

WAPPAPELLO TRAINING SITE IMPROVEMENTS INFRASTRUCTURE WAPPAPELLO, MISSOURI

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

MISSOURI NATIONAL GUARD
OFFICE OF THE ADJUTANT GENERAL
FACILITIES MANAGEMENT OFFICE

PROJECT
MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

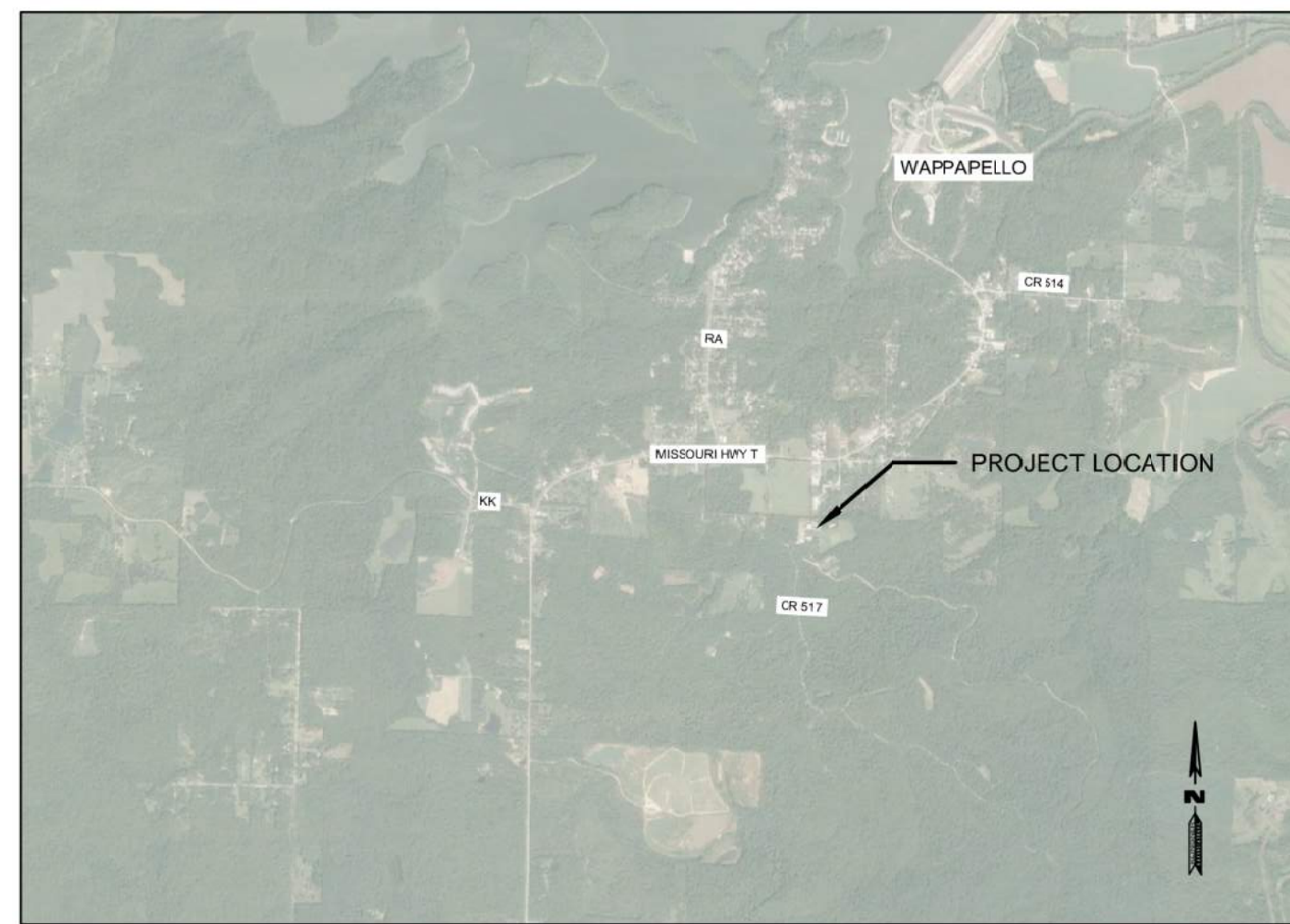
DESIGNER: Klingner & Associates, PC

PROJECT NUMBER: T2213-01

SITE NUMBER: 6325
ASSET NUMBER: 81363255016



PROJECT LOCATION



PROJECT LOCATION MAP
NTS

SHEET NUMBER	SHEET NAME	CURRENT REVISION DATE
G001	COVER SHEET	7/29/2022
C001	GENERAL NOTES AND LEGENDS	7/29/2022
CD101	DEMO AND GRADING PLAN	7/29/2022
C101	SITE UTILITY PLAN	7/29/2022
C102	UTILITY PLAN AND PROFILES	7/29/2022
C103	PUMP HOUSE DRAIN AND OWIS SEPARATOR DETAILS	7/29/2022
C104	FIRE SUPPRESSION TANK DETAILS	7/29/2022
C501	MISCELLANEOUS DETAILS	7/29/2022
C502	MISCELLANEOUS DETAILS CONTINUED	7/29/2022
S001	STRUCTURAL NOTES	7/29/2022
S101	FOUNDATION PLAN AND DETAILS	7/29/2022
S201	FRAMING PLAN	7/29/2022
S301	FRAMING ELEVATIONS	7/29/2022
M100	FIRE PUMP PLAN	7/29/2022
M200	HEATING AND VENTILATION PLAN	7/29/2022
E100	ELECTRICAL PLAN	7/29/2022
E200	ELECTRICAL SCHEDULES AND DETAILS	7/29/2022

THE CONTRACTOR(S) SHALL COMPLY WITH THE LATEST EDITION OF APPLICABLE CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO:
 - THE AMERICANS WITH DISABILITIES ACT (ADAAG)
 - INTERNATIONAL BUILDING CODE (IBC)
 - NATIONAL ELECTRIC CODE (NEC)
 - INTERNATIONAL PLUMBING CODE (IPC)
 - LIFE SAFETY CODE (NFPA 101)
 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
 - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - AMERICAN CONCRETE INSTITUTE (ACI)
 - MISSOURI DEPARTMENT OF TRANSPORTATION (MODOT)
 - MISSOURI DEPARTMENT OF NATURAL RESOURCES (MODNR)

GENERAL NOTES

- ALL DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
- ANY DISCREPANCIES BETWEEN SPECIFICATIONS, DRAWINGS, AND/OR SITE CONDITIONS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- ALL AREAS DESIGNATED TO REMAIN UNDISTURBED SHALL BE PROTECTED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR STAKING THE LOCATION OF ALL PROPOSED IMPROVEMENTS, INCLUDING ROUGH AND FINISHED ELEVATIONS AND ALL OTHER PROPOSED IMPROVEMENTS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL VERIFY THAT ALL APPLICABLE LOCAL, STATE, & FEDERAL CODES ARE FOLLOWED. ALL APPLICABLE LOCAL AND STATE NOTIFICATIONS AND PERMITS SHALL BE ACQUIRED PRIOR TO CONSTRUCTION, INCLUDING ALL NECESSARY UTILITY CONNECTION PERMITS FROM THE RESPECTIVE UTILITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND SERVICES REQUIRED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL REFERENCE POINTS, BENCHMARKS, MONUMENTS, STAKES, AND PROPERTY CORNERS DURING CONSTRUCTION. REPLACEMENT OF LOST REFERENCE POINTS SHALL BE AT THE CONTRACTORS EXPENSE.
- REMOVE ALL STRUCTURES, FOUNDATIONS, WALLS, PAVEMENTS, AND ALL OTHER ITEMS IN CONFLICT WITH PROPOSED IMPROVEMENTS IN ACCORDANCE WITH THE SPECIFICATIONS.
- REFERENCES TO "STANDARD SPECIFICATIONS" SHALL MEAN THE MISSOURI DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION", LATEST ADDITION.
- THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- NO WORK SHALL BE PERFORMED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT OWNER APPROVAL.
- SITE CLEAN-UP SHALL BE PERFORMED ON A DAILY BASIS. SIDEWALKS, PARKING LOTS, ROADWAYS, AND THE PROJECT SITE SHALL BE KEPT CLEAN AT ALL TIMES. CONTROL DUST IN AND AROUND ALL WORK AND STAGING AREAS.
- ALL OPEN EXCAVATIONS SHALL BE PROTECTED.
- MAINTAIN POSITIVE DRAINAGE ON THE SITE THROUGHOUT THE PROJECT DURATION.
- OWNER TO REMOVE BRUSH PILES.
- IF A DISCREPANCY IN THE SPOT ELEVATIONS IS NOTED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTING. IF THERE IS A DISCREPANCY BETWEEN THE SPOT ELEVATIONS AND CONTOURS, THE CONTOURS SHALL GOVERN.
- IF SOIL OR GROUNDWATER IS ENCOUNTERED WHICH EMITS A PETROLEUM ODDOR OR IS DISCOLORED THE CONTRACTOR SHALL STOP EXCAVATION AND NOTIFY THE OWNER IMMEDIATELY. THE OWNER WILL COORDINATE ENVIRONMENTAL EFFORTS TO HANDLE THE IMPACTED SOIL OR GROUNDWATER IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL TAKE APPROPRIATE ACTION TO ENSURE PUBLIC AND EMPLOYEE SAFETY.

UTILITY NOTES

- THE LOCATION OF EXISTING UTILITIES IN CONSTRUCTION AREAS SHALL BE FIELD VERIFIED BY THE CONTRACTOR BY CONTACTING THE MISSOURI ONE CALL SYSTEM, INC. OR THE INDIVIDUAL UTILITIES NOT PARTICIPATING IN THIS SYSTEM. EXISTING UTILITIES TO REMAIN SHALL BE PROTECTED. ANY REPAIR OR RELOCATION REQUIRED, AS A RESULT OF DAMAGE BY CONSTRUCTION ACTIVITIES SHALL BE AT THE CONTRACTORS EXPENSE. THE CONTRACTOR SHALL PAY UTILITY PERMIT AND/OR INSPECTION FEES.
- UTILITY TRENCHES WITHIN PAVEMENT AREAS SHALL BE BACKFILLED WITH APPROVED COMPACTED GRANULAR BACKFILL.
- ALL ELECTRIC SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE, CURRENT VERSION.
- ADJUST ALL VALVES, MANHOLES, CASTINGS, GAS VENTS, ETC., TO MATCH THE NEW SURFACE. ADJUSTMENT SHALL BE COORDINATED WITH THE UTILITY COMPANIES AND THE COST FOR ALL ADJUSTMENTS SHALL BE INCIDENTAL TO THE CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. REPAIR ANY DAMAGE TO SAID STRUCTURES AND APPURTENANCES THAT OCCUR DURING CONSTRUCTION.
- THE DRAWINGS INDICATE THE BEST KNOWLEDGE OF THE OWNER AND ENGINEER/ARCHITECT ON THE GENERAL LOCATION AND NATURE OF THE EXISTING AND OR PROPOSED UNDERGROUND UTILITIES IN THE AREA OF CONSTRUCTION. EXPLORATORY EXCAVATIONS AT THE SITE TO DETERMINE INSITU LOCATIONS WERE NOT CONDUCTED. QUALITY LEVEL D IN ACCORDANCE WITH GASCE 38-02, STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA, WAS UTILIZED. REGARDLESS OF THE LEVEL OF INVESTIGATION, THE UTILITIES SHOWN SHOULD NOT BE CONSIDERED A WARRANTY OR GUARANTEE OF ACTUAL PRESENCE OR LOCATION AND THE CONTRACTOR REMAINS RESPONSIBLE FOR THE LOCATION, VERIFICATION, AND PROPER NOTIFICATION OF POTENTIAL UTILITIES.

QUALITY LEVELS: B

QUALITY LEVEL A - PROVIDES THE HIGHEST LEVEL OF ACCURACY. BY LOCATING OR POTHOLING UTILITIES IN ADDITION TO QUALITY LEVELS B, C, AND D TASKS. THE LOCATED UTILITY INFRASTRUCTURE IS SURVEYED AND MAPPED TO DEVELOP PLAN AND PROFILE INFORMATION.

QUALITY LEVEL B - INVOLVES DESIGNATING THE HORIZONTAL POSITION OF SUBSURFACE UTILITIES THROUGH SURFACE DETECTION METHODS AND RECORDING THE INFORMATION THROUGH A SURVEY METHOD. IN ADDITION TO QUALITY LEVEL C AND D TASKS.

QUALITY LEVEL C - INVOLVES SURVEYING VISIBLE SUBSURFACE UTILITY STRUCTURES SUCH AS MANHOLES, HAND-HOLES, UTILITY VALVES AND METERS, FIRE HYDRANTS, PEDESTALS AND UTILITY MARKERS, AND THEN CORRELATING THE INFORMATION WITH EXISTING UTILITY RECORDS TO CREATE COMPOSITE DRAWINGS. IN ADDITION TO QUALITY LEVEL D TASKS

QUALITY LEVEL D - INVOLVES COLLECTING DATA FROM EXISTING UTILITY RECORDS, THAT MAY INCLUDE AS-BUILT DRAWINGS, DISTRIBUTION AND SERVICE MAPS, EXISTING GEOGRAPHIC INFORMATION SYSTEM DATABASE, CONSTRUCTION PLANS, ETC. DATABASES, CONSTRUCTION PLANS, ETC.

EROSION CONTROL NOTES

- EROSION CONTROL SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE DETAILS IN THESE PLANS, AND THE MISSOURI DEPARTMENT OF NATURAL RESOURCES STANDARDS AND REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL.
- THE EROSION CONTROL SHOWN ON THIS SET OF PLANS SHALL BE CONSIDERED THE MINIMUM ACCEPTABLE FOR THIS PROJECT. THERE MAY BE ADDITIONAL EROSION CONTROL REQUIRED DUE TO THE VARIOUS CONSTRUCTION TECHNIQUES, WHICH MAY BE USED. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING AND MAINTAINING ALL THE RUNOFF FROM THE SITE, IN A MANNER WHICH KEEPS ALL SILT ON SITE.
- A LAND DISTURBANCE PERMIT WILL NOT BE REQUIRED SINCE LESS THAN 1 ACRE OF LAND WILL BE DISTURBED BY GRADING OPERATIONS.
- ALL INLET PROTECTION AND TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED UPON COMPLETION OF PAVING OPERATIONS AND FINAL STABILIZATION OF LANDSCAPED AND SEED AREAS.

ABBREVIATIONS

- FL FLOWLINE ELEVATION
- TC TOP OF CURB ELEVATION
- GL GUTTER LINE ELEVATION
- TG TOP OF GRATE ELEVATION
- STA STATION
- FES FLARED END SECTION
- SWI STORM WATER INLET
- FFE FINISH FLOOR ELEVATION
- HP HIGH POINT
- LP LOW POINT
- TW TOP OF WALL ELEVATION
- BW BOTTOM OF WALL ELEVATION
- DS DOWNSPOUT
- EP EDGE OF PAVEMENT
- (NIC) NOT IN CONTRACT
- (M) MATCH EXISTING

LEGEND

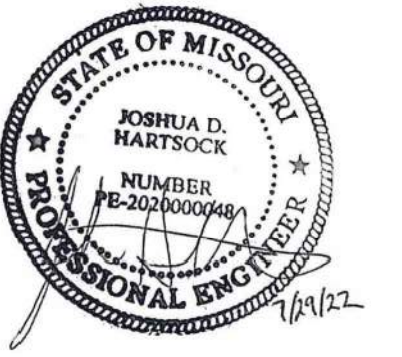
EXISTING	PROPOSED	
---	---	PROPERTY LINE
---	---	LOT LINE
---	---	RIGHT OF WAY LINE
---	---	CENTERLINE
---	---	EASEMENT
---	---	BUILDING SETBACK
---	---	CONSTRUCTION LIMITS
---	---	FENCE LINE
---	---	CHAIN LINK FENCE
---	---	FENCE W/ SQUARE POSTS
---	---	STREAM
---	---	STRUCTURE
---	---	PAVEMENT MARKINGS
---	---	EDGE OF PAVEMENT
---	---	CURB AND GUTTER
---	---	RAILROAD TRACKS
---	---	WATER LINE
---	---	FIRE PROTECTION
---	---	GAS LINE
---	---	OVERHEAD ELECTRIC
---	---	UNDERGROUND ELECTRIC
---	---	OVERHEAD TELEPHONE
---	---	UNDERGROUND TELEPHONE
---	---	CABLE TELEVISION
---	---	FIBER OPTIC
---	---	COMMUNICATION LINE
---	---	STORM SEWER
---	---	SANITARY SEWER
---	---	FORCE MAIN
---	---	COMBINED SEWER
---	---	IRRIGATION SYSTEM
---	---	MAST ARM SIGNAL (3 SIGNALS)
---	---	MAST ARM SIGNALS (2 SIGNALS)
---	---	UTILITY TRAFFIC SIGN
---	---	SIGN
---	---	MANHOLE
---	---	STORM WATER INLET
---	---	CATCH BASIN
---	---	CLEANOUT
---	---	CULVERT
---	---	BOX CULVERT
---	---	WATER VALVE
---	---	FIRE HYDRANT
---	---	POST INDICATOR VALVE
---	---	WATER METER
---	---	GAS VALVE
---	---	GAS METER
---	---	TELEPHONE PEDESTAL
---	---	CABLE TV PEDESTAL
---	---	ELECTRIC METER
---	---	UTILITY POLE
---	---	LIGHT STANDARD
---	---	LIGHT POLE
---	---	GUY WIRE
---	---	SUMMIT / HIGH POINT
---	---	CONTOURS
---	---	INDEX CONTOURS
---	---	DIRECTION OF DRAINAGE
---	---	SPOT ELEVATION
---	---	DECIDUOUS SHRUB
---	---	DECIDUOUS TREE
---	---	CONIFEROUS SHRUB
---	---	CONIFEROUS TREE



Know what's below.
Call before you dig.

NOTE
 UTILITY INFORMATION IS FOR THE CONVENIENCE OF THE CONTRACTOR. BEFORE CONSTRUCTION BEGINS THE CONTRACTOR SHALL CONTACT MISSOURI ONE CALL SYSTEM, INC. AT 811 OR 1-800-344-7483 AND THE INDIVIDUAL UTILITIES NOT INCLUDED IN THIS SYSTEM FOR THE LOCATION OF ALL EXISTING UTILITIES.

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR



JOSHUA D. HARTSOCK-ENGINEER
 MO # PE-202000048

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 Engineers • Architects • Surveyors

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 www.klinger.com
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 Hannibal, MO

MISSOURI STATE CERTIFICATE OF AUTHORITY #000866

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

WAPPAPELLO TRAINING
 SITE IMPROVEMENTS

INFRASTRUCTURE

461 COUNTY ROAD 517
 WAPPAPELLO, MO 63966

PROJECT # T2213-01
 SITE # 6325
 ASSET # 8136325016

REVISION: C-001
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 ISSUE DATE: 07/29/2022

CAD DWG FILE: C-001
 DRAWING BY: JDH/MCB
 CHECKED BY: MCB/JJN
 DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**GENERAL NOTES
 AND LEGENDS**

SHEET NUMBER:

C001

JULY 29, 2022



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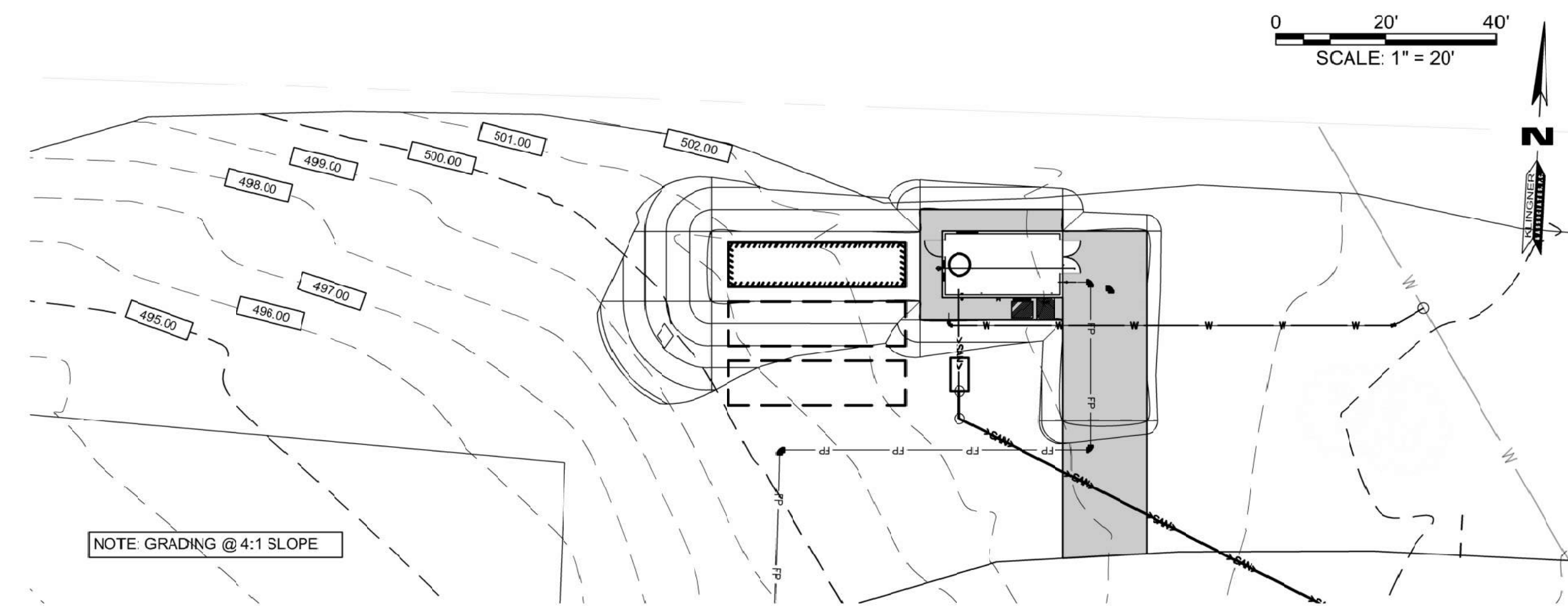
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DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: CD-101
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

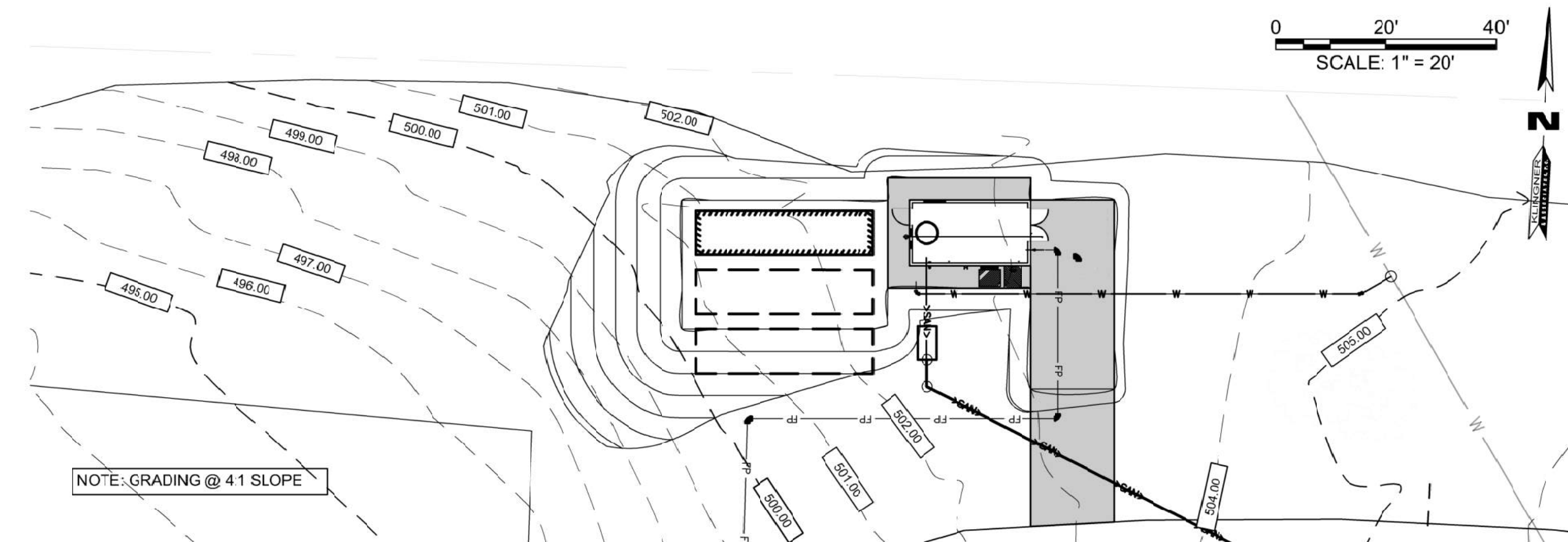
SHEET TITLE:
**SITE
DEMOLITION
AND GRADING**

SHEET NUMBER:
CD-101

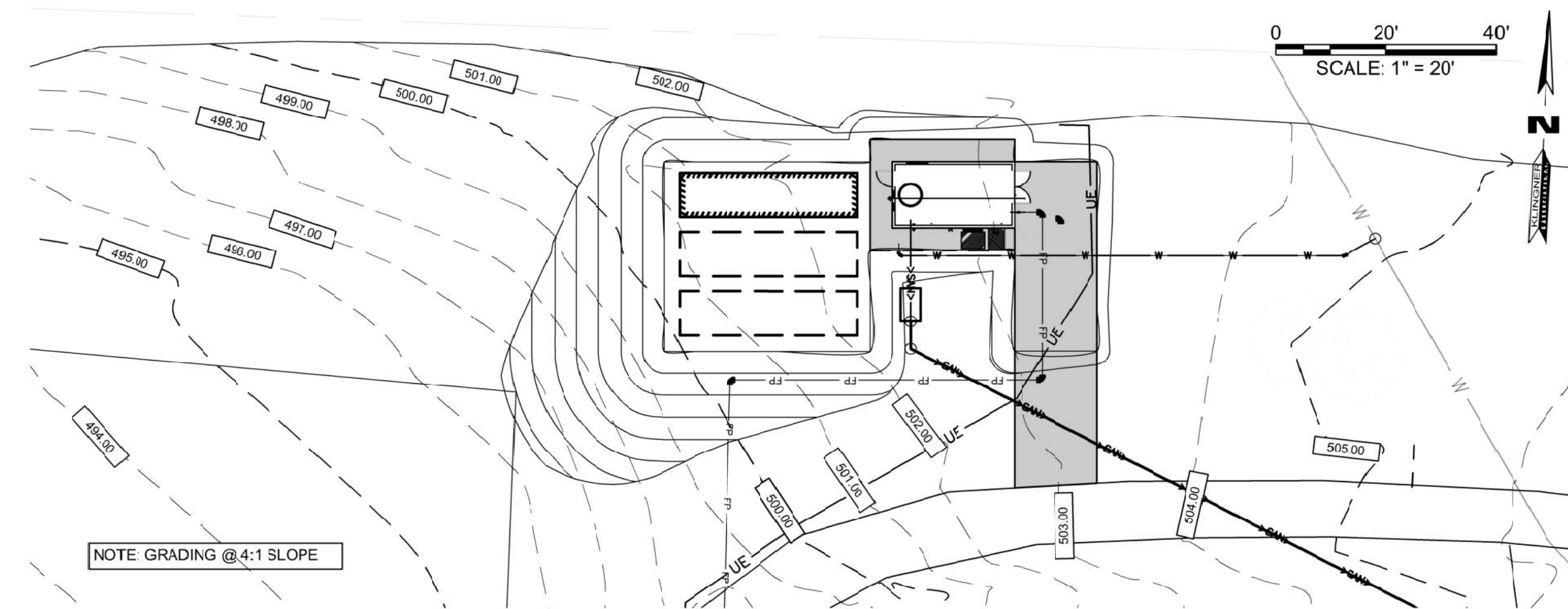
JULY 29, 2022



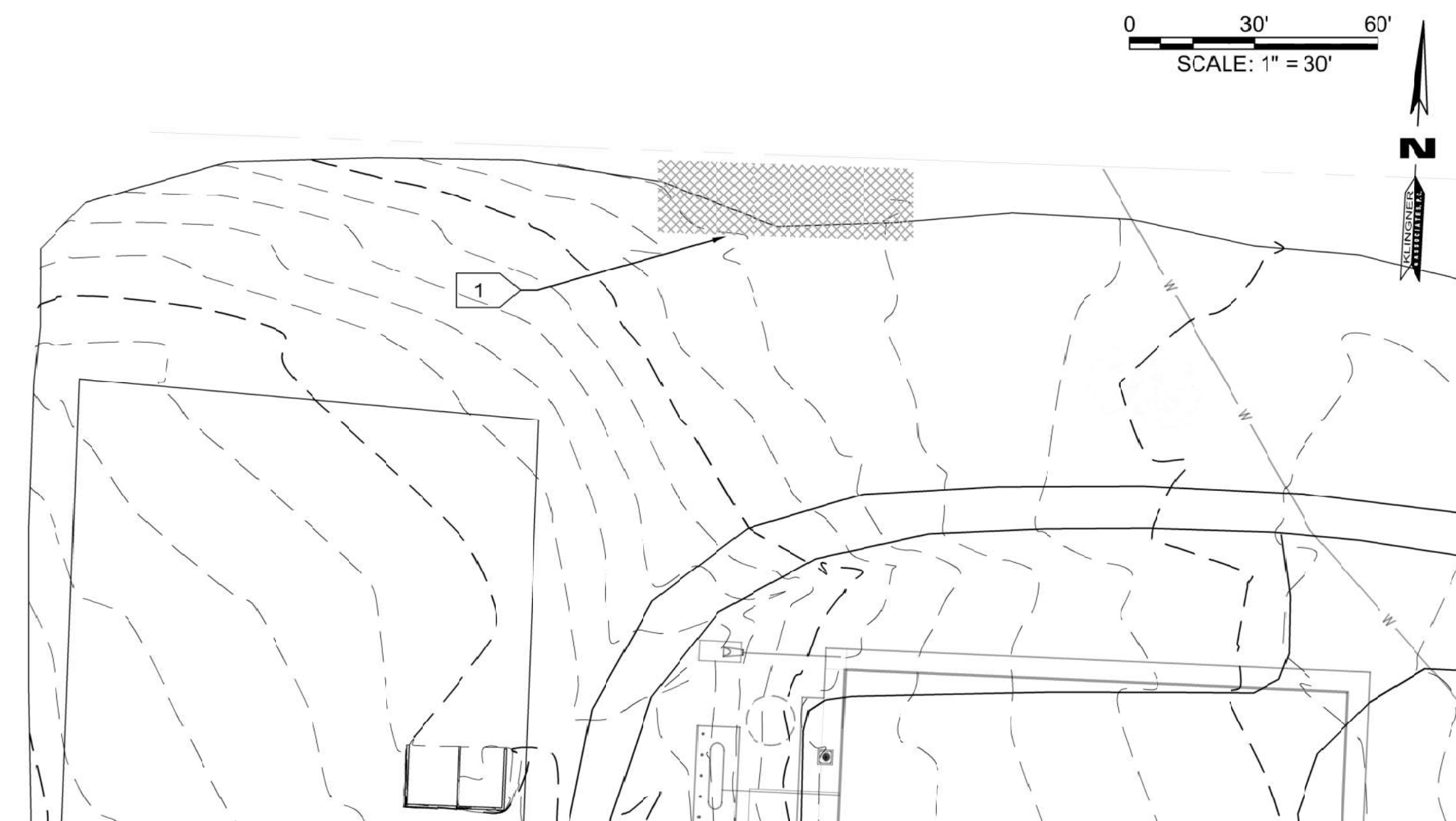
1 PROPOSED GRADING FOR BUILDING AND SINGLE TANK - PARALLEL



2 PROPOSED GRADING FOR BUILDING AND DOUBLE TANK PARALLEL



3 PROPOSED GRADING FOR BUILDING AND TRIPLE TANK PARALLEL



4 SITE DEMOLITION PLAN

DEMOLITION LEGEND

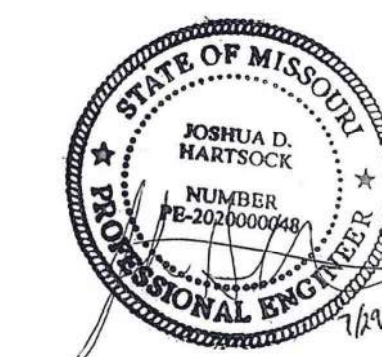
REMOVALS BY CONTRACTOR

DEMOLITION NOTES:

1. ALL REMOVALS SHALL BE COORDINATED WITH THE PHASING OF THE SITE AS COORDINATED WITH THE OWNER.
2. REMOVE ALL EXISTING PAVEMENTS, CURBS, WALLS, UTILITIES, LANDSCAPING, AND ALL OTHER EXISTING SITE FEATURES IN CONFLICT WITH PROPOSED IMPROVEMENTS.
3. COORDINATE UTILITY REMOVALS AND/OR RELOCATIONS WITH THE RESPECTIVE UTILITY COMPANIES AND/OR OWNER.
4. DEMOLITION SHALL INCLUDE REMOVAL AND PROPER DISPOSAL OF MATERIALS.
5. CONTRACTOR SHALL PAY ALL PERMIT AND DISPOSAL FEES.

