WEST WATSON ROAD IMPROVEMENTS – ADDENDUM #1
City of Sunset Hills, MO
Federal Project STP-5410(620)
July 8, 2016

This addendum is hereby made part of the contract documents of the above referenced project. This addendum supplements and/or amends the originally issued documents and all related addenda.

Attachments:

- Sheet C1.5 revised to include detail for asphalt pavement repair.
- Report of Subsurface Exploration and Geotechnical Engineering Evaluation, dated July 8, 2014.

ACKNOWLEDGEMENT OF ADDENDUM #1

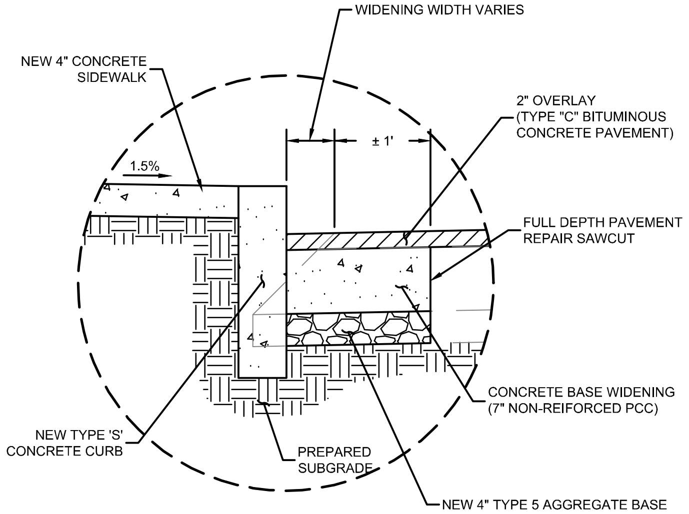
The bidder will acknowledge receipt of this Addendum and acceptance of its conditions by signing this Addendum and including it with the bid.

SIGNATURE: ______________________________________

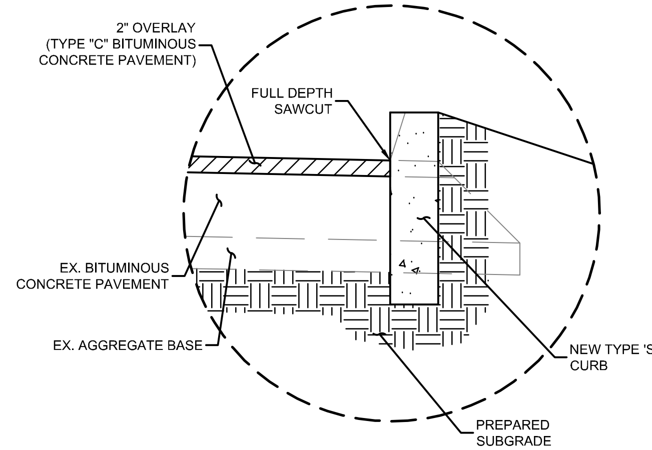
TITLE: ______________________________________

COMPANY: ______________________________________

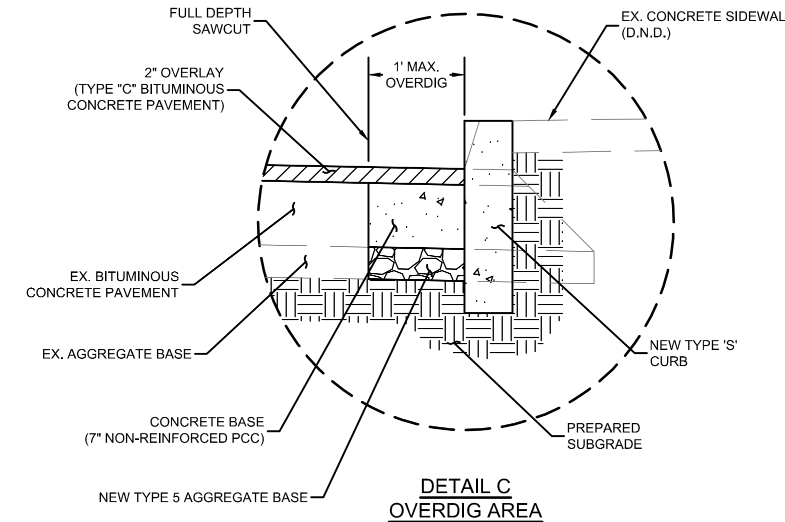
DATE: ______________________________________



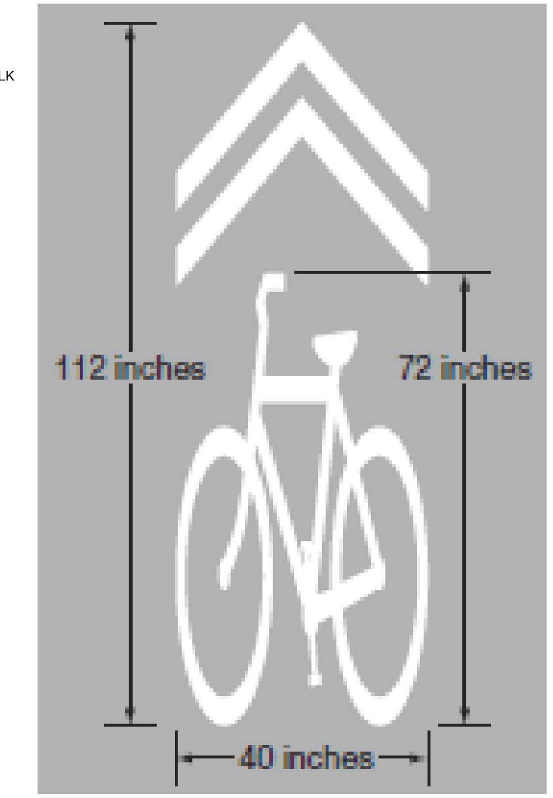
DETAIL A
CONCRETE BASE WIDENING



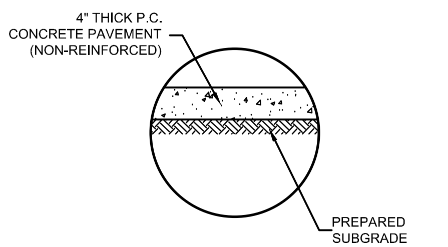
DETAIL B



DETAIL C
OVERDIG AREA



SHARED LANE MARKING
N.T.S.



