



SCALE 1"=3'

NOTES FOR THIS DETAIL

- (N1) 4" 90° ELBOW
- (N2) 4" MANIFOLD PIPE
- (N3) 4" GATE VALVE
- (N4) 1-1/4" UNION (TYP. OF 12)
- (N5) #WX350 PRESSURE TANK-119 gal. TYPICAL OF 12
- (N6) TEE FOR PRESSURE SWITCH TREE
- (N7) 4"x4"x1-1/4" TEE, (TYP. OF 12)
- (N8) PROVIDE 4" GATE VALVE AFTER TEE TO ISOLATE ENTIRE 4" MANIFOLD SYSTEM

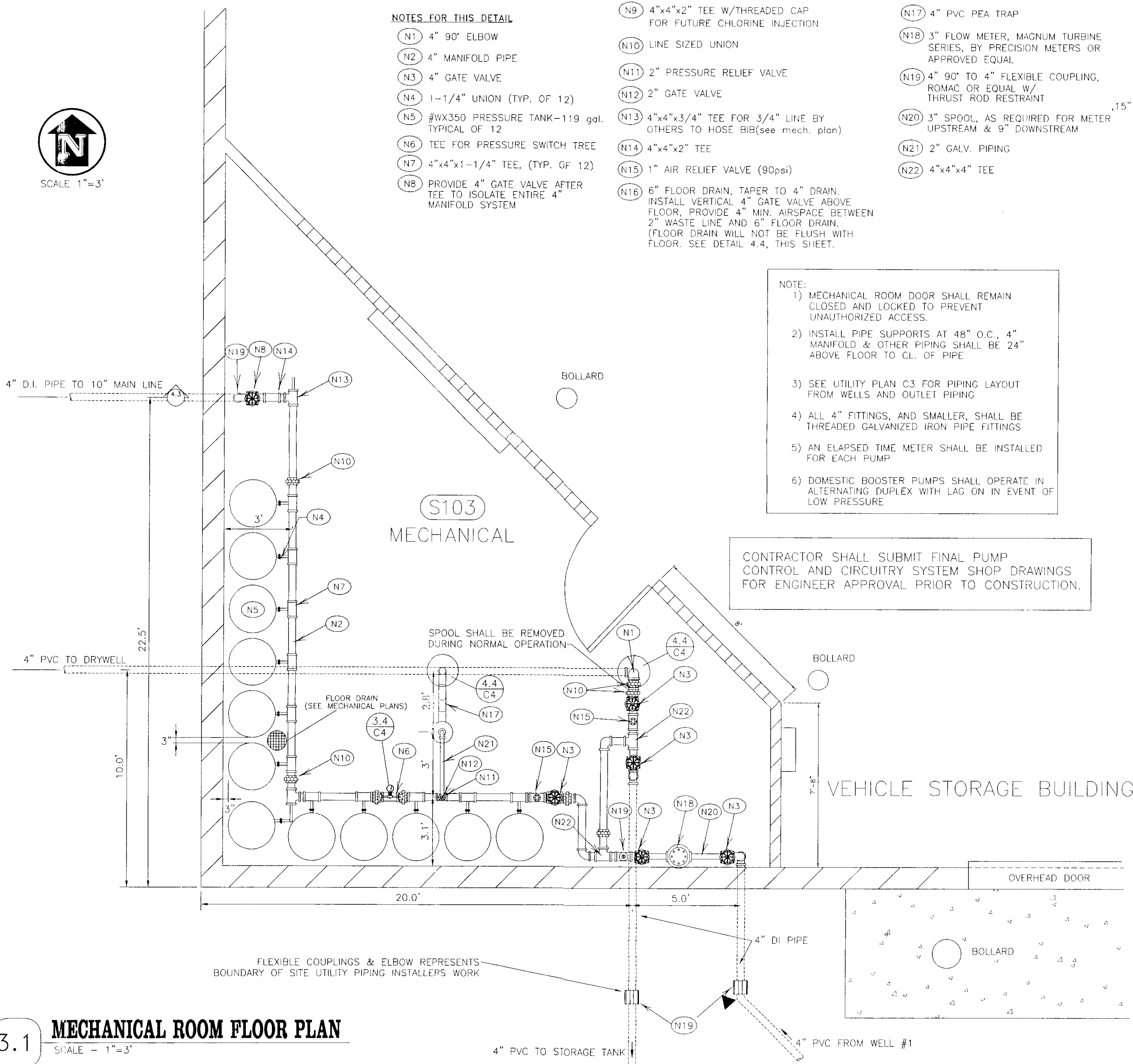
- (N9) 4"x4"x2" TEE W/THREADED CAP FOR FUTURE CHLORINE INJECTION
- (N10) LINE SIZED UNION
- (N11) 2" PRESSURE RELIEF VALVE
- (N12) 2" GATE VALVE
- (N13) 4"x4"x3/4" TEE FOR 3/4" LINE BY OTHERS TO HOSE BIB(see mech. plan)
- (N14) 4"x4"x2" TEE
- (N15) 1" AIR RELIEF VALVE (90psi)
- (N16) 6" FLOOR DRAIN, TAPER TO 4" DRAIN. INSTALL VERTICAL 4" GATE VALVE ABOVE FLOOR. PROVIDE 4" MIN. AIRSPACE BETWEEN 2" WASTE LINE AND 6" FLOOR DRAIN. (FLOOR DRAIN WILL NOT BE FLUSH WITH FLOOR. SEE DETAIL 4.4, THIS SHEET.

- (N17) 4" PVC PEA TRAP
- (N18) 3" FLOW METER, MAGNUM TURBINE SERIES, BY PRECISION METERS OR APPROVED EQUAL
- (N19) 4" 90° TO 4" FLEXIBLE COUPLING, ROMAC OR EQUAL W/ THRUST ROD RESTRAINT
- (N20) 3" SPOOL, AS REQUIRED FOR METER UPSTREAM & 9" DOWNSTREAM
- (N21) 2" GALV. PIPING
- (N22) 4"x4"x4" TEE

NOTE:

- 1) MECHANICAL ROOM DOOR SHALL REMAIN CLOSED AND LOCKED TO PREVENT UNAUTHORIZED ACCESS.
- 2) INSTALL PIPE SUPPORTS AT 48" O.C., 4" MANIFOLD & OTHER PIPING SHALL BE 24" ABOVE FLOOR TO CL. OF PIPE
- 3) SEE UTILITY PLAN C3 FOR PIPING LAYOUT FROM WELLS AND OUTLET PIPING
- 4) ALL 4" FITTINGS, AND SMALLER, SHALL BE THREADED GALVANIZED IRON PIPE FITTINGS
- 5) AN ELAPSED TIME METER SHALL BE INSTALLED FOR EACH PUMP
- 6) DOMESTIC BOOSTER PUMPS SHALL OPERATE IN ALTERNATING DUPLEX WITH LAG ON IN EVENT OF LOW PRESSURE

CONTRACTOR SHALL SUBMIT FINAL PUMP CONTROL AND CIRCUITRY SYSTEM SHOP DRAWINGS FOR ENGINEER APPROVAL PRIOR TO CONSTRUCTION.

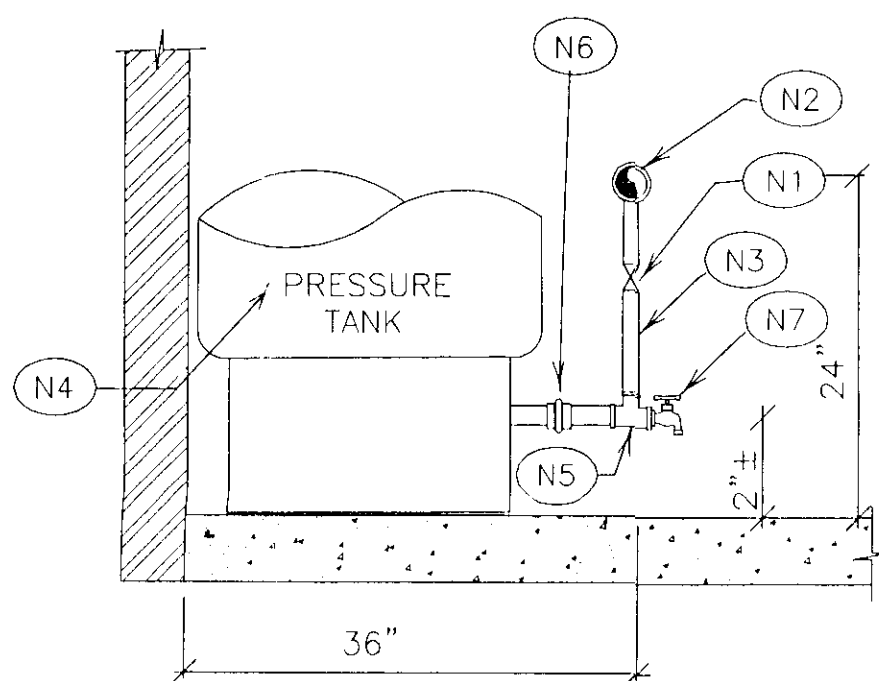


3.1 MECHANICAL ROOM FLOOR PLAN

SCALE - 1"=3'

NOTES FOR THIS DETAIL

- (N1) 1 1/4" BALL VALVE.
- (N2) 4"x4"x1 1/4" TEE ON 4" MANIFOLD
- (N3) 1 1/4" PIPE
- (N4) WELL XTROL WX-350 PRESSURE TANK: 119 GAL, 100 PSI MAX WORKING PRESSURE, TYP. OF 10
- (N5) 1 1/4" 90° ELBOW
- (N6) 1 1/4" TEE
- (N7) HOSE BIB