DEMOLITION KEY NOTES:

- 1 TREE REMOVAL DURING INSTALLATION. IF NEEDING REMOVED, TREES MUST BE REMOVED BETWEEN NOVEMBER 1 AND APRIL 1



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WAPPAPPELO TRAINING
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INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPPELO, MO 63966

PROJECT # T2213-01
SITE # 6325
ASSET # 8136325016

REVISION: C-101

DATE: _____

REVISION: _____

DATE: _____

REVISION: _____

DATE: _____

ISSUE DATE: 07/29/2022

CAD DWG FILE: C-101

DRAWING BY: JDH/MCB

CHECKED BY: MCB/JJN

DESIGNED BY: JDH/MCB/JJN

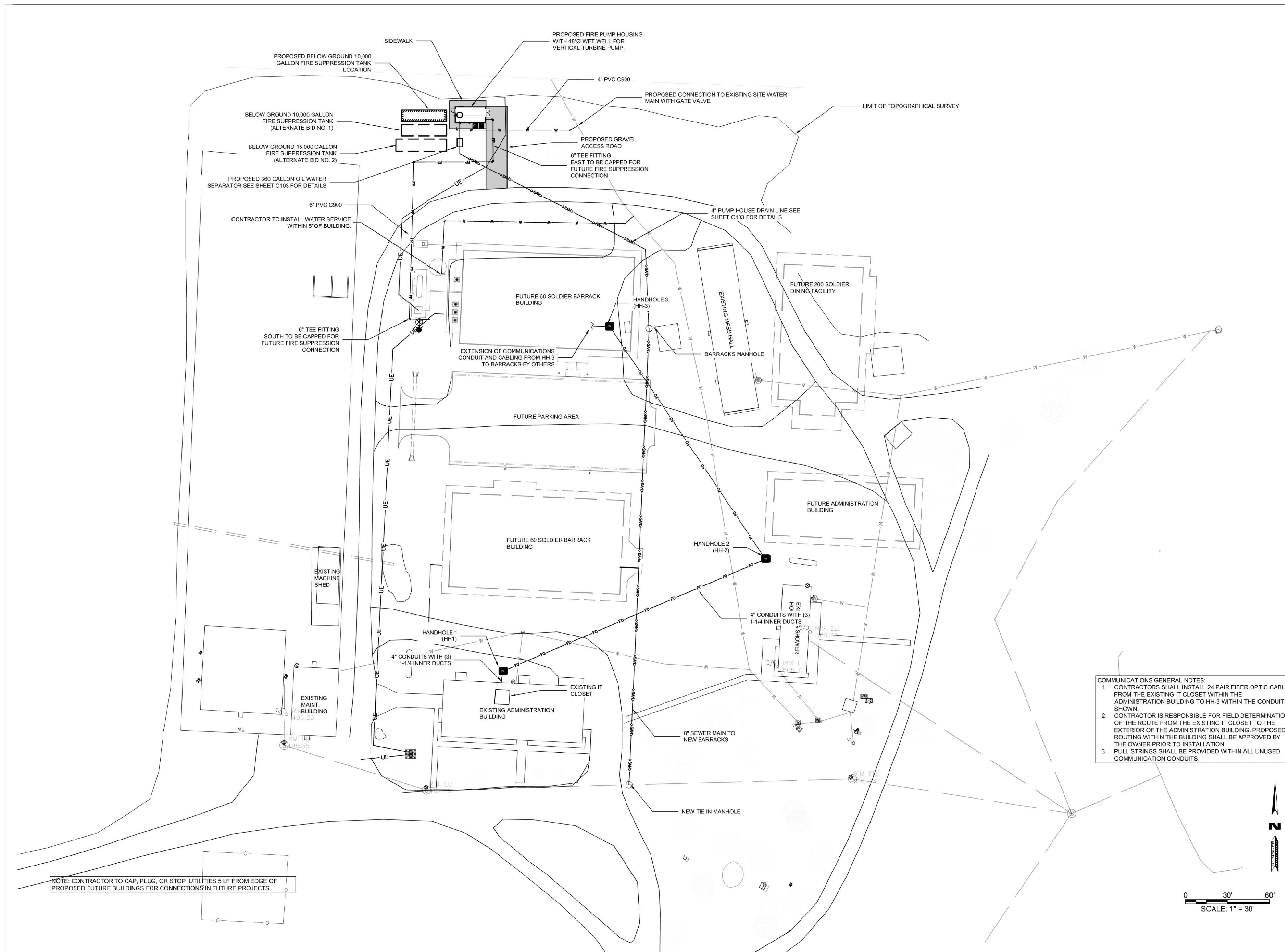
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**SITE
UTILITY
PLAN**

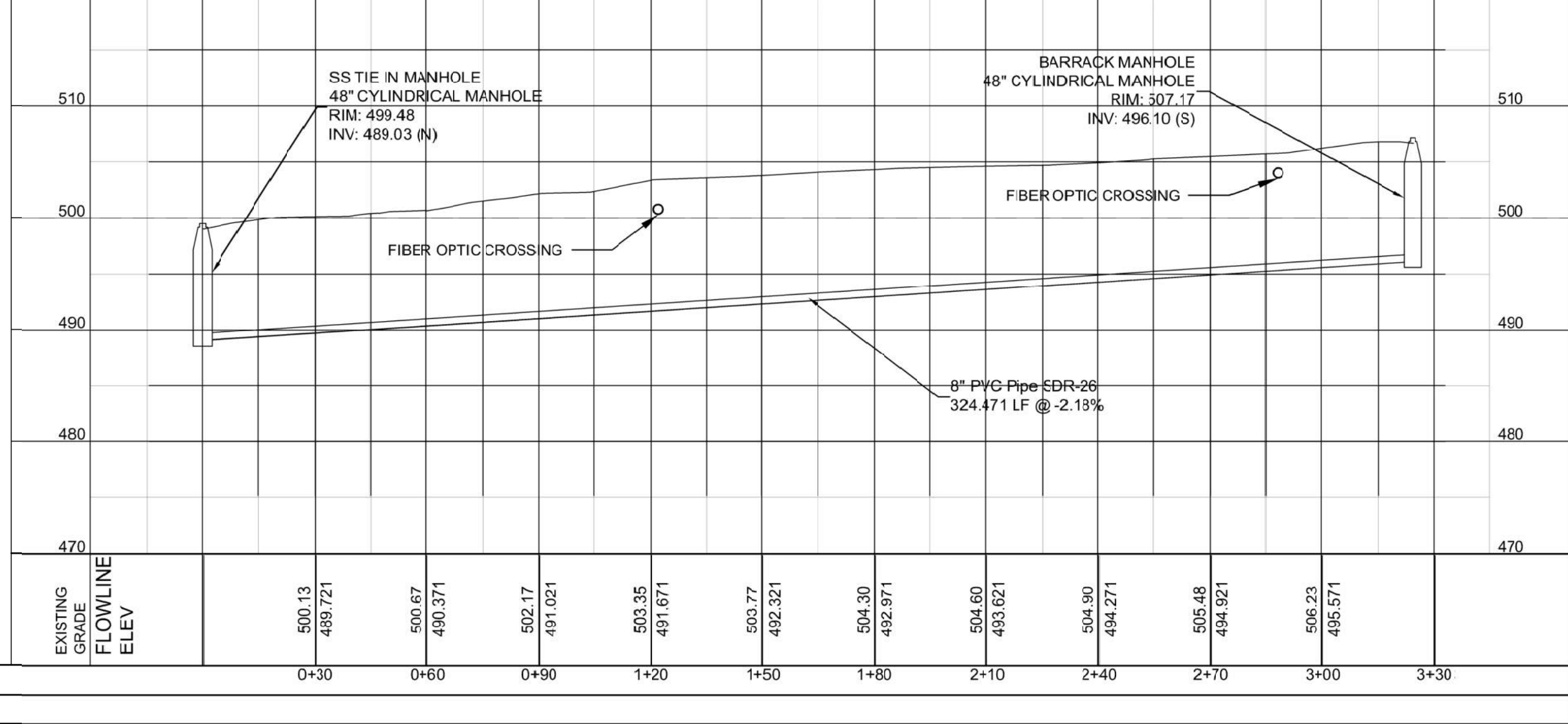
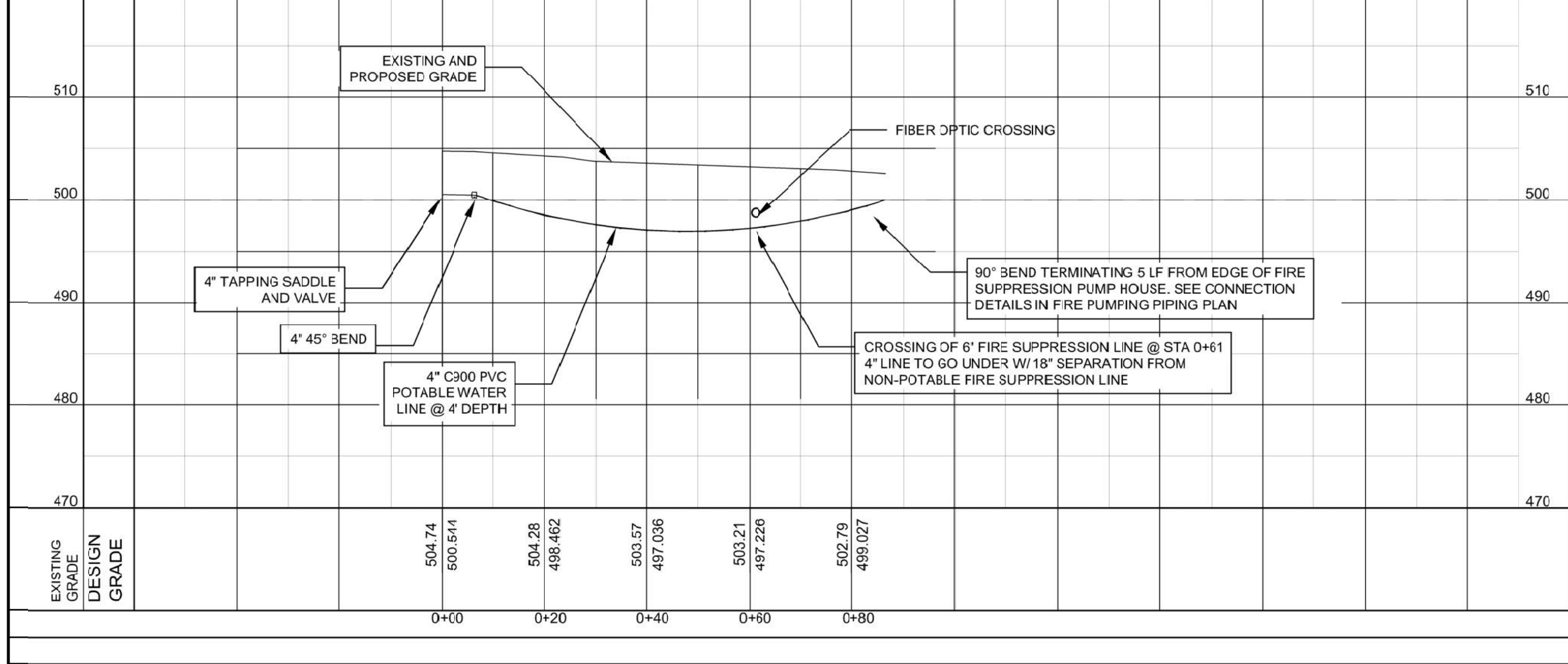
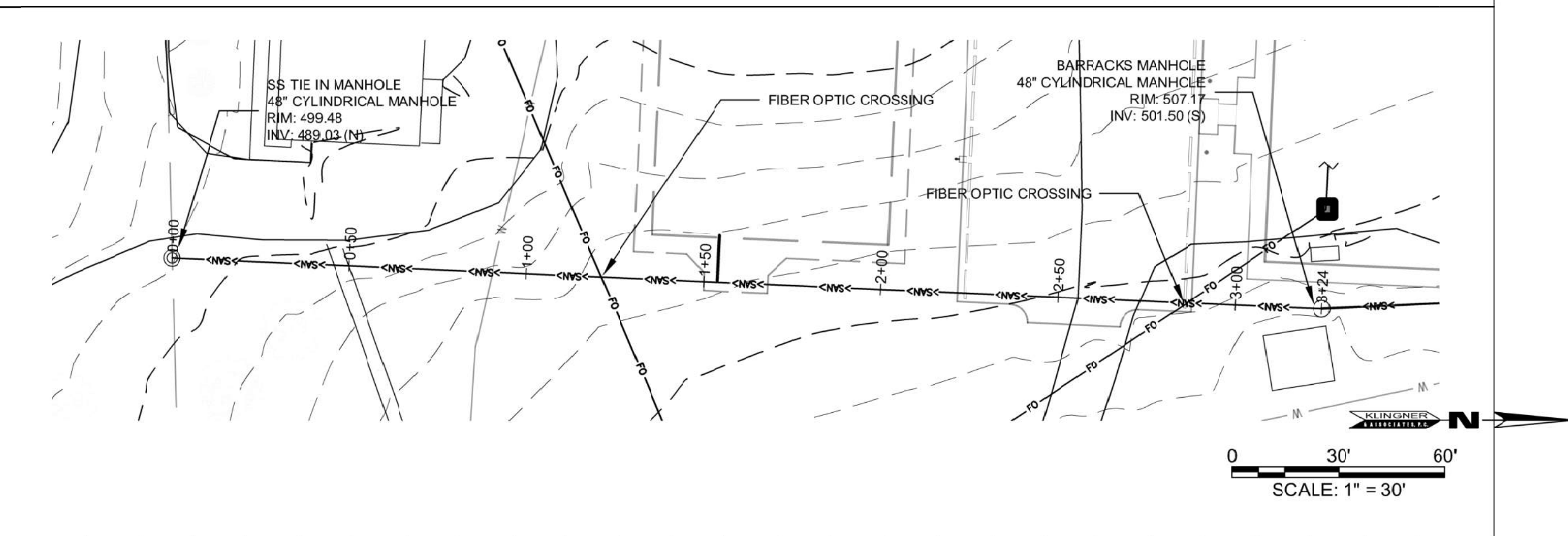
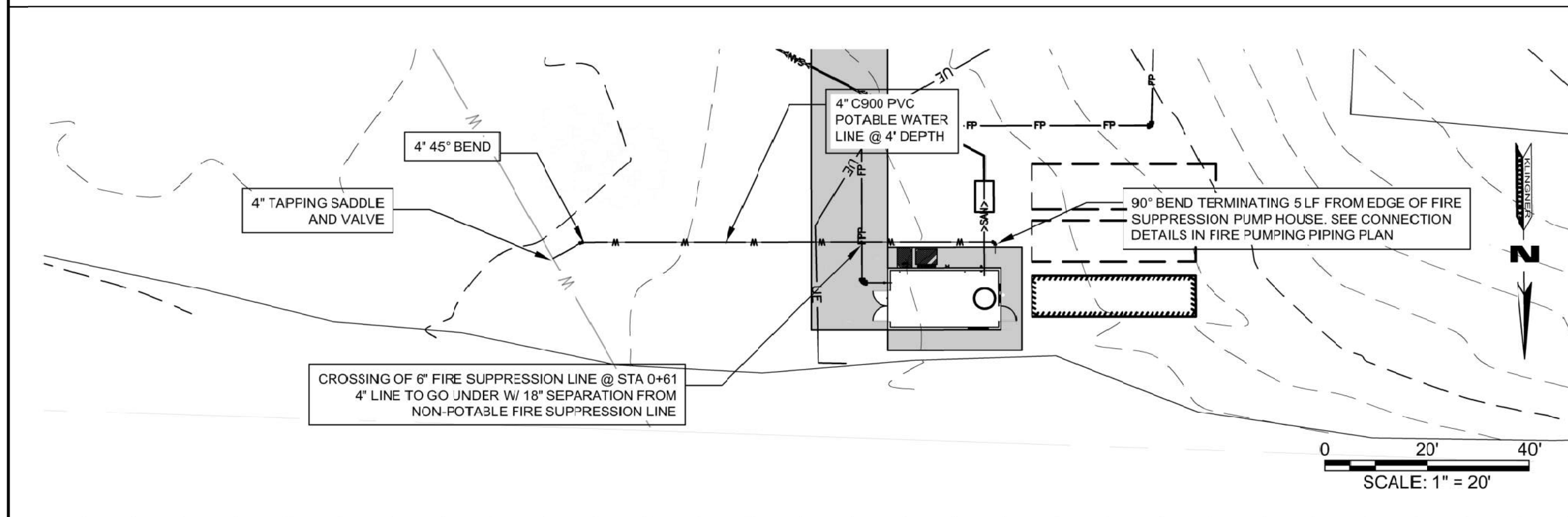
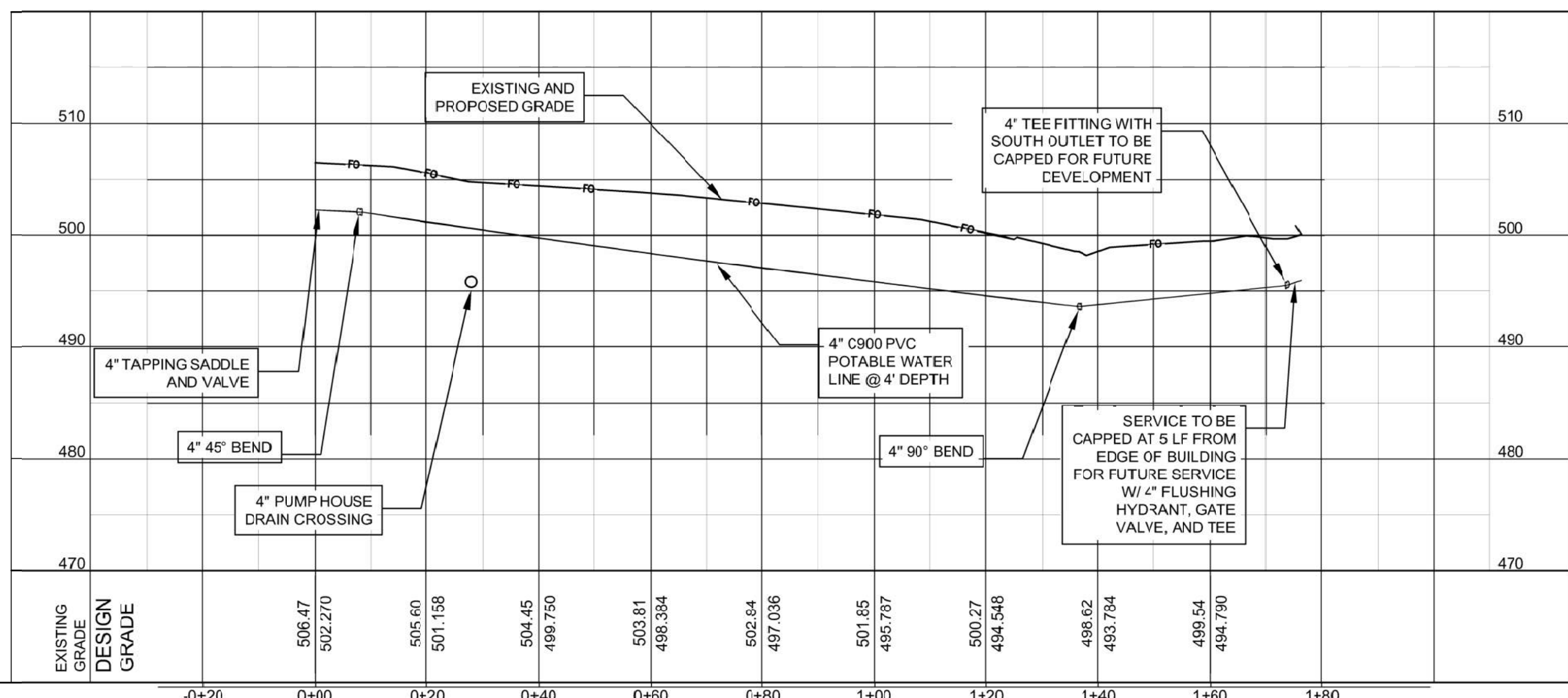
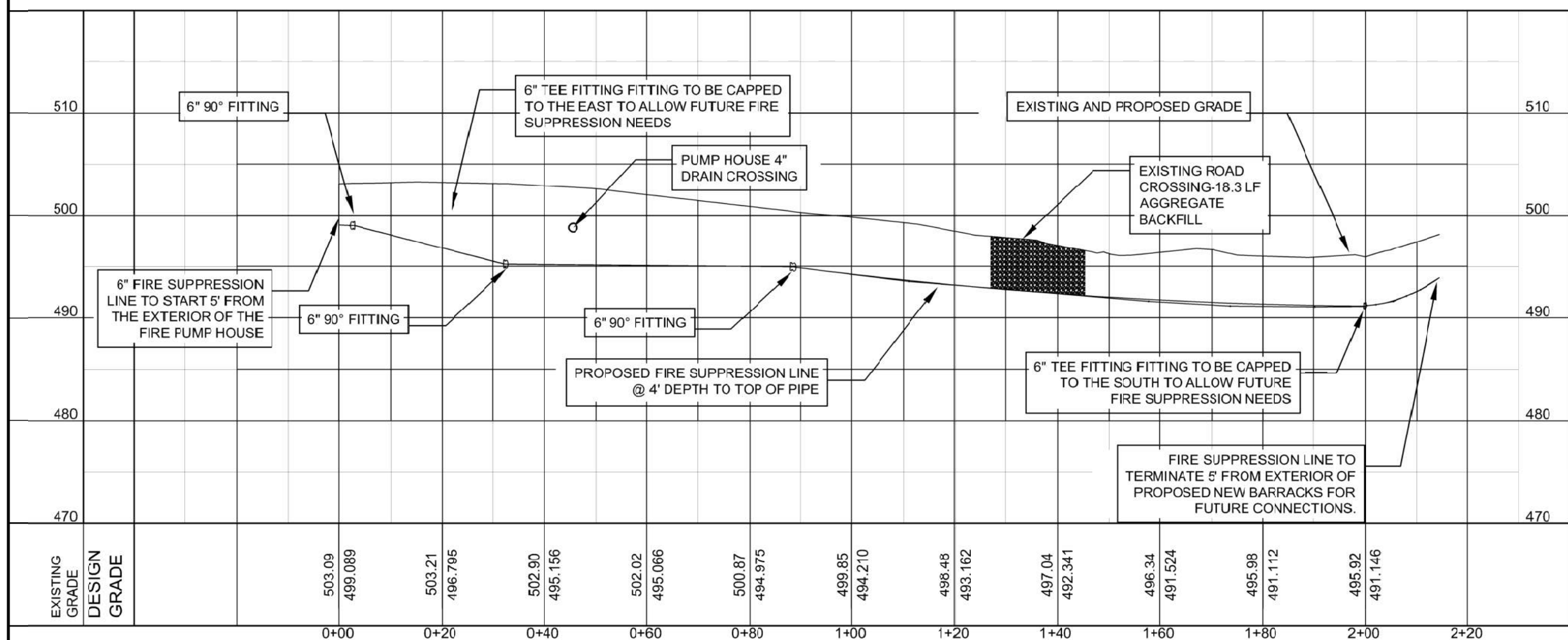
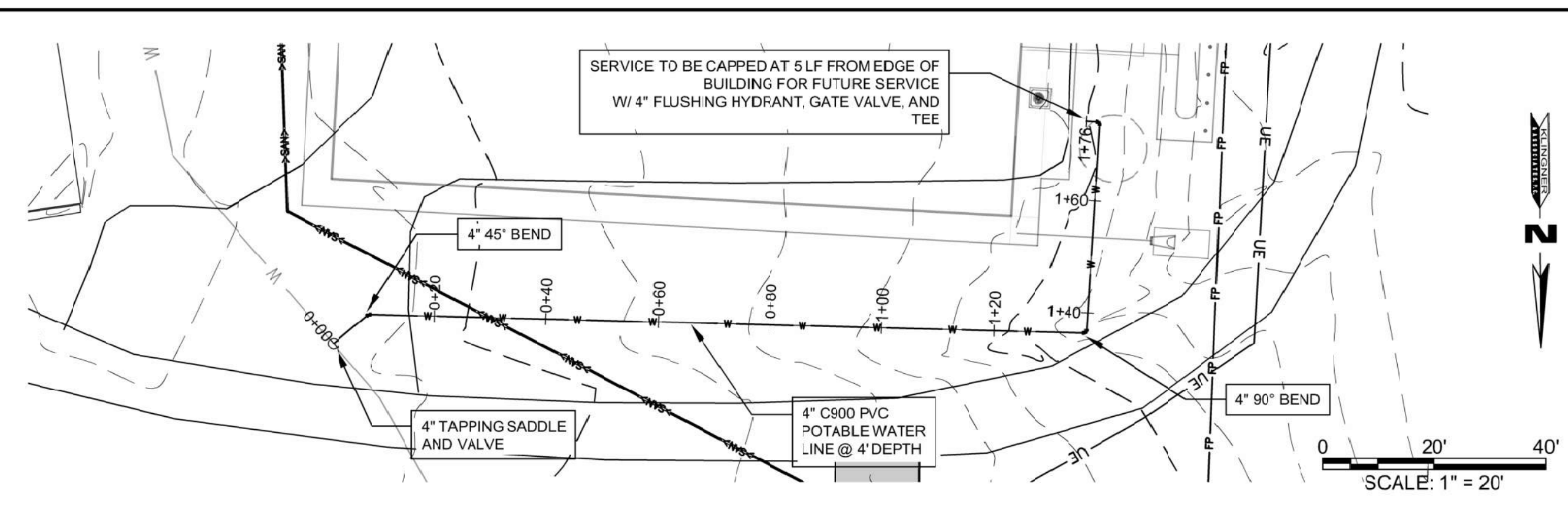
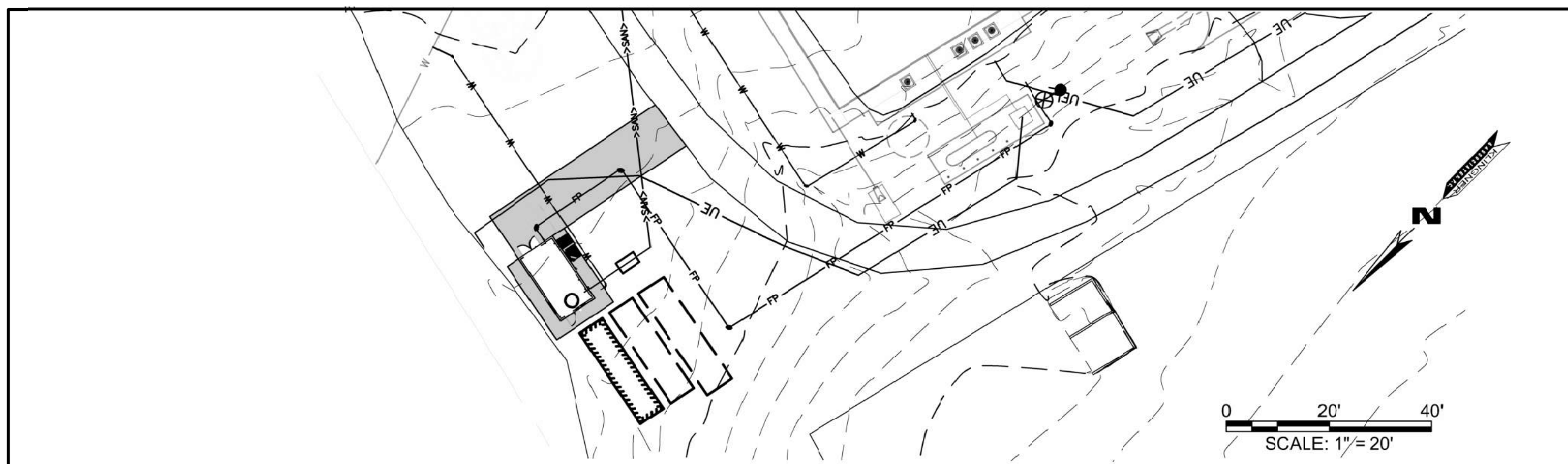
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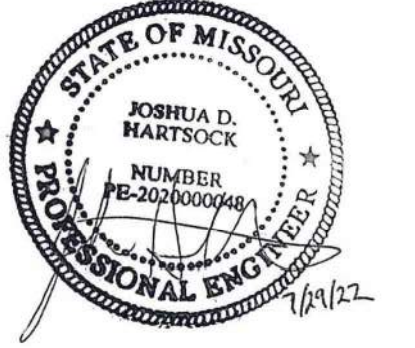
JULY 29, 2022



COMMUNICATIONS GENERAL NOTES:
1. CONTRACTORS SHALL INSTALL 24 PAIR FIBER OPTIC CABLE FROM THE EXISTING IT CLOSET WITHIN THE ADMINISTRATION BUILDING TO HH-3 WITHIN THE CONDUIT SHOWN.
DATE: _____
2. CONTRACTOR IS RESPONSIBLE FOR FIELD DETERMINATION OF THE ROUTE FROM THE EXISTING IT CLOSET TO THE EXTERIOR OF THE ADMINISTRATION BUILDING. PROPOSED ROUTING WITHIN THE BUILDING SHALL BE APPROVED BY THE OWNER PRIOR TO INSTALLATION.
DATE: _____
3. PULL STRINGS SHALL BE PROVIDED WITHIN ALL UNUSED COMMUNICATION CONDUITS.



