WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

Request for Architectural/Engineering/Planning Services

Lathrop Drive/Bascom Hill Utility Repairs, Phase I

State Project No. 17J2L
February 2018

CONSULTANT REQUIREMENTS

This request provides architectural/engineering/planning (AEP) resources to complete the project phases indicated below for State Project No. 17J2L – Lathrop Drive/Bascom Hill Utility Repairs, Phase I at the University of Wisconsin-Madison (*see attached for further detail*).

Pre-Design Phase	Preliminary Design Phase	Final Design Phase	Bidding Phase	Construction Phase
☒	☒	☒	☒	☒

Consultants should submit their qualifications in the form of a qualification document and demonstrate specific expertise and experience in the design and coordination of underground utility systems including utility tunnel; steam & condensate distribution; direct buried piping systems, both pressurized and gravity; electrical and communications distribution; and landscape restoration as part of a design team. Work includes project area surveys, acquiring field data, and verifying as-built conditions to assure accurate development of design and bidding documents, and production of necessary design and bidding documents. The consultant will verify project scope, schedule, and budget estimates, and recommend modifications as required to complete the specified project intent. The consultant will prepare a pre-design document to establish an appropriate project scope, budget, and schedule prior to the university seeking authority to construct from the Board of Regents.

The consultant(s) will participate in a highly interactive campus planning process by meeting with appropriate campus staff, including Facilities Planning & Management to develop Program Statement, Preliminary Design, and Final Design documents. Working in collaboration with the campus project team, the consultant will be responsible for program development, verification, and documentation; developing and documenting design alternatives with corresponding construction cost estimates and construction schedules for each design alternative; and determining and documenting any project work dependencies for selected design alternatives. This project will be phased over multiple years and may require multiple bid packages.

The university's long-range plans include requesting funding for the second phase of the Lathrop Drive/Bascom Hill Utility Repair project. Phase II work includes the replacement, relocation and/or construction of thermal utilities (steam and chilled water), electrical utilities (primary electric/signal communications), and civil utilities (domestic water, sanitary sewer and storm sewer) between North Charter Street and Music Hall along Lathrop Drive AND between Bascom Hall and North Park Street in the Bascom Hill area. This phase of work is currently estimated at a total cost of $20,076,000; including design, construction, contingency, and other fees. Pending funding availability in the next biennium, it is anticipated that the selected AE will be contracted for Phase II work.

The project site resides within the Bascom Hill Historic District which is listed on the U.S Register of Historic Places. The design consultant will be expected to consult and coordinate with the UW-Madison's Campus Planning and Landscape Architecture staff on the design alternatives, final design solution, and construction work. A registered archaeologist will be required for onsite supervision and observation of select excavation work in the Bascom Hill Historic District project area(s).

The design consultant(s) will provide pre-design services through construction administration services as indicated in the Division of Facilities Development and Management (DFDM) *Policy and Procedure Manual for Architects/Engineers and Consultants*, and the DFDM *Contract for Professional Services*. These services may be contracted through multiple contracts or contracts with multiple parts and project-specific review/approval/authorization milestones as determined by the needs of the project. Authorization for subsequent services will be issued in writing upon satisfactory performance and completion of contracted services and deliverables.

Pre-Design Services: In addition to the requirements for pre-design through construction in the DFDM *Policy and Procedure Manual for Architects/Engineers and Consultants,* the following addition and clarifications should be noted:

- Perform Project Planning. Evaluate and prepare for DFDM and campus consideration options and scenarios for determining project priorities and project delivery, this includes scheduling, phasing, estimated cost, inflation, and loss of revenue implications.
- Prepare a Project Plan with a Program Statement per the DFDM *Policy and Procedure Manual for Architects/Engineers and Consultants* incorporating the Facilities Condition Assessment (completed during the feasibility study), code assessment, and project delivery scenarios, phases, and alternatives.

