TOWN OF ASHLAND, MASSACHUSETTS
BOARD OF SELECTMEN

INDEPENDENCE LANE WATER BOOSTER STATION

OWNER

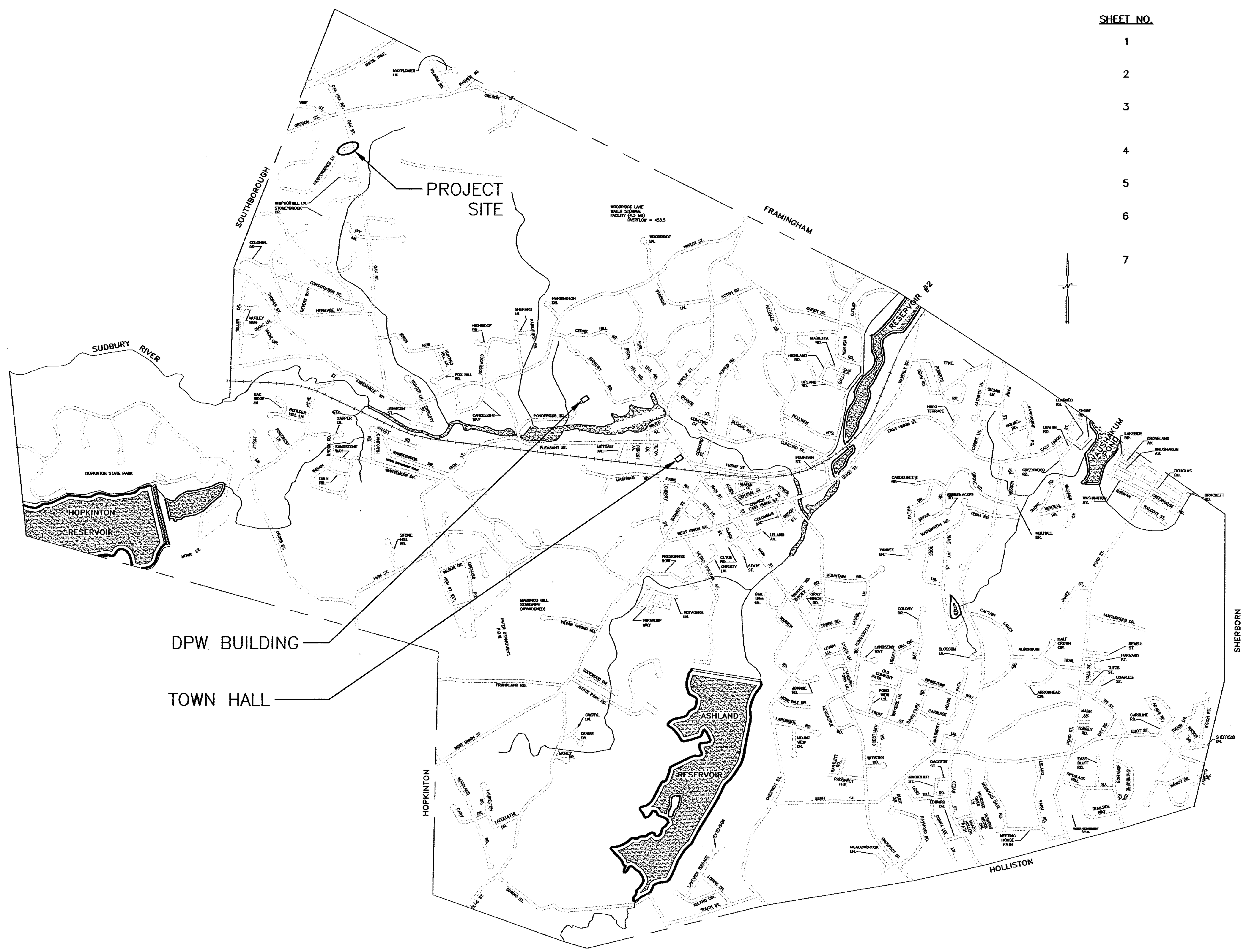
PULTE HOME CORP OF NEW ENGLAND
PO BOX 142, ASHLAND MA 01721

APPLICANT

ASHLAND DEPARTMENT OF PUBLIC WORKS
20 PONDEROSA RD, ASHLAND MA 01721

ENGINEER

HALEY WARD, INC.
63 GREAT RD, MAYNARD MA 01754



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4	M1R	MECHANICAL DETAILS
5	S1R	STRUCTURAL DETAILS
6	SD	CONSTRUCTION DETAILS
7	E1R	SINGLE LINE POWER & INSTRUMENTATION

ASSESSORS MAP 3, LOT 75 (FORMERLY 39)

LOT ADDRESS: 0 INDEPENDENCE LN, ASHLAND MA

ZONING DISTRICT: RESIDENTIAL R1/RA

DEED BOOK 31159, PAGE 541

PROPOSED USE: MUNICIPAL FACILITY – ZBA SPECIAL PERMIT

DIMENSIONAL REQUIREMENTS

	REQUIRED	ACTUAL	
LOT AREA (SF):	30,000	27,501 EASEMENT, LOT 515,315	– VARIANCE REQUESTED
LOT FRONTAGE (FT):	150	272	
FRONT YARD (FT):	40	15	– VARIANCE REQUESTED
SIDE YARD (FT):	10	35	
REAR YARD (FT):	30	150	
HEIGHT (FT):	35	9.7 (AVERAGE HEIGHT OF ROOF)	
BUILDING FOOTPRINT AREA:		195 SF	
BUILDING COVERAGE % OF SITE:		0.7% (EASEMENT)	
IMPERVIOUS AREA:		715 SF	
SOIL DISTURBANCE:		~1,500 SF	

APRIL 2021

1.2021 CHANGE NOTES

1. DRAWINGS LISTED AS REVISED REFLECT THE CHANGE IN BOOSTER STATION SIZE FROM 18'–8" TO 20'–3". THIS CHANGED THE STATION CONCRETE SLAB SIZE FROM 21'–5" TO 21'–11".
2. ELECTRICAL DRAWINGS LISTED AS REVISED TO REFLECT THE ADDITION OF A THIRD DOMESTIC PUMP AND THE ELIMINATION OF THE SCADA PLC, AND THE CHANGE TO HAVE THE CONTROL PANEL PLC ACT AS THE SCADA PLC.

TOWN OF ASHLAND, MASSACHUSETTS
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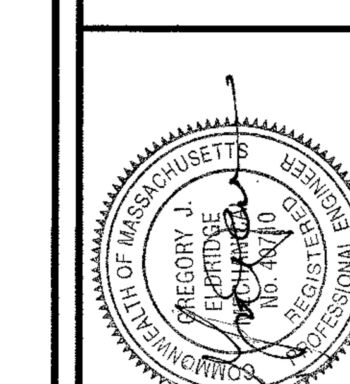
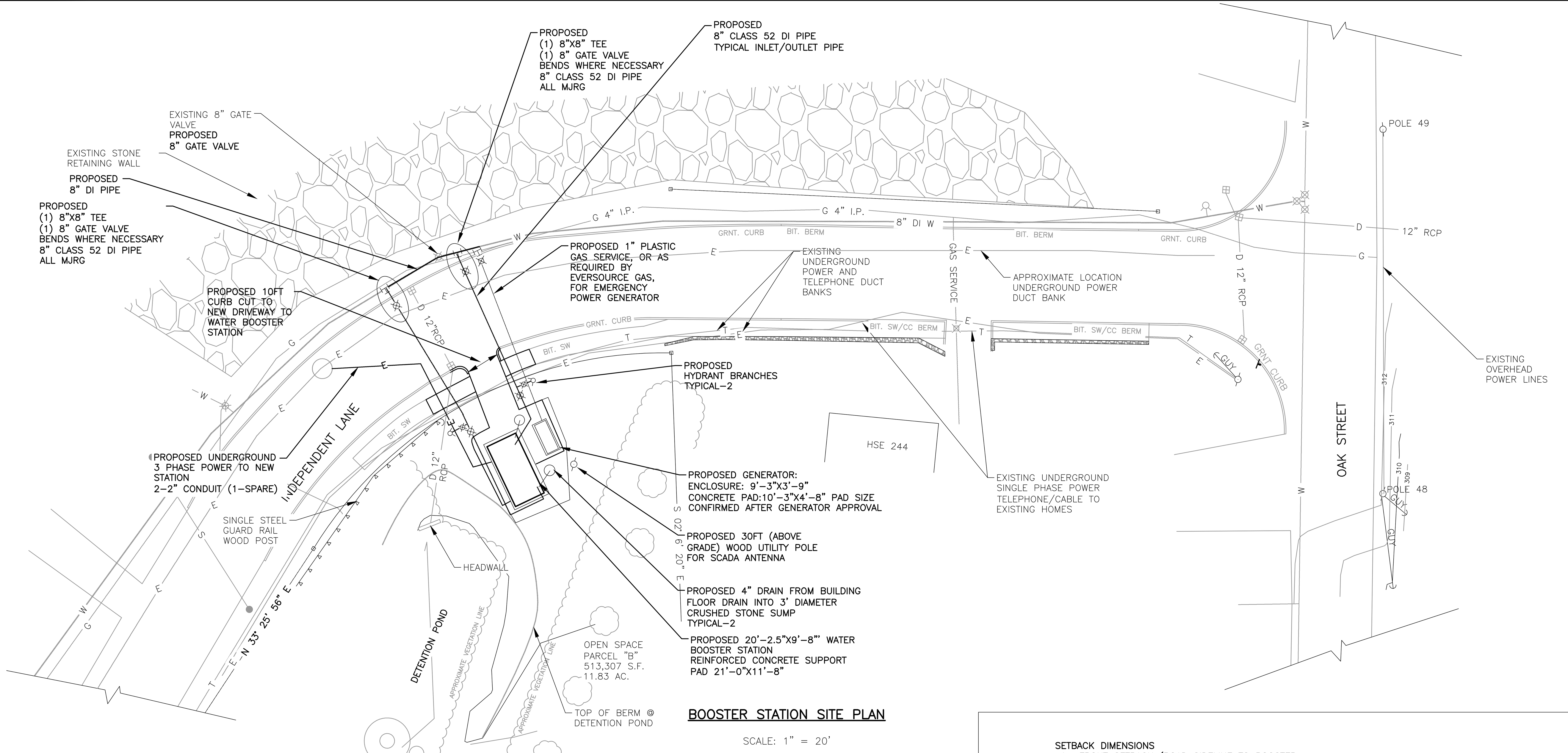


CHECKED	DATE	BY
REVISED	DATE	BY
1	1.2021	GJE

SHEET NO.: 1 OF 7
CONTRACT NO.: N/A
SCALE: AS NOTED
DATE DRAWN: JUNE 2019
DRAWN BY: GJE
FILE NO.: ASH-317-001.DWG

DWG. NO.
1



BOOSTER STATION SITE PLAN

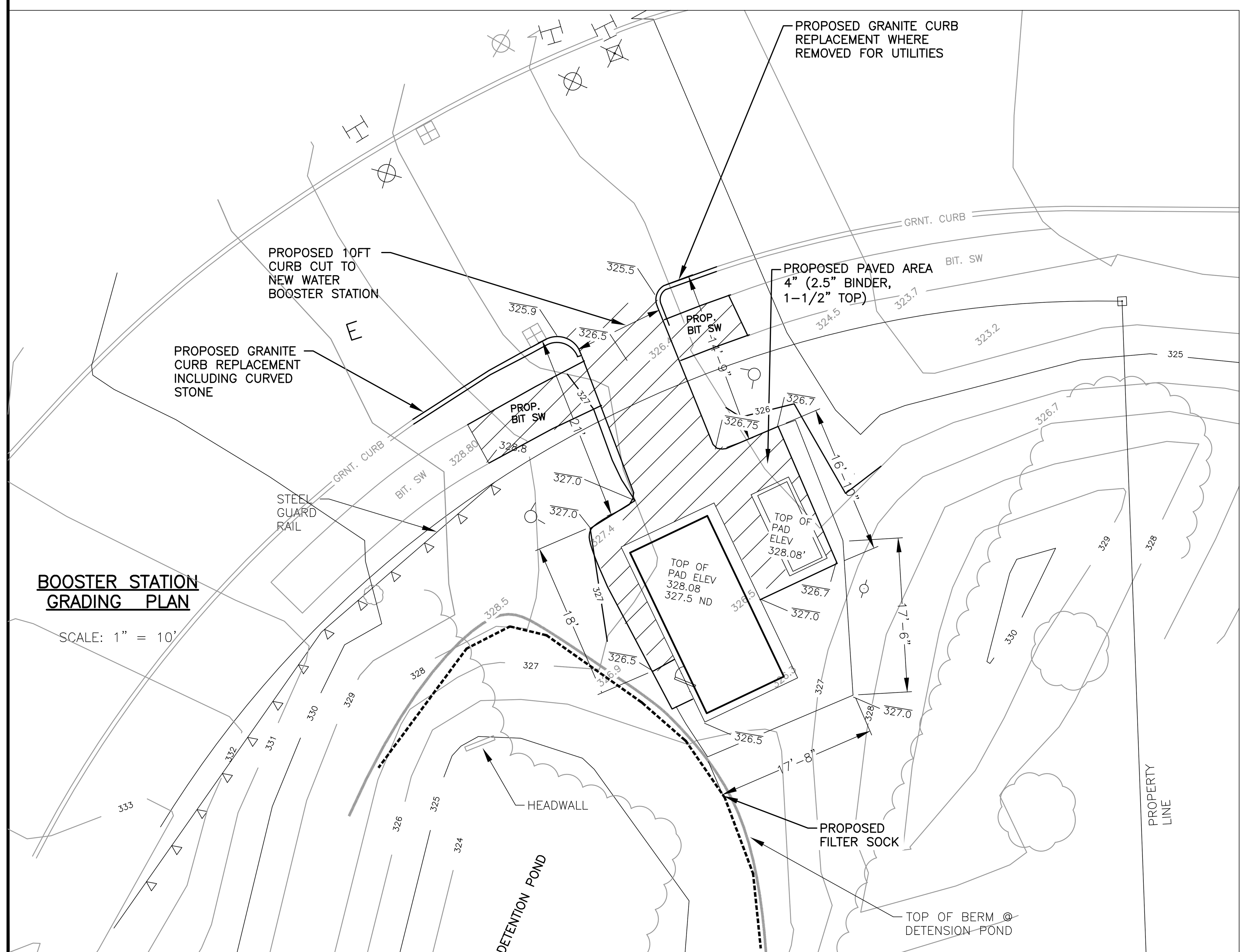
SCALE: 1" = 20'

