

NEW UG CHILLED WATER LINES – WEST SIDE USU
OSE# R0324-12X/DEL
SDSU# 25-15440
South Dakota State University
Brookings, South Dakota
2025

CONTRACTOR'S BID DATE: Thursday, March 20, 2025, at 1:30 PM CT

FILE BIDS: South Dakota State University
Facilities & Services
1451 Stadium Road
Brookings, SD 57007

ADDENDUM NO. 1
March 17, 2025

TO ALL PLANHOLDERS:

The following changes, clarifications, additions, and/or deletions are hereby made a part of the contract documents for the above-referenced project, as fully and completely as if the same were fully set forth therein. This addendum takes precedence over any items that may conflict.

MANUAL

1. Bid Form:

Project is a unit price project. Replace in its entirety with attached.

Update "base bid" to "total bid".

Added bid item quantities and allowance dollar values.

Added bid items UP-088 and UP-089.

2. Specification Section 03 3000, CAST-IN-PLACE CONCRETE:

Replace paragraph 2.02.C.3.b. with the following:

"b. Euclid Chemical; Eucon Vandex AM-10: www.euclidchemical.com/#sle.

c. Engineer Approved Equal."

Add paragraph 2.05.A.5.c. as follows:

"c. Waterproofing Admixture: Add to mix at rate of 2-3% by weight of cement."

3. Specification Section 08 3113, FLOOR HATCHES:

Replace paragraph 2.02.B. with the following:

"B. Flush Aluminum Cover: 1/4" thick aluminum, diamond-pattern tread plate reinforced for H-20 wheel loading, installed in off street locations not subject to high density traffic; open to 90 degrees and automatically lock with stainless steel hold open arm with release handle."

4. Specification Section 22 1116.01, PIPING ACCESSORIES:

Replace paragraph 2.01.A. with the following:

- "A. Dismantling Joints: Flanged Adapter Body: ASTM A513, ASME SA 675 GR60, or Ductile Iron ASTM A536. Steel Flange extension matching piping system. Bolts shall be high strength low alloy steel bolts and nuts. NBR Gaskets made from rubber compounded for water and sewer service in accordance with ASTM D2000 MBA810Z. Dismantling Joints shall have thrust restraint and shall be watertight at a working pressure of 150 psi. Dismantling joints shall be as manufactured by Romac model DJ400, Smith-Blair model 975, or Engineer approved equivalent."

Replace paragraph 2.01.C.1. with the following:

- "1. Ductile iron or steel."

Add the following to paragraph 2.01.C.7.:

- "d. Pipe shall have manufacture standard primer coating."

5. Specification Section 23 2113, HYDRONIC PIPING:

Replace "black;" within paragraph 2.03.A. with the following:

- "black epoxy coated;"

Replace paragraph 3.02.O.1. with the following:

- "1. Test shall be held for 8 hours. If after 8 hours the pressure has dropped less than 2.0 psi, the test shall be considered acceptable. Test to be witnessed by Engineer or representative if requested by Owner."

Add the following paragraph 3.04:

"3.04 FIELD QUALITY CONTROL

A. Visual Inspection:

1. The Owner's welder, in conjunction with a Certified Welding Inspector (CWI) from an independent inspection company at the Owner's option, will perform visual inspection of all welds in accordance with ANSI/ASME B31.1 and AWS B1.11:2000 guide for the visual examination of welds before, during, and after welding.
2. The Contractor shall cooperate with and provide access to the welds for the Certified Welding Inspector. The CWI will visit the site randomly to observe and inspect the welding process. The Contractor shall cooperate with and provide access to the welds for both the Owner's welder and the Certified Welding Inspector. The welder and/or the CWI will visit the site randomly to observe and inspect the welding process.
 - a. Hold points or check points will be established that will require the Contractor to stop work at specified times and notify the Owner's Construction Representative (OCR) that the work is available for inspection. The OCR will notify the Owner's welder and the CWI

who will examine the work in question within 24 hours and notify the Contractor of the acceptability of the work.

- b. The Owner will utilize visual inspection of the welds.
- c. The Owner at its option may perform additional weld testing beyond visual inspection including but not limited to radiography, ultrasonic, liquid penetrate, and magnetic particle methods.
- d. The Owner may employ the services of an independent testing agency to test any or all the welds. If welds are determined to be defective, the contractor will repair those welds at no cost to the owner. The contractor will then hire the owner selected independent testing agency and test method to test any or all up to 5 additional welds, per defective weld, regardless of when the defective weld was found, at no cost to the Owner. If any additional welds are determined to be defective, the Contractor will repair these welds and will then hire the owner selected independent testing agency and test method to test all the remaining welds at the contractor's expense. All defective welds found will be repaired. All welds that failed a test shall be retested after the repair at no cost to the Owner. All tests shall be witnessed by the Owner."

PLANS

1. Sheet B001 – ESTIMATE OF QUANTITIES:

Replace sheet in its entirety with attached.

Added bid items UP-088 and UP-089.

2. Sheet D001 – GENERAL NOTES:

Replace sheet in its entirety with attached.

Corrected substantial completion liquidated damages value and adjusting substantial completion requirements.

3. Sheet D002 – GENERAL NOTES:

Add the following to heading in the top left corner of the sheet.

"Trench and Excavation Safety"

4. Sheet D005 – GENERAL NOTES

Replace section **CHILLED WATER MAIN AND APPURTENANCES** with the following:

"All valve operation will be done by SDSU Facilities and Services. For acceptance of chilled water main work, all installed valves shall be operated prior to pavement and sidewalk placement.

Refer to project specifications for chilled water main and appurtenance material requirements.

The labor, materials, and equipment necessary to furnish and install the valves, dismantling joints, sleeves, elbows, and tees shall be incidental to the respective bid items.

The labor, materials, and equipment necessary to furnish and install the pipe, bedding material, pipe insulation, pipe supports, drain and vent piping, and chemical treatment of pipe shall be incidental to the respective pipe's bid item. Refer to specification section 23 2500 for chemical treatment requirements. "

5. Sheet E001 – VAULT AND STUDENT UNION ELECTRICAL PLAN:

Replace sheet in its entirety with attached.

Removed rebar and foundation shown on S sheets.

6. Sheet F002 – PROJECT PHASING PLAN:

Replace legend wording with the following:

"Phase 1 Project work between May x, 2025 and August x, 2025" with "Phase 1 Project work between May 12th, 2025 and August 6th, 2025."

And

"Phase 2 Project work between May x, 2026, and August x, 2026" with "Phase 2 Project work between May 13th, 2026, and August 7th, 2026."

7. Sheet I007 – CHILLED LINES – INTERIOR BUILDING PLAN:

Replace sheet in its entirety with attached.

Added cleaning and recirculation piping.

8. Sheet I201 – STORM SEWER – PLAN AND PROFILE:

Replace sheet in its entirety with attached.

Update to existing storm sewer manhole location.

9. Sheet S001 – HYDRONIC VAULT STRUCTURAL PLAN:

Replace sheet in its entirety with attached.

Update rebar reinforcement, keynotes 1 & 2, and design criteria.

10. Sheet S002 – STRUCTURAL DETAILS:

Replace sheet in its entirety with attached.

Updated concrete strength, clarified Detail 8 and 9, and added Detail 10.

11. Sheet U002 – SPECIAL DETAILS:

Replace sheet in its entirety with attached.

Removed unintentional lines from Detail 5.

12. Sheet U003 – SPECIAL DETAILS:

Replace sheet in its entirety with attached.

Removed rebar shown on S sheets.

Added concrete foundation around sump for clarification.

All bidders shall acknowledge receipt and acceptance of ADDENDUM NO. 1 by signing the space provided on the Bid Form.


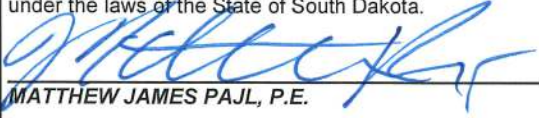
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of South Dakota.	
		Date: <u>3/17/25</u>
	<u>MATTHEW JAMES PAJL, P.E.</u>	
	License No. 11935	
	My renewal date is December 31, 2025	
	Pages or sheets covered by this seal:	
	<u>Entire document</u>	
	<u> </u>	
	<u> </u>	

EXHIBIT “A”

BID FORM

BID FORM

NEW UG CHILLED WATER LINES - WEST SIDE USU
SOUTH DAKOTA STATE UNIVERSITY
University Student Union
SDSU Project # 25-154440
OSE# RO324—12X/DEL

Date: _____

To: South Dakota State University
Facilities and Services
Box 2150
Brookings, SD 57007

Phone: 605-688-4136

The undersigned, being familiar with the local conditions affecting the work, and with the Contract Documents, including the Invitation to Bid, Instructions to Bidders, Bid Form, Explanation of Alternates, Modification to Bid Form, Bid Bond Form, Performance and Payment Bond, Acknowledgment of Surety, Sample Certification of Surety, Non-Resident Bidder Affidavit, Form of Agreement for Construction, General Conditions, Special Conditions, Technical Specifications, Plans and Addenda which govern the purchase of material and labor and the awarding of contracts hereby proposes to do all the work and provide all the material and equipment which pertains to

NEW UG CHILLED WATER LINES - WEST SIDE USU_____

OSE# 0324—12X/DEL_____

as provided for in the Plan and accompanying Specifications dated _____

for the following total bid:

TOTAL BID _____ **DOLLARS (\$** _____ **)**

UNIT PRICES:

For changing quantities of work items from those indicated by the contract drawings upon written instruction from the Architect and State Engineer, the following unit prices shall prevail:

BID ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
UP-001	IRRIGATION SYSTEM & LANDSCAPING REPAIRS	LS	1	\$	\$
UP-002	TREE CANOPY REPLACEMENT - FURNISH AND PLANT	LS	1	\$	\$
UP-003	MOBILIZATION	LS	1	\$	\$
UP-004	VERIFY UTILITY	EA	15	\$	\$
UP-005	CONSTRUCTION STAKING	LS	1	\$	\$
UP-006	TRAFFIC CONTROL	LS	1	\$	\$
UP-007	REMOVE WALKWAY LIGHT ASSEMBLY	EA	6	\$	\$
UP-008	REMOVE POTABLE WATER MAIN	FT	96	\$	\$
UP-009	REMOVE CHILLED WATER MAIN	FT	20	\$	\$
UP-010	REMOVE STORM SEWER MAIN	FT	137	\$	\$
UP-011	REMOVE SANITARY SEWER MAIN	FT	165	\$	\$
UP-012	REMOVE SANITARY SEWER MANHOLE	EA	1	\$	\$
UP-013	REMOVE STORM SEWER MANHOLE	EA	2	\$	\$
UP-014	REMOVE CONCRETE SIDEWALK	SY	1,075	\$	\$
UP-015	REMOVE CONCRETE CURB AND GUTTER	FT	25	\$	\$
UP-016	10" SANITARY SEWER CAP/PLUG	EA	2	\$	\$
UP-017	LANDSCAPING REMOVALS	SF	99	\$	\$
UP-018	CLEAR AND GRUB TREE	EA	6	\$	\$
UP-019	SANITARY SEWER TEMPORARY BYPASS	LS	1	\$	\$
UP-020	UNCLASSIFIED EXCAVATION	CY	50	\$	\$
UP-021	6" PVC WATER MAIN, C900	LF	113	\$	\$
UP-022	8" PVC WATER MAIN, C900	LF	230	\$	\$
UP-023	10" PVC WATER MAIN, C900	LF	10	\$	\$
UP-024	6" MJ 90 DEGREE BEND	EA	1	\$	\$
UP-025	6" MJ 11.25, 22.5, 45 DEGREE BEND	EA	6	\$	\$
UP-026	8" MJ 11.25, 22.5, 45 DEGREE BEND	EA	6	\$	\$
UP-027	8" MJ SLEEVE	EA	1	\$	\$
UP-028	10" MJ SLEEVE	EA	2	\$	\$
UP-029	6" GATE VALVE WITH BOX	EA	1	\$	\$
UP-030	8" GATE VALVE WITH BOX	EA	2	\$	\$
UP-031	CUT AND TIE TO EXISTING WATER MAIN	EA	3	\$	\$

UP-032	6" x 6" MJ TEE	EA	1	\$	\$
UP-033	8" x 6" MJ TEE	EA	1	\$	\$
UP-034	10" x 10" MJ TEE	EA	1	\$	\$
UP-035	8" x 6" MJ REDUCER	EA	1	\$	\$
UP-036	10" x 8" MJ REDUCER	EA	1	\$	\$
UP-037	STANDARD FIRE HYDRANT	EA	1	\$	\$
UP-038	CONCRETE ENCASEMENT	LF	20	\$	\$
UP-039	UNIVERSITY STUDENT UNION CONNECTION, POTABLE WATER	EA	1	\$	\$
UP-040	8" HDPE, DR11	LF	64	\$	\$
UP-041	12" HDPE, DR11	LF	2,259	\$	\$
UP-042	8" CARBON STEEL, STD. WGHT	LF	25	\$	\$
UP-043	12" CARBON STEEL, STD. WGHT	LF	80	\$	\$
UP-044	8" HDPE 11.25, 22.5, 45 DEGREE BEND	EA	4	\$	\$
UP-045	12" HDPE 11.25, 22.5, 45 DEGREE BEND	EA	26	\$	\$
UP-046	8" HDPE 90 DEGREE BEND	EA	2	\$	\$
UP-047	12" HDPE 90 DEGREE BEND	EA	7	\$	\$
UP-048	12" x 8" STEEL TEE	EA	2	\$	\$
UP-049	12" x 12" STEEL TEE	EA	2	\$	\$
UP-050	12" SLEEVE	EA	2	\$	\$
UP-051	8" HIGH PERFORMANCE BUTTERFLY VALVE	EA	4	\$	\$
UP-052	12" HIGH PERFORMANCE BUTTERFLY VALVE	EA	12	\$	\$
UP-053	8" DISMANTLING JOINT	EA	2	\$	\$
UP-054	12" DISMANTLING JOINT	EA	10	\$	\$
UP-055	20" CASING PIPE	LF	28	\$	\$
UP-056	CUT AND TIE TO EXISTING CHILLED WATER MAIN	EA	4	\$	\$
UP-057	MATHEWS HALL CONNECTION, INTERIOR WORK	EA	1	\$	\$
UP-058	UNIVERSITY STUDENT UNION CONNECTION, INTERIOR WORK	EA	1	\$	\$
UP-059	EXISTING HYDRONIC VAULT CONNECTION, INTERIOR WORK	EA	1	\$	\$
UP-060	CAST-IN-PLACE VAULT STRUCTURE	EA	1	\$	\$
UP-061	SUMP PUMP SYSTEM	EA	1	\$	\$
UP-062	SITE AND VAULT ELECTRICAL	LS	1	\$	\$
UP-063	15" RCP CLASS B, FURNISH	LF	102	\$	\$
UP-064	15" RCP CLASS B, INSTALL	LF	102	\$	\$
UP-065	48" STORM MANHOLE	EA	3	\$	\$
UP-066	15" STORM SEWER CAP/PLUG	EA	2	\$	\$
UP-067	CONTRACTOR FURNISHED FILL	TON	200	\$	\$
UP-068	AGGREGATE BASE COURSE	TON	294	\$	\$
UP-069	SCARIFY AND RECOMPACT SUBGRADE	SY	942	\$	\$