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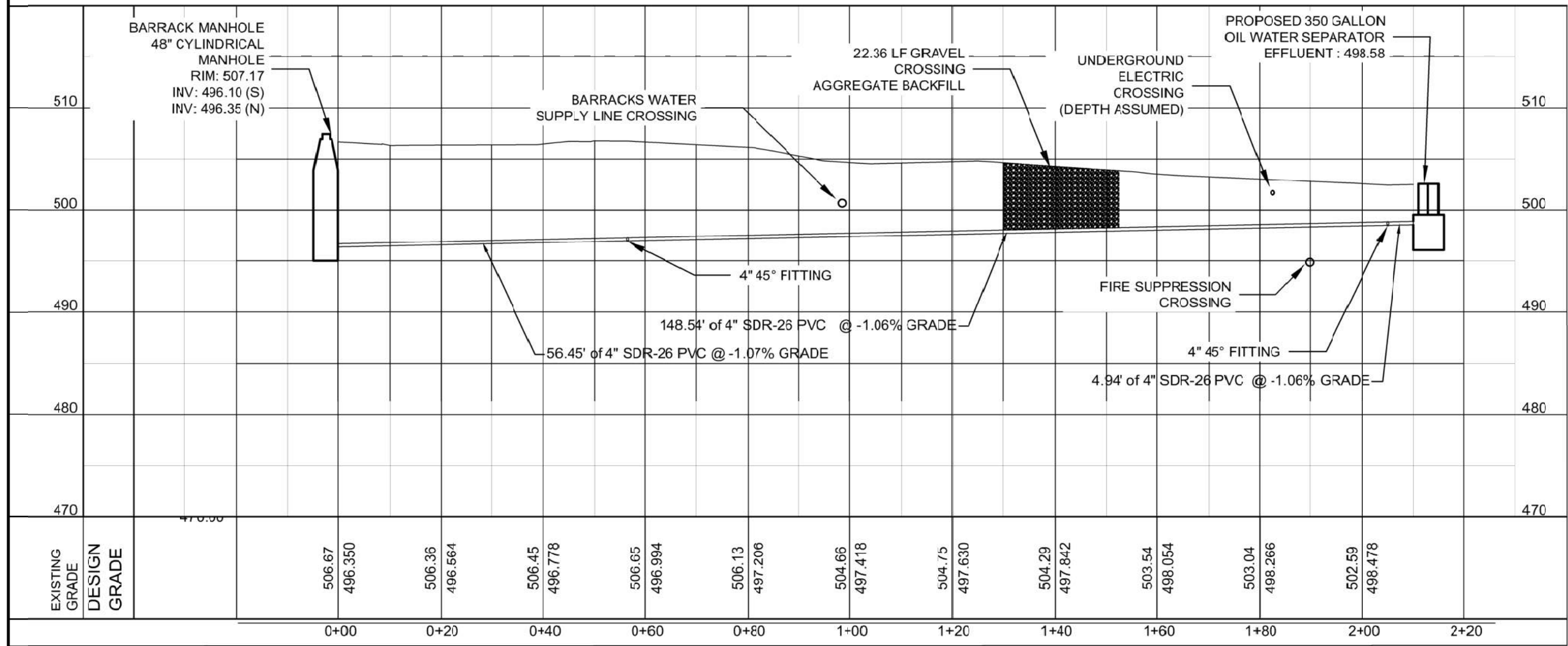
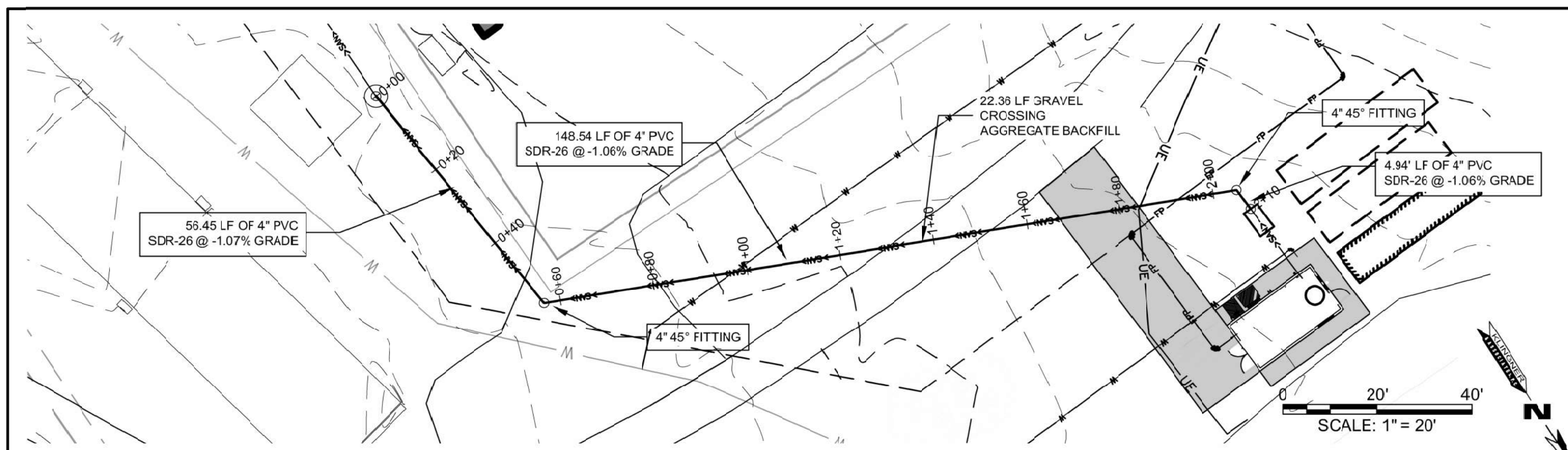
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DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: C-102
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

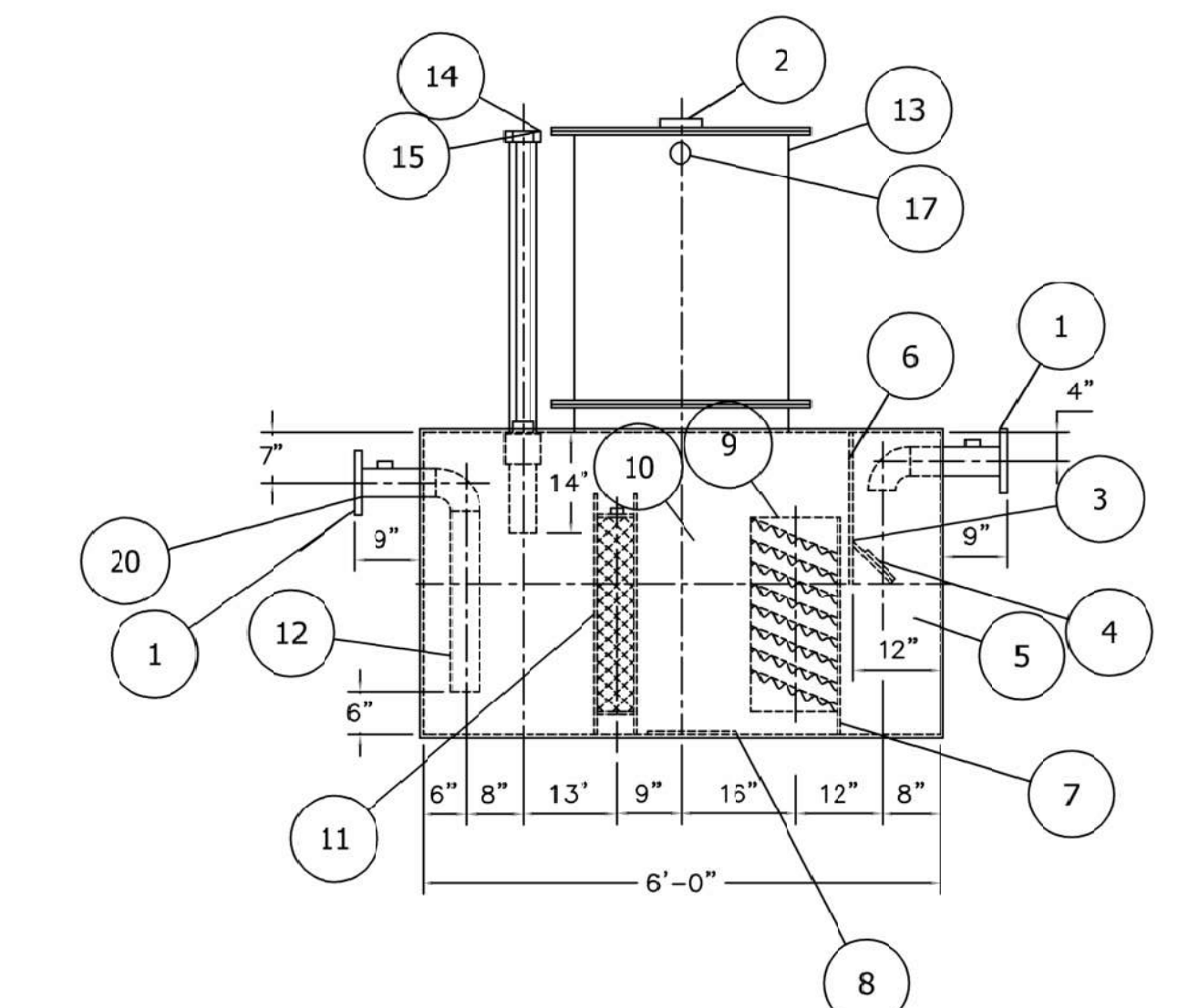
SHEET TITLE:
**PROPOSED
UTILITY PLAN
AND PROFILES**

SHEET NUMBER:
C-102

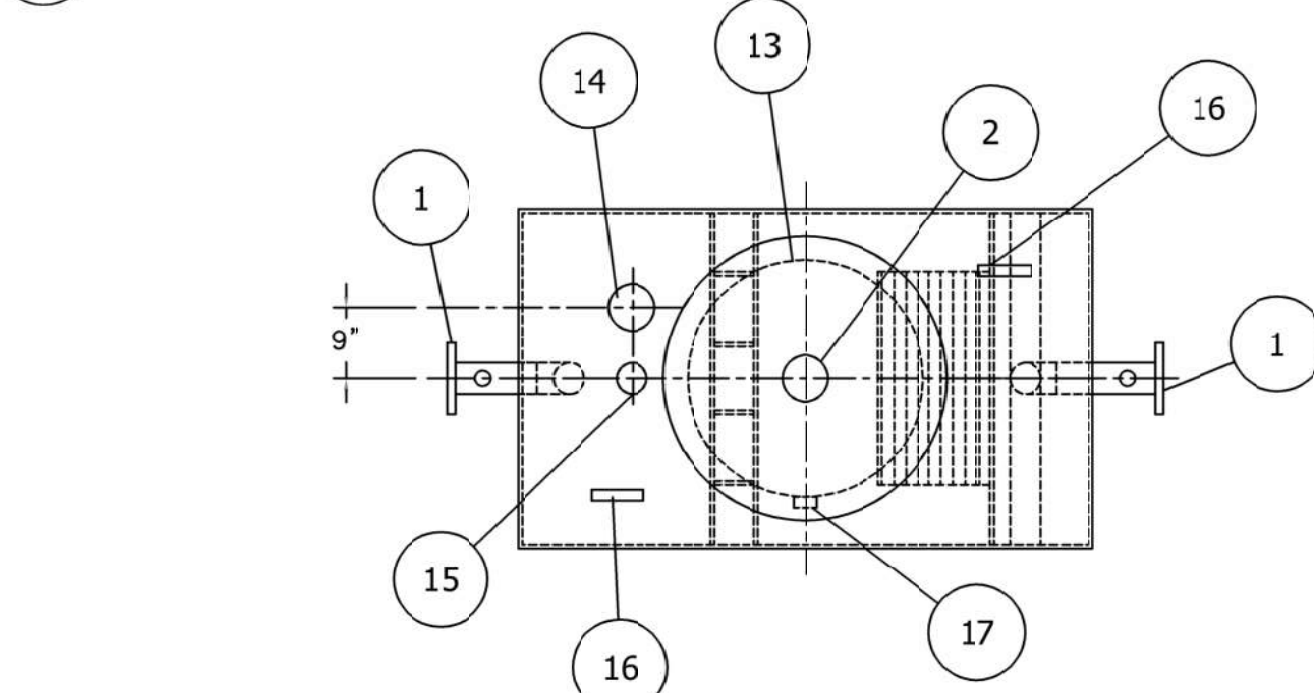
JULY 29, 2022



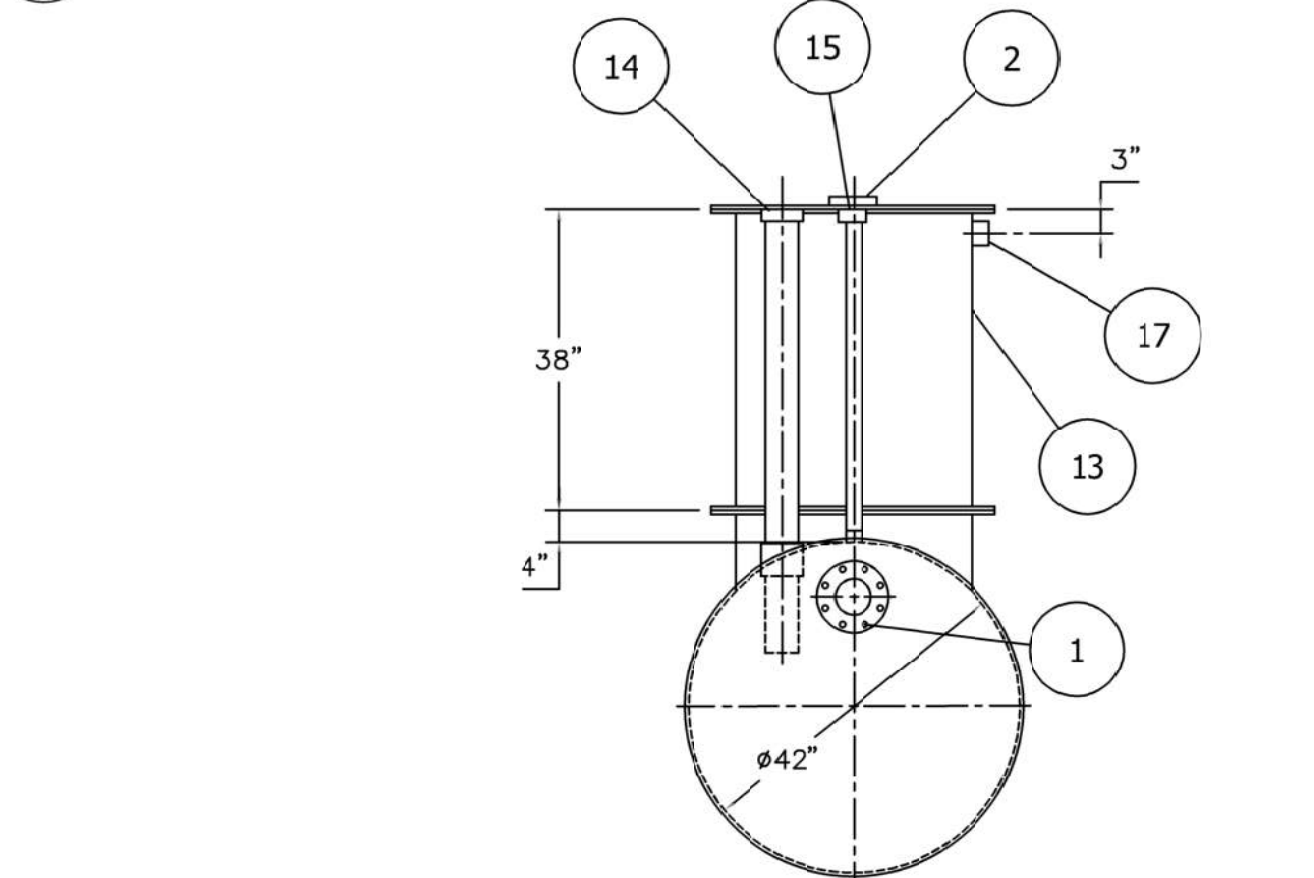
NO.	DESCRIPTION
1	150# R.F.S.O. FLANGE W/ 2" FNPT FOR VENT
2	4" Ø FNPT FOR GAUGE W/ PLUG
3	VELOCITY HEAD DIFFUSION BAFFLE
4	WEAR PLATE
5	SEDIMENT CHAMBER
6	UNDERFLOW BAFFLE (REMOVEABLE)
7	SLUDGE BAFFLE
8	STRIKER PLATES
9	PARALLEL CORRUGATED PLATE COALESCER. (3" PLATE SPACING)
10	OIL/WATER SEPARATOR CHAMBER
11	6" THICK PETROSCREEN COALESCER MATERIAL INSTALLED W/ PULL ROD
12	STEEL OUTLET DOWNCOMER
13	30"Ø MANWAY W/ BOLT-ON EXTENSION
14	4"Ø FNPT FOR OIL PUMP-OUT WITH INTERNAL PVC PIPE INSTALLED & RISER PIPE
15	2" Ø FNPT FOR LEVEL SENSOR WITH RISER PIPE
16	LIFTING LUG
17	2"Ø FNPT FOR VENT
18	R-GLM-5448/2 RECTANGULAR GRADE LEVEL MANWAY
19	4" INLET
20	4" OUTLET



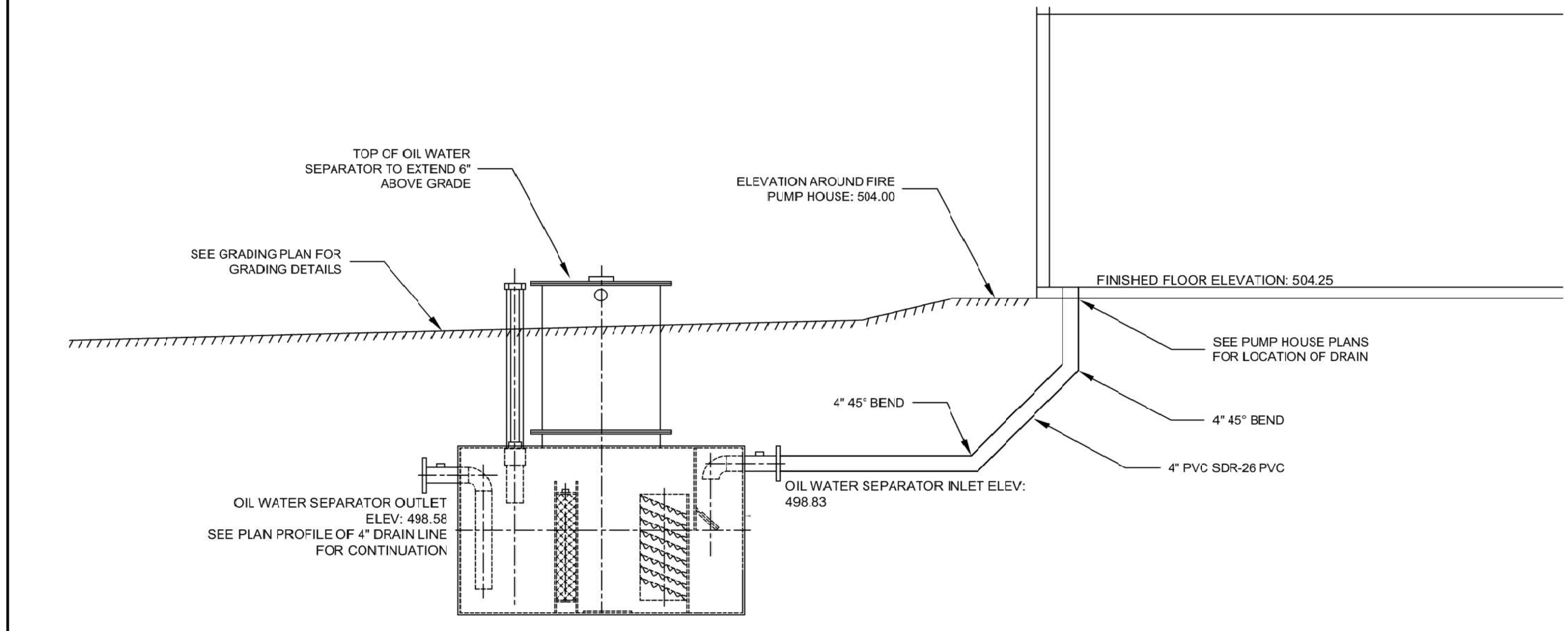
1 360 GALLON OIL WATER SEPARATOR PROFILE VIEW



2 360 GALLON OIL WATER SEPARATOR PLAN VIEW



3 360 GALLON OIL WATER SEPARATOR END VIEW



4 360 GALLON OIL WATER SEPARATOR DRAIN CONNECTION DETAILS

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



JOSHUA D. HARTSOCK-ENGINEER
MO # PE-2020000048

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OFFICE OF ADMINISTRATION
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MANAGEMENT,
DESIGN AND CONSTRUCTION

WAPPAPPELO TRAINING
SITE IMPROVEMENTS
INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPPELO, MO 63966

PROJECT # T2213-01
SITE # 6325
ASSET # 8136325016

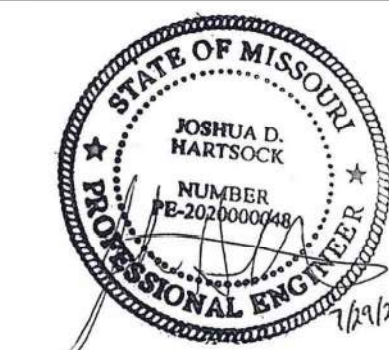
REVISION: C-103
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: C-103
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**PUMP HOUSE
DRAIN AND OWS
DETAILS**

SHEET NUMBER:
C-103

JULY 29, 2022



JOSHUA D. HARTSOCK-ENGINEER
MO # PE-202000048

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WAPPAPELLO TRAINING
SITE IMPROVEMENTS
INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPELLO, MO 63966

PROJECT # T2213-01
SITE # 6325
ASSET # 8136325016

REVISION: C-104
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

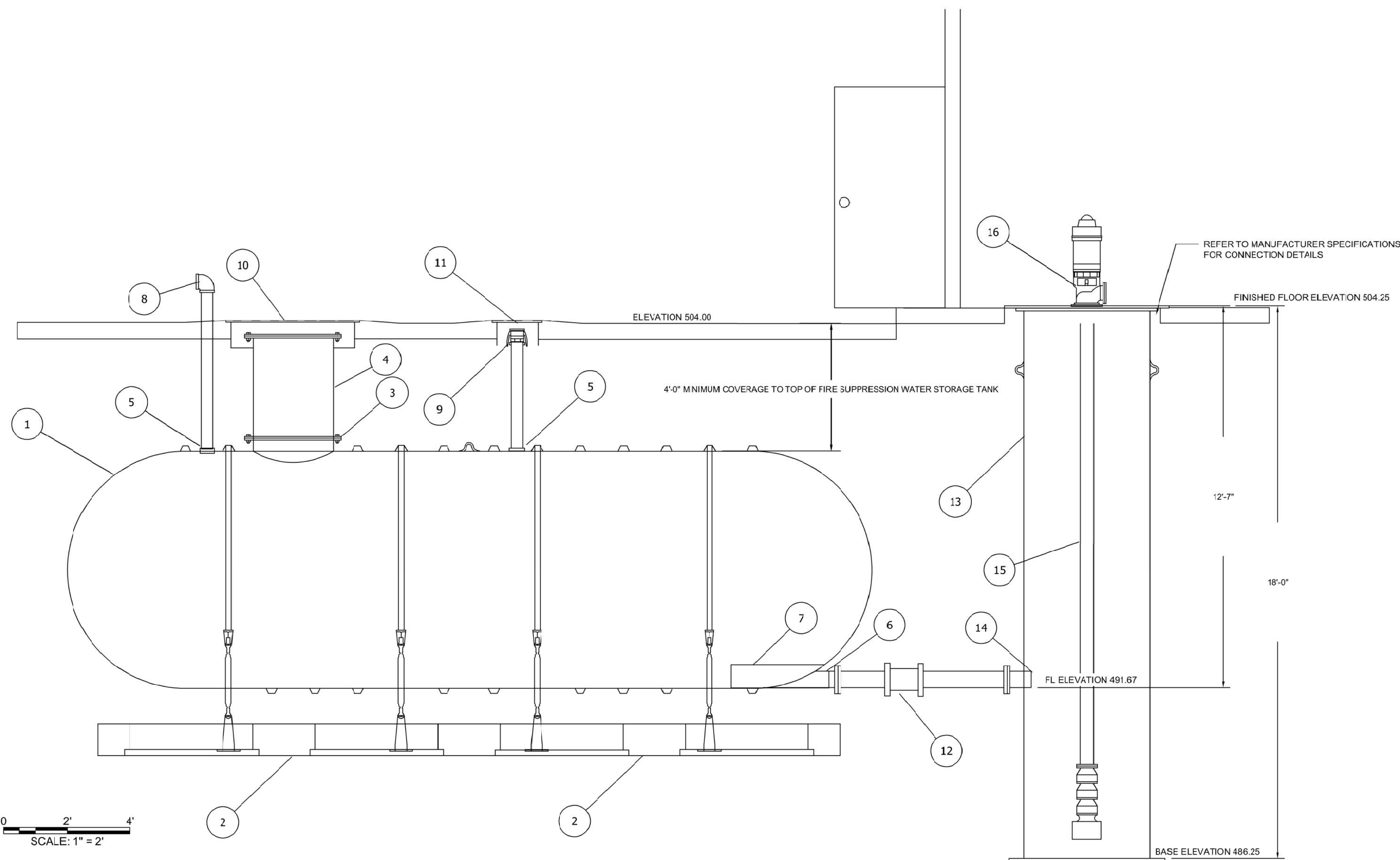
CAD DWG FILE: C-104
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**FIRE
SUPPRESSION
TANK DETAILS**

SHEET NUMBER:

C-104

JULY 29, 2022



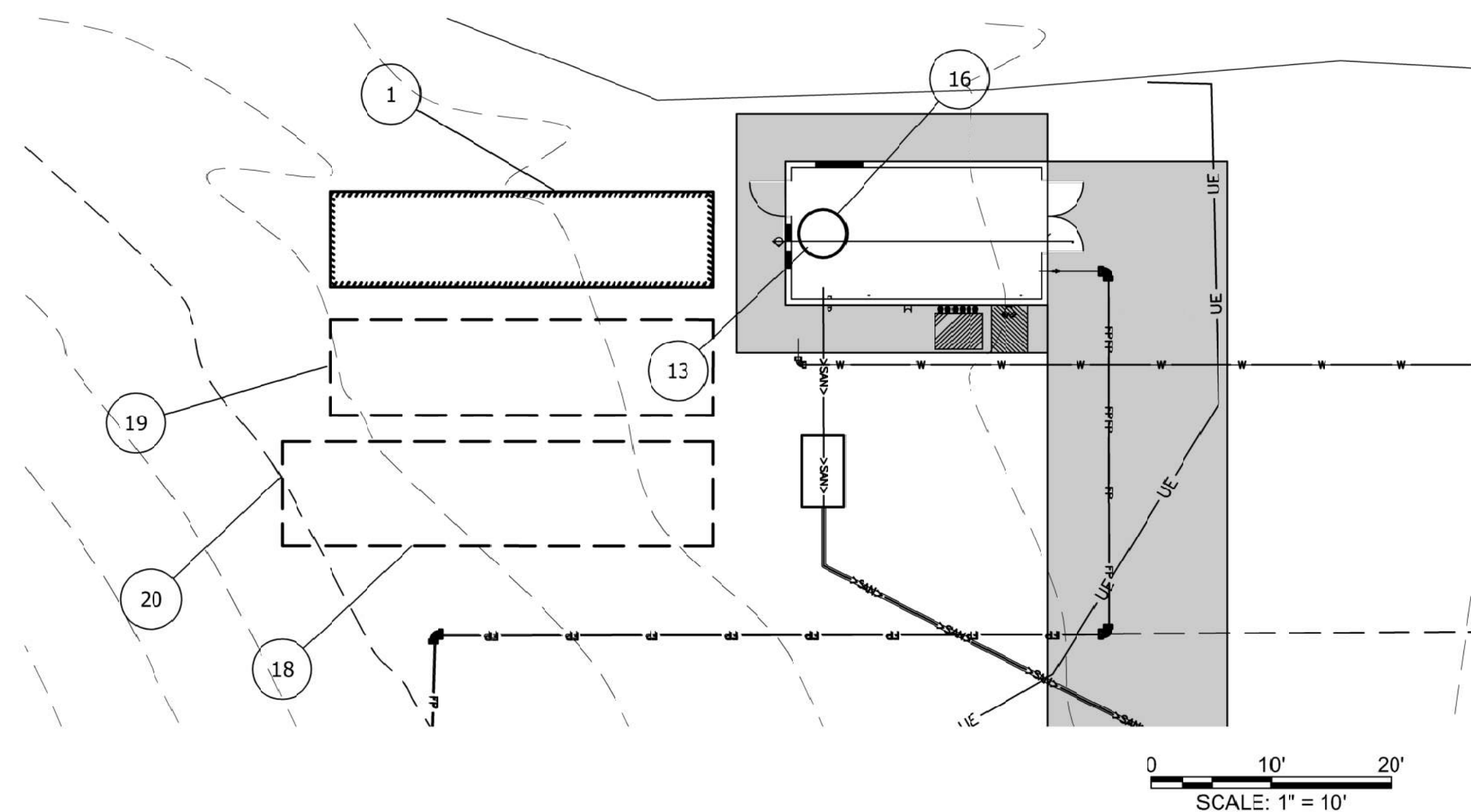
0 2' 4'
SCALE: 1" = 2'

1 10,000 GALLON UNDERGROUND STORAGE TANK DETAILS
SCALE: 1"=2'

NO.	DESCRIPTION
1	SINGLE WALL FRP
2	PRECAST DEADMAN SYSTEM W/ HOLD DOWN STRAP AND TURNBUCKLE ASSEMBLY
3	30" MANWAY WITH BLANK COVER
4	30" MANWAY EXTENSION
5	4" NPT SERVICE FITTING
6	6" TANGENTIAL FULL BOTTOM DRAIN NOZZLE
7	FRP ANTI-VORTEX PLATE
8	4" VENT PIPE
9	4" FILL WITH CAMLOCK CONNECTION
10	48" ROUND MANHOLE
11	16" ROUND MANHOLE
12	6" FLEXIBLE CONNECTOR
13	48" FRP VERTICAL PUMP VAULT W/ LIFTING LUGS
14	6" VAULT INLET NOZZLE
15	6" VERTICAL PUMP SHAFT HOUSING W/ BOWL ASSEMBLY AND STRAINER
16	VERTICAL PUMP W/ DISCHARGE HEAD AND MOUNTING PLATE
17	DISCHARGE VALVE AND PIPING
18	ADDITIONAL TANK LOCATION (SEE SHEET C101 FOR DETAILS)
19	PROPOSED LOCATION OF 10,000 GALLON TANK (ALTERNATE 1)
20	PROPOSED LOCATION OF 15,000 GALLON TANK (ALTERNATE 2)

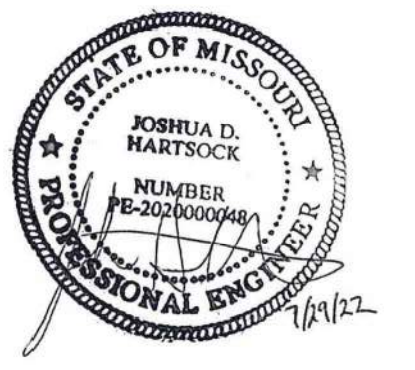
NOTE: CONTRACTOR TO CAP, PLUG, OR STOP UTILITIES 5 LF FROM EDGE OF PROPOSED FUTURE BUILDINGS FOR CONNECTIONS IN FUTURE PROJECTS.