LEGEND:

	EDGE OF PAVEMENT
	RIGHT OF WAY AND APPROXIMATE LOCATION OF PROPERTY LINES
— G — G — G —	24" EXISTING GAS LINE
8" XX	EXISTING WATER MAIN XX=PIPE MATERIAL
	EXISTING WATER SERVICE WITH CURB STOP
172	EXISTING CONTOUR ELEVATION
	EXISTING POST/RAIL FENCE
	NEW WATER
A1 BVW — BVW — BVW — BVW	BORDERING VEGETATED WETLAND (BVW)
	SILT SOCK
	BVW 100' BUFFER ZONE
	MEAN ANNUAL HIGH WATER LINE
	RIVER FRONT AREA BOUNDARY

EXISTING RIP-RAP	EXISTING FIRE HYDRANT
DRAIN MANHOLE	EXISTING WATER GATE
117/4 UTILITY POLE	NEW FIRE HYDRANT
117/4 UTILITY POLE W/GUY	NEW WATER GATE
GAS GATE	NEW SOLID SLEEVE
EXISTING MANHOLE	SIGN
CB WITH GRANITE THROAT STONE	327.0 PROPOSED SPOT GRADE

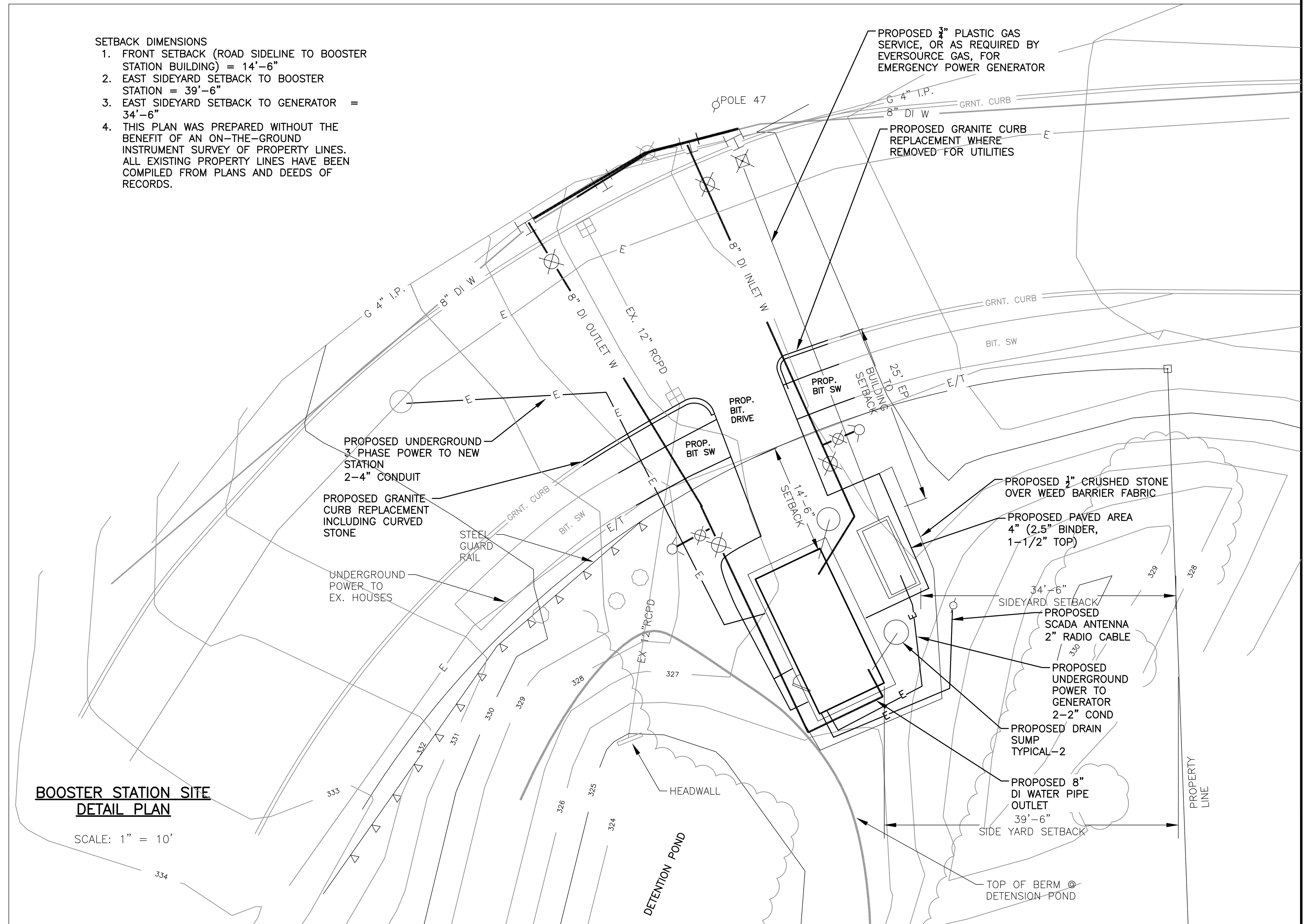
REVISION NOTES:
1. REVISION MADE 3.12.2021
   a. CHANGED BOOSTER STATION BUILDING AND GENERATOR SIZE TO MATCH APPROVED EQUIPMENT SIZE
   b. ADDED FLOOR DRAINS AND STONE SUMPS
2. REVISION MADE 4.9.2021
   c. MOVE STATION WEST ON SITE



BOOSTER STATION GRADING PLAN

SCALE: 1" = 10'

SETBACK DIMENSIONS
1. FRONT SETBACK (ROAD SIDELINE TO BOOSTER STATION BUILDING) = 14'-6"
2. EAST SIDEYARD SETBACK TO BOOSTER STATION = 39'-6"
3. EAST SIDEYARD SETBACK TO GENERATOR = 34'-6"
4. THIS PLAN WAS PREPARED WITHOUT THE BENEFIT OF AN ON-THE-GROUND INSTRUMENT SURVEY OF PROPERTY LINES. ALL EXISTING PROPERTY LINES HAVE BEEN COMPILED FROM PLANS AND DEEDS OF RECORDS.



BOOSTER STATION SITE DETAIL PLAN

SCALE: 1" = 10'

TOWN OF ASHLAND, MASSACHUSETTS
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SITE PLAN

Haley and Ward, Inc.
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REVISED	DATE	BY
1	3.12.2021	GJE
2	4.9.2021	GJE

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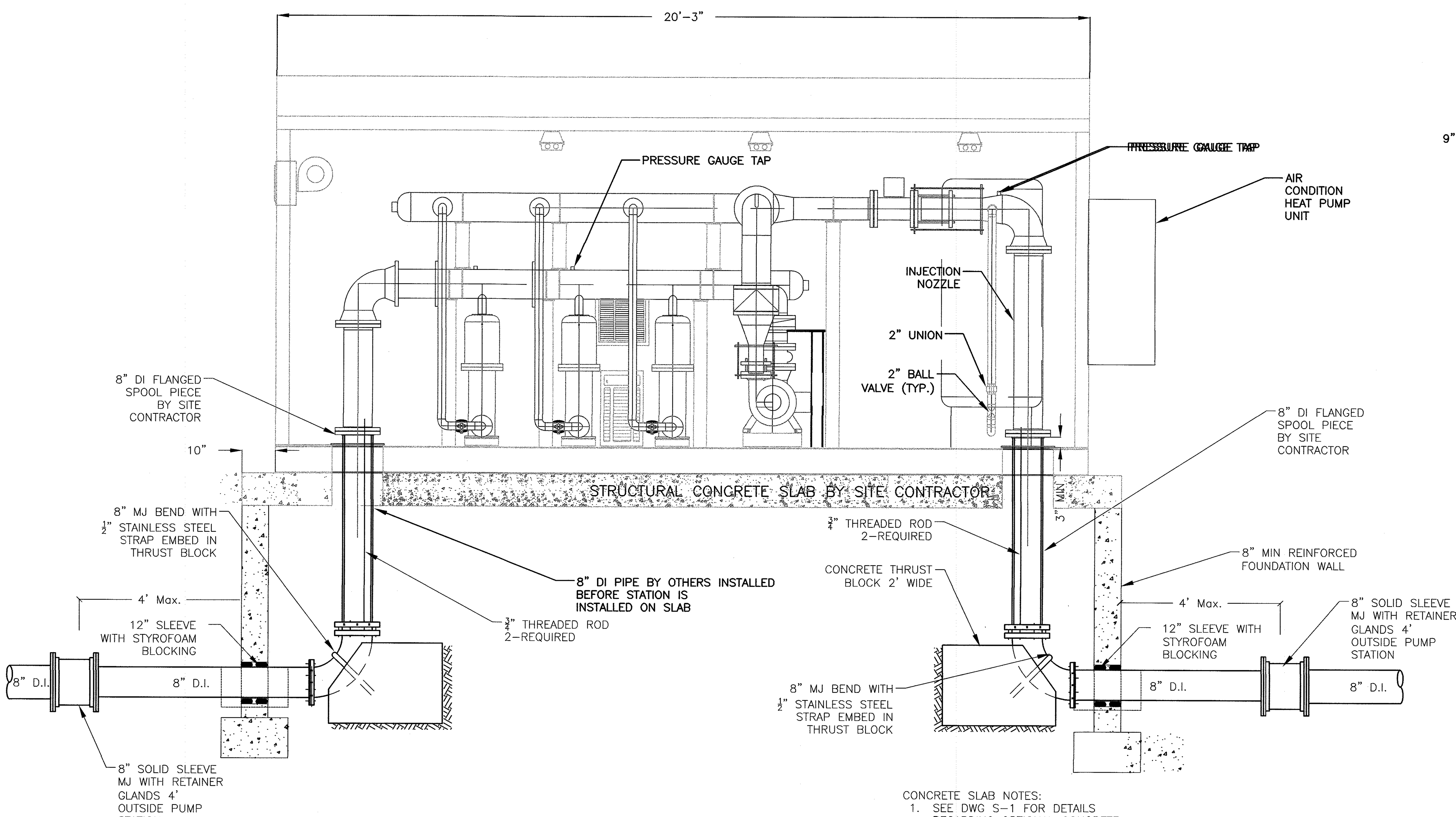
SHEET NO.:	2 OF 7
CONTRACT NO.:	N/A
SCALE:	AS NOTED
DATE DRAWN:	2019
DRAWN BY:	GJE
FILE NO.:	ash317-000.dwg

DWG. NO.