UP-070	5" CONCRETE SIDEWALK	SF	8,204	\$	\$
UP-071	5" COLORED CONCRETE SIDEWALK	SF	273	\$	\$
UP-072	CONCRETE CURB & GUTTER	FT	25	\$	\$
UP-073	TYPE 1 DETECTABLE WARNING PANEL	SF	8	\$	\$
UP-074	SALVAGE AND RESET SIGN	EA	1	\$	\$
UP-075	INSTALL SALVAGED LIGHT POLE WITH NEW CONCRETE BASE	EA	6	\$	\$
UP-076	ORANGE PLASTIC SAFETY FENCE	FT	602	\$	\$
UP-077	INLET PROTECTION	EA	5	\$	\$
UP-078	CONCRETE WASHOUT AREA	EA	1	\$	\$
UP-079	SEDIMENT CONTROL WATTLE	FT	260	\$	\$
UP-080	MINOR IMPACT VEHICLE TRACKING CONTROL	EA	1	\$	\$
UP-081	CONTRACTOR FURNISHED TOPSOIL	TON	641	\$	\$
UP-082	SALVAGE AND PLACE TOPSOIL	CY	1,250	\$	\$
UP-083	PERMANENT SEED MIXTURE 1	LB	304	\$	\$
UP-084	WEED CONTROL	SY	5,624	\$	\$
UP-085	BONDED FIBER MATRIX	TON	2.3	\$	\$
UP-086	PLANT BED PREPARATION	SY	11	\$	\$
UP-087	4" DEPTH SHREDDED BARK MULCH	SY	11	\$	\$
UP-088	12" x 4" STEEL TEE	EA	2	\$	\$
UP-089	4" x 3/4" REDUCER	EA	2	\$	\$
TOTAL BID:					\$

The above unit prices shall include all labor, materials, bailing, shoring removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with Article 14 of the General Conditions.

The Owner also reserves the unrestricted privilege to reject any unit prices for additions to or deductions from the scheduled amount of work as given in the Bid, if the same are considered excessive or unreasonable, or to accept by including the same in the contract as unit prices applicable in the event of addition to or deduction from the work to be performed under the contract, any or all such unit prices which may be considered fair or reasonable.

The above bid includes all applicable State and Municipal Sales and Use Taxes on materials, and State and Municipal Excise Taxes and all other State and Federal Taxes that would affect the amount of the bid. (See Instructions to Bidders-SD Sales and Use Tax Information for Public Contracts.)

In addition, any material furnished by the State for use in this project is subject to Use Tax and Excise Tax. The total taxable value of materials furnished by the State for this project is \$_____.

A Performance and Payment Bond as required by General Conditions will not be required on contracts which do not exceed Fifty Thousand Dollars (\$50,000). (See SDCL 5-21-1.1 as amended).

If discrepancies remain at the time of substantial completion, a value will be assigned to each of the discrepancies and two (2) times their estimated value will be retained from payment to the Contractor until completed and accepted. (See SDCL 5-18-13 as amended).

Within ten (10) days after Contractor's receipt of the Agreement for Construction, the Contractor shall submit to SDSU Facilities and Services, the executed Agreement for Construction, Performance and Payment Bond, Certificates of Insurance and Affirmative Action Plan (if applicable).

Work shall be commenced within ten (10) consecutive calendar days after written Notice to Proceed by the State Engineer and shall be substantially completed

_____.

The undersigned acknowledges receipt of the following addenda to the drawings and/or specifications (give number and date of each):

Addenda Nos. _____ dated _____ respectively.

The undersigned acknowledges that they have read and understand the Asbestos-Containing Materials Statement contained in the project manual.

Accompanying this proposal is a certified check, cashier's check or draft in the amount of 5% of the base bid and all add alternates, and drawn on a State or National Bank in the amount of \$ _____ or a 10% bid bond issued by a surety authorized to do business in the State of South Dakota, in the amount of \$ _____. (Not applicable if Bid is under \$50,000.)

In submitting this bid, it is understood that the right is reserved by the Owner to reject any and all bids and to waive any irregularities. It is further understood by the Bidder that he may not withdraw his Bid within 30 days after the actual opening thereof.

In submitting this bid, bidder asserts it has reviewed all provisions of the General Conditions including the provision for assessment of liquidated delay damages found in Article 10 of the General Conditions. Bidder agrees that the damages anticipated by the Owner in the event of delay in completion of the project are uncertain in amount and difficult to prove; the amount stipulated in Article III of the Agreement for Construction is a reasonable amount in light of the anticipated loss and injury; and the Owner's actual damages in the event of delay would be impracticable or extremely difficult to fix. Bidder agrees to be bound by the liquidated damages set forth in Article III of the Agreement for Construction. Bidder further agrees that the liquidated amount stipulated in Article III of the Agreement for Construction is not a penalty.

BIDDER: _____
(Type Name of Firm)

BY: _____
(Signature of Firm's Representative)

(Type Name and Title of Firm's Representative)

TELEPHONE NO. _____

FACSIMILE NO. _____

E-MAIL ADDRESS _____

BUSINESS ADDRESS _____

STATE OF INCORPORATION _____

ESTIMATE OF QUANTITIES			
BID ITEM NO.	ITEM DESCRIPTION	UNIT	APPROX QTY
ALLOWANCES			
UP-001	IRRIGATION SYSTEM & LANDSCAPING REPAIRS	LS	1
UP-002	TREE CANOPY REPLACEMENT - FURNISH AND PLANT	LS	1
GENERAL			
UP-003	MOBILIZATION	LS	1
UP-004	VERIFY UTILITY	EA	15
UP-005	CONSTRUCTION STAKING	LS	1
UP-006	TRAFFIC CONTROL	LS	1
REMOVALS			
UP-007	REMOVE WALKWAY LIGHT ASSEMBLY	EA	6
UP-008	REMOVE POTABLE WATER MAIN	FT	96
UP-009	REMOVE CHILLED WATER MAIN	FT	20
UP-010	REMOVE STORM SEWER MAIN	FT	137
UP-011	REMOVE SANITARY SEWER MAIN	FT	165
UP-012	REMOVE SANITARY SEWER MANHOLE	EA	1
UP-013	REMOVE STORM SEWER MANHOLE	EA	2
UP-014	REMOVE CONCRETE SIDEWALK	SY	1,075
UP-015	REMOVE CONCRETE CURB AND GUTTER	FT	25
UP-016	10" SANITARY SEWER CAP/PLUG	EA	2
UP-017	LANDSCAPING REMOVALS	SF	99
UP-018	CLEAR AND GRUB TREE	EA	6
UP-019	SANITARY SEWER TEMPORARY BYPASS	LS	1
UP-020	UNCLASSIFIED EXCAVATION	CY	50
POTABLE WATER			
UP-021	6" PVC WATER MAIN, C900	LF	113
UP-022	8" PVC WATER MAIN, C900	LF	230
UP-023	10" PVC WATER MAIN, C900	LF	10
UP-024	6" MJ 90 DEGREE BEND	EA	1
UP-025	6" MJ 11.25, 22.5, 45 DEGREE BEND	EA	6
UP-026	8" MJ 11.25, 22.5, 45 DEGREE BEND	EA	6
UP-027	8" MJ SLEEVE	EA	1
UP-028	10" MJ SLEEVE	EA	2
UP-029	6" GATE VALVE WITH BOX	EA	1
UP-030	8" GATE VALVE WITH BOX	EA	2
UP-031	CUT AND TIE TO EXISTING WATER MAIN	EA	3
UP-032	6" x 6" MJ TEE	EA	1
UP-033	8" x 6" MJ TEE	EA	1
UP-034	10" x 10" MJ TEE	EA	1
UP-035	8" x 6" MJ REDUCER	EA	1
UP-036	10" x 8" MJ REDUCER	EA	1
UP-037	STANDARD FIRE HYDRANT	EA	1
UP-038	CONCRETE ENCASEMENT	LF	20
UP-039	UNIVERSITY STUDENT UNION CONNECTION, POTABLE WATER	EA	1

ESTIMATE OF QUANTITIES			
BID ITEM NO.	ITEM DESCRIPTION	UNIT	APPROX QTY
CHILLED WATER			
UP-040	8" HDPE, DR11	LF	64
UP-041	12" HDPE, DR11	LF	2,259
UP-042	8" CARBON STEEL, STD. WGT	LF	25
UP-043	12" CARBON STEEL, STD. WGT	LF	80
UP-044	8" HDPE 11.25, 22.5, 45 DEGREE BEND	EA	4
UP-045	12" HDPE 11.25, 22.5, 45 DEGREE BEND	EA	26
UP-046	8" HDPE 90 DEGREE BEND	EA	2
UP-047	12" HDPE 90 DEGREE BEND	EA	7
UP-048	12" x 8" STEEL TEE	EA	2
UP-049	12" x 12" STEEL TEE	EA	2
UP-050	12" SLEEVE	EA	2
UP-051	8" HIGH PERFORMANCE BUTTERFLY VALVE	EA	4
UP-052	12" HIGH PERFORMANCE BUTTERFLY VALVE	EA	12
UP-053	8" DISMANTLING JOINT	EA	2
UP-054	12" DISMANTLING JOINT	EA	10
UP-055	20" CASING PIPE	LF	28
UP-056	CUT AND TIE TO EXISTING CHILLED WATER MAIN	EA	4
UP-057	MATHEWS HALL CONNECTION, INTERIOR WORK	EA	1
UP-058	UNIVERSITY STUDENT UNION CONNECTION, INTERIOR WORK	EA	1
UP-059	EXISTING HYDRONIC VAULT CONNECTION, INTERIOR WORK	EA	1
HYDRONIC VAULT			
UP-060	CAST-IN-PLACE VAULT STRUCTURE	EA	1
UP-061	SUMP PUMP SYSTEM	EA	1
ELECTRICAL			
UP-062	SITE AND VAULT ELECTRICAL	LS	1
STORM SEWER			
UP-063	15" RCP CLASS B, FURNISH	LF	102
UP-064	15" RCP CLASS B, INSTALL	LF	102
UP-065	48" STORM MANHOLE	EA	3
UP-066	15" STORM SEWER CAP/PLUG	EA	2
SURFACING			
UP-067	CONTRACTOR FURNISHED FILL	TON	200
UP-068	AGGREGATE BASE COURSE	TON	294
UP-069	SCARIFY AND RECOMPACT SUBGRADE	SY	942
UP-070	5" CONCRETE SIDEWALK	SF	8,204
UP-071	5" COLORED CONCRETE SIDEWALK	SF	273
UP-072	CONCRETE CURB & GUTTER	FT	25
UP-073	TYPE 1 DETECTABLE WARNING PANEL	SF	8
UP-074	SALVAGE AND RESET SIGN	EA	1
UP-075	INSTALL SALVAGED LIGHT POLE WITH NEW CONCRETE BASE	EA	6
EROSION CONTROL			
UP-076	ORANGE PLASTIC SAFETY FENCE	FT	602
UP-077	INLET PROTECTION	EA	5
UP-078	CONCRETE WASHOUT AREA	EA	1
UP-079	SEDIMENT CONTROL WATTLE	FT	260
UP-080	MINOR IMPACT VEHICLE TRACKING CONTROL	EA	1
UP-081	CONTRACTOR FURNISHED TOPSOIL	TON	641
UP-082	SALVAGE AND PLACE TOPSOIL	CY	1,250
UP-083	PERMANENT SEED MIXTURE 1	LB	304
UP-084	WEED CONTROL	SY	5,624
UP-085	BONDED FIBER MATRIX	TON	2.3
UP-086	PLANT BED PREPARATION	SY	11
UP-087	4" DEPTH SHREDDED BARK MULCH	SY	11
UP-088	12" x 4" STEEL TEE	EA	2
UP-089	4" x 3/4" REDUCER	EA	2



Xref: xgt-1-dm01

DRAWN BY: KMF JOB DATE: 2025
APPROVED: MJP JOB NUMBER: 2403756
CAD DATE: 3/17/2025 3:54:13 PM
CAD FILE: \\hrgreen.com\HRG\Data\2024\2403756\CAD\Dwgs\Bid Set Dwgs\B\B001

BAR IS ONE INCH ON
OFFICIAL DRAWINGS.
0" = 1"
IF NOT ONE INCH,
ADJUST SCALE ACCORDINGLY.
CAD Set Dwgs\B\B001

NO.	DATE	BY	REVISION DESCRIPTION
1	03/17/25	MJP	Addendum No. 1



NEW UG CHILLED WATER LINES – WEST SIDE USU
OSE# R0324-12X/DEL SDSU# 25-15440
SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA

B-ESTIMATE OF QUANTITIES
ESTIMATE OF QUANTITIES

SHEET NO.
B001

GENERAL NOTES

PROJECT SCOPE

The project will connect the two main Chilled Water Plants on SDSU’s campus. This will include approximately 2,200 ft of 12” HDPE pipe and 100 ft of 8” HDPE. There will be a new hydronic valve vault installed. Along with the chilled main there will be approximately 130 ft of 8” PVC potable water main installed, this will create greater looping. Approximately 100 ft of 15” RCP storm sewer will be rerouted as well. This project will take place in the same space and time frame as a sanitary sewer project, coordination with the other general contractor will be critical.

