

GAS METER SET INSTALLATION DETAILS
(TYPICAL)

NOTES

1. TYPE OF METER BASED ON CAPACITIES/CONS.
< 2000 CFH – DIAPHRAGM
> 2000 CFH – TURBINE OR ROTARY
2. ALL MATERIAL TO BE SUPPLIED BY UBC UTILITIES. USER MUST PROVIDE THE REQUIRED GAS LOADS.
3. METER SET TO BE FABRICATED USING WELDED FITTINGS WHERE POSSIBLE.
4. METERS TO BE INSTALLED OUTDOORS ONLY.
5. METER ASSEMBLY TO MEET CANADA ELECTRICITY AND GAS INSPECTIONS ACT AND MEASUREMENT CANADA'S PRESSURE FACTOR MEASUREMENT (PFM) REQUIREMENTS.
6. BOLLARDS AND/OR CHAINLINK FENCE ARE REQUIRED WHERE THERE IS RISK OF DAMAGE BY VEHICLES OR VANDALISM.
7. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6.
8. DEMARCATION POINT OF SERVICE IS:
a) IMMEDIATELY DOWNSTREAM LAST VALVE.
b) IMMEDIATELY DOWNSTREAM OF SERVICE TEE IF THERE IS NO VALVE AT METER OUTLET.
9. SEISMIC VALVE IS INSTALLED ONLY IF REQUIRED BY DESIGN ENGINEER.

PART LIST:

- 1 DIAPHRAGM GAS METER (SEE NOTE 1)
- 2 GAS PRESSURE REGULATOR
- 3 GAS VALVE
- 4 STRAINER
- 5 PRESSURE TEST PORT
- 6 DIELECTRIC UNION
- 7 SUPPORT BRACKET
- 8 DEMARCATION POINT
- 9 SEISMIC VALVE (SEE NOTES)
- 10 SERVICE TEE

NO.	DATE	REVISIONS	BY
2	JULY 13/09	UPDATE UBC TECHNICAL GUIDELINES	D.B.
1	DEC 19/02	UPDATE UBC TECHNICAL GUIDELINES	A.P.
0	DEC 13/00	FOR UBC TECHNICAL GUIDELINES	A.P.



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

PROJECT TITLE

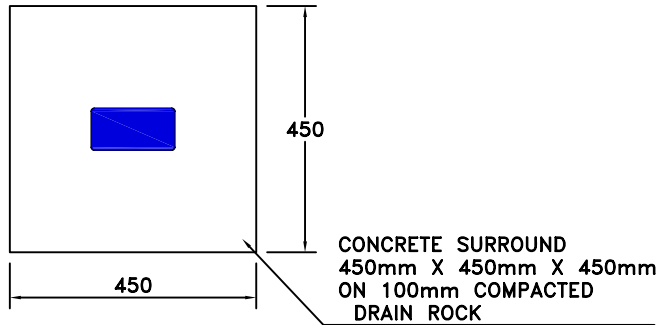
GAS METER
MECHANICAL INSTALLATION STANDARD

DRAWING TITLE

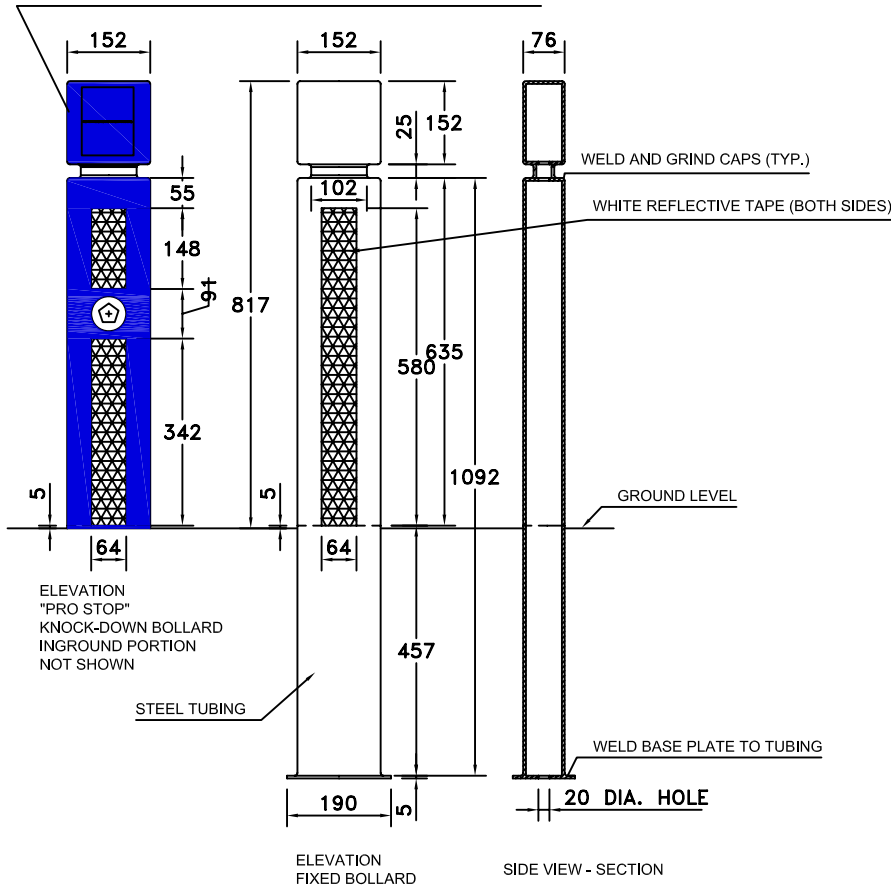
METER INSTALLATION DETAILS

SCALE	N.T.S.	DATE	JULY 13, 2009
DRAWN	A.P./D.B.	SHEET NO.	
REVIEWED	J.L.		
CAD FILENAME	T:\TECH GUIDELINE\ 1100-UT-01-GasMeterStd		
UBC PROJECT NO.	...		
UBC DRAWING NO.	1100-UT-01-GasMeterStd.dwg		REV. 2

NOTES



REFLECTIVE WHITE INFORMAL UBC CREST (BOTH SIDES)
ON UBC BLUE (GENERAL PAINT AC076N "HARBOUR BLUE")



PRE-FAB "PRO-STOP" KNOCK-DOWN BOLLARD
& CUSTOM FIXED BOLLARD TO MATCH

NO.	DATE	REVISIONS	BY
3			
2			
1			
0	07-07-08	NEW DETAIL FOR BOLLARD	



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

PROJECT TITLE

BOLLARD - GAS METER
PROTECTION

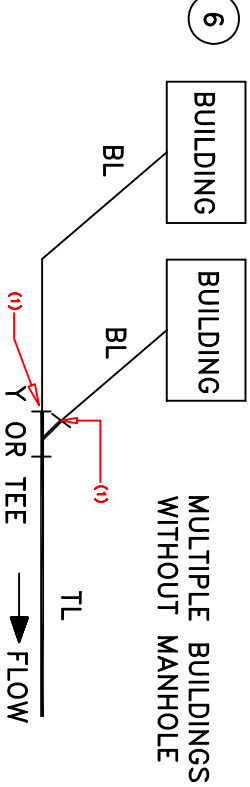
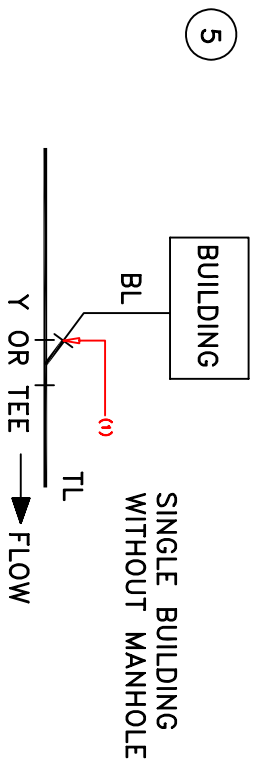
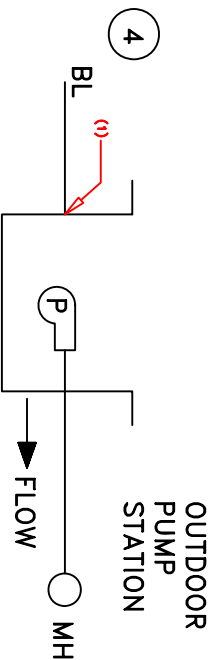
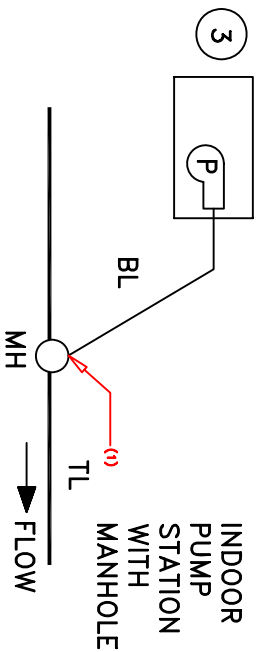
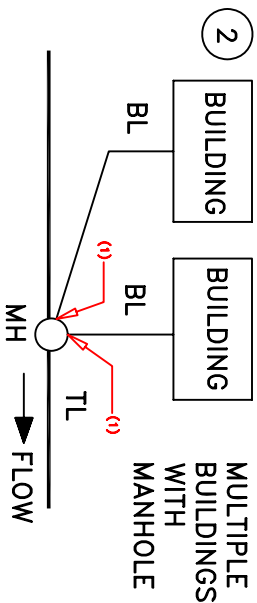
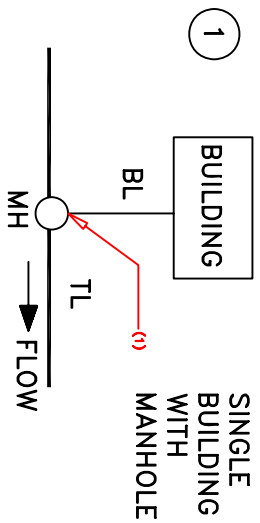
DRAWING TITLE

BOLLARD INSTALLATION DETAILS


SCALE	N.T.S.	DATE	JUL. 07/08
DRAWN		SHEET NO.	
REVIEWED	A.P.		
CAD FILENAME			
UBC PROJECT NO.	...		1 OF 1
UBC DRAWING NO.	1100-UT-02-Bollard.dwg	REV.	1

NOTES

- (1) ARROW SHOWS DEMARCATION POINTS OF UBC UTILITIES' SERVICE. UBC UTILITIES IS RESPONSIBLE FOR SYSTEM DOWNSTREAM OF TERMINATION POINT.
- (2) "RESPONSIBILITY" REFERS TO DEPARTMENT OWNERSHIP, NOT TRADE JURISDICTION.
- (3) DETAILS SHOW EXISTING INSTALLATIONS AT UBC. NOT NECESSARILY ALLOWABLE FOR NEW CONSTRUCTION.
- (4) UBC UTILITIES IS RESPONSIBLE FOR FOUR OUTDOOR PUMP STATIONS:
 - a) BOTANICAL GARDEN
 - b) CECIL GREEN PARK
 - c) PLACE VANIER
 - d) ACADIA PRESIDENT'S ROW



MH = MANHOLE
 P = PUMP
 BL = BRANCH LINE
 TL = TRUNK LINE

B	06/06/00	ADD NOTES	E.L.K.
A	06/09/00	DRAFT FOR REVIEW	
NO.	DATE	REVISIONS	BY
 UBC UTILITIES THE UNIVERSITY OF BRITISH COLUMBIA			
BUILDING/FACILITY			
SANITARY SYSTEM			
PROJECT TITLE			
SANITARY			
DRAWING TITLE			
DEMARCATION POINT OF UBC UTILITIES SERVICE			
SCALE	N/A	DATE	JULY 5, 2000
DRAWN	P.L.	SHEET NO.	
REVIEWED	L.A.K.		
CAD FILENAME	UBC UTILITY/Service		
UBC PROJECT NO.	1 OF 1		
UBC DRAWING NO.	1110-UT-01-Sanitary/Demarc.dwg		REV. B

NOTES

- (1) ARROW SHOWS DEMARCATION POINTS OF UBC UTILITIES' SERVICE. UBC UTILITIES IS RESPONSIBLE FOR SYSTEM DOWNSTREAM OF TERMINATION POINT.
- (2) "RESPONSIBILITY" REFERS TO DEPARTMENT OWNERSHIP, NOT TRADE JURISDICTION.
- (3) DETAILS SHOW EXISTING INSTALLATIONS AT UBC, NOT NECESSARILY ALLOWABLE FOR NEW CONSTRUCTION.
- (4) UBC UTILITIES IS RESPONSIBLE FOR ONE OUTDOOR PUMP STATION, LOCATED IN CECIL GREEN PARK.
- (5) UBC UTILITIES IS RESPONSIBLE FOR CULVERTS CONNECTING DRAINAGE DITCHES, BUT NOT THE DITCHES.

