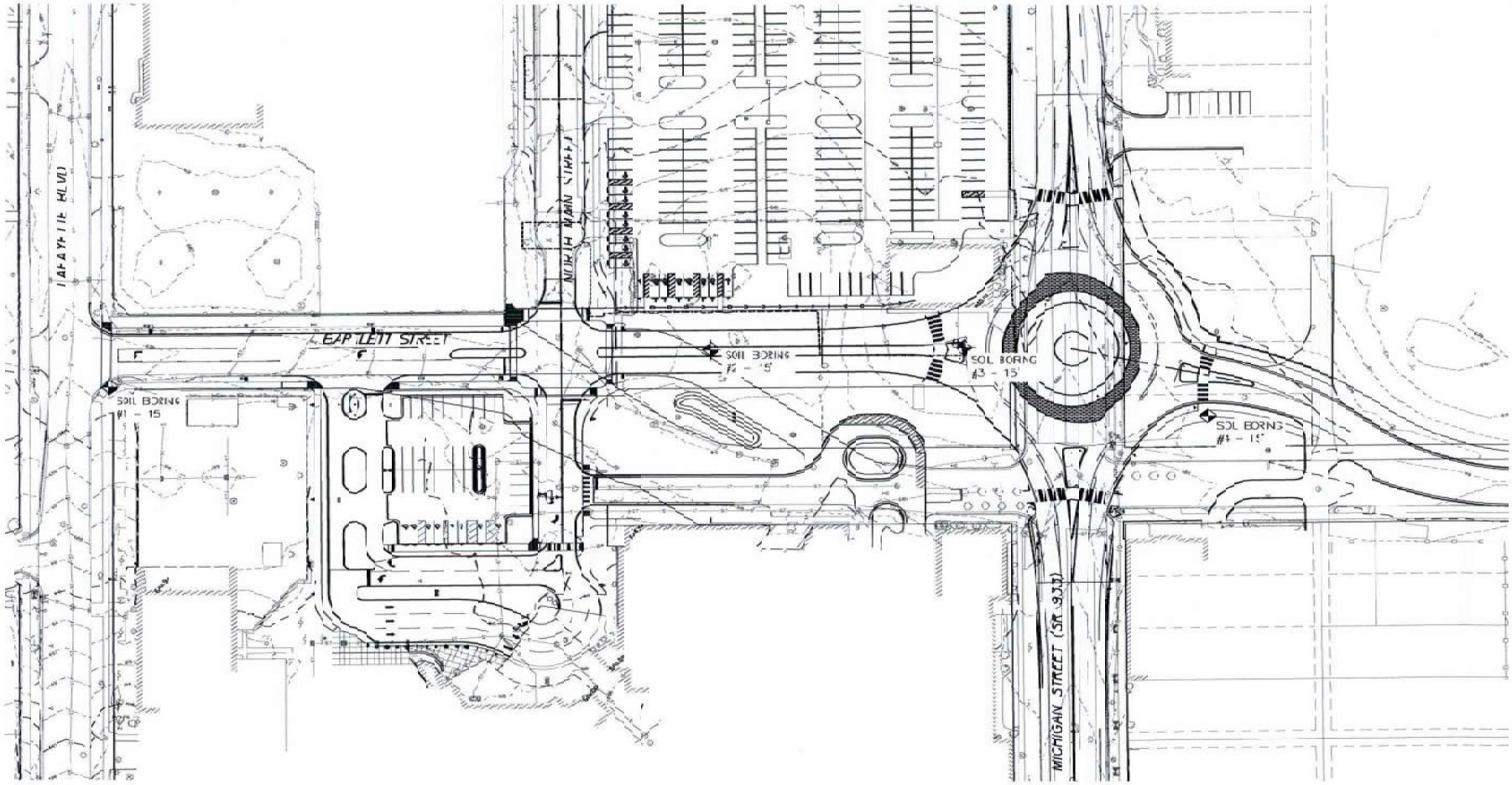


BARTLETT STREET IMPROVEMENTS - PHASE I

SITE GEOTECHNICAL REPORT
FIGURE 1 - VICINITY MAP

JONES PETRIE RAFINSKI
your one single source
Surveying · Engineering · Planning · Architecture · Utility Management
GIS · Environmental · Renewable Energy · Landscape Architecture

FIGURE 2
SOIL BORING LOCATION MAP



BARTLETT STREET IMPROVEMENTS - PHASE I

SITE GEOTECHNICAL REPORT

FIGURE 2 - SOIL BORING LAYOUT MAP

JONES PETRIE RAFINSKI

APPENDIX A
SOIL BORING LOGS

Jones Petrie Rafinski Corp
412 S. Lafayette Blvd.
South Bend, IN 46601
p:574-232-4388 f:574-232-4333
4703 Chester Dr.
Elkhart, IN 46545
p:574-293-7762 f:574-294-3717

Log of Borehole: B - 1

Project No.: 2014-5083
Project: Bartlett Street
Location: South Bend, IN
Date: 9/9/2014
Sheet: 1 of 1

Depth (ft)	Symbol	Description	Number	SBT Blows	Recovery	Water Level	Comments	Depth (ft)
0		Ground Surface						0
1							3" Topsoil	1
2		Moist, Very Loose, Brown Coarse Sand & Gravel W/Pebbles & Black Topsoil Fill	1	3,2,2-4	14"			2
3								3
4		Very Loose, Black Topsoil Fill To 3.5' Below Grade To Very Loose, Tan Fine Sand To 5' Below Grade	2	1,1,2-3	14"			4
5								5
6		Medium Dense, Brown Coarse Sand & Gravel W/Large Pebbles	3	8,8,10-18	12"			6
7							Water Level Observations: 9' During Drilling & 9' At Completion	7
8								8
9		Medium Dense, Borwn Coarse Sand & Gravel To 9' Below Grade To Wet, Medium Dense, Brown Coarse Sand & Gravel	4	10,7,3-10	4"	▼		9
10							Cave-In Depth: 10'	10
11								11
12								12
13								13
14		Wet, Medium Dense, Brown Coarse Sand & Gravel	5	5,6,8-14	14'			14
15							End Of Boring	15
16								16
17								17
18								18
19								19
20								20

Drilling Contractor: D & T Drilling
Drill Method: Hollow Stem Auger
Sampler Type: Split Spoon

Drop: 30"
Hammer Weight: 140 lbs.
Groundwater Depth: 9'/9'

Jones Petrie Rafinski Corp
412 S. Lafayette Blvd.
South Bend, IN 46601
p:574-232-4388 f:574-232-4333
4703 Chester Dr.
Elkhart, IN 46545
p:574-293-7762 f:574-294-3717

Log of Borehole: B - 2

Project No.: 2014-5083
Project: Bartlett Street
Location: South Bend, IN
Date: 9/9/2014
Sheet: 1 of 1

SUBSURFACE PROFILE			SAMPLE					
Depth (ft)	Symbol	Description	Number	SBT Blows	Recovery	Water Level	Comments	Depth (ft)
0		Ground Surface						0
1							18" Topsoil & 5" Asphalt	1
2		Loose, Black Topsoil Fill To 1.5' Below Grade To Loose, Tan Coarse Sand	1	5,3,5-8	18"			2
3								3
4		Loose, Tan Fine Sand W/Pebbles & Trace Sandy Clay	2	2,2,3-5	18"			4
5								5
6							Water Level Observations: 6.5' During Drilling & 7' At Completion	6
7		Medium Dense, Brown Coarse Sand & Gravel W/Large Rock Fragments	3	6,5,9-14	16"	▼		7
8								8
9		Wet, Medium Dense, Tan Coarse Sand & Gravel	4	14,11,9-20	14"			9
10								10
11								11
12							Cave-In Depth 10'	12
13								13
14		Wet, Medium Stiff, Gray Sandy Clay	5	4,5,7-12	18"			14
15							End Of Boring	15
16								16
17								17
18								18
19								19
20								20

Drilling Contractor: D & T Drilling
Drill Method: Hollow Stem Auger
Sampler Type: Split Spoon

Drop: 30"
Hammer Weight: 140 lbs.
Groundwater Depth: 6.5'/7'

Jones Petrie Rafinski Corp
412 S. Lafayette Blvd.
South Bend, IN 46601
p:574-232-4388 f:574-232-4333
4703 Chester Dr.
Elkhart, IN 46545
p:574-293-7762 f:574-294-3717

Log of Borehole: B - 3

Project No.: 2014-5083
Project: Bartlett Street
Location: South Bend, IN
Date: 9/9/2014
Sheet: 1 of 1

Depth (ft)	Symbol	Description	Number	SBT Blows	Recovery	Water Level	Comments	Depth (ft)
0		Ground Surface						0
1							4" Asphalt	1
2		Moist, Medium Dense, Brown Fine Sand & Sandy Clay Fill To 2.5' Below Grade	1	6,6,7-13	18"			2
3								3
4		Loose, Tan Medium Coarse Sand & Gravel W/Pebbles To 6' Below Grade	2	7,6,2-8	12"			4
5								5
6		Moist, Medium Stiff, Gray Silty Clay	3	6,6,4-10	18"	▼	Water Level Observations: 6' During Drilliing & 6' At Completion	6
7								7
8								8
9		Wet, Medium Stiff, Gray Silty Clay	4	3,4,5-9	18"			9
10								10
11								11
12								12
13								13
14		Wet, Medium Stiff, Gray Silty Clay	5	3,4,5-9	18"			14
15							End Of Boring	15
16								16
17								17
18								18
19								19
20								20

Drilling Contractor: D & T Drilling
Drill Method: Hollow Stem Auger
Sampler Type: Split Spoon

Drop: 30"
Hammer Weight: 140 lbs.
Groundwater Depth: 6'/6'

Jones Petrie Rafinski Corp
412 S. Lafayette Blvd.
South Bend, IN 46601
p:574-232-4388 f:574-232-4333
4703 Chester Dr.
Elkhart, IN 46545
p:574-293-7762 f:574-294-3717

Log of Borehole: B - 4

Project No.: 2014-5083
Project: Bartlett Street
Location: South Bend, IN
Date: 9/9/2014
Sheet: 1 of 1

Depth (ft)	Symbol	Description	Number	SBT Blows	Recovery	Water Level	Comments	Depth (ft)
0		Ground Surface						0
1							8" Topsoil	1
2		Loose, Brown Fine Sand W/Organics	1	3,3,3-6	16"			2
3								3
4		Loose, Brown Fine Sand W/Organics To 4' Below Grade To Medium Dense, Tan Fine Sand	2	6,7,3-10	18"			4
5								5
6								6
7		Medium Dense, Tan Fine Sand To 6.5' Below Grade To Loose, Tan Fine Sand & Pebbles To 8' Below Grade	3	6,3,4-7	4"			7
8								8
9		Medium Dense, Tan Fine Sand & Gravel To 12' Below Grade	4	4,5,6-11	18"			9
10						▼	Water Level Observations: 12' During Drilling & 10' At Completion	10
11								11
12								12
13								13
14		Wet, Medium Dense, Gray Silty Sand	5	8,7,8-15	18"			14
15							End Of Boring	15
16								16
17								17
18								18
19								19
20								20

Drilling Contractor: D & T Drilling
Drill Method: Hollow Stem Auger
Sampler Type: Split Spoon

Drop: 30"
Hammer Weight: 140 lbs.
Groundwater Depth: 12'/10'

EARTH EXPLORATION, Inc.

LOG OF TEST BORING

Project: **South Bend Street Conversion**
Location: **South Bend, Indiana**
Client: **American Structurepoint, Inc.**

2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: **B-1**
Elevation: **---**
Datum: **---**
EEI Proj. No. **2-15-041**
Sheet: **1** of **1**

Proj. No.:	115-019 ---	Station	719+00	Weather:	Sunny	Driller:	C.N.
Struct. No.:	---	Offset:	17.5 Lt. "MAI"	Temp.:	48° F	Inspector:	---

SAMPLE					DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES						
No.	Type	Rec %	N Value	Depth ft		q_p tsf	q_u tsf	P_{200} %	W %	LL %	PL %	PI %
					PORTLAND CEMENT CONCRETE (pavement - 10-in.)							
SS-1	X	80	26					7.5				
					SP-SC, **CLAYEY SAND**, trace gravel, medium dense, moist, yellowish brown							
SS-2	X	80	12	5								
SS-3	X	80	2									
					SP, **FINE TO MEDIUM SAND**, trace gravel, very loose to loose, moist, yellowish brown							
SS-4	X	80	7	10				3.8				
SS-5	X	35	26		**SP**, **SAND**, some gravel, medium dense, moist, yellowish brown			5.2				
SS-6	X	65	22	15				3.8				
					End of Boring at 15 ft							

WATER LEVEL OBSERVATIONS

Depth ft	▽ While Drilling	▼ Upon Completion	▽ After Drilling
To Water	NW	NW	BF
To Cave-in		11	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

GENERAL NOTES

Start: **4/24/15** End: **4/24/15** Rig: **CME 75**
Drilling Method: **3¼" I.D. HSA** **Truck**
Remarks: **Backfilled with auger cuttings and a Portland cement concrete patch.**

EARTH EXPLORATION, INC.

LOG OF TEST BORING

Project: **South Bend Street Conversion**
Location: **South Bend, Indiana**
Client: **American Structurepoint, Inc.**

2204 Yankee Street - Niles, MI 49120
269-262-4320 / 269-262-4479 (Fax)

Boring No.: **B-2**
Elevation: **---**
Datum: **---**
EEI Proj. No. **2-15-041**
Sheet: **1** of **1**

Proj. No.:	115-019 ---	Station	720+72	Weather:	Sunny	Driller:	C.N.
Struct. No.:	---	Offset:	12 Rt. "MAI"	Temp.:	46° F	Inspector:	---

SAMPLE No.	Type	Rec %	N Value	Depth ft	DESCRIPTION/CLASSIFICATION and REMARKS	q_p tsf	q_u tsf	P_{200} %	W %	LL %	PL %	PI %
				0	**PORTLAND CEMENT CONCRETE** (pavement - 10-in.)							
SS-1		80	26		**SP-SC**, **SILTY FINE SAND**, trace gravel, medium dense, moist, yellowish brown							
SS-2		NR*	6									
				5								
SS-3		65	2		**SP**, **SAND**, loose to very loose, moist, yellowish brown							
SS-4		90	6									
				10	**SP**, **SAND**, trace gravel, loose, moist, yellowish brown							
SS-5		NR	2									
SS-6		65	3		**SP**, **FINE SAND**, some gravel, very loose, moist, yellowish brown							
				15	End of Boring at 15 ft							

* Drove sampler on large gravel or cobble.

WATER LEVEL OBSERVATIONS

Depth ft	▽ While Drilling	▼ Upon Completion	▽ After Drilling
To Water	NW	NW	BF
To Cave-in		11	

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.