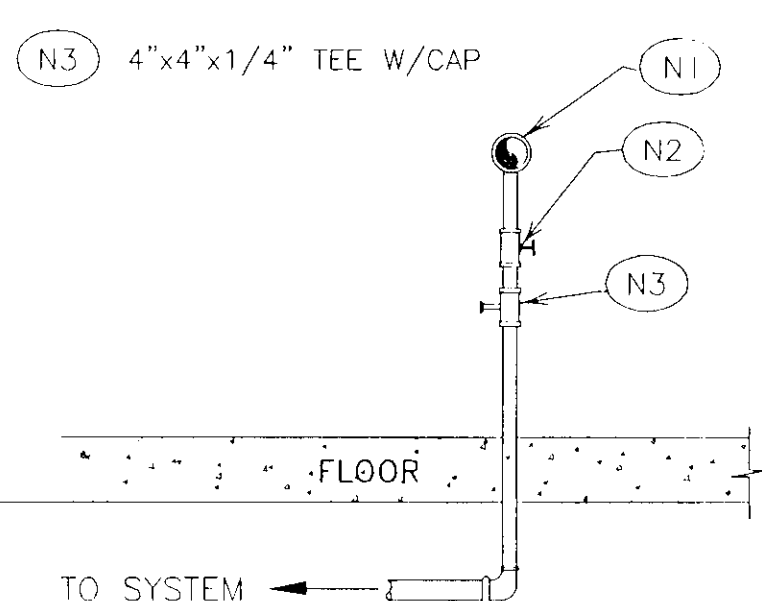


4.1 PRESSURE TANK DETAIL

SCALE-NO SCALE

NOTES FOR THIS DETAIL

- (N1) 4" MANIFOLD
- (N2) 4" GATE VALVE
- (N3) 4"x4"x1/4" TEE W/CAP



4.3 PIPE SECTION DETAIL

SCALE-NO SCALE

NOTES FOR THIS DETAIL

- (N1) 4" MANIFOLD PLUMBING
- (N2) 4" UNION.
- (N3) 4X4X3/4 TEE
- (N4) 3/4" SAMPLING TAP (HOSE BIB)
- (N5) BALL VALVE
- (N6) PRESSURE SWITCHES, SEE SETTINGS BELOW
- (N7) PRESSURE GAUGE, 3" DIAL, 0-100psi
- (N8) 3/4" PIPING
- (N9) 3/4" PLUG VALVE

PS W WELL DIRECT OPERATION - ON @ 50 PSI.
OFF @ 70 PSI.

PS 1 LOW PRESSURE ALARM - @ 25 PSI.

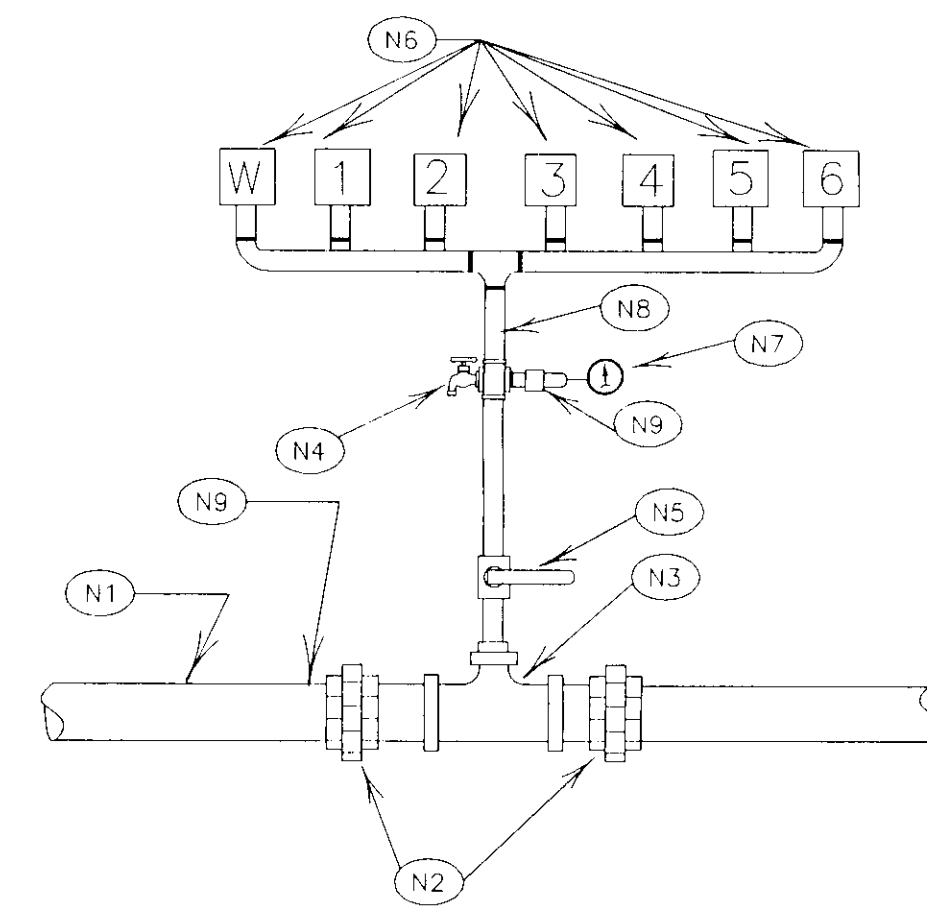
PS 2 HIGH CAPACITY PUMP - ON @ 35 PSI.
OFF @ 60 PSI.

PS 3 DOMESTIC LEAD PUMP - ON @ 50 PSI.
OFF @ 70 PSI.

PS 4 DOMESTIC LAG PUMP - ON @ 45 PSI.
OFF @ 65 PSI.

PS 5 HIGH PRESSURE ALARM - @ 80 PSI.

PS 6 WELL PUMP - ON @ 50 PSI.
OFF @ 70 PSI.



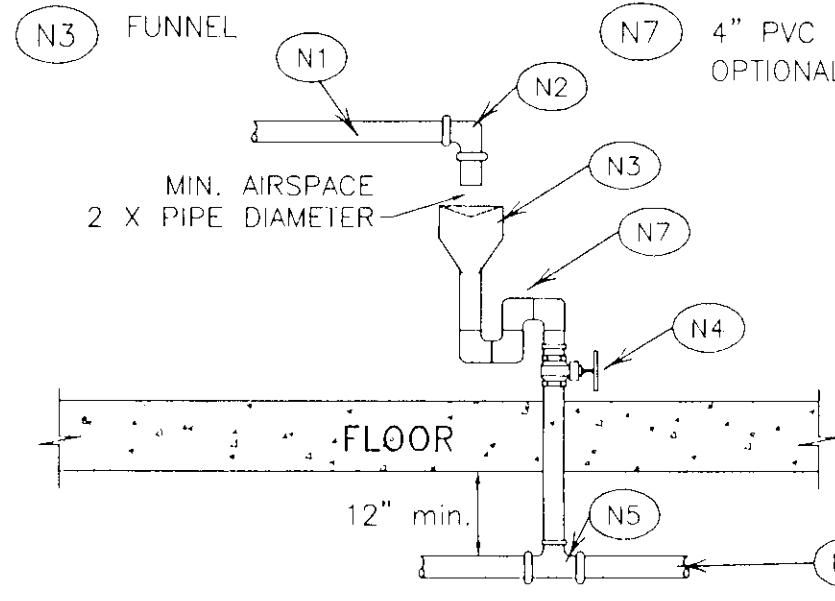
NOTE:
CONTRACTOR SHALL ADD DAMPENING TO PRESSURE SWITCH TREE TO ALLEVIATE ADVERSE EFFECTS OF WATER HAMMER ON SWITCHES. DAMPENING MAY INCLUDE USE OF COILED COPPER TUBING OR HYDROCELL.

3.4 PRESSURE SWITCH TREE DETAIL

SCALE-NO SCALE

NOTES FOR THIS DETAIL

- (N1) GALV. PIPE, 2" or 4"
- (N2) 90° ELBOW, 2" or 4"
- (N3) FUNNEL
- (N4) 4" GATE VALVE, OPTIONAL
- (N5) 4"x4"x4" TEE
- (N6) 4" D.I. PIPE
- (N7) 4" PVC 'P' TRAP, OPTIONAL