NOTE: SEE GRADING PLAN FOR ALTERNATE GRADING PLANS



2 UNDERGROUND WATER STORAGE TANK ORIENTATION PLAN
SCALE: 1"=10'

0 10' 20'
SCALE: 1" = 10'



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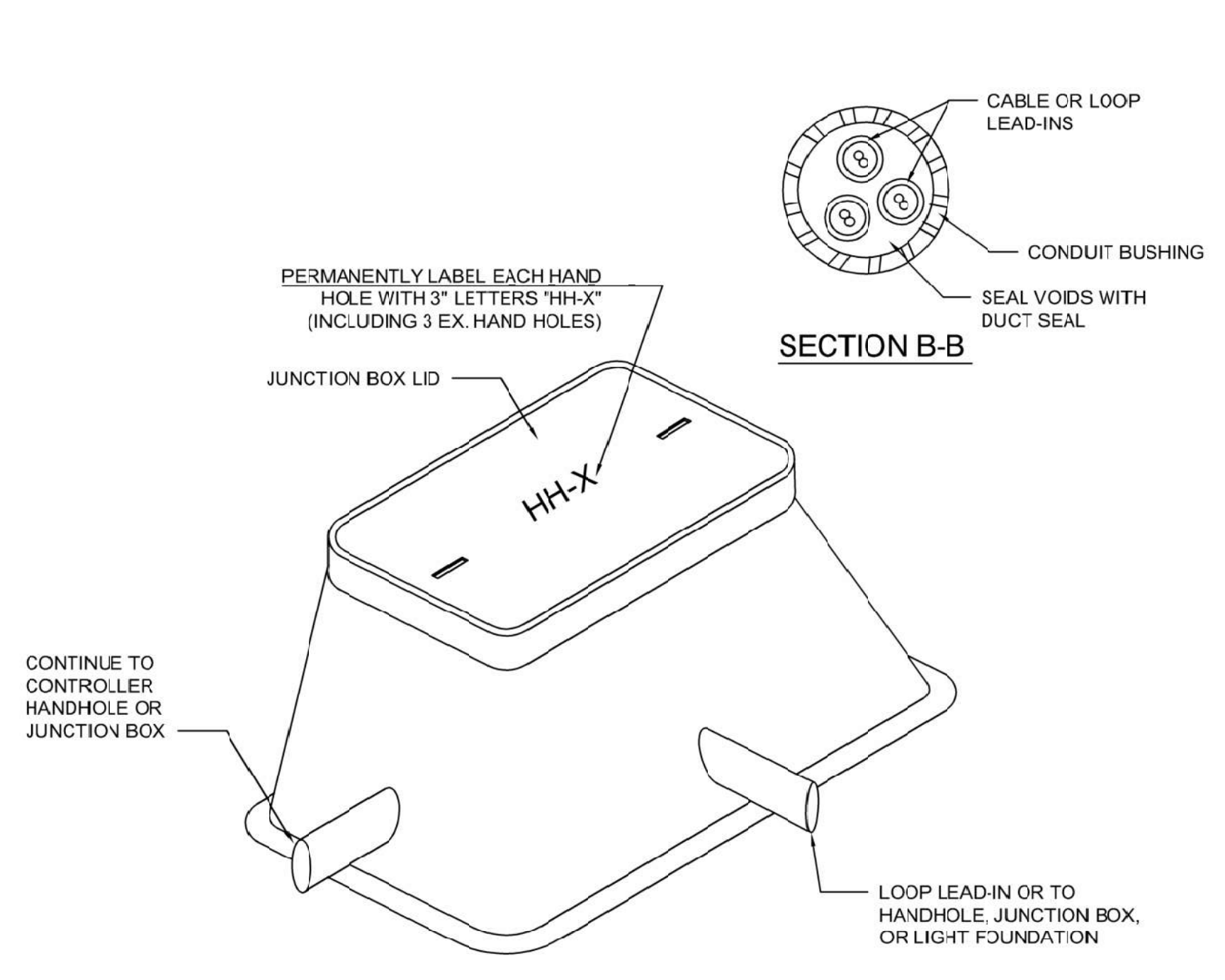
REVISION: C-501
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: C-501
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

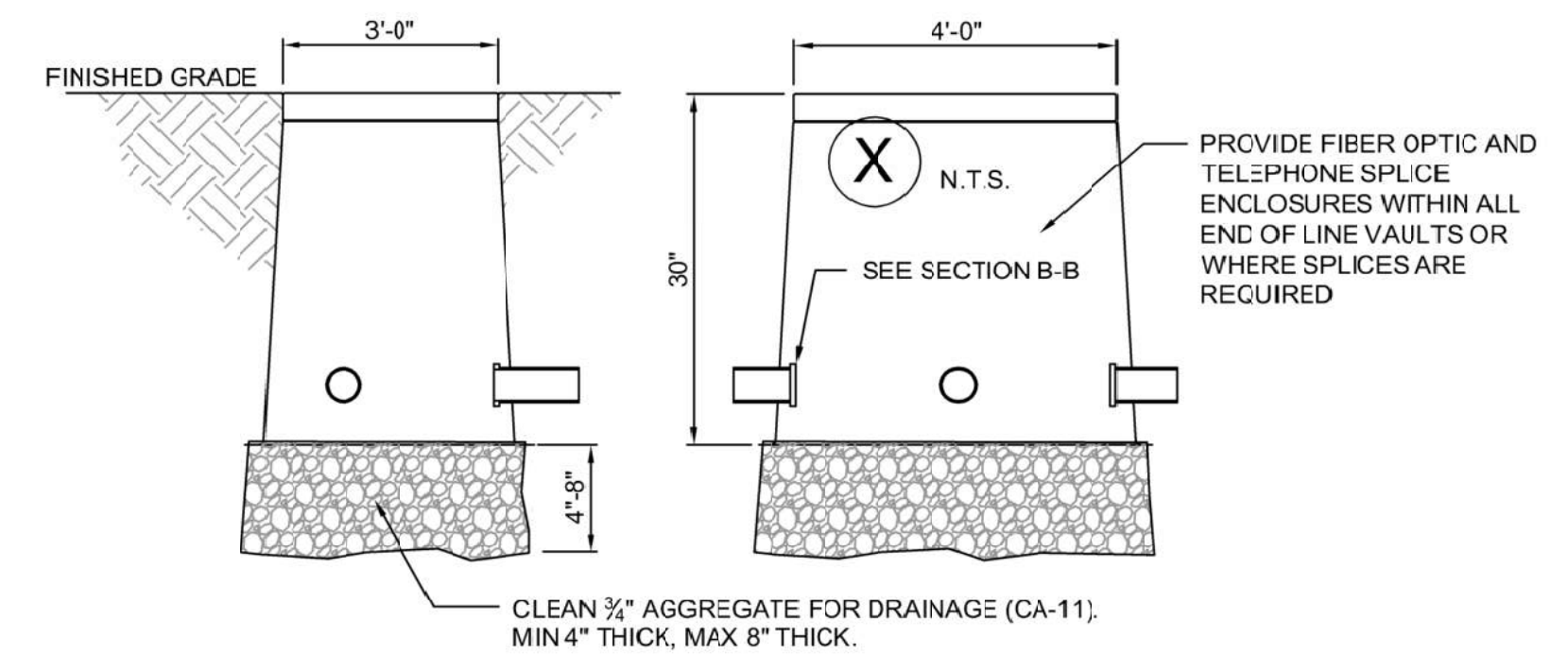
SHEET TITLE:
**MISCELLANEOUS
DETAILS**

SHEET NUMBER:
C-501

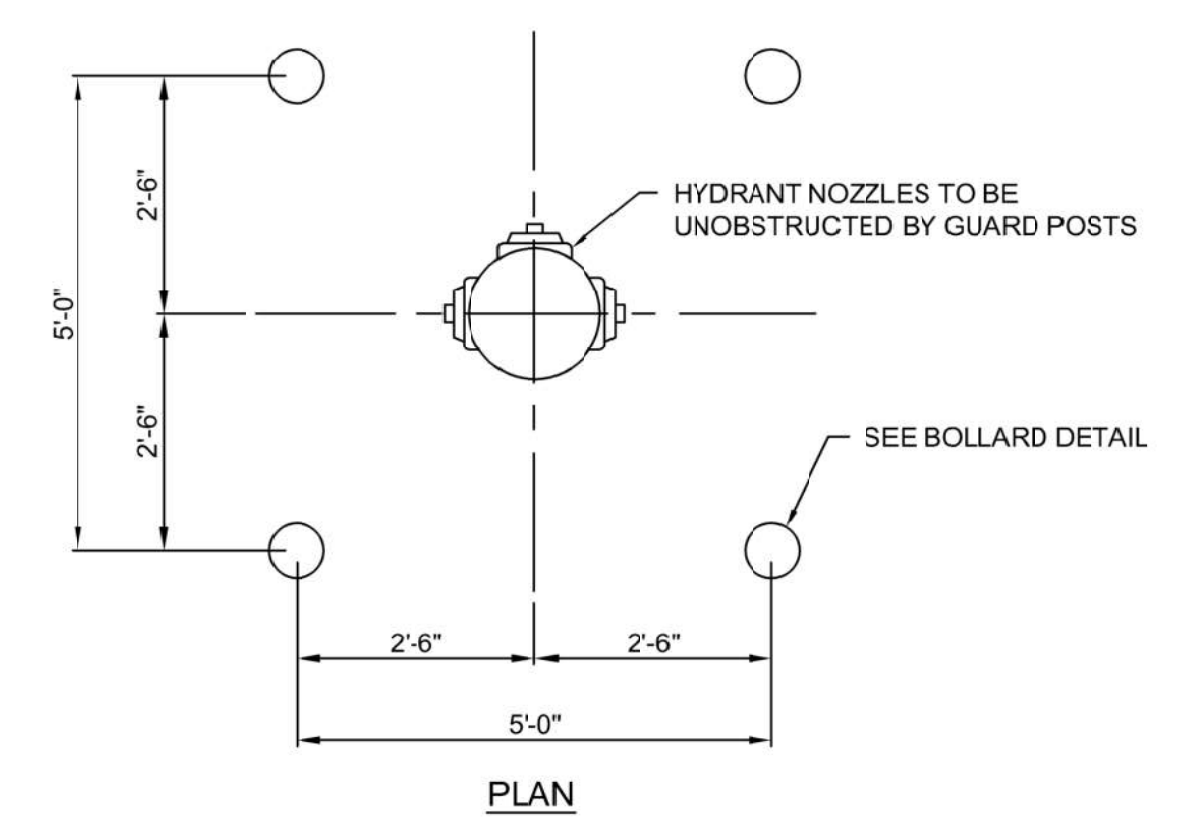
JULY 29, 2022



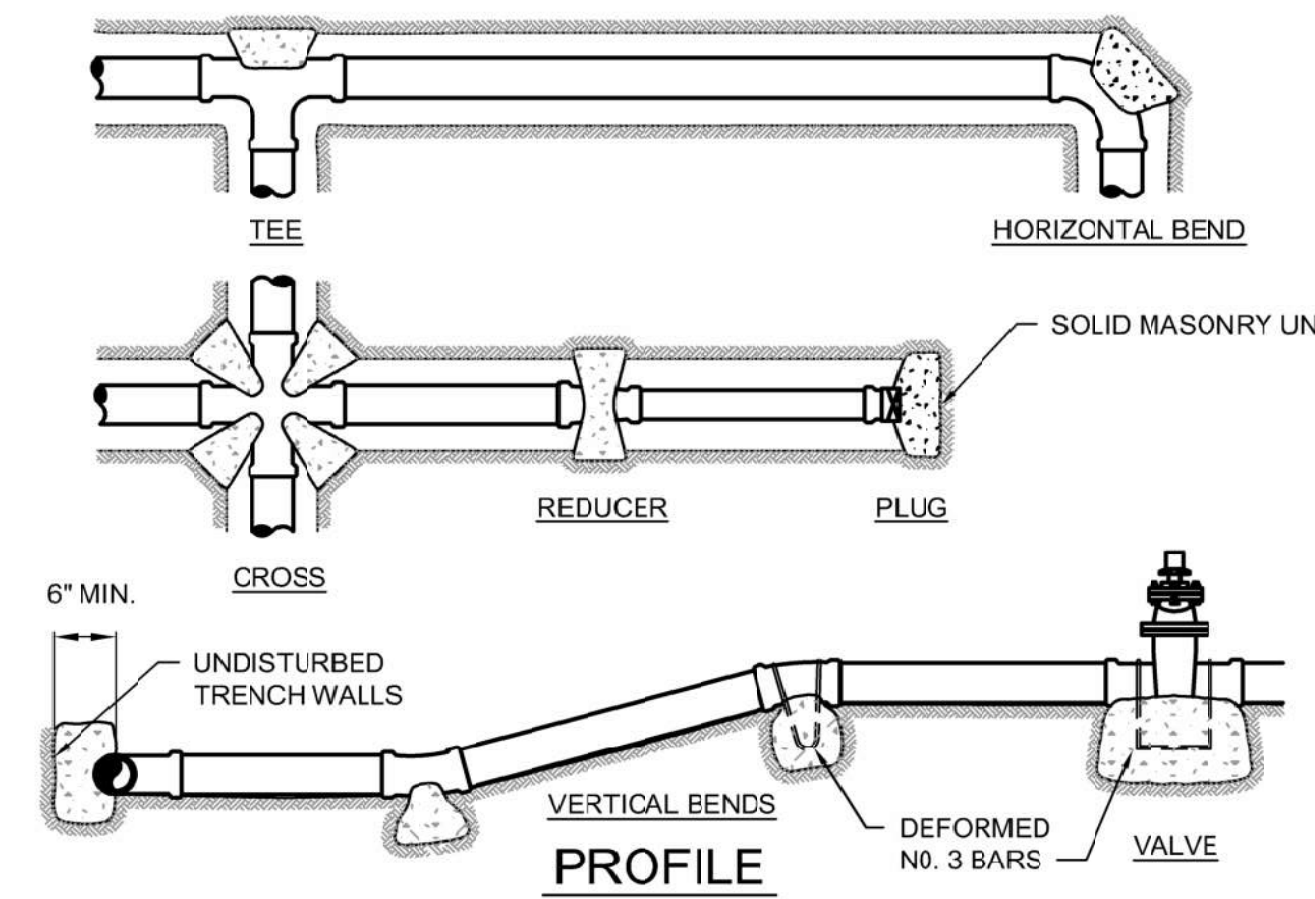
1 HANDHOLE DETAIL
N.T.S.



2 FIRE HYDRANT PROTECTION DETAIL
N.T.S.



3 THRUST BLOCK
N.T.S.

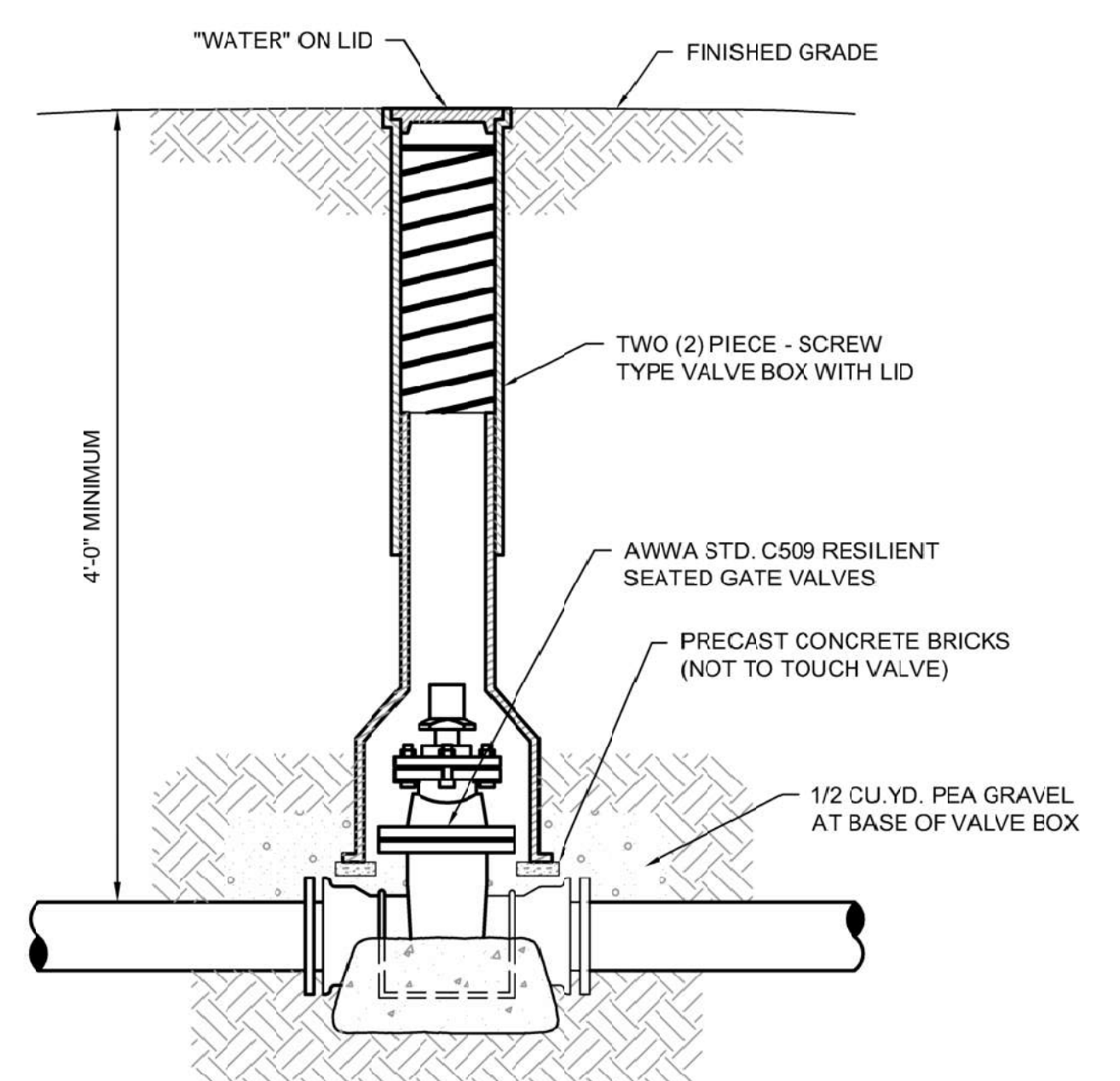


PIPE DIA.	BENDS			REDUCER	CROSS, TEE, PLUG AND VALVE
	11 1/4" & 22 1/2"	45°	90°		
2"	0.25	0.5	1	-	0.25
4"	0.5	1	2	0.75	1
6"	1	2	4	1.75	2.25
8"	2	4	7	2.75	4
10"	3	6	11.5	3.75	6.25
12"	4.5	9	16	4.75	9

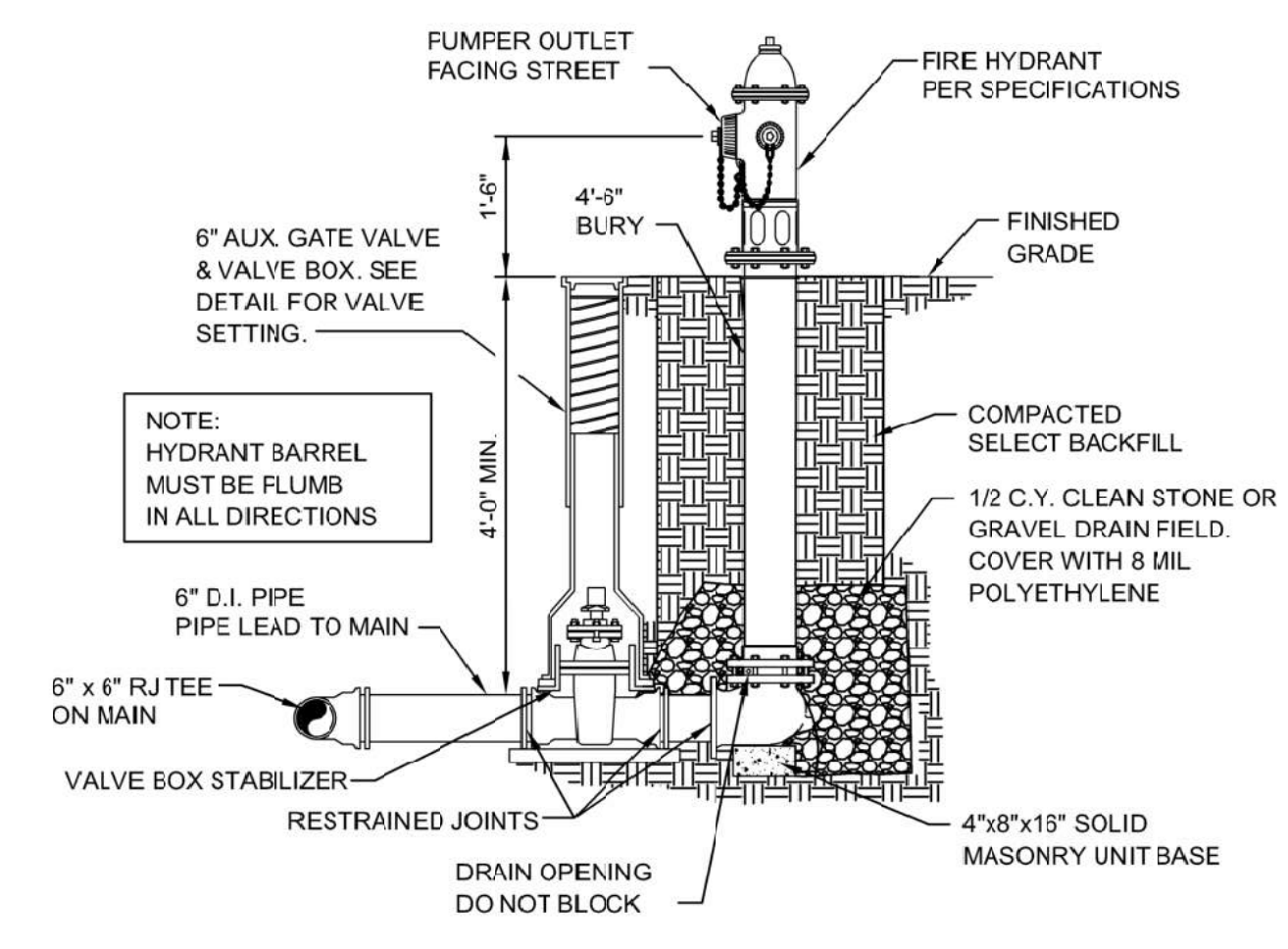
1. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE = 3000 PSI.
2. DESIGN TEST PRESSURE = 100 PSI + 50% FOR IMPACT.
3. DESIGN SOIL BEARING CAPACITY = 2000 PSF.
4. CONCRETE FOR THRUST BLOCKS BASED ON SOIL HAVING A SAFE LOAD BEARING OF 2000 PSF. FOR SOFT SOIL, INCREASE BEARING AREA AND VOLUME OF THRUST BLOCK.

PIPE SIZE IN. (mm)	NUMBER OF STAINLESS STEEL RODS FOR ROD & CLAMP ANCHORAGE PER F.M. DATA SHEET 3-10					
	MECHANICAL JOINT			PUSH-ON JOINT		
	1/4" BENDS	1/2" BENDS	TEES, HYDRANTS, CAPS, PLUGS	1/4" BENDS	1/2" BENDS	TEES, HYDRANTS, CAPS, PLUGS
4 (102)	2	2	2	2	2	2
6 (152)	2	2	2	2	2	2
8 (203)	4	2	4	4	2	4
10 (254)	6	4	4	4*	4*	4*
12 (305)	8	6	6	4**	4**	4**

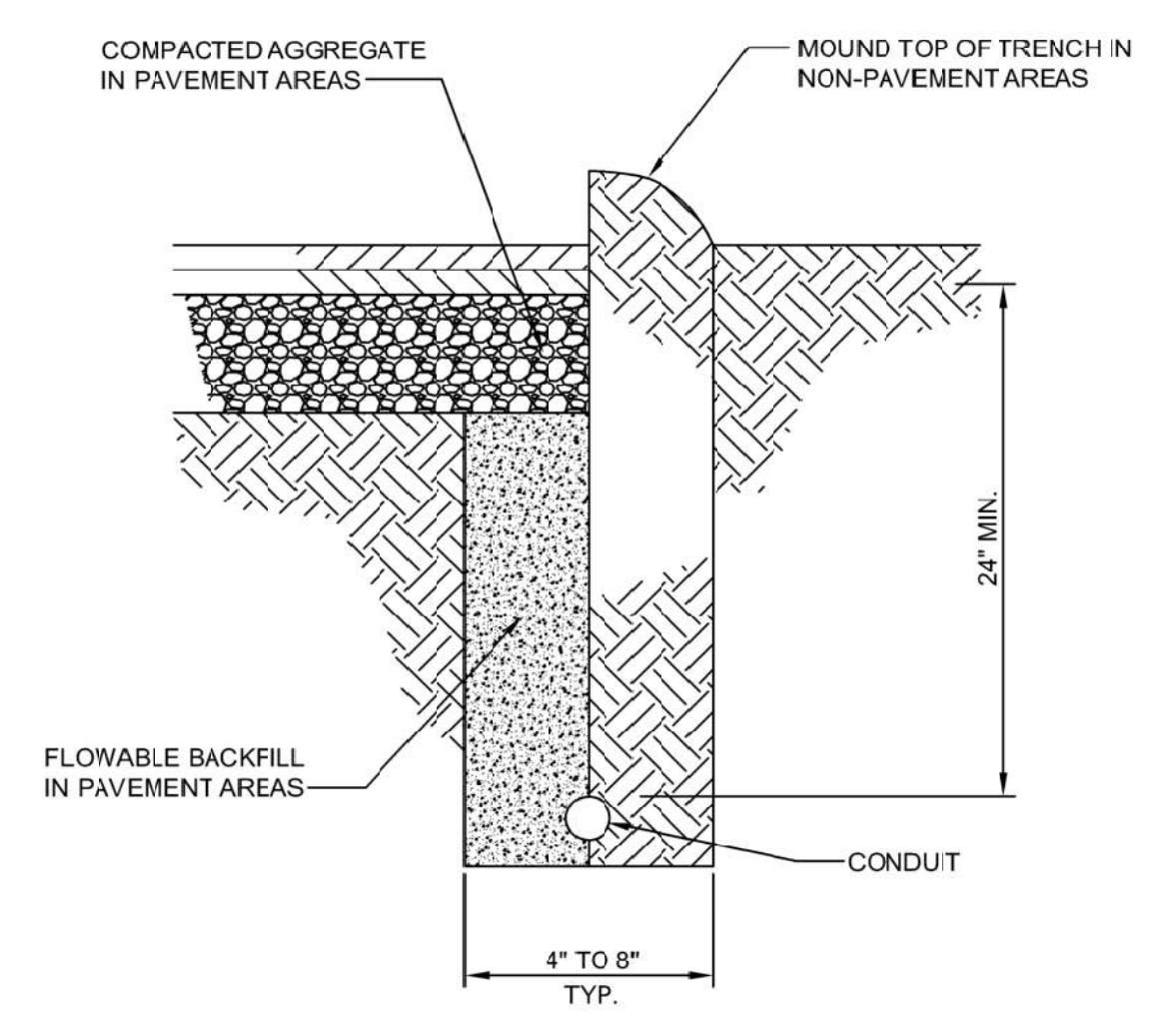
4 FIRE PROTECTION RISER DETAIL
N.T.S.



5 VALVE SETTING
N.T.S.

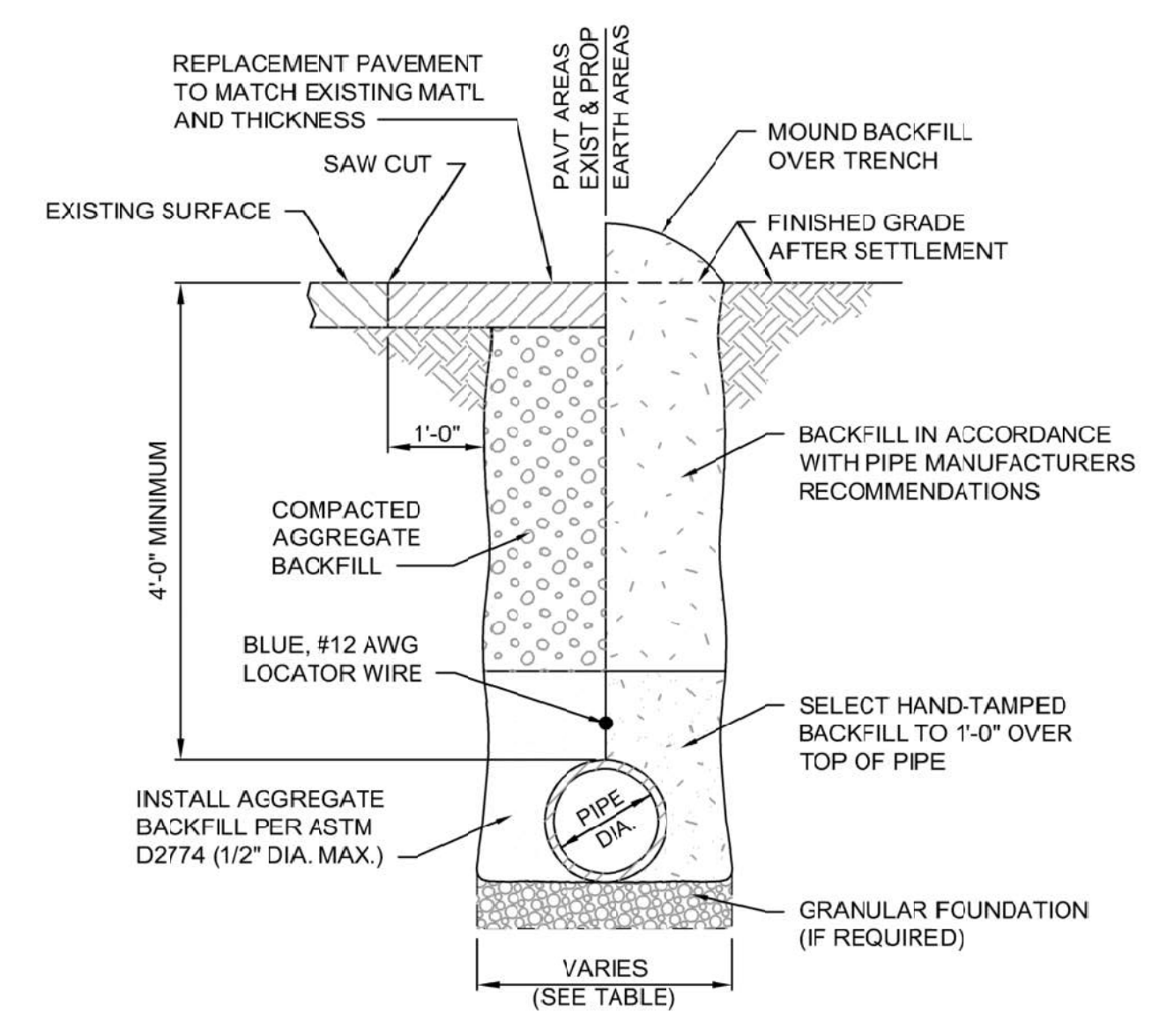


6 FIRE HYDRANT INSTALLATION
N.T.S.



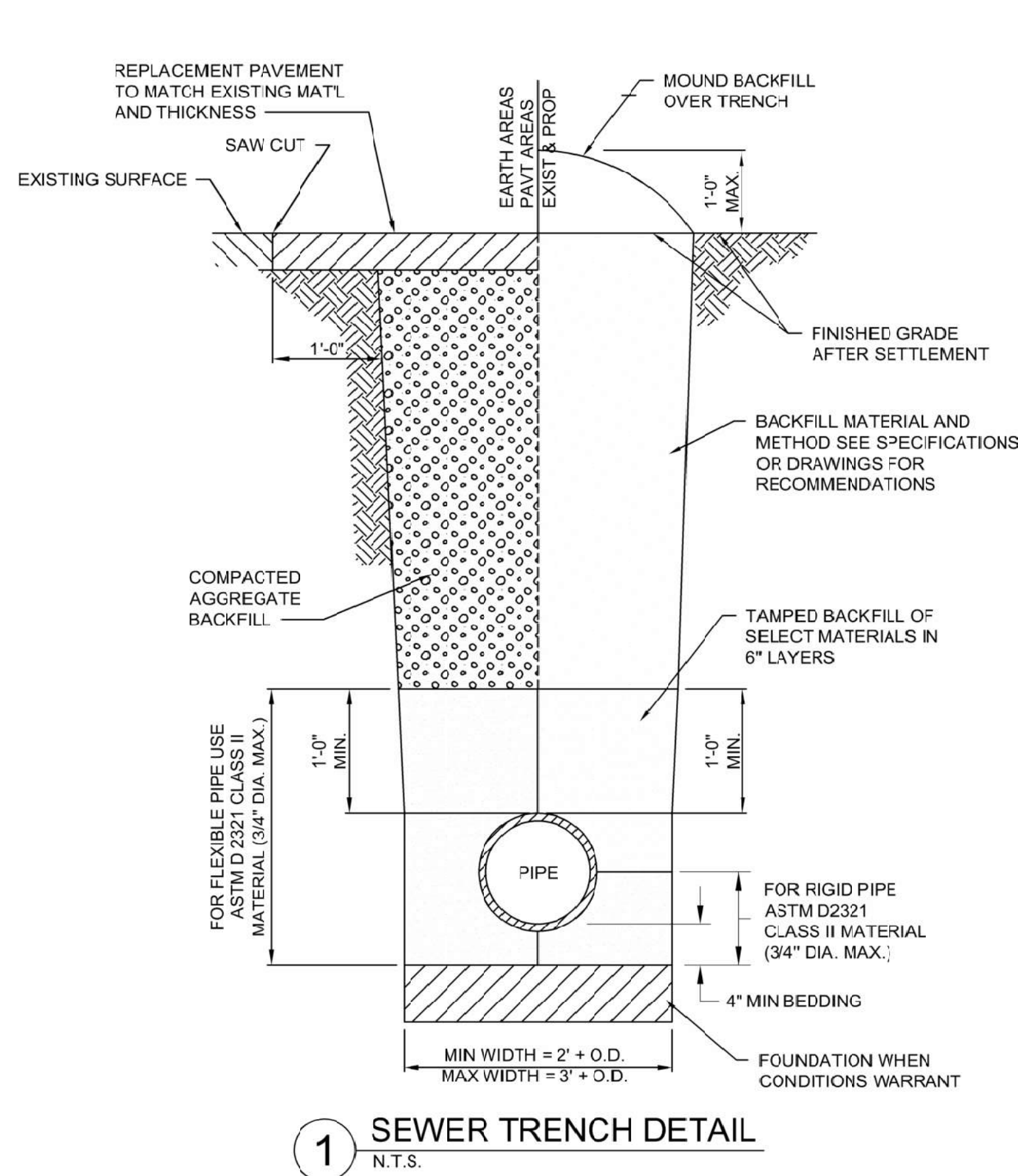
7 TYPICAL ELECTRIC TRENCH DETAIL
N.T.S.