GENERAL NOTES

Start: **4/24/15** End: **4/24/15** Rig: **CME 75**
Drilling Method: **3¼" I.D. HSA** **Truck**
Remarks: **Backfilled with auger cuttings and a Portland cement concrete patch.**

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

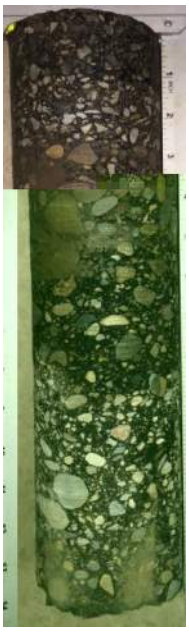
Core No.	Depth (in)	Description of Core	Photograph
C-1 Sta. 39+28 20 ft. Lt. RW-1	0 - 2	Asphaltic Concrete , 0 max. agg.)	
	2 - 4½	Asphaltic Concrete (natural aggregate, ½ max. agg.)	
	4½ 11¼	Asphaltic Concrete (natural aggregate, 1 max. agg.)	
C-2 Sta. 33+52 1 ft Rt. RW-1	0 - 2½	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	2½ 8¼	Asphaltic Concrete (natural aggregate, ½ max. agg.)	
	8¼ - 12¾	Asphaltic Concrete (natural aggregate, 1 max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION, INC.
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-3 Sta. 28+19 20 ft Lt. A	0 - 1½	Asphaltic Concrete (Limestone & slag agg.0 max. agg.)	
	1½ -	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
		Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	- 5¾	Asphaltic Concrete (natural 0 max. agg.)	
C-4 Sta.23+30 1 ft Rt. A	0 - 1½	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	1½ - 2¾	Asphaltic Concrete (limestone aggregate, max. agg.)	
	2¾ 5	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
	5 - 9	Asphaltic Concrete (natural aggregate, ½ max. agg.)	
	9 - 13¾	Asphaltic Concrete (natural aggregate, 1 max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-5 Sta. 18+00 20 ft Lt. A	0 - 1½	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	1½ - 2¾	Asphaltic Concrete (limestone aggregate, max. agg.)	
	2¾ 5¼	Asphaltic Concrete (natural aggregate, ½ max. agg.)	
	5¼ - 9	Asphaltic Concrete (natural aggregate, 1 max. agg.)	
	9 - 13½	Asphaltic Concrete (natural aggregate, ¾ max. agg.)	
C-6 Sta. 12+46 1 ft Rt. A	0 - 1½	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	1½ - 2¾	Asphaltic Concrete (limestone aggregate, max. agg.)	
	2¾ 5¾	Asphaltic Concrete (natural aggregate, 1 max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Core No.	Depth (in)	Description of Core	Photograph
C-7 Sta. 414+48 8 ft. Rt. MIC	0 - 1½	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	1½ -	Asphaltic Concrete (limestone aggregate, max. agg.)	
	4¼	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
	4¼ - 10¼	Portland Cement Concrete	
C-8 Sta. 170+48 8 ft Rt. WAS	0 - 2¼	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	2¼ - 6¾	Asphaltic Concrete (natural aggregate, ½ max. agg.)	
	6¾ 10	Asphaltic Concrete (limestone aggregate, 1 max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-9 Sta. 131+08 2 ft Rt. WAY	0 - 1¾	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	1¾ - 7¼	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	7¼ - 9	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
		Asphaltic Concrete (natural aggregate, ½ max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

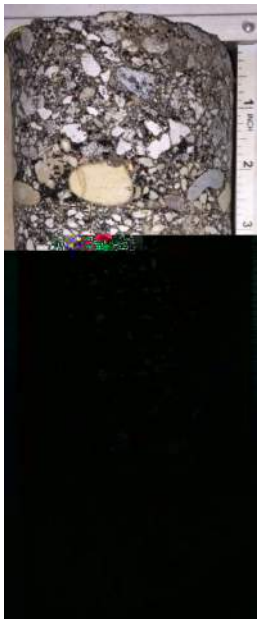
Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-11 Sta. 147+58 5 ft Lt. JEF	0 - 1½	Asphaltic Concrete (limestone aggregate, max. agg.)	
	1½ - 3¼	Asphaltic Concrete (natural aggregate, max. agg.)	
	3¼ 5¼	Asphaltic Concrete (limestone aggregate, max. agg.)	
	5¼ - 13	Portland Cement Concrete	
C-12 Sta. 107+60 11 ft Lt. WES	0 - 1¾	Asphaltic Concrete (limestone aggregate, max. agg.)	
	1¾ - 3	Asphaltic Concrete (natural aggregate, max. agg.)	
	6¾	Brick	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC.
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

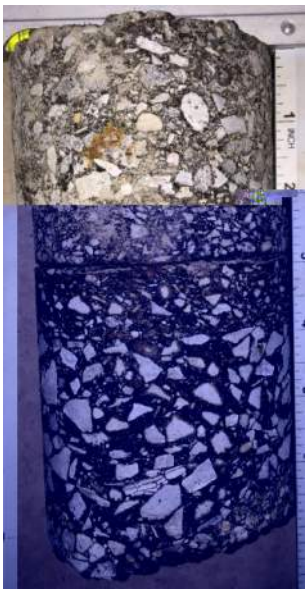
Core No.	Depth (in)	Description of Core	Photograph
C-13 Sta. 755+41 11 ft Lt. MAI	0 - ½	Asphaltic Concrete (natural aggregate)	
	½ - 2	Asphaltic Concrete (natural aggregate)	
	2 3	Asphaltic Concrete (limestone sand aggregate)	
	3 - 4¾	, 0 max. agg.)	
	4¾ -	Asphaltic Concrete (sand aggregate)	
	- 9¼	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
C-14 Sta. 750+16 11 ft Rt. MAI	0 - 2	Asphaltic Concrete (slag and limestone aggregate)	
	2 - 2¾	Asphaltic Concrete (natural aggregate)	
	2¾ 4	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	4 - 5	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	5 - 7½	Asphaltic Concrete (limestone aggregate, max. agg.)	
	7½ - 9	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-15 Sta. 745+18 0 ft Lt. MAI	0 - 1¾	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	1¾ - 5½	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
	5½ - 7	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	7 - 10½	Brick	
C-16 Sta. 740+20 11 ft Rt. MAI	0 - 2¼	, 0 max. agg.)	
	2¼ - 3¾	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	- 7	, 0 max. agg.)	

SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION INC
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-17 Sta. 735+55 11 ft Lt. MAI	0 - 1¾	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	1¾ 3	Asphaltic Concrete (limestone aggregate, ¼ max, agg.)	
	3 - , 0	max. agg.)	
	- 6¾	Asphaltic Concrete (sand aggregate)	
	6¾ - 7¾	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
	7¾ - 11¼	Brick	
C-18 Sta. 730+48 11 ft Rt. MAI	0 - 1	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	1 - 3½	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	3½ 5	Asphaltic Concrete (natural aggregate, max. agg.)	
	5 - 6½	Asphaltic Concrete (limestone aggregate, ½ max. agg.)	
	6½ - 10	Brick	

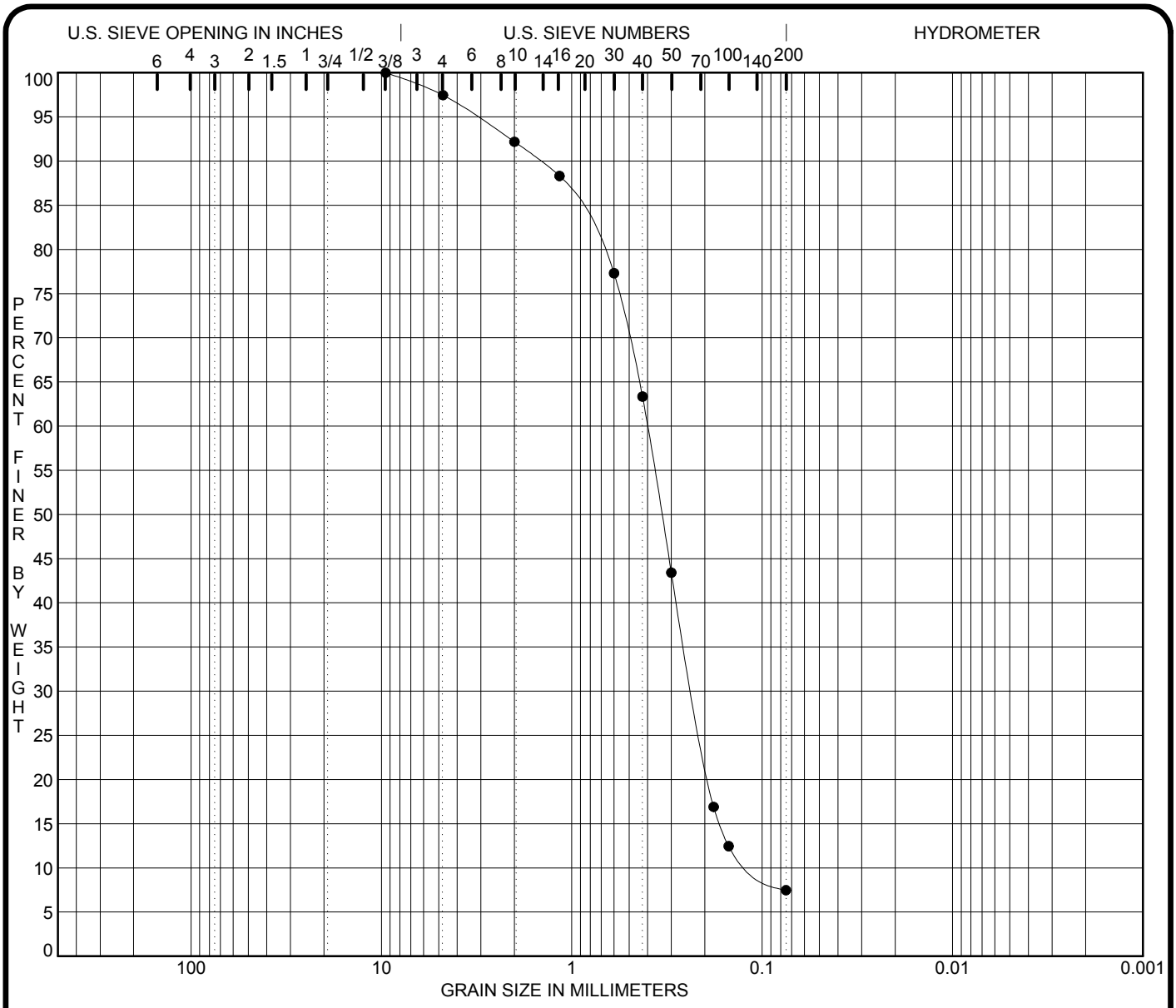
SUMMARY OF PAVEMENT CORE

EARTH EXPLORATION, INC.
2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Project: South Bend Street Conversion
Location: South Bend, Indiana
Client: American Structurepoint, Inc.
EEI Project No.: 2-15-041

Project 115-019

Core No.	Depth (in)	Description of Core	Photograph
C-19 Sta. 714+60 5 ft Lt. MAI	0 - 2¾	Asphaltic Concrete (limestone & slag agg., max. agg.)	
	3¾ 5½	Asphaltic Concrete (natural aggregate, ¾ max. agg.)	
	5½ - 6	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	6 7¼	Asphaltic Concrete (natural aggregate, max. agg.)	
	7¼ - 8½	Asphaltic Concrete (limestone aggregate, ¼ max. agg.)	
	8½ - 14¼	Asphaltic Concrete (natural aggregate, ½ max. agg.	



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample Identification		USCS Classification	MC%	LL	PL	PI	Cc	Cu
● B-1	SS-1	SP-SM, POORLY GRADED SAND with SILT		NP	NP	NP	1.26	3.8

% Gravel (>4.75mm)	% Sand (4.75 to .075mm)	% Silt (.075 to .005 mm)	% Clay (<.005mm)
2.5	90.0	7.5	

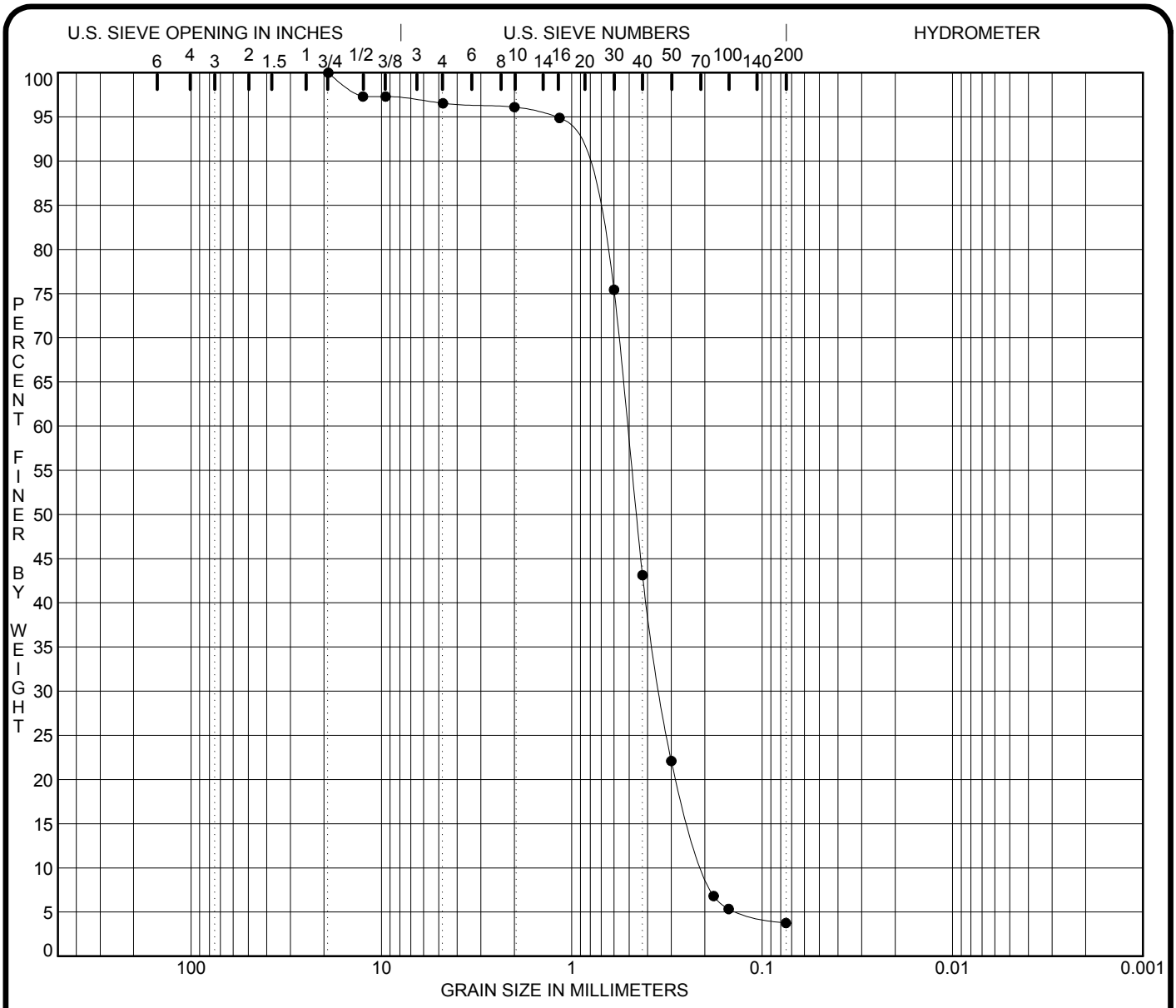
Grain Size (mm)	% Passing	Grain Size (mm)	% Passing	Grain Size (mm)	% Passing
25.0 [1-in.]		**2.36 [No. 8]**	93.2	**0**	
19.0 [3/4-in.]		**0.600 [No. 30]**	77.3	**0**	
12.5 [1/2-in.]		**0.150 [No. 100]**	12.5	**0**	
9.5 [3/8-in.]	100.0	**0.075 [No. 200]**	7.5	**0**	
4.75 [No. 4]	97.5	**0**			