B	DATE	ADD NOTES	E.K.
A.	9/6/99	DRAFT FOR REVIEW	
NO.	DATE	REVISIONS	BY



BUILDING/FACILITY
STORM SEWER SYSTEM

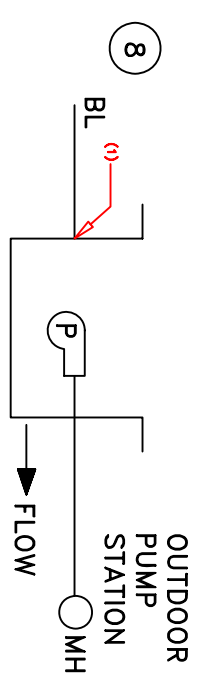
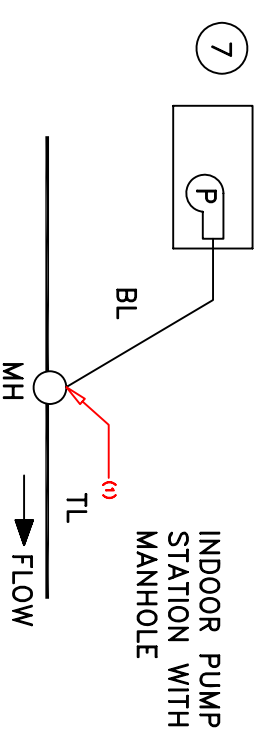
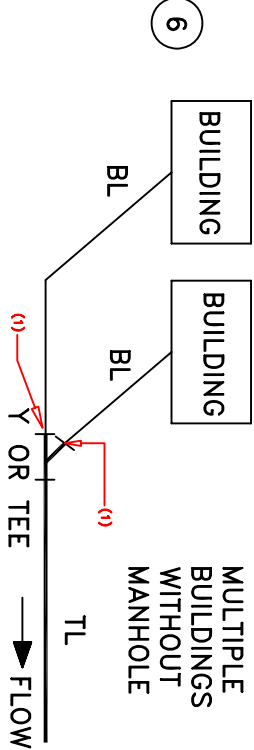
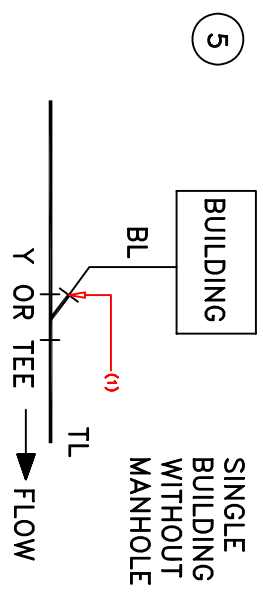
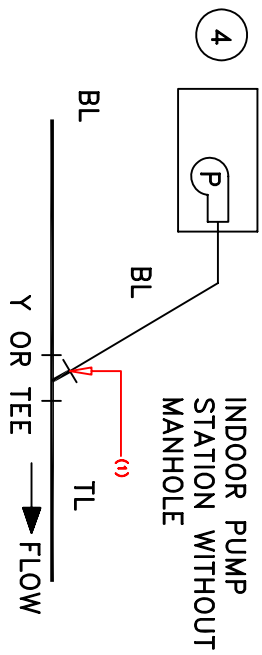
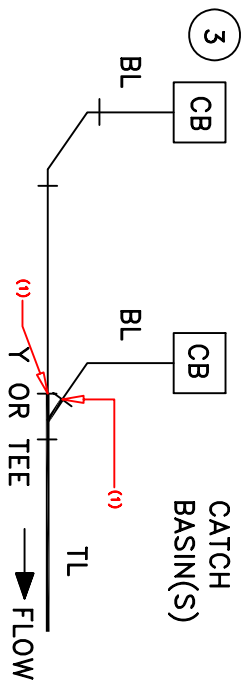
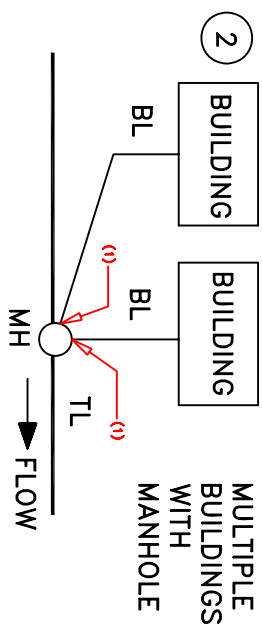
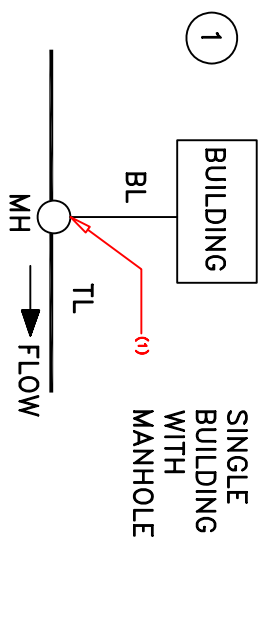
PROJECT TITLE
STORM

DRAWING TITLE
DEMARCATION POINT OF UBC UTILITIES SERVICE

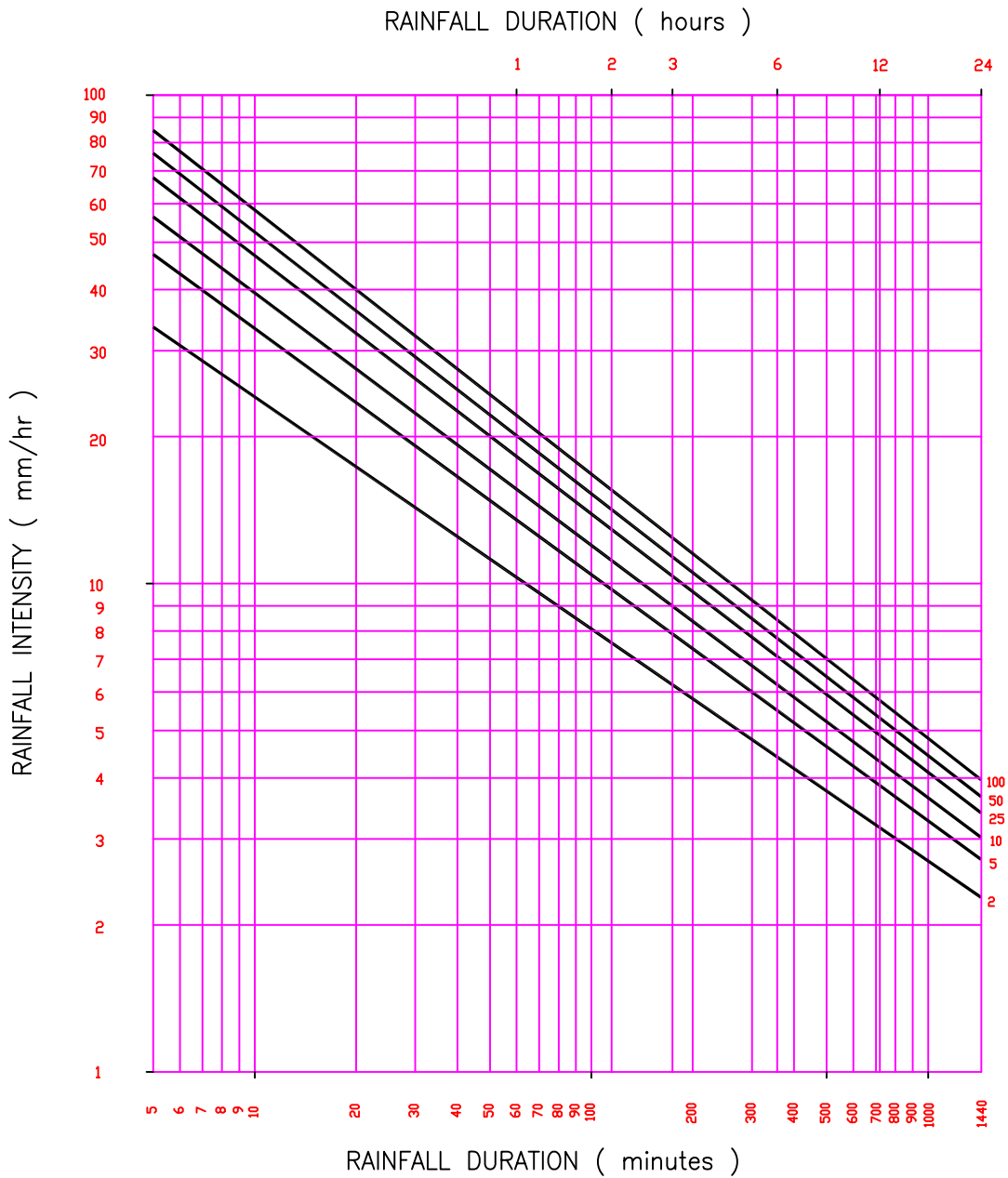
SCALE	N/A	DATE	MAY 13, 1999
DRAWN	P.L.L.	SHEET NO.	
REVIEWED	L.A.K.		
CAD FILENAME	UtiliYService		
UBC PROJECT NO.			
UBC DRAWING NO.	1120-UT-01-StormDemarc.DWG		

MH = MANHOLE
P = PUMP
CB = CATCH BASIN

BL = BRANCH LINE
TL = TRUNK LINE



VANCOUVER UNIVERSITY OF BRITISH COLUMBIA A.E.S. GAUGE
 CURVES BASED ON DATA PERIOD 1958 – 1990 (33 YEARS)



Acad T7.1s (LMS Tech) T:\Tech Guidelines\1120-UT-02-IDCurve.dwg, Jul 07, 2008 - 10:31am

TITLE:

UBC RAINFALL IDF CURVES

UBC Utilities
 The University of
 British Columbia

APPROVED:

DATE: SEPTEMBER, 2001

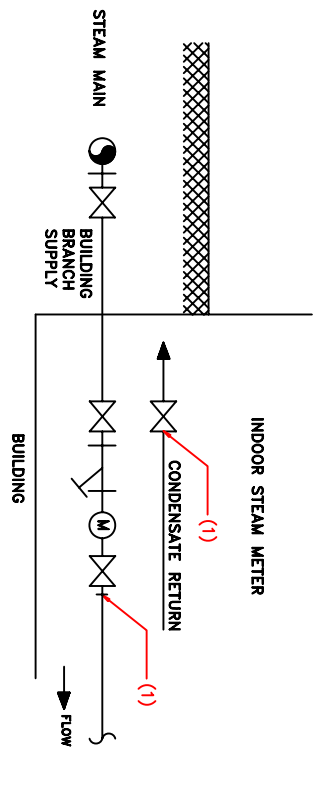
DRAWN BY:

FIGURE

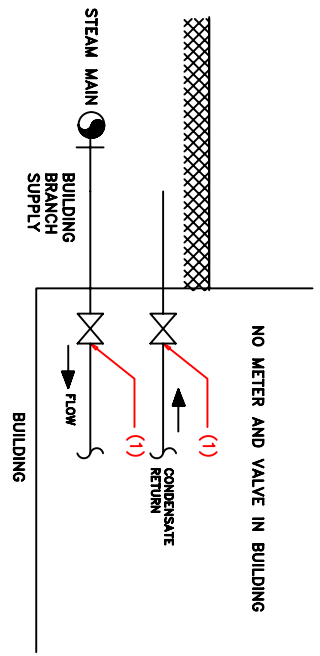
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NOTES

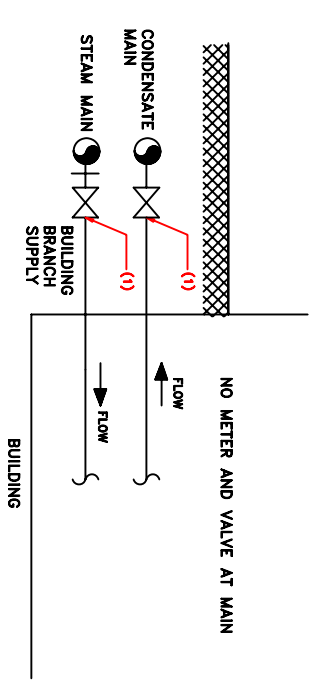
- (1) ARROW POINTS SHOWS DEMARCATION POINTS OF UBC UTILITIES SERVICE. UBC UTILITIES IS RESPONSIBLE FOR SYSTEM UPSTREAM OF TERMINATION POINT FOR CONDENSATE RETURN. DOWNSTREAM FOR CONDENSATE RETURN.
- (2) RESPONSIBILITY REFERS TO DEPARTMENT OWNERSHIP, NOT TRADE JURISDICTION.
- (3) DETAILS SHOW EXISTING INSTALLATIONS AT UBC. NOT NECESSARILY ALLOWABLE FOR NEW CONSTRUCTION.



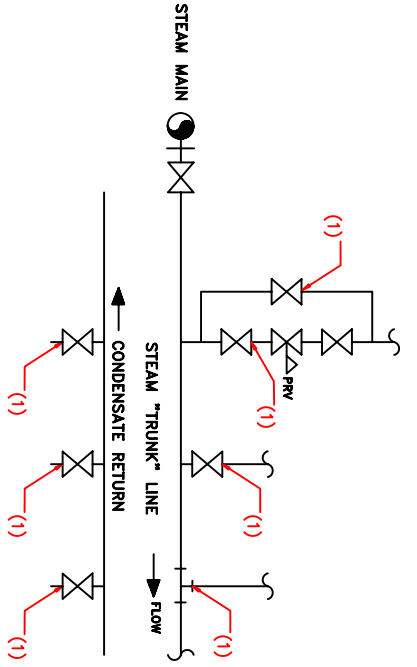
UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF THROUGH RUN OF LAST VALVE DOWNSTREAM OF METER



UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE



UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE



UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE AND AT BRANCH RUN END OF TEE IN STEAM MAIN

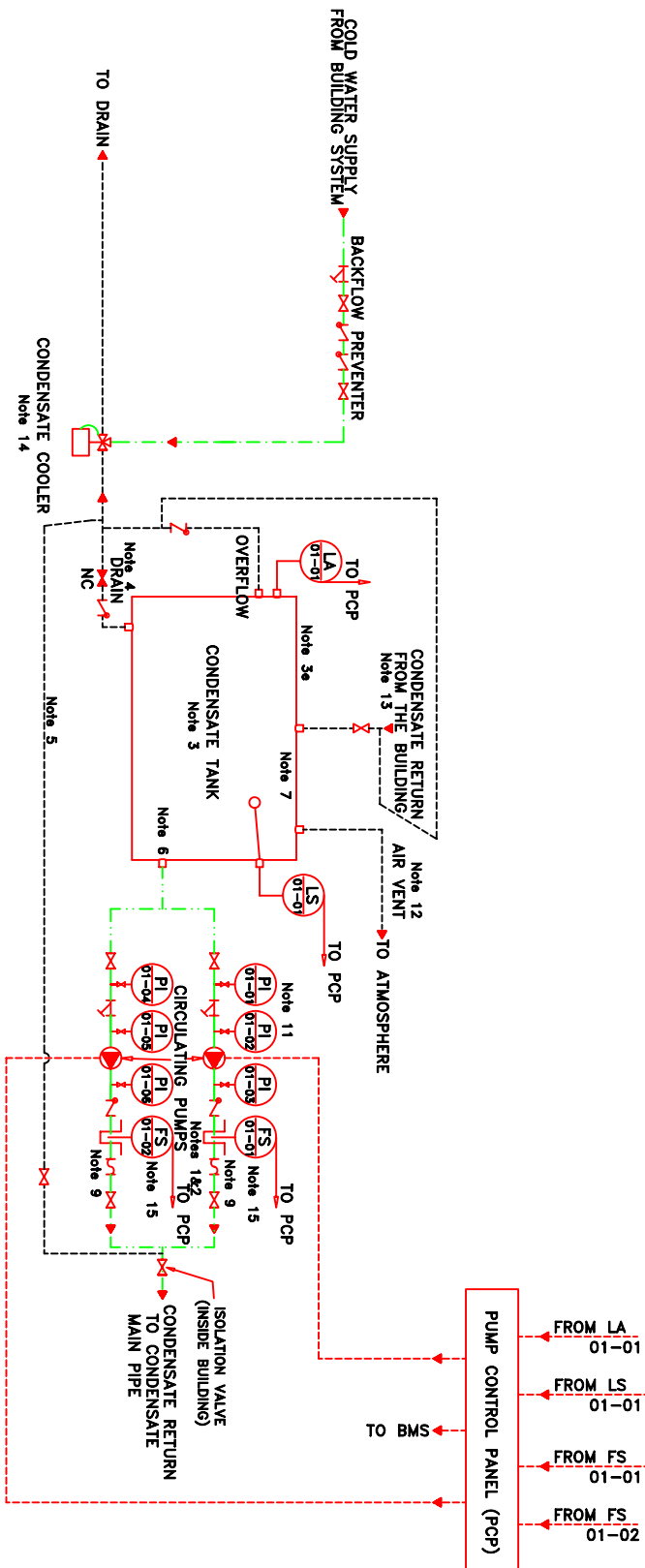


BUILDING/FACILITY
 STEAM DISTRIBUTION SYSTEM

PROJECT TITLE
 BUILDING STEAM SUPPLY

DRAWING TITLE
 TERMINATION POINT OF UTILITIES' SERVICE.

