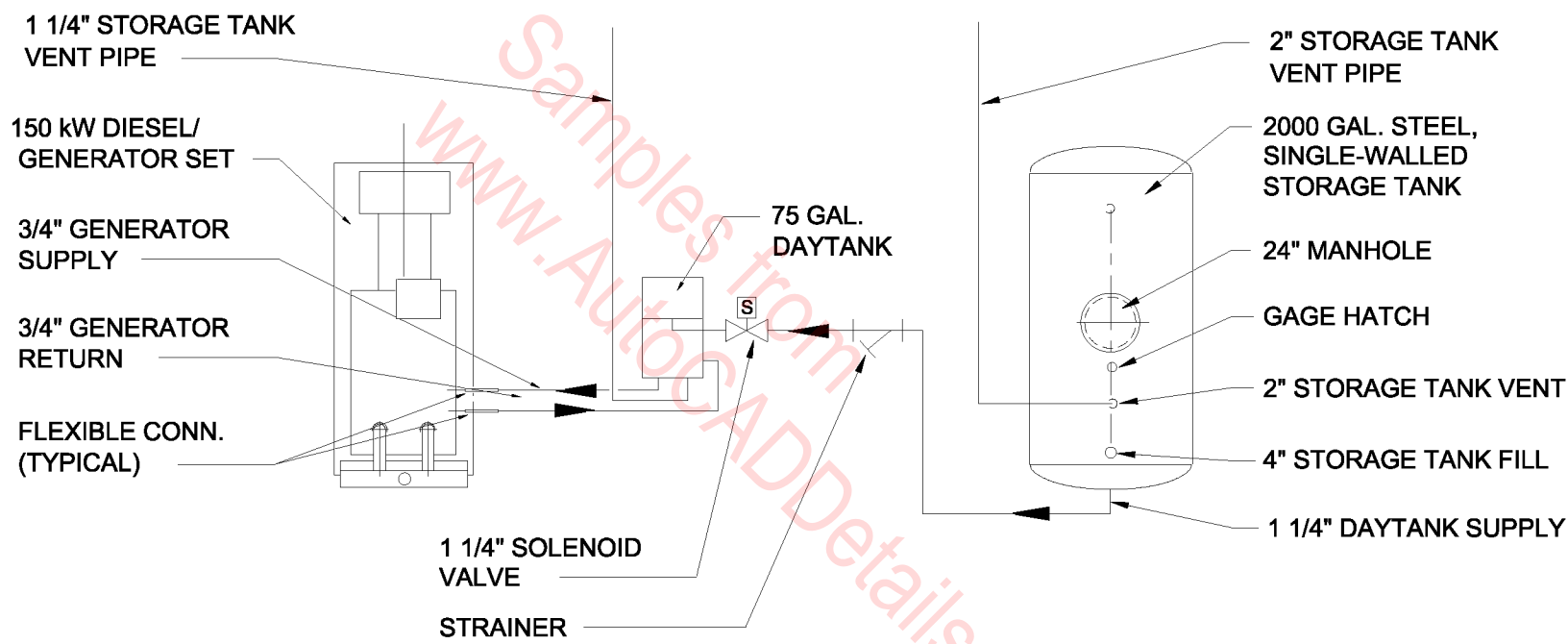


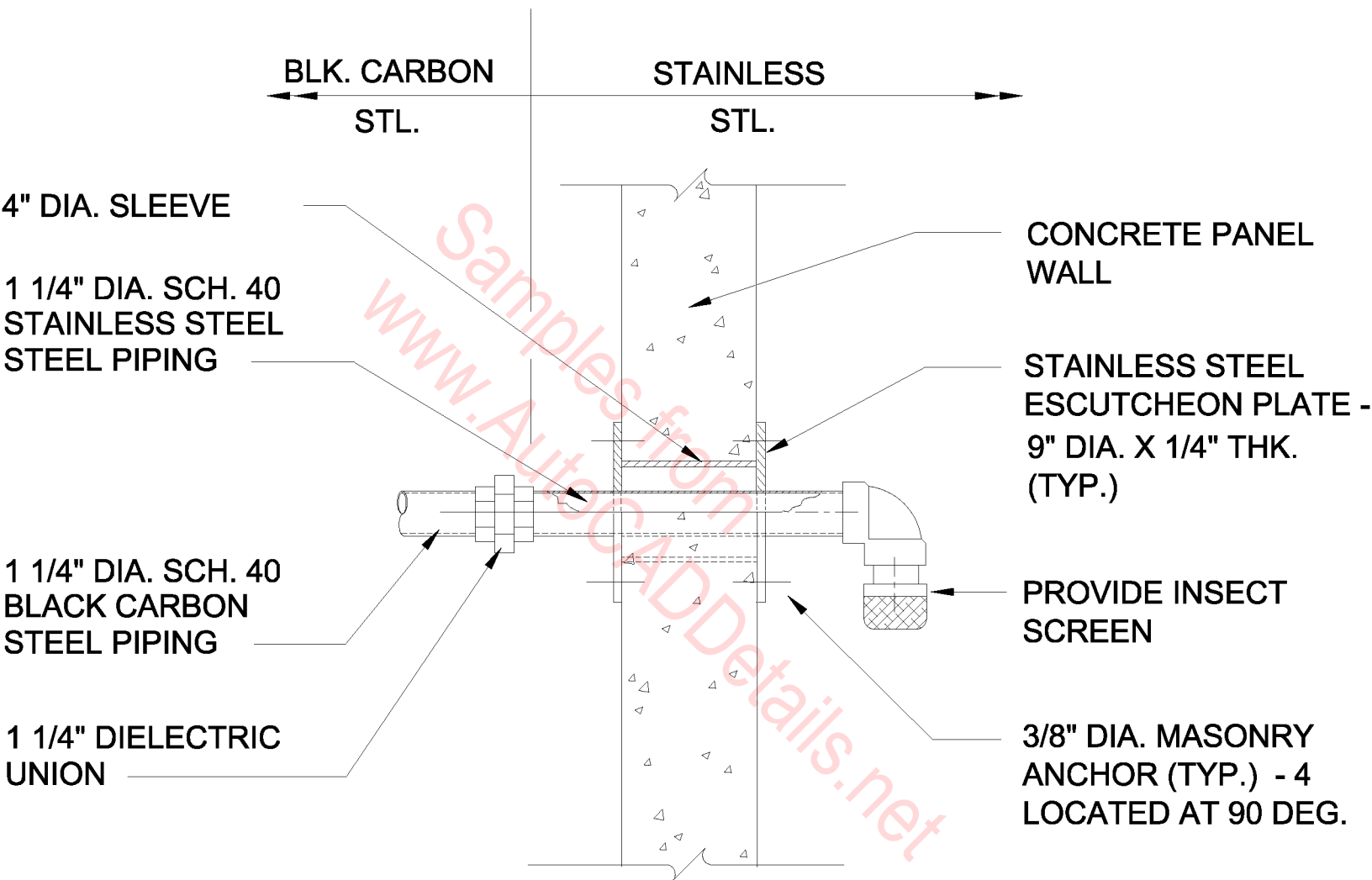
EXHAUST PIPE WALL PENETRATION

SCALE: 1" = 1' - 0"



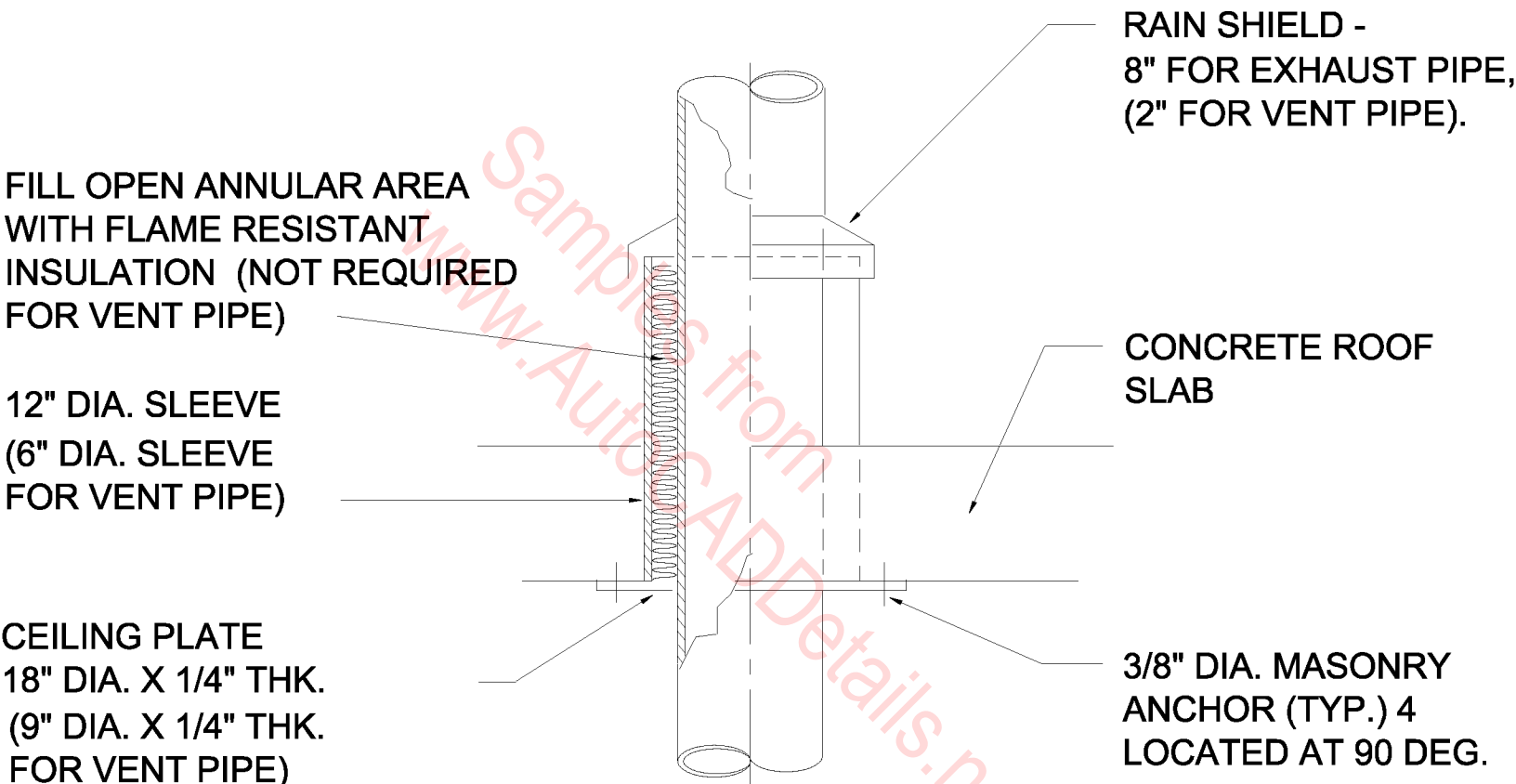
TYPICAL FUEL FLOW SCHEMATIC

N.T.S.



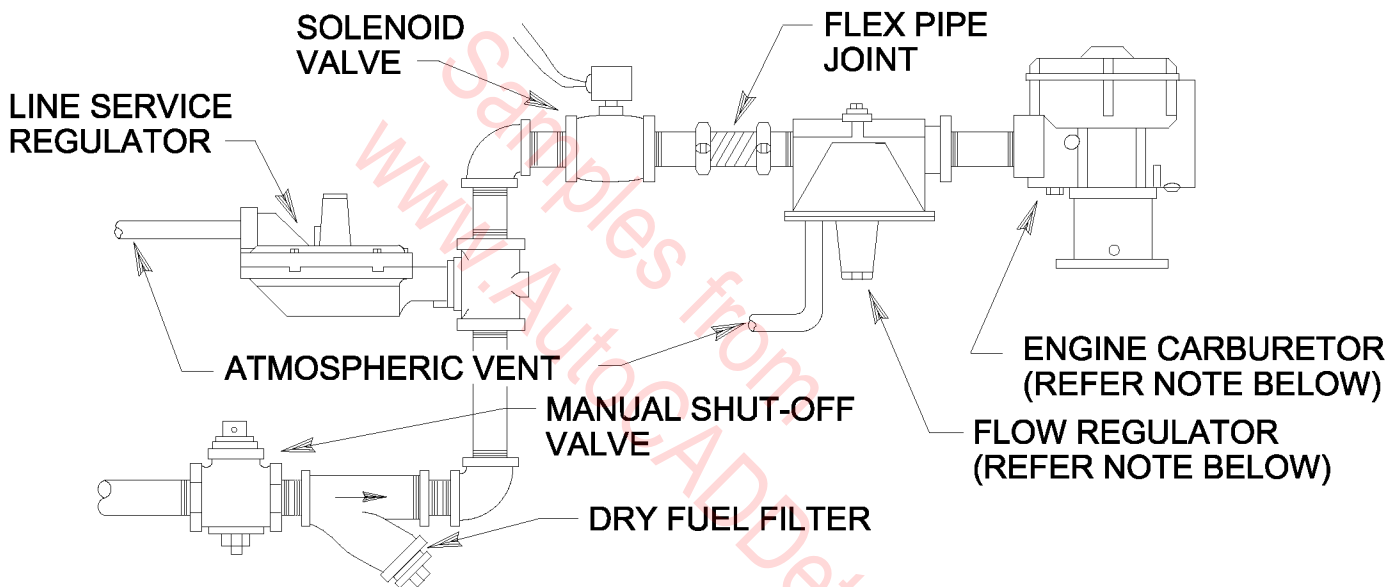
VENT PIPE WALL PENETRATION

SCALE: 1 1/2" = 1' - 0"



EXHAUST PIPE ROOF PENETRATION

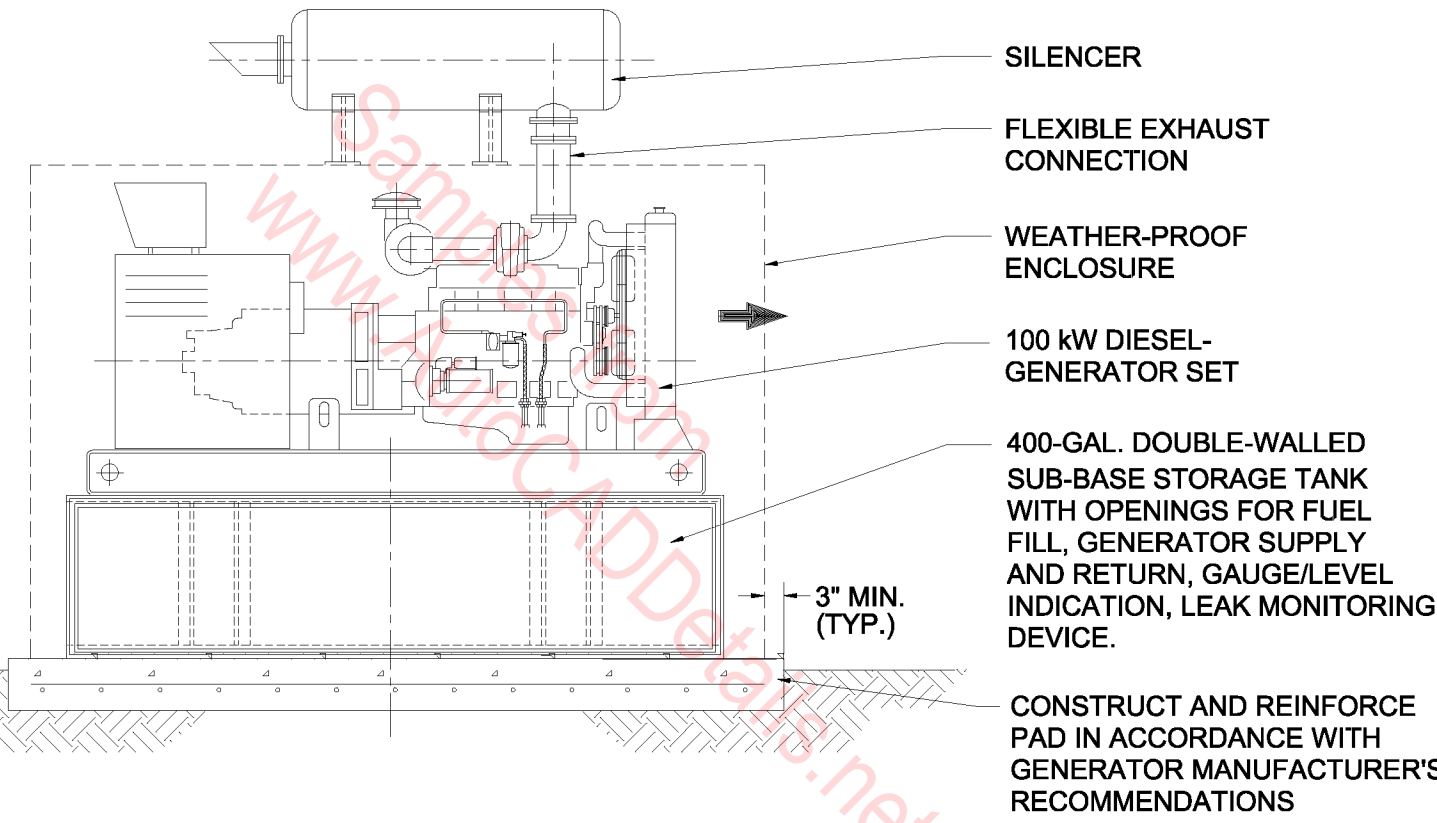
N.T.S.



NOTES: EQUIPMENT SHALL BE SUPPLIED BY ENGINE/GENERATOR SET MANUFACTURER. ALL ATMOSPHERIC VENTS SHALL BE ROUTED OUT OF BUILDING.

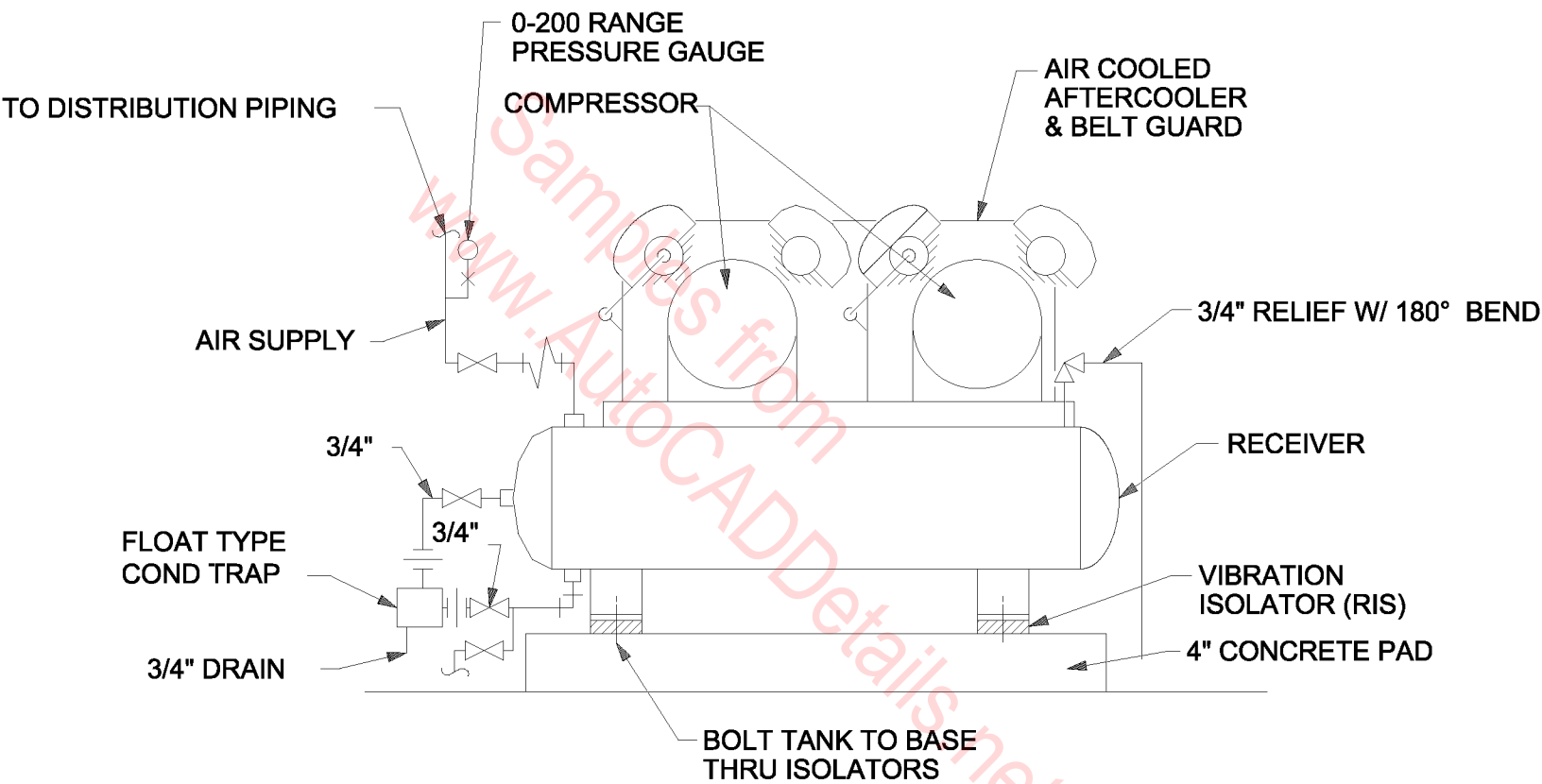
ENGINE/GENERATOR FUEL SYSTEM DIAGRAM

N.T.S.



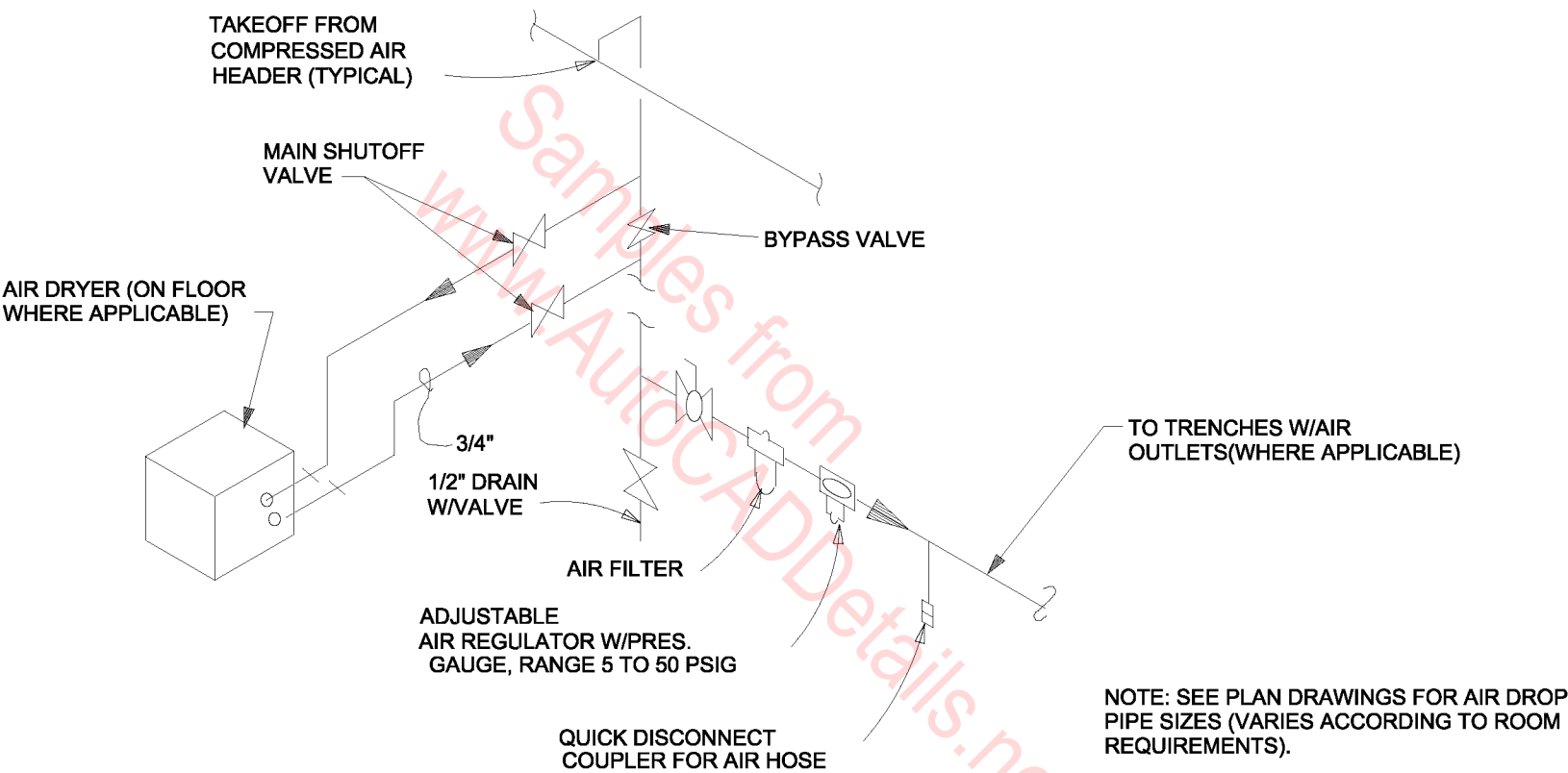
SECTION THRU 100 kW GENERATOR

N.T.S.



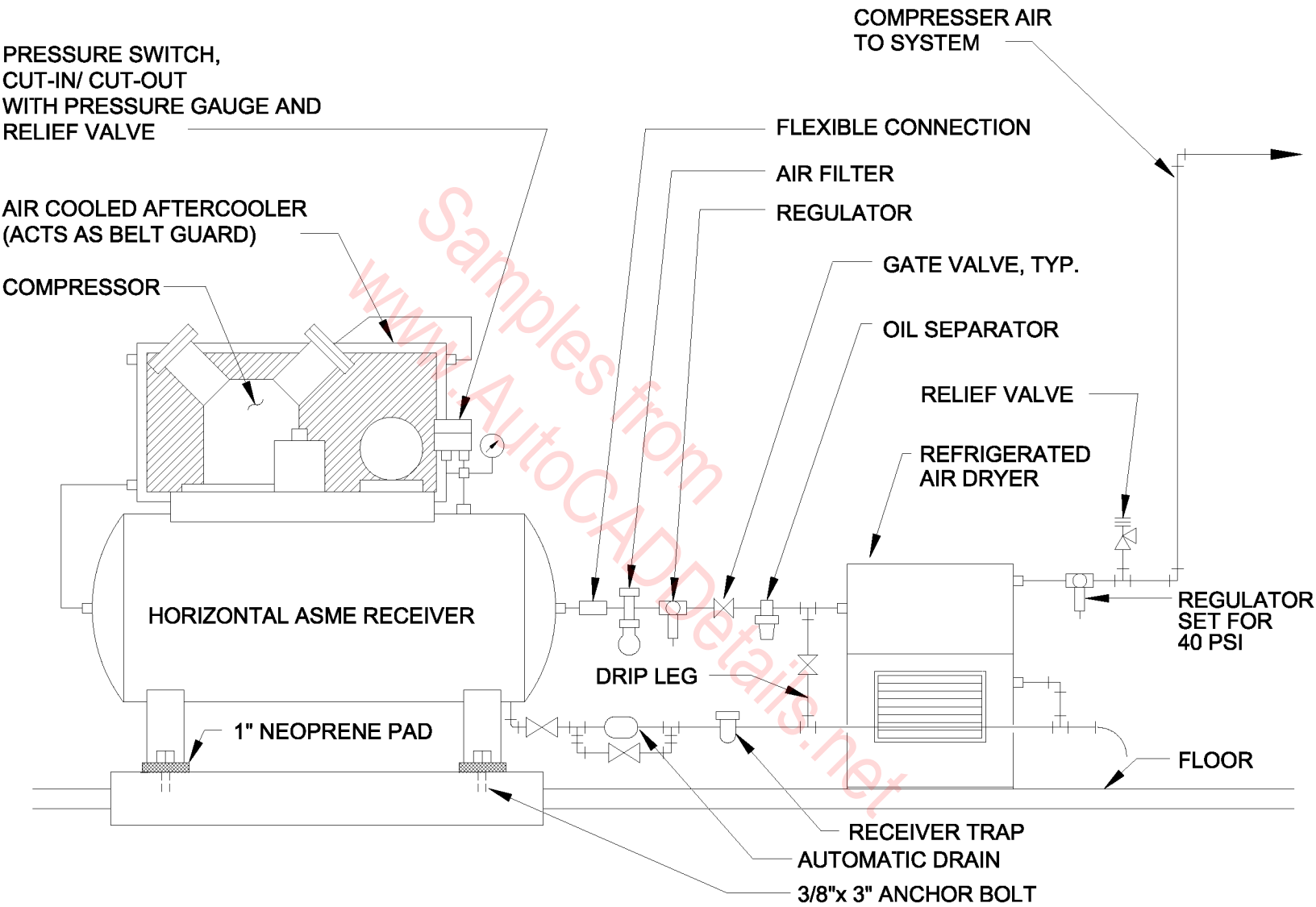
AIR COMPRESSOR DETAIL

N.T.S.



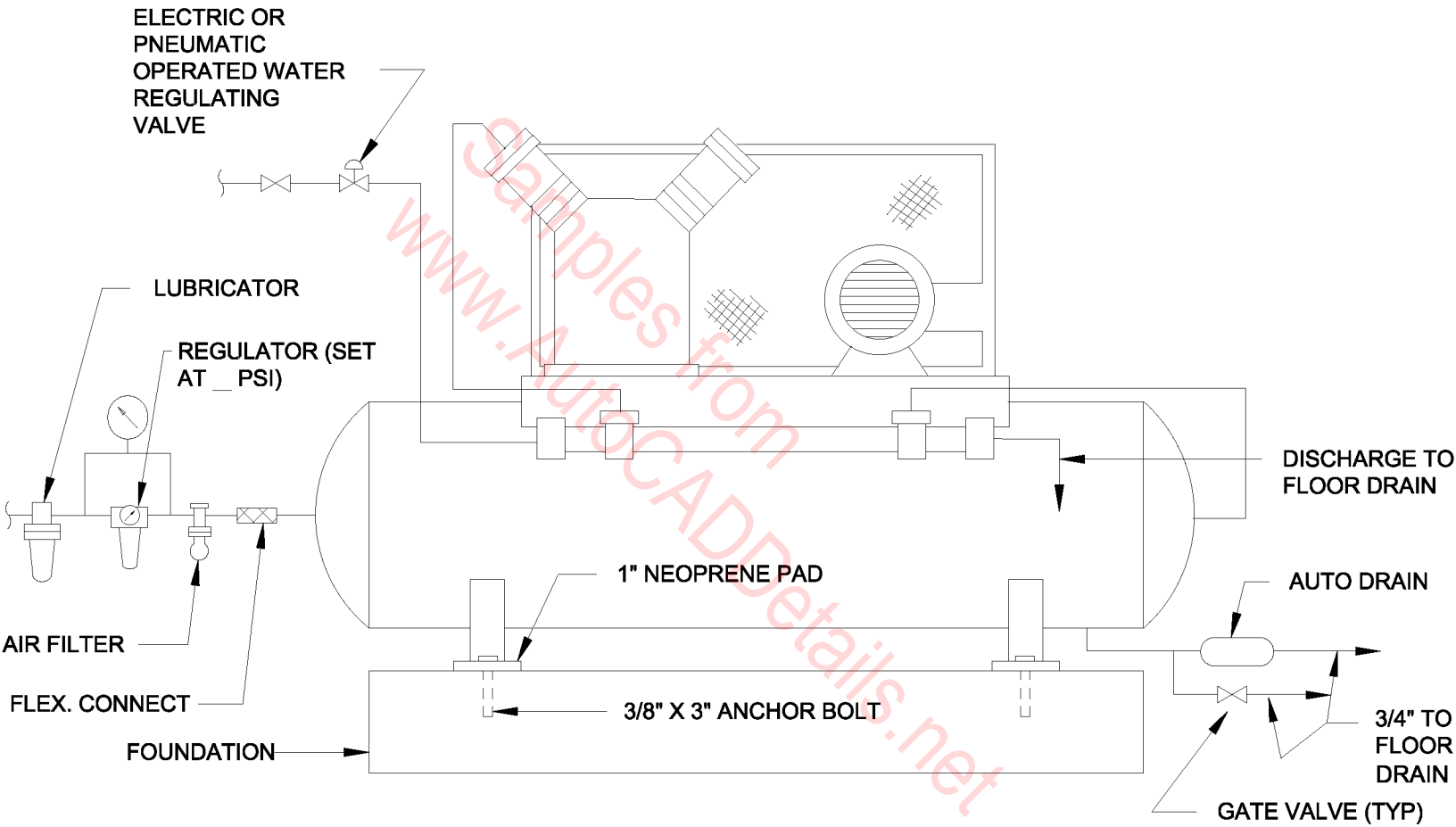
COMPRESSED AIR OUTLET DETAIL

N.T.S.



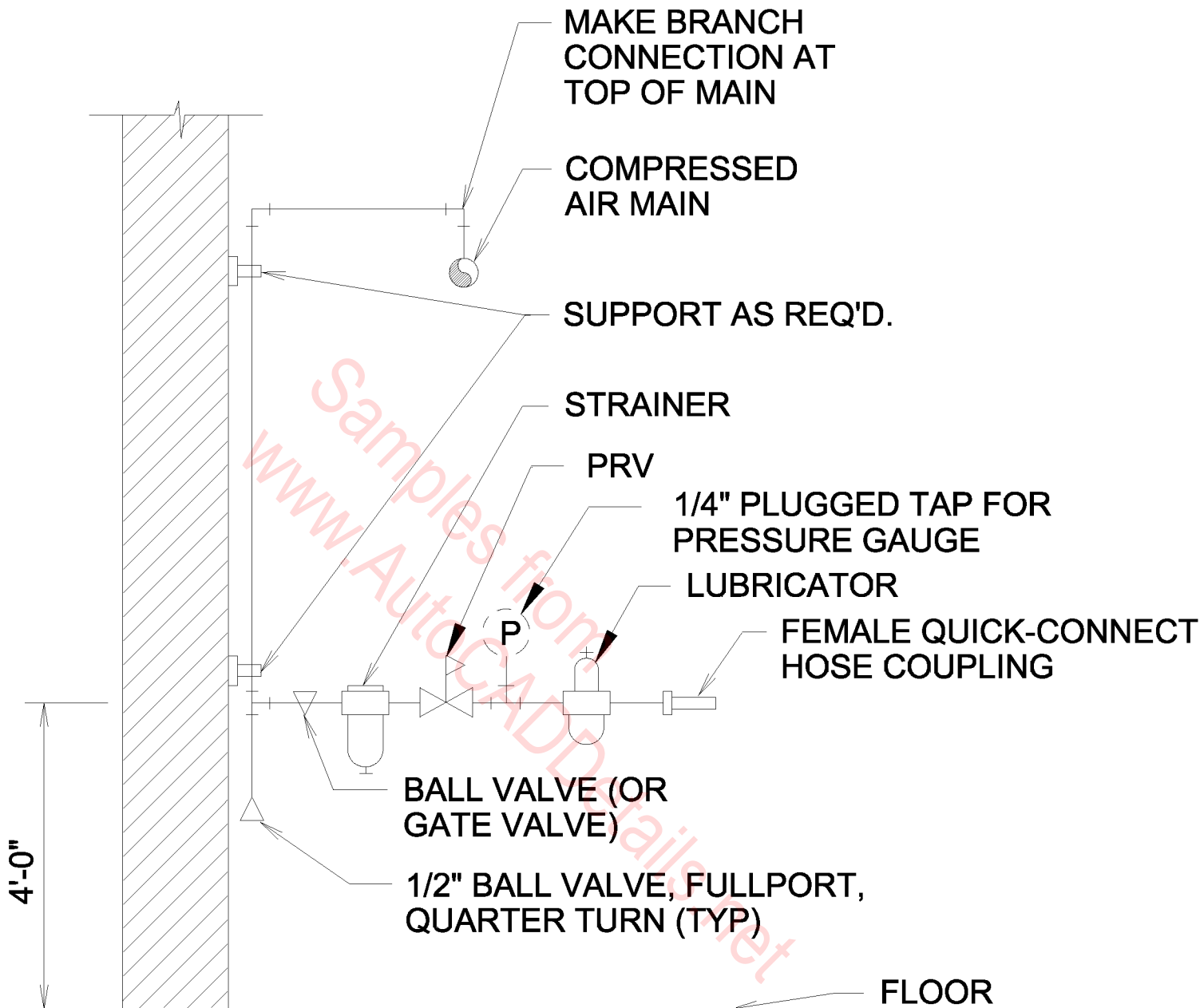
AIR COMPRESSOR DETAIL WITH AIR DRYER

N.T.S.



