ADDENDUM NO. 1
ISSUE DATE: October 20, 2021

RE: WIMR – LOADING DOCK AND PRIMATE CENTER RENOVATION
UNIVERSITY OF WISCONSIN - MADISON

UW-Institution Project No. A-20-005
UWSA Project No. 1485-1972

BID DUE: MEP Bidders: October 27, 2021, 2:00 p.m.
GPC Bidders: November 10, 2021, 2:00 p.m.

FROM: Zimmerman Architectural Studios, Inc.
2122 West Mt. Vernon Avenue
Milwaukee, Wisconsin 53233

TO: Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the original Contract Documents dated September 24, 2021 as noted below. Acknowledgement receipt of this Addendum by inserting the number and issue date of this Addendum in the blank space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of (3) pages and the attached documents:

Specifications (Revisions dated October 20, 2021):
GPC INVITATION TO BID
GPC INSTRUCTIONS TO BIDDERS
MEP INVITATION TO BID
MEP INSTRUCTIONS TO BIDDERS
GENERAL REQUIREMENTS
SECTION 02 32 00 – GEOTECHNICAL REPORT (DATED MARCH 18, 2004)
SECTION 07 95 00 – EXPANSION CONTROL

Drawings (Revisions AD1 Clouded on Drawings dated October 20, 2021):
S1.0 – FOUNDATION PLAN
S5.1 – DETAILS
A1.0 – DEMOLITION PLAN
A2.1 – FLOOR PLAN
A2.1B – EXPANDED HOUSING
A4.0 – EXTERIOR ELEVATIONS
A5.0 – BUILDING SECTIONS
A5.1 – BUILDING SECTIONS
A7.0 – FINISH SCHEDULE
A8.0 – FURNITURE & EQUIPMENT PLAN
P1.2B – PLUMBING CATWALK DEMOLITION PLAN – AREA B
M2.2A – MECHANICAL CATWALK PLAN – AREA A
M2.2B – MECHANICAL CATWALK PLAN – AREA B
M2.2C – MECHANICAL CATWALK PLAN – AREA C
M2.2D – MECHANICAL CATWALK PLAN – AREA D
M5.0 – MECHANICAL SECTIONS
E3.2 – ELECTRICAL POWER CATWALK PLAN
Changes to Specifications:

1. Bid Documents - GPC and MEP Volumes, Volumes 2 through 4 ADD the following to the Table of Contents:
   a. “SECTION 02 32 00 – GEOTECHNICAL REPORT”
   b. “SECTION 07 95 00 – EXPANSION CONTROL”

2. Bid Documents - GPC and MEP Volumes, Invitation to Bid
   a. Attached
   a. Pages A-2, A-3 Revisions at Red text

3. Bid Documents - GPC and MEP Volumes, Instructions to Bidders
   a. Attached
   a. Page B-10, Revisions at Red text

4. Bid Documents - GPC and MEP Volumes, General Requirements
   a. Attached
   b. Pages GR-2, GR-3 Revisions at Red text

5. Volume 2 – Section 02 32 00 – Geotechnical Report
   a. ADD the attached specification in it’s entirety.

6. Volume 2 – Section 07 42 14 – Insulated Metal Panel Systems
   a. Page 4, Lines 53-56, DELETE all reference to “thermal requirements for panels for specialty cheese ripening rooms”.

7. Volume 2 – Section 07 95 00 – Expansion Control
   a. ADD the attached specification in it’s entirety.

8. Volume 2 – Section 32 31 13 – Chain Link Fences and Gates
   a. Article 1.5, A.1.,d., DELETE all reference to “Gate Operators”.
   b. Article 1.5, B.3, DELETE all reference to “Gate Operator”.
   c. Article 1.5, B.4, DELETE all reference to “Wiring Diagrams”.
   d. DELETE Article 3.5 – Grounding and Bonding
   e. Article 3.7, B, DELETE all reference to “Automatic Gate Operator”.

Changes to Drawings:

1. Sheet S1.0 – FOUNDATION PLAN
   a. Added top of walls at north and south stairs
   b. Revised note on lift slab

2. Sheet S5.1 – DETAILS
   a. Revised detail 3

3. Sheet A1.0 – DEMOLITION PLAN
   a. Modified keynotes D5, D11, D14, & D24 for clarification
   b. Added keynote D36 to Mail Room and Radioio Storage Room.
   c. Added keynote D41 & D42 for clarification on existing ceiling conditions
   d. Added keynote D43 to Radioiso Storage Room
   e. Modified keynote D40.

4. Sheet A2.1 – FLOOR PLAN
   a. Revised keynote 14
   b. Added keynote 28

5. Sheet A2.1B – EXPANDED HOUSING
   a. Modified Equipment Schedule @ Expanded Housing for clarification
   b. Modified Floor Plan keynote 27 for clarification
   c. Modified Demoition keynote D35 for clarification.

6. Sheet A4.0 – EXTERIOR ELEVATIONS
   a. Revised note at soffit
   b. Revised locations of metal louvers.

7. Sheet A5.0 – BUILDING SECTIONS
   a. Revised note at soffit
8. Sheet A5.1 – BUILDING SECTIONS
   a. Revised note at soffit
9. Sheet A5.4 – DETAILS
   a. Revised detail 4/A5.4 for clarification.
10. Sheet A7.0 – FINISH SCHEDULE
    a. Added keynotes to Holding Rooms 1534, 1537, 1538, 1542 for clarification.
11. Sheet P1.2B – PLUMBING CATWALK DEMOLITION PLAN – AREA B
    a. Added sheet keynote 7 at the area of the new catwalk extension
12. Sheet M2.2A – MECHANICAL CATWALK PLAN – AREA A
    a. Revised ductwork locations to avoid structural piers.
13. Sheet M2.2B – MECHANICAL CATWALK PLAN – AREA B
    a. Increased supply and exhaust ductwork main sizing.
    b. Revised hot piping connection location and increased the main sizes.
14. Sheet M2.2C – MECHANICAL CATWALK PLAN – AREA C
    a. Increased supply and exhaust ductwork main sizing.
15. Sheet M2.2D – MECHANICAL CATWALK PLAN – AREA D
    a. Revised ductwork locations to avoid structural piers.
16. Sheet M5.0 – MECHANICAL SECTIONS
    a. Increased supply and exhaust ductwork main sizing.
    b. Revised hot piping and steam piping locations to accommodate ductwork main increase.
17. Sheet E3.2 – ELECTRICAL POWER CATWALK PLAN
    a. Show sheet keynote 2 at area of new catwalk extension.
    b. Add sheet keynote 4 to sheet and at area of new catwalk extension.

END OF ADDENDUM

Zimmerman Architectural Studios, Inc.
2122 West Mt. Vernon Avenue
Milwaukee, Wisconsin 53233

The Board of Regents of the University of Wisconsin
on Behalf of The University of Wisconsin – Madison
C/O UWSA – Capital Planning and Budget
780 Regent Street, Suite 239
Madison, Wisconsin 53715
GPC INVITATION TO BID  (Rev 12/2020)

THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM

WIMR – LOADING DOCK AND PRIMATE CENTER RENOVATION

UNIVERSITY OF WISCONSIN - MADISON

MADISON, WISCONSIN

UW-Madison Project No. A-20-005 / UWSA Project No. 1485-1972

BID OPENING for MEP BIDDERS: 2:00 P.M., October 27, 2021.

BID OPENING for GENERAL PRIME CONTRACTOR BIDDERS: 2:00 P.M., November 10, 2021

OWNER: The Board of Regents of the University of Wisconsin System on behalf of the University of Wisconsin - Madison, hereinafter termed the Owner.

NOTICE: Effective January 1, 2014, all potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: [http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4](http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4) or upon request from DFD—email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. The Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders.

Due to COVID-19 in 2020, the bidding procedures and requirements have changed. University construction projects will continue to proceed in accordance with Department of Health Services’ (DHS) guidelines, unless otherwise directed by the State of Wisconsin. Changes in construction bidding procedures are necessary to ensure the health and safety of University employees, bidders, and members of the general public who are served by State government. Effective immediately, the University of Wisconsin System Administration (UWSA) will ONLY be accepting construction bidding documents as follows:

- PDF scanned file of all required bid documents, including bid and bid bond forms with an either original wet signatures or digital electronic signatures emailed to UWSA Bid Submissions at uwsabidsubmissions@uwsa.edu. If submitting documents with electronic signatures, further information and requirements are in the following bullets.
- Please include Project Name, Project Number, Project Location, Category of Work being bid on, Bid Date, and the Name and Address of Bidder within email submission.
- For documents that require a seal, please darken these scans for better visibility.
- For bids including a cashier’s/certified check, please scan front and back of check and include with submission.
- Bidders may submit PDFs of bonds and powers of attorney containing e-signatures, e-corporate seals, and e-notaries affixed to each document in accordance with the Surety’s obligations. Telephone numbers are required for all electronic signatories for oral verification as needed. Wisconsin law permits the use of remote online notarization if it is performed using technology providers that have been approved by the Department of Financial Institutions (DFI). If a remote online notarization is used, it is the responsibility of the contractor and its Surety to ensure that the technology provider has been approved by DFI.
- Bidders may submit bid forms containing electronic signatures, but those signatures must be obtained using approved software in order to be accepted. DocuSign software and Adobe Digital Signature software are approved for e-signatures for submission of bids. Use of any other e-signature software will require additional verification and the bidder must obtain approval at least three (3) business days prior to submission of bids. Please contact jdwyer@uwsa.edu first regarding any proposed electronic signature software.
UWSA will NO LONGER accept bids via third party delivery (UPS, FEDEX, or DHL) or bids being dropped off in person at 780 Regent Street.

- Bids must be submitted to the email address listed above (uwsabidsubmissions@uwsa.edu) by 1:30 p.m. CT on the day that the bid submission is due. Email PDF submissions will receive a confirmation reply from UWSA. If for any reason a reply is not received after a PDF bid is emailed, please contact Jacob Dwyer at (608) 263-4584.
- Bidders are responsible for their bid being delivered by the time specified and delivery is entirely at the bidder's risk.

The bid opening will be conducted via teleconference with the information listed below. All bids will be opened at 2:00 p.m. CT on the scheduled date. All lines will be muted upon entry of the teleconference. Upon dialing into the teleconference line, you will hear silence until the bid starts.

- Dial-in: 1-415-655-0003
- Access Code: 26240830476

In general, the work consists of the addition of a loading dock and renovation of two portions within existing Primate Center, at the Wisconsin Institute of Medical Research, which is part of the University of Wisconsin in Madison. The work has been divided into (3) three Colored Areas.

GREEN Area #1 consists of the 2,781 square foot loading dock addition and the documentation, for reference and coordination, of an existing 782 square foot shed. The addition consists of a poured concrete foundation system, reinforced concrete masonry load bearing walls with a fully adhered roof over a supported metal deck. Spaces include the loading dock proper, along with rooms for hazardous storage and custodial supplies. Existing Dock needs to be active during construction of new dock (Area #1) and prior to the construction activities begin for the Suite-1400 Primate Center (Area #2). Once the new loading dock is active (partially substantially complete), the existing loading dock demolition can be initiated for construction of the Primate Center. This area needs to be available for use by the Owner.
before starting work on the existing building area in BEIGE Area #2. The exterior project area is not colored as a work area, but work will need to be aligned and coordinated to support the colored areas.

BEIGE Area #2 contains the 6,382 square foot Primate Center Vivarium renovation. As the Beige Area is used daily by SMPH, coordination to maintain use will be needed with the Dock, including Vivarium and Bedding needs; Waste and Recycling; Transportation Services (parking etc.); Surgical Pathology. Circulation for Surgical Pathology will use a 2nd Floor route outside the Project Area.

The Beige Area has (7) non-human primate holding rooms, a procedure room, wash down room and storage. There are (2) two vestibule entries which contain the vivarium suite, the north entrance intended for cage and supply routing while the south side is intended as primary staff access. A portion of the Beige Area is included in the exterior addition as circulation which will need to be shared with occupied Owner functions at phased times within the overall project.

BLUE Area #3 is a 1,688 square foot internal expansion of existing housing for the Primate Center. The Blue Area is physically separated from the other color areas as well as needing to be started and completed first so expanded areas are available during the Green and Beige area construction timelines. This expansion will be located in rooms that have been utilized for other functions, to be relocated outside of the project area, but were originally planned and partially built for this animal holding function within the larger primate center. The floor drains will be opened and original uses removed as the vivarium functions are activated for use. Expanded Housing (Area #3) can be completed on an earlier schedule (in order for the space to be used by the PI).

Note: Room 1444 is a radioactive counting lab. It does contain, typically in very small amounts, hazardous materials in the form of radioactive material. The Office of Radiation Safety on Campus will need to decommission and remove all materials prior to turning space over to GPC for demo.

The following Figures and listed additional enabling scope are included within the contractor’s project work. These are provided for the contractor’s planning, enabling/providing and incorporation/installation with the entire portion of their work. The following Phases are used to inform, while the specific phasing of work is to be provided by the Contractor with the Owner’s approval.
Figure 2 - Site Enabling for Green

Figure 1 - Existing Site Utilization

Site Enabling 'Phase 1'

Key:

- Elevated Temp Construction Walk (Covered)
- Dock Level (lift)
- Cover Over Existing Walk
- Mini-Bulk CO2 Tank (Temporary Location)
- Reserved: Morgue & Autopsy
- Reserved: Service/Vendor
- Reserved: Graduate School
- Reserved: UWWRC
- Reserved: BRMS

Lot 63:
- South Side - Lot Permit Parking (5 Stalls)
- North Side - D.O.C. Parking Only (10 Stalls)
Staging limits with fenced separation of construction is to be provided. Limits to be determined with Owner and extent of work at diagrammed red --X-- lines.

The staged construction area placement will maintain an existing egress path from WIMR West Wedge.
A functioning interim location for the Owner’s new CO2 supply is needed. Owner’s Vendor supplied work in included within the Project. Photo in Figure 2-2 shows an area for CO2 at the plan yellow circle with gated fence perimeter, Waste and Cardboard Recycling dumpsters shown in orange rectangles.
Contractor to provide interim condition to maintain the Dock functions needed by Owner. This includes potential routes for heavy and large items for the Vivarium. A possible consideration shown in Blue uses interim docks connecting with existing Hospital dock and existing WIMR Connector doors. A possible dock lift shown in green could use existing equipment being removed, to transition from grade to dock height. The diagrammed blue paths also need to provide for the existing building egress path from WIMR Connector doors, which are at two existing building floor elevations.
Building the wall at the perimeter of the existing building is expected within the Green Area of work to separate circulation and construction. A 5' area to the east of the exterior wall may be used for the Owner’s temporary circulation as well as contractor’s earlier work at the perimeter. The Beige circulation area at the boundary of Green will need to provide for multiple activities along the timeline coordinated by the Work.
When the Green Area is available for the Owner’s use, the Work will transition to the focus on the Beige area. Portions of the new Dock will be available to the Owner while some circulation may yet be needed at Interim locations. The contractor’s actual work areas will need to modify for the Work and to maintain Owner’s functions.
It will be understood that the contractor will continue to need access to the Beige Area while the Green is in use by the Owner. The North and West Beige corridors may flex for use by contractor or owner as coordinated with the Work. Interim circulation will be needed. Contractor to maintain separation from work to occupied spaces.

As the Work completes, the final circulation conditions will return and there is expected to be a mixed environment with Owner and Construction which will need coordination with the Work.
Bidding documents (drawings, specifications, and addenda) may be obtained only as electronic files (in PDF format): as a downloadable file from the University of Wisconsin System Administration’s Design and Construction Opportunities website (see website address below). Bidding documents may also be seen at various Builders’ Exchanges that have downloaded the documents. Additional project bidding information, including plan holders lists are available on the University of Wisconsin System public website: https://www.wisconsin.edu/procurement/construction/. After opening the web page, select the WIMR – LOADING DOCK AND PRIMATE CENTER RENOVATION project.

Base Bid will be received for: A single Base Bid for All Work.

No deposit is required to obtain documents for bidding purposes.

Bid Guarantee in the amount of 10% of the Bid must accompany each bid submitted. Contractor MUST submit hard copies of bid to UWSA within 10 working days of being notified of award.

Contract offer and construction phase records will be processed via email.

If prevailing wage rates are applicable to this project those rates are included in the Supplementary General Conditions.

The process for pre-bid tours will be as follows to insure no more than 10 people are together at one time. Pre-bid tours will be held on the afternoon of Wednesday, October 6, 2021. All parties interested in a tour must email eric.johnson@zastudios.com before October 4, 2021. Pre-bid tours are expected to be 90 minutes. The architect will send you a start time of your pre-bid tour. To minimize social contact, a maximum of 1 person per organization will be allowed to tour. On October 4, 2021 you will receive a response email with your tour start time.

Once signed up, participants should meet in the WIMR DOCK AREA building located at 1111 Highland Avenue, Madison, WI 53715. All bidders are highly encouraged to attend this Pre-bid Conference / Building Tour. The contact person is Zimmerman Architectural Studios, Inc., Eric Johnson, 2122 West Mt. Vernon Avenue, Milwaukee, WI 53233

Any other questions related to this project can be sent via email to the Procurement contact Jacob Dwyer at jdwyer@uwsa.edu.

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MEP INVITATION TO BID  (Rev 12/2020)
THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM

WIMR – LOADING DOCK AND PRIMATE CENTER RENOVATION
UNIVERSITY OF WISCONSIN - MADISON
MADISON, WISCONSIN

UW-Madison Project No. A-20-005 / UWSA Project No. 1485-1972

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This project is being let using a single prime bidding and contracting process. the Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders.

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- Please include Project Name, Project Number, Project Location, Category of Work being bid on, Bid Date, and the Name and Address of Bidder within email submission.
- For documents that require a seal, please darken these scans for better visibility.
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- Bidders may submit PDFs of bonds and powers of attorney containing e-signatures, e-corporate seals, and e-notaries affixed to each document in accordance with the Surety’s obligations. Telephone numbers are required for all electronic signatories for oral verification as needed. Wisconsin law permits the use of remote online notarization if it is performed using technology providers that have been approved by the Department of Financial Institutions (DFI). If a remote online notarization is used, it is the responsibility of the contractor and its Surety to ensure that the technology provider has been approved by DFI.
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- Dial-in: 1-415-655-0003
- Access Code: 2620895944

In general, the work consists of the addition of a loading dock and renovation of two portions within existing Primate Center, at the Wisconsin Institute of Medical Research, which is part of the University of Wisconsin in Madison. The work has been divided into (3) three Colored Areas.

- Area #1 – GREEN – Loading Dock
- Area #2 – BEIGE – Primate Center Vivarium
- Area #3 – BLUE – Primate Center Expanded Housing

AREA #3
EXPANDED HOUSING
1,688 GSF

AREA #2
PRIMATE CENTER
6,382 GSF

AREA #1
DOCK
2,781 GSF
SHED
782 GSF

LOCATION KEY PLAN
GREEN Area #1 consists of the 2,781 square foot loading dock addition and the documentation, for reference and coordination, of an existing 782 square foot shed. The addition consists of a poured concrete foundation system, reinforced concrete masonry load bearing walls with a fully adhered roof over a supported metal deck. Spaces include the loading dock proper, along with rooms for hazardous storage and custodial supplies. Existing Dock needs to be active during construction of new dock (Area #1) and prior to the construction activities begin for the Suite-1400 Primate Center (Area #2). Once the new loading dock is active (partially substantially complete), the existing loading dock demolition can be initiated for construction of the Primate Center. This area needs to be available for use by the Owner before starting work on the existing building area in BEIGE Area #2. The exterior project area is not colored as a work area, but work will need to be aligned and coordinated to support the colored areas.

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Note: Room 1444 is a radioactive counting lab. It does contain, typically in very small amounts, hazardous materials in the form of radioactive material. The Office of Radiation Safety on Campus will need to decommission and remove all materials prior to turning space over to GPC for demo.

The following Figures and listed additional enabling scope are included within the contractor’s project work. These are provided for the contractor’s planning, enabling/providing and incorporation/installation with the entire portion of their work. The following Phases are used to inform, while the specific phasing of work is to be provided by the Contractor with the Owner’s approval.
Figure 1- Existing Site Utilization
Figure 2 - Site Enabling for Green
Staging limits with fenced separation of construction is to be provided. Limits to be determined with Owner and extent of work at diagrammed red --X-- lines.

The staged construction area placement will maintain an existing egress path from WIMR West Wedge.
A functioning interim location for the Owner’s new CO2 bulk supply is needed. Owner’s Vendor supplied work in included within the Project. Photo in Figure 2-2 shows an area for CO2 at the plan yellow circle with gated fence perimeter, Waste and Cardboard Recycling dumpsters shown in orange rectangles.
Interim Dock Condition 1

Contractor to provide interim condition to maintain the Dock functions needed by Owner. This includes potential routes for heavy and large items for the Vivarium. A possible consideration shown in Blue uses interim docks connecting with existing Hospital dock and existing WIMR Connector doors. A possible dock lift shown in green could use existing equipment being removed, to transition from grade to dock height. The diagrammed blue paths also need to provide for the existing building egress path from WIMR Connector doors, which are at two existing building floor elevations.
Building the wall at the perimeter of the existing building is expected within the Green Area of work to separate circulation and construction. A 5’ area to the east of the exterior wall may be used for the Owner’s temporary circulation as well as contractor’s earlier work at the perimeter. The Beige circulation area at the boundary of Green will need to provide for multiple activities along the timeline coordinated by the Work.
When the Green Area is available for the Owner’s use, the Work will transition to the focus on the Beige area. Portions of the new Dock will be available to the Owner while some circulation may yet be needed at Interim locations. The contractor’s actual work areas will need to modify for the Work and to maintain Owner’s functions.
It will be understood that the contractor will continue to need access to the Beige Area while the Green is in use by the Owner. The North and West Beige corridors may flex for use by contractor or owner as coordinated with the Work. Interim circulation will be needed. Contractor to maintain separation from work to occupied spaces.

As the Work completes, the final circulation conditions will return and there is expected to be a mixed environment with Owner and Construction which will need coordination with the Work.
Bidding documents (drawings, specifications, and addenda) may be obtained only as electronic files (in PDF format): as a downloadable file from the University of Wisconsin System Administration’s Design and Construction Opportunities website (see website address below). Bidding documents may also be seen at various Builders' Exchanges that have downloaded the documents. Additional project bidding information, including plan holders lists are available on the University of Wisconsin System public website: https://www.wisconsin.edu/procurement/construction/. After opening the web page, select the WIMR – LOADING DOCK AND PRIMATE CENTER RENOVATION project.

**Base Bid will be received for: A single Base Bid for All Work.**

No deposit is required to obtain documents for bidding purposes.

Bid Guarantee in the amount of 10% of the Bid must accompany each bid submitted. Contractor MUST submit hard copies of bid to UWSA within 10 working days of being notified of award.

Contract offer and construction phase records will be processed via email.

If prevailing wage rates are applicable to this project those rates are included in the Supplementary General Conditions.

The process for pre-bid tours will be as follows to insure no more than 10 people are together at one time. Pre-bid tours will be held on the afternoon of **Wednesday, October 6, 2021.** All parties interested in a tour must email eric.johnson@zastudios.com before **October 4, 2021.** Pre-bid tours are expected to be 90 minutes. The architect will send you a start time of your pre-bid tour. To minimize social contact, a maximum of 1 person per organization will be allowed to tour. On **October 4, 2021** you will receive a response email with your tour start time.

Once signed up, participants should meet in the **WIMR DOCK AREA** building located at 1111 Highland Avenue, Madison, WI 53715. All bidders are highly encouraged to attend this Pre-bid Conference / Building Tour. The contact person is Zimmerman Architectural Studios, Inc., Eric Johnson, 2122 West Mt. Vernon Avenue, Milwaukee, WI 53233

Any other questions related to this project can be sent via email to the Procurement contact Jacob Dwyer at jdwyer@uwsa.edu.

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Bidding documents (drawings, specifications, and addenda) may be obtained only as electronic files (in PDF format) as a downloadable file from the University of Wisconsin System Administration’s Design and Construction Opportunities website (see website address below). Bidding documents may also be seen at various Builders’ Exchanges that have downloaded the documents. Additional project bidding information, including plan holders lists are available on the University of Wisconsin System public website: https://www.wisconsin.edu/procurement/construction/. After opening the web page, select the WIMR – LOADING DOCK AND PRIMATE CENTER RENOVATION project.

Base Bid will be received as a single lump sum bid for: 2) Fire Protection (Fire Suppression); 3) Plumbing; 4) Mechanical (Heating, Ventilating, Air Conditioning); and 5) Electrical.

No deposit is required to obtain documents for bidding purposes.

Bid Guarantee in the amount of 10% of the Bid must accompany each bid submitted. Contractor MUST submit hard copies of bid to UWSA within 10 working days of being notified of award.

If prevailing wage rates are applicable to this project those rates are included in the Supplementary General Conditions.

The process for pre-bid tours will be as follows to insure no more than 10 people are together at one time. Pre-bid tours will be held on the afternoon of Wednesday October 6, 2021. All parties interested in a tour must email eric.johnson@zastudios.com before October 4, 2021. Pre-bid tours are expected to be 90 minutes. The architect will send you a start time of your pre-bid tour. To minimize social contact, a maximum of 1 person per organization will be allowed to tour. On October 4, 2021 you will receive a response email with your tour start time.

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GPC INSTRUCTIONS TO BIDDERS
UW-Madison Project No. A-20-005 / UWSA Project No. 1485-1972

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1. DEFINITIONS

In this document, the following terms are defined as:

(a) "Mechanical, electrical, or plumbing subcontractor" ("MEP Subcontractor") is a contractor that performs mechanical (Heating, Ventilating, and Air Conditioning), electrical, plumbing, or fire protection (fire suppression) work for the Project, and enters into a contract with the General Prime Contractor to perform their division of work.

(b) "Qualified bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)1.

(c) "Qualified responsible bidder" means a contractor who is a qualified bidder and who is a responsible bidder.

(d) "Responsible bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)2.

(e) "Single prime contracting" means bidding and contracting through a process in which only a general prime contractor has a contractual relationship with the owner and all mechanical, electrical, or plumbing subcontractors are identified by the department and are subcontractors to the General Prime Contractor.

(f) "General Prime Contractor" ("GPC") is a contractor that enters into a contract with the owner to perform all work as required by the Contract Documents and enters into contracts with subcontractors including MEP Subcontractors identified by the Owner.

(g) "Non-MEP Subcontractor" is a subcontractor to a General Prime Contractor in divisions of work other than mechanical, electrical, plumbing, and fire protection. This includes suppliers and installers to the General Prime Contractor.

(h) "Subcontractor" is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.
(i) “Contractor” is all contractors working on a project regardless of contractual relationship. This includes the General Prime Contractor, MEP Subcontractors, Non-MEP Subcontractors, and all Subcontractors, regardless of tier of subcontract.

2. GENERAL

Time for bid opening shall be the prevailing central standard or daylight saving time in force at Madison, Wisconsin, on the date set forth in the Invitation to Bid.

All potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: https://doa.wi.gov/Pages/DoingBusiness/ContractorCertification.aspx or upon request from DFD--email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. The Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The Owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders. If a project does not include any mechanical, electrical, plumbing, or fire protection divisions of work, the Owner will bid one bid package for all work to general prime contractors.

The Owner will issue an addendum if a successful MEP bid is withdrawn or rejected after the MEP Subcontractors have been identified but before the General Prime Contractor bid opening. This addendum will include a revised list of successful MEP bids that must be included in General Prime Contractor bids and will move the General Prime Contractor bid opening five (5) days later to allow bidders sufficient time to update their bids based on the revised MEP list.

Before submitting a bid, the Bidder shall examine all of the Bidding and Contract Documents listed in the Table of Contents of these specifications. The successful Bidder will be required to do all work which is shown on the drawings, mentioned in the specifications or reasonably implied as necessary to complete the contract for this project.

The Bidder shall visit and examine the site to become acquainted with the adjacent areas, means of approach to the site, conditions of actual job site, and facilities for delivering, storing, placing, and handling of materials and equipment.

Failure to visit the site or failure to examine any and all Bidding and Contract Documents will in no way relieve the successful Bidder from the necessity of furnishing any materials or equipment, or performing any work, that may be required to complete the work in accordance with the Bidding and Contract Documents. Neglect of above requirements will not be accepted as reason for delay in the work or additional compensation.

All bidders shall have established and diligently maintained a satisfactory safety program, and if eligible for Experience Modification Rating (EMR), must have a rating of 1.20 or less as established by the Wisconsin Compensation Rating Bureau (WCRB) or the National Council on Compensation Insurance (NCCI).

3. DRAWINGS AND SPECIFICATIONS

The drawings and specifications that form a part of these Bidding Documents are listed in the Table of Contents of these specifications.

Complete sets of Contract Documents for all trades will be issued to all Bidders, irrespective of the category of work to be bid on, in order that all Bidders may be familiar with the work of other trades as they affect their bid.

4. INTERPRETATION

No verbal explanation or instructions will be given in regard to the meaning of the drawings or specifications during the bid period. Bidders shall bring inadequacies, omissions or conflicts to the Architect/Engineer’s attention at least ten (10) days before the date set for bid opening. Prompt clarification will be supplied to all bidders of record by addendum.
Failure to so request clarification or interpretation of the drawings and specifications will not relieve the successful Bidder of responsibility. Signing of the contract will be considered as implicitly denoting that the Contractor has thorough understanding of the scope of work and comprehension of the contract documents.

Neither the Architect/Engineer nor the Owner will be responsible for verbal instructions.

5. MANDATORY PRE-BID DOA CERTIFICATION
All potential bidders must become certified as qualified and responsible bidders before they can bid on state projects over $50,000. The criteria for determining certification of qualified and responsible bidders are itemized in Wis. Stat. s. 16.855(9m). If the Owner determines that more experience is necessary for a particular project, the Owner may include additional requirements.

6. BID GUARANTEE
A bid bond prepared on the Bid Bond Form bound herein, payable to the Owner in the amount not less than 10% of the maximum bid shall accompany each bid as a guarantee. A bank certified check or a cashier’s check may accompany each bid as a guarantee pursuant to Wis. Stat. s. 779.14(1m)(c)2.b. and 779.14(1s). Failure to enter into the contract with the owner (including failure to obtain certificate of insurance and separate 100% performance and 100% payment bonds) may result in forfeiture of the Bid Bond. The company issuing the Bonds must be licensed to do business in Wisconsin.

Any bid which is not accompanied by a bid guarantee will not be accepted and will not be read at the bid opening.

All checks tendered as bid guarantee, except those of the three lowest bidders, will be returned to their makers within three (3) days after bid opening. All such retained checks will be returned immediately upon execution of the contract between the General Prime Contractor and the Owner.

7. WITHDRAWAL OF BIDS
Prior to the time fixed for bid opening, bids may be withdrawn by written request from the Bidder, without prejudice to the right of the Bidder to file a new bid. Withdrawn bids will be returned unopened.

After the bid has been opened, negligence on the part of the Bidder in preparing their bid confers no right for withdrawal of the bid without penalty.

If a bid contains an error, omission, or mistake, the bidder may limit liability to the amount of their bid guarantee by giving the Owner written Notice, within seventy-two (72) hours of the bid opening, of their intent not to execute the contract with the owner. If no such notice is given, the Owner reserves the right to obtain the amount of the difference in bid price between the low bidder and the next low bidder.

8. CONTRACT FORM
These specifications include a copy of the contract the successful Bidder is required to enter into with the owner. Bidders shall read and understand the conditions contained in this contract. The successful Bidder will be offered a contract via email to the contact provided by the bidder on the Bid Form.

9. CONTRACT INTERESTS BY STATE PUBLIC OFFICIALS
In accordance with section 19.45(6) of the Wisconsin Statutes, no state public official, member of a state public official’s immediate family, nor any organization with which the state public official or a member of the official’s immediate family owns or controls at least 10% of the outstanding equity, voting rights, or outstanding indebtedness may enter into any contract or lease involving a payment or payments of more than $3,000 within a twelve (12) month period, in whole or in part derived from state funds unless the state public official has first made written disclosure of the nature and extent of such relationship or interest to the board and to the department acting for the state in regard to such contract or lease. Any contract or lease entered into in violation of this subsection may be voided by the owner in an action commenced within three (3) years of the date on which the ethics board, or the department or officer acting for the state in regard to the allocation of state funds from which such payment is derived, knew or should have known that a violation of this subsection had occurred. This subsection does not affect the application of s.946.13.
10. DISCLOSURE OF OWNERSHIP
The Bidder shall disclose on the date of submitting a bid for this project, the name of any construction business of which
the Bidder has had a 25% or greater interest as a shareholder, officer, partner, or owner at any time during the preceding
three (3) years, if said construction business has been found by the Department of Workforce Development to have failed
to pay the prevailing wage rate or at least 1.5 times the hourly basic rate of pay for hours worked in excess of the
prevailing hours of labor to any employee at any time within the preceding three (3) years.

The "Disclosure of Ownership" form may be obtained at no charge from the Department of Workforce Development,
Equal Rights Division, P.O. Box 8928, Madison, Wisconsin 53708.

11. MINORITY BUSINESS ENTERPRISE AND DISABLED VETERAN-OWNED BUSINESS INVOLVEMENT
"Minority Business Enterprise" (MBE) means: a business certified by the Wisconsin Supplier Diversity Program under
Wis. Stat. s. 16.287(2).

"Disabled Veteran-Owned Business" (DVB) means: a business certified by the Wisconsin Supplier Diversity Program
under Wis. Stat. s. 16.283(3).

In awarding construction contracts, the University of Wisconsin System Administration shall attempt to ensure that 5
percent of the total amount expended in each fiscal year is awarded to contractors which are minority businesses, as
defined under Wis. Stat. s. 16.75(3m)(a). The General Prime Contractor Bidder shall make every effort to award a
minimum of 15% of the work to minority business enterprises (MBE) involvement for all projects within 60 mile radius of
Milwaukee and 5% for projects located elsewhere.

In awarding construction contracts, the University of Wisconsin System Administration shall attempt to ensure that at
least 1 percent of the total amount expended each fiscal year is awarded to contractors that are disabled veteran-owned
businesses.

In order to assist the department in these endeavors we strongly encourage General Prime Contractors to use MBEs
and DVBs.

General Prime Contractor Bidders shall submit a “Form A Affidavit of Compliance – Minority Business Enterprise and
Disabled Veteran-Owned Business Provision” with their bid or within seven days of the general prime contractor bid
opening. This form should indicate the percentage of MBE/DVB participation commitment. Submission of a completed
Affidavit of Compliance is an element of responsiveness. Failure to submit this completed form within the above time
limits may be considered unresponsiveness and may result in contract award to the next apparent low bidder. All MEP
Subcontractor Bidders shall also make every effort to encourage MBE and DVB involvement.

Every General Prime Contractor will be required to submit a report to the Owner, on a monthly basis and upon completion
of the contract, which identifies the Minority Business Enterprises and Disabled Veteran-Owned Business to whom work
was directly subcontracted and the value of said work. Subcontractors, material suppliers, etc. under contract to a
subcontractor of a General Prime Contractor may not be used for reporting purposes under this paragraph without prior
approval of the Wisconsin Supplier Diversity Program office. A MBE/DVB monthly report form will be sent to the Bidder
after the Notice to Proceed is issued.