SCALE	N/A	DATE	APRIL 10, 2000
DRAWN	A.P.	SHEET NO.	
REVIEWED	E.M.		
CAD FILENAME	Steam Demarc.dwg		
UBC PROJECT NO.			
UBC DRAWING NO.	1130-UT-01-SteamDemarc.dwg	REV.	3
			1 OF 1



NOTES CONTINUED

10. UBC Technical Guidelines, Division 2, Section 02688 applies to all components (e.g. Schedule 80 schedule pipes, only steel components acceptable – no copper, bronze or PVC allowed; no galvanizing discharge pressure).
11. Pressure gauges to be glycerine filled and must have snubber. Range must be a minimum of 2x pump discharge pressure.
12. Vent not to be demarcated of tank connection. Full size vent to atmosphere.
13. Condensate return from building equipment can optionally be located at side of tank.
14. Armstrong – Yoshitake condensate cooler, assembly complete with 3-way valve, Model CC-5 is used where peak steam consumption is 2500 lb/hr. Model CC-12 for buildings with peak steam flow up to 6,000 lb/hr.
15. Notify UBC's Chief Engineer for inspection. Minimum 24 hours advance notice required.
16. Copies of all pressure test, commissioning, or other reports must be delivered to UBC's Chief Engineer.
17. Complete set of manuals for every piece of equipment, all in one 3-ring binder required. One binder for each building to be delivered to the Head Utilities Maintenance Engineer.

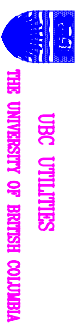
PUMP OPERATION CONTROL LOGIC

1. WHEN CONDENSATE IN THE TANK RISES UP TO THE MAXIMUM SET LEVEL, THE FLOAT SWITCH "LS" WILL START THE PUMP. BELOW SWITCH "FS" SHOULD ACTIVATE AFTER PUMP STARTS. IF THE FLOAT SWITCH DOES NOT ACTIVATE AFTER 5 SECONDS THE PUMP WILL BE STOPPED AND THE SECOND PUMP WILL START AUTOMATICALLY. AN ALARM SIGNAL WILL BE SENT TO BMS INDICATING THAT A PUMP HAS RUN DRY OR HAS SEIZED.
2. WHEN THE CONDENSATE LEVEL IN THE TANK DROPS TO THE MINIMUM SETPOINT, THE PUMP WILL STOP.
3. IF BOTH PUMPS FAIL OR ARE ISOLATED, THE CONDENSATE WILL OVERFLOW VIA A COOLER TO THE DRAIN.
4. IN BOTH CASES, THE CONDENSATE WILL OVERFLOW VIA A COOLER TO THE DRAIN. THE COOLER WILL BE AUTOMATICALLY STARTED TO PREVENT THE CONDENSATE FROM ENTERING THE DOW SYSTEM. A DOUBLE CHECK BACKFLOW PREVENTER IS NEEDED.

NOTES

1. Condensate pumps:
 - a) Manufacturer to be Gould
 - b) Must have coating drain and vents
 - c) Impeller must be In mid-range that fits in casing (allow for future upsize of impeller). Only stainless steel impeller material allowed.
2. Motors:
 - a) 3 phase /0.5-5.0 hp/1750rpm/208V-575V
 - b) TEC with aluminum fan
3. Tank:
 - a) Must have feet and air approx. 300 mm. above floor
 - b) Gauge glass required. Must cover entire operating range of water level, plus an additional 50 mm.
 - c) Stand to handle 10 minutes of peak steam flow (i.e. peak lb/hr divided by 6).
 - d) Easy access must be available for all tank connections.
 - e) Access manhole required for tanks 900 mm. diameter or larger.
 - f) Only carbon steel material allowed.
 - g) Minimum drain size is 50 mm.
4. Make this connection only if tank installed in a pit with no room. If pump or pipe failure, this overflow must have capacity for full flow.
5. Make this connection only if tank installed in a pit with no room. If pump or pipe failure, this overflow must have capacity for full flow.
6. Pump suction a minimum of 100 mm. from bottom of tank. Normal, minimum water level to be 100 mm. above suction.
7. Normal, maximum water level to be 150 mm. below top of tank.
8. All alarms must go to UBC's Building Management System (BMS).
9. Flexible connections also required on the suction side for horizontal pump installations.

NO.	DATE	REVISIONS	FOR REVIEW	BY
1	12-02-03	REVISED FOR ECOMTRK	E.K.	
2	14-03	REVISED FOR ECOMTRK	E.K.	



ALL UBC BUILDINGS

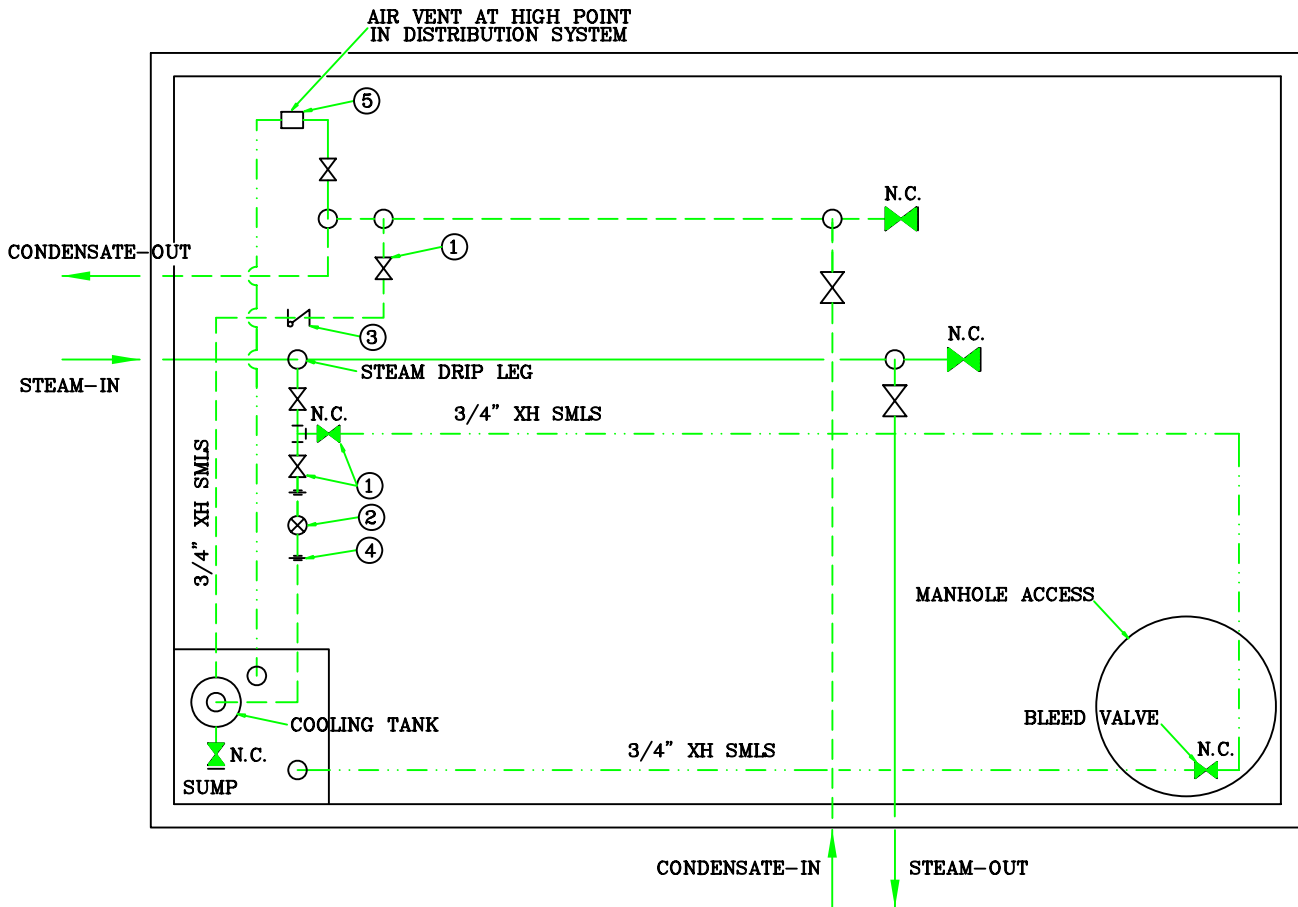
PROJECT TITLE
CONDENSATE RETURN

DRAWING TITLE
CONDENSATE RETURN PUMP SYSTEM DETAILS

SCALE	N.T.S.	DATE	FEB. 12, 03
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DRAWN	A.P.	SHEET NO.	
REVIEWED	E.M.		

UBC PROJECT NO.	1 OF 1
UBC DRAWING NO.	REV. 0




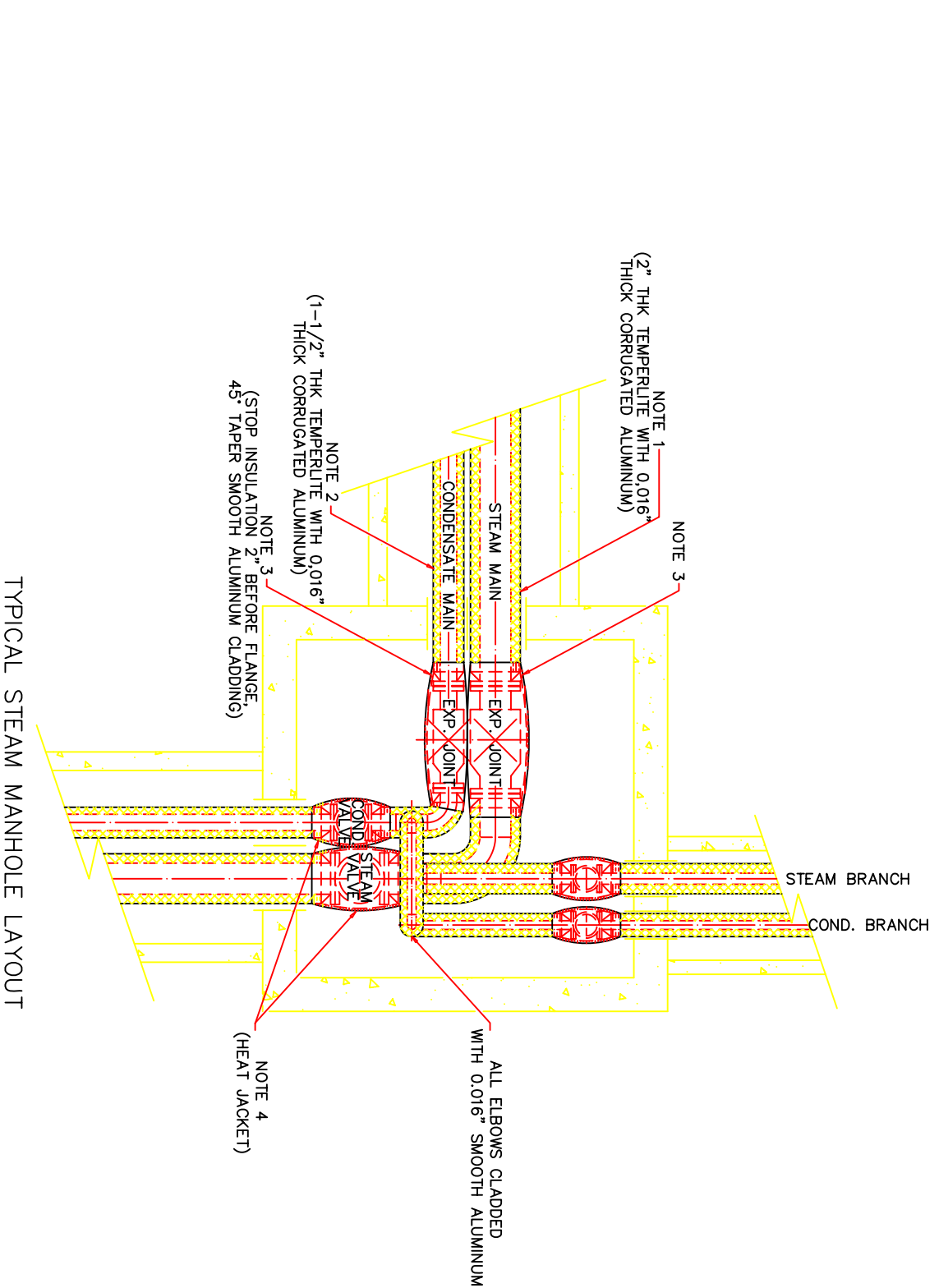
NOTE:

ALL INSTALLED PIPE FITTINGS TO BE XH SMLS
 ALL STEEL COMPONENTS. NO BRASS, COPPER
 OR OTHER MATERIALS ALLOWED

- ① 3/4" #800 F.S. GATE VALVE (7 OFF)
- ② 3/4" #150 INVERTED BUCKET STEAM TRAP WITH STRAINER ("ARMSTRONG" 880 SERIES)
- ③ 3/4" C.S. CHECK VALVE ("C.-ALL" UN-3)
- ④ 3/4" #3000 F.S. UNION
- ⑤ 3/4" F.S. AIR VENT ("SPIREX")

LOCATION:
 UBC STEAM DISTRIBUTION
 STEAM MANHOLES

 <p style="text-align: center;">UBC UTILITIES THE UNIVERSITY OF BRITISH COLUMBIA</p>	DRAWING TITLE	
	STANDARD STEAM TRAP ARRANGEMENT	
BUILDING/FACILITY	SCALE	DATE
	N.T.S.	MARCH 11, 2003
PROJECT TITLE	DRAWN	UBC PROJECT NO.
	A.P.	
STEAM TRAP MAINTENANCE	CAD FILENAME	SHEET NO.
		1 OF 1
	UBC DRAWING NO.	REV.
	1130-UT-03-SteamTrapStd.dwg	1



NOTES

- 1.. STEAM PIPES TO BE INSULATED WITH 2" THICK "TEMPERLUTE" C/W MINIMUM 0.016" THICK CORRUGATED ALUMINUM JACKETING.
- 2.. CONDENSATE PIPES TO BE INSULATED WITH 1-1/2" THICK "TEMPERLUTE" C/W MINIMUM 0.016" THICK CORRUGATED ALUMINUM JACKETING.
- 3.. "TEMPERLUTE" INSULATION SHOULD STOP MINIMUM 2" BEFORE ANY FLANGE JOINT TO ALLOW EASY REMOVAL OF BOLTS/NUTS.
- 4.. ALL VALVES AND EXPANSION JOINTS SHOULD BE INSULATED WITH REMOVABLE HEAT JACKETS FABRICATED FROM 1" THICK "FIBROX" MAT ON STAINLESS STEEL MESH, COVERED WITH #1702 SILICONE CLOTH.
- 5.. EACH HEAT JACKET SHOULD COVER AT LEAST 2" OF ADJACENT "TEMPERLUTE" INSULATION ON BOTH SIDES OF THE VALVE OR THE EXPANSION JOINT.
- 6.. ON COMPLETION OF THE JOB, THE SURFACE TEMPERATURE TO BE INSPECTED IN SIX LOCATIONS WITH A HEAT GUN AND RECORDS PROVIDED TO UTILITIES MECHANICAL ENGINEER.
- 7.. VENTILATION SHALL PREFERABLY BE PROVIDED WITH 6" DIAMETER PIPES, ONE INTAKE LOCATED NEAR BOTTOM OF MANHOLE AND THE OTHER NEAR THE TOP. VENTILATION PIPES ABOVE GROUND SHALL HAVE EXPANDED METAL MESH TACK WELDED TO PREVENT DEBRIS FROM BEING STUFFED INTO PIPE.
- 8.. SURFACE GRATING VENTILATION OPENINGS MAY BE USED WHERE PIPED VENTS ARE NOT PRACTICAL AS DETERMINED BY THE RESPONSIBLE UBC UTILITIES ENGINEER.

NO.	DATE	REVISIONS	BY
1	28-11-00	FOR CONSTRUCTION	A.P.
0	17-10-00	FOR REVIEW	A.P.

BUILDING/FACILITY
STEAM DISTRIBUTION SYSTEM

PROJECT TITLE
STEAM MANHOLE INSULATION STANDARD

DRAWING TITLE
MANHOLE INSULATION DETAILS

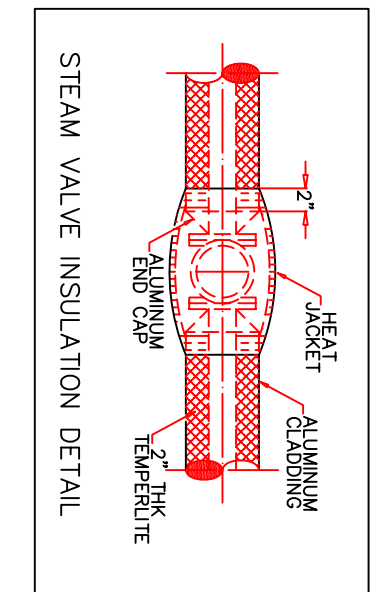
SCALE N.T.S. **DATE** OCT. 17, 2000

DRAWN A.P. **SHEET NO.**

REVIEWED E.M. **INSULATION**

CAD PROJECT NO. 00-00827-01 **1 OF 1**

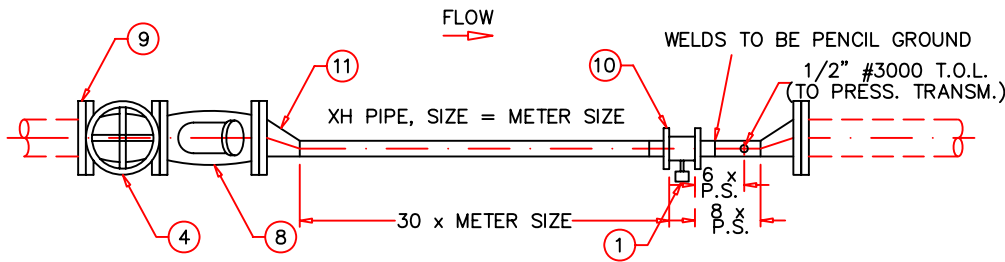
UBC DRAWING NO. 1130-UT-04-SteamManholeInsulationStd.dwg **REV.** 2



SURFACE TEMPERATURE LIMITS
GLOVES OR OTHER PERSONAL PROTECTION EQUIPMENT ARE MANDATORY IF THE FOLLOWING SURFACE TEMPERATURES ARE EXCEEDED:

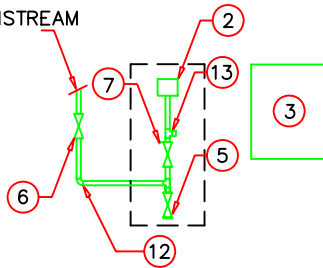
EXPOSURE	METAL	CERAMIC/GLASS	CLOTH/PLASTICS
MOMENTARY CONTACT	60°C(140°F)	68°C(154°F)	85°C(185°F)
PROLONGED CONTACT	49°C(120°F)	59°C(138°F)	69°C(156°F)

UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA



METER INSTALLATION DETAILS
(TYPICAL)

CONNECT TO T.O.L. DOWNSTREAM
OF FLOW METER



PRESSURE TRANSMITTER INSTALLATION DETAILS
(TYPICAL)

PIPING SPECIFICATIONS

CODE COMPLIANCE:	ANSI B31.1
SERVICE:	STEAM
DESIGN PRESSURE:	150 PSIG
DESIGN TEMPERATURE:	366°F
PIPE: 1/2" TO 2"	Sch.80-A106-CS
2-1/2" TO 6"	Sch.40-A106-CS
FITTINGS:	B.W.-SEAMLESS C.S. #2000 F.S. SCREWED FITTINGS
FLANGES:	#150 R.F. FLANGES (TO SUIT PIPE SCHEDULE)
GASKETS:	1/8" COMP-FLAT RING TYPE "FLEXITALIC"
BOLTING:	ALLOY STEEL HEXHEAD BOLTS HEAVY HEX NUTS
INSULATION:	2" FIBROUS GLASS WITH GENERAL PURPOSE JACKET

NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. FLOW METER SYSTEM PROGRAMMING AND COMMISSIONING BY UBC UTILITIES ONLY.
3. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6.

PART LIST:

- 1 FOXBORO "VORTEX" FLOWMETER-SIZING & SUPPLY ONLY BY UBC UTILITIES
- 2 FOXBORO PRESSURE TRANSMITTER-SUPPLY BY UBC UTILITIES
- 3 FOXBORO MASS FLOW COMPUTER-SUPPLY BY UBC UTILITIES
- 4 #150 C.S. GATE VALVE (FLG.)
- 5 1/2" #600 SS BALL VALVE C/W L.H. & PLUG
- 6 1/2" #800 F.S. GATE VALVE (NPT)
- 7 1/2" HEXHEAD BLOCK (NPT) + BLEED VALVE
- 8 #150 C.S. STRAINER (FLG.) CW BLOW-OUT
- 9 #150 RF/WN/FLANGE (4 OFF)
- 10 #150 RF/WN/FLANGE (XH) (2 OFF)
- 11 ECC. RED. (XH) (B/W) (2 OFF)
- 12 1/2" x 90° #2000 F.S. ELBOW (NPT) (3 OFF)
- 13 1/2" #2000 F.S. TEE (NPT) + PLUG

2	19-11-04	DESIGN PRESSURE REVISED	A.P.
0	13-12-00	FOR UBC TECHNICAL GUIDELINES	A.P.
NO.	DATE	REVISIONS	BY



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

PROJECT TITLE

"VORTEX" STEAM METER
MECHANICAL INSTALLATION STANDARD

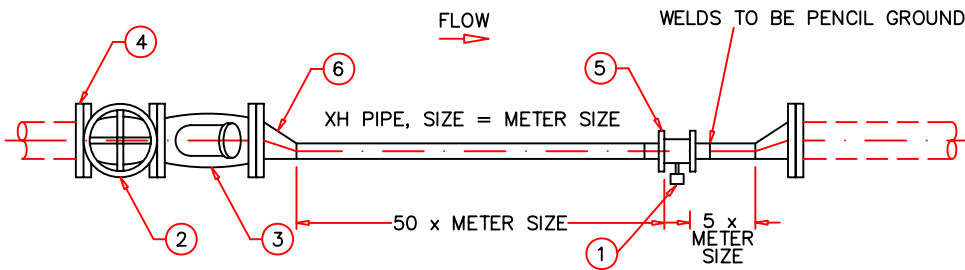
DRAWING TITLE

"VORTEX" STEAM METER
INSTALLATION DETAILS

SCALE	N.T.S.	DATE	DEC. 13,2000
DRAWN	A.P.	SHEET NO.	1 OF 1
REVIEWED	E.M.		
CAD FILENAME			
UBC PROJECT NO.	...		
UBC DRAWING NO.	1130-UT-05-SteamMeterStd-Foxboro.dwg	REV.	2

NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. FLOW METER SYSTEM PROGRAMMING AND COMMISSIONING BY UBC UTILITIES ONLY.
3. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6.



METER INSTALLATION DETAILS
(TYPICAL)

PART LIST:

- 1 ENDRESS & HAUSER PROLINE PROSWIRL 73 VORTEX FLOW METER – SIZING AND SUPPLY ONLY BY UBC UTILITIES
- 2 #150 C.S. GATE VALVE (FLG.)
- 3 #150 C.S. STRAINER (FLG.) CW BLOW-OUT
- 4 #150 RF/WN/FLANGE (4 OFF)
- 5 #150 RF/WN/FLANGE (XH) (2 OFF)
- 6 ECC. RED. (XH) (B/W) (2 OFF)

3	27-02-08	ENDRESS & HAUSER METER	J.L.
2	19-11-04	DESIGN PRESSURE REVISED	A.P.
1	13-12-00	FOR UBC TECHNICAL GUIDELINES	A.P.
NO.	DATE	REVISIONS	BY

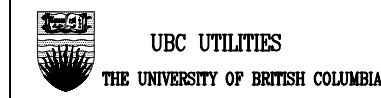


UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

PIPING SPECIFICATIONS	
CODE COMPLIANCE:	ANSI B31.1
SERVICE:	STEAM
DESIGN PRESSURE:	150 PSIG
DESIGN TEMPERATURE:	366°F
PIPE: 1/2" TO 2"	Sch.80-A106-CS
2-1/2" TO 6"	Sch.40-A106-CS
FITTINGS:	B.W.-SEAMLESS C.S. #2000 F.S. SCREWED FITTINGS
FLANGES:	#150 R.F. FLANGES (TO SUIT PIPE SCHEDULE)
GASKETS:	1/8" COMP-FLAT RING TYPE "FLEXITALIC"
BOLTING:	ALLOY STEEL HEXHEAD BOLTS HEAVY HEX NUTS
INSULATION:	2" FIBOROUS GLASS WITH GENERAL PURPOSE JACKET

BUILDING/FACILITY	
PROJECT TITLE	
"VORTEX" STEAM METER MECHANICAL INSTALLATION STANDARD	
DRAWING TITLE	
ENDRESS & HAUSER PROLINE PROSWIRL 73 "VORTEX" STEAM METER INSTALLATION DETAILS	
SCALE	N.T.S.
DATE	Feb. 27/08
DRAWN	A.P./D.B.
REVIEWED	J.L.
CAD FILENAME	
UBC PROJECT NO.	...
UBC DRAWING NO.	1130-UT-06-SteamMeterStd-Endress.dwg
REV.	2

4	Feb.19.10	HOSE CONNECTION	DB
3	Mar.26.09	DCVA AND CROSS CONN. NOTE	DB
2	DEC.18.07	BACKFLOW ASSEMBLY NOTE	DB
1	Oct.22.07	DOUBLE RPBA	DB
0	Oct.10.07	SPRINKLER RPBA, METER STD. REFER.	EK
NO.	DATE	REVISIONS	BY