Preliminary and Final Design Services: In addition to the requirements for preliminary design through construction in the DFDM *Policy and Procedure Manual for Architects/Engineers and Consultants*, the following additions and clarifications should be noted:

- The design consultant(s) will work with DFDM and the appropriate campus staff to review the Lathrop Drive/Bascom Hill Utilities Improvement Report (DFDM 13J2X), Preliminary Design, and Final Design documents. The design consultant(s) will attend design review meetings at each of the Preliminary Design and Final Design review stages. The reviewers will provide written comments to the DFDM Project Manager based on the documents and discuss the comments with the design consultant(s). The design consultant(s) are required to provide written responses to the DFDM Project Manager.
- The consultant shall provide a project schedule with monthly updates charting the project design schedule. At minimum, monthly project meetings shall be held until the final plans and specifications are complete.

- The consultant shall work with the DFDM Project Manager to determine if any and/or how many utility locates will be required for calculation of reimbursable expenses.
- The consultant shall meet with the UW-Madison (FPM, Engineering, Transportation, Capital Planning, etc.), City of Madison (Public Works Department, Engineering, Traffic Engineering, Water Utility, etc.) and utility providers (Madison Gas & Electric, AT&T, etc.) during the design phases of the project to coordinate with all utilities.
- The consultant shall provide pipe stress analysis for the new steam, steam condensate and compressed air piping, and existing steam, steam condensate and compressed air systems that are connected to. Revised pipe stress analyses for as built conditions are required as construction progresses.
- The consultant shall provide traffic and pedestrian control designs with signage for each stage of the project.
- The consultant should expect to participate in weekly meetings and provide weekly on-site construction inspections throughout the construction phases of the project.

Note that per the DFDM *Policy and Procedure Manual for Architects/Engineers and Consultants*, the following services will not be included in the scope of services:

- Hazardous material abatement design will be provided by a consultant under separate contract with DFDM based on the demolition plans. Abatement documents will be incorporated into the bid set.
- Preparation of a Wisconsin Environmental Protection Act (WEPA) Type II Environmental Impact Statement will be contracted separately.

The following documents will be made available to the successful design consultant team for reference, verification, and update as it relates to the project intent, description, and scope of work.

Lathrop Drive/Bascom Hill Utilities Improvement Report
State Project No. 13J2X
June 30, 2016

Note: This template is based upon DFDM's *Policy and Procedure Manual for Architects/Engineers and Consultants,* December 2013 edition, Section Three - Pre-Design Phase (*3.c.2.b Table of Contents, 3.C.2.e Physical Planning Issues, 3.C.2.h Room Data Sheets, 3.C.2.i Special Planning Issues, 3.C.2.j Budget*).