For assistance in identifying DOA certified MBE and DVB companies, please contact the Department of Administration
Supplier Diversity Program at: DOABDMBD@wisconsin.gov, or by telephone at: (608)267-9550, or visit their website

12. SUBSTANCE ABUSE PREVENTION
Mission/Purpose: The University of Wisconsin System Administration recognizes and supports drug-free workplace
programs as an important element in the national strategy to reduce the devastating effects of drug and alcohol abuse
in our society. the Owner requires contractors, subcontractors, suppliers and vendors to establish and enforce drug-free
workplace policies and programs that conform to Sec 103.503 of the Wisconsin Statutes.

Statement: The possession, use of, distribution or purchase of illegal drugs, or use of alcohol at work by any employee
on University of Wisconsin System Administration construction job sites, is strictly prohibited.
The terms of this Substance Abuse Program Statement shall cover all construction personnel who are working on University of Wisconsin System Administration job sites. This includes employees of all Contractors, Subcontractors, contractor suppliers, and their employees working at the job site.

General Prime Contractor's and Subcontractor's Written Program: Each General Prime Contractor and Subcontractor shall have in place a written Substance Abuse Program conforming to Sec 103.503(3) of the Wisconsin Statutes.

In addition, representatives of the Owner who believe that any General Prime Contractor’s or Subcontractor’s employee may be under the influence of alcohol or drugs shall, where deemed appropriate, contact the General Prime Contractor’s or Subcontractor’s appropriate management/supervision authority and request that appropriate action be taken. The General Prime Contractor’s or Subcontractor’s employer shall immediately remove an employee who is suspected of being under the influence of illegal drugs or alcohol shall be immediately removed from the job site.

Procedures for testing and handling of positive drug tests shall be in compliance and consistent with State and Federal laws.

Costs of Substance Abuse Programs and Testing: The cost associated with the development, implementation and enforcement of Substance Abuse Programs and any testing required shall be the responsibility of each individual General Prime Contractor and Subcontractor for their respective employees working on the job site. The Owner will not be responsible for any cost of substance abuse testing, rehabilitation or medical reviews related to substance abuse.

The General Prime Contractor and Subcontractors shall indemnify and hold the Owner harmless from any damages or other costs incurred that are related to the implementation or enforcement of any substance abuse policy or program.

13. METHOD OF AWARD - RESERVATION

General prime contractor bids that do not include the successful MEP bids identified by the Owner will be rejected.

The general prime contract will be awarded based on the following, as long as the cost does not exceed the amount of project funds available:

The lowest dollar amount is submitted by a qualified, responsible, certified bidder on a SINGLE BASE BID for all work comprising the project.

Should a qualified, responsible, certified minority business enterprise or disabled veteran-owned business submit a bid that is no more than 5% higher than the apparent low bid, the Contract may be awarded to the minority business enterprise or disabled veteran-owned business.

Firms wishing to be considered for the 5% bidding preference must be certified as a minority business enterprise or disabled veteran-owned business by the Wisconsin Supplier Diversity Program should indicate in the space provided on the Bid Form that preference is requested.

the Owner reserves the right to reject any and all bids, or to waive any informality in any bid, or to accept any bid which will serve the best interests of the Owner.

Informational Bids will not be considered in establishing low bidder.

14. SECURITY FOR SEPARATE 100% PERFORMANCE AND SEPARATE 100% PAYMENT

Bidder is required to furnish separate 100% performance and 100% payment bonds to the benefit of the Board of Regents of the University of Wisconsin as the sole obligee. These bonds shall be delivered to the Owner with the signed contract. The Surety Company shall be licensed to do business in Wisconsin. The Bond must be dated the same date or subsequent to the date of the Contract.

A certified copy of power of attorney shall be provided by the Surety Company showing that the agent who signs the Bond has the power of attorney to sign for the Surety Company. This power of attorney must be signed by the Secretary or Assistant Secretary of the company and not by an attorney-in-fact. The power of attorney must bear the same or later date as the bond.
If the Bidder is a partnership or a joint venture, a certified list providing the names of individuals constituting the partnership or joint venture must be furnished. The Contract itself may be signed by one partner of the partnership, or one partner of each firm comprising the joint venture, but the separate Performance and Payment Bonds must be signed by all of the partners.

If the Bidder is a corporation, a current certified copy of the resolution or other official act of the corporation must be submitted showing that the person who signs the contract is authorized to sign contracts for the corporation. The corporate seal must be affixed to the resolution, contract, and separate performance and payment bonds. If the Bidder's corporation has no seal, the above documents must include a statement or notation to the effect that the corporation has no seal.

15. TAXES
The Bidder shall include in the bid all taxes required by law.

In accordance with section 71.80(16)(a), Wis. Stats., SURETY BOND; NONRESIDENT CONTRACTOR. "All nonresident persons, whether incorporated or not, engaging in construction contracting in this state as contractor or subcontractor and not otherwise regularly engaged in business in this state, shall file a surety bond with the department (Wisconsin Department of Revenue MS 5-77 Attn: Non-Resident Surety Bonds, 2135 Rimrock Rd., Madison, WI 53713, telephone (608)266-2776) payable to the department of revenue, to guarantee the payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. The amount of the bond shall be 3% of the contract or subcontract price on all contracts of $50,000 or more..."

As the Board of Regents is an exempt entity, building materials purchased for this project are exempt. The University of Wisconsin System CES number: 040706. The Certificate of Exempt Status (CES) will be provided to awarded Contractor upon request.

16. SUBMISSION OF BIDS
All bids shall be submitted on the standard Bid Forms and only bids that are made on the Bid Forms will be considered. The entire Bid Form including the Addendum Receipt/Signature page, the Bid Bond Form, (if used), and other supporting documents (if any), shall be filled out and submitted in the manner specified hereinafter. SPECIFICATIONS SHALL NOT ACCOMPANY BID.

No bids for any subdivision or any subclassification of this work, except as indicated, will be accepted. Any conditional bid, amendment to the Bid Form or appendant thereto, the inclusion of any correspondence, written or printed matter, unsolicited material or data, or details of any nature other than the information specifically called for, will disqualify the Bid. Telecommunication alterations to the bid will not be accepted.

Space is provided on the Bid Form for General Prime Contractor’s single bid. Appropriate insertions are as follows: numerals indicating the cost of the work, $0 if there is no cost for the work, or the words ‘No Bid’ if the bidder is not intending to bid the work. Blank space(s) will be considered the same as ‘No Bid’.

Bidders shall submit a Single Base Bid for all the work.

Spaces are also provided on the Bid Form for General Prime Contractor’s to list the successful MEP Subcontractors bids included in the General Prime Contractor’s single base bid.

General prime contractor bids that do not include the successful MEP bids identified by the Owner will be rejected.

Any addendum issued during the time of bidding shall become a part of the Contract Documents. Bidders shall acknowledge receipt of such addendum in the appropriate space provided on the Bid Form. Bid will be rejected if receipt of an addendum applicable to the award of contract has not been acknowledged on the Bid Form.

The Owner is not responsible for bids not clearly labeled as required. Bids shall be signed, sealed, and delivered to the place indicated in the Invitation to Bid before the time designated in the Invitation to Bid. All bids shall be identified with
the Project Name, Project Number, Project Location, Category of Work being bid on, Bid Date, and the Name and
Address of Bidder.

Bidder shall be responsible for the bid being delivered to the place designated for the bid opening before the time
specified. Bids received after the time indicated in the Invitation to Bid will be rejected and returned to Bidder unopened.

Bid will be considered invalid and will be rejected if it has not been signed by the Bidder.

Bids will be rejected if the bidder is not certified by DOA in the division(s) of work they bid on and/or if their bid amount
exceeds their certification threshold in that division of work.

17. BASE BID
Base Bids shall be received as follows:
SINGLE BASE BID FOR ALL THE WORK.

Base Bid No. 1. All Work, as per specification Divisions 2 thru 33, applicable provisions of Division 1 and related drawings.

General prime contractor bids that do not include the successful MEP bids identified by the Owner will be rejected.

18. INFORMATIONAL BIDS
None.

19. UNIT PRICES
Unit prices requested on the Bid Form shall be given and, if included in the General Prime Contract, will be used for
additions to or deductions from amount of work required under the Contract. Unit prices shall include all costs of
materials, labor, insurance, taxes, overhead and profit.

The Owner reserves the right to reject any unit prices as given in the bid if they are considered excessive or
unreasonable, or to accept any or all of the unit prices that may be considered fair and reasonable. If any unit price is
rejected, the work governed by such unit price, if required, shall be treated as specified in General Conditions.

The Bidder shall refer to the Bid Form and the applicable technical section to determine the basis of unit measure and
the detailed information related to each unit price item requested.

20. STATED ALLOWANCES
None.

21. MINIMUM WAGE FOR CONTRACTOR REQUIREMENTS
This project will require Federal Minimal Wage Rate Requirements as per Davis-Bacon and Related Acts. Refer to the
following link: dol.gov/agencies/whd/government-contracts/construction
Comply with Department of Labor rules as per the timeline of the project. Submit confirmation of compliance with each
Request for Payment.

22. SUBCONTRACTORS
GENERAL PRIME CONTRACTOR SUBCONTRACT WITH MEP SUBCONTRACTORS:
The successful General Prime Contractor shall offer a subcontract to the successful MEP Subcontractors identified by
the Owner and included in the General Prime Contractor's bid. This subcontract between a General Prime Contractor
and a MEP Subcontractor must include a scope of work clause identical to the scope of work clause included in the Bid
Documents and the contract between the General Prime Contractor and the owner. A General Prime Contractor and an
MEP Subcontractor may not enter any agreement in connection with bids submitted that would alter or affect the scope
or price of the contracts entered into. This prohibition does not apply to the Owner change orders that result in changes
to the plans or specifications, or to back charges allowed by the contract.

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and
General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP
Subcontractor.
As the work progresses under any MEP subcontract for construction of a project, the General Prime Contractor shall, upon request of a subcontractor, pay to the subcontractor an amount equal to the proportionate value of the subcontractor's work properly completed, less retainage. The retainage shall be an amount equal to not more than 5 percent of the subcontractor's work completed until 50 percent of the subcontractor's work has been completed. At 50 percent completion, no additional amounts may be retained, and partial payments shall be made in full to the subcontractor unless the department certifies that the subcontractor's work is not proceeding satisfactorily. At 50 percent completion or any time thereafter when the progress of the subcontractor's work is not satisfactory, additional amounts may be retained but the total retainage may not be more than 10 percent of the value of the work completed. Upon substantial completion of the subcontractor's work, any amount retained shall be paid to the subcontractor, less the value of any required corrective work or uncompleted work. All payments the General Prime Contractor makes under this paragraph shall be within 7 calendar days after the date on which the General Prime Contractor receives payment from the department.

The contract entered into between the General Prime Contractor and an MEP Subcontractor must contain all of the following clauses:

**Scope of Work.** The MEP Subcontractor scope of work is identical to the General Prime Contractor scope of work included in these bidding and contract documents. By submitting and signing a bid, all bidders have examined all of the Bidding Documents listed in the Table of Contents of the project specifications. The successful bidders will be required to do all work which is shown on the drawings, mentioned in the specifications, or reasonably implied as necessary to complete the division of work bid for this project.

**Prompt Payment.** (General prime contractor) shall pay (mechanical, electrical, or plumbing subcontractor) in accordance with section 16.855(19)(b), Wisconsin stats, for work that has been satisfactorily completed and properly invoiced by (mechanical, electrical, or plumbing subcontractor). A payment is timely if it is mailed, delivered, or transferred to (mechanical, electrical, or plumbing subcontractor) by the deadline under section 16.855(19)(b), Wisconsin stats.

If (mechanical, electrical, or plumbing subcontractor) is not paid by the deadline in this contract, (general prime contractor) shall pay interest on the balance due from the eighth day after the (general prime contractor) receives payment from the University of Wisconsin System Administration for the work for which payment is due and owing to (mechanical, electrical, or plumbing subcontractor), at the rate specified in section 71.82, Wisconsin stats., compounded monthly.

A (mechanical, electrical, or plumbing subcontractor) that receives payment as provided under this contract and that subcontracts with another entity shall pay those subcontractors, and be liable for interest on late payments to those subcontractors, in the same manner as the (general prime contractor) is required to pay the (mechanical, electrical, or plumbing subcontractor) under this contract.

**Insurance and Bonds.** (Mechanical, electrical, or plumbing subcontractor) shall not commence work under this contract until it has obtained all necessary insurance required of (mechanical, electrical, or plumbing subcontractor) in the contract between the (general prime contractor) and the University of Wisconsin System Administration. (Mechanical, electrical, or plumbing subcontractor) shall provide a separate 100 percent performance bond and a separate 100 percent payment bond to the benefit of the (general prime contractor) as the sole named obligee. Original bonds shall be given to the (general prime contractor) and a copy shall be given to the University of Wisconsin System Administration no later than 10 days after execution of this contract.

**Indemnification.** To the fullest extent permitted by law, (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others whom (general prime contractor) is required to indemnify under its contract with the Owner, and the employees of any of them, from and against claims, damages, fines, penalties, losses, and expenses, including but not limited to attorney fees, arising in any way out of or resulting from the performance of the work under this contract, but only to the extent such claim, damage, fine, penalty, loss, or expense: (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of property, including but not limited to loss of use resulting therefrom and is caused by the negligence, or acts or omissions, of (mechanical, electrical, or plumbing subcontractor), its subcontractors, any of their employees, and anyone directly or indirectly employed by them or anyone for whose acts they may be liable, or (2) as related to such claims, damages,
fines, penalties, losses, and expense of or against (general prime contractor), results from or arises out of the negligence of the (general prime contractor) or other fault in providing general supervision or oversight of the work of (mechanical, electrical, or plumbing subcontractor) or (3) as related to claims, damages, fines, penalties, losses, and expense against the University of Wisconsin System Administration, arises out of the department's status as owner of the project or project site.

In addition (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its officers, directors, agents, and any others (general prime contractor) is required to indemnify under its contract with the department, and the employees of any of them, from any liability, including liability resulting from a violation of any applicable safe place act, that (general prime contractor) or the owner incurs to any employee of (mechanical, electrical, or plumbing subcontractor) or any third party where the liability arises from a derivative claim from said employee, when the liability arises out of the failure of the (general prime contractor) or the owner to properly supervise, inspect, or approve the work or work area of (mechanical, electrical, or plumbing subcontractor), but only to the extent that the liability arises out of the acts or omissions of (mechanical, electrical, or plumbing subcontractor), its employees, or anyone for whom (mechanical, electrical, or plumbing subcontractor) may be liable, or from (mechanical, electrical, or plumbing subcontractor’s) breach of its contractual responsibilities or arises out of (general prime contractor’s) negligence or other fault in providing general supervision or oversight of (mechanical, electrical, or plumbing subcontractor’s) work or arises out of the University of Wisconsin System Administration’s status as owner of the project or project site. In claims against (general prime contractor) or the owner by an employee of (mechanical, electrical, or plumbing subcontractor) or its subcontractors or anyone for whose acts (mechanical, electrical, or plumbing subcontractor) may be liable, the indemnification obligation of this paragraph is not limited by a limitation on amount or type of damage, compensation, or other benefits payable by or for the (mechanical, electrical, or plumbing subcontractor) subcontractors under workers compensation act.

Except as identified above, the obligations of (mechanical, electrical, or plumbing subcontractor) under this indemnification do not extend to the liability of (general prime contractor) and its agents or employees arising out of (1) preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications; (2) the giving of or failure to give directions or instructions by the (general prime contractor) or the University of Wisconsin System Administration or their agents or employees provided the giving or failure to give is the cause of the injury or damage; or (3) the acts or omissions of other subcontractors.

Retainage. Retainage shall occur and be in amounts and on a schedule equal to that in the contract between (general prime contractor) and the University of Wisconsin System Administration.

MEP AND NON-MEP SUBCONTRACTORS:
Bidders shall submit a completed Request for Subcontractor Approval (Form DOA-4225) with their bid or within seven days of the general prime contractor bid opening. The Request for Subcontractor Form shall also include, to the extent practicable, a list of their suppliers furnishing materials for the project. Submission of a completed Request for Subcontractor Approval form is an element of responsiveness. Failure to submit this completed form within the above time limits will be considered unresponsiveness and may result in contract award to the next apparent low bidder. Refer to Article 5 of the General Conditions for further information.

23. COMMENCEMENT AND COMPLETION
The successful General Prime Contractor Bidder shall commence work upon executed contract. The “Notice to Proceed” will be published after the executed contract, and will define Mobilization, which is expected to be January 5, 2022. Substantial Completion will be 6/1/2022 and 1/16/2023 as detailed in the below table. Refer also to General Conditions for additional information in regards to time for completion.
The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor. These milestones will be incorporated into the master project schedule after the Notice to Proceed is issued. The End Dates shown in bold red text are specifically to be maintained for benefit of Owner’s Schedule. The schedule must include, but is not limited to, the following milestone categories as they apply to the project:

<table>
<thead>
<tr>
<th>Start Date</th>
<th>End Date</th>
<th>Schedule Milestones</th>
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</thead>
<tbody>
<tr>
<td>1/5/2022</td>
<td>1/11/2022</td>
<td>Mobilization</td>
</tr>
<tr>
<td>1/4/2022</td>
<td>4/26/2022</td>
<td>Demolition</td>
</tr>
<tr>
<td>1/4/2022</td>
<td>4/26/2022</td>
<td>Area #3 Partial Substantial Completion</td>
</tr>
<tr>
<td>1/4/2022</td>
<td>6/1/2022</td>
<td>Area #1 Partial Substantial Completion</td>
</tr>
<tr>
<td>9/2/2022</td>
<td>1/16/2023</td>
<td>Finished Period</td>
</tr>
<tr>
<td>1/16/2023</td>
<td>1/16/2023</td>
<td>Project Substantial Completion</td>
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<tr>
<td>1/17/2023</td>
<td>2/27/2023</td>
<td>Commissioning</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>Owner Training</td>
</tr>
<tr>
<td>1/2/2023</td>
<td>1/30/2023</td>
<td>DHS Site Inspection</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/27/2023</td>
<td>Punch List Period</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/6/2023</td>
<td>Locks – Owners Activities Phase</td>
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<tr>
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<td>2/6/2023</td>
<td>Signage – Owners Activities Phase</td>
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<tr>
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<td>2/6/2023</td>
<td>Furniture – Owners Activities Phase</td>
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<tr>
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<td>2/6/2023</td>
<td>Fire Extinguishers – Owners Activities Phase</td>
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<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>Security Cameras – Owners Activities Phase</td>
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<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>IT Activation (DoIT) – Owners Activities Phase</td>
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<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>Physical Plant Activities – Owners Activities Phase</td>
</tr>
<tr>
<td>2/14/2023</td>
<td>2/16/2023</td>
<td>EH&amp;S Site Safety Walk – Owners Activities Phase</td>
</tr>
<tr>
<td>2/22/2023</td>
<td>2/24/2023</td>
<td>Terminal Clean – Owners Activities Phase</td>
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<td>2/27/2023</td>
<td>Go Live – Owners Activities Phase</td>
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<td>2/27/2023</td>
<td>2/27/2023</td>
<td>User Move-In Start – Owners Activities Phase</td>
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<td>1/27/2023</td>
<td>2/27/2023</td>
<td>Punch List Completed</td>
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<tr>
<td>1/17/2023</td>
<td>1/10/2024</td>
<td>Project Closeout – Owners Activities Phase</td>
</tr>
<tr>
<td>1/10/2024</td>
<td>1/10/2024</td>
<td>Project Completion</td>
</tr>
</tbody>
</table>

24. WORK BY THE OWNER
The following work will be accomplished by the Owner or will be let under separate contracts and will not be included under the General Prime Contract:

SECURITY CAMERAS:
Owner Furnished Contractor Installed

DoIT SWITCHES AND NETWORK GEAR:
Owner Furnished Owner Installed

DOOR HARDWARE LOCK CYLINDERS:
Owner Furnished Contractor Installed

FIRE EXTINGUISHERS:
Owner Furnished Contractor Installed

OPERATIONAL ACCESSORIES:
Owner Furnished Owner Installed
FURNITURE FIXTURES AND EQUIPMENT (FF&E):
Owner Furnished Owner Installed

MOVEABLE EQUIPMENT:
Placement of moveable equipment will be completed by the Owner. Contractor is responsible for connection of MEP systems to moveable equipment as noted on the Drawings.

Relocation of existing moveable equipment and materials from areas of work will be completed by the Owner.

FURNITURE:
Placement of furniture will be completed by the Owner. Contractor is responsible for connection of electrical systems to furniture as noted on the Drawings.

Relocation of existing furnishings from areas of work will be completed by the Owner.

***
1. Definitions

In this document, the following terms are defined as:

(a) "Mechanical, electrical, or plumbing subcontractor" (“MEP Subcontractor”) is a contractor that performs mechanical (Heating, Ventilating, and Air Conditioning, electrical, plumbing, or fire protection (fire suppression) work for the Project, and enters into a contract with the General Prime Contractor to perform their division of work.

(b) "Qualified bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)1.

(c) "Qualified responsible bidder" means a contractor who is a qualified bidder and who is a responsible bidder.

(d) "Responsible bidder" means a contractor that the department certifies under Wis. Stat. s. 16.855(9m)(b)2.

(e) "Single prime contracting” means bidding and contracting through a process in which only a general prime contractor has a contractual relationship with the owner and all mechanical, electrical, or audio visual subcontractors are identified by the department and are subcontractors to the General Prime Contractor.

(f) “General Prime Contractor” is a contractor that enters into a contract with the owner to perform all work as required by the Contract Documents and enters into contracts with subcontractors including MEP Subcontractors identified by the Owner.

(g) “Non-MEP Subcontractor” is a subcontractor to a General Prime Contractor in divisions of work other than mechanical, electrical, and audio visual. This includes suppliers and installers to the General Prime Contractor.

(h) "Subcontractor “is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.
(i) “Contractor” is all contractors working on a project regardless of contractual relationship. This includes the General Prime Contractor, MEP Subcontractors, Non-MEP Subcontractors, and all Subcontractors, regardless of tier of subcontract.

2. GENERAL

Time for bid opening shall be the prevailing central standard or daylight saving time in force at Madison, Wisconsin, on the date set forth in the Invitation to Bid.

All potential bidders must be certified by DOA prior to submitting bids on state construction projects over $50,000. All bids received from contractors who are not certified will be rejected. Contractor certification applications and instructions for completing the form may be obtained from the DOA Website DFD Contractor Certification page: http://www.doa.state.wi.us/category.asp?linkcatid=857&linkid=125&locid=4 or upon request from DFD--email dfdcertification@wisconsin.gov.

This project is being let using a single prime bidding and contracting process. the Owner will publicly bid the applicable mechanical, electrical, plumbing, and fire protection (MEP) divisions of work first. Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified bidder in each applicable MEP division of work. These successful MEP bids must be included in all general prime contractor bids received. No later than five (5) days after the Owner identifies the successful MEP bids, the Owner will publicly open general prime contractor bids. General prime contractor bids that do not include the successful MEP bids will be rejected. The owner will enter into a single contract with the lowest, qualified, responsible, certified general prime contractor and this general prime contractor shall enter into subcontracts with the successful MEP bidders.

The Owner will issue an addendum if a successful MEP bid is withdrawn or rejected after the MEP Subcontractors have been identified but before the General Prime Contractor bid opening. This addendum will include a revised list of successful MEP bids that must be included in General Prime Contractor bids and will move the General Prime Contractor bid opening five days later to allow bidders sufficient time to update their bids based on the revised MEP list.

Before submitting a bid, the Bidder shall examine all of the Bidding Documents listed in the Table of Contents of these specifications. The successful Bidder will be required to do all work which is shown on the drawings, mentioned in the specifications or reasonably implied as necessary to complete the division of work being bid for this project.

The Bidder shall visit and examine the site to become acquainted with the adjacent areas, means of approach to the site, conditions of actual job site, and facilities for delivering, storing, placing, and handling of materials and equipment.

Failure to visit the site or failure to examine any and all Bidding Documents will in no way relieve the successful Bidder from the necessity of furnishing any materials or equipment, or performing any work, that may be required to complete the work in accordance with the Bidding Documents. Neglect of above requirements will not be accepted as reason for delay in the work or additional compensation.

All bidders shall have established and diligently maintained a satisfactory safety program, and if eligible for Experience Modification Rating (EMR), must have a rating of 1.20 or less as established by the Wisconsin Compensation Rating Bureau (WCRB) or the National Council on Compensation Insurance (NCCI).

3. DRAWINGS AND SPECIFICATIONS

The drawings and specifications that form a part of these Bidding Documents are listed in the Table of Contents of these specifications.

Complete sets of Bidding Documents for all trades will be issued to all Bidders, irrespective of the category of work to be bid on, in order that all Bidders may be familiar with the work of other trades as they affect their bid.

4. INTERPRETATION

No verbal explanation or instructions will be given in regard to the meaning of the drawings or specifications during the bid period. Bidders shall bring inadequacies, omissions or conflicts to the Architect/Engineer’s attention at least ten (10) days before the date set for bid opening. Prompt clarification will be supplied to all bidders of record by addendum.
Failure to so request clarification or interpretation of the drawings and specifications will not relieve the successful Bidder of responsibility. Signing of the subcontract with the General Prime Contractor will be considered as implicitly denoting that the MEP Subcontractor has thorough understanding of the scope of work and comprehension of the Bidding Documents.

Neither the Architect/Engineer nor the Owner will be responsible for verbal instructions.

5. MANDATORY PRE-BID DOA CERTIFICATION
All potential bidders must become certified as qualified and responsible bidders before they can bid on state projects over $50,000. The criteria for determining certification of qualified and responsible bidders are itemized in Wis. Stat. s. 16.855(9m). If the Owner determines that more experience is necessary for a particular project, the Owner may include additional requirements.

6. BID GUARANTEE
A bid bond prepared on the Bid Bond Form bound herein, payable to the Owner in the amount not less than 10% of the maximum bid shall accompany each bid as a guarantee. A bank certified check or a cashier's check may accompany each bid as a guarantee pursuant to Wis. Stat. s. 779.14(1m)(c)2.b. and 779.14(1s). Failure to enter into the contract with the owner (including failure to obtain certificate of insurance and separate 100% performance and 100% payment bonds) with the General Prime Contractor may result in forfeiture of the Bid Bond. The company issuing the Bonds must be licensed to do business in Wisconsin.

Any bid which is not accompanied by a bid guarantee will not be accepted and will not be read at the bid opening.

All checks tendered as bid guarantee, except those of the three lowest bidders, will be returned to their makers within three (3) days after bid opening. All such retained checks will be returned immediately upon execution of the contract between the General Prime Contractor and the MEP Subcontractor.

7. WITHDRAWAL OF BIDS
Prior to the time fixed for bid opening, bids may be withdrawn by written request from the Bidder, without prejudice to the right of the Bidder to file a new bid. Withdrawn bids will be returned unopened.

After the bid has been opened, negligence on the part of the Bidder in preparing their bid confers no right for withdrawal of the bid without penalty.

If a bid contains an error, omission, or mistake, the bidder may limit liability to the amount of their bid guarantee by giving the Owner written Notice, within seventy-two (72) hours of the MEP bid opening, of their intent not to execute the contract with the General Prime Contractor. If no such notice is given, the Owner reserves the right to obtain the amount of the difference in bid price between the low bidder and the next low bidder.

8. MEP BIDDER IDENTIFICATION
Within five (5) days of the MEP bid opening, the Owner will identify a lowest, qualified, responsible, certified MEP Subcontractor in each applicable MEP division of work (as long as the cost does not exceed the amount of project funds available).

The lowest dollar amounts submitted by qualified, responsible, certified bidders on the SEPARATE BASE BIDS for various specified mechanical, electrical, plumbing, and fire protection divisions of the work; or

The lowest dollar amount submitted by qualified, responsible, certified bidders on the COMBINED BASE BIDS for any combination of the Separate Base Bids for various specified mechanical, electrical, plumbing, and fire protection divisions of the work.
The Owner reserves the right to reject any and all bids, or to waive any informality in any bid, or to accept any bid which will serve the best interest of the Owner.

9. MEP SUBCONTRACT WITH GENERAL PRIME CONTRACTOR
The General Prime Contractor will offer the successful MEP Bidder (s) a subcontract. A contract entered into between a General Prime Contractor and a MEP Subcontractor must include a scope of work clause identical to the scope of work clause included in the MEP Subcontractor bid documents. A General Prime Contractor and an MEP Subcontractor may not enter any agreement in connection with bids submitted that would alter or affect the scope or price of the contracts entered into. This prohibition does not apply to the Owner change orders that result in changes to the plans or specifications, or to back charges allowed by the contract.

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor.

As the work progresses under any MEP subcontract for construction of a project, the General Prime Contractor shall, upon request of a subcontractor, pay to the subcontractor an amount equal to the proportionate value of the subcontractor's work properly completed, less retainage. The retainage shall be an amount equal to not more than 5 percent of the subcontractor's work completed until 50 percent of the subcontractor's work has been completed. At 50 percent completion, no additional amounts may be retained, and partial payments shall be made in full to the subcontractor unless the department certifies that the subcontractor's work is not proceeding satisfactorily. At 50 percent completion or any time thereafter when the progress of the subcontractor's work is not satisfactory, additional amounts may be retained but the total retainage may not be more than 10 percent of the value of the work completed. Upon substantial completion of the subcontractor's work, any amount retained shall be paid to the subcontractor, less the value of any required corrective work or uncompleted work. All payments the General Prime Contractor makes under this paragraph shall be within 7 calendar days after the date on which the General Prime Contractor receives payment from the Owner.

The contract entered into between the General Prime Contractor and an MEP Subcontractor must contain all of the following clauses:

**Scope of Work.** The MEP Subcontractor scope of work is identical to the General Prime Contractor scope of work included in these bidding and contract documents. By submitting and signing a bid, all bidders have examined all of the Bidding Documents listed in the Table of Contents of the project specifications. The successful bidders will be required to do all work which is shown on the drawings, mentioned in the specifications, or reasonably implied as necessary to complete the division of work bid for this project.

**Prompt Payment.** (General prime contractor) shall pay (mechanical, electrical, or plumbing subcontractor) in accordance with section 16.855(19)(b), Wisconsin stats, for work that has been satisfactorily completed and properly invoiced by (mechanical, electrical, or plumbing subcontractor). A payment is timely if it is mailed, delivered, or transferred to (mechanical, electrical, or plumbing subcontractor) by the deadline under section 16.855(19)(b), Wisconsin stats. If (mechanical, electrical, or plumbing subcontractor) is not paid by the deadline in this contract, (general prime contractor) shall pay interest on the balance due from the eighth day after the (general prime contractor) receives payment from the Owner for the work for which payment is due and owing to (mechanical, electrical, or plumbing subcontractor), at the rate specified in section 71.82, Wisconsin stats., compounded monthly. A (mechanical, electrical, or plumbing subcontractor) that receives payment as provided under this contract and that subcontracts with another entity shall pay those subcontractors, and be liable for interest on late payments to those subcontractors, in the same manner as the (general prime contractor) is required to pay the (mechanical, electrical, or plumbing subcontractor) under this contract.

**Insurance and Bonds.** (Mechanical, electrical, or plumbing subcontractor) shall not commence work under this contract until it has obtained all necessary insurance required of (mechanical, electrical, or plumbing subcontractor) in the contract between the (general prime contractor) and the Owner. (Mechanical, electrical, or plumbing subcontractor) shall provide a separate 100 percent performance bond and a separate 100 percent
Any contract or lease entered into in violation of this subsection may be voided by the owner in an action commenced
such relationship or interest to the board and to the department acting for the state in regard to such contract or lease.

In accordance with section 19.45(6) of the Wisconsin Statutes, no state public official, member of a state public official's immediate family, nor any organization with which the state public official or a member of the official's immediate family owns or controls at least 10% of the outstanding equity, voting rights, or outstanding indebtedness may enter into any contract or lease involving a payment or payments of more than $3,000 within a twelve (12) month period, in whole or in part derived from state funds unless the state public official has first made written disclosure of the nature and extent of such relationship or interest to the board and to the department acting for the state in regard to such contract or lease. Any contract or lease entered into in violation of this subsection may be voided by the owner in an action commenced

Indemnification. To the fullest extent permitted by law, (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its agents, directors, officers, and anyone others whom (general prime contractor) is required to indemnify under its contract with the department, and the employees of any of them, from and against claims, damages, fines, penalties, losses, and expenses, including but not limited to attorney fees, arising in any way out of or resulting from the performance of the work under this contract, but only to the extent such claim, damage, fine, penalty, loss, or expense: (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of property, including but not limited to loss of use resulting therefrom and is caused by the negligence, or acts or omissions, of (mechanical, electrical, or plumbing subcontractor), its subcontractors, any of their employees, and anyone directly or indirectly employed by them or anyone for whose acts they may be liable, or (2) as related to such claims, damages, fines, penalties, losses, and expense of or against (general prime contractor), results from or arises out of the negligence of the (general prime contractor) or other fault in providing general supervision or oversight of the work of (mechanical, electrical, or plumbing subcontractor) or (3) as related to claims, damages, fines, penalties, losses, and expense against the Owner, arises out of the department's status as owner of the project or project site.

In addition (mechanical, electrical, or plumbing subcontractor) shall defend, indemnify, and hold harmless (general prime contractor) and its agents, directors, officers, and anyone others (general prime contractor) is required to indemnify under its contract with the department, and the employees of any of them, from any liability, including liability resulting from a violation of any applicable safe place act, that (general prime contractor) or the owner incurs to any employee of (mechanical, electrical, or plumbing subcontractor) or any third party where the liability arises from a derivative claim from said employee, when the liability arises out of the failure of the (general prime contractor) or the owner to properly supervise, inspect, or approve the work or work area of (mechanical, electrical, or plumbing subcontractor), but only to the extent that the liability arises out of the acts or omissions of (mechanical, electrical, or plumbing subcontractor), its employees, or anyone for whom (mechanical, electrical, or plumbing subcontractor) may be liable, or from (mechanical, electrical, or plumbing subcontractor's) breach of its contractual responsibilities or arises out of (general prime contractor's) negligence or other fault in providing general supervision or oversight of (mechanical, electrical, or plumbing subcontractor's) work or arises out of the Owner's status as owner of the project or project site. In claims against (general prime contractor) or the owner by an employee of (mechanical, electrical, or plumbing subcontractor) or its subcontractors or anyone for whose acts (mechanical, electrical, or plumbing subcontractor) may be liable, the indemnification obligation of this paragraph is not limited by a limitation on amount or type of damage, compensation, or other benefits payable by or for the (mechanical, electrical, or plumbing subcontractor) subcontractors under workers compensation act.