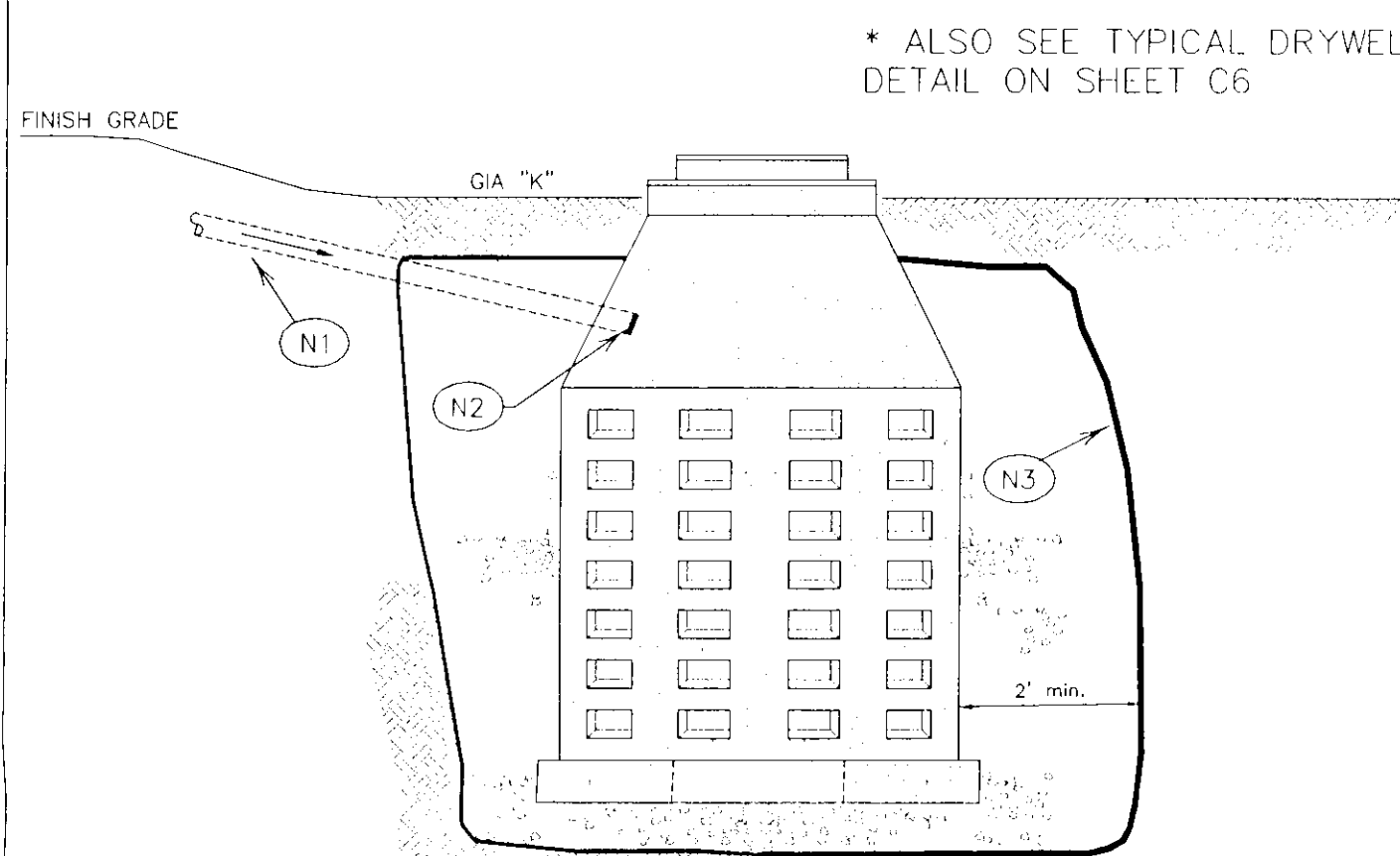


4.4 PRESSURE RELIEF/WELL BLOWOFF PIPING DETAIL

SCALE-NO SCALE

NOTES FOR THIS DETAIL

- (N1) 4" D.I. FROM PUMP CONTROL ROOM
- (N2) RODENT/INSECT PROOF SCREEN APPROVED BY ENGINEER
- (N3) AMOCO #2006 FILTER FABRIC OR EQUAL

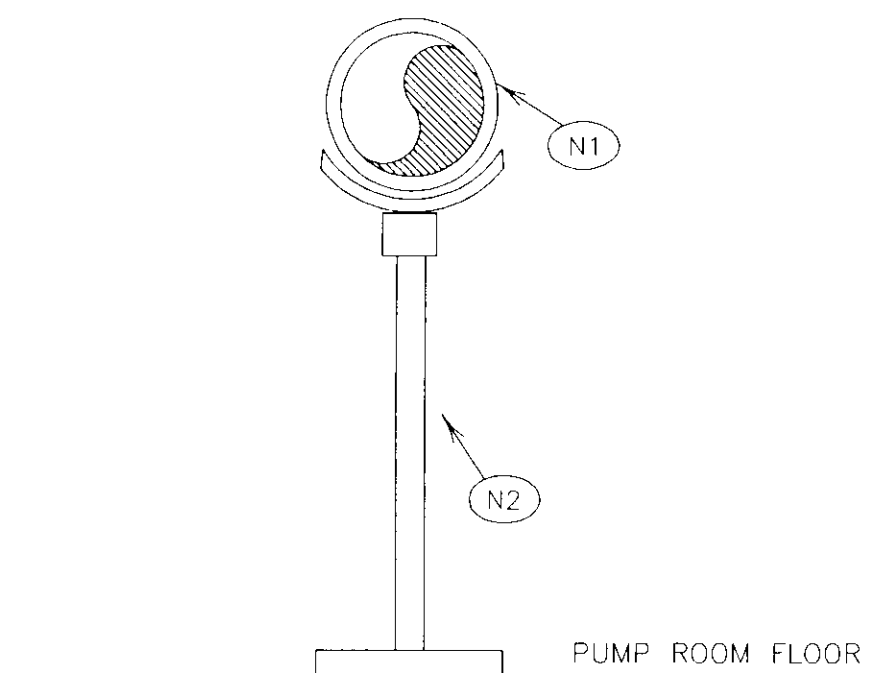


1.5 OVERFLOW/DISCHARGE DRAIN TO DRYWELL

SCALE-NO SCALE

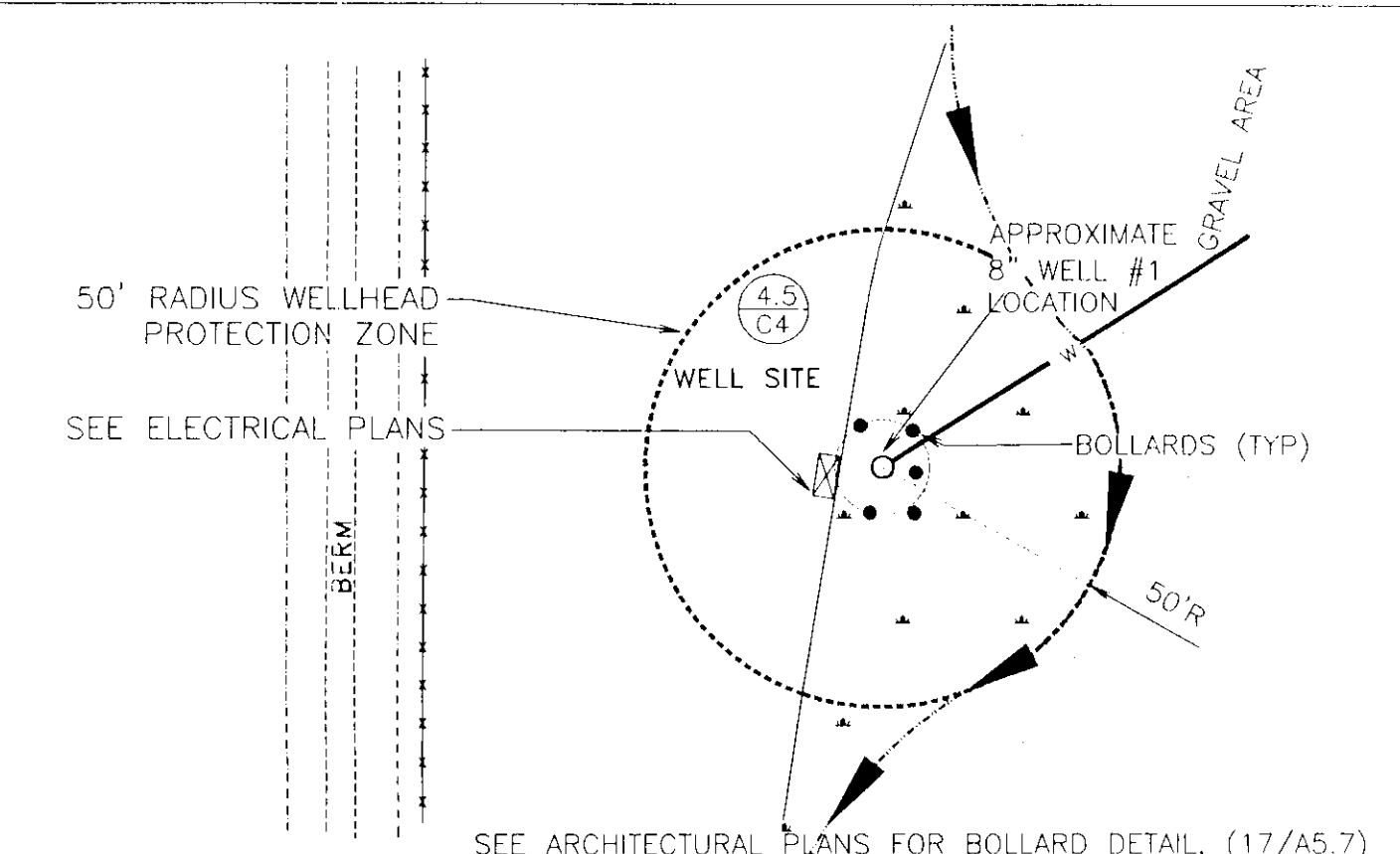
NOTES FOR THIS DETAIL

- (N1) PUMP CONTROL ROOM PIPING
- (N2) PIPE SUPPORT & ANCHORING SYSTEM TO BE APPROVED BY ENGINEER



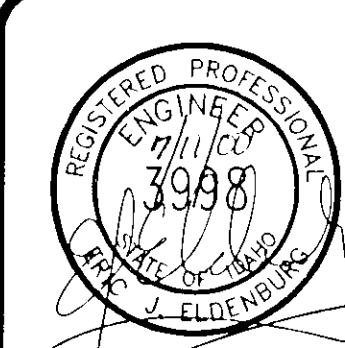
3.5 PIPE SUPPORT DETAIL

SCALE-NO SCALE



4.5 BOLLARD/WELL PROTECTION DETAIL

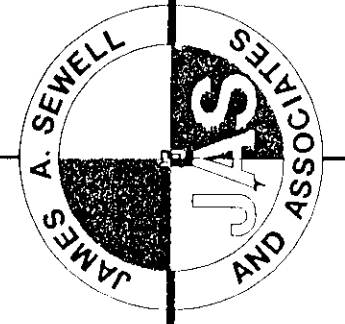
SCALE-NO SCALE



ENGINEER'S STAMP

DATE	REVISION	BY	CHK'D
1	3-9-99	MECHANICAL ROOM LAYOUT & BOLLARD DETAIL	DPH/SLH
2	4-19-99	REVISED MECHANICAL ROOM LAYOUT SINGLE WELL	DPH/SLH
3	5-4-99	REVISED WATER SYSTEM DESIGN LAYOUT	DPH/SLH
4	5-20-99	REVISED MECHANICAL ROOM PIPING & ADDED DETAIL 4.4	DPH/SLH
5	8-12-99	REMOVED FIRE RATED PUMPING APPARATUS	DPH/SLH
6	1-28-00	AS-BUILT REVISIONS	DPH/SLH
7	10-5-00	REVISED DETAILS 3.4 AND 4.4	KIA/SLH
8	6-21-00	AS-BUILT REVISIONS PIP DEQ. & PHD	SLH/SLH