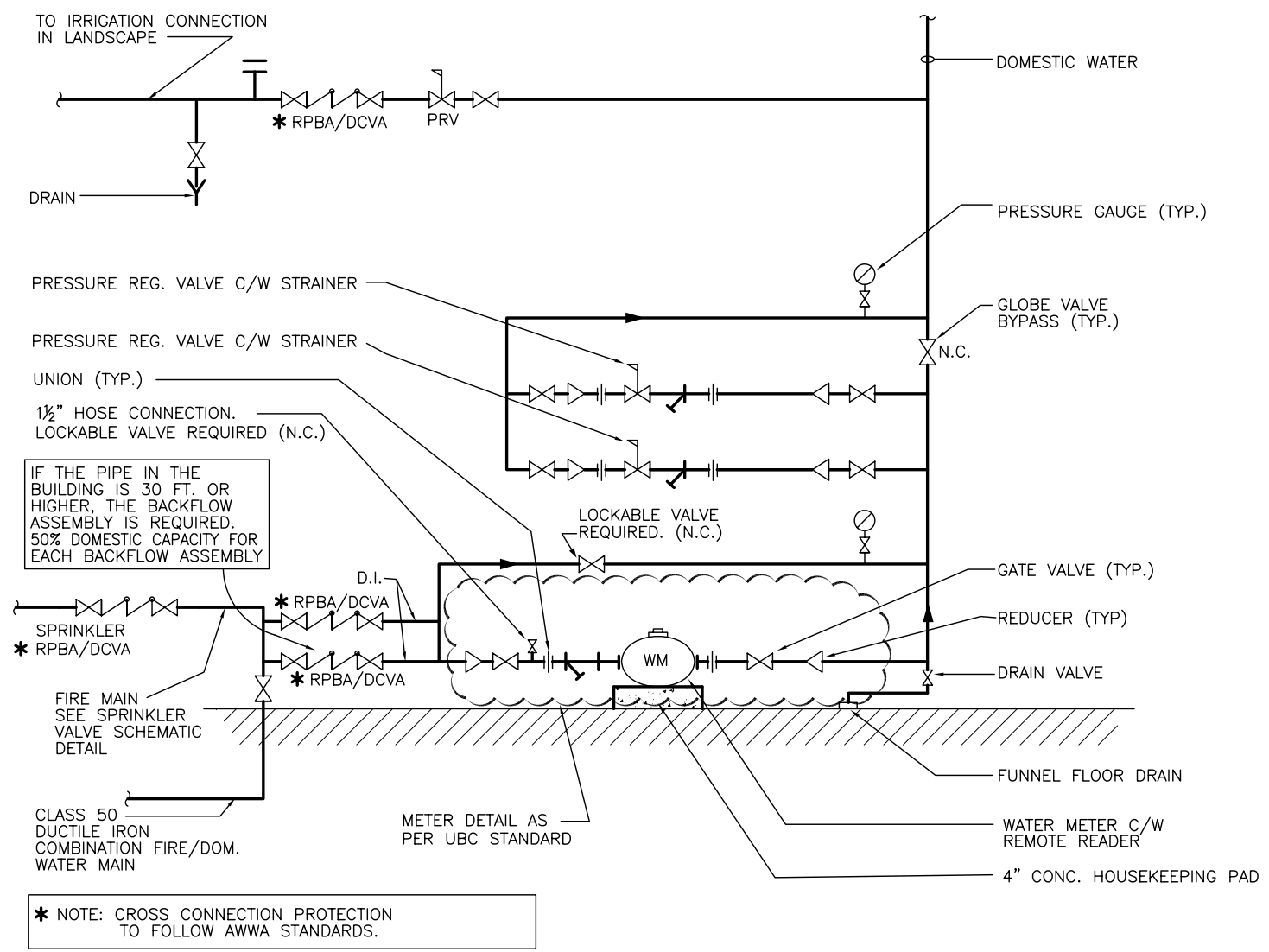


BUILDING/FACILITY

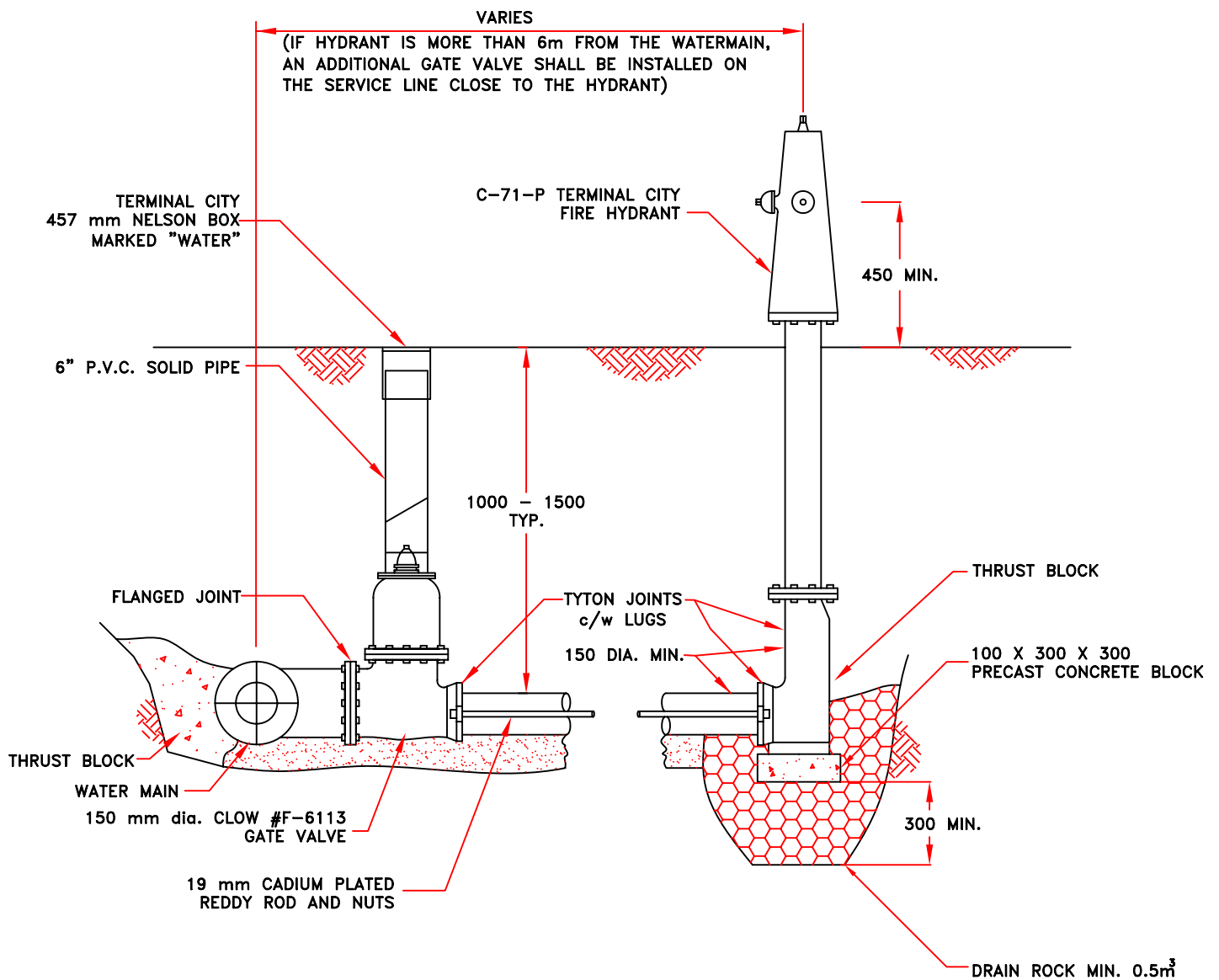
PROJECT TITLE
BUILDING WATER SUPPLY

DRAWING TITLE
MAIN WATER STATION SCHEMATIC

SCALE	N.T.S.	DATE	Sept. 18, 2007
DRAWN	D.B.	SHEET NO.	1 OF 1
REVIEWED	J.L.		
CAD FILENAME	T:\Tech Guidelines\... WaterStationSchematic		
UBC PROJECT NO.	...		



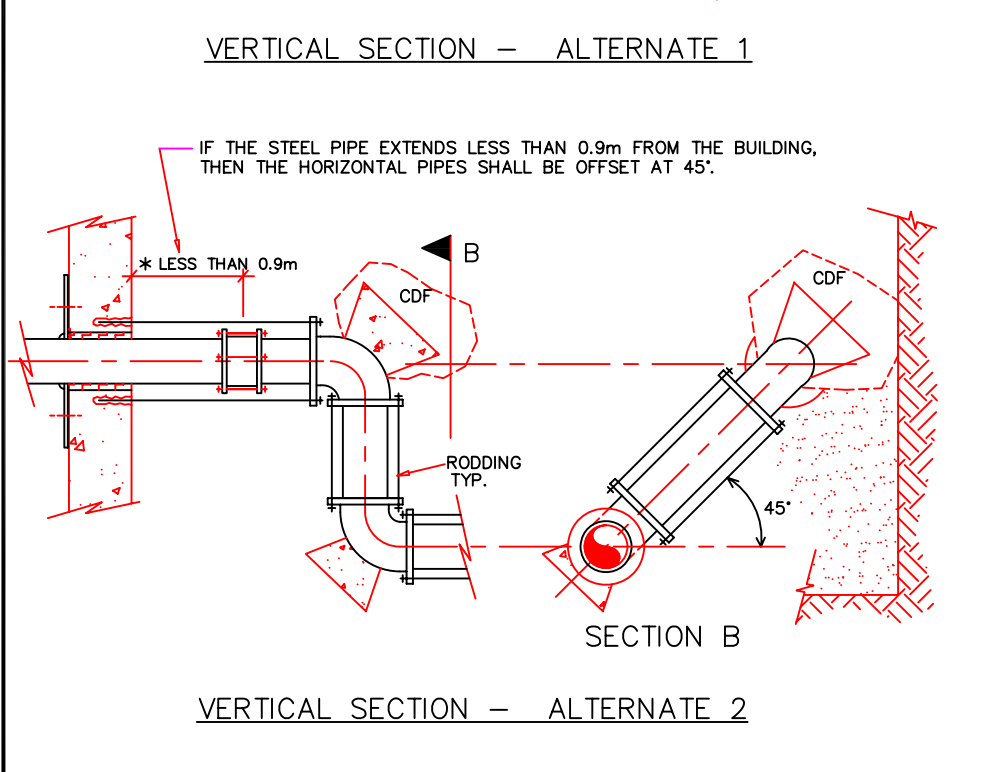
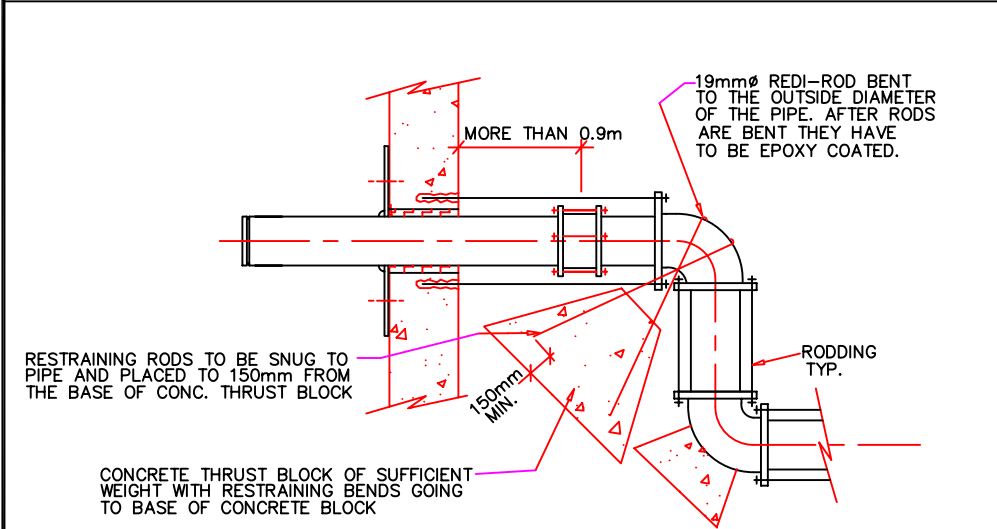
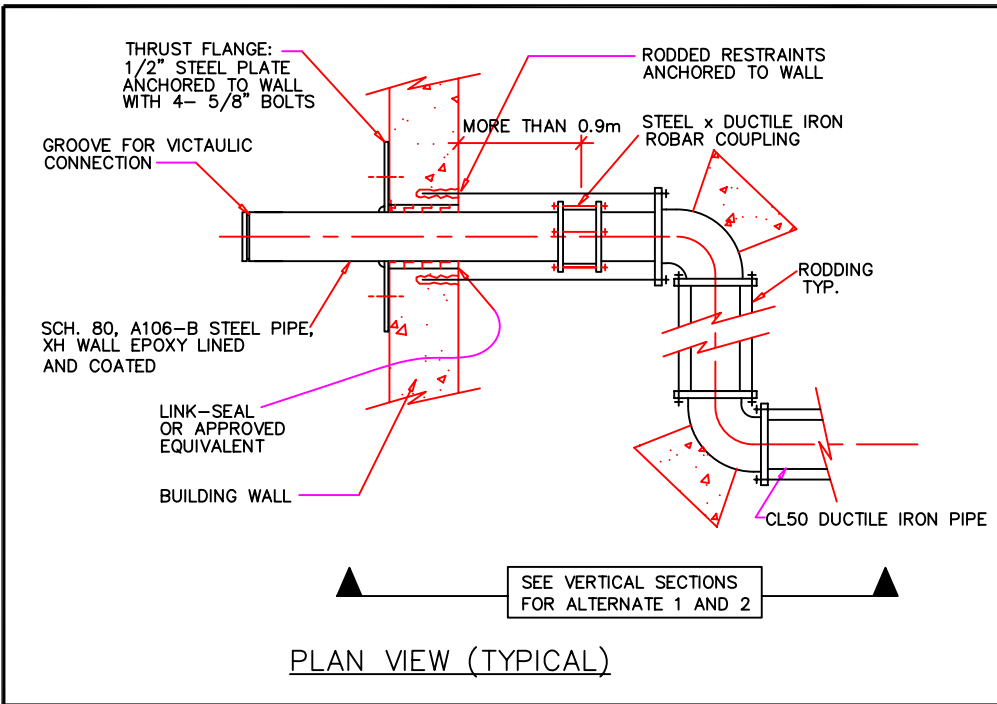
MAIN WATER STATION SCHEMATIC
N.T.S.