Except as identified above, the obligations of (mechanical, electrical, or plumbing subcontractor) under this indemnification do not extend to the liability of (general prime contractor) and its agents or employees arising out of (1) preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications; (2) the giving of or failure to give directions or instructions by the (general prime contractor) or the owner of the project or project site. In claims against (general prime contractor) or the owner by an employee of (mechanical, electrical, or plumbing subcontractor) or its subcontractors or anyone for whose acts (mechanical, electrical, or plumbing subcontractor) may be liable, the indemnification obligation of this paragraph is not limited by a limitation on amount or type of damage, compensation, or other benefits payable by or for the (mechanical, electrical, or plumbing subcontractor) subcontractors under workers compensation act.

Retainage. Retainage shall occur and be in amounts and on a schedule equal to that in the contract between (general prime contractor) and the Owner.

10. CONTRACT INTERESTS BY STATE PUBLIC OFFICIALS

In accordance with section 19.45(6) of the Wisconsin Statutes, no state public official, member of a state public official's immediate family, nor any organization with which the state public official or a member of the official's immediate family owns or controls at least 10% of the outstanding equity, voting rights, or outstanding indebtedness may enter into any contract or lease involving a payment or payments of more than $3,000 within a twelve (12) month period, in whole or in part derived from state funds unless the state public official has first made written disclosure of the nature and extent of such relationship or interest to the board and to the department acting for the state in regard to such contract or lease. Any contract or lease entered into in violation of this subsection may be voided by the owner in an action commenced
within three (3) years of the date on which the ethics board, or the department or officer acting for the state in regard to
the allocation of state funds from which such payment is derived, knew or should have known that a violation of this
subsection had occurred. This subsection does not affect the application of s.946.13.

11. DISCLOSURE OF OWNERSHIP
The Bidder shall disclose on the date of submitting a bid for this project, the name of any construction business of which
the Bidder has had a 25% or greater interest as a shareholder, officer, partner, or owner at any time during the preceding
three (3) years, if said construction business has been found by the Department of Workforce Development to have failed
to pay the prevailing wage rate or at least 1.5 times the hourly basic rate of pay for hours worked in excess of the
prevailing hours of labor to any employee at any time within the preceding three (3) years.

The “Disclosure of Ownership” form may be obtained at no charge from the Department of Workforce Development,
Equal Rights Division, P.O. Box 8928, Madison, Wisconsin 53708.

12. MINORITY BUSINESS ENTERPRISE AND DISABLED VETERAN-OWNED BUSINESS INVOLVEMENT
“Minority Business Enterprise” (MBE) means: a business certified by the Wisconsin Supplier Diversity Program under
Wis. Stat. s. 16.287(2).

“Disabled Veteran-Owned Business” (DVB) means: a business certified by the Wisconsin Supplier Diversity Program
under Wis. Stat. s. 16.283(3).

General Prime Contractors are strongly encouraged to use MBEs and DVBs.

General Prime Contractor Bidders will be required to submit a “Form A Affidavit of Compliance – Minority Business
Enterprise and Disabled Veteran-Owned Business Provision” with their bid or within seven days of the general prime
contractor bid opening. This form will indicate the percentage of MBE/DVB participation commitment. Submission of a
completed Affidavit of Compliance is an element of responsiveness. Failure to submit this completed form within the
above time limits may be considered unresponsiveness and may result in contract award to the next apparent low bidder.
All MEP Subcontractor Bidders shall also make every effort to encourage MBE and DVB involvement.

Every General Prime Contractor will be required to submit a report to the Owner, on a monthly basis and upon completion
of the contract, which identifies the Minority Business Enterprises and Disabled Veteran-Owned Business to whom work
was directly subcontracted and the value of said work. Subcontractors, material suppliers, etc. under contract to a
subcontractor of a General Prime Contractor may not be used for reporting purposes under this paragraph without prior
approval of the Wisconsin Supplier Diversity Program office. A MBE/DVB monthly report form will be sent to the General
Prime Contractor after the Notice to Proceed is issued.

For assistance in identifying DOA certified MBE and DVB companies, please contact the Department of Administration
Supplier Diversity Program at: DOABDMBD@wisconsin.gov, or by telephone at: (608)267-9550, or visit their website

13. SUBSTANCE ABUSE PREVENTION
Mission/Purpose: The Board of Regents of the University of Wisconsin System recognizes and supports drug-free
workplace programs as an important element in the national strategy to reduce the devastating effects of drug and alcohol
abuse in our society. The owner requires contractors, subcontractors, suppliers and vendors to establish and enforce
drug-free workplace policies and programs that conform to Sec 103.503 of the Wisconsin Statutes.

Statement: The possession, use of, distribution or purchase of illegal drugs, or use of alcohol at work by any employee
on the Owner’s construction job sites, is strictly prohibited.

The terms of this Substance Abuse Program Statement shall cover all construction personnel who are working on the
Owner’s job sites. This includes employees of all Contractors, Subcontractors, contractor suppliers, and their employees
working at the job site.
General Prime Contractor's and Subcontractor's Written Program: Each General Prime Contractor and Subcontractor shall have in place a written Substance Abuse Program conforming to Sec 103.503(3) of the Wisconsin Statutes.

In addition, representatives of the Owner who believe that any General Prime Contractor's or Subcontractor's employee may be under the influence of alcohol or drugs shall, where deemed appropriate, contact the General Prime Contractor's or Subcontractor's appropriate management/supervision authority and request that appropriate action be taken. The General Prime Contractor's or Subcontractor's employer shall immediately remove an employee who is suspected of being under the influence of illegal drugs or alcohol shall be immediately removed from the job site.

Procedures for testing and handling of positive drug tests shall be in compliance and consistent with State and Federal laws.

Costs of Substance Abuse Programs and Testing: The cost associated with the development, implementation and enforcement of Substance Abuse Programs and any testing required shall be the responsibility of each individual General Prime Contractor and Subcontractor for their respective employees working on the job site. The Owner will not be responsible for any cost of substance abuse testing, rehabilitation or medical reviews related to substance abuse.

The General Prime Contractor and Subcontractors shall indemnify and hold the Owner harmless from any damages or other costs incurred that are related to the implementation or enforcement of any substance abuse policy or program.

14. SECURITY FOR SEPARATE 100% PERFORMANCE AND SEPARATE 100% PAYMENT
MEP Subcontractors will be required to deliver to the General Prime Contractor separate 100 % performance and 100 % payment bonds to the benefit of the General Prime Contractor as the sole obligee. Original bonds shall be given to the General Prime Contractor and a copy shall be given to the Owner no later than 10 days after the execution of the subcontract. Separate 100% performance and separate 100 % payment bond forms are included in Appendix 1 of these instructions.

15. TAXES
The Bidder shall include in the bid, all Sales, Consumer, Use and other similar taxes required by law.

In accordance with section 71.80(16)(a), Wis. Stats., SURETY BOND; NONRESIDENT CONTRACTOR. "All nonresident persons, whether incorporated or not, engaging in construction contracting in this state as contractor or subcontractor and not otherwise regularly engaged in business in this state, shall file a surety bond with the department (Wisconsin Department of Revenue MS 5-77 Attn: Non-Resident Surety Bonds, 2135 Rimrock Rd., Madison, WI 53713, telephone (608)266-2776.) payable to the department of revenue, to guarantee the payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. The amount of the bond shall be 3% of the contract or subcontract price on all contracts of $50,000 or more..."

16. SUBMISSION OF BIDS
All bids shall be submitted on the standard Bid Forms and only bids that are made on the Bid Forms will be considered. The entire Bid Form including the Addendum Receipt/Signature page, the Bid Bond Form ( if used), and other supporting documents ( if any) shall be filled out and submitted in the manner specified hereinafter. SPECIFICATIONS SHALL NOT ACCOMPANY BID.

No bids for any subdivision or any subclassification of this work, except as indicated, will be accepted. Any conditional bid, amendment to the Bid Form or appendant thereto, the inclusion of any correspondence, written or printed matter, unsolicited material or data, or details of any nature other than the information specifically called for, will disqualify the Bid. Telecommunication alterations to the bid will not be accepted.

Space(s) are provided on the Bid Form for each Division of Work. Appropriate insertions are as follows: numerals indicating the cost of the work, $0 if there is no cost for the work, or the words 'No Bid' if the bidder is not intending to bid the work. Blank space(s) will be considered the same as 'No Bid'.

Bidders may submit separate base bids for any divisions of work they are certified to bid on (Fire Suppression, Plumbing, Heating, Ventilating and Air Conditioning, and Electrical).
Bidders may submit combined base bids for any combination of base bid categories if they are certified in each division of work included in their combined base bid.

Any addendum issued during the time of bidding shall become a part of the Bidding Documents. Bidders shall acknowledge receipt of such addendum in the appropriate space provided on the Bid Form. Bid will be rejected if receipt of an addendum applicable to the award of contract has not been acknowledged on the Bid Form.

The Owner is not responsible for bids not clearly labeled as required. Bids shall be signed, sealed, and delivered to the place indicated in the Invitation to Bid before the time designated in the Invitation to Bid. All bids shall be identified with the Project Name, Project Number, Project Location, Category of Work being bid on, Bid Date, and the Name and Address of Bidder.

Bidder shall be responsible for the sealed bid being delivered to the place designated for bid opening before the time specified. Bids received after the time indicated in the Invitation to Bid will be rejected and returned to Bidder unopened.

Bid will be considered invalid and will be rejected if it has not been signed by the Bidder.

Bids will be rejected if the bidder is not certified by DOA in the division(s) of work they bid on and/or if their bid amount exceeds their certification threshold in that division of work.

17. BASE BIDS
Fire Protection (Fire Suppression), Plumbing, Mechanical (Heating, Ventilating and Air Conditioning), and Electrical Base Bids shall be received utilizing one or all methods of bidding as follows:

SEPARATE BASE BIDS FOR THE VARIOUS DIVISIONS OF THE WORK.
Base Bid No. 2 Fire Suppression Work as per specification Division 21, applicable provisions of Division 1 and related drawings.
Base Bid No. 3 Plumbing Work as per specification Division 22, applicable provisions of Division 1 and related drawings.
Base Bid No. 4 Heating, Ventilating and Air Conditioning Work as per specification Division 23, applicable provisions of Division 1 and related drawings.
Base Bid No. 5 Electrical Work as per specification Division 26, 27, 28 applicable provisions of Division 1 and related drawings.

COMBINED BASE BIDS FOR ANY COMBINATION OF SEPARATE BASE BIDS FOR VARIOUS DIVISIONS OF THE WORK.
Base Bid No.____for_______, Base Bid No.____for_______ and Base Bid No.____for_______as per specifications, applicable provisions of Division 1 and related drawings.

18. INFORMATIONAL BIDS
None.

19. UNIT PRICES
Unit prices requested on the Bid Form shall be given and, if included in the General Prime Contract, will be used for additions to or deductions from amount of work required under the Contract. Unit prices shall include all costs of materials, labor, insurance, taxes, overhead and profit.

The Owner reserves the right to reject any unit prices as given in the bid if they are considered excessive or unreasonable, or to accept any or all of the unit prices that may be considered fair and reasonable. If any unit price is rejected, the work governed by such unit price, if required, shall be treated as specified in General Conditions.
The Bidder shall refer to the Bid Form and the applicable technical section to determine the basis of unit measure and the detailed information related to each unit price item requested.

20. STATED ALLOWANCES
None.

21. MINIMUM WAGE FOR CONTRACTOR REQUIREMENTS
This project will require Federal Minimal Wage Rate Requirements as per Davis-Bacon and Related Acts. Refer to the following link: dol.gov/agencies/whd/government-contracts/construction
Comply with Department of Labor rules as per the timeline of the project. Submit confirmation of compliance with each Request for Payment.

22. COMMENCEMENT AND COMPLETION
The successful General Prime Contractor Bidder shall commence work upon executed contract. The “Notice to Proceed” will be published after the executed contract, and will define Mobilization, which is expected to be January 5, 2022.
Substantial Completion will be 6/1/2022 and 1/16/2023 as detailed in the below table. Refer also to General Conditions for additional information in regards to time for completion.

The General Prime Contractor must base the Project Schedule on the schedule that the MEP Subcontractors and General Prime Contractors bid on (in the specifications or bid instructions), unless otherwise agreed to by the MEP Subcontractor. These milestones will be incorporated into the master project schedule after the Notice to Proceed is issued. The End Dates shown in bold red text are specifically to be maintained for benefit of Owner’s Schedule. The schedule must include, but is not limited to, the following milestone categories as they apply to the project:

<table>
<thead>
<tr>
<th>Start Date (Month/Year)</th>
<th>End Date (Month/Year)</th>
<th>Schedule Milestones</th>
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</thead>
<tbody>
<tr>
<td>1/5/2022</td>
<td>1/11/2022</td>
<td>Mobilization</td>
</tr>
<tr>
<td>1/4/2022</td>
<td>4/26/2022</td>
<td>Demolition</td>
</tr>
<tr>
<td>1/4/2022</td>
<td>4/26/2022</td>
<td>Area #3 Partial Substantial Completion</td>
</tr>
<tr>
<td>1/4/2022</td>
<td>6/1/2022</td>
<td>Area #1 Partial Substantial Completion</td>
</tr>
<tr>
<td>4/27/2022</td>
<td>9/1/2022</td>
<td>Rough-In Period</td>
</tr>
<tr>
<td>9/2/2022</td>
<td>1/16/2023</td>
<td>Finished Period</td>
</tr>
<tr>
<td>1/16/2023</td>
<td>1/16/2023</td>
<td>Project Substantial Completion</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/27/2023</td>
<td>Commissioning</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>Owner Training</td>
</tr>
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<td>1/17/2023</td>
<td>1/30/2023</td>
<td>DHS Site Inspection</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/27/2023</td>
<td>Punch List Period</td>
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<tr>
<td>1/17/2023</td>
<td>2/6/2023</td>
<td>Locks – Owners Activities Phase</td>
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<td>2/6/2023</td>
<td>Signage – Owners Activities Phase</td>
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<tr>
<td>1/17/2023</td>
<td>2/6/2023</td>
<td>Furniture – Owners Activities Phase</td>
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<td>1/17/2023</td>
<td>2/6/2023</td>
<td>Fire Extinguishers – Owners Activities Phase</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>Security Cameras – Owners Activities Phase</td>
</tr>
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<td>1/17/2023</td>
<td>2/13/2023</td>
<td>IT Activation (DoIT) – Owners Activities Phase</td>
</tr>
<tr>
<td>1/17/2023</td>
<td>2/13/2023</td>
<td>Physical Plant Activities – Owners Activities Phase</td>
</tr>
<tr>
<td>2/14/2023</td>
<td>2/16/2023</td>
<td>EH&amp;S Site Safety Walk – Owners Activities Phase</td>
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<td>2/24/2023</td>
<td>Terminal Clean – Owners Activities Phase</td>
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<td>Go Live – Owners Activities Phase</td>
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<td>2/27/2023</td>
<td>User Move-In Start – Owners Activities Phase</td>
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<td>2/27/2023</td>
<td>Punch List Completed</td>
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<td>1/10/2024</td>
<td>Project Closeout – Owners Activities Phase</td>
</tr>
<tr>
<td>1/10/2024</td>
<td>1/10/2024</td>
<td>Project Completion</td>
</tr>
</tbody>
</table>
23. WORK BY THE OWNER
The following work will be accomplished by the Owner or will be let under separate contracts and will not be included
under the General Prime Contract:

SECURITY CAMERAS:
Owner Furnished Contractor Installed

DoIT SWITCHES AND NETWORK GEAR:
Owner Furnished Owner Installed

DOOR HARDWARE LOCK CYLINDERS:
Owner Furnished Contractor Installed

FIRE EXTINGUISHERS:
Owner Furnished Contractor Installed

OPERATIONAL ACCESSORIES:
Owner Furnished Owner Installed

FURNITURE FIXTURES AND EQUIPMENT (FF&E):
Owner Furnished Owner Installed

MOVEABLE EQUIPMENT:
Placement of moveable equipment will be completed by the Owner. Contractor is responsible for connection of MEP
systems to moveable equipment as noted on the Drawings.
Relocation of existing moveable equipment and materials from areas of work will be completed by the Owner.

FURNITURE:
Placement of furniture will be completed by the Owner. Contractor is responsible for connection of electrical systems to
furniture as noted on the Drawings.
Relocation of existing furnishings from areas of work will be completed by the Owner.
DIVISION 1 - GENERAL REQUIREMENTS (Rev 12/2020)
UW-Madison Project No. A-20-005 / UWSA Project No. 1485-1972

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1. DEFINITIONS
In this document, the following terms are defined as:

(a) "Mechanical, electrical, or plumbing subcontractor" ("MEP Subcontractor") is a contractor that performs mechanical (Heating, Ventilating, and Air Conditioning), electrical, plumbing, or fire protection (fire suppression) work for the Project, and enters into a contract with the General Prime Contractor to perform their division of work.

(b) "Qualified bidder" means a contractor that DOA certifies under Wis. Stat. s. 16.855(9m)(b)1.
(c) "Qualified responsible bidder" means a contractor who is a qualified bidder and who is a responsible bidder.

(d) "Responsible bidder" means a contractor that DOA certifies under Wis. Stat. s. 16.855(9m)(b)2.

(e) "Single prime contracting" means bidding and contracting through a process in which only a general prime contractor has a contractual relationship with the the Owner and all mechanical, electrical, or plumbing subcontractors are identified by the Owner and are subcontractors to the General Prime Contractor.

(f) "General Prime Contractor" is a contractor that enters into a contract with the Owner to perform all work as required by the Contract Documents and enters into contracts with subcontractors including MEP Subcontractors identified by the Owner.

(g) "Non-MEP Subcontractor" is a subcontractor to a General Prime Contractor in divisions of work other than mechanical, electrical, plumbing, and fire protection. This includes suppliers and installers to the General Prime Contractor.

(h) "Subcontractor" is all subcontractors on a project. This includes MEP Subcontractors, subcontractors to the MEP Subcontractors, and Non-MEP Subcontractors.

(i) "Contractor" is all contractors working on a project regardless of contractual relationship. This includes the General Prime Contractor, MEP Subcontractors, Non-MEP Subcontractors, and all Subcontractors, regardless of tier of subcontract.

2. GENERAL

All articles in these General Requirements are applicable to all Divisions and Sections of the Work included herein. The Conditions of the Contract, General and Supplementary General Conditions, and these General Requirements shall apply with equal force and effect to the General Prime Contractor and all Subcontractors engaged in this work.

Contractor or the Contractor's authorized representative must be present to accept delivery of all equipment and material shipments. The Owner will not knowingly accept, unload or store anything delivered to the site for the Contractor's use. Inadvertent acceptance of delivered items by any representative or employee of the Owner shall not constitute acceptance or responsibility for any of the materials or equipment. It is the Contractor's responsibility to assume liability for equipment or material delivered to the job site.

Refer to https://covidresponse.wisc.edu/ for Contractor protocol requirements related to COVID 19.

3. SPECIAL SITE CONDITIONS

Confine all operations, equipment, apparatus and storage of materials, to the immediate area of work to the greatest possible extent. Contractor shall ascertain, observe and comply with all rules and regulations in effect on the project site, including but not limited to parking and traffic regulations, use of walks, security restrictions and hours of allowable ingress and egress. Any special traffic control during construction involving lane closures shall be in accordance with the federal standard, Manual of Uniform Traffic Control Devices.

The Contractor shall take all measures necessary to become acquainted with the location of underground service, utilities, structures, etc., which may be encountered or be affected by the Contractor's work, and shall be responsible for damage caused by neglect to provide proper precautions or protection. As a minimum to become acquainted with such underground appurtenances, the Contractor shall: 1) Observe existing conditions visible at the site immediately prior to commencement of work; 2) Review available site plans incorporated in the contract documents and/or provided by the Owner; 3) Final check with the Owner for additions to or changes from conditions indicated on site plans for the facility; and 4) Obtain input from the "one-call system", the organization composed of all suppliers of utilities/services to or from the site.
Information pertaining to existing conditions that are described in the specifications or appear on the drawings, is based on available records. While such data has been collected with reasonable care, there is no expressed or implied guarantee that conditions so indicated are entirely representative of those actually existing. This information is provided to inform the Contractor of known, existing conditions so that due diligence is taken by the Contractor to avoid damage. Where site observation or documents indicate existing underground utilities/services in close proximity (within four feet horizontally and/or four feet vertically) to necessary new construction work, the Contractor shall be responsible to test, probe or otherwise determine exact locations so as to prevent damage to such utilities/services.

Selected project area photos can be requested from Capital Planning & Development contact Andy Quathamer via email at andy.quathamer@wisc.edu. A conditional statement will be required to indicate images will not be shared with anyone and will be deleted once bids are submitted.

Areas #1 and #2 do not have access restrictions during construction. Area #3 is in the animal areas and will need Medical Clearance (TB/Measles) and restricted card access will be required. GPC will need to work with the WNPRC Compliance and Facility Access group to complete the access requirements and the Non-UW Visitor Form for approval.

Existing pipes, electrical work, and all other utilities encountered, which may interfere with new work, shall be re-routed, capped, cut off, or replaced by the Trades having jurisdiction, in accordance with the Bidding and Contract Documents.

Any noisy and disruptive activities will need to be coordinated with the Owner which occur before nine (9:00) am or after four (4:00) pm, Monday through Friday. Quiet hours will be limited to a 55 dB.

Any noisy and disruptive activities on weekends: Normal hours of operation and activities on weekends: Eight (8:00) AM to Six (6:00) PM Saturday and Ten (10:00) AM to Six (6:00) PM Sunday and all recognized holidays. Any noisy and disruptive activities will need to be coordinated with the owner. Quiet hours will be limited to a 55 dB.

Limit use of premises to work in the areas indicated. Do not disturb portions of the site beyond areas in which work is indicated. General, confine construction operations to areas defined within Project Limits, unless specifically noted or otherwise and/or approved by Owner. Confinement of materials and support facilities to designated staging areas.

Parking at or near the project site is restricted. Contractor’s truck or working vehicles will be permitted to drive on premises only for the purpose of loading and unloading materials and equipment for this project and only if keys are removed and all doors locked when not in use. No Contractor’s will be allowed to park inside of the construction fence. Free parking passes will not be provided. Contractors may park remotely and carpool to the project site, or may purchase parking permits as space is available from Transportation Services (www.fpm.wisc.edu/trans). Vehicles in violation of University parking regulations are subject to fine.

Owner will designate an area in a building which can be used by workers for eating lunch and for toilet needs. Toilets used by workers shall be kept clean and sanitary at all times.

All buildings at this site will be occupied during the construction.

To insure the safety of persons at the University, the following safety measures should be observed:
Contractor shall instruct their workers not to leave any openings in barricades, or to leave tools, equipment, or materials lying around in any area where persons may traverse. Surfaces of barricades, enclosures, etc., must be smooth with no protruding nails or other sharp projections or edges on side toward existing occupied areas, corridors, connecting links, etc.

Outdoor lanes for emergency exit from existing buildings which may lie within or adjacent to new construction area must be kept clear of obstructions at all times.

Active dock will need to remain active. Coordinate construction activities with Dock Manager and UW Project Representative.
The Owner reserves the right to occupy and place and install equipment in completed areas of construction. Such placement of equipment and partial occupancy shall not constitute acceptance of the Work. The Owner will prepare a Certificate of Substantial Completion for each specific portion of the work to be occupied before final occupancy. Before partial occupancy, mechanical and electrical systems shall be fully operational and required documents and inspections shall be successfully completed. On final completion, the Owner will operate, and maintain mechanical and electrical systems serving occupied portions of the building. On final completion, the Owner will assume responsibility for maintenance and custodial service for occupied portions of the building.

4. INSPECTION OF SURFACES
Contractor shall obtain complete data at the site and inspect surfaces that are to receive the Work before proceeding with fabricating, assembling, fitting or erecting any work under this contract.

Contractor shall notify the Owner in writing in case of discrepancies between existing work and drawings, and of any defects in such surfaces that are to receive the Contractor's work. The Owner will evaluate the notice and direct what remedial action will be taken.

Starting of work implies acceptance of existing work or the work of others. Removal and replacement of work applied to defective surfaces, in order to correct defects, shall be done at the expense of the Contractor who applied work to defective surfaces.

5. HAZARDOUS SUBSTANCES - ASBESTOS, LEAD AND POLYCHLORINATED BIPHENYLS (PCB'S)
Not Applicable to this Project.

6. SOIL TEST BORINGS
Not applicable to this project.

7. MUTUAL RESPONSIBILITY
Contractor(s) shall coordinate the work with adjacent work and shall cooperate with all other trades to facilitate the general progress of the work. Each trade shall afford all other trades every reasonable opportunity for the installation of their work and for the storage of their material. In no case will the Contractor(s) be permitted to exclude from the premises or work, any other Contractor or employees thereof, or interfere with any other Contractor in the executing or installation of their work.

Contractor(s) shall arrange the work and dispose of materials so as not to interfere with the work or storage of materials of others and each shall join their work to that of others in accordance with the intent of the drawings and specifications. All Contractors shall work in cooperation with the General Prime Contractor and with each other, and fit their work into the structure as job conditions may demand. All final decisions as to the right-of-way and run of pipe, ducts, etc., shall be made by the Owner at prearranged meetings with responsible representatives of the Contractors involved.

8. PROJECT MEETINGS
Project meetings will be held at the time designated by the Owner. Contractor, when requested, shall attend these meetings. If the principal of the firm does not attend meetings, a responsible representative of the Contractor who can bind the Contractor to a decision at the meetings shall attend.

The Architect/Engineer or a representative thereof will write a report covering all items discussed and decisions reached and copy of such report distributed to all parties involved.

9. SLEEVES AND OPENINGS
Each Contractor requiring sleeved openings shall furnish all sleeves required for their penetrations whether or not they responsible for providing the respective openings. Contractors furnishing sleeves to others for installation shall do this in a timely manner so as not to impede the project schedule.
Openings shown on the structural and/or architectural drawings shall be the responsibility of the General Prime Contractor. Sleeves furnished by other contractors for openings shown on the structural and/or architectural drawings shall be installed by the General Prime Contractor.

Openings that are required and are not shown on the structural and/or architectural drawings shall be the responsibility of the contractor requiring the openings. The contractor requiring the opening shall install sleeves for these openings or cut openings as needed (including floor openings within chases).

Individuals skilled in such work shall accomplish installation of sleeves and openings.
Each Contractor shall be responsible for coordinating locations of their sleeves with work of other trades.

Each Contractor who requires sleeves and/or openings shall submit through the Contractor, to the Owner for review and approval, layout drawings of all such required sleeves and/or openings. Sleeve and opening layout drawings shall be received by the Owner a minimum of two weeks prior to installation of the sleeves and openings. Sleeve and opening sizes and locations shall be dimensioned from column lines and floor elevations or from a point of reference approved by the Owner.

10. CUTTING AND PATCHING
Provisions of Article 9. Sleeves and Openings herein, cover the work involved for providing and installing sleeves and openings.

Cutting and patching required to access work in existing walls, in chases, above inaccessible ceilings, below floors, etc., shall be by the Contractor who requires the access, unless shown on the bid documents otherwise or noted otherwise.

The Contractor shall do all cutting, or fitting of the work as required to make its several parts fit together, or to receive the work of others, as shown or reasonably implied by the drawings or specifications, or as may be directed by THE OWNER. Holes cut in exterior walls and/or roofs shall be waterproofed.

The Contractor who cuts shall also be responsible for patching. Where cutting and patching is required, the Contractor shall hire individuals skilled in such work to do cutting and patching.

The Contractor who removes or relocates building components which leaves a remaining opening shall be responsible for patching the opening.

Patching includes repairing openings to match adjacent construction and painting the surface to match existing. Painting means covering the entire wall where patching is to be done to nearest break point or corner unless indicated to be done by other trades.

Contractor shall not endanger any work by cutting, digging or otherwise and shall not cut or alter the work of others without their consent.

Do not pierce beams or columns without permission of the Owner and then only as directed in writing. If any ductwork, piping, conduit, etc. is required through walls or floors where no sleeve has been provided, use a core drill or saw cut to prevent damage and structural weakening.

Wherever any material, finish, or equipment, is damaged, the skilled trade shall accomplish the repair or replacement, in that particular work and the cost shall be charged to the party responsible for the damage.

The Owner reserves the right to disallow any means and/or methods that, in the opinion of the Owner, are harmful to and/or not in the best interest of preserving the improvements receiving the work.
11. MANUFACTURER'S DIRECTIONS
Contractors shall apply, install, connect, erect, use, clean and condition manufactured articles, materials, and equipment as recommended by the manufacturer, unless specified to the contrary. The manufacturer's latest recommendations at the time of bidding shall be used.

12. LAYOUT
The General Prime Contractor shall immediately upon entering the site for purpose of beginning work, locate general reference points and take such action as is necessary to prevent their destruction. Each Contractor shall lay out its work and be responsible for all lines, elevations and measurements of the building and other work executed under its Contract. Each Contractor must exercise proper precaution to verify dimensions on the drawings before laying out work and will be held responsible for any error resulting from failure to exercise such precaution.

Using datum furnished by the Owner, the lot lines and present levels have been established as shown on the drawings. Other grades, lines, levels and benchmarks, shall be established and maintained by each Contractor, who shall be responsible for them.

As work progresses, the General Prime Contractor shall lay out on forms and floor, the locations of all partitions, walls and fix column centerlines as a guide to all trades. The General Prime Contractor shall make provision to preserve property line stakes, benchmarks, or datum point. If any are lost, displaced or disturbed through neglect of any Contractor, Contractor's agents or employees, the Contractor responsible shall pay the cost of restoration.

Each Contractor shall verify grades, lines, levels, locations and dimensions as shown on drawings and report any errors or inconsistencies to the Owner before commencing work. Starting of work by each Contractor shall imply acceptance of existing conditions.

13. SUPERVISION
The General Prime Contractor shall take complete charge of the work under this contract and coordinate the work of all Trades on the project.

14. FIELD OFFICES
Not required.

15. STAIRS AND SCAFFOLDS
The General Prime Contractor shall:
Furnish and maintain equipment such as temporary stairs, fixed ladders, ramps, chutes, runways and the like as required for proper execution of work by all trades, and shall remove them on completion of the work.
Erect permanent stair framing as soon as possible. Provide stairs with temporary treads, handrails, and shaft protection.

Contractors requiring scaffolds shall make arrangements with the General Prime Contractor, or shall provide their own and remove them on completion of the work.
Each Contractor shall underlay its interior scaffolds with planking to prevent uprights from resting directly on the floor construction.

16. HOISTS, ELEVATORS OR CRANES
Each separate contractor shall provide and pay for its own hoist/crane or other apparatus necessary for unloading/setting or moving their equipment and materials. Installation and removal of equipment for this activity must be accounted for in the Project Schedule.

Equipment and operations for this activity shall comply with applicable Department of Safety and Professional Services and OSHA requirements. No material hoist may be used to transport personnel unless it meets Department of Safety and Professional Services and OSHA requirements for that purpose.
Contractors shall provide any protection required, temporary or long term, to prevent damage to work in place or in progress. When hoisting activity results in such damage, the responsible contractor shall pay for cleaning, repair or replacement of material or equipment as determined by the Owner.

Equipment, that imposes loads of any kind on work in place, shall not be erected without agreement from the Owner.

At their own discretion, two or more contractors may agree to use common hoisting facilities. Under such arrangements, the allocation of costs, access and scheduling and all other details of the agreement are the responsibility of the contractors involved.

Existing elevators may be used on a limited basis with the Owner’s permission and agreement. Costs of warranty extensions and additional service work required will be paid by the using contractor. Appropriate protection must be provided by the using contractor and that contractor shall be responsible for any structural, mechanical or finish damage to the elevator and its parts and to adjoining building finishes and components.

17. SIGNS
No project sign required.

No individual advertising signs, plaques or credits, temporary or permanent, will be permitted on the building or premises, except the name of the Contractor on Contractor’s office or material shed.

18. FENCE
Construction Staging Areas/Materials Storage Areas: the Owner will assign required Construction Site Staging Areas and Material Storage Areas as required on this project. The General Prime Contractor shall provide an eight-foot (8’-0”) high, temporary chain-link construction fence around the site construction staging/material storage areas as required to secure the staging area(s) and construction materials stored on site. Contractor shall construct of standard studded T-Posts of sufficient length for line posts and spaced not to exceed 8’-0” apart. Corner posts and gate posts are to be galvanized steel pipe of not less than 2 1/2” o.d. and shall be properly braced. Note: Plastic fencing or wooden snow fence is not acceptable. Provide gates, properly constructed and braced, complete with hinges, hasps, and padlocks in number and location required for proper control, delivery and distribution of material and equipment. Gate posts shall be adequately back tied and anchored to insure a rigid installation. All protective fencing shall be maintained in an upright, orderly fashion throughout the construction schedule.

19. ROADWAY
Not applicable to this project.

20. TOILETS
The General Prime Contractor shall arrange with Owner to use nearly existing toilet facilities at building site. Toilets used by workers shall be kept clean and sanitary at all times.

21. TELEPHONES
It is expected that each contractor have access to their own cell phone for their own use. No additional telephone service will be provided.

22. WATER SUPPLY
The General Prime Contractor shall arrange with the Owner to use nearby existing water service.

Toilets and slop sinks used by workers shall be kept clean and sanitary at all times.

The General Prime Contractor shall supply water required for construction and other purposes from the existing building plumbing system.
The General Prime Contractor shall prevent waste of water and shall maintain valves, connections, and hoses in perfect condition, at all times. Trades shall provide their own hose or piping from hose bibs.

23. TEMPORARY ELECTRICAL WORK

Duplex receptacles (120 volts) are available in each of the existing areas where work is performed for use of small hand tools.

If a Contractor contemplates the use of equipment that requires a different voltage or greater capacity than that specified, then that Contractor must arrange with Utility for this additional service and pay for installation of the service and the necessary additional switches and wiring required.

The Electrical Contractor shall provide, at no cost to others, all lamps, wiring, switches, sockets and similar equipment required for temporary system until substantial completion. Upon completion of the project, the Electrical Contractor shall remove the temporary system.

The temporary lighting system shall be sufficient to enable all trades to safely complete their work and to enable the Owner to check all work as it is being done. Illumination shall be 5 foot-candles minimum in all areas and, in addition, shall meet or exceed the requirements of 29 CFR 1926.56 Illumination (OSHA regulations).

In accordance with the latest issue of the National Electrical Code, all temporary electrical circuits for construction purposes shall be equipped with combination ground fault interrupter and circuit breakers meeting the requirements of UL for Class A, Group 1 devices. The ground fault interrupter portion shall be solid state type, insulated and isolated from the breaker mechanism. A test button shall be provided for checking the device. The breaker mechanism shall provide overload and short circuit protection and shall be operated by a toggle switch with overcenter switching mechanism so that contact cannot be held closed.

All Trades shall furnish their extension cords and lamps other than those furnished for general lighting.

All Trades and other separate Contractors shall be allowed to use the service provided for general lighting and fractional horsepower hand tools at no cost.

The General Prime Contractor shall be compensated by those requiring three phase and single-phase energy used for equipment other than fractional horsepower hand tools. Arrangements shall be made with the General Prime Contractor before construction equipment is used.

