DOWNTOWN DEVELOPMENT

TID #5- REQUEST FOR PROPOSALS

NEW LONDON, WISCONSIN

Issuance Date: October 31st, 2022

Due Date: December 29th, 2022

REQUEST FOR PROPOSALS
TID #5 DOWNTOWN DEVELOPMENT

The City of New London, WI is pleased to release a Request for Proposals (RFP) for a development opportunity in New London's downtown TID #5 Business District. Development of this site expands on the city's goals to grow and strengthen the downtown district with a focus to diversify but complement existing businesses to capitalize and encourage economic growth.

Proposals must be for a commercial development which fits into the current zoning designation. New London is committed to reducing barriers and providing incentives, clarity and certainty throughout the development process for projects that support the city's economic and community expansion objectives.

The City of New London will accept written proposals until December 29th, 2022. Proposals can be submitted in person, by mail or by emailing a PDF copy to choerth@newlondonwi.org. Any proposals received after this date will be deemed unresponsive for this solicitation.

The City of New London reserves the right to accept or reject any or all proposals, to resolicit proposals, to waive any irregularities, and to select the proposal deemed to be in the best interest of the city.

Issuance of this RFP does not obligate the City of New London to award a contract nor is the city of New London liable for any costs incurred in the preparation and submittal of the proposal.

For questions or clarification of this RFP, please contact Chad Hoerth, New London City Administrator at 920.982.8500 x116 or by email at choerth@newlondonwi.org by November 11th, 2022.

N. Water Street, Downtown New London

BACKGROUND

The City of New London, WI seeks a development partner for prime property in New London's downtown district. The four (4) parcels for sale were purchased by the Library and Museum Board with the intent to expand on programming offered by the New London Library, which currently resides across the street. The Board's goal was to build a new facility, named the "New London Library Annex", and provide additional space for teen education, collaboration, computer lab resources, STEAM programming and a large community multipurpose room for training, education and private gatherings. The properties were purchased and existing buildings razed primarily through the financial generosity of local donors who supported the Board's visions for additional library services. Fully engineered and design plans were created for the new Annex facility. The Library and Museum Board was about ready to authorize the project to be advertised for construction bids when a separate opportunity was presented.

First State Bank, a prominent financial institution in the New London Community since 1933, made an extremely generous offer to donate their existing and well maintained 26,000 sq. foot facility on N. Water Street for a new library location. First State Bank's goal was to build a new facility to streamline their operations but did not want to see their old facility sit vacant and go to waste. The donation gave the library the opportunity to merge the existing book/resource collection and the services planned for the new annex facility under one roof. The benevolent donation was accepted and plans are now underway to transform this prominent anchor on N Water Street to a new library in the next few years. The effect of this donation expanded to two additional opportunities for the New London community. The New London Public Museum, which is housed in the lower level of the current Library/Museum facility, has also been researching ways over the years to expand their collection and devise better storage and climate control systems in line with current museum standards. The relocation of the library will allow the museum to expand into the entire facility increasing exhibits, programs, and collection storage space.

Finally, since the library and annex programing will be merged at the existing First State Bank building, a new facility will not be developed across from the existing Library and Museum building. City leaders are excited for the opportunity to market this prime piece of property for a new commercial development to spark additional growth in the downtown district.

PROJECT PREFERENCES

The identified parcels are located on an arterial traffic route in the city (Business Hwy 45 and Cty Hwy D) which is considered the south entrance of the downtown district. The location is also within two short walking blocks from the Wolf River and a newly proposed 98-unit multifamily riverfront housing development. Ideal commercial developments for this project would include but not necessarily be limited to a traditional downtown restaurant, retail, lodging, event center or office space use.

PARCEL INFORMATION

The ready to build site had all buildings removed and is currently divided into four parcels located southwest of the corner of W Spring Street and S Pearl Street. The four parcels collectively come to 29,157 sq. ft or 0.6693 acres. See Appendix A for the CSM which is in process of being recorded to combine the four parcels into one.

An existing "alley" is located through the parcel at address 413 S Pearl Street and is utilized by the property at 111 W Cook street to access a garage. A process to continue this access and/or create an easement may need to be considered and negotiated.

Four lots labeled 401, 405, 411 and 413 S Pearl Street make up the "site" for sale (highlighted in red).

A geo technical report was completed which confirmed support of the proposed single story 10,000 square foot "annex" facility. This geo technical report is shown in Appendix C.

PURCHASE PRICE

For this particular project, the City and Library/Museum Board are looking to sell the parcels as close to a market rate price as possible. The goal is to recoup as much of the over $100,000 donated funds as possible, and utilize those funds towards the renovation of the First State Bank building. This would allow the contributions of those original financial donations to still be used and recognized, as intended, for the new library development.

POTENTIAL INCENTIVES

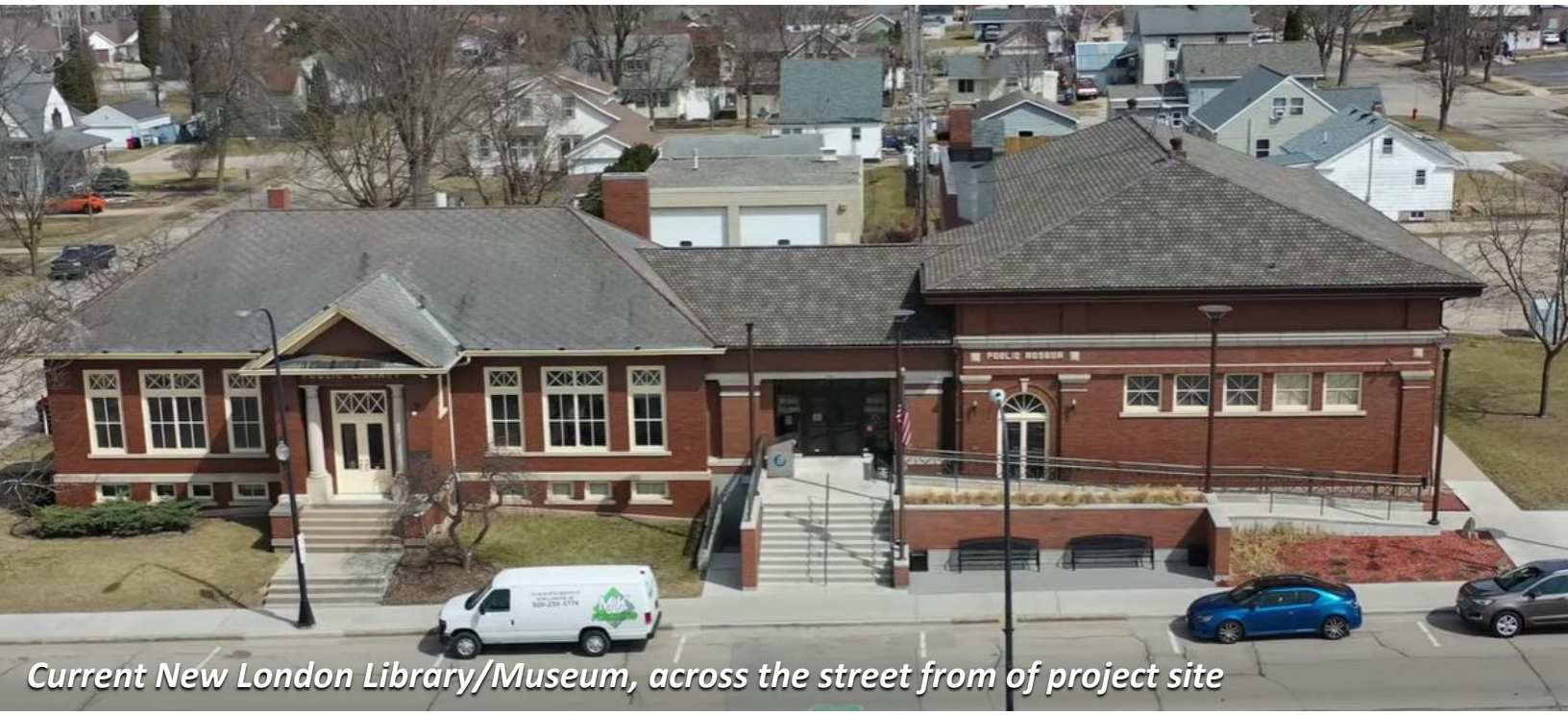
The City of New London created TID #5 in the downtown district in October of 2021. The purpose of the TID is to capture increment to fund a new residential housing development along the Wolf River, spur commercial growth opportunities on vacant or dilapidated downtown district buildings and financially assist with a planned street reconstruction project on nearby N Water Street in 2024. The four parcels for sale are included in TID #5 and the City of New London would be interested in negotiating an incentive based on the development's increased value. The developer would be required to enter into a developer's agreement with the city. This TID is expected to remain open for the full 20-year life and close in 2040. The city may also assist in supporting other grant or loan opportunities needed for a development including, but not limited to, programs offered by the State of Wisconsin, Waupaca County or others. Appendix B includes a map of the existing district and a recently approved expansion of the district on the north side to include a new development by First State Bank.

PREPARING & SUBMITTING PROPOSAL

Evaluation and selection of a project partner will be based on information submitted in the proposal, reference checks, and supplemental information. Failure to respond to each requirement in the RFP may be the basis for rejecting a response.
Submitted proposals are suggested to include each of the following sections:

1. DEVELOPER PROFILE
    a. Provide relevant contact information for the developer and a brief description of development success. Contact information should include main contact name(s), phone number, mailing address and email address.

2. EXECUTIVE SUMMARY OF THE PROPOSED PROJECT
    a. Provide project details related to the proposed use of the area. Plans should adhere to the city's current zoning requirements.



Current New London Library/Museum, across the street from of project site

3. DRAFT SITE PLAN
    a. A draft site plan for the property will need to be provided. Plan does not need to be engineered but should be generally to scale and should include (if the following features are planned) preliminary concepts on the structure layout, elevation and conceptual designs of the street facing façade, parking access and location(s), refuse storage location, basic landscaping intent, etc.

4. ESTIMATED CONSTRUCTION VALUE
    a. Provide the estimated construction value and proposed construction timeline.

5. SIMILAR REDEVELOPMENT PROJECTS
    a. Provide examples of similar successful development projects the development team has been part of.

6. PURCHASE PRICE OF LAND
    a. Provide the proposed purchase price of the city-owned parcels.

7. FINANCIAL INCENTIVES
    a. Provide all requests for city financial participation/incentives.

8. DEVELOPER'S FINANCIAL CAPACITY
    a. Provide a description of the development entity's financial capacity. This section should provide the city with an understanding of the capability of the developer to secure the financing necessary to complete a project of this size and scope.

Selected developers may be requested to attend a meeting with the selection committee or other city committees/boards to provide a presentation and/or answer questions about said proposal.

INCURRING COST

The City of New London is not liable for any cost incurred by proposers in replying to this RFP. The city reserves the right to accept or reject any or all proposals and to waive technicalities in any proposal or part thereof deemed to be in the best interest of the city.

PROPRIETARY INFORMATION – OPEN RECORDS

Proprietary information submitted will be handled in accordance with Wisconsin Statutes. Proposer should identify confidential information. The city must comply with open records law.

EVALUATION CRITERIA

All complete and responsive proposals will be evaluated by appropriate City of New London and Library/Museum Board officials. Evaluations will be based on the information submitted, as well as information that the city may discover in analyzing or verifying information submitted in the proposal (or subsequently requested). Proposal elements to be evaluated, in no particular order, include the following:

- Project design:
    - Proposal is architecturally unique
    - Creative in its use
    - Activates the street/public spaces
- Proposal complements existing downtown redevelopment projects & overall vision for the downtown district
- Development team capability
- Taxable value created
- Purchase price offer
- Requested city financial incentive participation

The city reserves the right to:

- Reject any or all offers and discontinue this RFP process without obligation or liability
- Accept or sell land on offers received, without discussions or requests for best and final offers
- Accept more than one right to develop
- Negotiate the nature and scope of any proposed project before final committee and council approval
- Accept no proposal and re-RFP or bid properties again in the future

CLARIFICATION OF THE REQUEST FOR PROPOSALS (RFP)

Any questions relative to the RFP must be submitted by e-mail to choerth@newlondonwi.org, and must be received by November 11th, 2022. No clarifications will be provided following that

date. All questions will be answered and posted for all interested developers on the City of New London website at: www.newlondonwi.org/projects by November 30th, 2022.

ANTICIPATED TIMETABLE

Below is an anticipated timeline for this RFP. The City of New London reserves the right to adjust this timeline as necessary.

- Issue RFP: October 31th, 2022
- Due Date for Questions: November 11th, 2022
- Date Questions will be posted on city's website: November 30th, 2022
- Proposals Due: December 29th, 2022
- Evaluation Period: January 31st, 2023
- Anticipated announcement: February 10th, 2023

APPENDIX A – UNRECORDED DRAFT CSM
to combine 4 parcels

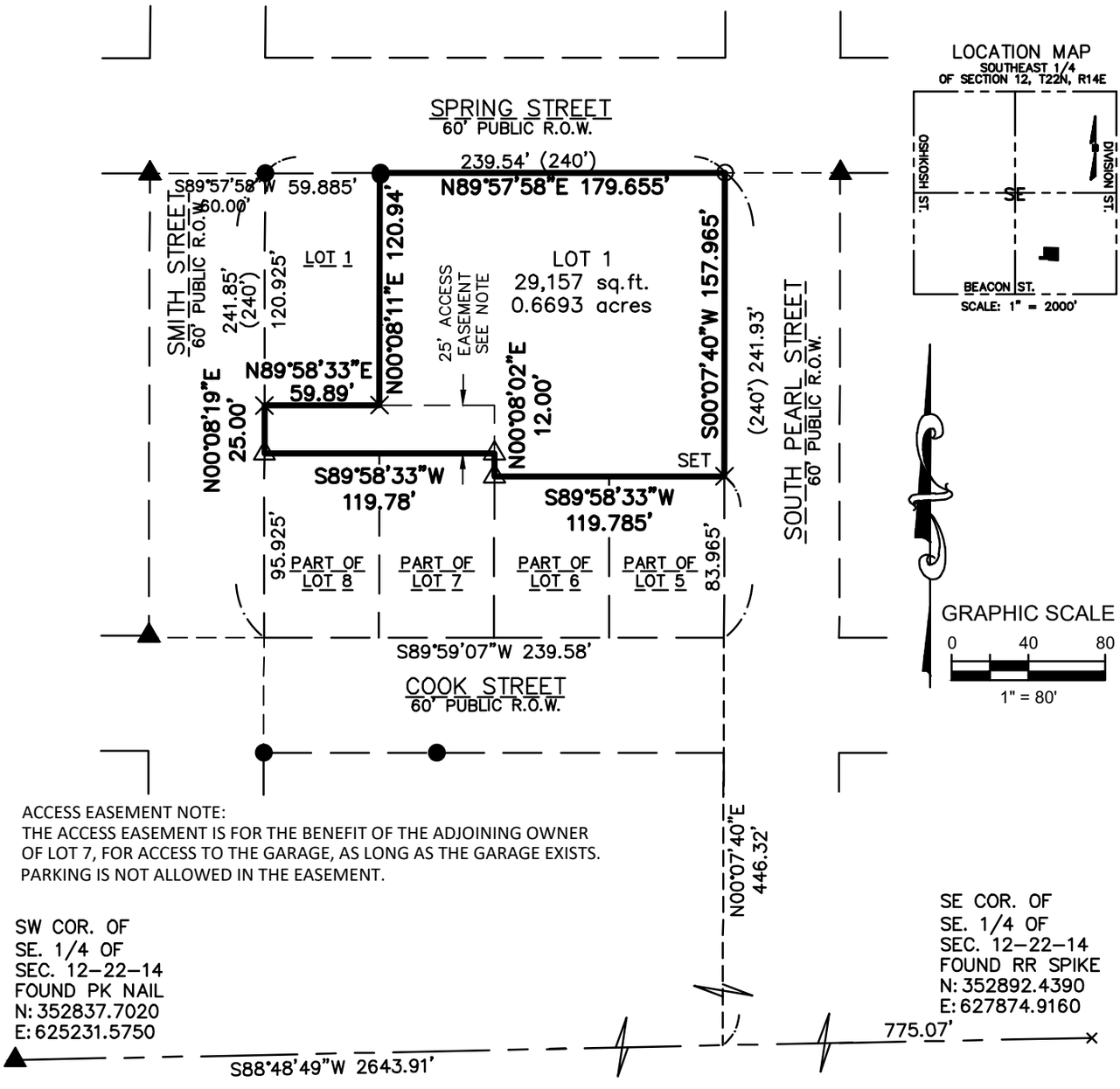
CERTIFIED SURVEY MAP NO. _____

A division of Lots 2, 3, 4, the North 37 feet of Lots 5 and 6, and the North 25 feet of Lots 7 and 8, in Block 23, Reeder Smith Plat, Waupaca County, located in Government Lot 1, Southeast 1/4 of the Southeast 1/4 of Section 12, Town 22 North, Range 14 East, City of New London, Waupaca County, Wisconsin.