SPECIFICATIONS TO BE USED

Division II and Division III of the most current edition of the South Dakota Department of Transportation Standard Specifications for Roads and Bridges with Supplemental Specifications and Errata, together with Brookings Municipal Utilities (BMU) Standard Specifications for Water Main and Sanitary Sewer Main Construction, South Dakota State University (SDSU), BMU and DOT Standard Plates and required provisions, supplemental specifications, and/or special provisions as included in the Project Manual are hereby made a part of these specifications in its entirety unless otherwise revised, deleted, or supplemented herein.

The South Dakota Department of Transportation Standard Specifications for Roads and Bridges with Supplemental Specifications and Errata can be downloaded from the SDDOT’s website at <https://dot.sd.gov/>.

Brookings Municipal Utilities’ Standard Specifications can be downloaded from their website at http://www.brookingsutilities.com/?page_id=16350. Note that not all requirements in these specifications apply.

ORDER OF PRECEDENCE

If conflicts arise, the order of precedence of the contract documents shall be as follows: Plans over Special Provisions over SDSU Standard Specifications over Brookings Municipal Utilities Standard Specifications over South Dakota Department of Transportation Supplemental Specifications and Errata over South Dakota Department of Transportation Standard Specifications for Roads and Bridges. SDSU Standard Plates have precedence over Brookings Municipal Utilities Standard Plates over South Dakota Department of Transportation Standard Plates.

ELECTRONIC DESIGN FILES

Electronic design files WILL be available to the Contractor prior to the bid letting if requested, subject to the following conditions:

- a. A signed disclaimer agreement shall be required from each Contractor requesting the electronic design files prior to distribution.
- b. Electronic design files will be distributed as DWG files. The Contractor will be responsible for obtaining the appropriate software to open, analyze, and/or convert these file formats for their own use, and understand the risks and limitations associated with that software.
- c. The electronic design files for distribution may be limited to the following: existing survey line work, existing ground surface model, proposed design utility and surfacing line work, and finished ground surface model. Additional information may be distributed at the Engineer’s discretion.
- d. The electronic design files will not include any modifications due to addendum unless specifically noted in an addendum.
- e. The electronic design files are provided for reference only. In the event of a discrepancy between the electronic design files and the contract documents, the contract documents shall prevail.

Requests for the electronic design files should be made by signing the disclaimer agreement and submitting it to the Engineer. Electronic design files will be furnished to the Contractor within two (2) business days from receipt of the signed disclaimer agreement.

CONSTRUCTION LIMITS

The construction limits are shown in the plans. Material storage and vehicle and equipment traffic shall be limited to the construction limits and designated staging area on the F Sheets. All paved areas adjacent to the project are to be cleaned at the end of each working day. The Contractor will not be allowed to store materials, equipment, etc. outside of the construction and staging area.

Long-term storage location is available upon request by Contractor. Providing a secure area at the storage location will be the Contractor’s responsibility.

CONSTRUCTION STAKING

Staking required to complete the work shall be completed by the Contractor, unless otherwise noted. Civil Design Inc from Brookings, SD completed the adjacent design survey. All costs associated with this work shall be included in the “Construction Staking” bid item.

SUBMITTALS

The following documents shall be submitted by the Contractor. Documentation requirements elsewhere in the contract are not waived if not listed in the following table.

Submittals	Date Submitted
Shop drawings	
Technical shop drawings as required per the specifications	
Construction schedule	
South Dakota State sewer and water plumbing contractor's license	
Documentation for licensed arborist	
Contractor furnished borrow location	
Dewatering plan for groundwater	
DANR Contractor Certification Form (SD Form – 2110LD)	
Colored concrete product name, standard color, mix design and sealer	
Topsoil source	
Seed testing certified report/seed bag tags	
Weed control inoculation certification and application records	
Mycorrhizal inoculum certification of fungal species claimed and live propagule count	
Fertilizer specifications, label producer name and warranty	
Bonded fiber matrix specifications	
Landscaping plantings	

CONSTRUCTION SCHEDULE

The Contractor shall prepare a construction schedule for approval by the Engineer that will ensure the completion of the project within the time frame specified. This schedule must be provided to the Engineer for review a minimum of 3 days prior to the preconstruction meeting. The construction schedule shall be in bar or network diagram form and show the start and completion dates for significant items of work in their respective phases. Significant items of work includes but is not limited to: erosion control, removals, grading, temporary water, installation of water main, base course, curb and gutter, paving, sidewalk, and pavement markings. When applicable, the schedule shall include submission dates for shop drawings, manufacturing and installation of materials, supplies, equipment, and testing for various parts of the work.

The construction schedule shall be updated on a weekly basis. If it appears the rate of progress is such that the contract will not be completed within the time frame allowed the Contractor shall be required to provide written documentation as to what measures they will take to complete the project within the specified time frame or to prosecute work in a satisfactory manner.

TIME PROVISIONS

The Contractor will commence work under this contract after Notice to Proceed is given. The Contractor will need to coordinate with the sanitary sewer project general contractor for construction phasing.

Phase 1 work can commence after the Notice to Proceed is given, construction cannot begin until summer break, which is anticipated to be **May 12th, 2025**. Phase 1 work should be completed to the point that chilled water main, potable water main, and building services are operational, pavement, and sidewalk is completed by **August 6th, 2025**, with Phase 1 final completion being **August 20th, 2025**.

The Phase 1 construction around the Student Union shall be staged so that the sidewalk placement is started within approximately 7 days after the chilled water main and services are installed.

Phase 2 work can commence after the Notice to Proceed is given, construction cannot begin until summer break, which is anticipated to be **May 13th, 2026**. **Phase 2** work should be completed to the point that chilled water main, potable water main, and building services are operational, pavement, and sidewalk is completed by **August 7th, 2026**, with Phase 2 final completion being **August 21st, 2026**.

Substantial Completion for each phase is listed above. The Contractor further agrees to pay as liquidated damages in the amount of **\$1,000 per calendar day** thereafter that the work remains uncompleted. Substantial Completion for the project shall be defined as completion of the chilled water main, potable water main, building services, **passing pipe pressure testing**, roadway, parking lot, and sidewalk work identified on the plans to permit utilization for the intended purpose. Exceptions shall be for final seeding, plantings, lighting, and related site work.

Final Completion for each phase is listed above. The Contractor further agrees to pay as liquidated damages in the amount of **\$500 per calendar day** thereafter that the work remains uncompleted. Final Completion shall be defined as completion of all the work identified in the plans and specifications, including cleanup of the site and staging areas, full site restoration, **pipe cleaning and chemical treatment**, and removal of all excess construction items from the site.

WARRANTY

All work and materials shall have a minimum one (1) year warranty after substantial completion.

COORDINATION MEETINGS

The contractor shall conduct coordination meetings with the sanitary sewer project general contractor (see “Adjacent Sanitary Sewer Project”), subcontractors, SDSU Facilities and Services, OSE Project Manager, and Engineer. These meetings shall be held weekly at a location on or near the project. The Contractor shall determine the time and location and as approved by the Engineer. Due to the high level of coordination required with the project, it is imperative that the subcontractors be included in the coordination meetings.

All costs to conduct the coordination meetings shall be incidental to the project.

ADJACENT SANITARY SEWER PROJECT

This project will take place in the same space and time frame as a sanitary sewer project, the general contractor of which is First Rate Inc out of Sioux Falls, SD. First Rate Inc is referred to as “others” in this plan set. Communication between First Rate Inc and this general contractor is critical.

CONTRACTOR SAFETY REQUIREMENTS

The Contractor is responsible for following all local, state, and federal rules and regulations regarding confined space entry and trench and excavation safety. The Contractor is solely responsible for site safety from the issuance of the Notice to Proceed until Final Acceptance. South Dakota State University shall not be responsible for the Contractor’s failure to follow all applicable rules and regulations.

The following requirements apply for all contractors and subcontractors working on the project. Failure to meet these requirements may result in a stop-work order and/or removal of the Contractor from the project at the discretion of the Engineer.

Confined Spaces

The Contractor shall have a written confined space entry program. Upon request, the Contractor shall provide a written certification to the Engineer that they are in compliance with their confined space entry program or provide a copy of their written confined space entry program to the Engineer.

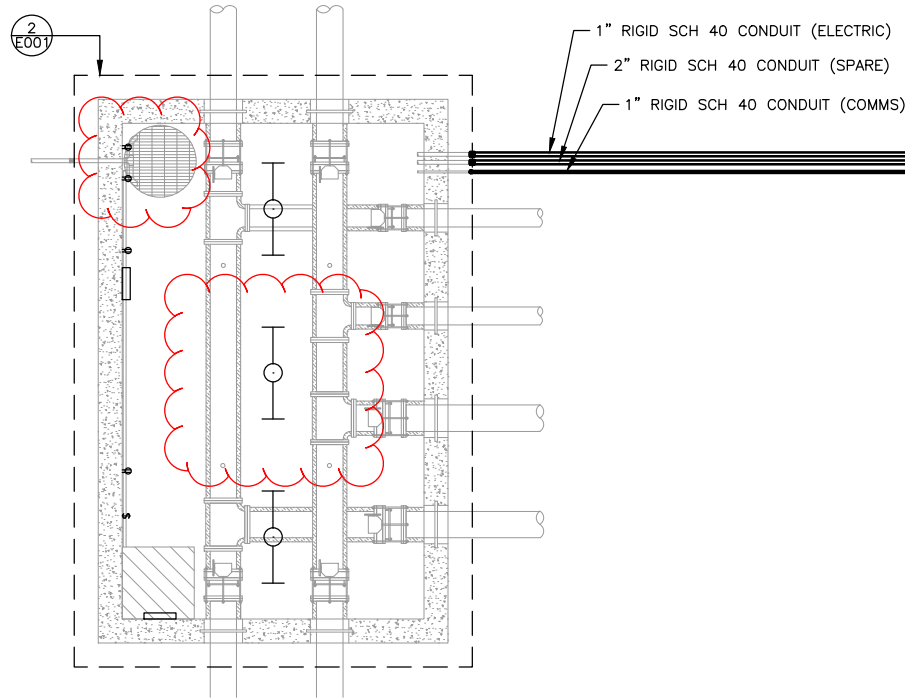
The Contractor shall follow all OSHA confined space requirements. The Contractor’s employees shall be trained in proper confined space entry operations. The Contractor shall supply any materials, equipment, tools, or other appurtenances needed for the confined space entry operations.

The Contractor is responsible for coordination when workers from more than one contractor or subcontractor, including SDSU personnel, are working in or near a confined space. The Engineer shall be included in the Contractor’s coordination efforts.

The Contractor shall advise the Engineer of any hazards confronted or created during a confined space entry operation.



DRAWN BY: KMF BID DATE: 2025		NO.	DATE	BY	DESCRIPTION	 HRGreen.com	NEW UG CHILLED WATER LINES – WEST SIDE USU OSE# R0324-12X/DEL SDSU# 25-15440 SOUTH DAKOTA STATE UNIVERSITY BROOKINGS, SOUTH DAKOTA	GENERAL NOTES	SHEET NO. D001
APPROVED: MJP JOB NUMBER: 2403756		1	03/17/25	MJP	Addendum No. 1				
PLOT DATE: 3/13/2025 2:54 PM									
CAD FILE:									



1 ELECTRICAL SITE PLAN
SCALE: 1/4" = 1'



CABLE & RACEWAY SCHEDULE					
FROM	TAG #	TO	TAG #	CONDUCTORS	CONDUIT
EXISTING PANELBOARD	LP-EX	PANELBOARD	LP	3-#8, #10 GND	1"
PANELBOARD	LP	CONVENIENCE RECEPTACLES	-	2-#12, #12 GND	3/4"
PANELBOARD	LP	SUMP PUMP #1 RECEPTACLE	-	2-#12, #12 GND	3/4"
PANELBOARD	LP	SUMP PUMP #2 RECEPTACLE	-	2-#12, #12 GND	3/4"
PANELBOARD	LP	LIGHTS	-	2-#12, #12 GND	3/4"
EXISTING CONTROL PANEL	CP EX	SUMP PUMP ALARM SYSTEM	-	-	1"
STUDENT UNION	-	HYDRONIC VAULT	-	-	2"

PANEL LP				
SIZE: 60 AMPS		MAINS: 60A MCB		
VOLTS: 120/240, 1 PHASE, 3 WIRE		MOUNTING: SURFACE, WALL		
CKT #	DESCRIPTION	LOAD (VA)	TRIP	POLE
1	CONVENIENCE RECEPTACLES	360	20	1
2				
3	SUMP PUMP #1 RECEPTACLE	1081	20	1
4				
5	SUMP PUMP #2 RECEPTACLE	1081	20	1
6				
7	LIGHTS	75	20	1
8				
9	SPARE	-	20	1
10				
11	SPARE		15	1
12				

LUMINAIRE SCHEDULE						
LUM NO.	MANUFACTURER	CATALOG NO.	LAMP DATA	VOLTAGE	DESCRIPTION	ALTERNATE MANUFACTURERS
L1	COLUMBIA	LXEM4-40VW-RFA-EDU	LED, 4000K, 3200 LUMENS, 25W	120/277	4" VAPOR TIGHT W/ SS LATCHES	LITHONIA