24. COLD WEATHER PROTECTION

All heating and protective covering, required to protect the work from injury due to freezing and moisture during the construction period and prior to enclosure of the building, shall be classed as COLD WEATHER PROTECTION. Such protection shall be provided and paid for by the General Prime Contractor.

Heat required to protect materials from injury due to freezing during the construction period and prior to enclosure, shall be provided by means of portable heating units intended for this purpose.

All heating units must be approved types. Proper ventilation must be provided. The use of temporary units whose product of combustion will damage fresh concrete, mortar or other building materials, will not be allowed. Use of coke or oil salamanders is prohibited.

If electrical power is required for oil or gas portable heating units, it may be taken from the available temporary power source and paid for by the General Prime Contractor.

Heating units and the area surrounding the units shall be kept in a clean and safe condition.
25. ENCLOSURE
The General Prime Contractor should provide approved translucent material for temporary enclosure of exterior wall openings if they have not received final louvers. Plain or reinforced polyethylene film or other suitable translucent material will be acceptable, provided it is installed in or on a well fitting rigid wood frame and kept in good repair. This means of temporary enclosure shall be used for other minor openings in walls.

At end of day's work, securely close temporary enclosures. Padlock work area doors. The General Prime Contractor shall supervise effectiveness of enclosures.

26. TEMPORARY HEAT
All heating required after enclosure of the building up to substantial completion shall be classified as TEMPORARY HEAT. Enclosure is defined in preceding Article.

It shall be the responsibility of the General Prime Contractor to see that every precaution is used to prevent unnecessary escape of heat.

For installations that are not connected to central plant steam or central plant hot water, the General Prime Contractor shall pay the fuel costs for temporary heat for both permanent heating systems used for temporary heat and/or temporary heating systems used for temporary heat.

The General Prime Contractor shall pay for all electrical energy consumed for temporary heat.

The Mechanical Contractor shall provide one of the following systems or a combination thereof, for furnishing temporary heat:

Permanent heating system may be used for temporary heating. If permanent system is used, the Mechanical Contractor shall install in their permanent location heating coils or connectors as approved by the Owner, with controls to maintain temperatures required. Temporary filters shall be used in the permanent system. Provide bases, shields, etc., around heating elements to prevent too rapid drying of adjacent concrete, masonry or plaster. Relocation of some of the permanent heating system equipment may be required during construction to prevent interference with new construction. Temporary units may be installed in such areas during the time permanent equipment is not operating due to relocation.

The distribution piping of the permanent heating system may be utilized for supply and return to unit heaters on each floor in lieu of temporary piping, provided approved connections, controls and protection of such piping is maintained.

If the permanent air system is used during temporary heating period, temporary filters shall be provided in the system and they shall have efficiency equal to the permanent filters. The return air ductwork shall be protected from construction dirt by temporary filters placed over return openings.

If the Mechanical Contractor does not have one of the above systems in operation by the time the building is enclosed, then the Mechanical Contractor shall provide, maintain and supervise the operation of temporary portable units with necessary automatic controls to provide required temperatures. Current required may be taken from the temporary electrical service. See "Temporary Electrical Installation". Cost of fuel to operate portable units shall be paid by the General Prime Contractor.

All electrical wiring required for temporary heating units shall be furnished and installed by Mechanical Contractor, from temporary wiring service. Electrical wiring to permanent equipment used for temporary heating that has been mounted in its permanent location shall be wired by trades skilled in that work.

The use of open salamanders as portable heating units will not be approved. All portable temporary heating units shall be properly ventilated to prevent combustion gases from remaining in the heating area.
The Mechanical Contractor must ascertain if heating equipment will operate on the temporary electrical service available. If service is insufficient to operate equipment, Mechanical Contractor shall make other arrangements.

The Mechanical Contractor shall be responsible for the proper adjustment and maintenance of the system, and shall supervise and be responsible for the operation of the system used for temporary heating until the Owner occupies the building. Supervision shall include periodic checking of operation as required.

A minimum temperature of 45 degrees and a maximum temperature of 60 degrees for the building shall be maintained by the Mechanical Contractor, except for a period of at least ten days prior to the placing of interior woodwork and throughout the placing of this and other finish, varnishing, painting, etc., and until substantial completion to provide sufficient heat to insure a temperature in the spaces involved of not less than 70 degrees nor more than 80 degrees.

The temporary heating system shall be removed by the Mechanical Contractor after the permanent heating system has been installed and operating. Surfaces and structure shall be patched as required. Temporary heating equipment shall be relocated by the Mechanical Contractor as required during construction to prevent interference with new construction.

At completion of construction work or when temporary heat is no longer required, Mechanical Contractor must repair any damage done to permanent equipment during temporary heating period and also perform the necessary cleaning of all ducts and equipment. The Mechanical Contractor shall provide permanent filters to the complete satisfaction of the Owner.

27. FIRE PROTECTION
The General Prime Contractor shall provide and maintain in working order during the entire construction period, a minimum of three (3) fire extinguishers on each floor level, including basement of the building, and one (1) in temporary office. Extinguishers shall be nonfreeze type such as A-B-C rated dry chemical, of not less than 10-pound capacity each. In addition, any Subcontractor who maintains an enclosed shed on the site shall provide and maintain, in an accessible location, one or more similar nonfreezing type fire extinguisher in each enclosed shed.

28. WATCHPERSONS
Watchpersons will not be furnished by the Owner. The Contractor shall provide such precautionary measures, to include the furnishing of watchpersons if deemed necessary, to protect persons and property from damage or loss where the Contractor's work is involved.

29. STORAGE OF MATERIALS
Contractor shall confine equipment, apparatus, storage of materials and operations to limits indicated on the drawings or by specific direction of the Owner and shall not bring material onto the site until they are needed for the progress of the work.

The storage of materials on the grounds and within the building shall be in strict accordance with the instructions of the Owner. Storage of materials within the building shall at no time exceed the design carrying capacity of the structural system.

All materials affected by moisture shall be stored on platforms and protected from the weather.

All materials shall be stored in a manner that prevents release of hazardous material to the environment.

All hazardous materials, including motor fuels, shall be properly handled and contained to prevent spills or other releases. The General Prime Contractor shall develop and maintain a contingency plan to provide emergency response, containment, and cleanup of spills of hazardous materials resulting from contract activities. All spills and releases shall be reported to the Owner as soon as possible.

During the construction of this building, materials, construction sheds, and earth stockpiles shall be located so as not to interfere with the installation of the utilities nor cause damage to existing lines.
The Contractor shall allot space to others for storage of their materials, and erection of their sheds.

Should it be necessary at any time to move material sheds or storage platforms, the Contractor shall move same at the Contractor's expense, when directed by Owner.

The Owner assumes no responsibility for materials stored in building or on the site. The Contractor assumes full responsibility for damage due to the storage of materials.

Repairing of areas used for placing of sheds, offices, and for storage of materials shall be done by the Contractor.

30. PROTECTION OF FINISHED CONSTRUCTION
Contractor shall assume the responsibility for the protection of all finished construction under the Contract and shall repair and restore any and all damage of finished work to its original state.

Wheeling of any loads over any type of floor, either with or without plank protection, will be permitted only in rubber tired wheelbarrows, buggies, trucks or dollies.

Where structural concrete is also the finished surface, care must be taken to avoid marking or damaging those surfaces.

31. PROTECTION IN GENERAL
All structures and equipment shall be constructed, installed and operated with guards, controls and other devices in place.

Temporary pumps required for pumping water from building excavation or from building proper shall be provided by the General Prime Contractor, including temporary connections. Plumbing Contractor shall install permanent sump basins and piping where and when required. Permanent sump pumps shall not be installed until building is substantially complete and when approved by Owner. The General Prime Contractor shall remove temporary pumps and connections when approved by Owner.

The General Prime Contractor shall:
Provide, erect and maintain all required planking, barricades, guard rails, temporary walkways, etc., of sufficient size and strength necessary for protection of stored material and equipment; paved surfaces, walks, curbs, gutters and drives; streets adjacent to or within project area; adjoining property and all project work to prevent accidents to the public and the workmen at the job site.

Notify adjacent property owners if their property interferes with the work so that arrangements for proper protection can be made.

Provide and maintain proper shoring and bracing to prevent earth from caving or washing into the building excavation.
Provide temporary protection around openings through floors and roofs, including elevator openings, stairwells, and edge of slabs.

Provide and maintain proper shoring and bracing for existing underground utilities, sewers, etc., encountered during excavation work, to protect them from collapse or other type of damage until such time as they are to be removed, incorporated into the new work, or can be properly backfilled upon completion of new work.

Provide protection against rain, snow, wind, ice, storms, or heat to maintain all work, materials, apparatus, and fixtures, incorporated in the work or stored on the site, free from injury or damage. At the end of the day's work, cover all new work likely to be damaged. Remove snow and ice as necessary for safety and proper execution of the work.

Protect the building and foundations from damage at all times from rain, ground water and back-up from drains or sewers. Provide all equipment and enclosures as necessary to provide this protection.
Damaged property shall be repaired or replaced in order to return it to its original condition. Damaged lawns shall be replaced with sod.

Protect materials, work and equipment, not normally covered by above protection, until construction proceeds to a point where the general building protection of the area where located, dispenses with the necessity therefore. Protect work outside of the building lines such as trenches and open excavations, as specified above.

Take all necessary precautions to protect the Owner's property as well as adjacent property, including trees, shrubs, buildings, sanitary and storm sewers, water piping, gas piping, electric conduit or cable, etc., from any and all damage which may result due to work on this project.

Repair work outside of property line in accordance with the requirements of the authority having jurisdiction.

Repair any work, damaged by failure to provide proper and adequate protection, to its original state to the satisfaction of the Owner or remove and replace with new work at the Contractor's expense.

Protect trees indicated on the drawings to remain and trees in locations that would not interfere with new construction, from all damage. Do not injure trunks, branches, or roots of trees that are to remain. Do cutting and trimming only as approved and as directed by Owner.

The value of trees destroyed or damaged will be charged against the account of the Contractor responsible for the damage in an amount equal to the expense of replacing the trees with those of similar kind and size.

32. CLEANING AND WASTE DISPOSAL

Contractor shall be responsible for all cleaning required within the technical sections of the specifications governing work under the Contractor's jurisdiction as well as for keeping all work areas, passageways, ramps, stairs and all other areas of the premises free of accumulation of surplus materials, rubbish, debris and scrap which may be caused by the Contractor's operations or that of the Subcontractors.

Remove rubbish, debris and scrap promptly upon its accumulation and in no event later than the end of each week.

Combustible waste shall be removed immediately or stored in fire resistive containers until disposed of in an approved manner.

No burning of rubbish or debris will be allowed at the site. Rubbish, debris and scrap shall not be thrown through any window or other opening, or dropped from any great height; it shall be conducted to the ground, to waiting truck(s) or removable container(s) by means of approved chutes or other means of controlled conveyance.

Form and scrap lumber shall have all nails withdrawn or bent over; shall be neatly stacked, placed in trash bins, or removed from the premises.

Spillages of oil, grease or other liquids which could cause a slippery or otherwise hazardous situation or stain a finished surface, shall be cleaned up immediately.

Waste materials removed from the site shall be managed by the contractor and disposed of in accordance with all applicable laws, regulations, codes, rules, and standards. Materials that meet the definition of a hazardous waste (Wis. Admin. Code NR 600) shall be disposed through the State's hazardous waste service contract (State Bulletin #15-99145-00), unless otherwise directed in writing by the Owner. The Contractor shall prepare all hazardous wastes for transport and disposal. Arrangements for disposal shall be coordinated through Owner. Charges for transport and disposal of hazardous waste by the Owner's hazardous waste service contractor will be paid directly by the Owner. Other materials such as soil, debris, sludge, water, etc. generated by project activities which may contain constituents exceeding federal, state, or local environmental cleanup standards must not be removed from the site, or treated and disposed on site.
without prior written approval of the Owner. The Owner will provide a list of acceptable offsite disposal or treatment facilities for disposal by Contractor. Other unused or discarded materials may be treated as solid waste. Facilities for recycle, disposal or landfill of such items shall be approved by the Owner prior to removal from the site.

Dust, dirt and other foreign matter shall be removed completely from all internal surfaces of all mechanical and electrical units, cabinets, ducts, pipes, etc.

Dirt, soil, fingerprints, stains and the like, shall be completely removed from all exposed finished surfaces.

General Prime Contractor shall wash all glass immediately prior to the occupancy of this project. Work shall include the removal of labels, paint splattering, glazing compound and sealant. Surfaces shall include mirrors and both sides of all glass in windows, borrowed lights, partitions, doors and side lights.

Broken, scratched or otherwise damaged glass shall be replaced by the General Prime Contractor.

In addition to the above, the General Prime Contractor shall be responsible for the general "broom" cleaning of the premises and for expediting all of the cleaning, washing, waxing and polishing required within the technical sections of the specifications governing work under this Contract. The General Prime Contractor shall also perform "final" cleaning of all exposed surfaces to remove all foreign matter, spots, soil, construction dust, etc., so as to put the project in a complete and finished condition ready for acceptance and use intended.

If rubbish and debris is not removed, or if surfaces are not cleaned as specified above, the Owner reserves the right to have said work done by others and the related cost(s) will be deducted from monies due the Contractor.

33. OPERATING AND MAINTENANCE MANUALS AND INSTRUCTIONS
Contractor shall provide the Owner with two (2) sets of the O&M data for each device, piece of equipment and assembly furnished and/or installed under this contract. Format shall be paper, indexed and labeled and bound in three-ring binders. When duplicate electronic data is available, include electronic media in 3-hole vinyl holders in binders.

The O&M manuals shall include the following:

- Table of Contents
- Contact information (including emergency contact number) for installing contractor, original vendor manufacturer and service provider
- Copy of approved submittals
- As-built control drawings and sequences of operations
- Catalog data or literature with correct model number checked
- Manufacturer’s installation and operation instructions including start-up, break-in, shutdown, seasonal, emergency and special operation procedures
- Manufacturer’s maintenance instructions including procedures and instructions for problem corrections, preventive maintenance, testing, alignment, adjustment and repair
- Complete parts list in an exploded view diagram of the equipment
- Construction Verification Checklists
- Inspection and testing reports
- Maintenance records indicating maintenance performed by contractor prior to substantial completion
- Equipment warranties including terms and conditions and date of inception (substantial completion) and date of expiration
- List of special tools or testing equipment required for the operation, testing or maintenance of the equipment
- For items assembled by the Contractor for special functions, write operating and maintenance instructions

Contractor shall submit to A/E for review, make revisions noted by A/E and provide final O&M data for A/E’s review 30 business days prior to training. Any revisions or changes to the systems and/or equipment post delivery of the final O & M data submittal must be submitted to A/E as an addendum within 30 days of the revision or change.
34. TESTS AND ADJUSTMENTS
The complete installation consisting of the several parts and systems and all equipment installed according to the requirements of the Contract Documents, shall be ready in all respects for use by the Owner and shall be subjected to a test at full operating conditions and pressures for normal conditions of use.

Contractor shall make all necessary adjustments and replacements affecting the work which is necessary to fulfill Owner requirements and to comply with the directions and recommendations of the manufacturer of the several pieces of equipment, and to comply with all codes and regulations which may apply to the entire installation. Contractor shall also make all required adjustments to comply with all provisions of the drawings and specifications.

35. LOOSE AND DETACHABLE PARTS
Contractor shall retain all loose and small detachable parts of apparatus and equipment furnished under this Contract, until completion of the work and shall turn them over to Owner designated to receive them. Contractor shall obtain from the Owner an itemized receipt thereof in triplicate. Contractor shall retain one copy of receipt for their files and attach the other two to request for final payment for the work.

36. EROSION CONTROL AND STORM WATER MANAGEMENT
In accordance with state law, where applicable, and what the University of Wisconsin System Administration believes to be good soil conservation practices and pollution prevention, the General Prime Contractor shall be governed by the following:

The General Prime Contractor hereby covenants to maintain all project grounds, public streets and associated areas, including fill areas in a manner consistent with state laws and the general policy to conserve soil and soil resources, and to control and prevent soil erosion and to control and prevent siltation into waters of the state. This clause is to be liberally construed to further the above stated objectives. The following shall include, but not limit areas in which control is to be executed:

Erosion Control Plan: Implement the erosion control plan developed for the project and maintain erosion control practices throughout the construction period. Modifications to the erosion control plan, addressing phases of construction shall be the responsibility of the General Prime Contractor. Erosion control practices that are compromised as the result of construction activity shall be returned to their functioning state by the end of the current work day. Where applicable, erosion control practices shall comply with Chapters NR 151 and 216, Wis. Adm. Code.

Minimum Stripping: Limit stripping of sod and vegetation and limit land disturbance to an area and a time period that will expose bare soil to least possibility of erosion that construction requirements will allow.

Stockpiling: Materials, including soil, shall be stored and protected in a manner that will prevent runoff of material from the stockpiles into streets, drainage facilities, storm sewer systems, or waters of the state in the event of rain.

Soil Erosion and Erodible Materials: Take positive measures to prevent soil erosion from the construction area and areas disturbed by construction activities by employing such means as seed and mulch, mulches, intercepting embankments and berms, sedimentation basins, ditch checks, riprap, erosion mats, silt fence, approved polyacrylamides, inlet protection, or other temporary erosion control devices or methods.

Record Keeping: Maintain a copy of the current erosion control plan on site. Maintain maintenance records and inspection logs on-site for erosion control and storm water management practices. Contractor shall provide Owner with a weekly maintenance and inspection report.

Street Maintenance: Control the tracking of soil onto street and paved surfaces to a minimum. Any such tracking shall be removed no less than on a daily basis.

Storm Water Management: Practices installed for post-construction storm water management shall be protected during construction activity, and in the event that their intended function becomes compromised during construction activity,
shall be restored and/or repaired according to Chapters NR 151 and 216, Wis. Adm. Code, for post-construction storm water management.

Erosion control and storm water management practices shall be installed and maintained in accordance with the WDNR approved technical standards available at the following website:


Responsibility and authority for inspections are vested in the University of Wisconsin.

Responsibility and authority for maintaining records for NR 216 is the responsibility of the General Prime Contractor.

37. AIR QUALITY MANAGEMENT

In accordance with the Department of Administration's air quality management practice on Ozone Action Days, all contractors shall reduce or limit emissions and particulate matter that adversely affect air quality.

The General Prime Contractor shall establish the action plan, in cooperation with other contractor(s), concerning implementation of air quality management on Ozone Action Days. This plan shall include suspending work or modifying operations for all activities related to ozone, volatile organic compounds (VOC) and nitrogen oxide emissions. These work activities include but are not limited to the following:

- Limit equipment and vehicle refueling to after 6 pm.
- Limit use of gasoline-powered vehicle and equipment.
- Limit excessive idling of diesel-powered vehicle and equipment.
- Limit large scale painting with VOC.
- Limit large scale asphalt roofing and paving.
- Limit and/or control all dust creating activities.

For information on air quality readings on Ozone Action Days refer to:

1-866-324-5924; or

http://www.dnr.state.wi.us/org/aw/air/wisards/state.htm

38. CONSTRUCTION WASTE MANAGEMENT

See Section 01 74 19 – Construction Waste Management.

39. GUARANTEE DOCUMENTS

Upon Substantial Completion of project, the Contractor shall submit such written guarantees and bonds to the Owner. Furnish guarantees in triplicate unless otherwise indicated.

40. RECORD DOCUMENTS

On a suitable set of Contract Documents, the contractor is to maintain a daily record of changes and deviations from the contract. All buried or concealed piping, conduit, or similar items shall be located by dimensions and elevations on the record drawings.

The daily record of changes shall be the responsibility of Contractor’s field superintendent. No arbitrary mark-ups will be permitted.

Once during the month the Contractor shall present at the project, the job copy showing variations and changes to date to the Architect/Engineer and the Owner for their review.

At substantial completion of the project, the Contractor shall transmit the marked up as-built documents to the Architect/Engineer and copy the Owner on the transmittal of the documents. The A/E will incorporate the contractor marked up as-built drawings into the record drawings.
PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. Section includes:
   1. Geotechnical Engineering Exploration and Analysis dated March 18, 2004
Geotechnical Engineering Exploration and Analysis

Proposed Interdisciplinary Research Complex (IRC) University of Wisconsin - Madison Highland Avenue Madison, Wisconsin

Prepared for:

The Zimmerman Design Group Milwaukee, Wisconsin

March 18, 2004

Project No. 1G-0401015

GILES Engineering Associates, Inc.
March 18, 2004

The Zimmerman Design Group
205 West Highland Avenue
Madison, WI 53203

Attention: Mr. John C. Sabinash, AIA
Vice President, Principal

Subject: Geotechnical Engineering Exploration and Analysis
Proposed Interdisciplinary Research Complex (IRC)
University of Wisconsin – Madison
Highland Avenue
Madison, Wisconsin
Project No. IG-0401015

Dear Mr. Sabinash:

In accordance with your request and authorization, we have completed a Geotechnical Engineering Exploration and Analysis for the above-referenced project. The conclusions and recommendations that we developed from our exploration and analysis are provided in the attached report.

We appreciate the opportunity to have been of service on this project. Please call if you have any questions or if we may be of further service.

Very truly yours,

GILES ENGINEERING ASSOCIATES, INC.

Datn M. Maciolek, P.E.
Project Manager

Anthony C. Giles, P.E.
Regional Director

Distribution: The Zimmerman Design Group
Attn: Mr. John C. Sabinash, AIA (4)
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**GEOTECHNICAL ENGINEERING EXPLORATION AND ANALYSIS**

**PROPOSED INTERDISCIPLINARY RESEARCH COMPLEX (IRC)**

**UNIVERSITY OF WISCONSIN – MADISON**

**HIGHLAND AVENUE**

**MADISON, WISCONSIN**

**PROJECT NO. 1G-0401015**

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- Appendix A - Figures (6) and Test Boring Logs (24)
- Appendix B - Field Procedures
- Appendix C - Laboratory Testing and Classification
- Appendix D - General Information and *Important Information about Your Geotechnical Engineering Report*

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1.0 EXECUTIVE SUMMARY

Our findings and conclusions are summarized below. This Executive Summary is provided solely for purposes of overview. Any party who relies on this Report must read the full report. The executive summary omits many details, any one of which could be crucial to the proper application of this Report.

Subsurface Exploration and Conditions

- We drilled twenty-four test borings for this project. Twenty-one of the test borings were about 31 feet deep and two of the test borings were about 101 feet deep. One of the test borings was terminated at about 90 feet below-grade due to auger refusal, likely caused by cobbles, boulder or bedrock.
- Asphalt pavement, topsoil and fine sand were encountered at the ground surface at the test borings. Soils that we classified as fill or possible fill was beneath the surface materials and were present to depths between about 6½ and 18 feet below-grade. In general, the fill and possible fill mostly consisted of silty clay and silty fine sand. Native soil, below the fill and possible fill, generally consisted of organic clayey silt and silty clay followed by fine sand, silty fine sand, fine sandy silt, silt and silty clay.
- The water table was between about 7 and 18 feet below-grade at the test borings. We estimate that the water table was between about El. 845 and El. 850 during our field services, referenced to the elevations on the Topographic Survey.

Seismic Design Considerations

- We recommend a soil Site Class C for seismic design.

Building Foundations

- A spread footing foundation could be used to support the proposed IRC building. We recommend an 8,000 pound per square foot (psf) maximum, net, allowable soil bearing capacity for foundation design.
- Suitable bearing native soil or compacted structural fill must support the foundations. Existing fill materials and native organic soils are not suitable to support the foundations. A geotechnical engineer should test and approve foundation support soil and structural fill materials.
Based upon the proposed basement floor slab elevation (El. 845), we assume that the foundation bearing grade will be about El. 841. Foundation excavations will likely be about five to ten feet below the water table. Dewatering will be necessary to allow for foundation (and basement floor slab) construction. A 3 to 4-inch-thick mud slab should be installed at the base of foundation excavations to serve as a working-mat for construction activities and to protect foundation support soil.

Over-excavation of unsuitable bearing soil will likely be needed for foundation construction due to the existing fill, organic soil, groundwater and sensitive soil.

**Slabs-on-Grade**

- The basement floor slabs will be below the water table and must, therefore, be designed to resist buoyant uplift forces. The basement floor slabs must also be watertight.
- A 3 to 4-inch-thick mud slab should be installed on floor slab subgrades to serve as a working mat and to protect the subgrade soil.
- The basement floor slabs could be designed using a subgrade modulus of 175 psi/in. The floor slabs should be underlain by a minimum 8-inch-thick free-draining aggregate base course.
- Floor slabs are recommended to be supported by native natural soil and/or new compacted structural fill. Suitable existing fill underlain by suitable natural soil could also support basement floor slabs.
- Overexcavation will likely be needed to develop a suitable floor slab subgrade due to the existing fill, organic soil, groundwater and sensitive soil.

**Basement Walls**

- The basement walls will be below the water table. The walls must, therefore, be watertight.
- The basement walls must be designed to resist lateral earth pressures, hydrostatic pressures and any above and below-grade surcharges.
- We recommend that a subdrainage system completely surround the basement of the IRC. Perimeter drainpipes should be at El. 851 to limit the maximum water table height adjacent to the IRC building.
2.0  SCOPE OF SERVICES

This Geotechnical Engineering Exploration and Analysis report ("Report") provides
geotechnical engineering recommendations for design and construction of foundations, basement
floor slabs and basement walls for the proposed Interdisciplinary Research Complex (IRC). The
scope of services for this project was generally limited to cursory site observations, geotechnical
subsurface explorations, field and laboratory soil testing, a geotechnical engineering analysis,
and preparation of this Report. The scope of services was based on the Request for Proposal,
dated December 16, 2003, by The Zimmerman Design Group and our proposal for geotechnical
services (No. 5GP-0312007), dated January 6, 2004. Environmental consulting services were not
requested and were, therefore, not included within the authorized scope for this project. We
could provide environmental consulting services, if needed. General comments and other
limitations regarding the project are in Appendix D.

3.0  SITE AND PROJECT DESCRIPTIONS

3.1  Site Description

The proposed Interdisciplinary Research Complex (IRC) will be an addition to the north
side of the Clinical Science Center (CSC) at the University of Wisconsin - Madison campus in
Madison, Wisconsin. Highland Avenue curves around the north side of the proposed IRC
location and the Health Sciences Learning Center (HSLC) is southeast of the proposed IRC
location. Asphalt parking lots with landscape areas and concrete sidewalks occupied the
proposed IRC location during our field services. The pavement appeared to be in fair condition,
based on cursory observations by our field representatives. We understand that utilities underlie
the proposed IRC location.

According to a Topographic Survey (dated October 31, 2003) by Graef, Anhalt,
Schloemer and Associates, the ground surface in the planned IRC location is between
approximately El. 855 and El. 865. The ground surface generally slopes down from the south to
north. The Topographic Survey also shows that the first floor and basement floor at the north
side of the CSC building, immediately adjacent to the proposed IRC location, are about El. 865
and El. 851, respectively. The Topographic Survey also indicates that the first floor elevation
and basement floor elevation at the northeast corner of the HSLC building are 866.18 and
852.14, respectively.
3.2 IRC Description

The IRC will be constructed along the north side of the CSC building. We understand that the IRC will be a multi-level, cast-in-place concrete structure that will have perimeter masonry cavity and/or curtain walls and a steel bar-joint penthouse roof. The Design Submittal Plans (dated December 22, 2003) indicate that the IRC will have three separate wings and each wing will have a full basement. We assume that each basement will have a concrete slab-on-grade floor. The Design Submittal Plans also indicate that the IRC will be constructed in phases. The IRC will be about 232 feet tall, including the basement and penthouse levels. A spread footing foundation is preliminarily planned for the IRC. We assume that foundation walls will be reinforced concrete. We understand that bearing wall foundations and column foundations will support about 3 kips per lineal foot (klf) and 2,500 kips, respectively. We also understand that a minimum 8,000 pound per square foot (psf) soil bearing capacity is desired for foundation design. We assume that the basement floor slabs will support a maximum 150 pound per square foot (psf) live load.

The Design Submittal Plans show that the IRC basement floor elevation will be 845 and the first floor elevation will be 865. We assume that those elevations relate to the ground surface elevations on the Topographic Survey. We also assume that the basement floor subgrade will be approximately El. 844. The ground surface elevations in the proposed IRC location are between about El. 855 and El. 865. Based on the assumed basement floor subgrade elevation and existing site grades, we estimate that the basement floor slab subgrade will be about 11 to 21 feet below the current ground surface.

3.3 Pavement Areas

We understand that vehicle drives will be constructed for the IRC project. We assumed and used a maximum daily traffic volume of 500 automobiles and five 18,000-pound equivalent single axle loads for the design of the pavement section. A maximum daily traffic volume of 100 automobiles per stall and no truck traffic was used for the design of the parking stall pavement section. We assume that the pavement will be within about 2 feet of the current site grades.

3.4 Existing Clinical Science Center

The CSC building consists of a multi-story structure with a basement. According to the Topographic Survey prepared by Graef, Anhalt, Schloemer and Associates, the first and basement floors of the CSC building are at approximately El. 865 and El. 851, respectively. No information is currently available on how the existing building is supported. It is assumed that the existing building is supported by spread footings with typical frost embedment depth perimeter footings and interior footings at approximately 4 feet below the concrete slab-on-grade.
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floor bearing on natural soils or structural fill similar to those encountered at the test borings. If
the existing building is supported differently than assumed, we should be contacted to determine
if alterations to our recommendations are needed.

3.5 General Information

This Report is based on our previous description of the proposed IRC and existing CSC,
including the first floor elevations and basement floor elevations. We recommend that the project
architects and engineers carefully review our descriptions. We must be notified if the IRC
building or the floor elevations will be different than we described; we may need to revise this
Report. Also, we should review the final project plans and project specifications before
construction to confirm that the project designers interpreted this Report correctly. Depending
on the final plans and specifications, we may need to revise our geotechnical recommendations
or provide supplemental geotechnical recommendations.

3.6 Reviewed Information

Soil Survey Information

We reviewed the Soil Survey of Dane County, Wisconsin (issued January 1978), prepared
by the United States Department of Agriculture Soil Conservation Service in cooperation with
the Research Division of the College of Agricultural and Life Sciences at the University of
Wisconsin. According to the Soil Survey, shallow native soils in the area of the proposed IRC
site consist of Colwood silt loam and Houghton Muck. Colwood soil reportedly consists of deep,
poorly-drained, moderately-permeable soils formed under sedge grasses in deep alternating
layers of calcareous lake-laid silt and fine sand. Houghton Muck soil reportedly consists of deep,
very poorly-drained soils with a moderately-rapid permeability. The Houghton soils reportedly
formed under sedge grasses and mineral soil and is typically deeper than 5 feet.

Topographic Quadrangle Map

A limited review of the United States Department of the Interior Geologic Survey
Madison West Quadrangle, Wisconsin – Dane County 7.5 minute series (topographic) dated
1983 was performed to evaluate the site area topography and features. The area topography
generally sloped down to the north toward Lake Mendota. Additionally, the ground surface
elevation was between approximately El. 850 and El. 860 (National Geologic Vertical Datum of
1929). According to the quadrangle map, the water level of Lake Mendota was El. 849.

GILES ENGINEERING ASSOCIATES, INC.
Water Table Map

The Water-Table Map of Dane County, Wisconsin (Madison West Quadrangle), Open File Report 95-1, prepared by the Wisconsin Geological and Natural History Survey dated February 1995 was reviewed for historical water levels at the site. According to the map, the water table in the site area is at approximately El. 850 (mean sea level) and the water table generally flows from south to north.

4.0 SUBSURFACE EXPLORATION AND IN-SITU TESTING

We drilled twenty-four test borings for this project using truck-mounted drilling rigs. The Zimmerman Design Group selected the boring locations according to the planned footprint of the IRC. Test Boring Nos. 1 through 21 were about 31 feet deep, Test Boring Nos. 23 and 24 were about 101 feet deep, and Test Boring No. 22 was approximately 90 feet deep. Test Boring No. 22 was planned to be 101 feet deep, but it was terminated at approximately 90 feet below-grade due to auger refusal, likely caused by cobbles, boulders or bedrock. Drilling was somewhat difficult due to groundwater and non-cohesive soils, including fine sand and silt. The approximate test boring locations are shown on the Boring Location Plan (Figure 1) in Appendix A. Field and laboratory test procedures are briefly described in Appendices B and C, respectively. We located the borings on-site using a cloth tape referenced to the CSC building, which is south of the planned IRC location.

A geotechnical engineer visually classified soil samples that we recovered from the test borings in general accordance with the Unified Soil Classification System (ASTM D 2488). The soil classifications are noted on the Records of Subsurface Exploration (test boring logs) along with laboratory test results, standard penetration test results (N-values), and other field-related information. The terms and symbols that we used on the Records of Subsurface Exploration are defined on the General Notes enclosure. The ground surface elevations at the boring locations are noted on the Records of Subsurface Exploration. We estimated the ground surface elevations at the test boring locations using the Topographic Survey. We consider the test boring elevations to be accurate within about one foot.

We conducted five pressuremeter tests for this project in order to evaluate the in-situ engineering properties of soil beneath the proposed IRC location. The pressuremeter tests were conducted at Test Boring Nos. 2, 8 and 15. Results of the pressuremeter tests are shown on Figures 2 through 6 in Appendix A. We used the pressuremeter test results as part of our geotechnical engineering analysis.
5.0 SUBSURFACE CONDITIONS

The soil and groundwater conditions that we encountered at the test borings are briefly described in this section. Detailed descriptions of the subsurface conditions are noted on the Records of Subsurface Exploration in Appendix A.

5.1 Soil Conditions and Geotechnical Laboratory Testing

Asphalt pavement was at the ground surface at Test Boring Nos. 1 through 7, 9, 10, 11, 13, 15, 16, and 18 through 23. The asphalt was about 3 to 4 inches thick. Sand and gravel base course material, that was about 6 to 10 inches thick, was beneath the asphalt pavement. Topsoil that was about 5 to 18 inches thick was at the ground surface at Test Boring Nos. 8, 14, 17 and 24. An approximate 6-inch-thick layer of fine sand that we classified as fill was at the ground surface at Test Boring No. 12.

Soil that we classified as fill or possible fill was beneath the surface materials to depths between about 6½ and 18 feet below-grade, depending on test boring location. In general, fill and possible fill mostly consisted of silty clay and silty fine sand. Native soil, below the fill and possible fill, generally consisted of organic clayey silt and silty clay to depths between approximately 9 and 23 feet below-grade, followed by fine sand, silty fine sand, fine sandy silt, silt, and silty clay to at least 101 feet below-grade, the maximum exploration depth.

We conducted unconfined compressive strength (without controlled strain), calibrated penetrometer resistance, and moisture content tests on select cohesive soil samples to determine engineering parameters. The test results are reported on the Records of Subsurface Exploration. We used the laboratory test results as part of our geotechnical engineering analysis.