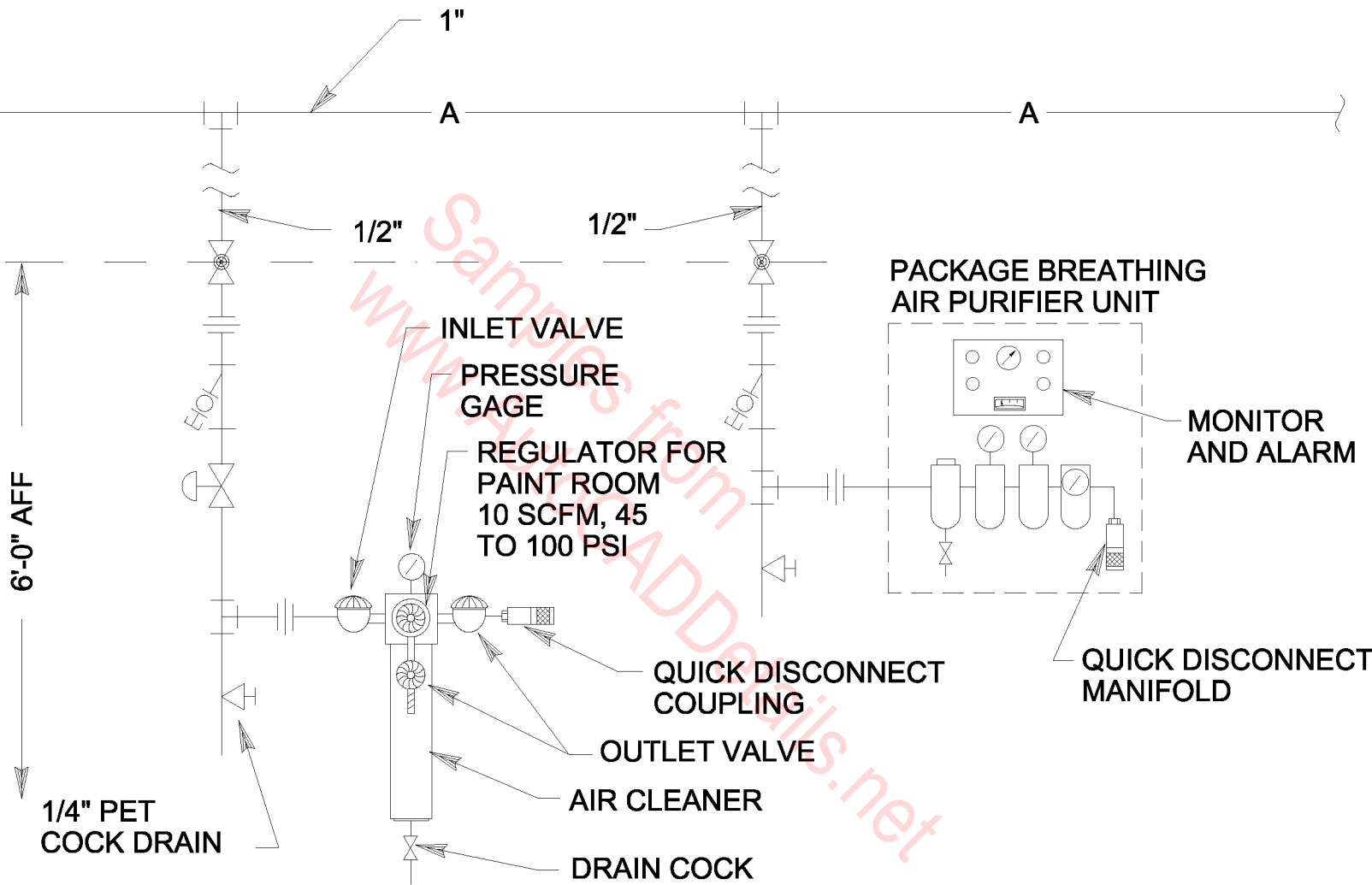
AIR COMPRESSOR DETAIL

N.T.S.



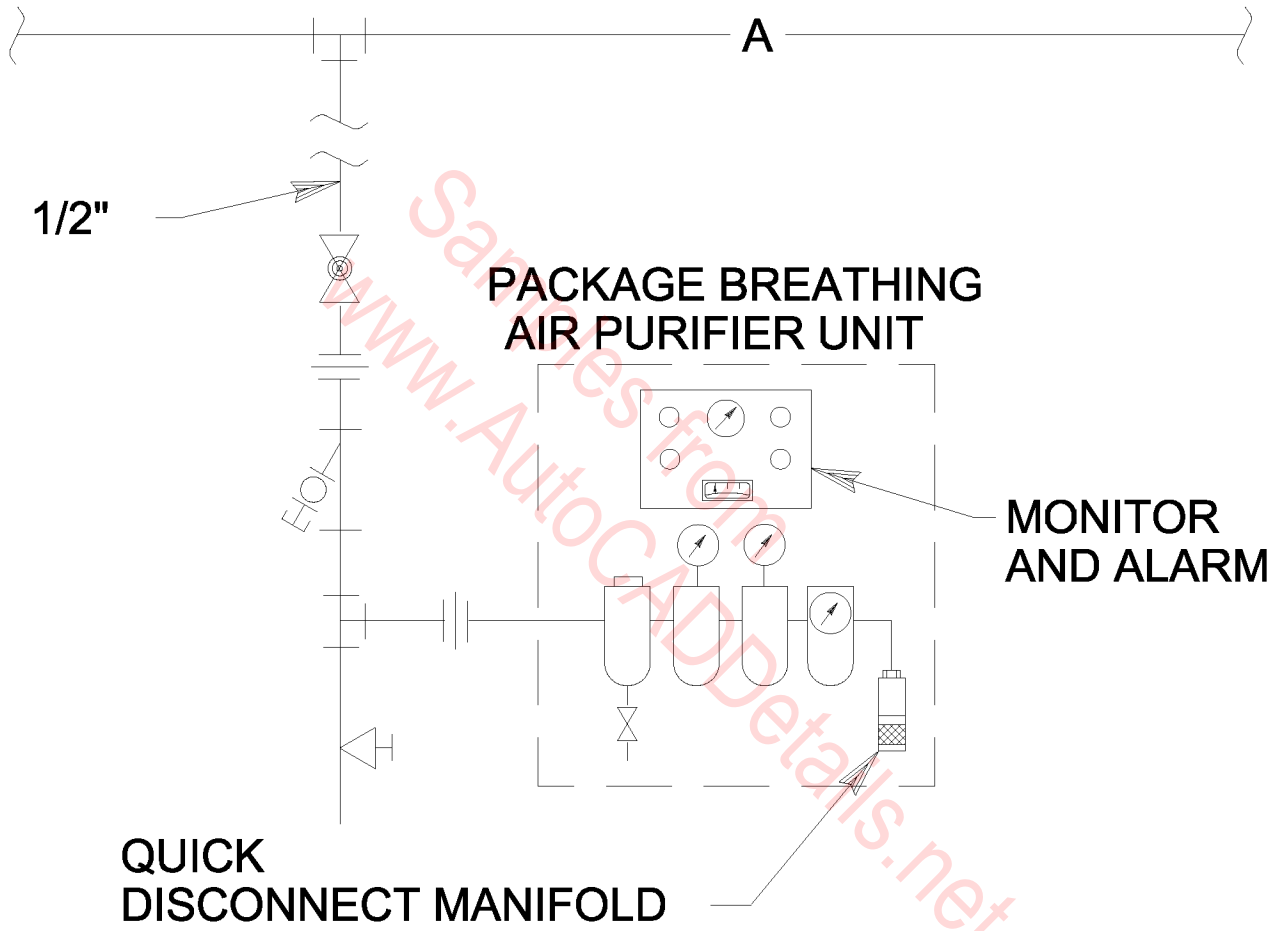
TYPICAL COMPRESSED AIR TOOL STATION

N.T.S.



TYPICAL UTILITY STATION DETAIL

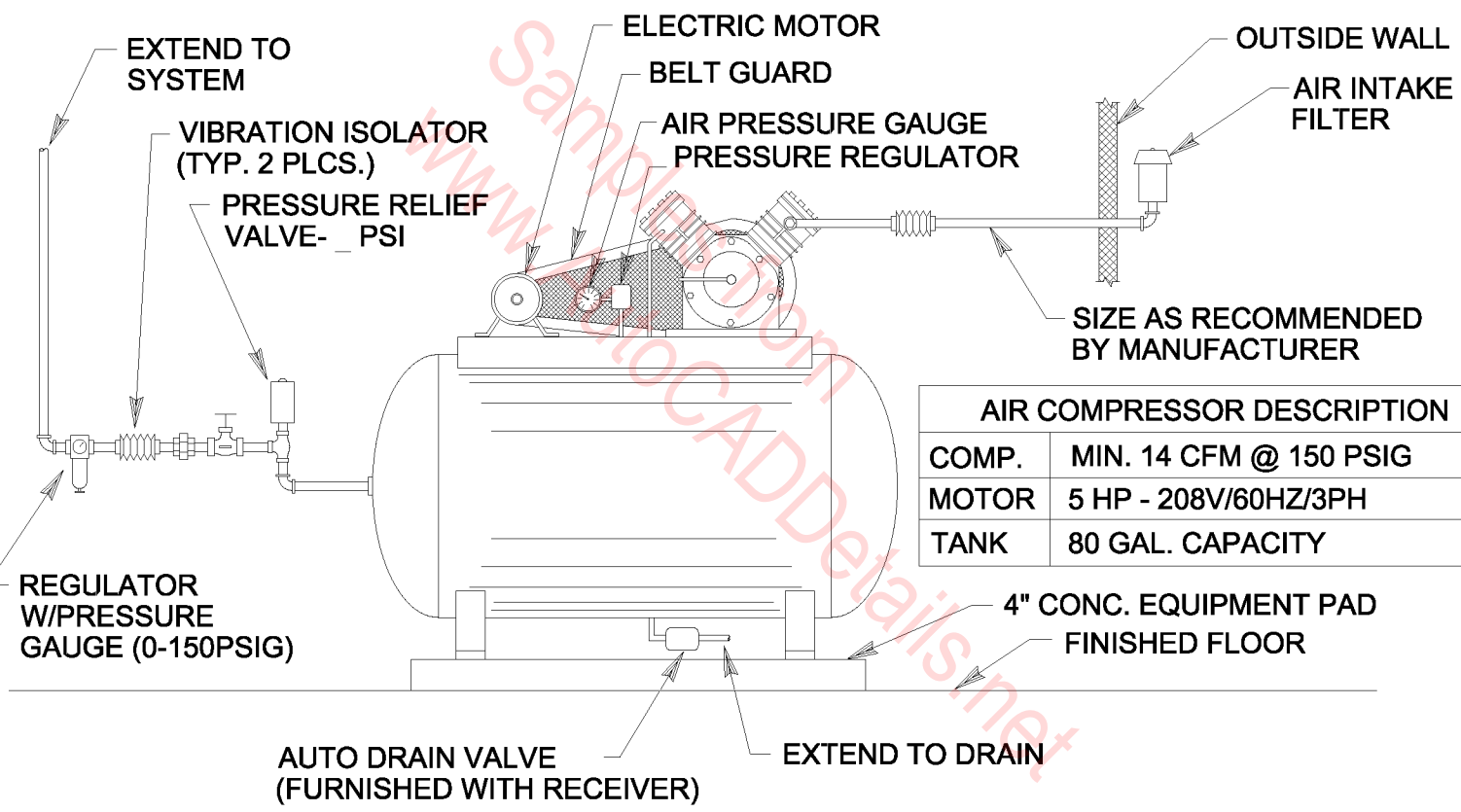
COMP. AIR/BREATHING AIR
N.T.S.



BREATHING AIR STATION DETAIL

N.T.S.

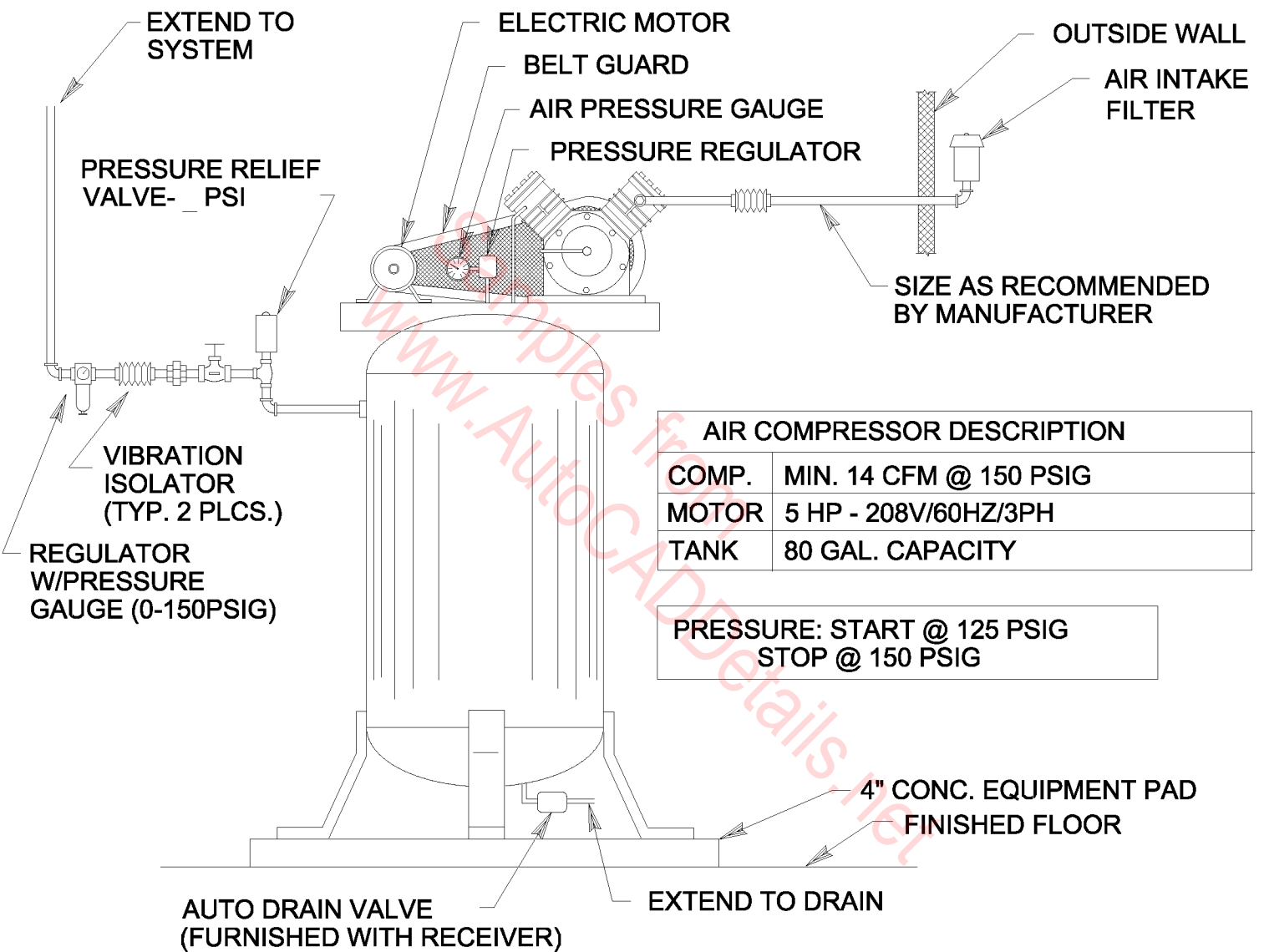
**PRESSURE: START @ 125 PSIG
STOP @ 150 PSIG**



AIR COMPRESSOR DESCRIPTION	
COMP.	MIN. 14 CFM @ 150 PSIG
MOTOR	5 HP - 208V/60HZ/3PH
TANK	80 GAL. CAPACITY

TYPICAL HORIZONTAL AIR COMPRESSOR DETAIL

N.T.S.

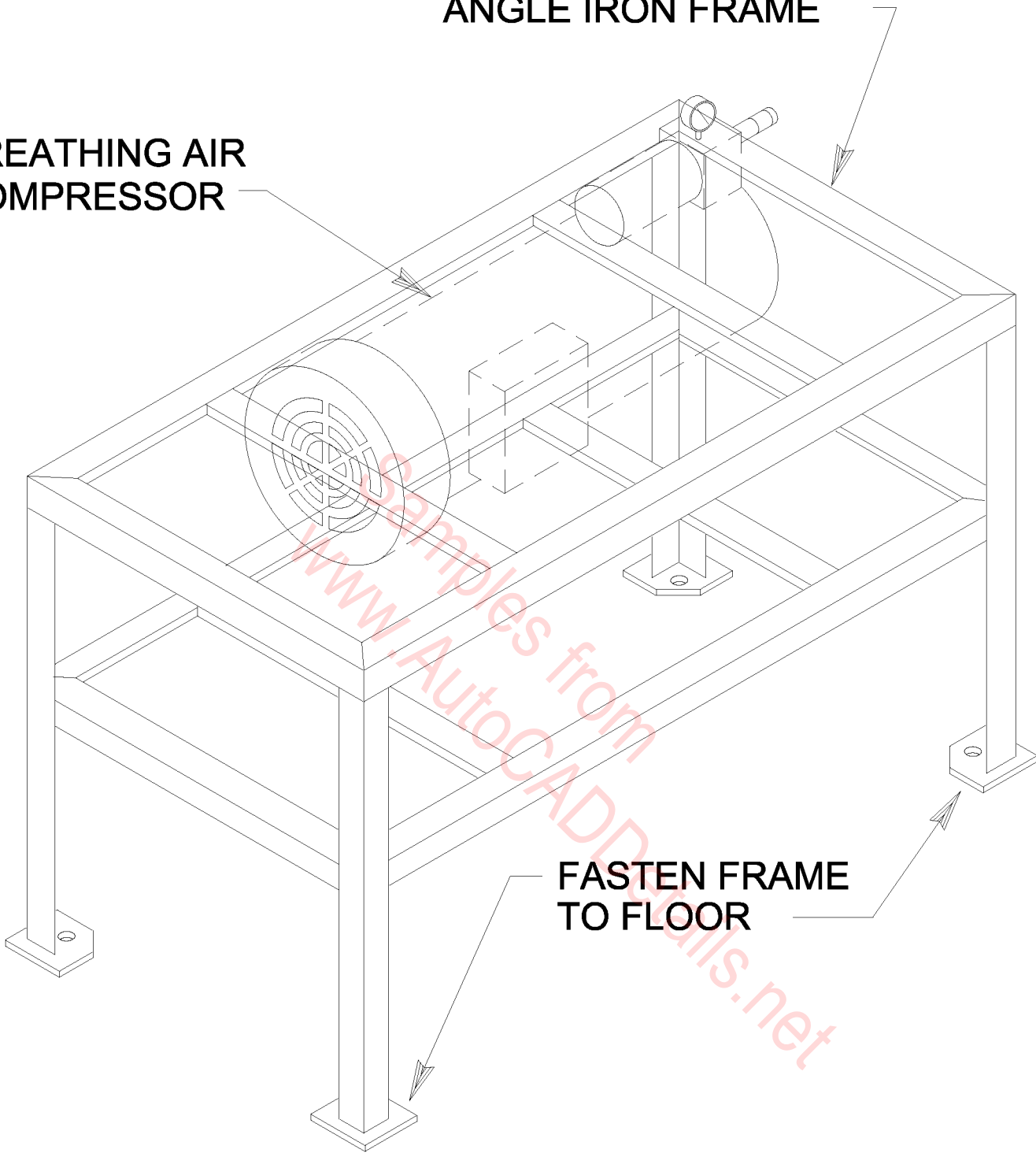


TYPICAL VERTICAL AIR COMPRESSOR DETAIL

N.T.S.

2"x 2"x 1/4"
ANGLE IRON FRAME

BREATHING AIR
COMPRESSOR

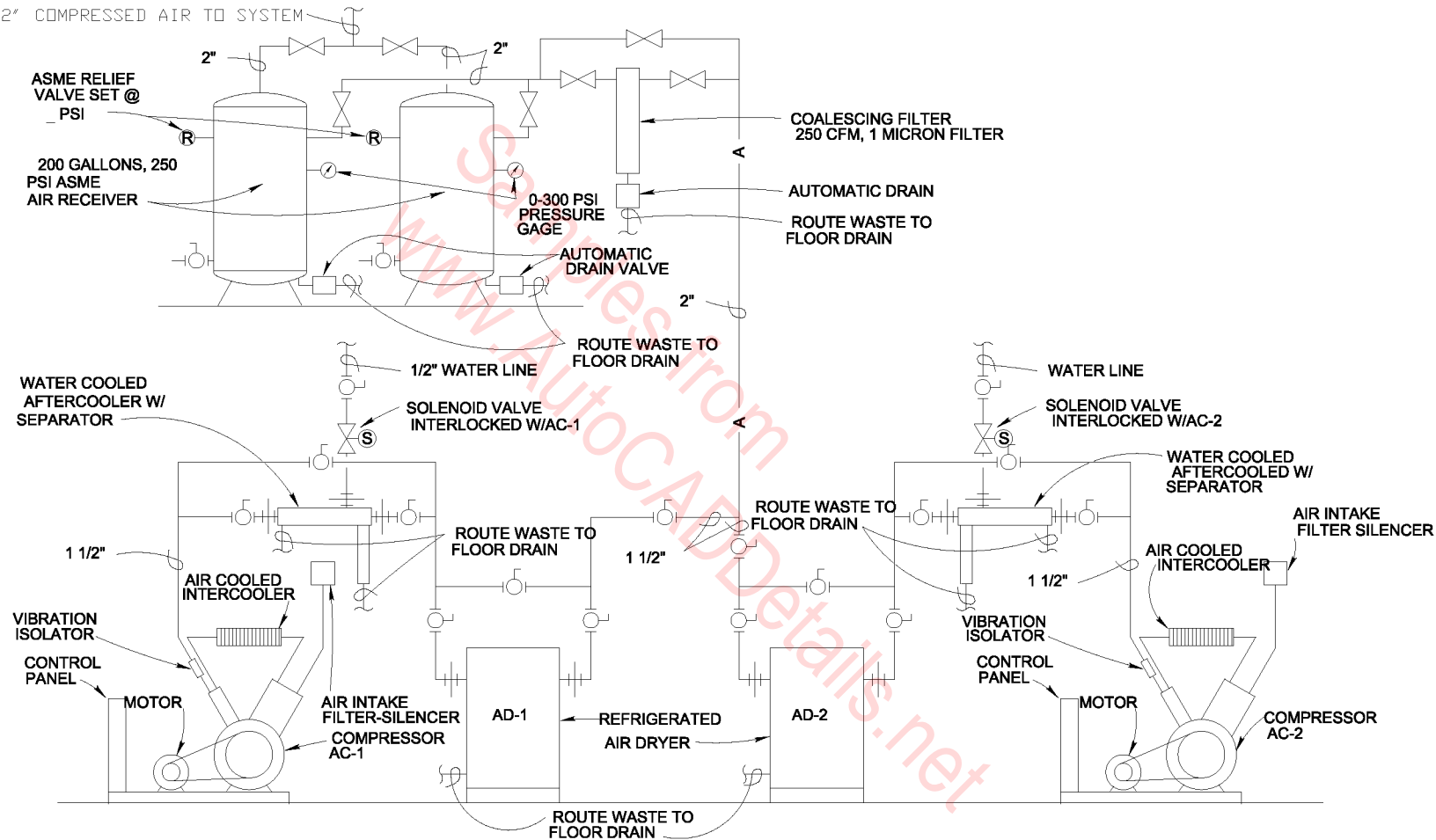


FASTEN FRAME
TO FLOOR

NOTE: BREATHING AIR COMPRESSOR FRAME SHALL
BE ASSEMBLED TO ACCOMMODATE BREATHING
AIR COMPRESSOR(S) AS CALLED FOR ON PLANS.

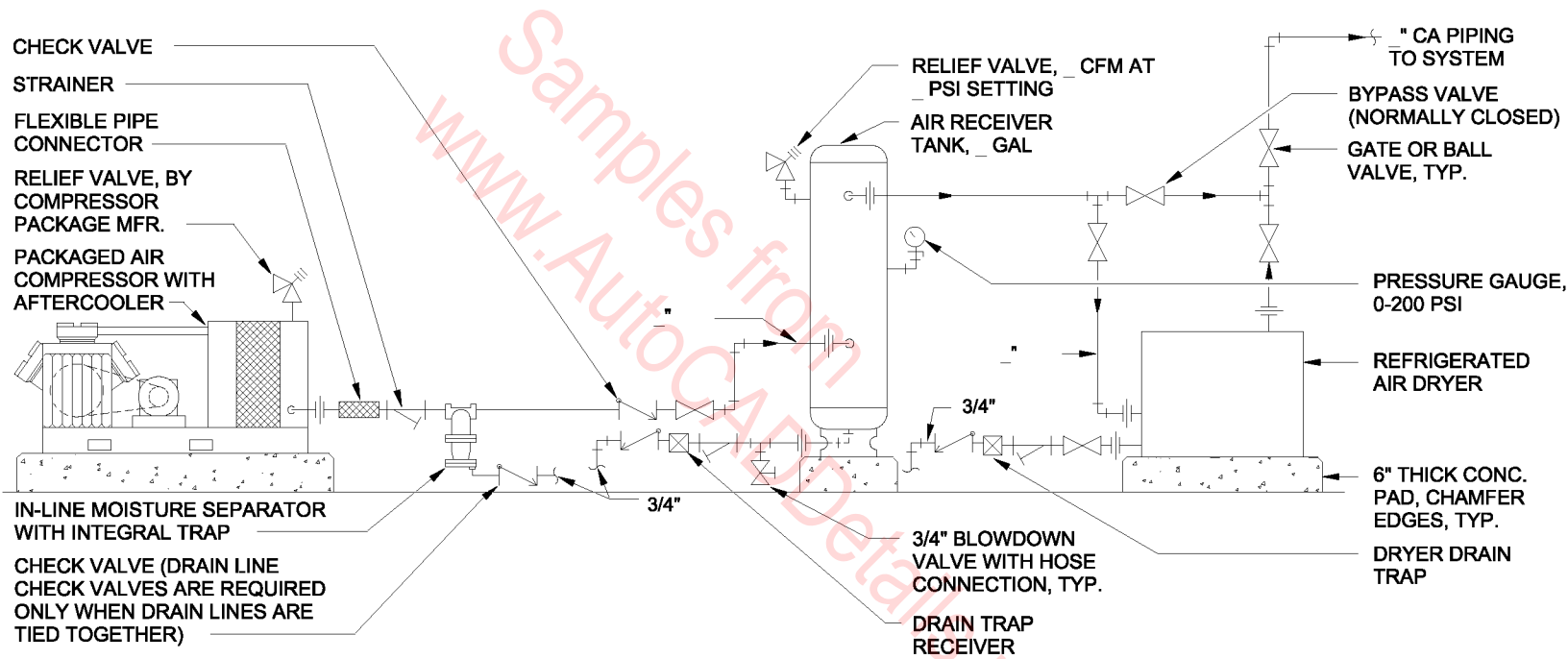
BREATHING AIR COMPRESSOR FRAME DETAIL

N.T.S.



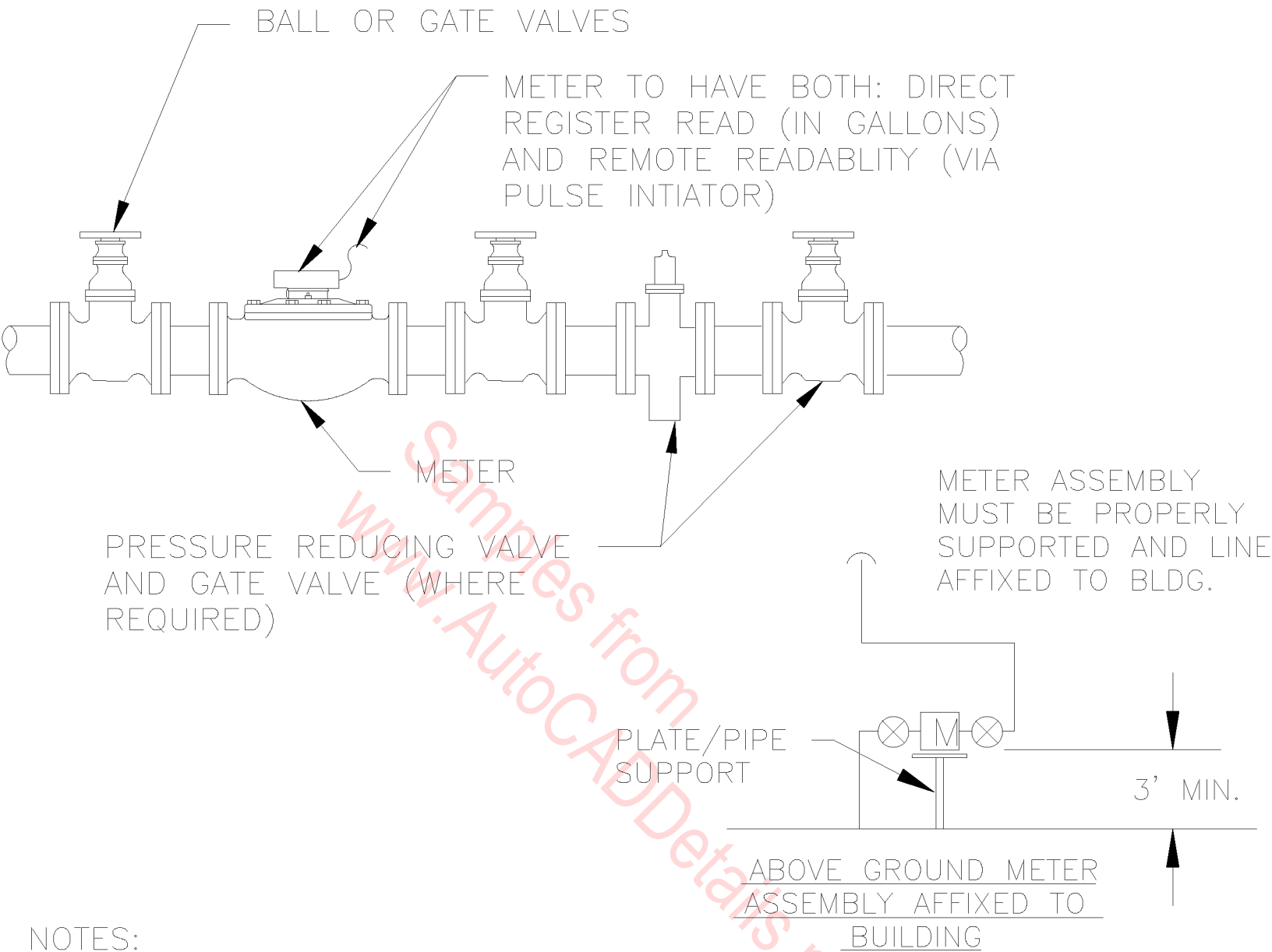
COMPRESSED AIR SYSTEM DIAGRAM

N.T.S.



TYPICAL AIR COMPRESSOR INSTALLATION

N.T.S.

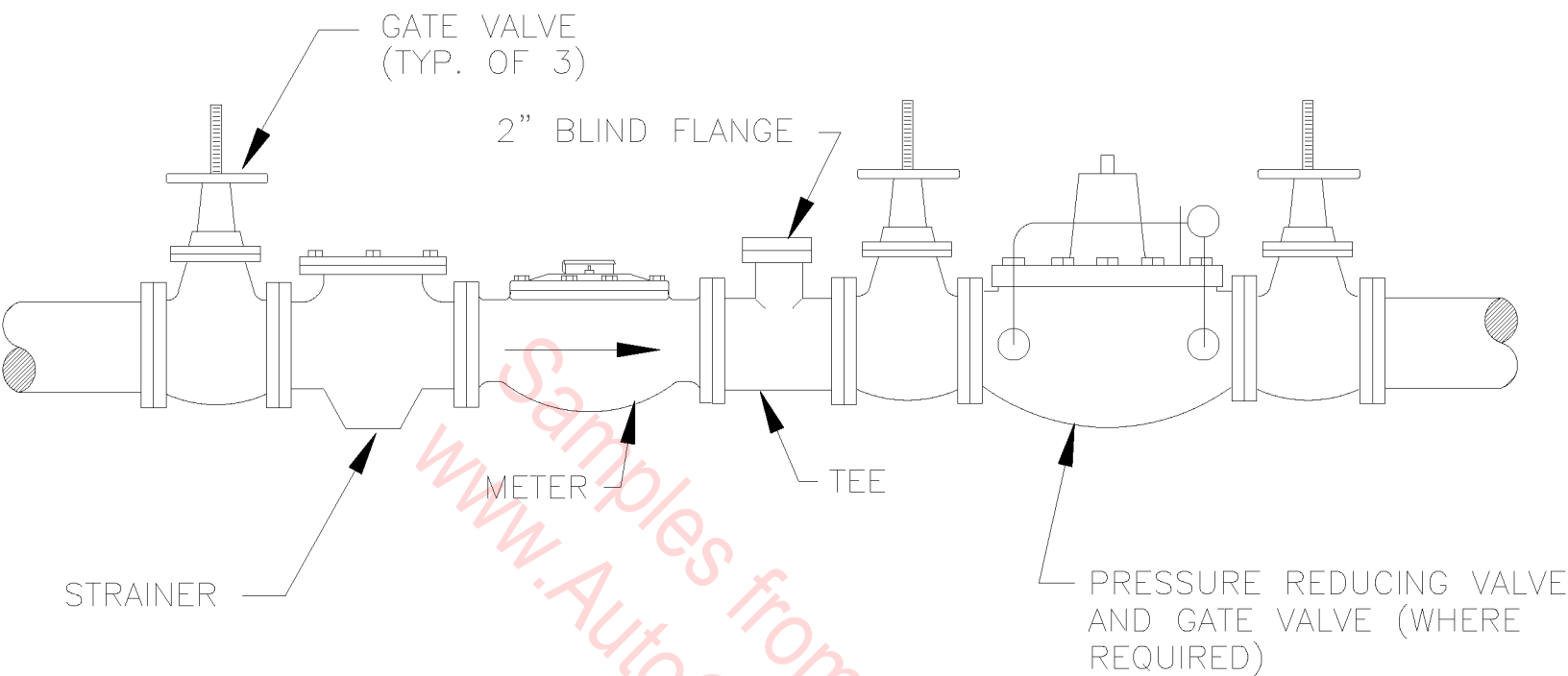


NOTES:

1. PROVIDE A "DRESSER-TYPE" COUPLING ON METER ASSEMBLY INSTALLATIONS IN VAULTS TO ALLOW FOR EASY REMOVAL OF FLANGED COMPONENTS.
2. METERING ASSEMBLY TO BE PROPERLY INSTALLED AND ADEQUATELY SUPPORTED TO ALLOW FOR EASY MAINTENANCE, REPAIR AND REPLACEMENT.

WATER METER CONFIGURATION

LESS THAN 2" – DISK OR DISPLACEMENT TYPE
 N.T.S.