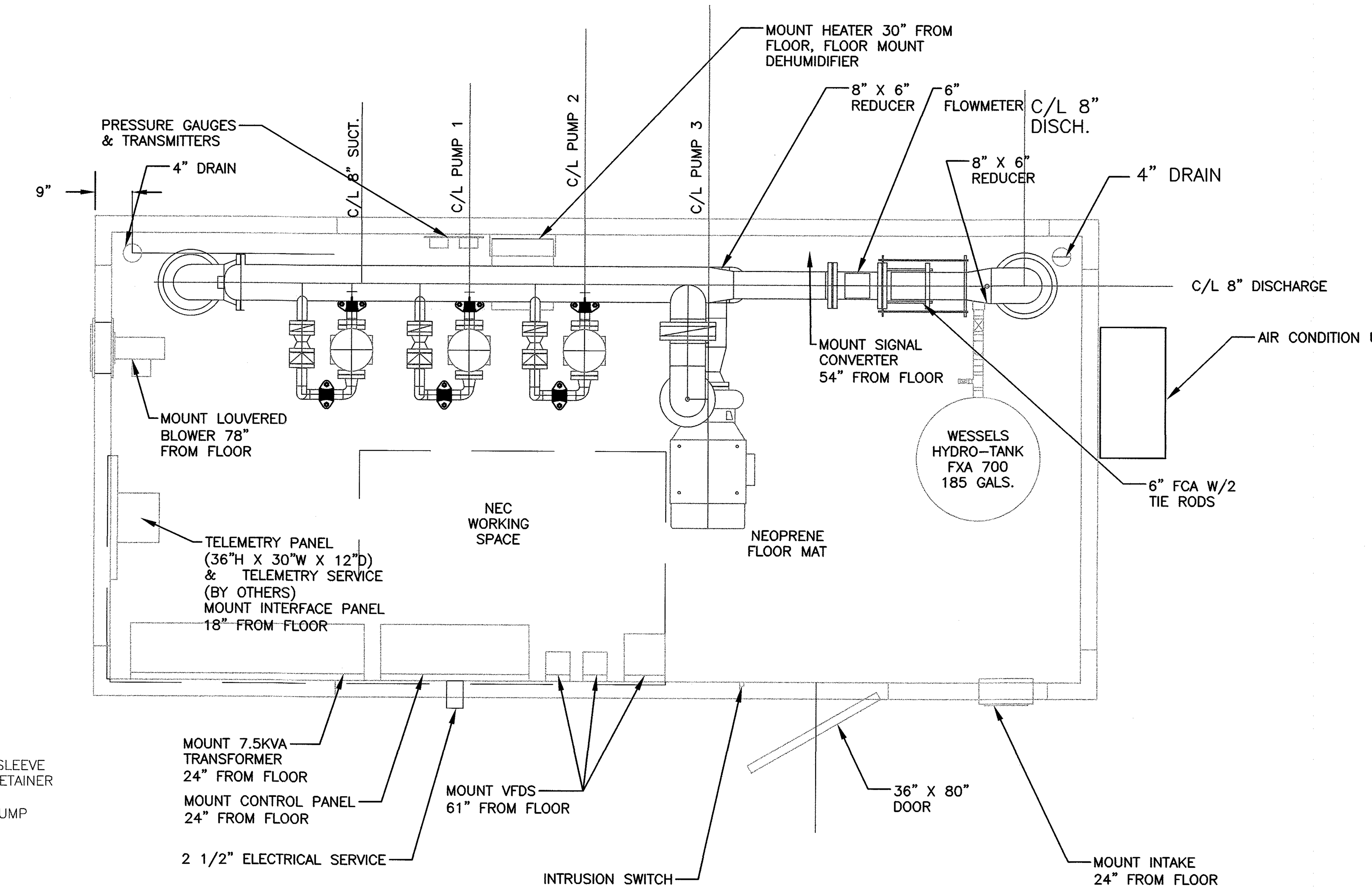
SPR



CONCRETE SLAB NOTES:
1. SEE DWG S-1 FOR DETAILS REGARDING OPTIONAL CONCRETE SLAB SETUP.
2. CONTRACTOR AHS OPTION TO INSTALL FROST WALL OR CONCRETE SLAB ON GRADE PROVIDED BUILDING DEPARTMENT APPROVES SLAB ON GRADE.

1/M1 **SECTION**

SCALE: 1/2" = 1'



CHANGE NOTES
1.CHANGES MADE ON 1.19.101 WAS TO INCREASE LENGTH OF STATION BUILDING FROM 18'-8 ½" TO 20'-3" AS REQUIRED BY THE SELECTED USEMCO BOOSTER STATION

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MECHANICAL DETAILS

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CHECKED	DATE	BY
1	1	1
REVISED	DATE	BY
1	1.2021	GJE

SHEET NO.: ? OF ?
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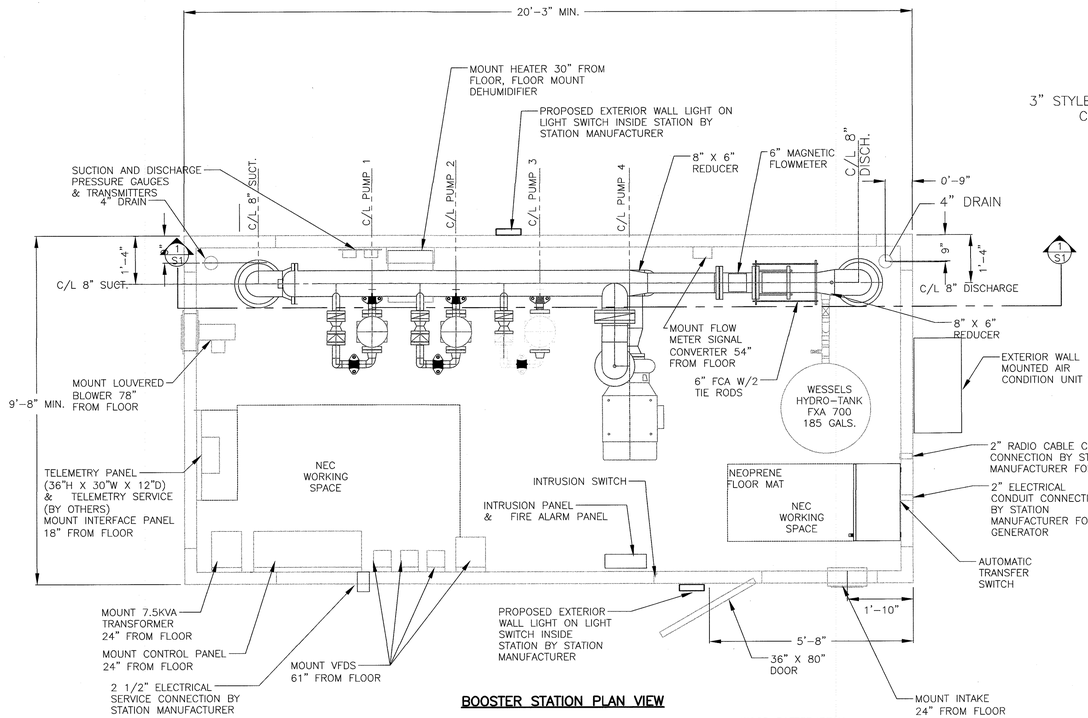
DRAWN BY: GJE
FILE NO.: ASH 317-M1

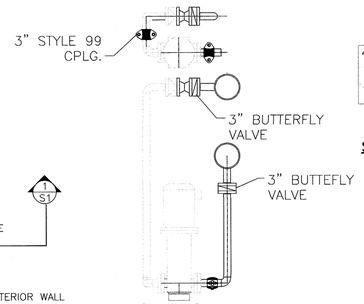
DWG. NO.

M1R



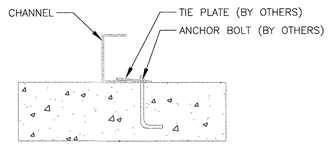
BOOSTER STATION PLAN VIEW

SCALE: 1/2" = 1'



PUMP 4 (FUTURE) ELEVATION VIEW

NOT TO SCALE



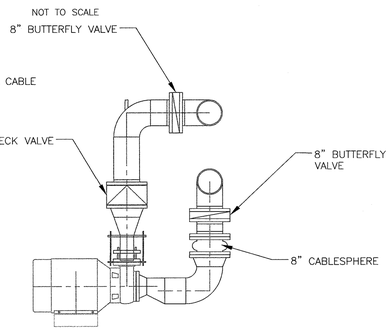
STATION ANCHOR SYSTEM DETAIL

NOT TO SCALE

FLOOR DRAIN NOTE:
1. STATION MANUFACTURER TO INSTALL CAST IRON 4" DIAMETER FLOOR DRAIN IN STATION FLOOR.
2. SITE CONTRACTOR TO FURNISH AND INSTALL 3" CAST IRON DRAIN FROM FLOOR DRIAN TO UNDERGROUND STONE SUMP AREA, 3 FOOT DIAMETER BY 2 FOOT DEEP

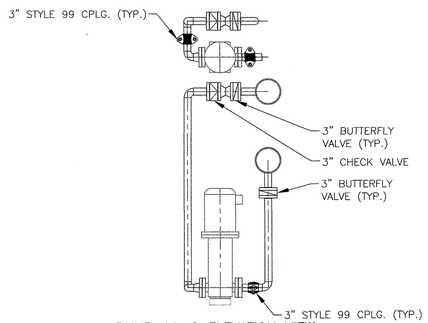
PAINT REQUIREMENTS

APPLY 8 MILS EPOXY ENAMEL INTERIOR OF PIPING: FUSION BONDED EPOXY COATED PER AWWA C213



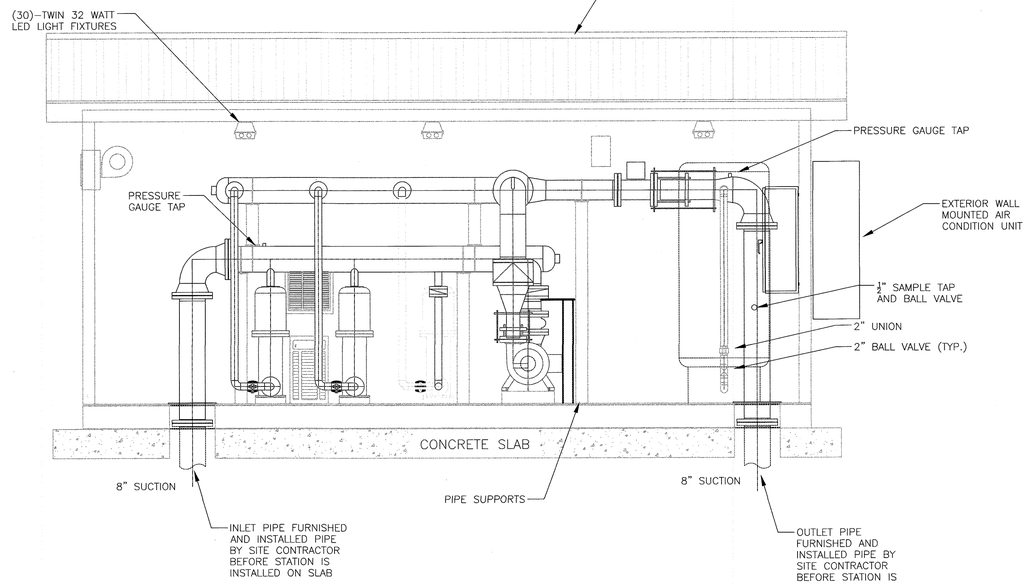
PUMP 3 ELEVATION VIEW

NOT TO SCALE



PUMP 1& 2 ELEVATION VIEW

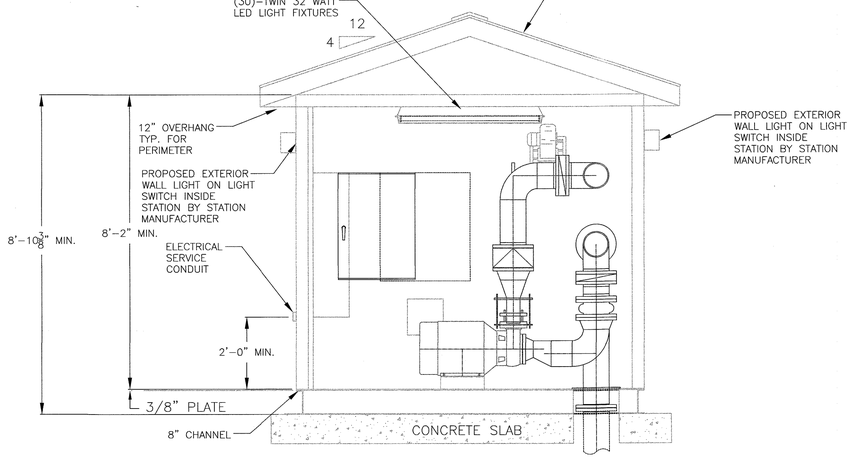
NOT TO SCALE



BOOSTER STATION ELEVATION VIEW WEST END

SCALE: 1/2" = 1'

NOTE:
INDEPENDENTLY SUPPORTED.
PIPE EXTERNAL TO STATION MUST BE



BOOSTER STATION ELEVATION VIEW SOUTH END

SCALE: 1/2" = 1'

CHANGE NOTES
1.CHANGES MADE ON 1.19.101 WAS TO INCREASE LENGTH OF STATION BUILDING FROM 18'-8 ½" TO 20'-3" AS REQUIRED BY THE SELECTED USEMCO BOOSTER STATION

GRAPHIC SCALE
1' 0 1' 2' 4' FEET

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BUILDING AND MECHANICAL DETAILS