5.2 Groundwater Conditions

We encountered groundwater while drilling each test boring. In addition, groundwater accumulated within most test borings shortly after drilling. Our drill crews measured the depth of groundwater within the borings while drilling and shortly after drilling. Those depth measurements are noted on the Records of Subsurface Exploration. We also measured water levels within the groundwater observation wells installed in Test Boring Nos. 1, 8 and 15. The observed water levels are noted in the table below. The groundwater observation wells have been left in-place for future observation, if desired, but is recommended to be abandoned in accordance with Wisconsin Department of Natural Resources regulations when no longer needed. The well can be abandoned or further read by us, if requested.
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<th>March 10, 2004</th>
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<td></td>
<td>16.4±</td>
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</tr>
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1) Relative to the existing site grades during drilling  
2) Relative to the datum of the Topographic Survey prepared by Graef, Anhalt, Schloemer and Associates

Based on the encountered water levels, gray soil coloration (a common indication of soil saturation), and soil moisture contents, we estimate that the water table was between approximately 7 and 18 feet below the ground surface at the test boring locations during our field services. We also estimate that the water table was between approximately El. 845 and El. 850 during our field services, referenced to the elevations on the Topographic Survey. As previously noted, a map entitled Water-Table Map of Dane County Wisconsin (dated February 1995) by K. Bradbury, M. Muldoon, A. Klein, D. Misky and M. Strobel shows the water table in the area of the proposed IRC location to be at El. 850, which corresponds with our estimated water table elevation.

Our estimate of the water table depth and elevation is only an approximation; the actual groundwater conditions may be higher or lower than we estimated. Also, water may become perched above the water table, particularly within existing fill and native organic soil. It is difficult to accurately estimate water table depth and elevation from boreholes, especially in cohesive soil such as the silty clay that underlies the proposed IRC location. We recommend the water levels in the groundwater observation wells installed at the proposed IRC be observed as long as possible to more accurately determine the water table depth and elevation for design and construction purposes. A geotechnical engineer should observe the depth of groundwater within the wells for at least several months and possibly longer, depending on the observations. We would be pleased to install additional groundwater wells and observe groundwater levels within the wells. If we do not observe the wells, we should be provided with the groundwater observation results. Depending on the results, we may need to revise this Report or provide supplemental recommendations.

The groundwater conditions beneath the proposed IRC location will likely correspond with the level of Lake Mendota; therefore, we reviewed the Madison West Quadrangle Map (dated 1983 and published by the United States Department of the Interior Geologic Survey) to determine the mean water level elevation of Lake Mendota. The quadrangle map shows the
water level of Lake Mendota at elevation 849. We also obtained information from the United States Geological Survey (USGS) to further evaluate the water level of Lake Mendota. According to that information, the daily mean water level of Lake Mendota, between February 16, 2002 and February 14, 2004, was about El. 848.3 to El. 850.4.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations are based on our description of the IRC and CSC in Section 3.0, the soil and groundwater conditions at the test borings, and the existing grades as shown on the referenced Topographic Survey. We must be notified if our description of the IRC or CSC are not accurate or if the soil and groundwater conditions that are encountered during construction differ from those shown on the Records of Subsurface Exploration; we may need to revise this report or we may need to provide supplemental geotechnical recommendations. This report particularly depends on our understanding that the IRC will have a full basement. We must be notified, and this Report must be revised, if portions of the IRC will not have a full basement. Our conclusions and recommendations are based on our assumption that a geotechnical engineer will observe site development and construction, including all earthwork operations.

6.1 Seismic Design Consideration

We recommend a soil Site Class C for seismic design of the IRC. The recommended site class is based on the proposed floor elevations, the subsurface conditions at the test borings, our knowledge and understanding of the area geology and Table 1615.1.1 of the 2000 International Building Code (IBC).

6.2 Construction Considerations

Groundwater

The water table below the proposed IRC location was between approximately El. 845 and El. 850, referenced to the Topographic Survey, during our field services. The referenced Water-Table Map of Dane County Wisconsin shows that the water table in the area of the proposed IRC site is about El. 850. Furthermore, information obtained from the USGS indicates that the water level of Lake Mendota was at about El. 848.3 to El. 850.4 between February 16, 2002 and February 14, 2004. The water level of Lake Mendota likely corresponds with the water table elevation below the IRC location.
Based upon the water table elevations at the test borings, and our research, basement floor slabs will likely be approximately five feet below the water table, assuming that the basement floor will be at El. 845. The actual depth below groundwater will depend on the groundwater conditions during construction. Deep, staged wells, or other specialized dewatering methods, will be needed to lower the water table beneath the IRC location to allow for below-grade construction. Dewatering wells will likely need to be installed at the perimeter and interior of the IRC footprint. We recommend that a qualified dewatering contractor or a geotechnical engineer design the dewatering system, including well locations, well depths and pumping rates. We also recommend that the dewatering system be designed based on in-situ permeability tests conducted at the IRC location. We recommend that a geotechnical engineer review and approve dewatering plans before construction.

The water table will likely need to be lowered between about five and ten feet within the IRC location. Dewatering must be performed with extreme care considering the nearby facilities. Recharge wells will likely be needed near the existing CSC and HSLC buildings. We recommend starting the dewatering operations before beginning basement excavations for the IRC. Dewatering should continue until all below-grade earthwork operations, foundation construction, utility construction and backfilling are complete. Dewatering should also continue until concrete for the basement walls and floor slab can withstand hydrostatic pressure. Vibratory compaction methods are not recommended near the water table since "quick" or "boiling" conditions could develop. Dewatering could adversely affect nearby facilities; therefore, dewatering must be performed carefully, likely in conjunction with recharge wells or other techniques as noted above, so that nearby facilities are not affected.

Surface water may collect within shallow excavations that are above the water table. We expect that filtered sump pumps, drawing water from sump pits in the bottom of excavations, will be adequate to remove surface water that collects in shallow excavations. Excavated sump pits should be filled with open-graded crushed stone and completely lined with a geotextile fabric such as Mirafi 160N or an equivalent geotextile approved by a geotechnical engineer.

Excavation Stability

We estimate that the excavations for basements and foundations will be about 15 to 25 feet deep. Excavations must be sloped-back or restrained to maintain a safe work environment. Earth restraint systems, such as soldier pile and lagging walls, will probably be needed considering the relatively deep excavations and cohesionless soil. We were not authorized to provide design and construction recommendations for earth restraint systems; however, we could provide those services upon request and authorization. Earth restraint systems must be designed and constructed in accordance with appropriate codes based on the actual soil and groundwater conditions at the wall locations.
Extraction stability and caving problems will likely occur during construction, especially within granular soil such as sand and below the water table. Excavation depth and sidewall inclination should not exceed those specified in local, state, or federal regulations. Excavation safety is the contractor's responsibility. We recommend that all contractors comply with local, state, and federal safety regulations including current OSHA excavation and trench safety standards.

Care must be taken to ensure that foundations of the adjacent CSC building are not undermined during below-grade construction of the IRC. Any current distress to the CSC or HLSC buildings should be monitored during construction of the IRC. Also, we recommend to install survey points on the CSC and HLSC structures to establish elevation benchmarks and monitor for structural movement. Slope inclinometers are also recommended to be installed before excavation to monitor earth movement. Inclinometer and survey readings should be taken over time in order to determine if there is any movement so that any necessary precautions can be taken to control future movement.

Existing Utilities

We understand that utilities underlie the proposed IRC location. We recommend to locate all utilities before construction. Utilities within 20 feet of the proposed IRC location should be rerouted before construction begins.

Adverse Weather

Moisture sensitive soils underlie the proposed IRC location. The moisture-sensitive soil will likely become unstable when exposed to adverse weather (rain, snow and freezing temperatures) and construction traffic. It may be necessary to remove or stabilize a 6 to 12-inch-thick layer of unstable surface soil if adverse weather occurs before or during construction. Adverse weather commonly occurs during late fall, winter, and early spring; therefore, at least some weather-related over-excavation should be expected during those periods. A geotechnical engineer should provide recommendations regarding the required over-excavation depth and the type of stabilization, based upon the soil conditions during construction.

Earthwork contractors should protect soil prior to and during construction. As an effort to protect the soil, earthwork contractors should surface-compact subgrades with a smooth-drum compactor, before precipitation, to seal the ground surface and lessen water infiltration. Also, the site should be graded in anticipation of wet weather to help prevent water from ponding within construction areas and/or flowing into excavations. Water that accumulates on-site should be removed along with unstable soil. Foundation concrete should be placed and excavations backfilled as soon as possible to protect the bearing grade. A 3 to 4-inch-thick mud slab is
recommended to be placed on the excavated subgrade to serve as a working mat for construction activities. In addition, construction traffic should be restricted to temporary haul roads and drives, which should be constructed at the site to control traffic-related soil disturbance. We recommend using aggregate or processed asphalt and concrete to construct temporary haul roads and parking areas. Information regarding processed asphalt and concrete is provided in a following section.

During freezing or freeze/thaw conditions, frozen or wet soil may need to be removed from the site each day. The removal depth will depend on the weather and depth of frozen or wet soil. Non-frost susceptible material should be used as fill during freezing conditions, unless other precautions are taken to prevent soil freezing.

Silt fences should be installed around the proposed IRC location, before earthwork, to control erosion. Silt fences are temporary structures that will likely require periodic maintenance. It may also be necessary to replace silt fences periodically.

Soil could become unstable after initial preparation and compaction due to construction activities and adverse weather. The subgrade may need to be restabilized immediately prior to construction, particularly if site preparation occurs during adverse weather or if the subgrade is disturbed by construction activities. The severity of construction problems will likely depend, in part, on precautions that are taken by the contractors to protect the moisture and disturbance sensitive soil, and the weather conditions during construction.

Reuse of On-Site Soil

On-site soil that does not contain significant organic matter or other deleterious materials, as noted in Item No. 4 of the enclosed Guide Specifications, could be used as structural fill beneath future floor slab, pavement and non-structural (landscape) areas. The site soil is not suitable for use in foundation influence zones, which is the area beneath footings that will support foundation loads. In general, the foundation influence zone can be conservatively estimated by extending imaginary lines downward and outward from edges of a footing pad at a ratio of 1(horizonal):1(vertical). The area within the imaginary lines is the foundation influence zone. We recommend that a geotechnical engineer assist contractors with determining foundation influence zones. We also recommend using a high quality well-graded aggregate within foundation influence zones. The aggregate should have a low water sensitivity with less than 5% passing the No. 200 sieve. It may be beneficial, or necessary, to use aggregate as structural fill within basement excavations and other areas near the water table. Aggregate may need to be underlain by a geotextile fabric, such as Mirafi 160N, or an equivalent. A geotechnical engineer should evaluate samples of proposed fill materials. A geotechnical engineer should also approve all fill materials based on the intended application.
Organic soil was encountered at most of the test borings. Organic soil is not suitable for use as structural fill; however, it may be suitable for use as topsoil within future landscape areas. A landscape architect should approve any materials proposed for use in future landscape areas.

The moisture content of cohesive (clayey) fill soil should not be less than 1 percent below, or greater than 3 percent above, the optimum moisture content determined by the Standard Proctor compaction test. The moisture content of granular fill soil should be within 3 percent of the optimum moisture content. Based upon the moisture contents of the recovered soil samples, on-site soil may need to be moisture-conditioned (uniformly dried or wetted) prior to use as structural fill. Soil that is near or below the water table will likely need to be dried prior to use as structural fill. Also, cobbles and boulders may need to be sorted (or crushed to a suitable size) from on-site soil that is used as structural fill. We recommend that a geotechnical engineer approve all fill materials prior to placement based on the intended application. Specific recommendations regarding fill selection, placement and compaction are in Appendix D.

6.3 Subgrade Preparation Recommendations

This section provides geotechnical recommendations for preparing slab-on-grade, pavement and structural fill sub-grades. The subgrade preparation recommendations are based on the soil and groundwater conditions at the test borings. Subgrade preparation requirements will depend on the soil and groundwater conditions that are exposed during construction; therefore, the actual subgrade preparation requirements may differ from those in this Report. We recommend that a geotechnical engineer observe and test construction and provide specific subgrade preparation recommendations based on the observed conditions. Also, subgrade preparation is weather-dependant; therefore, bids for subgrade preparation and other earthwork activities should be based on the time of year that construction is performed.

Site Stripping

We assume that the asphalt pavement and concrete sidewalks within the proposed IRC location will be removed during the site stripping operations. Asphalt and concrete could be processed into a uniform, well-graded, granular material with a maximum 3-inch particle size. Processed asphalt and concrete, and the existing pavement base course material, could be used as fill, sub-base material, or subgrade stabilization material. Processed asphalt and concrete could also be used to construct temporary construction haul roads and parking areas. A geotechnical engineer should approve processed asphalt and concrete, and other fill or stabilization materials, and confirm that the materials are suitable for the intended application. We recommend proper off-site disposal of asphalt and concrete, and any other construction materials that are not re-used on-site. Existing pavement should remain in-place as long as possible to protect the underlying soil from weather and construction disturbance.
Surface vegetation, topsoil, root-balls of trees and shrubs, and otherwise unsuitable bearing surface materials should be removed from the proposed IRC location. Most topsoil stripping will likely be within the existing landscape areas, considering that asphalt pavement overlies most of the proposed IRC location. Topsoil that was between about 5 and 18 inches thick was at the ground surface at Test Boring Nos. 8, 14, 17 and 24. Topsoil may, however, be much thinner or thicker between the test borings. A geotechnical engineer should observe the stripping operations and provide specific stripping recommendations according to the actual site conditions. Topsoil stripping depths should be determined based upon organic content and soil stability, not just soil color. It may be beneficial to stockpile stripped topsoil on-site for use within future landscape areas. A landscape architect should approve soil that will be used as topsoil.

Asphalt pavement and topsoil should be stripped at least five feet beyond the proposed IRC building location, where feasible. Also, a geotechnical engineer should observe the stripping operations and provide recommendations as needed during construction.

**Subgrade Preparation**

Basement areas may be excavated and other areas of the site may be lowered (cut) to the planned finished grades after site stripping. The exposed subgrades should then be proofrolled with construction equipment in the presence of a geotechnical engineer. A smooth-drum roller (non-vibratory) should be used to proofroll the basement floor slab subgrades. A fully-loaded tandem-axle dump truck should be used to proofroll the pavement subgrades and other subgrades that are sufficiently above the water table. Proofrolling is a technique that uses surface (wheel or roller) loads to locate unstable soil. We generally limit the maximum deflection caused by proofrolling to about 1/2 to 1 inch; greater deflection likely represents unsuitable bearing soil. The maximum deflection that is allowed for a project usually depends on the project and soil conditions; therefore, a geotechnical engineer should establish specific proofroll deflection limits at the time of construction based on the actual proofroll equipment, soil conditions, and the project details. Care must be taken to ensure that subgrades are sufficiently proofrolled. Also, proofrolling should continue at least five feet beyond the IRC development areas, where feasible.

Vibrations could cause groundwater and soil instability problems, especially in the basement areas and at other areas that are near the water table; therefore, basement areas should be proofrolled with a non-vibratory smooth-drum roller. Furthermore, we understand that vibrations could cause technical problems at the adjacent CSC due to equipment sensitivity. We therefore recommend not using heavy vibrating compaction equipment for construction of the IRC unless it is confirmed that the vibrations will not affect the CSC operations and equipment.
Soil that deflects excessively or ruts during proofrolling is typically unstable. Unstable soil should be removed to a stable subgrade and replaced with compacted structural fill. Well-graded free-draining aggregate should be used as structural fill within basement excavations considering the shallow groundwater and sensitive soil. As an option to replacement, unstable soil could be scarified, moisture-conditioned (uniformly moisten or dried) and compacted to at least 95 percent of the maximum dry density determined by the Standard Proctor compaction test (ASTM D 698). Compaction of soil in-place will likely not be feasible within basement and foundation excavations due to the groundwater. Unstable soil could also be chemically modified, using hydrated lime or Portland cement, or mechanically-stabilized with coarse aggregate, possibly along with geogrids or geotextiles. A geotechnical engineer should provide specific recommendations regarding overexcavation, replacement and stabilization of unstable soil. We expect that unstable soil will be encountered during construction of the IRC due to existing fill deposits, organic soils, groundwater, and sensitive soils.

Low areas should be raised to the planned finished grades with compacted structural fill immediately after a geotechnical engineer confirms that the subgrade is stable. Placement and compaction of structural fill should not be delayed because adverse weather and construction activities could cause the subgrade to become unstable. We recommend placing structural fill in uniform, loose layers (lifts) that are between about 8 and 12 inches thick. A geotechnical engineer should determine the maximum allowable fill thickness during construction based upon characteristics of the fill materials and capabilities of the compaction equipment. Each lift of fill should be compacted to at least 95 percent of the maximum dry density determined by the Standard Proctor compaction test (ASTM D 698). The moisture content of fill materials must be uniform and within a narrow range of the optimum moisture content, which is also determined by the Standard Proctor compaction test. In general, the moisture content of granular fill should be within about three percent of the optimum moisture content and the moisture content of cohesive (clayey) fill soil should be from about one percent below to three percent above the optimum moisture content. Fill soil may need to be moisture conditioned prior to and during placement.

A geotechnical engineer should perform tests on each lift of structural fill to measure the in-place dry density and moisture content of the fill materials. Fill that does not meet moisture and density requirements should be scarified, moisture-conditioned and recompacted. A subsequent lift of fill may be placed after a geotechnical engineer confirms that the previous lift was properly placed and compacted. Structural fill may need to be recompacted immediately before construction since equipment traffic and weather may reduce the stability of previously compact soil.
Buried Organic Soil

We encountered organic soil at about 6½ to 14 feet below-grade at most test boring locations. The organic soil can likely remain in-place in the parking lot areas assuming that the pavement will be within about two feet of the current site grades. Organic soil could be replaced with lean-mix concrete slurry or another approved controlled low strength material (CLSM). A geotechnical engineer should provide specific recommendations regarding removal and replacement of organic soil during construction.

6.4 Foundation Design Parameters

We understand that a spread footing foundation is planned for the IRC building. A spread footing foundation could be used to support the IRC. Based on the soil conditions at the test borings, and results of the pressuremeter tests, we recommend a 8,000 pound per square foot (psf) maximum, net, allowable soil bearing capacity for foundation design. Suitable bearing native soil or new structural fill must support the foundations. The existing fill and organic soil are not suitable to support foundations for the IRC. Suitable-bearing native soil must underlie structural fill and structural fill must be placed and compacted in accordance with this Report. High-quality, well-graded aggregate should be used as structural fill within THE foundation influence zones considering the relatively high bearing capacity and groundwater conditions. A geotechnical engineer should test and approve structural fill prior to placement. We estimate that the foundation bearing grade will be about El. 841, which is likely about 5 to 10 feet below the water table, considering that the water table was between about El. 845 and El. 850 during our field services. Dewatering will be required to allow for foundation construction. In order to develop sufficient punching shear resistance, strip footing pads should be at least 18 inches wide and isolated column pads should be at least 30 inches wide. We understand that foundation walls will be cast-in-place concrete. Trench footing construction methods will likely not be feasible due to caving of excavation sidewalls. We recommend that a structural engineer design the foundation including footing dimensions and reinforcing details.

The foundation bearing grade should be smooth and free of disturbed soil; therefore, a smooth-edge backhoe bucket should be used to excavate footing trenches in order to develop a smooth, undisturbed bearing grade. A bucket with teeth will likely cause excessive soil disturbance. Disturbed soil at the base of foundation excavations must be removed, possibly using manual tools such as shovels. Contractors must protect foundation construction materials and foundation support soil during and after construction.

Based on the test borings, we expect that fine sand will be at the foundation bearing grade. Fine sand is easily disturbed by construction. It will also cave and erode. Due to the sensitivity of the soil and groundwater, we recommend to install a 3 to 4-inch-thick mud slab at
the base of foundation excavations to serve as a working-mat for construction activities and to protect foundation support soil. Mud slab construction at the base of foundation excavations should begin immediately after a geotechnical engineer tests the underlying soil and confirms that the soil can support the foundations.

Subgrade Requirements

A geotechnical engineer should conduct hand-auger borings within the foundation excavations to evaluate the underlying soil. Each hand-auger boring should extend at least 4 feet below the foundation bearing grade, or to a depth that the geotechnical engineer determines to be suitable. The geotechnical engineer should compare the soil conditions at the hand-auger borings with those shown on the enclosed Records of Subsurface Exploration. We must be notified if the soil conditions differ; we may need to provide supplemental geotechnical recommendations.

We recommend that a geotechnical engineer test soil within foundation influence zones to confirm that the soil can properly support the design bearing capacity. Static cone penetrometers (SCP) should be used to test the bearing capacity of cohesive (clayey) soil and dynamic cone penetrometers (DCP) should be used to test the bearing capacity of granular soil. More specialized bearing capacity tests should be conducted if a geotechnical engineer considers them necessary. A geotechnical engineer must conduct a sufficient number of tests to thoroughly evaluate the foundation support soil.

The unconfined compressive strength cohesive soil within foundation influence zones should be at least 2.0 tons per square foot (tsf), based upon the recommended 8,000 psf bearing capacity. The average corrected N-value should be at least 12 blows per foot for tests within granular soil, based upon the recommended 8,000 psf bearing capacity. In general, the geotechnical engineer should test the bearing capacity of soil to at least 4 feet below the foundation bearing grade or overexcavated subgrade, or to a depth that the geotechnical engineer considers necessary. If the bearing capacity parameters are not met, the soil should be replaced with compacted structural fill, lean concrete slurry or another approved CLSM. We should be notified of test results that do not meet our recommended minimum parameters so that we can evaluate the conditions and provide supplemental geotechnical recommendations if needed.

The estimated depths and elevations of suitable bearing soil at the test boring locations are shown on the following table. The depths and elevations of suitable bearing soil will likely vary between test boring locations.
### ESTIMATED DEPTHS AND ELEVATIONS OF SUITABLE FOUNDATION-BEARING SOIL AT THE TEST BORING LOCATIONS

<table>
<thead>
<tr>
<th>Test Boring Number</th>
<th>Recommended Maximum Allowable Bearing Capacity: 8,000 psf</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth Below Ground Surface (Feet)</td>
</tr>
<tr>
<td>1</td>
<td>13±</td>
</tr>
<tr>
<td>2</td>
<td>14±</td>
</tr>
<tr>
<td>3</td>
<td>18±</td>
</tr>
<tr>
<td>4</td>
<td>18±</td>
</tr>
<tr>
<td>5</td>
<td>18±</td>
</tr>
<tr>
<td>6</td>
<td>13±</td>
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<tr>
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<td>13±</td>
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<td>8</td>
<td>17±</td>
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<td>23</td>
<td>14±</td>
</tr>
<tr>
<td>24</td>
<td>19±</td>
</tr>
</tbody>
</table>

1. Ground surface at the test borings relative to the existing surface during drilling.
2. Referenced to the referenced Topographic Survey

As shown on the table above, suitable bearing soil was between about El. 837 and El. 852 at the test borings. The average elevation of suitable bearing soil at the test boring locations was about El. 843 to El. 844. We estimate that the foundation bearing grade for the IRC building will be about El. 841, considering that the basement floor elevation will be at El. 845. In our opinion, suitable bearing soil will likely be at or near the assumed foundation bearing grade; although some over-excavation of unsuitable bearing soil will be needed such as at Test Boring Nos. 3, 4, 5, 8, 11 and 18. At those borings, suitable bearing soil was encountered below El. 841.

Unsuitable bearing soil within the foundation influence zone must be removed to a suitable bearing subgrade that is tested and approved by a geotechnical engineer. Care must be taken while over-excavating unsuitable bearing soil to prevent “boiling” or “heaving” problems associated with groundwater. Compacted structural fill or lean Portland cement concrete slurry
may be used to replace unsuitable bearing soil. If structural fill is used as replacement material, the unsuitable bearing soil must be completely removed within the foundation influence zone. The foundation influence zone is roughly defined by extending imaginary lines outward and downward at a ratio of 1(horizontal):1(vertical) from the bottom edges of the footing pad. The area within the imaginary lines is regarded as the foundation influence zone. Structural fill within foundation influence zone should consist of high quality well-graded aggregate with less than five percent passing the No. 200 sieve. It may be necessary to place the structural fill on a geotextile fabric such as Mirafi 160N. If lean concrete slurry is used to replace unsuitable bearing soil, the lean mix should extend at least 6 inches beyond the limits of the footing pad and the lean mix concrete should underlie the entire footing pad. The lean mix should also have a uniform thickness. Also, lean mix concrete should have a minimum 1,000 pound per square inch (psi), 28-day compressive strength. Lean mix may be a more effective backfill material since there is a lower potential of disturbing the subgrade than compacting a high quality aggregate.

Existing Construction Considerations

No information is currently available on how the existing CSC building is supported. It is assumed that the CSC building is supported by spread footings with typical frost embedment depth perimeter footings and interior footings at approximately 4 feet below the concrete slab-on-grade floor bearing on natural soils or structural fill similar to those encountered at the test borings. If the CSC building is supported differently than assumed, we should be contacted to determine if alterations to our recommendations are needed.

An expansion joint is recommended to be installed at the juncture of the CSC building and the new IRC, since some differential movement is expected to occur at this point. It is assumed additional load from the new improvements will not be added to the existing building foundations.

The foundations for the IRC are recommended to extend to the same elevation as the existing nearby CSC foundations if the IRC and CSC footings will bear at different elevations. The structural engineer should evaluate the stresses to be imposed on the lower foundation system so that the structural integrity of the CSC building and IRC is not affected. Any parallel foundations should be at least 1.5 footing widths apart (whichever is larger, either existing or new) to help reduce the additional stress imposed on the existing CSC foundations, unless it is found that the overlapping structural load stress imposed by the existing and new foundations are within acceptable limits for the existing soil. Where parallel foundations are wider than four feet apart, their different elevations should not place them within a 45-degree envelope extending upward and downward from the outside edges of the existing foundations. It is recommended that a geotechnical engineer be present on-site during the foundation and floor slab construction so that proper foundation and floor slab support is confirmed.
Precautions must be taken so that excavations for the new construction do not undermine existing footings and floor slabs or otherwise compromise the existing structure support. Based on the basement floor of the CSC being at El. 851 and the proposed basement floor of the IRC being at El. 845, underpinning will likely be needed, depending on the actual details of the CSC and IRC. Further recommendations regarding potential undermining of the CSC foundations can be provided when specific details of the CSC and IRC are known. If voids occur below existing footings or floor slabs, a geotechnical engineer should observe the conditions and provide recommendations. In general, voids should be immediately filled with a concrete dry pack or injection of a non-shrink expansive sand and cement slurry under appropriate pressure to maintain contact between the structure and supporting soils.

Foundation Embedment Depth

We understand that the local building code requires perimeter footings to be at least 48 inches below the finished exterior grade for frost protection. Interior footings may be directly below the floor slab within heated portions of the IRC, provided the subsoil will not freeze. Footings must be protected against weather damage, both during and after construction. Foundation construction, including embedment depth, must be in accordance with local and state building codes.

Estimated Settlement

We estimate that the post-construction total and differential settlements of foundation systems designed and constructed in accordance with this Report will be about 1.0 and 0.5 inch, respectively.

We estimate that the minimum angular distortion will be about 0.0021 inch per inch over a minimum 20-foot distance. If nearby foundations are at significantly different elevations, it is possible that the foundations will act differentially across a shorter span, which could result in greater angular distortion. This greater angular distortion would need to be accounted for by increasing rigidity of the structure or allowing for the differential movement in the structural design. Additionally, if the load differential between foundations, especially those in close proximity to each other is significant, the foundations may needed to be proportioned based on equivalent settlement rather than bearing capacity so that the differential settlement between foundations is within tolerable limits. If either of these conditions occur in the proposed structure, recommendations for providing increased rigidity or proportioning the foundations based on equivalent settlement can be provided as an addendum when details of the foundation system and loads, and locations of the footings have been established.
6.5 Floor Slab Design Parameters

Based on the Design Submittal Plans, we understand that each wing of the IRC building will have a full basement with a concrete slab-on-grade floor. We also understand that the basement floor slab elevation will be at El. 845. We estimate that the basement floor subgrades will be at El. 844. The soils at El. 844 at the test borings mostly consisted of fine sand and silty clay. In general, native fine sand and native silty clay are suitable to support floor slabs, provided the soil has suitable strength characteristics. Existing fill soil could likely support basement floor slabs, depending on the composition and support characteristics of the fill materials and the native soils beneath the fill. Organic soil was encountered at most test borings between about El. 842 and El. 855. Organic soil is not suitable to support basement floor slabs and must, therefore, be removed prior to floor slab construction. Unsuitable bearing soil, such as organic soil, must be replaced with compacted structural fill. We recommend using well-graded, free-draining aggregate within the basement excavation due to the groundwater conditions. Vibratory compaction equipment could cause the soil to become unstable due to groundwater; therefore, non-vibratory compaction equipment should be used to compact fill within basement excavations.

A geotechnical engineer should observe, test and approve the floor slab subgrade. Immediately after a geotechnical engineer confirms that the basement floor subgrade is stable based on the recommended proofrolling, a 3 to 4-inch-thick mud slab should be installed on basement floor slab subgrades. The mud slab will protect the soil and it will serve as a working mat for construction activities. The mud slab should be installed immediately after the geotechnical engineer confirms that the subgrade is stable. Installation of the mud slab should not be delayed because adverse weather and construction activities could cause the subgrade soil to become unstable.

We estimate that the water table was between about El. 845 and El. 850 at the time of the subsurface exploration. The water table will likely fluctuate and may rise above El. 850. Basement floors are planned to be at El. 845 and will, therefore, be below the water table and will be subject to buoyant uplift forces. The basement floor slabs must be designed to resist buoyant uplift. A structural engineer or architect should specify the floor slab thickness, reinforcing, and joint details based on buoyant conditions. Design recommendations for buoyant conditions are provided in the Section 5.6 entitled Basement Wall Design Parameters. The basement floor slab could be designed using a 175 pound per cubic inch (pci) modulus of subgrade reaction.
We recommend that a minimum 8-inch-thick base course underlie the floor slab. Base course materials should be placed directly on the mud slab. The base course materials should consist of well-graded, free-draining aggregate that has less than 5 percent passing the No. 200 sieve. A geotechnical engineer should test and approve base course material prior to placement.

The basement floor slabs will be below the water table. The basement slabs must, therefore, be watertight and must resist buoyant uplift. We recommend that a waterproofing membrane directly underlie the floor slabs. The membrane should be installed in accordance with the manufacturer’s specifications with careful attention to lap-joints. A geotextile fabric should underlie the membrane to protect it from sharp, angular aggregate.

Estimated Settlement

We estimate that the post-construction total and differential settlements of an isolated floor slab constructed in accordance with our recommendations will be less than 0.5 and 0.3 inch, respectively, over a distance of 20 feet.

6.6 Basement Wall Design Parameters

This section provides geotechnical recommendations for design and construction of the proposed basements. The recommendations are based on the water table elevation (El. 845 to El. 850) that we estimated from the test borings and our research. Our estimated water table elevation is only an approximation; it is likely the water table will be higher or lower during and after construction of the IRC.

Watertight Construction

We understand that the basement floor within each wing of the IRC will be at El. 845. Based on the subsurface conditions at the test borings, we estimate that the water table was at approximately El. 845 to El. 850 during our field services. The water table will likely fluctuate and it could rise to at least El. 851, based on our research. The basements will be below the water table. The basement floor slabs and basement walls must, therefore, resist hydrostatic pressure and must be watertight. Watertight construction should include "water-stops" at all junctures between the floor slab and the below-grade walls and at all other construction and control joints. Furthermore, suitable waterproofing material, such as a geomembrane, should be applied to the exterior sides of the basement walls and a geomembrane should underlie the basement floor slabs. The actual watertight design must be determined by the project structural engineer and/or architect.
Lateral Pressures

We recommend that free-draining aggregate continuously abut the basement walls. The aggregate should have less than five percent passing the No. 200 sieve. Also, a geotechnical engineering should test and approve the aggregate drainage material before it is placed to confirm that it is suitable to serve as drainage media for the recommended perimeter drain system which is discussed below. If the drainage aggregate is open-graded, a non-woven geotextile should separate the aggregate from the adjacent soil. The aggregate layer should be at least two feet wide, measured from the exterior face of the basement walls. Also, the aggregate layer should be continuous along the entire height of the basement walls, beginning from the perimeter footing pads. A clay cap, pavement, or other impermeable surface material should overlie the aggregate drainage layer to restrict surface water intrusion. Also, the ground surface adjacent to the IRC should be sloped to direct water away from the structure.

The aggregate drainage material should be placed and compacted in accordance with the enclosed Guide Specifications. Heavy compaction equipment should not be used within about 20 feet of the basement walls since high lateral pressures could develop, which could cause the basement walls to move laterally and/or become distressed. The aggregate drainage material should be compacted with hand-operated, light-weight equipment to between 90 and 95 percent of the maximum dry density determined by the Standard Proctor compaction test (ASTM D 698). We recommend bracing basement walls during placement and compaction of the aggregate and other materials within 20 feet of the walls. The bracing should remain in-place until the first floor deck is installed.

The basement walls must resist lateral earth pressures, hydrostatic pressure and lateral pressure from above and below-grade surcharges. The basement walls will be fixed; therefore, the basement walls should be designed using “at-rest” earth pressure conditions. We recommend using a 65 pound per cubic foot (pcf) “at-rest” equivalent fluid pressure above the water table. We recommend using a 100 pcf “at-rest” equivalent fluid pressure below the water table. The effect of any surface surcharge loads is recommended to be added to the “at-rest” fluid pressure. We can provide specific recommendations for surcharge loads on a case-by-case basis. Walls that are not designed to resist the actual pressures will be prone to lateral movement and/or distress.

We recommend to install a permanent drainage system around the basements to limit the maximum water table height to El. 851. The basement walls could therefore be designed using a 65 pcf “at-rest” equivalent fluid pressure above El. 851 and a 100 pcf equivalent fluid pressure below El. 851. The subdrainage system should include 6-inch-diameter (or larger) perforated drain pipes situated horizontally along the exterior sides of the basement walls within the aggregate drainage material. The drain pipes should form a continuous loop around the

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basements. The drain pipes should be about 12 inches from the basement walls and the
drainpipes should be surrounded by at least 12 inches of free-draining aggregate. The drainage
system should discharge by gravity, to storm sewers. The drainage system should be designed
by the project structural engineer or architect.

The basement floor will be at El. 845; therefore, the floor slab would be a maximum of
about six feet below the water table assuming that the recommended perimeter drain system
limits the maximum water level (adjacent to the IRC) to El. 851. Assuming that the water table
will at or below El. 851, basement floor slabs must resist a hydrostatic "head" of approximately
6 feet, which corresponds to a maximum uplift pressure of approximately 375 pounds per square
foot (psf). The dead weight of the floor slab will provide some resistance to buoyant uplift. The
actual amount of resistance will dependent on the slab thickness and reinforcing. Building
components (such as pipes, mechanisms, etc.) should not be included in determining uplift
resistance. Live loads should also not be used to determine uplift resistance.

