



DESIGN DETAILS

UNIVERSITY OF UTAH SUPPLEMENT

May 25, 2016

The University of Utah
FACILITIES MANAGEMENT
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VENT THRU ROOF

RETURN BEND.
ELEVATE TO HIGHEST
POINT POSSIBLE

SINK

ISLAND
CABINET

P-TRAP

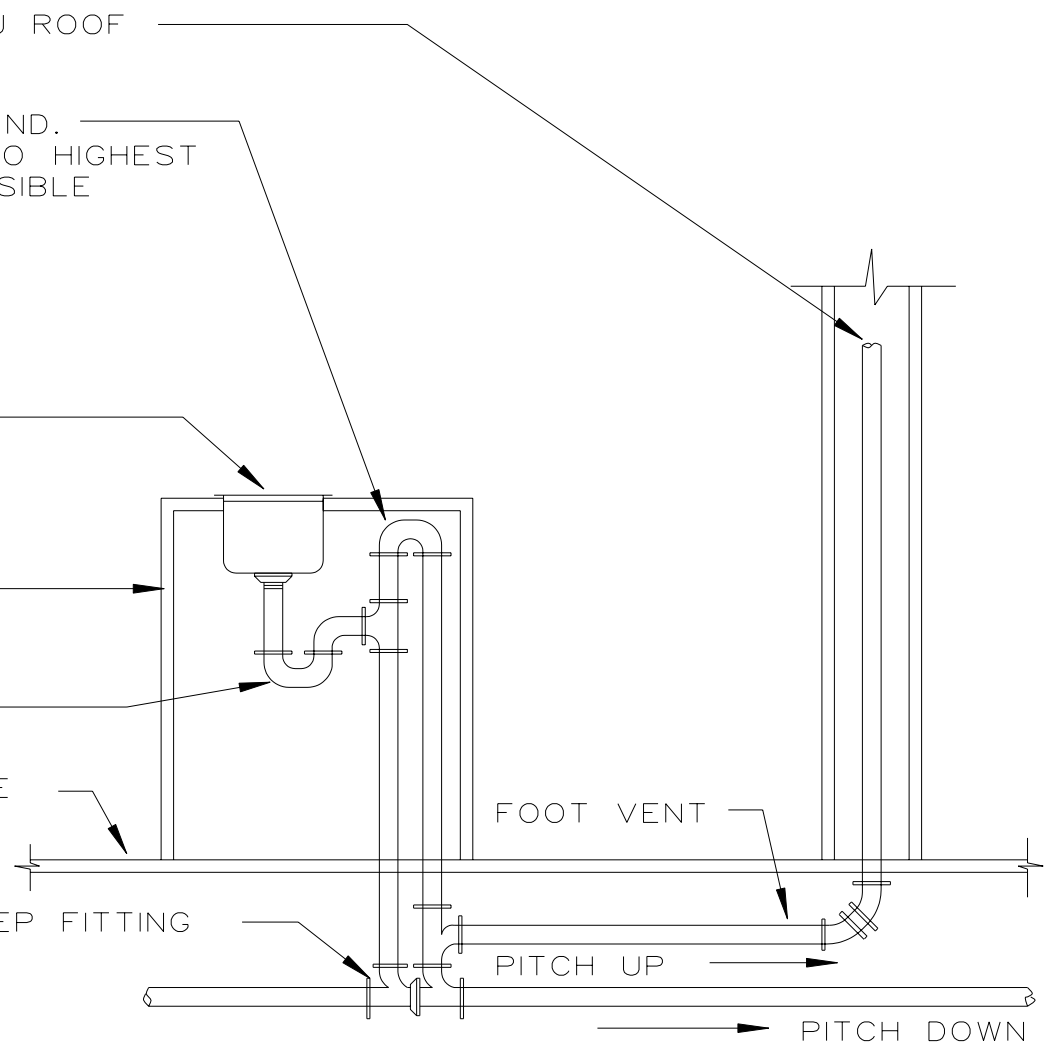
FLOOR LINE

FOOT VENT

LONG SWEEP FITTING
(TYPICAL)

PITCH UP

PITCH DOWN



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Drawing Title:

ISLAND SINK
INSTALLATION
DETAIL

Revision Date:

SEPT. 1992

Drawing No.:

MECH-P2

Drawing Title:

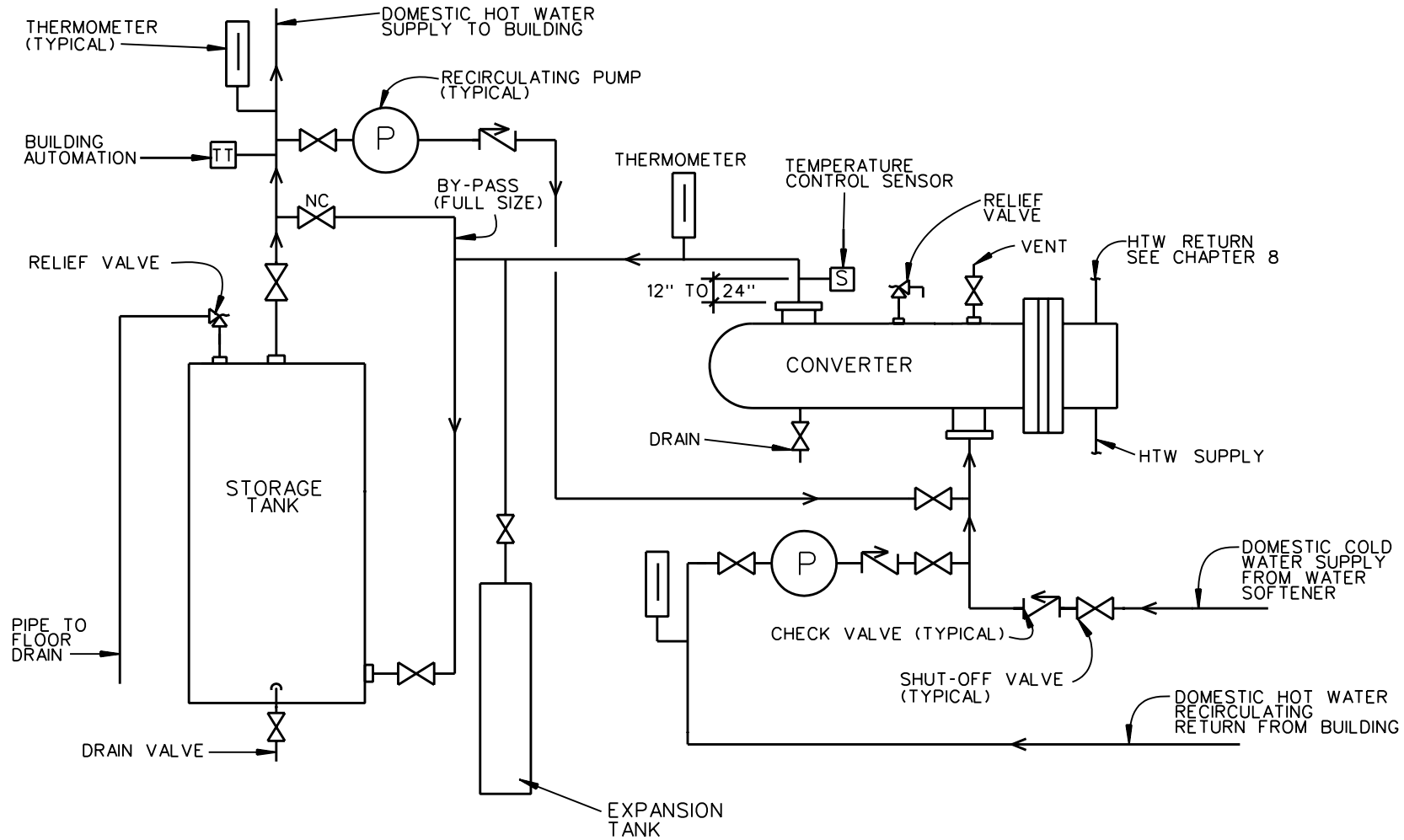
DOMESTIC WATER PIPING SCHEMATIC FOR HTW CONVERTER

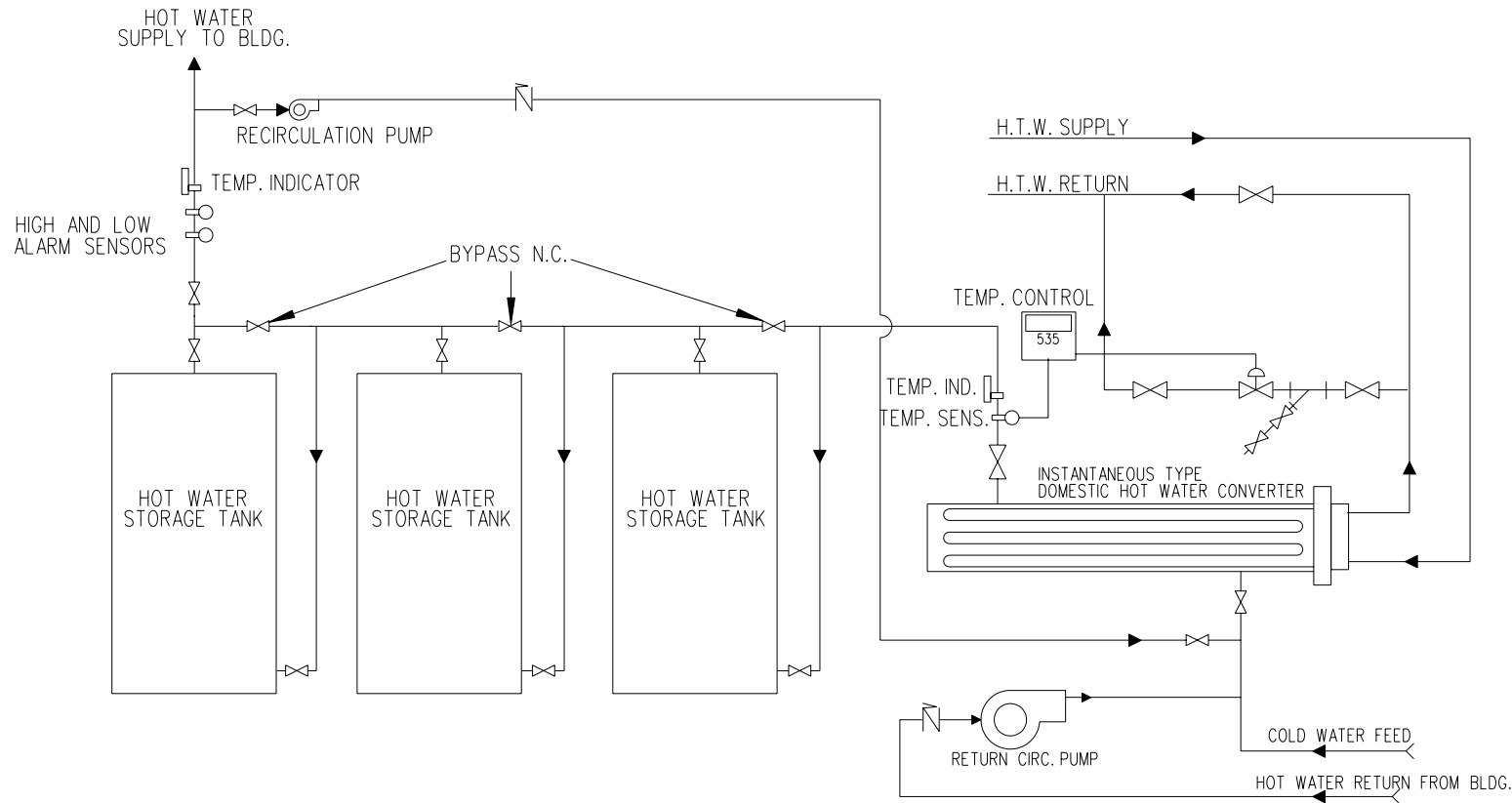
Revision Date:

21 NOV. 2003

Drawing No.:

MECH-P8





Drawing Title:

HIGH TEMP. HOT WATER (H.T.W.)
 SYSTEM, DOMESTIC HOT WATER
 CONVERTER SCHEMATIC

Revision Date:

DEC.1999

Drawing No.:

HTW-1

Drawing Title:

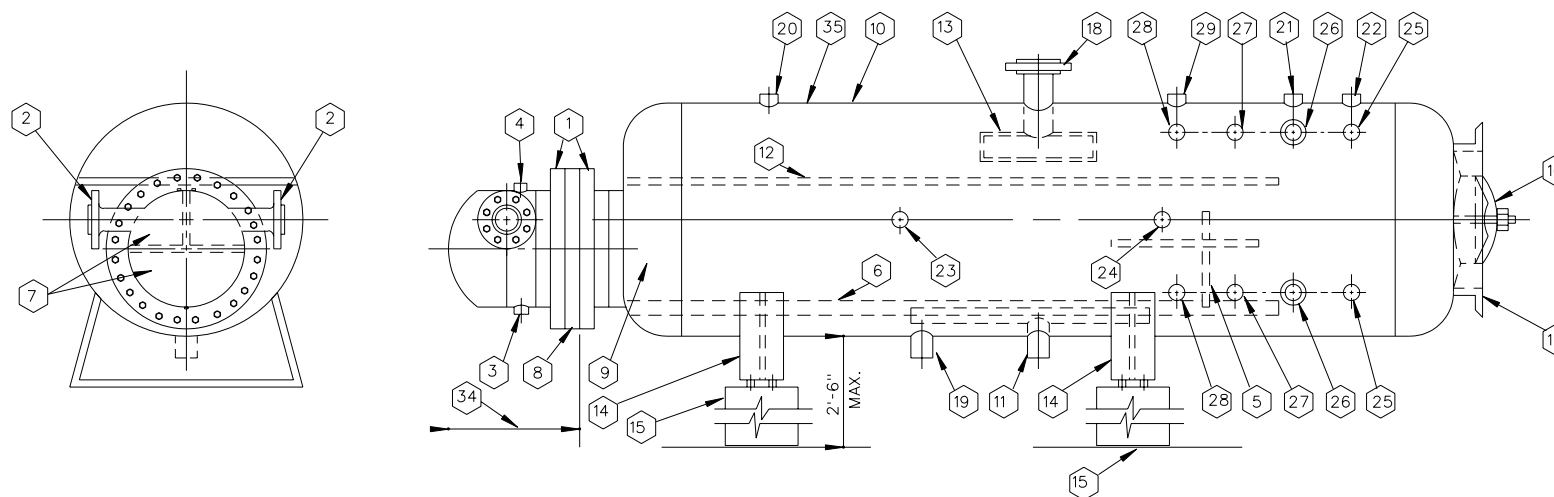
TYPICAL HTW
 STEAM GENERATOR

Revision Date:

JAN. 1992

Drawing No.:

HTW-2



NOTES:

1. BONNET FLANGES 600 LB. ANSI.
2. RADIAL FLANGE HTW SUPPLY & RETURN 600 LBS. ANSI.
3. DRAIN CONNECTION AS REQUIRED.
4. VENT CONNECTIONS AS REQUIRED.
5. TUBE SUPPORTS AS REQUIRED.
6. TRACK & TRACK SUPPORTS.
7. TUBE PASS PARTITIONS AS REQUIRED. (GASKETED)
8. TUBE SHEET.
9. TUBE BUNDLE.
10. SHELL.
11. WATER INLET & DISTRIBUTION PIPE. (BUTT WELD)
12. SPLASH BAFFLE IF REQUIRED.
13. SEPARATOR.
14. CRADLE. MAKE PROVISIONS FOR EXPANSION OF UNIT.
15. CONCRETE OR STRUCTURAL SUPPORT PIER.
16. MINIMUM 11"x15" MANHOLE.
17. ROLLED 3"x3"x1/4" L INSULATION RING. WELD BOTTOM HALF CONTINUOUS. TOP HALF 2" IN 4" TO SHELL.
18. STEAM OUTLET CONNECTION. MINIMUM 150 LB. ANSI.
19. BLOWDOWN CONNECTION. (BUTT WELD)
20. SAFETY VALVE CONNECTION.
21. COUPLING FOR PRESSURE CONTROL.
22. COUPLING FOR PRESSURE GAGE.
23. COUPLING FOR CHEMICAL FEED.
24. COUPLING FOR CONTINUOUS BLOWDOWN.
25. COUPLING FOR WATER COLUMN.
26. COUPLING FOR WATER LEVEL CONTROL.
27. COUPLING FOR HIGH LEVEL CONTROL.
28. COUPLING FOR LOW LEVEL CONTROL.
29. COUPLING FOR VENT CONNECTION.
30. FOR MATERIAL TO BE USED SEE SPECIFICATION.
31. FOR INSULATION OF UNIT SEE SPECIFICATION.
32. FOR PAINT SEE SPECIFICATION.
33. FOR REQUIRED DESIGN & TEST PRESSURES AND DESIGN TEMPERATURES, SEE SPECIFICATIONS.
34. SHOW DIMENSION FOR SPACE REQUIRED TO REMOVE BUNDLE.
35. STEAM SPACE TO OCCUPY 55% VOLUME OF SHELL.

FLOAT CAGE FOR LEVEL CONTROL, HIGH & LOW WATER LEVEL CONTROLS, ALARM SWITCHES, ETC.

PLUG (TYPICAL)

GLOBE DRAIN VALVE.

EXTEND TO EQUIPMENT DRAIN.

(DWG. NO. HTW-8)

NORMAL WATER LEVEL.

ISOLATING GATE VALVE.

UNION.

SINGLE POST

NOTE:

PIPE SIZES SHALL SUIT FLOAT CAGES & SWITCHES.

FLOAT CAGE FOR LEVEL CONTROL, HIGH & LOW WATER LEVEL CONTROLS, ALARM SWITCHES, ETC.

PLUG (TYPICAL)

UNIONS.

GLOBE DRAIN VALVE.

EXTEND TO EQUIPMENT DRAIN.

(DWG. NO. HTW-8)

ISOLATING GATE VALVE.

UNIONS.

NORMAL WATER LEVEL.

ISOLATING GATE VALVE.

