

# SPIRIT MOUNTAIN CITY OF DULUTH, MINNESOTA

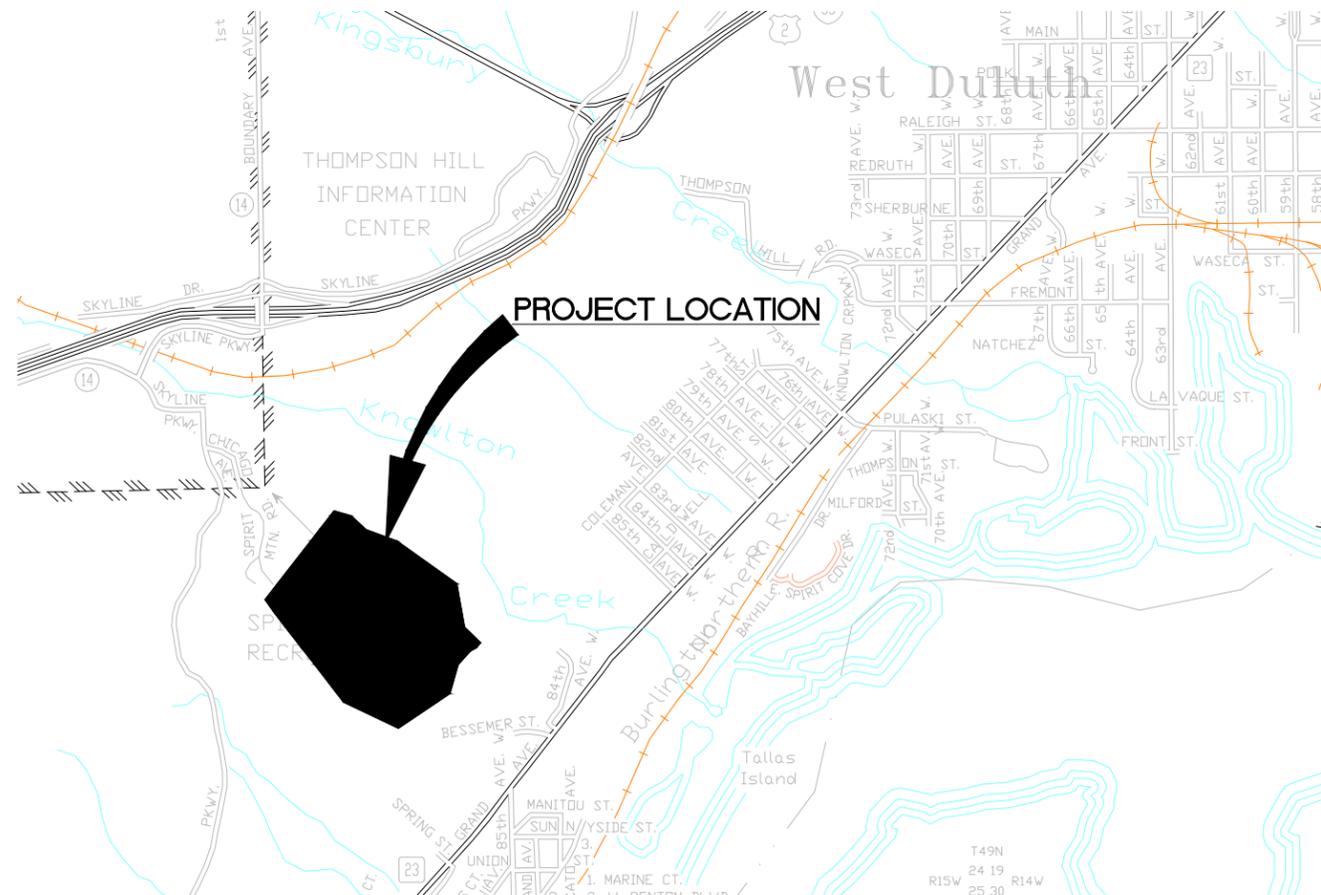
## CONSTRUCTION PLANS FOR INFRASTRUCTURE IMPROVEMENTS

### CONTRACT "C" ON-HILL IMPROVEMENTS

CLIENT PROJECT NO. 129137

#### LEGEND

	STREET CENTERLINE
	SURVEY BASELINE
	COUNTY SECTION
	QUARTER
	SIXTEENTH
	CORPORATE LIMITS
<b>EXISTING</b>	
	RIGHT OF WAY
	PERMANENT EASEMENT
	PROPERTY LINE
	R.R. RIGHT OF WAY
	SANITARY SEWER AND MANHOLE
	FORCE MAIN
	SANITARY SEWER SERVICE & CLEANOUT
	WATER MAIN, HYDRANT AND VALVE
	WATER SERVICE AND CURB STOP BOX
	WATER VALVE MANHOLE
	STORM SEWER, APRON, MANHOLE AND CATCH BASIN
	CULVERT
	BULKHEAD
	BURIED FIBER OPTIC CABLE
	BURIED FIBER OPTIC DUCT OR CONDUIT
	BURIED PHONE CABLE AND PEDESTAL
	BURIED PHONE DUCT OR CONDUIT AND MANHOLE
	BURIED TV CABLE AND PEDESTAL
	BURIED ELECTRIC CABLE
	BURIED ELECTRIC DUCT OR CONDUIT AND MANHOLE
	OVERHEAD ELECTRIC, POLE AND DOWN GUY ANCHOR
	LIGHT POLE
	TRAFFIC SIGNAL STANDARD
	GAS MAIN
	GAS SIGN, VALVE AND VENT
	PETROLEUM PIPELINE
	SOIL BORING
	TRAVERSE POINT
	CONCRETE CURB AND GUTTER
	EXISTING PAVEMENT OR SIDEWALK
	SIGN (HWY, PARK, STOP, ETC.)
	STREET NAME SIGN
	DITCH
	RAILROAD TRACKS
	FENCE (UNIDENTIFIED)
	BARBED WIRE FENCE
	CHAIN LINK FENCE
	ELECTRIC WIRE FENCE
	WOOD FENCE
	WOVEN WIRE FENCE
	PLATE BEAM GUARDRAIL
	CABLE GUARDRAIL
	DECIDUOUS AND CONIFEROUS TREE
	BUSH-SHRUB
	WOODED AREA
	WETLAND
	BUILDING
<b>PROPOSED</b>	
	NEW RIGHT OF WAY
	PERMANENT EASEMENT
	TEMPORARY EASEMENT
	SANITARY SEWER AND MANHOLE
	FORCE MAIN
	SANITARY SEWER SERVICE & CLEANOUT
	WATER MAIN, HYDRANT AND VALVE
	WATER SERVICE AND CURB STOP BOX
	WATER VALVE MANHOLE
	STORM SEWER, MANHOLE AND CATCH BASIN
	CULVERT
	BULKHEAD
	DRAIN PIPE
	DITCH
	CONCRETE CURB AND GUTTER
	SILT FENCE
	FLOATATION SILT CURTAIN
	BIOROLL
	LIGHT POLE
	TRAFFIC SIGNAL, STANDARD
	SIGN (HWY, PARK, STOP, ETC.)
	STREET LIGHT FEED POINT
	STREET LIGHTING CABLE



#### INDEX

SHEET NO.	DESCRIPTION
C1	TITLE SHEET
C2	OVERALL LAYOUT
C3	DETAILS
C4	SUPPLY LINE MAIN TO SHOP
C5	SUPPLY LINE SHOP TO VALVE PIT #8
C6	SUPPLY LINE SHOP TO VALVE PIT D
C7	HEADER LINE VALVE PIT #8 TO D
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M3	VALVE PIT 8 DETAILS
M4	VALVE PIT SHOP DETAILS
A1	VALVE PIT D SECTION VIEW
A2	VALVE PIT D SECTION VIEW
E9	VALVE PIT D DEMOLITION
E10	VALVE PIT D ELECTRICAL PLAN
E11	VALVE PIT D SCHEDULES AND RISERS
E12	VALVE PIT 8 ELECTRICAL PLAN
E13	VALVE PIT SHOP ELECTRICAL PLAN

THIS PLAN CONTAINS 18 SHEETS.

#### PROJECT LOCATION



#### DULUTH, MINNESOTA



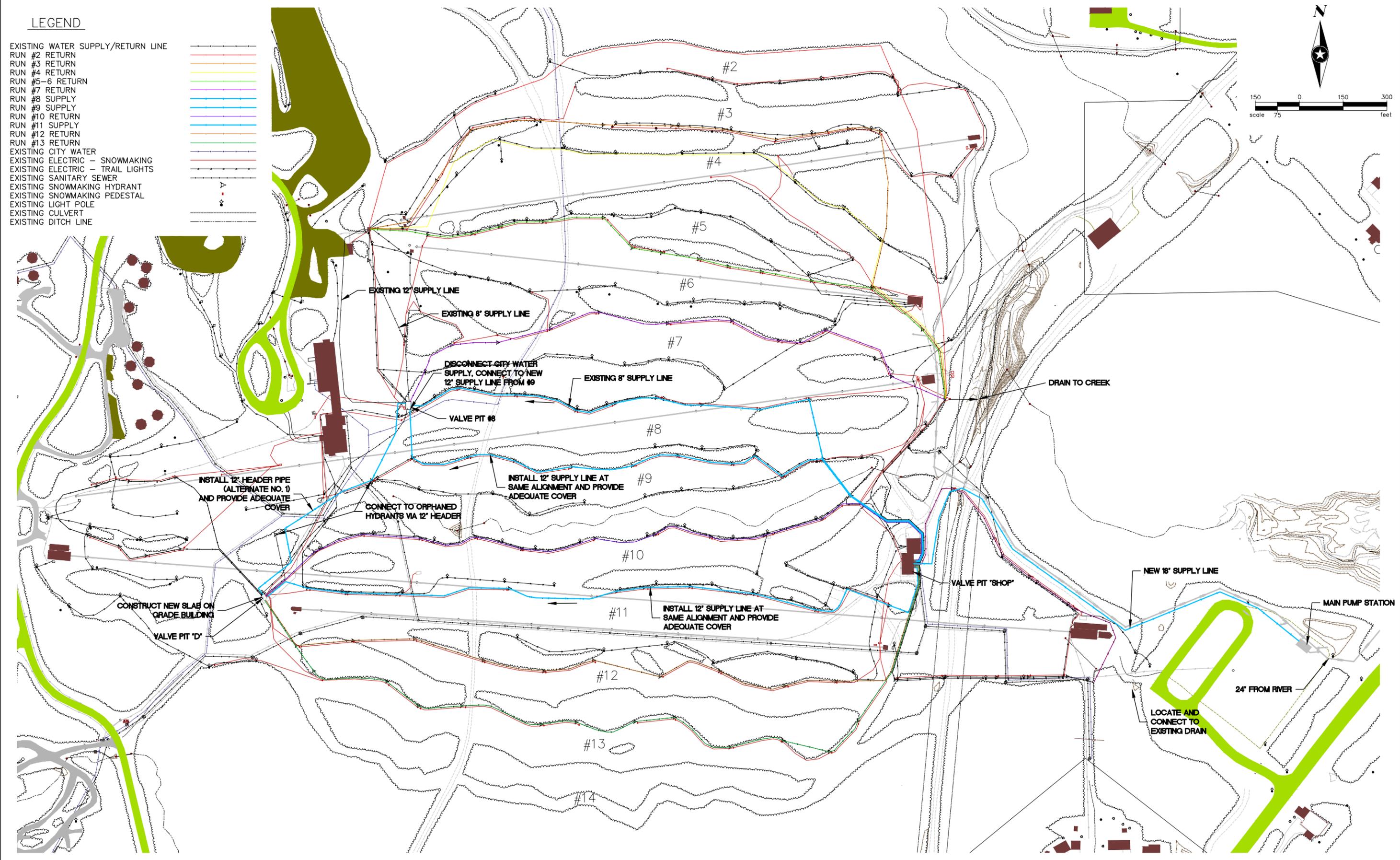
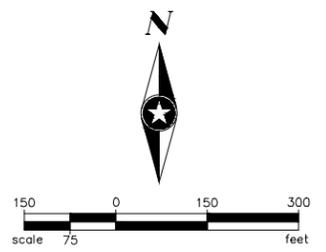
NOTE:  
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL CALL THE GOPHER STATE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		FILE NO.
	JEFFERY R. LEDIN P.E.	FOSJJ129137
Date: 10/17/2014	Lic. No. 25222	C1 18

**LEGEND**

- EXISTING WATER SUPPLY/RETURN LINE
- RUN #2 RETURN
- RUN #3 RETURN
- RUN #4 RETURN
- RUN #5-6 RETURN
- RUN #7 RETURN
- RUN #8 SUPPLY
- RUN #9 SUPPLY
- RUN #10 RETURN
- RUN #11 SUPPLY
- RUN #12 RETURN
- RUN #13 RETURN
- EXISTING CITY WATER
- EXISTING ELECTRIC - SNOWMAKING
- EXISTING ELECTRIC - TRAIL LIGHTS
- EXISTING SANITARY SEWER
- EXISTING SNOWMAKING HYDRANT
- EXISTING SNOWMAKING PEDESTAL
- EXISTING LIGHT POLE
- EXISTING CULVERT
- EXISTING DITCH LINE