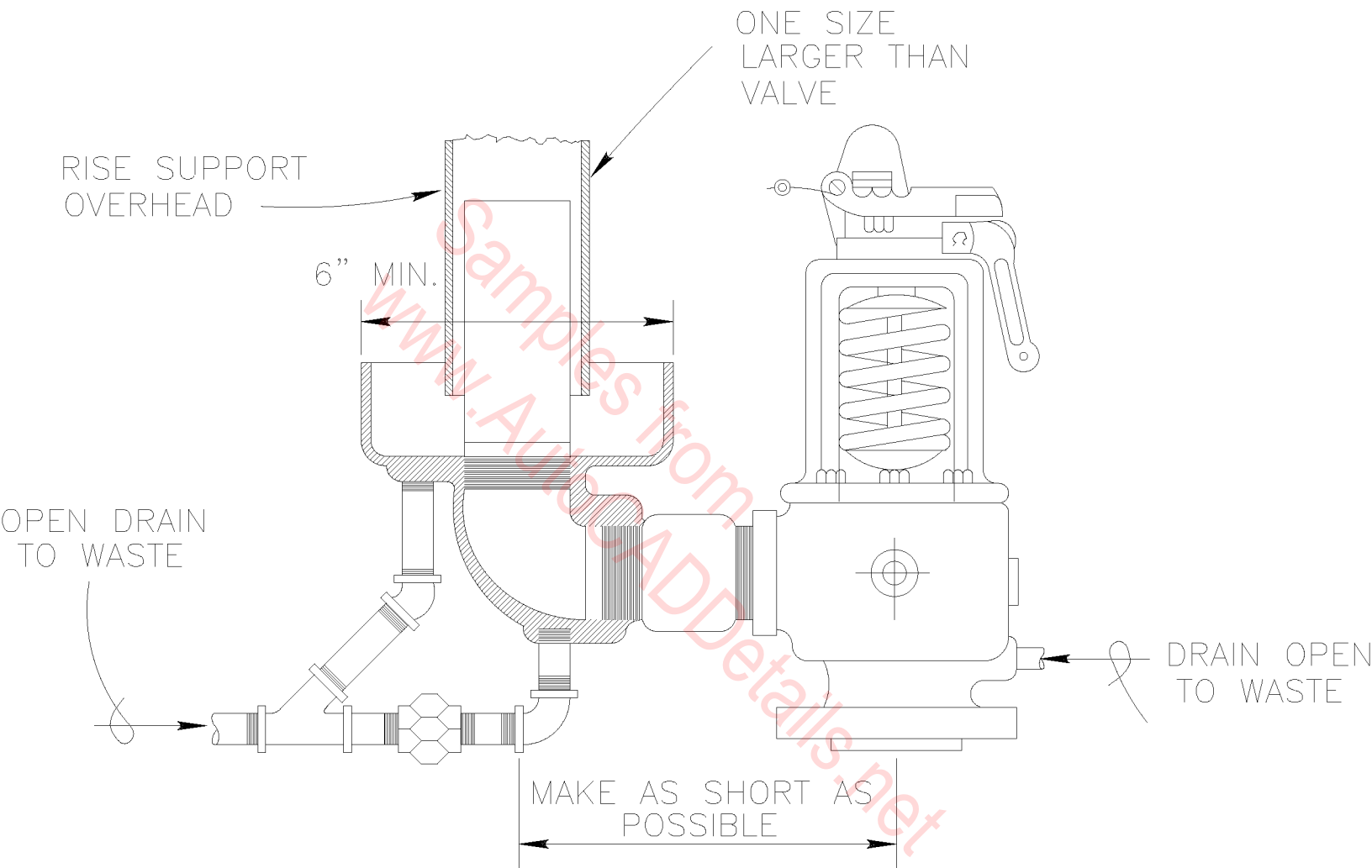


NOTES:

1. PROVIDE A "DRESSER-TYPE" COUPLING ON METER ASSEMBLY INSTALLATIONS IN VAULTS TO ALLOW FOR EASY REMOVAL OF FLANGED COMPONENTS.
2. METERING ASSEMBLY TO BE PROPERLY INSTALLED AND ADEQUATELY SUPPORTED TO ALLOW FOR EASY MAINTENANCE, REPAIR AND REPLACEMENT.

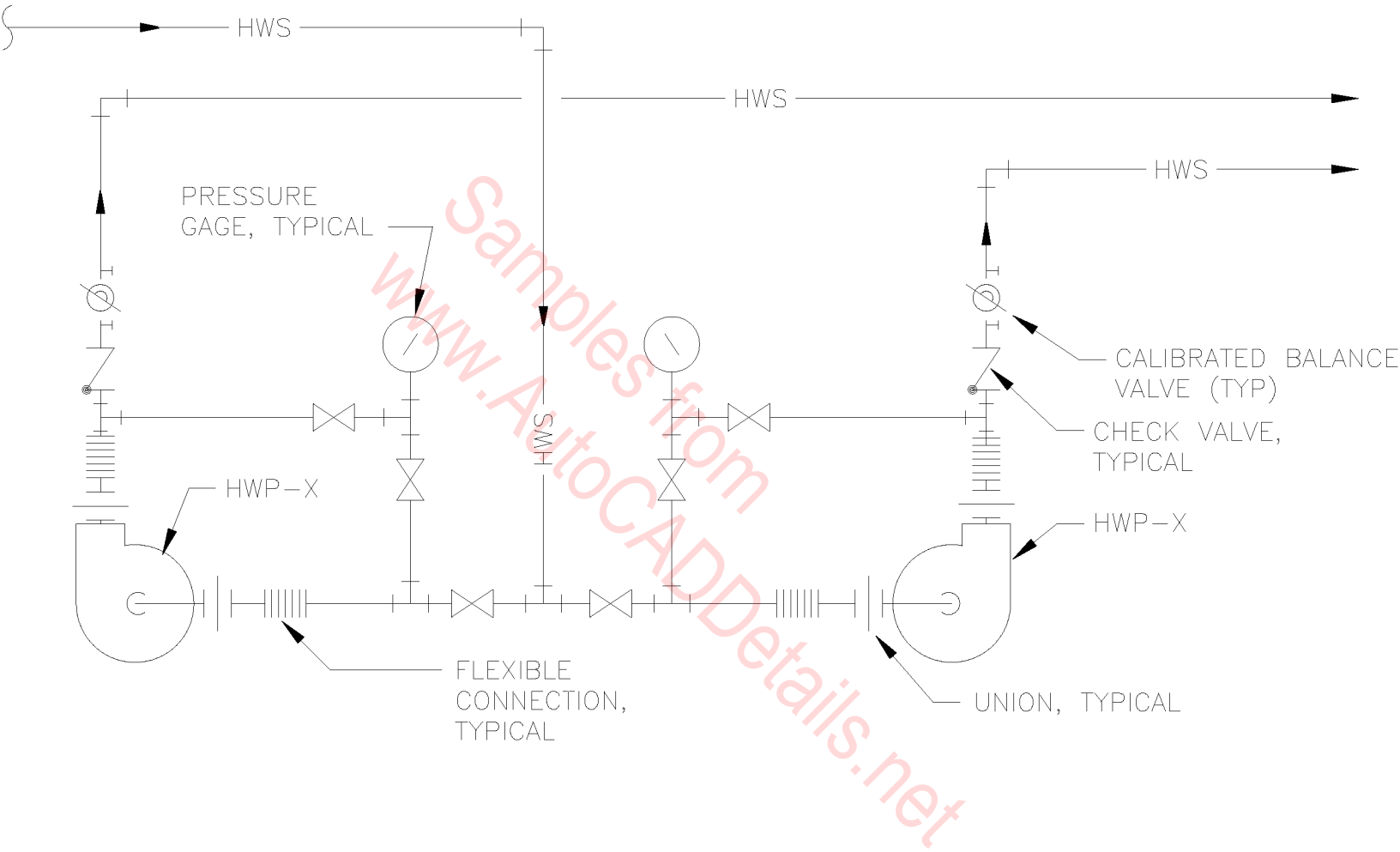
WATER METER CONFIGURATION

GREATER THAN 6" TURBINE METER
N.T.S.



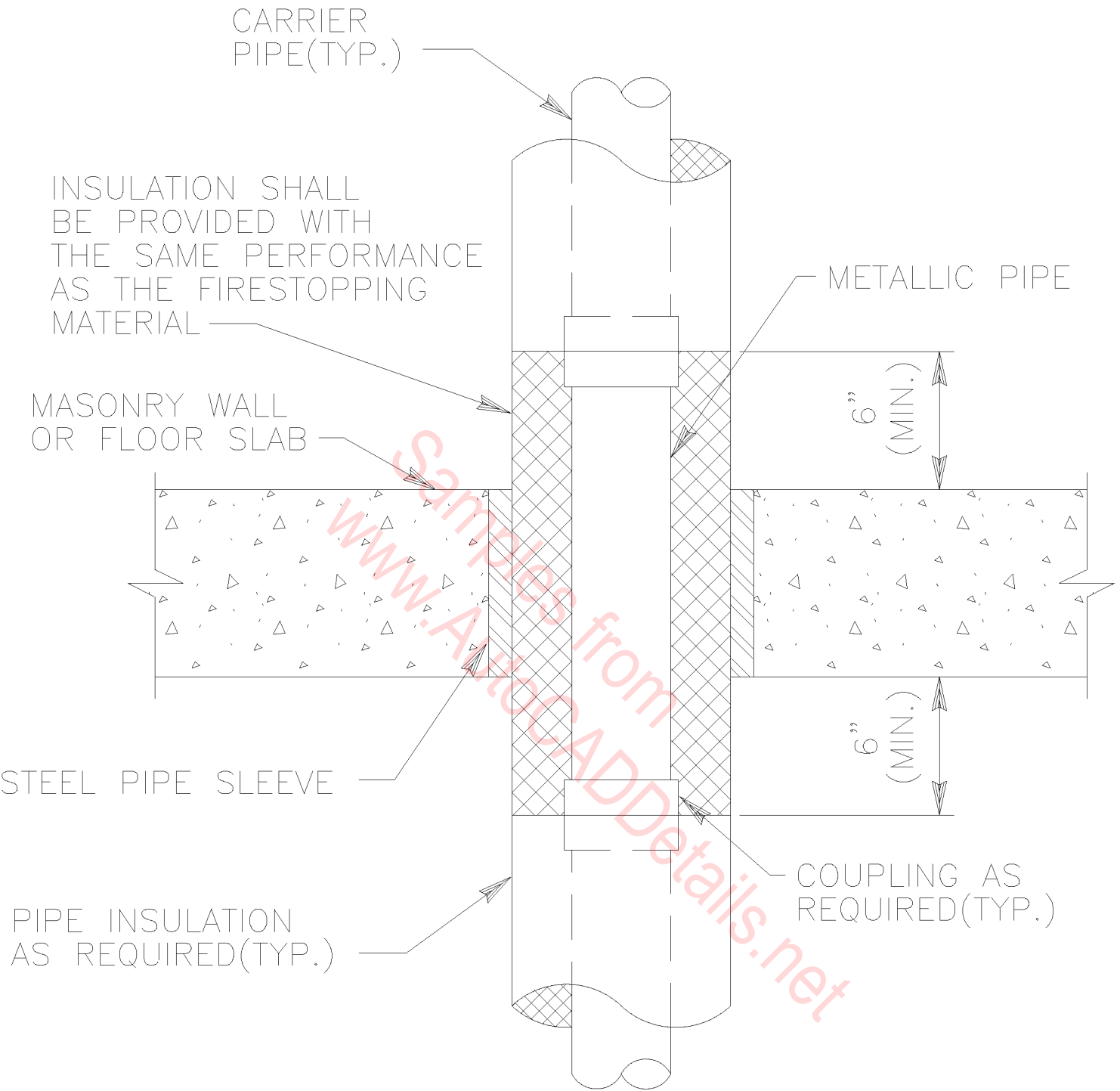
SAFETY VALVE

N.T.S.



DUAL PUMP
HOT WATER PIPING SCHEMATIC

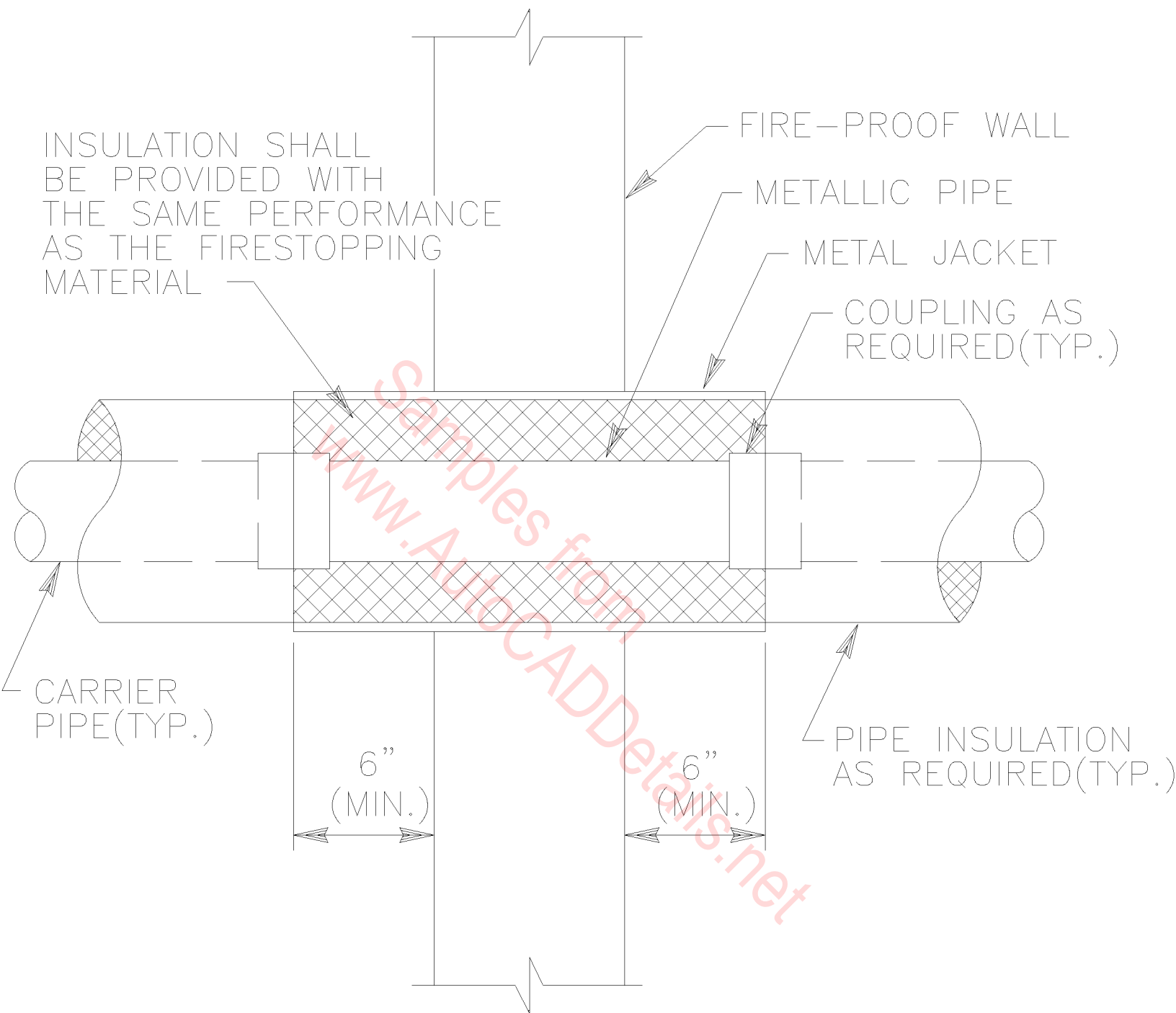
N.T.S.



NOTE: PIPE SLEEVE SHALL BE SIZED TO PROVIDE 1/4" ALL AROUND CLEARANCE.

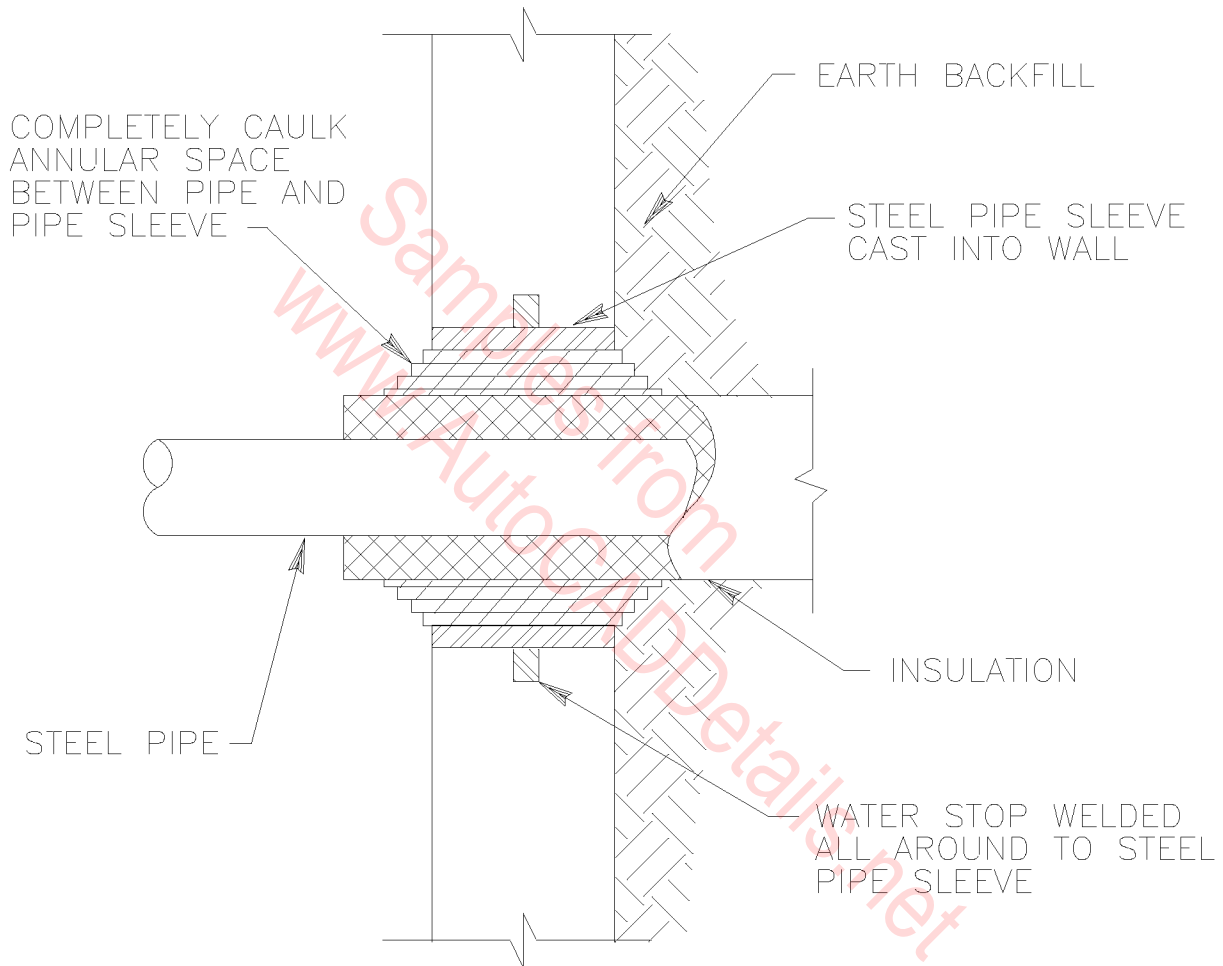
TYPICAL CONCRETE FLOOR OR MASONRY WALL PENETRATION

INSULATED OR NON-INSULATED, ABOVE GRADE
N.T.S.



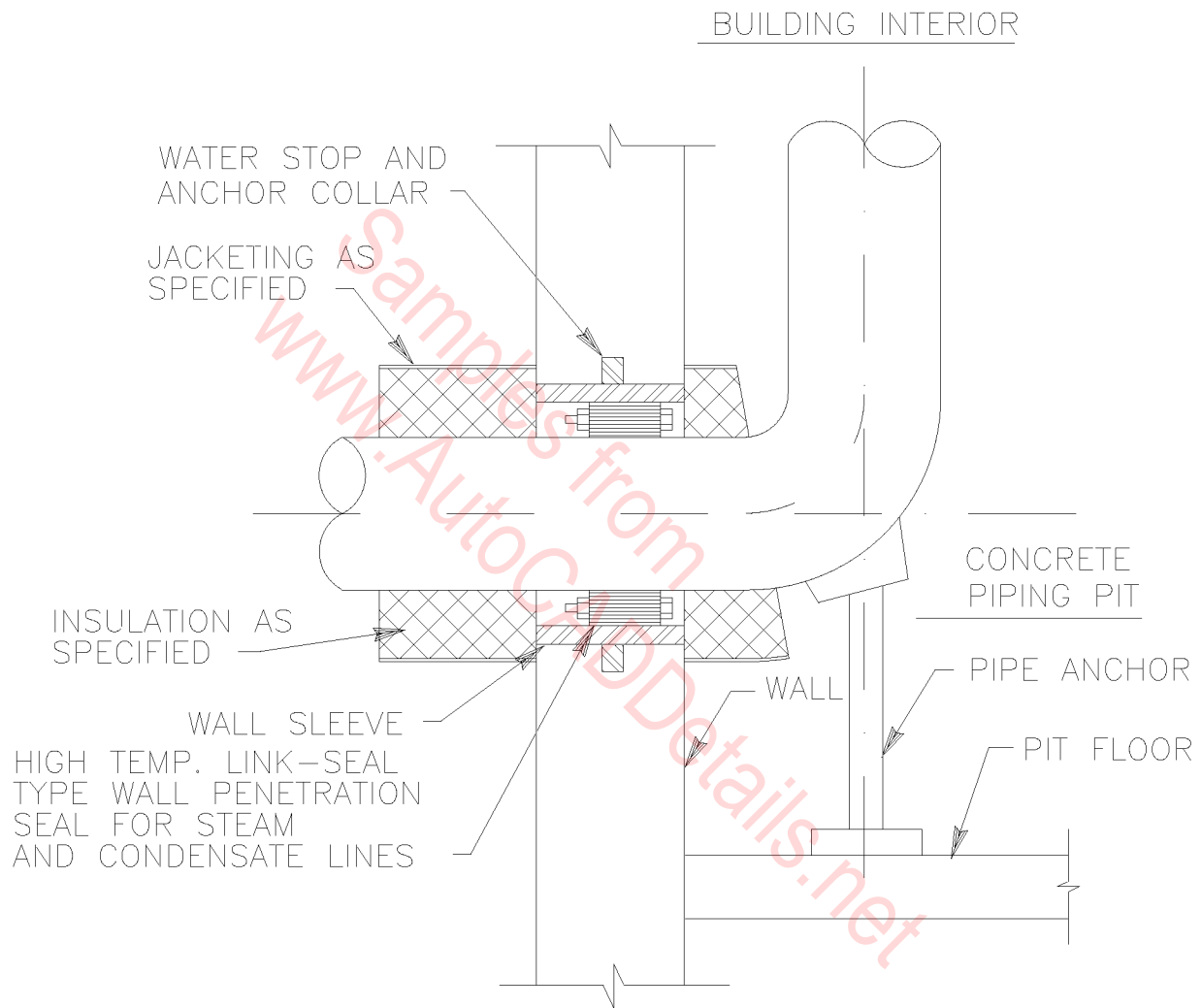
TYPICAL FIRE-PROOF, FRAMED WALL PENETRATION

INSULATED OR NON-INSULATED, ABOVE GRADE
N.T.S.



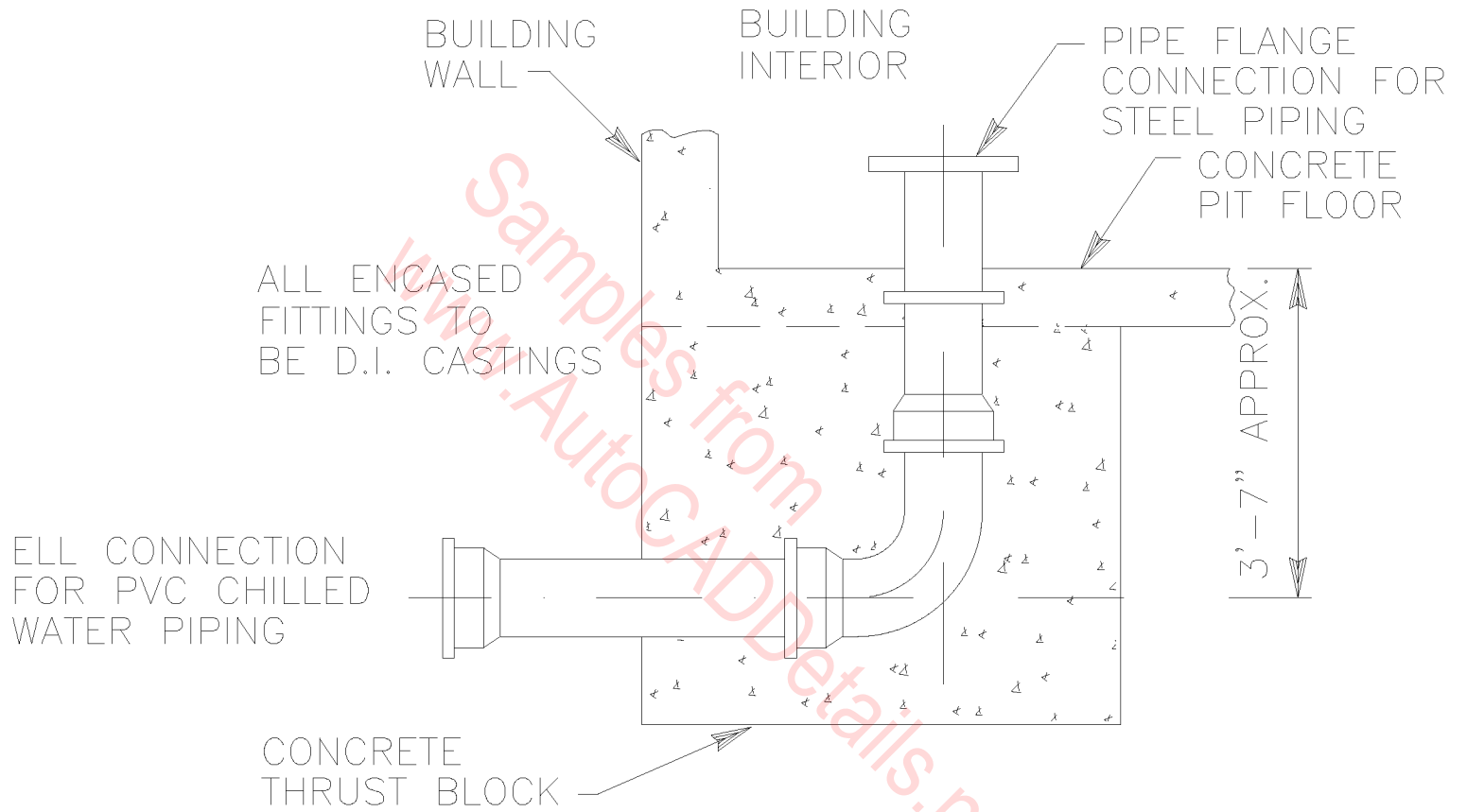
TYPICAL INSULATED PIPE WALL PENETRATION

BELOW GRADE
 N.T.S.



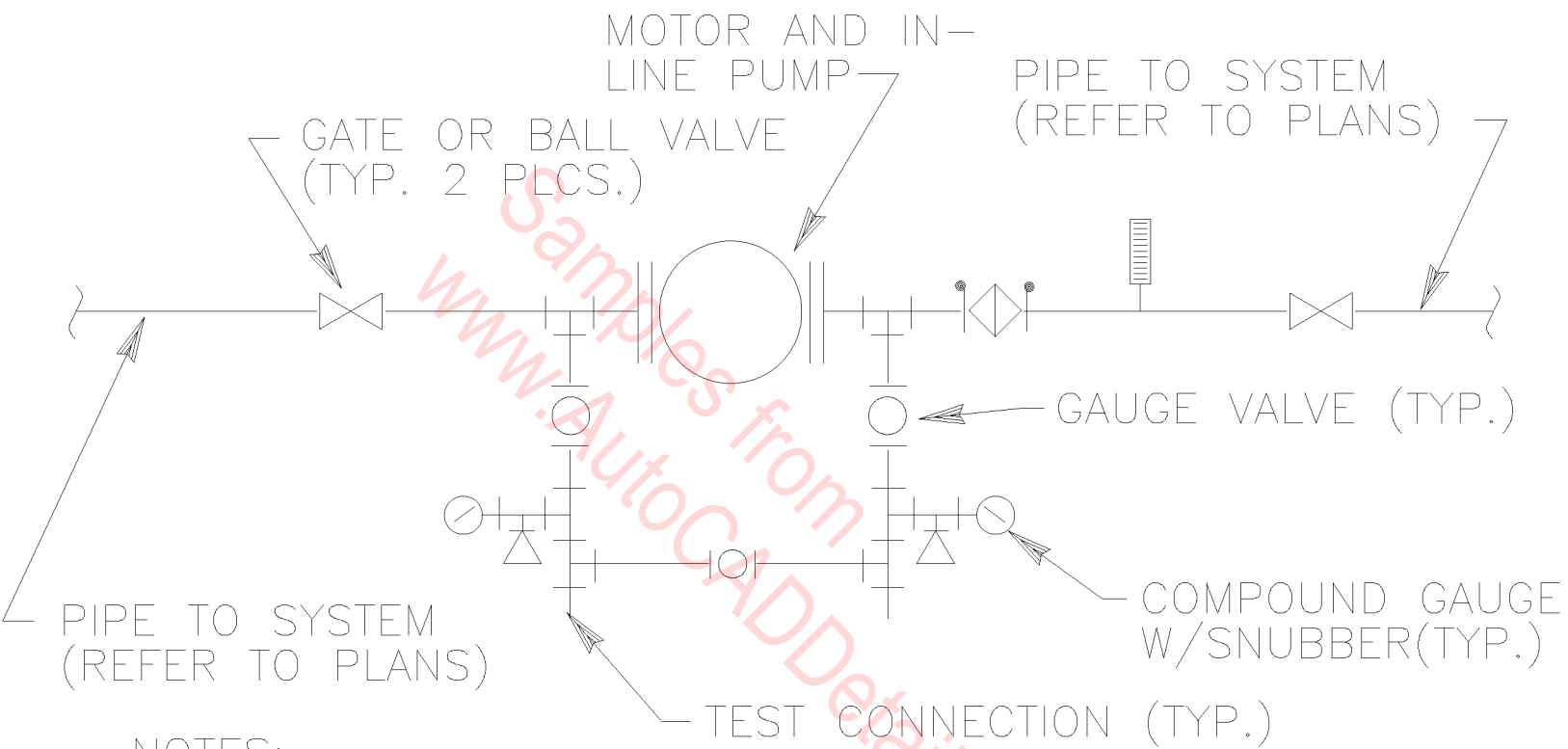
INSULATED PIPING WALL PENETRATION DETAIL

(STEAM-CONDENSATE RETURN)
 N.T.S.



CAST BUILDING PENETRATION DETAIL

CHILLED WATER SUPPLY AND RETURN
 N.T.S.

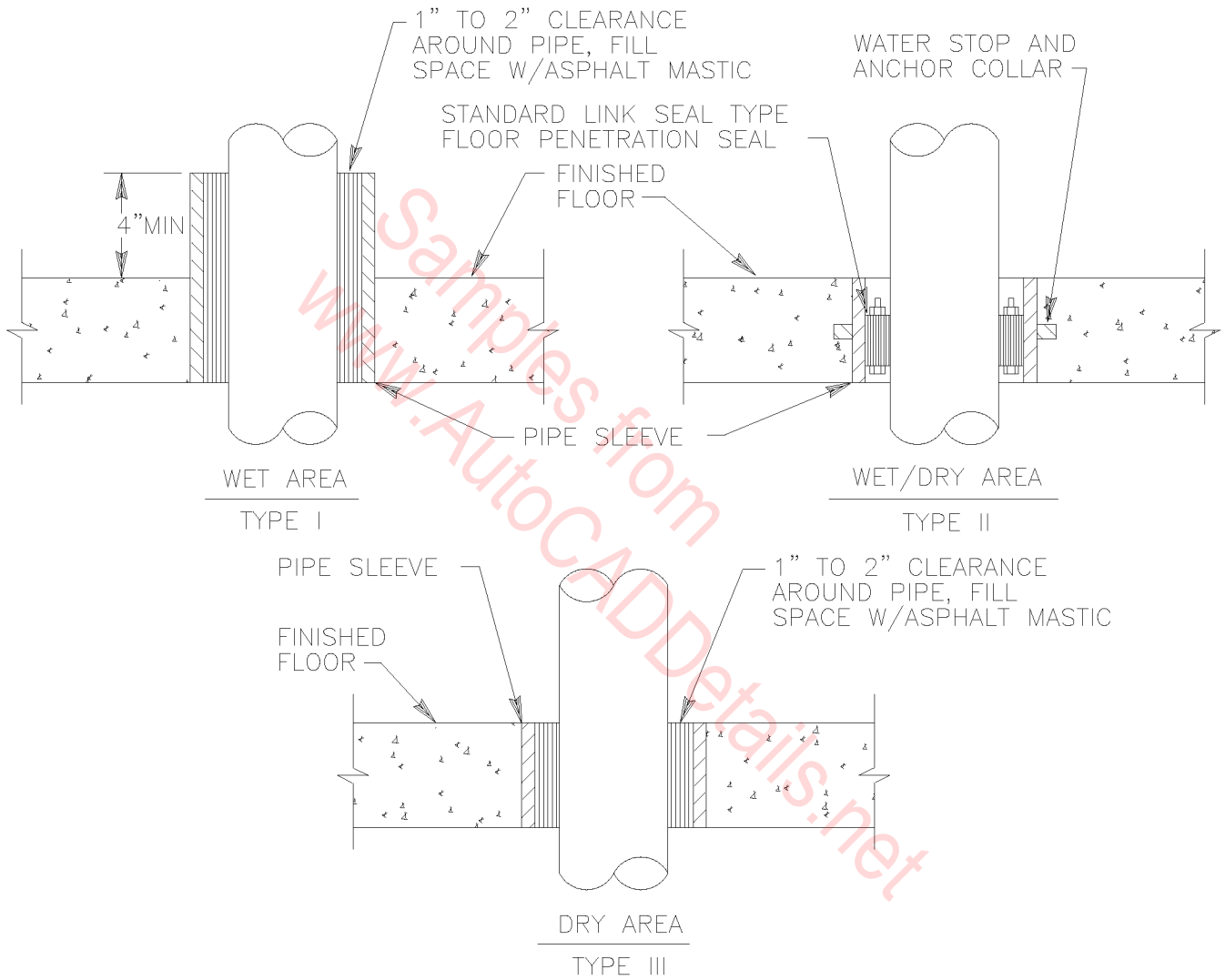


NOTES:

1. GATE VALVES SHALL BE 45° TO 90° ABOVE HORIZONTAL.
2. PUMP SHAFT ORIENTATION SHALL BE PER MANUF. RECOMMENDATION.

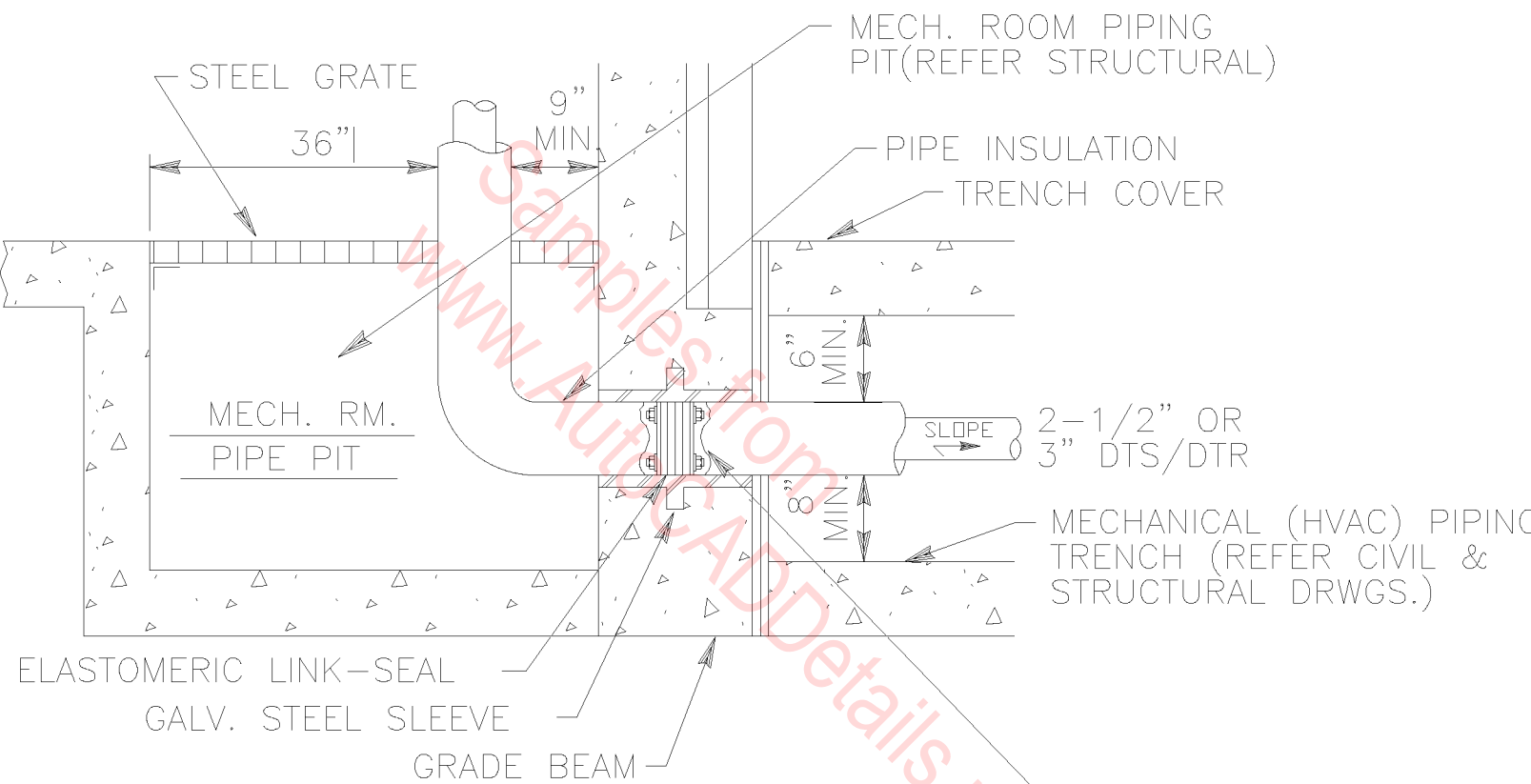
TYPICAL IN-LINE PUMP DETAIL

N.T.S.