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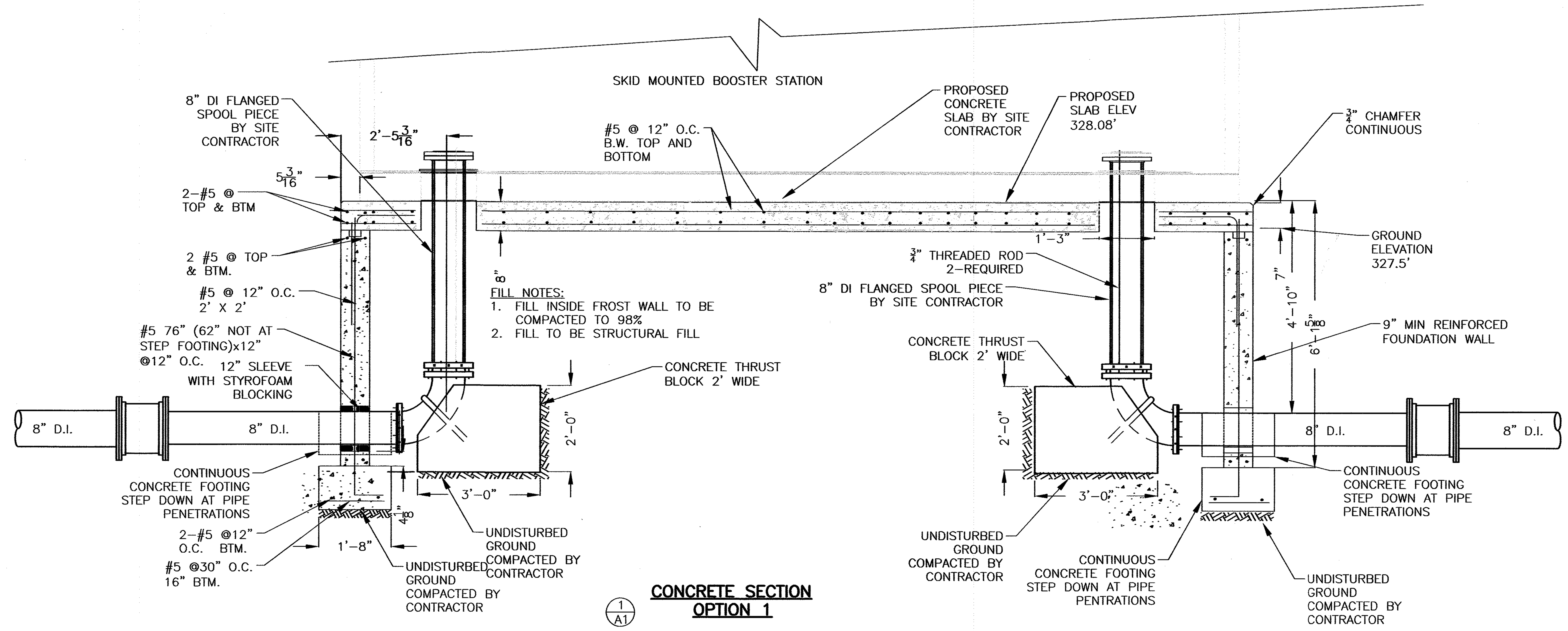
COMMONWEALTH OF MASSACHUSETTS
GREGORY J. CLERMONT
No. 40710
REGISTERED PROFESSIONAL ENGINEER

CHECKED	DATE	BY
	DATE	BY
REVISED	1.19.2021	GJC
1		

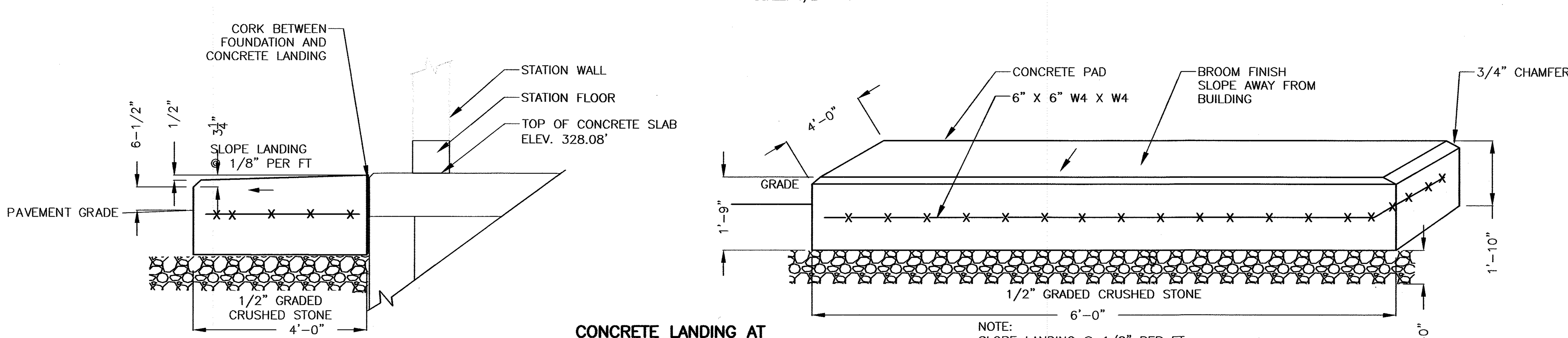
SHEET NO.: 3 OF 7
CONTRACT NO.: N/A
SCALE: AS NOTED
DATE DRAWN: JUNE 2019
DRAWN BY: LJC
FILE NO.:ASH317-A1

DWG. NO.
A1R



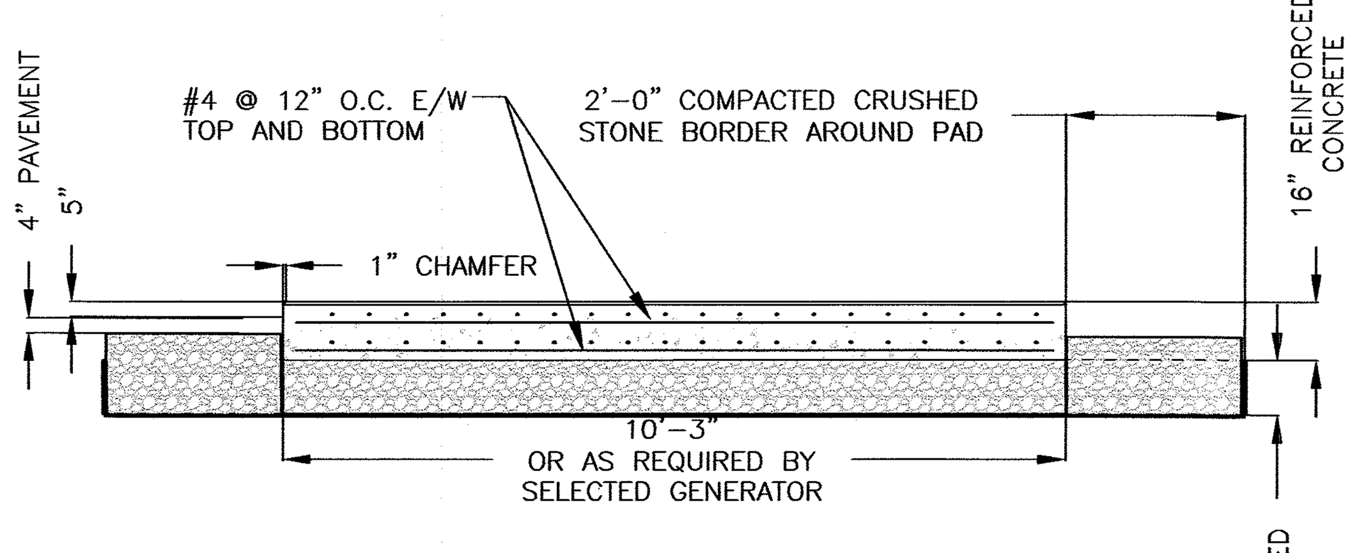
CONCRETE SECTION OPTION 1 (1/A1)

SCALE: 1/2" = 1'



CONCRETE LANDING AT EXTERIOR DOOR

NOT TO SCALE

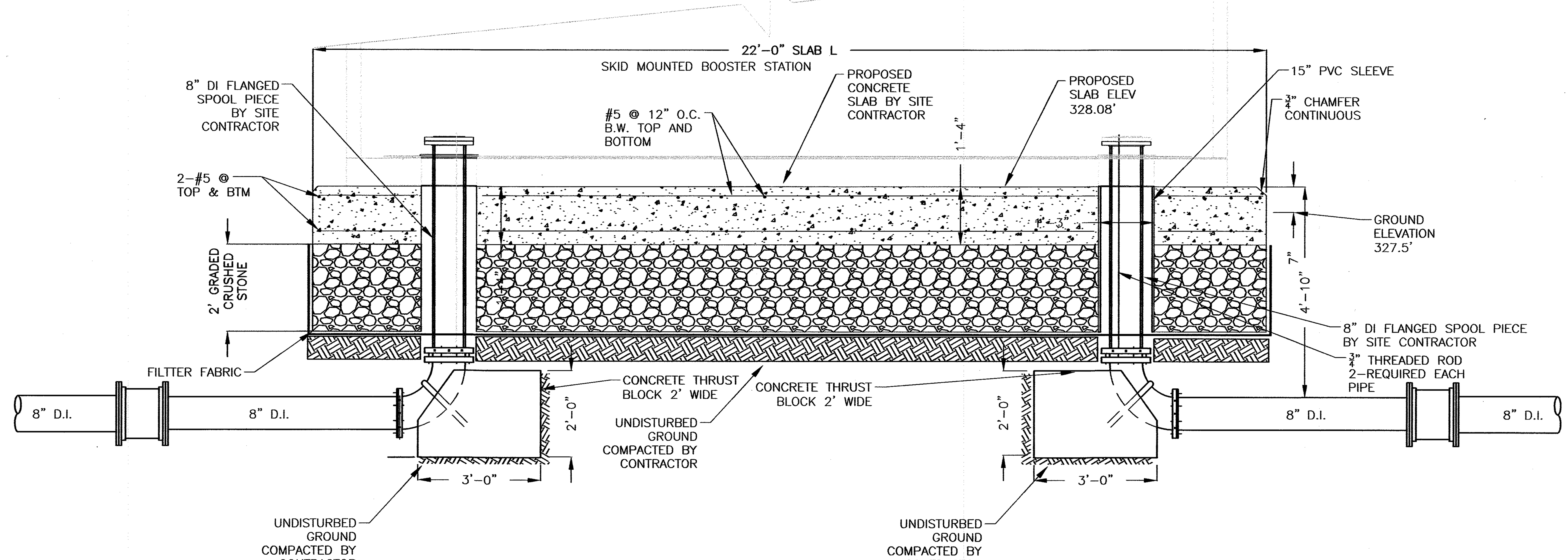


AUXILIARY POWER GENERATOR PAD

NOT TO SCALE

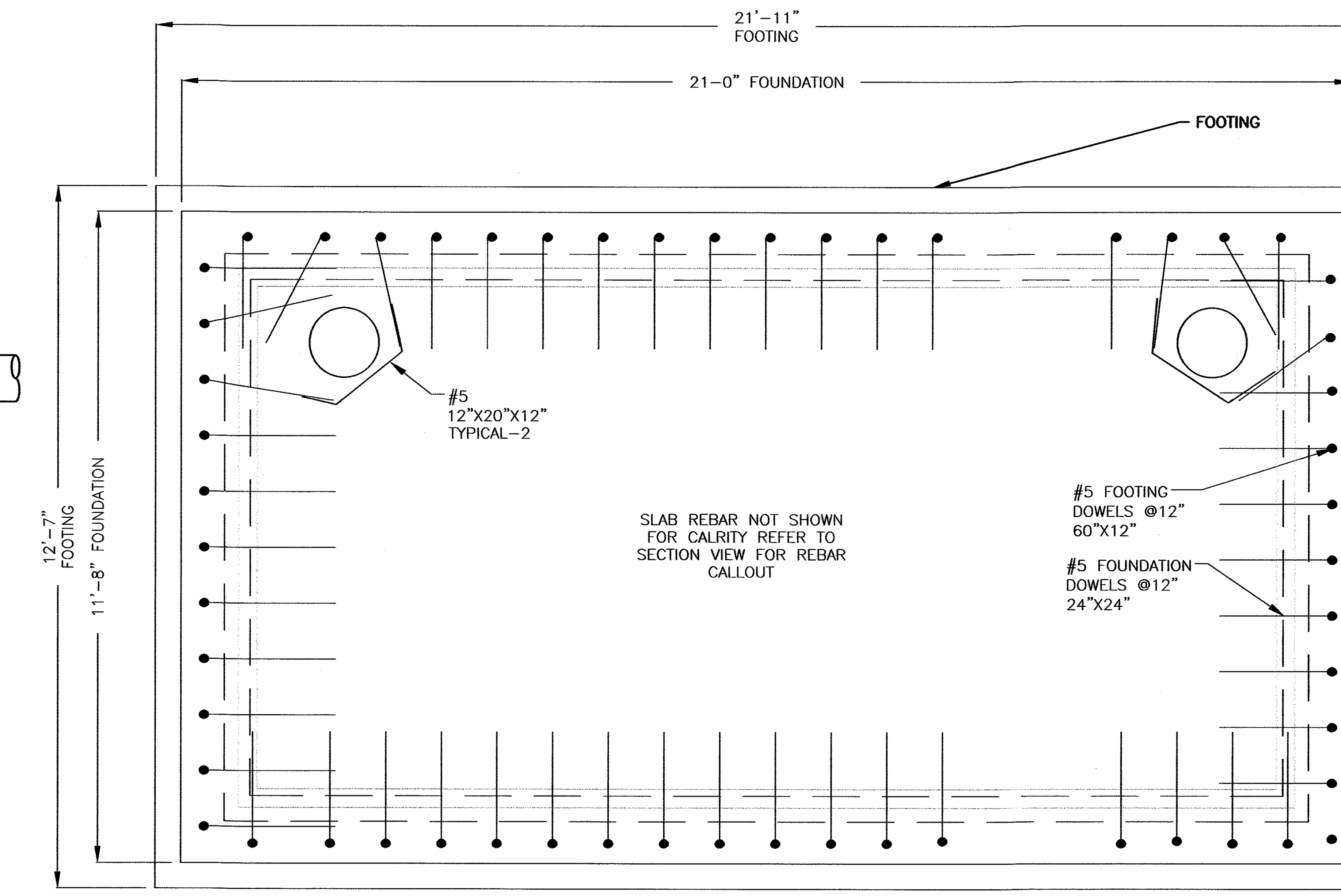
NOTES:

1. PROPOSED GENERATOR PAD APPROX. SIZE 10'-3" LONG BY 4'-8" WIDE BY 16" THICK. FINAL PAD SIZE BASED ON SELECTED GENERATOR SKID SIZE PLUS 6" ALL SIZE
2. TOP REINFORCEMENT AT 2" BELOW TOP SURFACE.
3. BOTTOM REINFORCEMENT AT 3" ABOVE BOTTOM GRADE



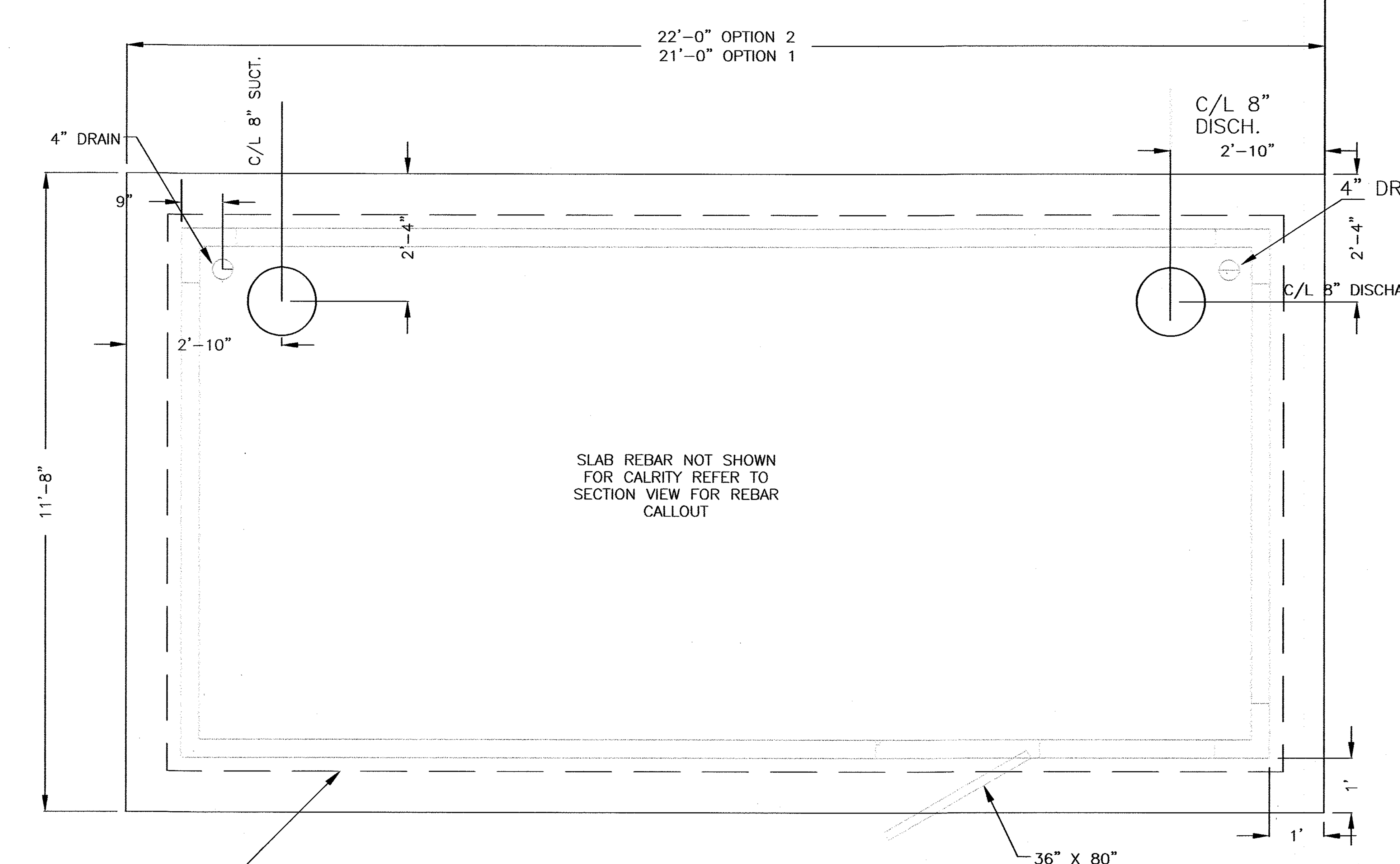
CONCRETEN SLAB SECTION OPTION 2 (A1)

SCALE: 1/2" = 1'



PROPOSED CONCRETE FOOTING AND FOUNDATION PLAN VIEW OPTION 1

SCALE: 1/2" = 1'



PROPOSED CONCRETE SLAB PLAN VIEW OPTION 1 & 2

SCALE: 1/2" = 1'

CONCRETE SLAB NOTES
1. CONCRETE SLAB SIZE IS APPROXIMATE. ACTUAL SIZE TO BE ONE FOOT LARGER IN ALL DIRECTIONS FROM SELECTED WATER BOOSTER STATION SKID.
2. THERE ARE 2 OPTIONS FOR THE CONCRETE SLAB ON THIS PROJECT; 1) FROST WALL FOUNDATION, FOOTING AND STRUCTURAL SLAB OR 2) CONCRETE STRUCTURAL SLAB ON GRADE.
3. CONTRACTOR'S OPTION SELECTED REQUIRES APPROVAL BY THE ASHLAND BUILDING DEPARTMENT

CHANGE NOTES
1.CHANGES MADE ON 1.19.101 WAS TO INCREASE LENGTH OF STATION BUILDING FROM 18'-8 1/4" TO 20'-3" AS REQUIRED BY THE SELECTED USEMCO BOOSTER STATION.
CHANGE IN STATION CONCRETE FOOTING WAS FROM 21'-5" TO 21'-11". THROUGH REDUCTION OF SLAB OVERHAND ON LONG ENDS.
2. CHANGES ON 3.12.2021 WAS
a. SHORTEN FOUNDATION LENGTH, IN SECTION 1/A1, TO MATCH PLAN VIEW LENGTH.
b. SLAB ON GRADE REMAINED THE SAME, WHICH IS LONGER.
c. PLAN VIEW FOUNDATION SLAB CALL OUT LENGTH CHANGED FROM 18'-4" TO 20'-0". AS SHOWN WAS CORRECT.
d. ADDED LENGTH OPTIONS IN SLAB PLAN VIEW FOR OPTION1 & 2

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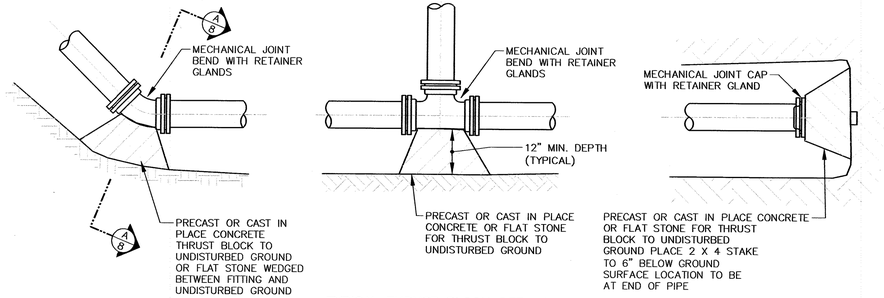
CHECKED	DATE	BY
-	-	-
REVISED	DATE	BY
1	1.2021	GJE
2	3.12.2021	GJE

SHEET NO.:	4 OF 7
CONTRACT NO.:	N/A
SCALE:	AS NOTED
DATE DRAWN:	JUNE 2019
DRAWN BY:	GJE
FILE NO.:	ASH 317-S1

DWG. NO.

S1R

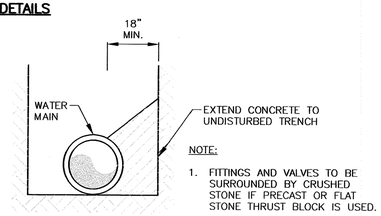


TYPICAL THRUST BLOCK DETAILS

NO SCALE

PIPE DIAMETER	BENDS				TEE
	11.25	22.5	45	90	
6	1	1	1	2	1.5
8	1	1	2	3	2.5
12	1	2	3.5	6.5	5

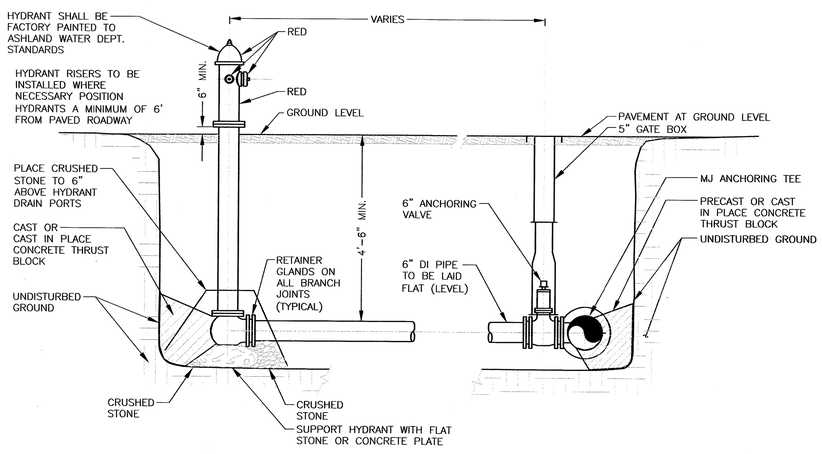
THRUST BLOCK BEARING AREA (SF)
(BASED UPON 100 psi WATER PRESSURE AND 3000 PSF BEARING LOAD CAPACITY)



NOTE:

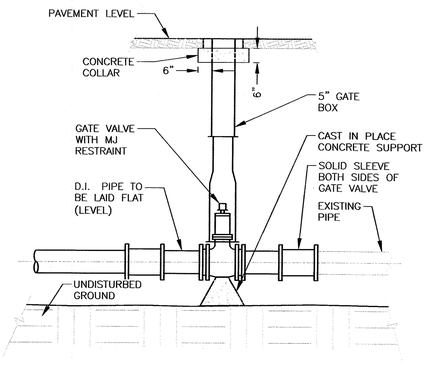
1. FITTINGS AND VALVES TO BE SURROUNDED BY CRUSHED STONE IF PRECAST OR FLAT STONE THRUST BLOCK IS USED.

A/B NO SCALE



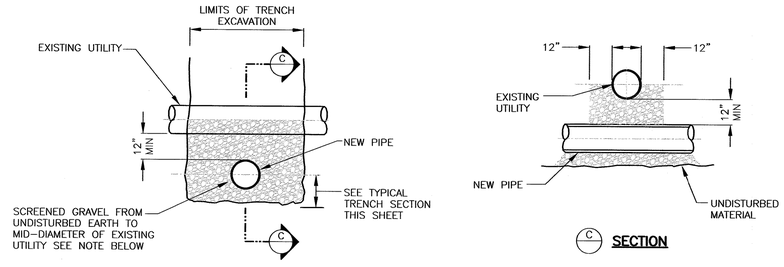
TYPICAL HYDRANT ASSEMBLY INSTALLATION

NOT TO SCALE

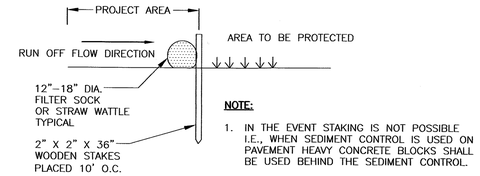


TYPICAL GATE VALVE INSTALLATION

NOT TO SCALE



TYPICAL SECTION

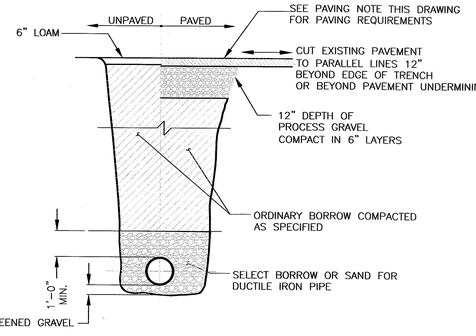


NOTE:

1. IN THE EVENT STAKING IS NOT POSSIBLE I.E., WHEN SEDIMENT CONTROL IS USED ON PAVEMENT HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT CONTROL.

TYPICAL FIILTER SOCK DETAIL

NOT TO SCALE

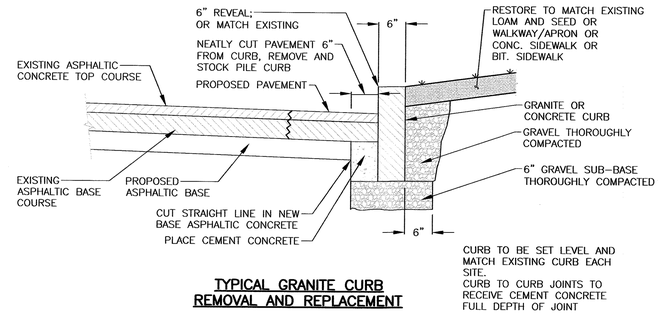


TYPICAL PIT SECTION FOR WATER MAINS

NOT TO SCALE

PAVING NOTES:

1. EXISTING ROADWAY PAVEMENT IS APPROXIMATELY FIVE (5)-INCHES THICK.
2. PROPOSED TRENCH PAVEMENT TO BE 2-1/2" TEMPORARY AND FIVE INCHES PERMANENT (3-1/2" BINDER 1-1/2" TOP).