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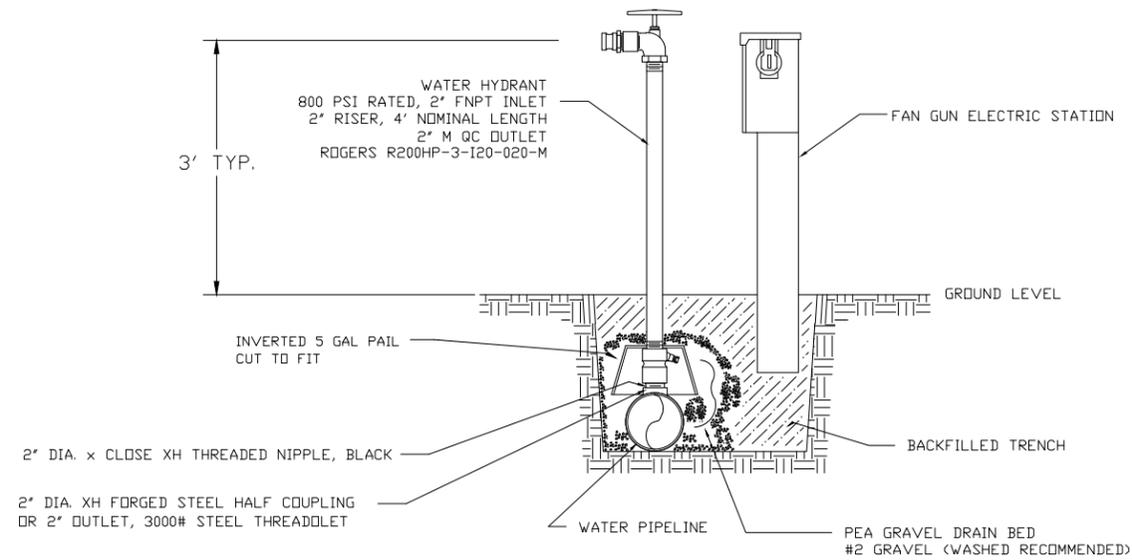
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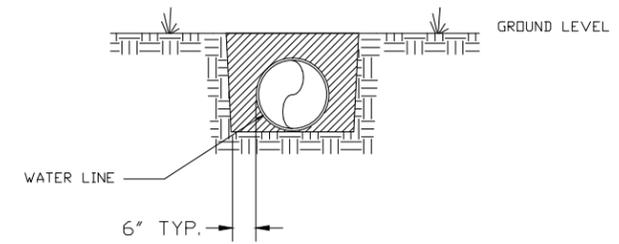
ON HILL IMPROVEMENTS  
 SPIRIT MOUNTAIN  
 DULUTH, MN

SKI RUN  
 OVERALL LAYOUT

FILE NO.  
 FOSJ129137  
**C2**  
**18**

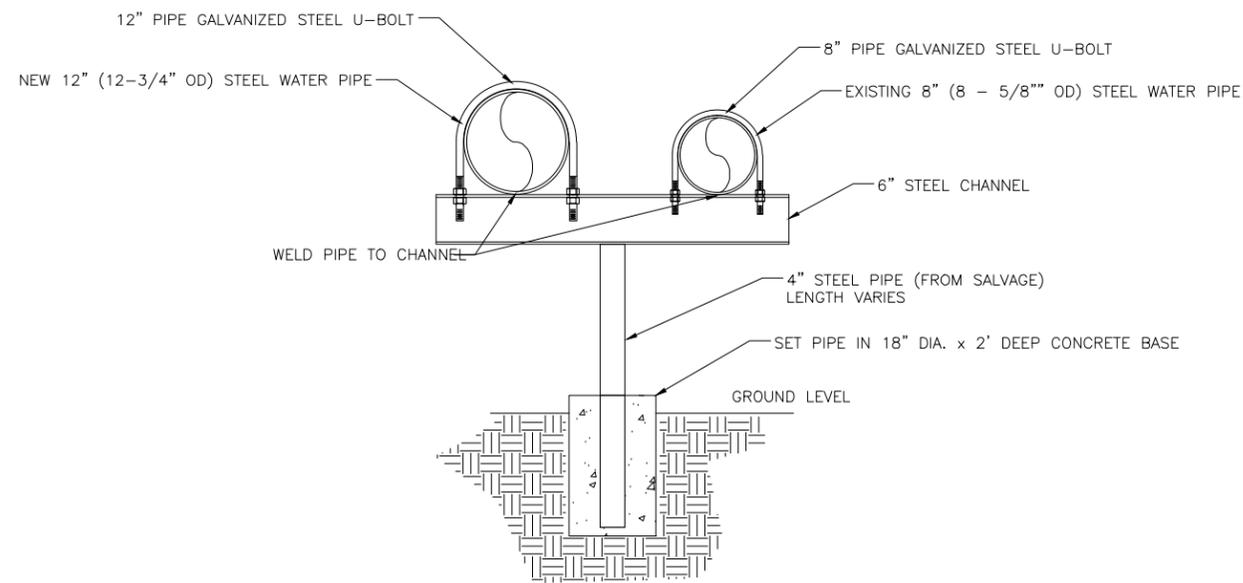


SHALLOW BURY HYDRANT AND FAN GUN STATION DETAIL - TYP.



SHALLOW BURY PIPELINE TRENCH CROSS SECTION - TYP.

NOTE: NO ROCKS LARGER THAN 3" IN TRENCH WHEN BACKFILLING.



ELEVATED PIPE SUPPORT  
20' MAXIMUM SPACING

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Date: 10/17/2014 Lic. No. 25222  
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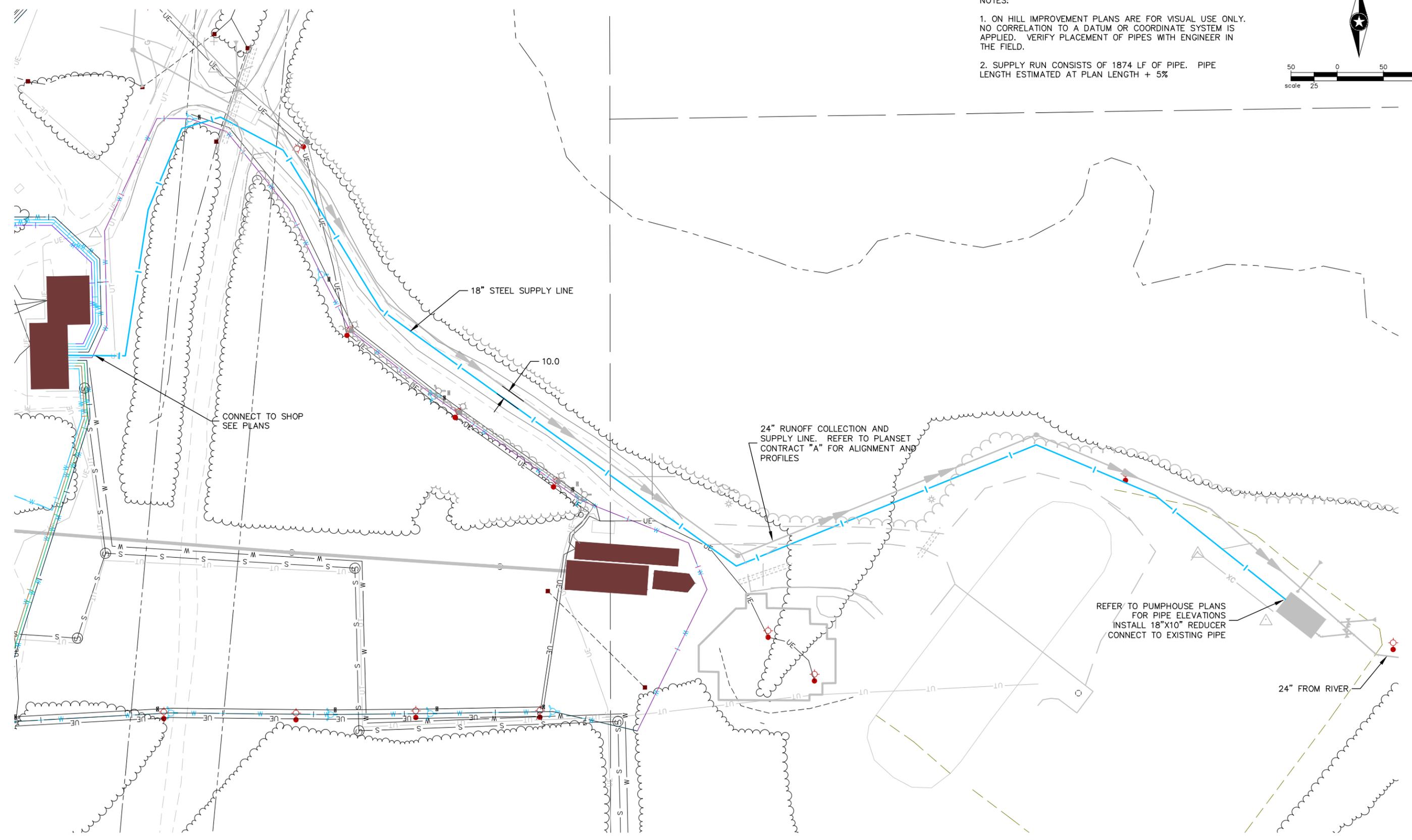
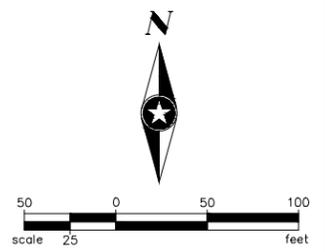
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SPIRIT MOUNTAIN  
DULUTH, MN

DETAILS

FILE NO.  
FOSJ129137

C3  
18

- NOTES:
- ON HILL IMPROVEMENT PLANS ARE FOR VISUAL USE ONLY. NO CORRELATION TO A DATUM OR COORDINATE SYSTEM IS APPLIED. VERIFY PLACEMENT OF PIPES WITH ENGINEER IN THE FIELD.
  - SUPPLY RUN CONSISTS OF 1874 LF OF PIPE. PIPE LENGTH ESTIMATED AT PLAN LENGTH + 5%



## 18" SUPPLY LINE FROM MAIN PUMPHOUSE TO SHOP

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				REVISIONS



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JEFFERY R. LEDIN, P.E.  
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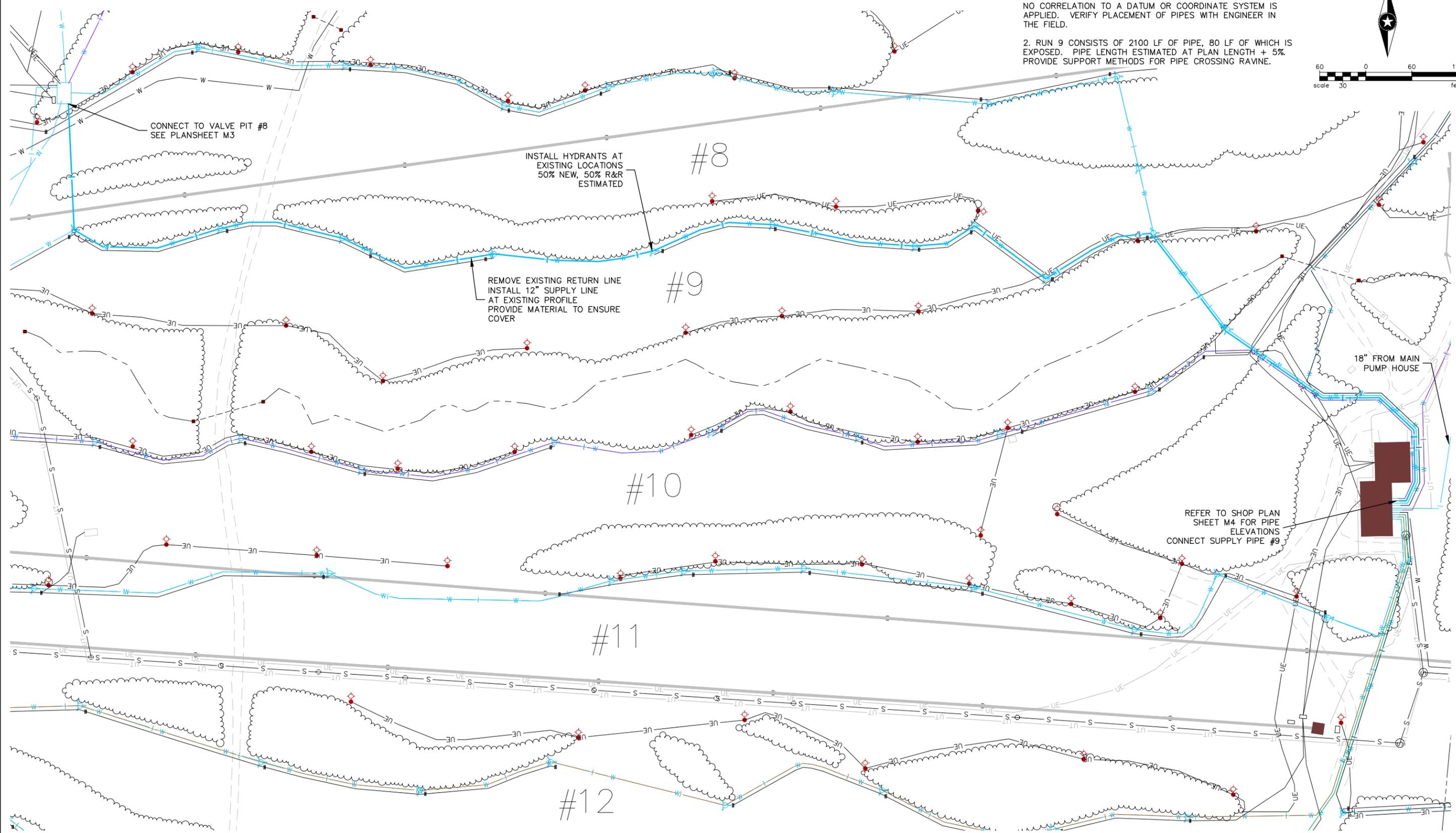
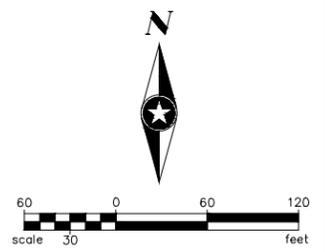
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SPIRIT MOUNTAIN  
DULUTH, MN

**SUPPLY LINE**  
MAIN PUMPHOUSE TO SHOP

FILE NO. **C4**  
FOSJ129137  
**18**

NOTES:

1. ON HILL IMPROVEMENT PLANS ARE FOR VISUAL USE ONLY. NO CORRELATION TO A DATUM OR COORDINATE SYSTEM IS APPLIED. VERIFY PLACEMENT OF PIPES WITH ENGINEER IN THE FIELD.
2. RUN 9 CONSISTS OF 2100 LF OF PIPE, 80 LF OF WHICH IS EXPOSED. PIPE LENGTH ESTIMATED AT PLAN LENGTH + 5%. PROVIDE SUPPORT METHODS FOR PIPE CROSSING RAVINE.