EARTH EXPLORATION Inc

PROJECT: South Bend Street Conversion
LOCATION: South Bend, Indiana
CLIENT: American Structurepoint, Inc.
EEI PROJECT NO.: 2-15-041

Project 115-019
CLIENT ID NO.:
DATE: 4/27/2015

GRAIN SIZE DISTRIBUTION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample Identification	USCS Classification	MC%	LL	PL	PI	Cc	Cu
● B-1 SS-4	SP, POORLY GRADED SAND		NP	NP	NP	1.15	2.5

% Gravel (>4.75mm)	% Sand (4.75 to .075mm)	% Silt (.075 to .005 mm)	% Clay (<.005mm)
3.5	92.8	3.8	

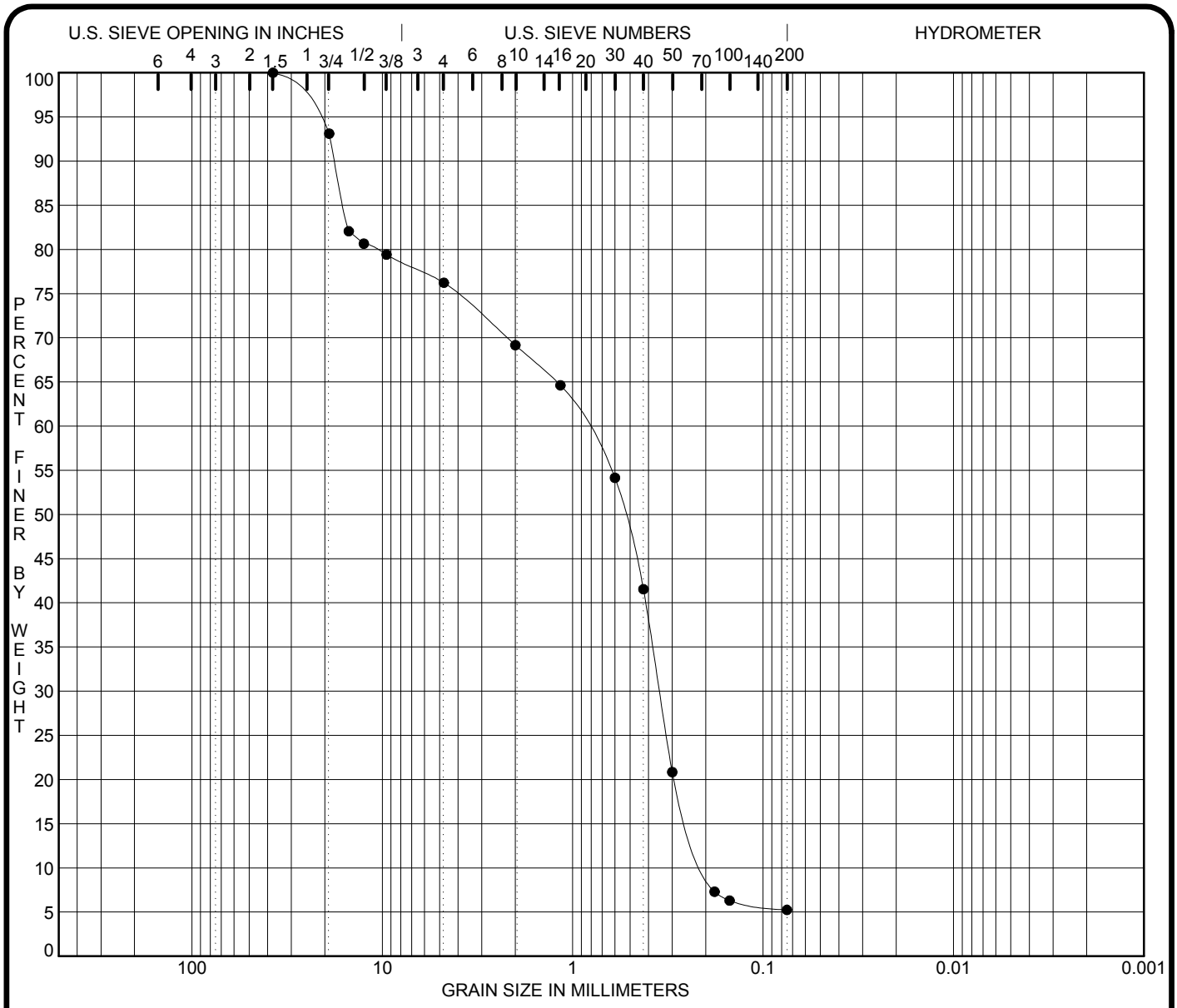
Grain Size (mm)	% Passing	Grain Size (mm)	% Passing	Grain Size (mm)	% Passing
25.0 [1-in.]		**2.36 [No. 8]**	96.2	**0**	
19.0 [3/4-in.]	100.0	**0.600 [No. 30]**	75.4	**0**	
12.5 [1/2-in.]	97.3	**0.150 [No. 100]**	5.3	**0**	
9.5 [3/8-in.]	97.3	**0.075 [No. 200]**	3.8	**0**	
4.75 [No. 4]	96.5	**0**			

EARTH EXPLORATION Inc

PROJECT: South Bend Street Conversion
LOCATION: South Bend, Indiana
CLIENT: American Structurepoint, Inc.
EEI PROJECT NO.: 2-15-041

Project 115-019
CLIENT ID NO.:
DATE: 4/27/2015

GRAIN SIZE DISTRIBUTION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample Identification		USCS Classification	MC%	LL	PL	PI	Cc	Cu
● B-1	SS-5	SP-SM, POORLY GRADED SAND with SILT and GRAVEL		NP	NP	NP	0.71	4.4

% Gravel (>4.75mm)	% Sand (4.75 to .075mm)	% Silt (.075 to .005 mm)	% Clay (<.005mm)
23.8	71.0	5.2	

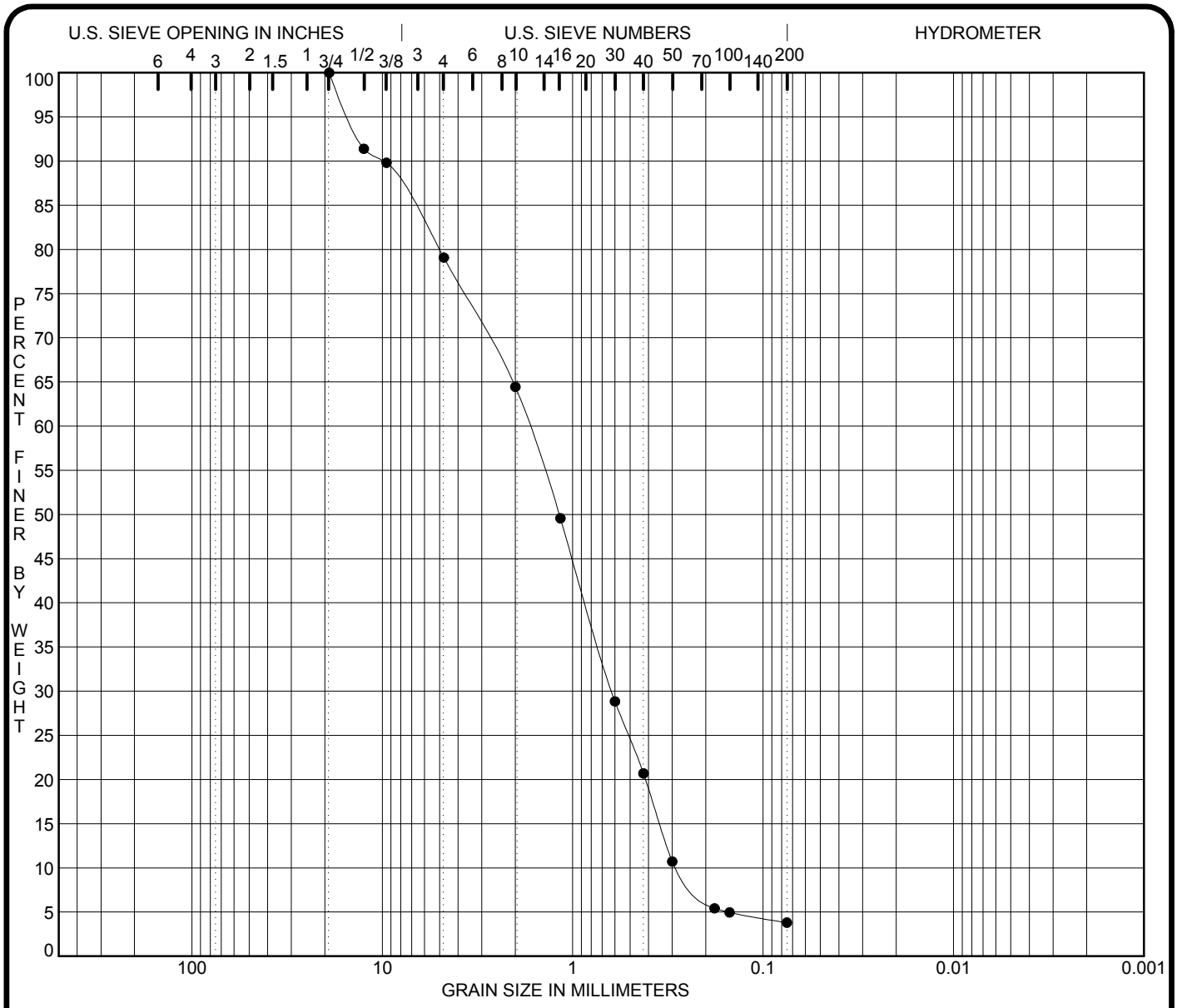
Grain Size (mm)	% Passing	Grain Size (mm)	% Passing	Grain Size (mm)	% Passing
25.0 [1-in.]	95.9	**2.36 [No. 8]**	70.5	**0**	
19.0 [3/4-in.]	93.1	**0.600 [No. 30]**	54.1	**0**	
12.5 [1/2-in.]	80.7	**0.150 [No. 100]**	6.3	**0**	
9.5 [3/8-in.]	79.4	**0.075 [No. 200]**	5.2	**0**	
4.75 [No. 4]	76.2	**0**			

EARTH EXPLORATION Inc

PROJECT: South Bend Street Conversion
LOCATION: South Bend, Indiana
CLIENT: American Structurepoint, Inc.
EEI PROJECT NO.: 2-15-041

Project 115-019
CLIENT ID NO.:
DATE: 4/27/2015

GRAIN SIZE DISTRIBUTION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample Identification		USCS Classification	MC%	LL	PL	PI	Cc	Cu
● B-1	SS-6	SP, POORLY GRADED SAND with GRAVEL		NP	NP	NP	0.81	6.1

% Gravel (>4.75mm)	% Sand (4.75 to .075mm)	% Silt (.075 to .005 mm)	% Clay (<.005mm)
20.9	75.3	3.8	

Grain Size (mm)	% Passing	Grain Size (mm)	% Passing	Grain Size (mm)	% Passing
25.0 [1-in.]		**2.36 [No. 8]**	67.2	**0**	
19.0 [3/4-in.]	100.0	**0.600 [No. 30]**	28.8	**0**	
12.5 [1/2-in.]	91.4	**0.150 [No. 100]**	5.0	**0**	
9.5 [3/8-in.]	89.8	**0.075 [No. 200]**	3.8	**0**	
4.75 [No. 4]	79.1	**0**			

EARTH EXPLORATION Inc

PROJECT: South Bend Street Conversion
LOCATION: South Bend, Indiana
CLIENT: American Structurepoint, Inc.
EEI PROJECT NO.: 2-15-041

Project 115-019
CLIENT ID NO.:
DATE: 4/27/2015

GRAIN SIZE DISTRIBUTION CURVE

Appendix G

Pre-Bid Meeting Minutes

AMERICAN STRUCTUREPOINT INC.

7260 Shadeland Station, Indianapolis, Indiana 46256
TEL 317.547.5580 FAX 317.543.0270

www.structurepoint.com

PRE-BID
MEETING MINUTES

Location:	Office of Board of Public Works, City-County Building, 13th Floor, 227 West Jefferson Blvd, South Bend, Indiana 46601
Date:	January 19, 2016
Project Name:	South Bend One-Way to Two-Way Street Conversion
Project No.:	116-001
Owner:	City of South Bend
Attendees:	(See attached attendee list)
Minutes By:	Ryan Huebschman & Patrick Wooden, American Structurepoint

The following notes reflect our understanding of the discussions and decisions made at this meeting.
If you have any questions, additions, or comments, please contact the issuer of these minutes.

ITEMS DISCUSSED:
The meeting began at 11:00am local time. The following is a summary of items discussed.

1. This project was designed by the following consultant firms:
    a. American Structurepoint, Inc.
    b. Lawson Fisher & Associates
    c. Jones Petrie Rafinski
2. The City called the bidder's attention to the DBE requirements for this project as indicated in the contract documents.
3. Plans are available for purchase at ARC Document Solutions (1303 Northside Blvd). Concern was raised by attendees over the delay by ARC in providing prints.
4. American Structurepoint is the lead design consultant. All questions shall be directed to American Structurepoint (southbend@structurepoint.com). These questions will be shared with the City and other consultants as appropriate with responses provided in a timely manner.
5. PDFs of the plan sets will be made available to all potential bidders.
6. A project overview was provided & described to attendees, including a map depicting the limits of Divisions A & B as well as the limits of each of the plan sets within in each division. The project map is attached to these meeting minutes.
7. Addendum 1 to the contract documents will be issued in the next few days. This addendum includes the following items:
    a. The addition of milling and resurfacing from Park Avenue to Angela Street
    b. The addition of milling and resurfacing from Chippewa Avenue to Ewing Avenue

c. Additional spot elevations and various miscellaneous detail revisions

d. Modifications to the special provisions.

8. A future Addendum to the contract documents will be issued prior to the bid, including revisions to the pay item list and additional plan details.