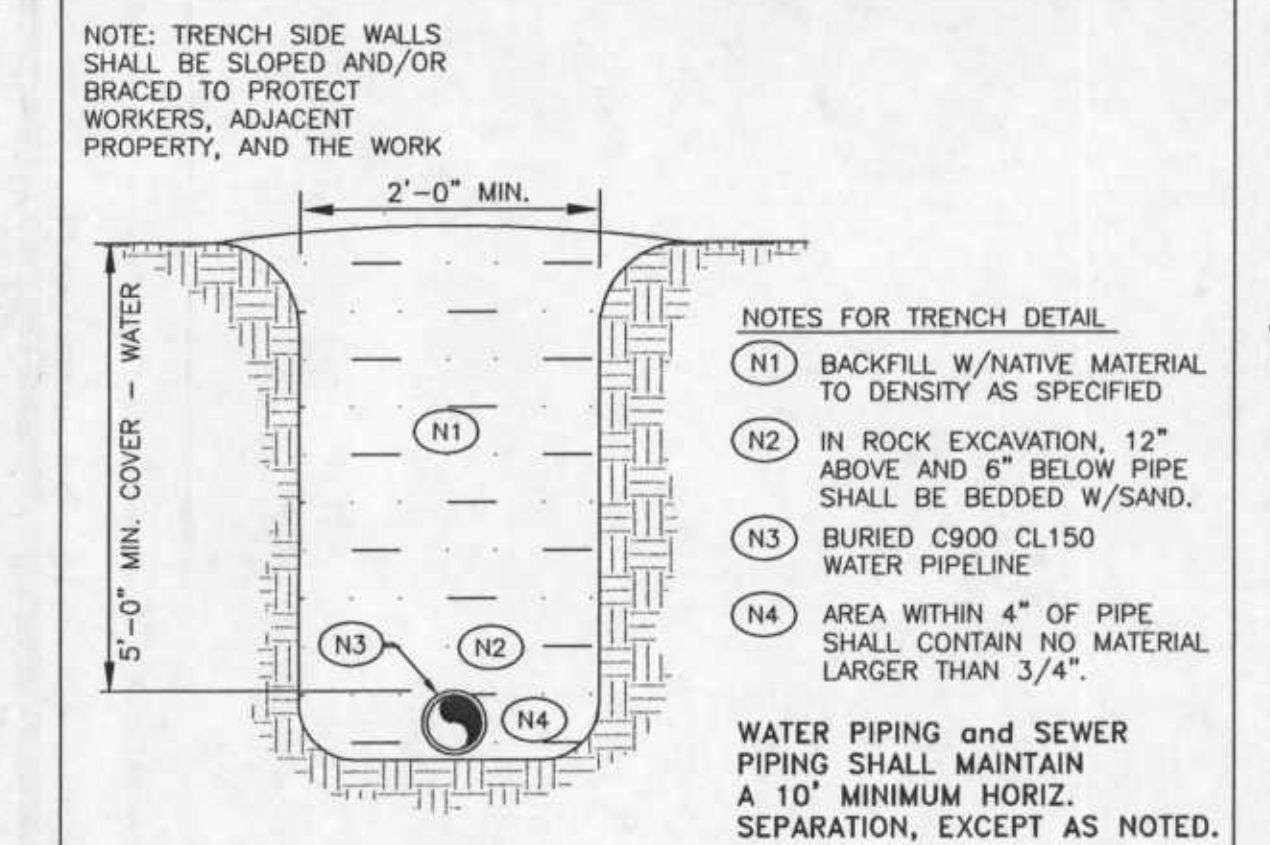
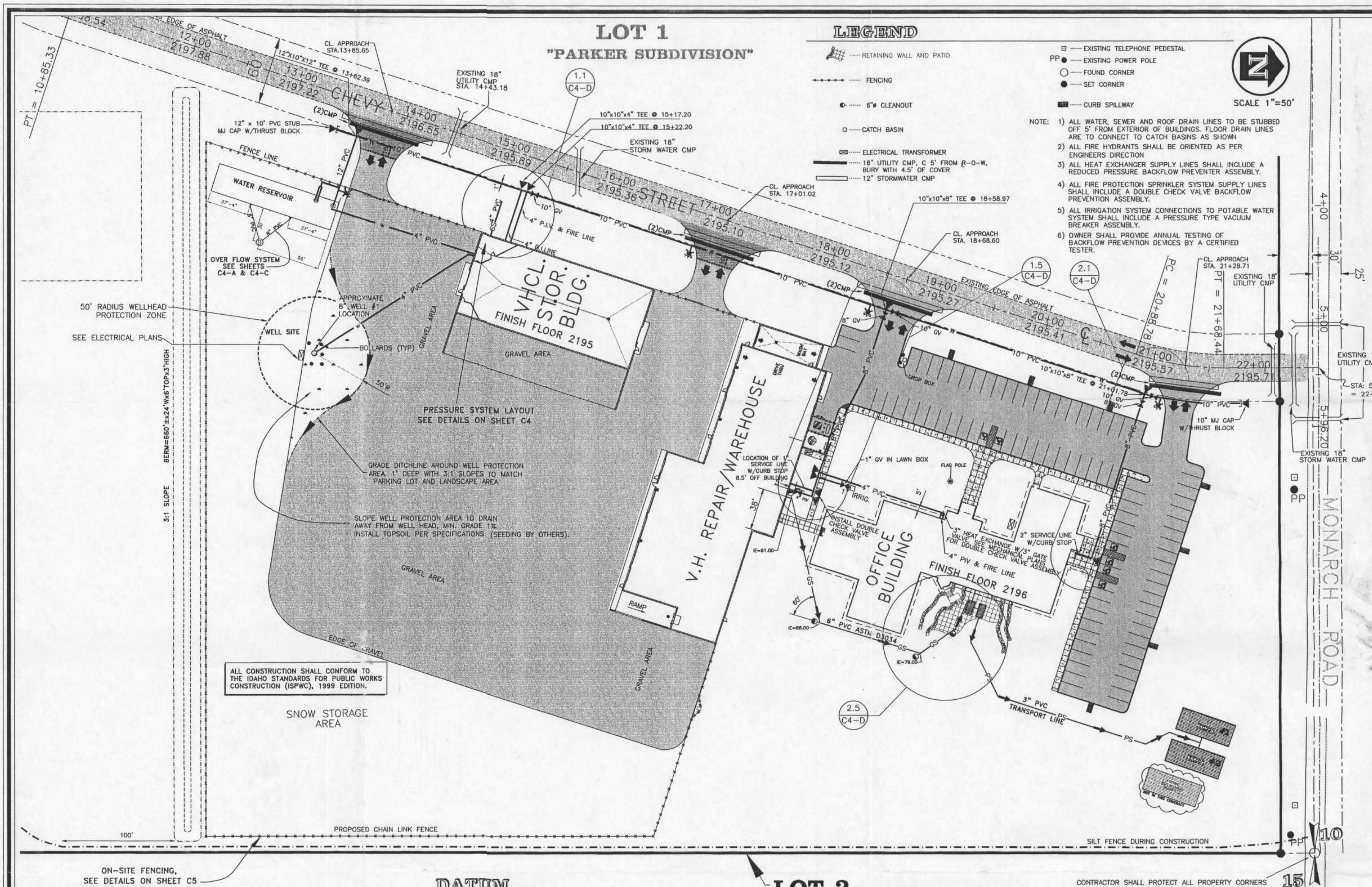
James A. Sewell and Associates
CONSULTING ENGINEERS
SANDPOINT, IDAHO 83864
(208) 263-4160



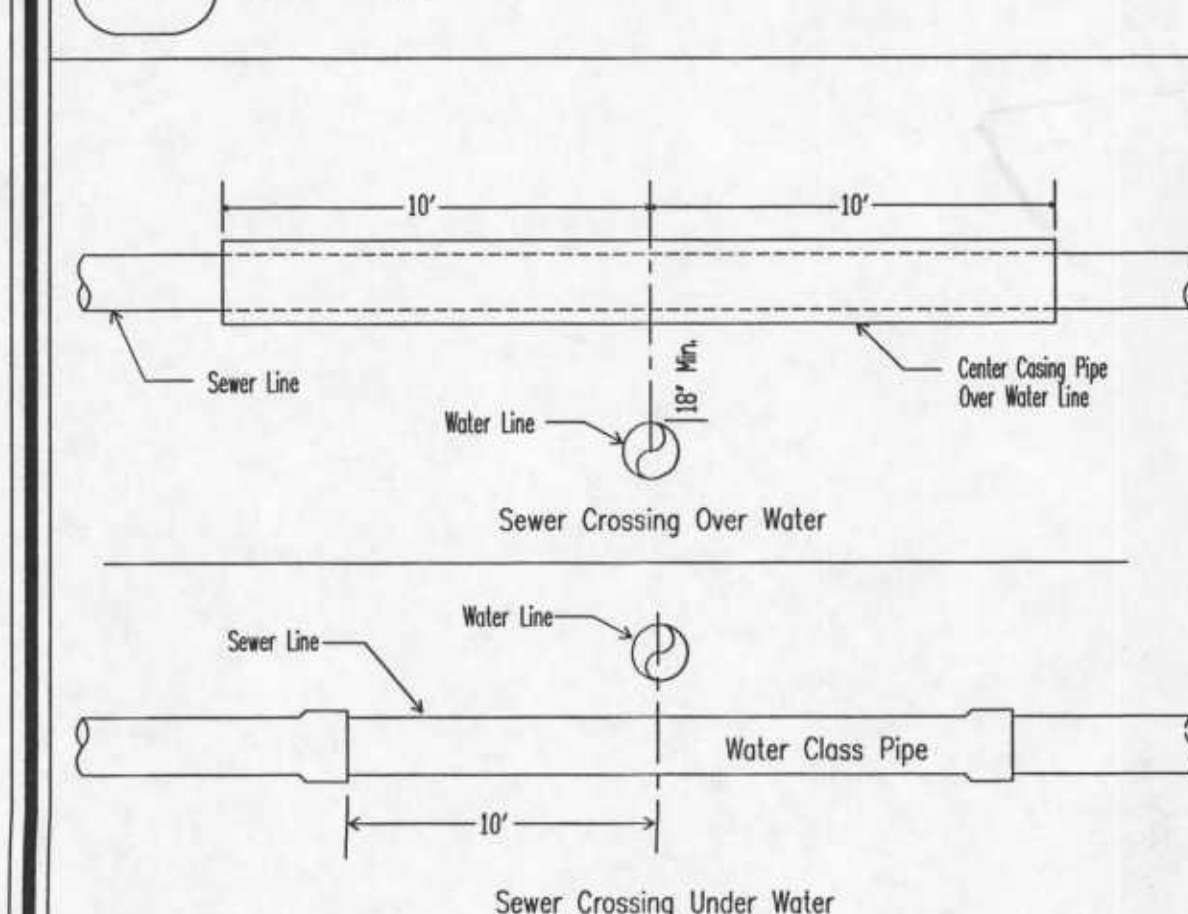
SAGLE HEADQUARTERS SITE DESIGN
ON-SITE WATER SYSTEM
FOR NORTHERN LIGHTS INC.
BONNER COUNTY, IDAHO