**12" SUPPLY LINE FROM SHOP TO VALVE PIT #8**

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 JEFFERY R. LEDIN, P.E.  
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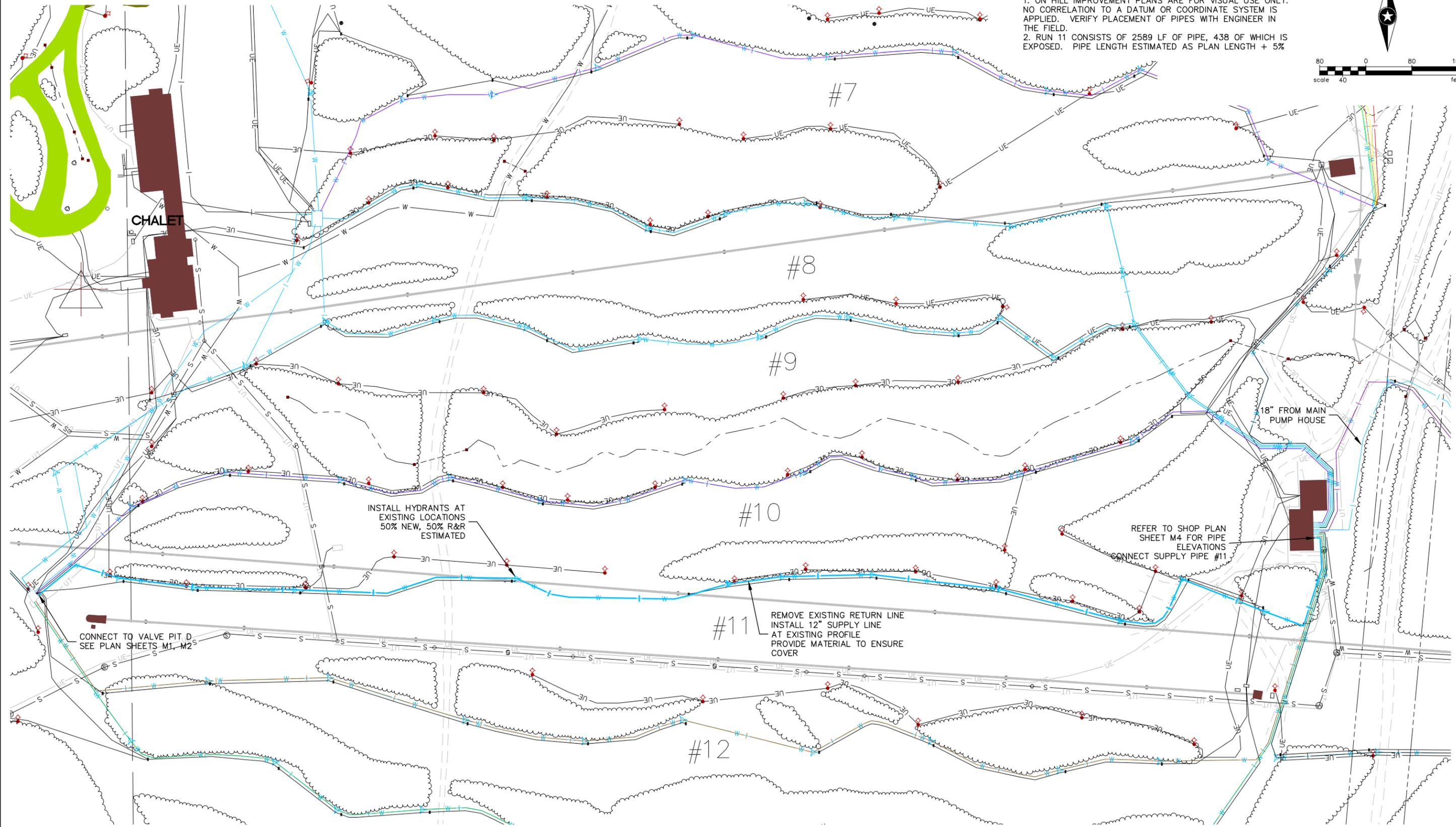
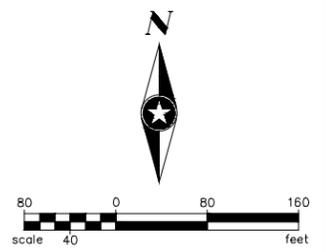
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 DULUTH, MN

**SUPPLY LINE**  
 SHOP TO VALVE PIT #8  
 RUN #9

FILE NO.  
 FOSJ129137

**C5**  
**18**

NOTES:  
 1. ON HILL IMPROVEMENT PLANS ARE FOR VISUAL USE ONLY. NO CORRELATION TO A DATUM OR COORDINATE SYSTEM IS APPLIED. VERIFY PLACEMENT OF PIPES WITH ENGINEER IN THE FIELD.  
 2. RUN 11 CONSISTS OF 2589 LF OF PIPE, 438 OF WHICH IS EXPOSED. PIPE LENGTH ESTIMATED AS PLAN LENGTH + 5%



INSTALL HYDRANTS AT EXISTING LOCATIONS  
 50% NEW, 50% R&R  
 ESTIMATED

REFER TO SHOP PLAN SHEET M4 FOR PIPE ELEVATIONS  
 CONNECT SUPPLY PIPE #11

REMOVE EXISTING RETURN LINE  
 INSTALL 12" SUPPLY LINE  
 AT EXISTING PROFILE  
 PROVIDE MATERIAL TO ENSURE COVER

CONNECT TO VALVE PIT D  
 SEE PLAN SHEETS M1, M2

### 12" SUPPLY LINE FROM SHOP TO VALVE PIT D

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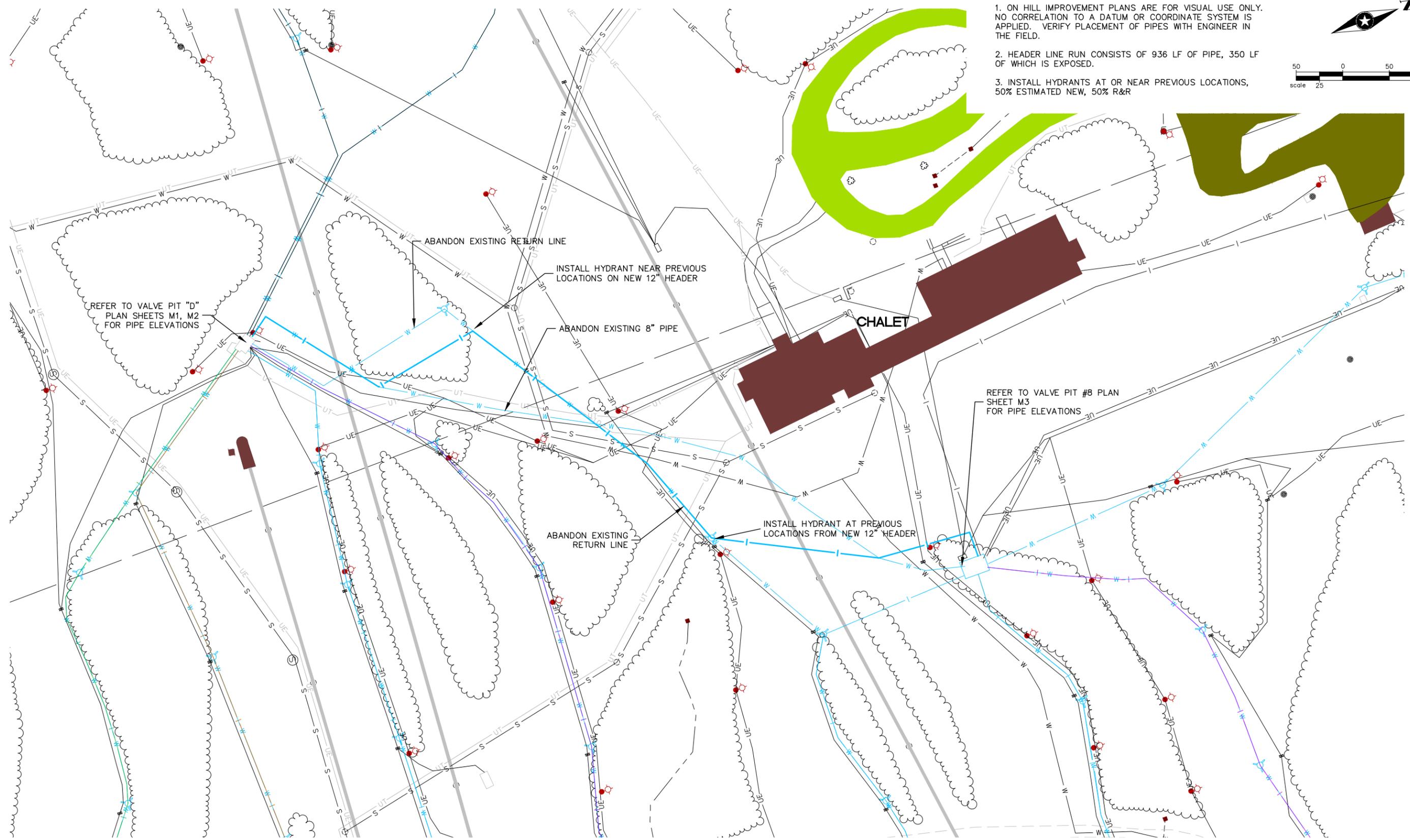
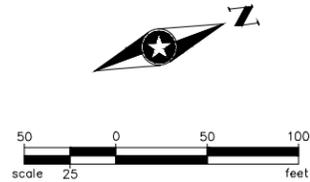
SUPPLY LINE  
 SHOP TO VALVE PIT D  
 RUN #11

FILE NO.  
 FOSJ129137

C6  
 18

NOTES:

1. ON HILL IMPROVEMENT PLANS ARE FOR VISUAL USE ONLY. NO CORRELATION TO A DATUM OR COORDINATE SYSTEM IS APPLIED. VERIFY PLACEMENT OF PIPES WITH ENGINEER IN THE FIELD.
2. HEADER LINE RUN CONSISTS OF 936 LF OF PIPE, 350 LF OF WHICH IS EXPOSED.
3. INSTALL HYDRANTS AT OR NEAR PREVIOUS LOCATIONS, 50% ESTIMATED NEW, 50% R&R



12" HEADER LINE FROM VALVE PIT #8 TO VALVE PIT D (ALTERNATE #1)

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 Date: 10/17/2014  
 Lic. No. 25222  
 JEFFERY R. LEDIN, P.E.



ON HILL IMPROVEMENTS  
 SPIRIT MOUNTAIN  
 DULUTH, MN

HEADER LINE  
 VALVE PIT #8 TO VALVE PIT D

FILE NO.  
 FOSJ129137

C7  
 18

VALVE AND FITTINGS LIST

ITEM	DESCRIPTION	MODEL/ENGINEERING DATA	QTY
1.00	Isolation Valve: 12" 300# wafer butterfly valve with gear operator.	Bray Series 42-466 12" 300# CS body, 316ss disc, 17-4 shaft, RTFE seat, TFE packing, Glass backed TFE bearing, Gear Operator	2
1.10	Stud And Nut Set	B7, Zinc Plated Stud with 2 Nuts, 1-1/8"x11"	32
1.20	Spiral Wound Gasket	12" 300# Steel / Chlorite / Graphite	4
1.30	Flange:	Slip on flange, raised face standard bore A105 12" 300#	2
1.40	Flange:	Weld neck flange, raised face standard bore A105 12" 300#	2
2.00	Isolation Valve: 6" 300# wafer butterfly valve with gear operator.	Bray Series 42-466 6" 300# CS body, 316ss disc, 17-4 shaft, RTFE seat, TFE packing, Glass backed TFE bearing, Gear Operator	4
2.10	Stud And Nut Set	B7, Zinc Plated Stud with 2 Nuts 3/4"x7-1/2"	48
2.20	Spiral Wound Gasket	6" 300# Steel / Chlorite / Graphite	8
2.30	Flange:	Slip on flange, raised face standard bore A105 6" 300#	8
3.00	Gate Valve: 2" 300# Gate valve	2" 300# Bonney gate valve 3-11-RF, CS body, OS&Y Gate Valve FE T 8 P. GRF HW	2
3.10	300# Flange Stud Set	B7, Zinc Plated Stud with 2 Nuts 5/8"x4-1/4"	16
3.20	Spiral Wound Gasket	2" 300# Steel / Chlorite / Graphite	4
3.30	Flange:	Slip on flange, raised face standard bore A105 2" 300#	6
3.50	Check Valve: 2" 300# wafer Check valve	Gulf 2ME30-2021-SR, Wafer style, Double disc, CS body and disc, 316SS shaft and spring, Buna-N seat	1
3.51	Stud And Nut Set	2474-0269 B7, Zinc Plated Stud with 2 Nuts 5/8"x6-1/2"	8
3.52	Spiral Wound Gasket	2511-0133 2" 300# Steel / Chlorite / Graphite	2
4.00	Weld Tee:	12" Tee Standard wall, bevel end, A234	2
5.00	Weld Elbow: 12" Long radius 90°	12" 90 Standard wall, bevel end, long radius A234	2
5.10	Weld Elbow: 12" Short radius 90°	12" 90 Standard wall, bevel end, Short radius A234	2
5.20	Weld Reducer, Concentric:	12x8 Reducer - Concentric Standard wall, bevel end, A234	1
6.00	Weld Elbow: 6" Long radius 90°	6" 90 Standard wall, bevel end, long radius A234	9
7.00	Weld Elbow: 4" Long radius 90°	4" 90 Standard wall, bevel end, long radius A234	2
8.00	Weld Elbow: 2" Long radius 90°	2" 90 Standard wall, bevel end, long radius A234	1
8.10	Weld Tee:	2" Tee Standard wall, bevel end, A234	1
9.00	Weld Reducer, Concentric:	12x6 Reducer - Concentric Standard wall, bevel end, A234	2
10.00	Weld Reducer, Concentric:	4x2 Reducer - Concentric Standard wall, bevel end, A234	1
11.00	Thread-O-Let:	36-3/4x1/2, A105 TOL	2
11.10	Plug:	1/2" NPT, Forged Steel, SA105 Galvanized Plug	2
12.00	Steel Pipe: 12" (12-3/4" OD)	12"(12-3/4" OD) x 0.312" wall minimum, BLK CS, ERW PIPE API-5L / ASTM A 53, GRADE X-42	As Req'd.
13.00	Steel Pipe: 6" (6-5/8" OD)	6"-STD-BLK CS ERW PIPE, ASTM A 53, GRADE B 0.280" Wall	As Req'd.
14.00	Steel Pipe: 4" (4-1/2" OD)	4"-STD-BLK CS ERW PIPE, ASTM A 53, GRADE B 0.237" Wall	As Req'd.
15.00	Steel Pipe: 2" (2-3/8" OD)	2"-XH-BLK CS ERW PIPE, ASTM A 53, GRADE B 0.218" Wall	As Req'd.