6.7 Pavement Design Parameters

The pavement subgrade soil will likely consist of existing fill deposits and new
compacted structural fill. Based on the test borings, the existing fill at the pavement subgrade
will likely consist of silty clay and fine sand. The silty clay soils were used for design due to
their generally lower pavement support characteristics. Silty clay is a poor to fair subgrade
material and typically has field California Bearing Ratio (CBR) values between 4 and 12,
assuming that it is a CL-type soil based on the Unified Soil Classification System (USCS). We
used a CBR value of 4 for flexible pavement design considering the silty clay and variability of
the fill deposits. We used a modulus of subgrade reaction of 125 psi/in for rigid pavement
design. In order to use the CBR value and modulus of subgrade reaction value, all fill used to
raise low areas must have pavement support characteristics at least equivalent to those values and
must be placed under engineering controlled conditions.

Areas of subgrade stabilization and/or overexcavation will likely be needed due to
construction traffic disturbance, particularly if construction proceeds during wet conditions. Use
of a geotextile, thickened base course or chemical subgrade modification may be needed,
especially during wet conditions to stabilize the subgrade.
New Asphalitic Concrete Pavement

The recommended asphalt concrete and base course thicknesses for new pavement is provided in the following table. The table includes state highway specifications. Local codes may require specific asphalt concrete or base course thickness or specialized testing to determine the soil support characteristics. The pavement thickness was determined based on a 20-year design period.

The pavement section is based on the traffic volume in Section 3.0. If the assumed traffic does not satisfy the actual traffic volumes, we can provide additional recommendations based upon alternate traffic loadings. We should be contacted for recommendations if other paving materials are to be used, since alteration to the thicknesses of the pavement section will likely be needed. The pavement section thickness is based on structural requirements for the assumed traffic and subgrade support characteristics. A thicker section may be needed for proper placement and compaction depending on the material gradation.

<table>
<thead>
<tr>
<th>Material</th>
<th>Asphalt Pavement Section Thickness (inches)</th>
<th>Wisconsin DOT Standard Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphaltic Concrete</td>
<td>1½</td>
<td>Section 460, E-0.3 (9.5 or 12.5 mm)</td>
</tr>
<tr>
<td>Surface Course</td>
<td></td>
<td>Section 460, E-0.3 (12.5 or 19 mm)</td>
</tr>
<tr>
<td>Asphaltic Concrete</td>
<td>2</td>
<td>Section 305, 19 mm Crushed Stone</td>
</tr>
<tr>
<td>Binder Course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate Base Course</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Pavement design recommendations assume proper drainage and construction observation and are based on AASHTO (1993) design parameters for a twenty-year design period. Continual maintenance along with a major rehabilitation after about seven to nine years will likely be needed to achieve a twenty-year service life.

Portland Cement Concrete Pavement

We recommend using Portland cement concrete pavement in high stress areas such as the lot entrance and exit aprons and at the trash dumpster location. The pavement should be 6 inches thick. The pavement should be underlain by a minimum 4-inch-thick, free-draining, granular base course supported on a properly prepared subgrade. A rigid pavement designed as recommended herein and in accordance with the enclosed Guide Specifications is based on a 20-year design period. The concrete should have a minimum 28-day compressive strength of 4,000 psi with 4 to 7 percent air entrainment. The materials and construction procedures for the pavement should be in accordance with the Wisconsin DOT Standard Specifications Section 415 for concrete and Section 305, 19 mm crushed stone for base course.
APPENDIX A

FIGURES AND TEST BORING LOGS

The Boring Location Plan contained herein was prepared based upon information supplied by Giles's client, or others, along with Giles's field measurements and observations. The diagram is presented for conceptual purposes only and is intended to assist the reader in report interpretation.

The Test Boring Logs and related information enclosed herein depict the subsurface (soil and water) conditions encountered at the specific boring locations on the date that the exploration was performed. Subsurface conditions may differ between boring locations and within areas of the site that were not explored with test borings. The subsurface conditions may also change at the boring locations over the passage of time.
APPENDIX B

FIGURES AND TEST BORING LOGS

The Boring Location Plan contained herein was prepared based upon information supplied by Giles's client, or others, along with Giles's field measurements and observations. The diagram is presented for conceptual purposes only and is intended to assist the reader in report interpretation.

The Test Boring Logs and related information enclosed herein depict the subsurface (soil and water) conditions encountered at the specific boring locations on the date that the exploration was performed. Subsurface conditions may differ between boring locations and within areas of the site that were not explored with test borings. The subsurface conditions may also change at the boring locations over the passage of time.
Notes: (1) The approximate locations of the test borings as drilled in the field are shown below. 
(2) Boring Location Plan developed from the Site Plan prepared by the University of Wisconsin Division of Facilities Planning & management dated July 17, 2001.
Test Boring No.: 2
Ground Surface El.: 857.9
Test Depth (feet): 19.0
Test El.: 838.9

Pressuremeter Modulus E (ksf): 320.5
Pressuremeter Limit Pressure PValidator (ksf): 27.1
Reload Modulus E_r (ksf): 1802.9
E/P_validator = 11.8
E/E = 5.6

PROJECT: Proposed IRC
LOCATION: University of Wisconsin Madison, WI
CLIENT: The Zimmerman Design Group
PROJECT No.: 1G0401015

Giles Engineering Associates, Inc.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS
N8 W22350 JOHNSON ROAD, SUITE A1 / WAUKESHA, WI 53186 (262) 544-0115/FAX: (262) 549-5666
Test Boring No.: 8
Ground Surface El.: 856.9
Test Depth (feet): 17.0
Test El.: 839.9

Pressuremeter Modulus E (ksf): 156.1
Pressuremeter Limit Pressure PL (ksf): 13.6
Reload Modulus ER (ksf): 765.1
E/PL = 11.5
E/Er = 4.9

PROJECT: Proposed IRC
LOCATION: University of Wisconsin Madison, WI
CLIENT: The Zimmerman Design Group
PROJECT No.: 1G0401015

PRESSUREMETER TEST ASTM D 4719

FIGURE 4

Giles Engineering Associates, Inc.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS
N8 W22350 JOHNSON ROAD, SUITE A1 / WAUKESHA, WI 53186/(262) 544-0118/FAX: (262) 549-5161
Test Boring No.: 15
Ground Surface El.: 863.2
Test Depth (feet): 21.0
Test El.: 842.2

Pressuremeter Modulus E (ksf): 117.1
Pressuremeter Limit Pressure PL*(ksf): 8.4
Reload Modulus Er (ksf): 1152.8
E/PL* = 14.0
Er/E = 9.8
Test Boring No.: 15  
Ground Surface El.: 863.2  
Test Depth (feet): 27.0  
Test El.: 836.2  

Pressuremeter Modulus E (ksf): 282.3  
Pressuremeter Limit Pressure PL*(ksf): 19.8  
Reload Modulus E_r (ksf): 604.3  
E/PL*: 14.2  
E_r/E: 2.1  

FIGURE 7
# RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 1  
**SURFACE ELEVATION:** 859.2  
**COMPLETION DATE:** 1/28/04  
**FIELD REPRESENTATIVE:** Beauford Jones  
**PROJECT:** Proposed Interdisciplinary Research Complex  
**PROJECT LOCATION:** Highland Avenue  
**GILES PROJECT NUMBER:** 1G-0401015  

## MATERIAL DESCRIPTION

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<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
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<th>q_d (tfs)</th>
<th>q_s (tfs)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
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<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>*100</td>
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<td></td>
<td>19</td>
<td></td>
<td>24°± to 36°± Frost</td>
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<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>*39</td>
<td></td>
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<tr>
<td>Brown fine Sand, little Silt, trace medium to coarse Sand and fine to coarse Gravel (Fill) - Damp</td>
<td>5</td>
<td>3-SS</td>
<td>17</td>
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<td>10</td>
<td>4-SS</td>
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<td>Brown-Gray Silty fine Sand, trace medium to coarse Sand (Possible Fill) - Wet</td>
<td>10</td>
<td>5-SS</td>
<td>8</td>
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<td>0.5</td>
<td>0.4</td>
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</tr>
<tr>
<td>Black Organic Clayey Silt - Very Moist</td>
<td>10</td>
<td>6-SS</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gray Silty Clay, little Organic Matter, trace fine Sand - Very Moist</td>
<td>10</td>
<td>7-SS</td>
<td>20</td>
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<td>Brown fine Sand, trace Silt - Wet</td>
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<td>8-SS</td>
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<td>1.8</td>
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<td>Gray-Brown Silty fine Sand (moderate dilatancy) - Wet</td>
<td>10</td>
<td>9-SS</td>
<td>21</td>
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<td>Gray Silty Clay, trace fine to coarse Sand - Moist</td>
<td>10</td>
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<td>25</td>
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<tr>
<td>Brown fine Sandy Silt, trace fine to coarse Gravel (with Clayey Silt seams and/or lenses) - Very Moist</td>
<td>10</td>
<td>11-SS</td>
<td>30</td>
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</tr>
</tbody>
</table>

Boring terminated at 31 feet

## WATER OBSERVATION DATA

- **WATER ENCOUNTERED DURING DRILLING:** 7.0 ft.  
- **WATER LEVEL AFTER REMOVAL:**  
- **CAVE DEPTH AFTER REMOVAL:**  
- **WATER LEVEL AFTER HOURS:**  
- **CAVE DEPTH AFTER HOURS:**

## REMARKS

- * N-value likely affected by frost.  
- **NOTE:** Temporary groundwater observation well installed at the completion of drilling. Bottom of well set at 27½± feet below grade.
### RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 2  
**SURFACE ELEVATION:** 857.9  
**COMPLETION DATE:** 1/28/04  
**PROJECT:** Proposed Interdisciplinary Research Complex  
**PROJECT LOCATION:** Highland Avenue  
**FIELD REPRESENTATIVE:** Beauford Jones  
**GILES PROJECT NUMBER:** 1G-0401015  

---

#### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (t/sf)</th>
<th>q_p (t/sf)</th>
<th>q_s (t/sf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
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<tr>
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<td>100/11</td>
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<tr>
<td>8'± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>*39</td>
<td>18</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gray Silty Clay, trace medium to coarse</td>
<td>5-SS</td>
<td>15</td>
<td>2.3</td>
<td>1.8</td>
<td>21</td>
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<tr>
<td>Gray Silty Clay, trace medium to coarse Sand (Fill) - Damp</td>
<td>6-SS</td>
<td>10</td>
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<td>31</td>
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<tr>
<td>Yellow Silty Clay, trace fine Sand, shells and Organic Matter - Very Moist</td>
<td>7-SS</td>
<td>16</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand - Wet</td>
<td>8-SS</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Brown-Gray Silty Clay, trace fine to coarse Sand - Moist</td>
<td>9-SS</td>
<td>12</td>
<td>1.4</td>
<td>1.2</td>
<td>0.6</td>
<td>24</td>
<td>See Figure 3</td>
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<tr>
<td>Light Brown Silty Clay, trace fine Sand - Moist</td>
<td>10-SS</td>
<td>16</td>
<td>1.4</td>
<td>0.7</td>
<td>22</td>
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<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

#### WATER OBSERVATION DATA

| WATER ENCOUNTERED DURING DRILLING: 13.0 ft. |
| WATER LEVEL AFTER REMOVAL: 18.4 ft. |
| CAVE DEPTH AFTER REMOVAL: 18.5 ft. |

**REMARKS**

N-value likely affected by frost.  
**NOTE:** Pressuremeter tests conducted to 19± and 25± feet. Refer to Figure Nos, 2 and 3.

---

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
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<tr>
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<td>*50/6&quot;</td>
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<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
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<tr>
<td>10'-0&quot;</td>
<td>Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>*35</td>
<td>14</td>
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<td></td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>Gray-Brown Silty Clay, little fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>6-SS</td>
<td>14</td>
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<tr>
<td>5'-0&quot;</td>
<td>Brown and Gray Silty fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moist</td>
<td>3-SS</td>
<td>14</td>
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<tr>
<td>5'-0&quot;</td>
<td>Dark Brown and Gray Silty Clay, little fine Sand mixed with fine Sand (Fill) - Moist</td>
<td>4-SS</td>
<td>21</td>
<td>1.4</td>
<td>1.0</td>
<td>19</td>
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<tr>
<td>10'-0&quot;</td>
<td>Black Organic Clayey Silt - Very Moist</td>
<td>5-SS</td>
<td>9</td>
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<tr>
<td>10'-0&quot;</td>
<td>Gray Clayey fine Sand, trace medium to coarse Sand and Organic Matter (fine roots) (with fine Sand seams and/or lenses) - Very Moist</td>
<td>7-SS</td>
<td>11</td>
<td></td>
<td></td>
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<tr>
<td>15'-0&quot;</td>
<td>Gray fine Sandy Silt (moderate dilatancy) - Wet</td>
<td>8-SS</td>
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<td></td>
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<td>14</td>
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<tr>
<td>20'-0&quot;</td>
<td>Gray Silt, trace Clay and fine Sand (moderate dilatancy) - Wet</td>
<td>9-SS</td>
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<tr>
<td>25'-0&quot;</td>
<td>Gray Clayey Silt, trace fine Sand - Very Moist</td>
<td>10-SS</td>
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<td>16</td>
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</table>

Boring terminated at 31 feet

### WATER OBSERVATION DATA

| WATER ENCOUNTERED DURING DRILLING: 25.0 ft. | REMARKS |
| WATER LEVEL AFTER REMOVAL: 11.7 ft. | * N-value likely affected by frost. |
| CAVE DEPTH AFTER REMOVAL: 15.8 ft. | |
| WATER LEVEL AFTER HOURS: | |
| CAVE DEPTH AFTER HOURS: | |

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>$q_u$ (tsf)</th>
<th>$q_p$ (tsf)</th>
<th>$q_s$ (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
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<td>22</td>
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<td>24' ± to 36' ± Frost</td>
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<tr>
<td>6.0' ± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
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<td>*27</td>
<td>17</td>
<td>17</td>
<td>17</td>
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<tr>
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<td>50/3*</td>
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<td>13</td>
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<td>Brown Clayey fine Sand, little medium to coarse Sand (Fill) - Moist</td>
<td>4-SS</td>
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<td>2.0</td>
<td>2.0</td>
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<td>Gray Silty fine Sand, trace Clay and medium to coarse Sand (Fill) - Moist</td>
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<td>Black Organic Clayey Silt - Very Moist</td>
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<tr>
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<td>6-SS</td>
<td>11</td>
<td>24</td>
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<td>Boring terminated at 31 feet</td>
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### WATER OBSERVATION DATA

WATER ENCOUNTERED DURING DRILLING: 15.0 ft.

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<td>WATER LEVEL AFTER REMOVAL: None</td>
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<td>CAVE DEPTH AFTER REMOVAL: 18.7 ft.</td>
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<tr>
<td>WATER LEVEL AFTER HOURS:</td>
</tr>
<tr>
<td>CAVE DEPTH AFTER HOURS:</td>
</tr>
</tbody>
</table>

*N-value likely affected by frost.

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

BORING NO. & LOCATION: 5  
SURFACE ELEVATION: 855.0  
COMPLETION DATE: 1/29/04  
FIELD REPRESENTATIVE: Beauford Jones  
PROJECT: Proposed Interdisciplinary Research Complex  
PROJECT LOCATION: Highland Avenue Madison, Wisconsin  
GILES PROJECT NUMBER: 1G-0401015

<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>( q_u ) (tsf)</th>
<th>( q_p ) (tsf)</th>
<th>( q_s ) (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>-</td>
<td>1-SS</td>
<td>100</td>
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<td></td>
<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
<td></td>
</tr>
<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>-</td>
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</tr>
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<td>4-SS</td>
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<tr>
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<td>Gray fine Sandy Silt, (moderate dilatancy) - Wet</td>
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<tr>
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<td>18</td>
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</tr>
</tbody>
</table>

Boring terminated at 31 feet

**WATER OBSERVATION DATA**

| WATER ENCOUNTERED DURING DRILLING: 15.0 ft.                                         | * N-value likely affected by frost. |
| WATER LEVEL AFTER REMOVAL: 11.9 ft.                                               |                                    |
| CAVE DEPTH AFTER REMOVAL: 14.6 ft.                                                |                                    |
| WATER LEVEL AFTER HOURS:                                                           |                                    |
| CAVE DEPTH AFTER HOURS:                                                           |                                    |

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
# Record of Subsurface Exploration

**Boring No. & Location:** 6

**Surf ace Elevation:** 855.2

**Completion Date:** 1/31/04

**Project:** Proposed Interdisciplinary Research Complex

**Project Location:** Highland Avenue

**Field Representative:** Beauford Jones

**Giles Project Number:** 1G-0401015

---

**Material Description**

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
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<td>*92</td>
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<td>24&quot;± to 36&quot;± Frost</td>
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<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
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<td>*95</td>
<td>16</td>
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<tr>
<td>Gray fine Sandy Silt, trace Clay (moderate dilatancy) - Wet</td>
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<td>20</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

**Water Observation Data**

- Water Encountered During Drilling: 18.0 ft.
- Water Level After Removal: None
- Cave Depth After Removal: 14.0 ft.
- Water Level After Hours: 0
- Cave Depth After Hours: 0

**Remarks**

* N-value likely affected by frost.
**RECORD OF SUBSURFACE EXPLORATION**

BORING NO. & LOCATION: 7  
SURFACE ELEVATION: 855.8  
COMPLETION DATE: 1/29/04  
FIELD REPRESENTATIVE: Beauford Jones  
PROJECT: Proposed Interdisciplinary Research Complex  
PROJECT LOCATION: Highland Avenue  
GILES PROJECT NUMBER: 1G-0401015

<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_d (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>*50/5&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24° to 36° Frost</td>
</tr>
<tr>
<td>10&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>*24</td>
<td>1.0</td>
<td></td>
<td></td>
<td>16</td>
<td></td>
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</tr>
<tr>
<td>Brown Silty Clay, little fine Sand, trace medium to coarse Sand (with Silty fine Sand layers and/or lenses) (Fill) - Moist</td>
<td>3-SS</td>
<td>11</td>
<td>1.7</td>
<td></td>
<td></td>
<td>18</td>
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<tr>
<td>Dark Brown Silty Clay, trace fine Sand (with Silty fine layers and/or Sand lenses) (Fill) - Moist</td>
<td>4-SS</td>
<td>8</td>
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<td>19</td>
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</tr>
<tr>
<td>Gray fine Sandy Silt, trace Clay and medium to coarse Sand (Fill) - Moist</td>
<td>5-SS</td>
<td>10</td>
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<td></td>
<td></td>
<td>241</td>
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<tr>
<td>Black Organic Clayey Silt - Very Moist</td>
<td></td>
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<td></td>
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<tr>
<td>Gray Silty fine Sand, trace Clay - Wet</td>
<td>6-SS</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, trace fine Sand (moderate dilatancy) - Wet</td>
<td>8-SS</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

**WATER OBSERVATION DATA**

- **WATER ENCOUNTERED DURING DRILLING:** 15.0 ft.
- **WATER LEVEL AFTER REMOVAL:** 11.8 ft.
- **CAVE DEPTH AFTER REMOVAL:** 16.9 ft.
- **WATER LEVEL AFTER HOURS:**
- **CAVE DEPTH AFTER HOURS:**

**REMARKS**

* N-value likely affected by frost.

---

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
### RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 8  
**PROJECT:** Proposed Interdisciplinary Research Complex  
**SURFACE ELEVATION:** 856.9  
**PROJECT LOCATION:** Highland Avenue  
**COMPLETION DATE:** 1/31/04  
**FIELD REPRESENTATIVE:** Beauford Jones  
**GILES PROJECT NUMBER:** 1G-0401015

<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>12± Dark Brown Silty Clay, trace fine Sand and Organic Matter (Topsoil Fill) - Moist</td>
<td>-</td>
<td>1-SS</td>
<td>77</td>
<td>14</td>
<td>24± to 36± Frost</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Brown Silty Clay, some fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moi st</td>
<td>-</td>
<td>2-SS</td>
<td>66</td>
<td>1.0</td>
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<tr>
<td>Gray-Brown Silty Clay, some fine Sand, trace medium to coarse Sand and Organic Matter (roots) (Fill) - Moist</td>
<td>5</td>
<td>3-SS</td>
<td>17</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty fine Sand, trace Clay and medium to coarse Sand (Fill) - Damp</td>
<td>4-SS</td>
<td>5</td>
<td>0.6</td>
<td>0.7</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, some fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>10</td>
<td>5-SS</td>
<td>5</td>
<td>0.5</td>
<td>74</td>
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</tr>
<tr>
<td>Black Organic Clayey Silt (with Gray Silty Clay layers and/or lenses) - Moist</td>
<td>6-SS</td>
<td>5</td>
<td>0.2</td>
<td>74</td>
<td></td>
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<tr>
<td>Gray fine Sandy Silt, trace Clay (moderate dilatancy) - Wet</td>
<td>15</td>
<td>7-SS</td>
<td>11</td>
<td>15</td>
<td>See Figure 4</td>
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<tr>
<td>Gray Silt, trace Clay and fine Sand - Wet</td>
<td>20</td>
<td>8-SS</td>
<td>13</td>
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<tr>
<td>Gray Clayey Silt, trace fine Sand - Wet</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>30</td>
<td>10-SS</td>
<td>12</td>
<td>1.6</td>
<td>1.2</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

### WATER OBSERVATION DATA

**WATER ENCOUNTERED DURING DRILLING:** 10.0 ft.  
**WATER LEVEL AFTER REMOVAL:**  
**CAVE DEPTH AFTER REMOVAL:**  
**WATER LEVEL AFTER HOURS:**  
**CAVE DEPTH AFTER HOURS:**

**REMARKS:**

- N-value likely affected by frost.

**NOTES:**
- Pressuremeter test conducted to 17± feet. Refer to Figure No. 4.
- Temporary groundwater observation well installed at the completion of drilling. Bottom of well set at 29± feet below grade.

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

<table>
<thead>
<tr>
<th>BORING NO. &amp; LOCATION:</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SURFACE ELEVATION:</td>
<td>861.0</td>
</tr>
<tr>
<td>COMPLETION DATE:</td>
<td>2/3/04</td>
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<tr>
<td>FIELD REPRESENTATIVE:</td>
<td>Beauford Jones</td>
</tr>
</tbody>
</table>

**PROJECT:** Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:** Highland Avenue

**GILES PROJECT NUMBER:** 1G-0401015

<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>$q_u$ (tsf)</th>
<th>$q_p$ (tsf)</th>
<th>$q_s$ (%)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td></td>
<td>1-SS</td>
<td>*68</td>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
</tr>
<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td></td>
<td>2-SS</td>
<td>*30</td>
<td></td>
<td></td>
<td>15</td>
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</tr>
<tr>
<td>Brown Clayey fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown and Dark Brown Silty Clay, some fine Sand, little fine to coarse Gravel,</td>
<td></td>
<td>3-SS</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>trace medium to coarse Sand (Fill) - Moist</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sand, little medium to coarse Sand, trace Silt (Fill) - Damp</td>
<td></td>
<td>4-SS</td>
<td>12</td>
<td>2.0</td>
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<td>37</td>
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<td>Black Organic Clayey Silt - Moist</td>
<td></td>
<td>5-SS</td>
<td>38</td>
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<tr>
<td>Brown fine Sand, trace Silt, medium to coarse Sand and fine to coarse Gravel -</td>
<td></td>
<td>6-SS</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sand, trace Silt - Wet</td>
<td></td>
<td>7-SS</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sandy Silt - Wet</td>
<td></td>
<td>8-SS</td>
<td>26</td>
<td></td>
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<td>Brown Silty Clay, trace fine Sand - Moist</td>
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<td>9-SS</td>
<td>10</td>
<td>1.9</td>
<td>1.5</td>
<td>26</td>
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<tr>
<td>Brown Silty Clay, little fine Sand, trace medium to coarse Sand and fine Gravel -</td>
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<td>10-SS</td>
<td>21</td>
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<td></td>
<td></td>
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<td></td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

**WATER OBSERVATION DATA**

<table>
<thead>
<tr>
<th>WATER ENCOUNTERED DURING DRILLING: 15.0 ft.</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>* N-value likely affected by frost.</td>
<td></td>
</tr>
</tbody>
</table>

| WATER LEVEL AFTER REMOVAL: None            | |
| CAVE DEPTH AFTER REMOVAL: 13.0 ft.        | |
| WATER LEVEL AFTER HOURS:                  | |
| CAVE DEPTH AFTER HOURS:                  | |

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
# RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 10  
**SURFACE ELEVATION:** 857.9  
**COMPLETION DATE:** 2/4/04  
**FIELD REPRESENTATIVE:** Beauford Jones  

**PROJECT:** Proposed Interdisciplinary Research Complex  
**PROJECT LOCATION:** Highland Avenue  
**GILES PROJECT NUMBER:** 1G-0401015

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>$q_u$ (tsf)</th>
<th>$q_p$ (tsf)</th>
<th>$q_s$ (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'± asphalitic concrete pavement</td>
<td>1-SS</td>
<td>*53</td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
</tr>
<tr>
<td>8'± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>*55</td>
<td>1.5</td>
<td></td>
<td></td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Clayey Silt, little fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moist</td>
<td>3-SS</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray and Black Silty Clay, trace fine Sand and Organic Matter (Possible Fill) - Moist</td>
<td>4-SS</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gray Clayey Silt, some fine Sand, trace medium to coarse Sand and fine to coarse Gravel (with Cobbles and/or Boulders, or Possible rubble) (Possible Fill) - Damp</td>
<td>5-ST</td>
<td>--</td>
<td>0.6</td>
<td>0.4</td>
<td></td>
<td>94</td>
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<td>Dₜ = 97.7pcf</td>
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<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td>6-ST</td>
<td>--</td>
<td>0.7</td>
<td>1.0</td>
<td>0.5</td>
<td>25</td>
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<tr>
<td>Gray Silty Clay, trace to little Organic Matter, trace shells - Moist</td>
<td>7-SS</td>
<td>12</td>
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</tr>
<tr>
<td>Gray fine Sand, trace Silt and medium to coarse Sand - Wet</td>
<td>8-SS</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, trace fine Sand (rapid dilatancy) - Wet</td>
<td>9-SS</td>
<td>19</td>
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<td></td>
<td></td>
<td>19</td>
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</tr>
<tr>
<td>Gray Silt, little fine Sand (slow dilatancy) - Wet</td>
<td>10-SS</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Boring terminated at 31 feet

### WATER OBSERVATION DATA

- **WATER ENCOUNTERED DURING DRILLING:** 8.0 ft.  
- **WATER LEVEL AFTER REMOVAL:** 17.5 ft.  
- **CAVE DEPTH AFTER REMOVAL:** 17.6 ft.  
- **WATER LEVEL AFTER HOURS:**

**REMARKS**

- N-value likely affected by frost.  
- $Dₜ$ = Unit weight, dry  

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:**
11

**SURFACE ELEVATION:**
857.8

**COMPLETION DATE:**
2/2/04

**FIELD REPRESENTATIVE:**
Beauford Jones

**PROJECT:**
Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:**
Highland Avenue
Madison, Wisconsin

**GILES PROJECT NUMBER:**
1G-0401015

---

<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td></td>
<td>1-SS</td>
<td>*52</td>
<td>1.0</td>
<td>16</td>
<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td></td>
<td>2-SS</td>
<td>*58</td>
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<td>19</td>
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<tr>
<td>Brown Silty Clay, some fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moist</td>
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<td>3-SS</td>
<td>34</td>
<td>1.0</td>
<td>16</td>
<td></td>
<td>20</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand (with Silt Clay layers and/or lenses), trace medium to coarse Sand (Fill) - Damp</td>
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<td>4-SS</td>
<td>41</td>
<td>1.6</td>
<td>18</td>
<td></td>
<td>93</td>
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<td>Gray Silty fine Sand, trace medium to coarse Sand and fine Gravel (with Silty Clay layers and/or lenses) (Fill) - Damp</td>
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<td>5-SS</td>
<td>11</td>
<td>1.6</td>
<td>10</td>
<td></td>
<td>21</td>
<td>10</td>
<td></td>
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<tr>
<td>Gray Silty Clay, little fine to coarse Sand (Fill) - Moist</td>
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<tr>
<td>Black Organic Clayey Silt - Moist</td>
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<td></td>
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<td></td>
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<tr>
<td>Gray Silty Clay, little fine Sand - Wet</td>
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<td>0.2</td>
<td>16</td>
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</tr>
<tr>
<td>Gray fine Sandy Silt (moderate dilatancy) - Wet</td>
<td></td>
<td>7-SS</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty fine Sand, trace Clay - Wet</td>
<td></td>
<td>8-SS</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, trace fine Sand (moderate dilatancy) - Wet</td>
<td></td>
<td>9-SS</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

**WATER OBSERVATION DATA**

| WATER ENCOUNTERED DURING DRILLING: 15.0 ft.                                      | Remarks: *N-value likely affected by frost. |
| WATER LEVEL AFTER REMOVAL: 17.2 ft.                                              |                                             |
| CAVE DEPTH AFTER REMOVAL: 17.2 ft.                                               |                                             |
| WATER LEVEL AFTER HOURS:                                                          |                                             |
| CAVE DEPTH AFTER HOURS:                                                          |                                             |

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.

---

**GILES ENGINEERING ASSOCIATES, INC.**
Milwaukee  Los Angeles
Madison  Dallas  Atlanta
Washington, D.C.  Orlando
<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;± Brown fine Sand, trace Silt, medium to coarse Sand and fine Gravel (Fill) - Damp</td>
<td>1-SS</td>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18°± to 24°± Frost</td>
</tr>
<tr>
<td>Brown Silty Clay, some fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>2-SS</td>
<td></td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, little fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>3-SS</td>
<td></td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark Gray Silty Clay, trace fine Sand and Organic Matter (Fill) - Moist</td>
<td>4-SS</td>
<td></td>
<td>9</td>
<td>1.1</td>
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<td></td>
<td>25</td>
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</tr>
<tr>
<td>Gray and Brown Silty fine Sand, trace medium to coarse Sand (with Silty Clay layers and/or lenses) (Fill) - Damp</td>
<td>5-SS</td>
<td></td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td>6-SS</td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>238</td>
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<tr>
<td>Gray Silty Clay, trace fine Sand and Organic Matter - Moist</td>
<td>7-SS</td>
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<td>8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.4</td>
<td>38</td>
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</tr>
<tr>
<td>Brown fine Sand, trace Silt and medium Sand - Wet</td>
<td>8-SS</td>
<td></td>
<td>17</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silt, trace Clay and fine Sand (with fine Sand layers and/or lenses) - Very Moist</td>
<td>9-SS</td>
<td></td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, little fine Sand, trace Clay - Wet</td>
<td>10-SS</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

**WATER OBSERVATION DATA**

| WATER ENCOUNTERED DURING DRILLING: 18.0 ft.                                       |                   | REMARKS |
| WATER LEVEL AFTER REMOVAL: 15.0 ft.                                               |                    | * N-value likely affected by frost. |
| CAVE DEPTH AFTER REMOVAL: 17.5 ft.                                                 |                    |       |
| WATER LEVEL AFTER HOURS:                                                           |                    |       |
| CAVE DEPTH AFTER HOURS:                                                           |                    |       |

Changes in strata indicated by lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
# Record of Subsurface Exploration

**Boring No. & Location:**
- 13

**Surface Elevation:**
- 859.5

**Completion Date:**
- 2/2/04

**Project Location:**
- Highland Avenue
- Madison, Wisconsin

**Field Representative:**
- Beauford Jones

**Giles Project Number:**
- 1G-0401015

## Material Description

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>( q_u ) (psf)</th>
<th>( q_d ) (psf)</th>
<th>( q_s ) (psf)</th>
<th>W (%)</th>
<th>PID</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>55</td>
<td>2.0</td>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
</tr>
<tr>
<td>8'± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Brown-Gray Silty Clay, trace fine to coarse Sand and fine Gravel (Fill) - Moist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand, trace medium to coarse Sand and fine Gravel (with Silt layers and/or lenses) (Fill) - Damp</td>
<td>3-SS</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, trace fine to coarse Sand and Gravel (Fill) - Moist</td>
<td>4-SS</td>
<td>38</td>
<td>0.8</td>
<td></td>
<td></td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td>5-SS</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty fine Sand (with Silty Clay layers and/or lenses) - Wet</td>
<td>6-SS</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty fine Sand (with Clayey Silt layers and/or lenses) - Wet</td>
<td>7-SS</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, little fine Sand (moderate dilatancy) - Wet</td>
<td>8-SS</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, trace fine Sand (slow dilatancy) - Wet</td>
<td>9-SS</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

## Water Observation Data

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>* N-value likely affected by frost.</td>
</tr>
</tbody>
</table>

- **Water Encountered during Drilling:** 15.0 ft.
- **Water Level After Removal:** 18.2 ft.
- **Cave Depth After Removal:** 18.2 ft.
- **Water Level After Hours:** 18.3 ft.
- **Cave Depth After Hours:**

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
# Record of Subsurface Exploration

**Boring No. & Location:** 14  
**Surface Elevation:** 862.7  
**Completion Date:** 1/29/04  
**Field Representative:** Beauford Jones  
**Giles Project Number:** 1G-0401015

## Material Description

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>18'</td>
<td>Dark Brown Silt; trace Clay, fine Sand and Organic Matter (Topsoil Fill) - Moist</td>
<td>1-SS</td>
<td>*70</td>
<td></td>
<td></td>
<td>18</td>
<td></td>
<td>24&quot; to 36&quot; Frost</td>
</tr>
<tr>
<td>Brown fine Sand, little fine to coarse Gravel, trace Silt and medium to coarse Sand (Fill) - Damp</td>
<td>2-SS</td>
<td>*40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark Brown Silty Clay, little fine Sand, trace medium to coarse Sand (Fill) - Damp</td>
<td>3-SS</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand, trace medium to coarse Sand (with Silty Clay layers and/or lenses) (Fill) - Moist</td>
<td>4-SS</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand, trace medium to coarse Sand (with Silty Clay layers and/or lenses) (Fill) - Moist</td>
<td>5-SS</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td>6-SS</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown and Gray mottled fine Sandy Silt, little medium to coarse Sand, trace fine to coarse Gravel - Damp</td>
<td>7-SS</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silt, little fine Sand (slow dilatancy) - Wet</td>
<td>8-SS</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Clayey Silt, trace fine Sand - Moist</td>
<td>9-SS</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty Clay, trace fine Sand - Moist</td>
<td>10-SS</td>
<td>11</td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

## Water Observation Data

- **Water Encountered During Drilling:** 20.0 ft.  
- **Water Level After Removal:** 18.5 ft.  
- **Cave Depth After Removal:** 19.1 ft.  
- **Water Level After Hours:**  
- **Cave Depth After Hours:**

* N-value likely affected by frost.