CONCRETE SIDEWALK
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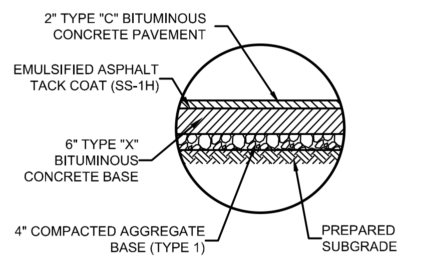
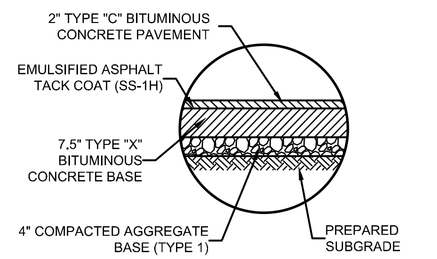


ASPHALT ENTRANCE
(RESIDENTIAL)
N.T.S.



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(COMMERCIAL)
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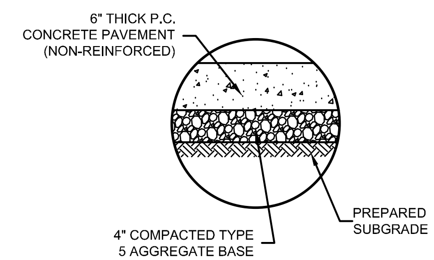
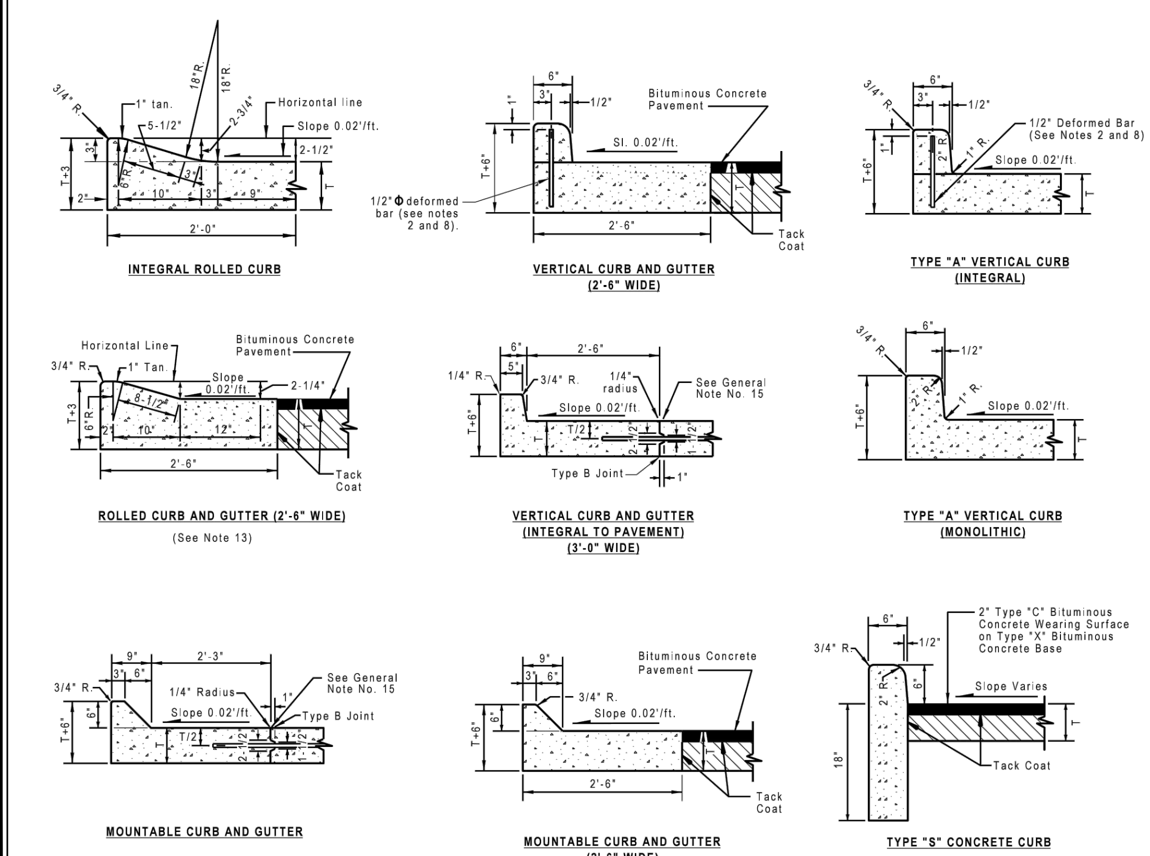


CONCRETE ENTRANCE
(RESIDENTIAL)
N.T.S.

NEW	REVISIONS			
1-11-90	11-2-98	7-31-07	1-1-10	10-1-12

ST. LOUIS COUNTY PROJ. — SHEET NUMBER — TOTAL SHEETS



GENERAL NOTES

1) Do dot scale drawing, follow dimensions.
2) Construction joint and tie bars may be omitted when curb is poured integral with pavement.
3. Minimum thickness for pavement is:

Concrete pavement thickness = / Bituminous Concrete pavement thickness =	(T)	(T)
All residential minor and local streets	6 in.	9 in.
Residential collector, residential major collector, all County and non-residential streets	7 in.	10-1/2 in.
All Arterial Streets	8 in.	12 in.