SHEET TITLE:
DATE: 6-21-2000
SCALE: AS SHOWN
DRAWN BY: DPH
CHECKED BY: SLH/KAK
FILE No.: N1PUMP_01

C4



3.1 UTILITY CONSTRUCTION PLAN
SCALE 1"=50'



PIPE DIAMETER	TEES AND ENDS	MINIMUM BEARING AREA (SQ. FT.)
4" AND SMALLER	1.5	2.0
6"	3.0	4.0
8"	5.0	7.0

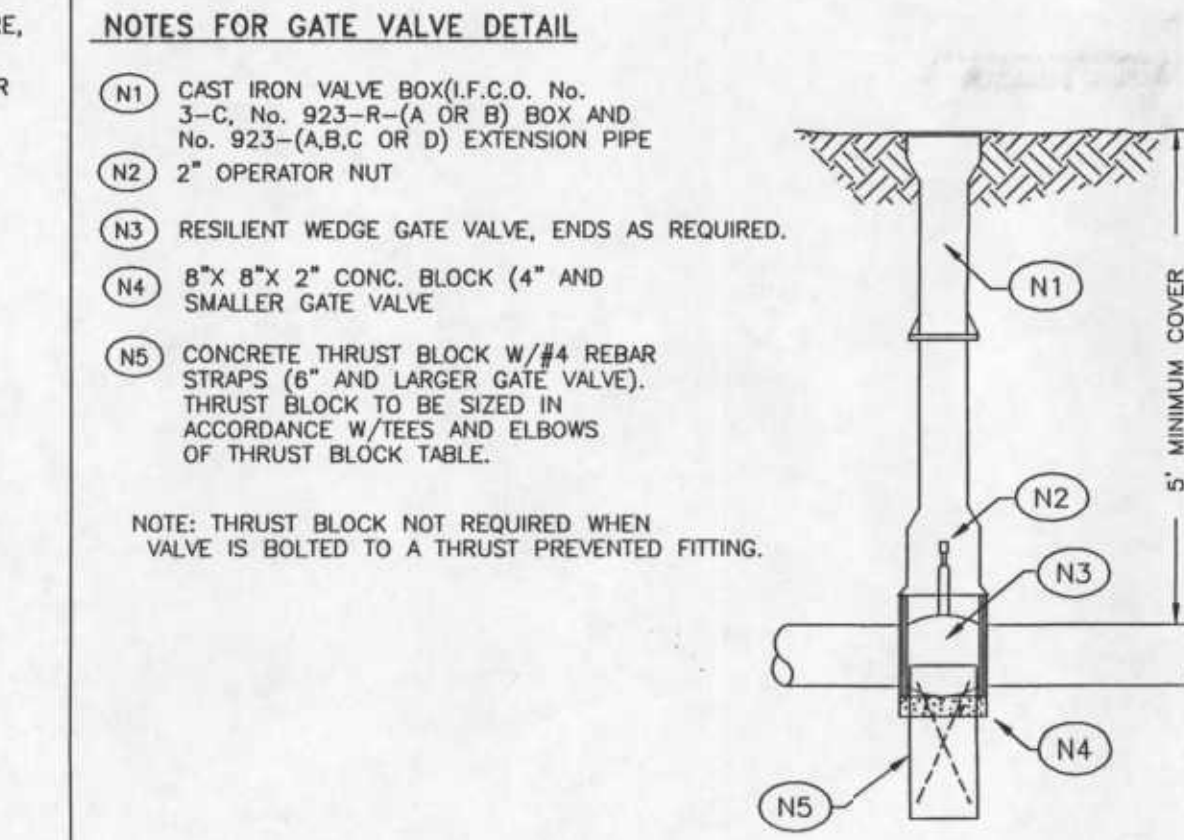
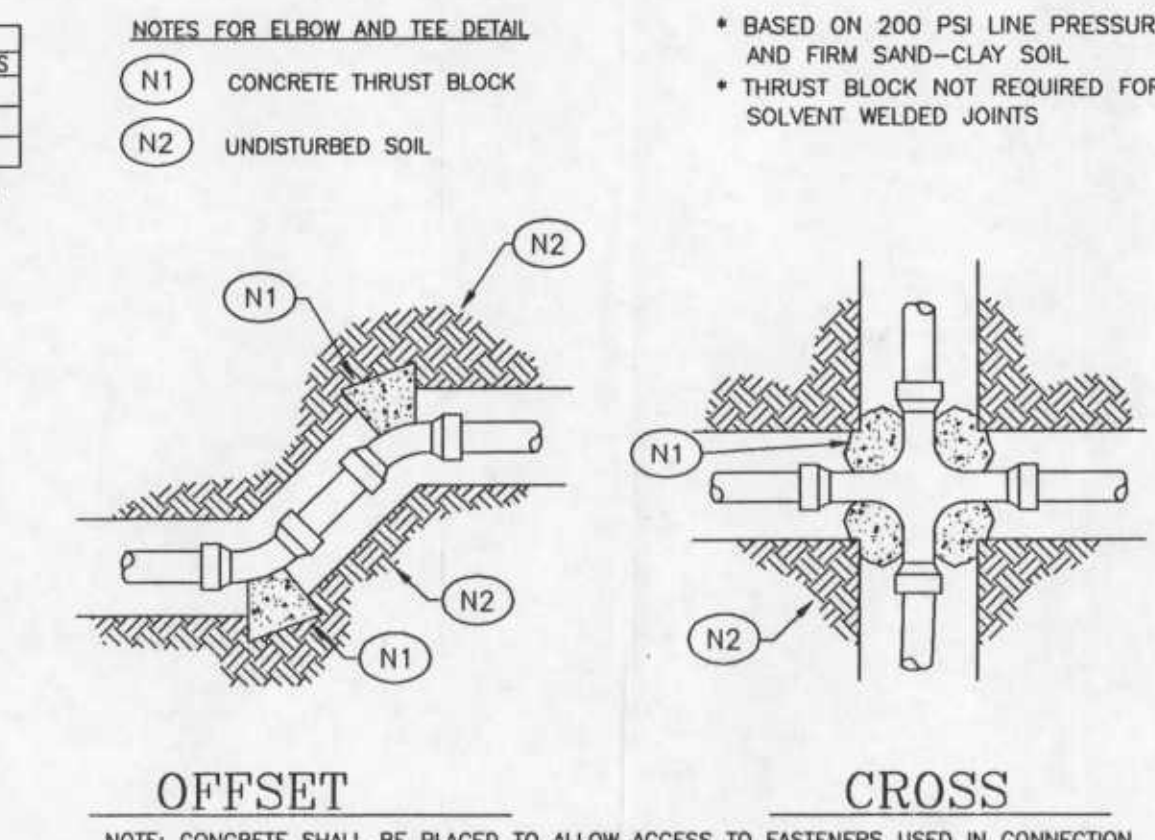
NOTES FOR ELBOW AND TEE DETAIL

- N1 CONCRETE THRUST BLOCK
- N2 UNDISTURBED SOIL

ELBOW

TEE

NOTE: CONCRETE SHALL BE PLACED TO ALLOW ACCESS TO FASTENERS USED IN CONNECTION



ENGINEER'S STAMP

AS-BUILT REVISIONS PER DET & PHO	SH/SLH	DEH/SLH	REVISIONS	REMOVED FIRE RATED PUMPING APPARATUS	DPH/SLH	ADDED DITCHLINE AROUND WELL AND NOTES	DPH/SLH	NEW WATER SYSTEM DESIGN/SINGLE WELL	DPH/SLH	NEW WATER SYSTEM LAYOUT	DPH/SLH	NEW FLAG POLE & WELL & SIGN LOCATION	DPH/SLH	REVISION	DATE	NO.
6-21-00	7	6-21-00	5	8-12-99	5	5-20-99	4	5-4-99	3	3-9-99	2	3-3-99	1			