MULTIPLE FLOATS FOR SAME TANK CONNECTIONS



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Drawing Title:

TYPICAL LEVEL CONTROL FOR STEAM GENERATOR

Revision Date:

FEB. 1992

Drawing No.:

HTW-3

Drawing Title:

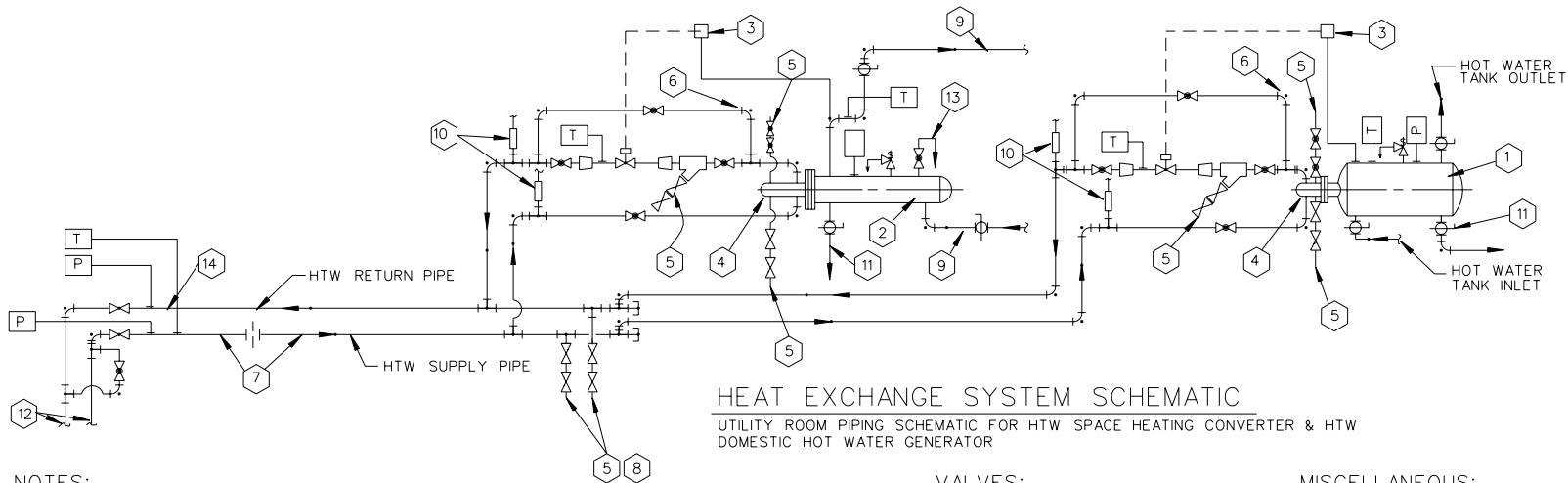
PIPING SCHEMATIC
SHEET 1

Revision Date:

JAN 2000

Drawing No.:

HTW-4



HEAT EXCHANGE SYSTEM SCHEMATIC

UTILITY ROOM PIPING SCHEMATIC FOR HTW SPACE HEATING CONVERTER & HTW DOMESTIC HOT WATER GENERATOR

NOTES:

1. HTW DOMESTIC HOT WATER GENERATOR.
2. HTW SPACE HEATER CONVERTER.
3. TEMPERATURE CONTROLLER INSTRUMENT.
4. DOUBLE VALVED VENTS & DRAINS INSTALLED ON ALL CONVERTER HEADS AS REQUIRED FOR PROPER DRAINING & VENTING.
5. DOUBLE VALVED. SEE SPECS. FOR SPECIAL VALVE. WELD 3" LONG NIPPLE WITH PLAIN END INTO VALVE. DISCHARGE END OF NIPPLE TO HAVE MALE PIPE THREAD.
6. THREE VALVE BY-PASS.
7. PROVIDE REQUIRED STRAIGHT RUN OF PIPE FOR PROPER FLOW MEASUREMENT AT ORIFICE PLATE OR SENSOR.
8. DOUBLE VALVED DRAIN. PROVIDE AT ALL LOW POINTS.
9. SECONDARY SYSTEM LINES.
10. VENT AT HIGH POINT OF LINES. GRADE LINES TO HIGH POINT. TYPICAL ALL HTW SUPPLY & RETURN LINES.
11. VALVED DRAIN. EXTEND TO DRAIN OR FLOOR.
12. FOR TYPICAL HTW SERVICE ENTRANCE. (DRAWING NO. HTW-6).
13. VENT. EXTEND TO FLOOR.
14. PROVIDE TEMPERATURE WELLS & OTHER SENSING POINTS FOR CENTRAL CONTROL SYSTEM.

VALVES:

- |—| GATE VALVE
- |—| GLOBE VALVE
- |—| PLUG VALVE
- |—| CHECK VALVE (ARROW INDICATES DIRECTION OF FLOW)
- |—| ANGLE VALVE
- |—| ANGLE SAFETY OR RELIEF VALVE
- |—| SAFETY OR RELIEF VALVE
- |—| SOLENOID OPERATED VALVE
- |—| CONTROL VALVE OR SPECIAL VALVE
- |—| THREE-WAY VALVE
- |—| PRESSURE REGULATING VALVE
- |—| BALL OR BUTTERFLY VALVE
- |—| REDUCED PRESSURE BACKFLOW PREVENTER

MISCELLANEOUS:

- |—| REDUCER
- |—| STRAINER
- |—| ORIFICE OR FLOW NOZZLE
- |—| PLUG, CAP OR BLIND FLANGE
- |—| FLANGE OR UNION
- |—| OPEN DRAIN FUNNEL
- |—| HOSE BIBB
- |—| THERMOMETER (T)
- |—| PRESSURE GAGE (DWG. HTW-11) (P)
- |—| DRIP PAN
- |—| METER (M)
- |—| VENT (DWG. NO. HTW-7)
- |—| VENT THRU ROOF (VTR)

Drawing Title:

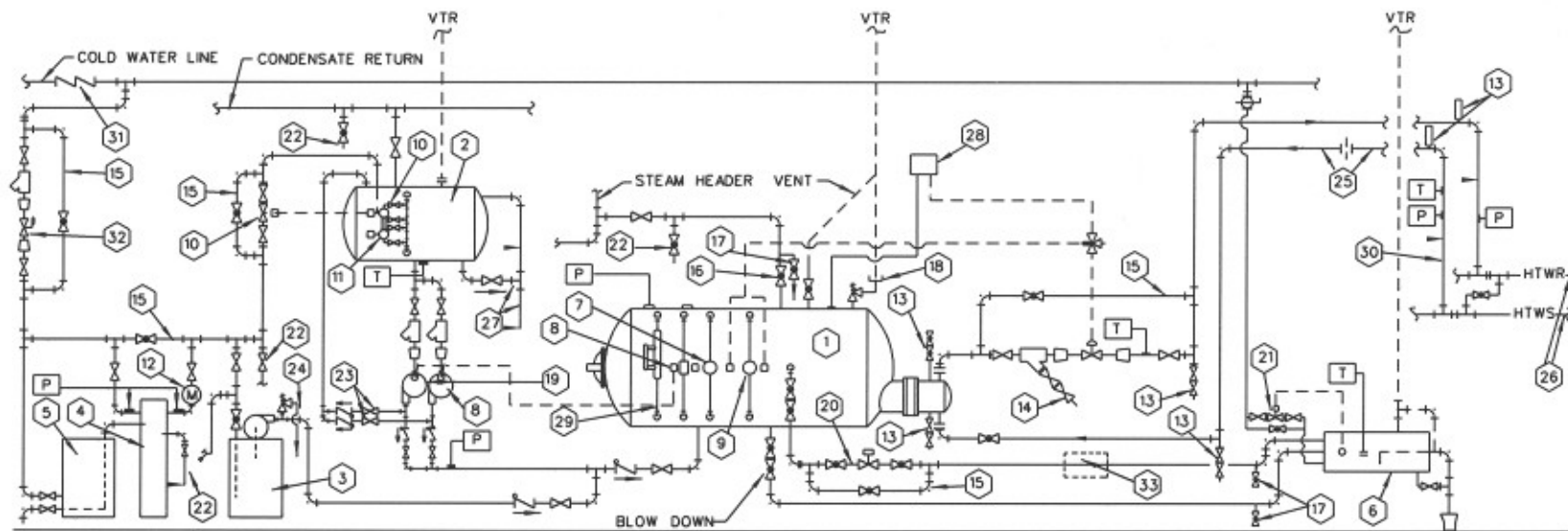
PIPING SCHEMATIC
SHEET 2

Revision Date:

JAN. 2006

Drawing No.:

HTW-5



UTILITY ROOM PIPING SCHEMATIC FOR HTW STEAM GENERATOR

NOTES:

1. HTW STEAM GENERATOR.
2. CONDENSATE TANK.
3. CHEMICAL FEED TANK & PUMP. SEE SPECIFICATIONS
4. WATER SOFTENER.
5. BRINE & SALT STORAGE TANK.
6. BLOWDOWN TANK.
7. HIGH LEVEL CUT-OFF & ALARM.
8. WATER LEVEL CONTROL CYCLES PUMPS.
9. LOW LEVEL CUT-OFF & ALARM.
10. MAKE-UP CONTROL & VALVE.
11. LOW LEVEL PUMP CONTROL.
12. WATER METER.
13. DOUBLE VALVED VENTS & DRAINS INSTALLED ON ALL STEAM GENERATOR HEADS & PIPING AS REQUIRED FOR PROPER VENTING & DRAINING. WELD 3" LONG NIPPLE WITH PLAIN END INTO VALVE. DISCHARGE END OF NIPPLE TO HAVE MALE PIPE THREAD.
14. DOUBLE VALVED WELD 3" LONG NIPPLE WITH PLAIN END INTO VALVE. DISCHARGE END OF NIPPLE TO HAVE MALE PIPE THREAD. SEE SPECS. FOR SPECIAL VALVES.
15. THREE VALVE BY-PASS.
16. SHUT-OFF VALVE OR NON-RETURN VALVE IF MORE THAN ONE HTW STEAM GENERATOR CONNECTED IN PARALLEL.
17. VALVED DRAINS AT LOW POINTS. (EXTEND TO DRAIN)
18. DRIP PAN ELBOWS WITH DRAINS.
19. FEED PUMPS. PROVIDE STAND-BY AS REQUIRED.
20. AUTOMATIC CONTINUOUS BLOWDOWN. SEE SPECIFICATIONS.
21. TEMPERATURE REGULATOR.
22. SAMPLE CONNECTION.
23. RELIEF VALVE OR ORIFICE TO SUIT TYPE PUMP FURNISHED.
24. RETURN TO CHEMICAL FEED TANK.
25. PROVIDE REQUIRED STRAIGHT RUN OF PIPE FOR PROPER FLOW MEASUREMENT AT ORIFICE PLATE.
26. FOR TYPICAL HTW SERVICE ENTRANCE. SEE DWG. NO. HTW-6.
27. OVERFLOW & VALVED DRAIN. EXTEND TO DRAIN FUNNEL.
28. PRESSURE CONTROLLER.
29. FLOAT GAGE SIGHT GLASS ASSEMBLY.
30. PROVIDE TEMPERATURE WELLS & OTHER SENSING POINTS FOR CENTRAL CONTROL SYSTEM.
31. REDUCED PRESSURE BACKFLOW PREVENTER.
32. PRESSURE REGULATING VALVE.
33. BLOWDOWN HEAT RECOVERY FOR HUMIDIFICATION SYSTEM. SEE SECTION 8.1 IN DESIGN STANDARDS.

Drawing Title:

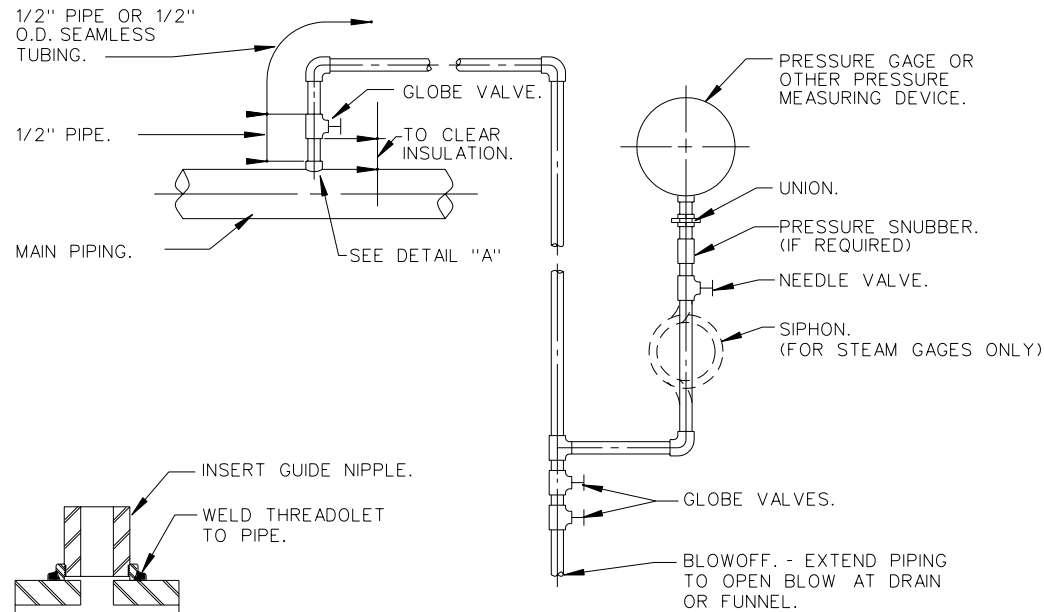
**PRESSURE METERING
INSTALLATIONS**

Revision Date:

JAN. 1992

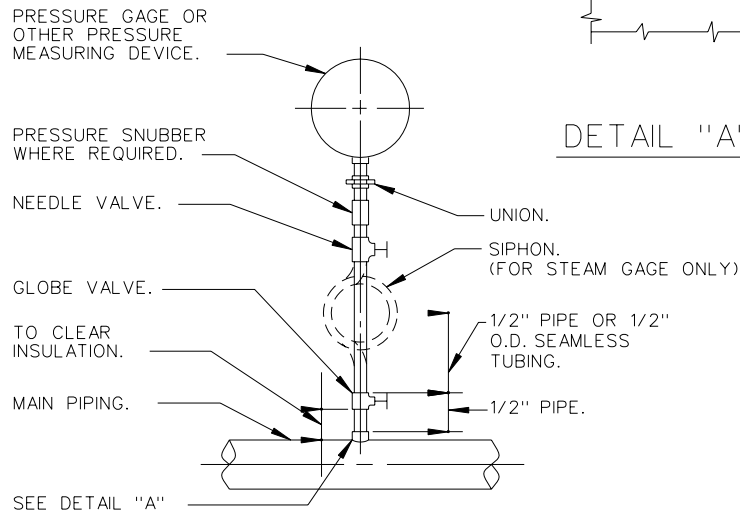
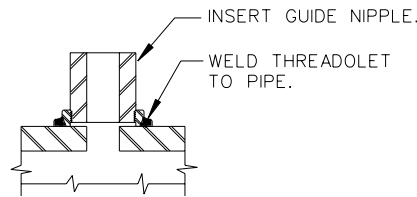
Drawing No.:

HTW-6



REMOTE CONNECTION

DETAIL "A"



DIRECT CONNECTION

NOTES:

1. PIPING & GLOBE VALVES TO BE OF SAME PRESSURE CLASS AS MAIN PIPING.
2. ALL GAGES OR DEVICES MEASURING RAPIDLY FLUCTUATING OR PULSATING PRESSURES TO BE PROTECTED BY PRESSURE SNUBBERS.
3. REMOTE CONNECTED GAGES TO BE CALIBRATED TO COMPENSATE FOR STATIC FLUID HEAD IN GAGE WHEN DIRECTED BY ENGINEER.

Drawing Title:

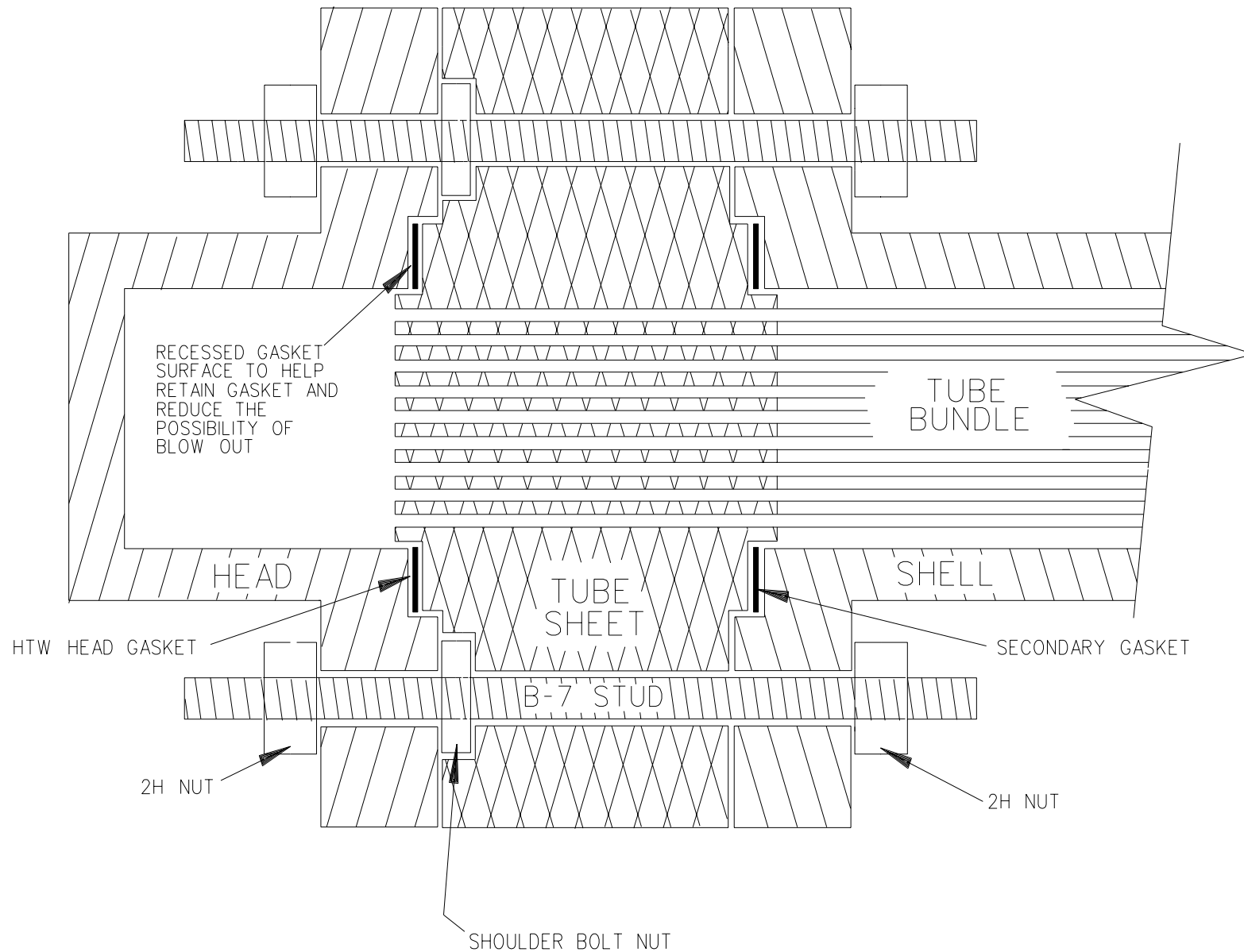
CROSS SECTION
 TYPICAL HTW
 CONVERTER

Revision Date:

NOV. 1995

Drawing No.:

HTW-7



Drawing Title:

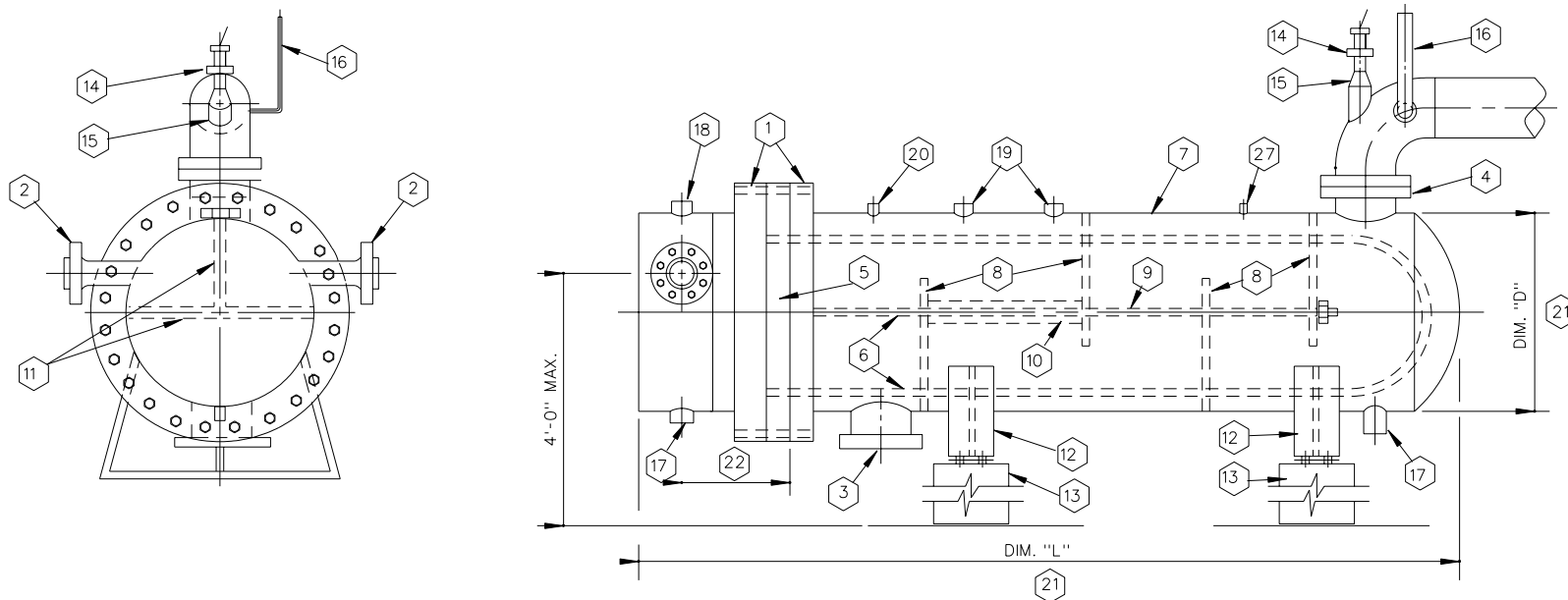
TYPICAL HTW
SPACE HEATING
CONVERTER

Revision Date:

JAN. 1992

Drawing No.:

HTW-8



NOTES:

1. BONNET FLANGES 600 LB. ANSI.
2. RADIAL FLANGE HTW SUPPLY & RETURN 600 LBS. ANSI.
3. INLET FLANGE
4. OUTLET FLANGE
5. TUBE SHEET
6. TUBE BUNDLE
7. SHELL
8. BAFFLES
9. STAY RODS
10. SPACER
11. TUBE PASS PARTITIONS AS REQUIRED.
12. CRADLE. (MAKE PROVISIONS FOR EXPANSION OF UNIT)
13. CONCRETE OR STRUCTURAL SUPPORT PIER.
14. THERMOMETER WELL FOR CONTROL ELEMENT. ARRANGE PIPING TO PROVIDE WELL IMMEDIATELY ADJACENT TO CONVERTER OUTLET.
15. SOCKET WELDED ELBOWLETS. LOCATE AS NEAR TO SHELL OUTLET AS POSSIBLE.
16. THERMOMETER WITH SEPARABLE SOCKET.
17. DRAIN CONNECTION
18. VENT CONNECTIONS AS REQUIRED.
19. RELIEF VALVE CONNECTIONS
20. VENT

21. DIMENSION "L" NOT TO BE GREATER THAN 5 TIMES DIMENSION "D".
22. SHOW DIMENSION FOR SPACE REQUIRED TO REMOVE BUNDLE.
23. FOR MATERIAL TO BE USED, SEE SPECIFICATIONS.
24. FOR INSULATION OF UNIT, SEE SPECIFICATIONS.
25. FOR PAINT, SEE SPECIFICATIONS.
26. FOR REQUIRED DESIGN & TEST PRESSURES & DESIGN TEMPERATURES, SEE SPECIFICATIONS.
27. COUPLING FOR PRESSURE GAGE.

Notes 17 and 18:
Add "Socket weld fitting" to each note.

Drawing Title:

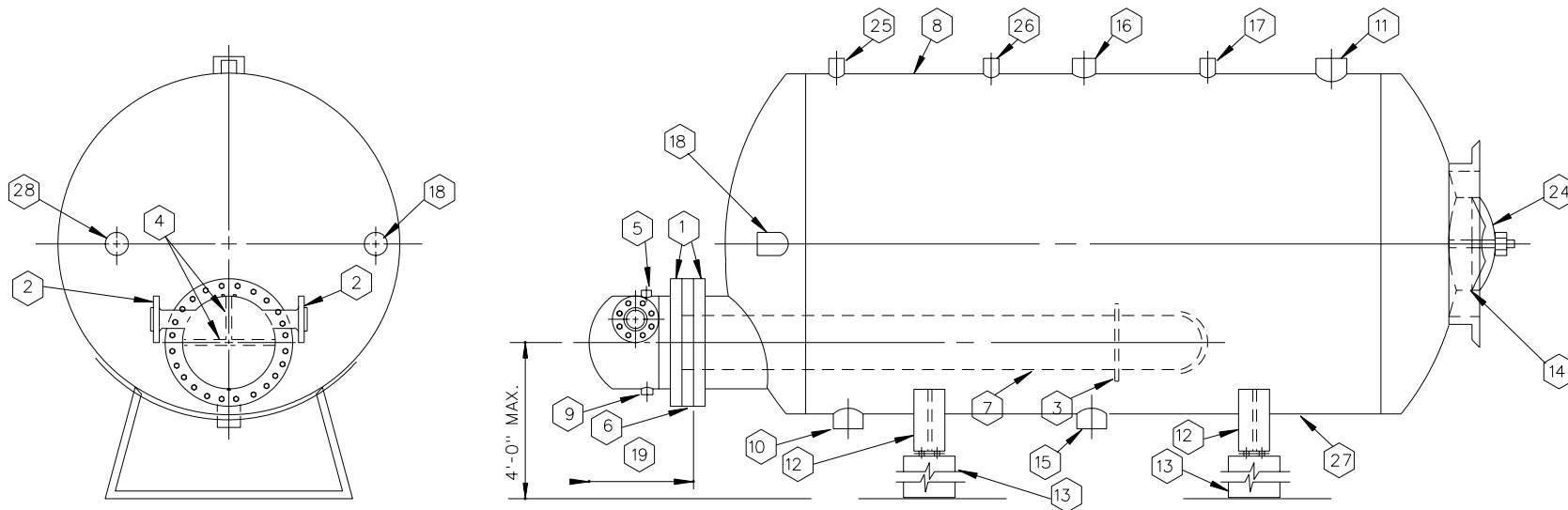
HTW DOMESTIC
HOT WATER
GENERATOR

Revision Date:

DEC. 1999

Drawing No.:

HTW-9



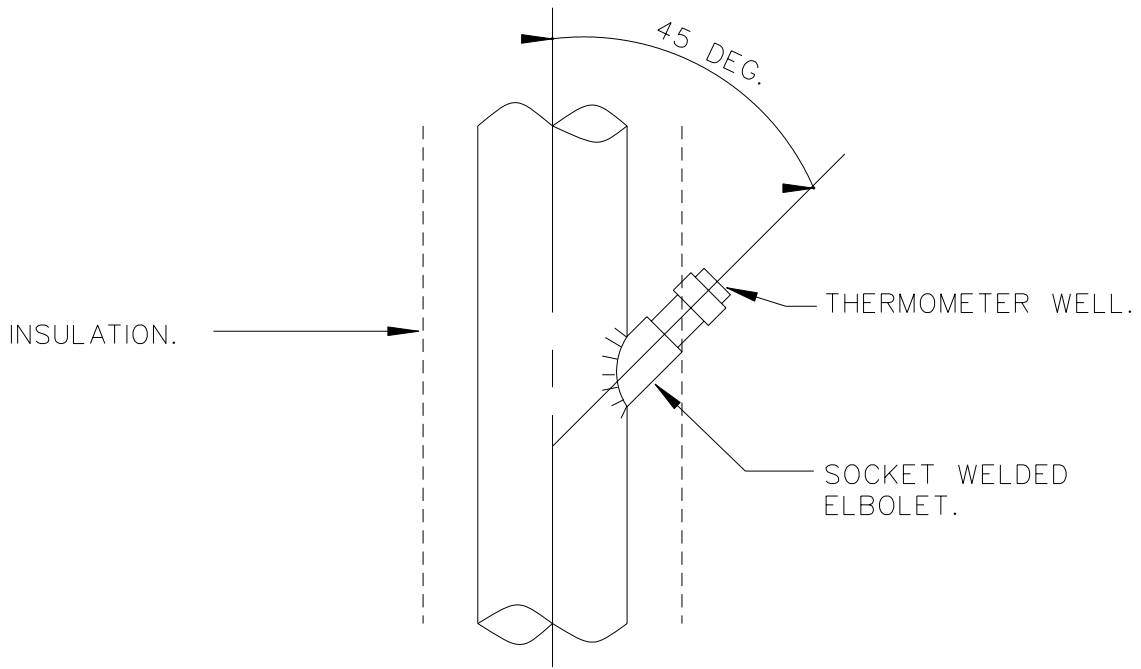
NOTES:

1. BONNET FLANGES 600 LB. ANSI.
2. RADIAL FLANGE HTW SUPPLY & RETURN 600 LBS. ANSI.
3. TUBE SUPPORTS AS REQUIRED.
4. TUBE PASS PARTITIONS AS REQUIRED.
5. VENT CONNECTIONS AS REQUIRED
6. TUBE SHEET
7. TUBE BUNDLE
8. SHELL
9. DRAIN CONNECTION AS REQUIRED.
10. WATER INLET
11. WATER OUTLET
12. CRADLE. MAKE PROVISIONS FOR EXPANSION OF UNIT.
13. CONCRETE OR STRUCTURAL SUPPORT PIER.
14. MINIMUM 11"x15" MANHOLE.
15. DRAIN CONNECTION.
16. RELIEF VALVE CONNECTION.
17. THERMOMETER WITH SEPARABLE SOCKET.
18. THERMOMETER WELL FOR CONTROL ELEMENT.
19. SHOW DIMENSION FOR SPACE REQUIRED TO REMOVE BUNDLE.
20. FOR MATERIAL TO BE USED, SEE SPECIFICATIONS.

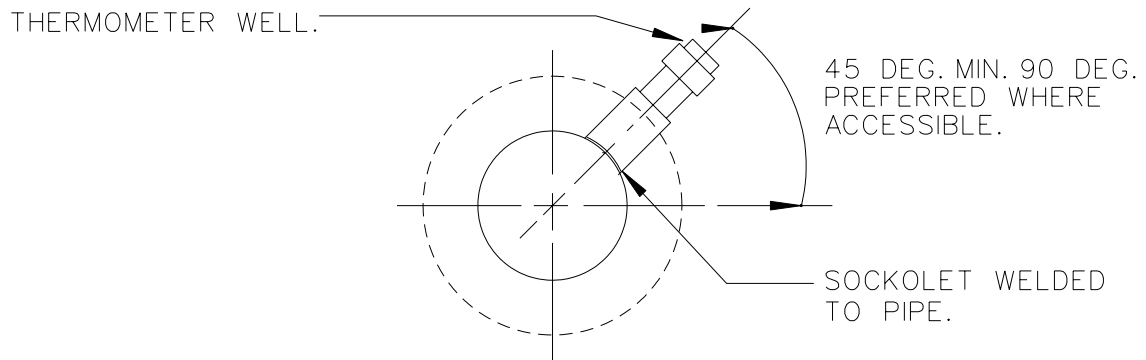
21. FOR PAINT, SEE SPECIFICATIONS.
22. FOR INSULATIONS OF UNIT, SEE SPECIFICATIONS.
23. FOR REQUIRED DESIGN & TEST PRESSURE & DESIGN TEMPERATURE, SEE SPECS.
24. ROLLED 3"x3"x1/4" L INSULATION RING. WELD BOTTOM HALF CONTINUOUS. TOP HALF 2" IN 4" TO SHELL.
25. PROVIDE VENT FOR SHELL.
26. PRESSURE GAUGE CONNECTION.
27. PROVIDE SUITABLE COATING & CORROSION PROTECTION FOR INSIDE OF TANK.
28. PROVIDE 1-1/4" THREADED FITTING ON VESSEL WITH A 24" TO 30" LONG MAGNESIUM SACRIFICIAL ANODE. INSTALL WITH A CENTER CORE WEEP DETECTION HOLE. INSTALL ANODE IN FRONT OR BACK FOR EASY ACCESSIBILITY.

NOTE: THIS DETAIL APPLIES TO BOTH STORAGE TYPE AND INSTANTANEOUS TYPE GENERATORS, EXCEPT MANWAY MAY BE DELETED ON INSTANTANEOUS SHELLS.

Notes 5 and 9:
Add "Socket weld fitting" to each note.



THERMOMETER WELL
INSTALLATION IN VERTICAL PIPE



THERMOMETER WELL
INSTALLATION IN HORIZONTAL PIPE



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Drawing Title:

THERMOMETER
 WELL DETAIL

Revision Date:

FEB. 1992

Drawing No.:

HTW-10

Drawing Title:

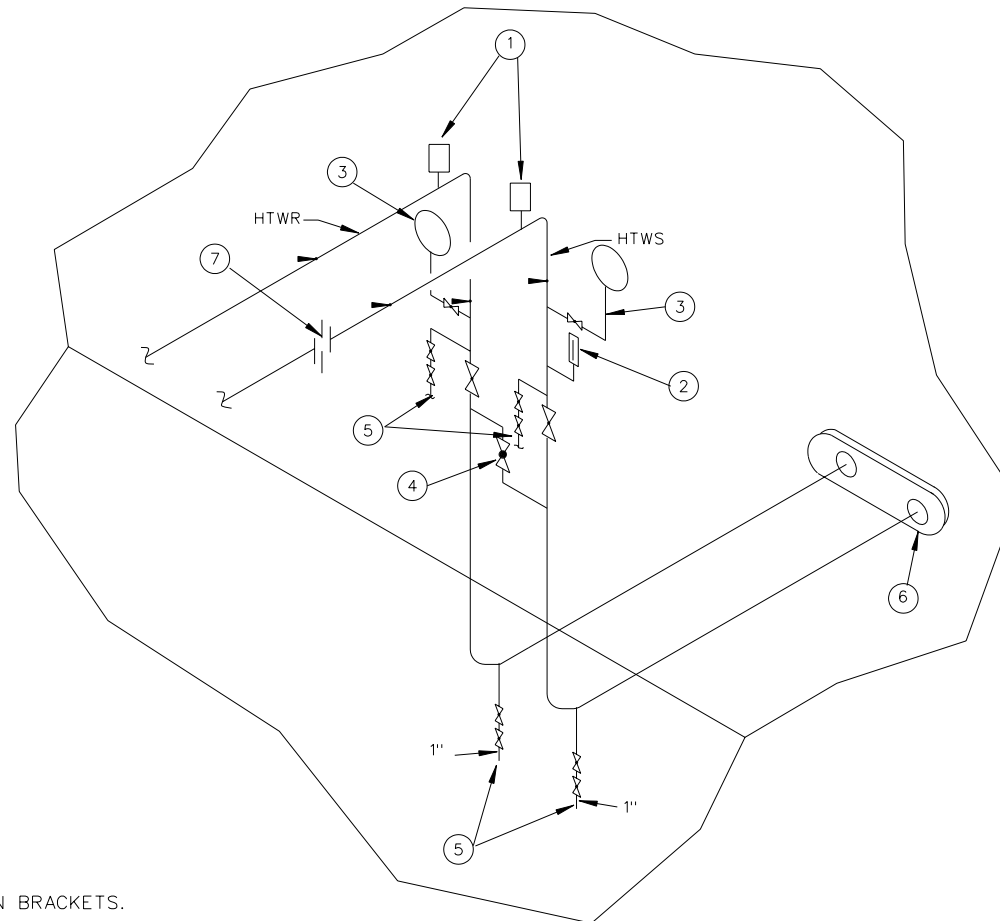
TYPICAL HTW
SERVICE ENTRANCE

Revision Date:

JAN. 1992

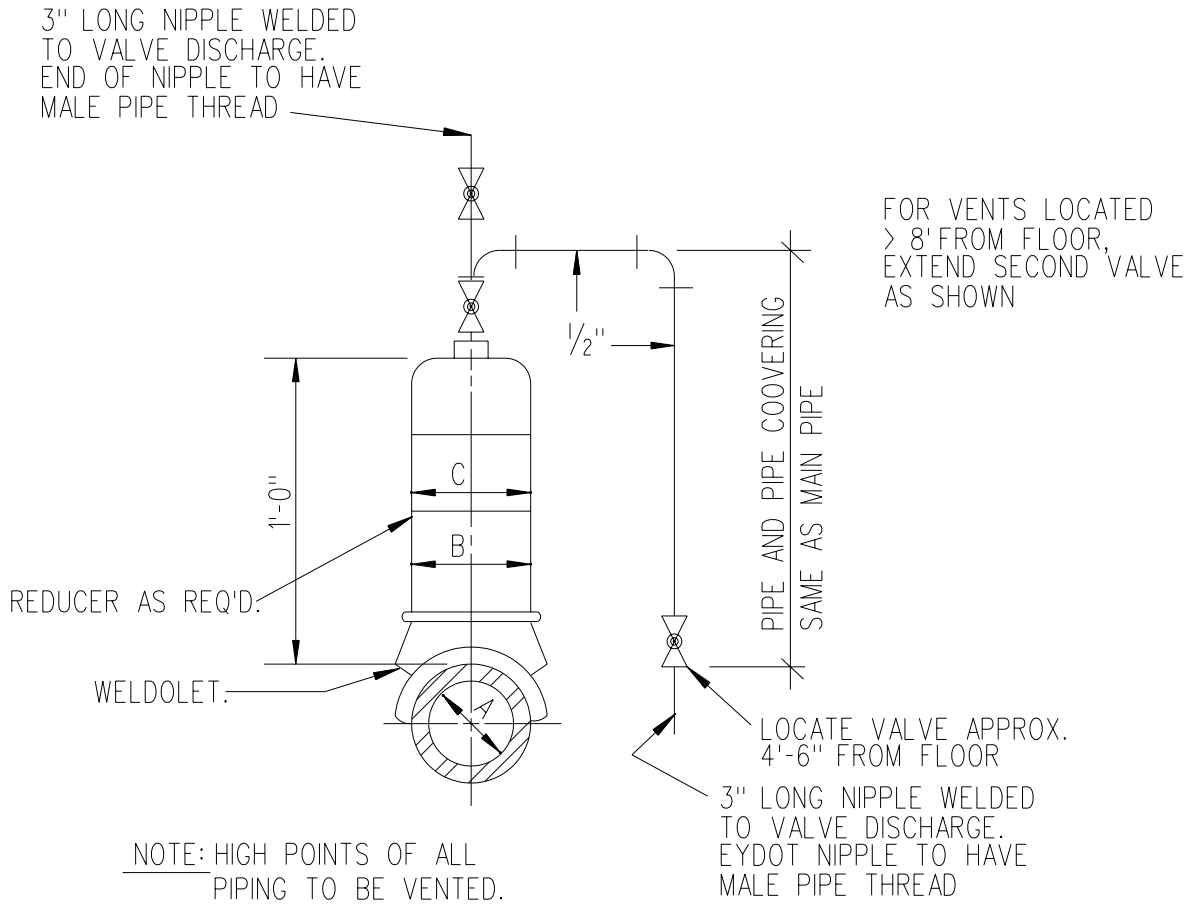
Drawing No.:

HTW-12




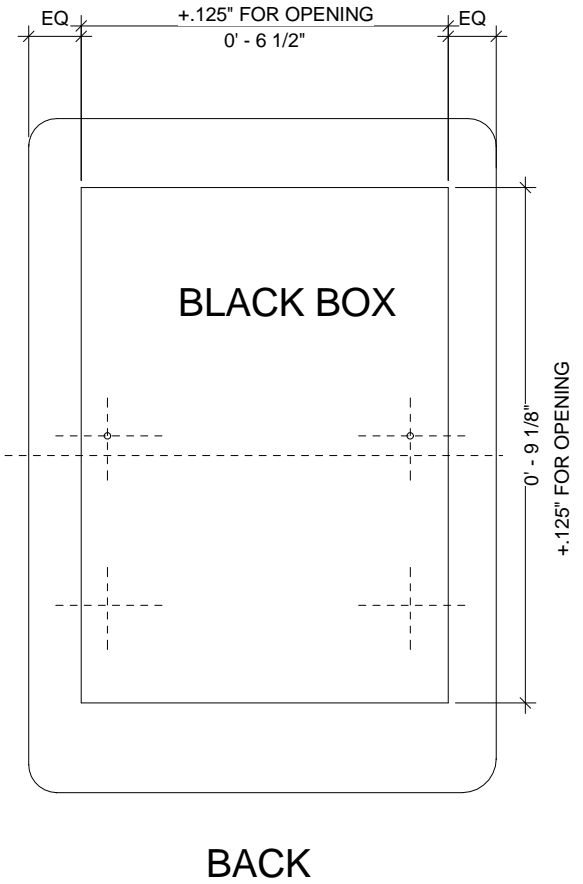
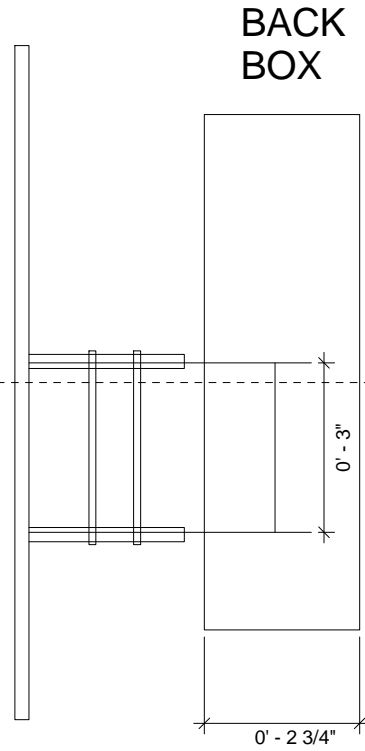
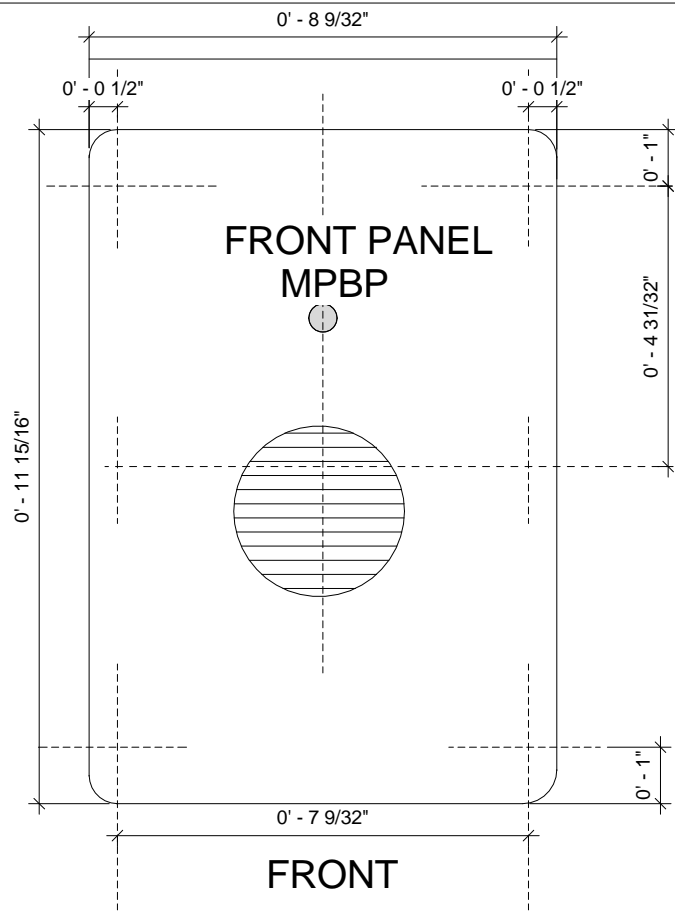
NOTES:

- ① AIR VENTS AT HIGH POINTS.
- ② THERMOMETER WITH SEPARABLE SOCKET.
- ③ PRESSURE GAUGE ASSEMBLY. MOUNT GAUGES ON BRACKETS.
- ④ BY-PASS GLOBE VALVE. PROVIDE OFFSETS OR LOOPS IN BY-PASS PIPING TO PERMIT FREE & UNRESTRICTED PIPE MOVEMENT DUE TO TEMPERATURE CHANGES. 1" FOR LINES TO 3". 1-1/4" FOR LINES 4" TO 6".
- ⑤ DRAINS EXTEND TO EQUIPMENT DRAINS.
- ⑥ HIGH TEMPERATURE WATER SUPPLY & RETURN IN CONDUIT WITH END SEAL.
- ⑦ ORIFICE & FLANGES FOR FLOW MEASUREMENT. PROVIDE REQUIRED STRAIGHT RUN OF PIPE PROPER MEASUREMENT FOR NEW OR FUTURE INSTALLATIONS.



PIPE SIZE (NOM.) A	DIAMETER	
	B	C
1-1/2" & 1-1/4"	1-1/2" & 1-1/4"	2"
2"	2"	3"
2-1/2"	2-1/2"	3"
3"	3"	3"
4"	4"	4"
6"	6"	6"
8"	6"	6"
10"	6"	6"

 <p>The Department of CAMPUS DESIGN & CONSTRUCTION 1795 E. So. Campus Drive, Rm 201 Salt Lake City, UT 84112-9403 Phone: (801)581-6883 FAX: (801)581-6081</p>	<p>Drawing Title:</p> <p>AIR VENT DETAIL</p>	<p>Revision Date:</p> <p>DEC.1999</p>
		<p>Drawing No.:</p> <p>HTW-18</p>



RAMTEL MODEL RR833



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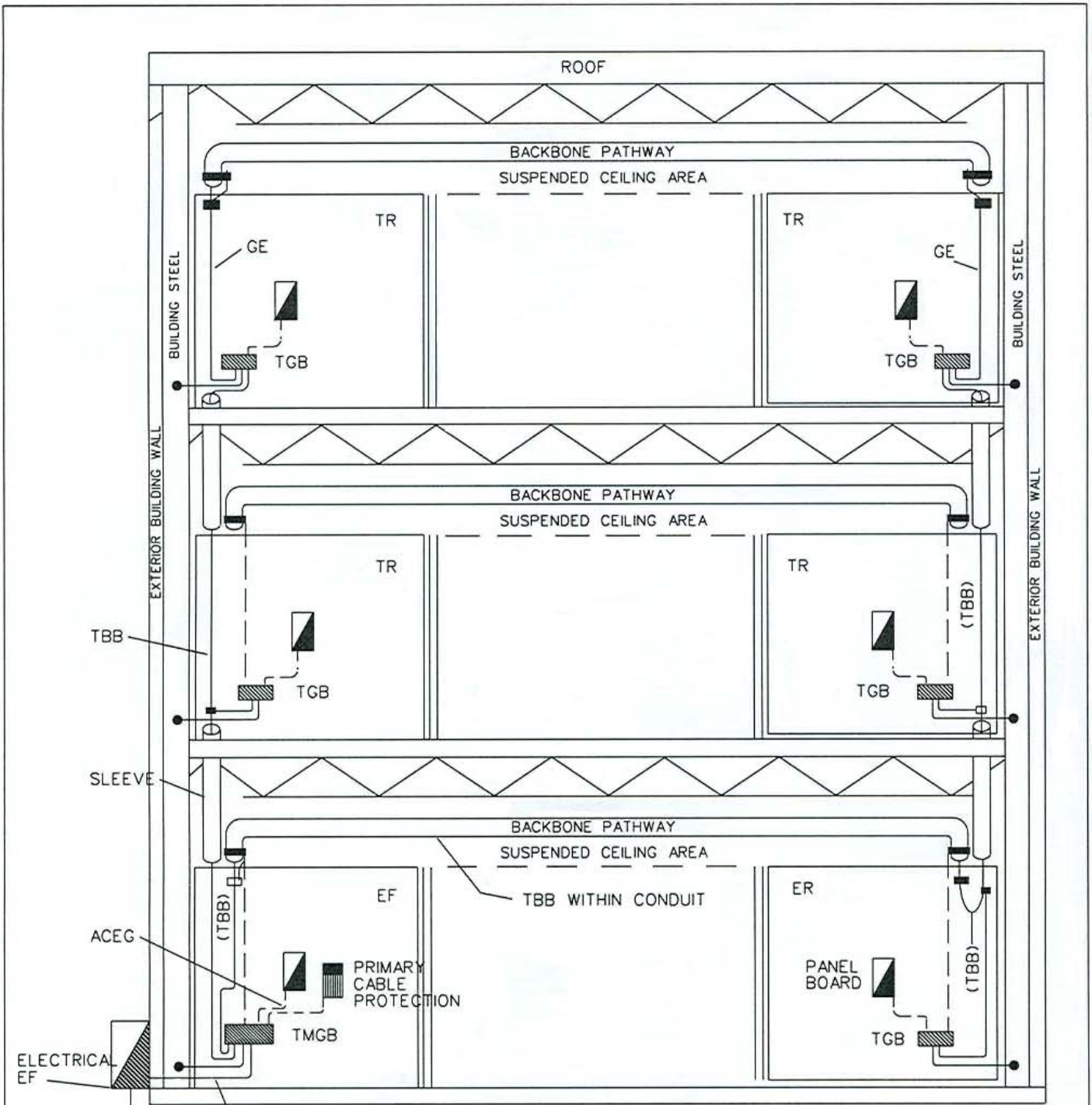
COMMUNICATIONS

PHONE PANEL DETAIL

Date 05/09/2016
Drawn by JJH
Checked by Checker

COM-1

Scale 6" = 1'-0"



- ACEG - ALTERNATING CURRENT EQUIPMENT GROUND
- BC - BONDING CONTRACTOR
- BCT - BONDING CONTRACTOR FOR TELECOMMUNICATIONS
- EF - ENTRANCE FACILITY
- ER - EQUIPMENT ROOM
- GE - GROUNDING EQUALIZER
- GEC - GROUNDING ELECTRODE CONDUCTOR
- TBB - TELECOMMUNICATIONS BONDING BACKBONE
- TGB - TELECOMMUNICATIONS GROUNDING BUSBAR
- TMGB - TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
- TR - TELECOMMUNICATIONS ROOM

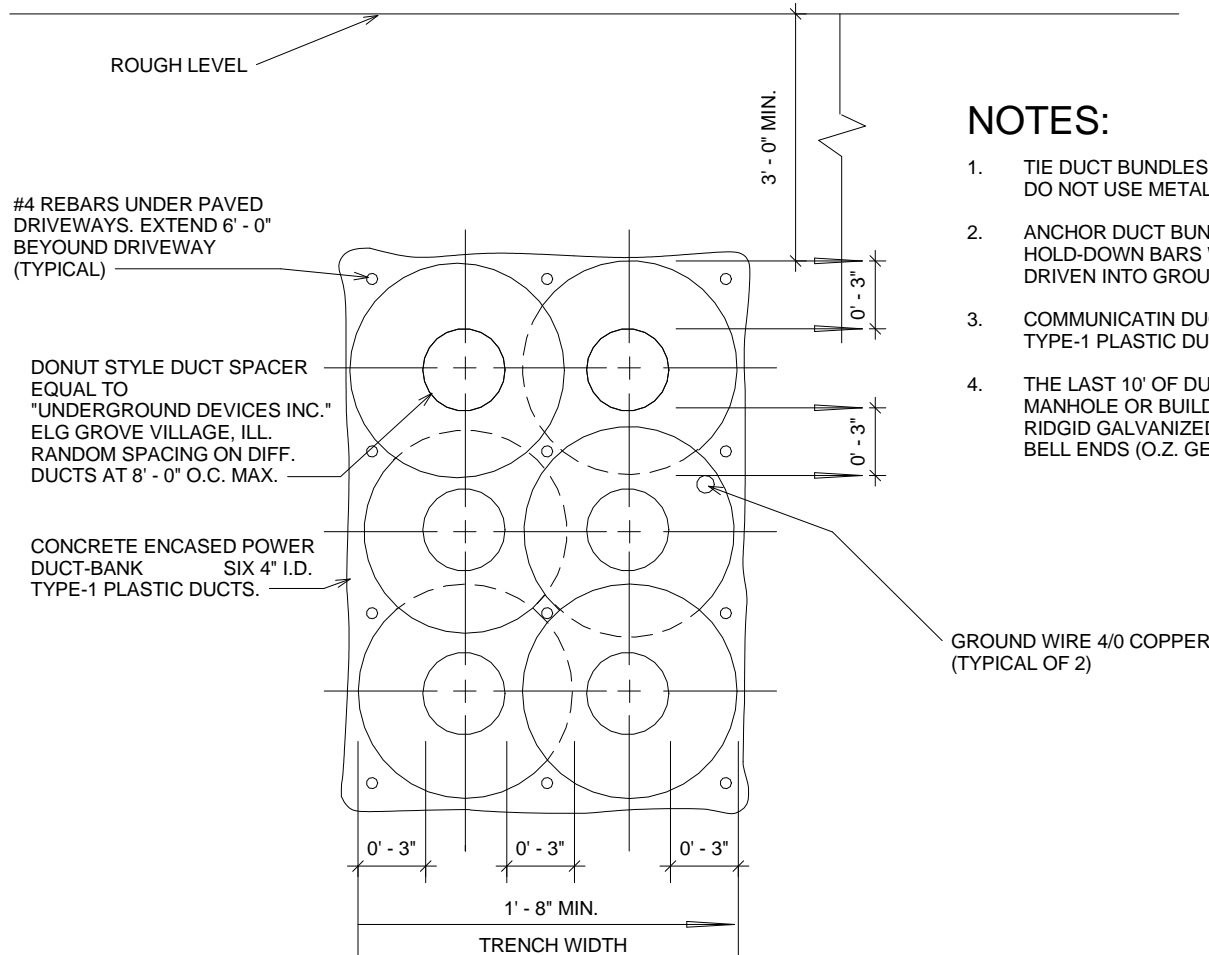


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Drawing Title:
**TELECOMMUNICATIONS
 GROUNDING &
 BONDING
 INFRASTRUCTURE**

Revision Date:
 FEB. 2005

Drawing No.:
COM-2



NOTES:

1. TIE DUCT BUNDLES WITH PLASTIC TAPE. DO NOT USE METAL WIRE.
2. ANCHOR DUCT BUNDLES DOWN WITH HOLD-DOWN BARS WITH #3 REBAR DRIVEN INTO GROUND BETWEEN DUCTS
3. COMMUNICATIN DUCTS TO BE 4" I.D. TYPE-1 PLASTIC DUCTS.
4. THE LAST 10' OF DUCTS ENTERING MANHOLE OR BUILDING SHALL BE RIDGID GALVANIZED CONDUIT WITH FLUSH BELL ENDS (O.Z. GEDNEY TYPE INS OR EQUAL)

① COMMUNICATION DUCT BANK
1 : 5



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COMMUNICATIONS

COMMUNICATION DUCT BANK

Date	05/09/2016
Drawn by	JJH
Checked by	Checker

COM-3

Scale 1 : 5

Drawing Title:

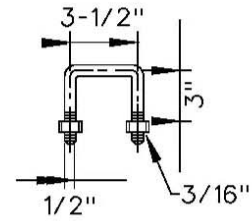
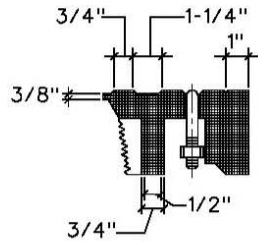
MANHOLE RING &
 COVER DETAIL

Revision Date:

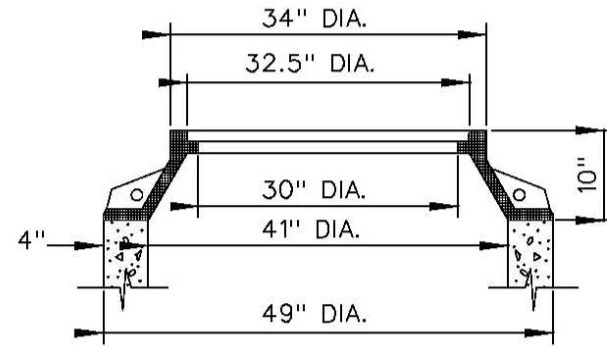
May 2012

Drawing No.:

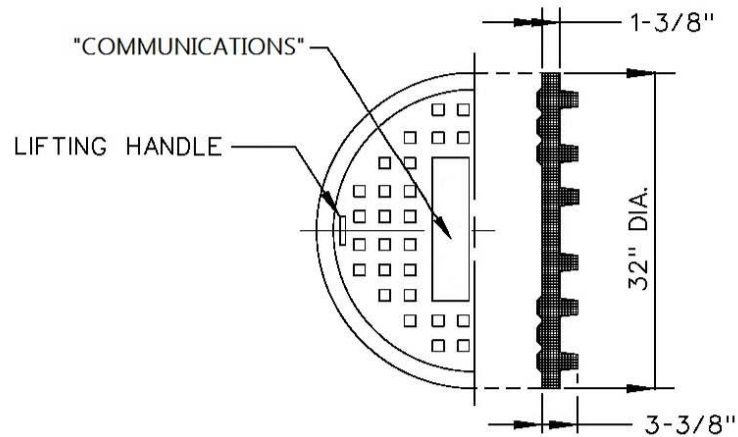
COM - 4



HANDLE DETAIL
 (2-REQ'D.)