▲ INDICATES FOUND IRON ROD, UNLESS NOTED
● INDICATES FOUND 1" IRON PIPE
X INDICATES CHISELED CROSS, UNLESS NOTED
△ INDICATES SET MAG NAIL
○ INDICATES SET 1.315" O.D. IRON PIPE AT LEAST 18" IN LENGTH, 1.68 LBS. PER LINEAL FOOT.
(_) INDICATES RECORDED AS

ALL DIMENSIONS SHOWN ARE MEASURED TO THE NEAREST HUNDREDTH OF A FOOT.
ALL BEARINGS ARE REFERENCED TO THE S. LINE OF THE SE. 1/4 OF SECTION 12, T 22 N, R 14 E, WHICH BEARS S88°48'49"W. WAUPACA COUNTY COORDINATE SYSTEM (WCCS).

FOR BUILDING SETBACK RESTRICTIONS CONTACT THE CITY OF NEW LONDON & ZONING DERPARTMENT.



ACCESS EASEMENT NOTE:
THE ACCESS EASEMENT IS FOR THE BENEFIT OF THE ADJOINING OWNER OF LOT 7, FOR ACCESS TO THE GARAGE, AS LONG AS THE GARAGE EXISTS. PARKING IS NOT ALLOWED IN THE EASEMENT.

SW COR. OF
SE. 1/4 OF
SEC. 12–22–14
FOUND PK NAIL
N: 352837.7020
E: 625231.5750

SE COR. OF
SE. 1/4 OF
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FOUND RR SPIKE
N: 352892.4390
E: 627874.9160

WISCONSIN
JOHN P. CASUCCI
S-2055
OCONOMOWOC
WI
LAND SURVEYOR

John P Casucci

1/04/2021

OWNER;
NEW LONDON LIBRARY AND MUSEUM BOARD
215 N. SHAWANO ST.
NEW LONDON, WI 5496

OWNER;
CITY OF NEW LONDON
215 N. SHAWANO ST.
NEW LONDON, WI 5496

raSmith
CREATIVITY BEYOND ENGINEERING
16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
rasmith.com

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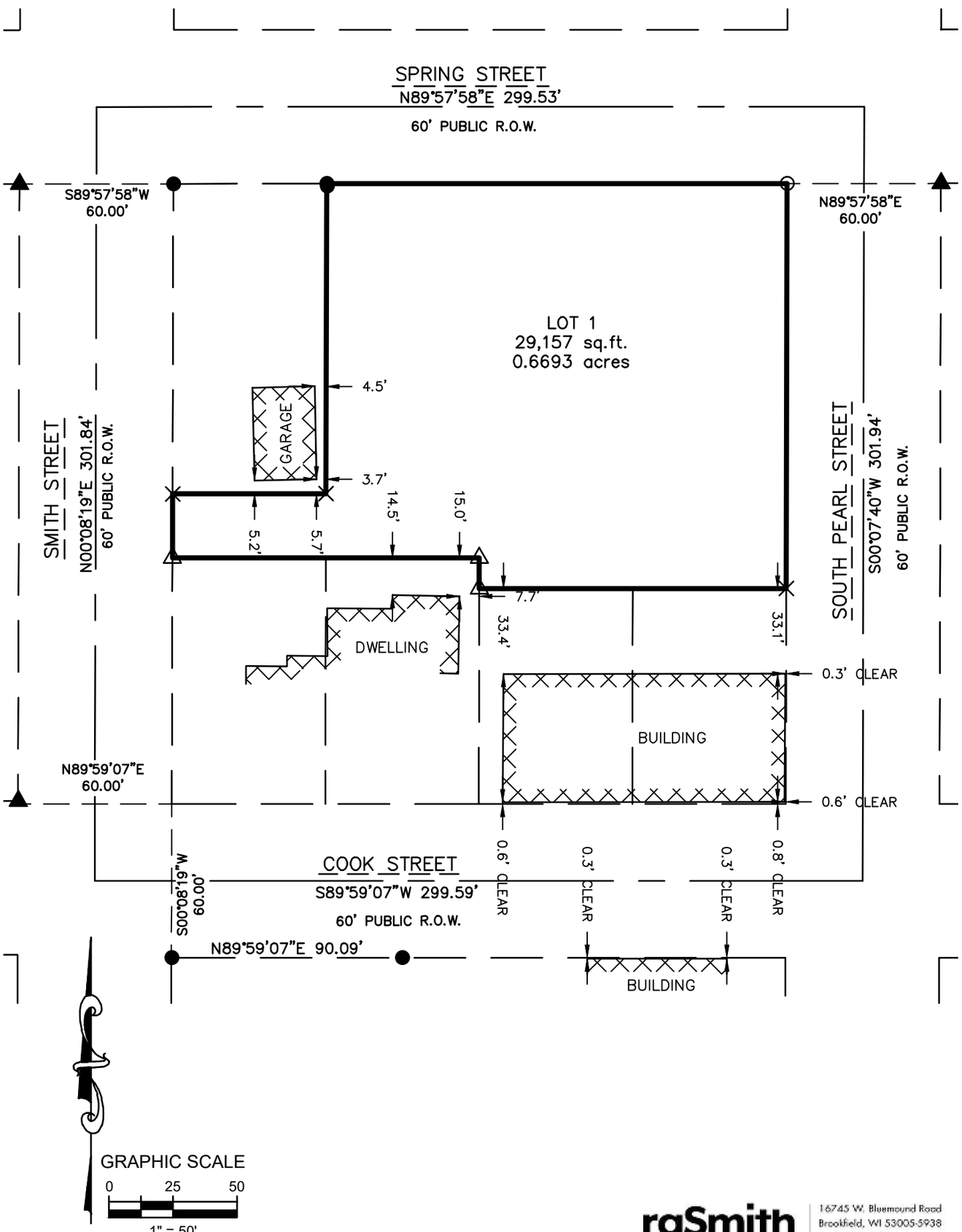

GRAPHIC SCALE
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1" = 50'

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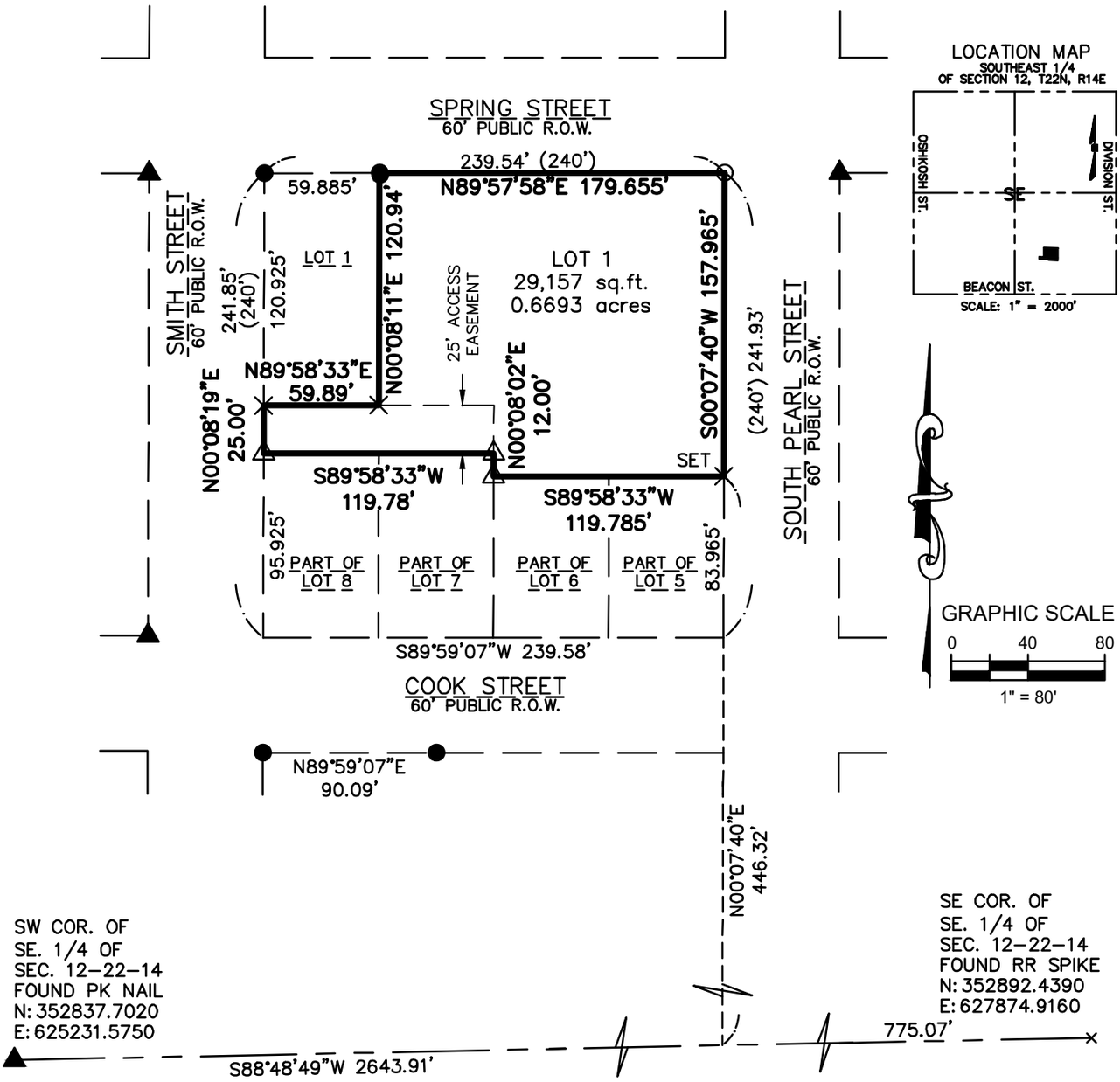

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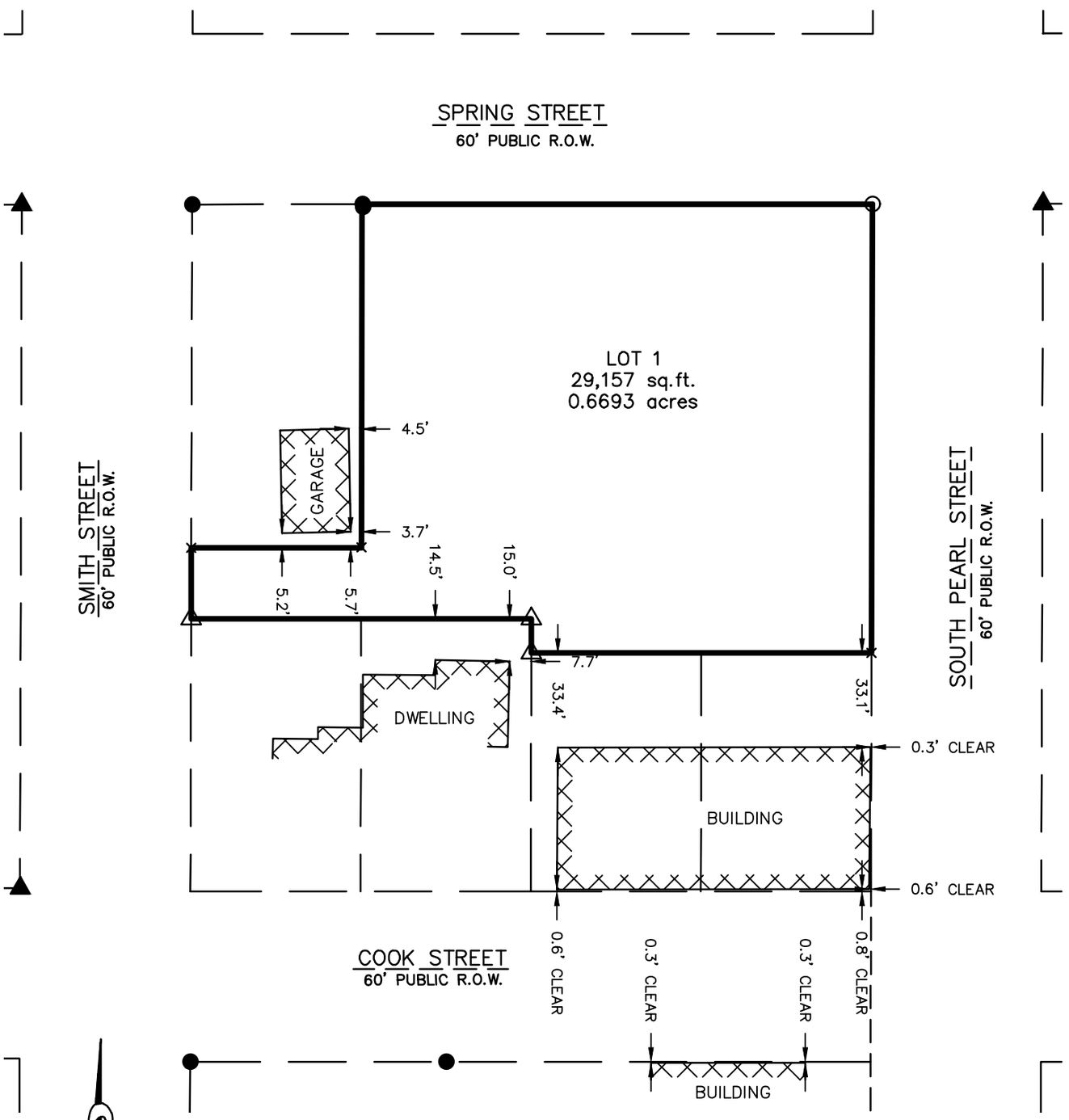

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SURVEYOR'S CERTIFICATE

STATE OF WISCONSIN }
:SS
WAUKESHA COUNTY }

I, JOHN P. CASUCCI, Professional Land Surveyor, do hereby certify:

THAT I have surveyed, divided and mapped a division of Lots 2, 3, 4, the North 37 feet of Lots 5 and 6, and the North 25 feet of Lots 7 and 8, in Block 23, Reeder Smith Plat, Waupaca County, located in Government Lot 1, Southeast 1/4 of the Southeast 1/4 of Section 12, Town 22 North, Range 14 East, City of New London, Waupaca County, Wisconsin, bounded and described as follows:

COMMENCING at the Southeast corner of the Southeast 1/4 of said Section 12; thence South 88° 48' 49" West along the South line of said 1/4 Section a distance of 775.07 feet to a point; thence North 00° 07' 40" East 446.32 feet to a point in the West line of South Pearl Street and the point of beginning of lands to be described; thence South 89° 58' 33" West 119.785 feet to a point; thence North 00° 08' 02" East 12.00 feet to a point; thence South 89° 58' 33" West 119.78 feet to a point in the East line of Smith Street; thence North 00° 08' 19" East along said East line 25.00 feet to the Southwest corner of Lot 1, Block 23 in Reeder Smith Plat; thence North 89° 58' 33" East along the South line of said Lot 59.89 feet to the Southeast corner of said Lot; thence North 00° 08' 11" East along the East line of said Lot 120.94 feet to a point in the South line of Spring Street; thence North 89° 57' 58" East along said South line 179.655 feet to a point in the West line of South Pearl Street; thence South 00° 07' 40" West 157.965 feet to the point of beginning.

Containing 29,157 square feet or 0.6693 acres.

THAT I have made such survey, land division and map by the direction of New London Library and Museum Board and the City of New London, owners.

THAT such map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

THAT I have fully complied with the provisions of Chapter 236.34 of the Wisconsin Statutes and the City of New London in surveying, dividing and mapping said lands.

_____ _____(SEAL)
DATE JOHN P. CASUCCI,
PROFESSIONAL LAND SURVEYOR S-2055

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CORPORATE OWNER'S CERTIFICATE

New London Library and Museum Board, a _____ duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owner, certify that said _____caused the land described on this map to the surveyed, divided, and mapped as represented on this map in accordance with the requirements of the City of New London Municipal Code.

New London Library and Museum Board, does further certify that this map is required by S.236.10 or 236.12 to be submitted to the following for approval or objection: City of New London

WITNESS the hand and seal of New London Library and Museum Board, has caused these presents to be signed by _____, its _____, this _____ day of _____, 2021.

New London Library and Museum Board

_____

STATE OF WISCONSIN }
:SS
_____ COUNTY }

PERSONALLY came before me this _____ day of _____, 2021, the above named _____, to me known to be the person who executed the foregoing instrument, and to me known to be such _____ of said _____ and acknowledged that they executed the foregoing instrument as such officer, by its authority.