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

**PLAN VIEW**  
SCALE: 1/2" = 1'-0"

DOWNHILL

NOTE: ALL PIPING, VALVES, AND FITTINGS ARE ANSI CLASS 300 RATED

NOTE 1:  
SUPPLY PIPING AND BENDS TO MAKE CONNECTIONS OUTSIDE OF FOUNDATION WALL TO EXISTING OR NEW PIPE LINES

TRAIL #13 EXISTING 6" Ø  
TRAIL #12 EXISTING 6" Ø  
TRAIL #11 NEW 12" Ø (REPLACEMENT)  
TRAIL #10 EXISTING 6" Ø  
TRAIL #9 OLD #9 RETURN CUT AND ABANDON  
TRAIL #17 6" Ø  
TRAIL #18 4" Ø  
EXISTING 8" Ø OR OPTIONAL NEW REPLACEMENT 12" Ø TO / FROM VALVE STATION 8  
#17 SUPPLY (6")  
#18 RETURN (6")  
OLD 8" HEADER OR NEW 12" HEADER

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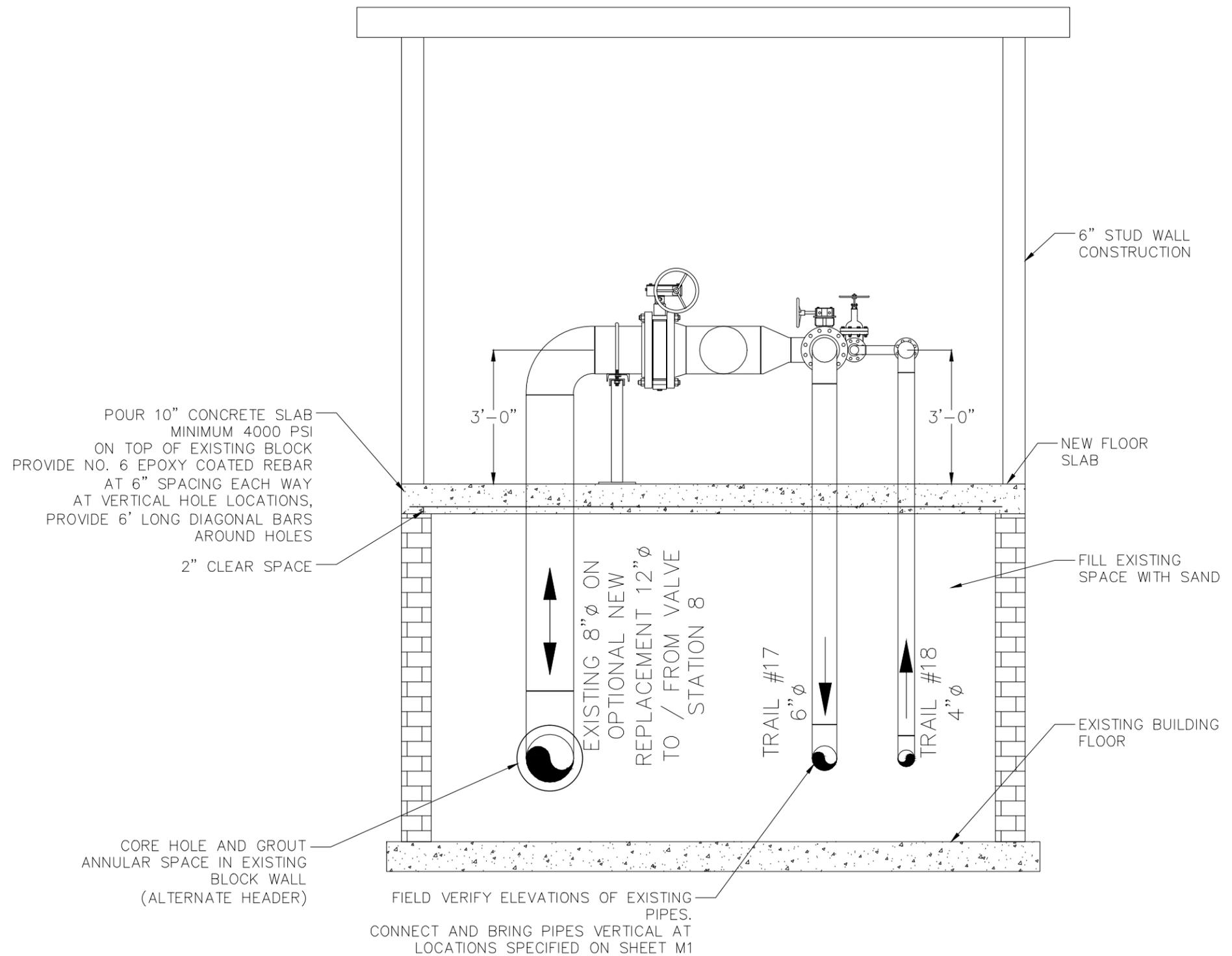
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ON HILL IMPROVEMENTS  
SPIRIT MOUNTAIN  
DULUTH, MN



VALVE PIT D  
PLAN VIEW  
FILE NO.  
FOSJ129137  
M1  
18

P:\FJ\JOCON\106141\50-Cod\on hill improvements\VP.dwg 10/15/2014 12:30 PM rheeh



POUR 10" CONCRETE SLAB  
MINIMUM 4000 PSI  
ON TOP OF EXISTING BLOCK  
PROVIDE NO. 6 EPOXY COATED REBAR  
AT 6" SPACING EACH WAY  
AT VERTICAL HOLE LOCATIONS,  
PROVIDE 6' LONG DIAGONAL BARS  
AROUND HOLES  
2" CLEAR SPACE

6" STUD WALL  
CONSTRUCTION

NEW FLOOR  
SLAB

FILL EXISTING  
SPACE WITH SAND

EXISTING BUILDING  
FLOOR

CORE HOLE AND GROUT  
ANNULAR SPACE IN EXISTING  
BLOCK WALL  
(ALTERNATE HEADER)

FIELD VERIFY ELEVATIONS OF EXISTING  
PIPES.  
CONNECT AND BRING PIPES VERTICAL AT  
LOCATIONS SPECIFIED ON SHEET M1

**SECTION A-A**

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

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**TORRENT** Engineering and Equipment  
P.O. BOX 270 MILFORD, IN 46542 USA  
Phone: (574)-658-3200 Fax: (574)-658-3229 www.torrentee.com

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DESIGNER: RVH				
CHECKED BY: JRL				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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& JOHNSON, INC.  
PROFESSIONAL ENGINEERS

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*Jeffery R. Ledin*  
JEFFERY R. LEDIN, P.E.  
Date: 10/17/2014 Lic. No. 25222

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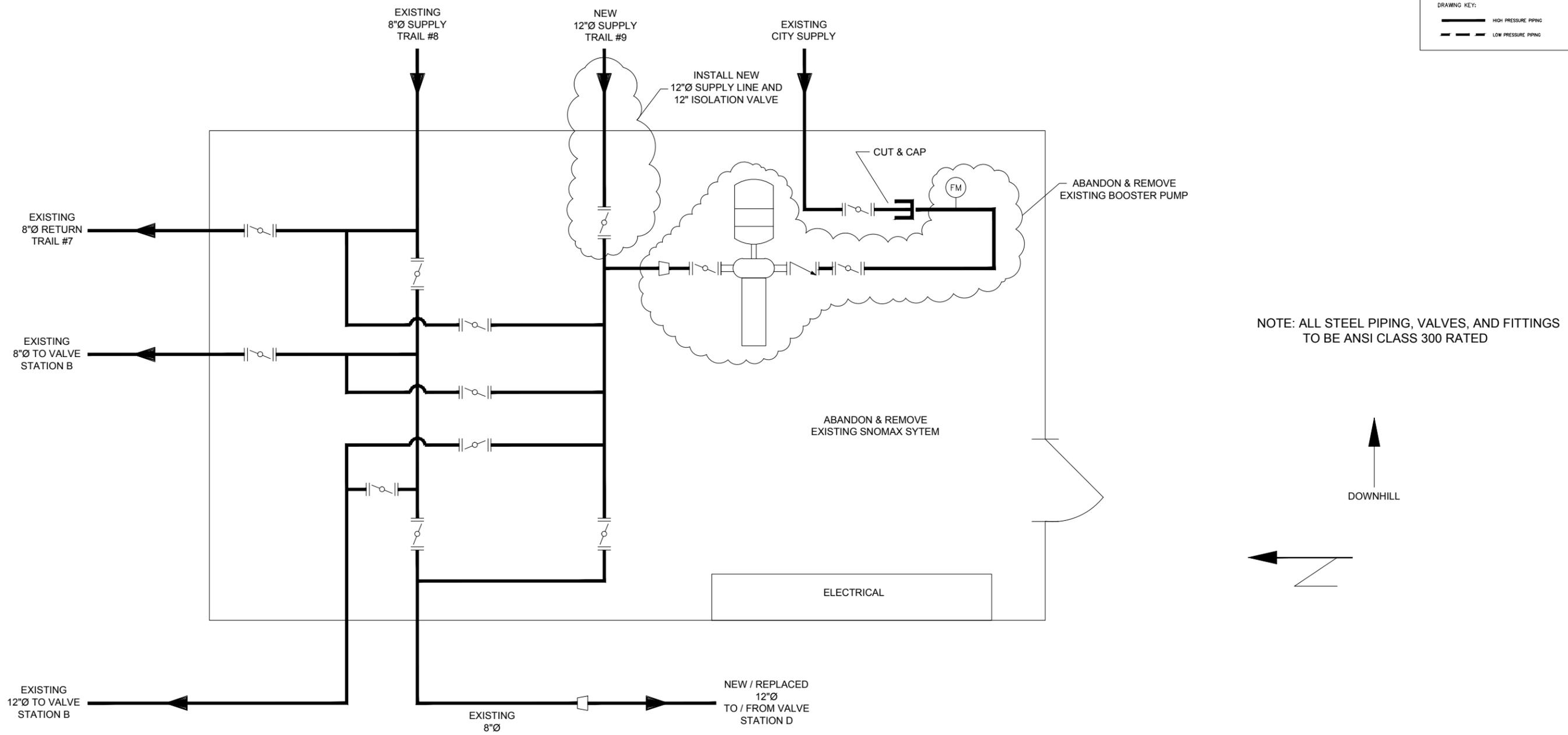
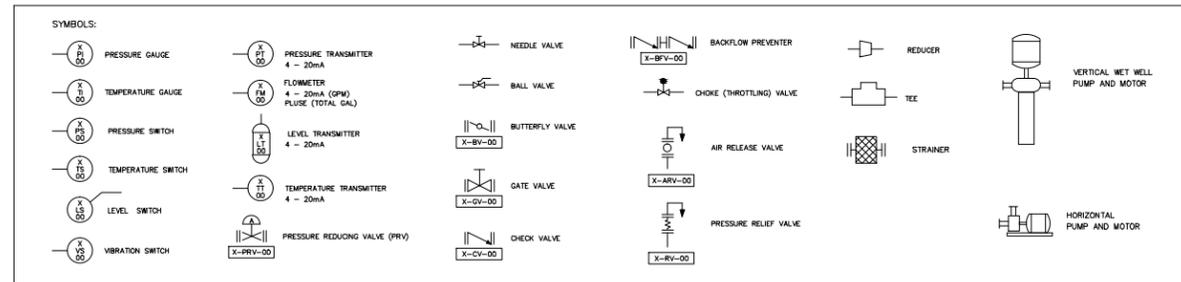
ON HILL IMPROVEMENTS  
SPIRIT MOUNTAIN  
DULUTH, MN

VALVE PIT D

FILE NO.  
FOSJJ129137  
**M2**  
18

SCOPE -

- (1) NEW 12" (TRAIL #9)
- CAP EXISTING CITY SUPPLY & REMOVE BOOSTER PUMP
- ALTERNATE - UPGRADE EXISTING 8"Ø TO VALVE STATION D TO 12"Ø