4) Type "G" transverse joint is required for Arterial, County, non-residential and residential major collector streets. Use Type "C" transverse joint for all others.
5) For subdivision or minor streets having 6 inch thick concrete pavement, 1/2 inch ● deformed tie bars, 30 inches long at 30 inch centers, shall be used for Type "B" longitudinal joints.
6) Refer to pavement construction details for "Integral Vertical Curb and Concrete Pavement Typical Sections and Details", Standard Drawing C502.01 and "Integral Rolled Curb and Concrete Pavement Typical Sections and Details", Standard Drawing C502.02 for joint and bar requirements for different street classifications. Note that width and location of each poured portion of the pavement may change the type and location of joint required.
7) All deformed bars for joints and curbs shall be in accordance with AASHTO M 31, Grade 40 and epoxy coated, conforming to the requirements in Section 1057.4 of the "St. Louis County Standard Specifications" manual.
8) Length of the tie bars shall be equal to the thickness of pavement plus the height of curb less 3 inches. Tie bars shall be placed at 24 inch centers.
9) Transverse or longitudinal construction joints in slip formed pavements may be made with a groover or tool, if such device has been approved in advance by the Department.
10) The free end of the dowel bar for a length of at least 11 inches shall be coated with an approved graphite grease conforming to Section 1057.3.1 of the "St. Louis County Standard Specifications" manual, or may substitute completed basket units pre-dipped in an approved bond breaker solution conforming to Section 1057.3.2.
11) All dowel bars 18 inches long at 12 inch centers shall be epoxy coated.
12) Superpave SP 125 is to be used in lieu of Type "C" bituminous concrete on Arterial roads, when directed by the Department or when specified in the County contract documents.
13) Certain streets will be required to overlay the gutter with 2 inches of Type "C" bituminous concrete wearing surface as directed by the Department.
14) JOINT SEALANT - The shape factor (depth/width) for liquid joint sealants should be no more than 1 for hot-pour sealants and no more than 0.5 for cold-pour sealants. Sealants shall be recessed between no less than 1/8 inch but no more than 1/4 inch below the pavement surface to avoid extrusion problems (when the joint closes and squeezes the material up through the reservoir exposing it to traffic). Backer rod of a diameter two times the width of the joint is required to accomplish this when expansion joint filler is not specified. Joint filler shall be recessed to accomplish the above for the specified joint sealant material.
15) Sawcut to achieve shape factor = 1.

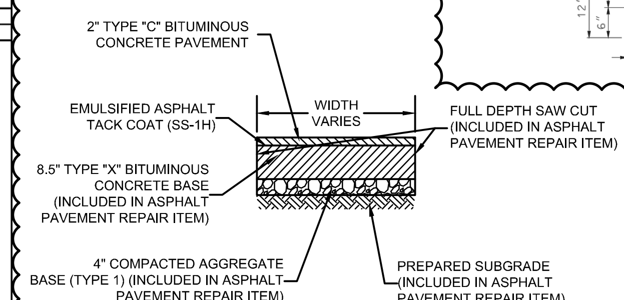
SAINT LOUIS COUNTY
DEPARTMENT OF HIGHWAYS AND TRAFFIC
CLAYTON, MISSOURI

PAVEMENT CONSTRUCTION DETAILS

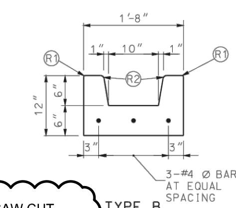
CURBS

REVISION DATE: October 1, 2012

DRAWING C502.14

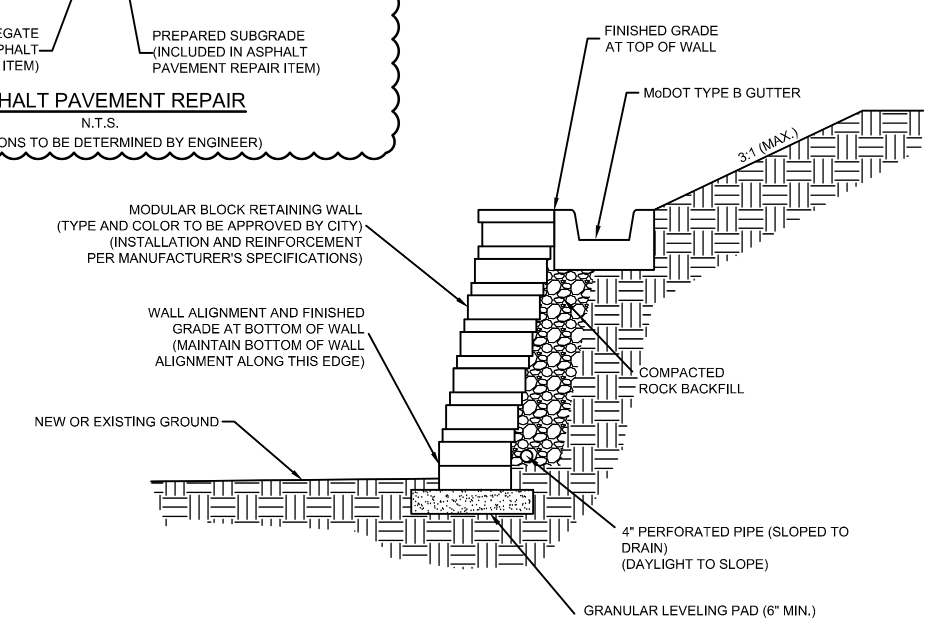


ASPHALT PAVEMENT REPAIR
N.T.S.
(LOCATIONS TO BE DETERMINED BY ENGINEER)