_____(SEAL)

Notary Public, State of Wisconsin
My commission expires _____

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CORPORATE OWNER'S CERTIFICATE

City of New London, a municipal corporation duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owner, certify that said municipal corporation caused the land described on this map to the surveyed, divided, and mapped as represented on this map in accordance with the requirements of the City of New London Municipal Code.

City of New London, does further certify that this map is required by S.236.10 or 236.12 to be submitted to the following for approval or objection: City of New London

WITNESS the hand and seal of City of New London, has caused these presents to be signed

By _____, its _____, this _____ day of

_____, 2021.

City of New London

_____

STATE OF WISCONSIN }
:SS
_____ COUNTY }

PERSONALLY came before me this _____ day of _____, 2021,

the above named _____, to me known to be the person who

executed the foregoing instrument, and to me known to be such _____ of said

municipal corporation and acknowledged that they executed the foregoing instrument as such officer, by its authority.

_____(SEAL)

Notary Public, State of Wisconsin
My commission expires _____

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SUBDIVISION ADMINISTRATOR'S CERTIFICATE

I, Mark Herter, Mayor for the City of New London, do hereby certify that the Certified Survey Map as shown above is in compliance with Chapter 18, Subdivision and Platting Code of the City of New London Municipal Code and thereby grant approval of the lot layout as shown hereon

_____ _____

DATE Mark Herter, MAYOR

TREASURER'S CERTIFICATE

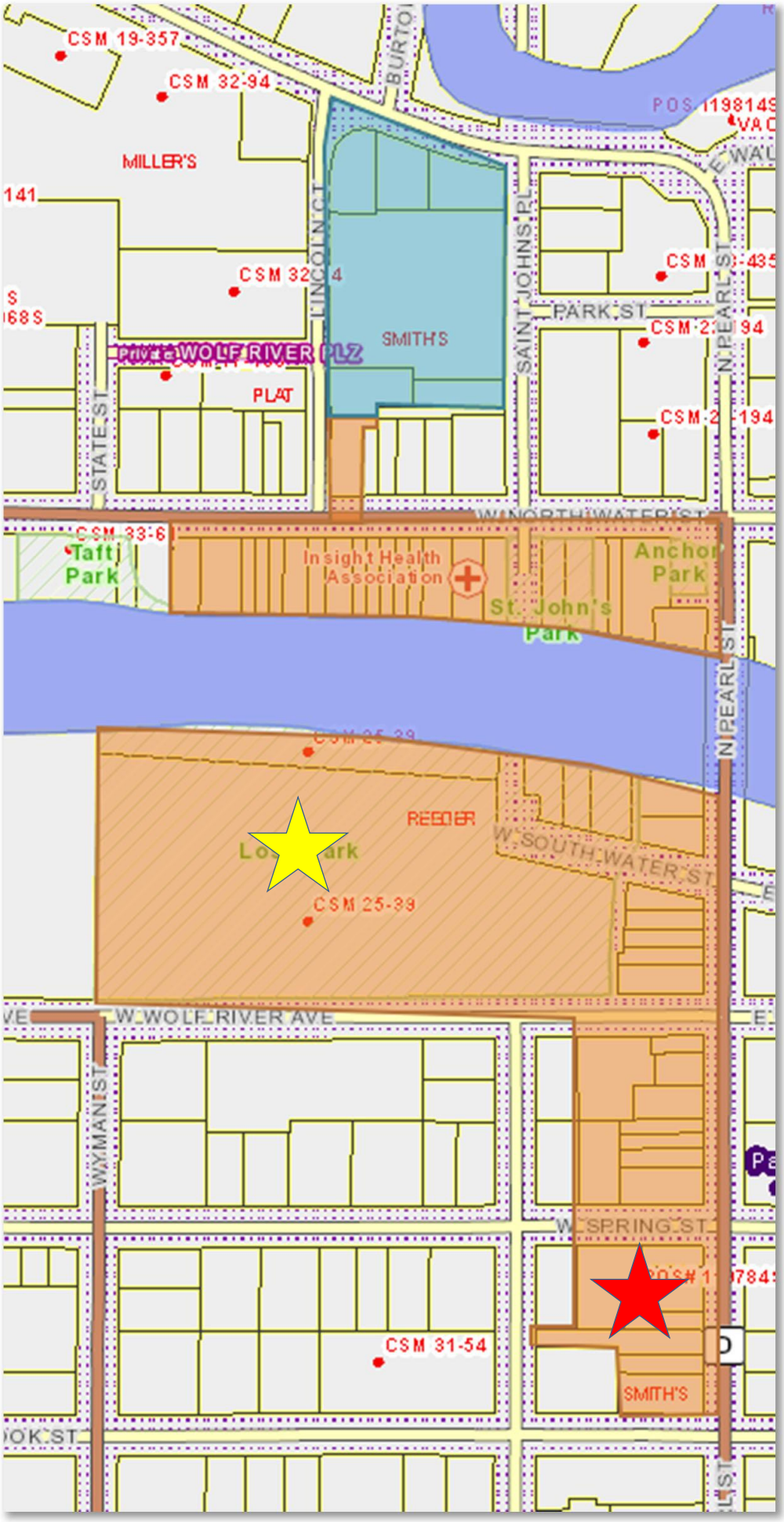
I hereby certify that there are no unpaid taxes or unpaid special assessments on any of the land included on this Certified Survey Map.

_____ _____

CITY TREASURER DATE COUNTY TREASURER DATE

THIS INSTRUMENT WAS DRAFTED BY JOHN P. CASUCCI,

APPENDIX B – TID #5 MAP



Existing TID #5 District

Approved TID #5 Expansion

Location of Public Site for Sale

Location of planned Riverfront Housing Development

APPENDIX C – Geotechnical Engineering Report

ECS Midwest, LLC

Geotechnical Engineering Report

Proposed Library

401, 405, 411, and 413 S. Pearl Street
New London, Wisconsin

ECS Project No. 59:2530

January 11, 2021

January 11, 2021

Mr. Devin Flanigan
Keller, Inc.
N216 STH 55
P.O. Box 620
Kaukauna, WI 54130
Email: dflanigan@kellerbuilds.com

ECS Project No. 59:2530

Reference: Geotechnical Engineering Report
Proposed Library
401, 405, 411, and 413 S. Pearl Street
New London, Wisconsin

Mr. Flanigan:

ECS Midwest, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to Keller, Inc. during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Midwest, LLC

Matthew A. Meyer, P.E.
Geotechnical Department Manager
mmeyer@ecslimited.com

Alex E Barker, P.E.
Office Manager
abarker@ecslimited.com

TABLE OF CONTENTS

APPENDICES

EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, we summarized our principal foundation recommendations. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- ECS understands the proposed project consists of the design and construction of a new library building. The new building is planned to be a 9,464 square foot, one to two story structure with slab-on-grade and no basement. A parking lot is also planned to be part of the proposed construction. We anticipate the parking lot will have a bituminous pavement section.

- In ECS's opinion, the proposed building could be supported on a spread footing foundation system. However, over-excavation of existing fill will be required for shallow footings and floor slabs in a majority of the proposed foundation area.

- A shallow spread footing foundation system bearing in competent native soils, or on engineered fill/lean concrete overlying competent native soils, may be designed for a maximum net allowable bearing pressure of 4,000 psf (pounds per square foot). Competent native soils can be identified on the test boring logs as glacial till, outwash, and lacustrine soils with Standard Penetration Test (SPT) N-values of at least 12 bpf or unconfined compressive strength (Q_p) of at least 2.25 tsf (tons per square foot).

- Excavation below subgrade (EBS) should be performed in pavement areas where subgrade soils contain more than 5 percent organic content or proof-rolling operations indicate rutting or deflections in excess of 1 inch. Consideration should be given to providing EBS for frost concerns where the exposed subgrade contains frost susceptible soil within 3 feet of the finished pavement grade.

- Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

1.0 INTRODUCTION

ECS prepared this report for the purpose of providing the results of our subsurface exploration and laboratory testing, site characterization, engineering analysis, and geotechnical recommendations for the design and construction of foundations, floor slabs, pavements, and retaining walls for the proposed library facility. The recommendations developed for this report are based on project information supplied by Mr. Devin Flanigan of Keller, Inc.

ECS provided services in accordance with our Proposal No. 59:2960-GP, dated September 16, 2020 as authorized by Keller Subcontract No. 74463-012 from Mr. Tom Fricke with Keller, Inc. on November 24, 2020.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

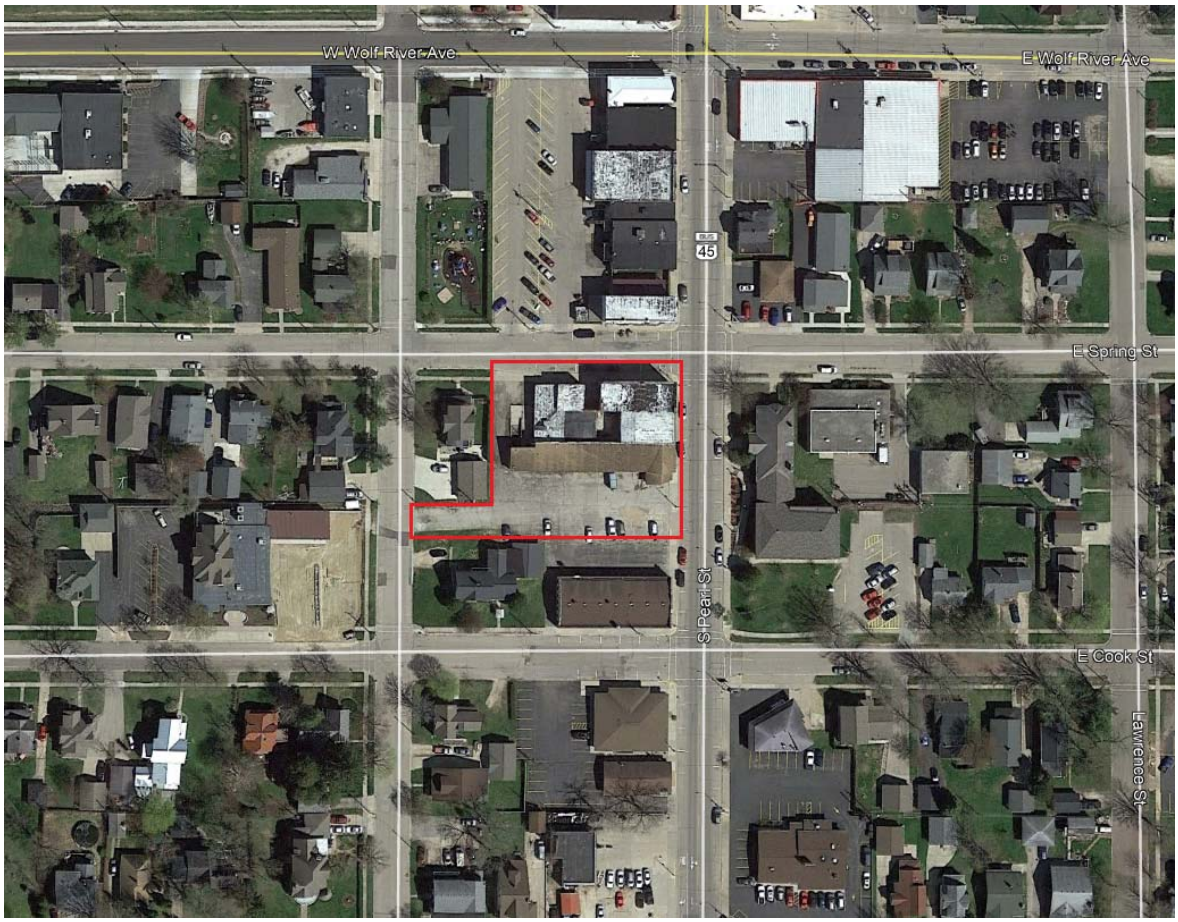
The report includes the following items.

- A brief review and description of our field and laboratory test procedures and results.
- A review of the observed surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil/rock stratigraphy with pertinent available physical properties.
- Final test boring logs.
- Recommended foundation type, allowable soil bearing pressure, and estimates of foundation settlement.
- Recommendations for slab-on-grade construction including subgrade modulus.
- Seismic site class.
- Recommendations for pavements (rigid and flexible) including pavement subgrade preparation, minimum pavement sections and pavement drainage.
- Design and construction recommendations for site retaining walls, including lateral earth pressures, sliding resistance coefficients, drainage, and wall backfill.
- Evaluation and recommendations relative to groundwater control.
- Recommendations for site preparation and construction of compacted fills, including an evaluation of on-site soils for use as compacted fills to support grade slabs and pavements, minimum compaction levels, and general suitable material guidelines.
- Utility construction.
- Recommendations for additional testing and/or consultation that might be required to complete the geotechnical assessment and related geotechnical engineering for this project.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The project site is located at 401, 405, 411, and 413 S. Pearl Street in New London, Wisconsin. The site location is shown in the figure below and on the Site Location Diagram in Appendix A of this report.



Site Location (approximately outlined in red)

The site is bound by S. Pearl Street to the east and W. Spring Street to the north. An existing drive entrance also provides access to the site from the west off Smith Street. At the time of our exploration, the site consisted of a vacant gravel lot. However, the site is known to have had prior structures as shown in the figure above.

ECS interpreted site specific topography from the Waupaca County Land Information Office interactive map (https://public1.co.waupaca.wi.us/land-records-viewer/) to estimate the existing site grade elevations. According to the Waupaca County interactive map, we anticipate the existing site grade elevations range from approximately EL. +783 feet to EL. +776 feet and generally descend to the northwest across the site as shown in the figure below.

Our visual review of historical aerial photographs of the subject site obtained from Google Earth and the Waupaca County interactive maps indicated the site consisted of a commercial lot with existing buildings from at least 1992 to 2017. The buildings previously located on the lots at 401 and 405 S. Pearl Street were demolished at some point between 2017 and 2020.

2.2 PROPOSED CONSTRUCTION

ECS understands the project includes construction of a 9,464 square foot, one to two story structure with slab-on-grade and no basement. The following information explains our understanding of the planned construction including the proposed building and related infrastructure.

Subject	Design Information / Assumptions
Building Footprint	Approximately 9,464 sf
Number of Stories	1-2 story above grade and no basement
Usage	Public library
Framing	Steel
Column Loads	150 kip maximum (assumed)
Wall Loads	5 kip/ft maximum (assumed)
Slab on Grade Loads	150 psf maximum (assumed)
Finished Floor Elevation	Within 2 feet of existing grade (approximate EL. 778 to 780 feet)

ECS also understands the project includes construction of utilities, paved parking lots and driveways. We anticipate the exterior pavements will consist of a bituminous pavement section. The planned traffic volume was not provided to us at the time of this report. Therefore, we used arbitrarily-selected design traffic volumes. Based on similar type of developments, we assumed a maximum daily traffic volume of 15 daily 18,000-pound equivalent single-axle loads (ESALs) for heavy duty pavement areas, and a maximum 5 daily ESALs for light duty pavement areas.

Where the borings encounter subsurface conditions that might be detrimental to the support of the proposed construction, ECS has assumed the owner will have an acceptable risk level if the detrimental material remains in place. With this in mind, this report assumes the owner would only be willing to accept a low risk for foundation settlement in excess of 1 inch and floor slab settlement in excess of ½ inch. We also assumed the owner would be willing to accept a moderate risk for a reduced pavement performance.

If ECS' understanding of the project or assumptions concerning the owner's acceptable risk level are not correct or the design changes, then please contact ECS so that we may review these changes and revise our recommendations, as appropriate.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled "Subsurface Exploration Procedures." Our scope of work included drilling fifteen (15) Standard Penetration Test (SPT) soil borings to a depth of between approximately 4 and 20 feet. Mr. Matthew Meyer with ECS selected the general boring locations and depths. ECS personnel located the borings at the site using a measuring wheel relative to existing site features and their approximate locations are shown on the Boring Location Diagram in Appendix A.

A licensed surveyor did not determine the ground surface elevation at the boring locations, so the elevations are approximate. ECS determined the surface elevation at the boring locations using conventional survey leveling techniques and the elevations at the site ranged from about 301.8 feet at Boring B-7 to 296.7 feet at Boring B-9. We referenced the surface elevation at each of the borings to the tag bolt on the fire hydrant located at the southwest corner of Spring Street and Pearl Street. We assumed the elevation of this temporary benchmark to be 300.0 feet. The surface elevation at each boring location can be found on the boring logs included in Appendix B.