LUMINAIRE NOTES:

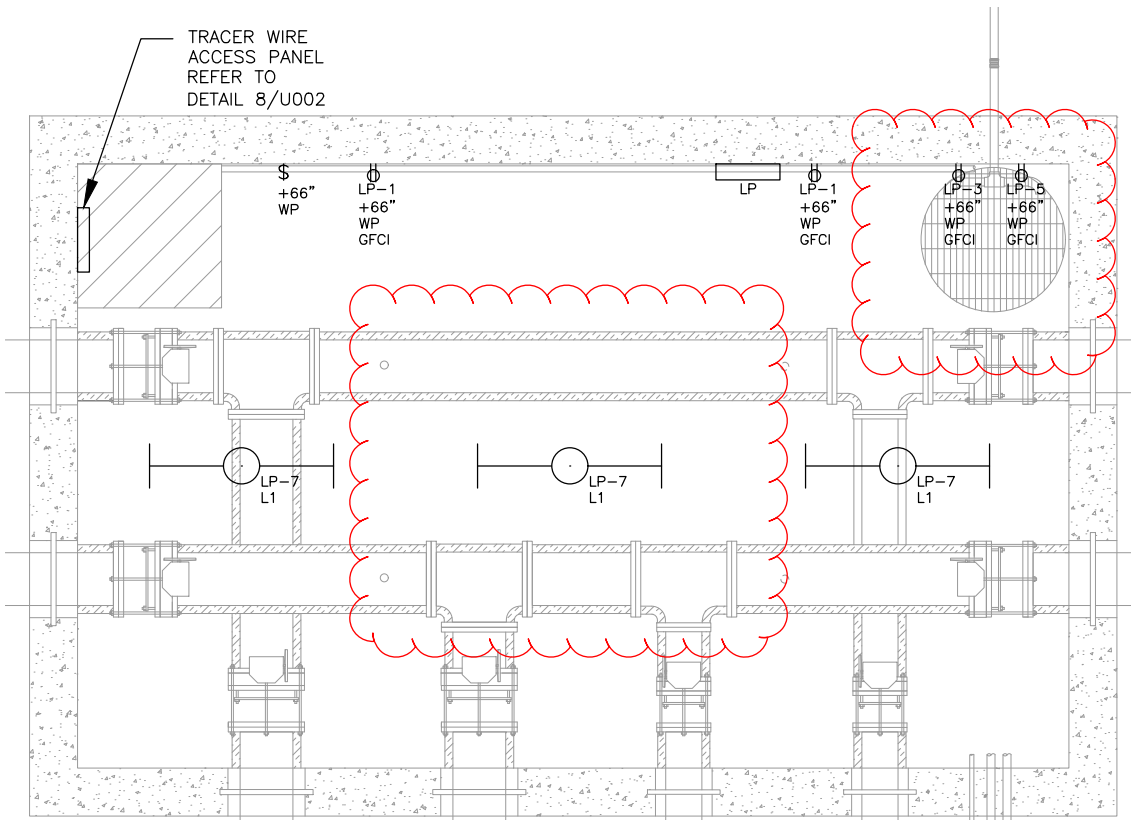
- SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR TO VERIFY LUMINAIRE CATALOG NUMBER AND INSTALLTION REQUIREMENTS PRIOR TO ORDERING.

KEY NOTES:

- REFER TO DETAIL 6/U002.
- INSTALL CONDUIT SUPPORT/HANGERS PER CODE. (TYP)
- PROVIDE 60/2 CIRCUIT BREAKER IN EXISTING PANEL TO SERVE NEW PANEL LP. MATCH EXISTING TYPES AND RATINGS. UPDATE CIRCUIT DIRECTORY.

GENERAL NOTES:

- REFER TO U003 FOR VAULT DIMENSIONS AND INTERIOR PIPING.
- PROVIDE JUNCTION AND PULL BOXES AS REQUIRED TO MEET CODE.



2 ELECTRICAL POWER AND LIGHTING PLAN
SCALE: 1/2" = 1'



ABBREVIATIONS

A	AMPERES
CKT	CIRCUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
V	VOLT
WP	WEATHERPROOF

ELECTRICAL SYMBOLS PLANS

LIGHT FIXTURES

—○— CEILING MOUNTED FIXTURE

WIRING DEVICE

⊕ DUPLEX RECEPTACLE—20A, 125V, 2P, 3W (NEMA 5-20R), WALL MOUNT
⊖ SINGLE POLE WALL SWITCH



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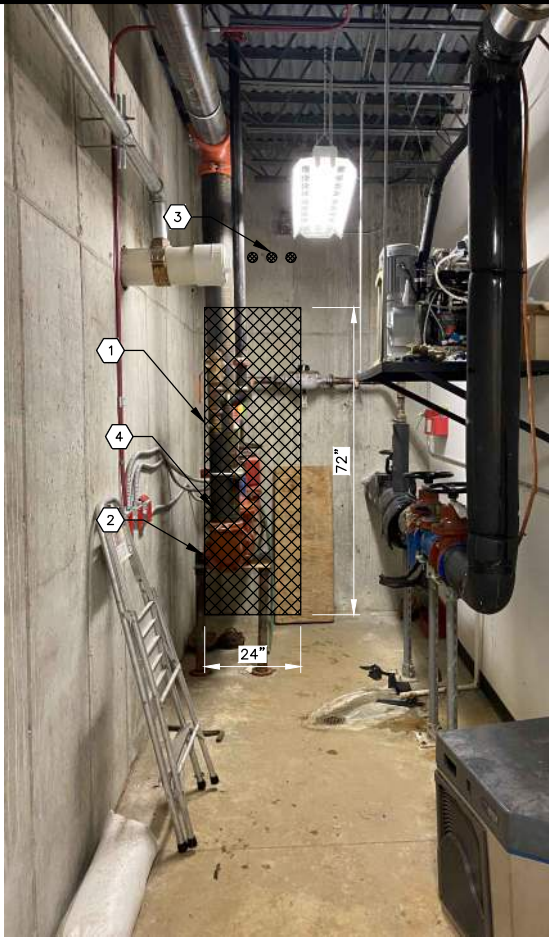
NEW UG CHILLED WATER LINES – WEST SIDE USU
OSE# R0324-12X/DEL SDSU# 25-15440
SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA

E-ELECTRICAL

VAULT AND STUDENT UNION ELECTRICAL PLAN

SHEET NO.

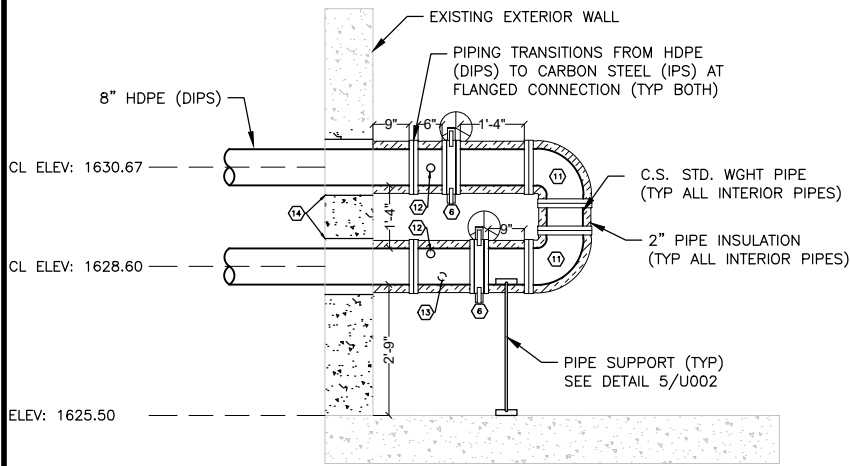
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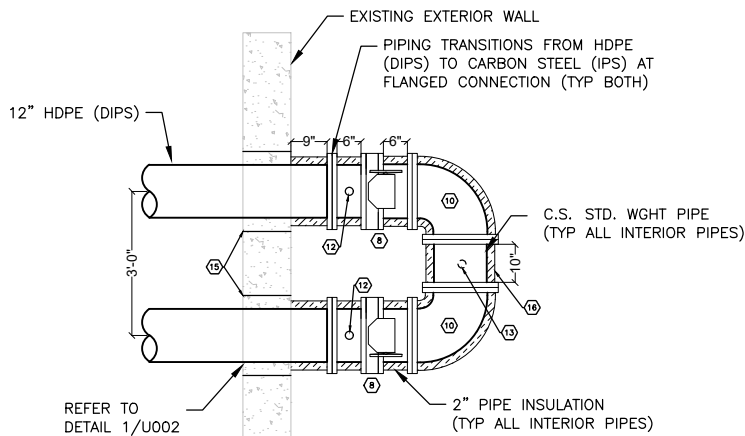
1 STUDENT UNION: INTERIOR PLUMBING PLAN
SCALE: NTS



2 MATHEWS HALL: INTERIOR PLUMBING PLAN
SCALE: NTS



3 STUDENT UNION: INTERIOR CHILLED PIPE LOOP SECTION
SCALE: 1/2" = 1'-0"



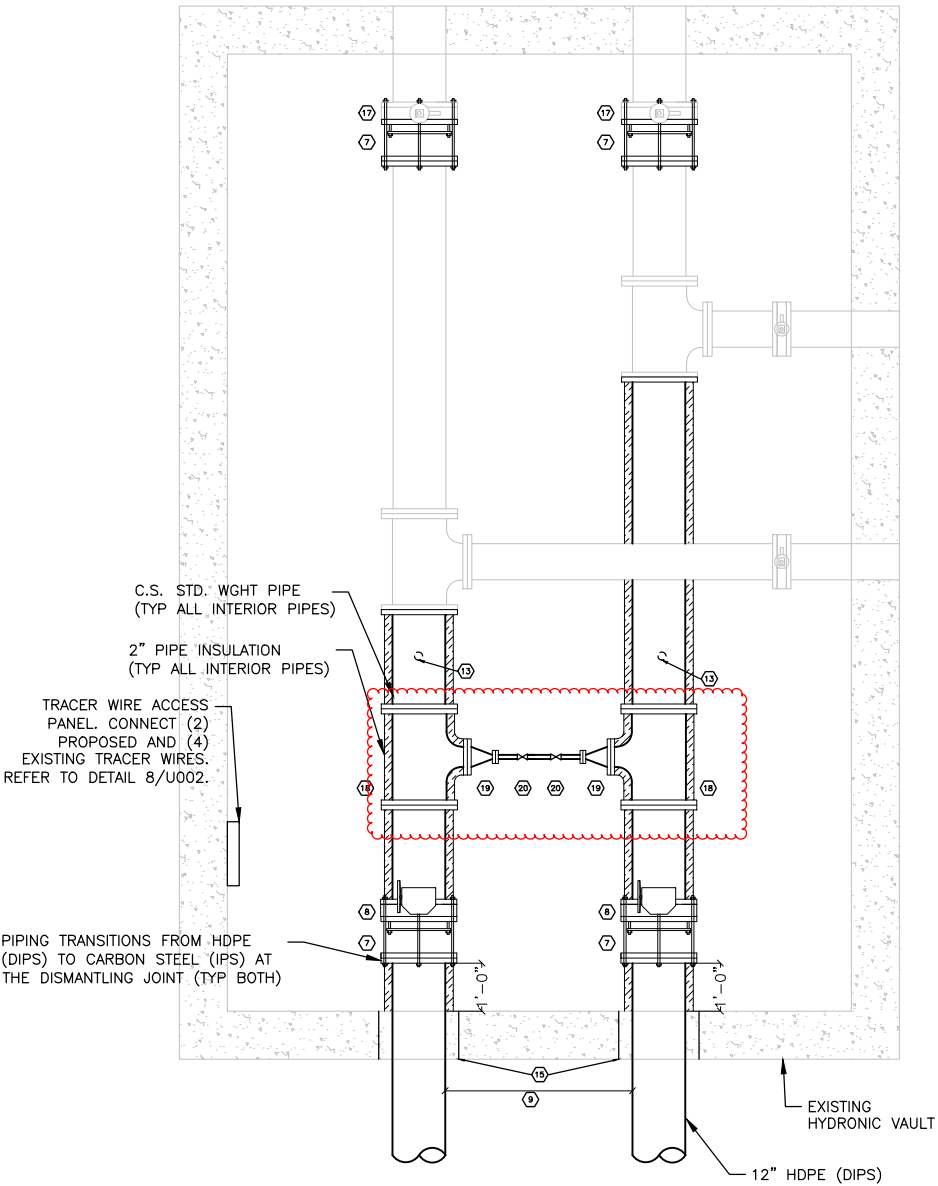
4 MATHEWS HALL: INTERIOR CHILLED PIPE LOOP PLAN
SCALE: 1/2" = 1'-0"

GENERAL NOTES:

1. ALL BURIED FITTINGS ON HDPE CHILLER LINES SHALL BE FUSED HDPE FITTINGS UNLESS OTHERWISE NOTES.
2. REFER TO SPECIFICATION 23 0719 FOR PIPE INSULATION REQUIREMENTS.

