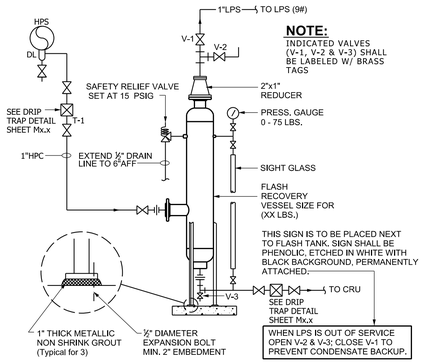
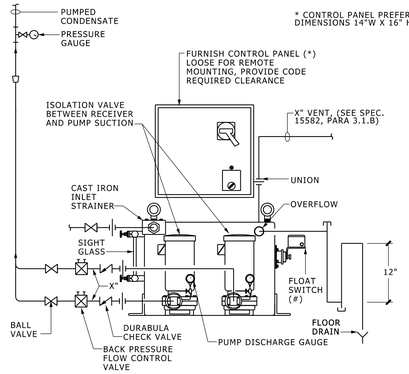
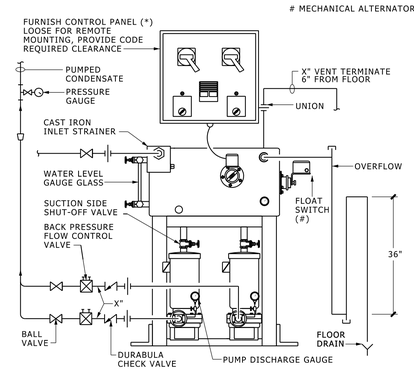



**NOTE:**
INDICATED VALVES (V-1, V-2 & V-3) SHALL BE LABELED W/ BRASS TAGS

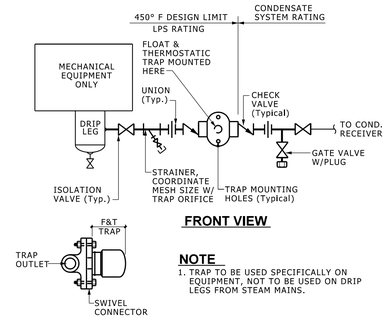
## FLASH TANK DETAIL
NO SCALE




## FLOOR MTD. CONDENSATE RETURN UNIT DETAIL
NO SCALE
D 15582 02 06 09.dgn




## ELEVATED CONDENSATE RETURN UNIT DETAIL
NO SCALE
D 15582 01 06 09.dgn

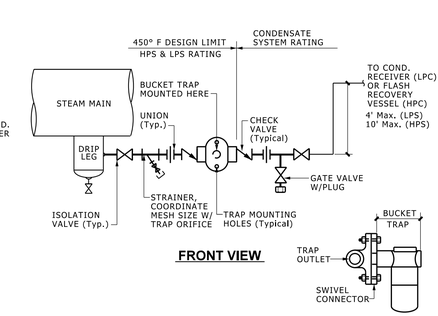



**FRONT VIEW**

**SIDE VIEW**

**NOTE**
1. TRAP TO BE USED SPECIFICALLY ON EQUIPMENT, NOT TO BE USED ON DRIP LEGS FROM STEAM MAINS.

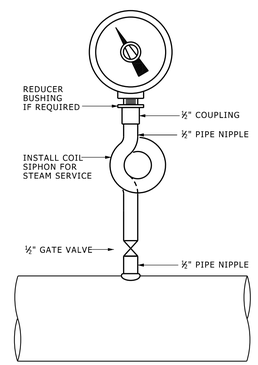
## F&T STEAM TRAP ASSEMBLY DETAIL
NO SCALE
D 15525 01 11 09.dgn



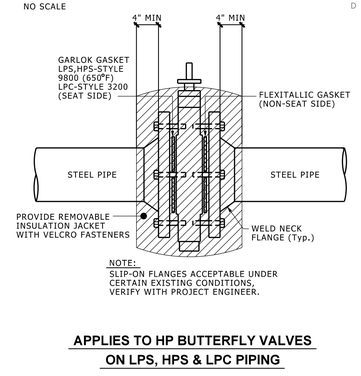

**FRONT VIEW**

**SIDE VIEW**

## BUCKET STEAM TRAP ASSEMBLY DETAIL
NO SCALE
D 15525 05 11 09.dgn



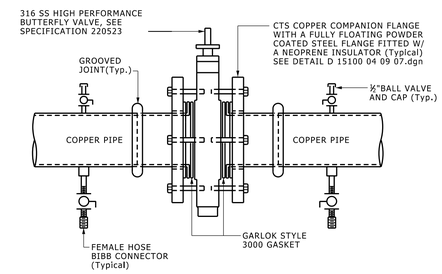

## PRESSURE GAUGE DETAIL
NO SCALE
D 15130 002 05 04.dgn




NOTE:
SLIP-ON FLANGES ACCEPTABLE UNDER CERTAIN EXISTING CONDITIONS, VERIFY WITH PROJECT ENGINEER.