1. BACKFILL AND COMPACT TRENCHES EVENLY, LEAVING A MOUND ON THE SURFACE FOR FUTURE SETTLING IN NON-PAVEMENT AREAS.
2. ALL TRENCHES UNDER PAVEMENT AREAS SHALL BE BACKFILLED WITH FLOWABLE BACKFILL IN ACCORDANCE WITH SECTION 593 OF THE STANDARD SPECIFICATIONS.

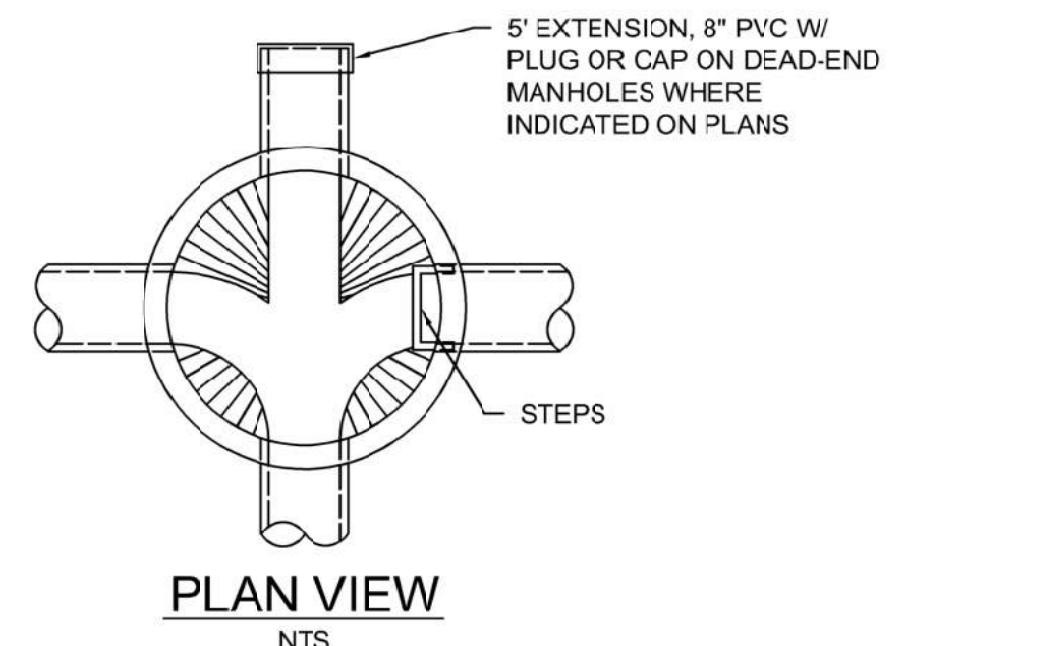


8 WATER PIPE INSTALLATION
N.T.S.

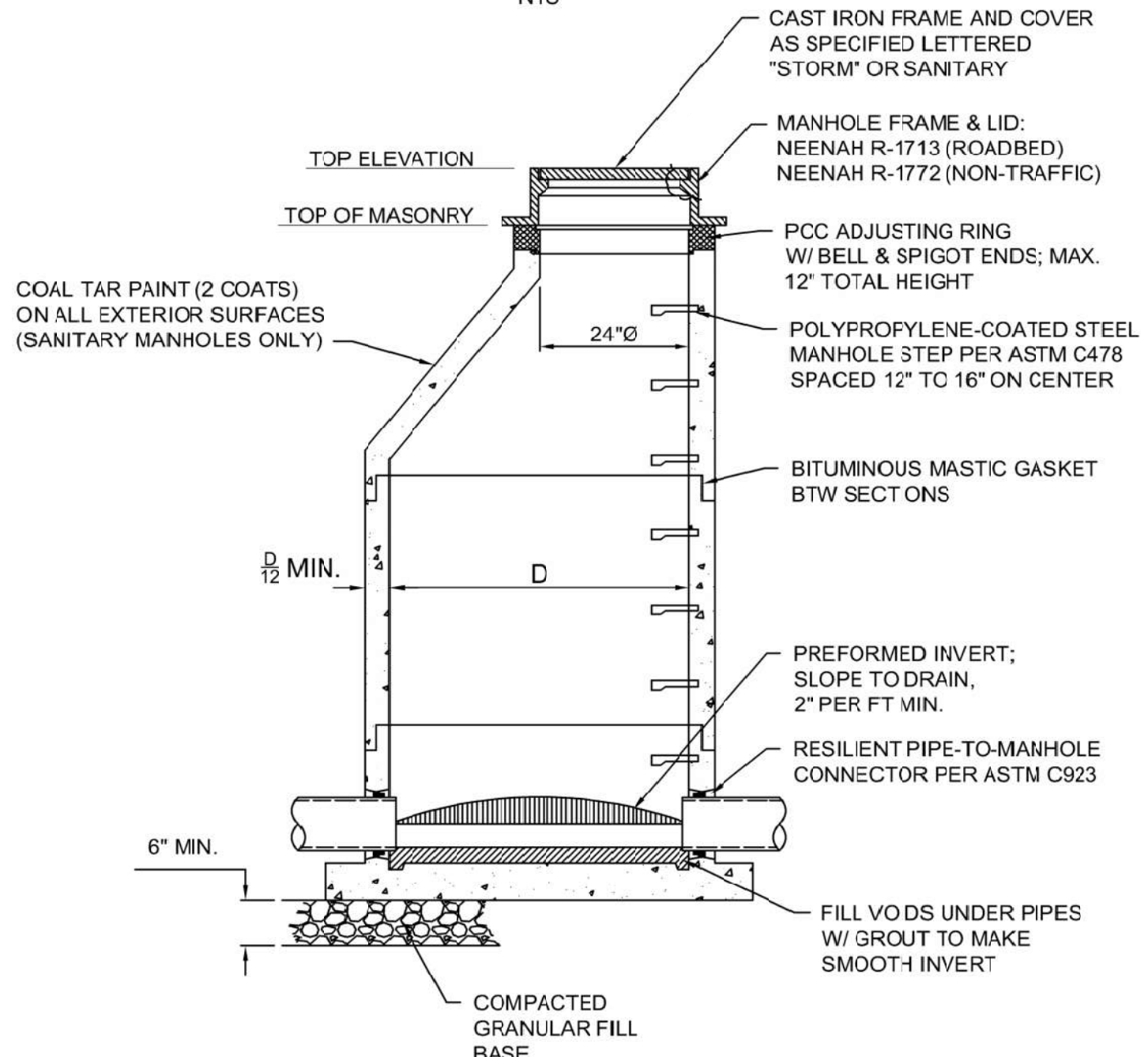
PIPE DIA.	TRENCH WIDTHS	
	MAXIMUM	MINIMUM
2"	26"	10"
4"	28"	12"
6"	30"	14"
8"	32"	16"
10"	34"	18"
12"	36"	20"
24"	56"	32"



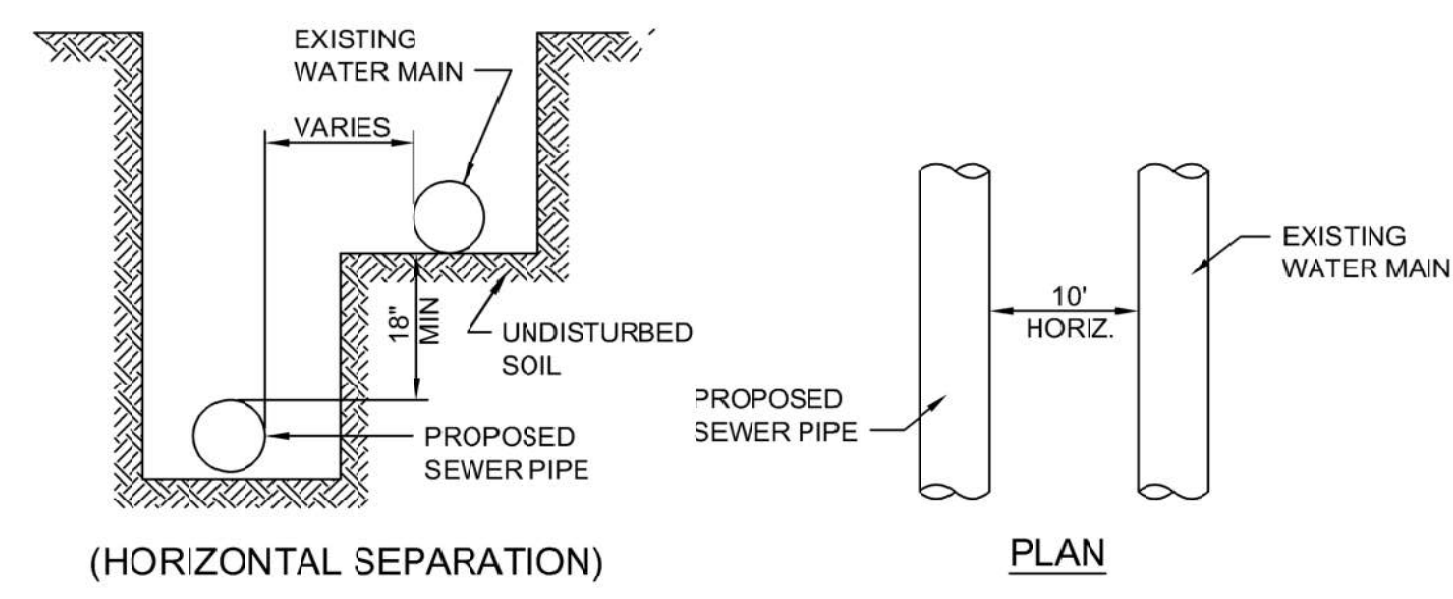
1 SEWER TRENCH DETAIL
N.T.S.



PLAN VIEW
N.T.S.



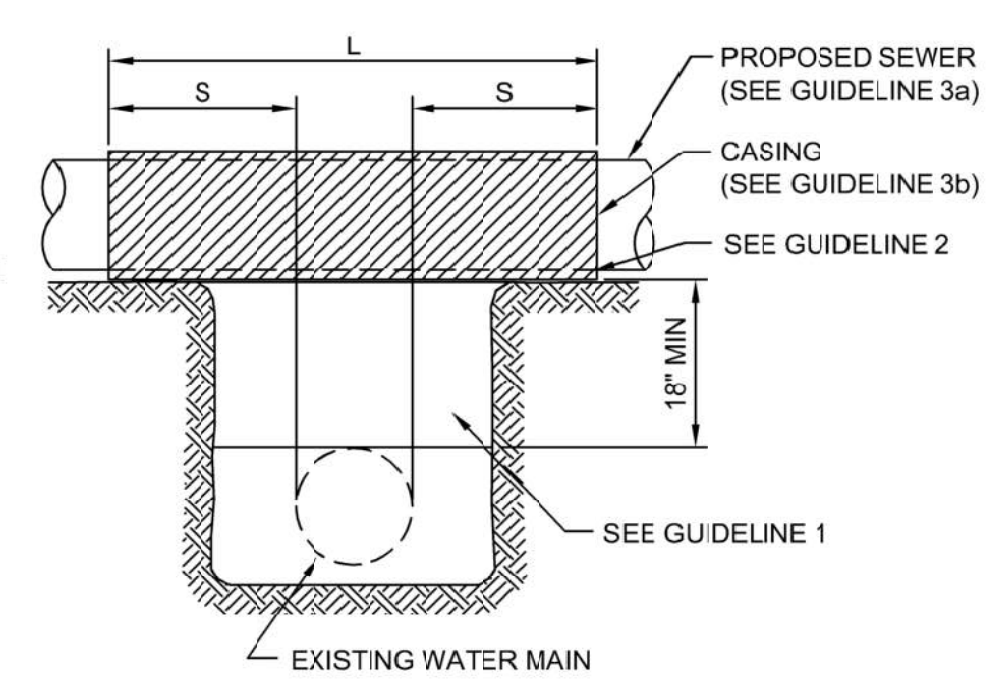
2 STANDARD MANHOLE DETAIL
N.T.S.



WHEN PROPOSED SEWER IS LOCATED LESS THAN 10 FEET FROM EXISTING WATER, DETAIL ABOVE SHALL APPLY.

WHEN PROPOSED SEWER IS LOCATED 10 FEET OR MORE FROM EXISTING WATER, NO SPECIAL CONSTRUCTION REQ'D

A - WATER AND SEWER SEPARATION REQUIREMENTS

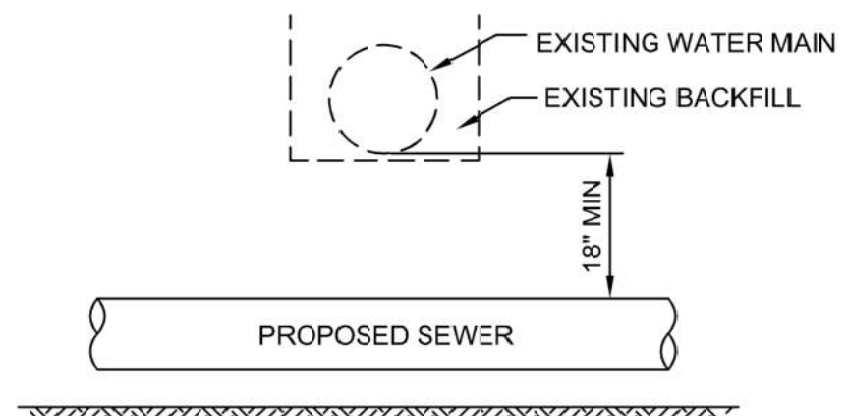


GUIDELINES

- IF SELECT GRANULAR BACKFILL EXISTS: REMOVE WITHIN WIDTH OF SEWER TRENCH & REPLACE WITH SELECT EXCAVATED MATL (CLASS IV) & COMPACT.
- OMIT SELECT GRANULAR EMBEDMENT & GRANULAR BACKFILL TO (1) FOOT OVER TOP OF SEWER & USE SELECT EXCAVATED MATL (CLASS IV) & COMPACT THE LENGTH OF "L" FEET.
- a. CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATL AND PRESSURE TEST, (OR);
- USE "L" FEET OF WATER MAIN MATL FOR CASING OF PROPOSED SEWER & SEAL ENDS OF CASING

NOTE: "S" IS THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPEND. TO THE EXISTING WATER MAIN

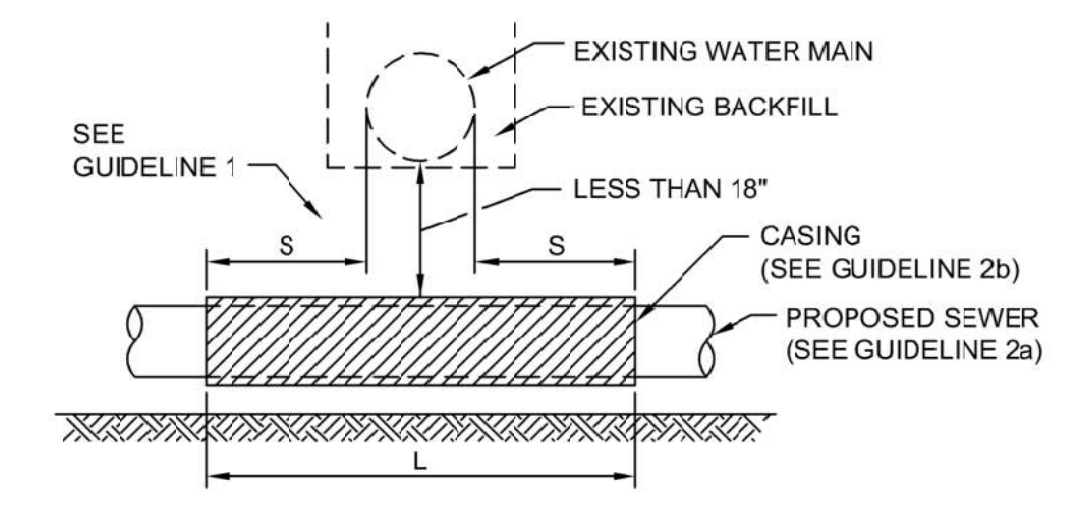
B - WATER AND SEWER SEPARATION REQUIREMENTS



GUIDELINES

- PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

C - WATER AND SEWER SEPARATION REQUIREMENTS



GUIDELINES

- OMIT SELECT GRANULAR EMBEDMENT & GRANULAR WITHIN BACKFILL TO (1) FOOT OVER TOP OF SEWER & USE SELECT EXCAVATED MATL (CLASS IV) & COMPACT FOR "S" FT. ON EA. SIDE OF WATER MAIN
- a. CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATL & PRESSURE TEST, (OR);
- b. USE "L" FEET OF WATER MAIN MATL FOR CASING OF PROPOSED SEWER & SEAL ENDS OF CASING
- PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH

NOTE: "S" IS THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPEND. TO THE EXISTING WATER MAIN

D - WATER AND SEWER SEPARATION REQUIREMENTS

3 WATER & SEWER SEPARATION REQUIREMENTS
N.T.S.



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WAPPAPPELLO TRAINING
SITE IMPROVEMENTS
INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPPELLO, MO 63966

PROJECT # T2213-01
SITE # 6325
ASSET # 8136325016

REVISION: C-502
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: C-502
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**MISCELLANEOUS
DETAILS
CONTINUED**

SHEET NUMBER:
C-502

DESIGN CRITERIA

- 1. BUILDING CODES:
A. IBC 2018
B. ASCE 7-16
2. DESIGN LOADS:
A. Occupancy Category IV
B. Dead Loads
a. Dead load weight of Pre-Engineered Building Framing as determined by Pre-Engineered Building manufacturer
b. See roof framing plan for additional loads
C. Live Loads
a. Roof = 20 psf
D. Roof Snow Load
a. Ground Snow Load, P_g = 15 psf
b. Flat Roof Snow Load, P_f = 18.5 psf
c. Snow Load Importance, I_s = 1.2
d. Snow Exposure Factor, C_e = 1.0
e. Roof Thermal Factor, C_t = 1.1
E. Wind Loading
a. Basic Wind Speed, V_B = 116 mph
b. Exposure Category = C
c. Internal pressure Coefficient, GC_p = +/- 0.18
d. Basic Wind Pressure: q = 24.9 psf
F. Seismic Loading
a. Risk Category = IV
b. Importance Factor, I_s = 1.5
c. Site Class C
d. S_ws = 0.788 (S_s = 9.85%)
e. S_wl = 0.339 (S_l = 3.39%)
f. Seismic Design Category D
g. Seismic Force-Resisting System - Steel System Not Specifically Detailed for Seismic (By Manufacturer)
1. Response Modification Coefficient, R = 3.0
2. Overstrength Factor, O_s = 3.0
3. Deflection Amplification Factor, Cd = 3.0
4. Seismic Response Coefficient, Cs = 0.394
h. Seismic Base Shear, V = W x C_s
i. Component Design per ASCE 7-16

SPECIAL STRUCTURAL INSPECTIONS AND TESTING

- 1. Owner will engage a qualified testing and inspecting agency to perform field special structural inspections and testing in accordance with the applicable International Building Code and to submit reports.
2. See specifications and list of elements below for a summary of the elements of construction that shall require verification or special inspection.
3. Special inspections noted as "Continuous" requires the presence of a qualified inspector in the vicinity of the work being performed for 100% of that work. Special inspections noted as "Periodic" requires part-time observation of the work being performed and observance of the final condition of the work before it is closed from view. Special inspections noted as "N/A" are Not Applicable for this project.
4. Special inspections shall conform to Chapter 17 of the International Building Code, IBC, 2018. Special inspections include:
A. Steel Construction - 1705.2
B. Concrete Construction - 1705.3
C. Soils - 1705.6
D. Wind Resistance Construction - 1705.11
E. Seismic Resistance Construction - 1705.12

ABBREVIATIONS

Table with 4 columns: Abbreviation, Description, Abbreviation, Description. Includes entries like & AND, AB ANCHOR BOLT, ALT ALTERNATE, ARCH ARCHITECT, @ AT, BLDG BUILDING, BM BEAM, BO BOTTOM OF, BOT BOTTOM, BRG BEARING, BRDG BRIDGING, BYD BEYOND, CIP CAST IN PLACE, CJ CONSTRUCTION JOINT, CL (C) CENTERLINE, CLR CLEAR, CMU CONCRETE MASONRY UNIT, COL COLUMN, CONC CONCRETE, CTR CENTER, DBL DOUBLE, DIA (Ø) DIAMETER, DIAPH DIAPHRAGM, DL DEAD LOAD, DWLS DOWELS, EA EACH, EF EACH FACE, ELEV (EL) ELEVATION, EMBED EMBEDMENT, EW EACH WAY, EX EXISTING, FB FIELD BEND, FDN FOUNDATION, FF FINISHED FLOOR, FLR FLOOR, FTG FOOTING, FV FIELD VERIFY, GA GAUGE, GALV GALVANIZED, HDG HOT DIP GALVANIZED, HDR HEADER, HGR HANGER, HORIZ HORIZONTAL, HS HEADED STUD, HSS HOLLOW STRUCTURAL SECTION, HT HEIGHT, ID INSIDE DIAMETER, JST JOIST, LG LONG, LL LIVE LOAD, LLH LONG LEG HORIZONTAL, LLV LONG LEG VERTICAL, LONG LONGITUDINAL, LWC LIGHT WEIGHT CONCRETE, MAX MAXIMUM, MECH MECHANICAL, MIN MINIMUM, NO (#) NUMBER, NTS NOT TO SCALE, OC ON CENTER, OH OPPOSITE HAND, ONG OPENING, OPP OPPOSITE, PAR PARALLEL, PEMB PRE-ENGINEERED METAL BUILDING, PERP PERPENDICULAR, PL (P) PLATE, PSF POUNDS PER SQUARE FOOT, PT PRESSURE TREATED, REINF REINFORCING, RO ROUGH OPENING, RTU ROOF TOP UNIT, SCH SCHEDULE, SIM SIMILAR, SL (S) STEEL LINE, STAGG STAGGERED, STD STANDARD, STIFF STIFFENER, TBR TO BE REMOVED, THK THICK, THRU THROUGH, TO TOP OF, TOF TOP OF FOOTING, TOS TOP OF STEEL, TOW TOP OF WALL, TRANS TRANSVERSE, TYP TYPICAL, UNO UNLESS OTHERWISE NOTED, VERT VERTICAL, W/ WITH, WF WIDE FLANGE, W/O WITHOUT, WP WORKING POINT, WWF WELDED WIRE FABRIC

GENERAL

- 1. The structure is designed to be self-supporting and stable after the building is fully completed. It is solely the contractor's responsibility to determine erection procedure and sequence and insure the safety of the construction personnel, public, building and its components parts, and adjacent buildings and properties. This includes the addition of whatever temporary or permanent shoring, bracing, needling, underpinning, or sheet piling, etc. that may be necessary to brace new construction, adjacent buildings, so that the structure is braced for wind, seismic, gravity, construction loads, etc. and that no horizontal or vertical settlement or any damage occurs to the adjacent existing structure. Temporary supports shall be maintained in place until permanents supports and/or shoring and bracing are installed.
2. Fall protection support from perimeter columns or walls shall be provided in accordance with OSHA requirements as required. Such material shall remain the contractor's property after the completion of the project.
3. It is the contractor's responsibility to enforce all applicable safety codes and regulations during all phases of construction.
4. The contractor shall perform all construction for the project in a manner and sequence that are based on accepted industry standards that recognize the interaction of the components that comprise the structure, without causing distress, unanticipated movements or irregular load paths as a result of the construction means and methods employed.
5. Construction loads shall not exceed design live loads. The contractor shall be responsible for all design required to support construction equipment used in constructing this project. Shoring and reshoring is the responsibility of the contractor.
6. Principal openings through the framing are shown on these drawings. The general contractor shall examine the structural and mechanical drawings for the required openings and shall verify size and location of all openings with the mechanical contractor. Providing all openings required by the mechanical, electrical, plumbing, or other trades shall be part of the general contract, whether or not shown in the structural drawings. Any deviation from the openings shown on the structural drawings shall be brought to the engineer's attention for review.
7. All contractors are required to examine the drawings and specifications carefully, visit the site and fully inform themselves as to all existing conditions and limitations, prior to agreeing to perform the work. Failure to visit the site and familiarize themselves with the existing conditions and limitations will in no way relieve the contractor from furnishing any materials or performing any work in accordance with drawings and specifications without additional cost to the owner.
8. Contractor shall verify all dimensions and conditions at the job site before commencing work and shall report any discrepancies to the engineer.
9. Omissions or conflicts between various elements of the drawings, notes, details and specifications shall be brought to the attention of the engineer and resolved before proceeding with the work.
10. Details labeled "Typical Details" on drawings apply to situations occurring on the project that are the same or similar to those specifically details. Such details apply whether or not details are referenced at each location. Notify engineer of clarification regarding applicability of "Typical Details".
11. Work these drawings with civil, mechanical, and electrical drawings.
12. Do not scale drawings.
13. Should any of the general notes conflict with any details or instructions on plans, the strictest provision shall govern.
14. Shop drawings and submittals:
A. These drawings shall be checked and coordinated with other materials and contracts by the general contractor and shop drawings and submittals shall bear the contractor's review stamp with the checker's initials before being submitted to the architect for approval.
B. When the fabricator has been authorized to use the architect and engineer's drawings as erection drawings, the fabricator must remove all title blocks, professional seals and any other reference to the architect and engineer from that erection drawing. The fabricator's name and title shall be placed on the erection drawing.
C. Submittals are required for the following:
a. Concrete Design Mix
b. Concrete Reinforcement
c. Pre-Engineered Building

CAST-IN-PLACE CONCRETE

- 1. All concrete construction shall conform to ACI 301, "Specification for Structural Concrete" and ACI 302, "Guide for Concrete Floor and Slab Construction", ACI 305 "Specification for Hot Weather Concrete" and ACI 306, "Standard Specification for Cold Weather Concrete", unless noted otherwise for the year referenced in the building code noted.
2. All detailing, fabrication and placing of reinforcing bars, unless otherwise noted, shall conform to ACI 318, "Building Code Requirements for Structural Concrete", ACI 117, "Specification for Tolerances for Concrete Construction and Materials", and the latest ACI detailing manual.
3. Concrete Types:
A. Interior Concrete:
a. Min. Cementitious Content = 564 lb/cu yd
b. Max Water-Cement Ratio = 0.45
c. Specified 28-day Compressive Strength, f'c = 4000 psi
d. Specified Slump Range for Placement (with W.R.) = 3 - 5 inches
e. Specified Air Content % by Volume = 0 - 3 (Entrapped)
f. Max Size Aggregate = 3/4"
B. Concrete Permanently Exposed to Weather; Exterior Walls, Exterior Footings, Stoops:
a. Min. Cementitious Content = 658 lb/cu yd
b. Max Water-Cement Ratio = 0.42
c. Specified 28-day Compressive Strength, f'c = 4000 psi
d. Specified Slump Range for Placement (with W.R.) = 3 - 5 inches
e. Specified Air Content % by Volume = 6.0 +/- 1.5
f. Max Size Aggregate = 3/4"
C. All cement shall be Type I or Type III Portland Cement per ASTM C150. Types IA and IP are not acceptable. Use one brand of cement throughout the project.
D. Minimum cementitious content shall consist of 100% cement or a combination of flyash per Note e, or a combination of cement and ground granulated blast furnace slag (GGBFS) per note f. Flyash shall not be used in combination with GGBFS as a substitute for cement.
E. Flyash is permitted and shall conform to ASTM C618 Type C or F, but shall not exceed 20% of cementitious content by weight indicated above on a substitution basis and shall be included in the water-cement ratio.
F. Ground granulated blast furnace slag (GGBFS) is permitted and shall conform to ASTM C989, but shall not exceed 15% of cementitious content by weight indicated above on a substitution basis and shall be included in the water-cement ratio.
G. Concrete used for floors shall have 1800 psi, 3 day strength. Mixes to be pumped shall be so identified on the mix design submittal. All pumped mixes shall have a mid-range or high-range water reducer.
H. All admixtures other than superplasticizers shall be added at the batch plant. Superplasticizers, designed for addition to the mix at the plant, may be added at the batch plant with verifications from the engineer and verification that the water-cement ratio has not been exceeded. Superplasticizers added at the site shall be in pre-measured containers from the batch plant.
I. All concrete used for cast-in-place concrete slabs shall contain the specified water reducing or water-reducing admixture. All concrete slabs, placed at air temperature 50°F shall contain the specified non-corrosive, non-chloride accelerator. All concrete placed at air temperature above 80°F shall contain specific water-reducing/retarder admixture. All concrete required to be air-entrained shall contain an approved air-entraining admixture. All pumped concrete shall contain the specified high-range water-reducing admixture. Concrete with a water-cement ratio between 0.4 and 0.5 shall contain the specified water-reducer.
J. Calcium chloride shall not be permitted nor shall any admixture containing calcium chloride be permitted.
4. All pipe sleeve openings through concrete slabs shall be formed with standard steel pipe.
5. No electrical conduit shall be placed above the welded wire fabric or top reinforcing of slab.
6. All aluminum in contact with concrete or dissimilar metals shall be coated with two coats of coal tar epoxy, approved by the engineer, unless otherwise noted.
7. Concrete shall be discharged at the site within 1 1/2 hours after water has been added to the cement and aggregates. Addition of water to the mix at the project site will not be permitted. All water must be added at the batch plant. Slump may be adjusted only through the use of additional water reducing admixtures or high range water reducing admixture.
8. All concrete shall be placed without horizontal construction joints, except where specifically noted.
9. All exposed edges of concrete members shall be chamfered 3/4" unless shown otherwise.
10. The placement of sleeves, outlet boxes, box-outs, anchors, etc., for the mechanical, electrical and plumbing trades is the responsibility of the trade involved; however, any box-outs not covered by typical details in structural drawings shall be submitted for approval.
11. Reinforcing bars shall conform to ASTM A615, Grade 60, No tack welding of reinforcing in the field will be permitted.
12. Wire bar supports shall be furnished for all reinforcing within slabs, inclusive of welded wire fabric. Bottom bars in slabs-on-grade may be supported by other suitable supports. Reinforcing shall be properly positioned prior to concrete placement and may not be re-positioned once concrete operations have begun. Wire bar and other types of supports shall be in accordance with the concrete reinforcing steel institute manual of standard practice.
13. Reinforcement shall be continuous through all construction joints unless otherwise noted on drawings.
14. All hooks shown on drawings shall be ACI standard hooks, unless otherwise noted.
15. Where continuous bars are called for, they shall run continuously around corners and be lapped at necessary splices. Lap lengths shall be as given in the splice and development table.
16. Provide additional reinforcing at the side and corners of all openings in concrete in accordance with typical details.
A. Minimum additional requirements are as follows:
a. (2)-#4 x 4'-0" long diagonally each corner of opening
b. Extend bars a minimum of 2'-0" beyond openings, hook where extension is not possible.
17. Reinforcing bars shall have a minimum clear spacing of 4"
18. SPLICE LENGTHS:

Table with 2 columns: Bar Size, Min. Lap. #3 1'-4", #4 1'-7", #5 2'-0", #6 2'-6", #7 3'-6"

- A. When lapping two different size bars, use the lap dimension of the smaller bar or the anchorage dimension of the larger bar, use whichever dimension is larger.