KEY NOTES:

1. SAW CUT AND REMOVE AN APPROX. 2' WIDE X 6' TALL SECTION OF THE EXTERIOR WALL. PROPOSED PIPING SHALL BE STUBBED INTO THE BUILDING AND THE WALL SHALL BE REPLACED.
2. THE RELOCATION OF THE EXISTING POTABLE WATER LINES WILL BE DONE BY MIDWESTERN MECHANICAL. CONTRACTOR TO COORDINATE WITH THE OWNER AND MIDWESTERN MECHANICAL FOR PHASING.
3. CORE DRILL FOR CONDUITS FROM THE PROPOSED HYDRONIC VAULT. REFER TO E001 FOR DEPTH AND LOCATION. REFER TO DETAIL 6/U002 FOR CORE DRILL.
4. REFER TO DETAIL 7/U002 FOR PROPOSED CHILLER LINE LOOP.
5. 8" DISMANTLING JOINT COUPLING
6. 8" HIGH PERFORMANCE BUTTERFLY VALVE
7. 12" DISMANTLING JOINT COUPLING
8. 12" HIGH PERFORMANCE BUTTERFLY VALVE
9. FIELD VERIFY EXISTING PIPE SPACING.
10. 12" FL 90° ELBOW
11. 8" FL 90° ELBOW
12. CHILLED MAIN RE-CIRCULATION ASSEMBLY, REFER TO DETAIL 7/U002.
13. CHILLED MAIN DRAIN ASSEMBLY. REFER TO DETAIL 4/U002.
14. WALL SLEEVE (8" PIPE). LINK SEAL MODEL CS-14 OR ENGINEER APPROVED EQUAL.
15. 20" DIAMETER CORE DRILL. REFER TO DETAIL 1/U002 FOR SEAL.
16. CONCRETE BLOCK W/ PIPE SUPPORT. REFER TO DETAIL 5/U002 FOR PIPE SUPPORT.
17. 12" HIGH PERFORMANCE BUTTERFLY VALVE. THIS VALVE HAS BEEN INCLUDED IN THE PROJECT QUANTITIES BUT SHALL BE SALVAGED AND REINSTALLED INSTEAD OF REPLACED IF THE EXISTING VALVE IS FUNCTIONING PROPERLY.
18. 12" X 4" STEEL TEE
19. 4" X 3/4" REDUCER
20. 3/4" BALL VALVE



5 EXISTING HYDRONIC VAULT: INTERIOR PLAN
SCALE: 1/2" = 1'-0"

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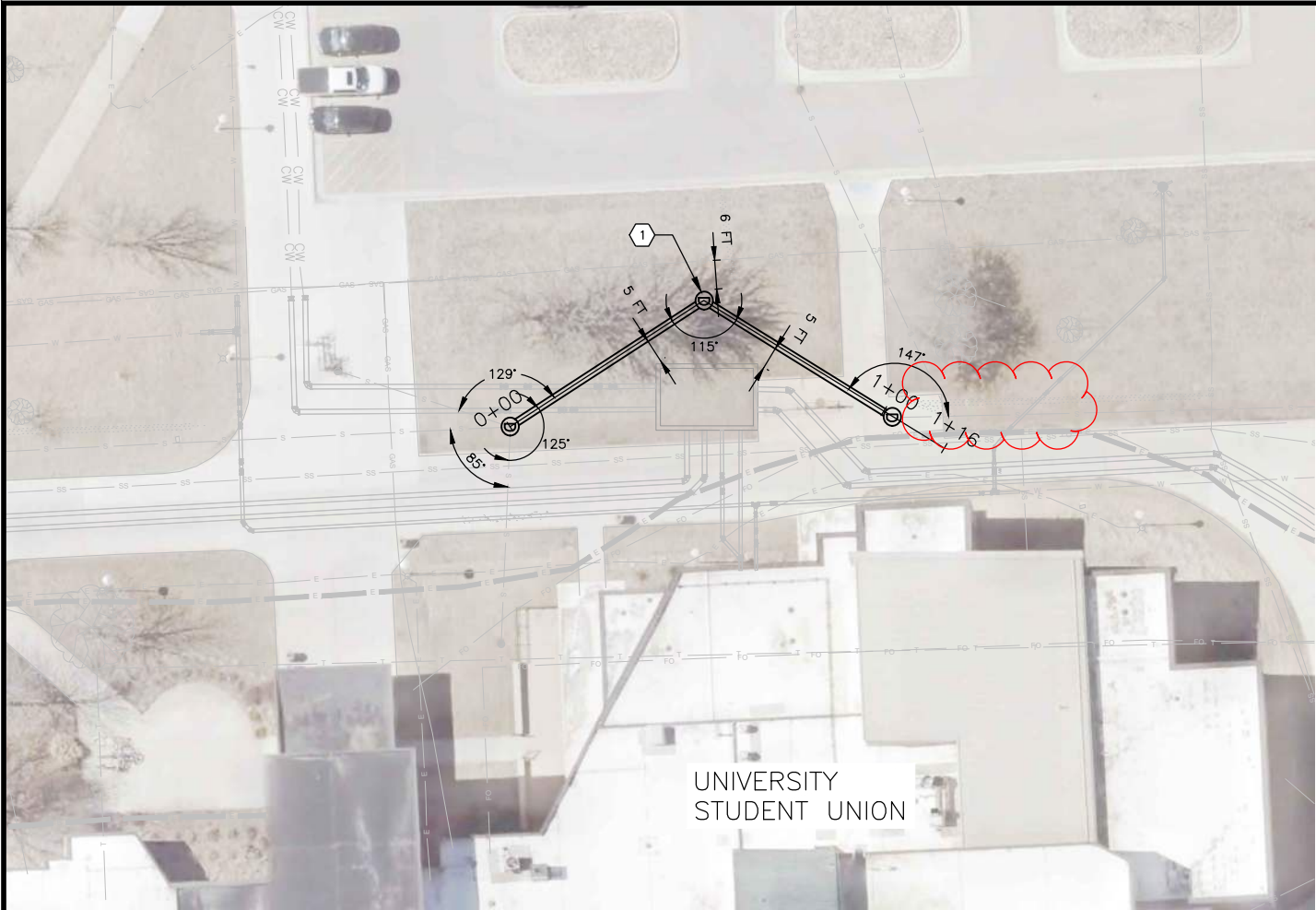


NEW UG CHILLED WATER LINES - WEST SIDE USU
OSE# R0324-12X/DEL SDSU# 25-15440
SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA

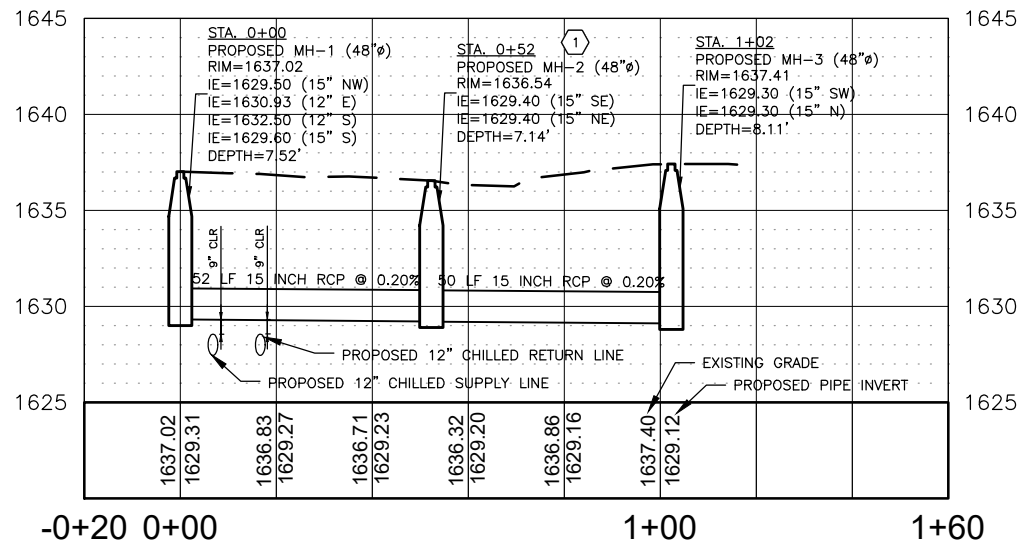
I-UTILITY PLAN AND PROFILE
CHILLED LINES - INTERIOR BUILDING PLAN



SHEET NO.
1007



1 STORM SEWER PLAN
SCALE: 1" = 20'



GENERAL NOTES:

1. CONTRACTOR TO SUPPORT UTILITY CROSSINGS DURING CONSTRUCTION AND TAKE PRECAUTIONS WHEN CROSSING THE HIGH VOLTAGE ELECTRICAL DUCT BANKS.
2. ALL GRAVITY PIPE LENGTHS ARE MEASURED FROM CENTER OF STRUCTURE (JB) TO CENTER OF STRUCTURE.
3. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND FOR REFERENCE; THEREFORE ARE NOT EXACT NOR COMPLETE. SEE ADDITIONAL REQUIREMENTS IN THE GENERAL NOTES ON D002.

KEY NOTES:

1. THIS STORM MANHOLE SHALL HAVE A GRATED LID, NEENAH R-1733 W/ GRATE OR ENGINEER APPROVED EQUAL. THE ADJACENT GRADING SHALL SLOPE TOWARDS THIS INLET.



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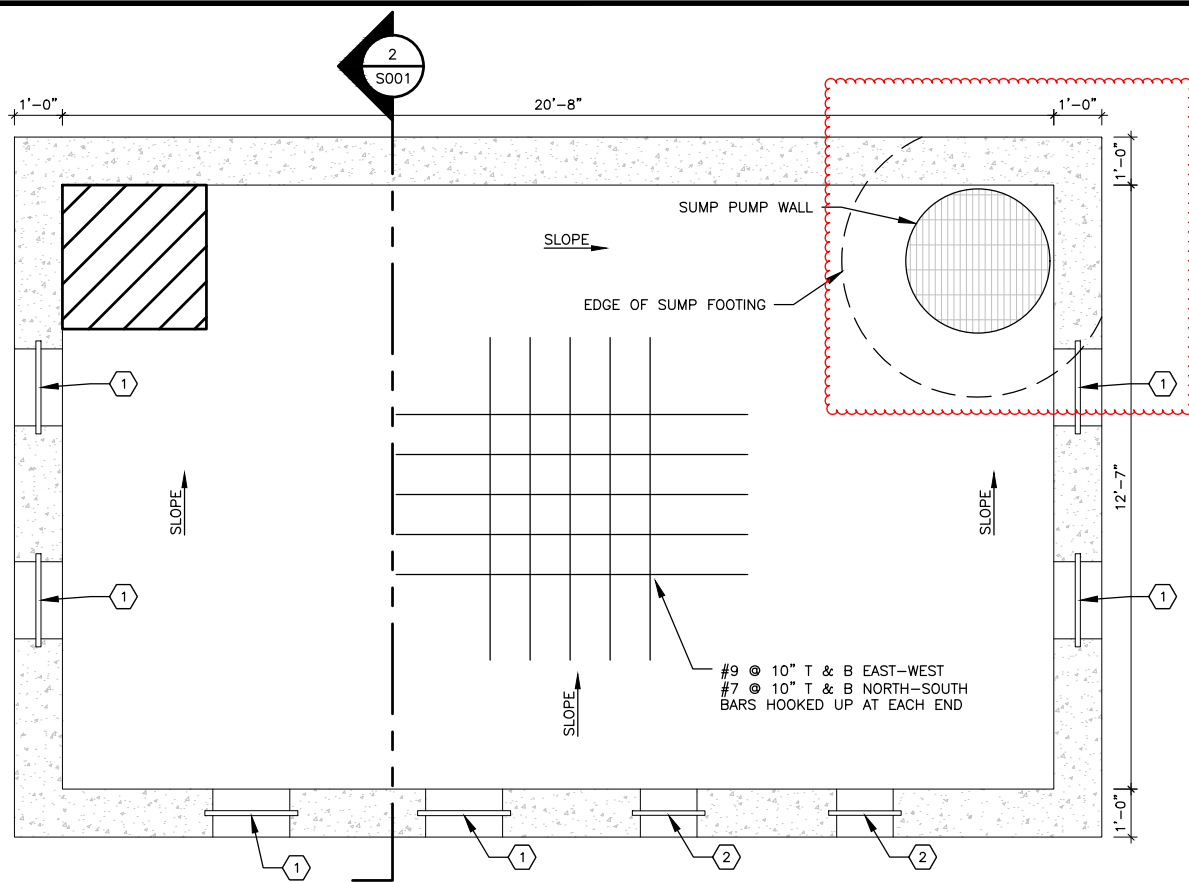
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SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA

I-UTILITY PLAN AND PROFILE

STORM SEWER – PLAN AND PROFILE

SHEET NO.

1201



1 VAULT FOUNDATION PLAN
SCALE: 1/2" = 1'

EARTHWORK

SOIL CONDITIONS

- CONSTRUCTION OF FOOTINGS SHALL NOT TAKE PLACE ON UNSUITABLE SOILS. UNSUITABLE BEARING CONDITIONS SHALL BE CORRECTED AS DIRECTED BY THE SOIL ENGINEER. CORRECTIVE MEASURES SHALL PROVIDE BEARING CAPACITY AT ASSUMED DESIGN PRESSURES.
- FOOTING TRENCHES SHALL BE FREE OF FROST PRIOR TO CASTING OF FOOTINGS AND PLACEMENT OF BACKFILL.

DRAINAGE

- PROVIDE POSITIVE DRAINAGE AWAY FROM THE EXCAVATION. USE BARRIERS, BERMS, CURBS, OR PIPING AS NECESSARY TO CARRY AWAY PONDED WATER.
- MAINTAIN DRAINAGE AWAY FROM AND OUT OF FOOTING TRENCHES USING SUMP PITS AND PUMPS IF NECESSARY TO REMOVE INFILTRATED OR SEEPING WATER.
- BACKFILL FOUNDATIONS AS SOON AS POSSIBLE TO PREVENT SURFACE WATER INFILTRATION.
- FOOTINGS EXPOSED TO RAIN OR SURFACE WATER INFILTRATION SHALL BE INSPECTED BY A QUALIFIED GEOTECHNICAL ENGINEER. CORRECTIVE MEASURES PRESCRIBED BY THE GEOTECHNICAL ENGINEER SHALL BE COMPLETE AND APPROVED PRIOR TO BACKFILLING.
- EARTH FORMING SHALL NOT BE USED WHERE DRAINAGE IS POOR.