NOTE: ALL STEEL PIPING, VALVES, AND FITTINGS TO BE ANSI CLASS 300 RATED



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DESIGNER: RVH				
CHECKED BY: JRL				
DESIGN TEAM	NO.	BY	DATE	REVISIONS



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*Jeffery R. Ledin*  
JEFFERY R. LEDIN, P.E.  
Date: 10/17/2014 Lic. No. 25222



ON HILL IMPROVEMENTS  
SPIRIT MOUNTAIN  
DULUTH, MN

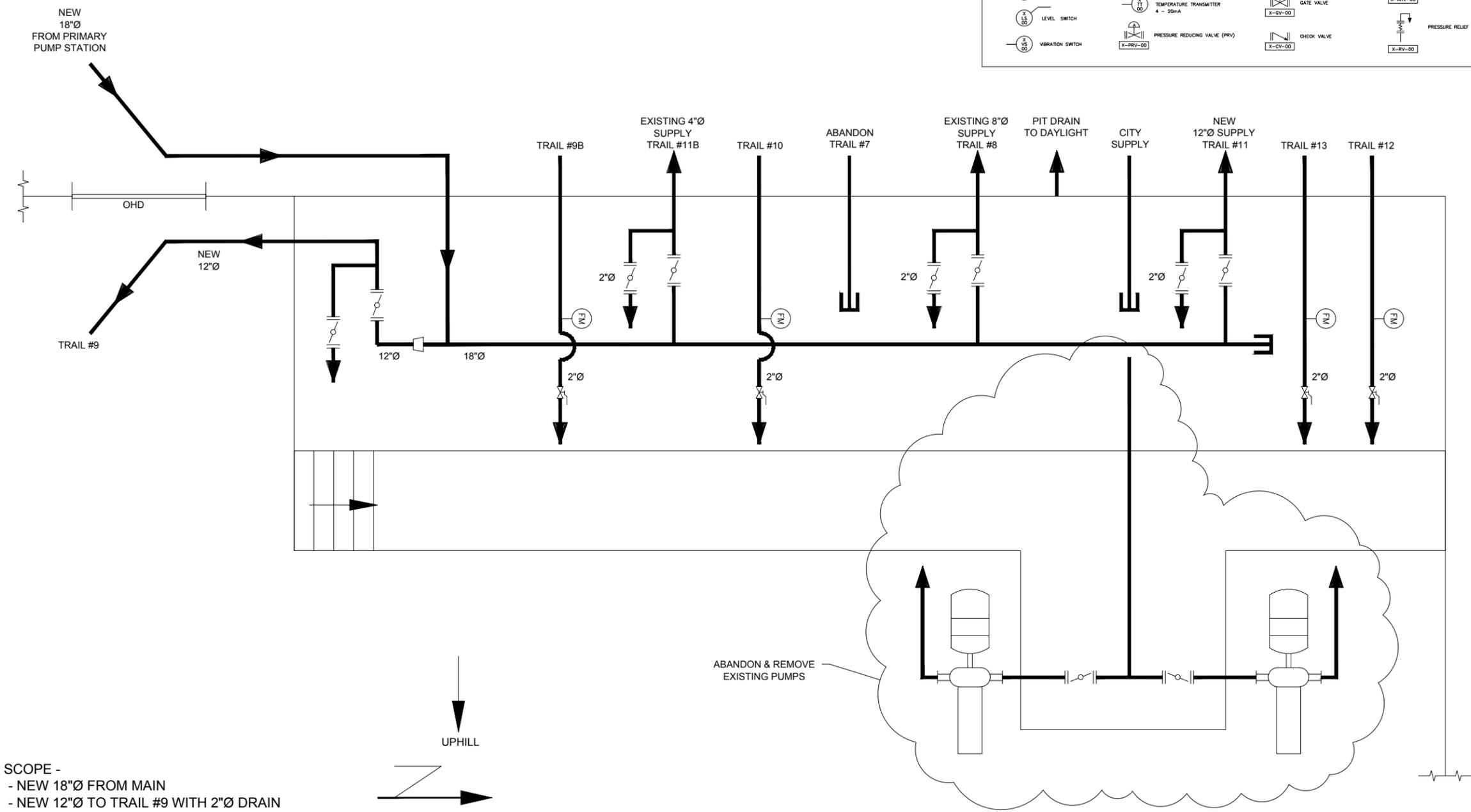
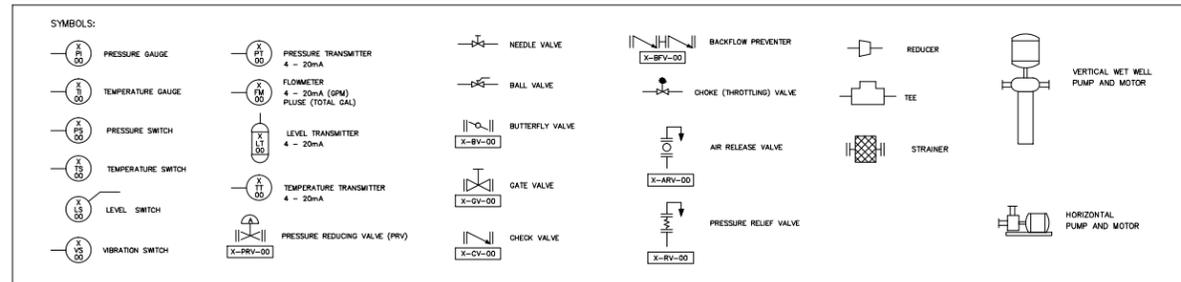
VALVE PIT #8

FILE NO. FOSJ129137  
M3  
18

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**TORRENT** Engineering and Equipment

P.O. BOX 270 MILFORD, IN 46542 USA  
Phone: (574)-658-3200 Fax: (574)-658-3229 www.torrentee.com



- SCOPE -**
- NEW 18"Ø FROM MAIN
  - NEW 12"Ø TO TRAIL #9 WITH 2"Ø DRAIN
  - CAP/ABANDON TRAIL #7 PIPING
  - NEW 12"Ø TO TRAIL #11
  - REWORK INSIDE PIPING AS REQ'D
  - CAP CITY SUPPLY AND REMOVE PUMPS

NOTE: ALL STEEL PIPING, VALVES, AND FITTINGS TO BE ANSI CLASS 300 RATED

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P:\FJ\J\JOCON\106141\50-Cod\on hill improvements\VP\_SHOP.dwg 10/15/2014 12:37 PM rhaehn

DRAWN BY: RVH				
DESIGNER: RVH				
CHECKED BY: JRL				
DESIGN TEAM	NO.	BY	DATE	REVISIONS



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*Jeffery R. Ledin*  
 JEFFERY R. LEDIN, P.E.  
 Date: 10/17/2014      Lic. No. 25222



ON HILL IMPROVEMENTS  
 SPIRIT MOUNTAIN  
 DULUTH, MN

VALVE PIT SHOP

FILE NO. FOSJJ129137

M4  
18

**CODE SUMMARY**

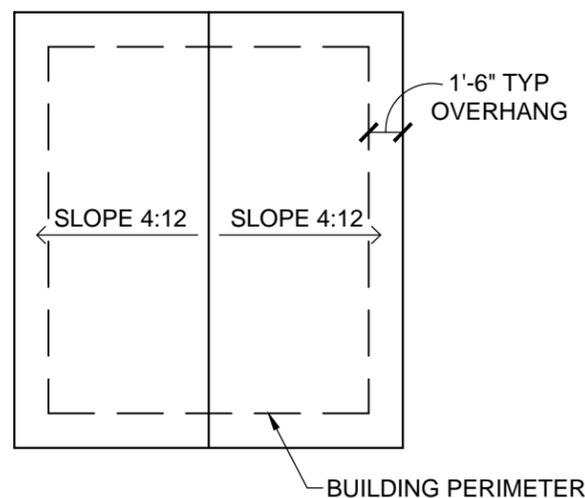
CODES USED:	2006 INTERNATIONAL BUILDING CODE (IBC) 2007 MINNESOTA STATE BUILDING CODE (MSBC): CHAPTER 1305
OCCUPANCY:	GROUP U UTILITY AND MISCELLANEOUS (PUMP SHED)
CONSTRUCTION:	TYPE VB
ALLOWABLE AREA:	TABLE 503 TABULAR (U): FRONTAGE: 5,500 SF SPRINKLER: NA MULTI-STORY TOTAL: 1 5,500 SF
ACTUAL AREA:	GROUP U MAIN FLOOR: 224 SF
MIXED OCCUPANCY:	TABLE 508.3 NOT APPLICABLE
OCCUPANCY SEPARATION:	TABLE 508.3.3 NOT APPLICABLE
ALLOWABLE HEIGHT:	TABLE 503 TABULAR (U) SPRINKLER: 1 STORY / 40 FEET TOTAL: NA 1 STORY / 40 FEET
ACTUAL HEIGHT:	1 STORY < 40 FEET
AUTOMATIC FIRE PROTECTION:	SECTION 903 NOT REQUIRED
FIRE RESISTIVE REQUIREMENTS:	TABLE 601 BUILDING ELEMENTS
	STRUCTURAL FRAME: 0 HOUR BEARING WALLS (EXT): 0 HOUR BEARING WALLS (INT): 0 HOUR NONBEARING WALLS (EXT): TABLE 602 NONBEARING WALLS (INT): 0 HOUR FLOOR CONSTRUCTION: 0 HOUR ROOF CONSTRUCTION: 0 HOUR
	TABLE 602 EXTERIOR WALLS
	<5 FEET: 1 HOUR 5 FEET TO < 10 FEET: 1 HOUR 10 FEET TO < 30 FEET: 1 HOUR > 30 FEET: 0 HOUR
	SECTION 707.4 SHAFT ENCLOSURES: NOT APPLICABLE
EXTERIOR WALL OPENINGS:	TABLE 704.8 UNPROTECTED:
	<3 FEET: NOT PERMITTED >3 FEET TO 5 FEET: NOT PERMITTED >5 FEET TO 10 FEET: 10% >10 FEET TO 15 FEET: 15% >15 FEET TO 20 FEET: 25% >20 FEET TO 25 FEET: 45% >25 FEET TO 30 FEET: 70% >30 FEET: UNLIMITED
	PROTECTED: NOT APPLICABLE
INTERIOR FINISH REQUIREMENTS:	TABLE 803.5 EXIT ENCLOSURES AND EXIT PASSAGEWAYS: NO RESTRICTIONS CORRIDORS: NO RESTRICTIONS ROOMS AND ENCLOSED SPACES: NO RESTRICTIONS

**PROJECT REQUIREMENTS:**

OCCUPANT LOAD:	TABLE 1004.1.1 EQUIPMENT ROOM - 224 SF / 300 OCF	1 OCCUPANTS
EXIT ACCESS TRAVEL DISTANCE:	TABLE 1016.1 GROUP U WITHOUT SPRINKLER	MAXIMUM 300 FT
BUILDINGS WITH ONE EXIT:	TABLE 1019.2 GROUP U 1 STORY	MAXIMUM 49 OCCUPANTS AND 75 FEET TRAVEL DISTANCE
SANITATION REQUIREMENTS	TABLE 2902.1	NOT REQUIRED

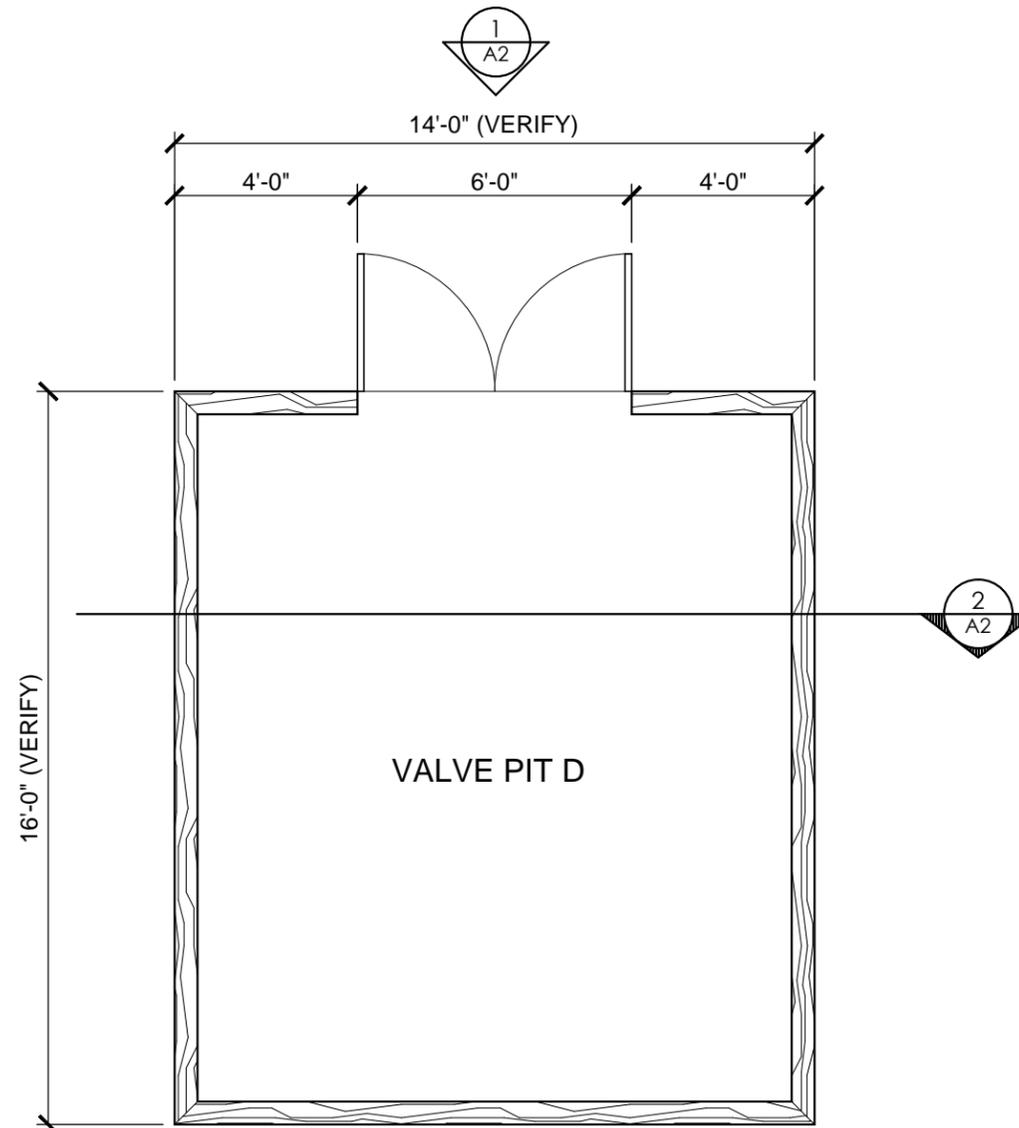
**COMMENTS:**

1. PROJECT SCOPE INCLUDES CONSTRUCTION OF NEW PUMP SHED ON EXISTING FOUNDATION AND FOOTING.
2. NO CHANGE OF USE.
3. SPECIAL INSPECTIONS NOT REQUIRED.
4. WLSSD CAF FEES NOT REQUIRED.
5. UNIFIED DEVELOPMENT CODE CHAPTER 50 REQUIREMENTS NOT APPLICABLE, NO CHANGE OF USE.