TYPICAL MEMBRANE WATERPROOF FLOOR PENETRATION

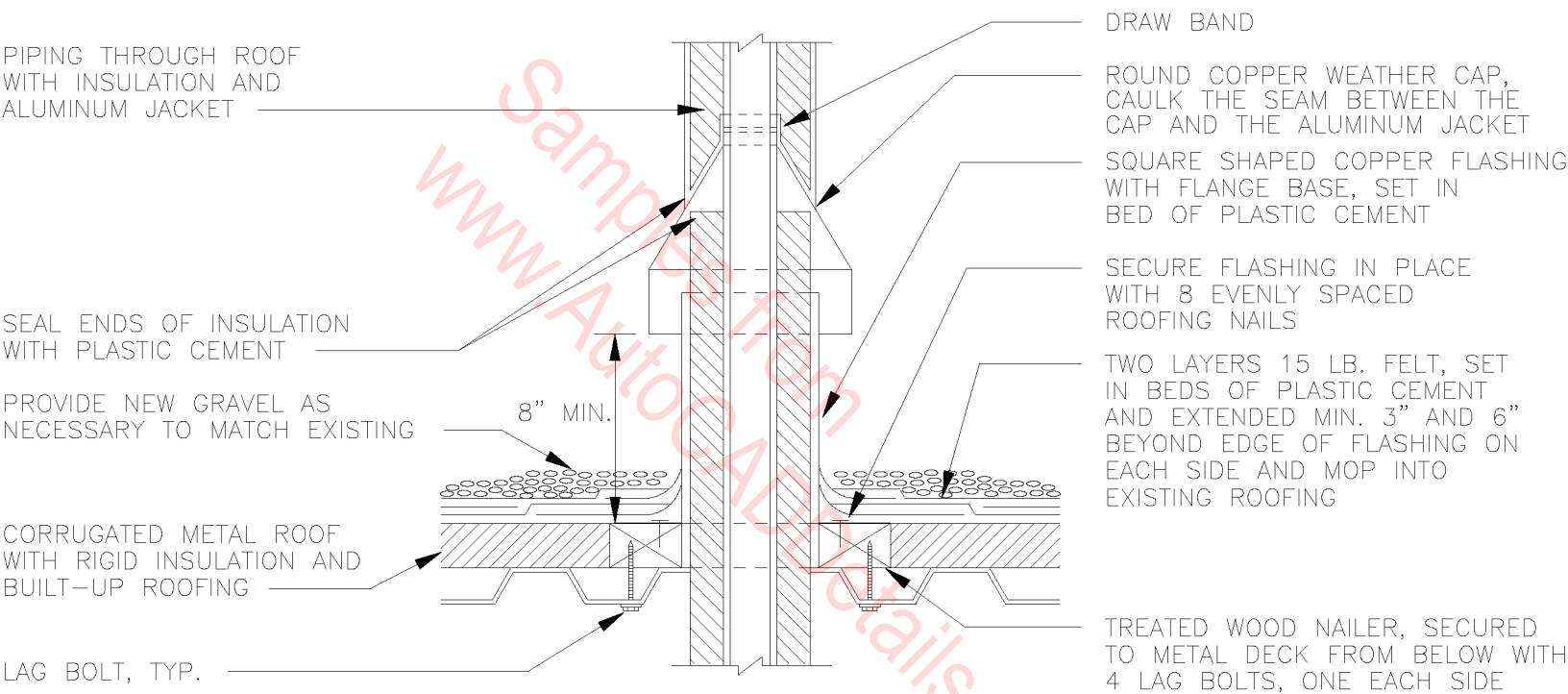
N.T.S.



INSULATE & VAPOR SEAL TO LINK-SEAL, BOTH SIDES

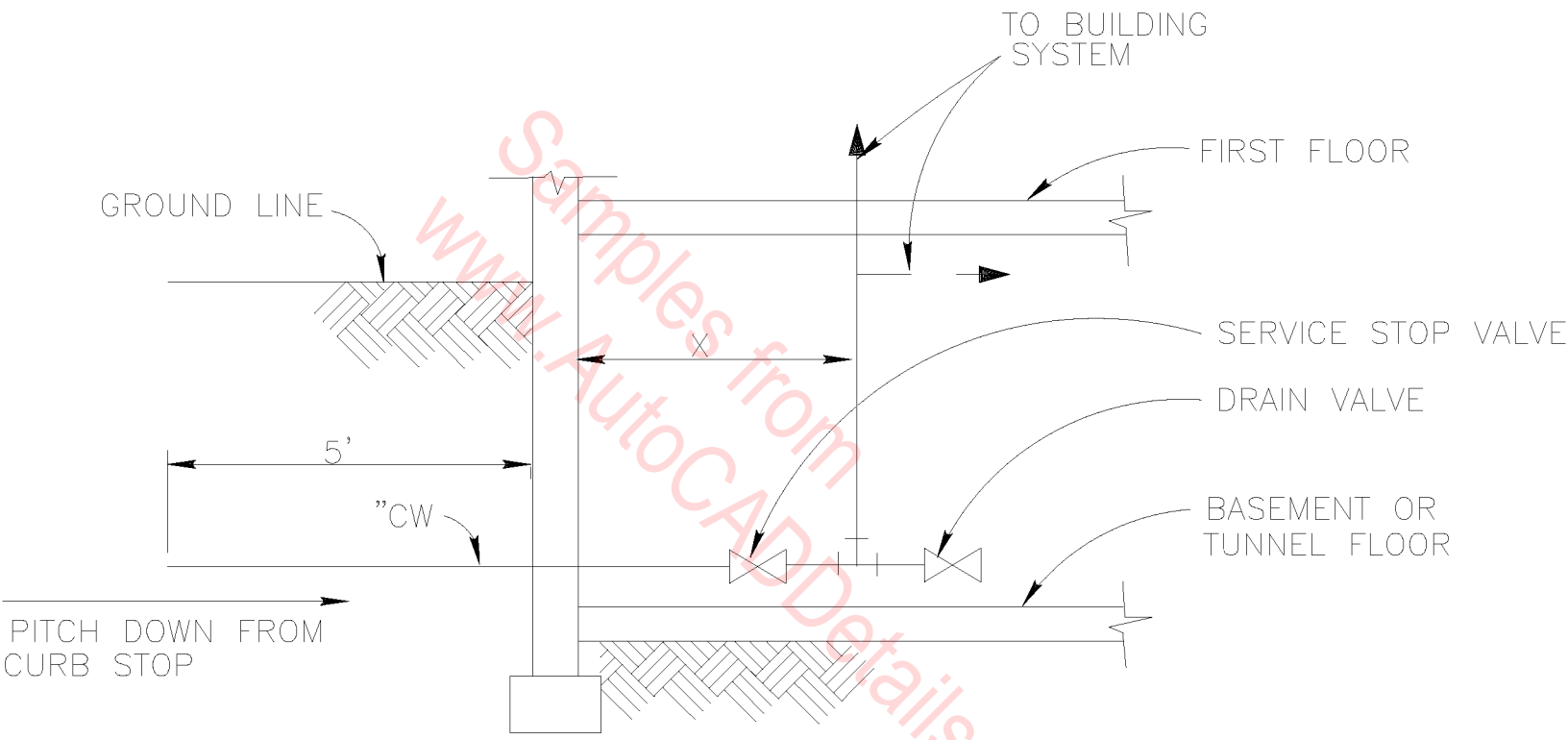
GRADE BEAM PIPE PENETRATION DETAIL

DTS & DTR
 N.T.S.



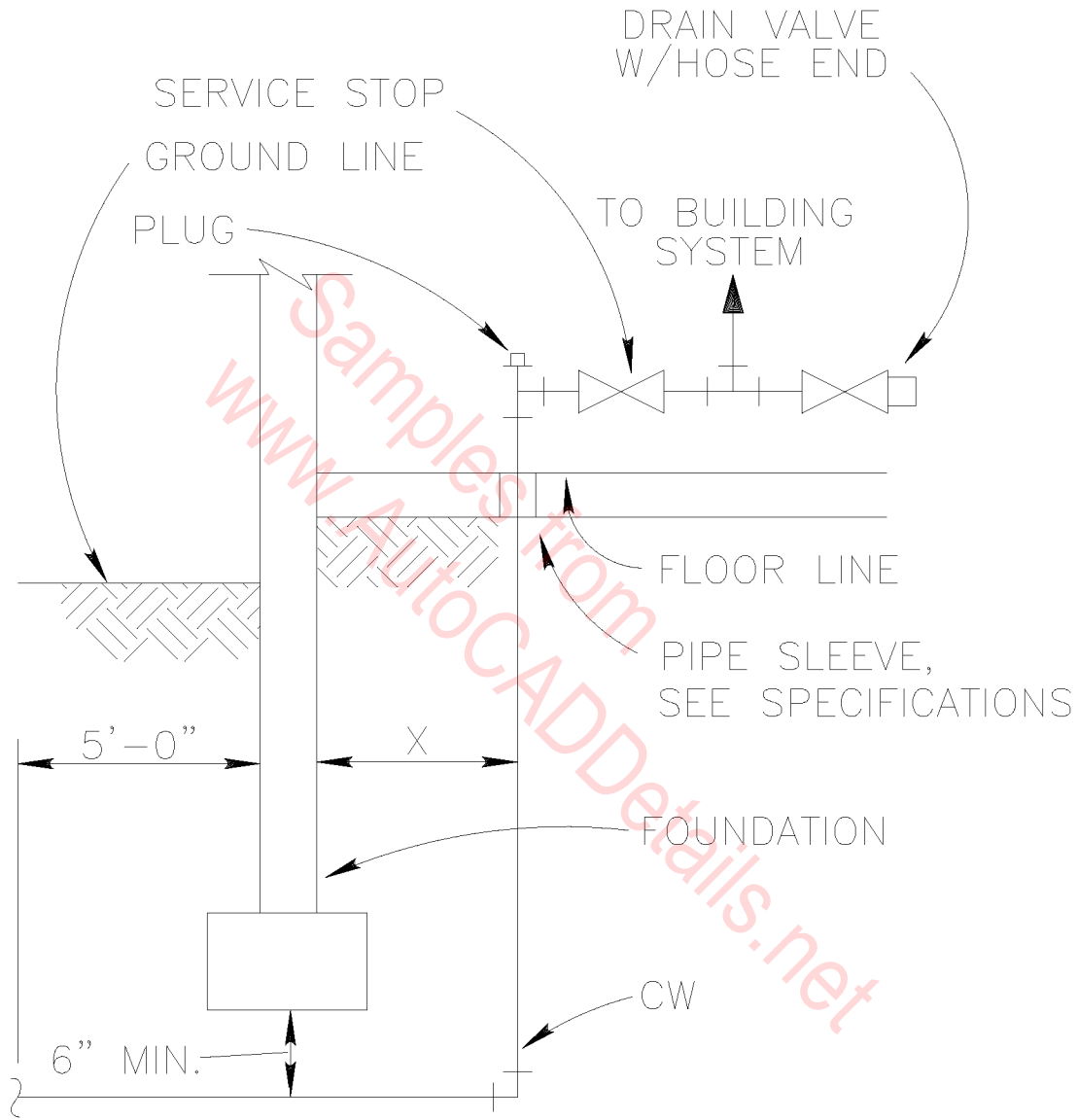
PIPING THROUGH ROOF DETAIL

N.T.S.



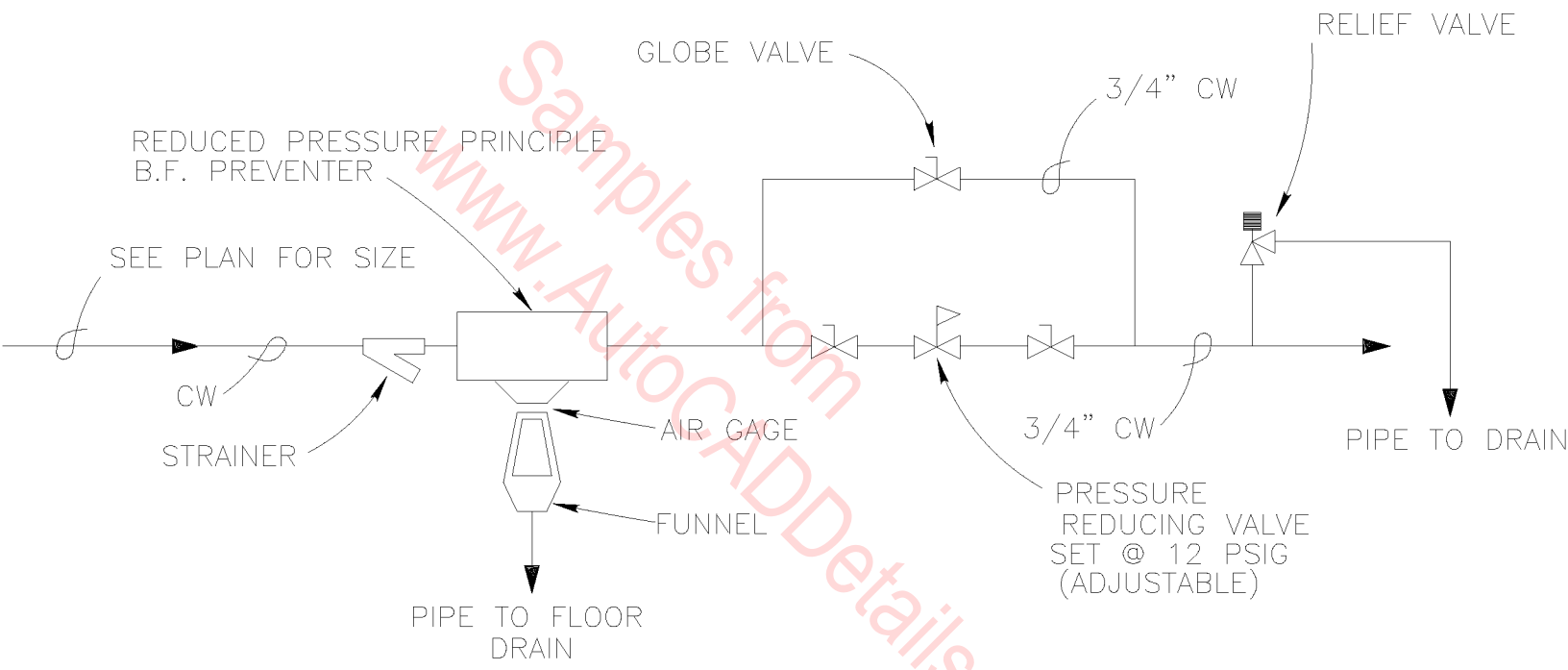
SERVICE ENTRANCE

BUILDINGS WITH BASEMENT OR TUNNEL BELOW
STREET MAIN OR CURB STOP
N.T.S.



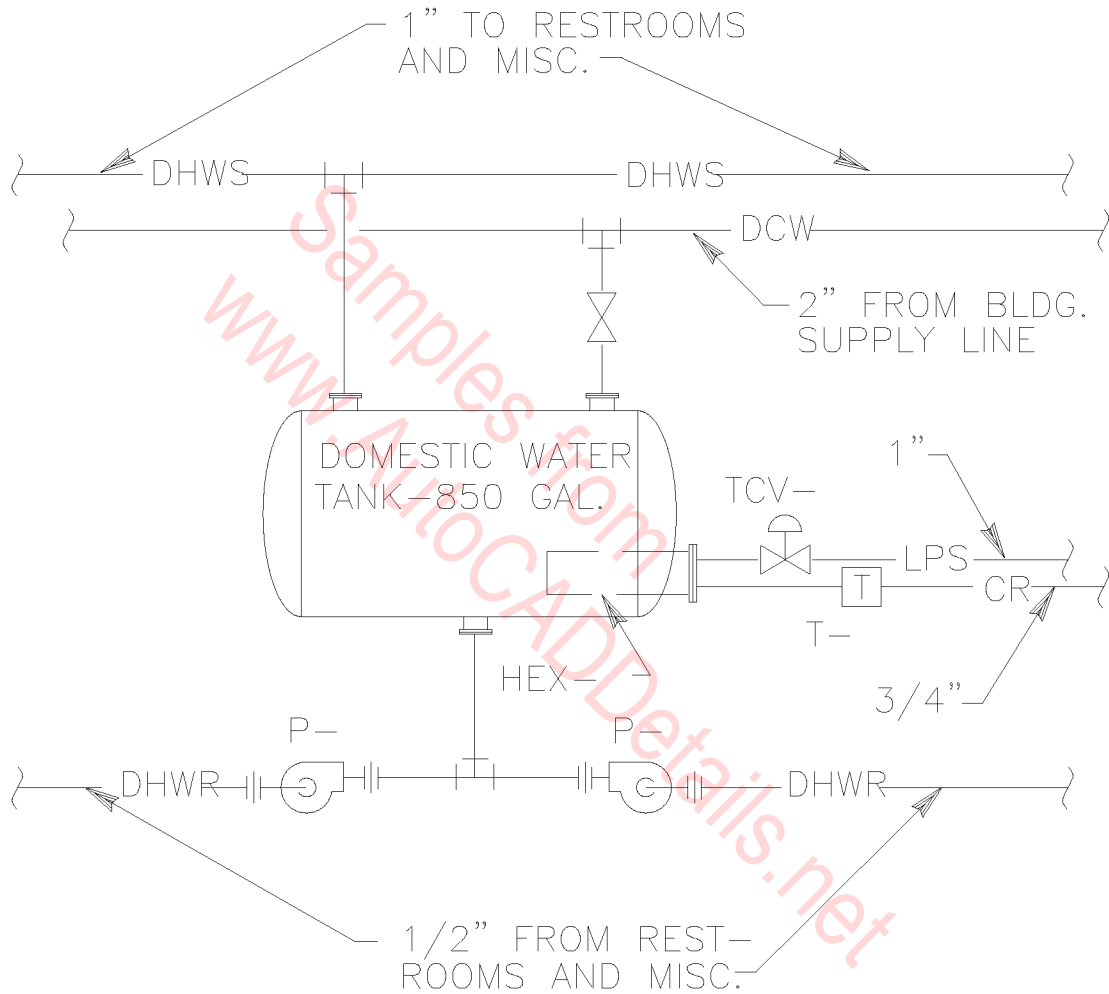
WATER SERVICE ENTRANCE DETAIL

N.T.S.



BACKFLOW PREVENTER DETAIL

N.T.S.

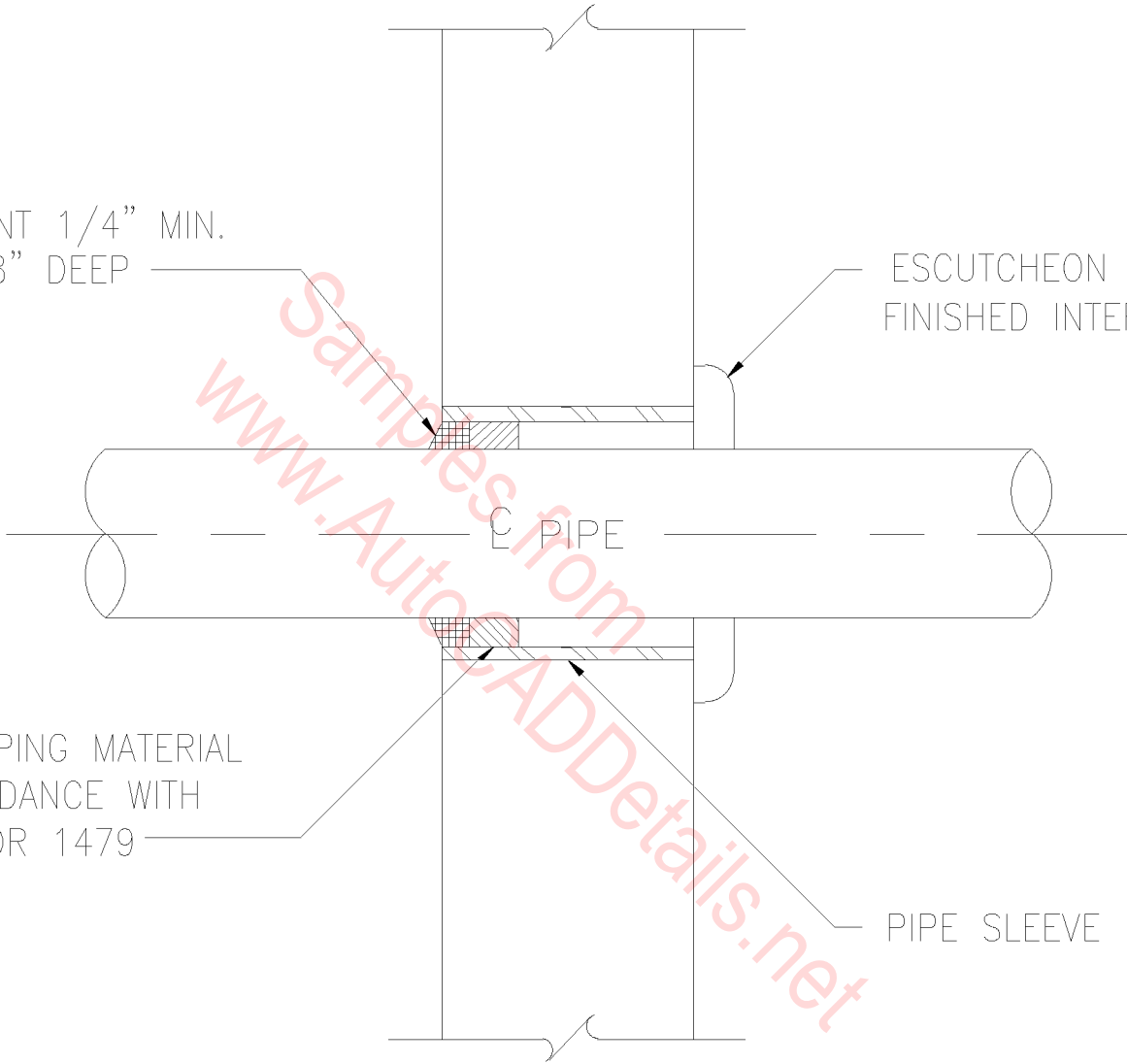


DOMESTIC HOT WATER PIPING SCHEMATIC

N.T.S.

SEALANT—JOINT 1/4" MIN.
WIDE BY 3/8" DEEP

ESCUTCHEON (TYPICAL FOR
FINISHED INTERIOR WALLS)

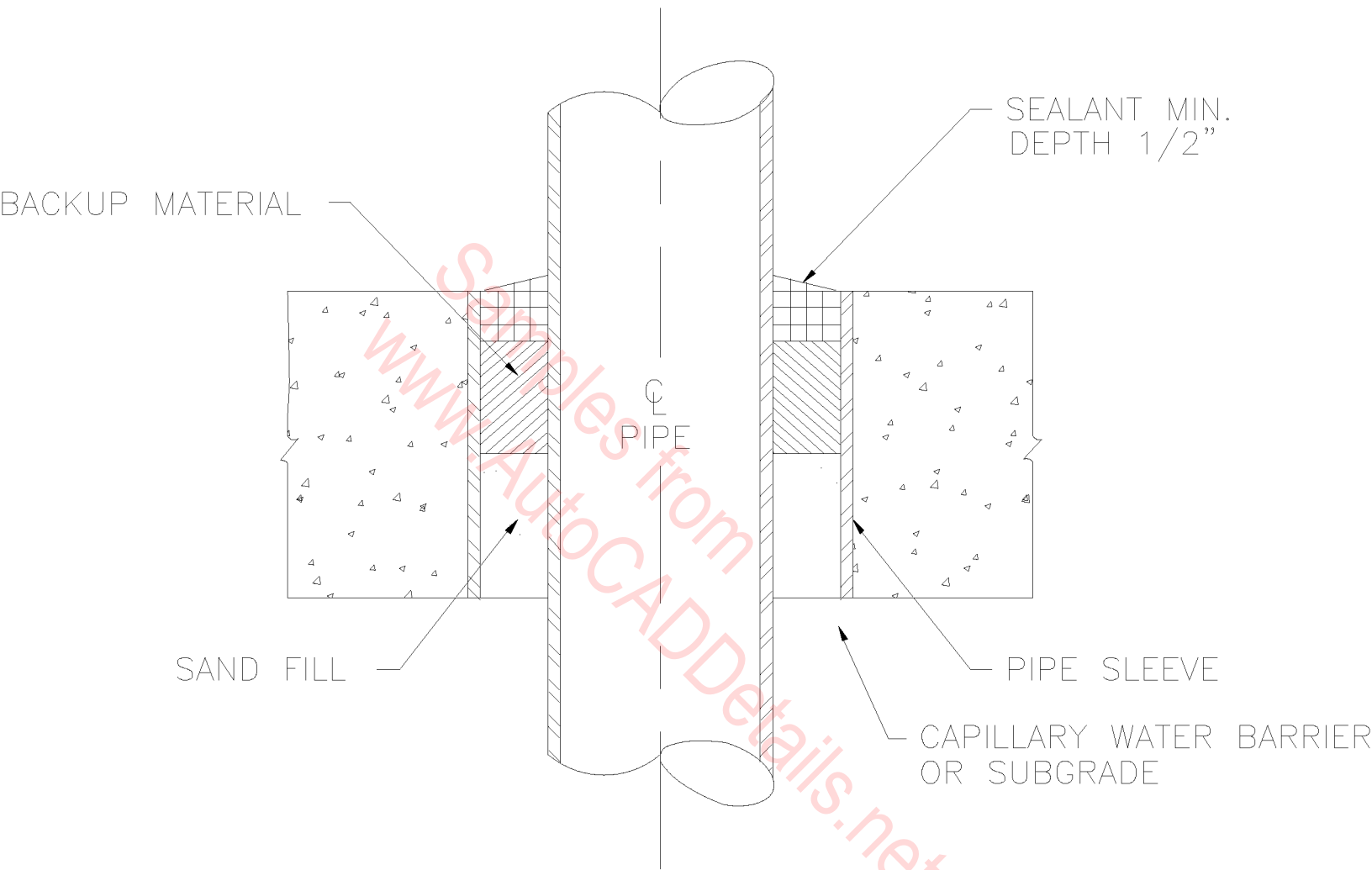


FIRESTOPPING MATERIAL
IN ACCORDANCE WITH
UL 723 OR 1479

PIPE SLEEVE

TYPICAL WALL PENETRATION DETAIL

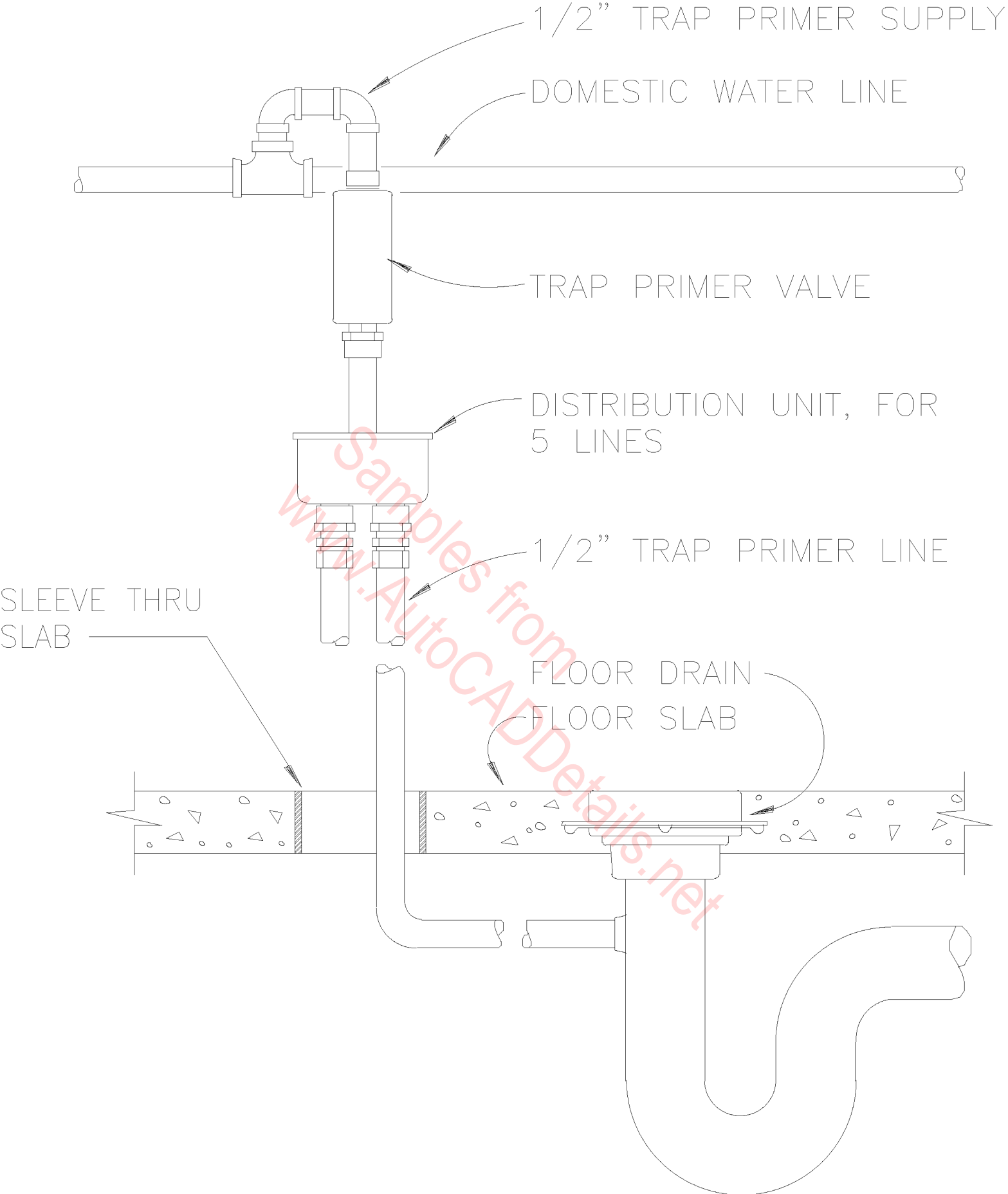
N.T.S.



PIPE SLEEVE THROUGH CONCRETE FLOOR SLAB ON GRADE
WITHOUT WATERPROOFING MEMBRANE

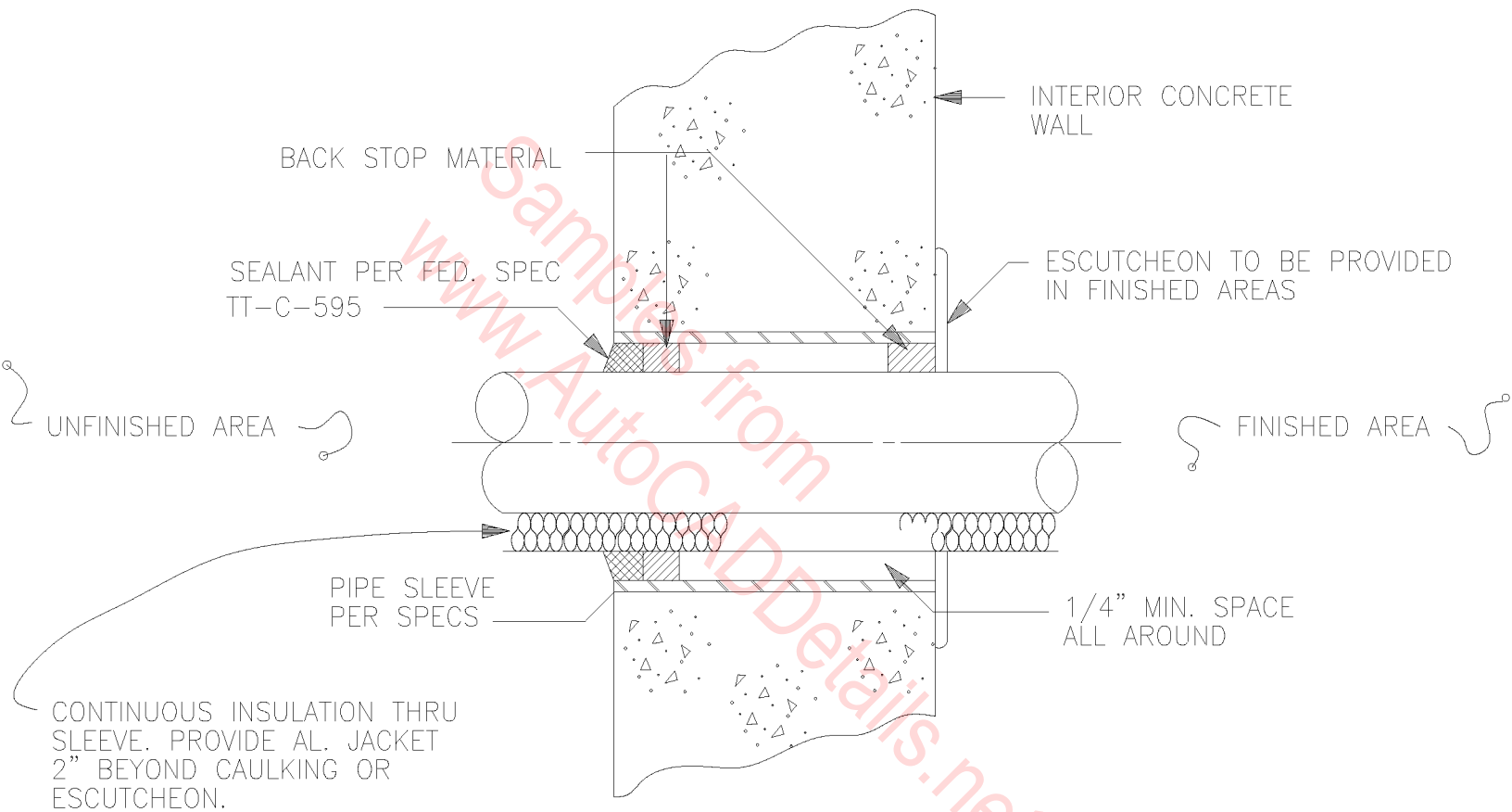
PIPE SLEEVE DETAIL

N.T.S.