LEGEND
(B) TIE BARS - 30" X #5 Ø AT 30" CTRS.
(C) PERMISSIBLE CONSTRUCTION JOINT. IF CONSTRUCTED IN THIS MANNER TIE BARS MUST BE USED.
(D) #4 Ø TIE BAR AT 24" CENTERS LENGTH OF THE TIE BARS EQUALS THICKNESS OF PAVEMENT PLUS HEIGHT OF CURB. LESS 3 INCHES.
(K) TONGUE & GROOVE JOINT WITH TIE BAR - SEE DETAIL.
(P) TOP OF PAVEMENT OR CONCRETE BASE.
(R1) ROUND TO ¼" RADIUS. (EXCEPT FOR SAWED JOINTS)
(R2) ROUND TO ½" RADIUS.
(R3) CONSTRUCT TO 9" RADIUS

MODOT TYPE B GUTTER
N.T.S.



MODULAR BLOCK RETAINING WALL
TYPICAL SECTION
N.T.S.

NO.	DATE	REVISION
1	7/8/16	ADDENDUM 1

STATE OF MISSOURI — RAMIN D. ASHRAFZADEH — NUMBER PE-2002003131 — PROFESSIONAL ENGINEER — 4/27/16

Name: Ramin Ashrafzadeh
Discipline: Civil Engineer
License No.: PE-2002003131
Expiration Date: 12-31-2016

HORNER SHIFRIN
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2296
314-531-4321 • FAX 314-531-6966 • WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

CITY OF SUNSET HILLS
WEST WATSON ROAD

CITY: SUNSET HILLS
COUNTY: ST. LOUIS
STATE: MISSOURI

DETAILS

Sunset Hills

DATE: 04/27/2016

DESIGNED: AMH
DRAWN: AMH
CHECKED: RDA

FEDERAL PROJECT NUMBER
STP-5410(620)

JOB NO. 1329500
MSD P NO. P-0030657-00
MSD BASE MAP: 26M, 26N, 27N

C1.5

OPERATOR: AHARRISON
DWG: T:\1329500-WestWatson\Cad\T\Construction_Plans\Typical Sections.dwg
PAGE SETUP NAME: 11X17 PDF
SAVE DATE: 7/5/2016 10:57:09 AM
CTB: Trans-std-half.ctb
PLOT DATE: 7/5/2016 10:59:37 AM

REPORT OF SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING EVALUATION

WEST WATSON ROAD IMPROVEMENTS
SUNSET HILLS, MISSOURI
TSi PROJECT NO. 20141168.00

HORNER & SHIFRIN, INC.
5200 Oakland Avenue
St. Louis, Missouri 63110

TSi engineering, inc.

5850 Arsenal Street
St. Louis, Missouri 63139

July 8, 2014

TSi engineering, inc.

5850 Arsenal Street
St. Louis, MO 63139
314.644.3134 (tel)
314.644.3135 (fax)
www.tsi-engineering.com

PROFESSIONAL SERVICE SINCE 1989

July 8, 2014

Mr. Ramin Ashrafzadeh, PE
HORNER & SHIFRIN, INC.
5200 Oakland Avenue
St. Louis, Missouri 63110

Re: Report of Subsurface Exploration and Geotechnical Engineering Evaluation
West Watson Road Improvements
Sunset Hills, Missouri
TSi Project No. 20141168.00

Dear Mr. Ashrafzadeh:

TSi Engineering, Inc. (TSi) has completed the authorized Subsurface Exploration and Geotechnical Engineering Evaluation for the referenced project and is pleased to submit this report of our findings to Horner & Shifrin, Inc. (H&S). The purpose of our work was to determine subsurface conditions at specific boring locations, and to gather data on which to prepare geotechnical recommendations for the design and construction of the planned West Watson Road improvements. This report describes the exploration procedures used, exhibits the data obtained, and presents our evaluations and recommendations relative to certain geotechnical engineering aspects of the project.

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

Respectfully submitted,
TSI ENGINEERING, INC.

James Overholt
Staff Engineer

STATE OF MISSOURI
WILLIAM J. GRAHAM
NUMBER
E-2002006889
REGISTERED PROFESSIONAL ENGINEER

William J. Graham, PE
Senior Project Manager

Denise B. Hervey, PE
Principal

CONTENTS

SUBSURFACE INVESTIGATION AND GEOTECHNICAL ENGINEERING EVALUATION WEST WATSON ROAD IMPROVEMENTS SUNSET HILLS, MISSOURI

1.0 SCOPE OF WORK

This report summarizes the results of a geotechnical study performed for the improvements to West Watson Road, in Sunset Hills, Missouri. The study was performed in general accordance with the TSi proposal to Mr. Ramin Ashrafzadeh of H&S, dated March 13, 2013. Based on TSi's understanding of the project, the following items have been identified for inclusion in this study report:

- Review available information concerning the geology and near-surface soil conditions along the roadway;
- Subsurface conditions and material types at each boring location, including documentation of the pavement layers and base;
- Recommendations for preparation of the soil subgrade for support of the new pavement;
- Recommendations for California Bearing Ratio (CBR) and modulus-of-subgrade reaction values based on the general character of the soil encountered, for design of the new pavement;
- Recommendations for fill and backfill materials, placement, and compaction; and
- General construction considerations.