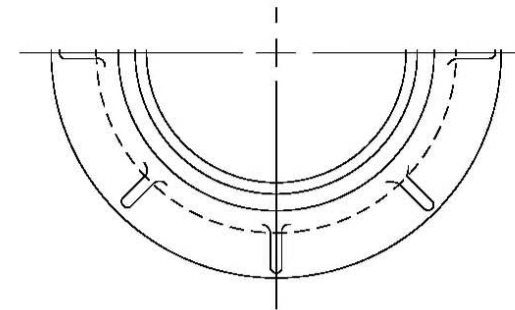


SECTION VIEW

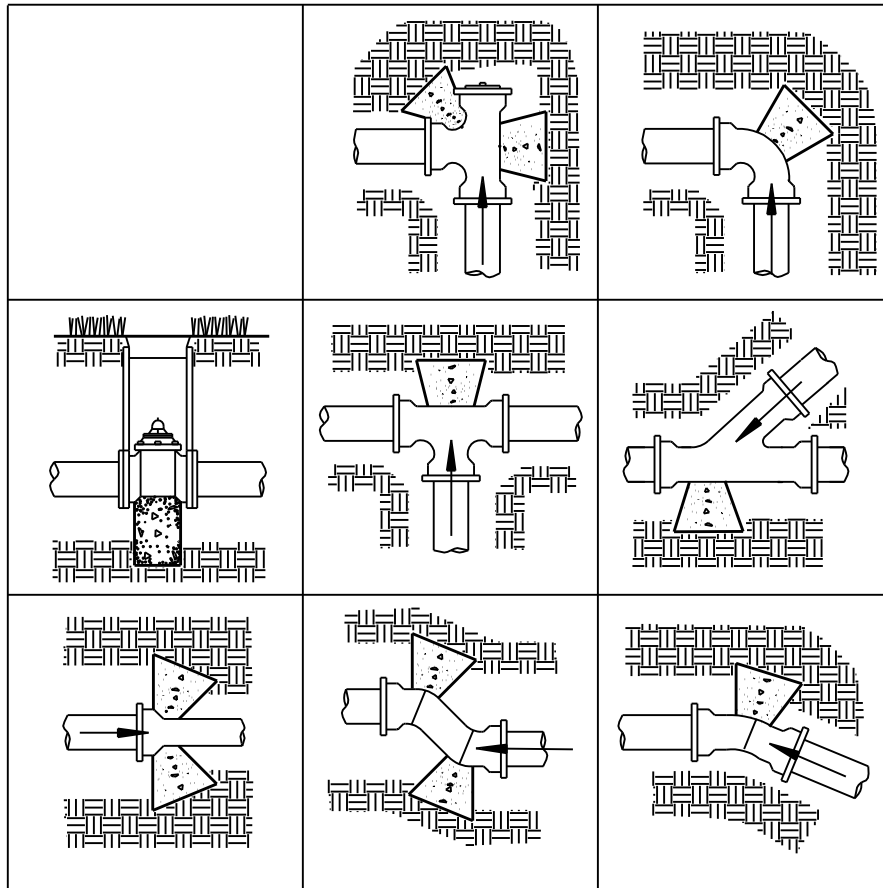


COVER

RING & COVER BY "CONCO FOUNDRY INC." CAT. NO. C-1380.




FRAME - TOP VIEW



NOTES:

1. MAIN LINE PIPING SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. THRUST BLOCKS MUST BE POURED AGAINST UNDISTURBED SOIL.
3. ALL PIPE JOINTS MUST BE LEFT ACCESSIBLE.
4. CONCRETE MUST BE ALLOWED TO CURE FOR 5 DAYS PRIOR TO PRESSURIZING WATER LINES.
5. CONCRETE MUST HAVE A MINIMUM OF 2500 PSICOMPRESSIVE STRENGTH IN 28 DAYS.
6. THRUST BLOCKS MUST BE POURED AS CLOSE AS POSSIBLE TO THE CONFIGURATION SHOWN.
7. BEARING AREAS FOR HORIZONTAL BEND THRUST BLOCKS ARE BASED ON TEST PRESSURE OF 200 PSIG & AN ALLOWABLE SOIL BEARING STRESS OF 2000 LBS./SQ.FT.
8. BEARING AREAS, VOLUMES, & SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER THIS STANDARD.
9. BEARING AREAS FOR PIPE SIZES OR CONFIGURATION NOT SHOWN REQUIRE A SPECIAL DESIGN.
10. ALL WORK MUST BE INSPECTED BY IRRIGATION FOREMAN PRIOR TO BACKFILL.

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			Drawing No.: LS-1

THRUST BLOCK SIZING PROCEDURE:

- MULTIPLY THE WORKING PRESSURE BY THE APPROPRIATE VALUE SHOWN IN THE FOLLOWING TABLE TO OBTAIN TOTAL THRUST IN N(LB)

PIPELINE THRUST FACTORS (BASED ON THRUST PER KPA (PSI) PRESSURE)


PIPE SIZE		DEAD END OR TEE	90° ELBOW	45° ELBOW	22½° ELBOW
IN.	MM				
3	89	9.80	13.90	7.51	3.82
4	114	16.20	23.00	12.40	6.31
6	168	34.80	49.20	26.70	13.60
8	219	59.00	83.50	45.20	23.00
10	273	91.50	130.00	70.00	35.80
12	324	129.00	182.00	98.50	50.30

- DETERMINE THE BEARING STRENGTH OF THE SOIL FROM THE TABLE BELOW.

BEARING STRENGTH OF SOILS

SOILS AND SAFE BEARING LOADS	1B/SQ.FT.	KPA
SOUND SHALE	10,000	500
CEMENTED GRAVEL & SAND DIFFICULT TO PICK	4,000	200
COARSE AND FINE COMPACT SAND	3,000	100
MEDIUM CLAY-CAN BE SPADED	2,000	150
SOFT CLAY	1,000	50
MUCK	0	0

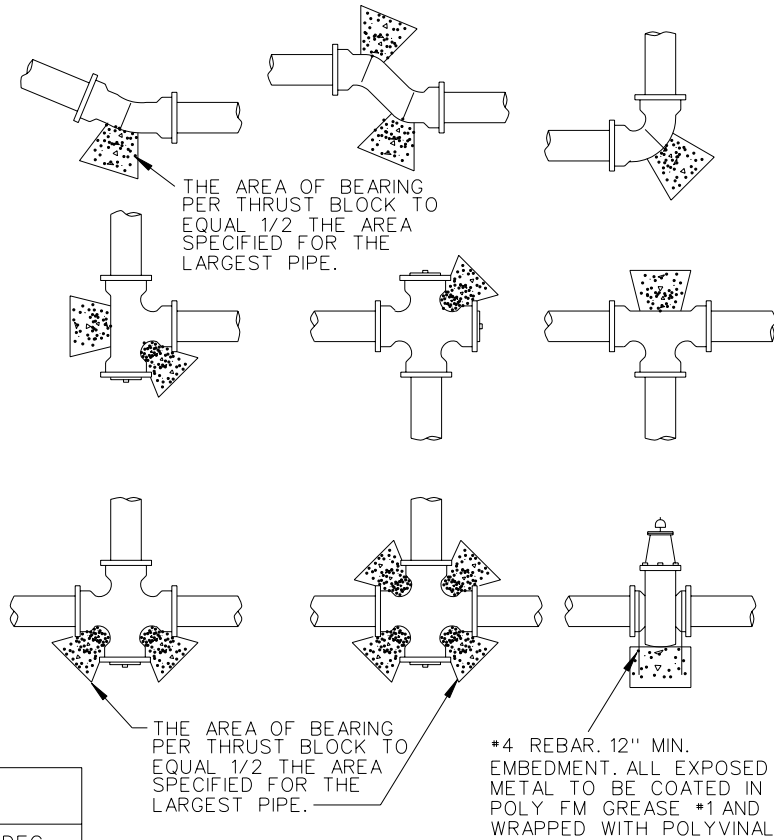
- DIVIDE THE TOTAL THRUST OBTAINED IN STEP 1 BY THE BEARING STRENGTH OF THE SOIL TO GET THE AREA NEEDED, M/SQ.FT.

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			Drawing No.: LS-2

NOTES

1. ALL WORK MUST BE INSPECTED BY PROJECT MANAGER PRIOR TO BACKFILL.
2. THRUST BLOCKS MUST BE POURED AGAINST UNDISDISTURBED SOIL.
3. ALL PIPE JOINTS MUST BE LEFT ACCESSIBLE.
4. CONCRETE MUST BE ALLOWED TO CURE FOR 5 DAYS PRIOR TO PRESSURIZING WATER LINES.
5. CONCRETE MUST HAVE A MINIMUM OF 2500 P.S.I. COMPRESSIVE STRENGTH IN 28 DAYS.
6. THRUST BLOCKS MUST BE POURED AS CLOSE AS POSSIBLE TO THE CONFIGURATION SHOWN.
7. BEARING AREAS FOR HORIZONTAL BEND THRUST BLOCKS ARE BASED ON TEST PRESSURE OF 200 P.S.I.G. & AN ALLOWABLE SOIL BEARING STRESS OF 2000 LBS./SQ. FT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES & SOIL BEARING STRESS. USE THE FOLLOWING EQUATION: BEARING AREA = (TEST PRESS./ 200) x (2000/SOIL BEARING STRESS) x (TABLE VALUE).
8. BEARING AREAS, VOLUMES, & SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER THIS STANDARD.
9. BEARING AREAS FOR PIPE SIZES OR CONFIGURATION NOT SHOWN REQUIRE A SPECIAL DESIGN.

DIRECT BEARING THRUST BLOCKS



MINIMUM BEARING AREA IN SQUARE FEET

SIZE OF PIPE	TEES, VALVES DEAD ENDS	90 DEG. BEND	45 DEG. BEND	22.5 DEG. BEND	11.25 DEG. BEND
4"	2	2	2	2	2
6"	3	4	3	2	2
8"	5	8	4	2	2
10"	8	12	6	4	3
12"	12	16	9	5	3
14"	19	26	14	7	4
16"	21	29	16	8	4

Drawing Title:

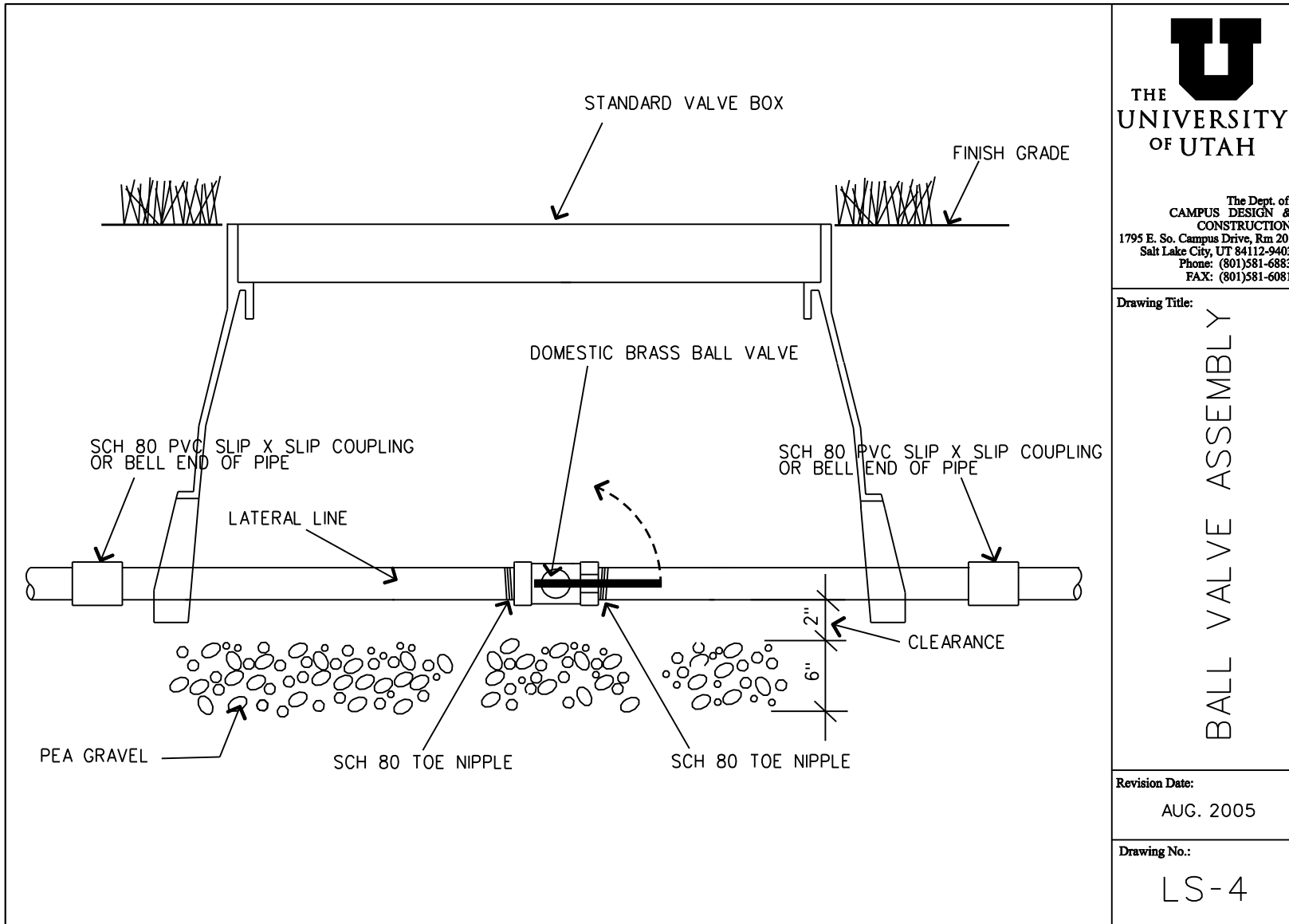
DIRECT BEARING
 THRUST BLOCKS

Revision Date:

MAR. 2003

Drawing No.:

LS-3



Drawing Title:

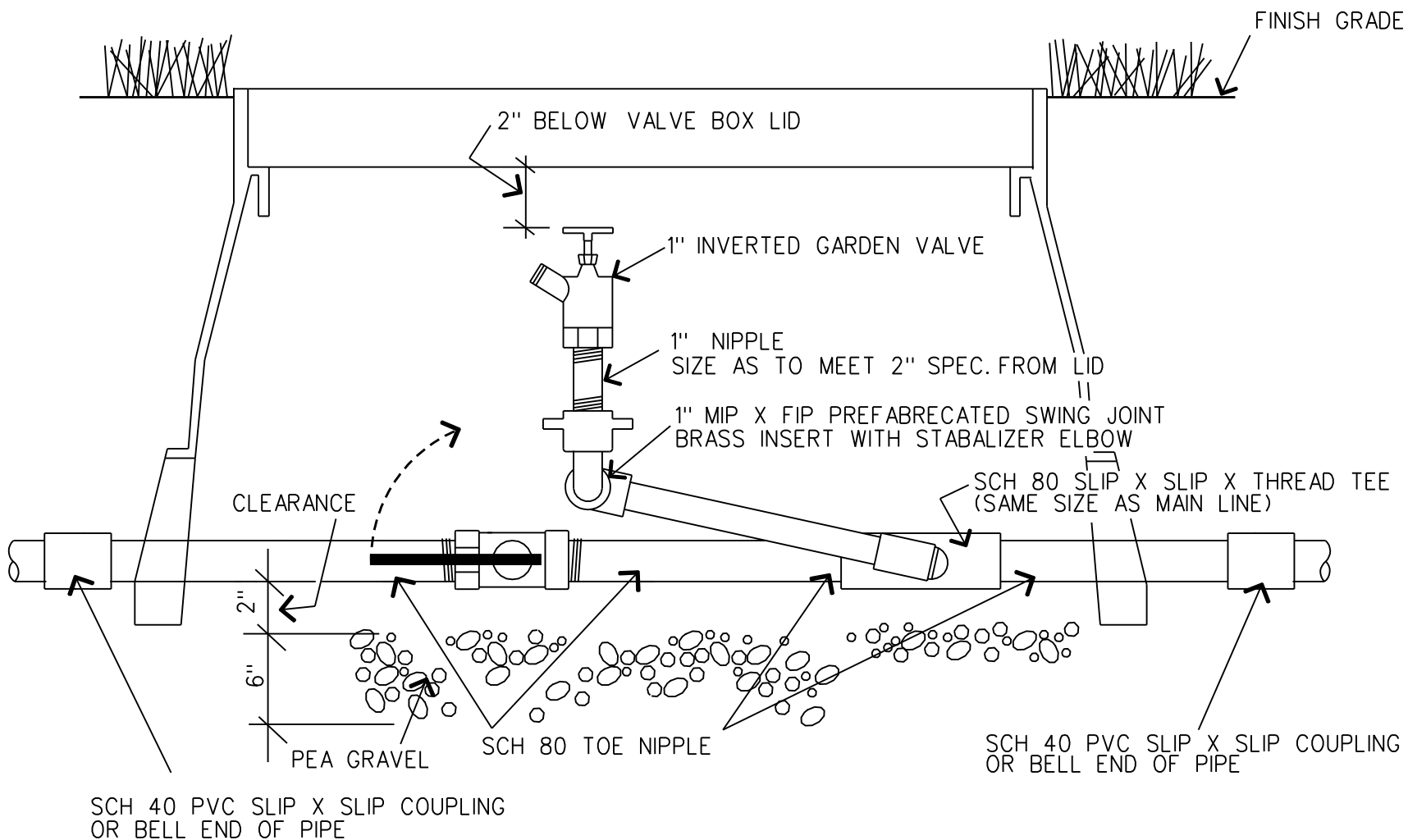
BALL/GARDEN VALVE
ASSEMBLY

Revision Date:

AUG. 2005

Drawing No.:

LS-5



Drawing Title:

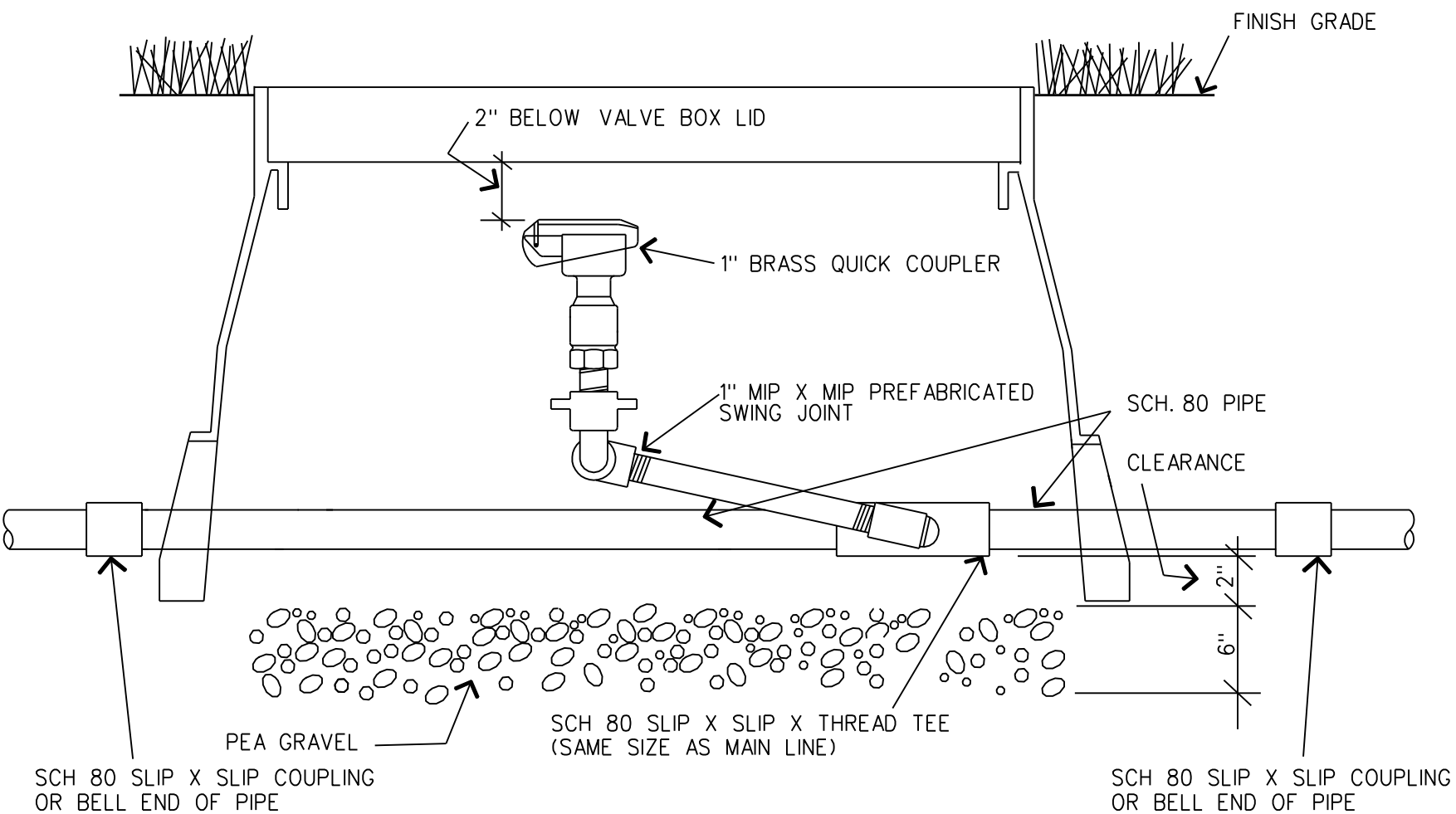
QUICK COUPLER ASSEMBLY

Revision Date:

AUG. 2005

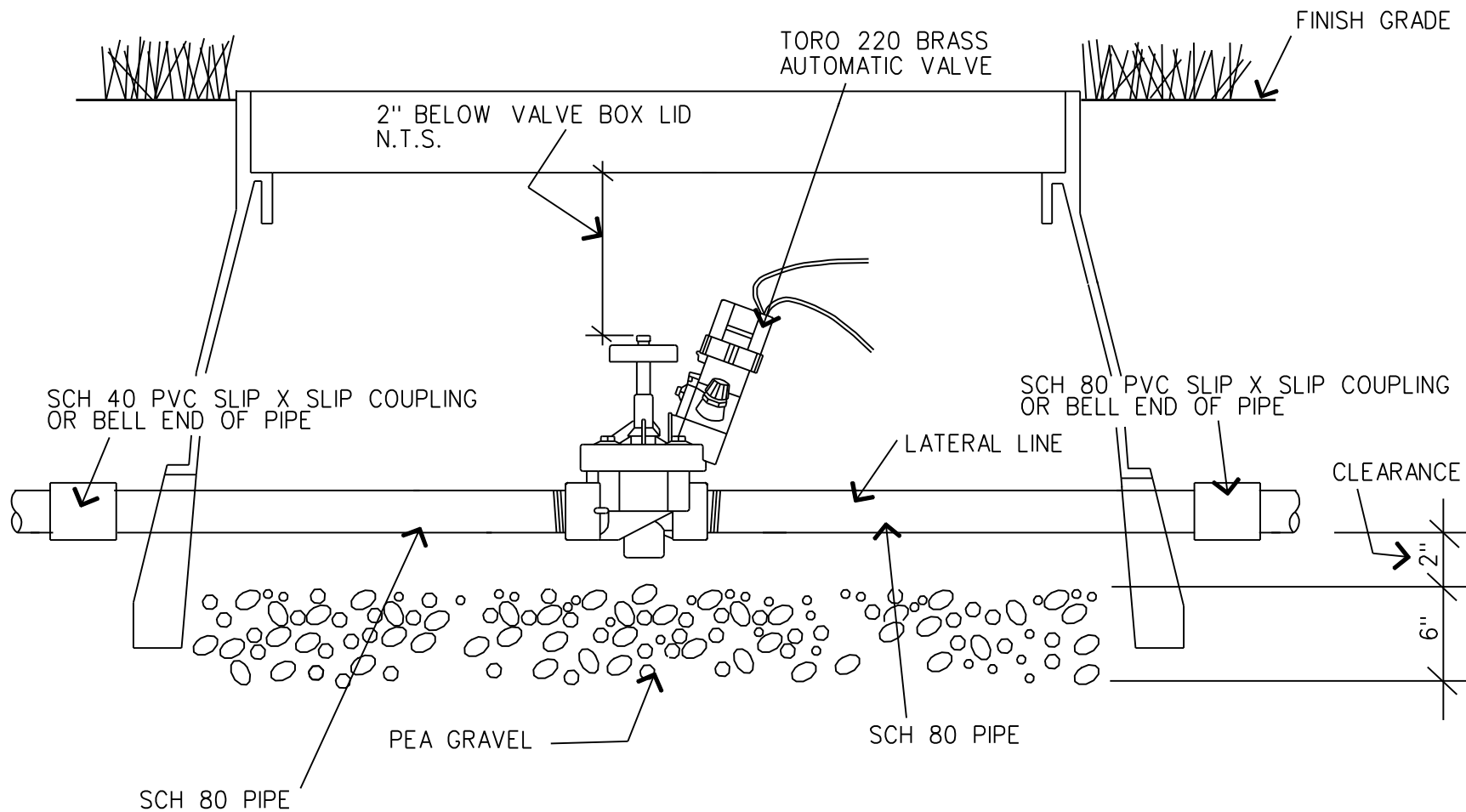
Drawing No.:

LS-6



Drawing Title:

VALVE MANIFOLD

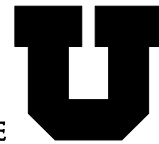


Revision Date:

AUG. 2005

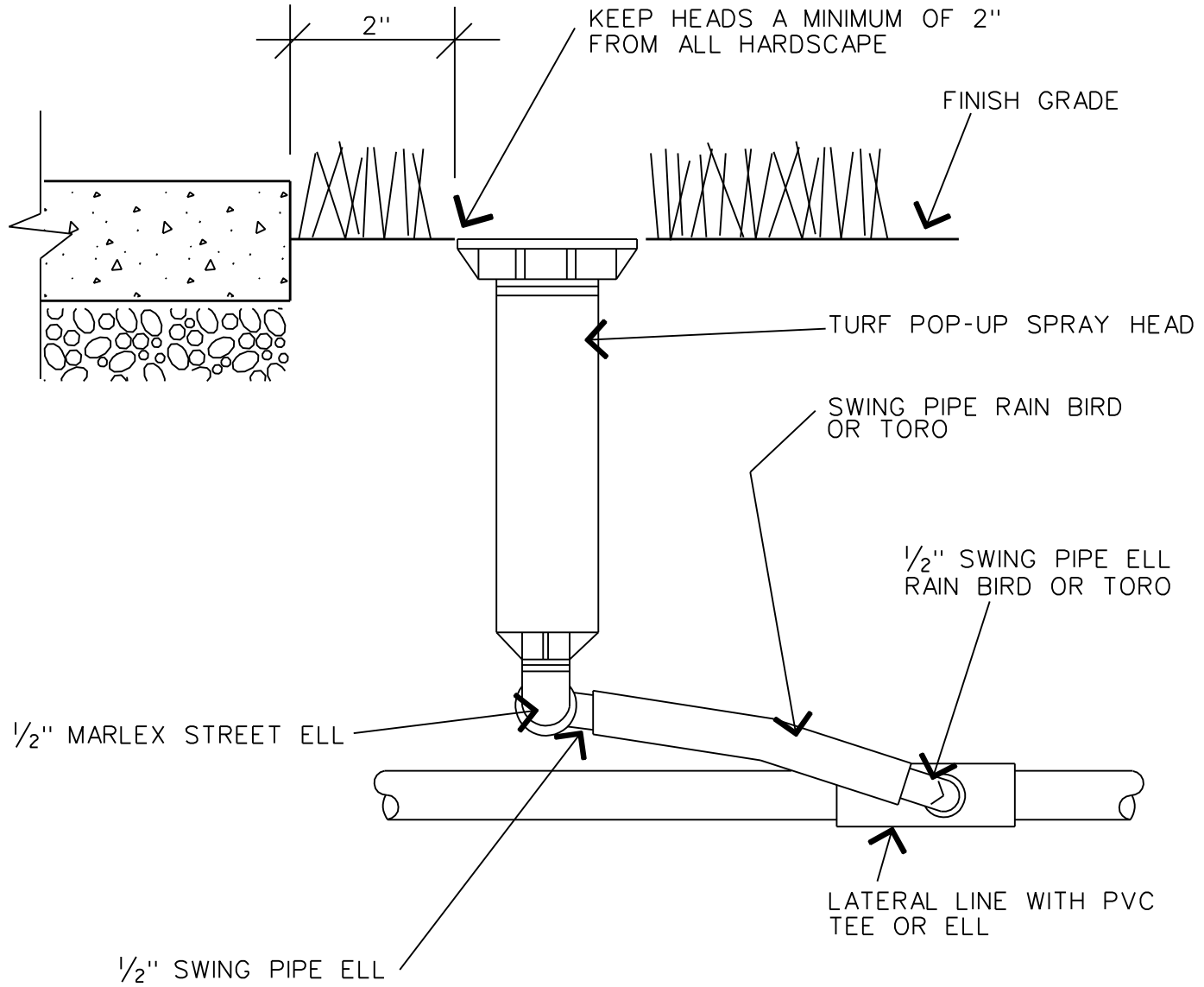
Drawing No.:

LS-7



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Drawing Title:

SPRAY HEAD

Revision Date:

AUG. 2005

Drawing No.:

LS-8

Drawing Title:

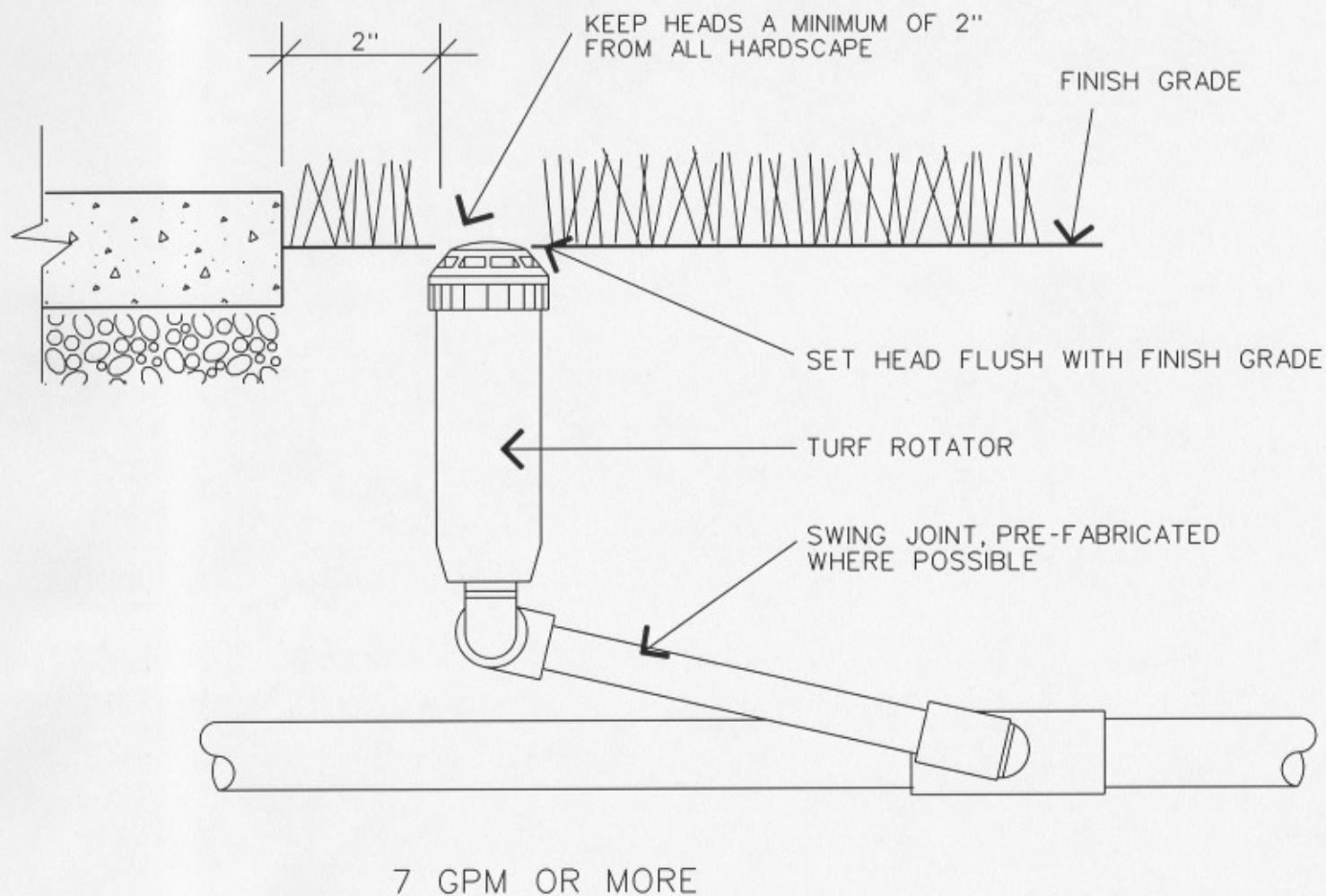
ROTOR

Revision Date:

NOV. 2005

Drawing No.:

LS-9



NOTES:

1. PREPARE A HOLE FOR FOUNDATION AND CONDUIT.
2. SEE FIGURE 1. POSITION SWEEP ELL CONDUIT SECTIONS IN HOLE AS SHOWN. COVER CONDUIT ENDS WITH TAPE TO SEAL OUT DIRT AND DEBRIS. BACKFILL SOIL TO ABOUT 12" BELOW FINISHED GRADE LEVEL.
3. USE $\frac{5}{16} \times 4\text{-}1/2$ " MOUNTING BOLTS AND $\frac{5}{16}$ -18 HEX NUTS SUPPLIED, PREPARE PLASTIC MOUNTING TEMPLATE AS SHOWN IN FIGURE 2. THREADED END BOLTS SHOULD PROTRUDE $1\text{-}1/8$ " TO $1\text{-}1/4$ " FROM TOP SURFACE OF TEMPLATE.
4. POUR CONCRETE INTO HOLE AND SMOOTH WITH TROWEL.
5. PRESS MOUNTING TEMPLATE INTO CONCRETE UNTIL FLUSH. CENTER TEMPLATE WITH CONDUIT AS SHOWN TO PREVENT PEDESTAL/ CONDUIT INTERFERENCE. SEE FIGURE 3.
6. TO PREVENT POOLING AT BASE OF PEDESTAL, FINISH FOUNDATION WITH GRADUAL SLOPE AWAY FROM MOUNTING TEMPLATE.