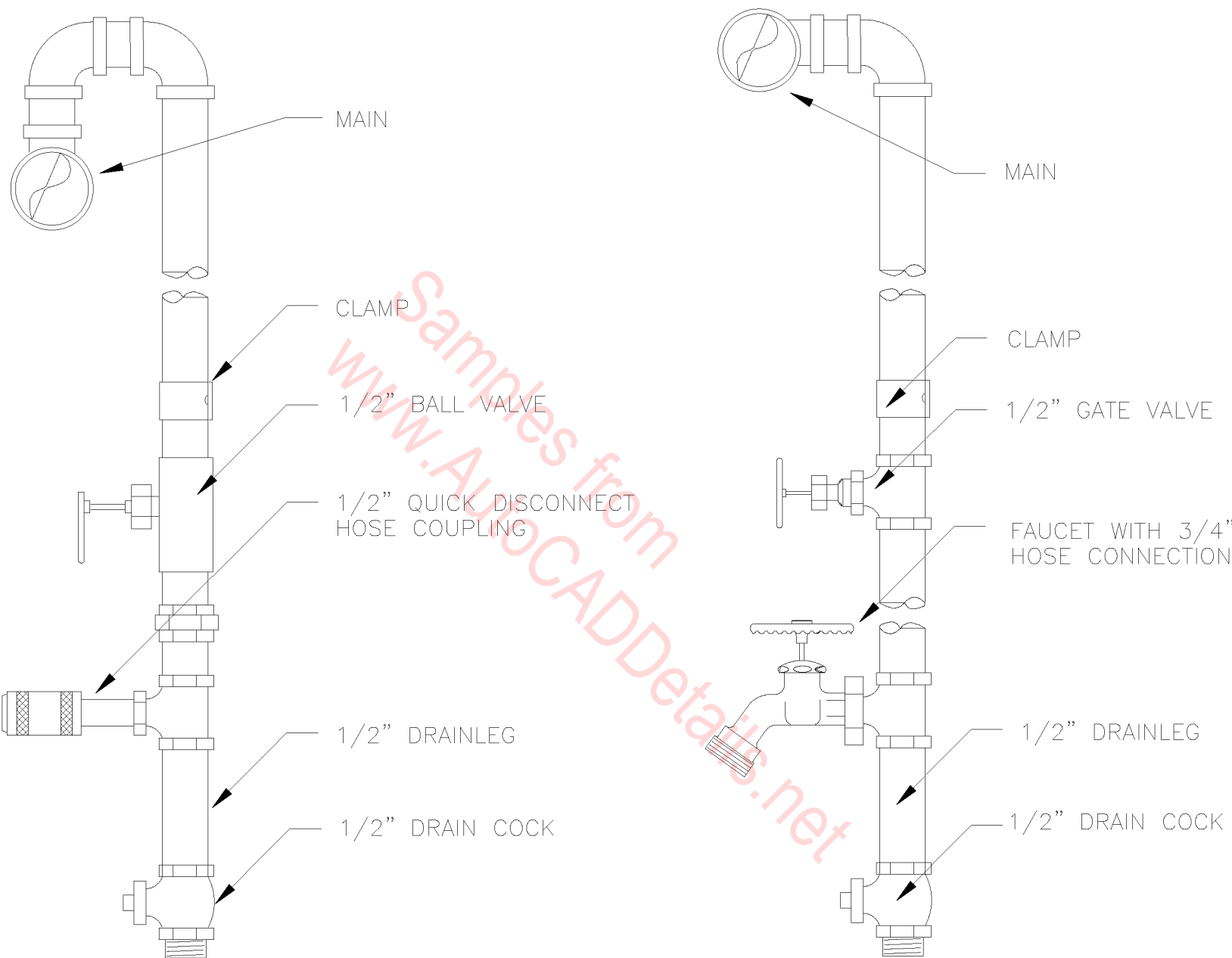
TRAP SEAL PRIMER DETAIL

N.T.S.



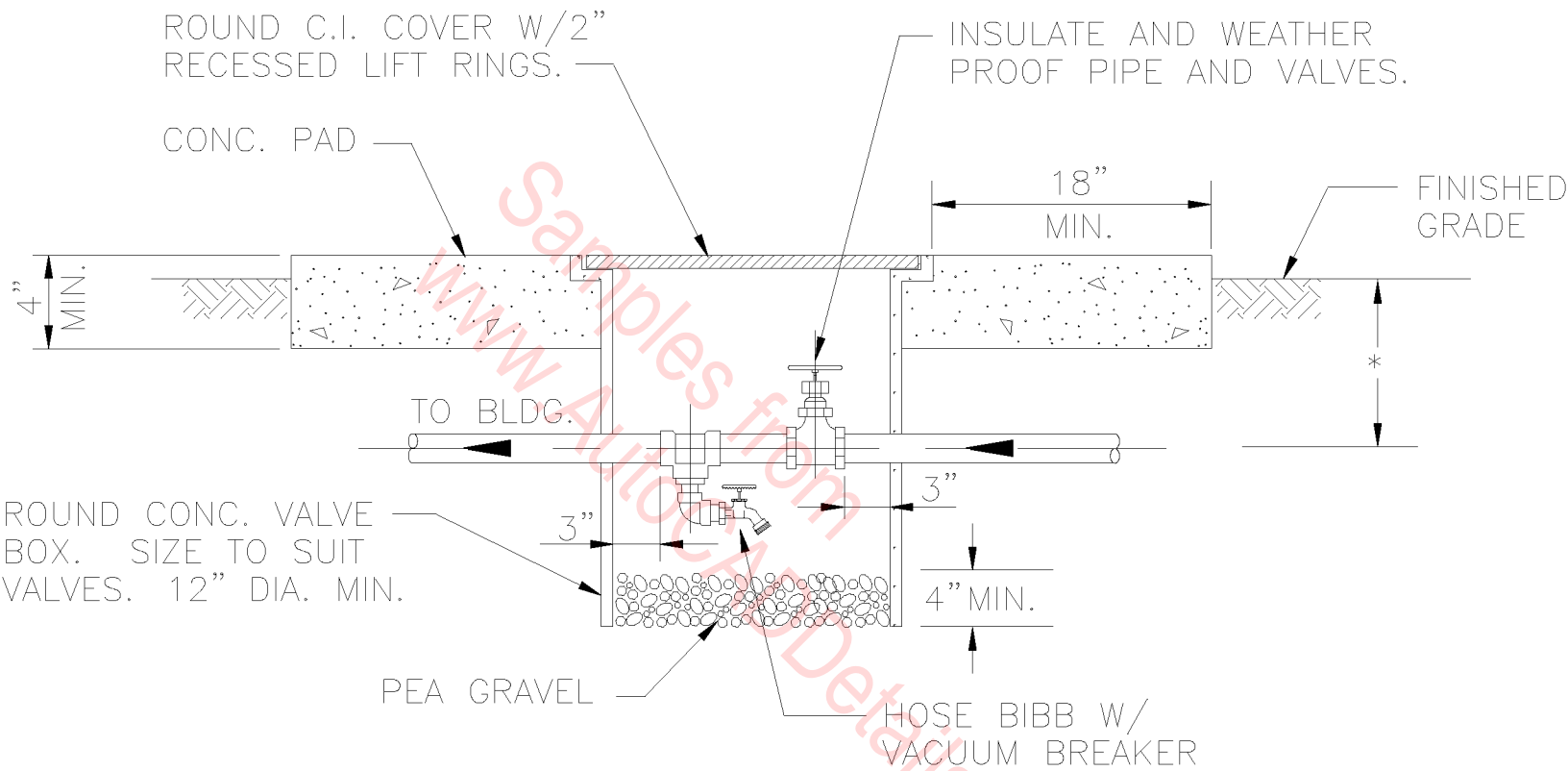
WALL PIPE SLEEVE DETAIL

N.T.S.



TYPICAL AIR AND WATER DROP DETAIL

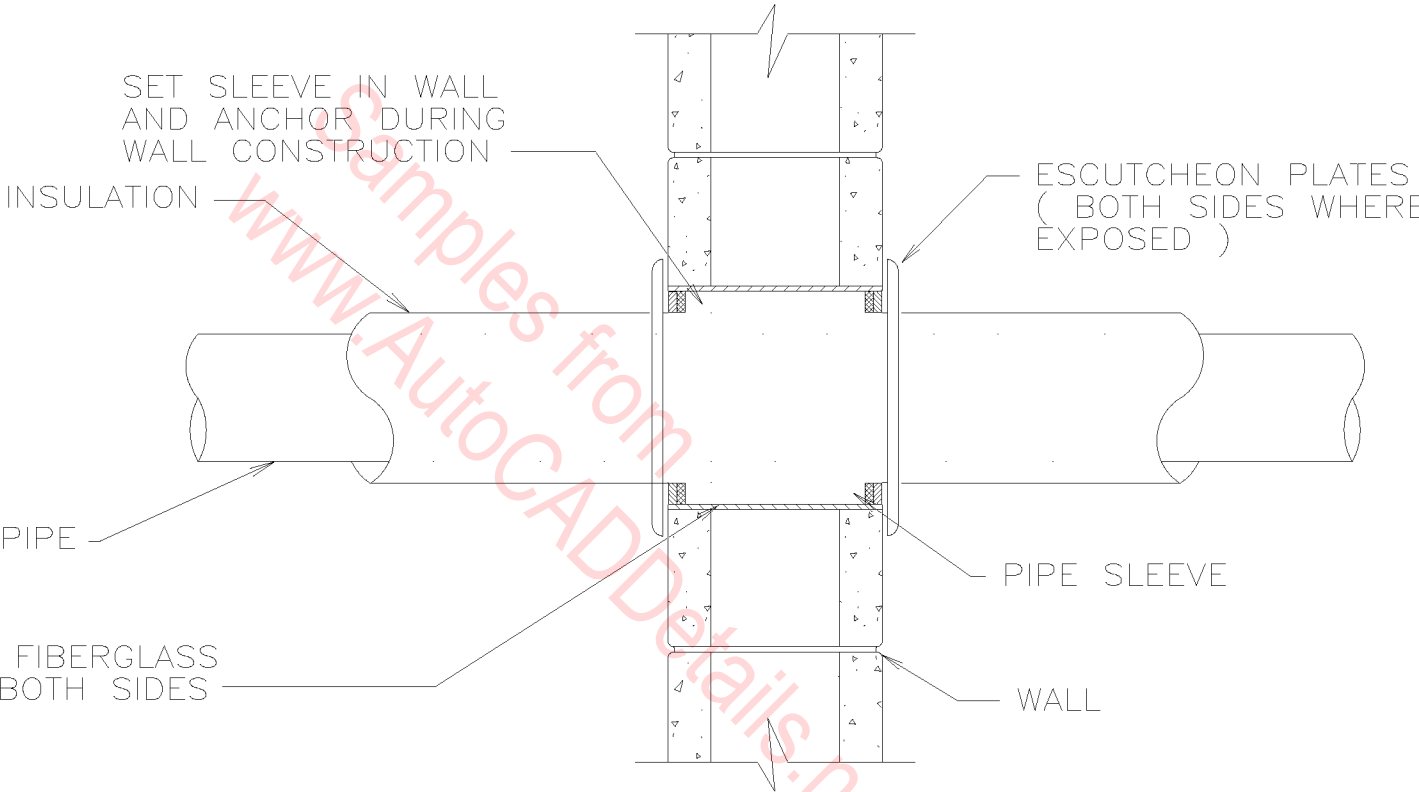
N.T.S.



* 12 INCHES BELOW AVERAGE LOCAL FROSTLINE.

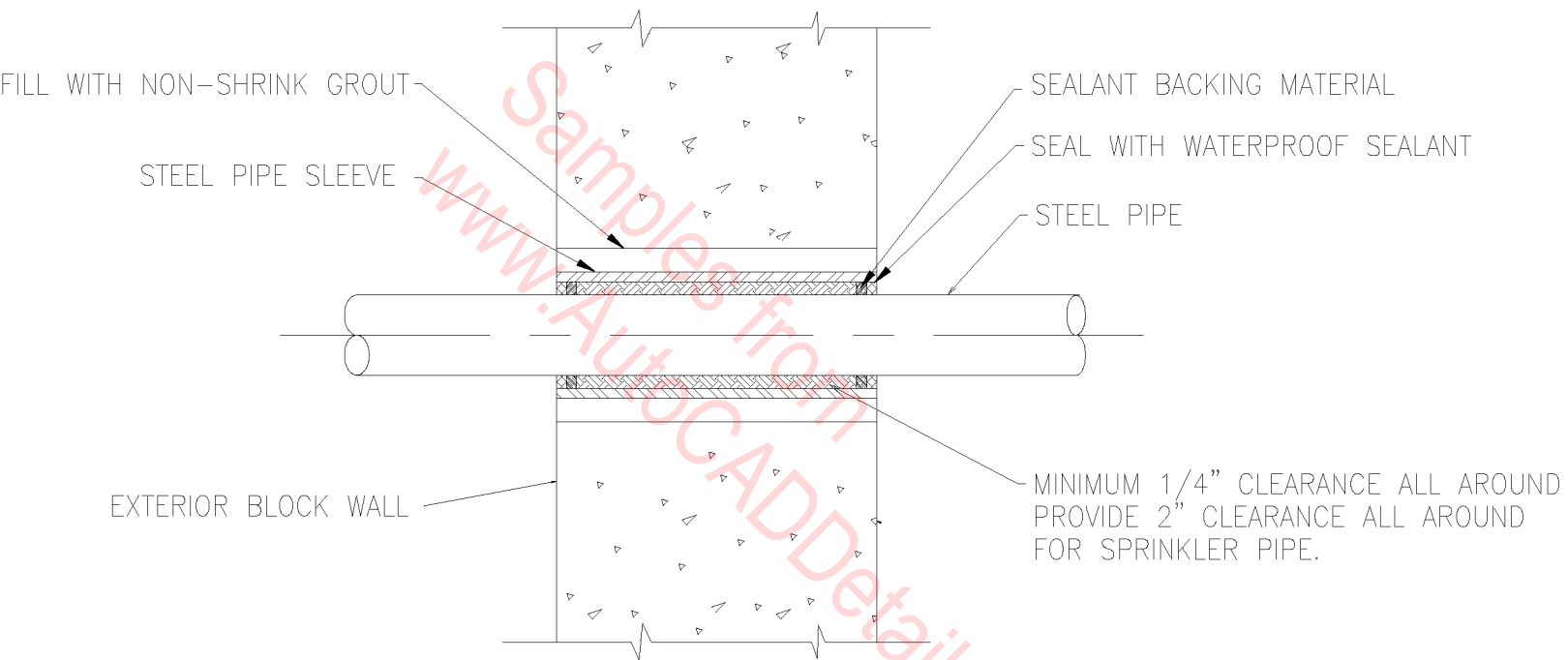
VALVE BOX DETAIL

N.T.S.



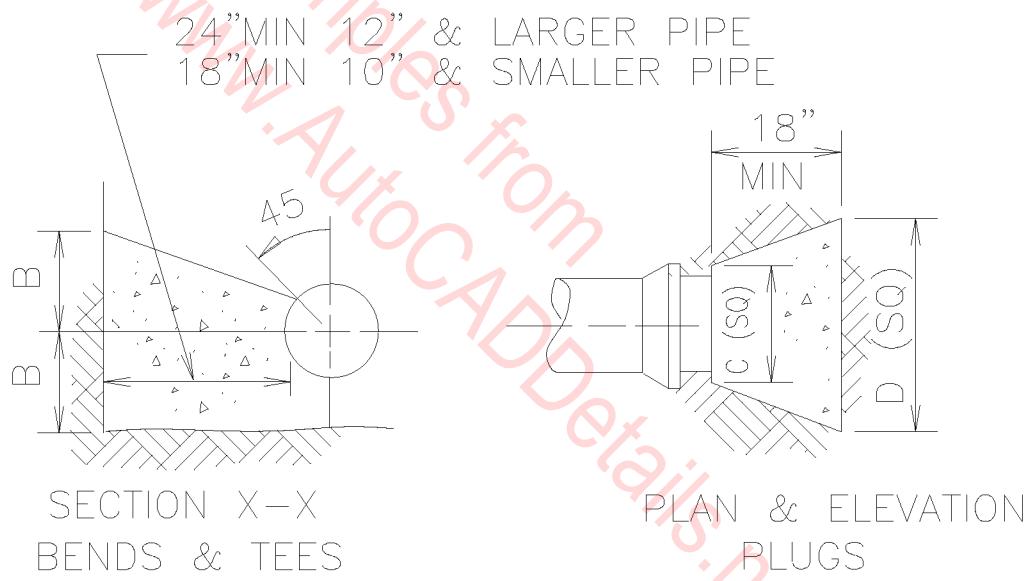
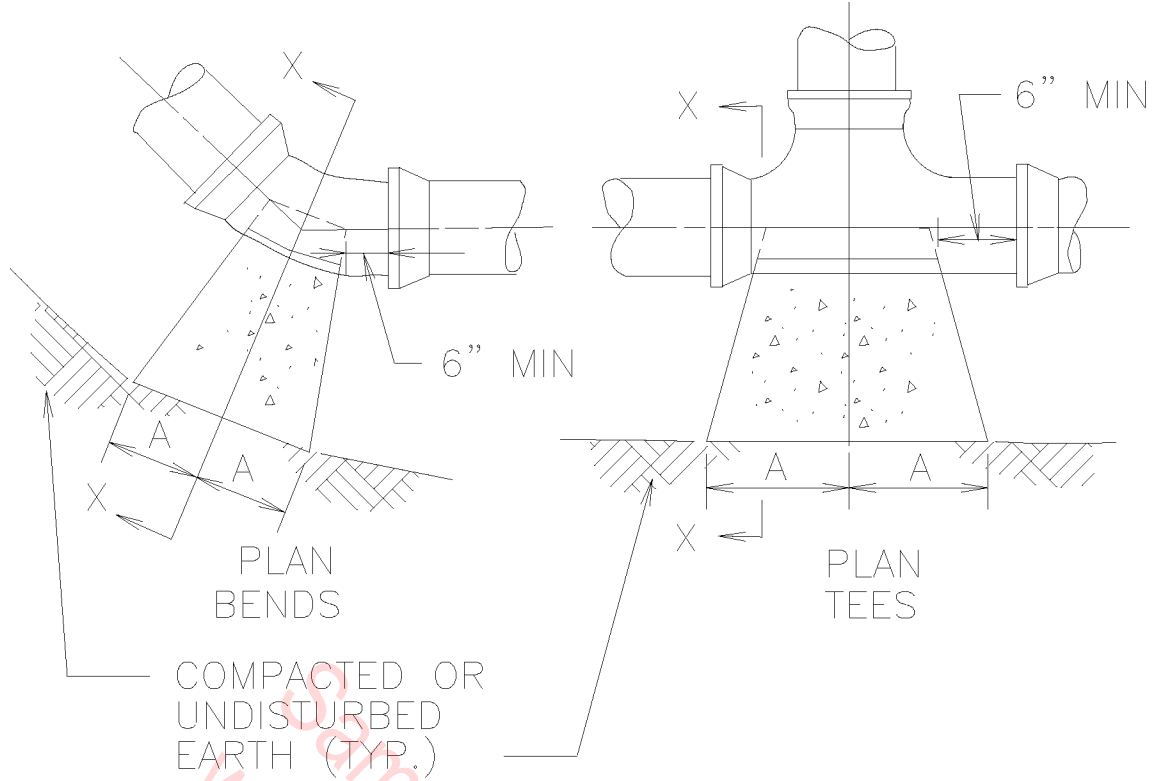
PIPE SLEEVE THRU INTERIOR WALL

N.T.S.



PIPE SLEEVE THRU EXTERIOR WALL DETAIL

N.T.S.



SIZE	1/4 BENDS		1/8 BENDS		1/16 BENDS		TEES		PLUGS	
	A	B	A	B	A	B	A	B	C	D
6"	16"	10"	9"	10"	6"	8"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"

THRUST BLOCKS

N.T.S.

GATE VALVE (INPUT SIDE)

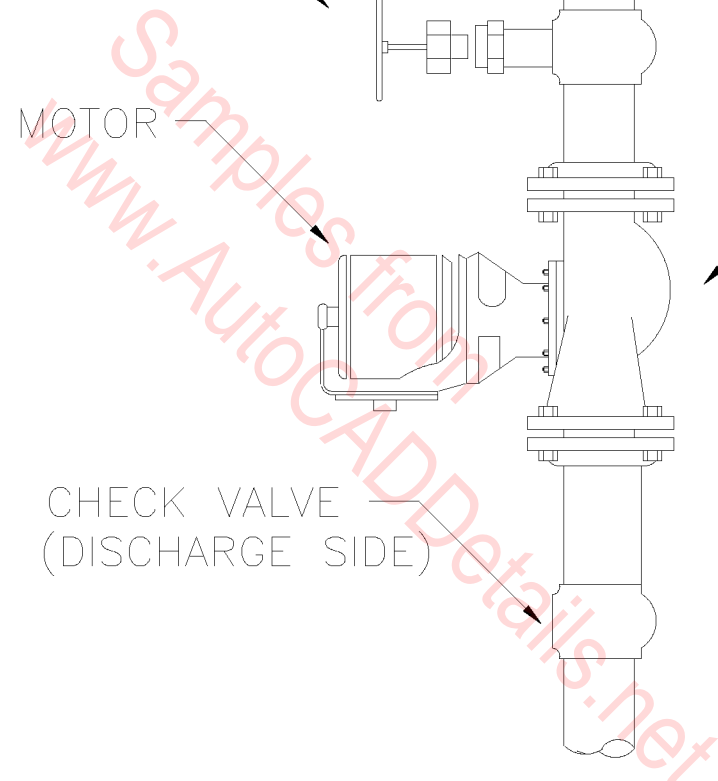
MOTOR

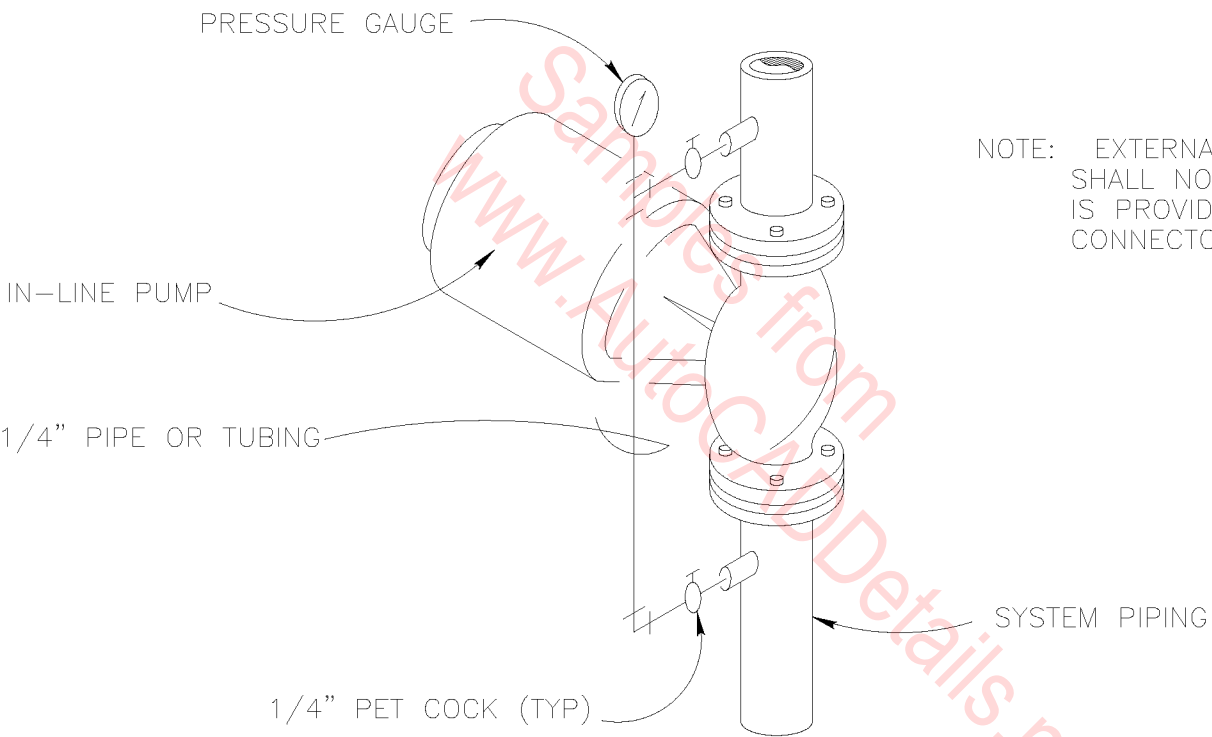
IN-LINE PUMP

CHECK VALVE
(DISCHARGE SIDE)

TYPICAL IN-LINE PUMP

N.T.S.

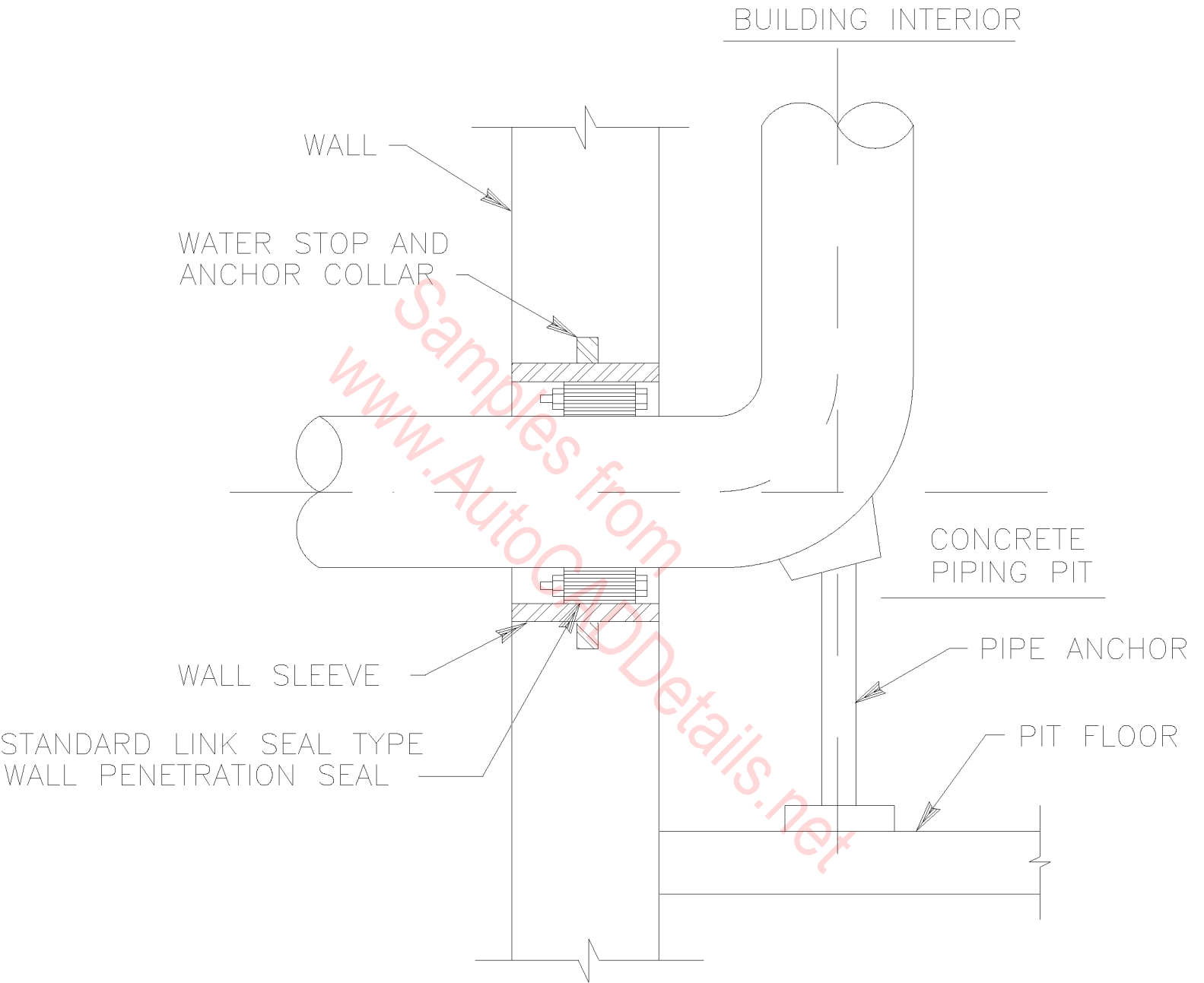




NOTE: EXTERNAL GAUGE TAPS ON PIPES SHALL NOT BE REQUIRED WHEN PUMP IS PROVIDED WITH FLANGE GAUGE CONNECTOR.

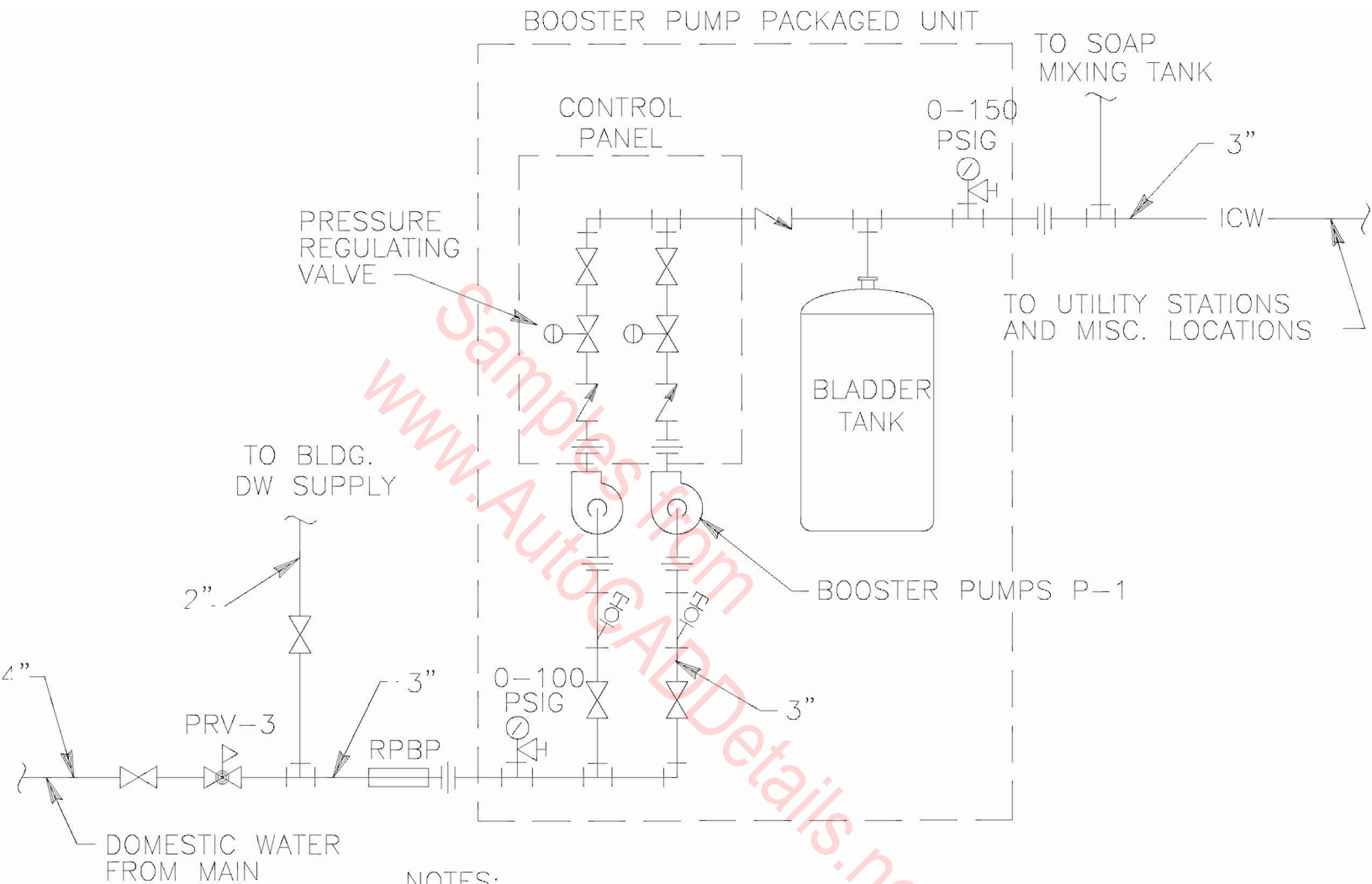
DOMESTIC HOT WATER PUMP DETAIL

N.T.S.



PIPING WALL PENETRATION DETAIL

(COMPRESSED AIR)
 N.T.S.

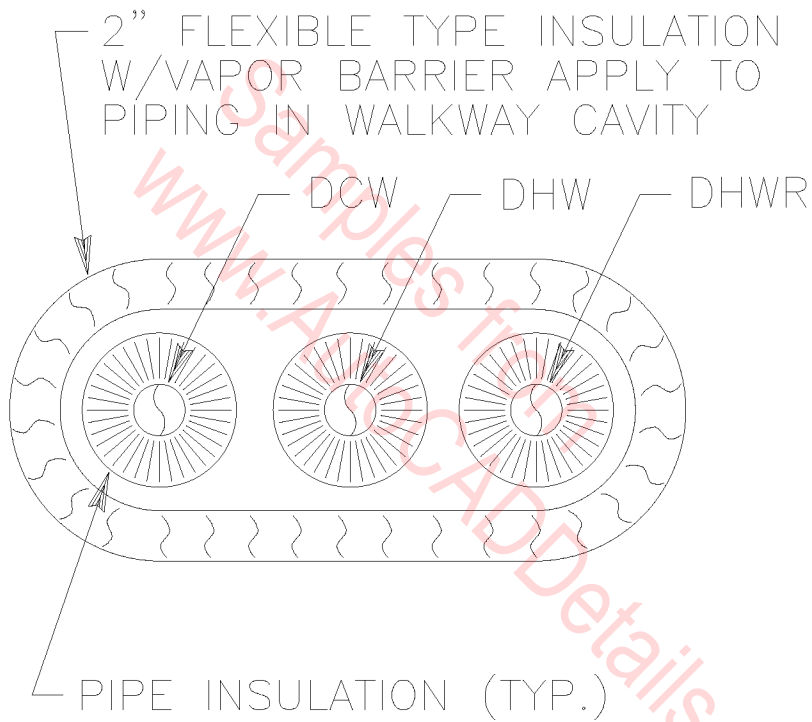


NOTES:

1. CONTROL PANEL INCLUDES; PUMP MOTOR STARTERS, CURRENT SENSING RELAYS, MIN. RUN TIMERS, TIME DELAY RELAYS, HIGH-LOW PRESSURE SAFETY ALARM AND CONTROL RELAYS.
2. PROVIDE AIR-RELIEF AND VACUUM BREAKER AT HIGH-POINT OF DOMESTIC WATER AND INDUSTRIAL COLD WATER.

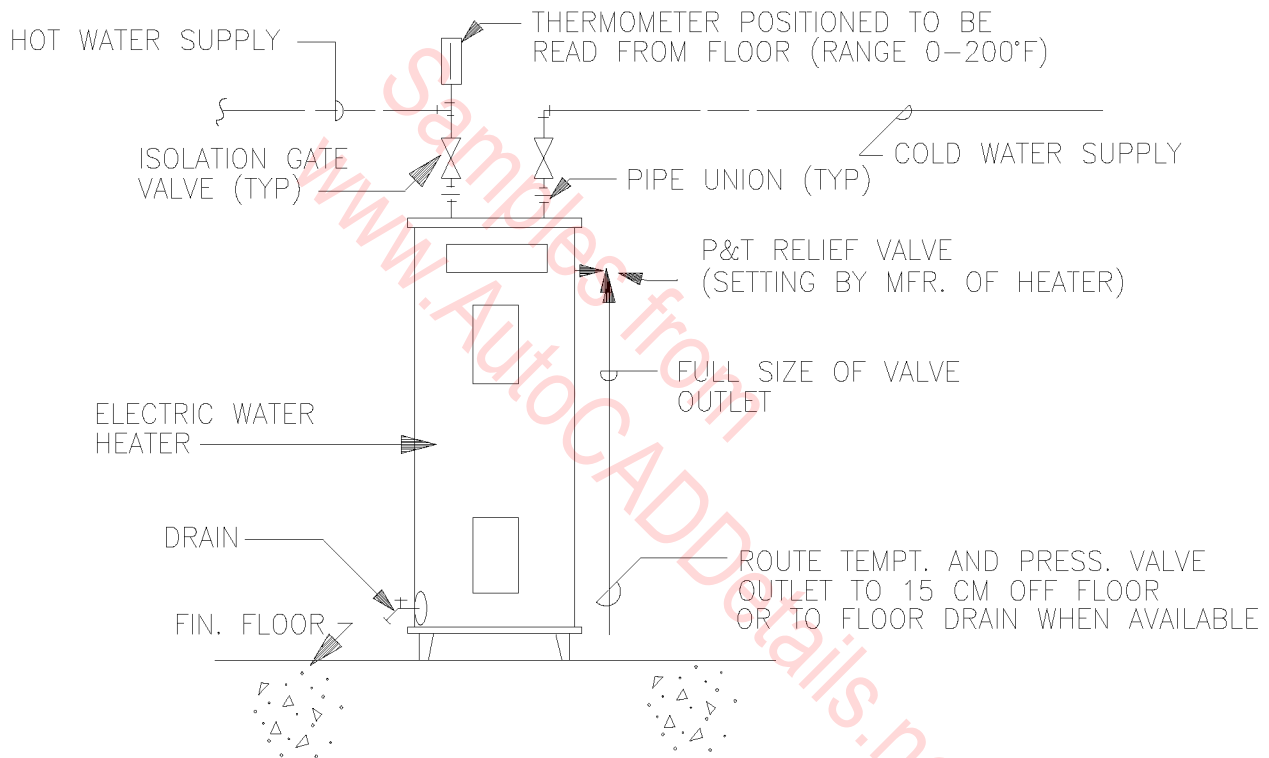
ICW BOOSTER PUMP DETAIL

N.T.S.