2.0 Site and Project Descriptions

The project consists of the reconstruction of approximately 4,500 feet of West Watson Road, from Robyn Road to Lindbergh Boulevard, in the City of Sunset Hills. Also included is approximately 3,000 feet of sidewalk on the north side of the road, from Robyn to Bradford Woods. The present wearing surface of the road is asphaltic concrete. The existing roadway is approximately 24 feet wide, with asphaltic concrete curbs and no shoulders. The roadway lies along the crest of a ridge oriented to the west-southwest, gradually sloping down from Lindbergh to Robyn. Approaching Robyn, the alignment moves down the south slope of the ridge. The project consists of the removal of a portion of the existing roadway by milling, with an asphaltic concrete overlay. The project will involve no significant grade changes to the present road. The new roadway will have two 11-foot lanes, with new Portland cement curbs and the sidewalk as described. The boring locations and the new roadway alignment are shown in relation to the various cross streets on the Site and Boring Location Plans, Figures 2.1 and 2.2 of Appendix A.

3.0 Field Exploration and Laboratory Testing

3.1 Field Exploration

On June 10, 2014, TSi conducted a subsurface exploration at the site of the planned West Watson Road improvements. The field exploration consisted of completing six core holes, designated as B-1 through -6, at approximate 800-foot intervals. The pavement was cored at each boring location, then a split-spoon sampler was driven through the pavement base. The core holes were drilled with a CME 45 truck-mounted rotary drill rig, using a carbide-tipped core barrel. At the conclusion of the coring at each location, the base material was removed and a split-barrel sampler was driven. The boring locations were selected by H&S, and marked in the field by TSi. The approximate locations of the borings are indicated on the Site and Boring Location Plans, Figures 2.1 and 2.2.

An engineer from TSi supervised the drilling and sampling procedures, and collected and classified the samples recovered. Split-spoon samples were recovered from the borings using a 2-inch outside-diameter, split-barrel sampler, driven by a CME automatic hammer, in accordance with ASTM D 1586. The split-spoon samples were placed in glass jars and saved for later testing in the laboratory. The sampling for each core hole is summarized on the Coring Data Summary in Appendix B of this report.

The results of the field tests and measurements were recorded on field logs and appropriate data sheets. Those data sheets and logs contain information concerning the boring methods, samples attempted and recovered, indications of the presence of various subsurface materials, and the observation of groundwater. The field logs and data sheets contain the field engineer's interpretations of the conditions between samples, based on the performance of the drilling equipment and the cuttings brought to the surface by the drilling tools.

3.2 Laboratory Testing

A laboratory testing program was conducted by TSi to determine selected engineering properties of the obtained soil samples. The following laboratory tests were performed on selected samples recovered from the borings:

- visual descriptions by color and texture of each sample (ASTM 2488);
- natural moisture content of each cohesive sample (ASTM D 2216); and
- Atterberg limits on selected cohesive samples (ASTM D 4318).

Data and observations from laboratory tests were recorded on laboratory data sheets during the course of the testing program. The results of the laboratory tests are summarized on the Coring Data Summary. The analysis and conclusions contained in this report are based on field and laboratory test results and on the interpretations of the subsurface conditions as reported on the summary. Only data pertinent to the objectives of this report have been included on the summary; therefore, this summary should not be used for other purposes.

4.0 Existing Pavement Section

The pavement section for the roadway consists of 7.0 to 10.0 inches of asphaltic concrete. An aggregate pavement base, comprised of crushed limestone was encountered in Borings B-2, -3, -5 and -6, with thicknesses ranging from 1.0 to 8.0 inches. The base rock at Boring B-1 consisted of gravel (GP-GC), with clay. Base rock was not encountered at Boring B-4, where the pavement appeared to be supported by natural fat clay (CH). The details of the pavement thickness and aggregate pavement base thickness are presented in the summary in Appendix B.

5.0 Subsurface Conditions

Details of the subsurface conditions encountered at the boring locations are shown on the Coring Data Summary in Appendix B. The general subsurface conditions encountered and their pertinent engineering characteristics are described in the following paragraphs. Conditions represented by the borings should be considered applicable only at the boring locations on the dates shown; the reported conditions may be different at other locations or at other times.

5.1 General Geology

The general site area is underlain by bedrock of Mississippian age, consisting of the St. Louis Limestone. In some areas, outliers of Pennsylvanian shales exist. The Mississippian limestone is susceptible to solution activity, resulting in the potential for sinkholes that may be filled with more recent sediments, irregular bedrock surfaces, and widened joints with variable degrees of weathering. Within the beds and some banks of creeks and tributaries, the soil overburden is expected to consist of alluvium, probably lean and fat clays eroded from the adjacent uplands. These deposits may also include layers of sand and gravel, or sandy soils that could contain water, or be capable of passing substantial volumes of water into excavations. Away from the creeks, the upland soils typically consist of windblown lean clays (loess) underlain by residual lean and fat clays derived by weathering of the underlying bedrock surface. In some areas the loess is absent.

5.2 Generalized Subsurface Profile

In general, the borings at the project site encountered residual deposits at the subgrade level, with the exception of Boring B-1 which encountered possible fill. The possible fill at Boring B-1 consisted of gravel (GP-GC, as designated by the Unified Soil Classification System), with a variable content of sand and clay. A sample of this possible fill has a standard penetration test (N) value of 7 with a moisture content of 10%. Residual deposits were encountered at all the other boring locations. The residual deposits consist of lean and fat clays (CL and CH). The residual deposits have N-values ranging from 5 to 11 bpf. Moisture contents in the residuum range from 19 to 26%.

5.3 Groundwater

Groundwater was not encountered in any of the borings at the time of drilling. The presence or absence of groundwater at a particular location does not necessarily mean that groundwater will be present or absent at that location at other times. Seasonal variations and other unknown considerations could cause fluctuations in water levels and the presence of water in the soils.

6.0 Engineering Assessments and Recommendations

6.1 Pavement Design Recommendations

Based on the general character of the soils encountered in the borings, a modulus-of-subgrade reaction of 100 pounds per cubic inch (pci) is recommended for design of the new concrete curbs and sidewalks. Flexible pavement thicknesses may be designed using an estimated CBR value of 3. These values are based on the assumption that the subgrade is prepared in accordance with the recommendations provided in Section 7 of this report. For areas where the asphaltic concrete overlay is planned, the values are based on the assumption that subgrade conditions are no worse than encountered at the boring locations.