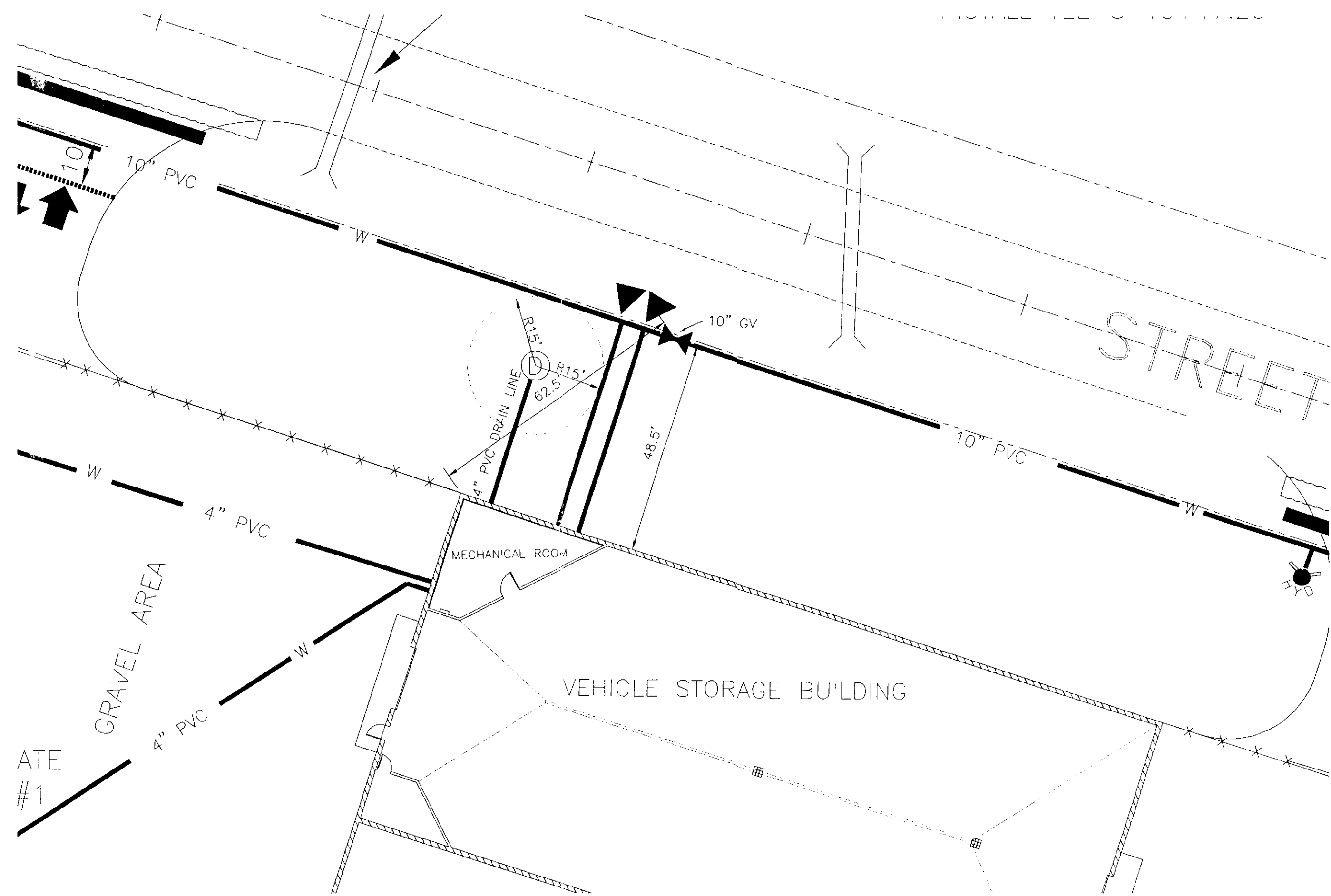
James A. Sewell and Associates
CONSULTING ENGINEERS
SANDPOINT, IDAHO 83864
(208) 263-4160



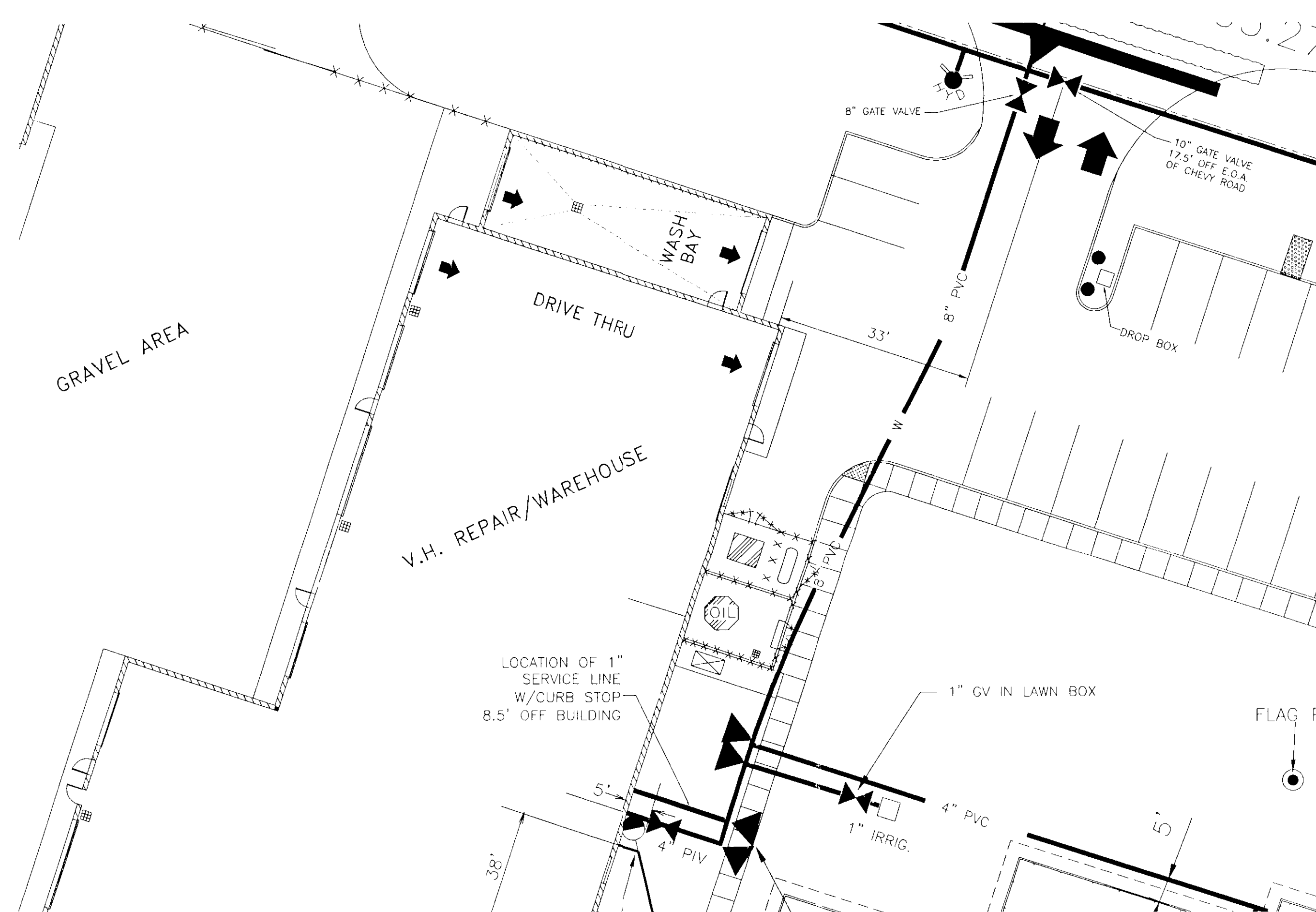
SAGLE HEADQUARTERS SITE DESIGN
UTILITY CONSTRUCTION PLAN
FOR NORTHERN LIGHTS INC.
BONNER COUNTY, IDAHO