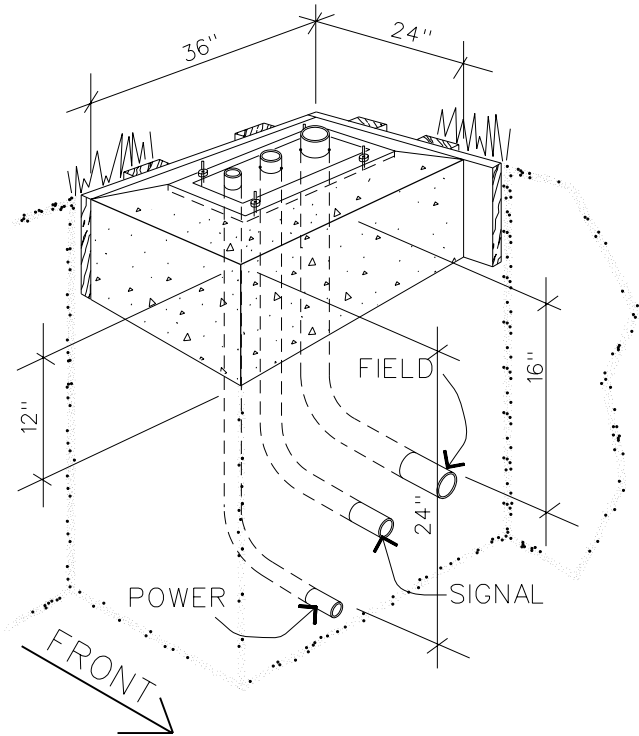


FIGURE 1

OVERVIEW OF COMPLETED FOUNDATION

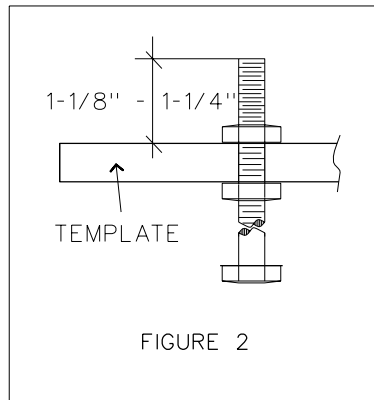


FIGURE 2

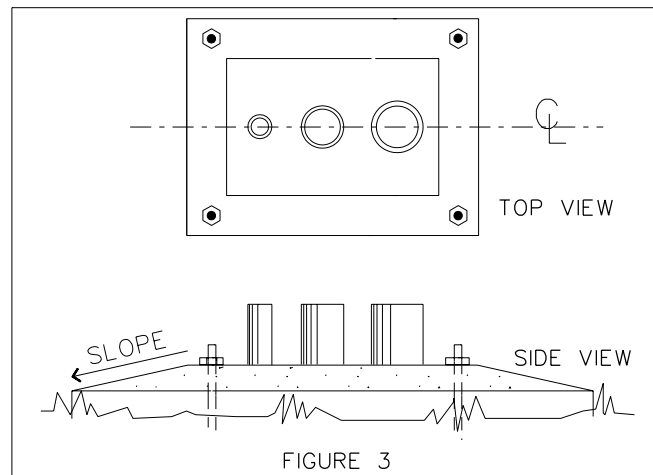


FIGURE 3

PEDESTAL INSTALLATION FOR TORO TC CONTROLLER



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Drawing Title:

AUTOMATIC CLOCK
 INSTALLATION

Revision Date:

JUL. 1997

Drawing No.:

LS-10

FIGURE 1.

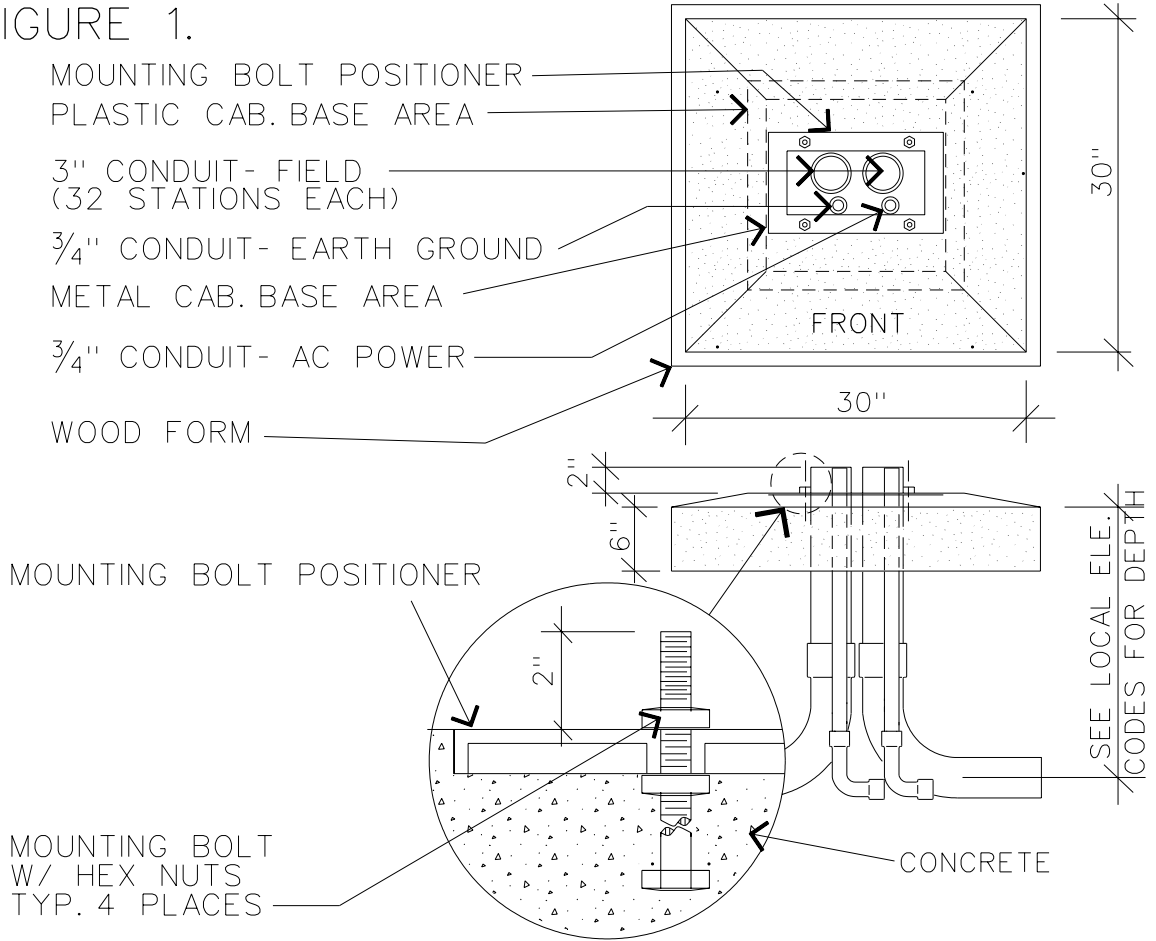
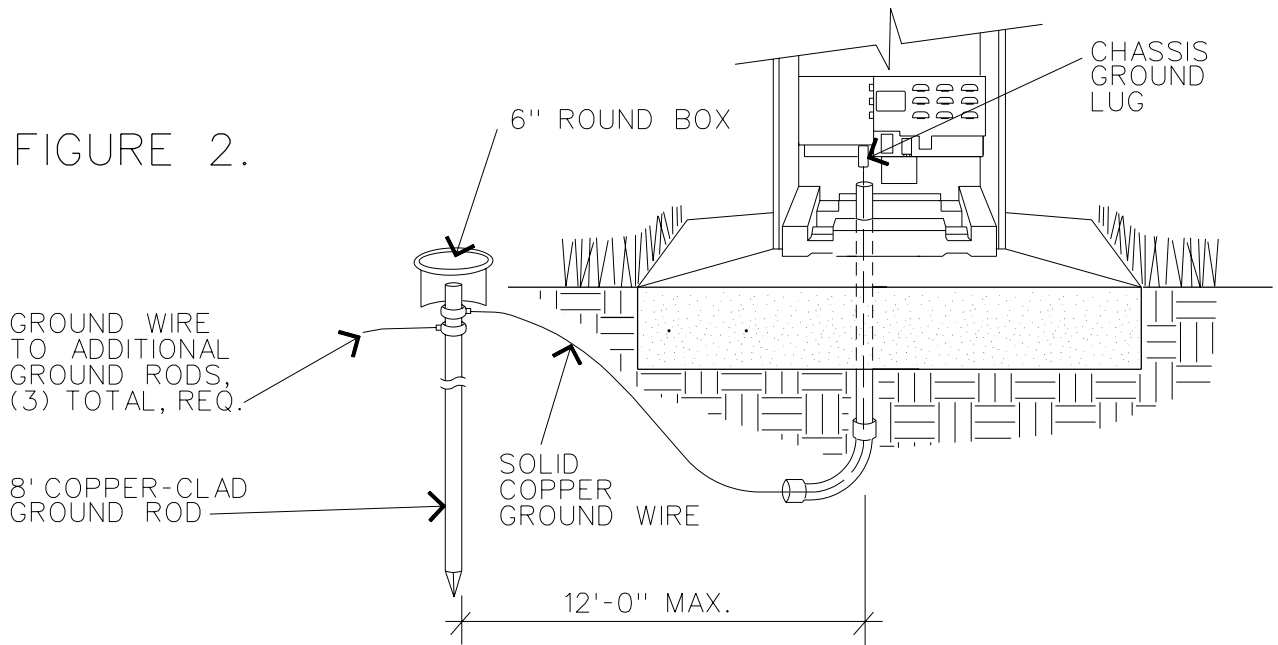



FIGURE 2.



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		<p>Drawing No.:</p> <p>LS-11</p>	



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Drawing Title:

TRENCH DETAIL

Revision Date:

OCTOBER, 2004

Drawing No.:

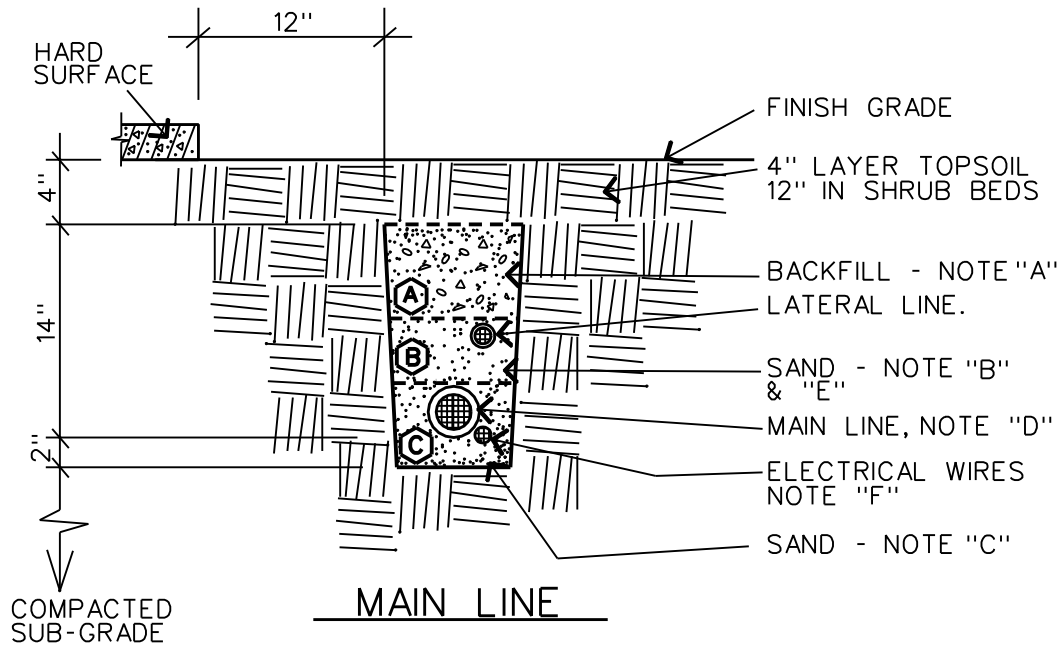
LS-12

NOTES:

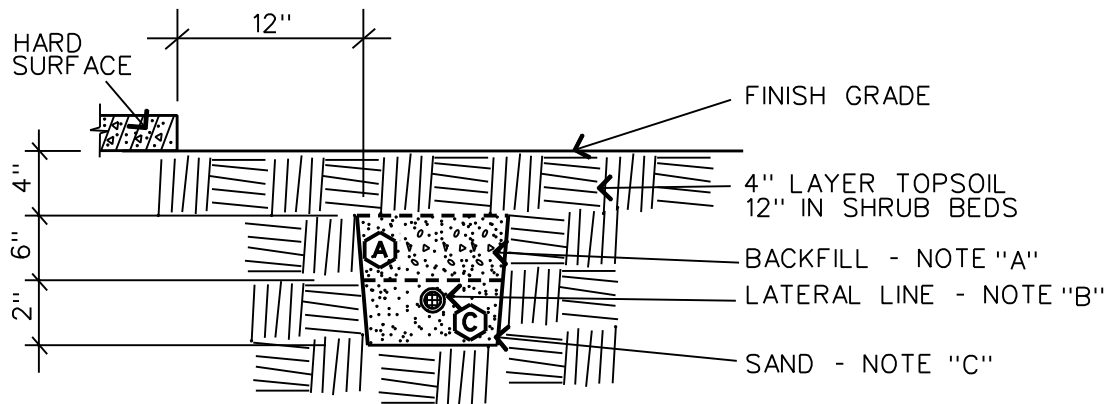
- (A) USE EXCAVATED TRENCH MATERIAL NOT TO EXCEED 2" DIAMETER ROCKS.
- (B) IN CASES WHERE LATERAL LINE IS INSTALLED IN MAIN LINE TRENCH, USE SAND TO BACKFILL TRENCH SO THAT LATERAL LINE IS 12" BELOW FINISH GRADE.
- (C) USE SAND TO A DEPTH OF 2" TO BED ALL MAIN LINE PIPE.
- (D) MINIMUM MAIN LINE DEPTH 18" TO THE TOP OF PIPE.
- (E) MINIMUM 6" DISTANCE BETWEEN EACH PIPE.
- (F) IRRIGATION CONTROL WIRE ONLY. NO OTHER UTILITIES MAY BE BURIED IN THE SAME TRENCH AS IRRIGATION.

GENERAL NOTE:

LOCATE ALL TRENCHES 12" AWAY FROM ALL BUILDINGS, SIDEWALKS OR ANY HARD SURFACES. SETTLE ALL TRENCHES WITH WATER PRIOR TO INSTALLTION OF TOPSOIL.



MAIN LINE



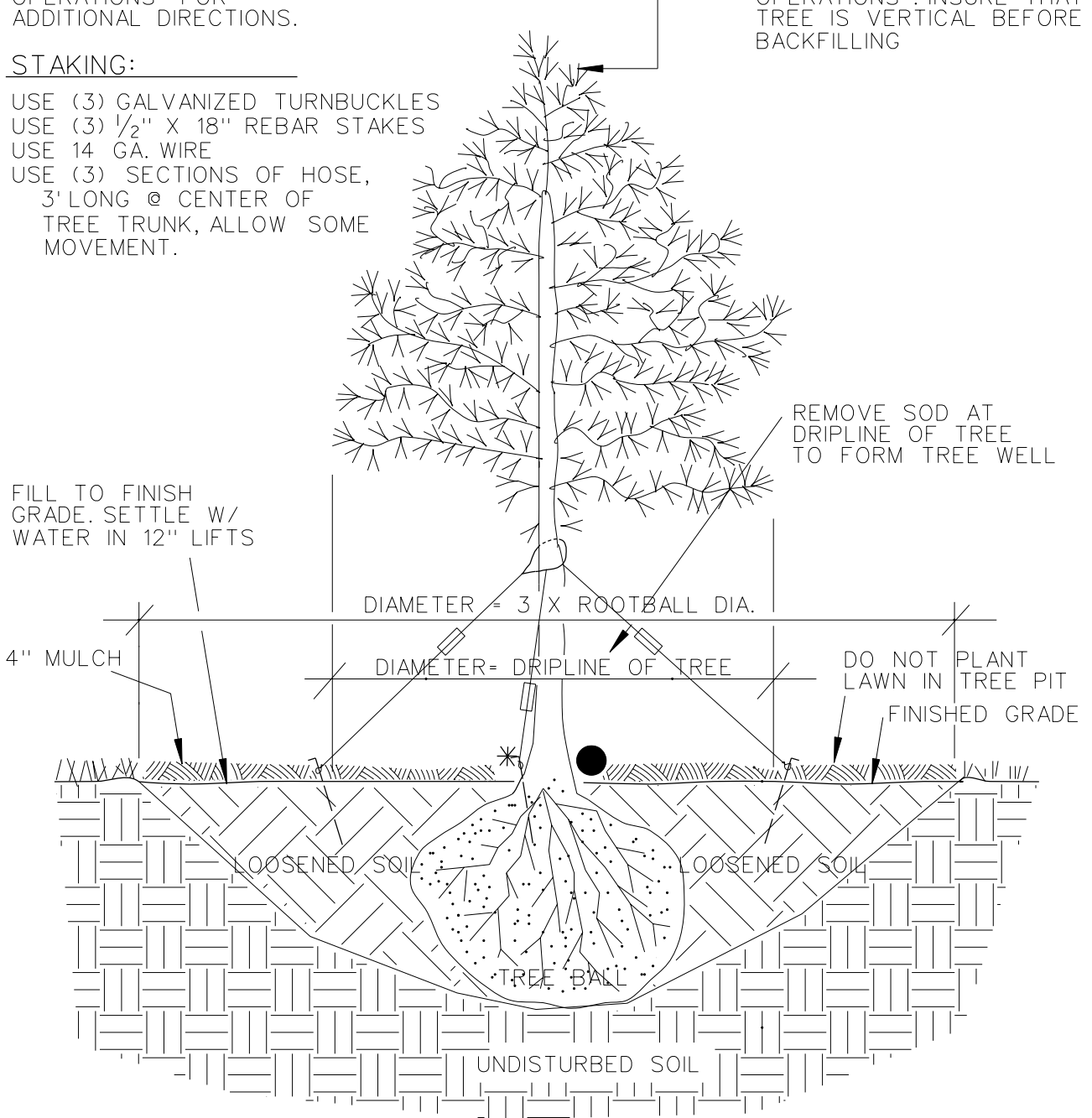
LATERAL LINE

NOTE:
SEE TREE "PLANTING OPERATIONS" FOR ADDITIONAL DIRECTIONS.

DO NOT PRUNE LEADER.
REMOVE ALL DEAD AND BROKEN BRANCHES.

BACKFILL:
SEE TREE "PLANTING OPERATIONS". INSURE THAT TREE IS VERTICAL BEFORE BACKFILLING

STAKING:
USE (3) GALVANIZED TURNBUCKLES
USE (3) 1/2" X 18" REBAR STAKES
USE 14 GA. WIRE
USE (3) SECTIONS OF HOSE, 3' LONG @ CENTER OF TREE TRUNK, ALLOW SOME MOVEMENT.