**ROOF PLAN**

1/4"=1'-0"



**FLOOR PLAN**

1/4"=1'-0"



**CALZO**  
architects

SCALZO ARCHITECTS, LTD.  
1901 South Street  
Duluth, Minnesota 55812  
Tele: 218.722.4319  
Fax: 218.722.3535

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*William B. Scalzo*

WILLIAM B. SCALZO  
DATE: OCTOBER 20, 2014  
LICENSE NO: 18130

PROJECT:  
**ON HILL IMPROVEMENTS**  
SPIRIT MOUNTAIN  
9500 SPIRIT MOUNTAIN PL  
DULUTH, MINNESOTA 55810

FLOOR PLAN  
ROOF PLAN  
CODE SUMMARY

REVISIONS:

DATE: OCTOBER 20, 2014  
DRAWN: TJB  
CHECKED: WBS  
PROJECT: 1455

0 1"  
FULL SCALE

SHEET NO.  
**A1**

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*William B. Scalzo*

WILLIAM B. SCALZO

DATE: OCTOBER 20, 2014

LICENSE NO: 18130

PROJECT:  
**ON HILL IMPROVEMENTS**  
SPIRIT MOUNTAIN  
9500 SPIRIT MOUNTAIN PL  
DULUTH, MINNESOTA 55810

ELEVATION  
SECTION

REVISIONS:

DATE: OCTOBER 20, 2014

DRAWN: TJB

CHECKED: WBS

PROJECT: 1455

0 1"

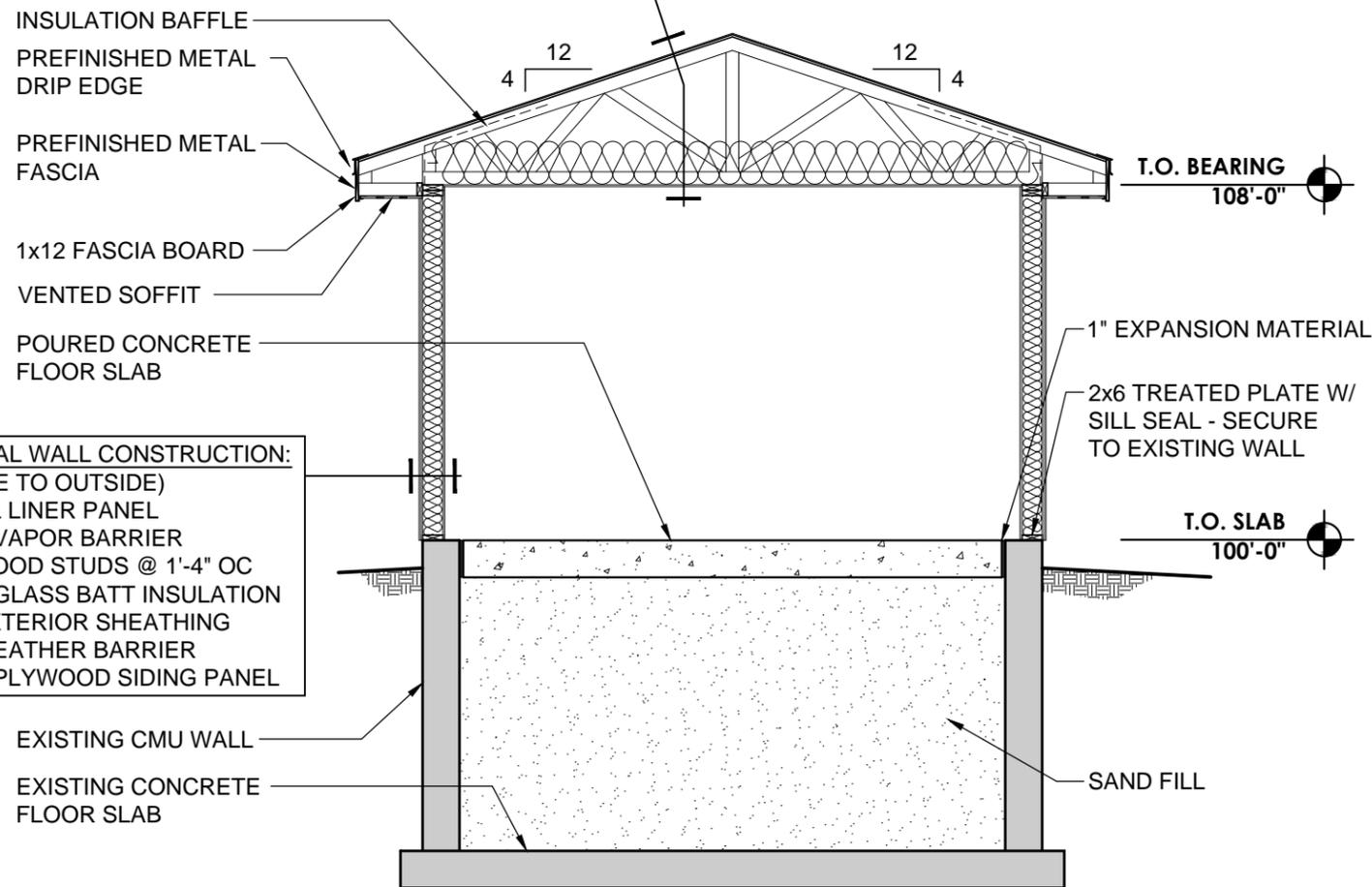
FULL SCALE

SHEET NO.

**A2**

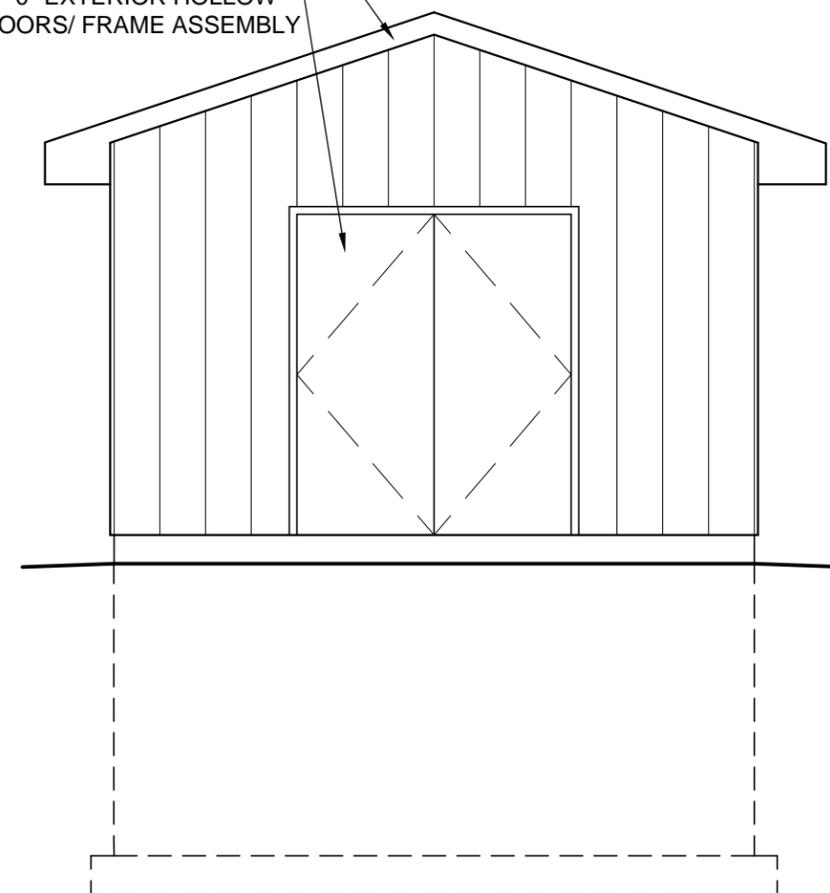
**TYPICAL ROOF / CEILING CONSTRUCTION:**  
(INSIDE TO OUTSIDE)  
METAL LINER PANEL  
6 MIL POLY VAPOR BARRIER  
PRE-ENGINEERED ROOF TRUSS W/ 1'-0" ENERGY HEAL  
12" BATT INSULATION  
1/2" ROOF SHEATHING  
ICE AND WATER SHIELD  
ASPHALT SHINGLES

**TYPICAL WALL CONSTRUCTION:**  
(INSIDE TO OUTSIDE)  
METAL LINER PANEL  
POLY VAPOR BARRIER  
2x6 WOOD STUDS @ 1'-4" OC  
FIBERGLASS BATT INSULATION  
1/2" EXTERIOR SHEATHING  
AIR/WEATHER BARRIER  
T1-11 PLYWOOD SIDING PANEL



2  
A2  
**SECTION**  
1/4"=1'-0"

PREFINISHED METAL FASCIA  
(2) 3'-0"x7'-0" EXTERIOR HOLLOW METAL DOORS/ FRAME ASSEMBLY



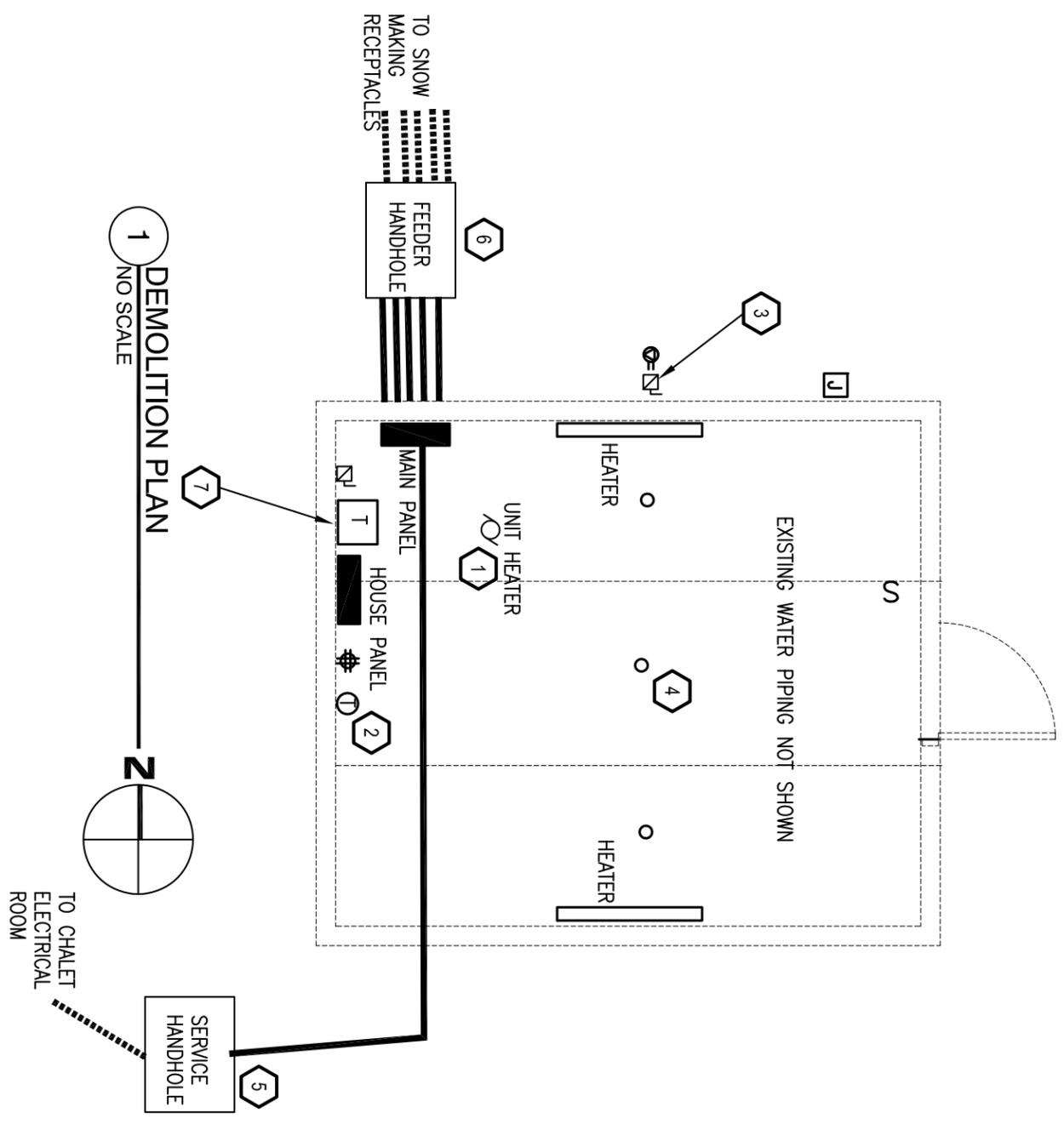
1  
A2  
**ELEVATION**  
1/4"=1'-0"

**Keyed Notes:** 

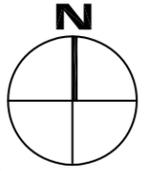
1. RELOCATE EXISTING UNIT HEATER TO NEW BUILDING.
2. RELOCATE EXISTING THERMOSTAT TO NEW BUILDING.
3. REMOVE FUSED SWITCH. RELOCATE 100 AMP RECEPTACLE TO NEW BUILDING.
4. REMOVE EXISTING LUMINAIRES AND SWITCHING.
5. PROVIDE HANDHOLE AND CAPTURE INCOMING FEEDER FROM CHALET.
6. PROVIDE HANDHOLE AND CAPTURE FEEDERS TO SNOW MAKING EQUIPMENT.
7. RELOCATE EXISTING TRANSFORMER TO NEW BUILDING.