9. The contractor's attention was directed to the following items:

   a. A major utility pole located near Chippewa Avenue is being relocated to accommodate this project. Relocation is expected to occur in February and March of 2016.

   b. I&M is installing new circuits along Main Street within the limits of Division B. This work is focused on the west side of Main Street and is expected to be finished prior to the completion of Phase 1 of the Maintenance of Traffic plan.

   c. I&M will be performing major work on its circuits in the vicinity of the proposed Marion Street roundabout. This work will begin as soon as weather allows.

   d. Road closures are to be utilized for construction of the roundabouts in Divisions A and B. These closures have start and end dates that are defined in the special provisions.

   e. Operations of the Xavier School (located between Main and Michigan Streets in Division A) restrict maintenance of traffic in this area as detailed in the special provisions.

   f. This project includes new drainage pipes and structures between the proposed Bartlett Street roundabout and the river.

   g. Landscaping is included in the Bartlett Street and Marion Street roundabouts

   h. Significant coordination efforts will be needed due to utility impact and various private development projects that will be under construction in 2016.

   i. Utility coordination is on-going.

10. Public questions and comments from attendees included the following. Responses are included as noted:

    a. Concern was raised regarding the bid opening date being approximately three weeks from the pre-bid meeting, and especially with the delay in receiving contract bid plans and documents.

    In response to this concern, the City has moved the bid opening date to 2/18/2016. A re-advertisement of the project will be issued on 1/22/2016 and again on 1/29/2016.

    b. A request was made for pay item list revisions as quickly as possible, in order to produce accurate bid documents for submission.

    Addendum No. 1 will be modified to include revised quantities. Future addendums will also include modified quantities as necessary.

    c. Requests were made for electronic versions of the pay item file.

    Bidders should coordinate directly with American Structurepoint for an electronic version (Excel) of the pay item list. Lists will be provided only for Bidders benefit; use of electronic files will be at sole risk of bidder and at no risk to either City or design consultants

    d. Multiple requests were made for electronic (PDF) copies of the bid documents. ARC Document Solutions has stated to the Bidders that City release / approval is needed to supply this.

    The City will coordinate with ARC for the release of electronic copies.

    e. How much coordination with INDOT is required on this project?

This project is to be constructed under INDOT permit. The City will handle all coordination with INDOT.

f. Who will provide construction inspection services?

The City will provide construction inspection services.

g. The specifications call for a $5,000 sprinkler allowance with any additional costs being covered by the contractor. This work is not clearly defined in the plans or specs.

The City to review and address in a forthcoming addendum.

h. 2,100 square yards of irrigation repair is included in the pay item list. The location of this work is not clear and the unit of measurement is not the typical unit expected for this type of work

This work is to occur in the vicinity of Memorial Hospital. The unit of measurement will be addressed in a forthcoming addendum.

i. Clarification is needed regarding the type and location of the four (4) webcams listed in the special provisions.

Clarification will be provided in a forthcoming addendum.

j. Railroad coordination is included in this project. Will the $20,000 force account required by the railroad be paid by the City?

The City will pay the $20,000 force account listed in the contract documents. The City will provide flagmen as needed to satisfy the requirements of the railroad. The Contractor must provide insurance as specified in the contract documents.

k. Per the compacted aggregate specification, no local slag or aggregates are allowed. Is this accurate?

The City to review and if necessary address in a forthcoming addendum.

l. Are additional geotechnical reports available?

All available geotechnical reports and coring logs will be provided to Bidders via addendum.

11. The meeting concluded at 11:40am local time.

cc: Attendees

Enclosures: Attendee List
Project Overview Map

Very truly yours,
American Structurepoint, Inc.

Patrick Wooden
Project Manager

CRH:pkw

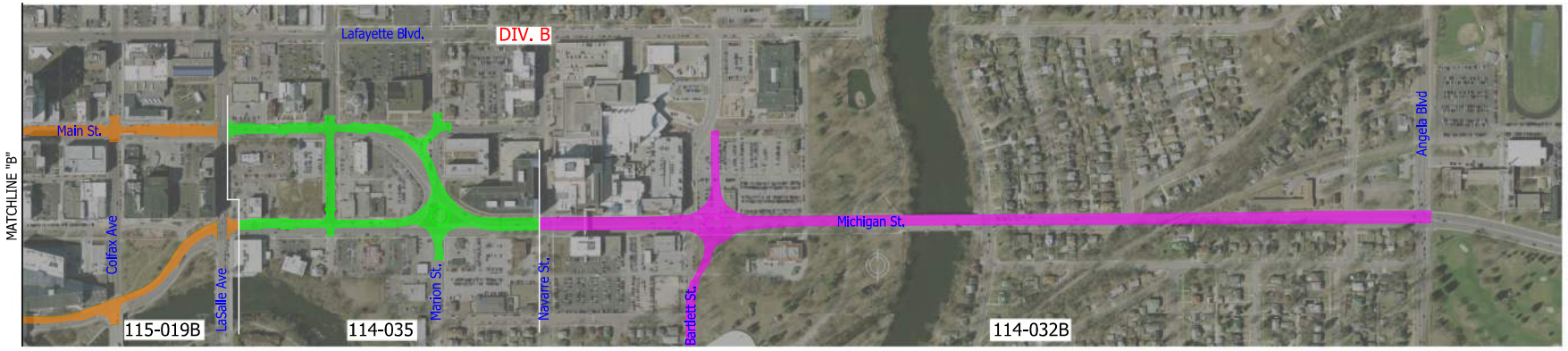
Pre Bid Meeting Attendees

Contractors

Name	Company	Email
Al McAuliffe	D2 Land & Water	amcauliffe@d2lwr.com
Bob Kuhns	Selge Construction Co, Inc.	bkuhns@selgeconstruction.com
Nick Relias	Walsh & Kelly	nick@walshkelly.com
Lynn Bauer	Walsh & Kelly	lynnb@walshkelly.com
Scott Kirkparick	Rieth-Riley	skirkpatrick@rieth-riley.com
Tanner Leibovitz	Pemberton Davis	tleibovitz@pembertondavis.com
Matt Cain	HRP Construction	mattc@hrpconstruction.com
Rob Nichols	Reith-Riley	rnichols@rieth-riley.com
Murray Miller	LIUNA Local 645	millsbi@aol.com

Smart Streets Team

Name	Company	Email
Eric Horvath	City of South Bend	ehorvath@southbendin.gov
Corbitt Kerr	City of South Bend	pckerr@southbendin.gov
Roger Nawrot	City of South Bend	rnawrto@southbendin.gov
Jatin Kain	City of South Bend	jkain@southbendin.gov
Toy Villa	City of South Bend	tvilla@southbendin.gov
Chriss Dressel	City of South Bend	cdressel@southbendin.gov
Michael Divita	City of South Bend	mdivita@southbendin.gov
Josh Ehmer	City of South Bend	jehmer@southbendin.gov
Rich Zielinski	American Structurepoint	rzielinski@structurepoint.com
Patrick Wooden	American Structurepoint	pwooden@structurepoint.com
Ryan Huebschman	American Structurepoint	rhuebschman@structurepoint.com
Chris Chockley	Jones Petrie Rafinski	cchockley@jpr1source.com
Mark Wilson	Jones Petrie Rafinski	mwilson@jpr1source.com
Michael Guzik	Lawson Fisher	mguzik@lawson-fisher.com
Ben Holden	Lawson Fisher	bholden@lawson-fisher.com
Vance Epple	Beam, Longest & Neff	vepple@b-l-n.com
Bill Curtis	United Consulting	bill.curtis@ucindy.com



PROJECT OVERVIEW

AMERICAN STRUCTUREPOINT INC.

SOUTH BEND
ONE-WAY TO TWO-WAY STREET CONVERSION
PROJECT 116-001

Legend
- 116-001 Div A - Part 1 of 2 - 114-045 Chippewa Roundabout
- 116-001 Div A - Part 2 of 2 - 115-019A Chippewa to Ewing
- 116-001 Div B - Part 1 of 3 - 115-019B Ewing to LaSalle
- 116-001 Div B - Part 3 of 3 - 114-035 Marion Roundabout
- 116-001 Div B - Part 2 of 3 - 114-032B Bartlett Roundabout

DES. NO.:	
PREPARED BY: JRG	
DATE: 1/19/2016	
CHECKED BY:	
DATE:	
JOB NO.: 116-001	

SCALE: 1" = 800'

SHEET NO.: 1 OF: 1

Appendix H

Summary of Project Quantities

Item No	Description	LFA- Chippewa Quantity 114-045	ASI/VS Quantity 115-019 (DIV. A)	Quantity TOTAL	Unit
1	CONSTRUCTION ENGINEERING	1	1	**1**	**LS**
2	CPM SCHEDULE	1	0	**1**	**LS**
3	CMP SCHEDULE, MONTHLY UPDATE	8	0	**8**	**EACH**
4	MOBILIZATION AND DEMOBILIZATION	1	1	**1**	**LS**
5	VIDEO RECORD	1	0	**1**	**LS**
6	UTILITY ALLOWANCE	10,000	0	**10,000**	**DOL**
7	<Pay Item Deleted>	0	0	**0**	**DOL**
8	UNDISTRIBUTED ALLOWANCE	35,000	0	**35,000**	**DOL**
9	CLEARING RIGHT OF WAY	1	1	**1**	**LS**
10	TESTING FOR ASBESTOS	2	0	**2**	**EACH**
11	PAVEMENT REMOVAL	8,396	0	**8,396**	**SYS**
12	CURB, CONCRETE, REMOVE	0	226	**226**	**LFT**
13	HOUSES AND BUILDINGS, REMOVE, PARCEL NO 13	1	0	**1**	**LS**
14	HOUSES AND BUILDINGS, REMOVE, PARCEL NO 14	1	0	**1**	**LS**
15	SIDEWALK, CONCRETE, REMOVE	1,331	127	**1,458**	**SYS**
16	INLET, REMOVE	11	0	**11**	**EACH**
17	MANHOLE, REMOVE	1	0	**1**	**EACH**
18	<Pay Item Deleted>	0	0	**0**	**EACH**
19	EXCAVATION, COMMON	2,000	0	**2,000**	**CYS**
20	BORROW	1,800	0	**1,800**	**CYS**
21	DEWATERING AND PROTECTION OF EXISTING STRUCTURES	1	0	**1**	**LS**
22	TEMPORARY INLET PROTECTION	52	15	**67**	**EACH**
23	TEMPORARY SILT FENCE	2,244	0	**2,244**	**LFT**
24	NO 2 STONE	100	0	**100**	**TON**
25	SUBGRADE TREATMENT, TYPE I	8,504	0	**8,504**	**SYS**
26	SUBGRADE TREATMENT, TYPE II	542	0	**542**	**SYS**
27	SUBGRADE TREATMENT, TYPE III	227	0	**227**	**SYS**
28	SUBGRADE TREATMENT, TYPE IC	401	0	**401**	**SYS**
29	STRUCTURAL BACKFILL, TYPE 2	552	0	**552**	**CYS**
30	COMPACTED AGGREGATE, NO. 53, BASE	1,209	0	**1,209**	**TON**
31	SUBBASE FOR PCCP	1,376	0	**1,376**	**CYS**
32	WIDENING WITH HMA, TYPE D	0	31	**31**	**TON**
33	MILLING, ASPHALT, 1 1/2 IN	1,768	53,595	**55,363**	**SYS**
34	MILLING, PROFILE	2,355	0	**2,355**	**SYS**
35	QC/QA-HMA, 3, 70, SURFACE, 9.5 mm	538	0	**538**	**TON**
36	QC/QA-HMA, 3, 70, INTERMEDIATE, 19.0 mm	634	0	**634**	**TON**
37	QC/QA-HMA, 3, 64, BASE, 25.0 mm	1,065	0	**1,065**	**TON**
38	JOINT ADHESIVE, SURFACE	3,482	0	**3,482**	**LFT**
39	JOINT ADHESIVE, INTERMEDIATE	2,252	0	**2,252**	**LFT**
40	LIQUID ASPHALT SEALANT	3,482	0	**3,482**	**LFT**
41	ASPHALT FOR TACK COAT	4	0	**4**	**TON**
42	QC/QA-PCCP, 10 IN	4,532	0	**4,532**	**SYS**
43	CORING, PCCP	1	0	**1**	**LS**
44	PCCP, 10 IN , DECORATIVE	438	0	**438**	**SYS**
45	PCCP, 6 IN	401	0	**401**	**SYS**
46	PCCP, COLORED, 6 IN	200	0	**200**	**SYS**
47	6" PCCP BANDING	35	0	**35**	**LFT**
48	D-1 CONTRACTION JOINT	3,376	0	**3,376**	**LFT**

Item No	Description	LFA- Chippewa Quantity 114-045	ASI/VS Quantity 115-019 (DIV. A)	Quantity TOTAL	Unit
49	SLEEPER SLAB	485	0	**485**	**LFT**
50	<Pay Item Deleted>	0	0	**0**	**LFT**
51	DECORATIVE PICKET FENCE	72	0	**72**	**LFT**
52	HMA FOR SIDEWALK	41	0	**41**	**TON**
53	SIDEWALK, CONCRETE, 4"	1,071	23	**1,094**	**SYS**
54	CURB RAMP, CONCRETE, A	0	20	**20**	**SYS**
55	CURB RAMP, CONCRETE, C	52	20	**72**	**SYS**
56	CURB RAMP, CONCRETE, D	0	8	**8**	**SYS**
57	CURB RAMP, CONCRETE, G	9	0	**9**	**SYS**
58	CURB RAMP, CONCRETE, L	27	0	**27**	**SYS**
59	CURB, CONCRETE	1,443	226	**1,669**	**LFT**
60	CURB AND GUTTER, COMBINED	923	0	**923**	**LFT**
61	CENTER CURB, D, CONCRETE	22	0	**22**	**SYS**
62	PCCP FOR APPROACHES, 6 IN	33	0	**33**	**SYS**
63	PCCP FOR APPROACHES, 9 IN	509	0	**509**	**SYS**
64	MAILBOX ASSEMBLY, SINGLE	6	0	**6**	**EACH**
65	BENCH MARK POST, RESET	1	0	**1**	**EACH**
66	INSPECTION HOLE	10	0	**10**	**EACH**
67	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	4	0	**4**	**EACH**
68	FERTILIZER	1	0	**1**	**TON**
69	<Pay Item Deleted>	0	0	**0**	**kGAL**
70	SODDING, NURSERY AND TOPSOIL	4,513	72	**4,585**	**SYS**
71	BRICK PAVERS	445	0	**445**	**SYS**
72	IRRIGATION, TREE WATERING SYSTEM	23	0	**23**	**EACH**
73	OVERSTORY TREE, 2" CALIPER	23	0	**23**	**EACH**
74	ORNAMENTAL TREE, 2", CALIPER	6	0	**6**	**EACH**
75	PERENNIAL, NO. 1 CONTAINER	266	0	**266**	**EACH**
76	ORNAMENTAL GRASS, NO. 1 CONTAINER	67	0	**67**	**EACH**
77	SHRUB, NO.3 CONTAINER	171	0	**171**	**EACH**
78	GROUNDCOVER, PLUG	1,670	0	**1,670**	**EACH**
79	SHREDDED HARDWOOD MULCH	35	0	**35**	**CYD**
80	LANDSCAPE EDGING	105	0	**105**	**LFT**
81	GATOR WATERING BAG	23	0	**23**	**EACH**
82	IRRIGATION, LANDSCAPE	4,645	0	**4,645**	**SFT**
83	REINFORCING STEEL	1	0	**1**	**TON**
84	MODULAR FACE BRICK	1,425	0	**1,425**	**SFT**
85	UPPER RETAINING WALLS	75	0	**75**	**LFT**
86	LOWER RETAINING WALLS	110	0	**110**	**LFT**
87	CONCRETE COLUMNS	60	0	**60**	**CYS**
88	CONCRETE MONUMENT FOOTING	17	0	**17**	**CYS**
89	4" MONUMENT RING CONCRETE	20	0	**20**	**SYS**
90	24" WIDE PRECAST CONCRETE WALL CAP	182	0	**182**	**LFT**
91	56" SQ PRECAST CONCRETE CAP	4	0	**4**	**EACH**
92	68" SQ PRECAST CONCRETE CAP	4	0	**4**	**EACH**
93	PRECAST CONCRETE PLANTER	4	0	**4**	**EACH**
94	METER PIT	1	0	**1**	**LS**
95	ADJUST WATER SERVICE LINE, RESIDENTIAL	2	0	**2**	**EACH**
96	TAP, WATER SERVICE, 1-INCH (CITY TAP FEE)	2	0	**2**	**EACH**