SHEET TITLE: PROJECT: DATE: 6-21-2000 SCALE: 1"=50' DRAWN BY: DPH CHECKED BY: SLH/RFH FILE No.: NLUUTIL_ab

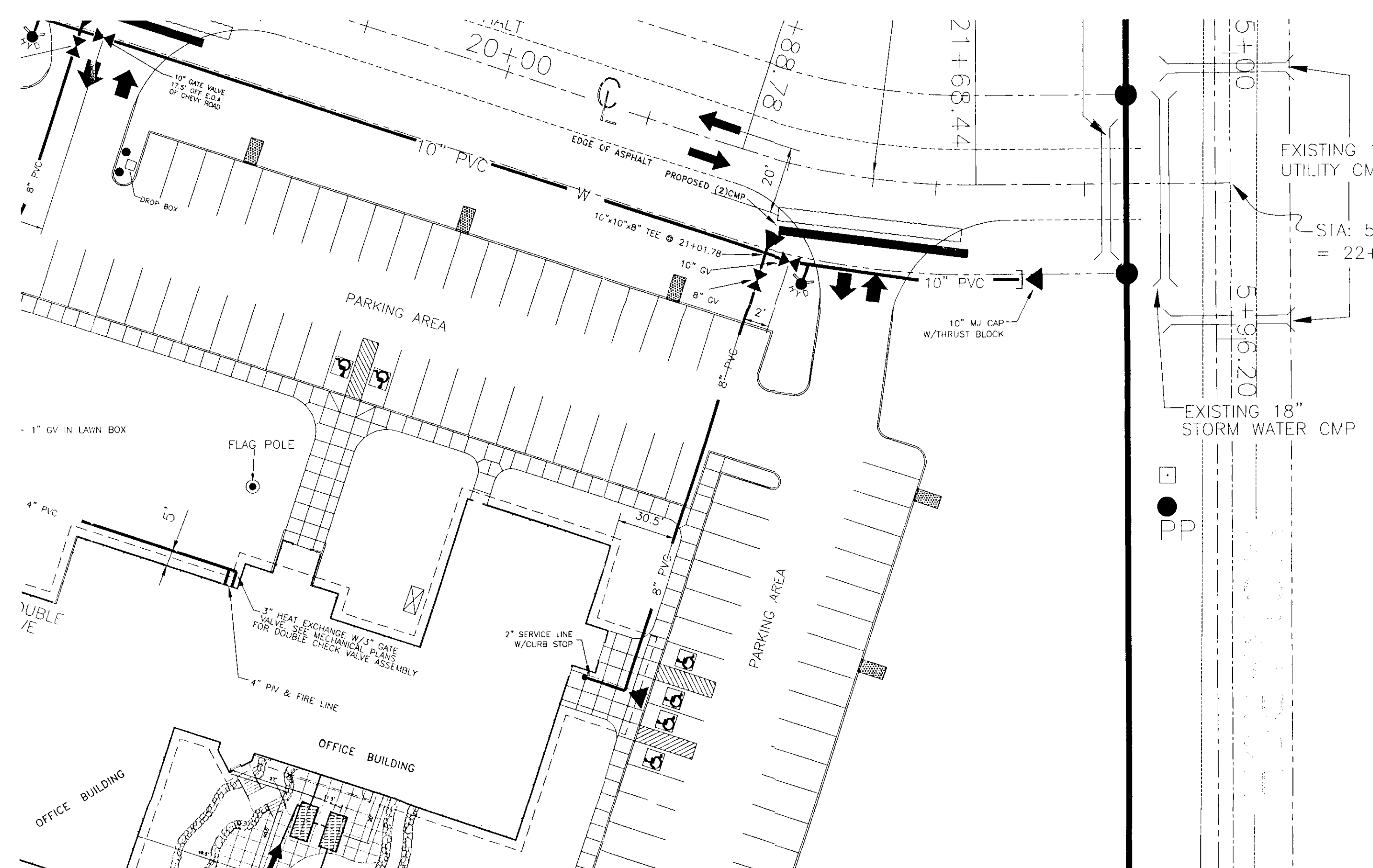
C3



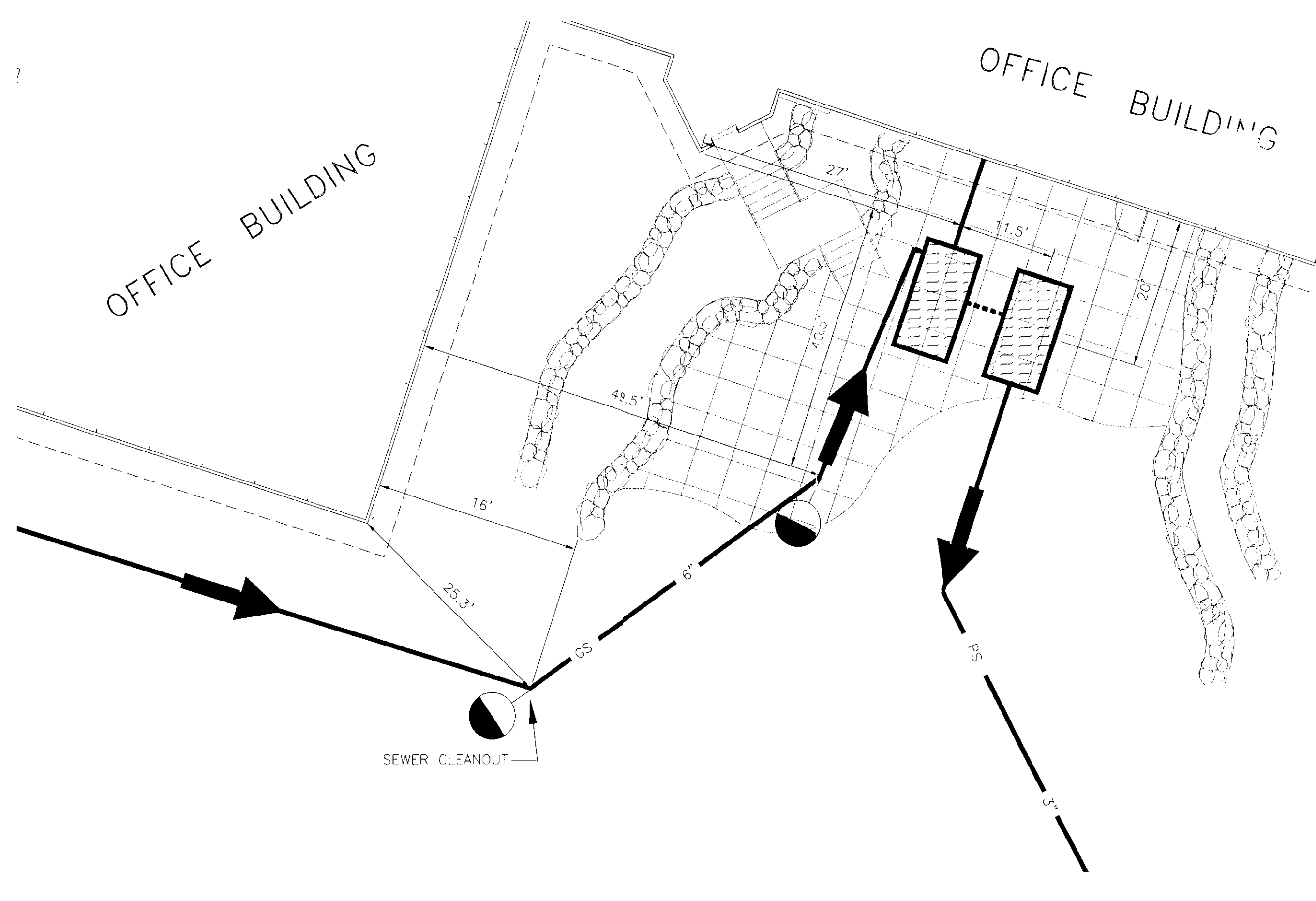
1.1 VALVE LOCATION DETAIL



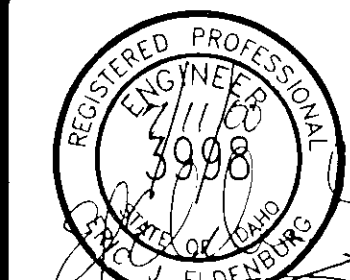
1.5 WATER LINE & VALVE LOCATION DETAIL



2.1 WATER LINE & VALVE LOCATION DETAIL



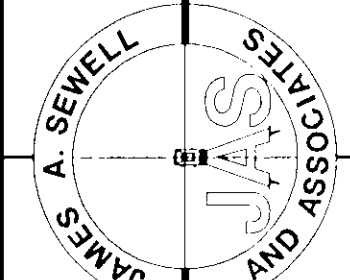
2.5 SEWER LOCATION DETAIL



ENGINEER'S STAMP

No.	DATE	REVISION	BY	CHKD
1	3-1-00	AS-BUILT REVISIONS	DEH/EJE	DEH/EJE
2	6-21-00	AS-BUILT REVISIONS PER DEC. & PHO SHU/EJE	SHU/EJE	SHU/EJE

James A. Sewell and Associates
CONSULTING ENGINEERS
SANDPOINT, IDAHO 83864
(208) 263-4160



SAGE HEADQUARTERS SITE DESIGN
ON-SITE WATER SYSTEM
FOR NORTHERN LIGHTS INC.
BONNER COUNTY, IDAHO

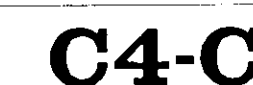
SHEET TITLE:
PROJECT:
DATE: 6-21-2000
SCALE: AS SHOWN
DRAWN BY: DEH
CHECKED BY: EJE
FILE No.: NI\UTILTDT_ob