NOTES:

1. A HUB X FLANGE ISOLATION VALVE SHALL BE INSTALLED DIRECTLY AT THE WATER MAIN TAKE-OFF.
2. IN CASES WHERE THE FIRE HYDRANT LOCATION EXCEEDS 6m FROM THE WATER MAIN, A SECOND VALVE SHALL BE INSTALLED DIRECTLY AT THE HYDRANT.

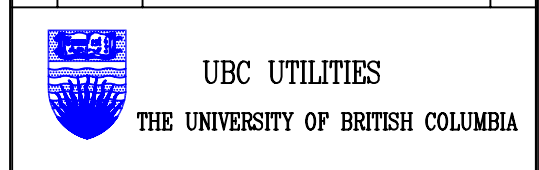
<p>UBC UTILITIES THE UNIVERSITY OF BRITISH COLUMBIA</p>	DRAWING TITLE	
	FIRE HYDRANT DETAIL	
BUILDING/FACILITY	SCALE	DATE
	N.T.S.	FEB. 27, 2006
PROJECT TITLE	DRAWN	UBC PROJECT NO.
	B.C.	
FIRE HYDRANT DETAIL	CAD FILENAME	SHEET NO.
	FIRE HYDRANT DETAIL	1 OF 1
	UBC DRAWING NO. 1140-UT-02-Fire Hydrant Detail	REV. 4



NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. THRUST BLOCKS
 - PLACE 6 mil POLYETHYLENE ON INTERFACE BETWEEN CONCRETE AND FITTING.
 - PLACE 20 MPa CONCRETE AGAINST UN-DISTURBED GROUND; KEEP CONCRETE CLEAR OF FITTING JOINTS.
 - IF THRUST BLOCKS CANNOT BE PLACED AGAINST UNDISTURBED SOIL, THE SPACE BETWEEN THRUST BLOCK AND UNDISTURBED SOIL SHALL BE FILLED WITH CONTROL DENSITY FILL (CDF).

NO.	DATE	REVISIONS	BY
2	08-Mar-09	Revised for UBC Technical Guidelines	D.B.
1	07-Dec-04	Revised for UBC Technical Guidelines	E.K.
0	07-06-02	FOR UBC TECHNICAL GUIDELINES	A.P.



BUILDING/FACILITY

PROJECT TITLE

BUILDING WATER SUPPLY

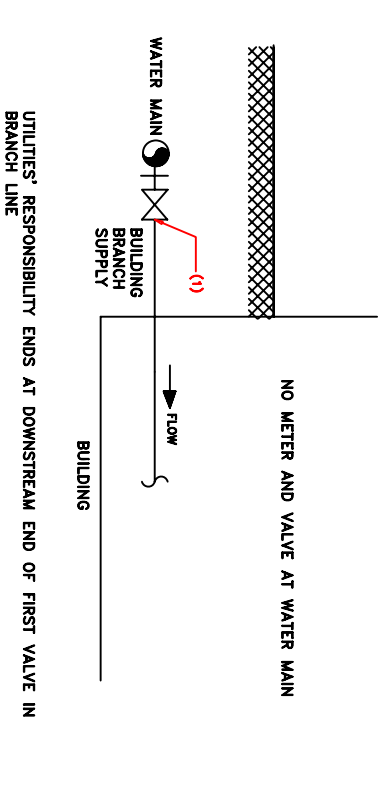
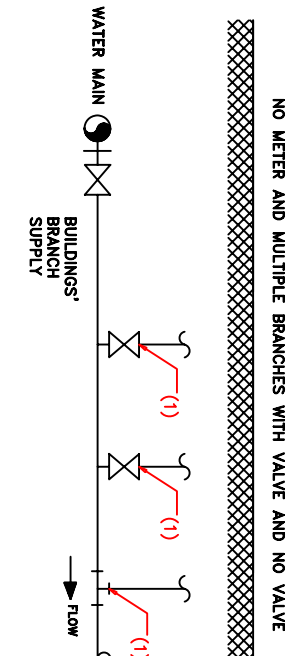
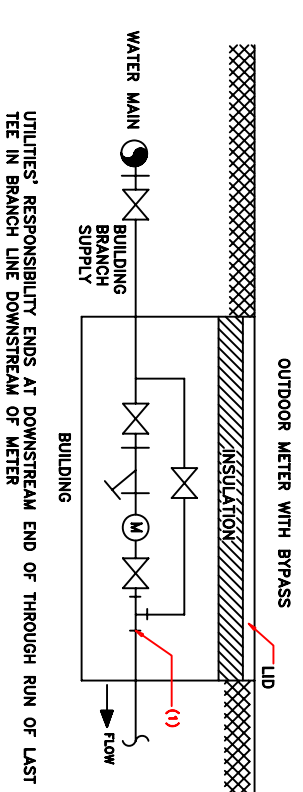
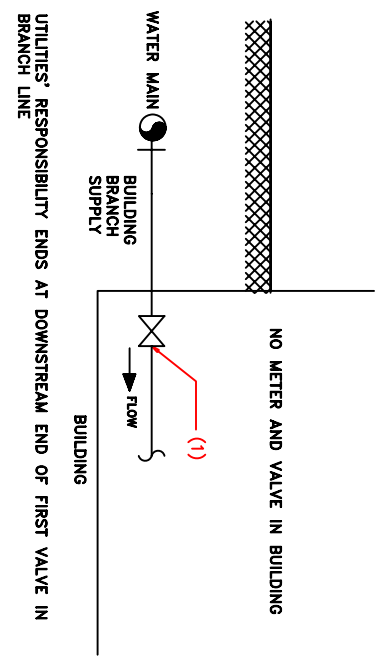
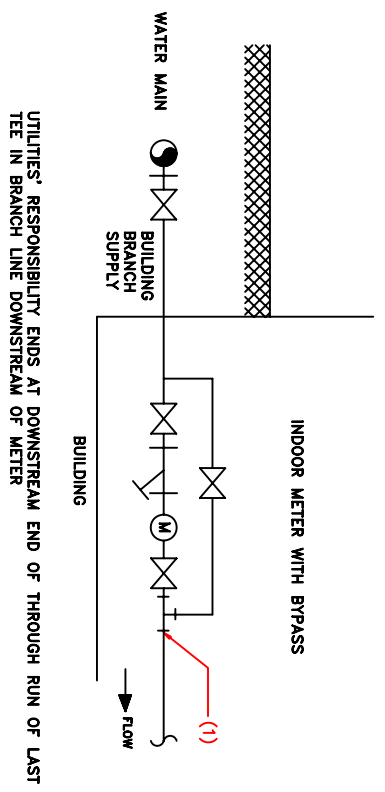
DRAWING TITLE

WATER SERVICE BUILDING ENTRY STANDARD

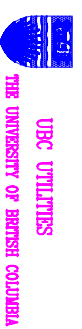
SCALE	N.T.S.	DATE	APR. 08, 2009
DRAWN	D.B.	SHEET NO.	
REVIEWED	J.L.		
CAD FILENAME	WATERENTRY.DWG		
UBC PROJECT NO.	...		
UBC DRAWING NO.	1140-UT-03-WATERENTRY.DWG	1 OF 1	
		REV.	1

NOTES

- (1) ARROW SHOWS DEMARCATION POINTS OF UBC UTILITIES' SERVICE. UBC UTILITIES IS RESPONSIBLE FOR SYSTEM UPSTREAM OF TERMINATION POINT.
- (2) "RESPONSIBILITY" REFERS TO DEPARTMENT OWNERSHIP, NOT TRADE JURISDICTION.
- (3) DETAILS SHOW EXISTING INSTALLATIONS AT UBC, NOT NECESSARILY ALLOWABLE FOR NEW CONSTRUCTION.



UPDATE DRAWING NOTES	
A.	DATE
DRAFT FOR REVIEW	
NO.	REVISIONS
BY	



BUILDING/FACILITY
WATER DISTRIBUTION SYSTEM

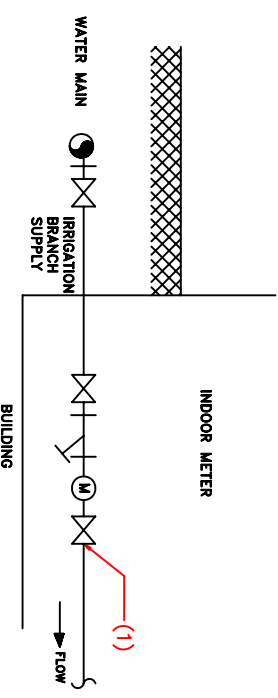
PROJECT TITLE
BUILDING WATER SUPPLY

DRAWING TITLE
DEMARCATION POINT OF UBC UTILITIES SERVICE.

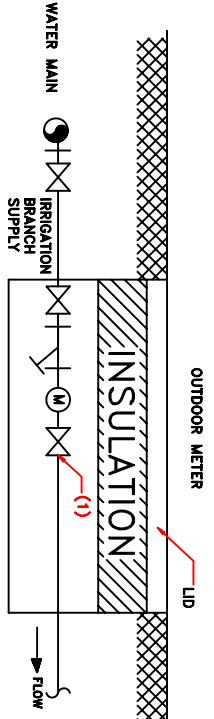
SCALE	N/A	DATE	MAY 13, 1999
DRAWN	P.L.	SHEET NO.	
REVIEWED	L.A.K.		
CAD FILENAME	UtilityService		
UBC PROJECT NO.			
UBC DRAWING NO.			
1140-UT-04-WaterBldgDemarc			

NOTES

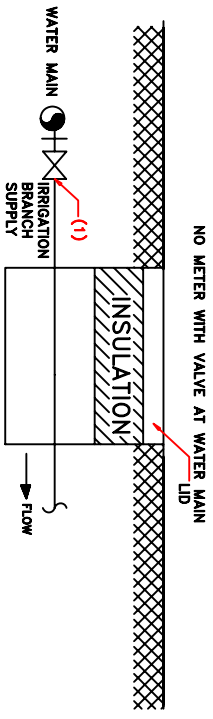
- (1) ARROW SHOWS DEMARCATION POINTS OF UBC UTILITIES' SERVICE. UBC UTILITIES IS RESPONSIBLE FOR SYSTEM UPSTREAM OF TERMINATION POINT.
- (2) "RESPONSIBILITY" REFERS TO DEPARTMENT OWNERSHIP, NOT TRADE JURISDICTION.
- (3) DETAILS SHOW EXISTING INSTALLATIONS AT UBC, NOT NECESSARILY ALLOWABLE FOR NEW CONSTRUCTION.



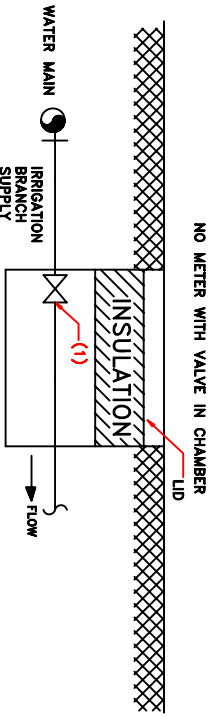
UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE DOWNSTREAM OF METER



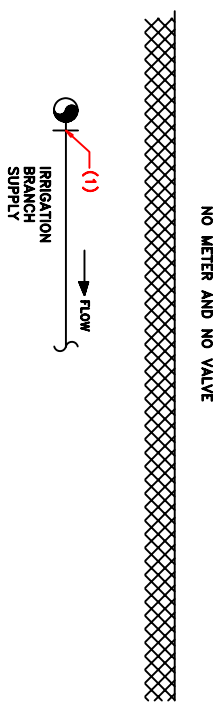
UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE DOWNSTREAM OF METER



UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE



UTILITIES' RESPONSIBILITY ENDS AT DOWNSTREAM END OF FIRST VALVE IN BRANCH LINE



UTILITIES' RESPONSIBILITY ENDS AT BRANCH RUN END OF TEE IN WATER MAIN

NO.	DATE	REVISIONS	BY
A	09/29/98	DRAFT FOR REVIEW	

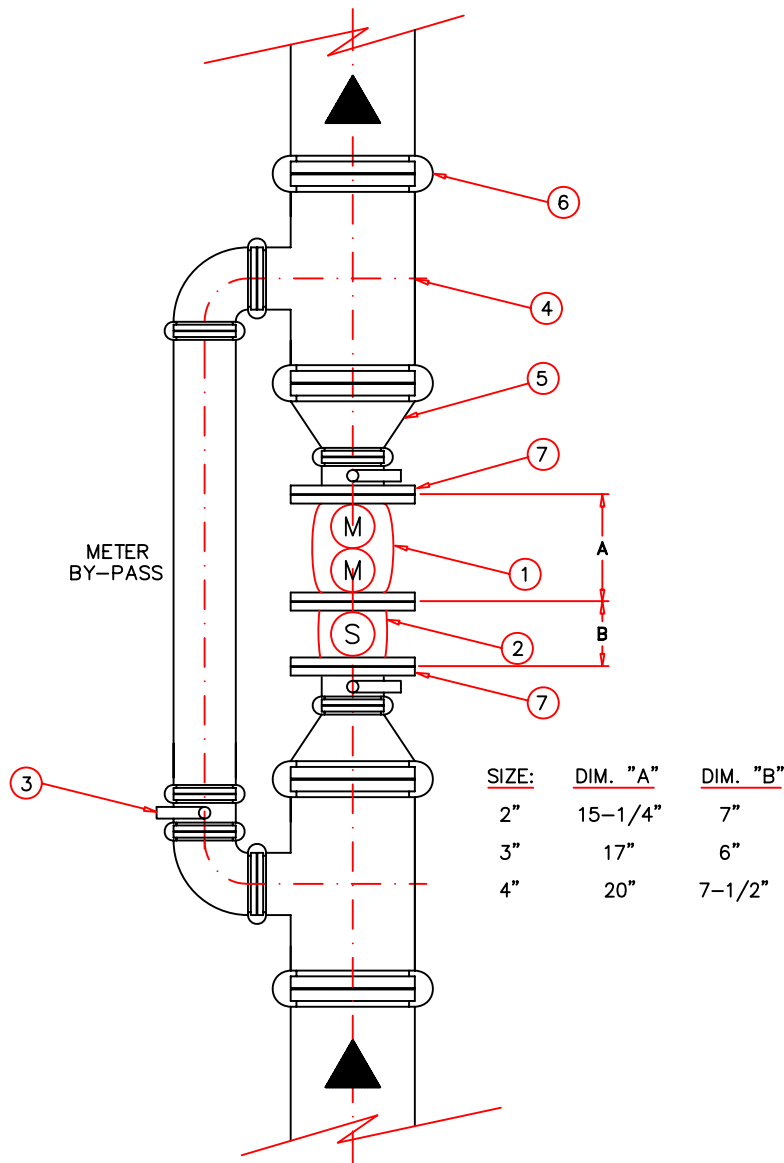


BUILDING/FACILITY
 WATER DISTRIBUTION SYSTEM

PROJECT TITLE
 IRRIGATION WATER SUPPLY

DRAWING TITLE
 DEMARCATION POINT OF UBC UTILITIES SERVICE.