Item No	Description	LFA- Chippewa Quantity 114-045	ASI/VS Quantity 115-019 (DIV. A)	Quantity TOTAL	Unit
97	CAP EXISTING WATER SERVICE LINE	2	0	**2**	**EACH**
98	PIPE, TYPE 2 CIRCULAR 12 IN (WATER MAIN GRADE)	103	0	**103**	**LFT**
99	PIPE, TYPE 2 CIRCULAR 15 IN (WATER MAIN GRADE)	188	0	**188**	**LFT**
100	PIPE, TYPE 2 CIRCULAR 18 IN (WATER MAIN GRADE)	37	0	**37**	**LFT**
101	PIPE, TYPE 2 CIRCULAR 12 IN	629	0	**629**	**LFT**
102	PIPE, TYPE 2 CIRCULAR 15 IN	356	0	**356**	**LFT**
103	PIPE, TYPE 2 CIRCULAR 18 IN	176	0	**176**	**LFT**
104	HMA FOR STRUCTURE INSTALLATION, TYPE A	57	0	**57**	**TON**
105	PIPE, PLUG EXISTING	4	0	**4**	**EACH**
106	DRYWELL	3	0	**3**	**EACH**
107	CASTING, ADJUST TO GRADE , MANHOLE	9	0	**9**	**EACH**
108	CASTING, ADJUST TO GRADE, INLET	3	0	**3**	**EACH**
109	CASTING, NEENAH R-1801-G, FURNISH AND ADJUST TO GRADE	2	0	**2**	**EACH**
110	CASTING, NEENAH R-3457-C2, FURNISH AND ADJUST TO GRADE	5	0	**5**	**EACH**
111	INLET, R13	3	0	**3**	**EACH**
112	PIPE CATCH BASIN, 24 IN	3	0	**3**	**EACH**
113	STRUCTURE, MANHOLE, RECONSTRUCTED	5	0	**5**	**LFT**
114	STRUCTURE, INLET, RECONSTRUCTED	3	0	**3**	**LFT**
115	INLET, B15	11	0	**11**	**EACH**
116	INLET, C15	19	0	**19**	**EACH**
117	CONSTRUCTION SIGN, C	4	1	**5**	**EACH**
118	CONSTRUCTION SIGN, BUSINESS SERVICE, TYPE C	4	0	**4**	**EACH**
119	TEMPORARY PAVEMENT MARKING, 4 IN	20,060	3,210	**23,270**	**LFT**
120	TEMPORARY PAVEMENT MARKING, REMOVABLE, 4 IN	0	3,210	**3,210**	**LFT**
121	TEMPORARY PAVEMENT MESSAGE MARKING, REMOVABLE, LANE INDICATION ARROW	2	4	**6**	**EACH**
122	CONSTRUCTION SIGN, A	28	50	**78**	**EACH**
123	CONSTRUCTION SIGN, B	12	2	**14**	**EACH**
124	MAINTAINING TRAFFIC	1	1	**1**	**LS**
125	BARRICADE, III-B	0	48	**48**	**LFT**
126	SIGNAL HEAD, RELOCATE	2	7	**9**	**EACH**
127	SIGN POST, SQUARE, TYPE 1, UNREINFORCED ANCHOR BASE	390	256	**646**	**LFT**
128	SIGN POST, SQUARE, TYPE 2, UNREINFORCED ANCHOR BASE	72	0	**72**	**LFT**
129	SIGN, SHEET ASSEMBLY, RELOCATE	0	19	**19**	**EACH**
130	CABLE SPAN SIGN STRUCTURE FOUNDATION, IV	2	0	**2**	**EACH**
131	SIGN, SHEET, WITH LEGEND 0.080"	106	152	**258**	**SFT**
132	SIGN, SHEET, WITH LEGEND 0.100 IN	281	72	**353**	**SFT**
133	SIGN, SHEET, WITH LEGEND 0.125 IN THICKNESS	77	0	**77**	**SFT**
134	SIGN STRUCTURE, SALVAGE	2	0	**2**	**EACH**
135	OVERHEAD SIGN STRUCTURE, MONOTUBE, REMOVE	1	0	**1**	**EACH**
136	OVERHEAD SIGN STRUCTURE, CABLESPAN	1	0	**1**	**EACH**
137	ILUMINATED WALL LETTERING	1	0	**1**	**LS**
138	TESCO CABINET W/DUAL SERVICE, FOUNDATION, WIRING & ETC	1	0	**1**	**EACH**
139	TRAFFIC SIGNAL EQUIPMENT, REMOVE	2	2	**4**	**EACH**
140	TESCO CABINET W/SINGLE SERVICE, FOUNDATION, WIRING & ETC	0	3	**3**	**EACH**
141	SIGNAL POLE FOUNDATION, 36 IN X 144 IN	4	0	**4**	**EACH**
142	HANDHOLE, SIGNAL, TYPE 1	0	12	**12**	**EACH**
143	SIGNAL HANDHOLE ADJUST TO GRADE	4	0	**4**	**EACH**
144	CONDUIT, HDPE, SCHEDULE 80, 2 IN	0	823	**823**	**LFT**

Item No	Description	LFA- Chippewa Quantity 114-045	ASI/VS Quantity 115-019 (DIV. A)	Quantity TOTAL	Unit
145	PEDESTRIAN SIGNAL HEAD, 12 IN., RELOCATE	0	3	**3**	**EACH**
146	PEDESTRIAN SIGNAL HEAD WITH INTERNATIONAL SYMBOLS, 12 IN, COUNTDOWN	8	0	**8**	**EACH**
147	SIGNAL PEDESTAL FOUNDATION, A	0	4	**4**	**EACH**
148	PVC SCHEDULE 80 CONDUIT, 3/4"	475	0	**475**	**LFT**
149	SIGNAL POLE, PEDESTAL, 12FT	0	1	**1**	**EACH**
150	<Pay Item Deleted>	0	0	**0**	**EACH**
151	<Pay Item Deleted>	0	0	**0**	**EACH**
152	<Pay Item Deleted>	0	0	**0**	**EACH**
153	SIGNAL CANTILEVER STRUCTURE, SINGLE TRUSS ARM 25 FT.	0	1	**1**	**EACH**
154	SIGNAL CANTILEVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE A	0	3	**3**	**EACH**
155	THERMAL DETECTION CAMERA	0	6	**6**	**EACH**
156	THERMAL DETECTION SYSTEM	0	3	**3**	**LS**
157	TRAFFIC SIGNAL HEAD, 3 SECTION, 12 IN	7	0	**7**	**EACH**
158	TRAFFIC SIGNAL HEAD, 5 SECTION, 12 IN	1	0	**1**	**EACH**
159	SPAN, CATENARY, AND TETHER	4	0	**4**	**EACH**
160	DISCONNECT HANGER	4	0	**4**	**EACH**
161	SIGNAL CABLE, ROADWAY LOOP, COPPER 1C/14GA	480	0	**480**	**LFT**
162	SIGNAL CABLE, CONTROL, COPPER 5C/14GA	869	3,234	**4,103**	**LFT**
163	<Pay Item Deleted>	0	0	**0**	**LFT**
164	SIGNAL CABLE, CONTROL, COPPER 7C/14GA	573	469	**1,042**	**LFT**
165	SIGNAL CABLE, DETECTOR LEAD-IN COPPER 2C/16GA	164	0	**164**	**LFT**
166	SIGNAL DETECTOR HOUSING	1	0	**1**	**EACH**
167	SAW CUT FOR ROADWAY LOOP AND SEALANT	160	0	**160**	**LFT**
168	SIGNAL STRAIN POLE, STEEL, 30 FT	4	0	**4**	**EACH**
169	HANDHOLE, LIGHTING	2	0	**2**	**EACH**
170	LIGHTING FOUNDATION	18	0	**18**	**EACH**
171	STREET LIGHT	20	0	**20**	**EACH**
172	PEDESTRIAN LIGHT	2	0	**2**	**EACH**
173	WIRE NO. 4	3,130	0	**3,130**	**LFT**
174	TRAFFIC SIGNAL CABLE, FIBER OPTIC, SINGLE-MODE	5,990	0	**5,990**	**LFT**
175	TRAFFIC SIGNAL CABLE, FIBER OPTIC, MULTI-MODE	1,540	0	**1,540**	**LFT**
176	CONDUIT, PVC, 2 IN, SCHEDULE 80	8,471	0	**8,471**	**LFT**
177	NEW PANEL AND LIGHTING CONTACTOR	1	0	**1**	**EACH**
178	LANDSCAPE LIGHTS, LED, TYPE 'F', NEW	21	0	**21**	**EACH**
179	LANDSCAPE LIGHTS, LED, TYPE 'G', NEW	4	0	**4**	**EACH**
180	NO. 3 WIRE	320	0	**320**	**LFT**
181	NO. 8 WIRE	160	0	**160**	**LFT**
182	WIRE NO. 10	3,900	0	**3,900**	**LFT**
183	NO. 12 WIRE	225	0	**225**	**LFT**
184	HANDHOLE, TRAFFIC	20	0	**20**	**EACH**
185	CABLE-DUCT MARKER	4	0	**4**	**EACH**
186	CONSTRUCTION LIGHTING	200	0	**200**	**DAY**
187	LINE, THERMOPLASTIC, BROKEN, WHITE, 4 IN	168	0	**168**	**LFT**
188	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	540	3,148	**3,688**	**LFT**
189	LINE, REMOVE	0	4,945	**4,945**	**LFT**
190	LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN	47	0	**47**	**LFT**
191	LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN	1,612	0	**1,612**	**LFT**
192	<Pay Item Deleted>	0	0	**0**	**LFT**

Item No	Description	LFA- Chippewa Quantity 114-045	ASI/VS Quantity 115-019 (DIV. A)	Quantity TOTAL	Unit
193	LINE, MULTI-COMPONENT, SOLID, YELLOW, 4 IN	1,684	0	**1,684**	**LFT**
194	<Pay Item Deleted>	0	0	**0**	**LFT**
195	<Pay Item Deleted>	0	0	**0**	**LFT**
196	<Pay Item Deleted>	0	0	**0**	**LFT**
197	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK	0	1,820	**1,820**	**LFT**
198	PAVEMENT MESSAGE MARKINGS, MULTI-COMPONENT, LANE INDICATION ARROW	4	0	**4**	**EACH**
199	<Pay Item Deleted>	0	0	**0**	**EACH**
200	TRANSVERSE MARKINGS, MULTI-COMPONENT, CROSSWALK, WHITE, 24 IN.	234	0	**234**	**LFT**
201	TRANSVERSE MARKING, MULTI-COMPONENT, SOILD, YELLOW, CROSSHATCH, 8 IN.	206	0	**206**	**LFT**
202	PAVEMENT MESSAGE MARKINGS, THERMOPLASTIC, BIKE SYMBOL	0	27	**27**	**EACH**
203	TRANSVERSE MARKINGS, MULTI-COMPONENT , YIELD LINE CHEVRON	90	0	**90**	**LFT**
204	LINE, MULTI-COMPONENT, DOTTED, WHITE, 4 IN.	43	0	**43**	**LFT**
205	LINE, THERMOPLASTIC, DOTTED, WHITE, 4 IN.	25	0	**25**	**LFT**
206	LINE, THERMOPLASTIC, SOLID, WHITE, 6 IN	480	50	**530**	**LFT**
207	LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN	287	4,414	**4,701**	**LFT**
208	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN	3,106	17,862	**20,968**	**LFT**
209	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 8"	94	0	**94**	**LFT**
210	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, 24 IN	106	197	**303**	**LFT**
211	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, LANE INDICATION ARROW	11	66	**77**	**EACH**
212	FIBER OPTIC, CITY PARK RECONNECTION	1	0	**1**	**LS**
213	NATIONAL GEODETIC SURVEY MONUMENT, REESTABLISH	1	0	**1**	**LS**
214	8" STANDARD CURB, CONCRETE	545	0	**545**	**LFT**
215	CURB RAMP, CONCRETE, B	0	59	**59**	**SYS**
216	FIRE HYDRANT ASSEMBLY	1	0	**1**	**EACH**
217	TEMPORARY TRANSVERSE PAVEMENT MARKING, REMOVABLE, STOP LINE, 24"	136	0	**136**	**LFT**
218	DETOUR ROUTE MARKER ASSMEBLY	19	0	**19**	**EACH**
219	FLASHING ARROW SIGN	540	0	**540**	**DAY**
220	PORTABLE CHANGEABLE MESSAGE SIGN	1,080	0	**1,080**	**DAY**
221	SIGNAL HEAD, COVER	8	0	**8**	**EACH**
222	SIGNAL HEAD, TEMPORARY	4	0	**4**	**EACH**
223	SOLAR POWERED FLASHING BEACON ASSEMBLY, RELOCATE	0	2	**2**	**EACH**
224	MISCELLANEOUS EQUIPMENT FOR LIGHTING	1	0	**1**	**LS**
225	PIPE, REMOVE EXISTING STORM SEWER	404	0	**404**	**LFT**
226	PCCP, 5 IN.	33	0	**33**	**SYS**
227	QC/QA-HMA, 4, 76, SURFACE, 9.5 mm	0	4,423	**4,423**	**TON**
228	CURB RAMP, CONCRETE, F	0	8	**8**	**SYS**
229	PEDESTRIAN PUSH BUTTON, NON-APS	0	24	**24**	**EACH**
230	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, SHARE THE ROAD	0	27	**27**	**EACH**
231	TRAFFIC SIGNAL HEAD, 3-SECTION, RELOCATE	0	7	**7**	**EACH**
232	SIGNAL POLE, PEDESTAL, 4 FT.	0	3	**3**	**EACH**
233	SEWER LATERAL, PRIVATE BUILDING, REINSTATEMENT	2	0	**2**	**EACH**
234	SIGNAL CANTILEVER STRUCTURE, RELOCATE	0	2	**2**	**EACH**
235	CONNECT TO EXISTING STRUCTURE	11	0	**11**	**EACH**
236	LINE, THERMOPLASTIC, DOTTED, WHITE, 6 IN.	0	169	**169**	**LFT**
237	PAINTING TRAFFIC SIGNALS	0	4	**4**	**EACH**