BUILDING PAD PREPARATION

- 1. All building pad preparation shall follow the recommendations of the geotechnical report, unless otherwise noted.
2. All trees, brush, roots, topsoil, rubble, organically contaminated or otherwise objectionable materials encountered are to be removed from the structural areas of the site.
3. Subgrade sectors which will exist in cut and those which are to support fill structures are to be proof rolled. Areas exhibiting instability are to be undercut and back filled on a lift-by-lift basis with each lift carefully compacted.
4. If unstable subgrade sectors cannot be stabilized by excavation and recompaction, then crushed stone or similar coarse aggregate material shall be rolled into the subgrade until a firm subgrade reaction is achieved.
5. The proposed engineered fill materials are to be placed in lifts not exceeding eight (8) inches in loose measured thickness.
A. Each lift is to be compacted as follows:
a. Slab-on-grade: Minimum of 98% maximum density by ASTM D698

FOUNDATION

- 1. The contractor shall familiarize themselves with the survey and the geotechnical investigation report before starting construction. All foundation work shall be in accordance with the recommendation of the geotechnical report by Geotechnics dated July 27, 2022, except where noted otherwise on drawings or specifications.
2. A soils testing laboratory shall be retained by the owner for project construction review to insure conformance with the construction documents during the excavation, back fill, and foundation phases of the project.
3. Foundation design is based on the following values:
A. 2,000 psf net allowable soil bearing pressure for continuous wall footings.
4. All fill material shall be free of organic contaminants and other deleterious matter.
5. All soil surrounding and under footings shall be protected from frost action and freezing during the course of construction.
6. Footing excavations should be made to the required lines and grades as rapidly as possible. Footing excavations be left open for a minimum of time to prevent disturbance to the foundation soils. Foot traffic should be prevented on the base of the footing excavations if disturbance is noted. Hand cleaning, if required and setting of reinforcing steel should then be accomplished from the sides of the excavation.

OVER EXCAVATION FILL

- 1. Unsuitable (soft or unstable) natural soils and/or recent fill, if encountered, shall be removed from the footing excavations, and replaced with suitable material as recommended below. Observation by a geotechnical engineer is required at the time of excavation to determine the presence and competency of the expected bearing strata and to document removal of unsuitable soils.
2. Replacement material for unsuitable soils in footings may consist of suitable granular material that is placed in 6" or less lifts and compacted to at least 95% of the standard proctor maximum dry density (ASTM D 698) at moisture contents of - 2% to +4% of optimum or flowable fill (Controlled Low Strength Material, CLSM).
3. The depth of overexcavation, if needed, under spread footings should be at least 2 feet below the bottom of footing(or to adequate bearing material, whichever is deeper) and the overexcavation should be at least 50% wider than the footing width for lateral stress dissipation. If flowable fill is used as replacement material below footings, over widening is not necessary.
4. High plastic clay soils near the surface will necessitate the placement of at least 24 inches of low volume change (LVC) material below slabs on grade. The capillary break may be considered part of the low volume change material. The LVC material may consist of suitable materials such as lean clay (LL<45% or less and PI<25% or less) or granular material. Granular material, if used, should be placed in 8" or less lifts and compacted to at least 95% of the proctor maximum dry density (ASTM D698). The granular material should be composed of reasonably well graded crushed stone or gravel with a maximum size of 1" and not more than 15% non-plastic fines.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



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DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

WAPPAPELLO TRAINING
SITE IMPROVEMENTS

INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPELLO, MO 63966

PROJECT # T2213-01
SITE # 6325
ASSET # 8136325016

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 07/29/2028

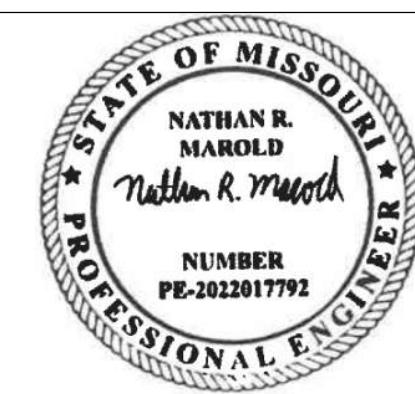
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DRAWING BY: ANM
CHECKED BY: S001
DESIGNED BY: NRM/ANM

SHEET TITLE:
STRUCTURAL
NOTES

SHEET NUMBER:

S001

JULY 29, 2022



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WAPPAPPELO TRAINING
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INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPPELO, MO 63966

PROJECT # T2213-01
SITE # 6325
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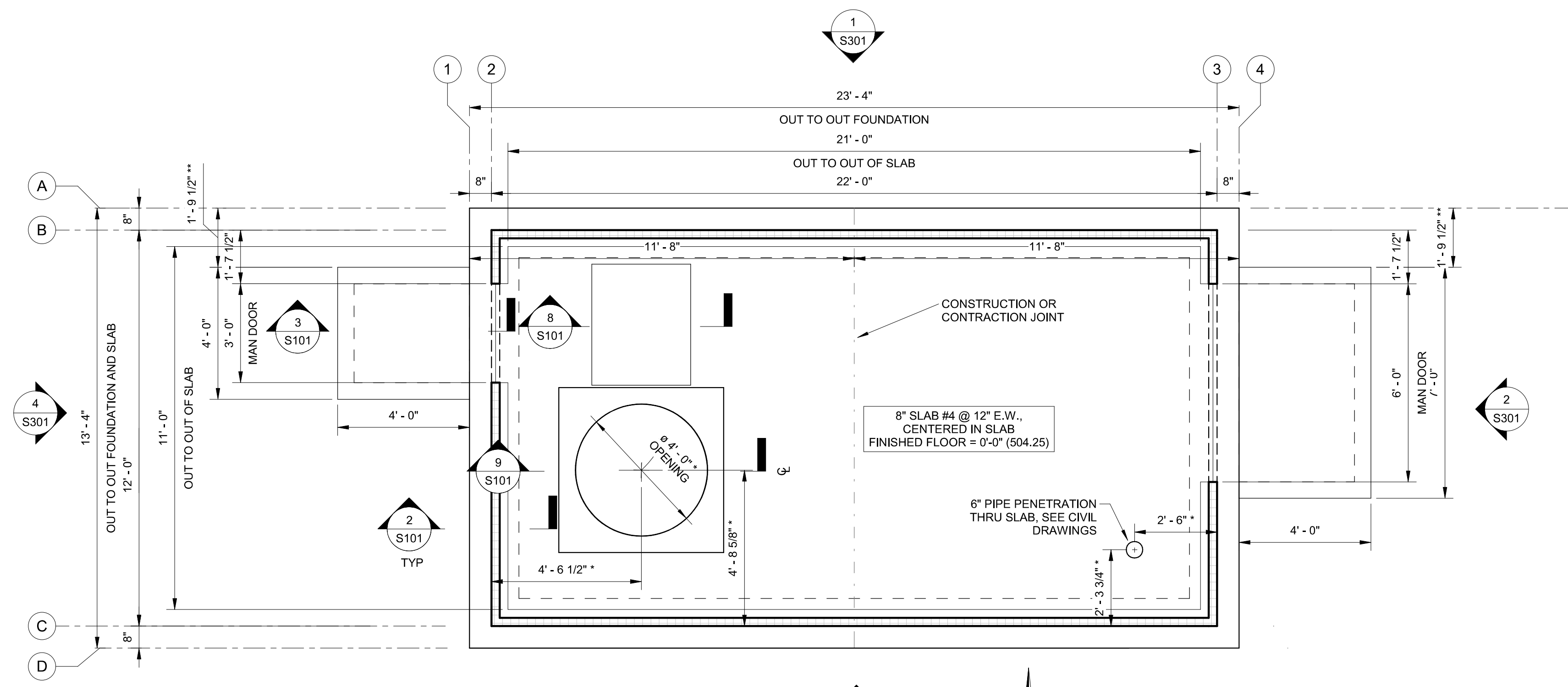
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SHEET TITLE:
**FOUNDATION
PLAN & DETAILS**

SHEET NUMBER:

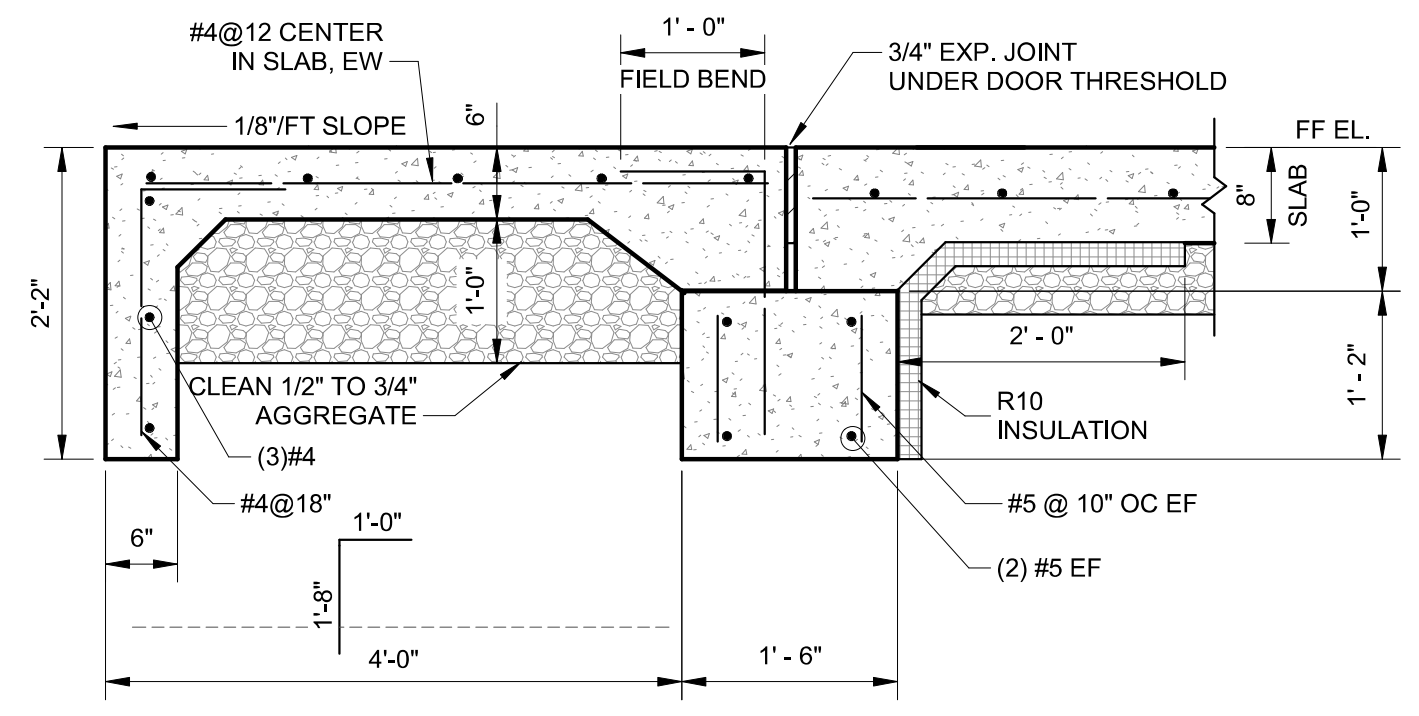
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JULY 29, 2022

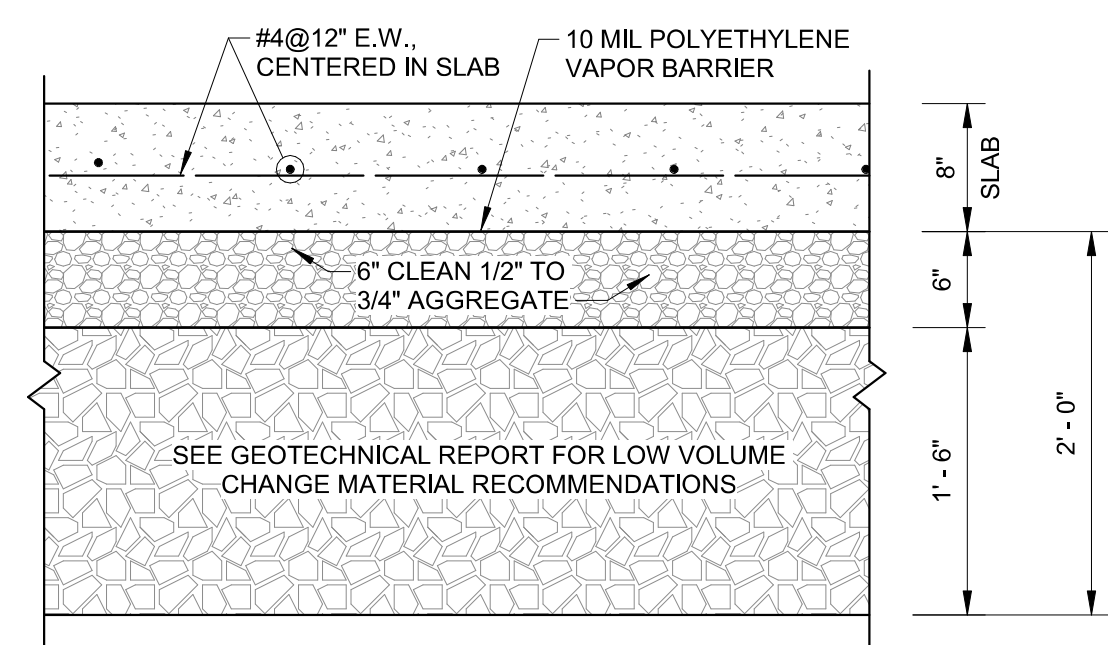


1 FOUNDATION PLAN
3/8" = 1'-0"

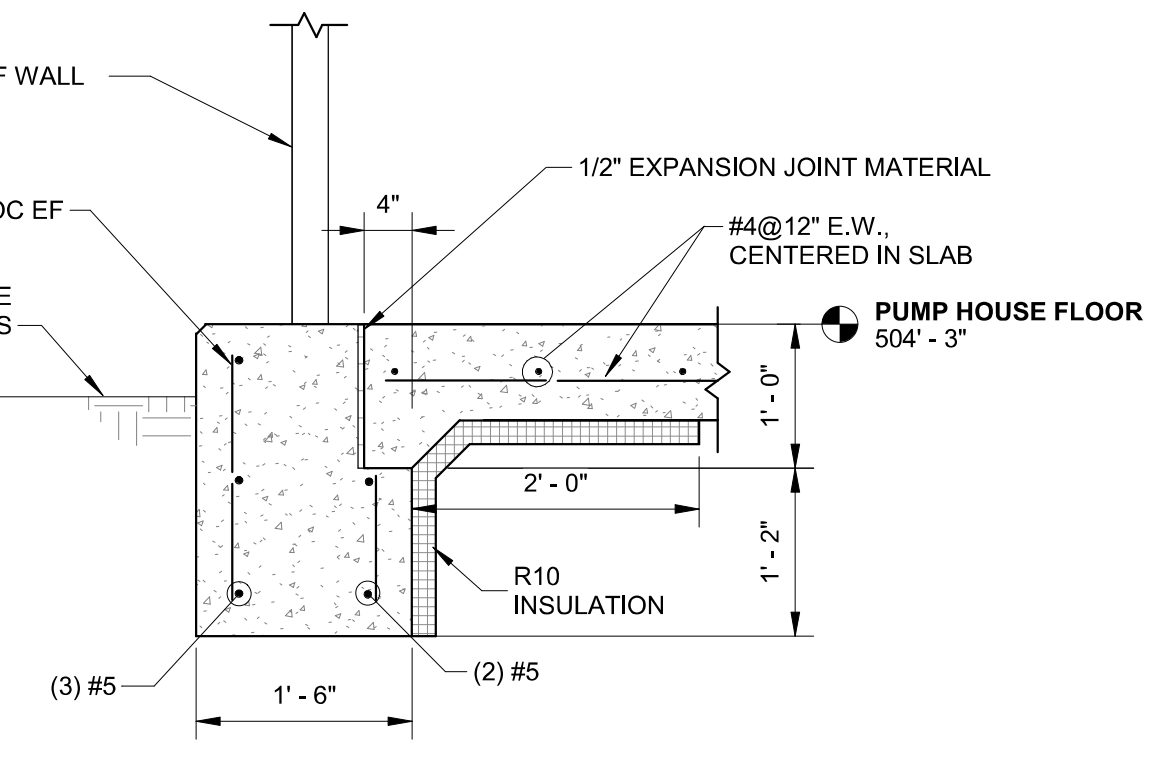
NOTES:
1. *COORDINATE DIMENSION WITH MEP
2. **STOOP TO BE CENTERED ON DOOR, COORDINATE DIMENSION WITH PRE-ENGINEERED BUILDING



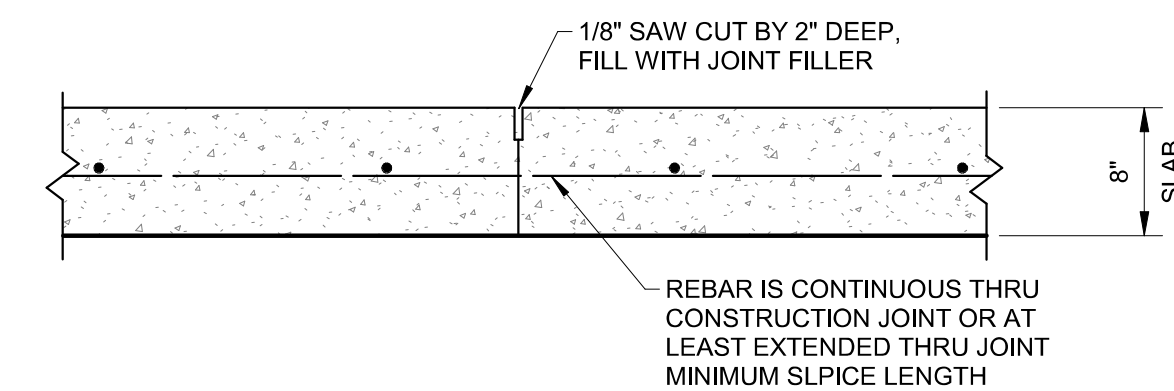
3 SECTION AT STOOP
3/4" = 1'-0"



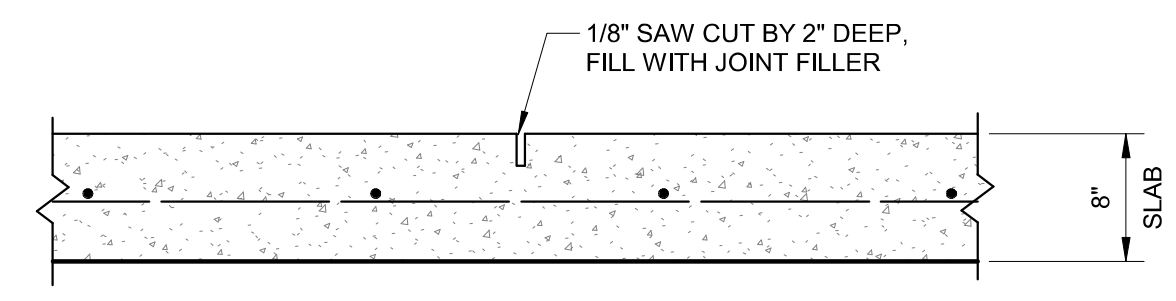
4 8" SLAB SECTION
1" = 1'-0"



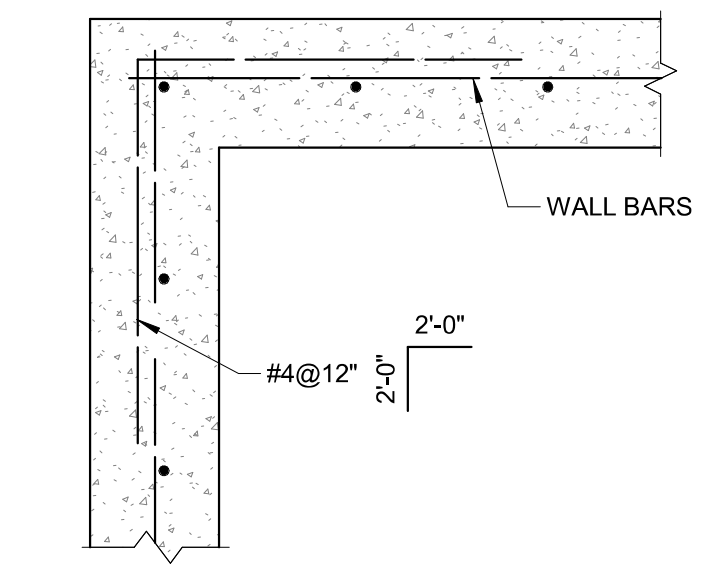
2 TYPICAL FOUNDATION SECTION
3/4" = 1'-0"



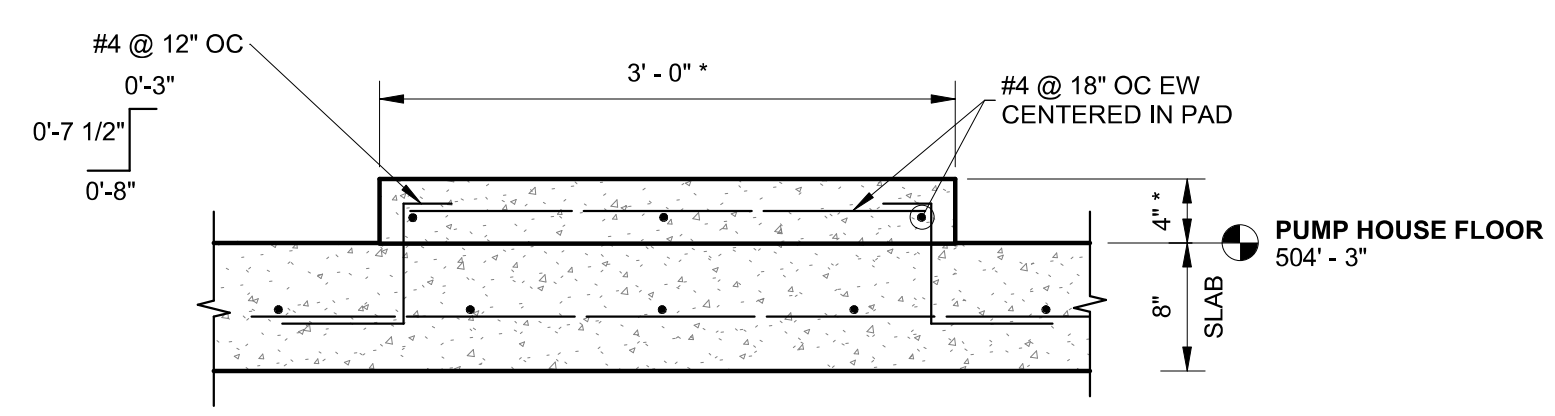
5 TYPICAL CONSTRUCTION JOINT DETAIL
1" = 1'-0"



6 TYPICAL CONTRACTION JOINT DETAIL
1" = 1'-0"

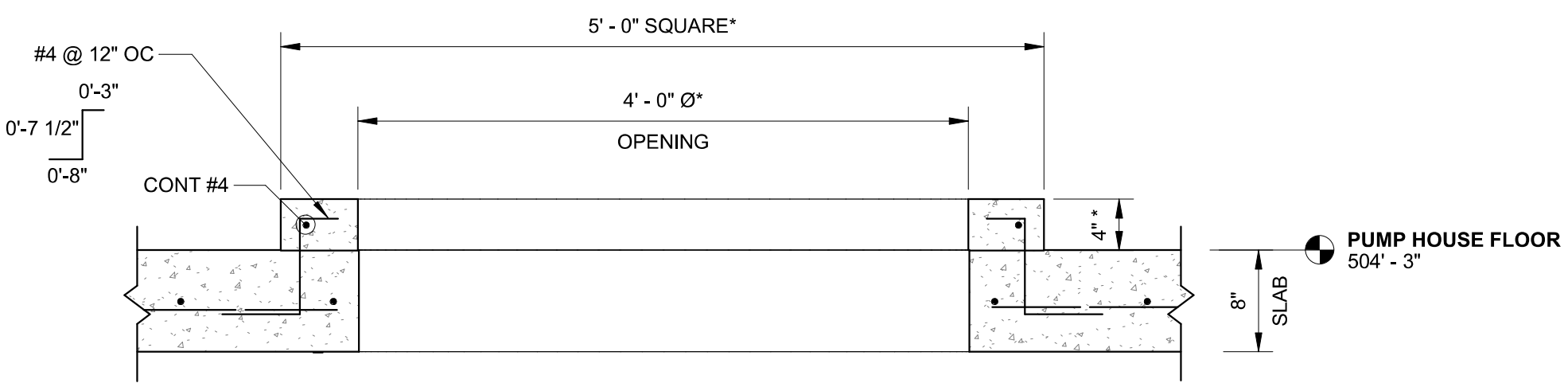


7 EXTRA REBAR AT CORNERS
1" = 1'-0"



8 HOUSEKEEPING PAD
1" = 1'-0"

NOTES:
1. *COORDINATE DIMENSION WITH MECHANICAL
2. ANCHORAGE PER EQUIPMENT MANUFACTURER



9 WELL PUMP PEDESTAL SECTION
1" = 1'-0"

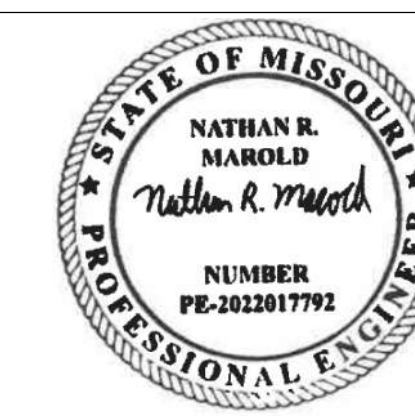
NOTES:
1. *COORDINATE DIMENSION WITH MECHANICAL
2. ANCHORAGE PER EQUIPMENT MANUFACTURER

PRIOR TO ORDER OF MATERIALS AND CONSTRUCTION, FINAL PRE-ENGINEERED BUILDING DRAWINGS AND REACTIONS NEED TO BE REVIEWED BY THE EOR TO VERIFY FOUNDATION SIZES AND DIMENSIONS.