SCALE	N/A	DATE	MAY 13, 1999
DRAWN	P.L.	SHEET NO.	
REVIEWED	L.A.K.		
CAD FILENAME	UtilityService		
UBC PROJECT NO.			
UBC DRAWING NO.	1140-UT-05-WaterIrrigDemarc		



METER INSTALLATION DETAILS
(TYPICAL)

NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. PIPE MATERIAL:
 Ø4" AND LARGER TO BE CL 54 DUCTILE IRON (CEMENT LINED)
 SMALLER THAN Ø4" TO BE TYPE "K" COPPER
3. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6.
4. MINIMUM AND MAXIMUM INSTALLATION HEIGHT OF THE CENTRELINE OF THE WATER METER:
 MINIMUM ABOVE THE FINISHED FLOOR: 600 mm
 MAXIMUM ABOVE THE FINISHED FLOOR: 1350mm

PART LIST:

- ① NEPTUNE WATER METER (COMPOUND) WITH TRICON-S REGISTER. READ OUT: PROREAD ARB PIT METER RECEPTACLE
 -SUPPLY ONLY BY UBC UTILITIES
- ② NEPTUNE STRAINER - SUPPLY BY UBC UTIL.
- ③ VIC 300 BUTTERFLY VALVE (LOCKABLE REQUIRED)
- ④ VIC 25 REDUCING TEE (2 OFF)
- ⑤ VIC 50 REDUCER (2 OFF)
- ⑥ STYLE 77 STD FLEXIBLE COUPLING
- ⑦ STYLE 741 VIC FLANGE ADAPTER

4	04-02-08	NOTE 6 REFERENCE AT ELBOW REMOVED	E.K
3	12-10-07	PART 7 BY J. LIU	D.B
2	16-09-07	NOTE 4 BY J. LIU	D.B
1	19-12-02	UPDATE TECHNICAL GUIDELINES	A.P.
0	13-12-00	FOR UBC TECHNICAL GUIDELINES	A.P.
NO.	DATE	REVISIONS	BY



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

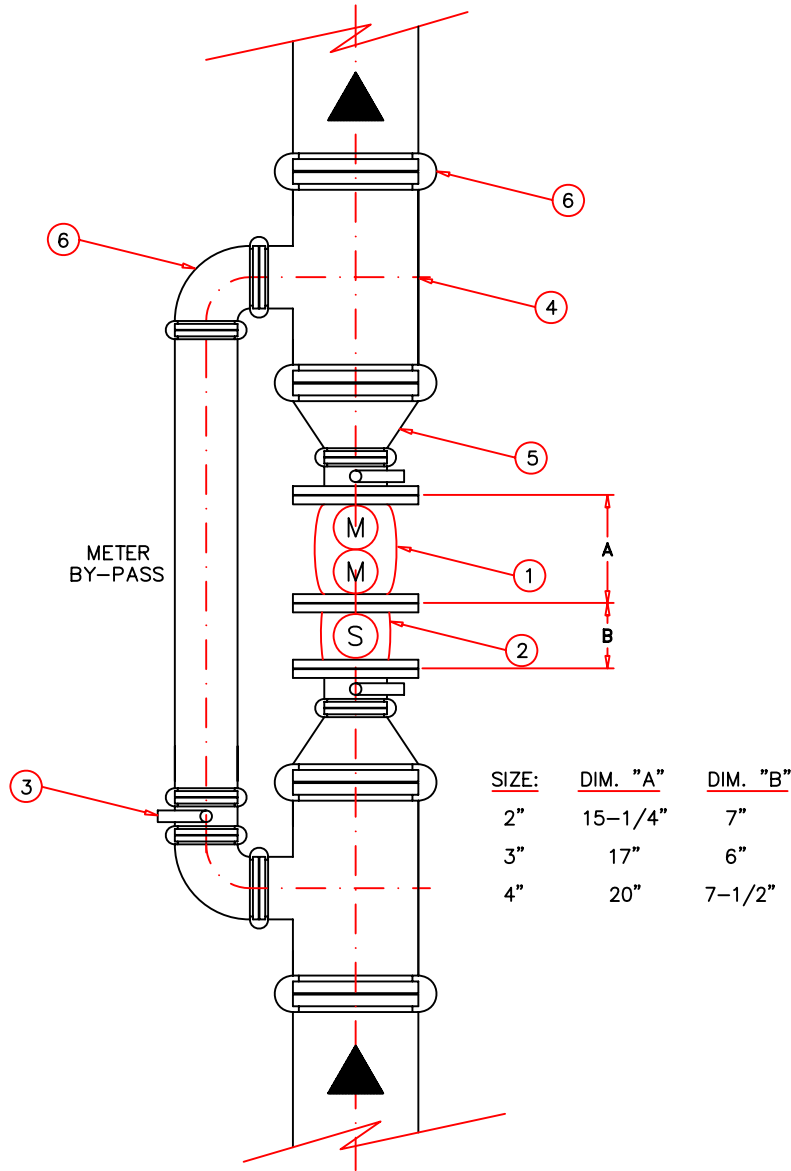
PROJECT TITLE

WATER METER
(COMPOUND)
MECHANICAL INSTALLATION STANDARD

DRAWING TITLE

METER INSTALLATION DETAILS

SCALE	N.T.S.	DATE	DEC. 13,2000
DRAWN	A.P.	SHEET NO.	1 OF 1
REVIEWED	E.M.		
CAD FILENAME	WaterMeterStdComp		
UBC PROJECT NO.	...		
UBC DRAWING NO.	1140-UT-06A-WaterMeterStdComp	REV.	1



METER INSTALLATION DETAILS
(TYPICAL)

SIZE:	DIM. "A"	DIM. "B"
2"	15-1/4"	7"
3"	17"	6"
4"	20"	7-1/2"

NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. PIPE MATERIAL:
 $\phi 4"$ AND LARGER TO BE CL 54 DUCTILE IRON (CEMENT LINED)
 SMALLER THAN $\phi 4"$ TO BE TYPE "K" COPPER
3. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6.
4. MINIMUM AND MAXIMUM INSTALLATION HEIGHT OF THE CENTRELINE OF THE WATER METER:
 MINIMUM ABOVE THE FINISHED FLOOR: 600 mm
 MAXIMUM ABOVE THE FINISHED FLOOR: 1350mm

PART LIST:

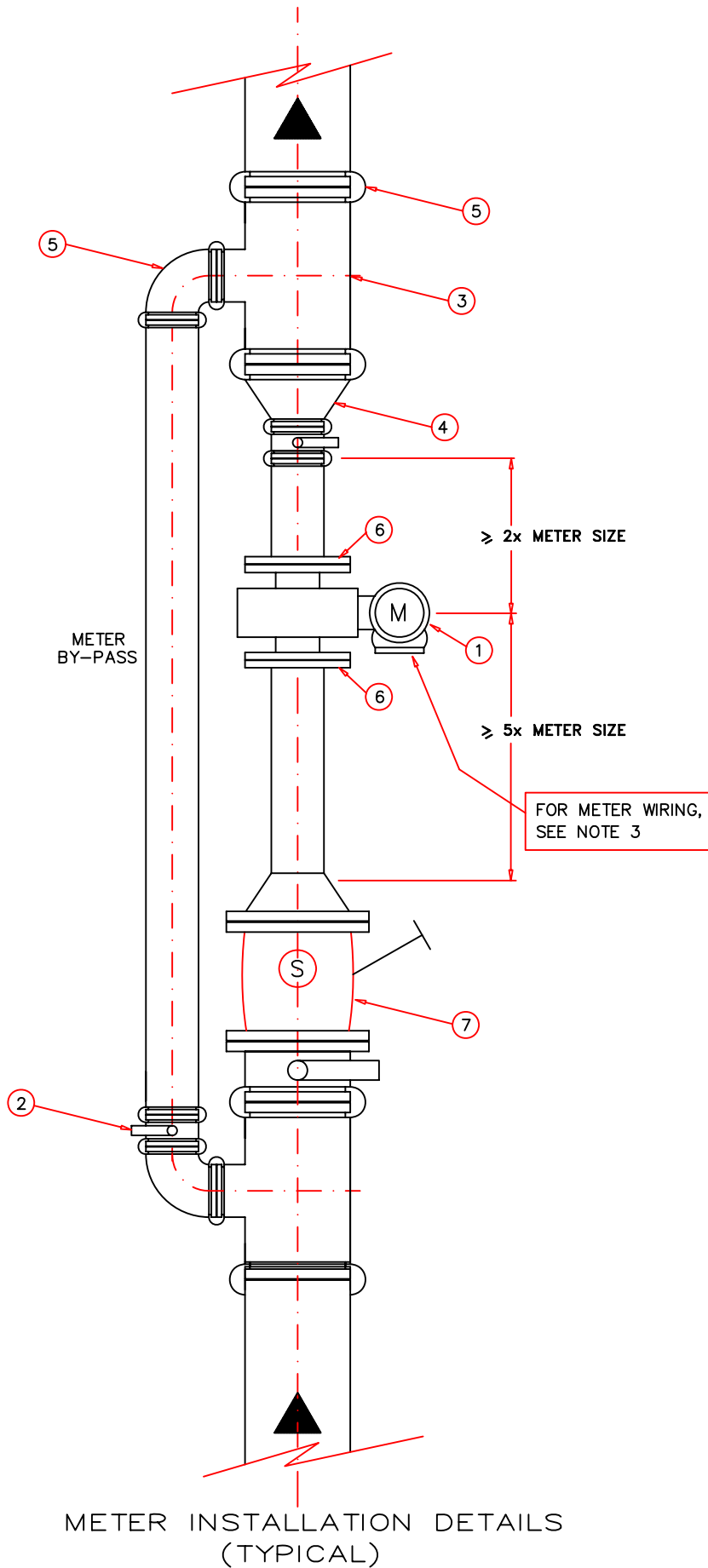
- 1 NEPTUNE WATER METER (COMPOUND) WITH TRICON-S REGISTER. READ OUT: PROREAD ARB PIT METER RECEPTACLE
 -SUPPLY ONLY BY UBC UTILITIES
- 2 NEPTUNE STRAINER - SUPPLY BY UBC UTIL.
- 3 VIC 300 BUTTERFLY VALVE (LOCKABLE REQUIRED)
- 4 VIC 25 REDUCING TEE (2 OFF)
- 5 VIC 50 REDUCER (2 OFF)
- 6 STYLE 77 STD FLEXIBLE COUPLING (4 OFF)

NO.	DATE	REVISIONS	BY
2	16-09-07	NOTE 4 BY J. LIU	D.B
1	19-12-02	UPDATE TECHNICAL GUIDELINES	A.P.
0	13-12-00	FOR UBC TECHNICAL GUIDELINES	A.P.



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY	
PROJECT TITLE	
WATER METER MECHANICAL INSTALLATION STANDARD	
DRAWING TITLE	
METER INSTALLATION DETAILS	
SCALE	DATE
N.T.S.	DEC. 13,2000
DRAWN	SHEET NO.
A.P.	1 OF 1
REVIEWED	
E.M.	
CAD FILENAME	
WaterMeterStd	
UBC PROJECT NO.	
...	
UBC DRAWING NO.	REV.
1140-UT-06-WaterMeterStd	1



NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. PIPE MATERIAL:
 Ø4" AND LARGER TO BE CL 54 DUCTILE IRON (CEMENT LINED)
 SMALLER THAN Ø4" TO BE TYPE "K" COPPER
3. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6A.
4. MINIMUM AND MAXIMUM INSTALLATION HEIGHT OF THE CENTRELINE OF THE WATER METER:
 MINIMUM ABOVE THE FINISHED FLOOR: 600 mm
 MAXIMUM ABOVE THE FINISHED FLOOR: 1350mm

PART LIST:

- ① WATER METER: ENDRESS & HAUSER PROMAG ELECTROMAGNETIC FLOW METER 50W.
 -SUPPLY ONLY BY UBC UTILITIES
- ② VIC 300 BUTTERFLY VALVE (LOCKABLE REQUIRED)
- ③ VIC 25 REDUCING TEE (2 OFF)
- ④ VIC 50 REDUCER (2 OFF)
- ⑤ STYLE 77 STD FLEXIBLE COUPLING
- ⑥ STYLE 741 VIC FLANGE ADAPTER
- ⑦ NEPTUNE STRAINER - SUPPLY BY UBC UTIL.