6.2 Pavement Drainage Considerations

Groundwater was not encountered in the Borings during drilling. The materials encountered at the borings within 3 feet of the surface frequently have moisture contents estimated to be below a saturated level. Drainage provisions for the new pavement, such as a drainage layer or drainage trenches below the pavement base layer, do not appear necessary.

7.0 Site Preparation and Excavation Considerations

7.1 Subgrade Preparation

Construction areas should be stripped of existing pavement, organic soil, and any deleterious materials prior to site excavation and grading. Care should be taken during stripping to prevent excessive disturbance of the underlying soil. After the removal of these materials, and where further excavation is not required, the exposed subgrade should be proofrolled under the observation of TSi to determine any areas of soft subgrade. Soft areas may require excavation and recompaction, or replacement with properly compacted material.

TSi recommends that the soil subgrade be compacted to a dry density of at least 95% of the standard Proctor maximum dry density (ASTM D 698) of the soil prior to the placement of fill or pavement materials.

7.2 Subgrade Protection and Modification

Construction areas should be properly drained in order to reduce or prevent surface runoff from collecting on the pavement subgrade. Any ponded water on the exposed subgrade should be removed immediately. To prevent unnecessary disturbance of the subgrade soils, heavy construction vehicles should be restricted from traveling through the finished subgrade. If areas of disturbed subgrade develop, they should be properly repaired in accordance with the recommendations in this report.

Natural soils consisting of fat clays (CH), with a liquid limit of 50 or more, were encountered just beneath the existing pavement at Boring B-4 at a depth of 2.3 feet, and may be encountered at other locations along the roadway. These clays can potentially shrink or swell due to variations in their natural moisture content resulting in heave, settlement, and cracking of the pavement. Precautions should be taken during construction to maintain the present moisture content of the soil. These soils should not be allowed to dry excessively due to prolonged exposure to the sun or wind. Water should not be allowed to collect on these soils. The fat clays should be covered with the pavement base layer as soon as possible after subgrade excavation and preparation.

Consideration could be given to lime modification of the clay subgrade. The incorporation of lime into the clay will reduce its plasticity, the potential to shrink or swell, and increase the shear strength of the soil. Typically the addition of lime will result in a modulus-of-subgrade reaction value for the compacted clay of more than 200 psi. A minimum thickness of 12 inches of lime-modified soil would be appropriate. The addition of 3 to 5 percent of lime by dry weight of the soil is normally required. Consideration should also be given to utilizing a crushed limestone base in the design of new pavement.

7.3 Fill and Backfill Materials

The soils encountered at the site should be suitable for use as structural fill where required. Off-site borrow soil should consist of lean clays or silts having a liquid limit of less than 50 and a plasticity index of less than 25. Off-site soil should be approved by TSi prior to being imported to the job site. In general, acceptable fill materials would include soil with no significant content of inert material such as brick, concrete, or stone pieces. Soil with decayable material such as wood, metal, or vegetation is not acceptable.

At this time, the moisture content of the on-site soil is generally too high for proper placement and compaction. Prior to compaction, some of the soil may require moisture reduction. During warm weather, moisture reduction can generally be accomplished by disking, or otherwise aerating the soil. At the time of construction, some of the soil may require the addition of moisture prior to compaction. This should be performed in a controlled manner using a tank truck with a spray bar, and the moistened soil should be thoroughly blended with a disk or pulverizer to produce a uniform moisture content. Repeated passages of the equipment may be required to achieve a uniform moisture content.

If the roadway is constructed during the winter season, fill materials should be carefully observed to see that no ice or frozen soils are placed as fill or remain in the base materials upon which fill is placed.

7.4 Fill and Backfill Placement

Cohesive fill placed for pavement support should be compacted to a dry density of at least 95% of the standard Proctor maximum dry density (ASTM D 698) of the soil. Well-graded granular material, such as crushed limestone, placed for pavement support, should be compacted to 100% of the standard Proctor maximum dry density. The moisture content of fill at the time of compaction should generally be within ±3% of the optimum moisture content of the material as determined by the standard Proctor compaction test. Fill should be placed in loose lifts not in excess of 8 inches thick, and compacted to the aforementioned criterion. However, it may be necessary to place fill in thinner lifts to achieve the recommended compaction when using small hand-operated equipment.

Backfill placed next to below-grade structures should be compacted with hand-operated compaction equipment and not large self-propelled or machine-operated equipment. The operation of large pieces of equipment adjacent to a structure can result in overcompaction and excessive lateral earth pressure against the structure.

7.5 Groundwater Considerations

Groundwater was not encountered during drilling, and groundwater seepage is not anticipated at the depths of grading planned for the roadway. However, if groundwater seepage does occur, it is believed the groundwater can be handled by shallow swales, with a sump and pump arrangement, as necessary. If groundwater seepage or moist conditions become evident within the subgrade, care must be taken not to disturb the exposed soil. Equipment should not operate directly on saturated subgrade areas.

8.0 Construction Observation and Testing

It is recommended that TSi be retained during construction to perform testing and observation services for the following items:

- observation of the exposed roadway subgrade, after removal of the existing pavement, base aggregate, or topsoil, and during proofrolling and recompaction;
- placement and compaction of fill and backfill materials;
- placement and compaction of the pavement aggregate base; and
- placement and quality assurance testing of the pavement materials.

These quality assurance services should help to verify the design assumptions and maintain construction procedures in accordance with the project plans, specifications, and good engineering practice.

9.0 Report Limitations

This report has been prepared for the exclusive use of **Horner & Shifrin, Inc.** for specific application to the subject project. The recommendations contained in this report have been made in accordance with generally accepted soil and foundation engineering practices; no other warranties are implied or expressed.