Item No	Description	ASI / VS Quantity 115-019 (Div. B)	LFA - Marion Quantity 114-035	JPR - Bartlett Quantity 114-032B	Quantity TOTAL	Unit
1	CONSTRUCTION ENGINEERING	1	1	1	**1**	**LS**
2	RAILROAD INSURANCE	1	0	0	**1**	**LS**
3	CPM SCHEDULE	0	0	1	**1**	**LS**
4	CPM SCHEDULE, MONTHLY UPDATE	0	0	12	**12**	**EACH**
5	MOBILIZATION AND DEMOBILIZATION	1	1	1	**1**	**LS**
6	VIDEO RECORD	0	1	0	**1**	**LS**
7	UTILITY ALLOWANCE	0	10,000	30,000	**40,000**	**DOL**
8	<Pay Item Deleted>	0	0	0	**0**	**DOL**
9	UNDISTRIBUTED ALLOWANCE	0	35,000	0	**35,000**	**DOL**
10	MATERIAL TESTING	0	0	1	**1**	**LS**
11	TREE, REMOVE	0	0	30	**30**	**EACH**
12	CLEARING RIGHT OF WAY	1	1	1	**1**	**LS**
13	TESTING FOR ASBESTOS	1	0	0	**1**	**EACH**
14	PAVEMENT REMOVAL	15,974	5,975	8,038	**29,987**	**SYS**
15	CURB, CONCRETE, REMOVE	11,951	0	3,470	**15,421**	**LFT**
16	CURB AND GUTTER, REMOVE	463	6,904	0	**7,367**	**LFT**
17	HOUSES AND BUILDINGS, REMOVE, PARCEL NO. 35	0	1	0	**1**	**LS**
18	SIDEWALK, CONCRETE, REMOVE	12,188	2,936	1,640	**16,764**	**SYS**
19	INLET, REMOVE	72	16	10	**98**	**EACH**
20	LIGHT STANDARD AND FOUNDATION, REMOVE	83	52	5	**140**	**EACH**
21	TRAFFIC SIGNAL EQUIPMENT, REMOVE	250	4	1	**255**	**EACH**
22	<Pay Item Deleted>	0	0	0	**0**	**EACH**
23	FIRE HYDRANT ASSEMBLY, REMOVE	11	0	0	**11**	**EACH**
24	FLAG POLE AND FOUNDATION, REMOVE	2	0	0	**2**	**EACH**
25	EXCAVATION, COMMON	3,082	6,359	6,813	**16,254**	**CYS**
26	BORROW	1,899	600	600	**3,099**	**CYS**
27	SEDIMENT, REMOVE	0	8	0	**8**	**CYS**
28	TEMPORARY INLET PROTECTION	268	70	47	**385**	**EACH**
29	TEMPORARY MULCH	0	10	0	**10**	**TON**
30	TEMPORARY SILT FENCE	278	356	550	**1,184**	**LFT**
31	NO 2 STONE	100	100	200	**400**	**TON**
32	TEMPORARY SEED MIXTURE	0	1,104	0	**1,104**	**LBS**
33	SUBGRADE TREATMENT, TYPE I	0	10,725	0	**10,725**	**SYS**
34	SUBGRADE TREATMENT, TYPE II	0	1,063	0	**1,063**	**SYS**
35	SUBGRADE TREATMENT, TYPE IV	6,440	0	0	**6,440**	**SYS**
36	SUBGRADE TREATMENT, TYPE IB	8,669	0	0	**8,669**	**SYS**
37	STRUCTURAL BACKFILL, TYPE 1	892	902	1,626	**3,420**	**CYS**
38	STRUCTURAL BACKFILL, TYPE 5	557	0	0	**557**	**CYS**
39	COMPACTED AGGREGATE, NO. 53, BASE	1,030	466	3,715	**5,211**	**TON**
40	DENSE GRADED SUBBASE	0	881	0	**881**	**CYS**
41	<Pay Item Deleted>	0	0	0	**0**	**CYS**
42	HMA PATCHING, TYPE D	587	0	50	**637**	**TON**
43	WIDENING WITH HMA, TYPE D	2,271	0	0	**2,271**	**TON**
44	MILLING, ASPHALT, 1 1/2 IN	46,192	0	22,985	**69,177**	**SYS**
45	MILLING ASPHALT, 3 1/2 IN	1,344	0	0	**1,344**	**SYS**
46	MILLING ASPHALT, 4 1/2 IN	1,005	0	0	**1,005**	**SYS**
47	MILLING ASPHALT, 2 1/2 IN	7,101	0	0	**7,101**	**SYS**
48	MILLING, APPROACH	0	1,790	0	**1,790**	**SYS**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
49	MILLING, ASPHALT, 2 IN	0	5,707	0	**5,707**	**SYS**
50	QC/QA-HMA, 2, 70, SURFACE, 9.5 mm	207	0	0	**207**	**TON**
51	QC/QA-HMA, 4, 76, SURFACE, 9.5 mm	4,827	0	1,830	**6,657**	**TON**
52	QC/QA-HMA, 4, 76, SURFACE, 12.5 mm	0	1,281	0	**1,281**	**TON**
53	QC/QA-HMA, 2, 70, INTERMEDIATE, 19.0 mm	345	0	0	**345**	**TON**
54	QC/QA-HMA, 4, 76, INTERMEDIATE, 19.0 mm	0	1,494	0	**1,494**	**TON**
55	QC/QA-HMA, 2, 64, BASE, 19.0 mm	414	0	0	**414**	**TON**
56	QC/QA-HMA, 4, 64, BASE, 19.0 mm	0	2,048	0	**2,048**	**TON**
57	HMA SURFACE, TYPE B	0	0	630	**630**	**TON**
58	HMA INTERMEDIATE, TYPE B	0	0	175	**175**	**TON**
59	HMA BASE, TYPE B	0	0	410	**410**	**TON**
60	JOINT ADHESIVE, SURFACE	32,251	6,047	13,850	**52,148**	**LFT**
61	JOINT ADHESIVE, INTERMEDIATE	0	6,063	460	**6,523**	**LFT**
62	LIQUID ASPHALT SEALANT	32,251	6,105	13,850	**52,206**	**LFT**
63	ASPHALT FOR TACK COAT	18	5	7	**30**	**TON**
64	QC/QA PCCP, 10 IN.	5,284	3,623	4,575	**13,482**	**SYS**
65	<Pay Item Deleted>	0	0	0	**0**	**SYS**
66	PCCP, 9 IN	0	0	1,365	**1,365**	**SYS**
67	PCCP, 6 IN	0	35	30	**65**	**SYS**
68	PCCP, 5 IN.	0	53	65	**118**	**SYS**
69	PCCP, 4 IN.	599	0	0	**599**	**SYS**
70	PCCP, COLORED, 10 IN	48	594	825	**1,467**	**SYS**
71	PCCP, COLORED, 8 IN 9 IN	0	69	0	**69**	**SYS**
72	PCCP, COLORED, 6 IN	0	200	215	**415**	**SYS**
73	<Pay Item Deleted>	0	0	0	**0**	**SYS**
74	<Pay Item Deleted>	0	0	0	**0**	**SYS**
75	PERMEABLE PAVEMENT	1,645	650	0	**2,295**	**SYS**
76	D-1 CONTRACTION JOINT	2,866	2,893	3,880	**9,639**	**LFT**
77	SLEEPER SLAB	0	358	0	**358**	**LFT**
78	PREFORMED JOINT MATERIAL	0	358	0	**358**	**LFT**
79	GUARDRAIL, REMOVE	199	0	0	**199**	**LFT**
80	GUARDRAIL END TREATMENT, MS	2	0	0	**2**	**EACH**
81	<Pay Item Deleted>	0	0	0	**0**	**SYS**
82	SIDEWALK, CONCRETE, 4"	7,679	0	0	**7,679**	**SYS**
83	SIDEWALK, CONCRETE, 5"	4,483	3,525	2,860	**10,868**	**SYS**
84	SIDEWALK, CONCRETE, 6"	596	0	0	**596**	**SYS**
85	SIDEWALK, CONCRETE, DECORATIVE	0	1,796	0	**1,796**	**SYS**
86	MOW STRIP, CONCRETE	0	0	8	**8**	**LFT**
87	CURB RAMP, CONCRETE, A	710	31	0	**741**	**SYS**
88	CURB RAMP, CONCRETE, C	39	402	117	**558**	**SYS**
89	<Pay Item Deleted>	0	0	0	**0**	**SYS**
90	CURB RAMP, CONCRETE, E	0	87	0	**87**	**SYS**
91	CURB RAMP, CONCRETE, F	15	0	80	**95**	**SYS**
92	CURB RAMP, CONCRETE, G	65	28	122	**215**	**SYS**
93	CURB RAMP, CONCRETE, H	137	11	0	**148**	**SYS**
94	CURB RAMP, CONCRETE, K	126	0	0	**126**	**SYS**
95	CURB RAMP, CONCRETE, L	25	48	0	**73**	**SYS**
96	CURB RAMP, CONCRETE, UNIQUE	0	94	0	**94**	**SYS**
97	<Pay Item Deleted>	0	0	0	**0**	**LS**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
98	CURB, INTEGRAL, CONCRETE	2,496	2,767	3,615	**8,878**	**LFT**
99	CURB, INTEGRAL, B, CONCRETE, MODIFIED	0	371	410	**781**	**LFT**
100	CURB, CONCRETE	4,178	880	2,290	**7,348**	**LFT**
101	<Pay Item Deleted>	0	0	0	**0**	**LFT**
102	<Pay Item Deleted>	0	0	0	**0**	**LFT**
103	CENTER CURB, D, CONCRETE	46	0	0	**46**	**SYS**
104	CURB AND GUTTER, B, CONCRETE	11,234	4,405	0	**15,639**	**LFT**
105	HMA FOR APPROACHES, TYPE B	0	272	685	**957**	**TON**
106	PCCP FOR APPROACHES, 9 IN	0	1,063	220	**1,283**	**SYS**
107	PCCP FOR APPROACHES, 8 IN	279	0	0	**279**	**SYS**
108	PCCP FOR APPROACHES, 6 IN	988	0	0	**988**	**SYS**
109	<Pay Item Deleted>	0	0	0	**0**	**SYS**
110	HEADER, CONCRETE	2,246	514	0	**2,760**	**LFT**
111	GEOTEXTILES	0	0	100	**100**	**SYS**
112	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	0	2	0	**2**	**EACH**
113	<Pay Item Deleted>	0	0	0	**0**	**kGAL**
114	SODDING, NURSERY AND TOPSOIL	1,030	8,958	8,126	**18,114**	**SYS**
115	CURB IDENTIFICATION MARKER	124	70	0	**194**	**EACH**
116	BRICK, DECORATIVE	613	858	0	**1,471**	**SYS**
117	BRICK, DECORATIVE, PERMEABLE	4,982	735	290	**6,007**	**SYS**
118	OVERSTORY TREE, 2" CALIPER	106	36	75	**217**	**EACH**
119	ORNAMENTAL TREE, 2", CALIPER	3	5	14	**22**	**EACH**
120	EVERGREEN TREE, 6'-8' HEIGHT	0	0	14	**14**	**EACH**
121	SHRUB, NO.3 CONTAINER	267	157	178	**602**	**EACH**
122	PERENNIAL, NO. 1 CONTAINER	981	204	313	**1,498**	**EACH**
123	ORNAMENTAL GRASS, NO. 1 CONTAINER	146	50	248	**444**	**EACH**
124	GROUNDCOVER, PLUG	191	1,125	1,125	**2,441**	**EACH**
125	SHREDDED HARDWOOD MULCH	2,258	33	60	**2,351**	**CYS**
126	TRASH ENCLOSURE	0	0	1	**1**	**EACH**
127	TRASH RECEPTACLE	17	0	0	**17**	**EACH**
128	BACKFILL MIX FOR PLANTINGS	460	0	0	**460**	**CYS**
129	BENCH	4	0	0	**4**	**EACH**
130	BICYCLE RACK	14	0	0	**14**	**EACH**
131	SIGN, DECORATIVE, TWO WAY CYCLE TRACK	4	0	0	**4**	**EACH**
132	SIGN, DECORATIVE, TWO WAY CYCLE TRACK WITH SUPPLEMENT	1	0	0	**1**	**EACH**
133	SIGN, DECORATIVE, SHARED USE PATH	2	0	0	**2**	**EACH**
134	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, SHARED CYCLE TRACK	4	4	0	**8**	**EACH**
135	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, CYCLE TRACK SYMBOL	11	19	0	**30**	**EACH**
136	PRECAST CONCRETE PLANTER	4	4	4	**12**	**EACH**
137	TREE GRATE	71	0	0	**71**	**EACH**
138	LANDSCAPE EDGING	0	100	315	**415**	**LFT**
139	IRRIGATION, TREE WATERING SYSTEM	107	25	24	**156**	**EACH**
140	IRRIGATION, LANDSCAPE	0	6,458	6,570	**13,028**	**SYS**
141	IRRIGATION, REPAIR	0	2,650	2,100	**4,750**	**SYS**
142	GABION RENO MATTRESS	0	0	16	**16**	**SYS**
143	MASONRY WALL	62	0	0	**62**	**CYS**
144	ROUNDABOUT - REINFORCING STEEL	0	2,000	2,000	**4,000**	**LBS**
145	ROUNDABOUT - MODULAR FACE BRICK	0	1,650	1,425	**3,075**	**SFT**
146	ROUNDABOUT - UPPER RETAINING WALLS	0	95	75	**170**	**LFT**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
147	ROUNDABOUT - LOWER RETAINING WALLS	0	110	110	**220**	**LFT**
148	ROUNDABOUT - CONCRETE COLUMNS	0	60	60	**120**	**CYS**
149	CONCRETE MONUMENT FOOTING	0	19	19	**38**	**CYS**
150	<Pay Item Deleted>	0	0	0	**0**	**SYS**
151	24" WIDE PRECAST CONCRETE WALL CAP	0	182	182	**364**	**LFT**
152	56" SQ PRECAST CONCRETE CAP	0	4	4	**8**	**EACH**
153	68" SQ PRECAST CONCRETE CAP	0	4	4	**8**	**EACH**
154	<Pay Item Deleted>	0	0	0	**0**	**EACH**
155	PRECAST CONCRETE HEADWALL	0	0	1	**1**	**EACH**
156	METER PIT	0	1	1	**2**	**EACH**
157	<Pay Item Deleted>	0	0	0	**0**	**LFT**
158	PIPE, TYPE 2 CIRCULAR 8 IN	33	9	0	**42**	**LFT**
159	PIPE, TYPE 2 CIRCULAR 10 IN	0	18	0	**18**	**LFT**
160	PIPE, TYPE 2 CIRCULAR 12 IN	2,442	2,019	1,036	**5,497**	**LFT**