ID	Y/N?	Description	Comments and Clarification Notes
1.00	☒	**Project and Program Considerations**	*For Feasibility Studies, Project and Program Considerations items that are selected to recognize that the documentation and professional guidance required to develop the required support documentation is above and beyond the traditional 10% concept report, but not necessarily completing the full 35% preliminary design efforts.*
1.01	☒	Program Verification	
1.02	☒	Design Concept	
1.03	☒	Site/Survey	
1.04	☒	Site/Existing Conditions	
1.05	☒	Facilities Site Plan	
1.06	☒	Existing Land Use	***1.05*** *Please see <https://www.wisconsin.edu/capital-planning/reference/deliverables/> for more detailed AutoCAD and geospatial data definition requirements.*
1.07	☒	*Topography/Drainage*	
1.08	☒	*Vegetation/Landscaping*	
1.09	☒	*Subsurface Conditions*	***1.06*** *Includes erosion control requirements.*
1.10	☒	*Construction Staging/Occupancy of Site During Construction*	
1.11	☐	*WEPA – Environmental Impact Determination and Identification*	
1.12	☒	Utilities/Infrastructure	***1.12*** *See attached "Phase I & Existing" Drawing dated September 28, 2017 for information on proposed utility demolition and new utility routing.*
1.13	☒	Existing: capacity and condition of existing lines and equipment	***1.13*** *Includes the central utility plant.*
1.14	☒	Proposed central and site utility systems	***1.14*** *Includes chilled water, domestic water, electrical power, natural gas, sanitary sewer, storm water sewer, steam and condensate return, and telecommunications.*
1.15	☒	Maintaining utility services and infrastructure during construction	***1.20*** *Includes during construction period.*
1.16	☒	Transportation/Circulation	***1.23*** *Includes building clocks, phone, IT, fiber*
1.17	☒	Vehicular/Bicycle/Pedestrian	
1.18	☒	Parking	
1.19	☒	Service/Loading/Unloading	
1.20	☒	Access to Site	
1.21	☒	Existing Building Conditions	
1.22	☐	Conditions of Existing Building Spaces as necessary for design	
1.23	☒	Condition of Existing Infrastructure and Equipment	
1.24	☒	Demolition Planning/Phasing	
1.25	☒	Building Systems	
1.26	☒	Structural Systems	
1.27	☒	Mechanical Systems/HVAC	
1.28	☐	*Environmental Control*	
1.29	☒	Electrical/Lighting	
1.30	☒	*Lighting Design*	
1.31	☐	*Fire Alarm*	
1.32	☒	*Telecommunications Systems*	
1.33	☐	*Access Control*	
1.34	☒	Plumbing	
1.35	☐	Fire Protection Systems	
1.36	☒	Signage (Building and Room/Space Identification)	
1.37	☐	Other Systems	
2.00	☒	**Design Considerations**	***2.03*** *is not applicable to maintenance personnel only, non-public areas.*
2.01	☒	Cost Estimating	***2.04*** *as per DFDM standards for pipe insulation and tunnel ventilation.*
2.02	☒	Constructability	***5.01*** *Please see <https://www.wisconsin.edu/capital-planning/reference/deliverables/> for more detailed AutoCAD and geospatial data definition requirements.*
2.03	☐	Accessibility	***5.02*** *Includes performance test data, list of normal and alarm set points, and contact information for responsible parties.*
2.04	☒	Sustainable Facilities and Energy Conservation	***5.03*** *Includes all newly installed components, include list of all input/output control points and custom software with programming requirements needed to maintain and/or field-modify newly installed systems.*
2.05	☒	Equipment Layout	***5.04*** *Includes contact information for responsible parties and date of warranty expiration.*
2.06	☒	Campus Technical Review	
3.00	☒	**Bid Documents (see contract for details)**	
4.00	☒	**Construction Administration (see contract for details)**	
4.01	☒	Commissioning (Level 1)	
5.00	☒	**Post-Construction Deliverables (see contract for details)**	
5.01	☒	As-Built Record Drawings	
5.02	☒	Commissioning Details	
5.03	☒	Operations and Maintenance Manuals	
5.04	☒	Warranty/Guarantee Details	