TYPICAL GRANITE CURB REMOVAL AND REPLACEMENT

NOT TO SCALE

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CONSTRUCTION DETAILS

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COMMONWEALTH OF MASSACHUSETTS
GREGORY J. MORRIS
No. 40710
REGISTERED PROFESSIONAL ENGINEER
CIVIL

CHECKED	DATE	BY
REVISED	DATE	BY

SHEET NO.: 5 OF 7
CONTRACT NO.: N/A
SCALE: NONE
DATE DRAWN: JUNE 2019
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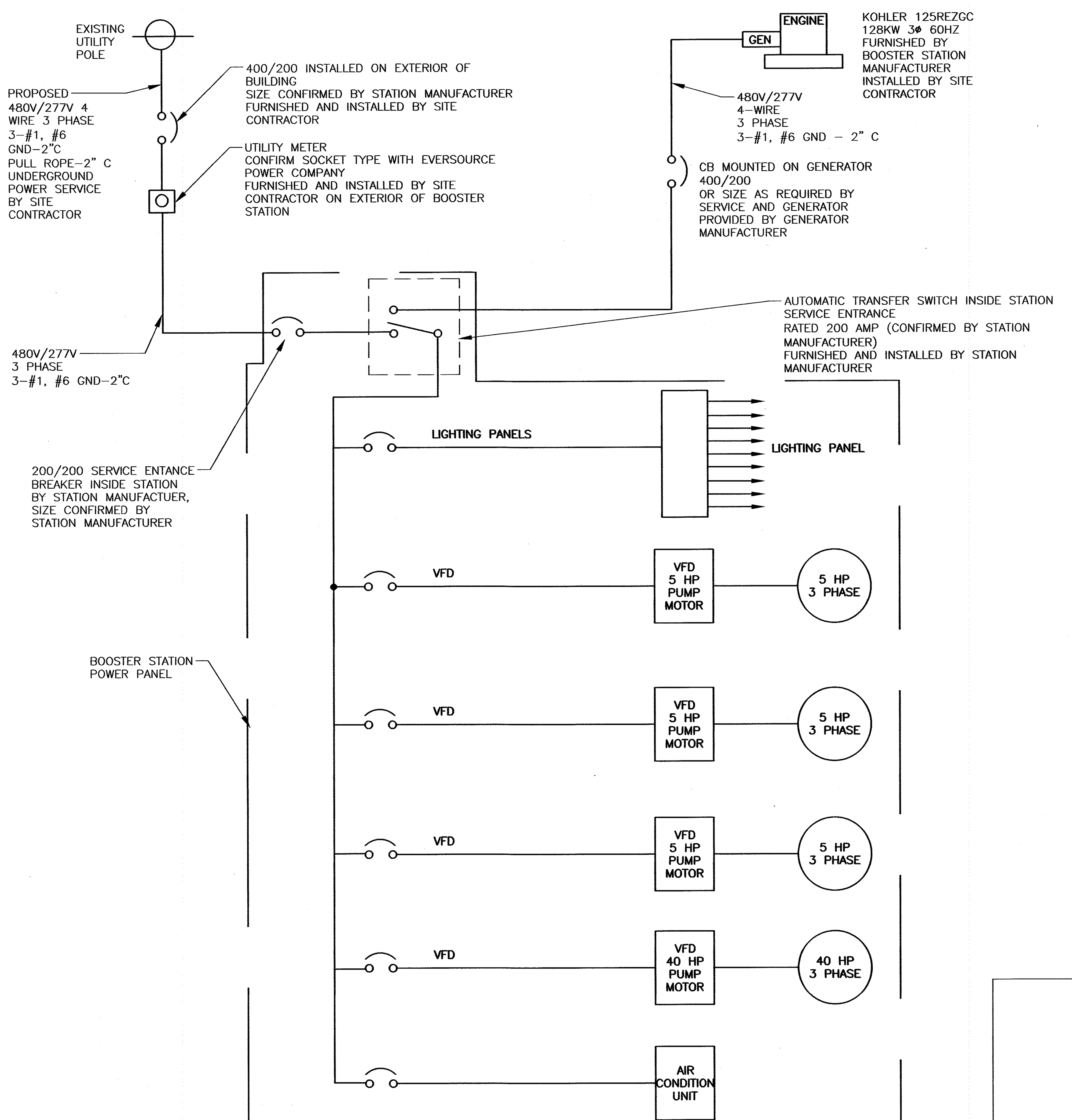
FILE NO.: ASH-317-SD1.DWG

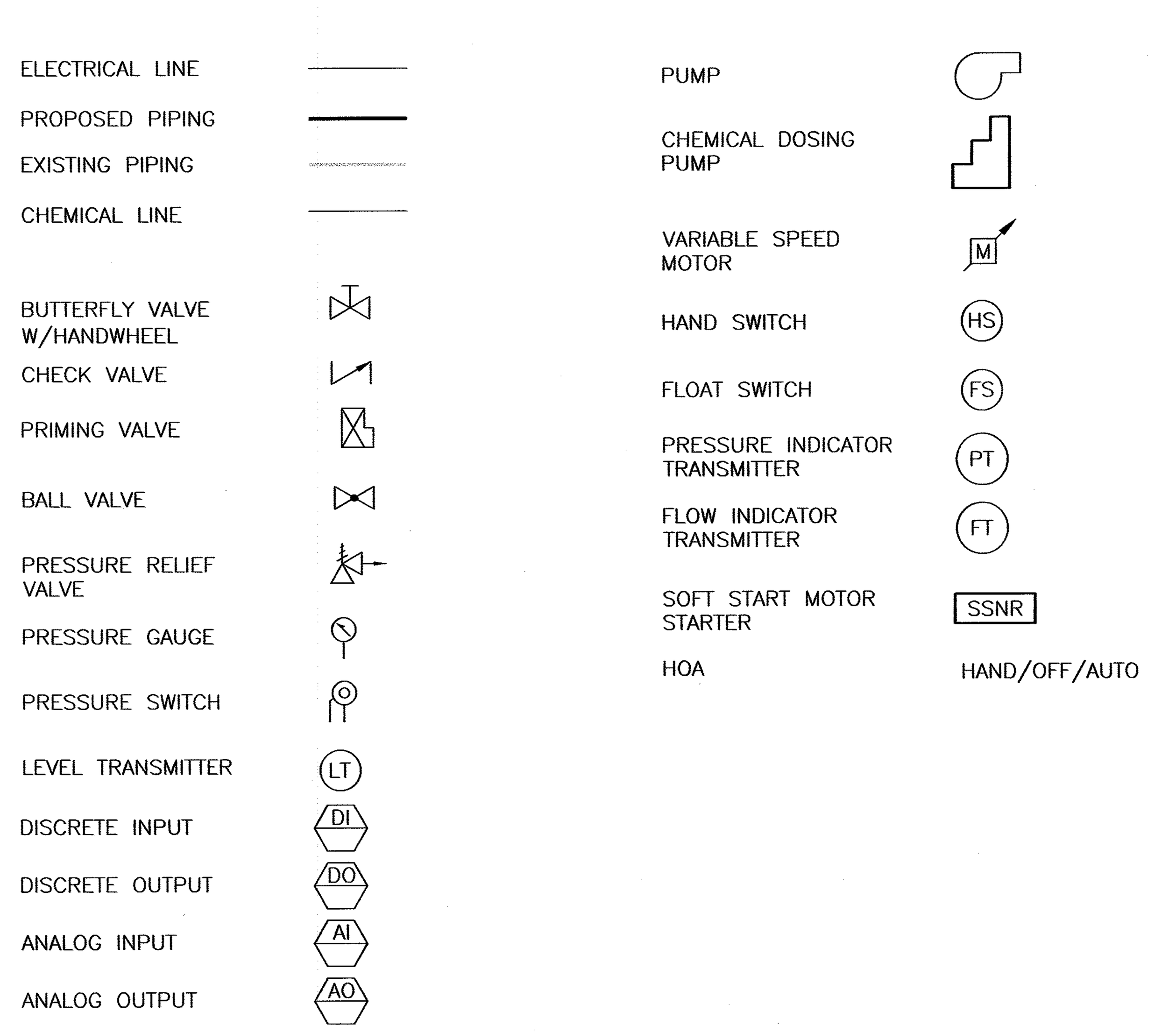
DWG. NO.