SUBGRADE, BACKFILL, AND COMPACTION

- FOUNDATION SOILS SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF IOWA. UPON EXCAVATION, WHERE WHERE UNSUITABLE SOILS ARE FOUND, REMOVE TO DEPTH REQUIRED BY GEOTECHNICAL ENGINEER AND REPLACE WITH SUITABLE COMPACTED "ENGINEERED FILL" OR "GRANULAR FILL" TO ACHIEVE THE REQUIRED BEARING CAPACITY.
- PROVIDE MINIMUM OF 6-INCH COMPACTED ENGINEERED FILL SUBBASE WITH LESS THAN 4% PASSING #200 SIEVE FOR FOUNDATIONS WITH SUBBASE EXTENDING A MINIMUM OF ONE-FOOT BEYOND STRUCTURE IN EACH DIRECTION.
- DO NOT BRING HEAVY COMPACTION OR PAVING EQUIPMENT WITHIN 3' OF FOUNDATIONS OR WALLS. USE MANUALLY OPERATED COMPACTION EQUIPMENT ADJACENT TO STRUCTURES.
- FROST FREE FOOTINGS SHALL BE BASED ON "GRANULAR FILL" BASE WITH LESS THAN 4% PASSING #200 SIEVE COMPACTED TO 95% OF STANDARD PROCTOR DENSITY AND EXTENDING HORIZONTALLY ONE FOOT BEYOND FOUNDATION AND TO FROST DEPTH, AND ENCLOSED BY FILTER FABRIC ON ALL SURFACES EXPOSED TO SOIL.

PRODUCTS

- CONCRETE / REINFORCING
REFER TO CONCRETE MATERIAL SCHEDULE FOR MIX, MIX AND CASTING REQUIREMENTS TO COMPLY WITH STRUCTURAL SPECIFICATIONS
03 1000 CONCRETE FORMING
03 2000 CONCRETE REINFORCING
03 3000 CAST-IN-PLACE CONCRETE

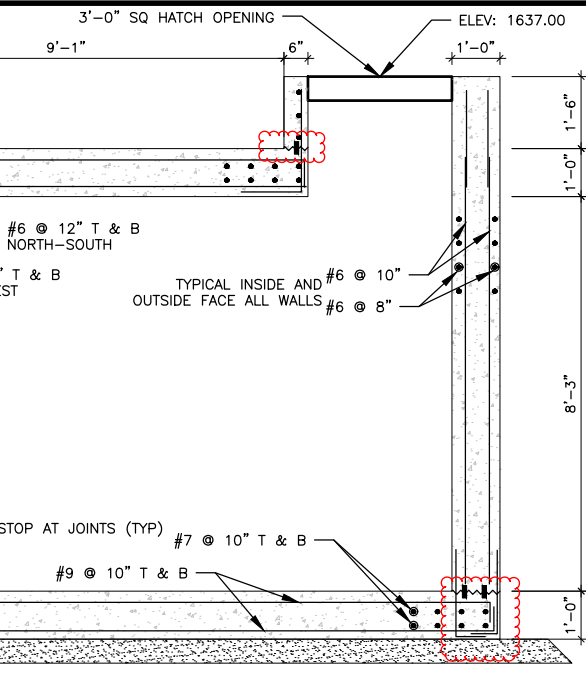
CONCRETE NOTES

- SEE CONCRETE MATERIAL SCHEDULE DETAIL 5 SHEET S002.
- SEE CONCRETE PROTECTION TABLE DETAIL 4 SHEET S002 FOR COVER REQUIREMENTS.
- FOR REBAR DEVELOPMENT, SPLICES AND HOOKS SEE TABLE DETAIL 3 SHEET S002. ALL BARS ARE CONSIDERED TOP BARS UNLESS NOTED OTHERWISE.
- IN ADDITION TO MAIN BAR REINFORCEMENT SIZE AND SPACING INDICATED ON DRAWING, OPENINGS 16 INCHES OR LARGER SHALL HAVE 2 ADDITIONAL #5 BAR DIAGONALS BY 4-FOOT LONG CENTERED AT EACH CORNER. OPENINGS 30 INCHES OR LARGER SHALL HAVE A MINIMUM OF 2 ADDITIONAL HORIZONTAL AND VERTICAL EDGE REINFORCEMENT BARS CENTERED AT EACH EDGE OF THE OPENING MATCHING MAIN BAR SIZES AND EXTENDING THE BAR DEVELOPMENT LENGTH BEYOND THE FIRST BAR BEYOND THE OPENING. ROUND OPENINGS 30 INCHES OR LARGER SHALL ALSO HAVE 2 #5 HOOP BARS AROUND OPENING. FOR ADDITIONAL REQUIREMENTS SEE OPENING REINFORCEMENT DETAIL 1 SHEET S002.
- REINFORCEMENT ACROSS CONSTRUCTION JOINTS SHALL DEVELOP 125% OF BAR CAPACITY AND TERMINATE IN STANDARD HOOKS WHERE CONCRETE DIMENSIONS DO NOT ALLOW FULL DEVELOPMENT OF REINFORCEMENT.
- CONSTRUCTION JOINTS AND/OR SAW CUT JOINTS SHALL BE AT SPACING LESS THAN 40 TIMES SLAB THICKNESS IN EACH DIRECTION IN SLABS ON GRADE AND ARE NOT ALLOWED IN MAT FOUNDATIONS UNLESS OTHERWISE NOTED.
- SLOPE CONCRETE BASE TO SUMP PUMP AT 0.5% SLOPE.
- SEE DETAIL 1 SHEET S901 FOR ADDITIONAL REINFORCEMENT AROUND SUMP AND WALL AND ROOF SLAB OPENINGS. IN ADDITION, PROVIDE (3) ADDITIONAL #5 HOOP BARS EQUALLY SPACED DOWN SIDE OF SUMP.

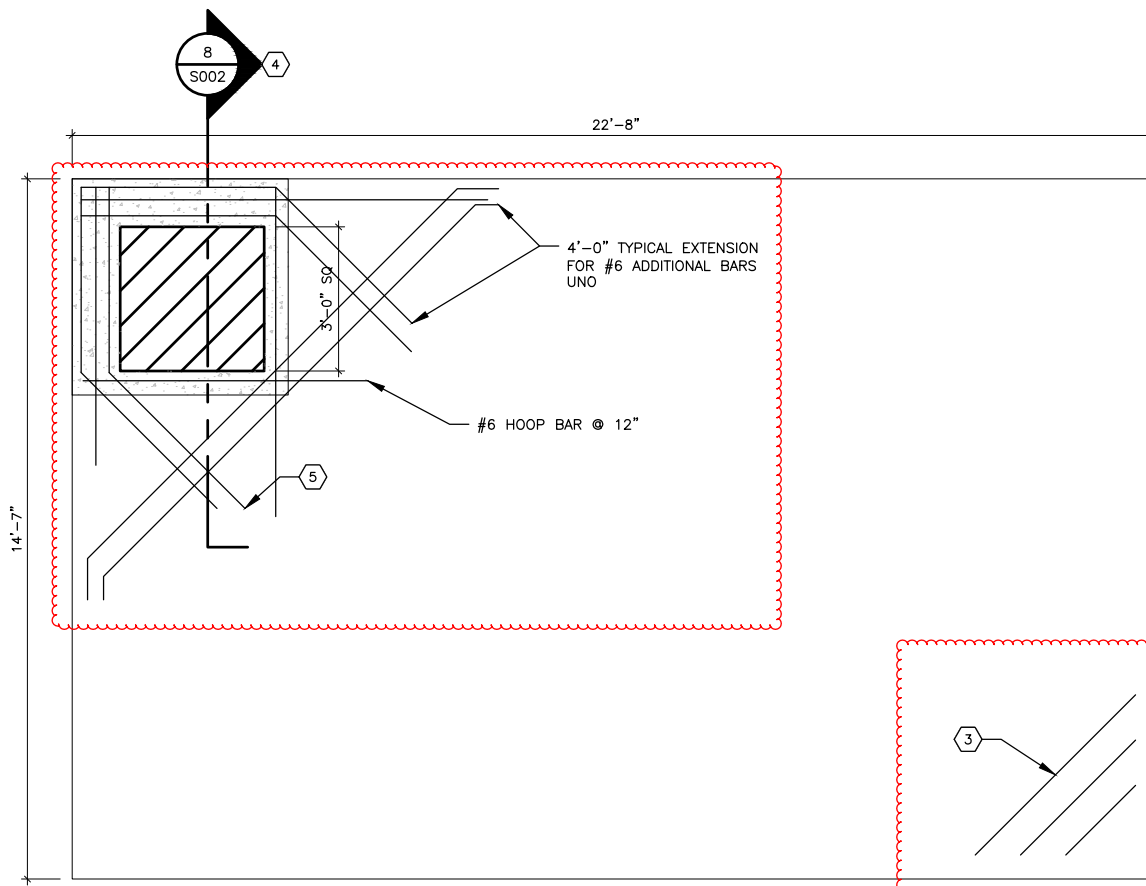
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0" = 1"
IF NOT ONE INCH,
ADJUST SCALE ACCORDINGLY.

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2 VAULT STRUCTURAL SECTION
SCALE: 1/2" = 1'



3 VAULT ROOF REINFORCING PLAN
SCALE: 1/2" = 1'

KEYNOTES:

- WALL SLEEVE (12" PIPE). WALL SLEEVE SHALL HAVE A LARGE ENOUGH I.D. TO ACCOMMODATE THE FLANGE O.D. OF 19.00".
- WALL SLEEVE (8" PIPE). WALL SLEEVE SHALL HAVE A LARGE ENOUGH I.D. TO ACCOMMODATE THE FLANGE O.D. OF 13.50".
- ADDITIONAL REINFORCEMENT AT ELEVATED SLAB CORNERS. REFER TO DETAIL 6/S002.
- CONCRETE CURB FOR ROOF HATCH. REFER TO DETAIL 8/S002.
- ADDITIONAL BARS. REFER TO DETAIL 1/S002.

GENERAL NOTES:

- WALL SLEEVES ARE OVERSIZED FOR THE PIPE TO ACCOMMODATE THE PASS THROUGH OF THE FLANGED END INTO THE VAULT.
- REFER TO PLAN FOR DETAILS AROUND OPENINGS.

DESIGN CRITERIA

CODES:

2021 INTERNATIONAL BUILDING CODE WITH SOUTH DAKOTA AMENDMENTS
AMERICAN INSTITUTE OF STEEL CONSTRUCTION - 16TH EDITION
AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-25)
AMERICAN CONCRETE INSTITUTE CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350-20)

GRAVITY DESIGN LOADING

ROOF DESIGN LOADS:
DEAD LOAD: SELF WEIGHT
LIVE LOAD: 100PSF OR (ONE) LIGHT TRUCK VEHICLE 8,000 LB.
MAXIMUM GROSS WEIGHT.
SNOW LOAD:
GROUND SNOW LOAD: $P_g=40\text{PSF}$
IMPORTANCE FACTOR, $I=1.20$
EXPOSURE FACTOR, $C_e=1.0$
FLOOR DESIGN LIVE LOADS:
BASE MAT FOUNDATION: 250PSF

LATERAL DESIGN LOADING:

WIND:

BASIC WIND SPEED (ULTIMATE): 125 MPH
EXPOSURE: C
IMPORTANCE FACTOR: 1

SEISMIC:

SEISMIC ACCELERATION VALUES:

$S_s = 0.091$
 $S_1 = 0.035$

SOIL SITE CLASS: D

IMPORTANCE FACTOR, $I=1.25$

SEISMIC DESIGN PARAMETERS:

$S_{ds} = 0.097$
 $S_{d1} = 0.057$

SEISMIC DESIGN CATEGORY: A

DESIGN BASE SHEAR = 0.0364W

SEISMIC RESPONSE COEFFICIENT, $C_s = 0.0364$

RESPONSE MODIFICATION COEFFICIENT, $R = 4$

ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE

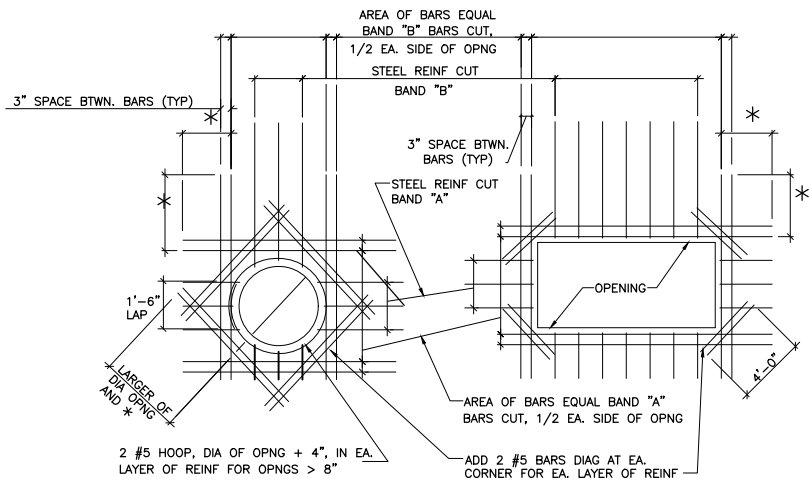


S-STRUCTURAL

HYDRONIC VAULT STRUCTURAL PLAN

SHEET NO.

S001



- NOTES:
- *BAR LAP LENGTH, UNLESS NOTED OTHERWISE ON PLANS.
 - DO NOT WELD REINFORCING TO PIPE SLEEVES AND INSERTS.
 - TYP FOR ALL OPENINGS IN CONC. WALL AND SLABS UNLESS INDICATED OTHERWISE ON PLANS.
 - COORDINATE WALL OPENINGS WITH ALL DISCIPLINES.