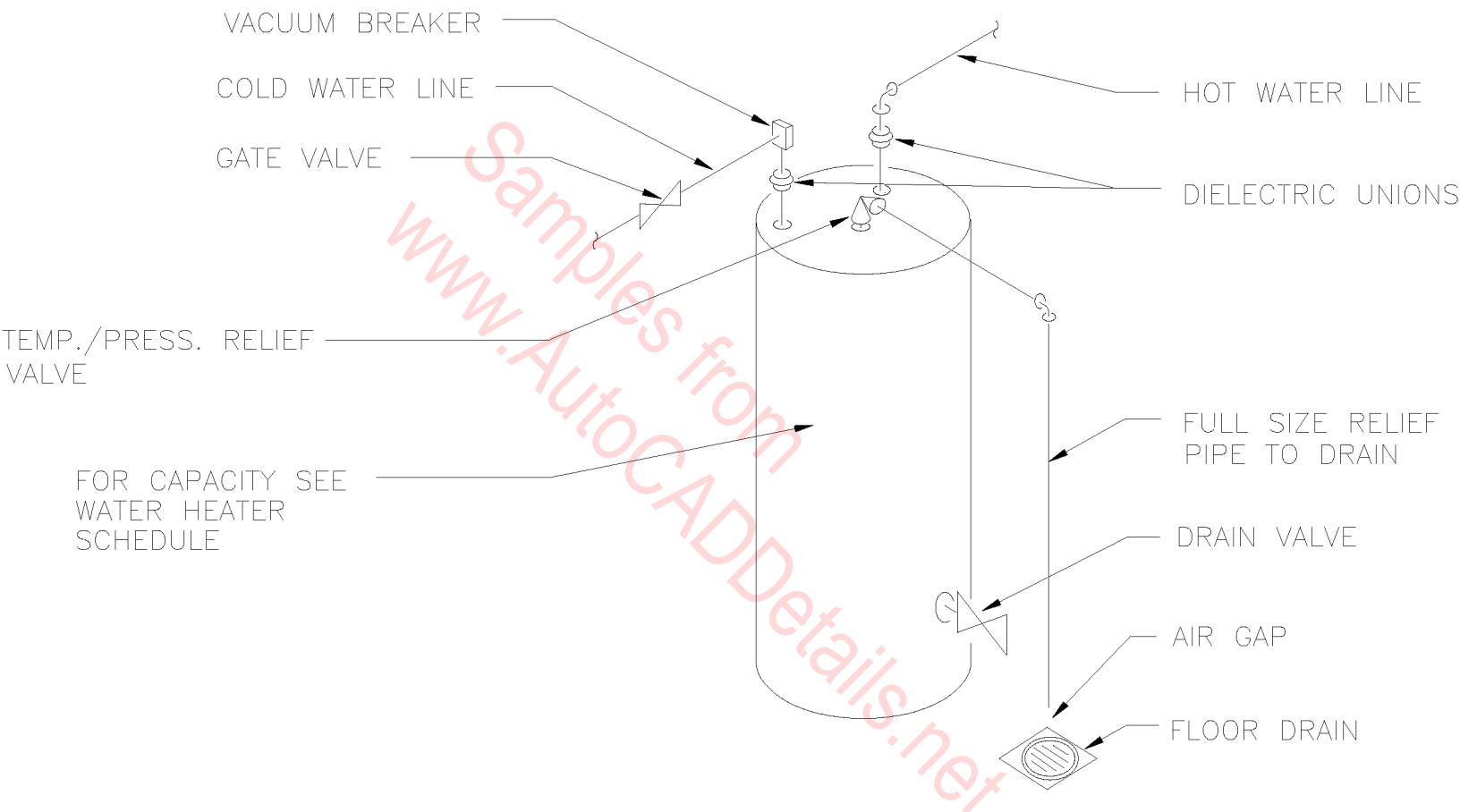
FLEXIBLE PIPE INSULATION DETAIL

N.T.S.



FLOOR MOUNTED ELECTRIC WATER HEATER DETAIL

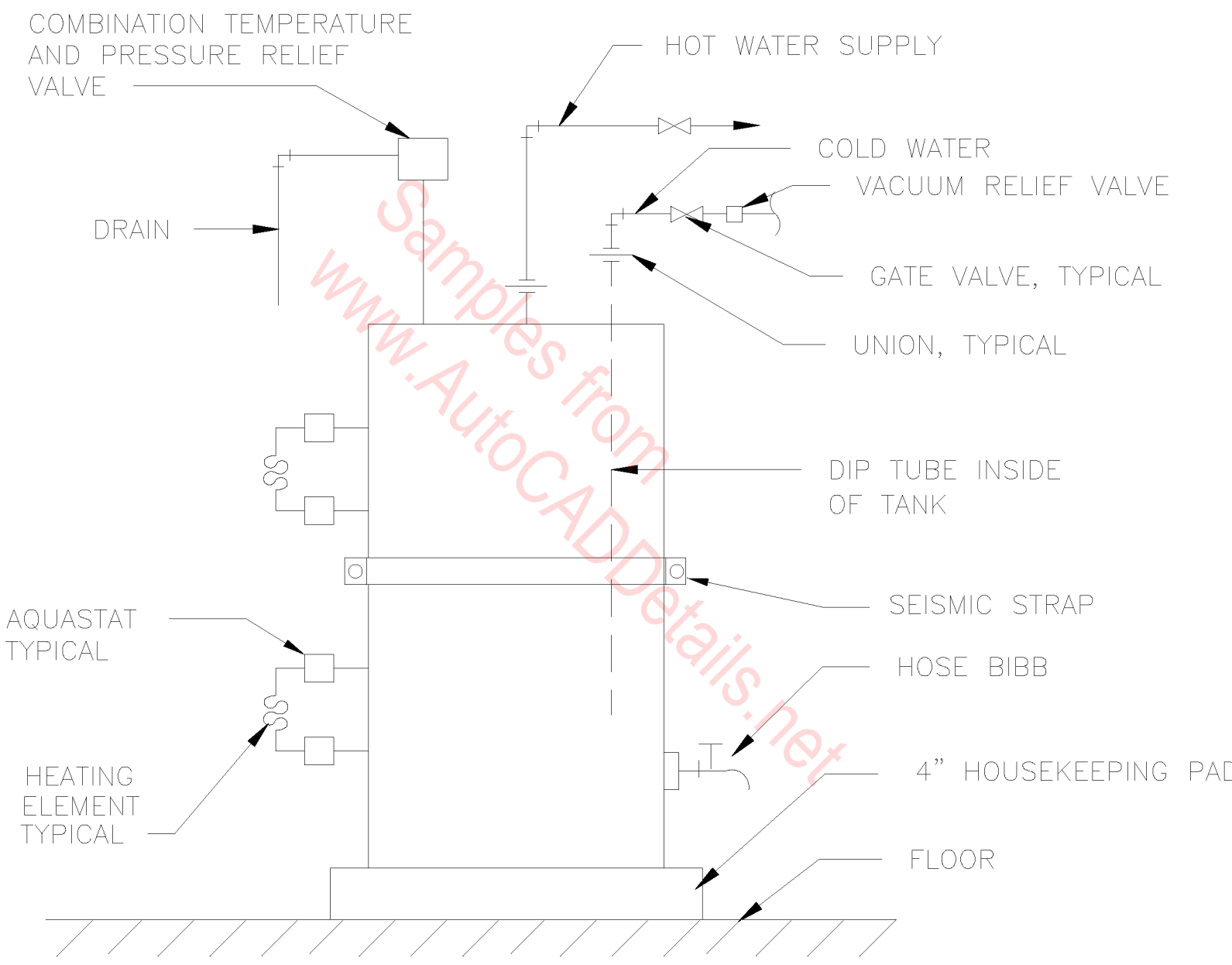
N.T.S.



WATER HEATER DETAIL

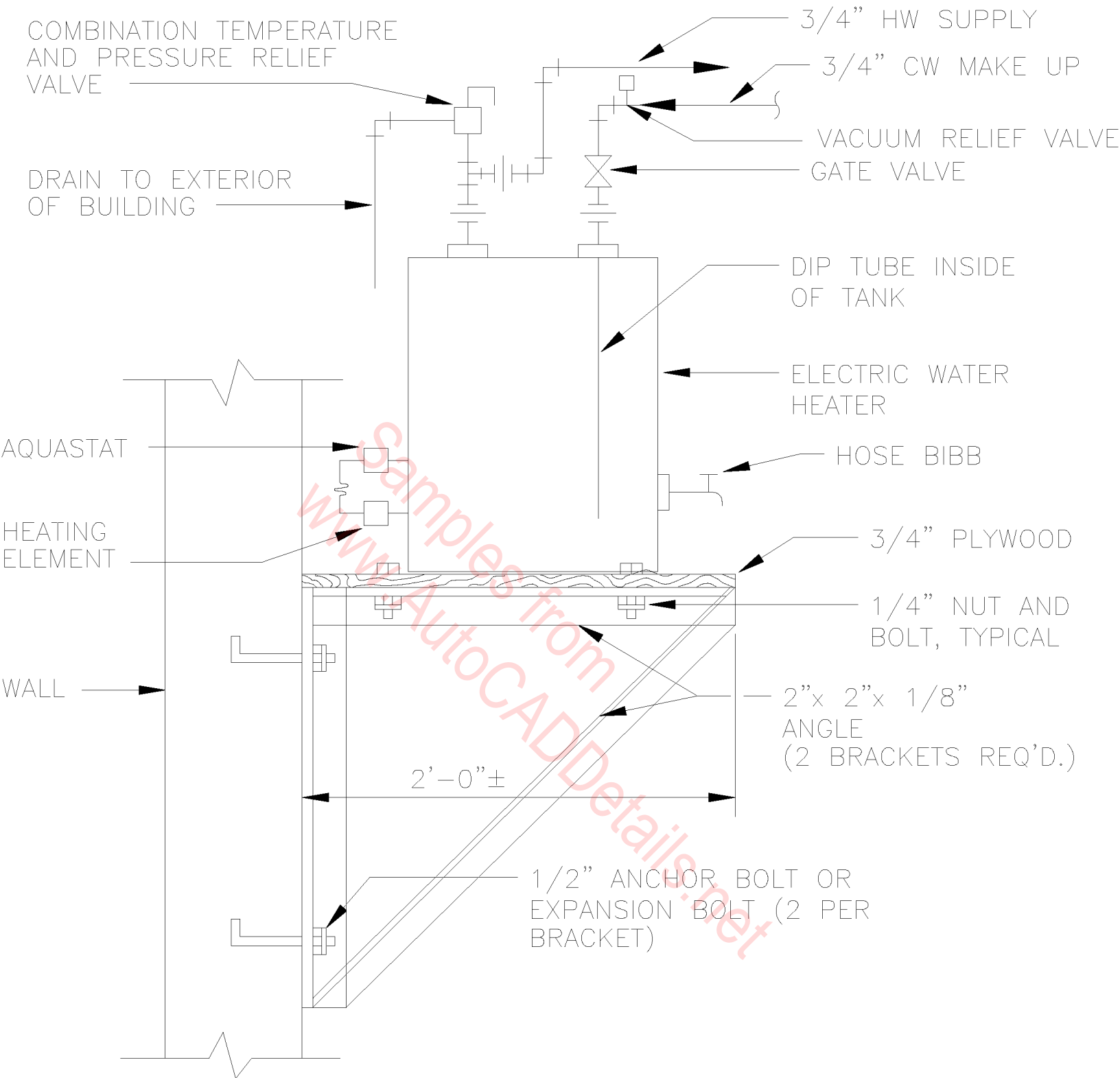
N.T.S.

NOTE TO DESIGNER: N.S.P.C. 10.16.7 REQUIRES: WHERE A HOT WATER STORAGE TANK OR INDIRECT WATER HEATER IS LOCATED AT AN ELEVATION ABOVE THE FIXTURE OUTLETS IN THE SYSTEM A VACUUM RELIEF VALVE SHALL BE INSTALLED ON THE STORAGE TANK.



DOMESTIC ELECTRIC WATER HEATER

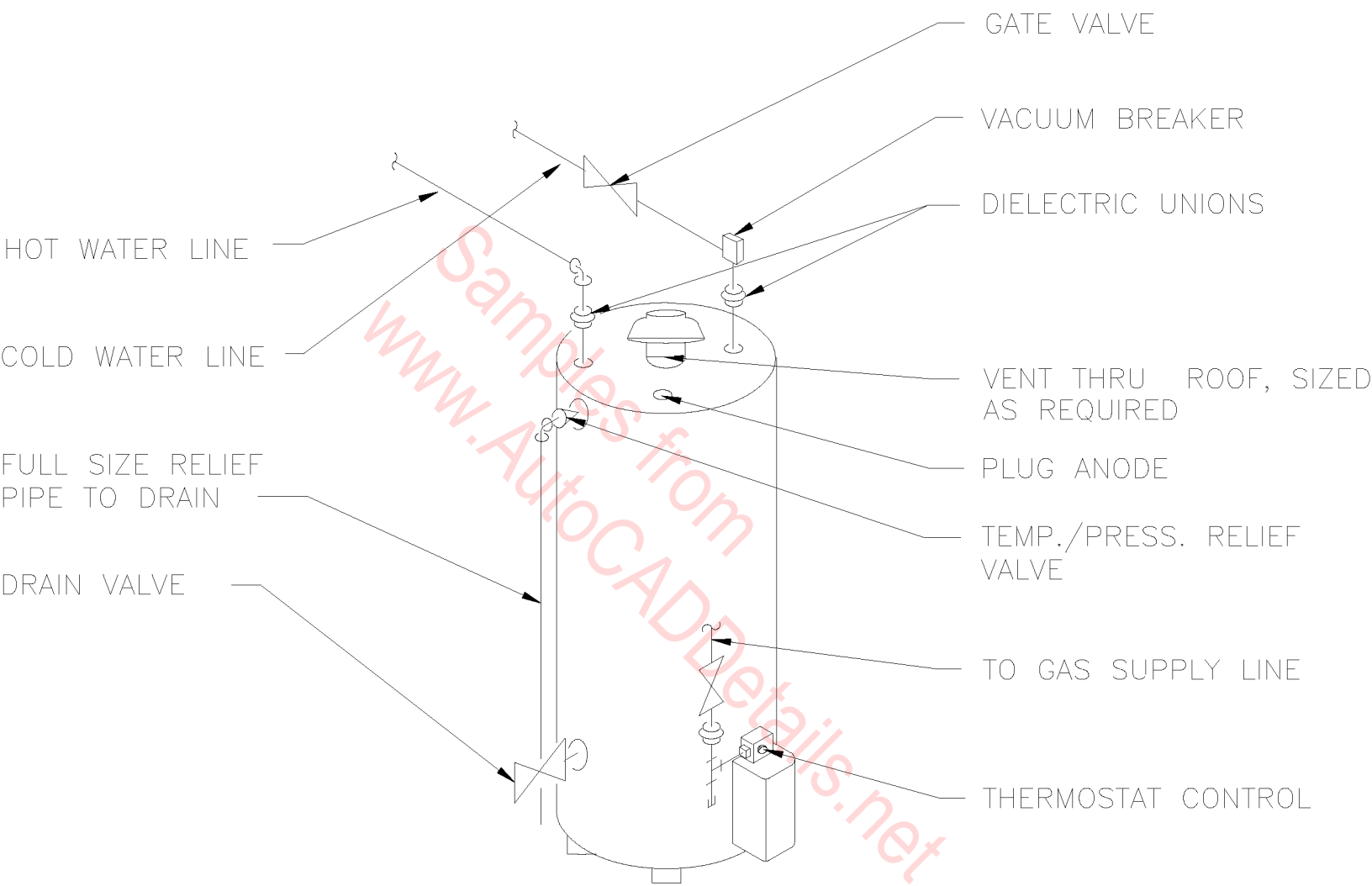
N.T.S.



NOTE TO DESIGNER: N.S.P.C. 10.16.7 REQUIRES: WHERE A HOT WATER STORAGE TANK OR INDIRECT WATER HEATER IS LOCATED AT AN ELEVATION ABOVE THE FIXTURE OUTLETS IN THE SYSTEM A VACUUM RELIEF VALVE SHALL BE INSTALLED ON THE STORAGE TANK.

WALL MOUNTED
ELECTRIC WATER HEATER DETAIL

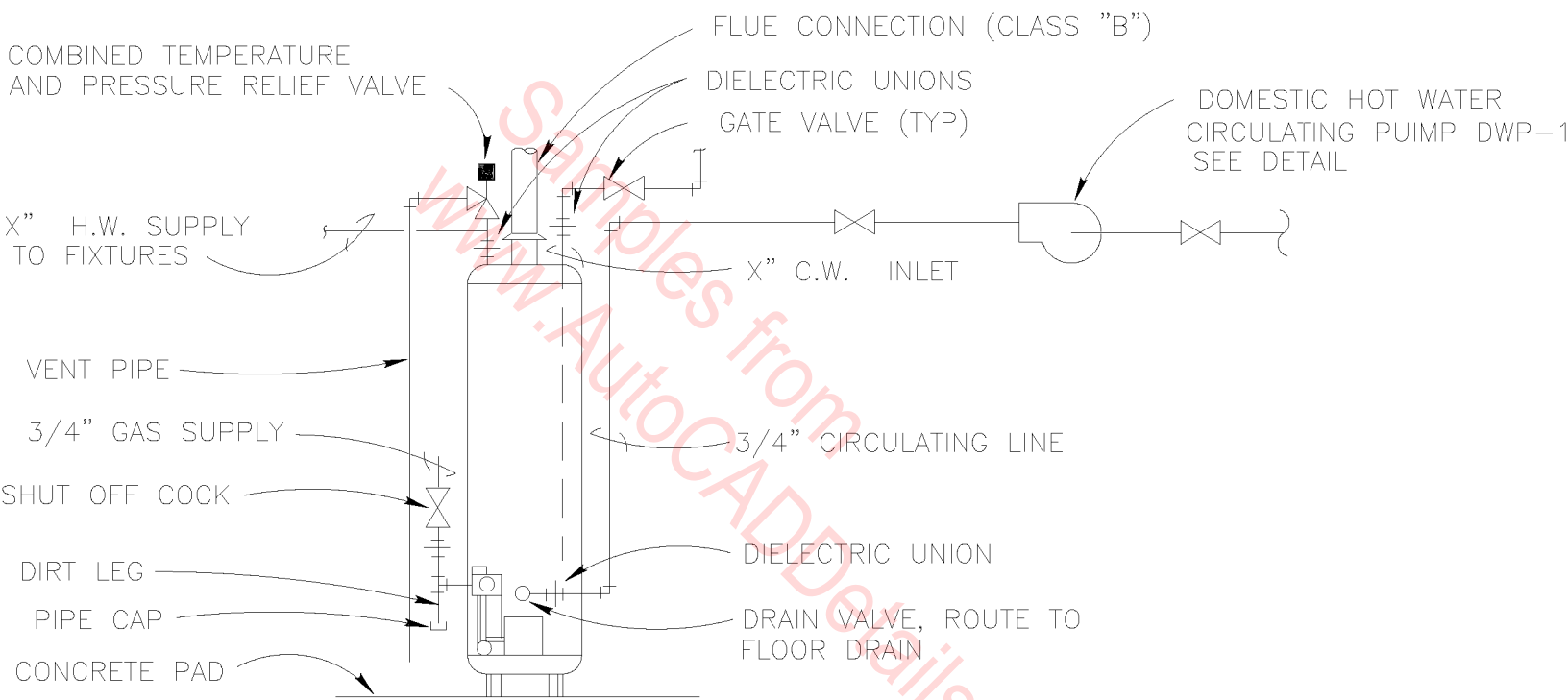
N.T.S.



NOTE: FOR CAPACITY SEE WATER HEATER SCHEDULE

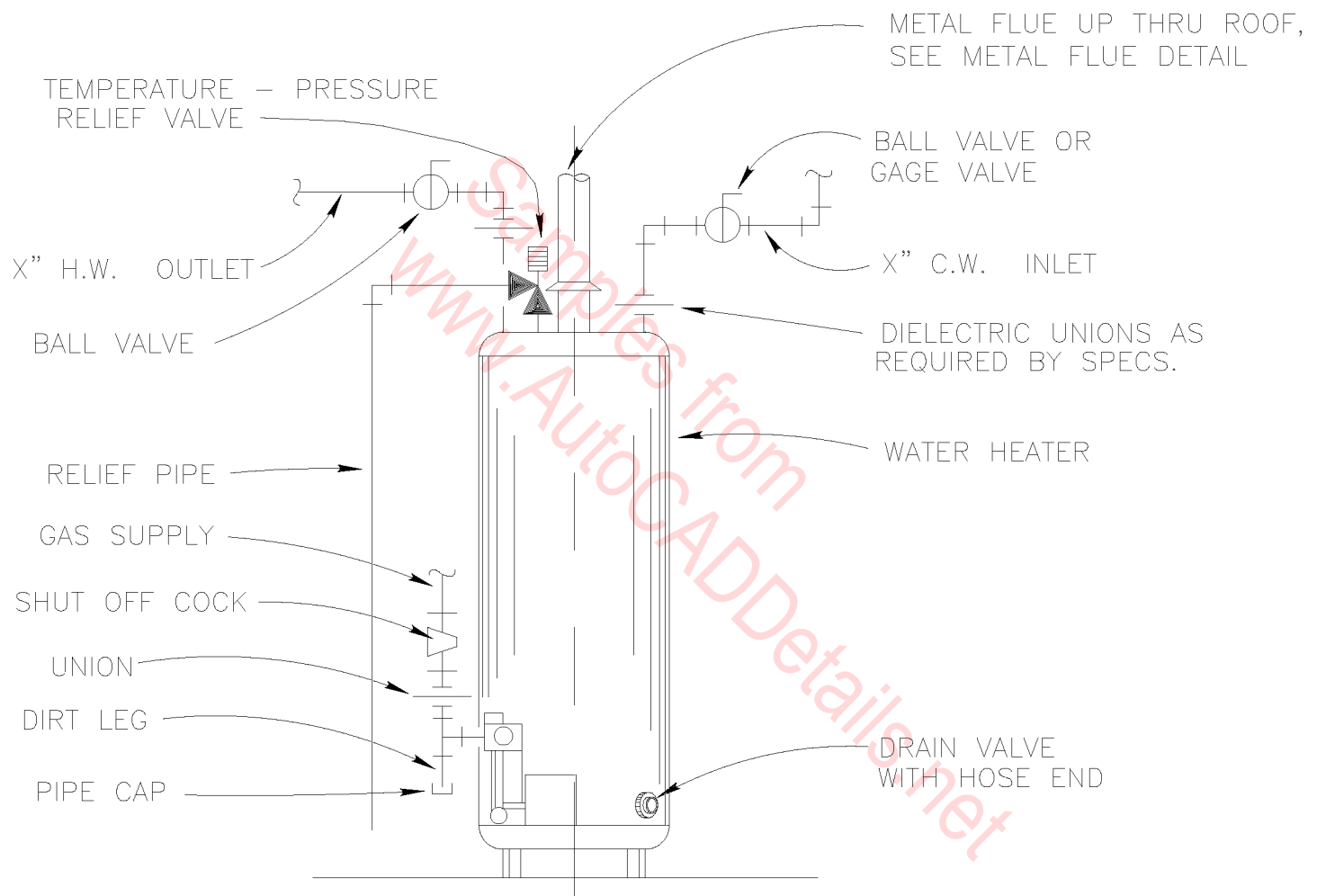
WATER HEATER DETAIL

N.T.S.



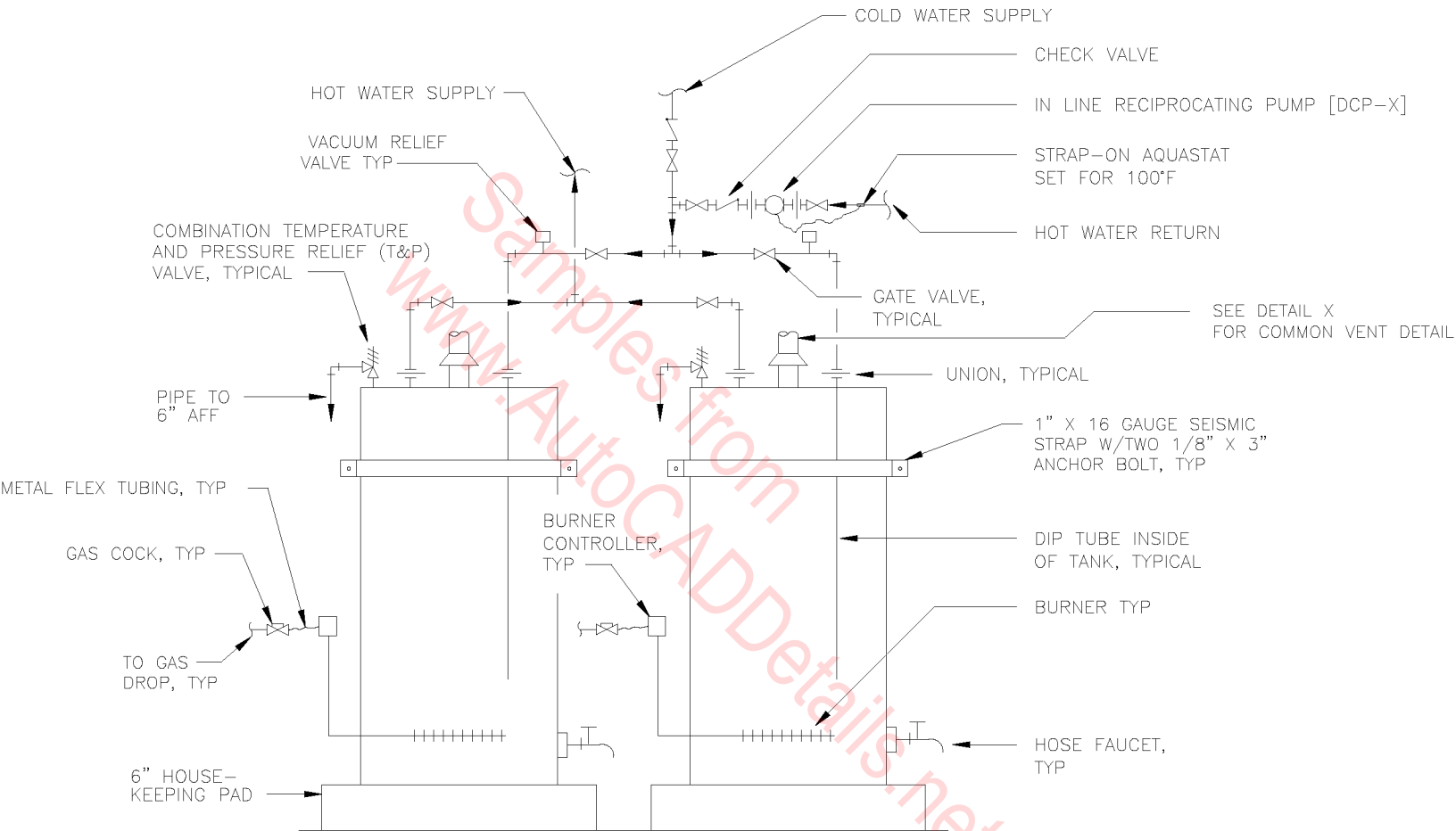
GAS FIRED HOT WATER HEATER
CONNECTIONS WITH RECIRCULATING LOOP

N.T.S.



GAS FIRED HOT WATER HEATER CONNECTIONS

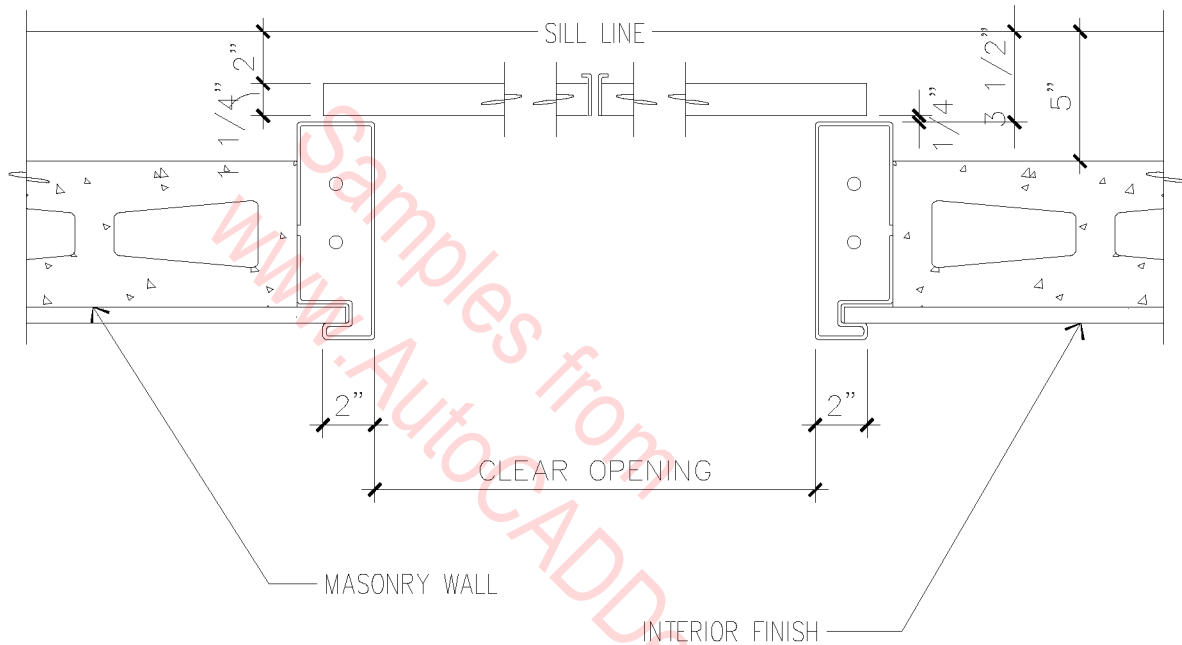
N.T.S.



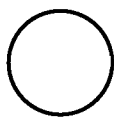
GAS FIRED WATER HEATER

N.T.S.

NOTE TO DESIGNER: N.S.P.C. 10.16.7 REQUIRES: WHERE A HOT WATER STORAGE TANK OR INDIRECT WATER HEATER IS LOCATED AT AN ELEVATION ABOVE THE FIXTURE OUTLETS IN THE SYSTEM A VACUUM RELIEF VALVE SHALL BE INSTALLED ON THE STORAGE TANK.