ID	Y/N?	Description	Comments and Clarification Notes
A.00	☐	**Planning Considerations**	***A.03*** *and* ***A.05*** *required to assure and affirm scope, budget estimate, and proposed schedule.*
A.01	☐	Master Planning	
A.02	☐	Blocking and Stacking Diagramming	
A.03	☒	Scope Definition	
A.04	☐	Space Needs Analysis	
A.05	☒	Site Evaluation	
A.06	☐	Market Study	
A.07	☐	Space Utilization Analysis	
B.00	☐	**Project and Program Considerations**	***B.13*** *is required for anticipated or known ACM piping insulation.* *Review and confirm conclusions from 13J2X pre-design report.*
B.01	☐	Occupants/User Activities	
B.02	☐	Space Tabulation	
B.03	☐	Room Data Sheets	
B.04	☐	Site/Survey	
B.05	☐	Easements	
B.06	☐	Zoning Approval Efforts	
B.07	☐	Floodplain Restrictions	
B.08	☐	Landholdings/Ownership/Boundaries	
B.09	☐	Utilities/Infrastructure	
B.10	☐	Energy Modeling	
B.11	☐	Existing Facilities Survey	
B.12	☐	Facility Condition Assessment	
B.13	☒	Document Existing Conditions	
B.14	☒	Concealed Conditions	
B.15	☐	Building Code Analysis	
B.16	☒	Phasing Options and Analysis	
B.17	☐	Adjacency Analysis and Matrix	
B.18	☐	Facility Specialties	
B.19	☐	Acoustics	
B.20	☐	Elevator Constructor/Vertical Transportation	
B.21	☐	Food Service Operations/Kiosks	
B.22	☐	Security/Video Surveillance	
B.23	☐	Specialty Lighting	
B.24	☐	Other (Please Specify)	
B.25	☐	Furniture and Equipment	
B.26	☐	Design Standards to Follow	
B.27	☐	Furniture Design Services	
B.28	☐	Fixed Equipment	
B.29	☐	Movable Equipment	
B.30	☐	Art Selection Assistance	
B.31	☐	Universal Design	***B.32*** *Select excavation work within the Bascom Hill Historic District requires onsite supervision and observation by a registered archaeologist.* ***B.35*** *required for the new route determination and potential adjustments required if historical artifacts are found or known to exist within the designated path.* ***C.01*** *Includes additional on-site construction administration beyond basic services*
B.32	☒	Historic Preservation	
B.33	☐	Historic Structure Report (HSR)	
B.34	☐	Historic Preservation Plan (HPP)	
B.35	☒	Wisconsin Historical Society Approval for Building Concept	
B.36	☐	Presentations	
B.37	☐	Formal Presentation(s)	
B.38	☐	Presentation Materials	
B.39	☐	Facilitate on Campus Design Document Review	
C.00	☐	**Construction Administration**	
C.01	☒	Additional Construction Administration Services	
D.00	☐	**Miscellaneous**	
D.01	☐	Wayfinding	
D.02	☐	LEED™	

D.03	☐	Renderings, Models, and Mock-Ups
D.04	☐	Building Information Modeling
D.05	☐	Measured Drawings Beyond Project Area
D.06	☐	Commissioning (i.e. Level 2, Exterior Envelope)
D.07	☐	Post Occupancy Evaluation
E.00	☐	**Other (Please Specify)**

SUPPLEMENTAL SERVICES — Board of Regents Evaluation Criteria Responses

ID	Y/N?	Description	Comments and Clarification Notes
F.00	☐	**General Considerations**	
F.01	☐	Surge Space(s) Identification	
F.02	☐	Utility Infrastructure Impact(s) Identification	
G.00	☐	**Priority Considerations**	
G.01	☐	Project Sequence Dependency Identification	
H.00	☐	**Physical Development Considerations**	
H.01	☐	Code Compliance Resolution	
H.02	☐	Health & Safety Condition Resolution	
H.03	☐	Environmental Protection Condition Resolution	
H.04	☐	Facility and/or Program Standards Condition Resolution	
H.05	☐	Space Profile (Demolition/Renovation/New Construction)	

Demolition	0	ASF	0	GSF	$	0
Renovation	0	ASF	0	GSF	$	0
New Construction	0	ASF	0	GSF	$	0
Project Total	**0**	**ASF**	**0**	**GSF**	**$**	**0**

Determine and document the following for each solution/phase/alternative…

1. *Estimated capital renovation costs and current replacement value for the proposed space to be demolished.*
2. *Estimated capital renovation costs and current replacement value for the proposed space to be renovated.*
3. *If any portion of the proposed new construction space is required to resolve building codes and standards, and/or health and safety conditions, and/or environmental protection conditions, and/or facility or program standards which cannot be economically be resolved in existing space.*
4. *If any portion of the proposed new construction space is required to resolve demonstrated capacity issues or space shortages related to enrollment growth and 5-year enrollment trends (specific program and/or overall campus).*
5. *If any portion of the proposed new construction is required to resolve poor adaptive reuse potential for existing space that could have been included in the proposed project solution scope and budget estimate.*

I.00	☐	**Program Considerations**
I.01	☐	Functionality Improvement(s) Identification
I.02	☐	Energy Cost Impact Profile
I.03	☐	Space Shortage(s) Condition Resolution
I.04	☐	Space Utilization Profile

Major Project Request
2017-19 Biennium

Agency	Institution		
University of Wisconsin	Madison		
Project Title	Lathrop Drive/Bascom Hill Utility Repairs, Phase I	**Project No.**	17J2L

Project Request

The UW System requests enumeration of $32,656,000 ($23,839,000 General Fund Supported Borrowing and $8,817,000 Program Revenue Supported Borrowing) to construct utility improvements at the UW-Madison campus.