1 TYPICAL OPENING REINFORCEMENT

SCALE: NTS

ADHESIVE AND EXPANSION ANCHORS UNLESS OTHERWISE NOTED							
DIAMETER	3/8"	1/2"	5/8"	3/4"	7/8"	1"	
EXP ANCH EMBED.	3"	4"	5"	6"	7"	8"	
ADHESIVE ANCH EMBED	2 1/2"	3"	3 3/4"	4 1/2"	5 1/4"	6"	
ALLOWABLE TENSION (LB)	1220	2040	3120	3700	4080	6040	
ALLOWABLE SHEAR (LB)	840	1330	2660	3350	5530	6250	
CLOSEST ANCHOR (IN) (SEE NOTES C & I)	6 3/4"	9"	11 1/4"	13 1/2"	15 3/4"	18"	
CLOSEST EDGE (IN) (SEE NOTE J)	9"	12"	15"	18"	21"	24"	

ANCHORAGE TO CONCRETE - POST-INSTALLED ANCHORS

- NOTES:
- UNLESS NOTED OTHERWISE, ANCHORS MAY BE EITHER EXPANSION OR ADHESIVE.
 - UNLESS NOTED OTHERWISE, MINIMUM EMBEDMENT SHALL BE PER TABLE ABOVE. IN NO CASE MAY THE EMBEDMENT BE LESS THAN THE MANUFACTURER'S "MINIMUM EMBEDMENT" FROM PUBLISHED CATALOG LITERATURE.
 - UNLESS NOTED OTHERWISE, MINIMUM CENTER-TO-CENTER SPACING BETWEEN ANCHORS SHALL BE PER TABLE ABOVE ("CLOSEST ANCHOR").
 - EXPANSION ANCHORS - WEDGE-TYPE, GRADE 316 STAINLESS STEEL. MANUFACTURERS: HILTI "KWIK BOLT TZ OR HY-200"; ITW RED HEAD "TRUBOLT+"; POWERS "POWER-STUD+SD2"; OR SIMPSON "STRONG BOLT 2".
 - ADHESIVE ANCHORS - EPOXY OR ACRYLIC ADHESIVE WITH GRADE 316 STAINLESS STEEL THREADED ROD. MANUFACTURERS: HILTI "RE500V3"; ITW RED HEAD "EPCON C6+ OR S7" OR POWERS "PURE110+", OR SIMPSON "SET-XP".
 - INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS AND ADDITIONAL RECOMMENDATIONS OF ICC EVALUATION SERVICE REPORT.
 - ALL POST-INSTALLED ANCHORS MUST BE INSPECTED TWICE:
 - AFTER HOLE IS DRILLED AND CLEANED, AND
 - DURING INSTALLATION OF ADHESIVE AND ROD OR EXPANSION ANCHOR.
 - ON DRAWINGS, ADHESIVE ANCHORS MAY ALSO BE REFERRED TO AS EPOXY OR EPOXY SET ANCHORS.
 - FOR STATED ALLOWABLE LOAD VALUES TO APPLY, THERE MAY BE NO OTHER ANCHORS WITHIN (18 TIMES THE ANCHOR DIAMETER), AND THERE MAY BE NO FREE CONCRETE EDGE WITHIN (24 TIMES THE ANCHOR DIAMETER).
 - FOR ANCHORS RESISTING TENSION AND SHEAR USE FOLLOWING EQUATION: (ACTUAL TENSION/ALLOWABLE TENSION) + (ACTUAL SHEAR/ALLOWABLE SHEAR) < 1.00
 - UNLESS NOTED OTHERWISE, ADHESIVE ANCHORS MAY NOT BE USED IN OVERHEAD APPLICATIONS.
 - FOR STATED ALLOWABLE LOAD VALUES TO APPLY, DESIGN STRENGTH OF CONCRETE (F_c) MUST BE AT LEAST 4,500 PSI.
 - CONCRETE ANCHORS MAY ALSO BE USED AT CMU, PROVIDED THAT CELLS AT AND ADJACENT TO ANCHOR ARE FULLY GROUTED (TOP AND BOTTOM, AND BOTH SIDES OF ANCHOR CELL). USE 1/2 OF ALLOWABLE LOADS STATED IN TABLE.

2 CONCRETE ANCHORS

SCALE: NTS

BAR DEVELOPMENT, SPLICE, AND HOOK TABLE				
Mt. BAR SIZE	DEVELOPMENT	LAP SPLICE	STANDARD 90 DEGREE HOOK LEG	DEVELOPMENT EMBED WITH HOOK
#3	1'-4"	1'-10"	6"	8"
#4	1'-10"	2'-5"	8"	11"
#5	2'-3"	3'-0"	10"	1'-2"
#6	2'-9"	3'-7"	1'-2"	1'-4"
#7	4'-0"	5'-3"	1'-3"	1'-7"
#8	4'-7"	6'-0"	1'-3"	1'-10"
#9	5'-2"	6'-9"	1'-7"	2'-1"
#10	5'-10"	7'-7"	1'-9"	2'-4"
#11	6'-5"	8'-5"	1'-11"	2'-7"

- NOTES:
- BASED ON 4500 PSI CONCRETE. DEVELOPMENT AND SPLICE (LAP) LENGTHS MAY BE ADJUSTED BASED ON THE NOMINAL CONCRETE STRENGTH PER ACI 318.
 - NONCONTACT LAP SPLICE LENGTH IS THE LAP SPLICE PLUS THE SEPARATION OF BARS BEING LAPPED. BARS BEING LAPPED CAN NOT BE FURTHER APART THAN 1/5TH OF THE LAP SPLICE LENGTH OR 6 INCHES.
 - FOR EPOXY-COATED BARS, MULTIPLY FINAL LAP LENGTH BY 1.5.

3 REBAR AND LAP SPLICE DETAIL

SCALE: NTS

CONCRETE PROTECTION FOR REINFORCEMENT CLEAR CONCRETE COVER DISTANCES UNO	
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE IN CONTACT WITH OR IMMEDIATELY ABOVE OR ADJACENT TO WATER/WASTEWATER	2"
CONCRETE EXPOSED TO EARTH OR WEATHER	
#6 THROUGH #11 BARS	2"
#5 AND SMALLER, W31 OR D31 WIRE	1 1/2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
SLABS, WALLS AND JOISTS: #11 AND LARGER BARS	1 1/2"
#10 AND SMALLER BARS	LARGER OF 1" OR BAR DIA.
BEAMS AND COLUMNS: PRIMARY REINFORCEMENT, TIES, STIRRUPS AND SPIRALS	1 1/2"

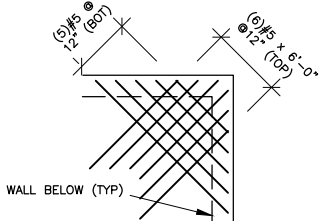
4 CONCRETE REINFORCEMENT PROTECTION

SCALE: NTS

CONCRETE MATERIAL SCHEDULE	
PROPERTIES/MATERIALS	STRUCTURAL CONCRETE
COMPRESSIVE STRENGTH - MINIMUM	4,500 psi
PORTLAND CEMENT - ASTM C150	Type I/II
FLYASH - ASTM C618	15% max
AGGREGATE - COARSE - ASTM C33	1" max
AIR ENTRAINMENT - ASTM C260	6% ± 1%
SUPER PLASTICIZER - ASTM C494	(OPTIONAL) TYPE F
WATER TO CEMENT RATIO - MAXIMUM	0.44 max
MAXIMUM UNIT WEIGHT	150 PCF
FIBER REINFORCEMENT	ELEVATED SLAB (ROOF)
WATERPROOFING ADMIXTURE	VAULT CONCRETE

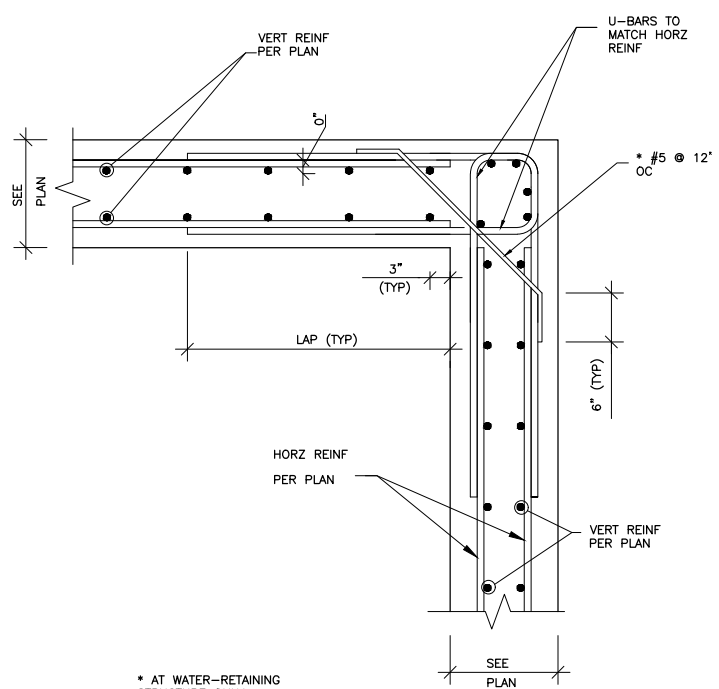
5 CONCRETE MIX

SCALE: NTS



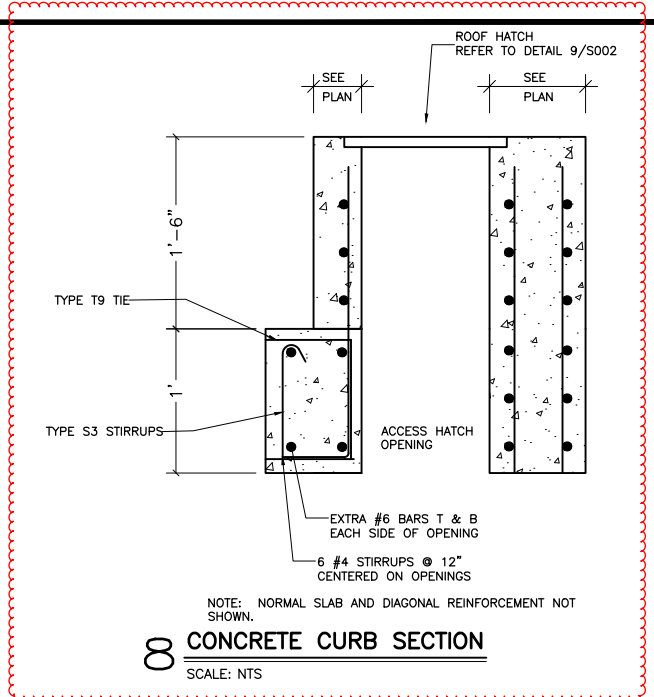
6 ADDITIONAL REINFORCING AT ELEVATED SLAB CORNERS

SCALE: NTS



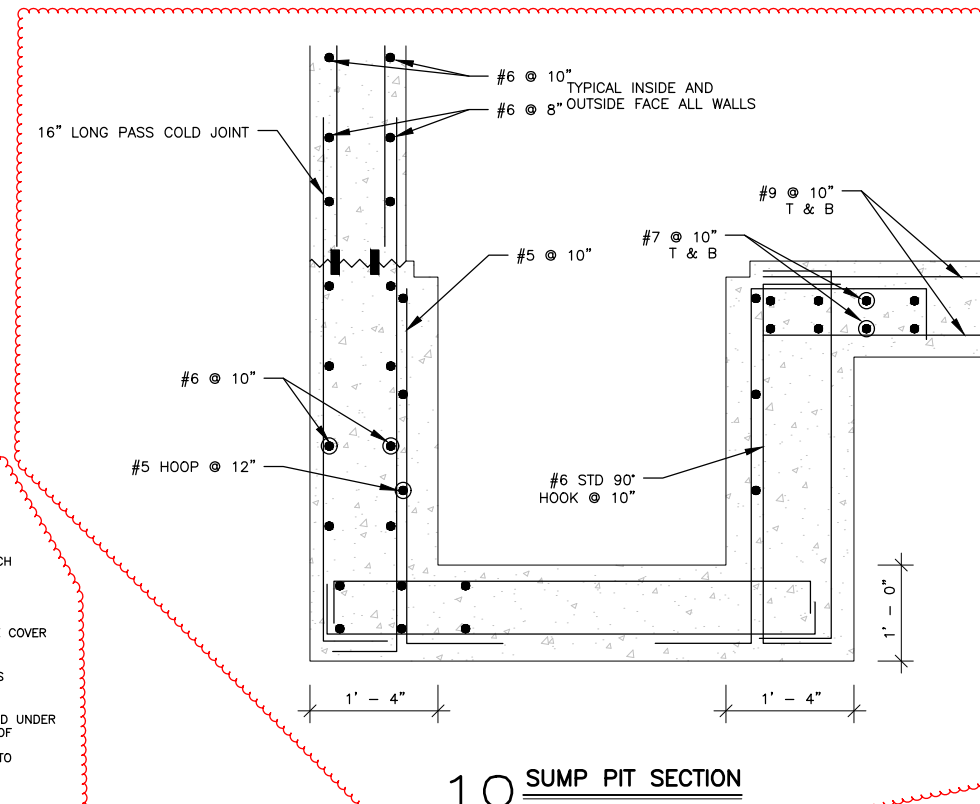
7 TYPICAL CORNER WALL

SCALE: NTS



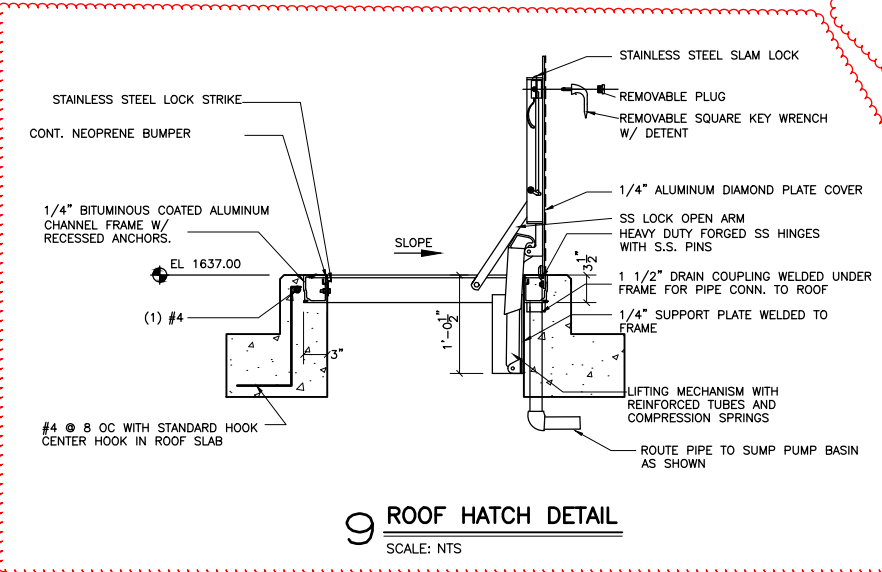
8 CONCRETE CURB SECTION

SCALE: NTS



10 SUMP PIT SECTION

SCALE: 1" = 1'-0"