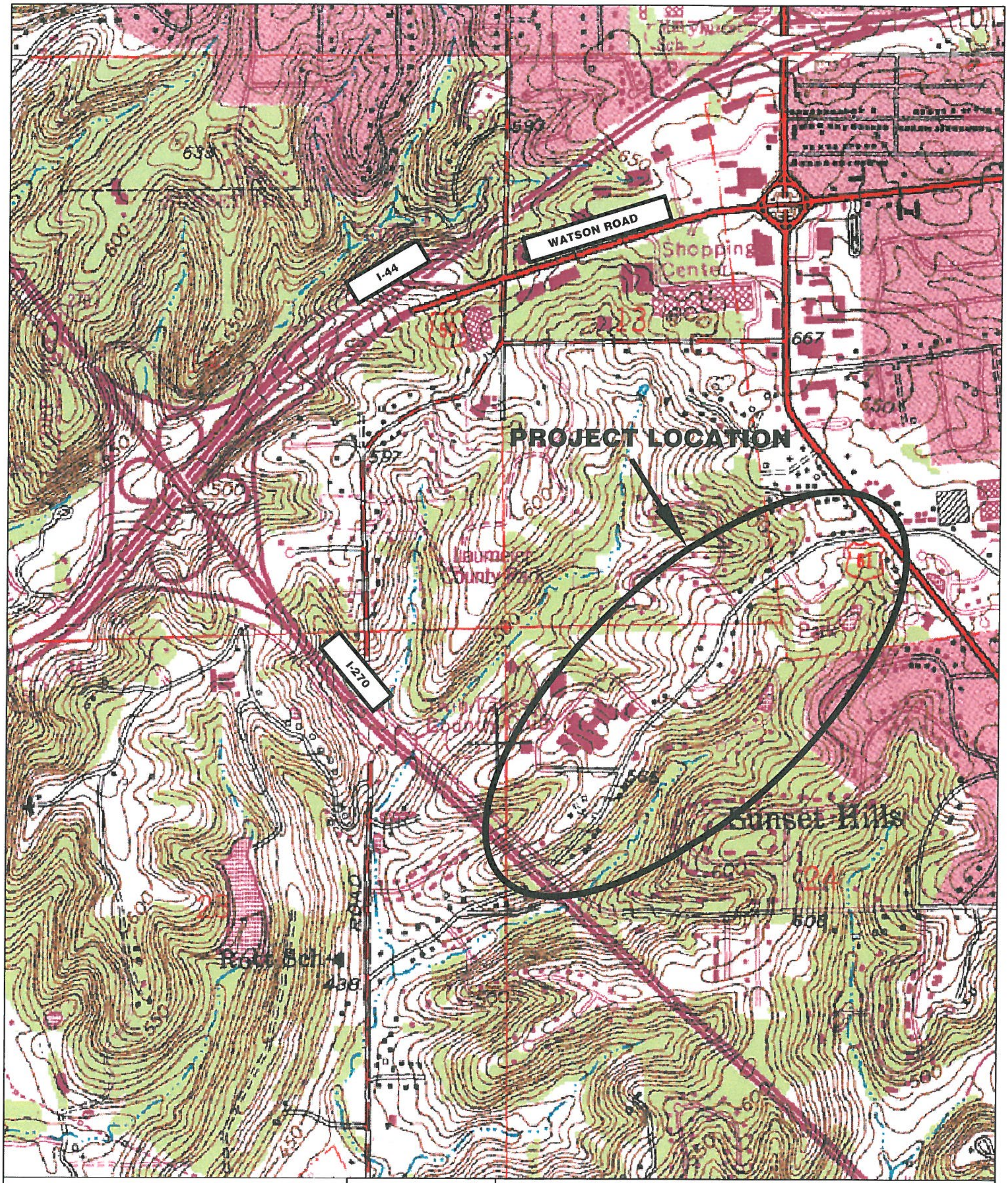
The assessments and recommendations submitted in this report are based in part upon the data obtained from the test borings. The nature and extent of variations away from the borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

This report was prepared for design purposes only and may not be sufficient to prepare an accurate construction bid. Contractors reviewing this report should acknowledge that the information and recommendations contained herein are for design purposes.

If conditions at the site have changed due to natural causes or construction operations, this report should be reviewed by TSi to determine the applicability of the analyses and recommendations considering the changed conditions. The report should also be reviewed by TSi if changes occur in the roadway location, width, and type, or in the planned loads, elevations, or project concepts.

TSi requests the opportunity to review the final plans and specifications for the project prior to construction to verify that the recommendations in this report are properly interpreted and incorporated in the design and construction documents. If TSi is not accorded the opportunity to make this recommended review, we can assume no responsibility for the misinterpretation of our recommendations.