3.1 SUBSURFACE CHARACTERIZATION

According to the University of Wisconsin Extension Geological and Natural History Survey and U.S. Geological Survey, the site of the proposed construction lies above Phanerozoic bedrock of the Cambrian System consisting of sedimentary rocks of Paleozoic Age. The bedrock formation generally lies within Sandstone (Cu), which consists of sandstone with some dolomite and shale, and includes Trempealeau, Tunnel City, and Elkmound Groups. The soil overburden is generally 50 to over 100 feet thick and the soils generally consist of well drained silty loess over clayey lacustrine deposits.

According to the Soil Survey from the USDA - Natural Resources Conservation Service (https://websoilsurvey.nrcs.usda.gov), which provides soil information to a shallow depth (generally less than 5 feet), the soils in the site area are predominantly mapped as Oshkosh silty clay loam (OsB). These soil types are described with the following properties. Soil mapping of the site vicinity is presented in the figure below.

- Oshkosh silty clay loam (OsB) - Landforms consisting of glacial lakes with silty loess over clayey lacustrine deposits. These soils are generally well drained, classified as being in Hydrologic Soil Group C, and have a moderate to high potential for frost action.

Except for the existing fill soils present at the site, the encountered subsurface conditions in the borings appeared to closely match published geological mapping. The following sections provide generalized characterizations of the soil and rock strata. For subsurface information at a specific test boring location, refer to the boring logs in Appendix B.

Approximate Depth (ft)	Stratum	Description	Range of SPT(1) N-values (bpf)	Unconfined Compressive Strength, Q_p(2) (tsf)
0 - 1.4 (Surface cover)	n/a	Approximately 4 to 12-inch thick base course layer or Approximately 1 to 5-inch thick asphalt pavement and 3 to 12-inch thick gravel base course.	N/A	N/A
1.5 – 8.5	I	**FILL/Possible FILL:** SILTY SAND (SM), SILTY CLAYEY SAND (SC-SM), SILTY GRAVEL (GM), SANDY LEAN CLAY (CL), SANDY SILT (ML), ORGANIC CLAY (OL), ORGANIC SILT (OL), pieces of Glass, Concrete, and Brick.	3 – 50+	2.0 – 5.0
1.5 - 20 (End of Boring)	II	**Glacial till:** LEAN CLAY (CL), SANDY LEAN CLAY (CL), and SILTY SAND (SM). **Lacustrine:** LEAN CLAY (CL), SILT (ML), SANDY SILT (ML), and SILTY SAND (SM). **Outwash:** SAND WITH SILT (SP-SM), SILTY SAND (SM), and SANDY SILT (ML).	3 – 50+	1.5 – 6.0

Notes:
(1) Standard Penetration Testing
(2) Estimated from calibrated hand penetrometer.

A graphical presentation of the subsurface conditions is shown on the Subsurface Cross Section Diagrams included in Appendix A.

The soil stratification shown on the boring logs represents the interpreted soil conditions at the actual boring locations. Variations in the stratification can occur between sample intervals and boring locations. The subsurface conditions at other times and locations on the site may differ from those found at the boring locations. If different site conditions are encountered during construction, ECS should be contacted to review our recommendations relative to the new information.

3.2 GROUNDWATER OBSERVATIONS

The drill crew observed a measurable groundwater level in Boring B-1 through B-8 during drilling and noted it at a depth ranging from 18½ feet below the existing grade in Boring B-2 to 13½ feet in Boring B-6 and B-8. At the completion of drilling the drill crew observed groundwater at a depth ranging from 12 feet below the existing grade in Boring B-6 to 18 feet in Boring B-7. Boring B-9 through B-15 did not contain a measurable groundwater level. The groundwater levels are noted on the boring logs in Appendix B.

The borings generally encountered a mix of soils having drainage characteristics ranging from well drained to poorly drained. As a result, the water levels in the borings may take days or weeks to stabilize. In addition, the native soils can contain groundwater "perched" within more permeable soil zones. With this in mind, in our opinion, the observed groundwater level, or lack of observed groundwater, in the borings may not necessarily indicate the static groundwater conditions at the time of this exploration program. In addition, variations in the long term water table elevation may occur as a result of seasonal variations in precipitation, evaporation, surface water runoff, lateral drainage conditions, construction activities and other factors. The time of year and the weather

history during the advancement of the borings should be considered when estimating groundwater levels at other points in time.

3.3 LABORATORY SERVICES

ECS performed classification and index property tests on representative soil samples obtained from the test borings to aid classification of the soils, and to help estimate engineering properties.

A geotechnical engineer visually classified each collected soil sample from the test borings on the basis of texture and plasticity using ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)* and ASTM D2487 *Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS)).* After classification, the geotechnical engineer grouped the various soil types into the major zones noted on the test boring logs in Appendix B of this report. The group symbols for each soil type are indicated in parentheses along with the soil descriptions on the test boring logs. The stratification lines designating the interfaces between earth materials on the logs are approximate; in-situ, the transitions may be gradual.

ECS performed calibrated hand penetrometer tests (Q_p) on select cohesive soil samples. In the hand penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 6.0 tons per square foot (tsf), by measuring the resistance of a soil sample to penetration by a small, calibrated, spring-loaded cylinder. The hand penetrometer test results can be found on the boring logs.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposal.

4.0 DESIGN RECOMMENDATIONS

4.1 FOUNDATIONS

Provided subgrades and engineered fills are prepared as recommended in this report, the proposed building can be supported by shallow foundations including isolated column footings and continuous wall footings. We recommend the foundation design use the following parameters:

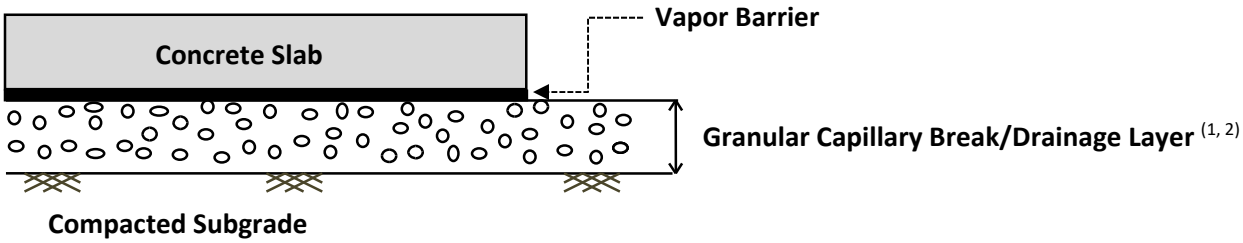
Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure (1, 2)	4,000 psf	4,000 psf
Acceptable Bearing Soil Material	medium dense/very stiff Glacial till, Lacustrine, and Outwash Stratum II or Engineered Fill	medium dense/very stiff Glacial till, Lacustrine, and Outwash Stratum II or Engineered Fill
Competent Soils Designated Suitable for the Allowable Bearing Pressure	N ≥ 12 bpf or Qp ≥ 2.25	N ≥ 12 bpf or Qp ≥ 2.25
Minimum Width	24 inches	18 inches
Minimum Exterior Frost Depth (below final exterior grade) (3)	48 inches (heated structure) 66 inches (non-heated structure)	48 inches (heated structure) 66 inches (non-heated structure)
Estimated Total Settlement (4)	Less than 1 inch	Less than 1 inch
Estimated Differential Settlement (5)	Less than ½ inch	Less than ½ inch

Notes:
(1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
(2) Specialty testing, such as pressuremeter testing, may allow for the use of a higher net allowable bearing pressure.
(3) For frost penetration considerations.
(4) Based on maximum column/wall loads. If final loads are different, then ECS must be contacted to update foundation recommendations and settlement calculations.
(5) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

Potential Undercuts: Based on our review of the subsurface information, the contractor should be prepared to over-excavate areas of existing fill, soft/very loose native soils, or other unsuitable soils encountered in the foundation excavations. The **Earthwork Operations** section in this report provides our subgrade preparation recommendations for the construction of spread footing foundations and floor slabs for the building. ***ECS anticipates over-excavation to remove existing fill will be needed for shallow foundations and floor slabs in a majority of the site.*** All over excavated material should be backfilled with engineered fill up to the original design bottom of footing elevation. As an alternative to soil replacement, strip footing pads could be stepped or thickened, and isolated column pads could be uniformly thickened to extend through unsuitable bearing materials. If this alternative is utilized, then ECS recommends stepped or thickened footings be designed by the structural engineer.

4.2 SLABS ON GRADE

Based on the boring information, we recommend the removal of organic soils (topsoil), undocumented fill, and any soft/very loose or disturbed soils from within 2 feet of floor slabs. Provided subgrades and engineered fills are prepared as discussed herein, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). However, the existing fill may be left in place below floor slabs provided the fill contains less than 5 percent organic content *and* proof-roll testing during construction indicates less than 1 inch of rutting or deflection of the existing fill subgrade. Based on the anticipated finished floor elevation, it appears that slabs on grade will bear on newly compacted fill or approved existing fill soils. The following graphic depicts our soil-supported slab recommendations:



1. Drainage Layer Thickness: Minimum 6 inches
2. Drainage Layer Material: GRAVEL (GP, GW) or SAND (SP, SW) having a maximum aggregate size of 1 inch and no more than 5 percent passing the No. 200 sieve.

Soft/very loose or yielding soils may be encountered in portions of the building. Those soils should receive additional compaction effort or be removed and replaced with compacted engineered fill in accordance with the recommendations included in this report.

Subgrade Modulus: Provided the engineered fill and granular drainage layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 150 pci (pounds per cubic inch). The modulus of subgrade reaction value is based on historical testing of similar soils using a 1 ft by 1 ft plate load test basis. However, if at least 2 feet of engineered fill will be placed below the entire floor area, then the utilized modulus of subgrade reaction, k_1 value can be increased to 200 pci.

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

Frost Susceptible Areas: Exterior aprons and sidewalks, and portions of the floor slab, such as at doorways, and entrance/exit vestibules may be susceptible to frost heave movement during freezing weather. Additional insulation, installation of subgrade drainage, and/or replacement to the frost depth with non-frost-susceptible backfill should be considered for these areas. Pavement and ground surface grades are recommended to be sloped away from the building and flatwork, to reduce water infiltration and potential frost heave problems.

4.3 SEISMIC DESIGN CONSIDERATIONS

Seismic Site Classification: The three parameters used to classify sites are shear wave velocity (v_s); undrained shear strength (s_u); and Standard Penetration Test (SPT) resistance (N-value). The seismic Site Class definitions for the weighted average of shear wave velocity, shear strength or SPT N-value in the upper 100 feet of the soil profile are listed in the following table.

Site Class	Soil Profile Name	Shear Wave Velocity, Vs, (ft./s)	N value (bpf)	S_u value (psf)
A	Hard Rock	Vs > 5,000 fps	N/A	N/A
B	Rock	2,500 < Vs ≤ 5,000 fps	N/A	N/A
C	Very dense soil and soft rock	1,200 < Vs ≤ 2,500 fps	>50	≥ 2,000
D	Stiff Soil Profile	600 ≤ Vs ≤ 1,200 fps	15 to 50	1,000 to 2,000
E	Soft Soil Profile	Vs < 600 fps	<15	≤ 1,000

The 2015 International Building Code (IBC) requires the Site Class for seismic design be based on the upper 100 feet of the soil profile. The borings performed for this project were drilled to a maximum depth of 20 feet. Therefore, we assumed the conditions below this depth based on our experience with the soils in the general site vicinity and engineering judgment. In our opinion the site soils can be characterized as Site Class D.

The Site Class should not be confused with the Seismic Design Category, which the structural engineer typically determines. If a more favorable Site Class is beneficial to the project, ECS would be pleased to discuss our ReMi testing capabilities in this regard.

4.4 PAVEMENT DESIGN CONSIDERATIONS

Subgrade Characteristics: Based on the results of the borings, it appears the pavement subgrade soils will generally consist of existing fill consisting of a variety of soils including SILTY SAND (SM), SAND WITH SILT (SP-SM), SILTY CLAYEY SAND (SC-SM), SILTY GRAVEL (GM), LEAN CLAY (CL), and SANDY LEAN CLAY (CL).

California Bearing Ratio [CBR] testing was not performed as part of this study. Based primarily on the soils encountered in the borings and the Standard Penetration N-values, we have assumed a CBR value of 6 for preliminary design purposes of flexible pavements. In addition, the rigid pavements may be designed assuming a modulus of subgrade reaction, k_1 of 150 pci.

Pavement Sections: For preliminary design purposes, the recommended minimum pavement sections listed in the following table are based on the anticipated usage at the project site and a 20-year design service life, but were not developed based on specific traffic patterns, loading and resiliency factors, as those parameters were not provided by the design team. We assumed typical

traffic loads for the light-duty pavement section will be limited to standard automobiles and does not account for more heavily loaded vehicles (i.e., multiple axle trucks) and should be used for parking lanes. We recommend the heavy-duty pavement section for frequent traffic areas such as drive lanes, bus lanes, delivery areas, loading dock aprons, trash enclosure pads, and points of ingress or egress. ***If the anticipated traffic will exceed that assumed in the Proposed Construction section, ECS should be contacted for revised pavement design recommendations; otherwise, increased pavement maintenance and a shortened pavement life should be expected.***

Pavement Material	Compacted Material Thicknesses (Inches)			
	Flexible Pavement		Rigid Pavement	
	Light Duty	Heavy Duty	Light Duty	Heavy Duty
Portland Cement Concrete (1)	--	--	5	6
Hot Mix Asphalt (2) **Surface Course**	1¾	1¾	--	--
Hot Mix Asphalt (2) **Base Course**	1¾	2¼	--	--
Dense Graded Crushed Stone Base (3)(4)	12	16	6	6

Notes:
(1) Section 415 of WisDOT Standard Specification for Highway and Structure Construction.
(2) Section 460 of WisDOT Standard Specification for Highway and Structure Construction.
(3) Section 305 of WisDOT Standard Specification for Highway and Structure Construction.
(4) If crushed gravel or some other material is used in lieu of crushed stone, the material may have a lower structural coefficient and a thicker base may be required.

All pavement materials and construction should be in accordance with the Guidelines for AASHTO Pavement Design, and the WisDOT Standard Specifications for Highway and Structure Construction.

We recommend the crushed granular base course be compacted to at least 95 percent of the maximum dry density obtained in accordance with ASTM D1557, Modified Proctor Method. The hot mix asphalt should be compacted to a minimum of 93 percent of the maximum theoretical density value.

If the pavements will be constructed early during site development to accommodate construction traffic, consideration should be given to the construction of designated haul roads, where thickened pavement sections are provided to accommodate the construction traffic, as well as the future in-service traffic. ECS can provide additional design assistance with recommended pavement sections for haul roads if requested.

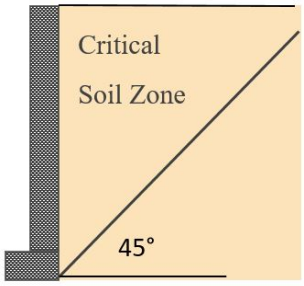
Rigid Concrete Pavements: We recommend a heavy duty rigid pavement section be used in frequent traffic areas such as where trucks frequently turn, delivery areas, trash enclosure pads, and points of ingress or egress. The Portland cement concrete pavement section should consist of air-entrained Portland cement concrete having a minimum 28-day compressive strength of 4,000 psi. The rigid pavement section should be provided with construction joints at appropriate intervals per PCA requirements. The construction joints should be reinforced with dowels to transfer loads across the joints.

4.5 SITE RETAINING WALLS

Unlike below grade foundation walls, site retaining walls are free to rotate at the top (not restrained). For these walls the "Active" (k_a) soil condition should be used along with a triangular distribution of earth pressures. In addition, site retaining walls should be designed to withstand lateral earth pressures exerted by the backfill and any surcharge loads within the "Critical Soil Zone". The Critical Zone is defined as the area between the back of the retaining wall footing and an imaginary line projected upward and rearward at a 45-degree angle (see figure below).

The lateral earth pressures developed behind site retaining walls are a function of the backfill soil type, backfill slope angle, and any surcharge loads. For the design of site retaining walls, and assuming a flat 0° backslope at the top of wall, we recommend the soil parameters provided below.

RETAINING WALL BACKFILL IN THE CRITICAL SOIL ZONE	
Soil Parameter	**Estimated Value**
Soil Classification	Silty SAND (SM) or more granular
Maximum Fines Content Passing #200 Sieve	20% by dry weight
Coefficient of Active Earth Pressure (K_a)	0.31
Retained Soil Moist Unit Weight (γ)	125 pcf
Cohesion (C)	0 psf
Angle of Internal Friction (ϕ)	32°
Active Equivalent Fluid Pressure	39H (psf)



FOUNDATION SOILS	
Soil Parameter	**Estimated value**
Allowable Soil Bearing Pressure	4,000 psf
Minimum Wall Embedment Below Grade	24 inches
Coefficient of Passive Earth Pressure (K_p)	2.8
Soil Moist Unit Weight (γ)	125 pcf
Interface Friction Angle [Concrete on Soil] (ϕ_f)	18°
Sliding Friction Coefficient [Concrete on Soil] (μ)	0.30
Adhesion (C_A)	500 psf
Passive Equivalent Fluid Pressure	350H (psf)

It is critical that the soils used for backfill of the retaining walls meet the soil parameters recommended above. If the soils available do not meet those parameters, then ECS should be contacted to provide revised values, and to confirm that only suitable soils will be used for wall backfill.