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# Record of Subsurface Exploration

**Boring No. & Location:**

15

**Surface Elevation:**

863.2

**Completion Date:**

1/31/04

**Field Representative:**

Ryan Fett

**Giles Project Number:**

1G-0401015

---

**Material Description**

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>N</th>
<th>Q_u (tsf)</th>
<th>Q_p (tsf)</th>
<th>Q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>1</td>
<td>73</td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td>36'± Frost</td>
<td></td>
</tr>
<tr>
<td>7'± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>2</td>
<td>44</td>
<td> </td>
<td> </td>
<td> </td>
<td>16</td>
<td> </td>
<td></td>
</tr>
<tr>
<td>Brown Silty Clay, little fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>3-SS</td>
<td>5</td>
<td>20</td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark Gray Silty Clay, little fine to coarse Sand (Fill) - Moist</td>
<td>4-SS</td>
<td>4</td>
<td>6</td>
<td> </td>
<td>0.5</td>
<td> </td>
<td>12</td>
<td> </td>
<td></td>
</tr>
<tr>
<td>Brown Silty Clay, some fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moist</td>
<td>5-SS</td>
<td>5</td>
<td>6</td>
<td> </td>
<td>1.5</td>
<td> </td>
<td>18</td>
<td> </td>
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<tr>
<td>Gray Silty Clay, little fine Sand (possible Fill) - Moist</td>
<td>6-SS</td>
<td>6</td>
<td>9</td>
<td> </td>
<td> </td>
<td> </td>
<td>94</td>
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</tr>
<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td>7-SS</td>
<td>10</td>
<td>10</td>
<td> </td>
<td>1.6</td>
<td> </td>
<td>1.5</td>
<td>0.6</td>
<td>48</td>
</tr>
<tr>
<td>Dark Gray Silty Clay, trace fine Sand and Organic Matter - Moist</td>
<td>8-SS</td>
<td>15</td>
<td>5</td>
<td> </td>
<td>1.6</td>
<td> </td>
<td>1.5</td>
<td>0.6</td>
<td>48</td>
</tr>
<tr>
<td>Brown fine Sand, trace Silt and medium Sand - Wet</td>
<td>9-SS</td>
<td>20</td>
<td>20</td>
<td> </td>
<td>21</td>
<td> </td>
<td> </td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silt, trace fine Sand (moderate dilatancy) - Wet</td>
<td>10-SS</td>
<td>25</td>
<td>25</td>
<td> </td>
<td>17</td>
<td> </td>
<td>17</td>
<td> </td>
<td></td>
</tr>
<tr>
<td>Brown Silty Clay, trace fine to medium Sand - Moist</td>
<td>11-SS</td>
<td>30</td>
<td>30</td>
<td> </td>
<td>8</td>
<td> </td>
<td>1.2</td>
<td>1.0</td>
<td>21</td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

**Water Observation Data**

**Water Encountered During Drilling:** 18.5 ft.

**Water Level After Removal:**

**Cave Depth After Removal:**

**Water Level After Hours:**

Remarks:

* N-value likely affected by frost.

**Notes:**

- Pressuremeter tests conducted to 21±, 25± and 27± feet. Refer to Figure Nos. 5, 6 and 7.
- Temporary groundwater observation well installed at the completion of drilling. Bottom of well set at 29± feet below grade.

Changes in strata indicated by lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
### RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:**
16

**SURFACE ELEVATION:**
863.3

**COMPLETION DATE:**
1/31/04

**FIELD REPRESENTATIVE:**
Ryan Fett

**PROJECT:**
Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:**
Highland Avenue

**GILES PROJECT NUMBER:**
1G-0401015

---

#### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Description</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>$q_u$ (tsf)</th>
<th>$q_p$ (tsf)</th>
<th>$q_r$ (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;+ asphaltic concrete pavement</td>
<td></td>
<td>1-SS</td>
<td><em>50/4</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36&quot;+ Frost</td>
</tr>
<tr>
<td>8&quot;+ Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td></td>
<td>2-SS</td>
<td>*47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark Brown and Brown Silty Clay, trace fine to coarse Sand (Fill) - Moist</td>
<td></td>
<td>5-SS</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sand; trace Silt, medium to coarse Sand and fine Gravel (with Silty Clay layers and/or lenses) (Fill) - Damp</td>
<td></td>
<td>4-SS</td>
<td>50/5</td>
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<tr>
<td>Brown-Gray Silty fine Sand, little fine to coarse Sand and Gravel (with Silty Clay layers and/or lenses) (Fill) - Damp</td>
<td></td>
<td>10-SS</td>
<td>35</td>
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</tr>
<tr>
<td>Black Silty Clay, trace fine to coarse Sand and Organic Matter (Possible Fill) - Moist</td>
<td></td>
<td>15-SS</td>
<td>15</td>
<td>1.8</td>
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<td>Brown-Gray Clayey fine Sand, trace medium to coarse Sand - Moist</td>
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<td>20-SS</td>
<td>7</td>
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<tr>
<td>Brown fine Sand, trace Silt and medium Sand - Wet</td>
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<td>25-SS</td>
<td>19</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silt, trace Clay and fine Sand (slow dilatancy) - Wet</td>
<td></td>
<td>30-SS</td>
<td>16</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

#### WATER OBSERVATION DATA

- **WATER ENCOUNTERED DURING DRILLING:** 19.5 ft.
- **WATER LEVEL AFTER REMOVAL:** None

**REMARKS**

- N-value likely affected by frost.
- **CAVE DEPTH AFTER REMOVAL:** 17.5 ft.
- **WATER LEVEL AFTER HOURS:**

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
### Record of Subsurface Exploration

**BORING NO. & LOCATION:**
17

**SURFACE ELEVATION:**
863.4

**COMPLETION DATE:**
1/31/04

**FIELD REPRESENTATIVE:**
Ryan Fett

---

**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5&quot; 5' Dark Brown fine Sandy Silt, trace Organic Matter (Topsoil Fill) - Moist</td>
<td>1-SS</td>
<td>&quot;50/5&quot;</td>
<td></td>
<td>20</td>
<td></td>
<td>24&quot;± Frost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brown Silty fine Sand (with Silty Clay layers and/or lenses) (Fill) - Moist</td>
<td>2-SS</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brown fine Sand; trace Silt, medium to coarse Sand and fine Gravel (Fill) - Damp</td>
<td>5-SS</td>
<td>20</td>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brown Clayey fine Sand, little medium to coarse Sand (Fill) - Moist</td>
<td>4-SS</td>
<td>25</td>
<td></td>
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<td>Brown Silty Clay, trace fine Sand (Fill) - Moist</td>
<td>10-SS</td>
<td>12</td>
<td></td>
<td>10</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Black Silty Clay, little Organic Matter (with Silty fine Sand layers and/or lenses) (Possible Fill) - Moist</td>
<td>6-SS</td>
<td>14</td>
<td>1.1</td>
<td>0.7</td>
<td>22</td>
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<tr>
<td></td>
<td>Brown fine Sand, trace Silt and medium to coarse Sand - Wet</td>
<td>7-SS</td>
<td>10</td>
<td>1.2</td>
<td>19</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Brown Silt, trace fine Sand (with Silty fine Sand layers and/or lenses) - Moist</td>
<td>20-SS</td>
<td>10</td>
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<tr>
<td></td>
<td>Boring terminated at 31 feet</td>
<td>25-SS</td>
<td>7</td>
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**WATER OBSERVATION DATA**

<table>
<thead>
<tr>
<th>WATER ENCOUNTERED DURING DRILLING: 19.5 ft.</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER LEVEL AFTER REMOVAL: 17.0 ft.</td>
<td>* N-value likely affected by frost.</td>
</tr>
<tr>
<td>CAVE DEPTH AFTER REMOVAL: 19.5 ft.</td>
<td></td>
</tr>
<tr>
<td>WATER LEVEL AFTER HOURS:</td>
<td></td>
</tr>
<tr>
<td>CAVE DEPTH AFTER HOURS:</td>
<td></td>
</tr>
</tbody>
</table>

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Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:**
18

**SURFACE ELEVATION:**
857.5

**COMPLETION DATE:**
2/3/04

**PROJECT:**
Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:**
Highland Avenue

**FIELD REPRESENTATIVE:**
Beauford Jones

**GILES PROJECT NUMBER:** 1G-0401015

<table>
<thead>
<tr>
<th>MATERIAL DESCRIPTION</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
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<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>7-SS</td>
<td>51</td>
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<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>48</td>
<td>0.7</td>
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<tr>
<td>Dark Brown Silty Clay, trace fine to coarse Sand and Organic Matter (Fill) - Moist</td>
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</tr>
<tr>
<td>Gray-Brown Clayey Silt, trace fine Sand (Fill) - Moist</td>
<td>5-SS</td>
<td>5</td>
<td>1.2</td>
<td>0.3</td>
<td>0.6</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gray and Black Silty Clay, trace shells and Organic Matter (Fill) - Moist</td>
<td>4-SS</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Dark Brown Silty Clay, trace fine to coarse Sand and Gravel (Fill) - Moist</td>
<td>10-SS</td>
<td>5</td>
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<tr>
<td>Brown and Gray Silty Clay, trace fine to coarse Sand (Possible Fill) - Moist</td>
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</tr>
<tr>
<td>Gray Silty Clay, trace Organic Matter - Moist</td>
<td>6-SS</td>
<td>9</td>
<td>3.3</td>
<td>1.8</td>
<td></td>
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<tr>
<td>Gray Silty Clay, little fine Sand, trace medium Sand - Moist</td>
<td>15-SS</td>
<td>11</td>
<td>1.6</td>
<td>1.4</td>
<td>0.7</td>
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<td></td>
<td></td>
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<tr>
<td>Brown Silty fine Sand (slow dilatancy) - Wet</td>
<td>8-SS</td>
<td>15</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Brown Silt, trace fine Sand (moderate dilatancy) - Wet</td>
<td>25-SS</td>
<td>21</td>
<td></td>
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<td></td>
<td>30-SS</td>
<td>24</td>
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</table>

Boring terminated at 31 feet

**WATER OBSERVATION DATA**

<table>
<thead>
<tr>
<th>WATER ENCOUNTERED DURING DRILLING: 20.0 ft.</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER LEVEL AFTER REMOVAL: 15.3 ft.</td>
<td>* N-value likely affected by frost.</td>
</tr>
<tr>
<td>CAVE DEPTH AFTER REMOVAL: 16.4 ft.</td>
<td></td>
</tr>
<tr>
<td>WATER LEVEL AFTER HOURS:</td>
<td></td>
</tr>
<tr>
<td>CAVE DEPTH AFTER HOURS:</td>
<td></td>
</tr>
</tbody>
</table>

Changes in strata indicated by lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:** 19

**SURFACE ELEVATION:** 864.4

**COMPLETION DATE:** 2/10/04

**FIELD REPRESENTATIVE:** Beauford Jones

**PROJECT:** Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:** Highland Avenue

**GILES PROJECT NUMBER:** 1G-0401015

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### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>(q_u) (tsf)</th>
<th>(q_p) (tsf)</th>
<th>(q_s) (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>100/10</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>24&quot;± to 36&quot;± Frost</td>
<td></td>
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<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>89</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sandy Silt, little Clay, trace medium to coarse Sand and fine to coarse Gravel (Fill) - Moist</td>
<td>3-SS</td>
<td>22</td>
<td>1.5</td>
<td></td>
<td></td>
<td>11</td>
<td></td>
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<tr>
<td>Dark Gray Silty Clay, some fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moist</td>
<td>4-SS</td>
<td>19</td>
<td>2.9</td>
<td>3.5</td>
<td></td>
<td>13</td>
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<tr>
<td>Brown Silty Clay, trace medium to coarse Sand and fine Gravel (with Silty fine Sand layers and/or lenses) (Fill) - Moist</td>
<td>5-SS</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, some fine Sand, little medium to coarse Sand (Fill) - Moist</td>
<td>6-SS</td>
<td>17</td>
<td>1.2</td>
<td>1.4</td>
<td></td>
<td>17</td>
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<tr>
<td>Brown fine Sand, trace medium to coarse Sand (with Silty Clay layers and/or lenses) (Fill) - Damp</td>
<td>7-SS</td>
<td>14</td>
<td>2.2</td>
<td></td>
<td></td>
<td>32</td>
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<tr>
<td>Gray Silty Clay, some fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>8-SS</td>
<td>21</td>
<td></td>
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</tr>
<tr>
<td>Black Silty Clay, little Organic Matter (Possible Fill) - Moist</td>
<td>9-SS</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sand, little Silt - Wet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand (with Silt layers and/or lenses) (rapid dilatancy) - Wet</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty Clay, trace fine Sand - Moist</td>
<td>10-SS</td>
<td>15</td>
<td>2.0</td>
<td>1.2</td>
<td>0.6</td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boring terminated at 31 feet

---

### WATER OBSERVATION DATA

<table>
<thead>
<tr>
<th></th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER ENCOUNTERED DURING DRILLING: 19.5 ft.</td>
<td>* N-value likely affected by frost.</td>
</tr>
<tr>
<td>WATER LEVEL AFTER REMOVAL: None</td>
<td></td>
</tr>
<tr>
<td>CAVE DEPTH AFTER REMOVAL: 23.7 ft.</td>
<td></td>
</tr>
<tr>
<td>WATER LEVEL AFTER HOURS:</td>
<td></td>
</tr>
<tr>
<td>CAVE DEPTH AFTER HOURS:</td>
<td></td>
</tr>
</tbody>
</table>

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
# RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:**
20

**SURFACE ELEVATION:**
864.0

**COMPLETION DATE:**
2/10/04

**FIELD REPRESENTATIVE:**
Beauford Jones

**PROJECT:**
Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:**
Highland Avenue

**GILES PROJECT NUMBER:**
1G-0401015

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## MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Feet Below</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>( q_u ) (tsf)</th>
<th>( q_d ) (tsf)</th>
<th>( q_s ) (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>*100</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td></td>
<td>24&quot;± to 36&quot;± Frost</td>
</tr>
<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>*70</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand, little Clay, trace medium to coarse Sand (Fill) - Moist</td>
<td>3-SS</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>14</td>
<td></td>
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<tr>
<td>Brown Silt, little Clay and fine Sand, trace medium to coarse Sand and fine to coarse Gravel (Fill) - Moist</td>
<td>4-SS</td>
<td>18</td>
<td>4.0</td>
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<tr>
<td>Brown Silty Clay, trace fine to coarse Sand (with Silty fine Sand layers and/or lenses) (Fill) - Moist</td>
<td>5-SS</td>
<td>23</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Brown fine Sand, little fine to coarse Gravel, trace Silt and medium to coarse Sand (Fill) - Damp</td>
<td>6-SS</td>
<td>11</td>
<td>2.1</td>
<td>2.7</td>
<td>-</td>
<td>17</td>
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<tr>
<td>Brown and Gray Silty Clay, trace fine Sand (Possible Fill) - Moist</td>
<td>7-SS</td>
<td>17</td>
<td>2.4</td>
<td>-</td>
<td>-</td>
<td>18</td>
<td></td>
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<tr>
<td>Dark Brown and Gray Silty Clay, trace fine medium Sand (Possible Fill) - Moist</td>
<td>8-SS</td>
<td>26</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Brown fine Sand, trace Silt - Wet</td>
<td>9-SS</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17</td>
<td></td>
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<tr>
<td>Brown fine Sandy Silt (with Silt and fine to medium Sand layers and/or lenses) (moderate dilatancy) - Wet</td>
<td>10-SS</td>
<td>18</td>
<td>1.3</td>
<td>-</td>
<td>-</td>
<td>18</td>
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</table>

Boring terminated at 31 feet

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## WATER OBSERVATION DATA

<table>
<thead>
<tr>
<th></th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER ENCONCERED DURING DRILLING: 14.5 ft.</td>
<td>* N-value likely affected by frost.</td>
</tr>
<tr>
<td>WATER LEVEL AFTER REMOVAL: 24.3 ft.</td>
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</tr>
<tr>
<td>CAVE DEPTH AFTER REMOVAL: 24.5 ft.</td>
<td></td>
</tr>
<tr>
<td>WATER LEVEL AFTER HOURS:</td>
<td></td>
</tr>
<tr>
<td>CAVE DEPTH AFTER HOURS:</td>
<td></td>
</tr>
</tbody>
</table>

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
### RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 21  
**SURFACE ELEVATION:** 862.7  
**COMPLETION DATE:** 2/3/04  
**FIELD REPRESENTATIVE:** Beauford Jones  
**GILES PROJECT NUMBER:** 1G-0401015

#### MATERIAL DESCRIPTION

<table>
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<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphallic concrete pavement</td>
<td>1-SS</td>
<td>*70</td>
<td>2.0</td>
<td>15</td>
<td>24&quot;± Frost</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Dark Brown Silty Clay, little fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td>3-SS</td>
<td>20</td>
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<tr>
<td>Brown fine Sand, trace Silt and medium to coarse Sand (Fill) - Damp</td>
<td>4-SS</td>
<td>25</td>
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<tr>
<td>Brown Silty fine Sand, trace medium to coarse Sand (Fill) - Wet</td>
<td>5-SS</td>
<td>11</td>
<td>81</td>
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<td>Black Organic Clayey Silt - Moist</td>
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<td>0.5</td>
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<tr>
<td>Gray and Brown mottled Silty Clay, trace fine to medium Sand - Moist</td>
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<td>Brown Silty fine Sand - Wet</td>
<td>8-SS</td>
<td>19</td>
<td>21</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sandy Silt (slow dilatancy) - Wet</td>
<td>9-SS</td>
<td>21</td>
<td>17</td>
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</tr>
</tbody>
</table>

Boring terminated at 31 feet

#### WATER OBSERVATION DATA

- WATER ENCOUNTERED DURING DRILLING: 8.0 ft.
- WATER LEVEL AFTER REMOVAL: 11.2 ft.
- CAVE DEPTH AFTER REMOVAL: 16.2 ft.
- WATER LEVEL AFTER HOURS:  
- CAVE DEPTH AFTER HOURS:  

**REMARKS**

* N-value likely affected by frost.
## RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 22  
**SURFACE ELEVATION:** 859.0  
**COMPLETION DATE:** 2/6/04  
**FIELD REPRESENTATIVE:** Beaudolf Jones

**PROJECT:** Proposed Interdisciplinary Research Complex  
**PROJECT LOCATION:** Highland Avenue  
**FIELD REPRESENTATIVE:** Madison, Wisconsin

**GILES PROJECT NUMBER:** 1G-0401015

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (t/sf)</th>
<th>q_p (t/sf)</th>
<th>q_s (t/sf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>-</td>
<td>100/11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>24&quot;± to 36&quot;± Frost</td>
<td></td>
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<tr>
<td>8&quot;± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>-</td>
<td>*95</td>
<td>-</td>
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<tr>
<td>Brown fine Sand, little Silt and medium to coarse Sand, trace Clay and fine Gravel (Fill) - Damp</td>
<td>3-SS</td>
<td>5</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty Clay, little fine Sand, trace medium to coarse Sand and fine to coarse Gravel (Fill) - Moist</td>
<td>4-SS</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sand, trace Silt and medium to coarse Sand (Fill) - Damp</td>
<td>5-SS</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sand, trace Silt and medium to coarse Sand (with Gray Silty Clay layers and/or lenses) (Fill) - Damp</td>
<td>6-SS</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td>7-SS</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, little fine Sand - Moist</td>
<td>8-SS</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine Sandy Silt (rapid dilatancy) - Wet</td>
<td>9-SS</td>
<td>35</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
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</tr>
<tr>
<td>Gray Silt, trace fine Sand (moderate dilatancy) - Wet</td>
<td>10-SS</td>
<td>40</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Gray Silty Clay, trace fine to coarse Sand - Moist</td>
<td>11-SS</td>
<td>45</td>
<td>-</td>
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<td>-</td>
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<td></td>
</tr>
</tbody>
</table>

### WATER OBSERVATION DATA

| WATER ENCOUNTERED DURING DRILLING: 20.0 ft. | \* N-value likely affected by frost. |
| WATER LEVEL AFTER REMOVAL: None |
| CAVE DEPTH AFTER REMOVAL: |
| WATER LEVEL AFTER HOURS: |
| CAVE DEPTH AFTER HOURS: |

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:** 22  
**SURFACE ELEVATION:** 859.0  
**COMPLETION DATE:** 2/6/04  
**FIELD REPRESENTATIVE:** Beauford Jones  

**PROJECT:** Proposed Interdisciplinary Research Complex  
**PROJECT LOCATION:** Highland Avenue  
**GILES PROJECT NUMBER:** 1G-0401015

**MATERIAL DESCRIPTION**  
<table>
<thead>
<tr>
<th>Feet Below</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Brown Silty fine Sand - Wet</td>
<td>50</td>
<td>13-SS</td>
<td>17</td>
<td></td>
<td></td>
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<tr>
<td>Gray Silty Clay, little fine Sand - Moist</td>
<td>55</td>
<td>14-SS</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty fine Sand, trace medium to coarse Sand and fine to coarse Gravel (with Cobbles and/or Boulders) - Wet</td>
<td>60</td>
<td>15-SS</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty fine to coarse Sand and Gravel (with Cobbles and/or Boulders) - Wet</td>
<td>65</td>
<td>16-SS</td>
<td>50/4&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>17-SS</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>18-SS</td>
<td>50/3&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt Clay, some fine Sand, trace medium to coarse Sand and fine to coarse Gravel - Moist</td>
<td>80</td>
<td>19-SS</td>
<td>55</td>
<td>5.3</td>
<td>3.5</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>20-SS</td>
<td>74</td>
<td>4.5*</td>
<td></td>
<td></td>
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<tr>
<td>90</td>
<td>21-SS</td>
<td>190/0.5</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Boring terminated at 90 feet due to auger refusal likely on Cobbles, Boulders or Bedrock

**WATER OBSERVATION DATA**  

**WATER ENCOUNTERED DURING DRILLING:** 20.0 ft.  
**WATER LEVEL AFTER REMOVAL:** None  
**CAVE DEPTH AFTER REMOVAL:**  
**WATER LEVEL AFTER HOURS:**  
**CAVE DEPTH AFTER HOURS:**

**REMARKS**  
*N-value likely affected by frost.*
# RECORD OF SUBSURFACE EXPLORATION

**BORING NO. & LOCATION:** 23  
**SURFACE ELEVATION:** 857.5  
**COMPLETION DATE:** 2/9/04  
**FIELD REPRESENTATIVE:** Beauford Jones  

**PROJECT:** Proposed Interdisciplinary Research Complex  
**PROJECT LOCATION:** Highland Avenue  
**GILES PROJECT NUMBER:** 1G-0401015  

---

## MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Depth Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q&lt;sub&gt;u&lt;/sub&gt; (tsf)</th>
<th>q&lt;sub&gt;p&lt;/sub&gt; (tsf)</th>
<th>q&lt;sub&gt;s&lt;/sub&gt; (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>44± asphaltic concrete pavement</td>
<td>1-SS</td>
<td>88</td>
<td>14</td>
<td>24± to 36± Frost</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>8± Brown fine to coarse Sand and fine Gravel, little Silt (Fill) - Damp</td>
<td>2-SS</td>
<td>62</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand, little medium to coarse Sand and fine Gravel (Fill) - Damp</td>
<td>3-SS</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray-Brown Silty Clay, trace fine to coarse Sand (Fill) - Damp</td>
<td>4-SS</td>
<td>40</td>
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<td></td>
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</tr>
<tr>
<td>Brown fine Sand, trace Silt and medium to coarse Sand (Fill) - Damp</td>
<td>5-SS</td>
<td>26</td>
<td>8</td>
<td></td>
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</tr>
<tr>
<td>Brown Silty Clay, some fine Sand, trace medium to coarse Sand and fine Gravel (Fill) - Moist</td>
<td>6-SS</td>
<td>11</td>
<td>97</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Black Organic Clayey Silt - Moist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, little Clay, trace fine Sand - Moist</td>
<td>7-SS</td>
<td>20</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gray Silt, little Clay, trace fine Sand (with Silty fine Sand layers and/or lenses) - Wet</td>
<td>8-SS</td>
<td>13</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, trace fine Sand - Wet</td>
<td>9-SS</td>
<td>15</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray fine Sandy Silt (slow dilatancy) - Wet</td>
<td>10-SS</td>
<td>16</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, trace fine Sand - Moist</td>
<td>11-SS</td>
<td>12</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray fine Sand, trace Silt - Wet</td>
<td>12-SS</td>
<td>15</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray fine Sand, little Silt, trace fine Gravel - Wet</td>
<td>13-SS</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14-SS</td>
<td>11</td>
<td></td>
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</tbody>
</table>

---

## WATER OBSERVATION DATA

- WATER ENCOUNTERED DURING DRILLING: 24.5 ft.
- WATER LEVEL AFTER REMOVAL: None
- CAVE DEPTH AFTER REMOVAL:
- WATER LEVEL AFTER HOURS:
- CAVE DEPTH AFTER HOURS:

* N-value likely affected by frost.

---

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:** 23

**SURFACE ELEVATION:** 857.5

**COMPLETION DATE:** 2/9/04

**FIELD REPRESENTATIVE:** Beauford Jones

**PROJECT:** Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:** Highland Avenue

**GILES PROJECT NUMBER:** 1G-0401015

### MATERIAL DESCRIPTION

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
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</thead>
<tbody>
<tr>
<td>55</td>
<td>15-SS</td>
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<tr>
<td>60</td>
<td>16-SS</td>
<td>32</td>
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<tr>
<td>65</td>
<td>17-SS</td>
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<td>70</td>
<td>18-SS</td>
<td>83</td>
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<td>9</td>
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<td>75</td>
<td>19-SS</td>
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<td>20-SS</td>
<td>100/9</td>
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<td></td>
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<tr>
<td>85</td>
<td>21-SS</td>
<td>91</td>
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<td></td>
<td></td>
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<td>22-SS</td>
<td>91</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>95</td>
<td>23-SS</td>
<td>32</td>
<td>2.2</td>
<td>3.5</td>
<td></td>
<td>20</td>
<td></td>
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<tr>
<td>100</td>
<td>24-SS</td>
<td>42</td>
<td>3.1</td>
<td>4.5+</td>
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</table>

Boring terminated at 101 feet

### WATER OBSERVATION DATA

<table>
<thead>
<tr>
<th>WATER ENCOUNTERED DURING DRILLING:</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.5 ft.</td>
<td>* N-value likely affected by frost.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>WATER LEVEL AFTER REMOVAL:</th>
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</thead>
<tbody>
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</table>

<table>
<thead>
<tr>
<th>CAVE DEPTH AFTER REMOVAL:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>WATER LEVEL AFTER HOURS:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CAVE DEPTH AFTER HOURS:</th>
</tr>
</thead>
</table>

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:**
- 24

**SURFACE ELEVATION:**
- 861.9

**COMPLETION DATE:**
- 2/2/04

**FIELD REPRESENTATIVE:**
- Beauford Jones

**PROJECT:**
- Proposed Interdisciplinary Research Complex

**PROJECT LOCATION:**
- Highland Avenue

**GILES PROJECT NUMBER:**
- 1G-0401015

---

**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>q_u (tsf)</th>
<th>q_p (tsf)</th>
<th>q_s (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;± Dark Brown Silty Clay, little fine Sand, trace Organic Matter (Topsoil Fill) - Moist</td>
<td></td>
<td>1-SS</td>
<td>*66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12&quot;± Frost</td>
</tr>
<tr>
<td>Brown fine Sand, trace Silt and medium to coarse Sand (Fill) - Damp</td>
<td></td>
<td>2-SS</td>
<td>22</td>
<td>4.5+</td>
<td></td>
<td></td>
<td>18</td>
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<tr>
<td>Dark Brown Silty Clay, little fine Sand (Fill) - Moist</td>
<td></td>
<td>3-SS</td>
<td>16</td>
<td>3.0</td>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown and Gray Silt Clay, some fine Sand, trace medium to coarse Sand (Fill) - Moist</td>
<td></td>
<td>4-SS</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay, trace fine to coarse Sand (with fine Sand layers and/or lenses) (Fill) - Moist</td>
<td></td>
<td>5-SS</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown and Gray fine Sandy Silt, little medium to coarse Sand and fine to coarse Gravel, trace Clay (with Cobbles and/or Boulders) (Fill) - Damp</td>
<td></td>
<td>6-SS</td>
<td>41</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Dark Gray Silty Clay, trace to little Organic Matter (Possible Fill) - Moist</td>
<td></td>
<td>7-SS</td>
<td>4</td>
<td>1.0</td>
<td>0.8</td>
<td>0.5</td>
<td>33</td>
<td></td>
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<tr>
<td>Brown-Gray Silt, little fine Sand (rapid dilatancy) - Wet</td>
<td></td>
<td>9-SS</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silt, trace fine Sand (with fine Sand layers and/or lenses) - Wet</td>
<td></td>
<td>10-SS</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td></td>
<td></td>
</tr>
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<td></td>
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<td>11-SS</td>
<td>17</td>
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<tr>
<td>Gray Silty Clay, trace fine Sand - Moist</td>
<td></td>
<td>12-SS</td>
<td>19</td>
<td>3.3</td>
<td>2.0</td>
<td></td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Silty fine Sand, trace medium to coarse Sand - Wet</td>
<td></td>
<td>13-SS</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown fine to medium Sand, trace Silt, coarse Sand and fine to coarse Gravel - Wet</td>
<td></td>
<td>14-SS</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>15-SS</td>
<td>19</td>
<td></td>
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</tr>
</tbody>
</table>

---

**WATER OBSERVATION DATA**

| WATER ENCOUNTERED DURING DRILLING: 24.5 ft.                                   | * N-value likely affected by frost. |
| WATER LEVEL AFTER REMOVAL: None                                               |                                   |
| CAVE DEPTH AFTER REMOVAL: 11.3 ft.                                            |                                   |
| WATER LEVEL AFTER HOURS:                                                       |                                   |
| CAVE DEPTH AFTER HOURS:                                                        |                                   |

---

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
**RECORD OF SUBSURFACE EXPLORATION**

**BORING NO. & LOCATION:** 24

**SURFACE ELEVATION:** 861.9

**COMPLETION DATE:** 2/2/04

**PROJECT LOCATION:** Highland Avenue

**FIELD REPRESENTATIVE:** Beauford Jones

**PROJECT:** Proposed Interdisciplinary Research Complex

**GILES PROJECT NUMBER:** 1G-0401015

---

**MATERIAL DESCRIPTION**

<table>
<thead>
<tr>
<th>Feet Below Surface</th>
<th>Sample No. &amp; Type</th>
<th>N</th>
<th>( q_u ) (tsf)</th>
<th>( q_p ) (tsf)</th>
<th>( q_s ) (tsf)</th>
<th>W (%)</th>
<th>PID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown fine to medium Sand, trace Silt, coarse Sand and fine to coarse Gravel - Wet (continued)</td>
<td>55</td>
<td>16-SS</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay (with Silt layers and/or lenses) - Moist</td>
<td>60</td>
<td>17-SS</td>
<td>63</td>
<td>2.4</td>
<td>2.0</td>
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<td>65</td>
<td>18-SS</td>
<td>39</td>
<td>1.2</td>
<td>2.3</td>
<td>20</td>
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</tr>
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<td></td>
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<td>19-SS</td>
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<td>4.3</td>
<td>2.7</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>20-SS</td>
<td>45</td>
<td>3.4</td>
<td>4.0</td>
<td>20</td>
<td></td>
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<tr>
<td></td>
<td>80</td>
<td>21-SS</td>
<td>63</td>
<td>3.0</td>
<td></td>
<td>18</td>
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<tr>
<td></td>
<td>85</td>
<td>22-SS</td>
<td>65</td>
<td>2.2</td>
<td>3.0</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>23-SS</td>
<td>52</td>
<td>2.6</td>
<td>3.5</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark Gray Silt, trace Clay and fine Sand - Moist</td>
<td>95</td>
<td>24-SS</td>
<td>47</td>
<td>3.3</td>
<td>2.0</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Silty Clay (with Silt layers and/or lenses) - Moist</td>
<td>100</td>
<td>25-SS</td>
<td>40</td>
<td>2.9</td>
<td>3.7</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WATER OBSERVATION DATA**

- **WATER ENCOUNTERED DURING DRILLING:** 24.5 ft.
- **WATER LEVEL AFTER REMOVAL:** None
- **CAVE DEPTH AFTER REMOVAL:** 11.3 ft.
- **WATER LEVEL AFTER HOURS:**

**REMARKS**

* N-value likely affected by frost.

---

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between borings. Location of Test Boring is shown on the Boring Location Plan.
APPENDIX B

FIELD PROCEDURES

The field operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) designation D 420 entitled "Standard Guide for Sampling Soil and Rock" and/or other relevant specifications. Soil samples were preserved and transported to Giles's laboratory in general accordance with the procedures recommended by ASTM designation D 4220 entitled "Standard Practice for Preserving and Transporting Soil Samples." Brief descriptions of the sampling, testing and field procedures commonly performed by Giles are provided herein.
GENERAL FIELD PROCEDURES

Test Boring Elevations

The ground surface elevations reported on the Test Boring Logs are referenced to the assumed benchmark shown on the Boring Location Plan (Figure 1). Unless otherwise noted, the elevations were determined with a conventional hand-level and are accurate to within about 1 foot.

Test Boring Locations

The test borings were located on-site based on the existing site features and/or apparent property lines. Dimensions illustrating the approximate boring locations are reported on the Boring Location Plan (Figure 1).

Water Level Measurement

The water levels reported on the Test Boring Logs represent the depth of “free” water encountered during drilling and/or after the drilling tools were removed from the borehole. Water levels measured within a granular (sand and gravel) soil profile are typically indicative of the water table elevation. It is usually not possible to accurately identify the water table elevation within cohesive (clayey) soils, since the rate of seepage is slow. The water table elevation within cohesive soils must therefore be determined over a period of time with groundwater observation wells.

It must be recognized that the water table may fluctuate seasonally and during periods of heavy precipitation. Depending on the subsurface conditions, water may also become perched above the water table, especially during wet periods.

Borehole Backfilling Procedures

Each borehole was backfilled upon completion of the field operations. If potential contamination was encountered, and/or if required by state or local regulations, boreholes were backfilled with an “impervious” material (such as bentonite slurry). Borings that penetrated pavements, sidewalks, etc. were “capped” with Portland Cement concrete, asphaltic concrete, or a similar surface material. It must, however, be recognized that the backfill material may settle, and the surface cap may subside, over a period of time. Further backfilling and/or re-surfacing by Giles’ client or the property owner may be required.
FIELD SAMPLING AND TESTING PROCEDURES

Auger Sampling (AU)

Soil samples are removed from the auger flights as an auger is withdrawn above the ground surface. Such samples are used to determine general soil types and identify approximately soil stratifications. Auger samples are highly disturbed and are therefore not typically used for geotechnical strength testing.

Split-Barrel Sampling (SS) – (ASTM D-1586)

A split-barrel sampler with a 2-inch outside diameter is driven into the subsoil with a 140-pound hammer, free-falling a vertical distance of 30 inches. The summation of hammer-blows required to drive the sampler the final 12 inches of an 18-inch sample interval is defined as the “Standard Penetration Resistance” or “N-value.” The N-value is representative of the soils’ resistance to penetration. The N-value is therefore an index of the relative density of granular soils and the comparative consistency of cohesive soils. A soil sample is collected from each SPT interval.