APPENDIX A



NOT TO SCALE

NOTE:
DRAWING PREPARED FROM AN IMAGE OBTAINED FROM TOPOQUEST.COM ON 7/2/14

N

TSi engineering, inc.
5850 ARSENAL STREET
ST. LOUIS, MISSOURI 63139

VICINITY MAP
WEST WATSON ROAD IMPROVEMENTS
SUNSET HILLS, MISSOURI

Drawn By: JAS	Checked By: JSK
Project No. 20141168.00	Date: 7/2/14 | Figure 1

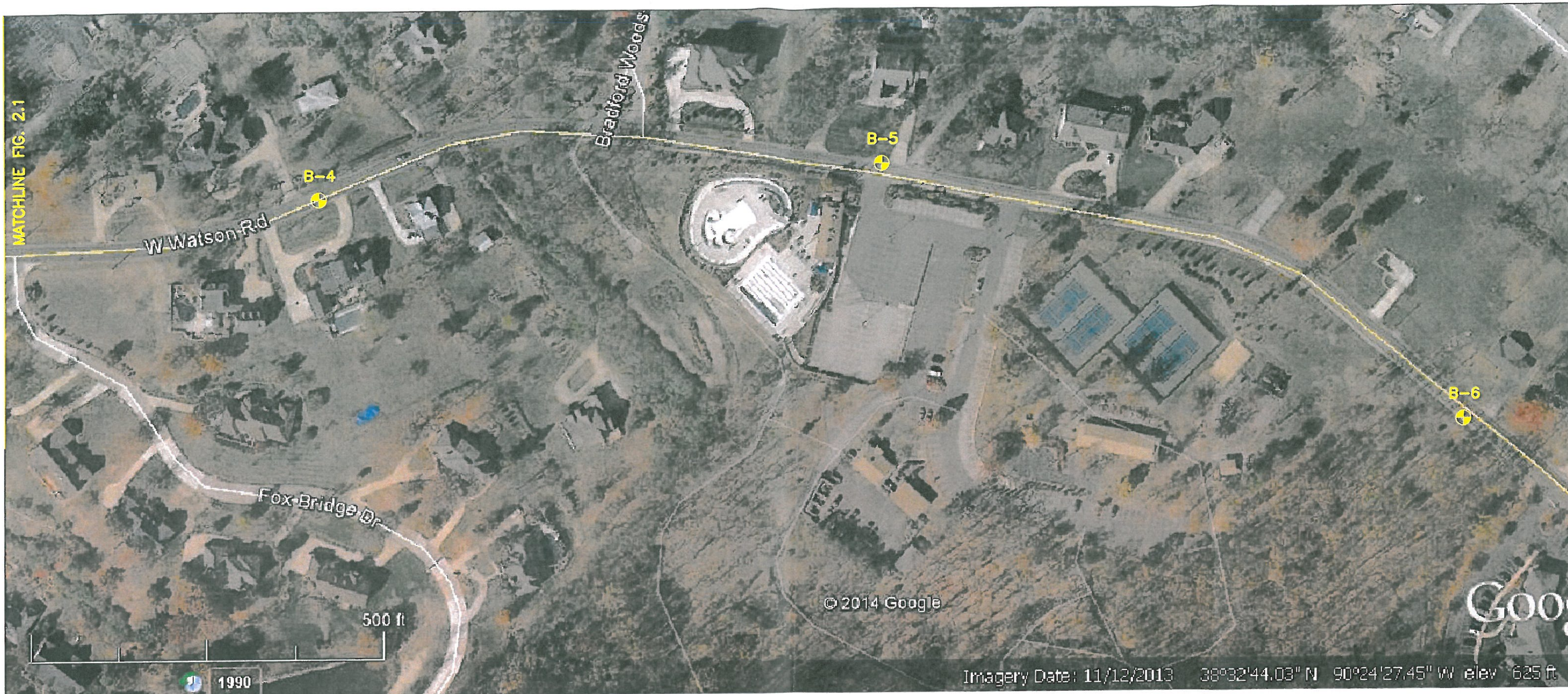
LEGEND

B-1 ⊕ APPROXIMATE BORING LOCATION AND NUMBER

NOTE: THIS PLAN WAS PREPARED FROM A GOOGLE EARTH IMAGE.

TSi
5850 ARSENAL STREET
ST. LOUIS, MISSOURI 63139

SITE AND BORING LOCATION PLAN WEST WATSON ROAD IMPROVEMENTS SUNSET HILLS, MISSOURI	
Drawn By: JAS	Checked By: JSK
Project No. 20141168.00	Date: 7/2/14 — Figure 2.1



LEGEND

B-1 ⊕ APPROXIMATE BORING LOCATION AND NUMBER

NOTE: THIS PLAN WAS PREPARED FROM A GOOGLE EARTH IMAGE.

TSi
5850 ARSENAL STREET
ST. LOUIS, MISSOURI 63139

SITE AND BORING LOCATION PLAN		
WEST WATSON ROAD IMPROVEMENTS SUNSET HILLS, MISSOURI		
Drawn By: JAS	Checked By: JSK	
Project No. 20141168.00	Date: 7/2/14	Figure 2.2

APPENDIX B

TSi engineering, inc.
5850 Arsenal Street
St. Louis, MO 63139
314.644.3134
314.644.3135 (Fax)

Coring Data Summary
Project: W. Watson Road Improvements
Project No.: 20141168.00

Prepared By: J. Overholt **Date: 6-12-2014**
Checked By: D. Iffrig **Date: 7-3-2014**

	Boring Number	Core Layer Thickness (inches) Top → Bottom			Recovered Pavement Thickness (inches)				N - Value (bpf)	Moisture Content (%)	**Notes and Comments**
		1	2	3	Asphalt	Concrete	Combined	Base Rock			
W. Watson Road	B-1	7.00 N			7.00	None	7.00	None	7	10	No base rock, brown & gray gravel, trace clay (Fill) to 2.1 ft
	B-2	9.00 N			9.00	None	9.00	3.00	7	24	Crushed limestone base rock, brown fat clay to 2.25 ft
	B-3	10.00 N			10.00	None	10.00	1.00	8	21	Crushed limestone base, brown fat clay with gravel to 2.3 ft
	B-4	9.50 N			9.50	None	9.50	None	8	24	No base rock, brown fat clay to 2.3 ft..
	B-5	7.00 N			7.00	None	7.00	8.00	11	19	Crushed limestone base rock, brown lean clay to 2.25 ft.
	B-6	8.00 N			8.00	None	8.00	3.00	5	26	Crushed limestone base rock, brown & gray lean clay to 2.2 ft.

Notes: An Atterberg limits test run on the sample of clay in Boring B-4 yielded LL=60, PL=21 and PI=39