NOTE:
DO NOT USE AN AUGAR FOR TREE HOLES.

* TREE FLARE 1" TO 2" ABOVE FINISH GRADE
● NO MULCH 1" TO 2" AROUND TRUNK



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Drawing Title:

TREE PLANTING

Revision Date:

FEB. 2003

Drawing No.:

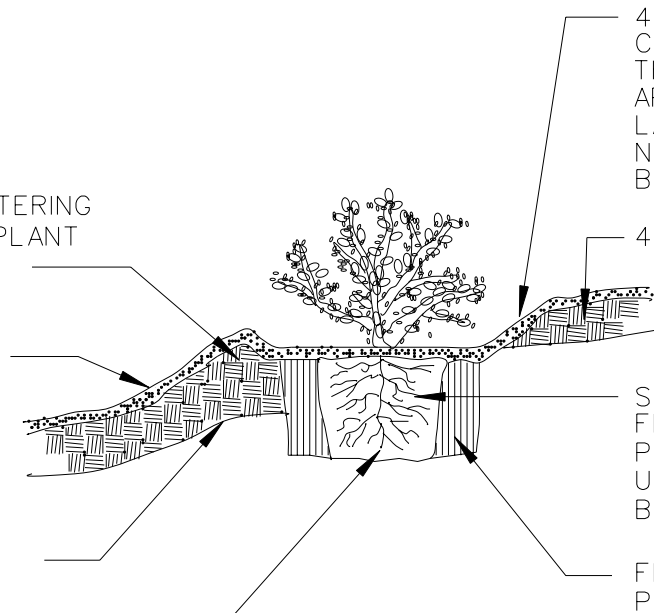
LS-13

CONSTRUCT WATERING DISH AT EACH PLANT USING TOPSOIL.

FINISH GRADE.

EXISTING GRADE

SET PLANT TO GRADE ON UNDISTURBED SOIL



4" LAYER OF MEDIUM COURSE BARK MULCH THAT HAS BEEN APPROVED FOR USE BY LANDSCAPE ARCHITECT. NOT UP TO PLANT STEM BASE.

4" LAYER OF TOPSOIL.

SETTLE PLANT BY FILLING PLANTING PIT WITH WATER USING HOSE OR BUCKET.

FILL ENTIRE PLANTING PIT WITH PREPARED TOPSOIL BACKFILL MATERIAL

DEEP WATER WITH HOSE ALL PLANTS

WATER PLANT IN POT PRIOR TO REMOVING PLANT FROM POT. DO NOT PLANT DRY PLANTS. ALL POTTED PLANTS MUST HAVE A MOIST ROOT SYSTEM.



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Drawing Title:

SHRUB
PLANTING DETAIL

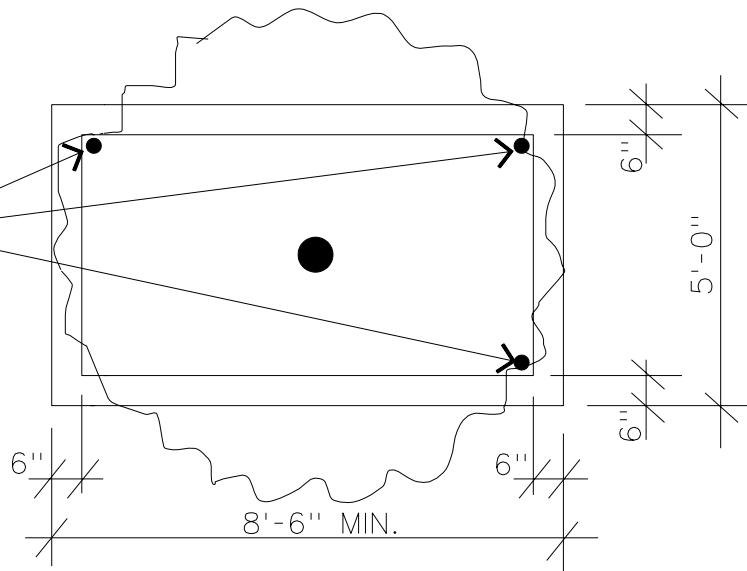
Revision Date:

MAR. 2003

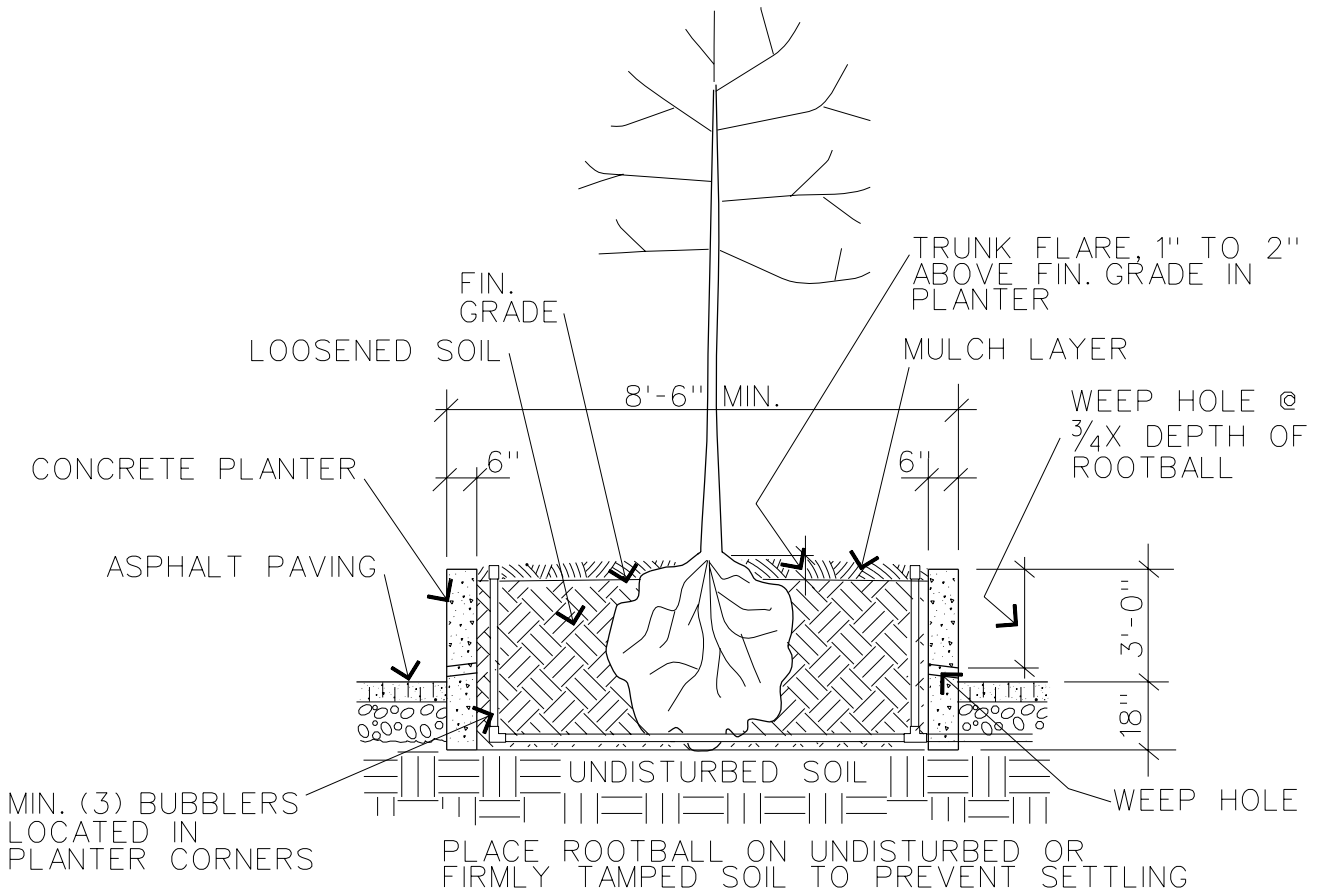
Drawing No.:

LS-14

TYP. BUBBLER LOCATIONS



PLAN VIEW



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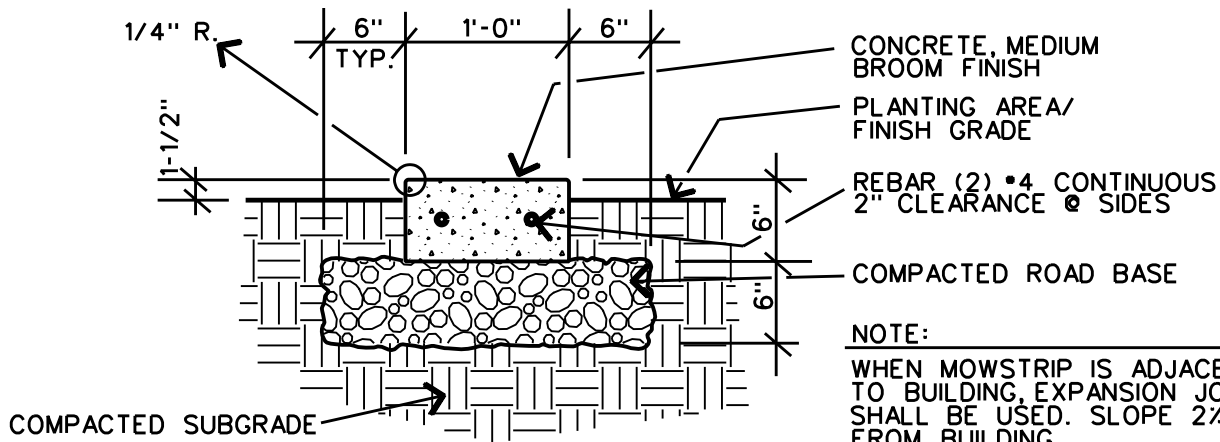
PARKING LOT
 CONCRETE
 PLANTER DETAIL

Revision Date:

MAR. 2003

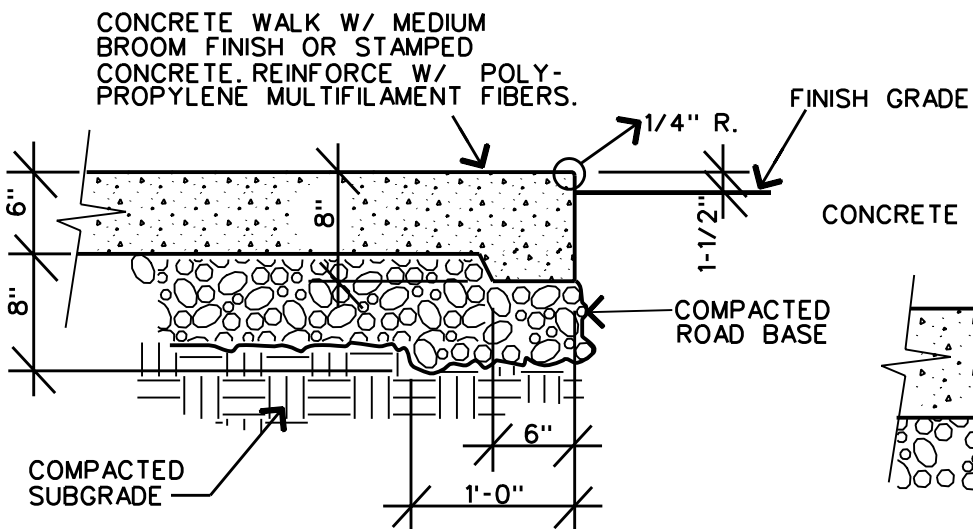
Drawing No.:

LS-15



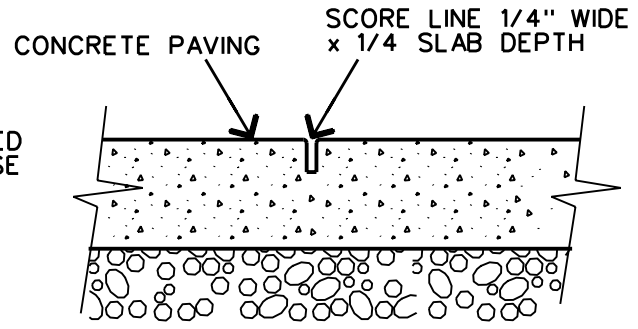
CONCRETE, MEDIUM BROOM FINISH
 PLANTING AREA/ FINISH GRADE
 REBAR (2) #4 CONTINUOUS 2" CLEARANCE @ SIDES
 COMPACTED ROAD BASE
 NOTE:
 WHEN MOWSTRIP IS ADJACENT TO BUILDING, EXPANSION JOINT SHALL BE USED. SLOPE 2% AWAY FROM BUILDING.

CONCRETE MOWSTRIP

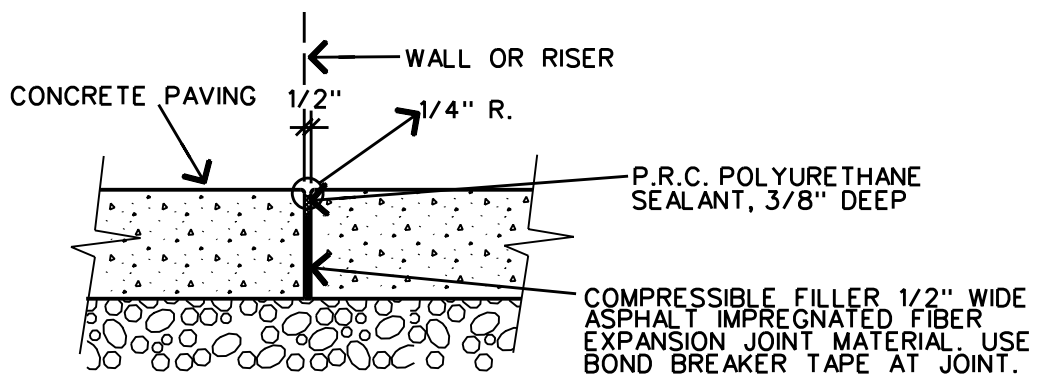


CONCRETE WALK W/ MEDIUM BROOM FINISH OR STAMPED CONCRETE. REINFORCE W/ POLY-PROPYLENE MULTIFILAMENT FIBERS.

CONCRETE PAVING



SCORE JOINT SECTION



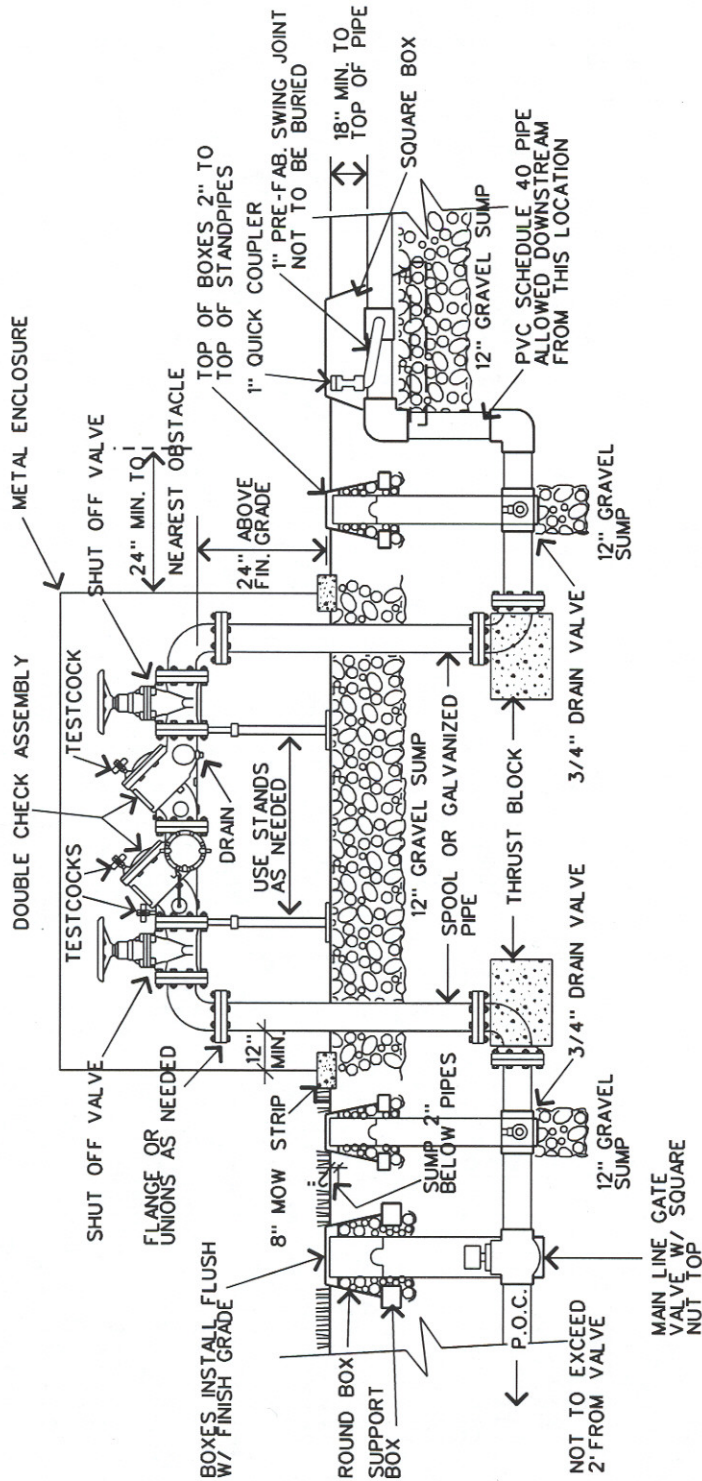
EXPANSION JOINT/SCORE LINE



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Drawing Title:
 MOW STRIP &
 CONCRETE
 PAVING DETAIL

Revision Date:
 SEPT. 2003
 Drawing No.:
 LS-16



NOTES

1. CONFORM TO UNIVERSITY OF UTAH PLUMBING DEPARTMENT STANDARDS AND AWWA CODES WHEN CONNECTING WATER MAIN SUPPLY.
2. ALL BACKFLOW PREVENTERS ARE TO MEET UTAH STATE CODES AS APPROVED BY THE UNIVERSITY OF UTAH PLUMBING DEPARTMENT.
3. ALL STANDPIPES AND BOXES MUST HAVE PROPER PROVISION FOR DRAINING AND FROST PROTECTION.
4. ALL METAL ENCLOSURES AND THEIR LOCATIONS TO BE APPROVED BY THE UNIVERSITY OF UTAH GROUNDS DEPARTMENT.
5. METAL ENCLOSURES TO BE REMOVABLE OR HAVE REMOVABLE SIDES.
6. METAL ENCLOSURES TO BE LOCKABLE.



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Drawing Title:
**BACKFLOW
 PREVENTER**

Revision Date:
 APRIL 2004

Drawing No.:
 LS-17