0 2 4
SCALE: 3/8" = 1'-0"

0 1 2
SCALE: 3/4" = 1'-0"

0 6" 1' 2'
SCALE: 1" = 1'-0"



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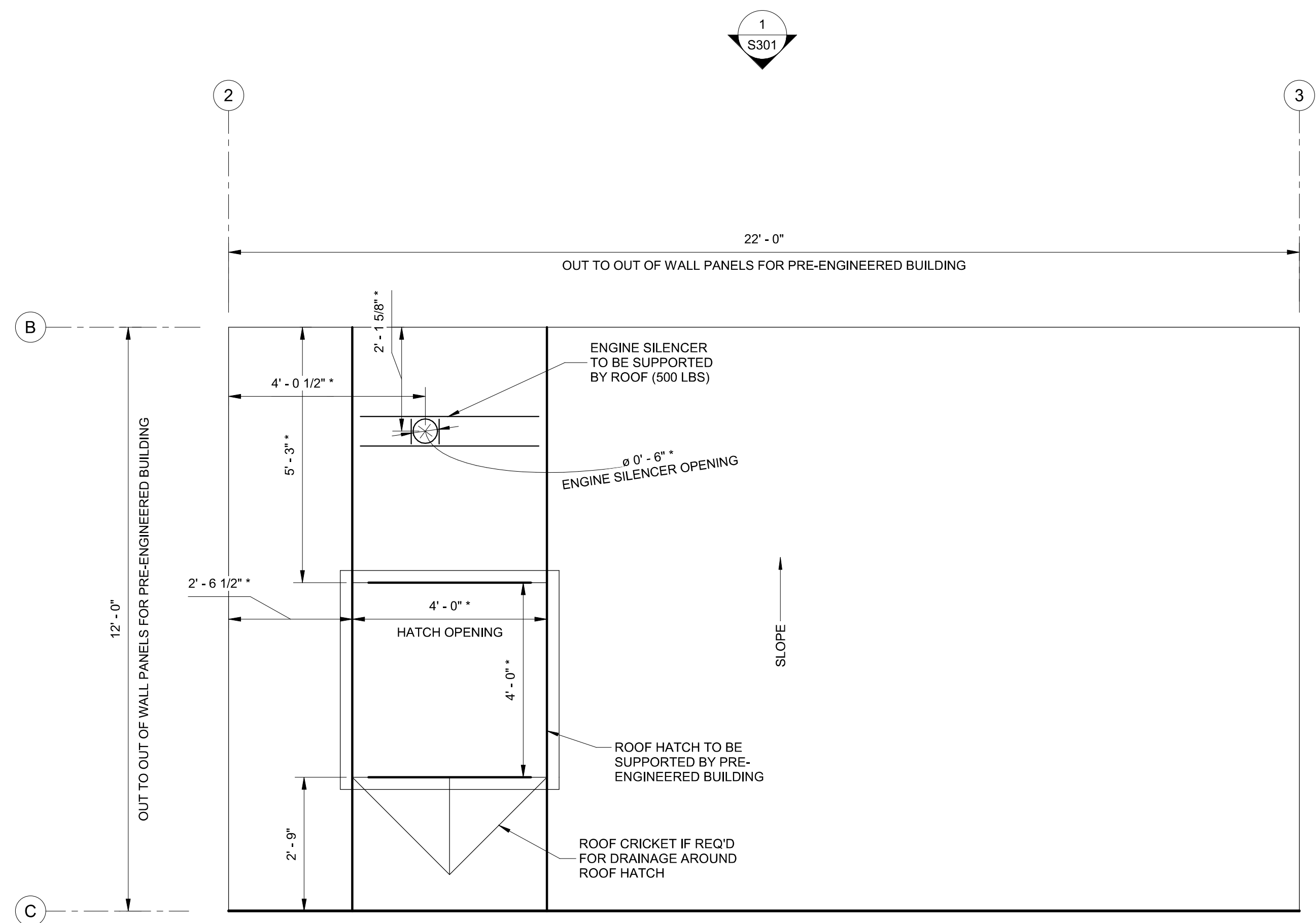
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DESIGNED BY: NRM/ANM

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FRAMING PLAN

SHEET NUMBER:

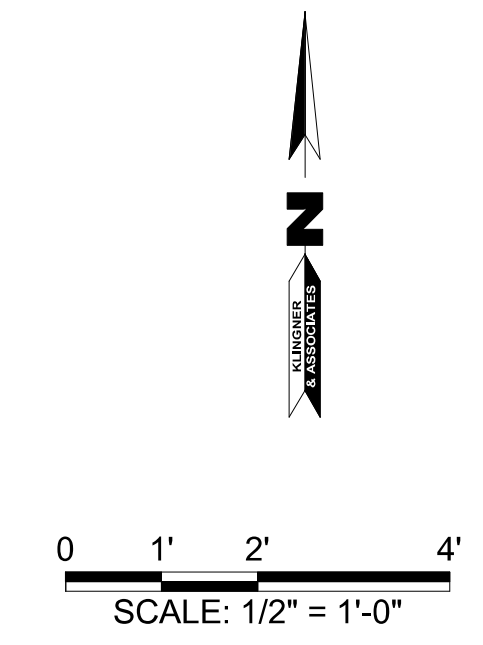
S201

JULY 29, 2022



1 ROOF FRAMING PLAN
1/2" = 1'-0"

- NOTES:
1. *COORDINATE DIMENSIONS WITH MECHANICAL
2. LOCATION AND SIZE OF SILENCER PENETRATION
TO BE COORDINATED WITH EQUIPMENT PROVIDED





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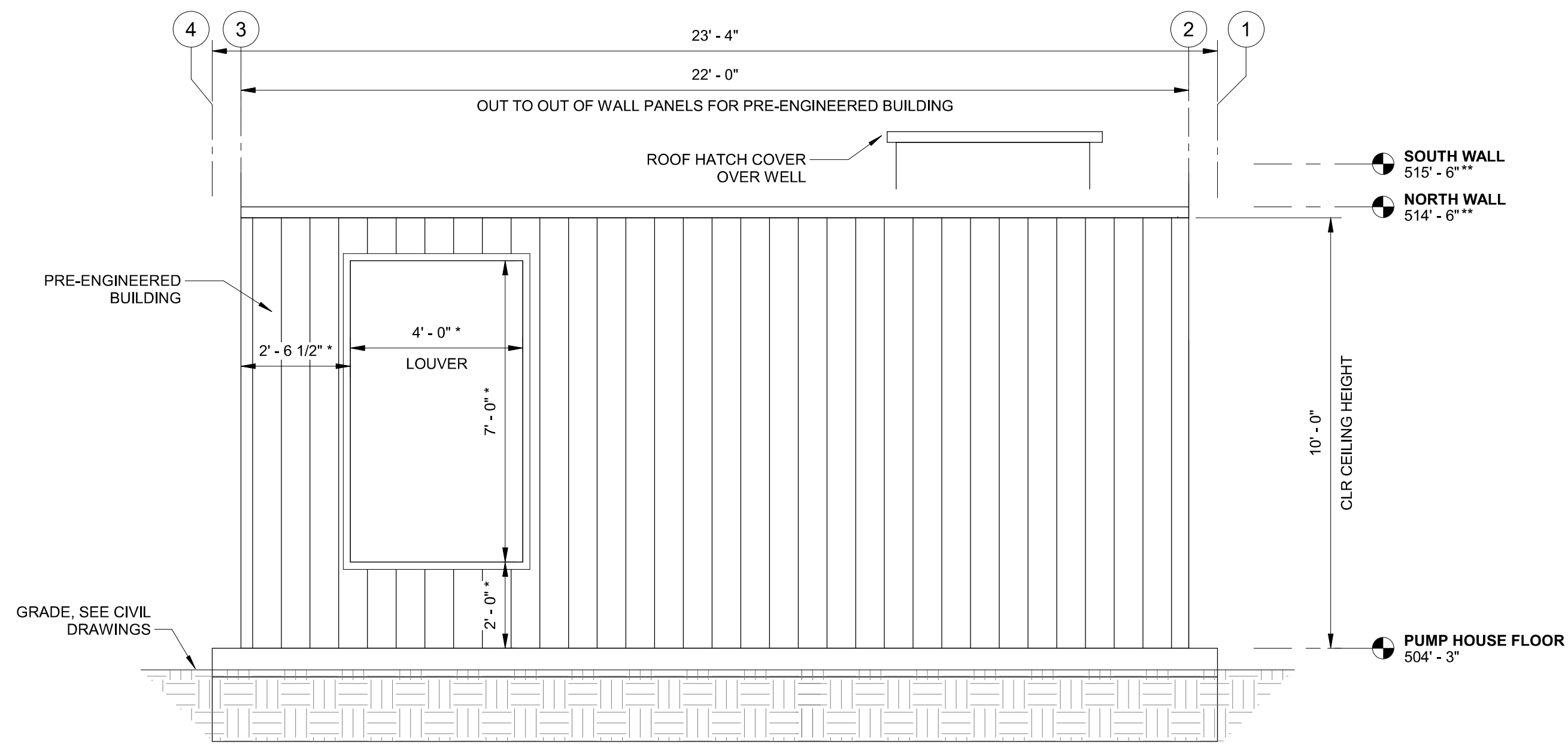
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SHEET TITLE:
**FRAMING
ELEVATIONS**

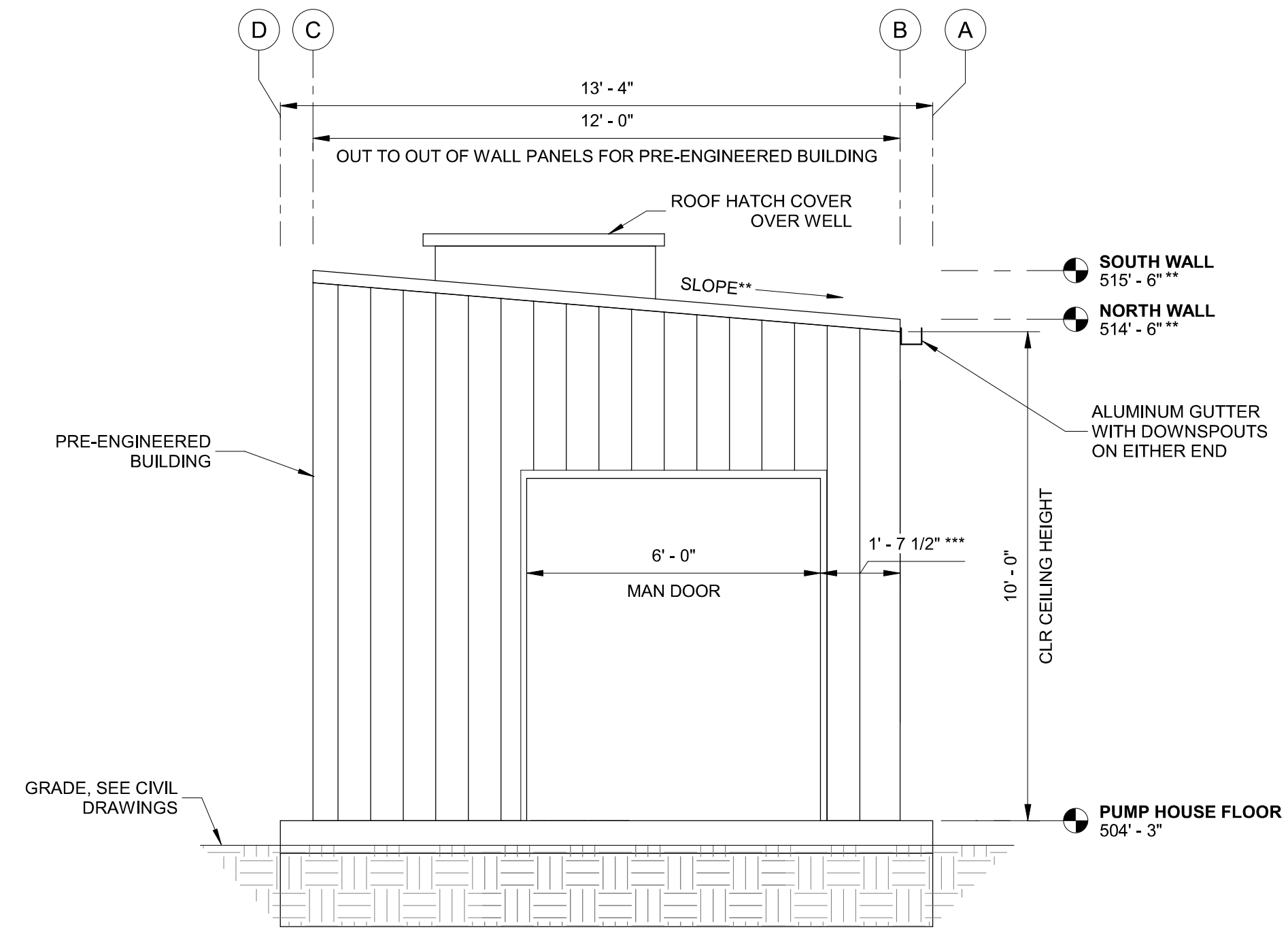
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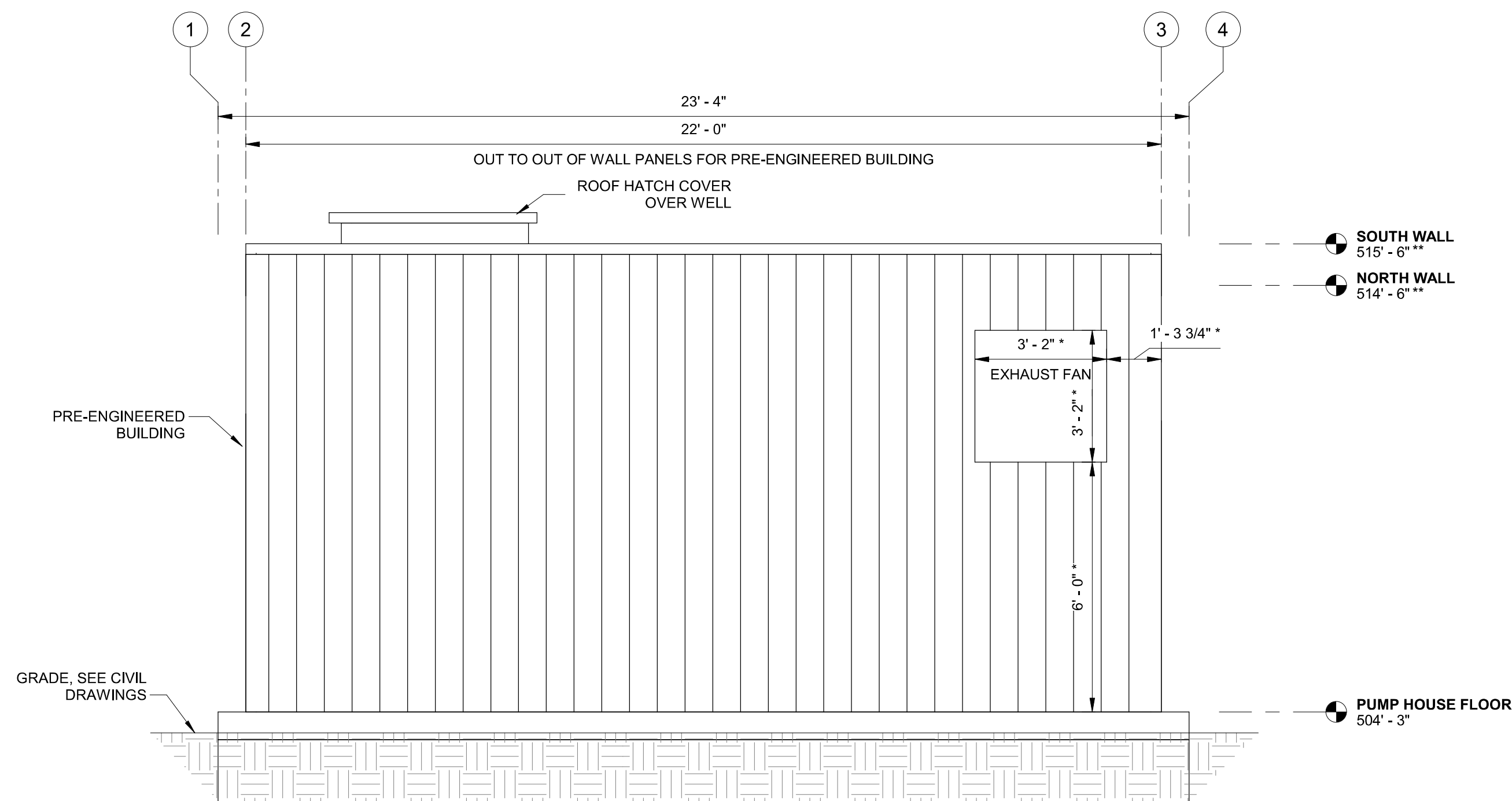
JULY 29, 2022



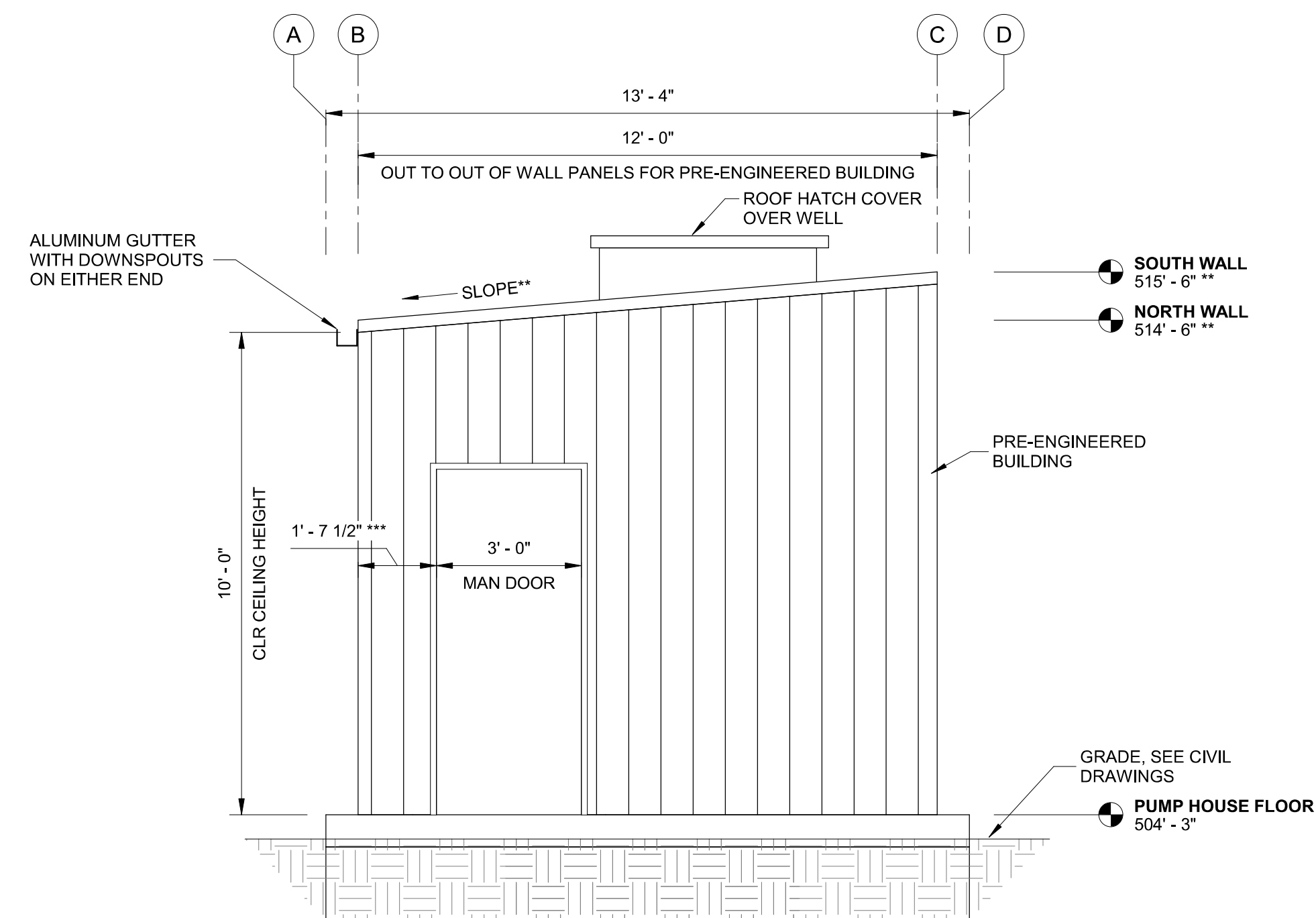
1 NORTH WALL ELEVATION
3/8" = 1'-0"



2 EAST WALL ELEVATION
3/8" = 1'-0"



3 SOUTH WALL ELEVATION
3/8" = 1'-0"

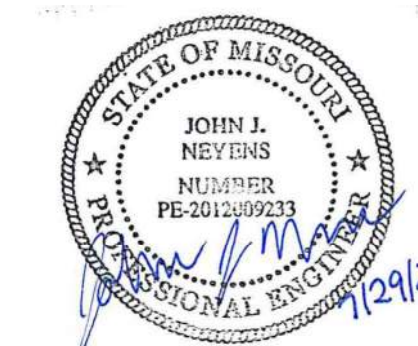


4 WEST WALL ELEVATION
3/8" = 1'-0"

NOTES:

- SEE ELECTRICAL DRAWINGS FOR LOCATIONS AND DESCRIPTIONS OF EXTERIOR WALL MOUNTED LIGHT FIXTURES.
- *COORDINATE DIMENSIONS WITH MECHANICAL
- **ELEVATION AND SLOPE PER PRE-ENGINEERED BUILDING SUPPLIER, TO PROVIDE ADEQUATE DRAINAGE AND TO KEEP A CLEAR CEILING HEIGHT OF 10'-0"
- ***DIMENSION TO BE COORDINATED WITH PRE-ENGINEERED BUILDING





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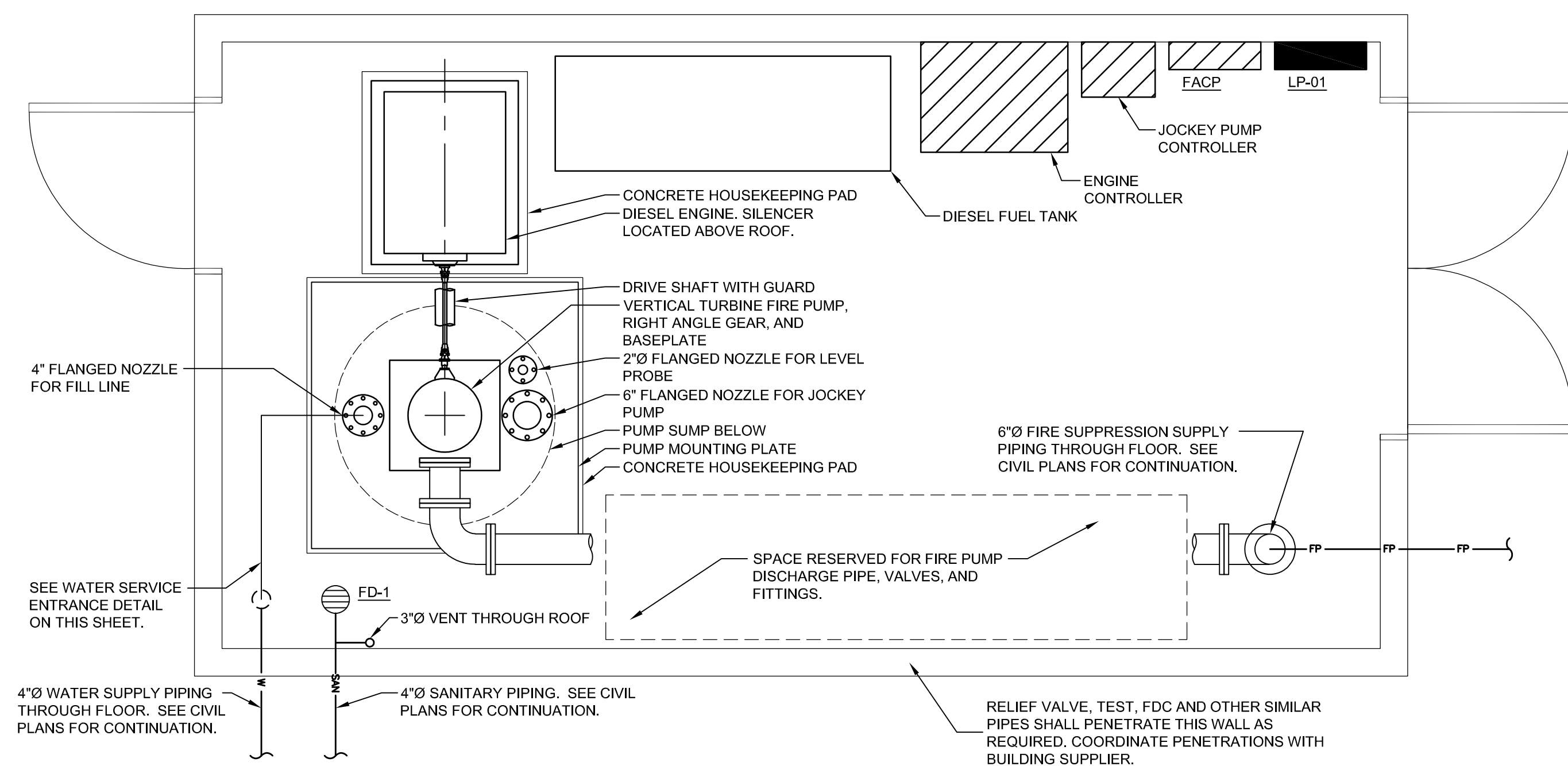
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DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
FIRE PUMP PLAN

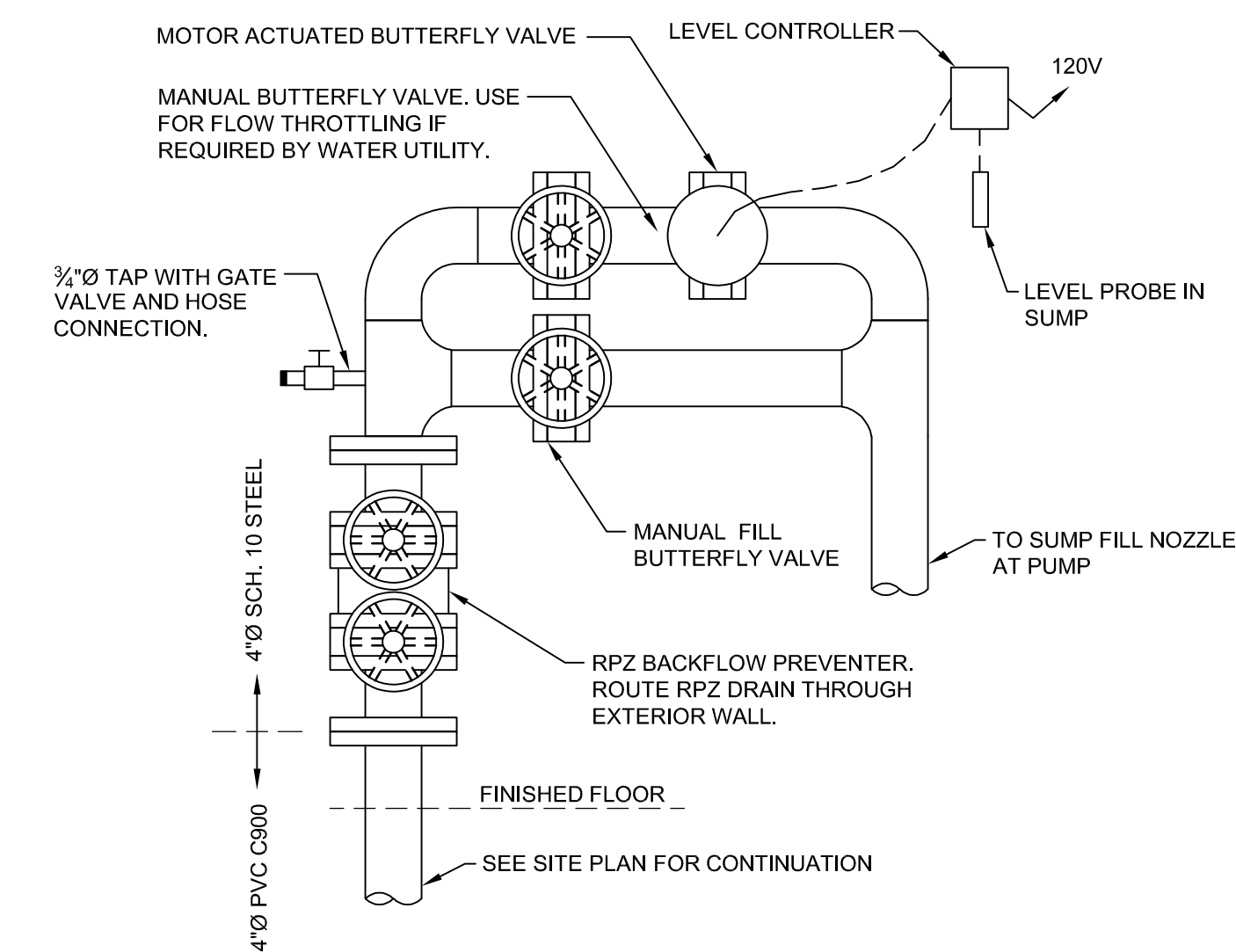
SHEET NUMBER:

M100

JULY 29, 2022



1 FIRE PROTECTION BUILDING PLAN
1/2"=1'-0"

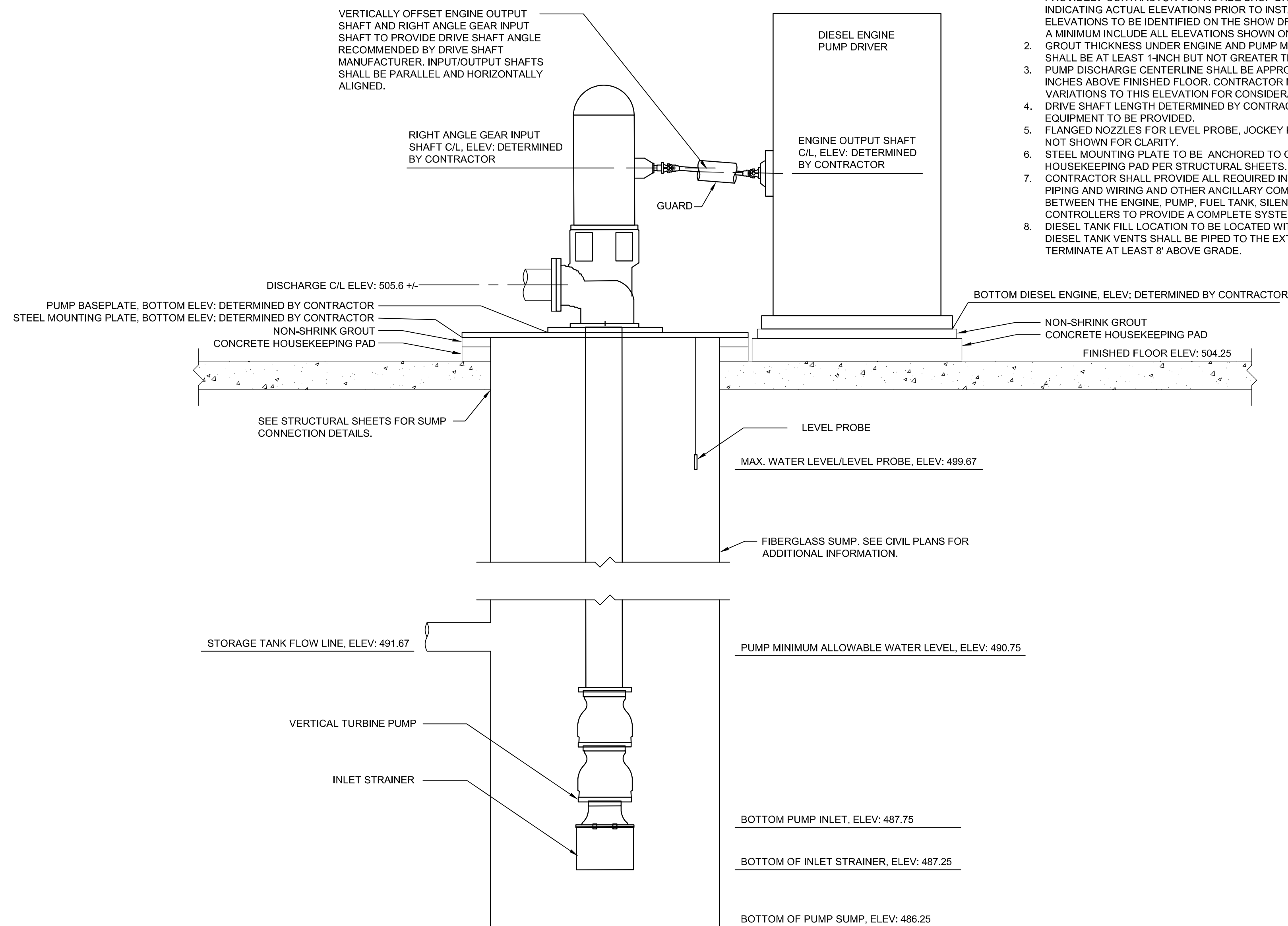


2 WATER SERVICE ENTRANCE DETAIL
N.T.S.

SUMP FILL SEQUENCE OF OPERATION
1. MANUAL: MANUAL BUTTERFLY VALVE TO BE OPENED/CLOSED TO FILL SUMP.
2. AUTO: MOTOR OPERATED VALVE TO OPEN WHEN WATER FALLS BELOW LEVEL PROBE IN SUMP. VALVE SHALL CLOSE WHEN WATER LEVEL RETURNS TO WATER PROBE LEVEL. MANUAL BUTTERFLY VALVE MAY BE USED TO THROTTLE FLOW RATE IF FILL RATE EXCEEDS MAXIMUM ALLOWABLE FILL RATE OF WATER UTILITY.

PUMP AND DRIVER GENERAL ARRANGEMENT NOTES

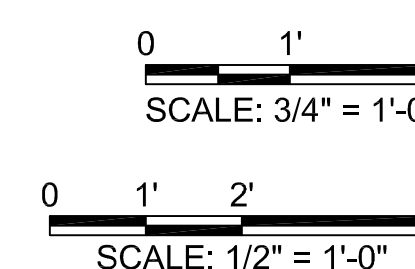
- HOUSEKEEPING PAD ELEVATION AND GROUT THICKNESS TO BE ADJUSTED AS REQUIRED TO ACCOMMODATE EQUIPMENT PROVIDED. CONTRACTOR TO PROVIDE SHOP DRAWING INDICATING ACTUAL ELEVATIONS PRIOR TO INSTALLATION. ELEVATIONS TO BE IDENTIFIED ON THE SHOW DRAWING SHALL AT A MINIMUM INCLUDE ALL ELEVATIONS SHOWN ON THIS DETAIL.
- GROUT THICKNESS UNDER ENGINE AND PUMP MOUNTING PLATES SHALL BE AT LEAST 1-INCH BUT NOT GREATER THAN 2-INCHES.
- PUMP DISCHARGE CENTERLINE SHALL BE APPROXIMATELY 18 INCHES ABOVE FINISHED FLOOR. CONTRACTOR MAY PROPOSED VARIATIONS TO THIS ELEVATION FOR CONSIDERATION.
- DRIVE SHAFT LENGTH DETERMINED BY CONTRACTOR BASED ON EQUIPMENT TO BE PROVIDED.
- FLANGED NOZZLES FOR LEVEL PROBE, JOCKEY PUMP, AND FILL NOT SHOWN FOR CLARITY.
- STEEL MOUNTING PLATE TO BE ANCHORED TO CONCRETE HOUSEKEEPING PAD PER STRUCTURAL SHEETS.
- CONTRACTOR SHALL PROVIDE ALL REQUIRED INTERCONNECTING PIPING AND WIRING AND OTHER ANCILLARY COMPONENTS BETWEEN THE ENGINE, PUMP, FUEL TANK, SILENCER, AND CONTROLLERS TO PROVIDE A COMPLETE SYSTEM.
- DIESEL TANK VENTS SHALL BE PIPED TO THE EXTERIOR AND TERMINATE AT LEAST 8' ABOVE GRADE.