**General Electrical Demolition Notes:**

- A. CONTRACTOR SHALL VISIT SITE.
- B. REMOVE ELECTRICAL FROM WALLS, CEILINGS, AND FLOORS BEING REMOVED.
- C. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL EQUIPMENT TO BE REMOVED AND REMOVE ASSOCIATED ELECTRICAL.
- D. REMOVE ALL ABANDONED CONDUCTORS.
- E. REMOVE UNUSED CONDUITS AND BOXES.
- F. ELECTRICAL SHOWN AS BOLD SHALL BE REMOVED. ELECTRICAL SHOWN LIGHT AND/OR DASHED TO REMAIN.



**1** DEMOLITION PLAN  
NO SCALE



TO CHALET  
ELECTRICAL  
ROOM



**FOSTER, JACOBS,  
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345 CANAL PARK DRIVE  
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(218) 722-2960  
FAX (218) 722-1931  
Email: mjk@fjic.com

Project Name:  
**SPIRIT MOUNTAIN  
CONTRACT "C"  
HILL IMPROVEMENTS**

Project Location:  
**SPIRIT MOUNTAIN  
Duluth, Minnesota**

Phase:

**BIDDING**

MARK	DATE	DESCRIPTION

LINE IS ONE INCH  
AT FULL SIZE  
(IF NOT 1" = SCALE ACCORDINGLY)

Issue Date: 10/22/14  
Project No.: S-14005  
Filename: S14005-E9.dwg  
Drawn By: TRL  
Checked By: TRL

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*Terence R. Larson*  
Terence R. Larson  
Reg. No. 17136  
Date: October 22, 2014

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Sheet Title:  
**Valve House D  
Electrical  
Demolition**

Sheet Number:

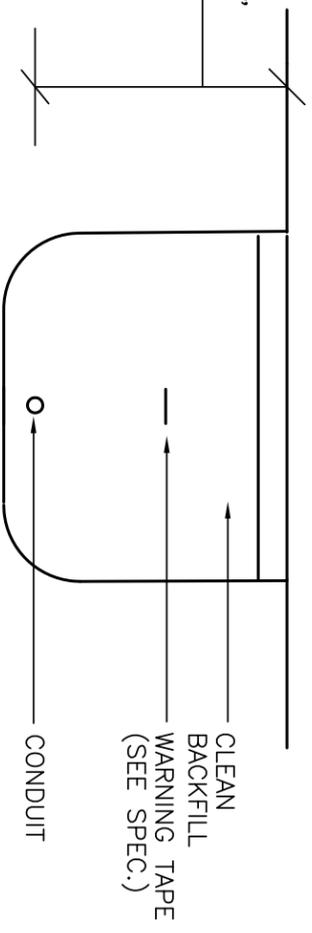
**E9**

1 2 3 4 5 6

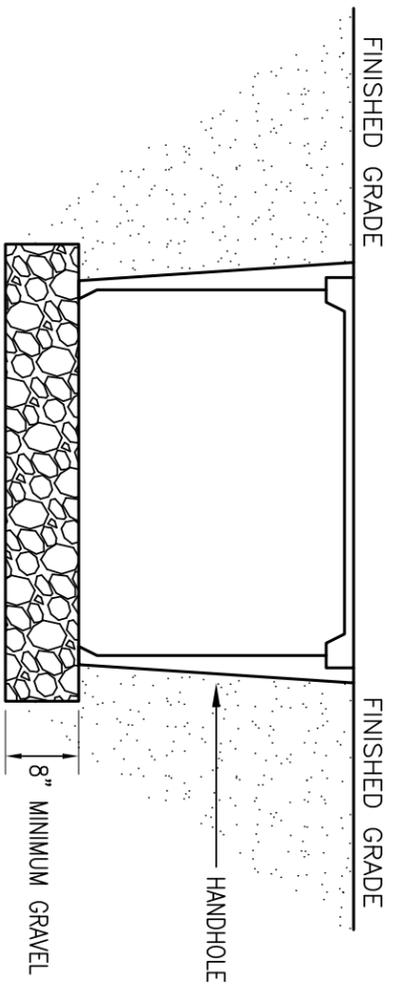
**Keyed Notes:** 

1. RELOCATE TRANSFORMER T1 TO NEW EQUIPMENT ROOM ABOVE GRADE.
2. PROVIDE HANDHOLE. CAPTURE EXISTING FEEDER TO VALVE HOUSE D. SPLICE NEW FEEDER TO NEW MSP-D.
3. NEW LOCATION FOR EXISTING TRANSFORMER T1.
4. PROVIDE HANDHOLE. CAPTURE (4) EXISTING FEEDERS TO SNOW MAKING RECEPTACLES. SPLICE AND EXTEND CIRCUITS TO NEW PANEL MSP-D.
5. REINSTALL EXISTING 100A RECEPTACLE ON NEW BUILDING. PROVIDE NEW 100A NON-FUSED DISCONNECT SWITCH.
6. NEW LOCATION FOR EXISTING UNIT HEATER.
7. NEW LOCATION FOR EXISTING THERMOSTAT.

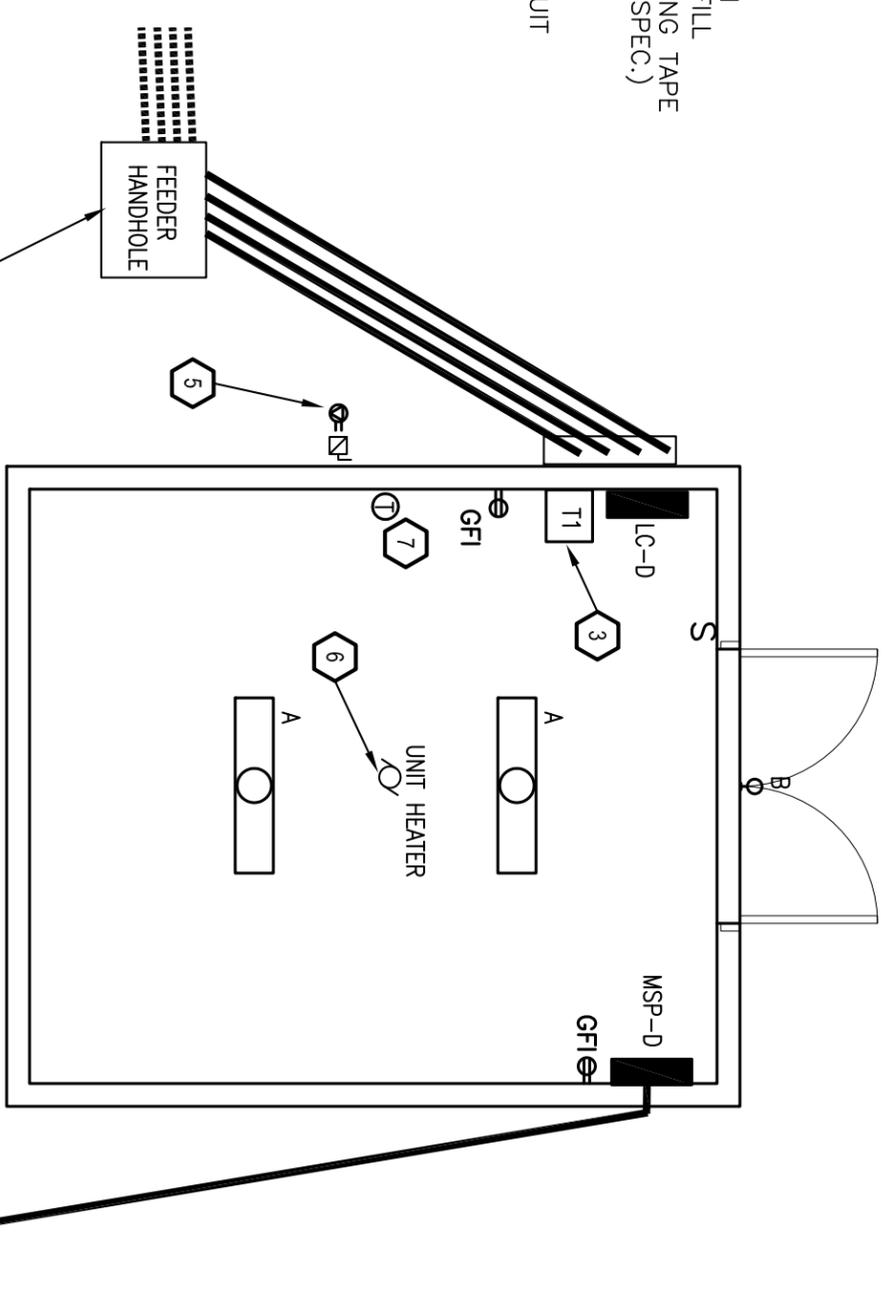
BURY PVC CONDUIT @ 24"  
MIN. OR 6" MIN. WITH  
RIGID STEEL CONDUIT  
ON SOLID ROCK WITH  
WITH 2" CONCRETE  
COVER (CONTRACTOR'S  
OPTION)



**2**  
TRENCH DETAIL  
NO SCALE



**3**  
HANDHOLE DETAIL  
NO SCALE



**1**  
ELECTRICAL PLAN  
1/4" = 1'-0"



**FOSTER, JACOBS,  
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PROFESSIONAL ENGINEERS

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(218) 722-2960  
FAX (218) 722-1931  
Email: mjk@fj.com

Project Name:  
**SPIRIT MOUNTAIN  
CONTRACT "C"  
HILL IMPROVEMENTS**

Project Location:  
**SPIRIT MOUNTAIN  
Duluth, Minnesota**

Phase:  
**BIDDING**

MARK	DATE	DESCRIPTION

Issue Date: 10/22/14  
Project No.: S-14005  
Filename: S14005-E10.dwg  
Drawn By: TRL  
Checked By: TRL

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Terence R. Larson  
Reg. No. 17136  
Date: October 22, 2014

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Sheet Title:  
**Valve House D  
Electrical Plan**

Sheet Number:  
**E10**

PANEL SCHEDULE							
PANEL	LP-D	AMPS	60	GRD. BUS	O.C.P. DEVICE	MCB	
LOCATION	VALVE HOUSE D	VOLTS	120/240		FED FROM	TRANSFORMER	
MOUNTING	SURFACE	PHASE	1		REMARKS	SCCR 10000A	
	LOAD CENTER	WIRE	3				
RM. NO.	LOAD DESCRIPTION	BRKR	CKT NO.	A	B	CTKT NO.	BRKR
VALVE HOUSE D	UNIT HEATER		1	X		2	15/1
			3		X	4	15/1
			5	X		6	15/2
	SPARE		7		X	8	