SD1



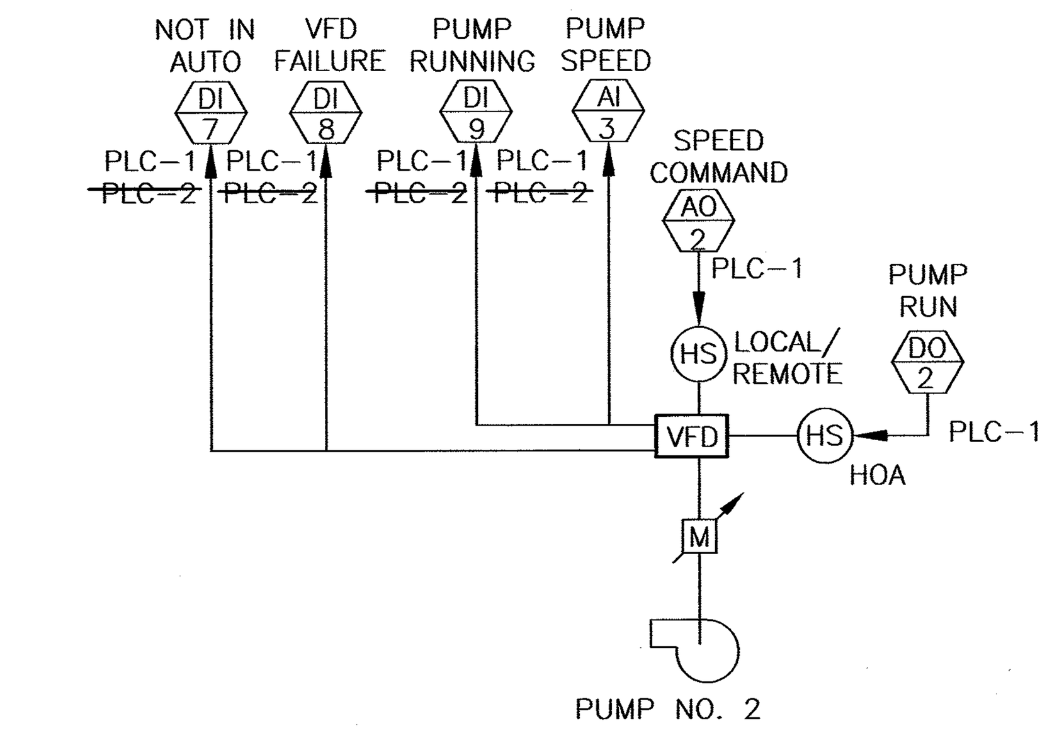
SINGLE LINE DIAGRAM

LEGEND & ABBREVIATIONS

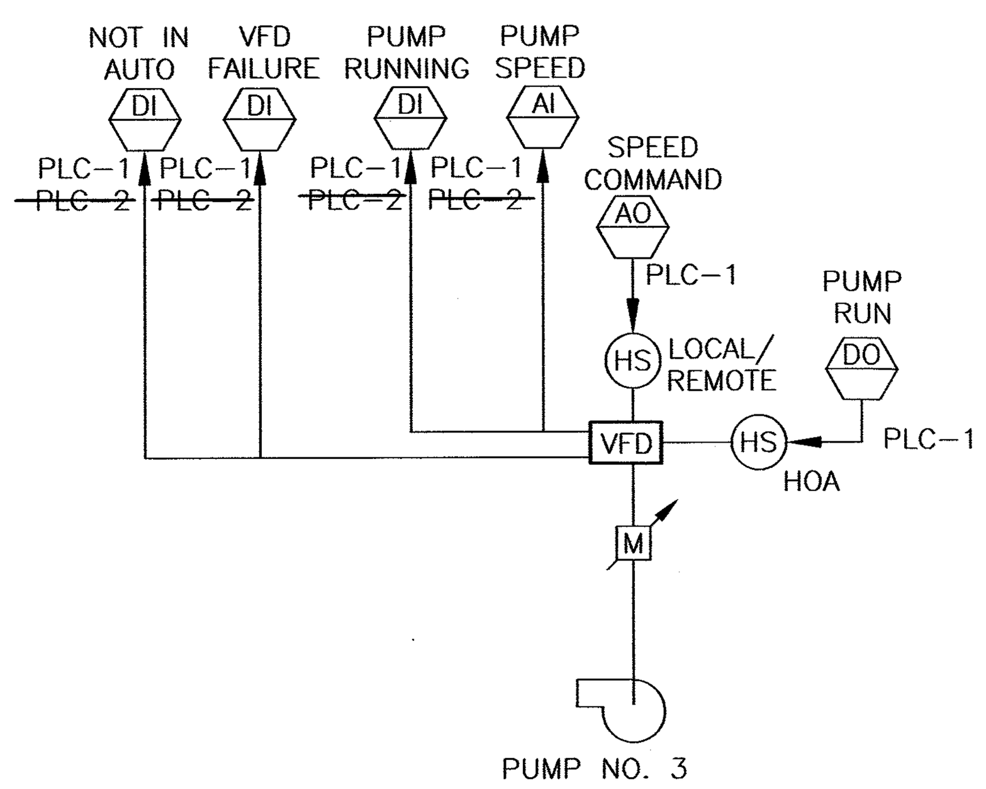


1.2021 CHANGE NOTES:

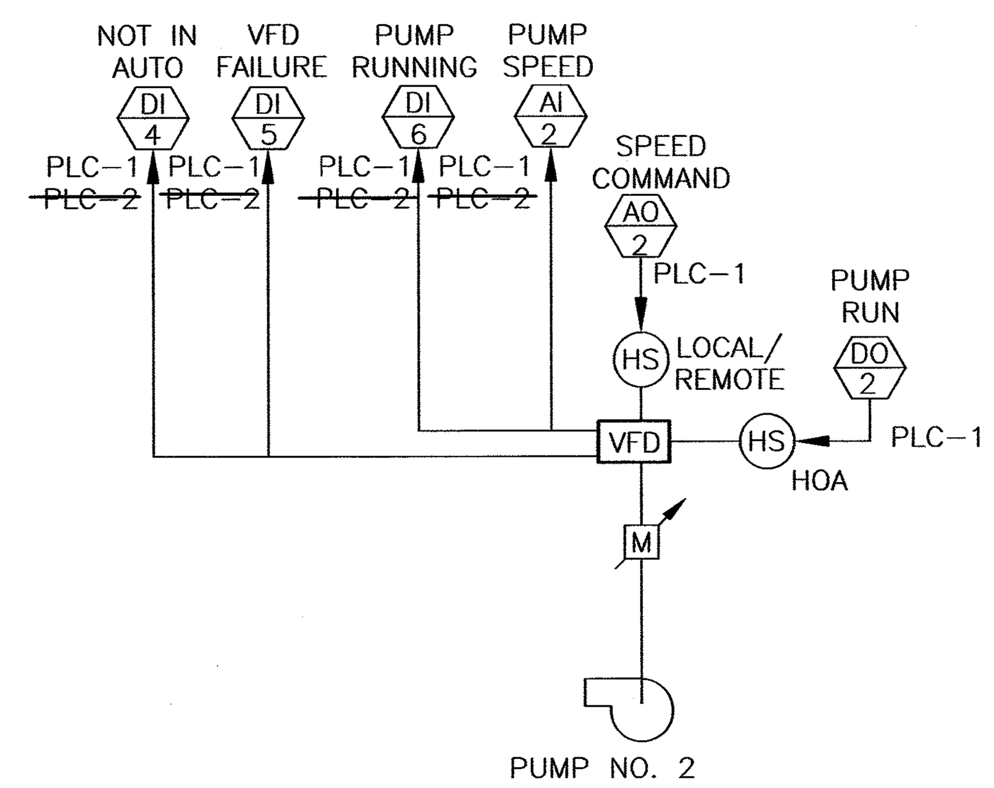
1. CHANGES WERE BASED ON CONSOLIDATION OF TOWN'S SCADA PANEL WITH STATION CONTROL PANEL.
2. SCADA PANEL WILL BE CHANGED TO A SCADA RADIO PANEL.WHERE THE SCADA RADIO WILL PULL ADDRESSES FORM THE CONTROL PANEL PLC.
3. CONTROL PANEL PLC AND TOUCH SCREEN SHALL BE ALLEN BRADLEY UNITS COMPATIBLE WITH TOWN'S SCADA RADIO SYSTEM.
4. PUMP CONTROL SCHEMATIC CHANGED TO INCLUDE A THIRD DOMESTIC PUMP.
5. CONNECTION BETWEEN BOOSTER STATION CONTROL PLC PANEL TO THE TOWN'S SCADA RADIO PANEL SHALL BE MADE BY THE BOOSTER STATION MANUFACTURER.



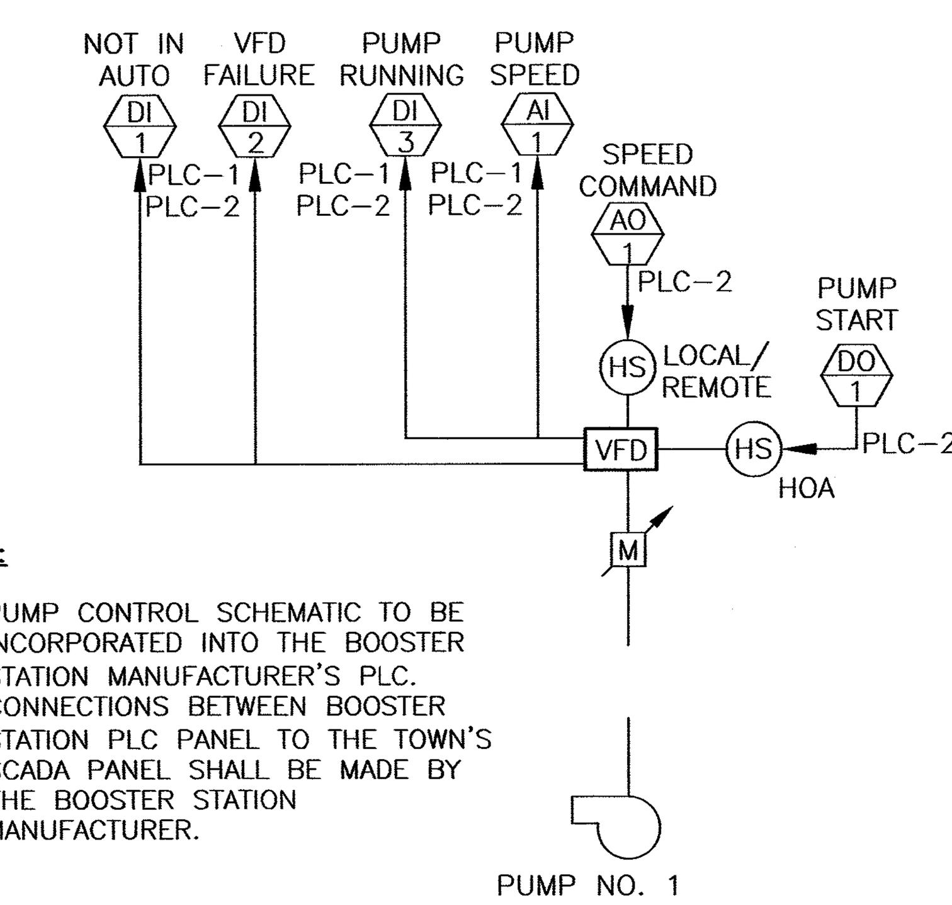
PROPOSED FIRE PUMP NO. 1 CONTROL SCHEMATIC



PROPOSED PUMP NO. 3 CONTROL SCHEMATIC



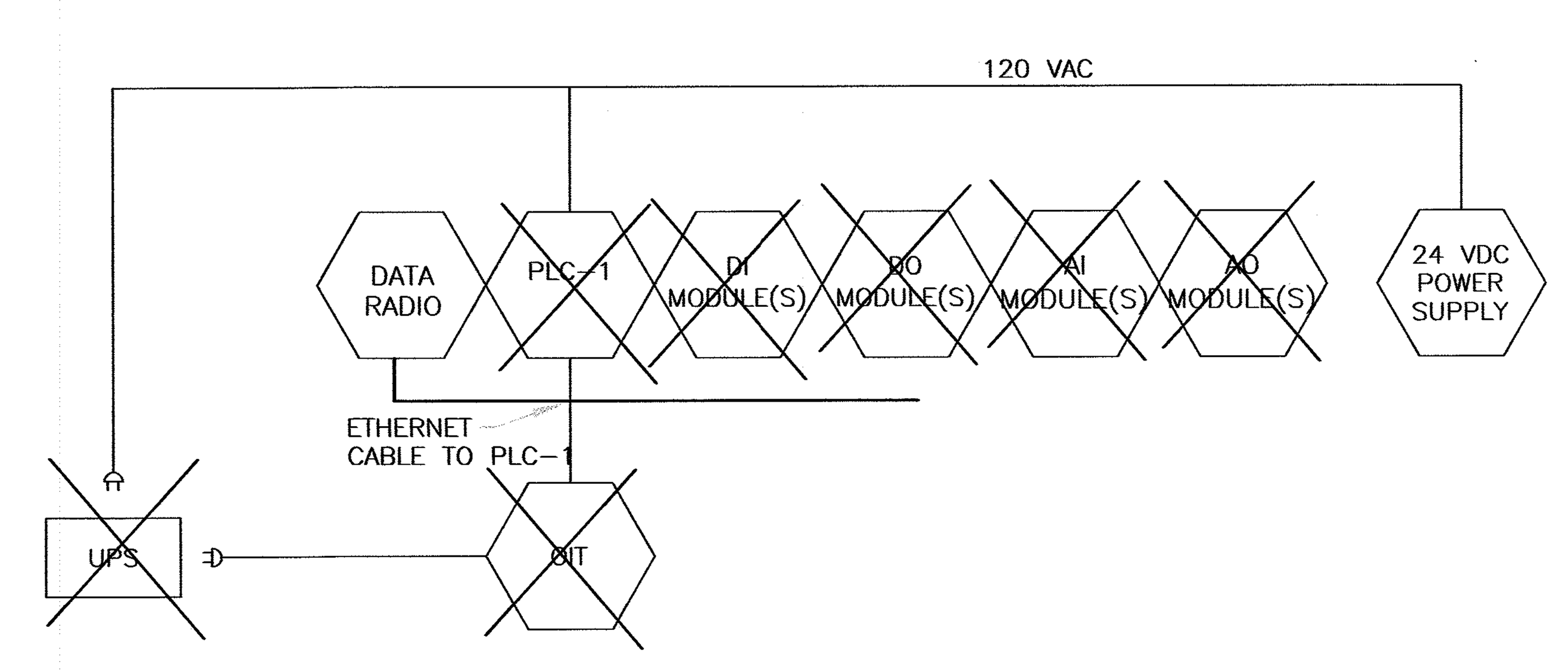
PROPOSED PUMP NO. 2 CONTROL SCHEMATIC



PROPOSED PUMP NO. 1 CONTROL SCHEMATIC

NOTE:

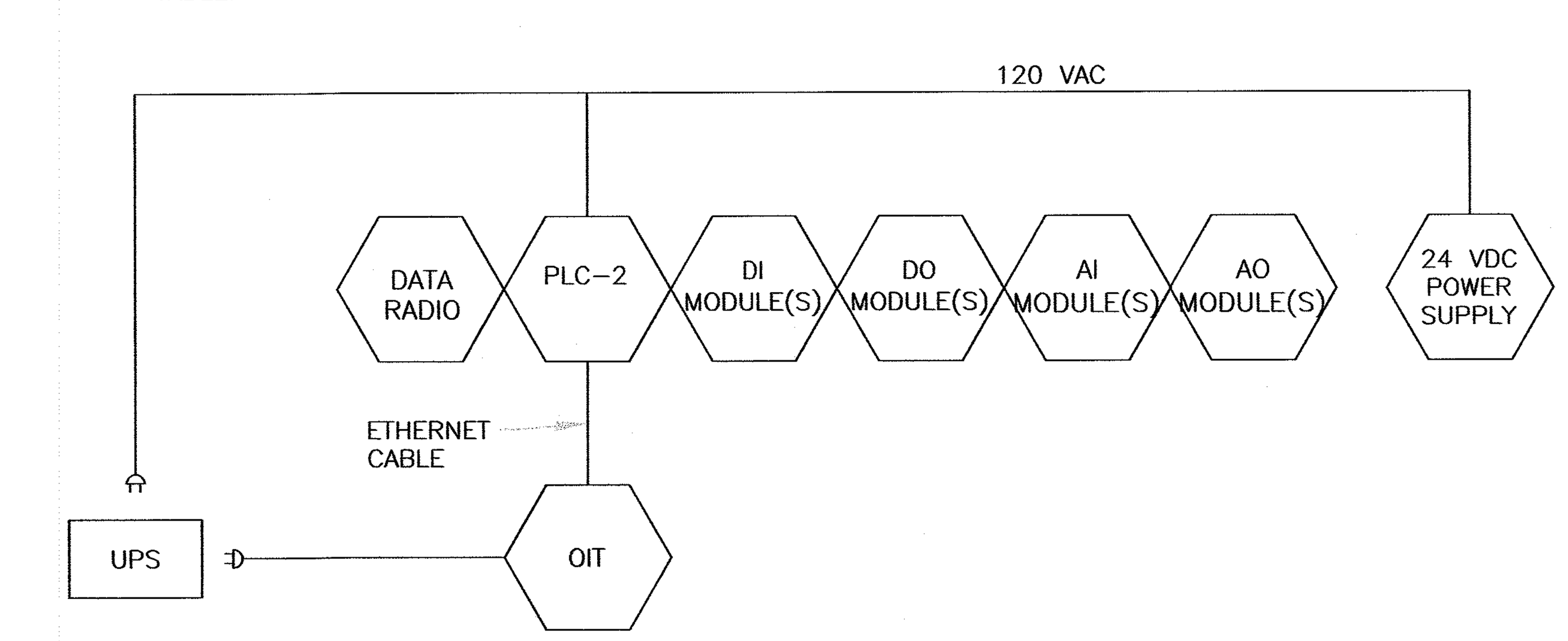
1. PUMP CONTROL SCHEMATIC TO BE INCORPORATED INTO THE BOOSTER STATION MANUFACTURER'S PLC.
2. CONNECTIONS BETWEEN BOOSTER STATION PLC PANEL TO THE TOWN'S SCADA PANEL SHALL BE MADE BY THE BOOSTER STATION MANUFACTURER.