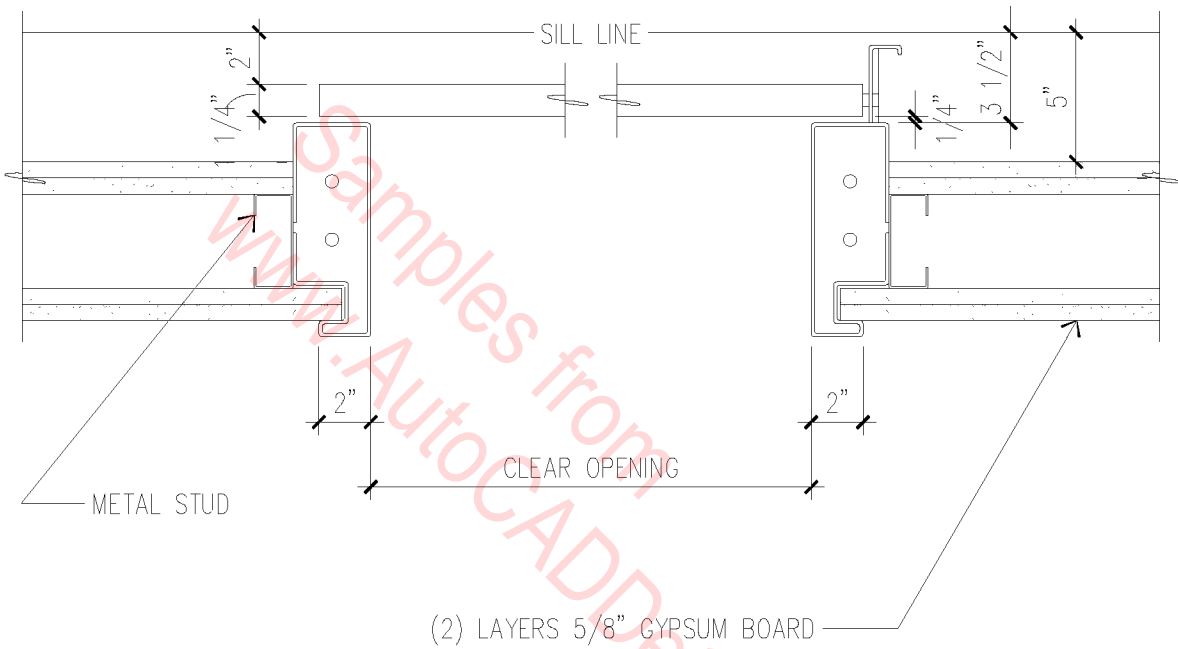


JAMB — SINGLE SPEED
CTR. OPENING ELEVATOR

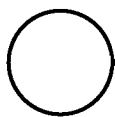


1 1/2" = 1'-0"

14A-1001

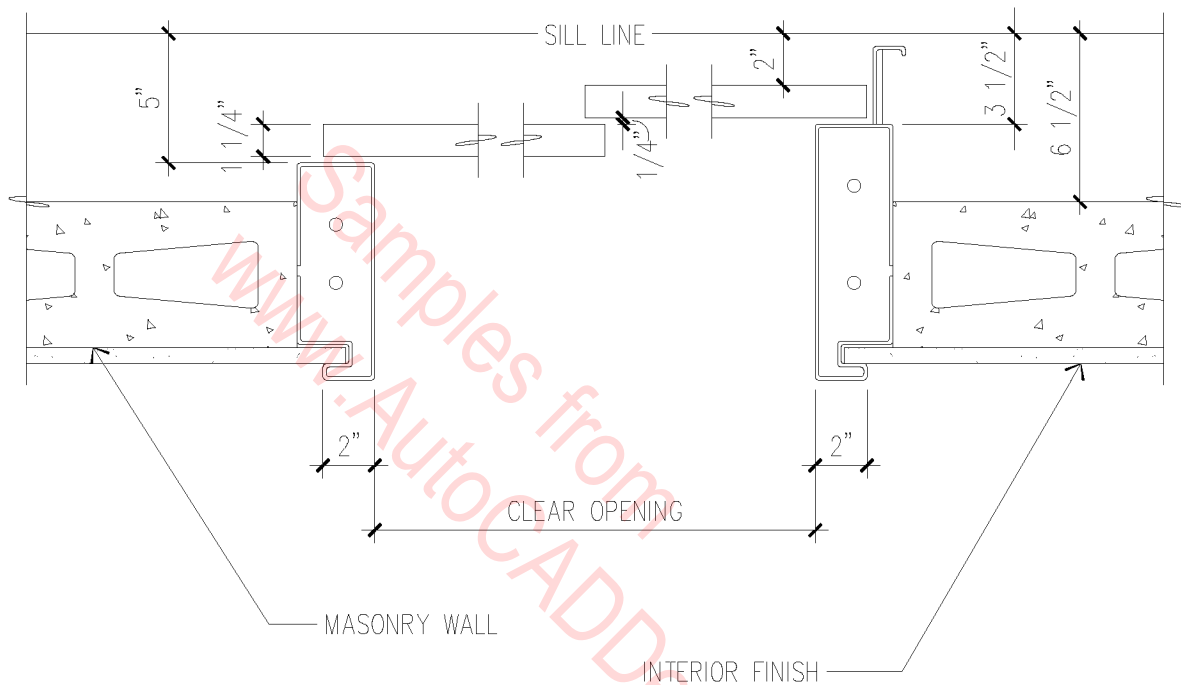


JAMB — SINGLE SPEED
SIDE OPENING ELEVATOR

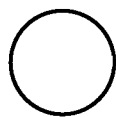


1 1/2" = 1'-0"

14A-1002

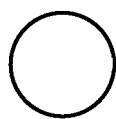
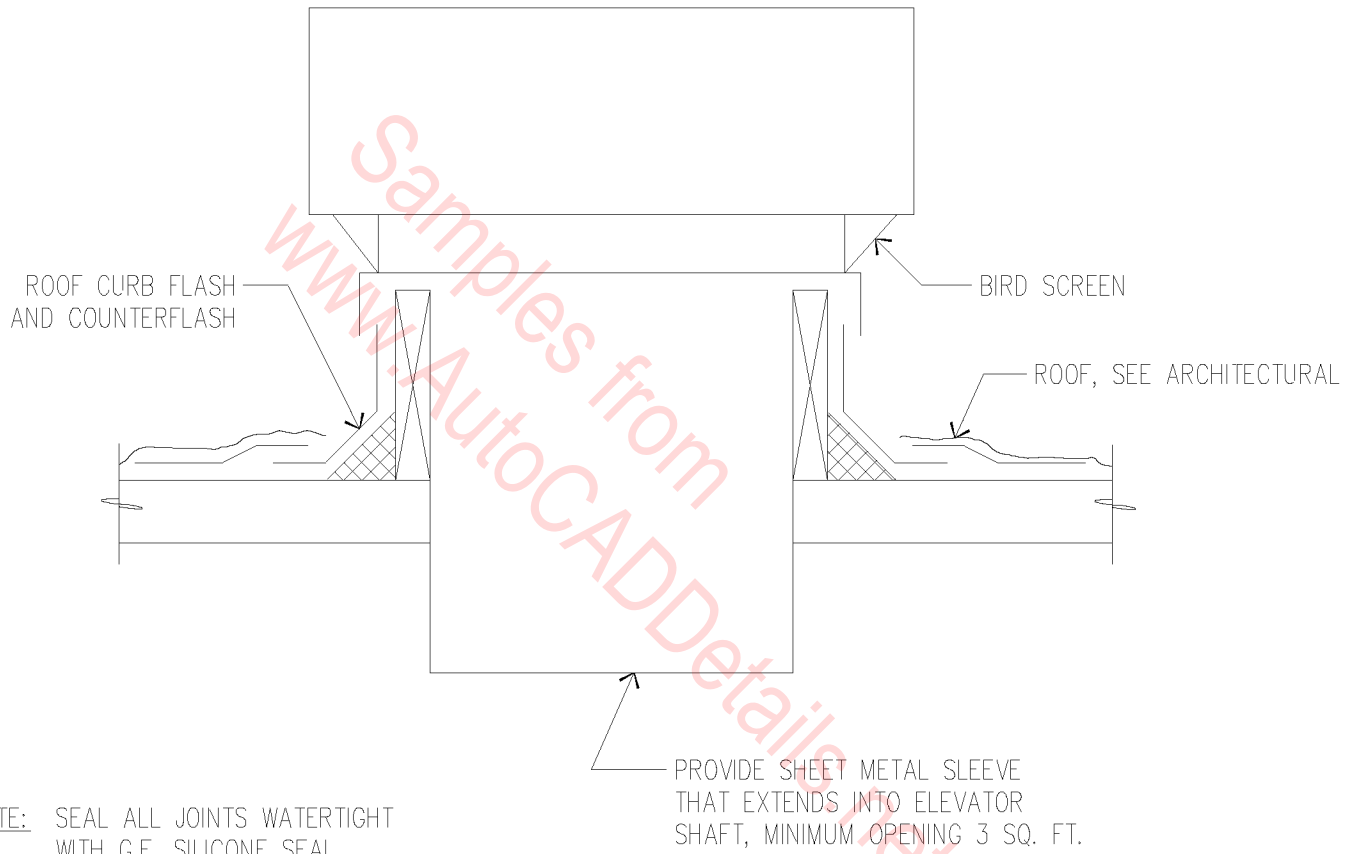


JAMB — TWO SPEED
SIDE OPENING ELEVATOR



1 1/2" = 1'-0"

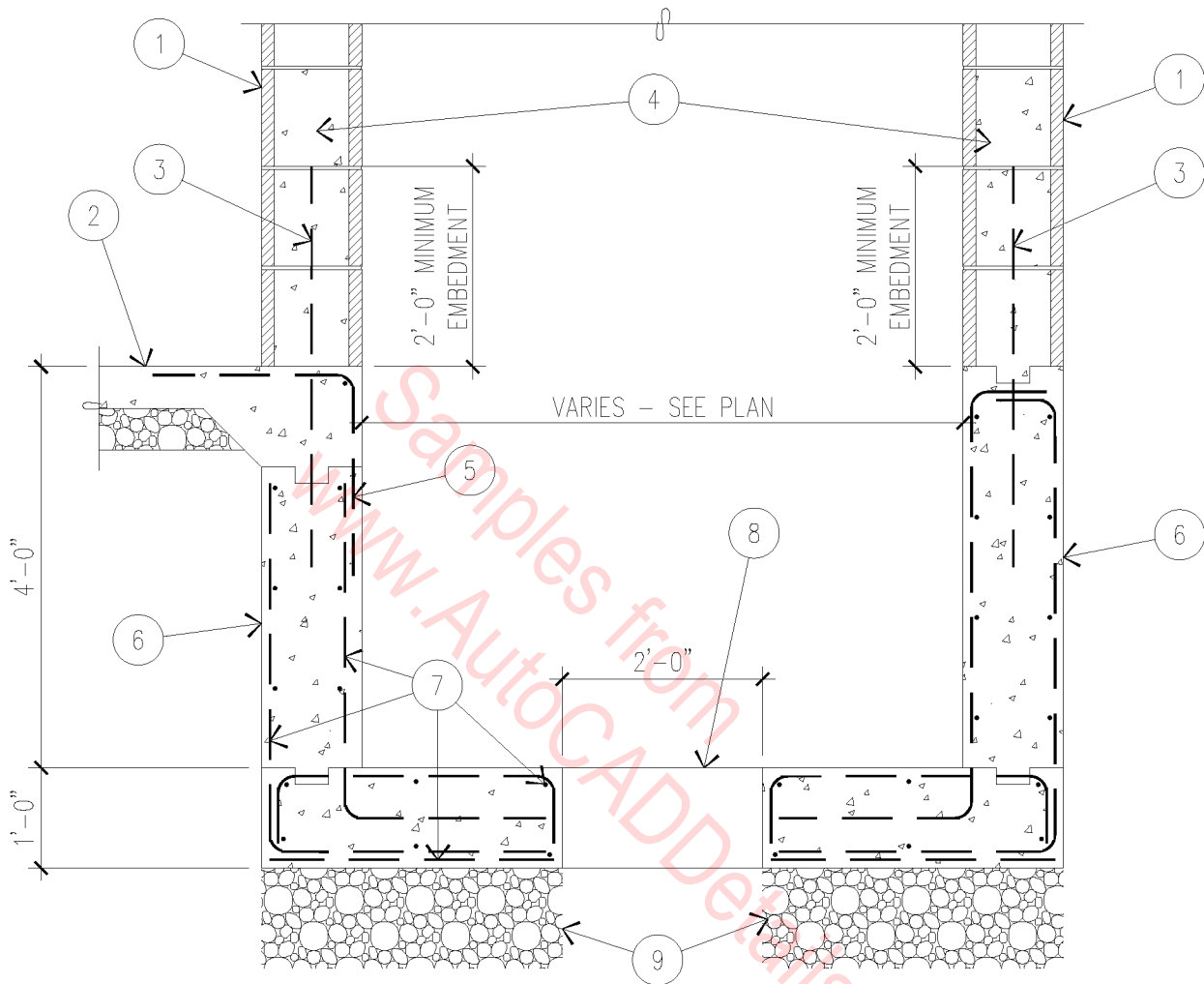
14A-1003



ELEVATOR RELIEF VENT

N.T.S.

14A-1004



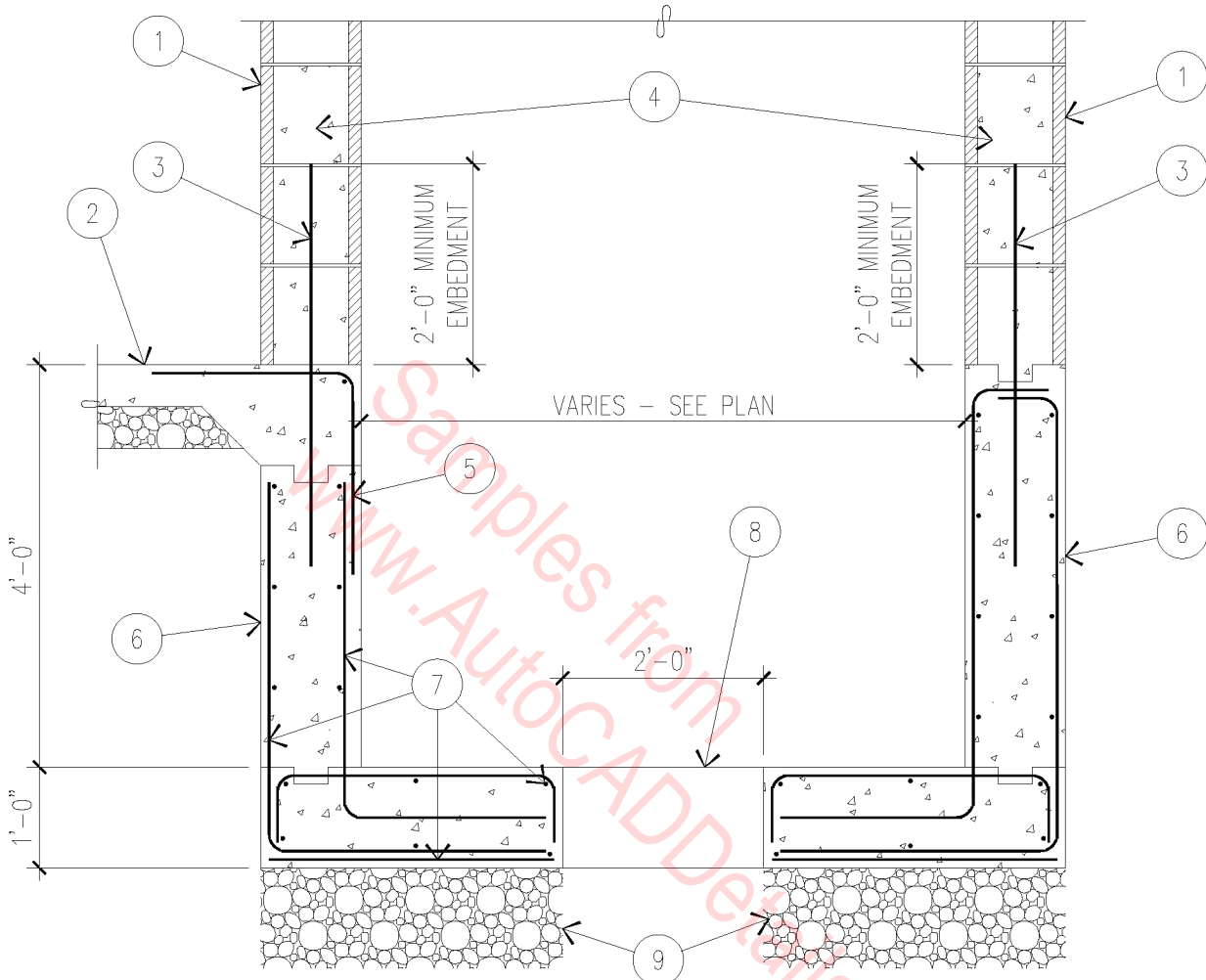
1. 12" THICK C.M.U.
2. 5" CONCRETE SLAB OVER
5" AGGREGATE BASE COURSE.
3. #5 REBAR, HORIZONTAL,
X 4'-0" LONG AT 16" O.C.
4. GROUT BOTTOM (3) COURSES
SOLID.

5. #5 X 4'-0" LONG AT 12" O.C.
6. 12" THICK CONCRETE PIT WALL.
7. #5 REBAR AT 12 O.C., EACH
WAY.
8. 2'-0" X 2'-0" OPENING IN SLAB.
9. CRUSHED STONE, COMPACTED.

SECTION THROUGH ELEVATOR PIT

1/2" = 1'-0"

14A-1005

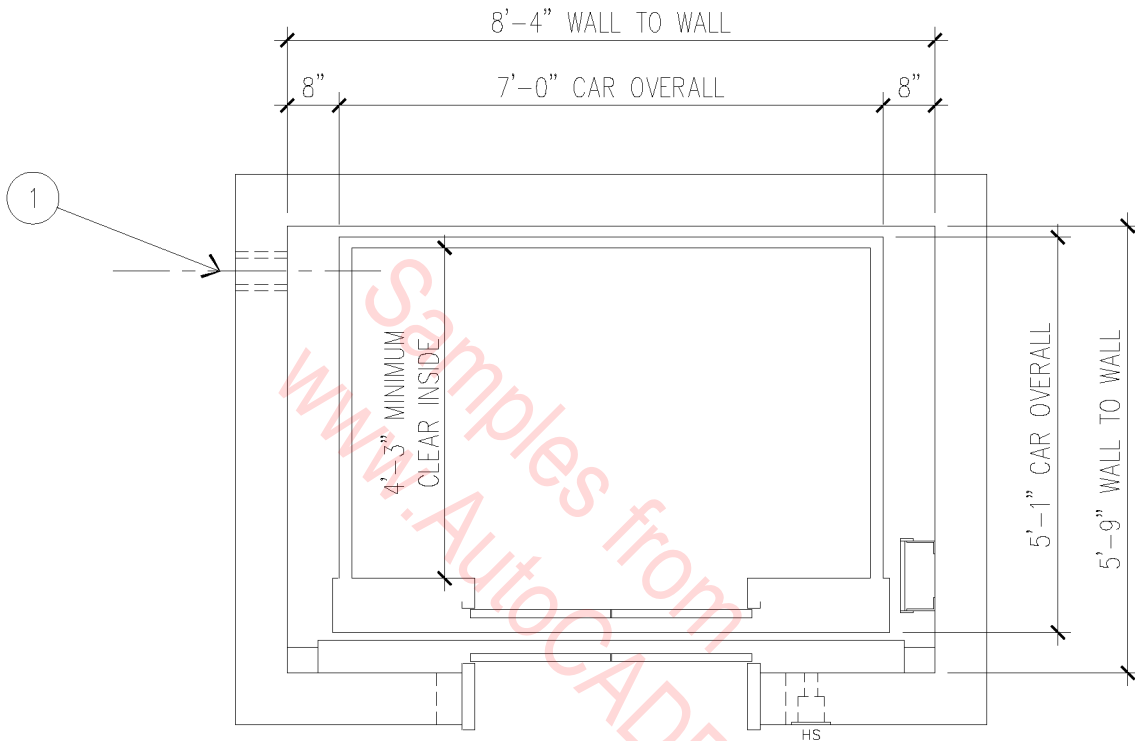


- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 12" THICK C.M.U. 2. 5" CONCRETE SLAB OVER
5" AGGREGATE BASE COURSE. 3. #5 REBAR, HORIZONTAL,
X 4'-0" LONG AT 16" O.C. 4. GROUT BOTTOM (3) COURSES
SOLID. | <ol style="list-style-type: none"> 5. #5 X 4'-0" LONG AT 12" O.C. 6. 12" THICK CONCRETE PIT WALL. 7. #5 REBAR AT 12 O.C., EACH
WAY. 8. 2'-0" X 2'-0" OPENING IN SLAB. 9. CRUSHED STONE, COMPACTED. |
|--|---|

SECTION THROUGH ELEVATOR PIT

1/2" = 1'-0"

14A-1005

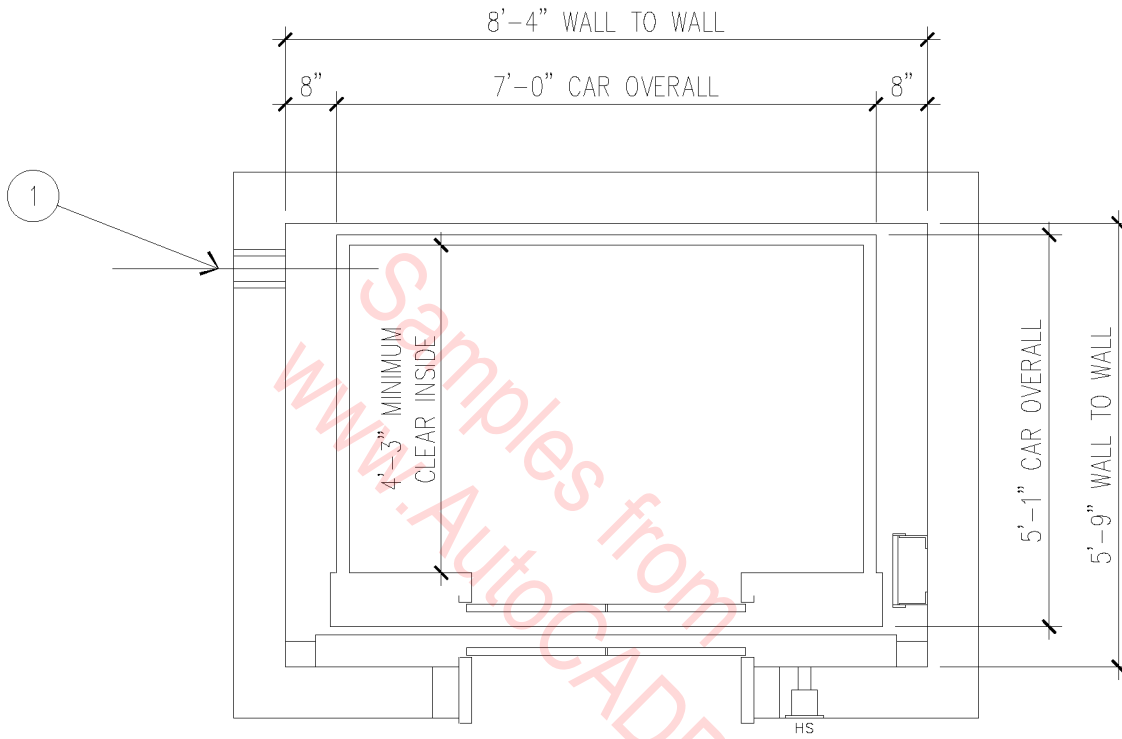


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

3/8" = 1'-0"

14A-1006

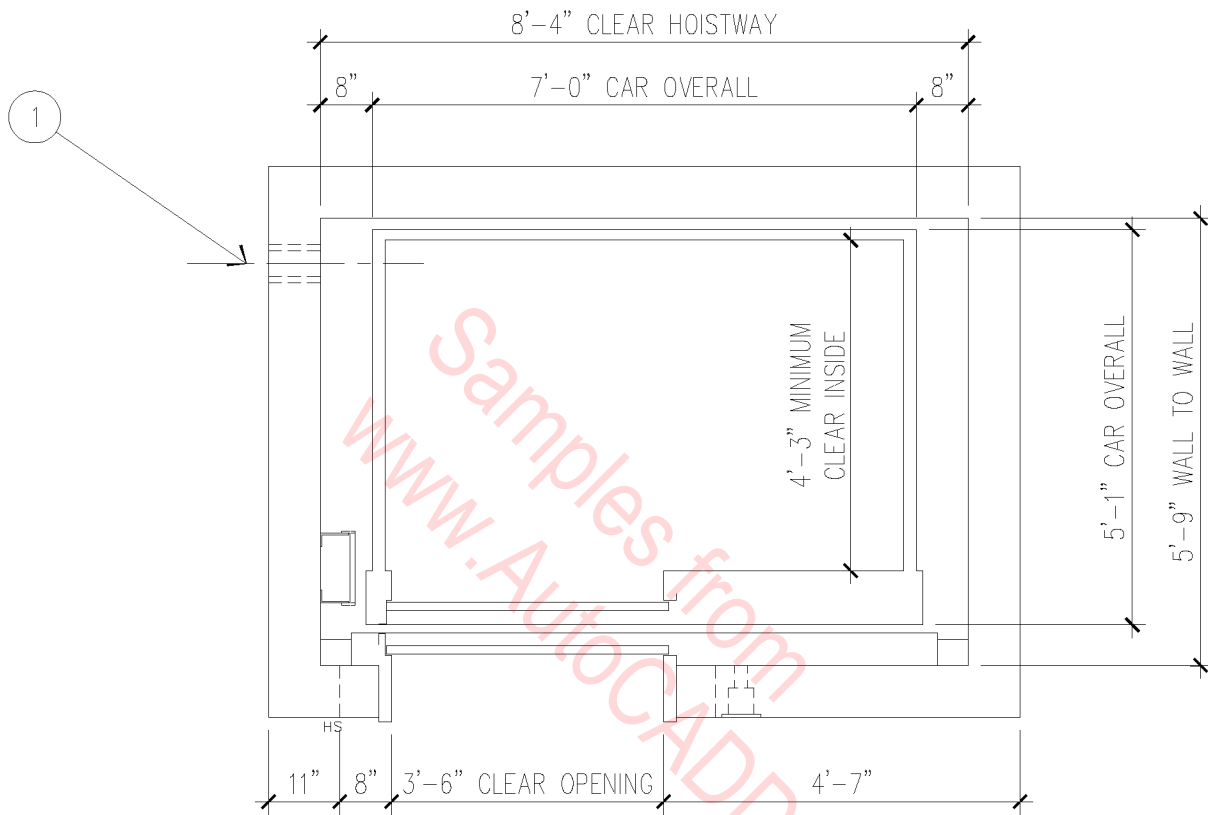


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

3/8" = 1'-0"

14A-1006

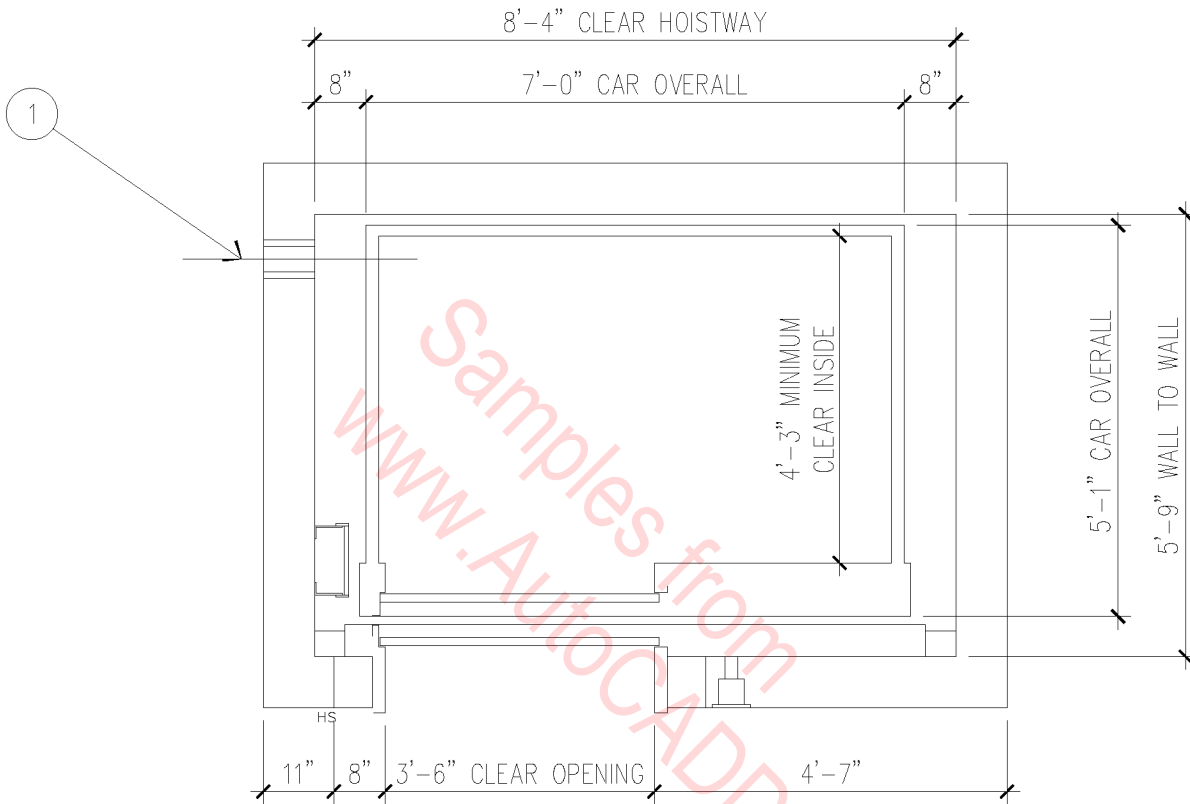


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

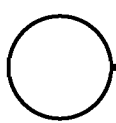
HOISTWAY PLAN

3/8" = 1'-0"

14A-1007



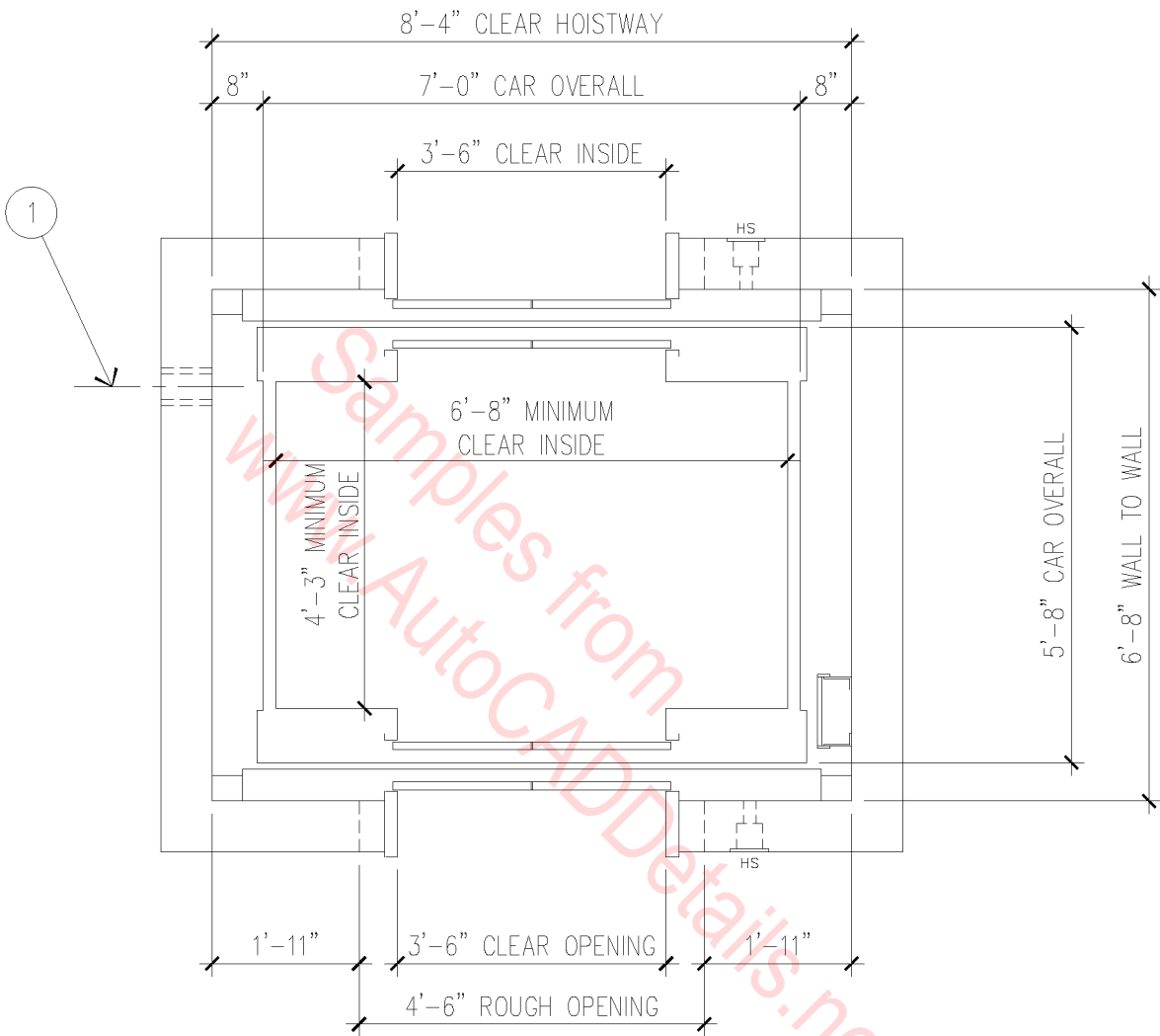
1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.



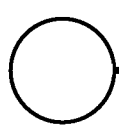
HOISTWAY PLAN

3/8" = 1'-0"

14A-1007



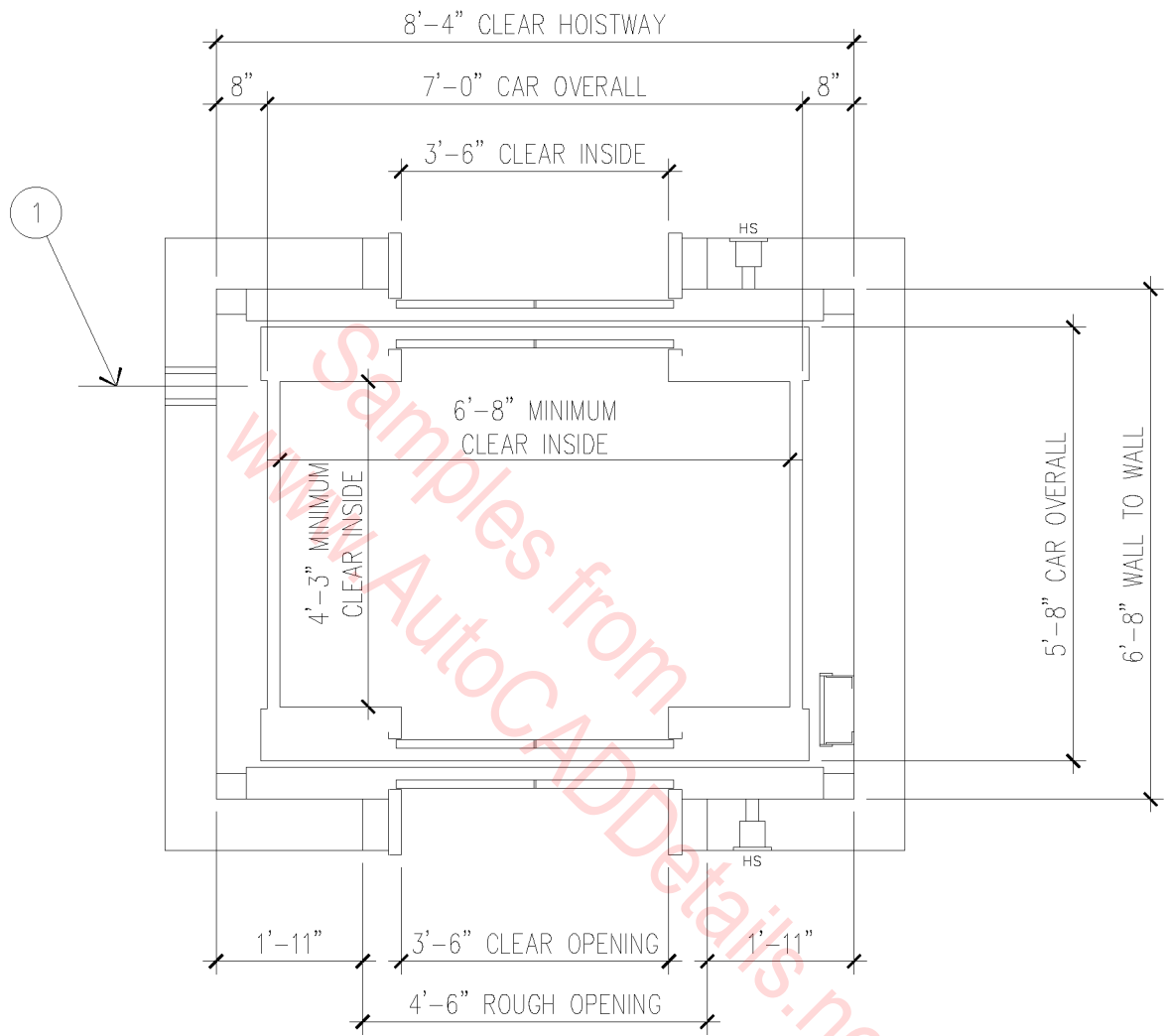
1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.