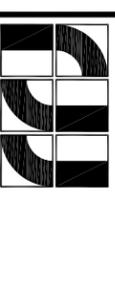
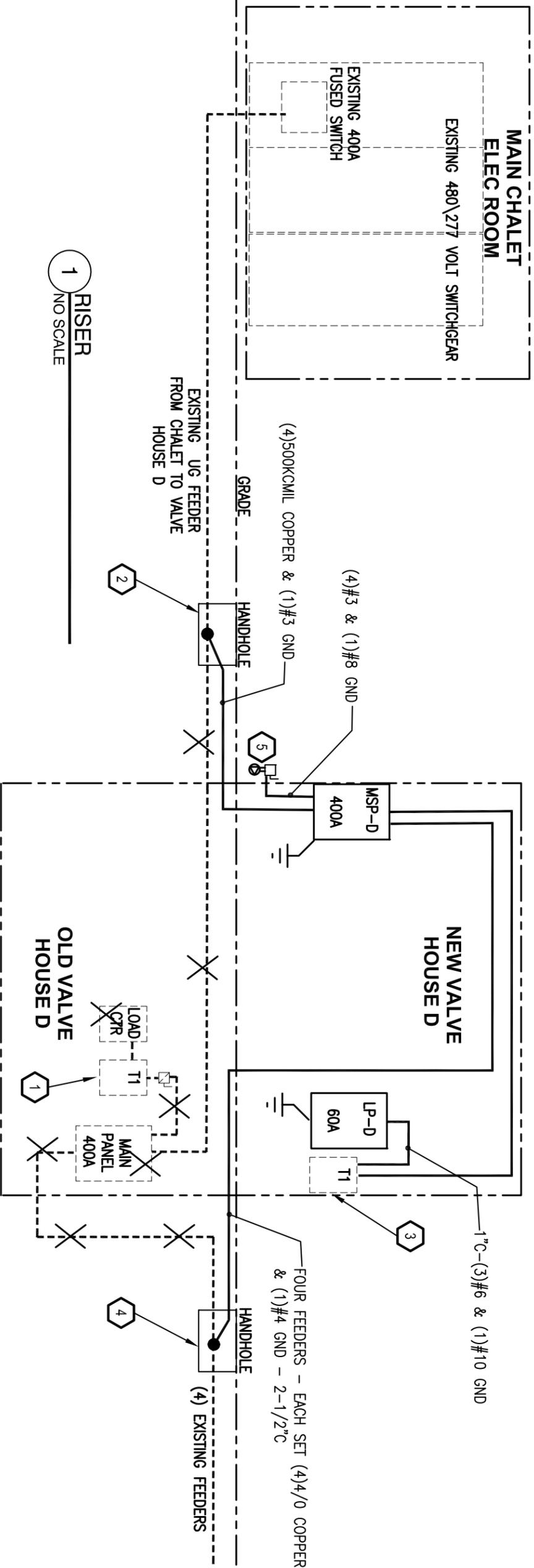
PANEL SCHEDULE										
PANEL	MSP-D	AMPS	400	GRD. BUS	O.C.P. DEVICE	MCB				
LOCATION	VALVE HOUSE D	VOLTS	277/480		FED FROM	CHALET MAIN ELEC ROOM				
MOUNTING	SURFACE	PHASE	3		REMARKS					
	SCCR 14000A	WIRE	4							
RM. NO.	LOAD DESCRIPTION	BRKR	CKT NO.	A	B	C	CTKT NO.	BRKR	LOAD DESCRIPTION	RM. NO.
HILL #13	SNOW MAKING RECEPTACLE		1	X			2		SNOW MAKING RECEPTACLE	VALVE HOUSE D
			3		X		4			
			5			X	6			
HILL #11	SNOW MAKING RECEPTACLE		7	X			8		15/2 HOUSE POWER TRANSFORMER	VALVE HOUSE D
			9		X		10			
			11			X	12		20/1 SPARE	
			13		X		14			
HILL #10	SNOW MAKING RECEPTACLE		15		X		16		225/3	SNOW MAKING RECEPTACLE
			17			X	18			
			19		X		20			
			21			X	22			
			23			X	24			

**General Notes:**

- A. EXISTING VALVE HOUSE EQUIPMENT IS BELOW GRADE WITH ROOF AT GRADE. NEW VALVE HOUSE WILL HAVE EQUIPMENT ROOM ABOVE GRADE.

**Keyed Notes:** 

1. RELOCATE TRANSFORMER T1 TO NEW EQUIPMENT ROOM ABOVE GRADE.
2. PROVIDE HANDHOLE. CAPTURE EXISTING FEEDER TO VALVE HOUSE D.
3. SPLICE NEW FEEDER TO NEW MSP-D.
3. NEW LOCATION FOR EXISTING TRANSFORMER T1.
4. PROVIDE HANDHOLE. CAPTURE (4) EXISTING FEEDERS TO SNOW MAKING RECEPTACLES. SPLICE AND EXTEND CIRCUITS TO NEW PANEL MSP-D.
5. REINSTALL EXISTING 100A RECEPTACLE ON NEW BUILDING. PROVIDE NEW 100A NON-FUSED DISCONNECT SWITCH.



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 PROFESSIONAL ENGINEERS  
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 (218) 722-2960  
 FAX (218) 722-1931  
 Email: mjk@fjll.com

Project Name:  
 SPIRIT MOUNTAIN  
 CONTRACT "C"  
 HILL IMPROVEMENTS

Project Location:  
 SPIRIT MOUNTAIN  
 Duluth, Minnesota

Phase:  
 BIDDING

MARK	DATE	DESCRIPTION
		LINE IS ONE INCH AT FULL SIZE (IF NOT 1" - SCALE ACCORDINGLY)

Issue Date: 10/22/14  
 Project No.: S-14005  
 Filename: S14005-E11.dwg  
 Drawn By: TRL  
 Checked By: TRL  
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 Terence R. Larson  
 Reg. No. 17136  
 Date: October 22, 2014

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 Sheet Title:  
 Valve House D  
 Schedules and  
 Riser

Sheet Number:

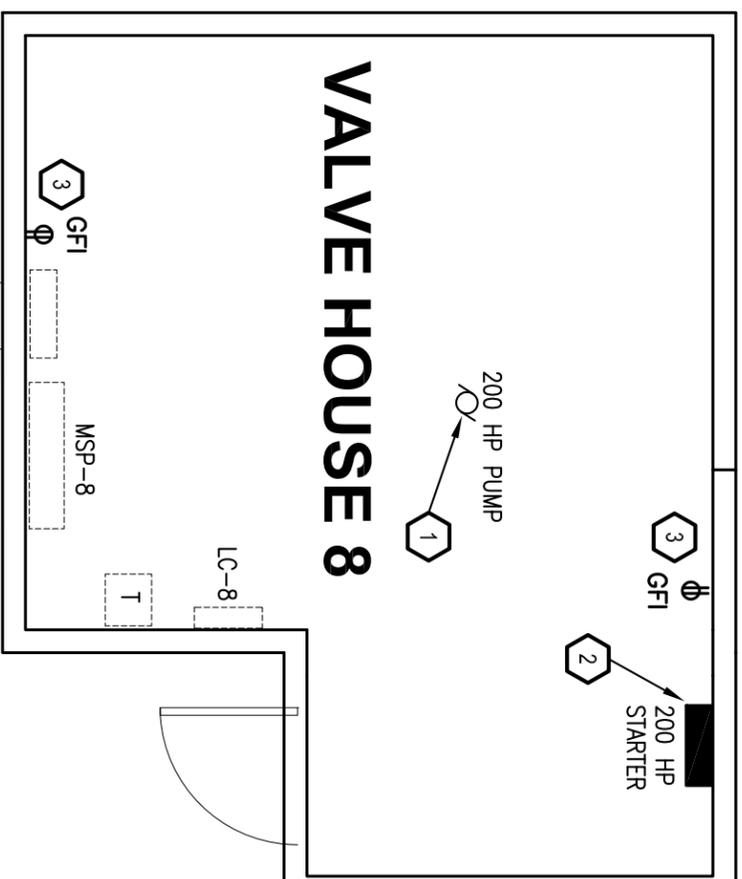
**E11**

**Keyed Notes:** 

1. REMOVE 200HP PUMP MOTOR.
2. REMOVE 200HP MOTOR STARTER.
3. REPLACE EXISTING RECEPTACLES WITH NEW GFI DUPLEX RECEPTACLES.

**General Electrical Demolition Notes:**

- A. CONTRACTOR SHALL VISIT SITE.
- B. ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL EQUIPMENT TO BE REMOVED AND REMOVE ASSOCIATED ELECTRICAL.
- C. REMOVE ALL ABANDONED CONDUCTORS.
- D. PROVIDE BLANK COVER PLATES ON ALL EMPTY BOXES.
- E. REMOVE UNUSED CONDUITS AND BOXES.
- F. ELECTRICAL SHOWN AS BOLD SHALL BE REMOVED. ELECTRICAL SHOWN LIGHT AND/OR DASHED TO REMAIN.



**1** ELECTRICAL PLAN  
NO SCALE



**FOSTER, JACOBS,  
& JOHNSON, INC.**  
PROFESSIONAL ENGINEERS

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SUITE 200  
DULUTH, MN 55802  
(218) 722-2960  
FAX (218) 722-1931  
Email: mjk@fjll.com

Project Name:  
**SPIRIT MOUNTAIN  
CONTRACT "C"  
HILL IMPROVEMENTS**

Project Location:  
**SPIRIT MOUNTAIN  
Duluth, Minnesota**

Phase:  
**BIDDING**

MARK	DATE	DESCRIPTION

LINE IS ONE INCH  
AT FULL SIZE  
(IF NOT 1" - SCALE ACCORDINGLY)

Issue Date: 10/22/14  
Project No.: S-14005  
Filename: S14005-E12.dwg  
Drawn By: TRL  
Checked By: TRL

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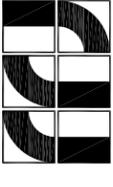
*Terence R. Larson*  
Terence R. Larson  
Reg. No. 17136  
Date: October 22, 2014

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Sheet Title:  
**Valve House 8  
Electrical Plan**

Sheet Number:

**E12**



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& JOHNSON, INC.**  
PROFESSIONAL ENGINEERS  
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FAX (218) 722-1931  
Email: mjk@fj.com

Project Name:  
**SPIRIT MOUNTAIN  
CONTRACT "C"  
HILL IMPROVEMENTS**

Project Location:  
**SPIRIT MOUNTAIN  
Duluth, Minnesota**

Phase:

**BIDDING**

MARK	DATE	DESCRIPTION
←	LINE IS ONE INCH	→
←	AT FULL SIZE	→
←	(IF NOT 1" - SCALE ACCORDINGLY)	→

Issue Date: 10/22/14  
Project No.: S-14005  
Filename: S14005-E13.dwg  
Drawn By: TRL  
Checked By: TRL

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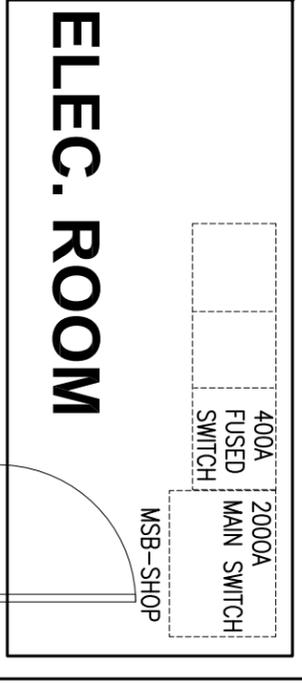
*Terence R. Larson*  
Terence R. Larson  
Reg. No. 17136  
Date: October 22, 2014

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Sheet Title:  
**Shop  
Electrical Plan**

Sheet Number:

**E13**

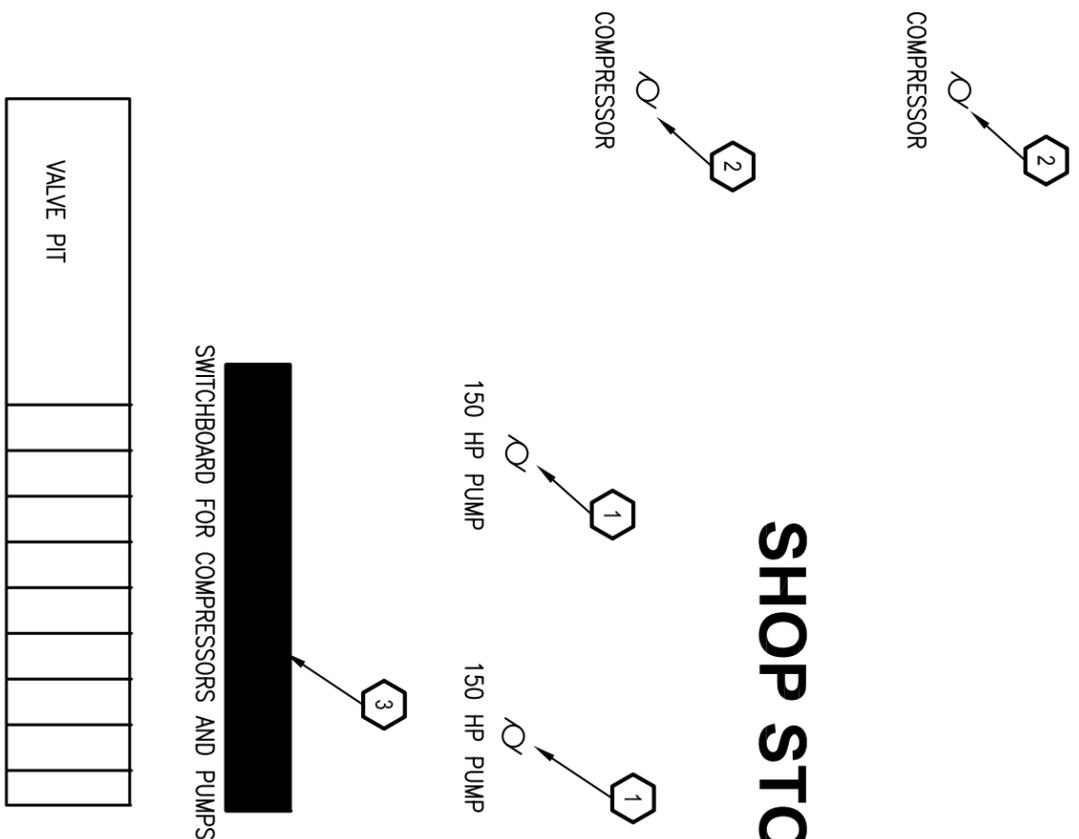


- Keyed Notes:**
- REMOVE 150HP PUMP MOTOR.
  - REMOVE COMPRESSOR.
  - REMOVE SWITCHGEAR. REMOVE FEEDER CONDUCTORS BACK TO 400A FUSED SWITCH LOCATED IN MAIN ELECTRICAL ROOM

- General Electrical Demolition Notes:**
- CONTRACTOR SHALL VISIT SITE.
  - ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL EQUIPMENT TO BE REMOVED AND REMOVE ASSOCIATED ELECTRICAL.
  - REMOVE ALL ABANDONED CONDUCTORS.
  - PROVIDE BLANK COVER PLATES ON ALL EMPTY BOXES.
  - REMOVE UNUSED CONDUITS AND BOXES.
  - ELECTRICAL SHOWN AS BOLD SHALL BE REMOVED. ELECTRICAL SHOWN LIGHT AND/OR DASHED TO REMAIN.

OVERHEAD DOOR

# SHOP STORAGE



**1** PARTIAL FLOOR PLAN  
NO SCALE