4 FIRE PROTECTION PUMP SECTION VIEW
3/4"=1'-0"

FIRE PROTECTION GENERAL NOTES

- THE INFORMATION PROVIDED ON THE FIRE PROTECTION DRAWINGS IS INTENDED TO SERVE AS THE "PRELIMINARY PLANS" FOR THE PROJECT AS DEFINED BY NFPA 13 FOR THE PURPOSE OF CONSTRUCTION BIDDING. "WORKING PLANS", AS DEFINED BY NFPA 13 AND IN ACCORDANCE WITH NFPA 13 AND NFPA 20, SHALL BE DEVELOPED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER AND THE AUTHORITY HAVING JURISDICTION PRIOR TO PURCHASE OR INSTALLATION OF ANY FIRE PROTECTION SYSTEM EQUIPMENT.
- THE FIRE PUMP BUILDING SHALL BE PROTECTED BY AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 AS AN EXTRA HAZARD GROUP 2 OCCUPANCY.
- SEISMIC BRACING OF PIPE AND FITTINGS IN ACCORDANCE WITH NFPA 13 SHALL BE PROVIDED.





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ISSUE DATE: 07/29/2022

CAD DWG FILE: M200
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**HEATING AND
VENTILATION
PLAN**

SHEET NUMBER:

M200

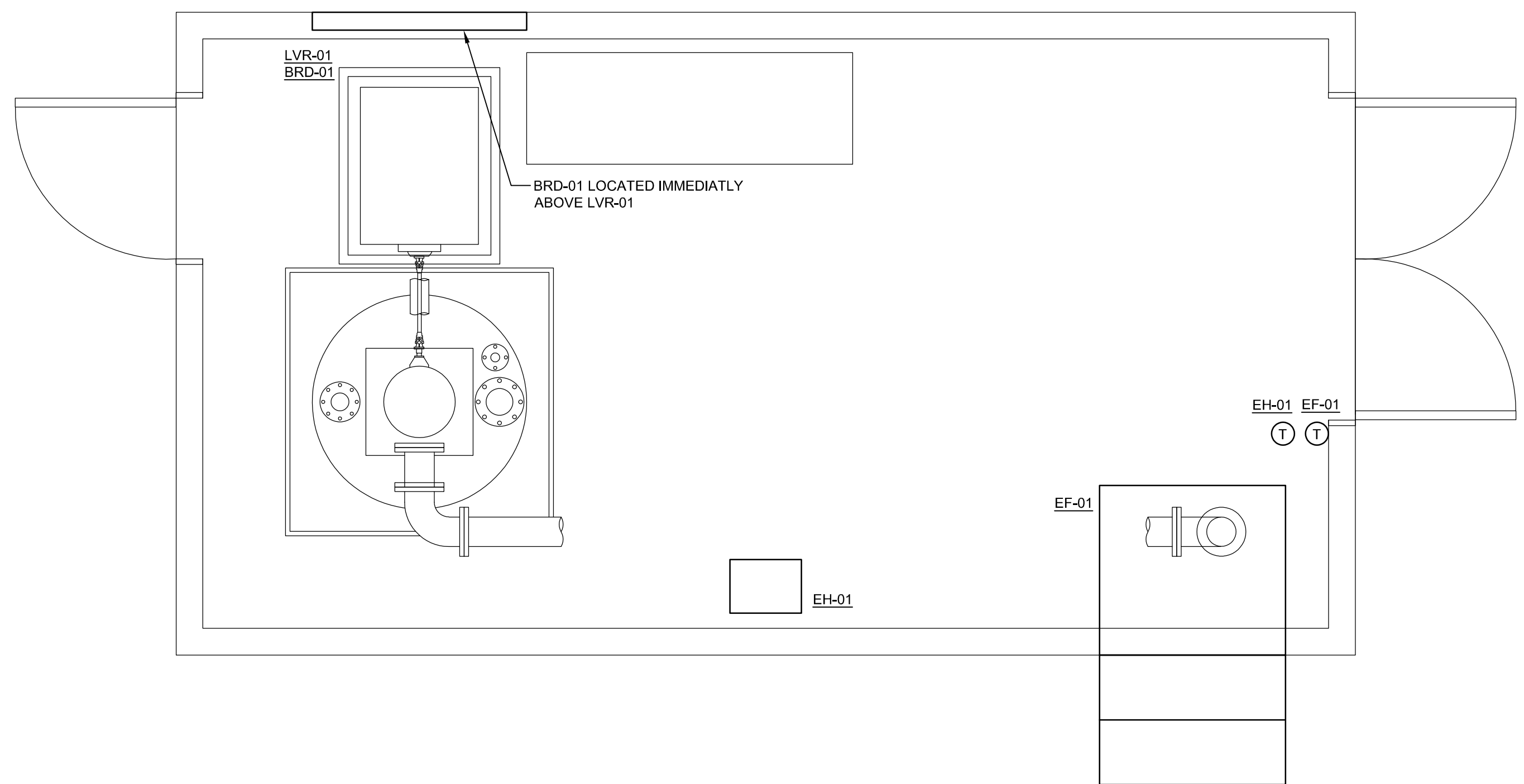
JULY 29, 2022

HVAC SEQUENCES OF OPERATION

BRD-01
1. BAROMETRIC DAMPER SHALL OPEN AUTOMATICALLY WHEN INTERIOR BUILDING PRESSURE DROPS BELOW EXTERIOR PRESSURE DUE TO THE OPERATION OF THE INTERNAL COMBUSTION ENGINE DRIVEN FIRE PUMP.

EF-01 AND LVR-01
1. WHEN INTERIOR TEMPERATURE IS ABOVE THE THERMOSTAT SETPOINT (70°F), LVR-01 SHALL OPEN AND EF-01 SHALL OPERATE.
2. WHEN INTERIOR TEMPERATURE IS BELOW THE THERMOSTAT SETPOINT (70°F), LVR-01 SHALL BE CLOSED OPEN AND EF-01 SHALL BE OFF

EH-01
1. WHEN INTERIOR TEMPERATURE IS ABOVE THE THERMOSTAT SETPOINT (50°F), EH-01 SHALL BE OFF.
2. WHEN INTERIOR TEMPERATURE IS BELOW THE THERMOSTAT SETPOINT (50°F), EH-01 SHALL OPERATE.



1 MECHANICAL FLOOR PLAN
1/2"=1'-0"

LOUVER/DAMPER SCHEDULE													
TAG	TYPE	DIMENSIONS		BACK PRESURE	START TO OPEN PRESSURE	FREE AREA	MATERIAL			PAINT	BASIS OF DESIGN*		COMMENTS
		WIDTH	HEIGHT				FRAME	BLADE	SEAL		MAKE	MODEL	
LVR-01	COMBINATION LOUVER/DAMPER, DRAINABLE BLADE	48"	60"	NA	NA	9.4 SF	ALUMINUM	ALUMINUM	VINYL	NONE	GREENHECK	ECD-401	1.2.3
BRD-01	BAROMETRIC RELIEF DAMPER (INTAKE)	48"	24"	2.0 IN. WG	0.05 IN WG	NA	GALV. STEEL	ALUMINUM	TPE	NONE	GREENHECK	BR-30	1.2.4

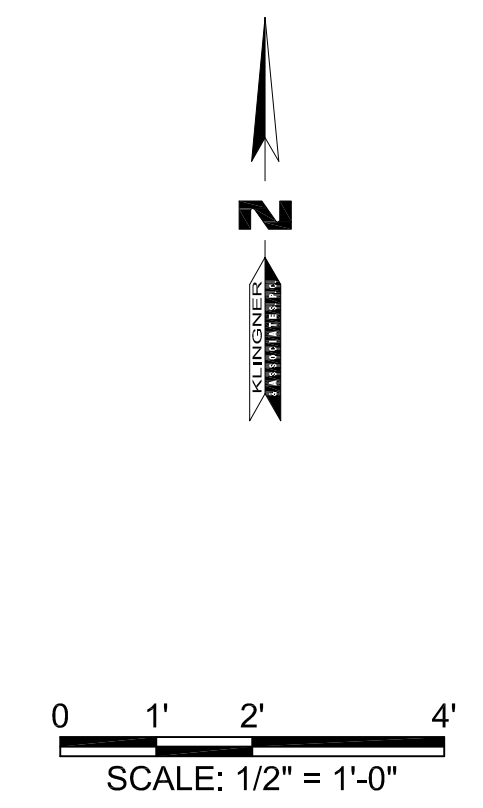
COMMENTS
1 PROVIDE WITH MOUNTING FLANGE ON EXTERIOR SIDE
2 PROVIDE WITH INSECT SCREEN
3 PROVIDE WITH 120V ACTUATOR
4 DAMPER SERVES AS COMBUSTION AIR INTAKE AND SHALL ALLOW AIRFLOW INTO THE BUILDING
* SEE PROJECT MANUAL FOR ADDITIONAL ACCEPTABLE

FAN SCHEDULE																
TAG	TYPE	AIRFLOW	SUPPLY FAN				ELECTRICAL						UNIT WEIGHT	BASIS OF DESIGN*		COMMENTS
			TYPE	DRIVE TYPE	EXT. STATIC PRESSURE	FAN RPM	SONES	VOLT	FREQ	PHASE	MCA	MOP		MAKE	MODEL	
EF-01	SIDEWALL BELT DRIVE EXHAUST FAN	5,000 CFM	PROPELLER	BELT	0.25 IN W.G.	735	16	120 V	60 Hz	1	13.8	20	125 LBS	GREENHECK	SBE-3H30	1.2.3

COMMENTS
1 PROVIDE WITH WALL HOUSING AND 45 DEGREE WEATHERHOOD
2 PROVIDE WITH UNIT MOUNTED DISCONNECT
3 PROVIDE WITH REMOTE MOUNT LINE VOLTAGE THERMOSTAT
* SEE PROJECT MANUAL FOR ADDITIONAL ACCEPTABLE MANUFACTURERS

ELECTRIC HEAT UNIT HEATER SCHEDULE											
TAG	TYPE	CAPACITY	AIRFLOW	ELECTRICAL				UNIT WEIGHT	BASIS OF DESIGN		COMMENTS
				VOLT	FREQ	PHASE	MOP		MAKE	MODEL	
EH-01	SUSPENDED ELECTRIC UNIT HEATER	2 KW	510 CFM	240 V	60 Hz	1	20	45 LBS	REZNOR	EGHB	1.2.3

COMMENTS
1 PROVIDE WITH WALL MOUNT BRACKER
2 PROVIDE WITH UNIT MOUNTED DISCONNECT
3 PROVIDE WITH REMOTE MOUNT THERMOSTAT

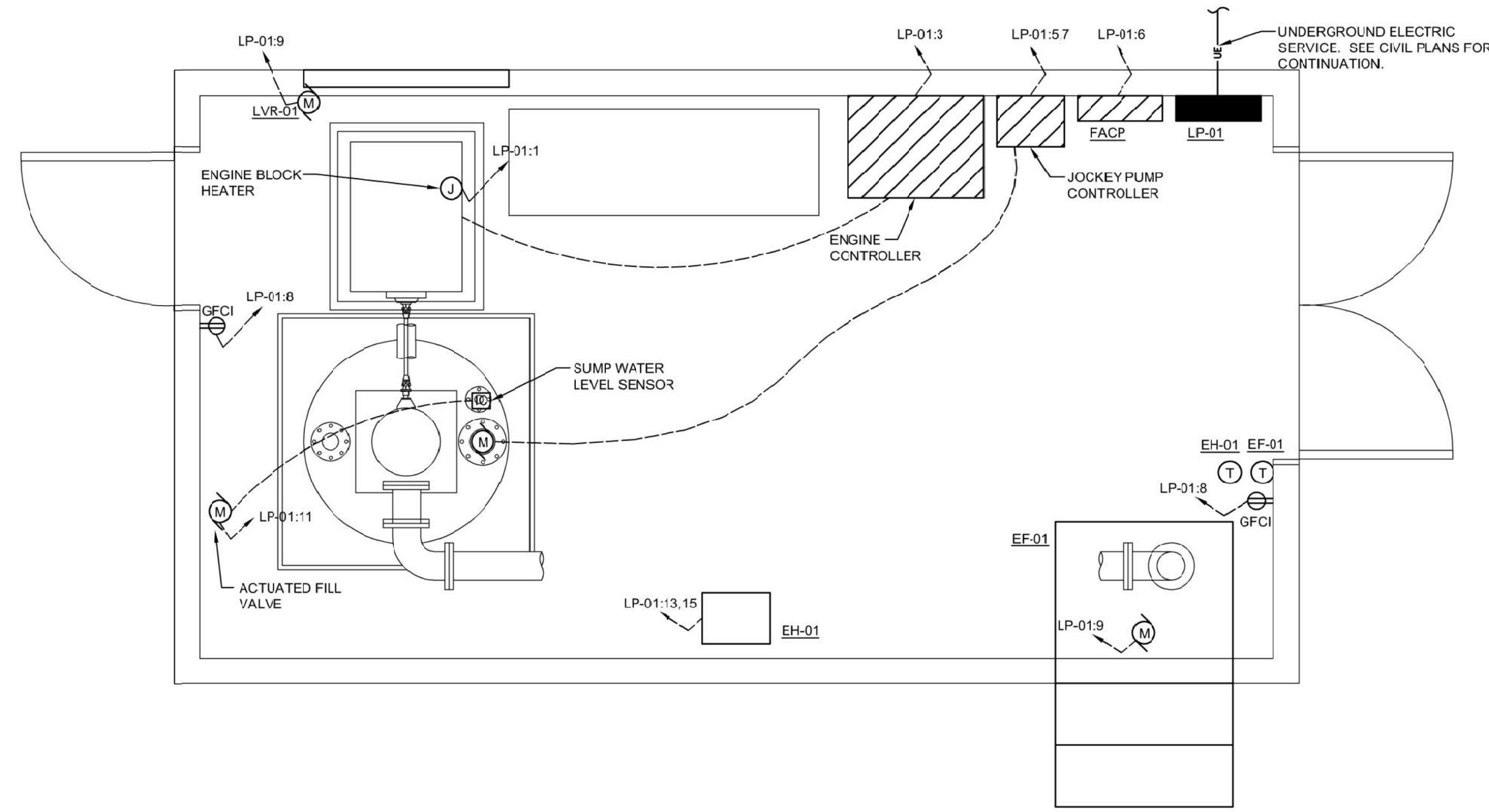




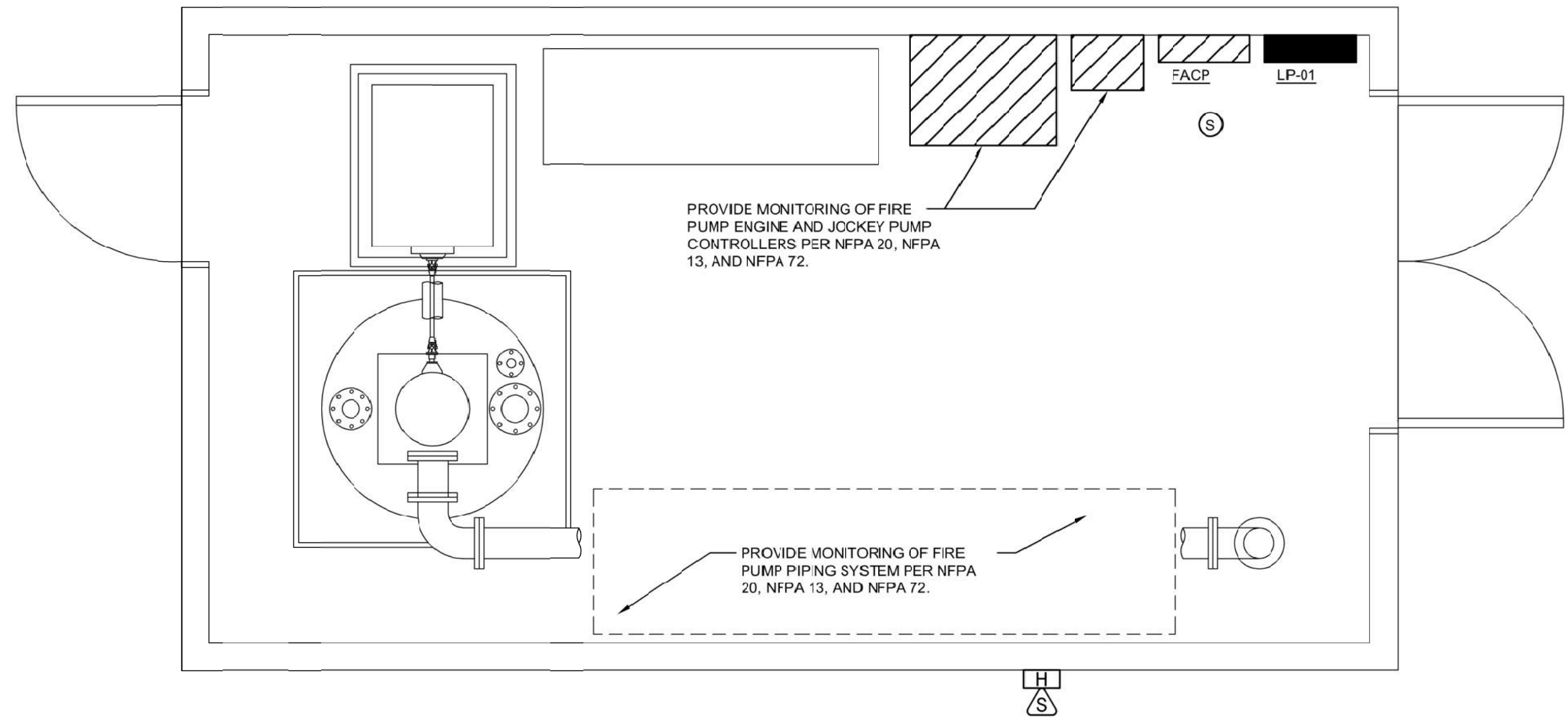
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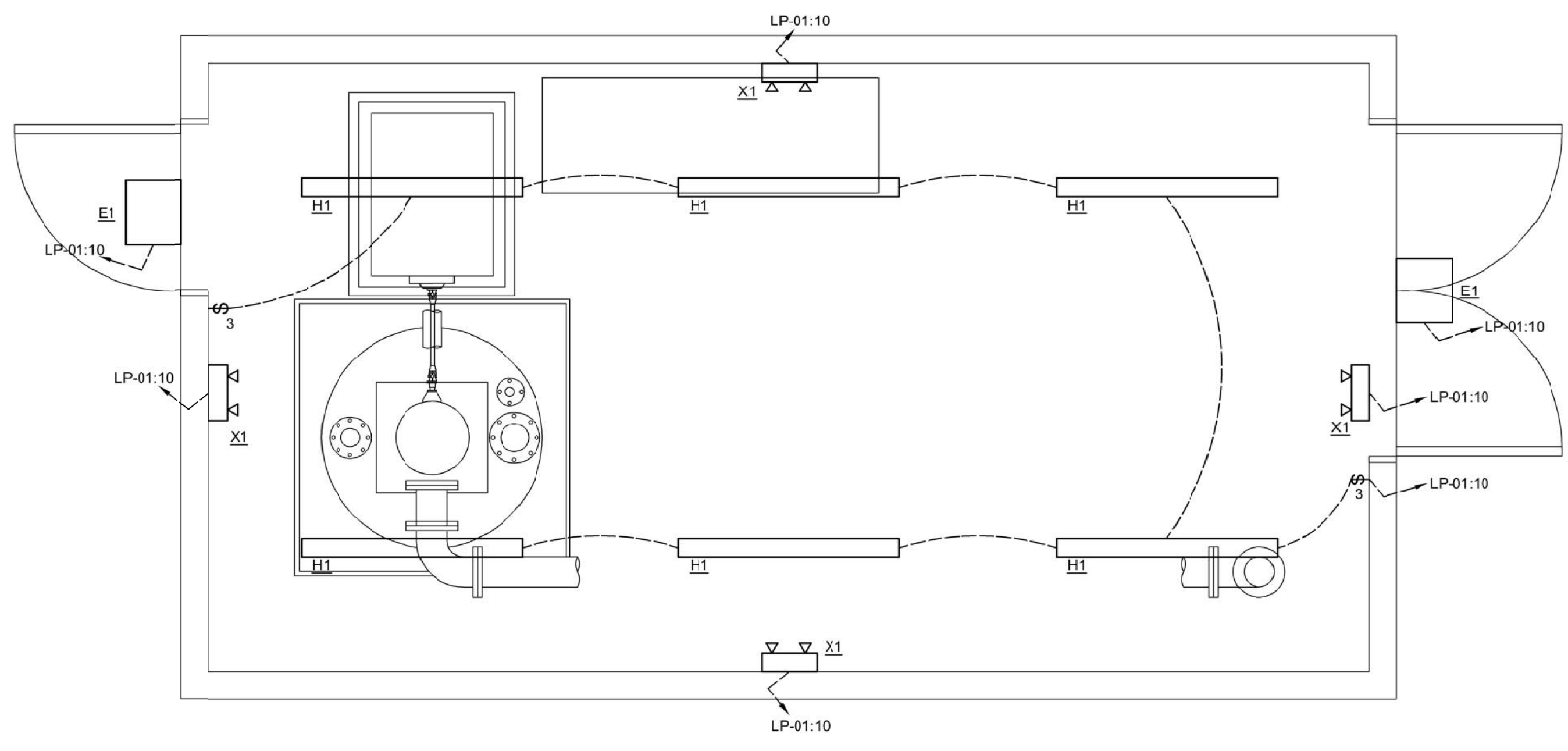
KLINGNER & ASSOCIATES, P.C. - ENGINEERING
MISSOURI STATE CERTIFICATE OF AUTHORITY #000866



1 POWER PLAN
1/2"=1'-0"

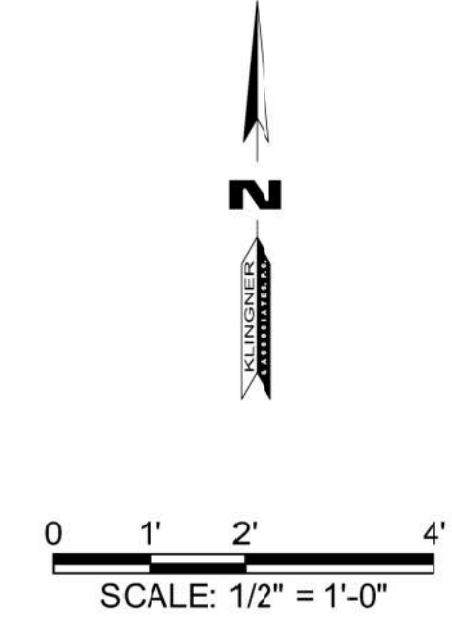


3 FIRE ALARM PLAN
1/2"=1'-0"



2 LIGHTING PLAN
1/2"=1'-0"

ELECTRICAL SYMBOLS	
TYPE/COMMENT	PROPOSED
LIGHT SWITCH.	Ⓢ
LIGHT SWITCH, x-WAY.	Ⓢx
HEAT DETECTOR	⊕
SMOKE DETECTOR	⊙
HORN	⊠
STROBE	⊠
PULL STATION	Ⓟ
FLOOR BOX WITH DUPLEX RECEPT.	⊙
FLOOR BOX FOR DATA/COMMUNICATION	⊙
WALL BCX FOR DATA/COMMUNICATION	▲
DUPLEX RECEPTACLE OUTLET	⊖
GROUND FAULT CIRCUIT INTERRUPTER	⊖ GFCI
JUNCTION BOX	⊙
CIRCUITING NOTATION: X DENOTES PANEL AND # DENOTES CIRCUIT NUMBER.	X:##
DENOTES CIRCUITING FOR STANDARD ELECTRICAL DEVICES.	—



OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

WAPPAPPELO TRAINING
SITE IMPROVEMENTS
INFRASTRUCTURE

461 COUNTY ROAD 517
WAPPAPPELO, MO 63966

PROJECT # T2213-01
SITE # 6325
ASSET # 8136325016

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: E100
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**ELECTRICAL
PLAN**

SHEET NUMBER:
E100

JULY 29, 2022



JOHN J. NEVENS-ENGINEER
MO # PE-2012009233



OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
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WAPPAPELLO TRAINING
SITE IMPROVEMENTS

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461 COUNTY ROAD 517
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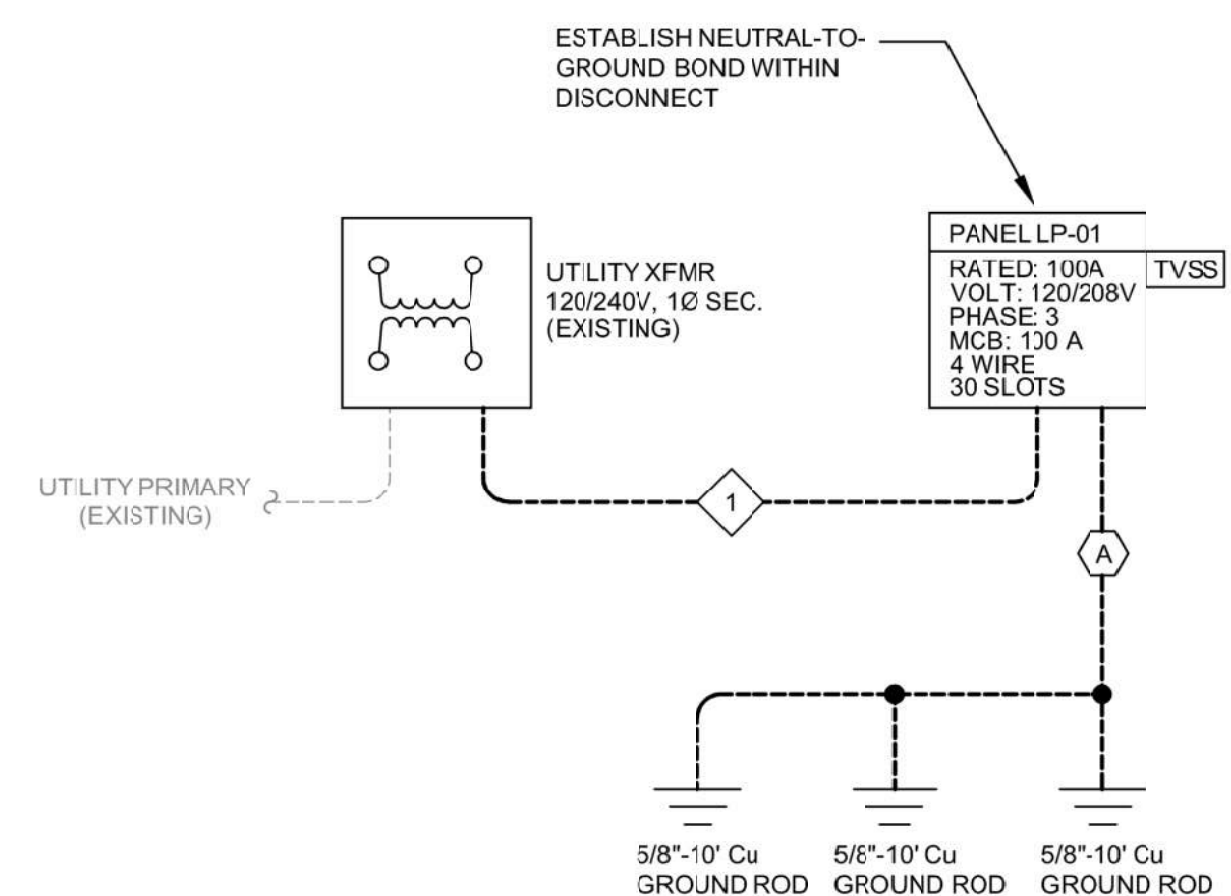
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 07/29/2022

CAD DWG FILE: E200
DRAWING BY: JDH/MCB
CHECKED BY: MCB/JJN
DESIGNED BY: JDH/MCB/JJN

SHEET TITLE:
**ELECTRICAL
SCHEDULES AND
DETAILS**

SHEET NUMBER:

E200



FEEDER SCHEDULE							
FEEDER TAG	PHASE CONDUCTORS			NEUTRAL SIZE	EGC SIZE	CONDUIT	
	PARALLEL SETS	QUANTITY	SIZE			SIZE	TYPE
1	1	2	#1 AWG Cu	#1 AWG Cu	--	1 1/2"	PVC

GEC SCHEDULE	
GEC TAG	GEC SIZE
A	#6 AWG Cu

1 POWER ONE-LINE DIAGRAM
NTS

LIGHT FIXTURE SCHEDULE													
TAG	DESCRIPTION	MOUNT	TYPE	COLOR TEMP.	OUTPUT	DISTRIBUTION	DRIVER CONTROL	VOLT	LOAD	BASIS OF DESIGN*			REMARKS
										MAKE	MODEL	ACCESSORIES	
E1	EXTERIOR WALL PACK	WALL	LED	3000K	3,300 lm	TYPE 3	AUTO ON	120 V	29 VA	LITHONIA	KAXWLED	BIRD DETERRENT SPIKES	INSTALL AT 9'-0" ABOVE CONTROL ROOM FLOOR. INTEGRAL PHOTOCELL.
H1	4' LINEAR LED STRIP LIGHT	CEILING	LED	4000K	4,000 lm		ON/OFF	120 V	35 VA	LITHONIA	CSS		
X1	EMERGENCY LIGHT	WALL	LED				AUTO ON	120 V	1 VA	LITHONIA	EU2C		180 MINUTE RUN-TIME, SELF DIAGNOSTICS

*OTHER ACCEPTABLE MANUFACTURERS INCLUDE BUT ARE NOT LIMITED TO: EATON, COOPER, HUBBELL, AND COLUMBIA

PANELBOARD LP-01									
Area Served: FIRE PUMP BUILDING									
Location: FIRE PUMP BUILDING									
100 A 120/240 V 1 Ph 3 Wire 100AMP MAIN BREAKER									
Fault Rating: 42,000**									
No.	Description	Brkr. Amps	Load			Brkr. Amps	Description	No.	
			A	B	B				
1	BLOCK HEATER	20*	1920			30*	TVSS	2	
3	ENGINE CONTROLLER	20*		1920				4	
5	JOCKEY PUMP CONTROLLER	20*	1440			500	FIRE ALARM CONTROL PANEL	6	
7				1440	360		RECEPTACLES	8	
9	EXHAUST FAN AND LOUVER	20	1656			268	LIGHTING	10	
11	SUMP WATER LEVEL SENSOR	20		100			SPARE	12	
13	UNIT HEATER	20	1000				SPARE	14	
15							SPARE	16	
17	SPARE	20					SPARE	18	
Totals			8016	4460	360	768			
			Phase A	Phase B	Total Wattage(VA)		Capacity		
			6784	4320	11604		24000		

*COORDINATE BREAKER SIZE WITH EQUIPMENT PROVIDED

**COORDINATE RATING WITH UTILITY COMPANY