**APPLIES TO HP BUTTERFLY VALVES ON LPS, HPS & LPC PIPING**

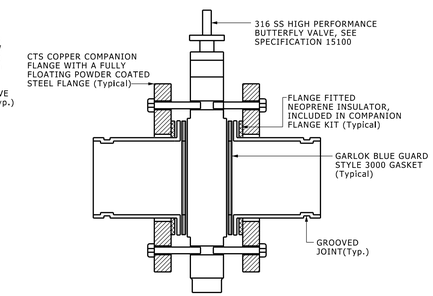
## VALVE INSTALLATION DETAIL
NO SCALE
D 15100 01 04 09.dgn




DHW VALVES NOT INSULATED

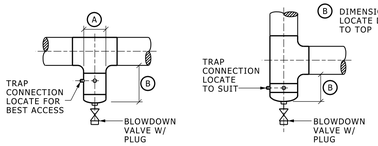
**APPLIES TO DHW PIPING**

## VALVE INSTALLATION DETAIL
NO SCALE
D 15100 02 04 09.dgn




**APPLIES TO COPPER PIPING**

## COMPANION FLANGE INSTALLATION DETAIL
NO SCALE
D 15100 04 09 07.dgn

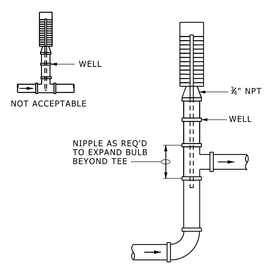



**HORIZONTAL** **VERTICAL**

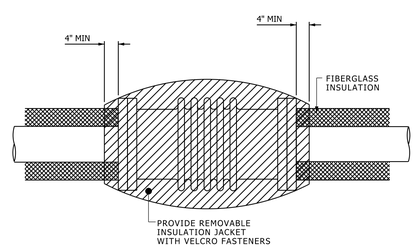
| SIZING SCHEDULE | | | | |
|---|---|---|---|---|
| PIPE SIZE (IN) | (A) SIZE (IN) | (B) LENGTH (IN) | TRAP CONN. SIZE (IN) | BLOW DOWN SIZE (IN) |
| <4" | 3" | 6" | ¾" | 1" |
| 4" | 3" | 6" | ¾" | 2" |
| 6" | 4" | 9" | ¾" | 2" |
| 8" | 6" | 11" | ¾" | 2" |
| 10,12" | 8" | 18" | ¾" | 2" |
| 14,16" | 12" | 24" | 1" | 2" |
| 18,20" | 16" | 30" | 1" | 2.5" |
| 24" | 20" | 36" | 1" | 2.5" |

**NOTES**
1. USE TEE THRU 16" PIPE AND WELDOLET FOR LARGER SIZES.

## STEAM DRIP LEG DETAIL
NO SCALE
D 15525 02 10 04.dgn

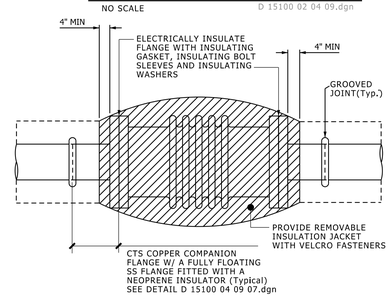



## THERMOMETER INSTALLATION DETAIL
NO SCALE
FOR PIPING 1" THRU 2"
D 15130 001 05 04.dgn



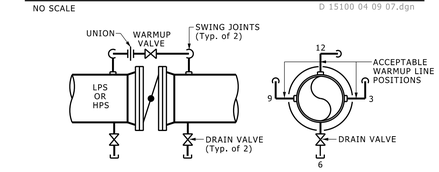

**APPLIES TO LPS, HPS & LPC EXPANSION JOINTS**

## EXPANSION JOINT DETAIL
NO SCALE




**APPLIES TO DHW EXPANSION JOINTS**

## EXPANSION JOINT DETAIL
NO SCALE
D 15125 02 09 07.dgn

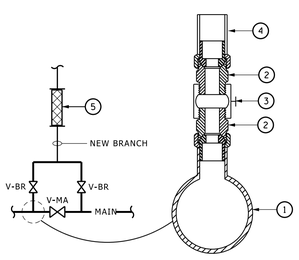



**SIDE VIEW** **SECTION**

| WARMUP LINE SIZING SCHEDULE | | | |
|---|---|---|---|
| LOW PRESSURE STEAM (9# LPS) | | HIGH PRESSURE STEAM (60# HPS) | |
| SERVICE SIZE | WARMUP LINE SIZE | SERVICE SIZE | WARMUP LINE SIZE |
| ≥14" | 2" | ≥14" | 1½" |
| ≥8"-<14" | 1½" | ≥8"-<14" | 1" |
| <8" | 1" | <8" | ¾" |