161	PIPE, TYPE 2 CIRCULAR 15 IN	0	8	174	**182**	**LFT**
162	PIPE, TYPE 2 CIRCULAR 18 IN	0	237	237	**474**	**LFT**
163	PIPE, TYPE 2 CIRCULAR 21 IN	0	0	103	**103**	**LFT**
164	PIPE, TYPE 2 CIRCULAR 24 IN	0	15	264	**279**	**LFT**
165	PIPE, TYPE 2 CIRCULAR 30 IN	0	0	294	**294**	**LFT**
166	PIPE, TYPE 2 CIRCULAR 36 IN	0	0	416	**416**	**LFT**
167	PIPE, TYPE 2 CIRCULAR 42 IN	0	0	28	**28**	**LFT**
168	HMA FOR STRUCTURE INSTALLATION, TYPE B	0	20	0	**20**	**TON**
169	VIDEO INSPECTION FOR PIPE	3,099	2,306	2,552	**7,957**	**LFT**
170	<Pay Item Deleted>	0	0	0	**0**	**EACH**
171	CASTING, ADJUST TO GRADE	28	14	31	**73**	**EACH**
172	CASTING, 2, FURNISH AND ADJUST TO GRADE	5	0	0	**5**	**EACH**
173	CASTING, 4, FURNISH AND ADJUST TO GRADE	7	10	0	**17**	**EACH**
174	CASTING, 10, FURNISH AND ADJUST TO GRADE	6	0	0	**6**	**EACH**
175	CASTING, 13, FURNISH AND ADJUST TO GRADE	1	1	0	**2**	**EACH**
176	INLET, A3	2	0	0	**2**	**EACH**
177	INLET, R13	3	1	0	**4**	**EACH**
178	INLET, A2, MODIFIED	3	0	0	**3**	**EACH**
179	CATCH BASIN, J15	0	0	7	**7**	**EACH**
180	CATCH BASIN, K10	75	17	0	**92**	**EACH**
181	CATCH BASIN, S14	1	0	0	**1**	**EACH**
182	CATCH BASIN, F7	0	2	0	**2**	**EACH**
183	CATCH BASIN, M10	0	17	0	**17**	**EACH**
184	CATCH BASIN, B15	9	0	0	**9**	**EACH**
185	CATCH BASIN, C15	1	0	0	**1**	**EACH**
186	PIPE CATCH BASIN, 12 IN	0	3	0	**3**	**EACH**
187	MANHOLE, C4	19	2	1	**22**	**EACH**
188	MANHOLE, D4	0	0	1	**1**	**EACH**
189	MANHOLE, D15, MODIFIED	0	0	10	**10**	**EACH**
190	MANHOLE, F4	1	0	1	**2**	**EACH**
191	MANHOLE, H4	0	3	0	**3**	**EACH**
192	MANHOLE, H10, MODIFIED	0	1	0	**1**	**EACH**
193	MANHOLE, J10, MODIFIED	0	2	0	**2**	**EACH**
194	MANHOLE, C15, MODIFIED, DOGHOUSE	0	0	1	**1**	**EACH**
195	MANHOLE, D15, MODIFIED, DOGHOUSE	0	0	1	**1**	**EACH**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
196	INLET, B15, MODIFIED	0	0	4	**4**	**EACH**
197	INLET, C15, MODIFIED	0	0	8	**8**	**EACH**
198	INLET, B15	0	0	8	**8**	**EACH**
199	INLET, C15	0	0	1	**1**	**EACH**
200	TRENCH DRAIN	0	287	0	**287**	**LFT**
201	STRUCTURE, MANHOLE, RECONSTRUCTED	0	0	3	**3**	**LFT**
202	FIRE HYDRANT ASSEMBLY	11	1	0	**12**	**EACH**
203	FIRE HYDRANT, RESET	9	0	0	**9**	**EACH**
204	WATER MAIN, D.I., 6"	0	4	80	**84**	**LFT**
205	WATER QUALITY STRUCTURE	0	0	1	**1**	**EACH**
206	WATER MAIN, D.I. 20"	0	237	244	**481**	**LFT**
207	<Pay Item Deleted>	0	0	0	**0**	**EACH**
208	MECHANICAL JOINT RESTRAINT FOR 20" DI WATER MAIN	0	12	18	**30**	**EACH**
209	<Pay Item Deleted>	0	0	0	**0**	**EACH**
210	TEMPORARY PAVEMENT MESSAGE MARKING, REMOVABLE, LANE INDICATION ARROW	14	6	16	**36**	**EACH**
211	CONSTRUCTION SIGN, C	5	17	8	**30**	**EACH**
212	ROAD CLOSURE SIGN ASSEMBLY	48	0	0	**48**	**EACH**
213	TEMPORARY PANEL SIGNS	759	0	0	**759**	**SFT**
214	TEMPORARY PANEL SIGN SUPPORTS	248	0	0	**248**	**LFT**
215	TEMPORARY PAVEMENT MARKING, 4 IN	41,877	2,030	9,100	**53,007**	**LFT**
216	TEMPORARY PAVEMENT MARKING, REMOVABLE, 24"	200	40	180	**420**	**LFT**
217	DETOUR ROUTE MARKER ASSEMBLY	195	28	57	**280**	**EACH**
218	CONSTRUCTION SIGN, A	259	14	56	**329**	**EACH**
219	CONSTRUCTION SIGN, B	3	25	0	**28**	**EACH**
220	FLASHING ARROW SIGN	1,080	60	270	**1,410**	**DAY**
221	CHANGEABLE MESSAGE SIGN	4	3	0	**7**	**EACH**
222	TUBULAR MARKER, PERMANENT	12	0	0	**12**	**EACH**
223	MAINTAINING TRAFFIC	1	1	1	**1**	**LS**
224	BARRICADE, III-A	1,030	0	0	**1,030**	**LFT**
225	BARRICADE, III-B	608	636	480	**1,724**	**LFT**
226	BOLLARD, DECORATIVE, ILLUMINATED	11	22	0	**33**	**EACH**
227	HOSPITAL SIGN REMOVAL	0	0	1	**1**	**EACH**
228	SIGN POST, SQUARE, TYPE 1, REINFORCED ANCHOR BASE	902	503	398	**1,803**	**LFT**
229	<Pay Item Deleted>	0	0	0	**0**	**LFT**
230	PROJECT INFORMATION SIGN	0	1	0	**1**	**EACH**
231	SIGN, SHEET ASSEMBLY, RELOCATE	71	0	0	**71**	**EACH**
232	SIGN, SHEET, WITH LEGEND 0.080"	445	231	124	**800**	**SFT**
233	SIGN, SHEET, WITH LEGEND 0.100 IN	53	108	178	**339**	**SFT**
234	SIGN STRUCTURE, SALVAGE	0	1	0	**1**	**LS**
235	SIGNAL EQUIPMENT, SALVAGE	0	1	0	**1**	**LS**
236	<Pay Item Deleted>	0	0	0	**0**	**EACH**
237	TRANSPORTATION OF SALVAGEABLE SIGNAL EQUIPMENT	25	0	0	**25**	**EACH**
238	TESCO CABINET W/DUAL SERVICE, FOUNDATION, WIRING, ETC.	4	1	1	**6**	**EACH**
239	TESCO CABINET W/SINGLE SERVICE, FOUNDATION, WIRING & ETC	15	1	0	**16**	**EACH**
240	MAST ARM HAND HOLE COVERS	36	0	0	**36**	**EACH**
241	WIRELESS MAGNETOMETER DETECTOR, RELOCATE	24	0	0	**24**	**EACH**
242	SIGNAL CABLE INTERCONNECT, FIBER OPTIC	255	620	0	**875**	**LFT**
243	SIGNAL POLE, PEDESTAL, 15 FT	7	0	0	**7**	**EACH**
244	LOOP DETECTOR DELAY COUNTING AMPLIFIER, 2 CHANNEL	49	0	0	**49**	**EACH**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
245	LOOP DETECTOR RACK	11	0	0	**11**	**EACH**
246	CONTACT CLOSURE CARD	1	0	0	**1**	**EACH**
247	RECEIVER PROCESSOR	1	0	0	**1**	**EACH**
248	<Pay Item Deleted>	0	0	0	**0**	**EACH**
249	<Pay Item Deleted>	0	0	0	**0**	**EACH**
250	HANDHOLE, SIGNAL, TYPE 1	59	2	7	**68**	**EACH**
251	HANDHOLE, SIGNAL, ADJUST TO GRADE	34	0	0	**34**	**EACH**
252	RELOCATE CONTROLLER CABINET	7	0	0	**7**	**EACH**
253	CONTROLLER, RELOCATE AND REWIRE	7	0	0	**7**	**EACH**
254	TRAFFIC SIGNAL HEAD, 3-SECTION, RELOCATE	94	1	0	**95**	**EACH**
255	PEDESTRIAN SIGNAL HEAD, 12 IN., RELOCATE	4	0	0	**4**	**EACH**
256	PEDESTRIAN SIGNAL HEAD, COUNTDOWN, 18 IN	136	8	0	**144**	**EACH**
257	SIGNAL PEDESTAL FOUNDATION, A	49	5	0	**54**	**EACH**
258	SIGNAL POLE, PEDESTAL, 12FT	42	5	0	**47**	**EACH**
259	<Pay Item Deleted>	0	0	0	**0**	**LFT**
260	PVC SCHEDULE 80 CONDUIT, 3/4"	0	0	6,225	**6,225**	**LFT**
261	CONDUIT, PVC, 2 IN, SCHEDULE 80	5,465	0	6,884	**12,349**	**LFT**
262	PVC SHEDULE 80 CONDUIT, 3"	0	0	160	**160**	**LFT**
263	CONDUIT, HDPE, 2 IN, SCHEDULE 80	13,472	7,593	0	**21,065**	**LFT**
264	CONDUIT, STEEL, 2 IN, GALVANIZED	55	0	0	**55**	**LFT**
265	<Pay Item Deleted>	0	0	0	**0**	**LFT**
266	<Pay Item Deleted>	0	0	0	**0**	**EACH**
267	<Pay Item Deleted>	0	0	0	**0**	**EACH**
268	<Pay Item Deleted>	0	0	0	**0**	**EACH**
269	SIGNAL CANTILEVER STRUCTURE, SINGLE TRUSS ARM 35 FT.	4	0	0	**4**	**EACH**
270	SIGNAL CANTILEVER STRUCTURE, SINGLE ARM, 45 FT.	1	0	0	**1**	**EACH**
271	SIGNAL CANTILEVER STRUCTURE, SINGLE ARM, 50 FT.	1	0	0	**1**	**EACH**
272	SIGNAL CANTILEVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE A	41	0	0	**41**	**EACH**
273	SIGNAL CANTILEVER STRUCTURE, DRILLED SHAFT FOUNDATION, TYPE B	3	0	0	**3**	**EACH**
274	SIGNAL CANTILEVER STRUCTURE, RELOCATE	33	0	0	**33**	**EACH**
275	PAINTING TRAFFIC SIGNALS	18	0	0	**18**	**EACH**
276	THERMAL DETECTION CAMERA	8	0	0	**8**	**EACH**
277	THERMAL DETECTION SYSTEM	4	0	0	**4**	**EACH**
278	TRAFFIC SIGNAL HEAD, 3 SECTION, 12", RED AMBER GREEN BIKE SIGNALS	8	0	0	**8**	**EACH**
279	TRAFFIC SIGNAL HEAD, 5 SECTION, 12", RED AMBER GREEN, AMBER ARROW, GREEN ARR	23	0	0	**23**	**EACH**
280	<Pay Item Deleted>	0	0	0	**0**	**EACH**
281	PEDESTRIAN PUSH BUTTON, NON-APS	76	6	0	**82**	**EACH**
282	<Pay Item Deleted>	0	0	0	**0**	**EACH**
283	<Pay Item Deleted>	0	0	0	**0**	**EACH**
284	<Pay Item Deleted>	0	0	0	**0**	**EACH**
285	CONSTRUCTION LIGHTING	300	1,000	100	**1,400**	**DAY**
286	SIGNAL CABLE, SERVICE, COPPER. 3C/8GA	400	0	0	**400**	**LFT**
287	SIGNAL CABLE, ROADWAY LOOP, COPPER 1C/14GA	35,728	1,217	2,500	**39,445**	**LFT**
288	SIGNAL CABLE, CONTROL, COPPER 5C/14GA	27,055	687	0	**27,742**	**LFT**
289	SIGNAL CABLE, CONTROL, COPPER 7C/14GA	8,831	27	0	**8,858**	**LFT**
290	SIGNAL CABLE, DETECTOR LEAD-IN COPPER 2C/16GA	11,324	0	0	**11,324**	**LFT**
291	SIGNAL DETECTOR HOUSING	88	0	0	**88**	**EACH**
292	<Pay Item Deleted>	0	0	0	**0**	**LFT**
293	ILLUMINATED WALL LETTERING	0	0	1	**1**	**LS**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
294	SAW CUT FOR ROADWAY LOOP AND SEALANT	13,728	425	800	**14,953**	**LFT**
295	HANDHOLE, LIGHTING	9	20	5	**34**	**EACH**
296	LIGHT STANDARD FOUNDATION, 2FT DIAMETER X 6FT	81	53	44	**178**	**EACH**
297	LUMINAIRE, ORNAMENTAL	126	61	0	**187**	**EACH**
298	LIGHT POLE, ORNAMENTAL, SINGLE	38	45	0	**83**	**EACH**
299	LIGHT STANDARD TYPE 'D'	0	0	10	**10**	**EACH**
300	LIGHT STANDARD TYPE 'E'	0	0	29	**29**	**EACH**
301	LIGHT STANDARD TYPE 'A'	0	0	5	**5**	**EACH**
302	LIGHT STANDARD TYPE 'B'	0	0	4	**4**	**EACH**
303	LIGHT STANDARD TYPE 'C'	0	0	6	**6**	**EACH**
304	<Pay Item Deleted>	0	0	0	**0**	**EACH**
305	<Pay Item Deleted>	0	0	0	**0**	**EACH**
306	LANDSCAPE LIGHTS, LED, TYPE 'F'	0	21	21	**42**	**EACH**
307	LANDSCAPE LIGHTS, LED, TYPE 'G'	0	4	4	**8**	**EACH**
308	NEW PANEL AND LIGHTING CONTACTOR	0	0	1	**1**	**EACH**
309	MISCELLANEOUS EQUIPMENT FOR LIGHTING	0	0	1	**1**	**LS**
310	3/0 WIRE	0	0	320	**320**	**LFT**
311	NO. 3 WIRE	0	320	320	**640**	**LFT**
312	NO. 4 WIRE, COPPER, 1/C	39,980	0	22,000	**61,980**	**LFT**
313	NO. 6 WIRE, COPPER, 1/C	39,980	5,913	160	**46,053**	**LFT**
314	NO. 8 WIRE	0	160	20,830	**20,990**	**LFT**
315	NO. 10 WIRE	0	475	23,725	**24,200**	**LFT**
316	NO. 12 WIRE	0	225	3,495	**3,720**	**LFT**
317	<Pay Item Deleted>	0	0	0	**0**	**LFT**