C4-D

C4-B



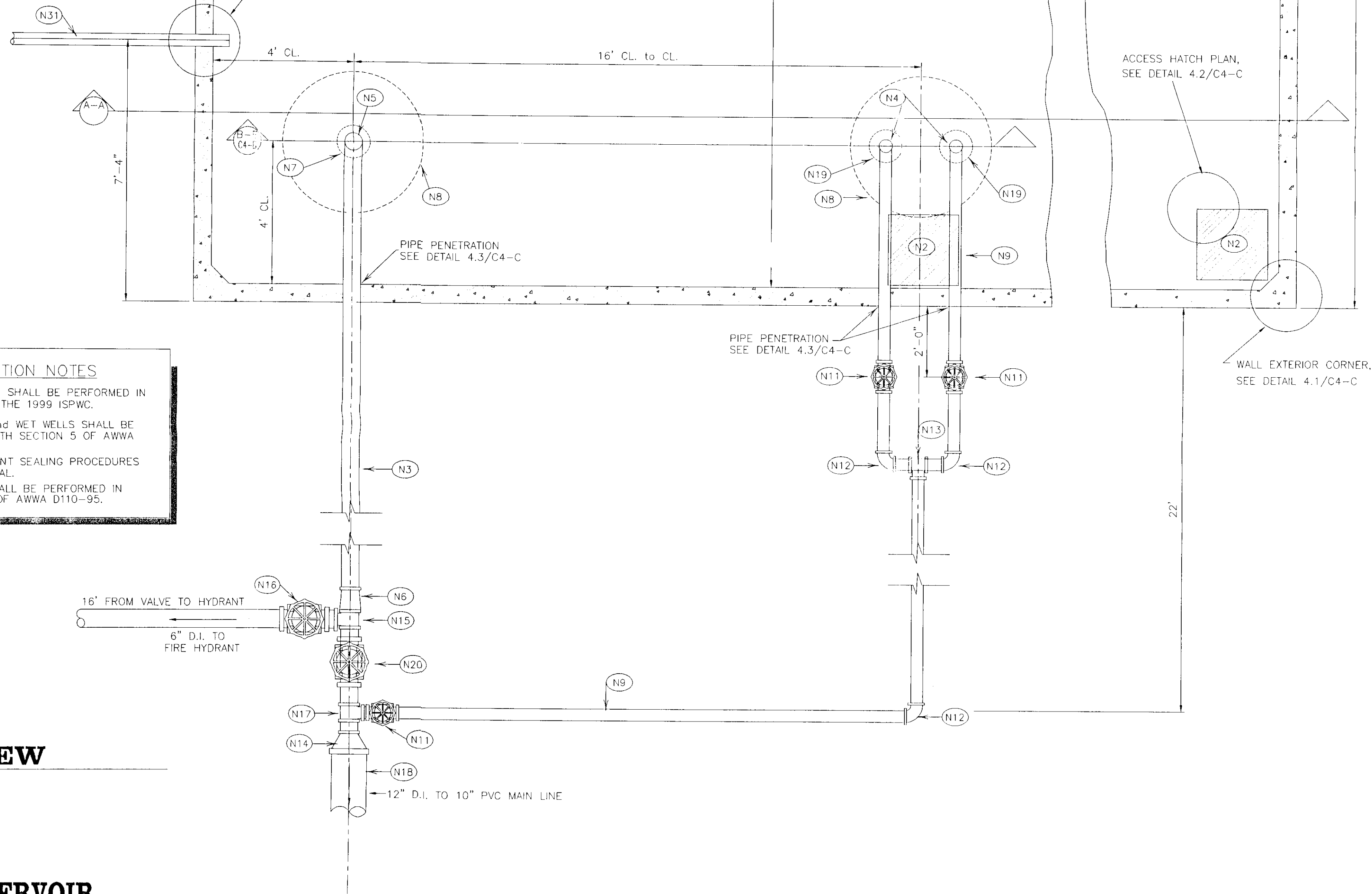
NOT USED



NOTES FOR PLAN VIEW

- (N1) CAST IN-PLACE CONCRETE TANK.
- (N2) 30" sq. HATCH W/LOCKING LID, PER MANUFACTURES SPECS.
- (N3) 6" D.I. PIPING
- (N4) DOMESTIC PUMPS
- (N5) HIGH CAPACITY PUMP
- (N6) 8"x5" REDUCER
- (N7) 14"ø HOLE IN CONCRETE LID PANEL.
- (N8) 48"ø MANHOLE BASE AND SECTIONS AS REQUIRED
- (N9) 4" D.I. PIPING
- (N10) 4" OVERFLOW PIPE, PLACED 38'-2" FROM TANK ENDS (TYPICAL OF 2)
- (N11) 4" GATE VALE (TYP. 3)
- (N12) 4" 90° ELBOW (TYP. 3)
- (N13) 4" TEE
- (N14) 8"x12" REDUCER
- (N15) 8"x6"x6" TEE
- (N16) 6" GATE VALVE
- (N17) 8"x8"x4" TEE
- (N18) 12" C900 PVC PIPING TO DISTRIBUTION NETWORK
- (N19) 12"ø HOLE IN CONCRETE LID PANEL
- (N20) 8" GATE VALVE

LIQUID LEVEL = 7'-6"
CEILING HEIGHT = 8'-0"
TANK OVERALL HEIGHT = 9'-9-1/2"



GENERAL CONSTRUCTION NOTES

- 1) ALL PIPING AND CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH AWWA AND THE 1999 ISPCW.
- 2) LEAK TESTING OF RESERVOIR and WET WELLS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 5 OF AWWA D110-95.
- 3) CONTRACTOR SHALL SUBMIT JOINT SEALING PROCEDURES TO THE ENGINEER FOR APPROVAL.
- 4) DISINFECTION OF RESERVOIR SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 5 OF AWWA D110-95.

PLAN VIEW

SCALE=1/2"=1'

4.1 WATER RESERVOIR

LITHOLOGIC LOG:

BORE DIAM.	FROM	TO	REMARKS:	WATER	
				YES	NO
			PULLED 25' OF SCREENS RESET 15' 40 SLOT	X	
12	0	5	TOPSOIL		X
12	5	50	SAND BROWN		X
12	50	60	SAND BROWN CLAY		X
8	60	78	BROWN CLAY SANDY		X
8	78	190	CLAY GREY SILTY WWET	X	
8	190	192	CLAY GREY WITH GRAVELS	X	
8	192	212	SAND COURSE WITH GRAVELS	X	
	0	0	NOTE: (2) 8" K-PACKERS		

SEALING PROCEDURES:

BENTONITE FROM 0 TO -60' 18 BAGS, METHOD WAS OVERBORE

CASING/ LINER:

8" FROM +2 TO -194, .322 GAUGE STEEL WELDED
7" FROM -190 TO -210 SERVICE AND SCREEN

PERFORATIONS / SCREENS

STAINLESS STEEL JOHNSON SCREEN FROM -197 TO -212.
SLOT SIZE .40, NUMBER 16, 8" DIAMETER.

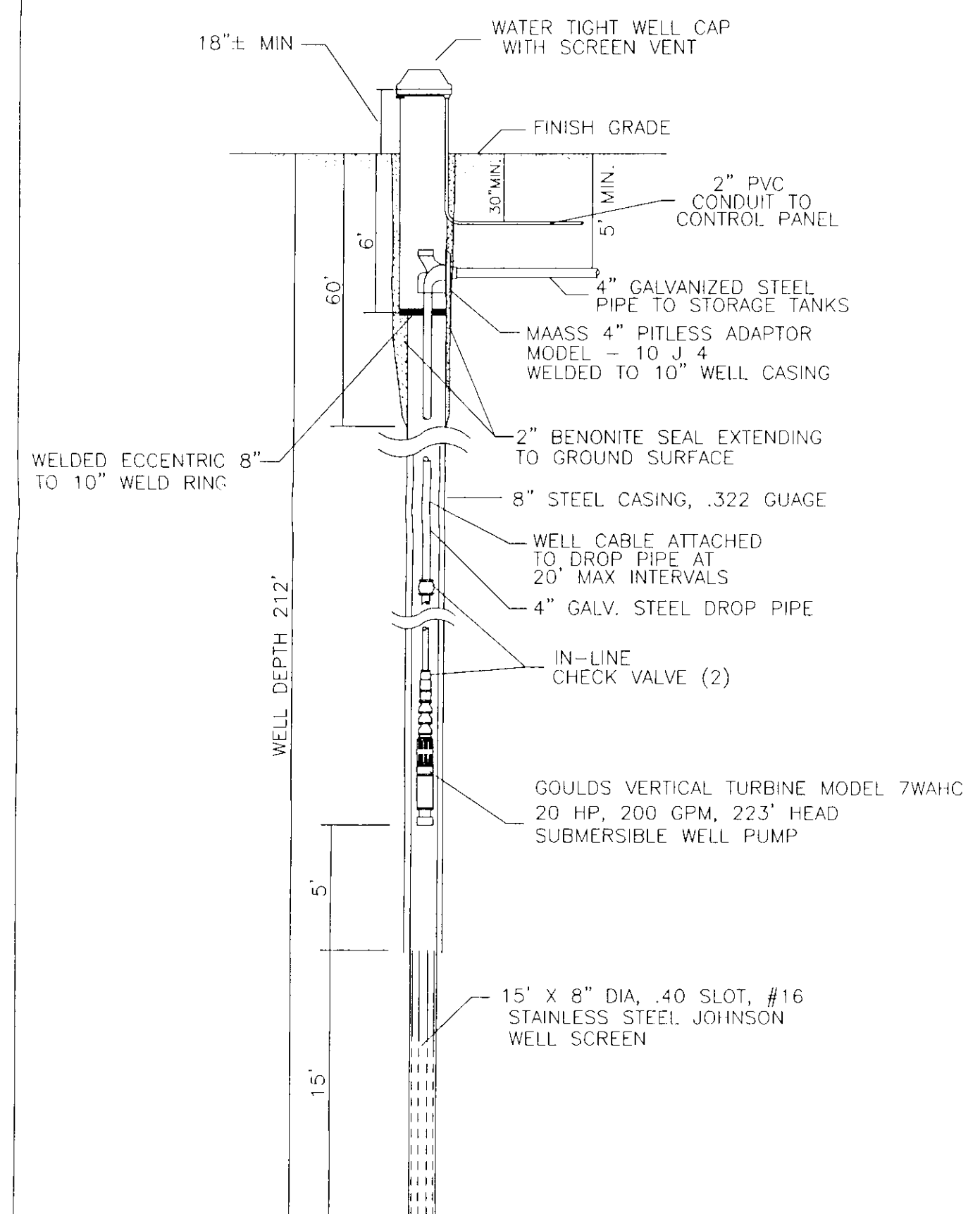
STATIC WATER LEVEL:

54 FEET BELOW GROUND LEVEL

WELL TESTS:

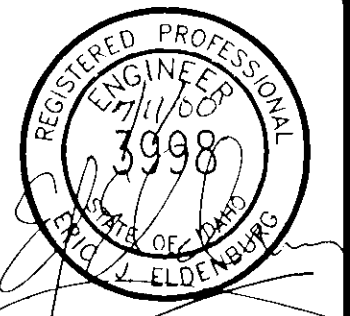
AIR PRESSURE TEST, YIELD OF 70 GALLONS PER MINUTE

2.4 WELL LOG INFORMATION



4.4 WELL CONSTRUCTION DETAIL

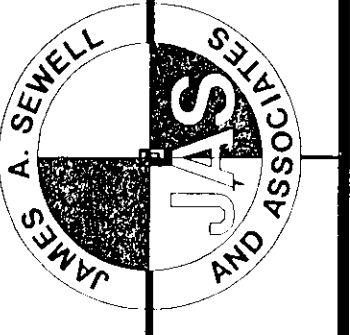
N.T.S.



ENGINEER'S STAMP

NO.	DATE	REVISION	BY	CHK'D
1	6-21-00	AS-BUILT REVISIONS PER DEC 8 PWD	SLH	CMW
2	5-5-00	ADDED WELL DETAIL	SLH	CMW
3	1-31-00	AS-BUILT REVISIONS	SLH	CMW
4	8-15-99	REMOVED PER BIDD AND APPROVAL NOTES	SLH	CMW
5	5-20-99	REVISED NOTES	SLH	CMW

James A. Sewell and Associates
CONSULTING ENGINEERS
SANDPOINT, IDAHO 83864
(208) 263-4160



SAGLE HEADQUARTERS SITE DESIGN
ON-SITE WATER SYSTEM
FOR NORTHERN LIGHTS INC.
BONNER COUNTY, IDAHO

SHEET TITLE:
DATE: 6-21-2000
SCALE: AS SHOWN
DRAWN BY: DPH
CHECKED BY: SLH/CMW
FILE No.: NLPUMPH.ad

C4-A