**NOTES**
1. DRAIN VALVES TO BE LOCATED AT BOTTOM, WARMUP VALVE TO BE LOCATED AT 9, 12 OR 3 O'CLOCK POSITIONS.
2. PROVIDE SWING JOINTS TO ALLOW FOR EXPANSION & CONTRACTION.
3. DRAIN AND WARM UP VALVES SHALL BE GATE VALVES.

## WARM UP VALVE DETAIL
NO SCALE
D 15100 03 09 07.dgn

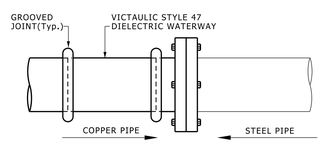



**KEY NOTES**
1. 6" COPPER REDUCING TEE.
2. CAST BRASS UNION W/ THREADED END ONE SIDE AND SWEAT CONNECTION OTHER SIDE.
3. BRONZE BALL VALVE UP TO 2" BRANCH, BUTTERFLY VALVE FOR 2½" & LARGER.
4. COPPER BRANCH PIPING.
5. FOR 2" TUBING AND BELOW, 18" MIN. FLEXIBLE COPPER METAL HOSE.

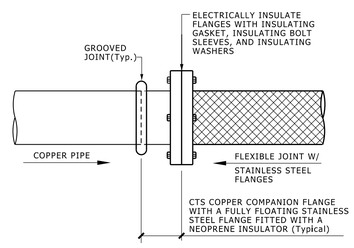
   FOR 2½" TUBING AND ABOVE, 18" MIN. FLEXIBLE STAINLESS STEEL METAL HOSE WITH STAINLESS STEEL FLANGES.

| LOCATION | V-MA | V-BR | SERVICE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## DHW BRANCH PIPING DETAIL
NO SCALE

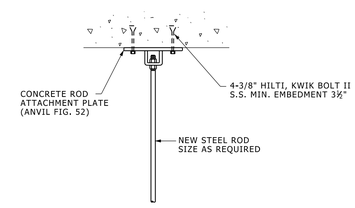



## DIELECTRIC CONNECTION DETAIL
NO SCALE




**APPLIES TO DHW PIPING**

## FLEXIBLE HOSE INSTALLATION DETAIL
NO SCALE




## TUNNEL ATTACHMENT DETAIL
NO SCALE


UNIVERSITY OF MICHIGAN
ARCHITECTURE, ENGINEERING AND CONSTRUCTION
ARCHITECTURE & ENGINEERING
326 East Hoover, Mail Stop B
Ann Arbor, MI 48109-1002
Phone: 734-764-3414
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Tom Girard
U OF M DESIGN SUPERVISOR

APPROVED BY
AEC - Architecture & Engineering
REPRESENTING

AF/BB — DRAWN BY
WPG — PROJECT LEAD
CVW/VSM — DESIGNED BY
REVIEWED BY

| MARK | ISSUED FOR/REVISIONS | DATE |
|---|---|---|
| • | New Master | 03/20/15 |
| • | Tunnel Group Revision | 08/08/12 |
| • | Hydronics Group Revision | 10/04/07 |
| • | Warm-up Valve Revision | 08/13/07 |
| • | New Master | 06/28/07 |
| • | Issued for Revision | 06/22/07 |

# Tunnels

## Tool Kit

## University Of Michigan
## Ann Arbor , MI


UNIVERSITY OF MICHIGAN
ARCHITECTURE, ENGINEERING AND CONSTRUCTION
326 East Hoover, Mail Stop E
Ann Arbor, MI 48109-1002
Phone: 734-763-3020
Fax: 734-763-3238


P00009388 — U OF M PROJECT NO.
9980 — BUILDING NO.

SHEET TITLE: Tunnels

# Typical Tunnel Details

SHEET NO.
# TK-6

SHEET NO. 8 OF 13
SHEET FILE NO. TK-6 04 15.dgn


4/7/2015 9:24:45 AM bbegg G:\1009980 - Tunnels\Consultations\P00009388-Tunnel Technical Support FY15\Tunnel Toolkit\To Be Posted\TK-06 04 15.dgn