Shelby Tube Sampling (ST) – (ASTM D-1587)

A relatively undisturbed soil sample is collected by hydraulically advancing a thin-walled Shelby Tube sampler into a soil mass. Shelby Tubes have a sharp cutting edge and are commonly 2 to 5 inches in diameter. Unless otherwise noted, Giles uses 3-inch diameter tubes.

Bulk Sample (BS)

A relatively large volume of soil is collected with a shovel or other manually-operated tool. The sample is typically transported to Giles’ materials laboratory in a sealed bag or bucket.

Dynamic Cone Penetration Test (DC) – (ASTM STP 399)

This test is conducted by driving a 1.5-inch-diameter cone into the subsoil using a 15-pound steel ring (hammer), free-falling a vertical distance of 20 inches. The number of hammer-blows required to drive the cone 1½ inches is an indication of the soil strength and density, and is defined as “N.” The Dynamic Cone Penetration test is commonly conducted in hand auger borings, test pits and within excavated trenches.

-Continued-
**Ring-Lined Barrel Sampling – (ASTM D 3550)**

In this procedure, a ring-lined barrel sampler is used to collect soil samples for classification and laboratory testing. This method provides samples that fit directly into laboratory test instruments without additional handling/disturbance.

**Sampling and Testing Procedures**

The field testing and sampling operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the field testing (i.e. N-values) are reported on the Test Boring Logs. Explanations of the terms and symbols shown on the logs are provided on the appendix enclosure entitled “General Notes.”
APPENDIX C

LABORATORY TESTING AND CLASSIFICATION

The laboratory testing was conducted under the supervision of a geotechnical engineer in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specification. Brief descriptions of laboratory tests commonly performed by Giles are provided herein.
LABORATORY TESTING AND CLASSIFICATION

In this procedure, soil samples are ‘scanned’ in Giles’ analytical laboratory using a Photoionization Detector (PID). The instrument is equipped with an 11.7 eV lamp calibrated to a Benzene Standard and is capable of detecting a minute concentration of certain Volatile Organic Compound (VOC) vapors, such as those commonly associated with petroleum products and some solvents. Results of the PID analysis are expressed in IFNu (manufacturer’s) units rather than actual concentration.

Moisture Content (w) (ASTM D2216)

Moisture content is defined as the ratio of the weight of water contained within a soil sample to the weight of the dry solids within the sample. Moisture content is expressed as a percentage.

Unconfined Compressive Strength (qu) (ASTM D2166)

An axial load is applied at a uniform rate to a cylindrical soil sample. The unconfined compressive strength is the maximum stress obtained or the stress when 15% axial strain is reached, whichever occurs first.

Calibrated Penetrometer Resistance (ap)

The small, cylindrical tip of a hand-held penetrometer is pressed into a soil sample to a prescribed depth to measure the soils capacity to resist penetration. This test is used to evaluate unconfined compressive strength.

Vane-Shear Strength (qs)

The blades of a vane are inserted into the flat surface of a soil sample and the vane is rotated until failure occurs. The maximum shear resistance measured immediately prior to failure is taken as the vane-shear strength.

Loss-On-Ignition (ASTM D2974; Method C)

The Loss-On-Ignition (L.O.I.) test is used to determine the organic content of a soil sample. This procedure is conducted by heating a dry soil sample to 440°C in order to burn-off or “ash” organic matter present within the sample. The L.O.I. value is the ratio of the weight lost due to ignition compared to the initial weight of the dry sample. L.O.I. is expressed as a percentage.
Particle Size Distribution (ASTM D 421, D 422, and D 1140)

This test is performed to determine the distribution of specific particle sizes (diameters) within a soil sample. The distribution of coarse-grained soil particles (sand and gravel) is determined from a “sieve analysis,” which is conducted by passing the sample through a series of nested sieves. The distribution of fine-grained soil particles (silt and clay) is determined from a “hydrometer analysis,” which is based on the sedimentation of particles suspended in water.

Consolidation Test (ASTM D 2435)

In this procedure, a series of cumulative vertical loads are applied to a small, laterally confined soil sample. During each load increment, vertical compression (consolidation) of the sample is measured over a period of time. Results of this test are used to estimated settlement and time rate of settlement.

Classification of Samples

Each soil sample was visually-manually classified, based on texture and plasticity, in general accordance with the Unified Soil Classification System (ASTM D-2488-75). The classifications are reported on the Test Boring Logs.

Laboratory Testing

The laboratory testing operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the laboratory tests are provided on the Test Boring Logs or other appendix enclosures. Explanation of the terms and symbols used on the logs is provided on the appendix enclosure entitled “General Notes.”
The CBR test is used for evaluation of a soil subgrade for pavement design. The test consists of measuring the force required for a 3-square-inch cylindrical piston to penetrate 0.1 or 0.2 inches into a compacted soil sample. The result is expressed as a percent of force required to penetrate a standard compacted crushed stone.

Unless a CBR test has been specifically requested by the client or heavy traffic loads are expected, the CBR is estimated from published charts, based on soil classification and strength characteristics. A typical correlation chart is indicated below.
APPENDIX D

GENERAL INFORMATION AND IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT
GUIDE SPECIFICATIONS FOR SUBGRADE AND GRADE PREPARATION
FOR FILL, FOUNDATION, FLOOR SLAB AND PAVEMENT SUPPORT;
AND SELECTION, PLACEMENT AND COMPACTION OF FILL SOILS
USING STANDARD PROCTOR PROCEDURES

1. Construction monitoring and testing of subgrades for fill, foundation, floor slab and pavement; and fill selection, placement and compaction shall be performed by an experienced soils engineer and/or his representatives.

2. All compaction fill, subgrades, and grades shall be (a) underlain by suitable bearing material, (b) free of all organic, frozen, or other deleterious material, and (c) observed, tested and approved by qualified engineering personnel representing an experienced soils engineer. Preparation of subgrades after stripping vegetation, organic or other unsuitable materials shall consist of (a) proofrolling to detect soil, wet, yielding soils or other unstable materials that must be undercut, (b) scarifying top 6 to 8 inches, (c) moisture conditioning the soils as required, and (d) recompaction to same minimum in-situ density required for similar materials indicated under Item 5. Note: Compaction requirements for pavement subgrade are higher than other areas. Weather and construction equipment may damage compacted fill surface and reworking and retesting may be necessary to assure proper performance.

3. In overexcavation and fill areas, the compacted fill must extend (a) a minimum 1 foot lateral distance beyond the exterior edge of the foundation at bearing grade or pavement at subgrade and down to compacted fill subgrade on a maximum 0.5 (H): 1(V) slope, (b) 1 foot above footing grade outside the building, and (c) to floor subgrade inside the building. Fill shall be placed and compacted on a 5 (H):1 (V) slope or must be stepped or bench as required to flatten if not specifically approved by qualified personnel under the direction of an experienced soils engineer.

4. The compacted fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as “contaminated,” and shall be low-expansive with a maximum Liquid Limit (ASTM D-423) and Plasticity Index (ASTM D-424) of 30 and 15, respectively, unless specifically tested and found to have low expansive properties and approved by an experienced soils engineer. The top 12 inches of compacted fill should have a maximum 3-inch-particle diameter and all underlying compacted fill a maximum 6-inch diameter unless specifically approved by an experienced soils engineer. All fill material must be tested and approved under the direction of an experienced soils engineer prior to placement. If the fill is to provide non-frost susceptible characteristics, it must be classified as a clean GW, GP, SW or SP per Unified Soil Classification System (ASTM D-2487).

5. For structural fill depths less than 20 feet, the density of the structural compacted fill and scarified subgrade and grades shall not be less than 95 percent of the maximum dry density as determined by Standard Proctor (ASTM D-698) with the exception of the top 12 inches of pavement subgrade which shall have a minimum in-situ density of 100 percent of maximum dry density, or 5 percent higher than underlying fill materials. Where the structural fill depth is greater than 20 feet, the portions below 20 feet should have a minimum in-place density of 100 percent of its maximum dry density of 5 percent greater than the top 20 feet. The moisture content of cohesive soil shall not vary by more than –1 to +3 percent and granular soil ±3 percent of the optimum when placed and compacted or recompacted, unless specifically recommended/approved by the soils engineer monitoring the placement and compaction. Cohesive soils with moderate to high expansive potentials (PI >15) should, however, be placed, compacted and maintained prior to construction at a moisture content of 3±1 percent above optimum moisture content to limit future heave. The fill shall be placed in layers with a maximum loose thickness of 8 inches for foundations and 10 inches for floor slabs and pavements, unless specifically approved by the soils engineer taking into consideration the type of materials and compaction equipment being used. The compaction equipment should consist of suitable mechanical equipment specifically designed for soil compaction. Bulldozers or similar tracked vehicles are typically not suitable for compaction.

6. Excavation, filing, subgrade and grade preparation shall be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working platform. Springs or water seepage encountered during grading/foundation construction must be called to the soil engineer’s attention immediately for possible construction procedure revision or inclusion of an underdrain system.

7. Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls (i.e. basement walls and retaining walls) must be properly tested and approved by an experienced soils engineer with consideration for the lateral pressure used in the wall design.

8. Wherever, in the opinion of the soils engineer or the Owner’s Representatives, an unstable condition is being created either by cutting or filling, the work shall not proceed into that are until an appropriate geotechnical exploration and analysis has been performed and the grading plan revised, if found necessary.
GENERAL COMMENTS

The soil samples obtained during the subsurface exploration will be retained for a period of thirty days. If no instructions are received, they will be disposed of at that time.

This report has been prepared exclusively for the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. Copies of this report may be provided to contractor(s), with contract documents, to disclose information relative to this project. The report, however, has not been prepared to serve as the plans and specifications for actual construction without the appropriate interpretation by the project architect, structural engineer, and/or civil engineer. Reproduction and distribution of this report must be authorized by the client and Giles.

This report has been based on assumed conditionscharacteristics of the proposed development where specific information was not available. It is recommended that the architect, civil engineer and structural engineer along with any other design professionals involved in this project carefully review these assumptions to ensure they are consistent with the actual planned development. When discrepancies exist, they should be brought to our attention to ensure they do not affect the conclusions and recommendations provided herein have been correctly interpreted.

The analysis of this site was based on a subsoil profile interpolated from a limited subsurface exploration. If the actual conditions encountered during construction vary from those indicated by the borings, Giles must be contacted immediately to determine if the conditions alter the recommendations contained herein.

The conclusions and recommendations presented in this report have been promulgated in accordance with generally accepted professional engineering practices in the field of geotechnical engineering. No other warranty is either expressed or implied.
<table>
<thead>
<tr>
<th>Class</th>
<th>Compaction Characteristics</th>
<th>Max. Dry Density Standard Proctor (pcf)</th>
<th>Compressibility and Expansion</th>
<th>Drainage and Permeability</th>
<th>Value as an Embankment Material</th>
<th>Value as Subgrade When Not Subject to Frost</th>
<th>Value as Base Course</th>
<th>Value as Temporary Pavement With Dust Palliative</th>
<th>Value as Temporary Pavement With Bituminous Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>GW</td>
<td>Good: tractor, rubber-tired, steel wheel or vibratory roller</td>
<td>125-135</td>
<td>Almost none</td>
<td>Good drainage, pervious</td>
<td>Very stable</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair to Poor</td>
<td>Excellent</td>
</tr>
<tr>
<td>GP</td>
<td>Good: tractor, rubber-tired, steel wheel or vibratory roller</td>
<td>115-125</td>
<td>Almost none</td>
<td>Good drainage, pervious</td>
<td>Reasonably stable</td>
<td>Excellent to good</td>
<td>Poor to fair</td>
<td>Poor</td>
<td>Poor to fair</td>
</tr>
<tr>
<td>GM</td>
<td>Good: rubber-tired or light sheepsfoot roller</td>
<td>120-135</td>
<td>Slight</td>
<td>Poor drainage, semipervious</td>
<td>Reasonably stable</td>
<td>Excellent to good</td>
<td>Fair to poor</td>
<td>Poor</td>
<td>Poor to fair</td>
</tr>
<tr>
<td>GC</td>
<td>Good to fair: rubber-tired or sheepsfoot roller</td>
<td>115-130</td>
<td>Slight</td>
<td>Poor drainage, impervious</td>
<td>Reasonably stable</td>
<td>Good</td>
<td>Good to fair **</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>SW</td>
<td>Good: tractor, rubber-tired or vibratory roller</td>
<td>110-130</td>
<td>Almost none</td>
<td>Good drainage, pervious</td>
<td>Very stable</td>
<td>Good</td>
<td>Fair to poor</td>
<td>Poor to fair</td>
<td>Poor</td>
</tr>
<tr>
<td>SP</td>
<td>Good: tractor, rubber-tired or vibratory roller</td>
<td>100-120</td>
<td>Almost none</td>
<td>Good drainage, pervious</td>
<td>Reasonably stable when dense</td>
<td>Good to fair</td>
<td>Poor</td>
<td>Poor to fair</td>
<td>Poor to fair</td>
</tr>
<tr>
<td>SM</td>
<td>Good: rubber-tired or sheepsfoot roller</td>
<td>110-125</td>
<td>Slight</td>
<td>Poor drainage, impervious</td>
<td>Reasonably stable when dense</td>
<td>Good to fair</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor to fair</td>
</tr>
<tr>
<td>SC</td>
<td>Good to fair: rubber-tired or sheepsfoot roller</td>
<td>105-125</td>
<td>Slight to medium</td>
<td>Poor drainage, impervious</td>
<td>Reasonably stable</td>
<td>Good to fair</td>
<td>Fair to poor</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>ML</td>
<td>Good to poor: rubber-tired or sheepsfoot roller</td>
<td>95-120</td>
<td>Slight to medium</td>
<td>Poor drainage, impervious</td>
<td>Poor stability, high density required</td>
<td>Fair to poor</td>
<td>Not suitable</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>CL</td>
<td>Good to fair: sheepsfoot or rubber-tired roller</td>
<td>95-120</td>
<td>Medium</td>
<td>No drainage, impervious</td>
<td>Good stability</td>
<td>Fair to poor</td>
<td>Not suitable</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>OL</td>
<td>Fair to poor: sheepsfoot or rubber-tired roller</td>
<td>80-100</td>
<td>Medium to high</td>
<td>Poor drainage, impervious</td>
<td>Unstable, should not be used</td>
<td>Poor</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
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<td>MH</td>
<td>Fair to poor: sheepsfoot or rubber-tired roller</td>
<td>70-95</td>
<td>High</td>
<td>Poor drainage, impervious</td>
<td>Poor stability, should not be used</td>
<td>Poor</td>
<td>Not suitable</td>
<td>Very poor</td>
<td>Not suitable</td>
</tr>
<tr>
<td>CH</td>
<td>Fair to poor: sheepsfoot roller</td>
<td>80-105</td>
<td>Very high</td>
<td>No drainage, impervious</td>
<td>Fair stability, may soften on expansion</td>
<td>Poor to very poor</td>
<td>Not suitable</td>
<td>Very poor</td>
<td>Not suitable</td>
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<tr>
<td>OH</td>
<td>Fair to poor: sheepsfoot roller</td>
<td>65-100</td>
<td>High</td>
<td>No drainage, impervious</td>
<td>Unstable, should not be used</td>
<td>Very poor</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
</tr>
<tr>
<td>Pt</td>
<td>Not suitable</td>
<td>Very high</td>
<td>Fair to poor drainage</td>
<td>Should not be used</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>Not suitable</td>
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</tr>
</tbody>
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** Not suitable if subject to frost.
**UNIFIED SOIL CLASSIFICATION SYSTEM** (ASTM D-2487)

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gravels</strong></td>
<td>GW</td>
<td>Well-graded gravels, gravel-sand mixtures, little or no fines</td>
<td>$C_U = \frac{D_{60}}{D_{10}}$ greater than 4, $C_C = \frac{(D_{50})^2}{D_{10} \times D_{60}}$ between 1 and 3</td>
</tr>
<tr>
<td><strong>Gravels</strong></td>
<td>GP</td>
<td>Poorly graded gravels, gravel-sand mixtures, little or no fines</td>
<td>Not meeting all gradation requirements for GW</td>
</tr>
<tr>
<td><strong>Clayey gravels, gravel-sand-clay mixtures</strong></td>
<td>GC</td>
<td>Silty gravels, gravel-sand-silt mixtures</td>
<td></td>
</tr>
<tr>
<td><strong>Silty gravels, gravel-sand-silt mixtures</strong></td>
<td>GM</td>
<td>Silty gravels, gravel-sand-silt mixtures</td>
<td></td>
</tr>
<tr>
<td><strong>Clean sands</strong></td>
<td>SW</td>
<td>Well-graded sands, gravelly sands, little or no fines</td>
<td></td>
</tr>
<tr>
<td><strong>Clean sands</strong></td>
<td>SP</td>
<td>Poorly graded sands, gravelly sands, little or no fines</td>
<td></td>
</tr>
<tr>
<td><strong>Silty sands, sand-silt mixtures</strong></td>
<td>SM</td>
<td>Silty sands, sand-silt mixtures</td>
<td></td>
</tr>
<tr>
<td><strong>Clayey sands, sand-clay mixtures</strong></td>
<td>SC</td>
<td>Clayey sands, sand-clay mixtures</td>
<td></td>
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</tbody>
</table>

**Sands**

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clean sands</strong></td>
<td>SW</td>
<td>Well-graded sands, gravelly sands, little or no fines</td>
<td></td>
</tr>
<tr>
<td><strong>Clean sands</strong></td>
<td>SP</td>
<td>Poorly graded sands, gravelly sands, little or no fines</td>
<td></td>
</tr>
</tbody>
</table>

**Silty clays**

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays</strong></td>
<td>CL</td>
<td>Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays</td>
<td></td>
</tr>
</tbody>
</table>

**Organic clays**

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organic silts and organic silty clays of low plasticity</strong></td>
<td>OL</td>
<td>Organic silts and organic silty clays of low plasticity</td>
<td></td>
</tr>
</tbody>
</table>

**Organic clays of medium to high plasticity, organic silts**

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts</strong></td>
<td>MH</td>
<td>Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts</td>
<td></td>
</tr>
</tbody>
</table>

**Inorganic clays of high plasticity, fat clays**

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organic clays of medium to high plasticity, organic silts</strong></td>
<td>OH</td>
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</tbody>
</table>

**Peat and other highly organic soils**

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Names</th>
<th>Laboratory Classification Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peat and other highly organic soils</strong></td>
<td>Pt</td>
<td>Peat and other highly organic soils</td>
<td></td>
</tr>
</tbody>
</table>

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*Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits, suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

*Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW.GC, well-graded gravel-sand mixture with clay binder.*
SAMPLE IDENTIFICATION
All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)       PARTICLE SIZE (DIAMETER)
Trace: 1-10%     Boulders: 8 in and larger
Little: 11-20%   Cobble: 3 in to 8 in
Some: 21-35%     Gravel: coarse - ¼ to 3 in
And/Adjective 36-50% fine - No. 4 (4.76 mm) to ¾ in
                              coarse - No. 4 (4.76 mm) to No. 10 (2.0 mm)
                              medium - No. 10 (2.0 mm) to No. 40 (0.42 mm)
                              fine - No. 40 (0.42 mm) to No. 200 (0.074 mm)
                              Silt: No. 200 (0.074 mm) and smaller (Non-plastic)
                              Clay: No. 200 (0.074 mm) and smaller (Plastic)

SOIL PROPERTY SYMBOLS
Dd:       Dry Density (pcf)
LL:       Liquid Limit, percent
PL:       Plastic Limit, percent
Pi:       Plasticity Index (LL-PL)
LOI:      Loss on Ignition, percent
Gs:       Specific Gravity
K:        Coefficient of Permeability
w:        Moisture content, percent
qp:       Calibrated Penetrometer
qs:       Vane-Shear Strength, t/sf
qu:       Unconfined Compressive Strength, t/sf
qc:       Static Cone Penetrometer Resistance
Correlated to Unconfined Compressive Strength, t/sf

DRILLING AND SAMPLING SYMBOLS
SS:       Split-Spoon
ST:       Shelby Tube - 3" O.D. (except where noted)
CS:       3" O.D. California Ring Sampler
DC:       Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:       Auger Sample
DB:       Diamond Bit
CB:       Carbide Bit
WS:       Wash Sample
RB:       Rock-Roller Bit
BS:       Bulk Sample
Note:     Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

PID:      Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-units (BDL=Below Detection Limits)
N:        Penetration Resistance per 6 inch interval, or fraction thereof, for a standard 2 inch O.D. (1¾ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N values where plus sign is shown
Nc:       Penetration Resistance per 1¼ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.
Nr:       Penetration Resistance per 6 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE BLOWS PER RELATIVE BLOWS PER
CONSISTENCY FOOT (N) UNCOMPRESS COMPREHENSIVE DENSITY FOOT (N)

Very Soft 0-2 0-0.25 Very Loose 0-4
Soft 3-4 0.25-0.50 Loose 5-10
Medium Stiff 5-8 0.50-1.00 Firm 11-30
Stiff 9-15 1.00-2.00 Dense 31-50
Very Stiff 16-30 2.00-4.00 Very Dense 51+
Hard 31+ 4.00+

DEGREE OF DEGREE OF EXPANSIVE POTENTIAL PI
PLASTICITY PI
None to Slight 0-4 Low 0-15
Slight 5-10 Medium 15-25
Medium 11-30 High 25+
High to Very High 31+
Important Information About Your
Geotechnical Engineering Report

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

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

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

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

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

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

- The function of the proposed structure, as when it’s changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- Elevation, configuration, location, orientation, or weight of the proposed structure,
- Composition of the design team, or
- Project ownership.

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

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

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

A Report’s Recommendations Are Not Final
Do not overly rely on the construction recommendations included in your report. Those recommendations are not final, because geotechnical engineers develop them principally from judgement and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report’s recommendations if that engineer does not perform construction observation.
A Geotechnical Engineering Report Is Subject To Misinterpretation

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

Do Not Redraw the Engineer’s Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

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

Rely on Your Geotechnical Engineer for Additional Assistance

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

ASFE
8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/562-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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GILES ENGINEERING ASSOCIATES, INC.
SECTION 07 95 00
EXPANSION CONTROL

PART 1 - GENERAL

SCOPE
Furnish and install floor and wall expansion joint covers.

PART – GENERAL
Scope
Related Work
Quality Assurance
Submittals
PART 2 – PRODUCTS
Expansion Joint Covers
Fabrication
PART 3 – EXECUTION
Surface Conditions
Coordination
Installation
Cleaning and Protection

RELATED WORK
Applicable provisions of Division 1 shall govern work under this Section.

Section 07 53 23 – EDPM Roofing
Section 07 63 00 – Sheet Metal Roofing Specialties

QUALITY ASSURANCE
Fire Performance Characteristics:
Fire Resistance: Where indicated, provide expansion joint cover assemblies identical to those of assemblies
whose fire resistance and cycling capability has been determined per UL 2079 by Underwriter Laboratories, Inc.
Fire rating not less than the rating of adjacent construction.

SUBMITTALS
Submit the following:
Materials list of items proposed to be provided under this section.
Shop Drawings showing full extent of expansion joint cover assemblies; include large-scale details indicating
profiles of each type of expansion joint cover assembly, splice joints between sections, joinery with other types,
special end conditions, anchorage's, fasteners, and relationship to adjoining work and finishes. Include
description of materials and finishes and installation instructions.
Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
Shop Drawings in sufficient detail to show fabrication, installation, anchorage and interface of the work of this
Section with the work of adjacent trades.
PART 2 - PRODUCTS

EXPANSION JOINT COVERS

Roof:
Basis of Design: Emseal – A Sika Company, "Emshield watertight and firerated expansion joint - No. WFR3"

Provide other materials required for a complete and proper installation.

FABRICATION

General: Provide expansion joint cover assemblies of design, basic profile, materials, and operation indicated. Select units comparable to those indicated or required to accommodate joint size, variations in adjacent surfaces, and structural movement. Furnish units in longest practicable lengths to minimize number of end joints. Provide hairline-mitered corners where joint changes directions or abuts other materials. Include closure materials and transition pieces, tee-joints, corner, curbs, cross-connections, and other accessories as required to provide continuous joint cover assemblies.

Flush Floor Cover Assemblies: Provide continuous frame on each side of joint, designed to support gasket and center plate where required. Finish to be mill.

PART 3 - EXECUTION

SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Report to Construction Manager conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

COORDINATION

Coordinate as required with other trades to ensure proper and adequate provision in the work of those trades for interface with the work of this Section.

INSTALLATION

In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for all phases of work, including preparation of substrate, applying materials, and protection of installed units.

Provide anchorage devices and fasteners where necessary for securing expansion joint cover assemblies to in-place construction, including threaded fasteners with drilled-in fasteners for masonry and concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type, and size to suit type of construction indicated and provide for secure attachment of expansion joint cover assemblies.

Perform all cutting, drilling and fitting required for installation of expansion joint covers. Install joint cover assemblies in true alignment and proper relationship to expansion joints and adjoining finished surfaces measured from established lines and levels.

Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling. Set floor covers at elevations to be flush with adjacent finished floor materials. If necessary, shim to level, but ensure base frames have continual support to prevent rocking and vertical deflection.

Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches on centers.

Maintain continuity of expansion joint cover assemblies with end joints held to a minimum and metal members aligned mechanically using splice joints. Cut and fit ends to produce joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames.
CLEANING AND PROTECTION

Do not remove strippable protective material until finish work in adjacent areas is complete. When protective material is removed, clean exposed metal surfaces to comply with manufacturer's instructions.

END OF SECTION
18. PIPE WITH PLUMBING CONTRACTOR

17. BOTTOM COVER

- SF2.0 T = 2' - 0" W x 1' - 0" D x CONT W/ (2) - #5 x CONT. TOP & BOTTOM

UNLESS NOTED OTHERWISE

- SEE 8/S5.1 FOR REINFORCING AROUND FLOOR SLAB AND WALL OPENINGS, FOOTINGS EXPOSED DURING CONSTRUCTION. AND WALLS.

- WHERE REQUIRED, REMOVE UNSUITABLE EXISTING SOILS BELOW FOOTINGS,

- ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY CONTRACTOR TO

COL. FOOTING MARK

FOOTING STEP, SEE SEC 5/S5.0

STRIP FOOTING

XX'

PX

X''

BLDG EXTERIOR

GRADE IS COMPLETELY CONSTRUCTED

- SEE ARCHITECTURAL DRAWINGS FOR FLOOR PITCHES, DEPRESSIONS, ETC.

ADDITIONAL REQUIREMENTS.

- THE CONTRACTOR SHALL ALSO VERIFY ELEVATIONS OF EXISTING SLABS,

- SEE SHEET S9.0 & S9.1 FOR GENERAL NOTES, SCHEDULES AND OTHER

- WHERE REQUIRED, REMOVE UNSUITABLE EXISTING SOILS BELOW FOOTINGS,

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- UNDER THE DIRECTION AND SUPERVISION OF THE SOIL ENGINEER.  SOIL

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WALL SECTION AT RAMP

FOUNDATION WALL

LOADING DOCK SECTION

EXTERIOR FOUNDATION WALL AT O.H.

COLUMN AT EXISTING

FOUNDATION WALL AT EXISTING

TYPICAL OPENING OR DEPRESSION IN CONCRETE FLOOR SLAB OR WALL
1. EXISTING FINISHES TO REMAIN. PATCH TO MATCH EXISTING.
2. INSULATED METAL PANEL
3. PROJECT AREA). REFER TO DETAIL 5/A5.4 FOR NEW CONDITION. MAINTAIN 1 hr rated horizontal shaft wall
4. Grid Finish: Painted Steel
5. SLT Edge - Shadowline Tapered Edge
6. Acadia White
7. Final Finish Coat: PC 509 with PC 498 MRSA Guard at 3-5 mils wet
8. Sherwin Williams Coll Coatings
9. Olympic Mountains
10. Cloud Cover
11. VCT-1B Vinyl Resilient Tile
12. VCT-1 Vinyl Resilient Tile (Pattern)
13. 713 Medium Gray
14. Build Coats: PC 400 installed at 6-8 mils per coat. (2 coats)
16. Color: Manistique
17. Noraplan Sentica
18. See Interior Elevations
19. 1/8" = 1'-0" 2FINISH PLAN - EXPANDED HOUSING
20. PATCH AND MATCH MATERIAL FINISHES TO NEW HOLDING ROOMS (SEE BEIGE 4. VCT-2 AT FLOORING TRANSITION TO CORRIDOR 1600J. SEE FINISH PLAN.
21. APC-1 Acoustical Ceiling Panel
22. ERPF-1 Epoxy Resin Polymer Floor (Vivarium Floor)
23. FLP-1A Flat Latex Paint (Location: Dock Walls)
24. Insulated Spandrel Glass (spandrel exterior window)
25. Fluropon L/G SR Parchment (Medium Neutral)
26. FLP-0 Flat Latex Paint (Location: West Wedge Vestibule)
27. FSP-1B Satin Enamel Paint (Location: General Corridor Walls)
28. EP-1B Epoxy Paint (Location: Vivarium Corridor Walls)
29. 5/8" water resistant gypsum wall board on metal framing
30. Insulated Vision Glass (vision exterior window)
31. 5/8" gypsum wall board on metal framing
32. Insulated Vision Glass (vision exterior window)
33. 5/8" water resistant gypsum wall board on metal framing
34. Insulated Vision Glass (vision exterior window)
35. 5/8" gypsum wall board on metal framing
36. Insulated Vision Glass (vision exterior window)
<table>
<thead>
<tr>
<th>Number</th>
<th>Graphic</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1485</td>
<td>1</td>
<td>CFCI = CONTRACTOR FURNISHED, CONTRACTOR INSTALLED</td>
</tr>
<tr>
<td>1972</td>
<td>2</td>
<td>OFCI = OWNER FURNISHED, CONTRACTOR INSTALLED</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>OFOI = OWNER FURNISHED, OWNER INSTALLED</td>
</tr>
<tr>
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<td>4</td>
<td>EQUIPMENT NOT INCLUDED IN SCHEDULES IS OFOI</td>
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<td>EQUIPMENT NOT INCLUDED IN SCHEDULES IS OFOI</td>
</tr>
<tr>
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<td>6</td>
<td>SCHEDULED EQUIPMENT IS LISTED AS BASIS OF DESIGN</td>
</tr>
</tbody>
</table>

University of Wisconsin

No: -

Hold: -

Chase: UW Systems Administration

Issue: -

Consultants:

Project Location:

Address: 303 South Broadway Suite G20

Tarrytown, New York 10591

Phone: [414] 476.9500

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Number: ZAS No: 200058.00

A8.0

AD1 4/21/21 Addendum 1

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School of Medicine and Public Health

University of Wisconsin

GRAPHIC:

1. CFCI = CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
2. OFCI = OWNER FURNISHED, CONTRACTOR INSTALLED
3. OFOI = OWNER FURNISHED, OWNER INSTALLED
4. EQUIPMENT NOT INCLUDED IN SCHEDULES IS OFOI
5. SCHEDULED EQUIPMENT IS LISTED AS BASIS OF DESIGN

Legend:

- = No

Yes

1FLOOR PLAN

1/8" = 1'-0"
GENERAL NOTES

1. COORDINATE ALL CONSTRUCTION AND AIR DUCT WORK PRIOR TO PLUMBING WORK.
2. EXISTING CONSTRUCTION SHALER MATERIALS AND DEBRIS SHALL BE REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER.
3. COORDINATE ALL SUBTRADE WORK WITH THE GENERAL CONTRACTOR AND ARCHITECT.
4. REMOVE AND REROUTE EXISTING PIPING OR PLUMBING IF REQUIRED TO ACCOMMODATE NEW CATWALK CLEARANCES.
5. REMOVE AND REROUTE EXISTING PIPING OR PLUMBING IF REQUIRED TO ACCOMMODATE NEW CATWALK CLEARANCES.
6. REMOVE AND REROUTE EXISTING PIPING OR PLUMBING IF REQUIRED TO ACCOMMODATE NEW CATWALK CLEARANCES.
7. REMOVE AND REROUTE EXISTING PIPING OR PLUMBING IF REQUIRED TO ACCOMMODATE NEW CATWALK CLEARANCES.

SHEET KEYNOTES

1. EXISTING LAVATORY ALONG WITH ALL RELATED TRIM AND PIPING TO BE REMOVED.
2. EXISTING WATER CLOSET ALONG WITH ALL RELATED TRIM AND PIPING TO BE REMOVED.
3. EXISTING REVERSE OSMOSIS TO BE REMOVED.
4. EXISTING CLEAN OUTS TO BE REMOVED.
5. EXISTING PIPING OR PLUMBING TO BE REMOVED.
6. EXISTING PIPING OR PLUMBING TO BE REMOVED.
7. EXISTING PIPING OR PLUMBING TO BE REMOVED.

AD1 10/21/21 Addendum 1
GENERAL NOTES
1. PROVIDE BALANCING DAMPER FOR EACH DIFFUSER, REGISTER, AND GRILLE. BALANCING DAMPER IS NOT REQUIRED IF A SINGLE DIFFUSER, REGISTER, OR GRILLE COVERS THE ENTRANCE TO THE AREA.

2. INSTALL DANGLING PIPING IN SUCH A WAY THAT IT DOES NOT OBSTRUCT ACCESS TO THE AREA.

3. PROVIDE ISOLATION VALVES AT ALL BRANCH TAKE OFFS AND CONNECTION TO EXISTING PIPE.

4. FOR ALL PIPING LOCATIONS, PROVIDE GROUNDED CONDUIT RUNS AND CONNECTION TO EARTH GROUND.

AD1 10/21/21 Addendum 1
MECHANICAL CATWALK PLAN - AREA D

GENERAL NOTES
1. PROVIDE BALANCING DAMPER FOR EACH DIFFUSER, REGISTER, AND GRILLE. BALANCING DAMPER IS NOT REQUIRED IF A SINGLE DAMPER IS PROPERLY LOCATED ON THE AIR DUCT. REFER TO DETAIL 3/M6.0 FOR MORE INFORMATION.
2. PROVIDE ISOLATION VALVES AT ALL BRANCH TAKE OFFS AND CONNECTIONS TO EXISTING PIPE.

SHEET KEYNOTES

1. REUSED EXISTING SUPPLY FAN
2. REUSED EXISTING AIR HANDLING UNIT, INCLUDING STEAM COIL AND FILTER. PIPE STEAM COIL PER DETAIL 16/1.
1. REFER TO SHEET E0.0 FOR SYMBOLS AND ABBREVIATIONS.

2. REFER TO SHEET E8.1 FOR EQUIPMENT SCHEDULE.

**SHEET KEYNOTES**

1. CIRCUITS USED IN EXISTING LOADING DOCK TO BE UNLOADED DURING DEMOLITION AND REUSED TO SERVE NEW VIVARIUM SUITES. (Sheet F0.2)

2. EXTEND COVER 1 FOOT BEYOND BOTH SIDES OF NEW WALL OPENING FOR NEW CATWALK.

**GENERAL NOTES**

AD1 10/21/21 Addendum 1

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**DRAWING TITLE:** ELECTRICAL POWER CATWALK PLAN

**SCALE:** 1/8" = 1'-0"