Project Description and Scope

This project replaces, relocates and/or constructs new thermal utilities (steam and chilled water), electrical utilities (primary electric/signal communications), and civil utilities (domestic water, sanitary sewer and storm sewer) in two areas: between North Charter Street and Music Hall along Lathrop Drive and between Bascom Hall and North Park Street in the Bascom Hill area.

A new north-south thermal and primary electric/signal communications utility corridor will be created from the north side of Lathrop Hall to Observatory Drive. The corridor passes on either side of South Hall between Birge Hall and the Law School Building avoiding the wooded area west and southwest of the Law School Building, crosses Bascom Hill, and extends to the north side of North Hall. Thermal utilities include a new steam tunnel with high pressure steam, low pressure steam, pumped condensate, and compressed air. Electric utilities include primary electric and signal communications ductbanks, manholes, and cabling. An additional primary electric ductbank and cabling between Sterling Hall and Chamberlin Hall will also be included. Chilled water piping in the area of the new utility corridor will be replaced, including branch piping replacements to Birge Hall, the Law Building, South Hall, and Bascom Hall. Civil utilities including water, storm sewer, and sanitary sewer in the area of the new utility corridor will be replaced, including the infill of an abandoned cistern located on the south side of South Hall.

A new east-west thermal and primary electric utility corridor will also be created from the east end of Bascom Hill to Bascom Hall. The corridor passes down the middle of Bascom Hill avoiding the pedestrian tree-lined sidewalks on either side of the hill. Thermal utilities include a new steam tunnel with high pressure steam, low pressure steam, pumped condensate, and compressed air. The tunnel replacement will include all piping and tunnel enclosures on Bascom Hall, including those sections serving Radio Hall. Electric utilities include primary electric ductbanks, manholes, and cabling. Civil utilities including water, storm sewer, and sanitary sewer in the area of the extended utility corridor and portions of an existing steam tunnel will be replaced.

Upon completion of the utility systems, all areas disturbed by the project will be fully restored, including roadways, gutters, sidewalks, landscaping features, and site structures.

Background

Buildings located on all of the UW System campuses are served by a variety of utilities, which are critical to the operation of the campuses, and have a replacement value in the hundreds of millions of dollars. Maintenance and improvement of these systems is a constant process requiring a substantial and consistent investment. Routine maintenance is supported by the operating budget. In addition, each biennium the university identifies critical maintenance and improvement projects to be funded through the capital budget.

The UW-Madison campus is served by three heating and cooling plants which supply steam, chilled water and compressed air throughout campus. Electrical power is provided to campus by Madison Gas & Electric and campus distributes the power to buildings from substations. Signal communications is primarily routed in parallel with the electrical power utilities and serves campus from several locations. Civil utilities serving campus (domestic water, storm sewer and sanitary sewer) are a combination of campus owned and public utility owned.

Analysis of Need

Campus utilities are essential in supporting the instructional and research missions of the universities. Utility requests in recent years have focused on needed campus utility upgrades to maintain support of current functions and supply thermal, electric/communications, and civil utilities for facilities currently in construction or design.

The 2005 and 2015 Utility Master Plans recommended a comprehensive north campus utility improvements project. Utility systems should be replaced and/or relocated due to age, condition, location, and increased in size where necessary, all to support current facilities, future facilities, and provide additional system redundancy.