318	CABLE, POLE CIRCUIT THWN, NO 10 COPPER, STRANDED, 1/C	3,510	2,068	0	**5,578**	**LFT**
319	WIRE, NO 6 COPPER IN PLASTIC DUCT, 4 1/C	0	714	0	**714**	**LFT**
320	WIRE, NO 6 COPPER IN PLASTIC DUCT, IN TRENCH, 4 1/C	0	4625	0	**4,625**	**LFT**
321	CONNECTOR KIT, UNFUSED	203	53	0	**256**	**EACH**
322	CONNECTOR KIT, FUSED	203	53	0	**256**	**EACH**
323	MULTIPLE COMPRESSION FITTING, NON-WATERPROOFED	361	0	0	**361**	**EACH**
324	MULTIPLE COMPRESSION FITTING, WATERPROOFED	24	200	0	**224**	**EACH**
325	INSULATION LINK, NON-WATERPROOFED	23	0	0	**23**	**EACH**
326	INSULATION LINK, WATERPROOFED	48	214	0	**262**	**EACH**
327	<Pay Item Deleted>	0	0	0	**0**	**EACH**
328	LINE, REMOVE	47,985	0	100	**48,085**	**LFT**
329	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, BIKE SYMBOL	94	0	0	**94**	**EACH**
330	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, BIKE SYMBOL	13	0	0	**13**	**EACH**
331	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN.	34,115	2,257	1,290	**37,662**	**LFT**
332	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN	47,767	4,501	6,575	**58,843**	**LFT**
333	LINE, THERMOPLASTIC, BROKEN, WHITE, 4 IN	1,099	78	2,430	**3,607**	**LFT**
334	LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN	5,073	356	0	**5,429**	**LFT**
335	LINE, THERMOPLASTIC, SOLID, WHITE, 6 IN	20,411	0	1,970	**22,381**	**LFT**
336	LINE, THERMOPLASTIC, SOLID, YELLOW, 6 IN	651	0	0	**651**	**LFT**
337	LINE, THERMOPLASTIC, SOLID, YELLOW, 8"	0	194	540	**734**	**LFT**
338	LINE, THERMOPLASTIC, DOTTED, WHITE, 6 IN.	686	0	0	**686**	**LFT**
339	LINE, MULTI-COMPONENT, BROKEN, WHITE, 4 IN	0	45	700	**745**	**LFT**
340	LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN	2,538	2,486	2,900	**7,924**	**LFT**
341	LINE, MULTI-COMPONENT, SOLID, YELLOW, 4 IN	2,709	1,139	2,130	**5,978**	**LFT**
342	LINE, MULTI-COMPONENT, BROKEN, YELLOW, 4 IN	0	1,124	180	**1,304**	**LFT**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
343	LINE, MULTI-COMPONENT, SOLID, WHITE, 6 IN	2,128	0	0	**2,128**	**LFT**
344	LINE, MULTI-COMPONENT, DOTTED, WHITE, 8 IN.	0	96	200	**296**	**LFT**
345	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 8"	860	0	0	**860**	**LFT**
346	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, YELLOW, 12"	0	50	145	**195**	**LFT**
347	TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, 6"	9,595	1,158	300	**11,053**	**LFT**
348	TRANSVERSE MARKING THERMOPLASTIC CROSSWALK, WHITE 24"	3,116	0	0	**3,116**	**LFT**
349	TRANSVERSE MARKING, THERMOPLASTIC, STOP LINE, 24 IN	3,121	204	555	**3,880**	**LFT**
350	TRANSVERSE MARKING, THERMOPLASTIC, YIELD, WHITE, 24 IN.	0	117	0	**117**	**LFT**
351	TRANSVERSE MARKING, MULTI-COMPONENT, WHITE, CROSSHATCH, 8 IN.	289	0	60	**349**	**LFT**
352	TRANSVERSE MARKINGS MULTI-COMPONENT, CROSSHATCH LINE, WHITE,12"	0	27	220	**247**	**LFT**
353	TRANSVERSE MARKING, MULTI-COMPONENT, CROSSWALK LINE, 6"	1,071	0	0	**1,071**	**LFT**
354	TRANSVERSE MARKING MULTI-COMPONENT, STOP LINE, 24"	254	0	52	**306**	**LFT**
355	TRANSVERSE MARKINGS, MULTI-COMPONENT, CROSSWALK, WHITE, 24 IN.	429	0	0	**429**	**LFT**
356	TRANSVERSE MARKINGS, MULTI-COMPONENT, YIELD LINE, WHITE, 24 IN.	13	79	0	**92**	**LFT**
357	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, LANE INDICATION ARROW	274	20	110	**404**	**EACH**
358	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, (ONLY)	26	3	18	**47**	**EACH**
359	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, HANDICAP SYMBOL	4	0	0	**4**	**EACH**
360	PAVEMENT MESSAGE MARKINGS, MULTI-COMPONENT, LANE INDICATION ARROW	8	4	15	**27**	**EACH**
361	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, (ONLY)	2	2	0	**4**	**EACH**
362	PAVEMENT MESSAGE MARKINGS, MULTI-COMPONENT HANDICAP SYMBOL	13	0	0	**13**	**EACH**
363	PAVEMENT MARKING, SOLID, MULTI-COMPONENT, GREEN	202	0	0	**202**	**SYS**
364	PAVEMENT MARKING, SOLID, MULTI-COMPONENT, RED	50	0	0	**50**	**SYS**
365	HMA FOR PATCHING, TYPE B	0	0	390	**390**	**TON**
366	<Pay Item Deleted>	0	0	0	**0**	**SYS**
367	POROUS CONCRETE	0	298	0	**298**	**SYS**
368	FENCE, TEMPORARY	0	560	0	**560**	**LFT**
369	CURB RAMP, CONCRETE, G, MODIFIED	0	0	13	**13**	**SYS**
370	CONCRETE STAIR	0	0	30	**30**	**LFT**
371	STAIR RAILING	0	0	14	**14**	**LFT**
372	CURB, CONCRETE, 8 IN	0	554	554	**1,108**	**LFT**
373	CASTING, FURNISH, INSTALL & ADJUST TO GRADE	0	0	7	**7**	**EACH**
374	TEMPORARY TRANSVERSE PAVEMENT MARKING, STOP LINE, 24"	0	30	0	**30**	**LFT**
375	TEMPORARY PAVEMENT MARKING, REMOVABLE, 4"	0	7,190	3,000	**10,190**	**LFT**
376	BARRICADE, II	0	12	0	**12**	**LFT**
377	SIGNAL HEAD, COVER	0	8	0	**8**	**EACH**
378	MISCELLANEOUS ELECTRICAL EQUIPMENT	0	0	1	**1**	**LS**
379	MISC ELECTRICAL REVISIONS	0	0	1	**1**	**LS**
380	CONTROLLER CABINET FOUNDATION, P1	7	0	0	**7**	**EACH**
381	FIBER OPTIC, RELOCATE	0	175	0	**175**	**LFT**
382	WIRELESS MAGNETOMETER DETECTOR, NEW	18	0	0	**18**	**EACH**
383	PEDESTRIAN PUSH BUTTON, RELOCATE	4	0	0	**4**	**EACH**
384	LIGHT STANDARD FOUNDATION, 2FT DIAMETER X 8FT	0	0	10	**10**	**EACH**
385	ELECTRICAL DEVICES AND POST	0	0	33	**33**	**EACH**
386	LINE, THERMOPLASTIC, SOLID, WHITE, 12 IN.	0	0	760	**760**	**LFT**
387	LINE, THERMOPLASTIC, SOLID, WHITE, 24 IN.	0	0	35	**35**	**LFT**
388	LINE, MULTI-COMPONENT, SOLID, WHITE, 8 IN.	0	0	600	**600**	**LFT**
389	LINE, MULTI-COMPONENT, SOLID, WHITE, 12 IN	0	0	2,050	**2,050**	**LFT**
390	LINE, MULTI-COMPONENT, SOLID, WHITE, 24 IN	0	0	15	**15**	**LFT**
391	CATCH BASIN, E7	0	1	0	**1**	**EACH**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
392	SIGN, SHEET, REMOVE	0	51	0	**51**	**EACH**
393	LIGHT POLE, ORNAMENTAL. TWIN	44	8	0	**52**	**EACH**
394	SIGNAL CABLE, CONTROL, COPPER 3C/14GA	0	106	0	**106**	**LFT**
395	TRAFFIC SIGNAL HEAD, 5-SECTION, RELOCATE	0	1	0	**1**	**EACH**
396	TRAFFIC SIGNAL CABLE, FIBER OPTIC, MULTI-MODE	0	2060	0	**2060**	**LFT**
397	PAVEMENT MARKING, SOLID, THERMOPLASTIC, GREEN	1329	296	0	**1625**	**SYS**
398	PAVEMENT MESSAGE MARKING, MULTI-COMPONENT, PED. SYMBOL	0	19	0	**19**	**EACH**
399	POLE FOUNDATION, REMOVE	0	10	0	**10**	**EACH**
400	WATER MAIN, D.I., 8"	0	123	0	**123**	**LFT**
401	WATER MAIN, TESTING TAP, 2 IN.	0	2	1	**3**	**EACH**
402	WATER SERVICE, COPPER, 2 IN.	0	35	30	**65**	**LFT**
403	WATER SERVICE, D.I., 4 IN.	0	24	0	**24**	**LFT**
404	CONNECT TO EXISTING WATER SERVICE, 4 IN.	0	1	0	**1**	**EACH**
405	CONNECT TO EXISTING WATER MAIN, 6 IN.	0	1	0	**1**	**EACH**
406	CONNECT TO EXISTING WATER MAIN, 8 IN.	0	2	0	**2**	**EACH**
407	TRANSITION COUPLING, 20 IN.	0	6	6	**12**	**EACH**
408	45 DEGREE ELBOW, 2 IN.	0	2	2	**4**	**EACH**
409	45 DEGREE ELBOW, 8 IN.	0	4	0	**4**	**EACH**
410	90 DEGREE ELBOW, 20 IN.	0	4	4	**8**	**EACH**
411	CAP, 6 IN.	0	1	0	**1**	**EACH**
412	CAP, REMOVE EXISTING, 6 IN.	0	1	0	**1**	**EACH**
413	TEE, 6 IN. X 6 IN. X 4 IN.	0	1	0	**1**	**EACH**
414	CORPORATION STOP, 2 IN.	0	1	1	**2**	**EACH**
415	GATE VALVE AND BOX, 4 IN.	0	1	0	**1**	**EACH**
416	BUTTERFLY VALVE AND BOX, 20 IN.	0	2	2	**4**	**EACH**
417	INSERT VALVE AND BOX, 8 IN.	0	2	0	**2**	**EACH**
418	TEMPORARY LINE STOP VALVE, 20 IN.	0	2	2	**4**	**EACH**
419	MANHOLE, REMOVE	0	0	3	**3**	**EACH**
420	CURB RAMP, CONCRETE, B	0	0	30	**30**	**SYS**
421	TRANSVERSE MARKING, THERMOPLASTIC, CROSSHATCH LINE, WHITE, 8"	0	0	60	**60**	**LFT**
422	ADJUST WATER SERVICE LINE, COMMERCIAL	0	2	0	**2**	**EACH**
423	INSPECTION HOLE	0	10	0	**10**	**EACH**
424	TAP, WATER SERVICE, 1 IN. - CITY TAP FEE	0	2	0	**2**	**EACH**
425	CAP EXISTING WATER SERVICE LINE	0	2	0	**2**	**EACH**
426	SEWER LATERAL PRIVATE BUILDING, REINSTATEMENT	0	2	0	**2**	**EACH**
427	SIGNAL POLE, PEDESTAL, 4 FT.	6	0	0	**6**	**EACH**
428	PAVEMENT MESSAGE MARKING, THERMOPLASTIC, SHARE THE ROAD	21	0	0	**21**	**EACH**
429	CONDUIT, HDPE, SCHEDULE 80, 3 IN.	260	0	0	**260**	**LFT**
430	CONDUIT, HDPE, SCHEDULE 80, 4 IN.	80	0	0	**80**	**LFT**
431	SIGN, SHEET ASSEMBLY, NEW	38	0	0	**38**	**EACH**
432	<Pay Item Deleted>	0	0	0	**0**	**EACH**
433	CONNECT TO EXISTING STRUCTURE	20	12	0	**32**	**EACH**
434	MECHANICAL JOINT RESTRAINT FOR 8" DI WATER MAIN	0	10	0	**10**	**EACH**
435	MECHANICAL JOINT RESTRAINT FOR 6" DI WATER MAIN	0	3	0	**3**	**EACH**
436	MECHANICAL JOINT RESTRAINT FOR 4" DI WATER MAIN	0	3	0	**3**	**EACH**
437	TRANSVERSE MARKING, MULTI-COMPONENT, YELLOW, CROSSHATCH LINE, 12"	0	0	85	**85**	**LFT**
438	FIELD OFFICE, C	0	12	0	**12**	**MOS**
	ALTERNATE NO. 1					
501	CROSSWALK SYSTEM - FLUSH BI-DIRECTIONAL FIXTURE	0	14	20	**34**	**EACH**

Item No	Description	Quantity 115-019 (Div. B)	Quantity 114-035	Quantity 114-032B	Quantity TOTAL	Unit
502	CROSSWALK SYSTEM - FLASHING PEDESTRIAN SIGN	0	4	8	**12**	**EACH**
503	CROSSWALK SYSTEM CONTROLLER	0	1	1	**2**	**EACH**
504	CROSSWALK SYSTEM - PEDESTRIAN PUSH-BUTTON STATION	0	4	4	**8**	**EACH**
505	NO. 8 WIRE	0	1,678	1,592	**3270**	**LFT**
506	NO. 12 WIRE	0	1,474	1,430	**2904**	**LFT**
507	HANDHOLE, SIGNAL, TYPE 1	0	2	2	**4**	**EACH**
508	CONDUIT, PVC, 2 IN, SCHEDULE 80	0	423	412	**835**	**LFT**
509	CONDUIT, PVC, 1 IN, SCHEDULE 80	0	176	919	**1095**	**LFT**