9 ROOF HATCH DETAIL

SCALE: NTS

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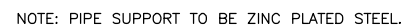


NEW UG CHILLED WATER LINES - WEST SIDE USU
OSE# R0324-12X/DEL SDSU# 25-15440
SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS, SOUTH DAKOTA

S-STRUCTURAL
STRUCTURAL DETAILS

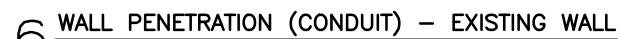


SHEET NO.
S002



5 TYPICAL PIPE SUPPORT

SCALE: NTS



SCALE: NTS

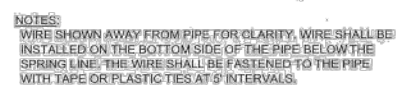


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1 VENT AND DRAIN DETAIL

SCALE: NTS



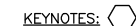
SPLICE AS REQUIRED LEAVING A LOOSE KNOT AHEAD OF
SPLICE NUT

TRACER WIRE DETAIL

NO SCALE



SCALE: NTS



1. CABLE GLAND. REFER TO SPEC SECTION 26 0533.13
2. HOFFMAN NEMA 4X MODEL-A16148CHSCFGW OR ENGINEER APPROVED EQUAL.
3. NON-METALLIC CONNECTION BAR
4. BRASS 1/2"-13 THREAD, 1-1/2" LONG BOLT
5. ROUTE GROUND WIRE TO VAULT GROUNDING SYSTEM.
6. NUMBER OF CONNECTIONS VARIES.
7. LABEL EACH CONNECTION PER SPEC SECTION 26 0553 W/ CONNECTION NAMES PER OWNER.

8 TRACER WIRE ACCESS PANEL


SCALE: NTS



SCALE: NTS



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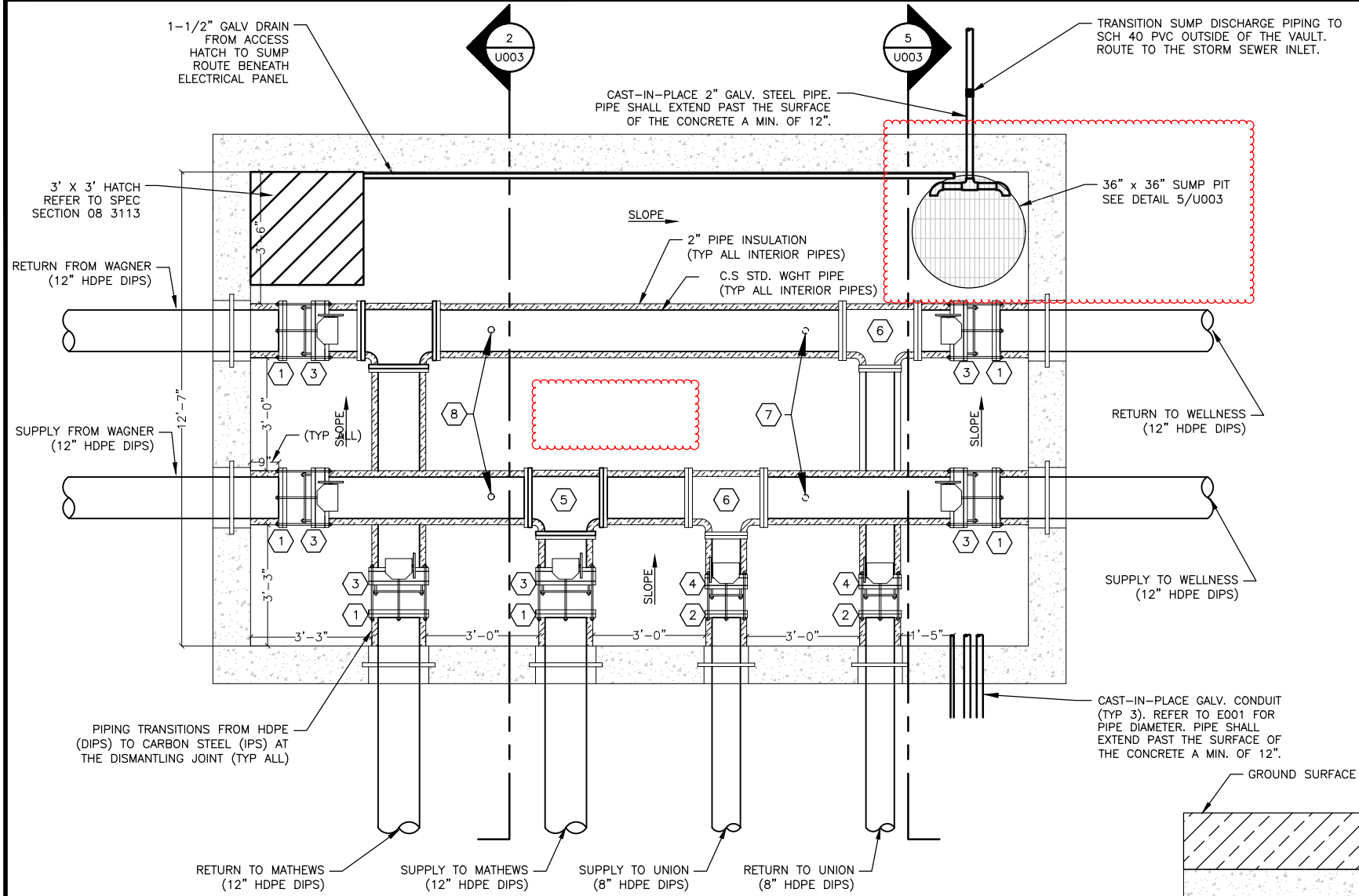
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U-DETAILS AND STANDARD PLATES

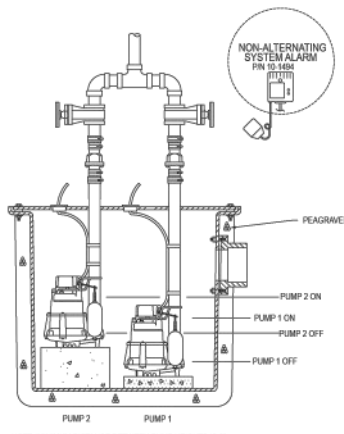
SPECIAL DETAILS

SHEET NO.
U002

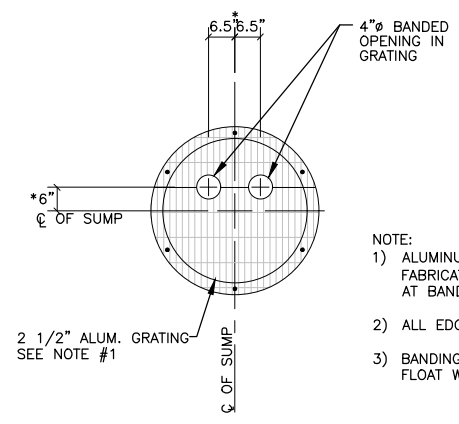




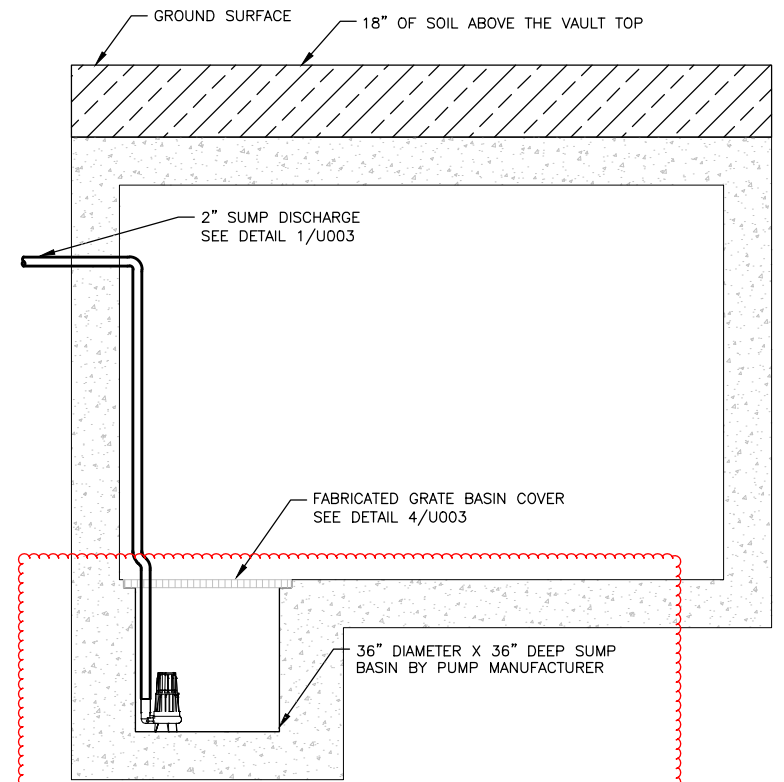
1 VAULT PLAN VIEW
SCALE: 1/2" = 1'



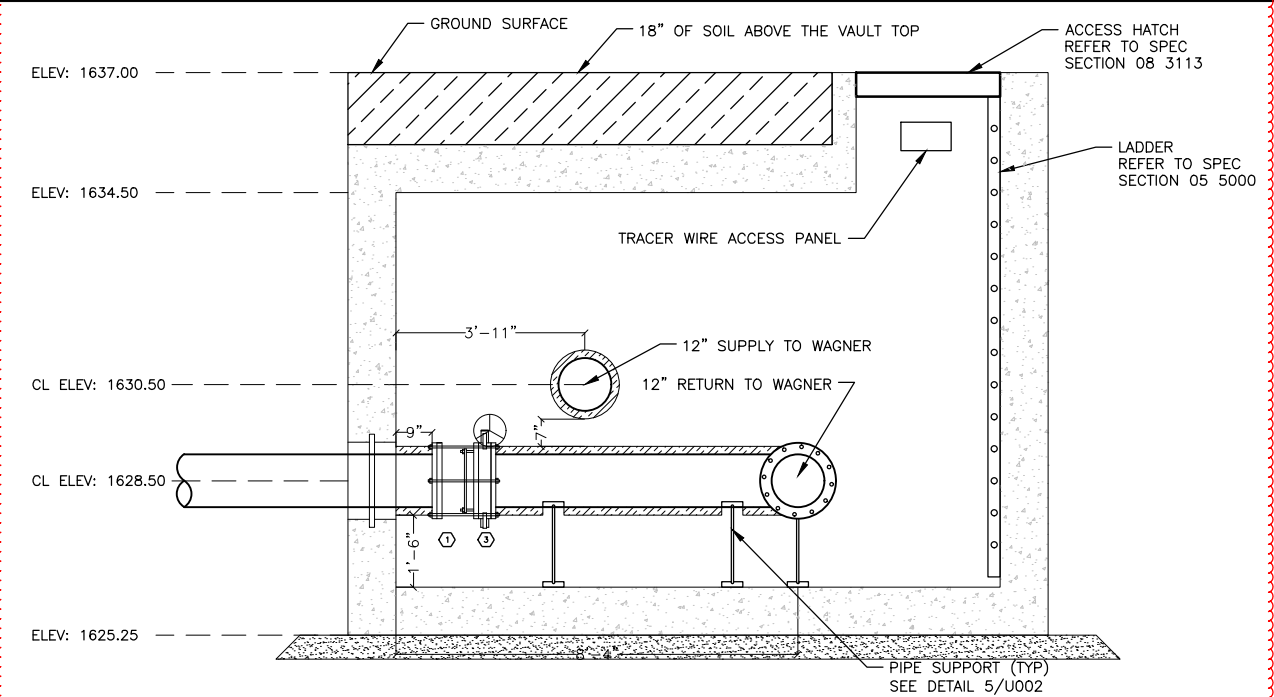
3 SUMP PUMP DETAIL
SCALE: NTS



4 SUMP GRATE DETAIL
SCALE: NTS



5 SUMP PUMP SECTION
SCALE: 1/2" = 1'



2 VAULT SECTION VIEW
SCALE: 1/2" = 1'

- KEYNOTES: ○
- 12" DISMANTLING JOINT COUPLING
 - 8" DISMANTLING JOINT COUPLING
 - 12" HIGH PERFORMANCE BUTTERFLY VALVE
 - 8" HIGH PERFORMANCE BUTTERFLY VALVE
 - 12" X 12" FL TEE
 - 12" X 8" FL TEE
 - CHILLED MAIN DRAIN ASSEMBLY, SEE DETAIL 4/U002.
 - CHILLED MAIN VENT ASSEMBLY, SEE DETAIL 4/U002.
- GENERAL NOTES:
- REFER TO E001 FOR CONTINUATION OF CONDUIT AND ELECTRICAL WORK INSIDE OF THE VAULT.
 - REFER TO SPECIFICATION 23 0719 FOR PIPE INSULATION REQUIREMENTS.

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U-DETAILS AND STANDARD PLATES
SPECIAL DETAILS

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