Care should be used to avoid the operation of heavy equipment to compact the wall backfill since it may overload and damage the wall. In addition, such loads are not typically considered in the design of site retaining walls, and are not provided for in our recommendations.

Wall Drainage: Retaining walls should be provided with a wall and foundation drainage system to relieve hydrostatic pressures which may develop behind the walls. This system should consist of weepholes through the wall and/or a 4-inch perforated, closed joint drain line located along the backside of the walls above the top of the footing. The drain line should be surrounded by a minimum of 6 inches of AASHTO #57 Stone wrapped with an approved non-woven geotextile, such as Mirafi 140-N or equivalent. Wall drains can consist of a 12-inch wide zone of free draining gravel, such as AASHTO #57 Stone, employed directly behind the wall and separated from the soils beyond with a non-woven geotextile. Alternatively, the wall drain can consist of a suitable geocomposite drainage board material. The wall drain should be hydraulically connected to the foundation drain.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Initial Site Preparation

The subgrade preparation should consist of stripping all vegetation, rootmat, topsoil, existing fill, existing foundations, existing pavements, and other soft/very loose or unsuitable materials from the 10-foot expanded proposed building limits, 5-foot expanded proposed pavement limits and 5 feet beyond the toe of engineered fills, where feasible. ECS should be retained to observe and document that topsoil and other unsuitable surficial materials have been removed prior to the placement of engineered fill or construction of structures.

Additionally, we recommend either abandoning or relocating any existing utilities outside the proposed building area. Utilities not reused should be capped-off and removed or properly abandoned in-place in accordance with local codes and ordinances.

5.1.2 Proofrolling

After the removal of all unsuitable surface materials, cutting to the proposed subgrade, and prior to the placement of any engineered fill or other construction materials, the exposed subgrade should be observed by ECS. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck in clayey soils or large smooth drum roller in sandy soils). Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas of rutting or deflection greater than 1-inch, those areas should be repaired prior to the placement of any subsequent engineered fill or other construction materials. Where the depth of engineered fill will exceed 2 feet, the acceptable rutting or deflection limit can be increased to no more than 1½-inches. Methods of stabilization, such as undercutting, moisture conditioning, placement of geotextile or geogrid, or chemical stabilization should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

Some slab areas may be inaccessible to appropriate proofroll equipment. These areas should be evaluated with hand-operated testing equipment to check the subgrade support characteristics.

Near surface subgrade soils having a high moisture content and/or those having N-values less than 10 bpf may not pass a proofroll, and may need to be undercut or repaired. Some undercutting or repair of unstable subgrade soils should be anticipated during slab/pavement subgrade preparation. If construction will occur during wet times of the year (such as during the spring or fall months), or immediately following extended periods of rain, then seasonal reduction of the near surface soil strength will occur. This may cause additional unstable or pumping subgrade areas for constructability concerns. The actual quantity of the subgrade undercut or stabilization should be determined by ECS at the time of construction.

5.1.3 Site Temporary Dewatering

ECS does not anticipate foundation or utility excavations will extend below the groundwater levels encountered in the borings. However, seasonal variations in precipitation and site drainage conditions can cause the accumulation of water in the upper soils, particularly within more permeable soils underlain by less permeable clayey or silty soils. Where excavations extend less than 2 feet below the groundwater level, initial attempts to control water may be accomplished by pumping from sump pits in the excavation bottom, which are backfilled with AASHTO Size No. 57 Stone or open-graded bedding material. If water control cannot be maintained with sump pumps, or where excavations extend more than 2 feet below the static groundwater level, dewatering likely will require installation of a well-point system or some other dewatering system to aid in maintaining the groundwater level below the excavation bottom. ECS and a qualified dewatering contractor should be consulted if groundwater cannot be satisfactorily controlled through the use of sump pumps.

Lowering the static groundwater level can adversely affect nearby structures, utilities and other construction. We recommend any dewatering scheme be reviewed by ECS and a contractor who specializes in this type of work prior to its implementation.

Surface Drainage: The surface soils may be erodible. Therefore, the contractor should provide and maintain good site surface drainage during earthwork operations to maintain the integrity of the surface soils. All erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or steeper to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to reduce infiltration of surface water.

5.2 EARTHWORK OPERATIONS

5.2.1 Existing Man-Placed Fill

Fill Content: A majority of the borings contained existing man-placed fill material that extended to a depth of between 1½ and 8½ feet below the existing grade. In addition, Boring B-7 and B-13 contained possible fill soils. Undocumented fill has a risk for higher settlement because of potential

variations in the density of this material. The risk also increases where the undocumented fill contains more than 5 percent organic content.

Based primarily on the standard penetration N-values, in our opinion the risk of total and/or differential foundation and floor slab settlement in excess of 1 inch and ½ inch, respectively, associated with the existing fill at this site would be moderate to high. The risk for reduced pavement performance associated with the existing fill at this site would also generally be moderate to high. However, the risk could be reduced to low for floor slabs and pavements if the existing fill contains less than 5 percent organic content *and* proof-rolling observations do not indicate rutting or deflection greater than 1 inch.

Fill Removal: Based on the assumed acceptable risk level of the owner, ECS recommends the removal of existing fill from below foundations. In addition, we recommend removing existing fill from within 2 feet of the finished floor slabs and exterior pavements where the fill contains greater than 5 percent organic content or does not meet the above proof-rolling requirements. The removed material should then be replaced with properly compacted engineered fill.

The engineered fill placed below the foundations and within the foundation influence zone should extend 1 foot beyond the outside edges of the footings and from that point, outward laterally 1 foot for every 2 feet of fill thickness below the footing. If lean concrete is utilized to replace weaker/low bearing soils or unsuitable soils, lateral over-excavation is typically not necessary, but the excavation should be 1 foot wider than the footing (6 inches on each side), and the lean concrete should be allowed to sufficiently harden prior to placement of the foundation concrete. Use of lean mix concrete to limit lateral over-excavation may not be effective in portions of the site because of caving of excavation sidewalls in the granular soils. In addition, we ***strongly*** recommend ECS document the material exposed in the excavations does not exhibit obvious characteristics that would adversely affect the performance of the foundation system.

5.2.2 Frost Susceptible Soils

The frost susceptible clayey and silty soils encountered in the borings provide another concern for the pavement system. ECS wishes to note, a risk for reduced pavement performance exists with the construction of pavements on frost susceptible soil. The reduced pavement performance may occur because of potential detrimental frost heaving and spring thaw weakening. The risk associated with frost susceptible soils can be reduced by removal of all frost susceptible soils within 3 feet of the finished pavement grade. In our opinion, the risk at this site related to the frost susceptible soils would generally be moderate.

Based on our assumption of the owner's acceptable level of risk, we anticipate most of the frost susceptible soils will remain in place below pavements. However, if the owner is only willing to accept a low risk for reduced pavement performance, we recommend removing all frost susceptible silty and clayey soil from within 3 feet of the finished pavement grade. The removed material should then be replaced with a compacted engineered fill.

5.2.3 Existing/Previous Construction Considerations

According to historical aerial photographs, existing buildings occupied a portion of the planned building location. Possible remnants of the previous construction may be present. Site preparation

will require complete removal and proper disposal of any remnants of previous construction, including foundations, floor slabs, underground utilities which are not reused, etc. Disposal of debris should be in accordance with local, state and federal regulations for the material type. As an option, it is possible to leave portions of any remaining foundations in-place in the planned parking and landscape areas, provided they are cut off at least 2 feet below the planned subgrade elevation and any hollow cores are grouted solid. Any construction remnants left in-place may cause excavation difficulties for new utilities or other future construction.

5.2.4 Engineered Fill

Prior to placement of engineered fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will typically include natural moisture content, Atterberg limits, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

Satisfactory Engineered Fill Materials: Materials satisfactory for use as engineered fill within building and pavement areas should consist of inorganic soils with the following engineering properties and compaction requirements.

ENGINEERED FILL INDEX PROPERTIES	
Subject	**Property**
Liquid Limit (LL) and Plasticity Index (PI)	LL < 40, PI < 20
Maximum Particle Size	3 inches
Maximum Fines Content Passing #200 Sieve	25% by dry weight
Maximum Organic Content	5% by dry weight
ENGINEERED FILL COMPACTION REQUIREMENTS	
Subject	**Requirement**
Compaction Standard	Modified Proctor, ASTM D1557
Required Compaction	95% of Max. Dry Density
Moisture Content	-2 to +3% points of the soil's optimum value
Loose Thickness	8 inches prior to compaction

On-Site Borrow Suitability: The on-site non-organic SAND WITH SILT (SP-SM), SILTY SAND (SM), and SILTY GRAVEL (GM) soil may be feasible to use as engineered fill, but should be further evaluated and approved by ECS prior to its use. On-site soil used as engineered fill must be free of frozen matter, deleterious materials, or chemicals that may result in the material being classified as "contaminated." Some conditions at the time of construction, such as wet or freezing weather, may preclude the use of on-site soil, and it may be necessary to use an imported less moisture sensitive or less frost susceptible granular material. The soil samples had relatively high moisture so the contractor should expect some drying of on-site soil prior to reuse as engineered fill. The soil should not be compacted too dry as it may lose its apparent stability if it later becomes wet. The suitability of engineered fill materials should be checked by ECS prior to placement.

The moisture in many of the obtained samples appeared to likely be more than 3 percent above the estimated optimum moisture content of the material. The construction team should anticipate moisture conditioning (mostly drying) of subgrade soils and engineered fill lifts at this site. Soil chemical modification may be helpful to reduce moisture contents of subgrade soils and fills.

Fill Placement: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and all frozen or frost-heaved soils should be removed prior to placement of engineered fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: ECS anticipates most of the native soils at the foundation bearing elevation to be suitable for support of the proposed structure. However, it will be important to have us observe the foundation subgrade prior to placing foundation concrete, to confirm and document the anticipated bearing soils.

Where existing fill, soft/very loose or other unsuitable soils are observed in the foundation influence zone, we recommend the removal of the unsuitable soils. Any undercut should be backfilled with engineered fill or lean concrete ($f'_c \geq 1{,}000$ psi at 28 days) up to the original design bottom of footing elevation. The original footing is then recommended to be constructed on top of the engineered fill or hardened lean concrete.

Slab Subgrade Verification: Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in the **Proofrolling** section of this report.

5.4 UTILITY INSTALLATIONS

Perform utility construction in accordance with *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*.

Utility Subgrades: ECS expects the soils encountered in our exploration to be generally suitable for support of utility pipes at typical utility depths. The pipe subgrade should be observed and probed for stability by ECS to evaluate the suitability of the encountered materials. All existing fill, soft/very loose, organic or otherwise unsuitable materials encountered at the utility pipe subgrade elevation should be removed and replaced with suitable compacted engineered fill or pipe bedding material.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the project drawings and specifications. ECS recommends granular bedding consist

of crushed stone chips in accordance with Table 32 and Chapter 8.43.0 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the recommendations for engineered fill given in this report. We recommend cover material consist of material in accordance with Table 36 and Chapter 8.43.3 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*. Granular backfill material should consist of material in accordance with Table 37 and Chapter 8.43.4 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*. Excavated material in accordance with Chapter 8.43.5 of *The Standard Specifications for Sewer and Water Line Construction in Wisconsin*, and as recommended in the **Earthwork Operations** section of this report could also be used as backfill.

We do not recommend flood compaction of the backfill, especially within a cohesive soil excavation, where cohesive soils are used as backfill, and/or where a shallow water table exists. ECS recommends mechanical compaction because it generally provides more uniform compaction than flood compaction.

Excavation Safety: The contractor should make and maintain all excavations and slopes in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing and constructing stable, excavations and slopes and should shore, slope, or bench the sides of the excavations and slopes as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in OSHA 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; ECS does not imply such responsibility, and the contractor, design team and owner should not infer it.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by Keller, Inc. If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

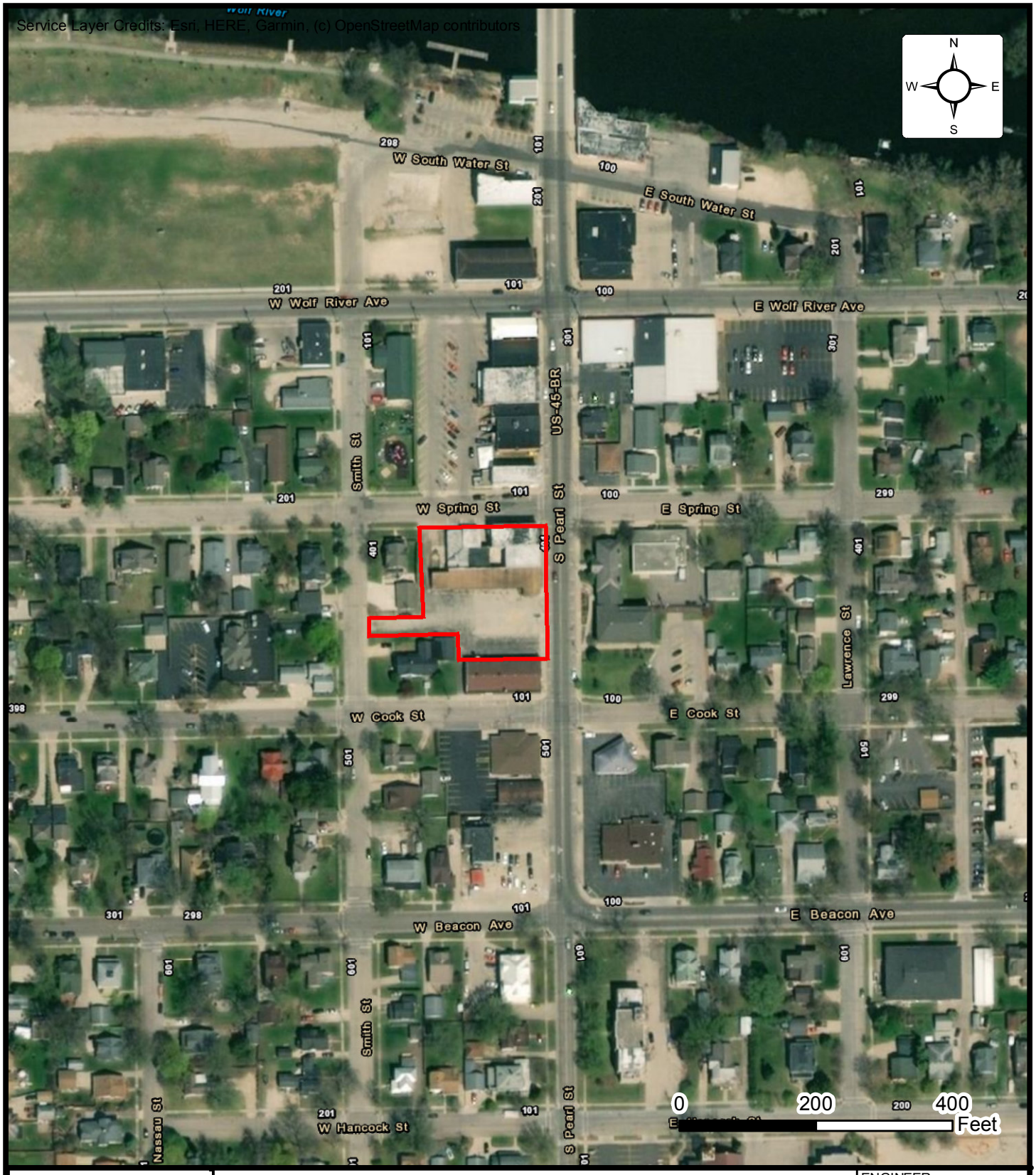
Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to

apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Diagrams & Reports

Site Location Diagram
Boring Location Diagram
Subsurface Cross Section Diagrams

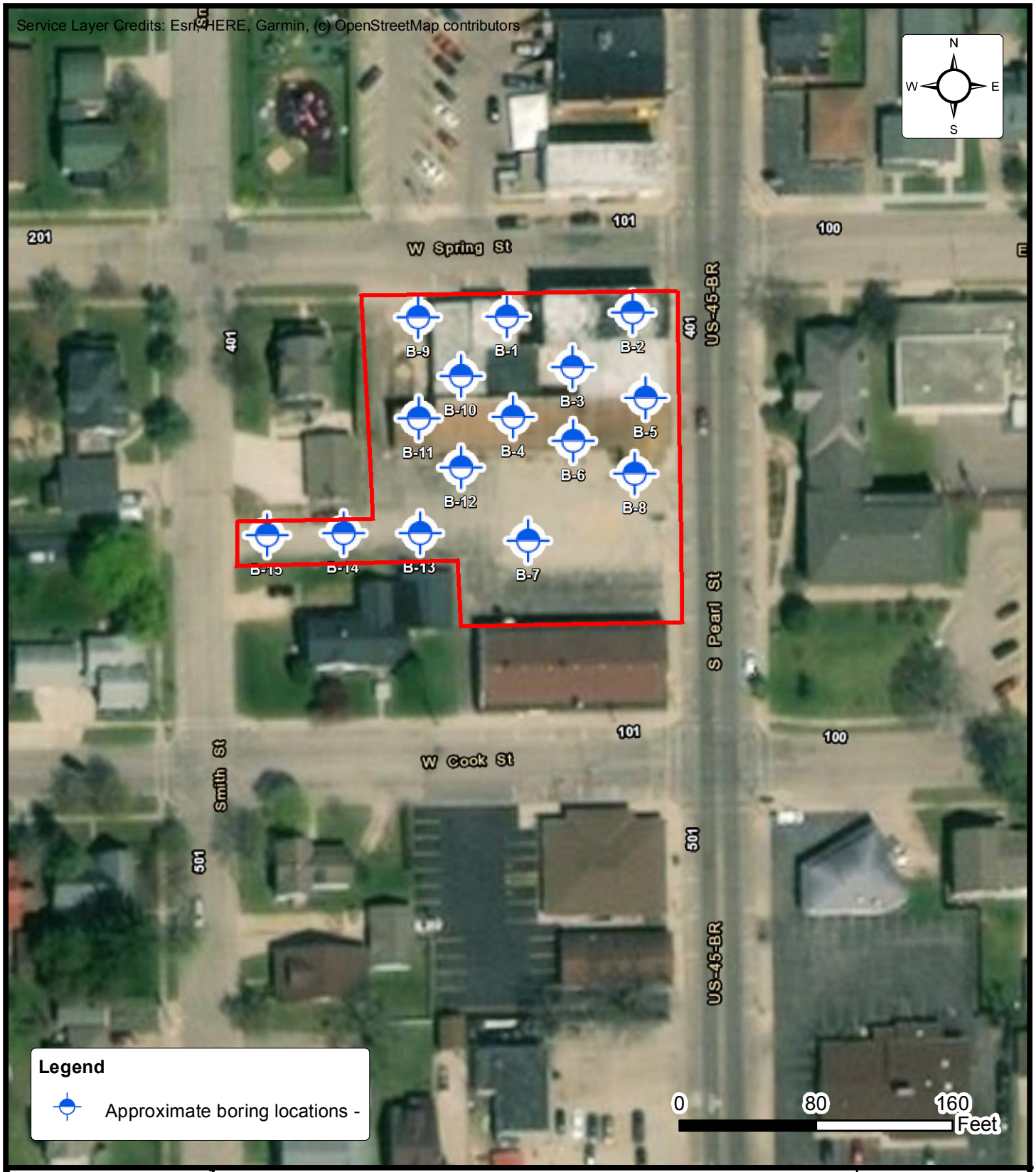


Site Location Diagram
NEW LONDON LIBRARY

406 S PEARL STREET, NEW LONDON, WISCONSIN

KELLER, INC.

ENGINEER	MAM4
SCALE	AS NOTED
PROJECT NO.	59:2530
SHEET	1 OF 1
DATE	12/3/2020



Boring Location Diagram
NEW LONDON LIBRARY

406 S PEARL STREET, NEW LONDON, WISCONSIN

KELLER, INC.

ENGINEER	MAM4
SCALE	AS NOTED
PROJECT NO.	59:2530
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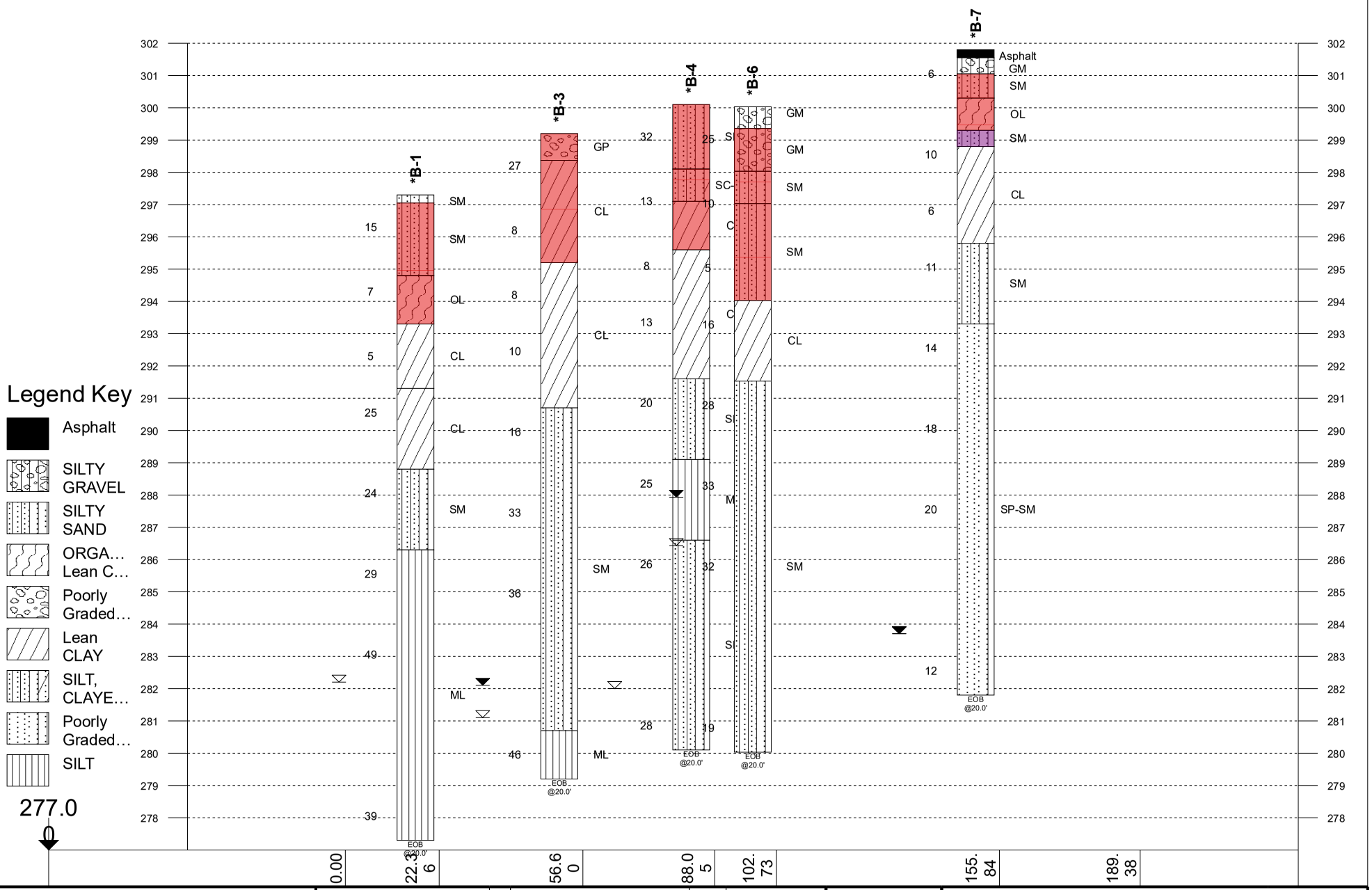


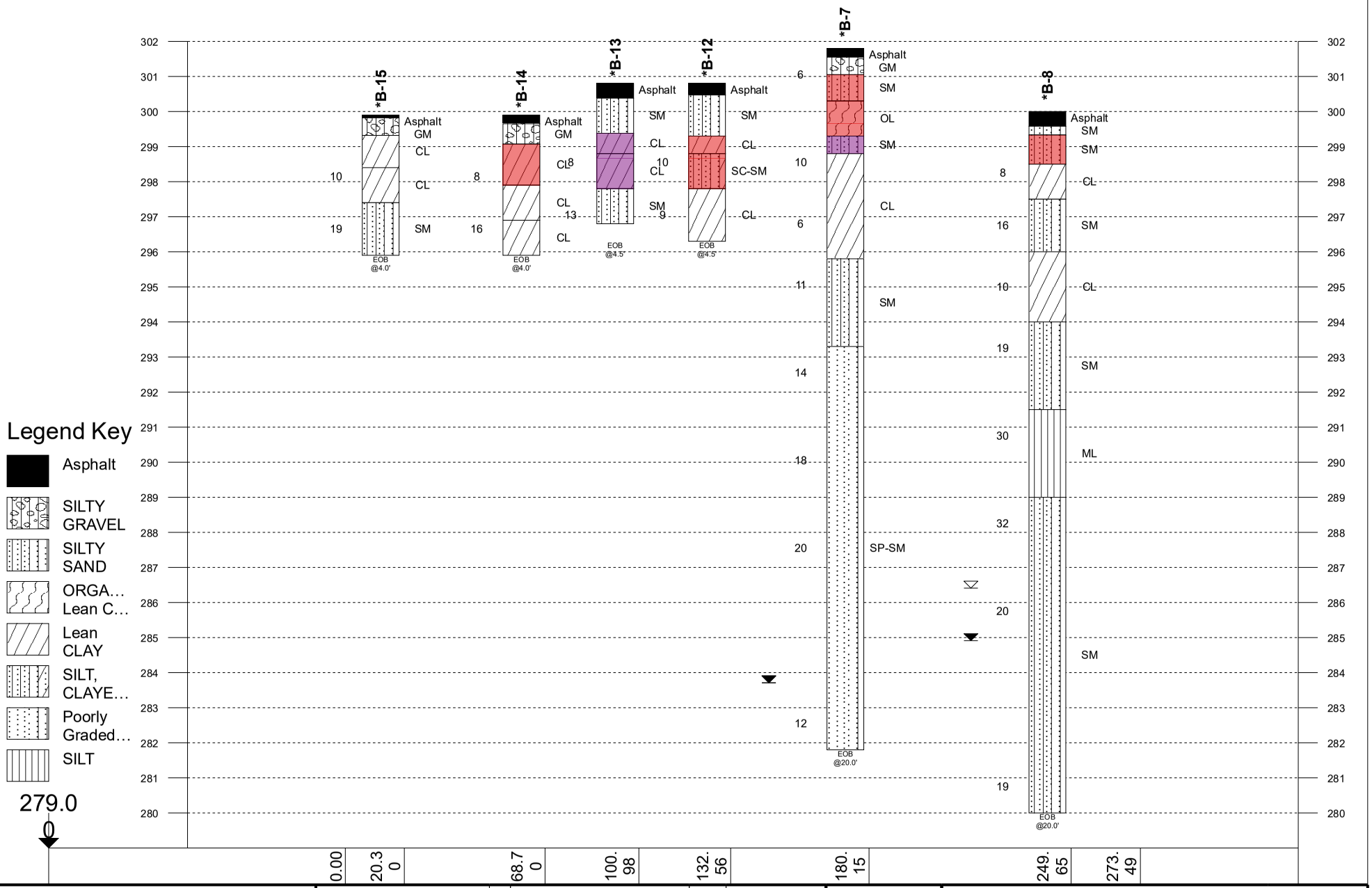
Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X—●—△	WL (First Encountered)	Fill
[FINES CONTENT %]	WL (Completion)	Possible Fill
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill
LOSS OF CIRCULATION	WL (Stabilized)	Rock

GENERALIZED SUBSURFACE SOIL PROFILE
Section A-A'
New London Library
Keller, Inc.
406 S Pearl Street, New London, Wisconsin 54961

Project No: 59:2530 Date: 01/11/2021



Legend Key

- Asphalt
- SILTY GRAVEL
- SILTY SAND
- ORGA… Lean C…
- Lean CLAY
- SILT, CLAYE…
- Poorly Graded…
- SILT

279.0

0

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X———●———△	WL (First Encountered)	Fill
[FINES CONTENT %]	WL (Completion)	Possible Fill
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill
100% LOSS OF CIRCULATION	WL (Stabilized)	Rock

GENERALIZED SUBSURFACE SOIL PROFILE
Section B-B'

New London Library
Keller, Inc.
406 S Pearl Street, New London, Wisconsin 54961

Project No: 59:2530 Date: 01/11/2021

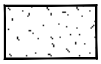
APPENDIX B – Field Operations

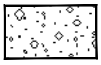
Reference Notes for Boring Logs
Subsurface Exploration Procedure: Standard Penetration Testing (SPT)
Boring Logs B-1 through B-15

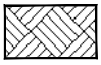
REFERENCE NOTES FOR BORING LOGS

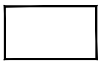
MATERIAL[1,2]

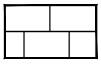

ASPHALT


CONCRETE


GRAVEL

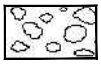

TOPSOIL

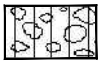

VOID


BRICK

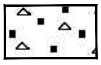

AGGREGATE BASE COURSE

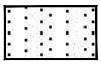

GW **WELL-GRADED GRAVEL**
gravel-sand mixtures, little or no fines

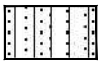

GP **POORLY-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GM **SILTY GRAVEL**
gravel-sand-silt mixtures

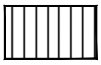

GC **CLAYEY GRAVEL**
gravel-sand-clay mixtures

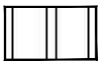

SW **WELL-GRADED SAND**
gravelly sand, little or no fines

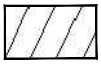

SP **POORLY-GRADED SAND**
gravelly sand, little or no fines


SM **SM SILTY SAND**
sand-silt mixtures

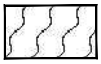

SC **CLAYEY SAND**
sand-clay mixtures

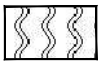

ML **SILT**
non-plastic to medium plasticity

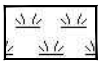

MH **ELASTIC SILT**
high plasticity


CL **LEAN CLAY**
low to medium plasticity


CH **FAT CLAY**
high plasticity


OL **ORGANIC SILT or CLAY**
non-plastic to low plasticity


OH **ORGANIC SILT or CLAY**
high plasticity


PT **PEAT**
highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective *(ex: "Silty")*	25 - 45	30 - 45

WATER LEVELS[6]

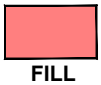

WL (First Encountered)


WL (Completion)


WL (Seasonal High Water)


WL (Stabilized)

FILL AND ROCK


FILL


POSSIBLE FILL


PROBABLE FILL


ROCK

[1]Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

[2]To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

[3]Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

[4]Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

[6]The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

[7]Minor deviation from ASTM D 2488-17 Note 14.

[8]Percentages are estimated to the nearest 5% per ASTM D 2488-17.

SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)

- Auger is advanced* and an additional SPT is performed
- One SPT test is typically performed for every two to five feet

- Obtain two-inch diameter soil sample

**Drilling Methods May Vary—* The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-1**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **297.3**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	17	(SM) Base course, SILTY SAND WITH GRAVEL, light yellowish brown and gray, moist, medium dense [4"]			39-11-4-4 (15)
	S-2	SS	24	10	(SM) FILL, SILTY SAND WITH GRAVEL, trace organic clay, brown and gray, moist, medium dense to loose			4-3-4-4 (7)
5	S-3	SS	24	14	((OL, ML)) FILL, A MIXTURE OF SAND, ORGANIC SILT AND SANDY SILT, very dark grayish brown and brown, moist, firm		293	2-2-3-5 (5)
	S-4	SS	18	8	(CL) Glacial till, LEAN CLAY, lenses of silt, mottled brown and light brownish gray, moist, very stiff			11-15-10 (25)
	S-5	SS	18	12	(CL) Glacial till, LEAN CLAY WITH GRAVEL, brown and gray, moist, very stiff		288	5-10-14 (24)
10	S-6	SS	18	16	(SM) Lacustrine, SILTY SAND, yellowish brown, moist, medium dense			5-11-18 (29)
	S-7	SS	18	16	(ML) Lacustrine, SANDY SILT, brown, wet, stiff to very stiff to stiff	▽	283	13-21-28 (49)
15								
	S-8	SS	18	18			278	12-17-22 (39)
20					**END OF DRILLING AT 20.0 FT**			
25							273	
30							268	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

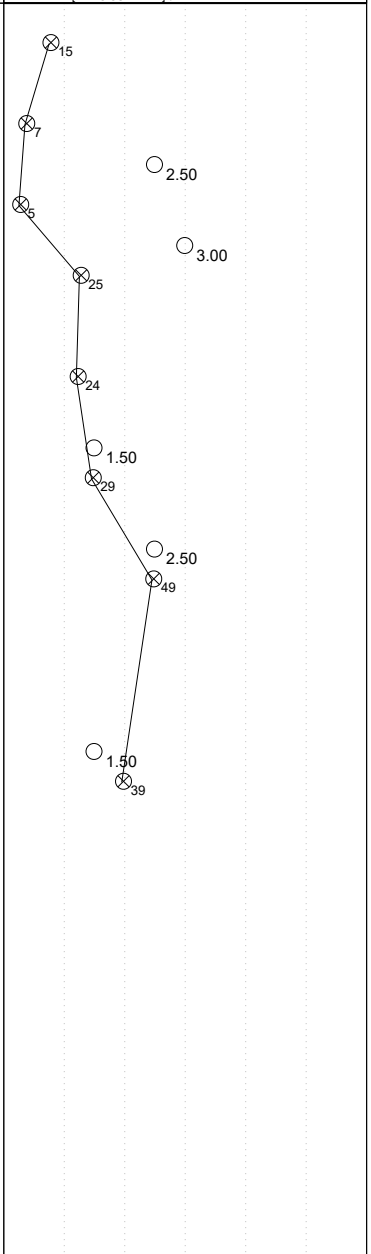
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**15.00**	BORING STARTED: **Dec 14 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 14 2020**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-2**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **298.4**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	10	(SP-SM) Base course, FINE TO MEDIUM SAND WITH SILT AND GRAVEL, light yellowish brown and light gray, moist, very dense [8"]			40-28-26-12 (54)
	S-2	SS	24	12	(SM) FILL, SILTY SAND WITH GRAVEL, brown and gray, moist, very dense			9-6-8-8 (14)
	S-3	SS	7	6	(SC-SM) FILL, SILTY CLAYEY SAND WITH GRAVEL AND PIECES OF CONCRETE, dark brown and gray, moist, medium dense to very dense		294	6-50/1" (50/1")
5	S-4	SS	18	6	(CL) FILL, SANDY LEAN CLAY WITH PIECES OF BRICK, mottled brown and reddish brown, moist, firm			8-3-2 (5)
	S-5	SS	18	6	(CL) Lacustrine, LEAN CLAY, brown, moist, very stiff		289	36-34-11 (45)
10	S-6	SS	18	0	(SM) Lacustrine, SILTY SAND, yellowish brown, moist, dense			30-38-50 (88)
	S-7	SS	18	10	(NO RECOVERY) (ML) Lacustrine, SILT, lenses of lean clay, gray and brown, moist to wet, hard to very stiff		284	27-40-14 (54)
15								
	S-8	SS	18	12		▽	279	28-26-18 (44)
20					**END OF DRILLING AT 20.0 FT**			
25							274	
30							269	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

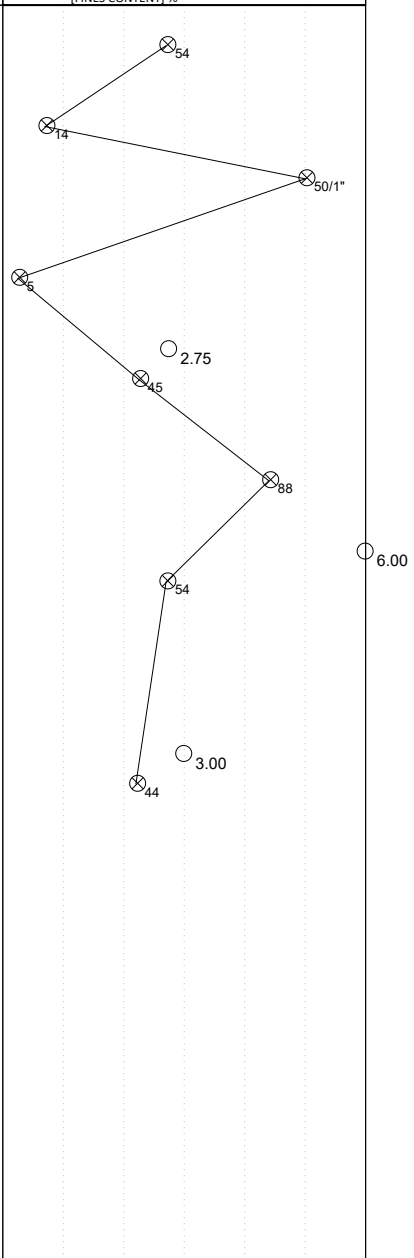
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**18.50**	BORING STARTED: **Dec 14 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 14 2020**		HAMMER TYPE: **Auto**
▽ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-3**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **299.2**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	12	(GP) FILL, GRAVEL WITH SAND AND SILT, light yellowish brown and gray, moist, medium dense			38-20-7-4 (27)
	S-2	SS	24	14	(CL) FILL, SANDY LEAN CLAY WITH GRAVEL AND ORGANIC CLAY, brown, gray and dark brown, moist, very stiff			3-3-5-5 (8)
5	S-3	SS	24	14	(CL) Glacial till, LEAN CLAY WITH SAND, brown and light brownish gray, moist, hard		295	2-4-4-5 (8)
	S-4	SS	18	16				3-3-7 (10)
10	S-5	SS	18	12	(SM) Glacial outwash, SILTY SAND, yellowish brown, moist to wet, medium dense to dense		290	5-7-9 (16)
	S-6	SS	18	16				7-14-19 (33)
15	S-7	SS	18	14		▼ ▽	285	7-16-20 (36)
20	S-8	SS	18	12	(ML) Lacustrine, SANDY SILT, brown, wet, very stiff		280	9-20-26 (46)
					END OF DRILLING AT 20.0 FT			
25							275	
30							270	

Plastic Limit Water Content Liquid Limit
X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

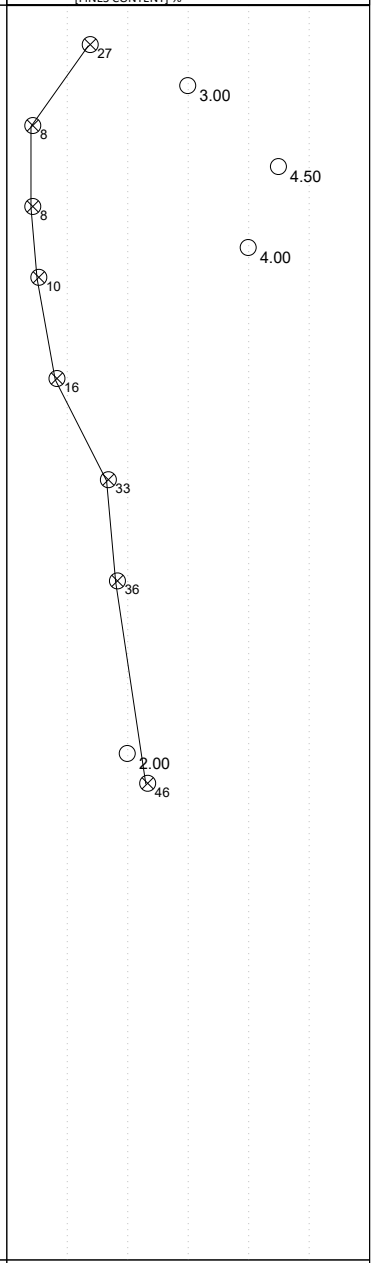
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**18.00**	BORING STARTED: **Dec 14 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**17.00**	BORING COMPLETED: **Dec 14 2020**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-4**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **300.1**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	16	(SM) FILL, SILTY SAND WITH GRAVEL AND PIECES OF CONCRETE, light yellowish brown, brown and gray, moist, dense			42-21-11-9 (32)
	S-2	SS	24	10	(SC-SM) FILL, SILTY CLAYEY SAND WITH ORGANIC SILT AND GRAVEL, gray, brown, dark brown and dark grayish brown, moist, medium dense			8-7-6-4 (13)
5	S-3	SS	24	12			296	3-3-5-5 (8)
	S-4	SS	18	14	(CL) FILL, A MIXTURE OF SANDY LEAN CLAY AND SANDY ORGANIC CLAY WITH GRAVEL, brown, grayish brown and gray, moist, hard			3-6-7 (13)
	S-5	SS	18	16	(CL) Glacial till, SANDY LEAN CLAY, reddish brown and light gray, moist, hard		291	4-9-11 (20)
10	S-6	SS	18	14	(SM) Glacial outwash, SILTY SAND, yellowish brown, moist, medium dense			6-12-13 (25)
					(ML) Glacial outwash, SANDY SILT, yellowish brown, moist to wet, very stiff			
	S-7	SS	18	14	(SM) Glacial outwash, SILTY SAND, yellowish brown, wet, medium dense	▽	286	7-12-14 (26)
15								
	S-8	SS	18	16			281	8-12-16 (28)
20					**END OF DRILLING AT 20.0 FT**			
25							276	
30							271	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

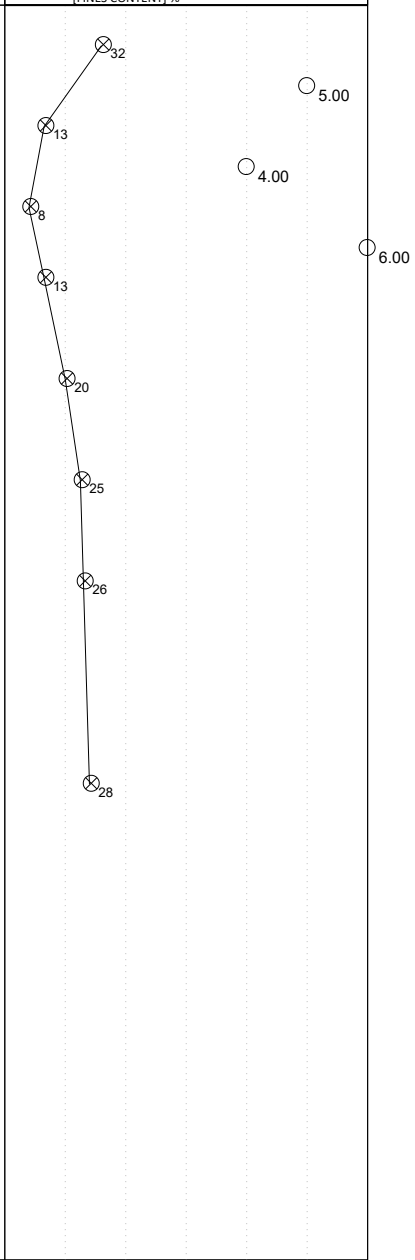
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**18.00**	BORING STARTED: **Dec 14 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 14 2020**		HAMMER TYPE: **Auto**
⧩ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 18.5' (AH)**
⧩ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-5**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **299.1**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	12	(SM) FILL, SILTY SAND WITH A LITTLE GRAVEL, light yellowish brown and gray, moist, medium dense		299	36-17-4-12 (21)
	S-2	SS	24	10	(SM) FILL, SILTY SAND WITH GRAVEL, PIECES OF CONCRETE AND A LITTLE GRAVEL, brown and gray, moist, medium dense to loose			12-10-6-6 (16)
5	S-3	SS	24	10			295	3-4-3-4 (7)
	S-4	SS	18	6	(SM) FILL, SILTY SAND WITH GRAVEL AND PIECES OF CONCRETE, brown and gray, moist, medium dense to loose			5-8-3 (11)
10	S-5	SS	18	12	(SP-SM) Glacial outwash, FINE TO MEDIUM SAND WITH SILT, yellowish brown, moist, medium dense		290	5-6-10 (16)
	S-6	SS	18	14				5-10-15 (25)
15	S-7	SS	18	14	(ML) Glacial outwash, SANDY SILT, yellowish brown, moist to wet, hard	▽	285	8-14-19 (33)
20	S-8	SS	18	16			280	14-20-25 (45)
					END OF DRILLING AT 20.0 FT			
25							275	
30							270	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

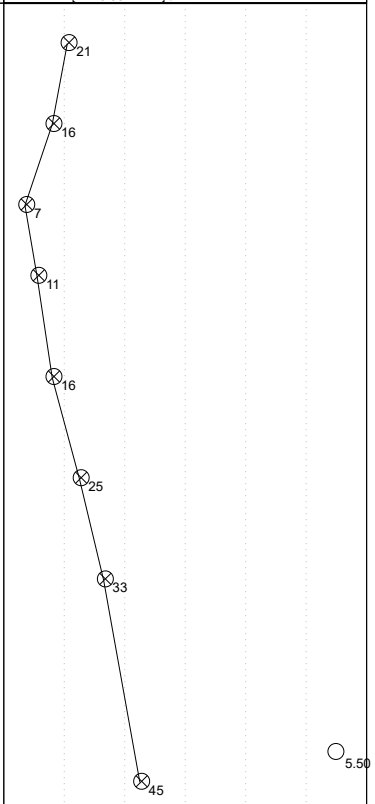
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**14.00**	BORING STARTED: **Dec 14 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 14 2020**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY:	DRILLING METHOD: **3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-6**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **300.0**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	10	(GM) Base course, SILTY GRAVEL WITH SAND, gray and light yellowish brown, moist, medium dense [8"]			25-14-11-8 (25)
	S-2	SS	24	12	(GM) FILL, SILTY GRAVEL WITH SAND, gray, brown and grayish brown, moist, medium dense		296	4-4-6-6 (10)
5	S-3	SS	24	10	(SM) FILL, SILTY SAND WITH PIECES OF GLASS, dark brown, moist, loose			3-3-2-2 (5)
	S-4	SS	18	14	(SM) FILL, SILTY SAND WITH CHUNKS OF LEAN CLAY, light brownish gray and dark brown, moist, loose			6-7-9 (16)
	S-5	SS	18	16	(CL) Glacial till, LEAN CLAY WITH GRAVEL, brown and gray, moist, hard		291	5-13-15 (28)
10	S-6	SS	18	12	(SM) Lacustrine, SILTY SAND, yellowish brown, moist to wet, medium dense to dense to medium dense	▼		8-14-19 (33)
	S-7	SS	18	14		▽	286	9-15-17 (32)
15								
	S-8	SS	18	18			281	5-9-10 (19)
20					**END OF DRILLING AT 20.0 FT**			
							276	
25								
							271	
30								

Plastic Limit Water Content Liquid Limit
X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

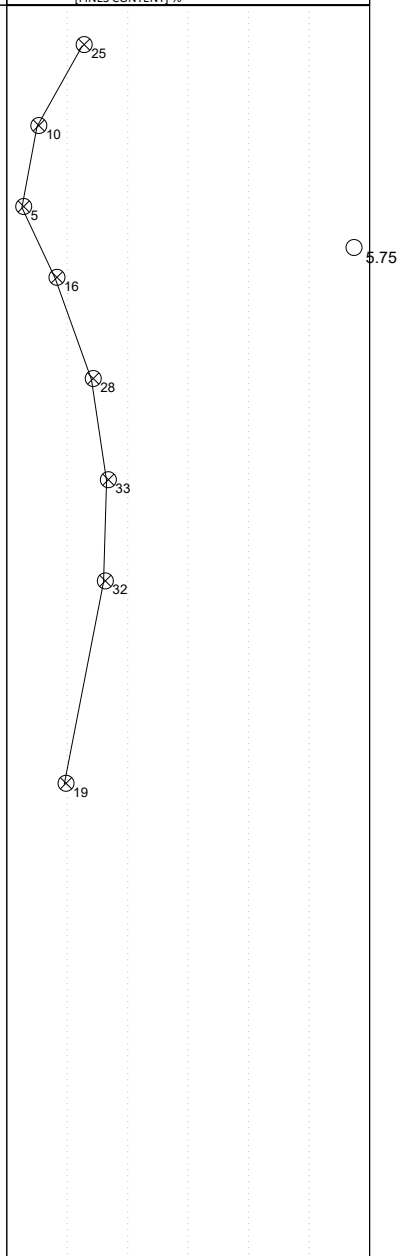
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**13.50**	BORING STARTED:	**Dec 15 2020**	CAVE IN DEPTH:	**12.00**
▼ WL (Completion)	**12.00**	BORING COMPLETED:	**Dec 15 2020**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD:	**3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-7**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **301.8**

BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

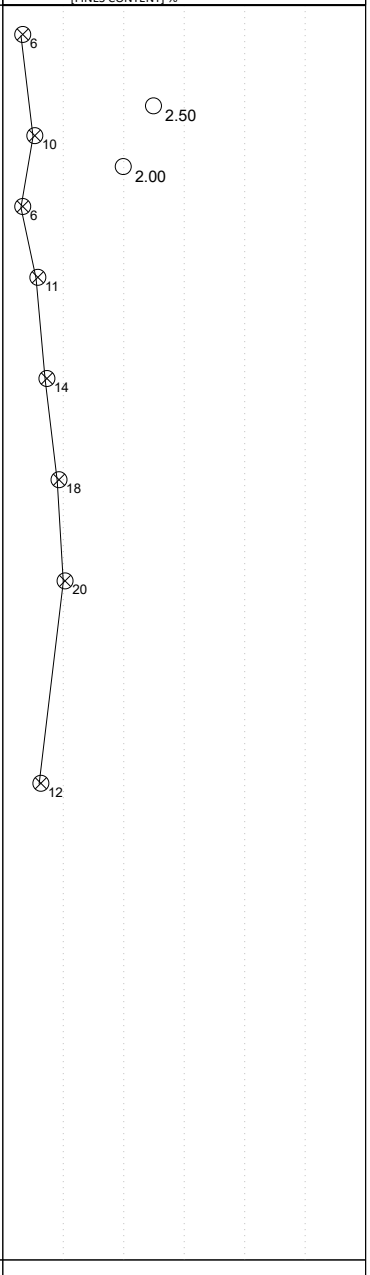
RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	BLOWS/6"
	S-1	SS	18	12	Asphalt Thickness [3"] (GM) Base course, SILTY GRAVEL WITH SAND, gray and brown, moist [6"]		3-3-3 (6)
	S-2	SS	18	12	(SM) FILL, SILTY SAND, brown and grayish brown, moist, loose		4-5-5 (10)
5	S-3	SS	24	12	(OL) FILL, SANDY ORGANIC SILT AND SANDY SILT, dark brown and brown, moist, firm to very stiff	297	3-3-3-3 (6)
	S-4	SS	18	14	(SM) POSSIBLE FILL, SILTY SAND, brown, moist, loose		4-6-5 (11)
	S-5	SS	18	10	(CL) Glacial till, SANDY LEAN CLAY, lenses of silt, brown and light brownish gray, moist, very stiff		5-6-8 (14)
10						292	
	S-6	SS	18	12	(SM) Lacustrine, SILTY SAND, dark yellowish brown, moist, medium dense		6-8-10 (18)
	S-7	SS	18	14	(SP-SM) Glacial outwash, FINE TO MEDIUM SAND WITH SILT, yellowish brown, moist to wet, medium dense		4-9-11 (20)
15						287	
	S-8	SS	18	12			4-5-7 (12)
20					**END OF DRILLING AT 20.0 FT**	282	
25						277	
30						272	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**18.00**	BORING STARTED:	**Dec 15 2020**	CAVE IN DEPTH:	**16.00**
▼ WL (Completion)	**18.00**	BORING COMPLETED:	**Dec 15 2020**	HAMMER TYPE:	**Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD:	**3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-8**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **300.0**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Asphalt Thickness [5"]			
	S-1	SS	18	12	(SM) Base course, SILTY SAND WITH GRAVEL, dark brown and gray, moist [3"]			2-3-5 (8)
	S-2	SS	18	10	(SM) FILL, SILTY SAND, trace organic silt, dark brown and grayish brown, moist, loose			3-5-11 (16)
5	S-3	SS	24	14	(CL) Glacial till, SANDY LEAN CLAY, brown, moist, hard		295	2-4-6-8 (10)
	S-4	SS	18	12	(SM) Glacial till, SILTY SAND, brown, moist, loose			5-9-10 (19)
	S-5	SS	18	14	(CL) Glacial till, SANDY LEAN CLAY, trace gravel, brown and gray, moist, hard			7-14-16 (30)
10					(SM) Lacustrine, SILTY SAND, yellowish brown, moist, medium dense		290	
	S-6	SS	18	18	(ML) Lacustrine, SANDY SILT, yellowish brown, moist, very stiff			7-15-17 (32)
	S-7	SS	18	14	(SM) Glacial outwash, SILTY SAND, yellowish brown, moist to wet, dense to medium dense	▽ ▼		4-8-12 (20)
15							285	
	S-8	SS	18	12				5-8-11 (19)
20					**END OF DRILLING AT 20.0 FT**		280	
25							275	
30							270	

Plastic Limit Water Content Liquid Limit

⊗ STANDARD PENETRATION BLOWS/FT

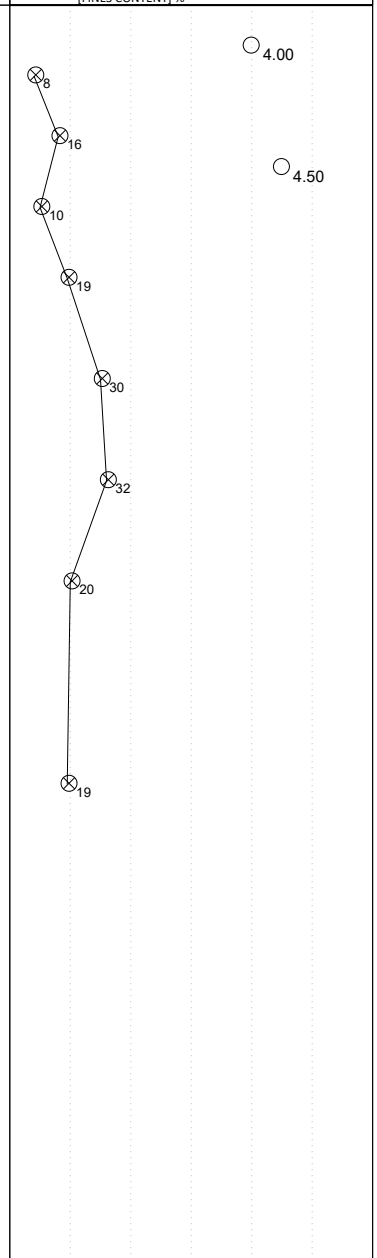
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**13.50**	BORING STARTED:	**Dec 15 2020**	CAVE IN DEPTH:	**15.00**
▼ WL (Completion)	**15.00**	BORING COMPLETED:	**Dec 15 2020**	HAMMER TYPE:	**Auto**
▽▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD:	**3 1/4" HSA 0' to 18.5' (AH)**
▽ WL (Stabilized)					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-9**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **296.7**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	3	3	(SM) FILL, SILTY SAND WITH GRAVEL, yellowish brown, brown and gray, moist, very dense		296	50/3" (50/3")
	S-2	SS	24	18	(SM) FILL, SILTY SAND WITH GRAVEL, light yellowish brown and gray, moist, very dense			2-3-4-5 (7)
5					(SM) Glacial till, SILTY SAND, brown, moist, loose		292	
					(CL) Glacial till, SANDY LEAN CLAY, brown, moist, very stiff			
					END OF DRILLING AT 4.0 FT			
10							287	
15							282	
20							277	
25							272	
30							267	

Plastic Limit Water Content Liquid Limit

X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

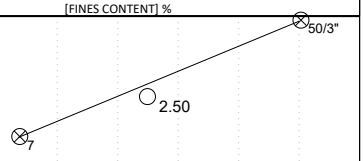
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None**	BORING STARTED: **Dec 15 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 15 2020**		HAMMER TYPE: **Auto**
⧩ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 4' (AH)**
⧩ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-10**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **298.6**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	3	3	(SM) Base course, SILTY SAND WITH GRAVEL, brown, light yellowish brown and gray, moist, very dense [10"]		298	50/3" (50/3")
	S-2	SS	24	18	(SM) FILL, SILTY SAND WITH GRAVEL, brown and dark brown, moist, very loose			3-2-1-3 (3)
					(CL) FILL, SANDY LEAN CLAY WITH ORGANIC CLAY, brown, dark grayish brown, moist, very stiff			
5					(CL) Glacial till, SANDY LEAN CLAY, brown, moist, very stiff		294	
					END OF DRILLING AT 4.0 FT			
10							289	
15							284	
20							279	
25							274	
30							269	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

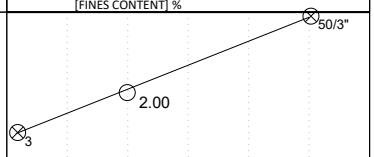
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	**None**	BORING STARTED: **Dec 15 2020**		CAVE IN DEPTH:
WL (Completion)	**None**	BORING COMPLETED: **Dec 15 2020**		HAMMER TYPE: **Auto**
WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 4' (AH)**
WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-11**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **299.3**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	16	(SP-SM) Base course, COARSE TO FINE SAND WITH SILT AND GRAVEL, light yellowish brown and gray, moist, very dense [12"]		299	45-40-10-6 (50)
	S-2	SS	24	12	(CL) FILL, SANDY LEAN CLAY, trace organic clay, brown, reddish brown and grayish brown, moist, hard to very stiff			4-7-6-6 (13)
5					**END OF DRILLING AT 4.0 FT**		295	
10							290	
15							285	
20							280	
25							275	
30							270	

Plastic Limit Water Content Liquid Limit
X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

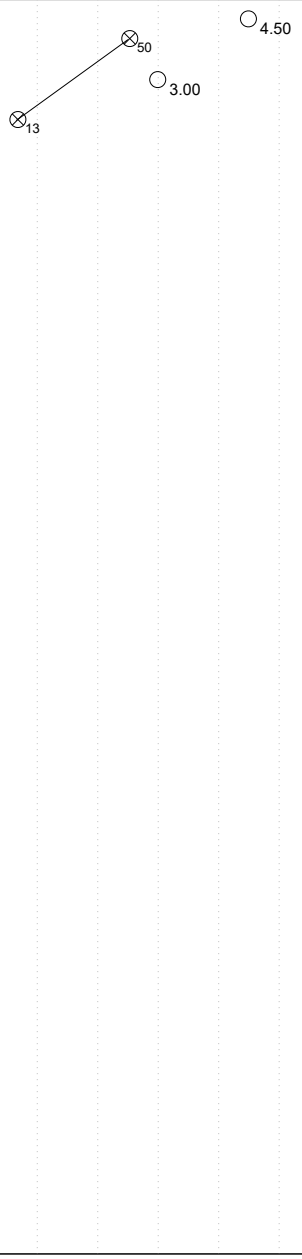
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None**	BORING STARTED: **Dec 15 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 15 2020**		HAMMER TYPE: **Auto**
▼ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSAA 0' to 4' (AH)**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-12**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **300.8**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Asphalt Thickness [4"]		300	
	S-1	SS	18	12	(SM) Base course, SILTY SAND WITH GRAVEL, dark brown and gray, moist, loose [12"]			3-4-6 (10)
	S-2	SS	18	12	(CL, OL) FILL, A MIXTURE OF SANDY LEAN CLAY AND ORGANIC CLAY, brown and very dark grayish brown, moist, hard			5-4-5 (9)
5					(SC-SM) FILL, SILTY CLAYEY SAND, brown and grayish brown, moist, loose		296	
					(CL) Glacial till, SANDY LEAN CLAY, brown, moist, hard			
					END OF DRILLING AT 4.5 FT			
10							291	
15							286	
20							281	
25							276	
30							271	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

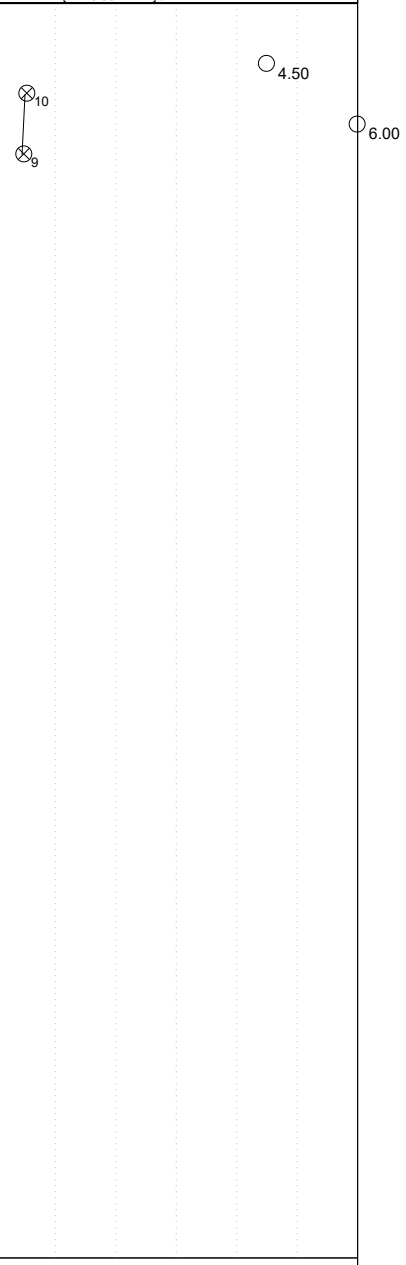
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered)	**None**	BORING STARTED: **Dec 15 2020**		CAVE IN DEPTH:
WL (Completion)	**None**	BORING COMPLETED: **Dec 15 2020**		HAMMER TYPE: **Auto**
WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 4.5' (AH)**
WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-13**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **300.8**

BOTTOM OF CASING

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Asphalt Thickness [5"]			
					(SM) Base course, SILTY SAND WITH GRAVEL, brown and gray, moist [12"]			
	S-1	SS	18	10	(CL) POSSIBLE FILL, LEAN CLAY, trace organic clay, brown and dark grayish brown, moist, hard			3-3-5 (8)
	S-2	SS	18	8				3-5-8 (13)
5					(CL) POSSIBLE FILL, SANDY LEAN CLAY, brown, moist, hard		296	
					(SM) Glacial till, SILTY SAND, brown, moist, medium dense			
					END OF DRILLING AT 4.5 FT			
10							291	
15							286	
20							281	
25							276	
30							271	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered) **None**	BORING STARTED: **Dec 15 2020**	CAVE IN DEPTH:	
WL (Completion) **None**	BORING COMPLETED: **Dec 15 2020**	HAMMER TYPE: **Auto**	
WL (Seasonal High Water)	EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 4.5' (AH)**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-14**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
New London Library	**ECS59 - Crew 1**

SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **299.9**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Asphalt Thickness [3"]			
	S-1	SS	18	12	(GM) Base course, SILTY GRAVEL WITH SAND, light yellowish brown and gray, moist [7"]			3-4-4 (8)
	S-2	SS	18	10	(CL) FILL, SANDY LEAN CLAY, trace gravel and organic clay, dark brown, very dark grayish brown and brown, moist, very stiff			4-6-10 (16)
5					(CL) Glacial till, LEAN CLAY WITH SAND, brown and light gray, moist, very stiff		295	
					(CL) Glacial till, SANDY LEAN CLAY, brown and light gray, moist, very stiff			
10					**END OF DRILLING AT 4.0 FT**		290	
15							285	
20							280	
25							275	
30							270	

Plastic Limit Water Content Liquid Limit

STANDARD PENETRATION BLOWS/FT

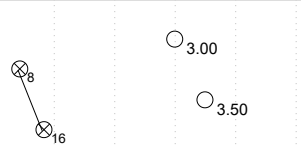
ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None**	BORING STARTED: **Dec 15 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 15 2020**		HAMMER TYPE: **Auto**
⧩ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY: **MAM4**	DRILLING METHOD: **3 1/4" HSA 0' to 4' (AH)**
⧩ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Keller, Inc.	**59:2530**	**B-15**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
New London Library	**ECS59 - Crew 1**		
SITE LOCATION: **406 S Pearl Street, New London, Wisconsin 54961**			LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION: **299.9**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Asphalt Thickness[1"]			
	S-1	SS	18	8	(GM) Base course, SILTY GRAVEL WITH SAND, brown and gray, moist [6"]			3-4-6 (10)
	S-2	SS	18	10	(CL) Lacustrine, LEAN CLAY, brown, and grayish brown, moist, stiff to hard			5-8-11 (19)
5					(CL) Glacial till, SANDY LEAN CLAY, brown, moist, hard		295	
					(SM) Glacial till, SILTY SAND, brown, moist, medium dense			
					END OF DRILLING AT 4.0 FT			
10							290	
15							285	
20							280	
25							275	
30							270	

Plastic Limit Water Content Liquid Limit

X———●———△

⊗ STANDARD PENETRATION BLOWS/FT

ROCK QUALITY DESIGNATION & RECOVERY

RQD

REC

○ CALIBRATED PENETROMETER TON/SF

[FINES CONTENT] %

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**None**	BORING STARTED: **Dec 15 2020**		CAVE IN DEPTH:
▼ WL (Completion)	**None**	BORING COMPLETED: **Dec 15 2020**		HAMMER TYPE: **Auto**
⧩ WL (Seasonal High Water)		EQUIPMENT: **Truck**	LOGGED BY:	DRILLING METHOD: **3 1/4" HSA 0' to 4' (AH)**
⧩ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

APPENDIX C – Supplemental Report Documents

Important Information about This Geotechnical-Engineering Report

Important Information about This

Geotechnical-Engineering Report

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

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include 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 personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org