NO.	DATE	REVISIONS	BY
3	03-10-08	ADD STRAINER	D.B
2	02-28-08	ENDRESS & HAUSER METER	D.B
1	12-10-07	PART 6	D.B
0	11-10-07	NEW DETAIL REV'D FOR MAG METER	D.B



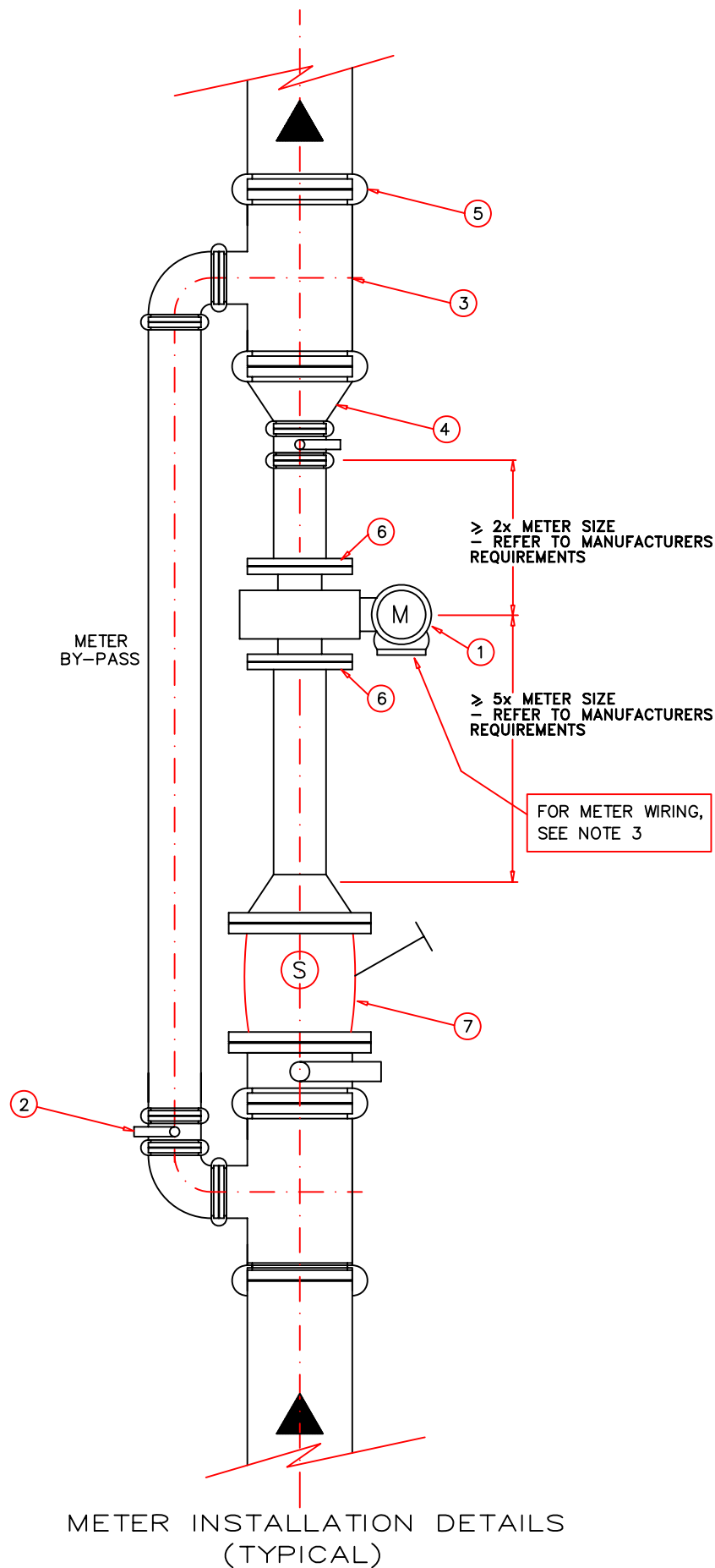
UBC UTILITIES
 THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

PROJECT TITLE
 WATER METER
 ENDRESS & HAUSER PROLINE PROMAG 50
 (MAGNETIC)
 MECHANICAL INSTALLATION STANDARD

DRAWING TITLE
 METER INSTALLATION DETAILS

SCALE	N.T.S.	DATE	FEB. 27/08
DRAWN	D.B.	SHEET NO.	1 OF 1
REVIEWED	J.L.		
CAD FILENAME	WaterMeterStdMagE&H		
UBC PROJECT NO.	...		
UBC DRAWING NO.	1140-UT-07A-WaterMeterStdMagE&H	REV.	1



NOTES

1. ALL MATERIAL TO BE SUPPLIED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE SPECIFIED.
2. PIPE MATERIAL:
 Ø4" AND LARGER TO BE CL 54 DUCTILE IRON (CEMENT LINED)
 SMALLER THAN Ø4" TO BE TYPE "K" COPPER
3. METER TO BE INTEGRATED INTO ELECTRICAL METERING SYSTEM AS PER DIVISION-16, SECTION 16460, DRAWING E4-6A.
4. MINIMUM AND MAXIMUM INSTALLATION HEIGHT OF THE CENTRELINE OF THE WATER METER:
 MINIMUM ABOVE THE FINISHED FLOOR: 600 mm
 MAXIMUM ABOVE THE FINISHED FLOOR: 1350mm

PART LIST:

- ① WATER METER: ENDRESS & HAUSER PROMAG ELECTROMAGNETIC FLOW METER 50W OR EQUIVALENT.
 -SUPPLY ONLY BY UBC UTILITIES
- ② VIC 300 BUTTERFLY VALVE (LOCKABLE REQUIRED)
- ③ VIC 25 REDUCING TEE (2 OFF)
- ④ VIC 50 REDUCER (2 OFF)
- ⑤ STYLE 77 STD FLEXIBLE COUPLING
- ⑥ STYLE 741 VIC FLANGE ADAPTER
- ⑦ NEPTUNE STRAINER - SUPPLY BY UBC UTIL.

NO.	DATE	REVISIONS	BY
3	05-28-08	ADD STRAINER	D.B
2	02-28-08	ENDRESS & HAUSER METER	D.B
1	12-10-07	PART 6	D.B
0	11-10-07	NEW DETAIL REV'D FOR MAG METER	D.B



UBC UTILITIES
 THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

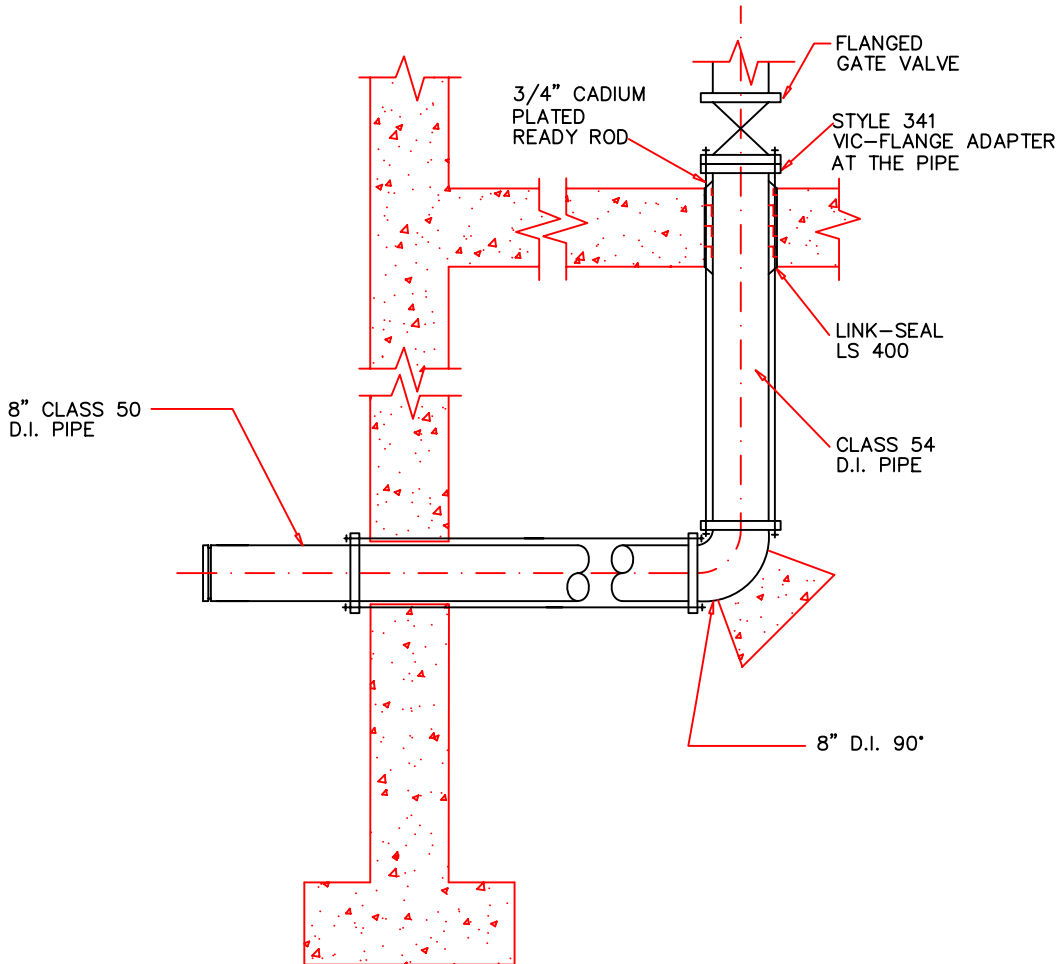
PROJECT TITLE

WATER METER
 (MAGNETIC)
 MECHANICAL INSTALLATION STANDARD

DRAWING TITLE

METER INSTALLATION DETAILS

SCALE	N.T.S.	DATE	FEB. 27/08
DRAWN	D.B.	SHEET NO.	1 OF 1
REVIEWED	J.L.		
CAD FILENAME	WaterMeterStdMag		
UBC PROJECT NO.	...		
UBC DRAWING NO.	1140-UT-07-WaterMeterStdMag	REV.	1



WATER SERVICE BUILDING ENTRY
(FOR SLAB ON GRADE)
N.T.S.

1	JULY 18/08	VIC-FLANGE ADAPTER	DB
NO.	DATE	REVISIONS	BY



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

BUILDING/FACILITY

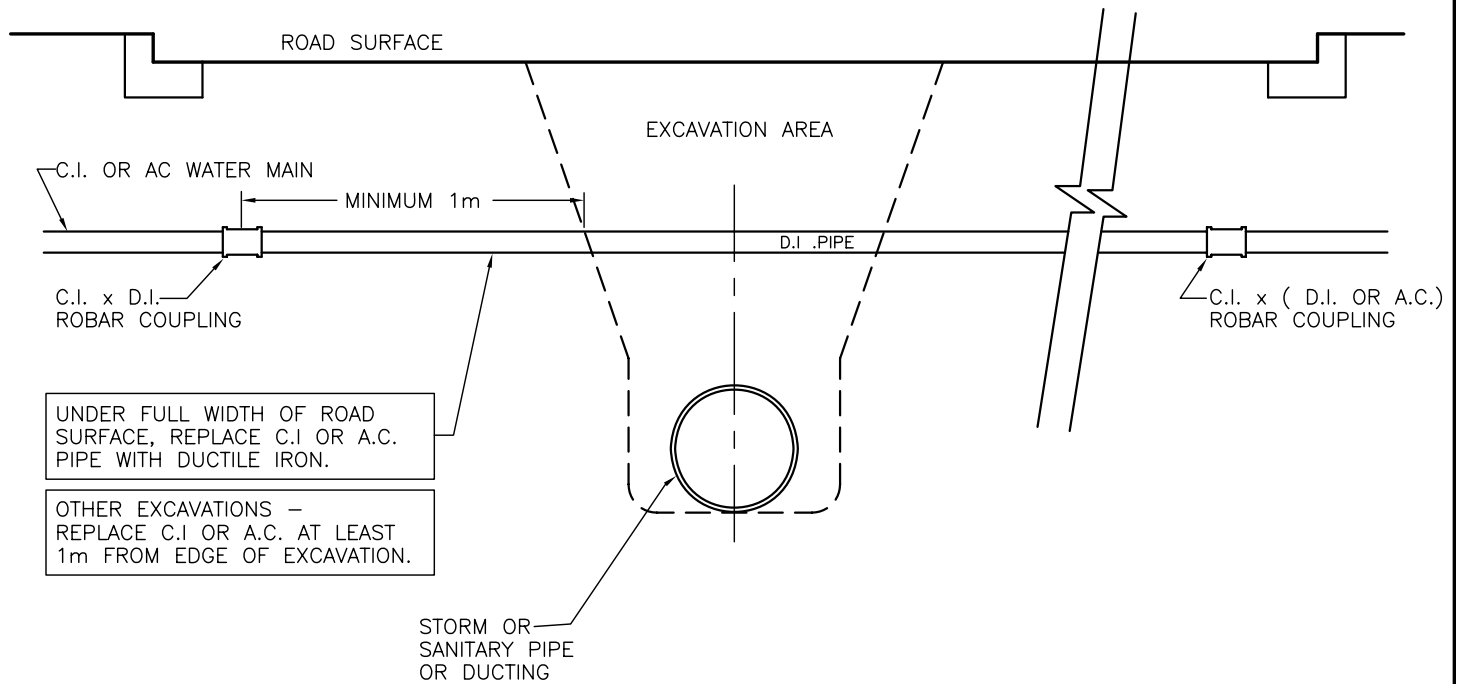
PROJECT TITLE

BUILDING WATER SUPPLY

DRAWING TITLE

WATER SERVICE BUILDING ENTRY
(FOR SLAB ON GRADE)

SCALE	N.T.S.	DATE	Sept. 17, 2007
DRAWN	D.B.	SHEET NO.	1 OF 1
REVIEWED	J.L.		
CAD FILENAME	T:\Tech Guidelines\WaterEntrySOG		
UBC PROJECT NO.	...		
UBC DRAWING NO.	1140-UT-08-WaterEntrySOG		REV. 1



UBC UTILITIES
THE UNIVERSITY OF BRITISH COLUMBIA

DRAWING TITLE

**WATER MAIN PIPE REPLACEMENT
 AT EXCAVATIONS**

SCALE

N.T.S.

DATE

FEB 4, 2010

DRAWN

D.B

UBC PROJECT NO.

CAD FILENAME

**T:\Tech Guidelines\
 1140-UT-09-WaterMainAtExcavations**

SHEET NO.

1 OF 1

UBC DRAWING NO.

1140-UT-09-WaterMainAtExcavations

REV.

0