The project site is one the oldest and most historic areas on campus with many of the utilities approaching the end of their expected service life. Recently, the reliability of these site utilities has come into question. As a result, this utility improvement project was developed in order to increase utility reliability, decrease operational costs, and rebuild the site utilities to be viable for the next 50 years.

The chilled water lines in this area were manufactured of cast iron, are brittle, and are of the age that removal and replacement is necessary. Existing chilled water lines have failed at least five times in the last decade including two failures near Lathrop Hall that have damaged the Botany Gardens, which are located just south of Lathrop Drive. Failures can result in the loss of tens of thousands of gallons of chilled water and require the shutdown of air conditioning in several buildings. The Bascom Hill steam tunnels are the oldest and narrowest on campus, difficult and dangerous to access, and present a high risk for failure. A high-pressure steam line of same vintage as those tunnels recently failed within Radio Hall, causing extensive damage to the facility and contents.

Primary electric distribution is limited in the Lathrop and Bascom areas. The primary electric power serving the buildings in this area are entirely loop fed, but most of the looped feeders share the same ductbanks, which reduces the overall reliability of the utility. Additional primary electric ductbanks and feeders will improve the reliability and redundancy of the electrical distribution system. Signal communication ductbanks are required to provide separation of communication cables from high pressure steam, condensate, and compressed air piping in the existing steam tunnels. This reduces the risk of interrupted communications caused by a major steam leak and extends the life expectancy of the cabling.

The majority of the water, storm sewer, and sanitary sewer piping in this area is at least 50 years old (the typical useful life for these systems) with many piping segments more than 110 years old.

Alternatives

Various alternatives and phasing plans have been evaluated within the context of the 2005 Utility Master Plan and more recently in the Lathrop Drive/Bascom Hill Utility Study. The project presented in this document is considered to be the most efficient, practical, and economically justifiable to meet present and future needs in this area of the campus.

Project Budget		
Construction Cost:	$	26,439,000
A/E Design Fees:	$	2,200,000
Other Fees:	$	210,000
DFD Management Fees:	$	1,163,000
Contingency:	$	2,644,000
Movable/Special Equip.:	$	0
	$	**32,656,000**

Funding Source	Total	
General Fund Supported Borrowing	$	23,839,000
Program Revenue Supported Borrowing	$	8,817,000
Building Trust Funds	$	0
Gifts and Grants	$	0
Program Revenue Cash	$	0
	$	**32,656,000**

Fee Impact

Not applicable.

Impact on Operating Budget

	FTE		Cost
Custodial Staff	0.00	$	0
Maintenance Staff	0.00	$	0
Supplies		$	0
Utilities		$	0
	0.00	$	0

It is estimated that no additional budget will be required annually to support the completion of this project for staffing, supplies and equipment, and energy bills.