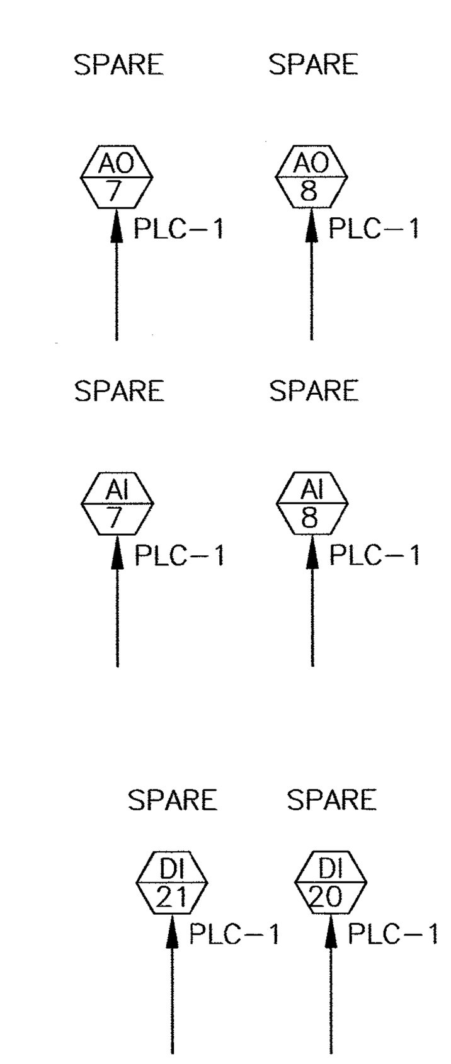
PROPOSED TOWN SCADA RADIO PANEL

NOTE: TOWN SCADA RADIO PANEL

1. STATION MANUFACTURER SHALL PURCHASE SCADA RADIO PANEL FROM NORTHEAST SYSTEMS CONTROLS, INC. JASON ROACHE AND INSTALL SCADA RADIO PANEL COMPLETE AND CONNECT TO PLC-1.
2. RADIO MODEM WILL BE PROGRAMMED BY TOWN'S SCADA TECHNICIAN UNDER THIS PROJECT.
3. ~~CONNECTIONS TO PANEL FOR EQUIPMENT EXTERNAL TO STATION SHALL BE MADE BY SITE CONTRACTOR PER I/O TABLE.~~



PROPOSED STATION CONTROL PANEL

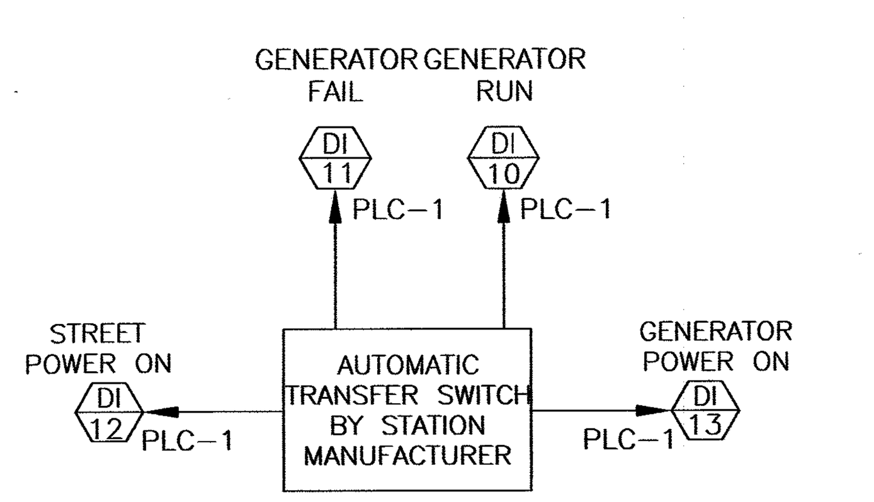


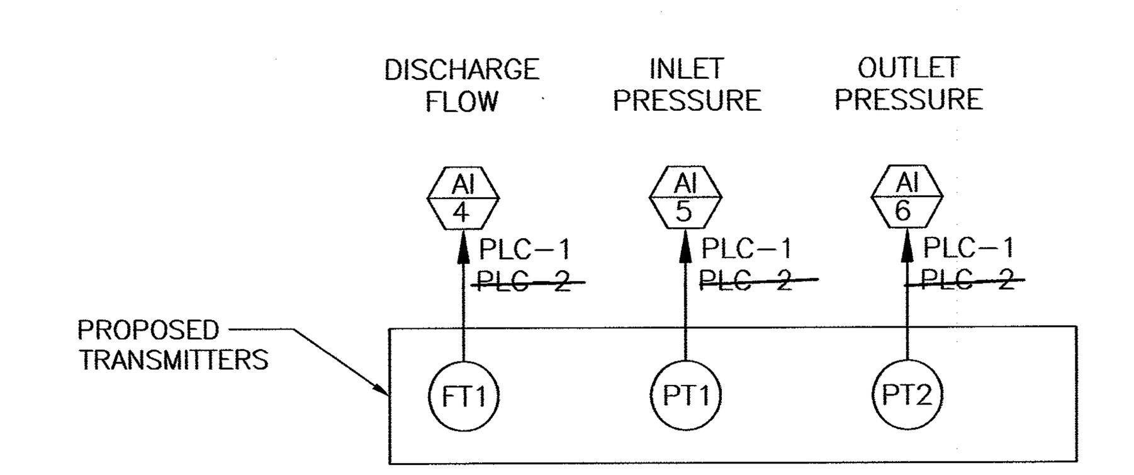
GENERAL INSTRUMENTATION AND SCADA NOTES:

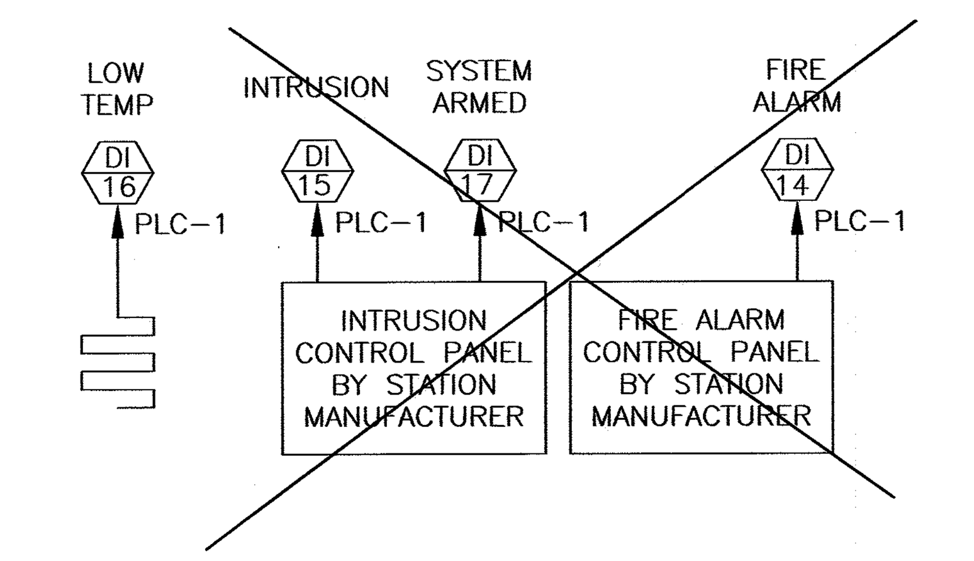
1. BOOSTER STATION MANUFACTURER SHALL PROVIDE PROPOSED INSTRUMENTATION AND ALL ASSOCIATED WIRES, CONDUITS, AND HARDWARE, INSIDE STATION, AND RUN INPUT/OUTPUTS TO PROPOSED PLC CONTROL PANEL.
2. A SCADA RADIO PANEL WILL BE PROVIDED BY STATION MANUFACTURER TO TRANSFER PLC ADDRESSES TO SCADA RADIO FOR TRANSFER TO TOWN'S SCADA SYSTEM.
3. SITE ELECTRICAL CONTRACTOR SHALL TERMINATE AND LABEL WIRES FROM EXTERNAL EQUIPMENT TO CONTROL PLC PANEL.
4. SITE ELECTRICAL CONTRACTOR SHALL PROVIDE LABOR FOR (2)-4 HOUR PERIODS FOR TESTING AND TROUBLE SHOOTING COORDINATED WITH SCADA INTEGRATOR.
5. PROVIDE TERMINAL STRIPS TO CONNECT ALL REQUIRED INPUTS AND OUTPUTS INCLUDING SPARE TERMINALS.
6. BOOSTER STATION MANUFACTURER SHALL MAKE CONDUCTOR CONNECTIONS TO ALL INSTRUMENTS, LABEL, AND RUN THEM TO TERMINAL STRIP IN CONTROL PANEL PANEL.
7. TOWN'S SCADA INTEGRATOR SHALL WORK WITH STATION MANUFACTURER TO OBTAIN PLC ADDRESSES FOR TRANSFER TO SCADA RADIO PANEL AD TEST ACCORDINGLY.
8. FURTHERMORE, AFTER STATION INSTALLATION IS COMPLETE BOOSTER STATION MANUFACTURER SHALL PLAN FOR 8 HOURS OF WORKING ON SITE AND IN CONJUNCTION WITH INTEGRATOR TO BRING INSTRUMENTATION AND CONTROLS ONLINE, AND TROUBLESHOOT.
9. ALL INPUTS AND OUTPUTS TO AND FROM PLC CONTROL PANEL TO BE CONNECTED AT INPUT TERMINALS, INCLUDING ALL ANALOG SIGNALS.
10. SPARE ANALOG INPUTS MUST BE WIRED FROM TERMINALS TO PLC ANALOG INPUT CARD TERMINALS.
11. SPARE DIGITAL INPUTS AND OUTPUTS MUST BE WIRED FROM PLC DIGITAL INPUT AND OUTPUT CARDS TERMINALS.
12. DRAWINGS ARE PARTIAL WIRING DIAGRAM FOR THE PLC CONTROL PANEL.

CONTROLS IO LISTING

TYPE	POINT ID	SCALE
AI	FLOW	100% = 1,500 GPM
AI	SUCTION PRESSURE	100% = 80 PSI
AI	DISCHARGE PRESSURE	100% = 100 PSI
AI	FIRE PUMP SPEED	100% = 60 HRTZ
AI	DOMESTIC PUMP 1 SPEED	100% = 60 HRTZ
AI	DOMESTIC PUMP 2 SPEED	100% = 60 HRTZ
AI	DOMESTIC PUMP 3 SPEED	100% = 60 HRTZ
AO	DOMESTIC PUMP 1 SPEED	100% = 60 HRTZ
AO	DOMESTIC PUMP 2 SPEED	100% = 60 HRTZ
AO	DOMESTIC PUMP 3 SPEED	100% = 60 HRTZ
AO	FIRE PUMP SPEED SET	100% = 60 HRTZ
DI	PUMP 1 NOT IN AUTO	CLOSED = FAULT
DI	PUMP 2 NOT IN AUTO	CLOSED = FAULT
DI	PUMP 3 NOT IN AUTO	CLOSED = FAULT
DI	FIRE PUMP NOT IN AUTO	CLOSED = FAULT
DI	PUMP 1 FAULT	CLOSED = FAULT
DI	PUMP 2 FAULT	CLOSED = FAULT
DI	PUMP 3 FAULT	CLOSED = FAULT
DI	FIRE PUMP FAULT	CLOSED = FAULT
DI	PUMP 1 RUNNING	CLOSED = NORMAL
DI	PUMP 2 RUNNING	CLOSED = NORMAL
DI	PUMP 3 RUNNING	CLOSED = NORAML
DI	FIRE PUMP RUNNING	CLOSED = NORMAL
DI	LOW STATION TEMP	CLOSED = FAULT
DI	STREET POWER	CLOSED = NORMAL
DI	GENERATOR POWER	CLOSED = NORMAL
DI	GENERATOR FAIL	CLOSED = FAULT
DI	GENERATOR RUNNING	CLOSED = NORMAL
DI	FIRE ALARM	CLOSED = FAULT
DI	STATION INTRUSION	CLOSED = FAULT
DI	INRUSION SYSTEM ARMED	CLOSED = NORMAL
DO	PUMP 1 START	CLOSED = RUN
DO	PUMP 2 START	CLOSED = RUN
DO	PUMP 3 START	CLOSED = RUN
DO	FIRE PUMP START	CLOSED = RUN







TOWN OF ASHLAND, MASSACHUSETTS
BOARD OF SELECTMEN

INDEPENDENCE LANE BOOSTER STATION

SINGLE LINE POWER AND INSTRUMENTATION

Haley Ward, Inc.
63 GREAT ROAD, SUITE 200,
MAYNARD, MASSACHUSETTS 01754-2097
PHONE: (978) 648-6025 FAX: (978) 648-6068
www.haleyward.com

GREGORY J. ELDRIDGE No. 46170 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

CHECKED	DATE	BY
REVISED	DATE	BY
1	1.2021	GJE

SHEET NO.:	6 OF 7
CONTRACT NO.:	TBD
SCALE:	AS NOTED
DATE DRAWN:	JUNE 2019
DRAWN BY:	GJE
FILE NO.:	ASH317-E1

DWG. NO.

E1R