Project Schedule

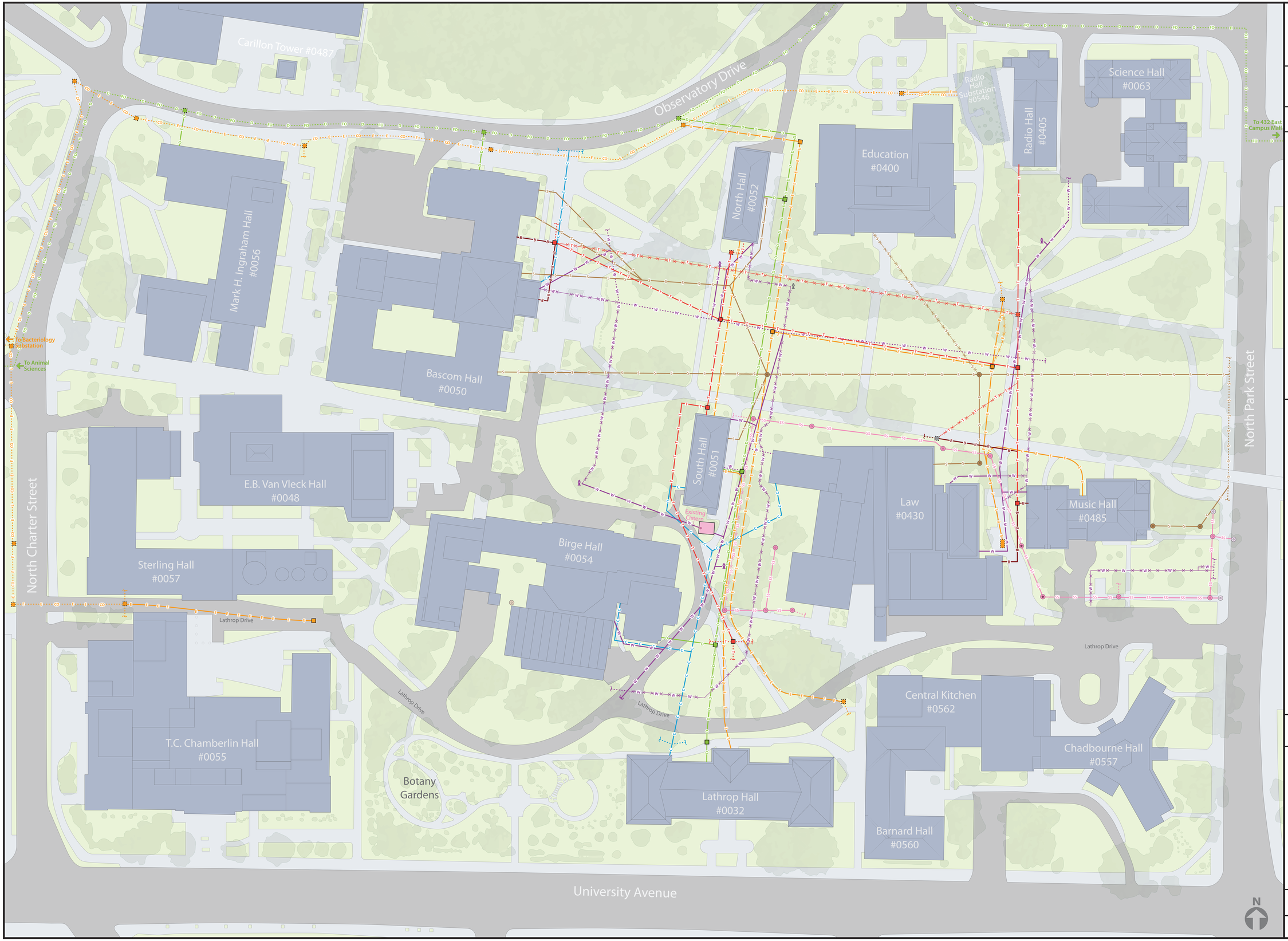
A/E Selection:	Mar 2018
Design Report:	Mar 2019
Bid Date:	Jan 2021
Start Construction:	Nov 2021
Substantial Completion:	Jan 2023
Final Completion:	Jun 2023

Project Delivery

At the present time, it is anticipated that the standard state project delivery process will be used.

Previous Action

09/21/2017 2017 Wisconsin Act 59	The State of Wisconsin enumerated the project as requested and included it in the 2017-19 biennial budget bill.



Affiliated Engineers

University of Wisconsin, Madison
Lathrop Drive/Bascom Hill Utility

DFD Project Number: 13J2X

- Existing to Remain
- Demo/Abandon
- New Construction
- Conductor Only
- Fiber Only
- Existing Vault/Access
- New Vault/Access
- Existing Manhole
- New Manhole
- Existing Area Drain
- New Area Drain
- ExistingCatch Basin
- New Catch Basin
- Existing Hydrants
- New Hydrants
- Existing Meter Pit (M)
- New Meter Pit (M)

Revised
Date: September 28, 2017

Utility Key

- Steam Tunnel - T
- Box Conduit - B
- Chilled Water - C
- Electrical - E
- Signal - D
- Water - W
- Sanitary Sewer - S
- Storm Sewer - SS

Utility	**All**

Phase 1 & Existing