HOISTWAY PLAN

3/8" = 1'-0"

14A-1008

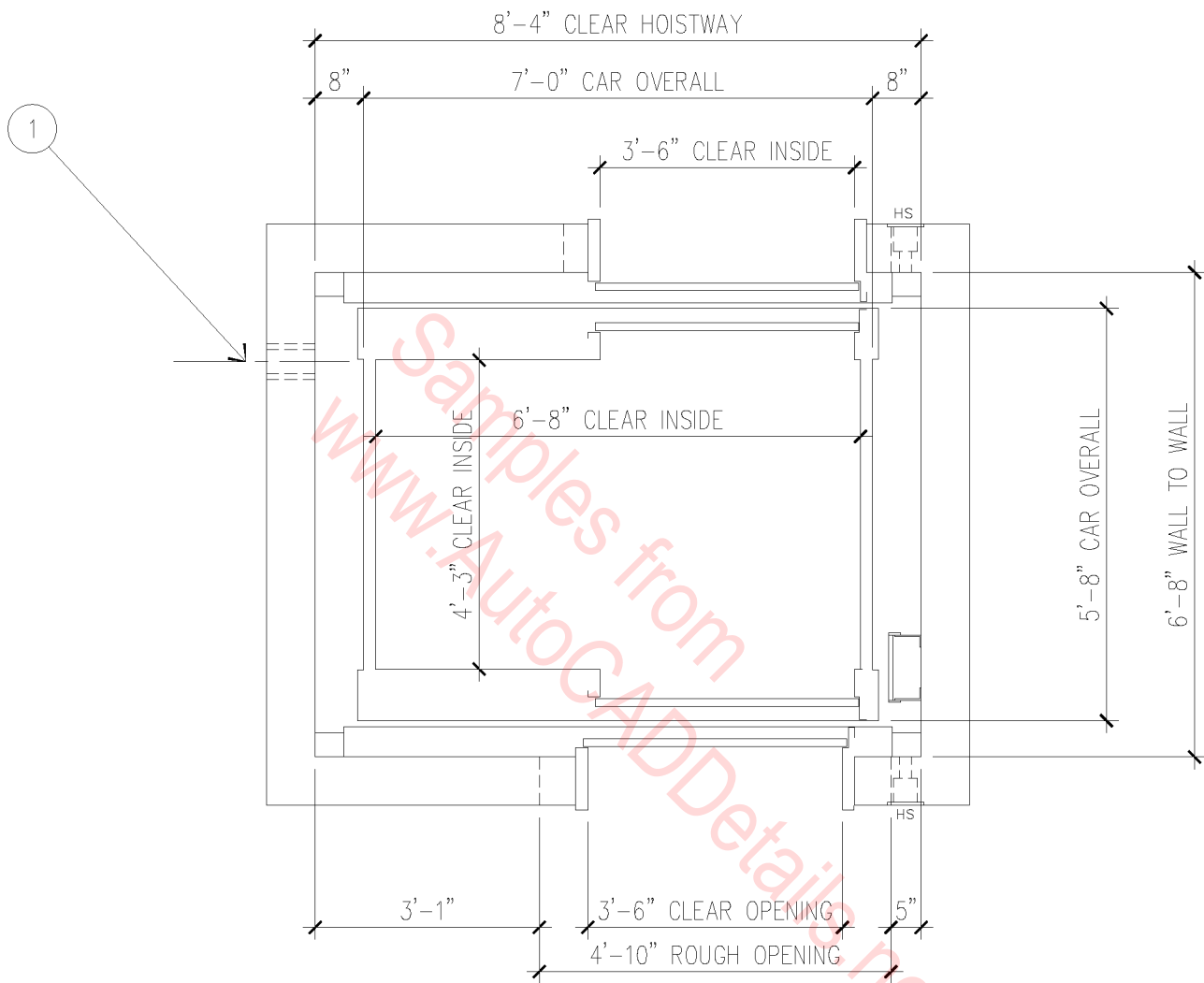


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

3/8" = 1'-0"

14A-1008

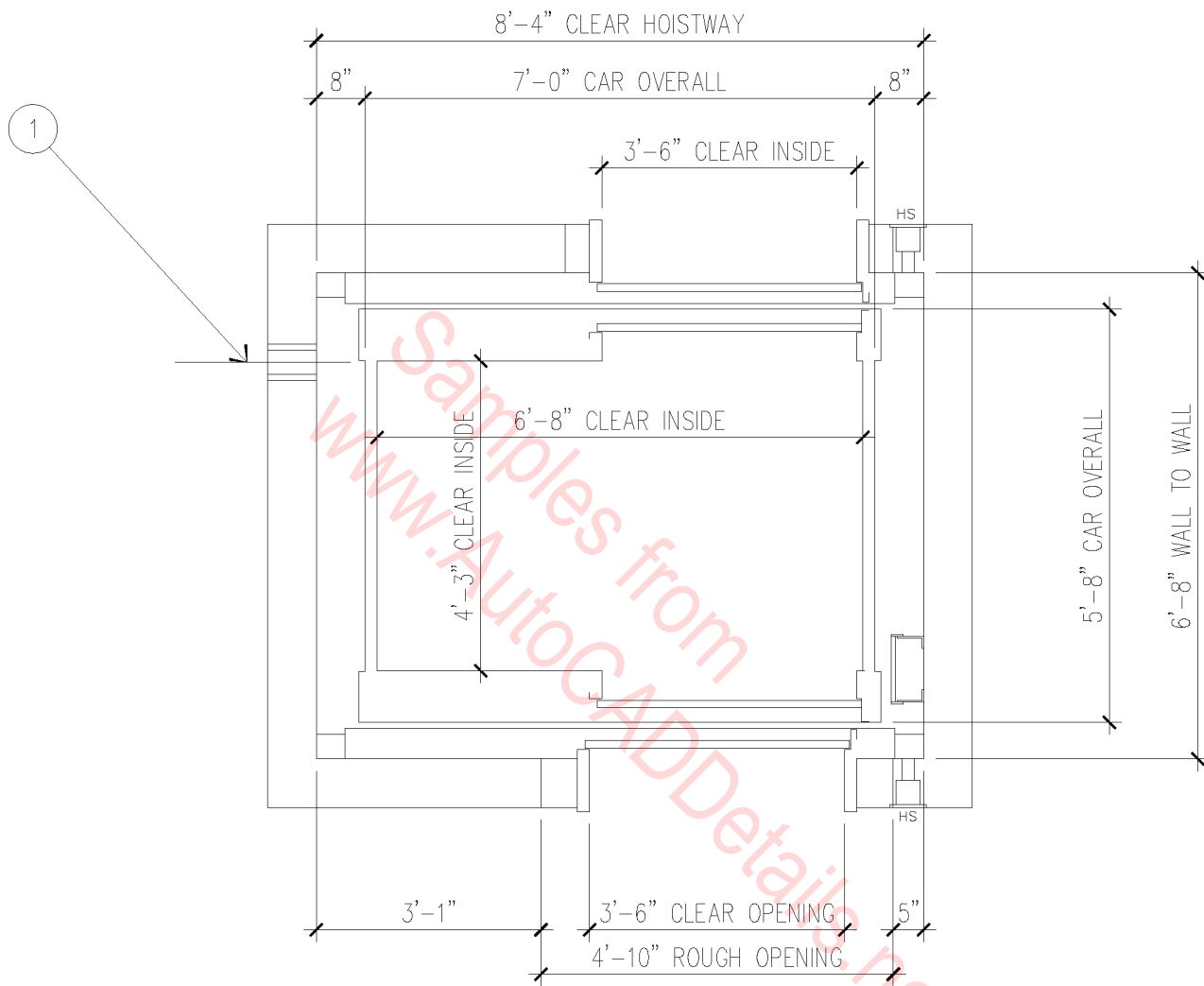


1. 4" W X 3" H ELECTRIC RACEWAY,
 8" X 8" PIPE SLEEVE -
 LOCATION DETERMINED BY
 RELATIONSHIP TO MACHINE ROOM.

○ HOISTWAY PLAN

3/8" = 1'-0"

14A-1009

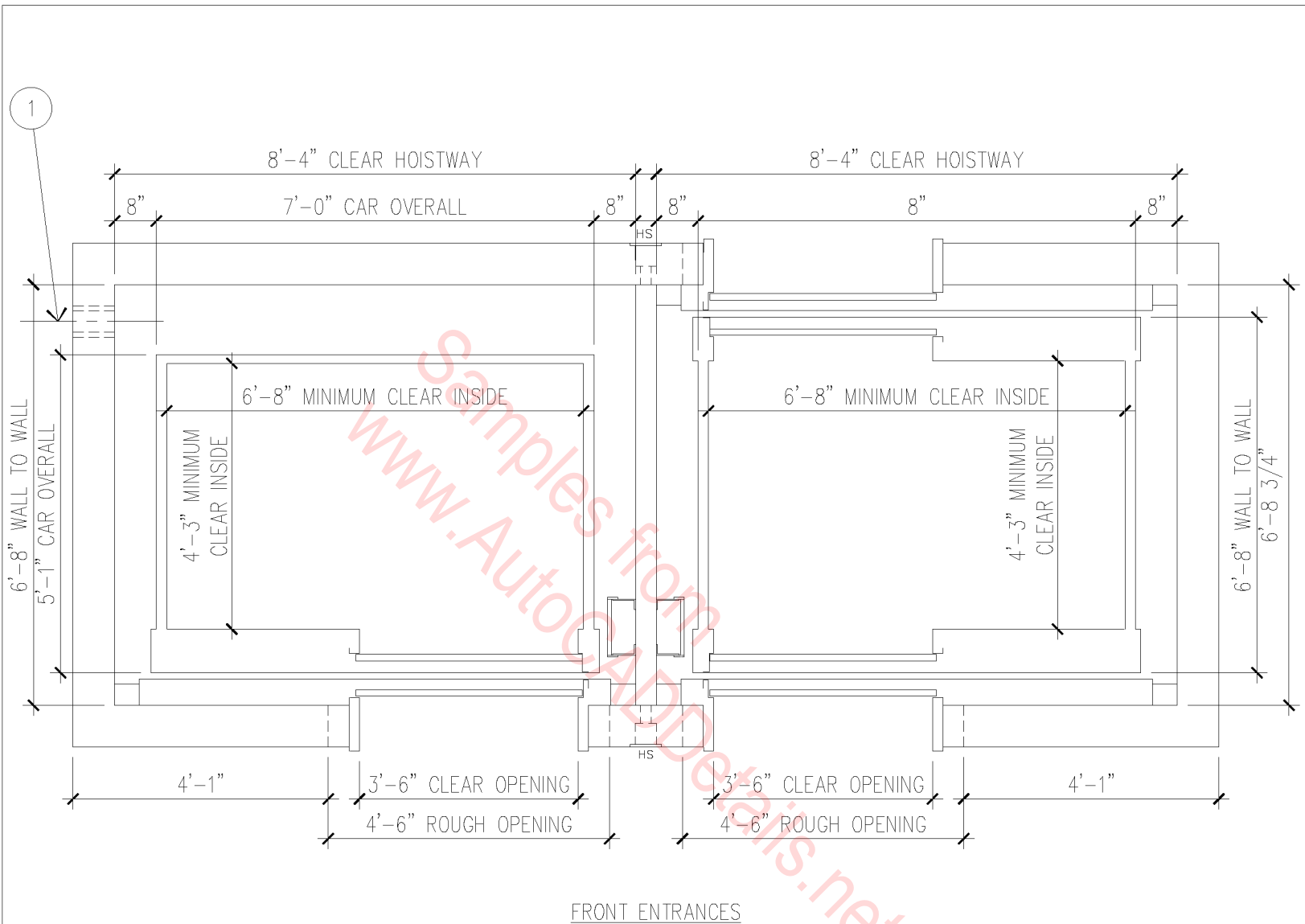


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

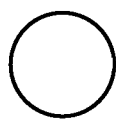
3/8" = 1'-0"

14A-1009



FRONT ENTRANCES

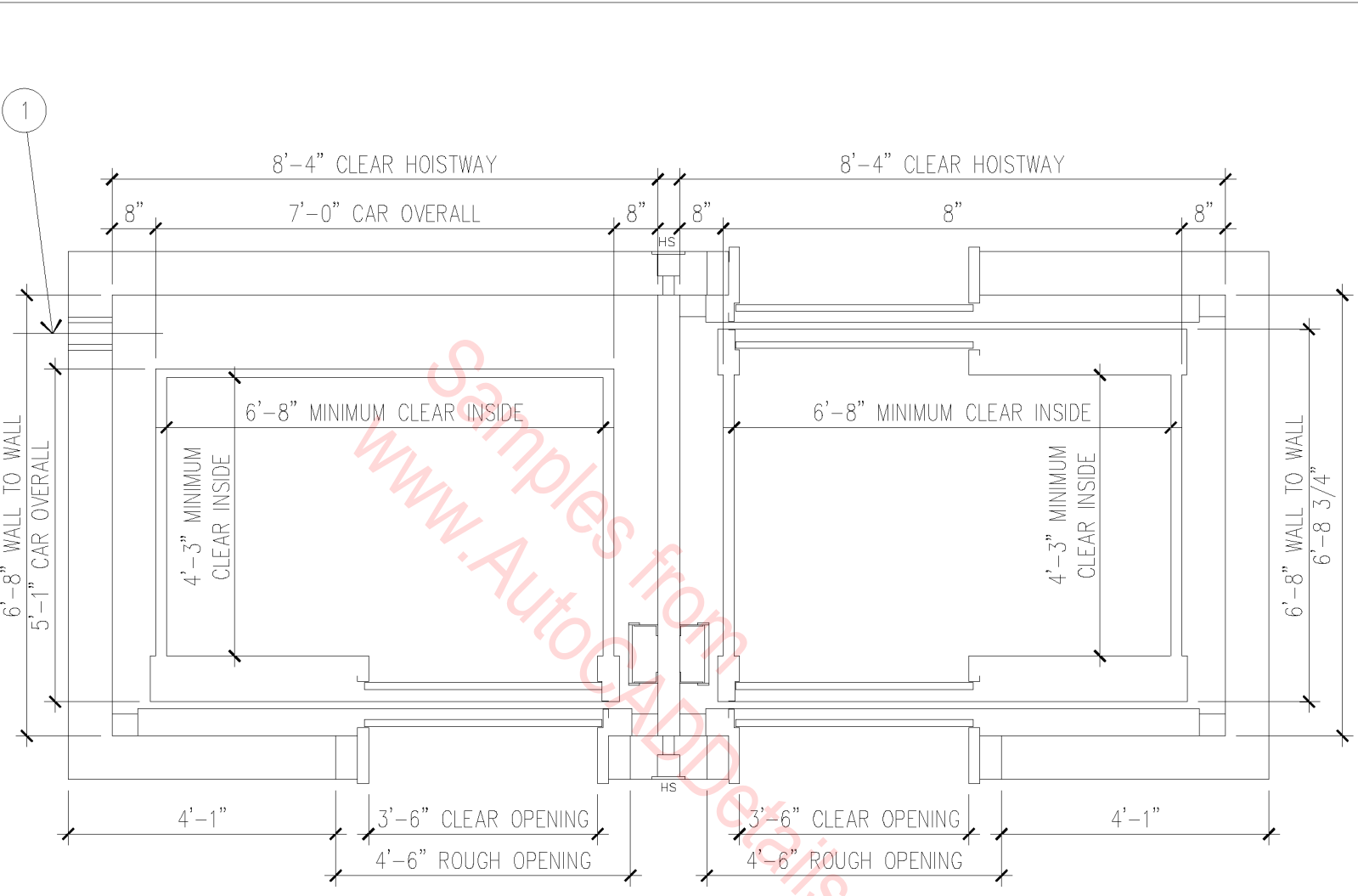
1. 4"W X 3"H ELECTRIC RACEWAY
8" X 8" PIPE SLEEVE, LOCATION DETERMINED BY RELATIONSHIP TO MACHINE ROOM.



HOISTWAY PLAN

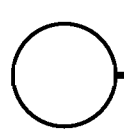
3/8" = 1'-0"

14A-1010



FRONT ENTRANCES

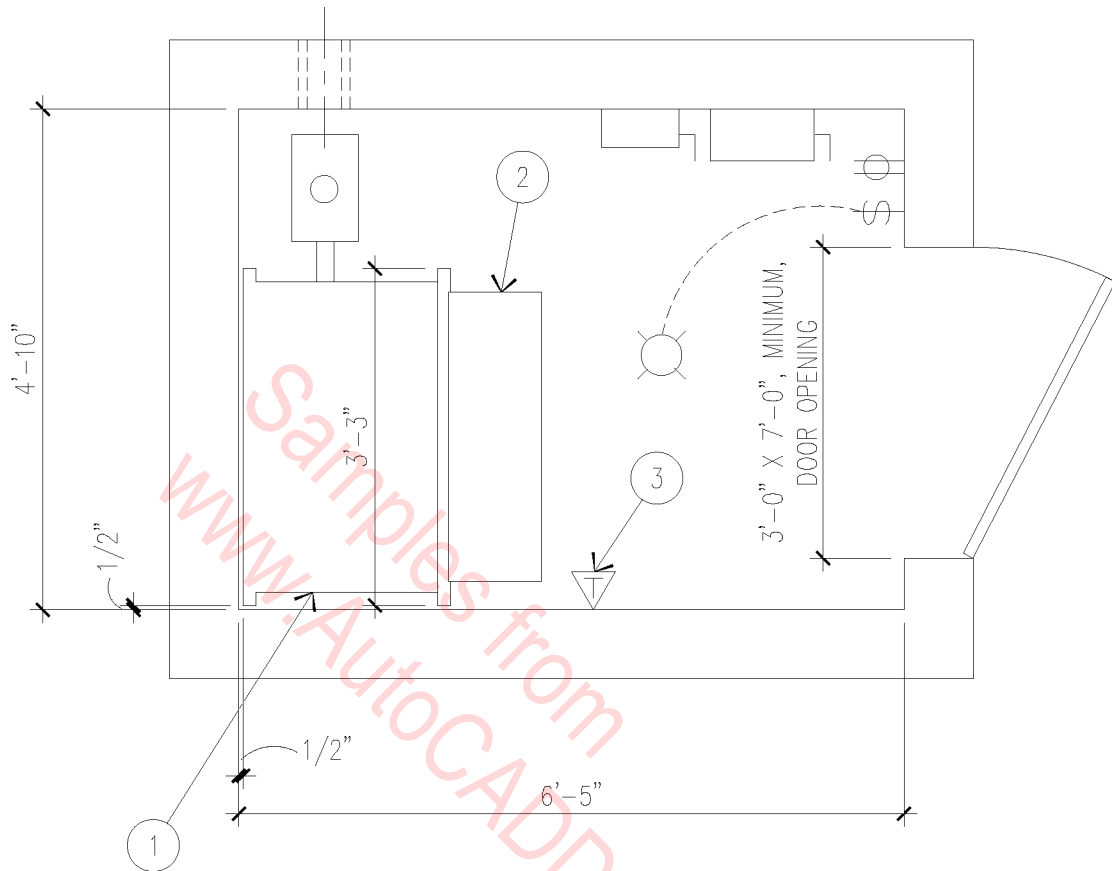
- 1. 4"W X 3"H ELECTRIC RACEWAY
8" X 8" PIPE SLEEVE, LOCATION
DETERMINED BY RELATIONSHIP TO
MACHINE ROOM.



HOISTWAY PLAN

3/8" = 1'-0"

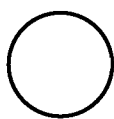
14A-1010



1. POWER UNIT TANK: 3'-10" HIGH (MAXIMUM), 1900 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 5'-5 3/4" HIGH.
3. CONNECTION.

NOTES:

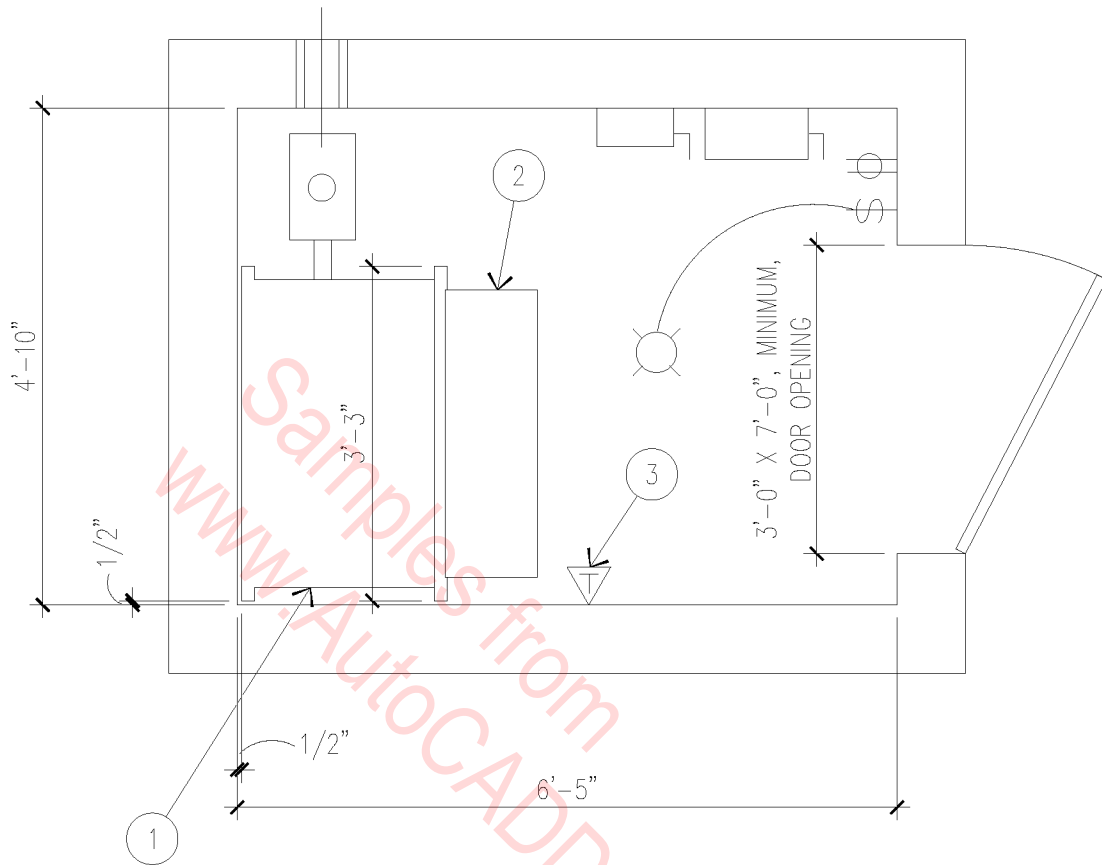
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 2" OIL LINE FROM TANK TO 2" SILENCER WITH 2" SHUTOFF VALVE AND 2" OIL LINE (0.154") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

1/2" = 1'-0"

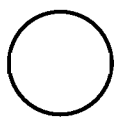
14A-1011



1. POWER UNIT TANK: 3'-10" HIGH (MAXIMUM), 1900 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 5'-5 3/4" HIGH.
3. CONNECTION.

NOTES:

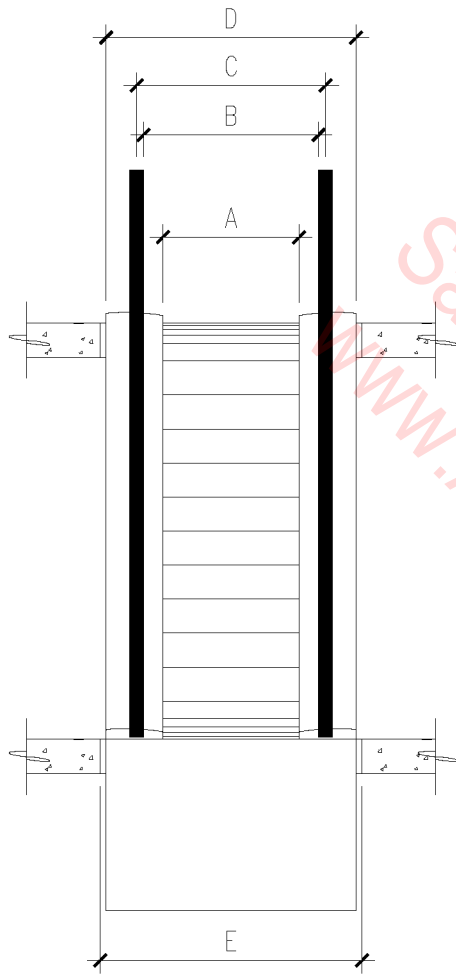
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 2" OIL LINE FROM TANK TO 2" SILENCER WITH 2" SHUTOFF VALVE AND 2" OIL LINE (0.154") FROM SHUTOFF VALVE TO JACK.



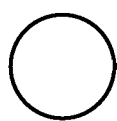
ELEVATOR EQUIPMENT

1/2" = 1'-0"

14A-1011



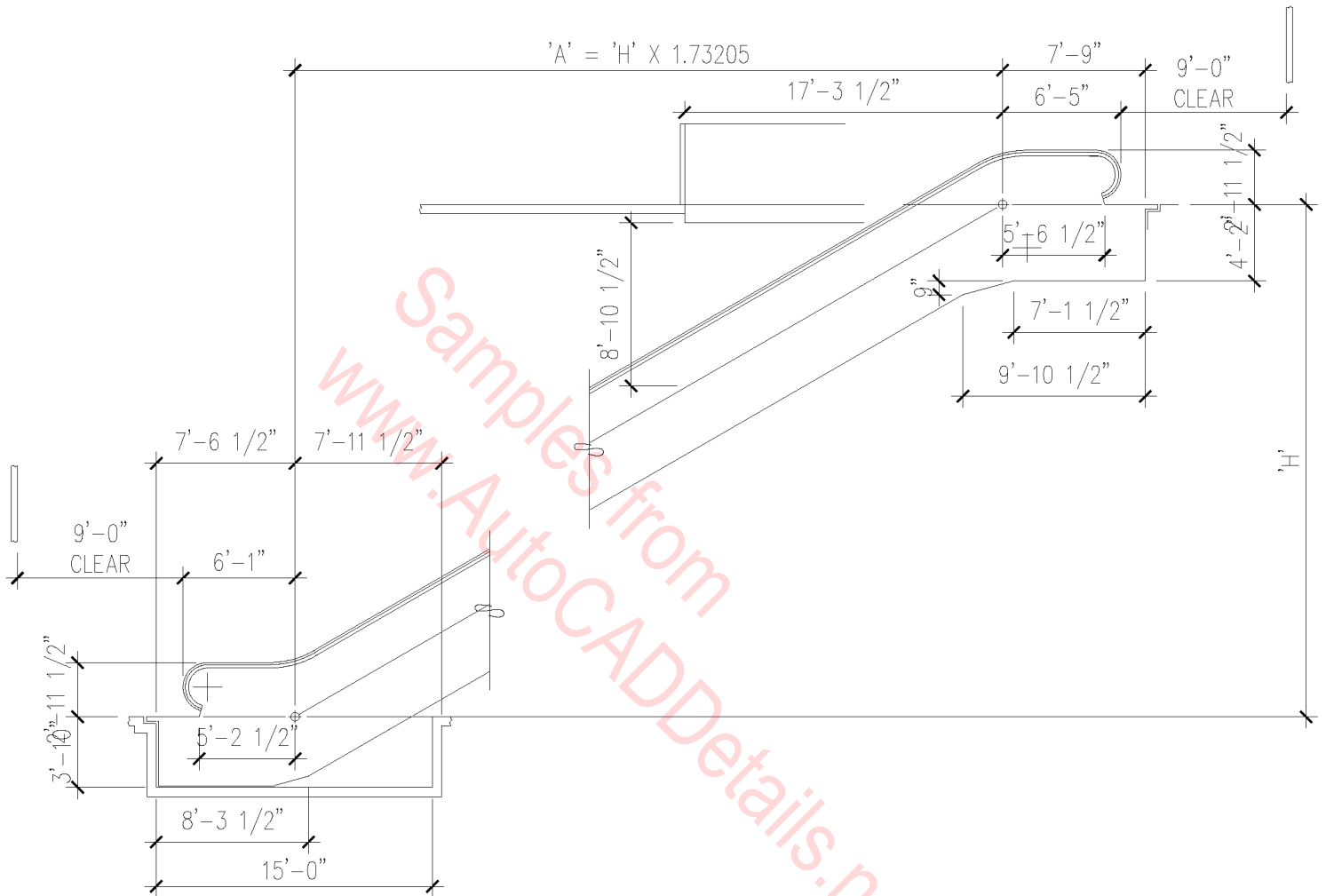
NOMINAL ESCALATOR WIDTH	32"	40"	48"
A (STEP WIDTH)	1'-11 5/8"	2'-7 1/2"	3'-3 3/8"
B (INSIDE TO INSIDE HANDRAIL)	2'-8 5/8"	3'-4 1/2"	4'-0 3/8"
C (CENTERLINE TO CENTERLINE HANDRAIL)	2'-11 7/8"	3'-7 3/4"	4'-3 5/8"
D (OUTERDECK TO OUTERDECK DIMENSION)	4'-2"	4'-9 7/8"	5'-5 3/4"
E (WELLWAY OPENING, SINGLE UNIT)	4'-4 3/4"	5'-0 5/8"	5'-8 1/2"
E (WELLWAY OPENING, TWO ADJACENT UNITS)	8'-7 1/8"	9'-10 7/8"	11'-2 5/8"



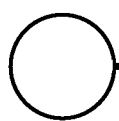
ESCALATOR PROFILE

1/4" = 1'-0"

14A-3002



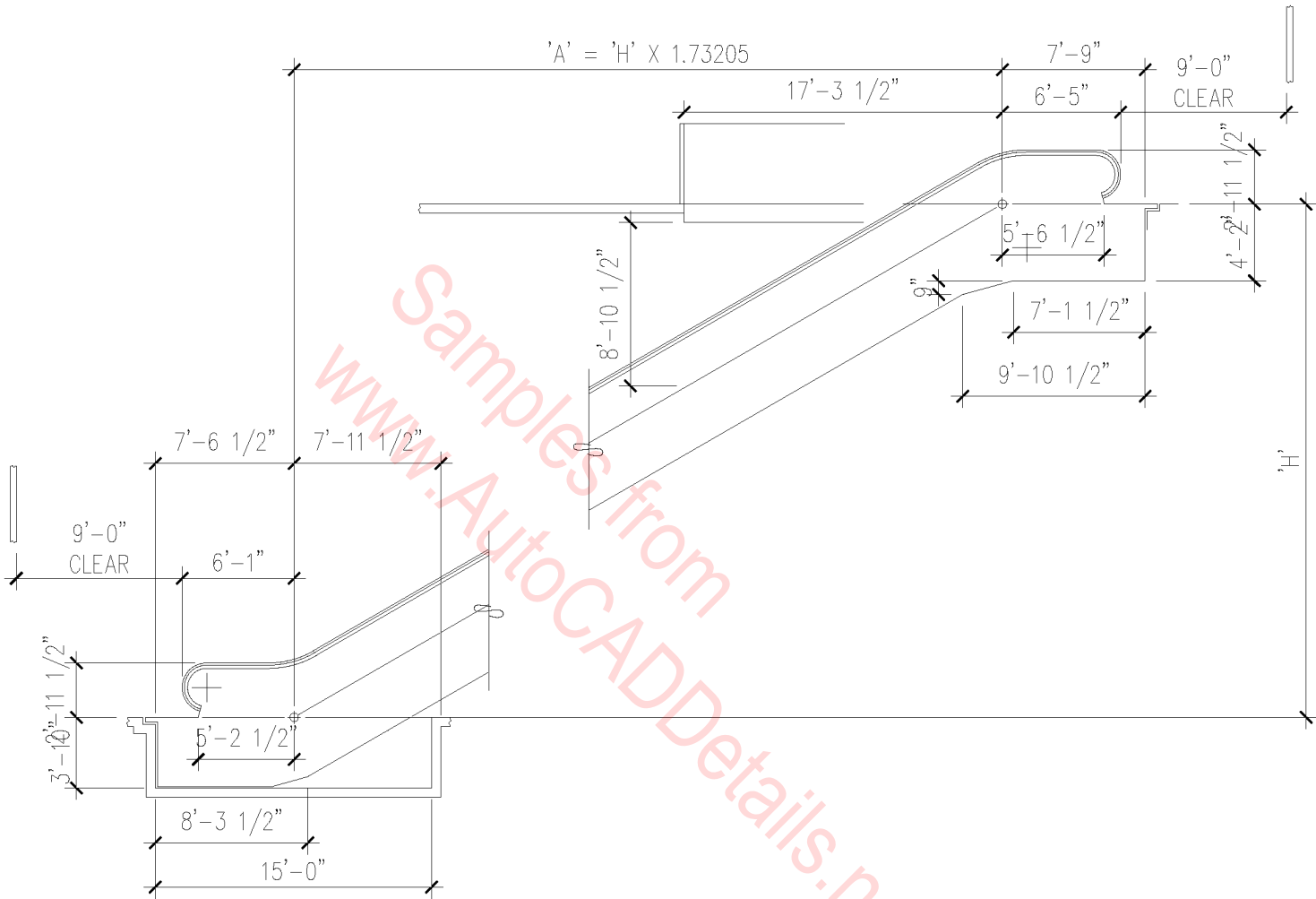
NOTE: INTERMEDIATE SUPPORT
RECOMMENDED FOR RISES
OVER 21'-0".



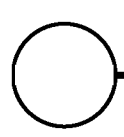
ESCALATOR

1" = 10'-0"

14A-3003



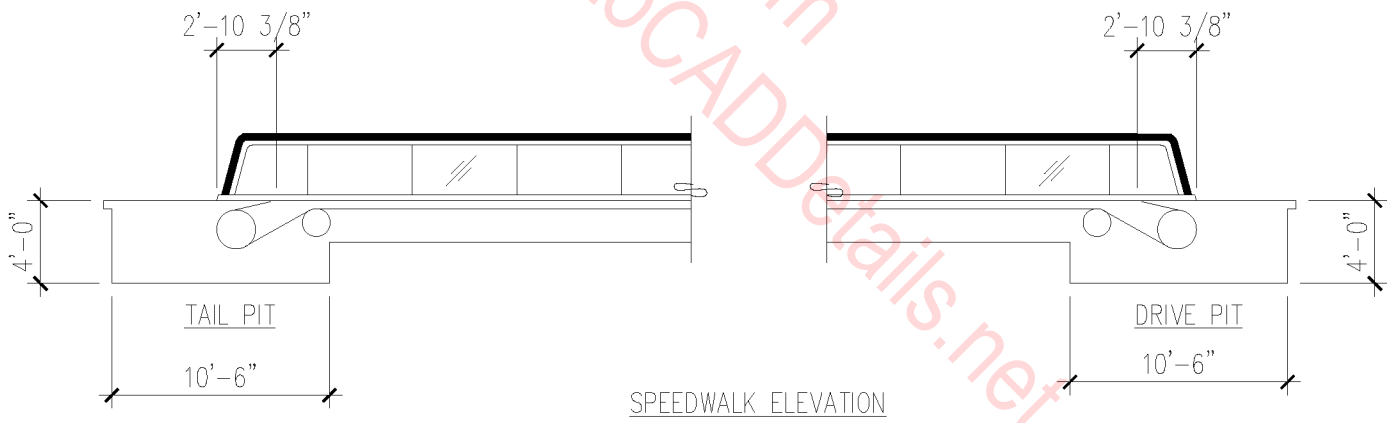
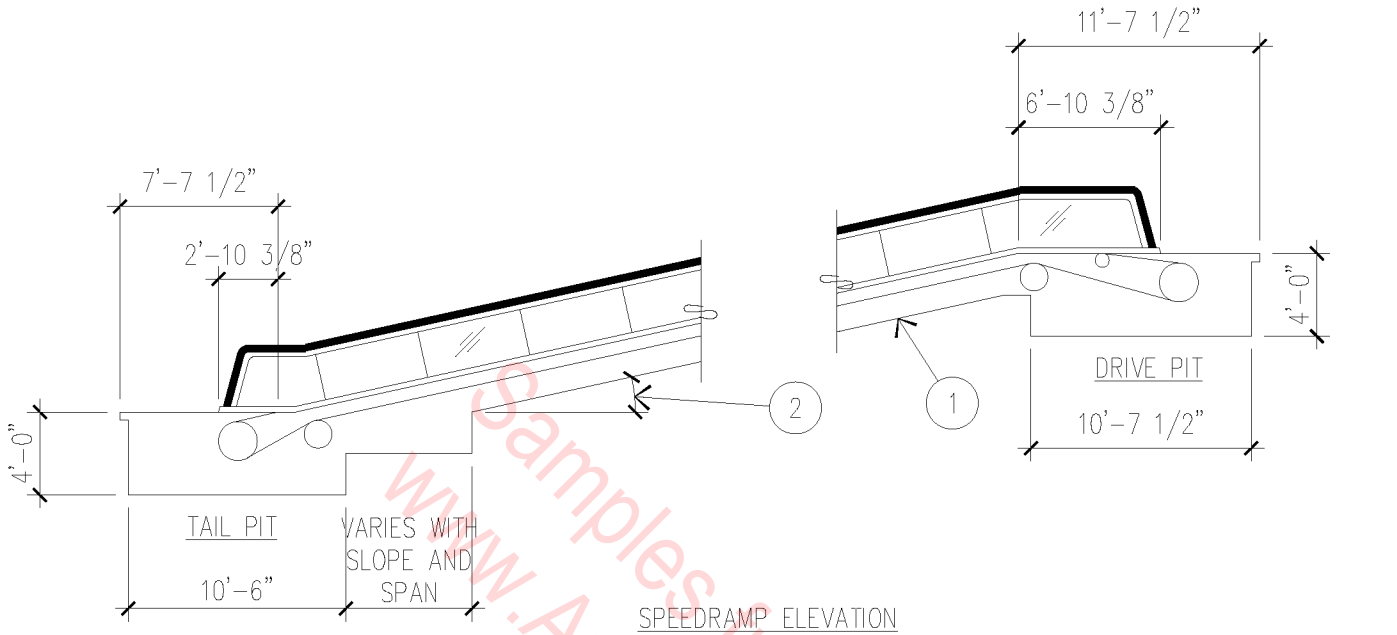
NOTE: INTERMEDIATE SUPPORT
RECOMMENDED FOR RISES
OVER 21'-0".



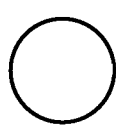
ESCALATOR

1" = 10'-0"

14A-3003



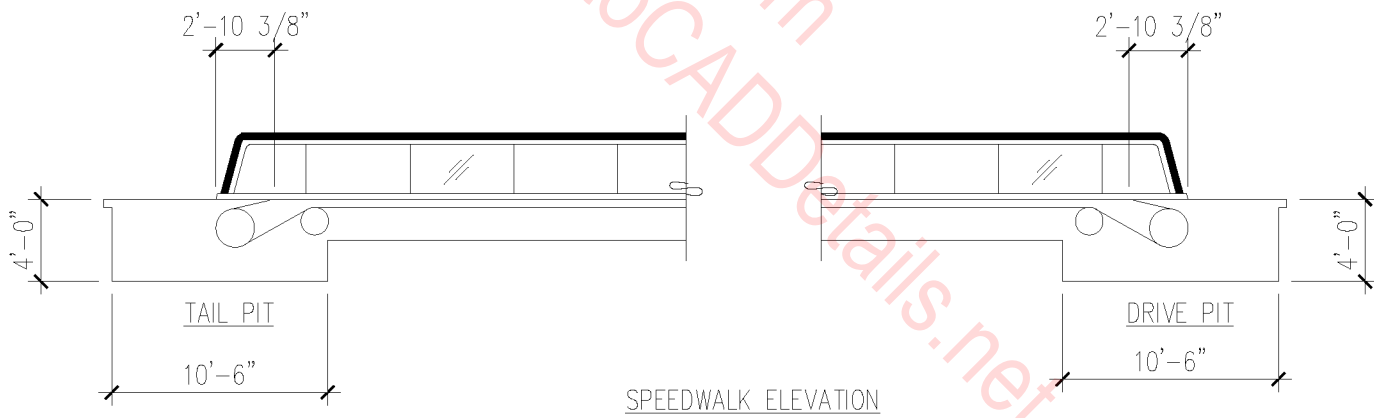
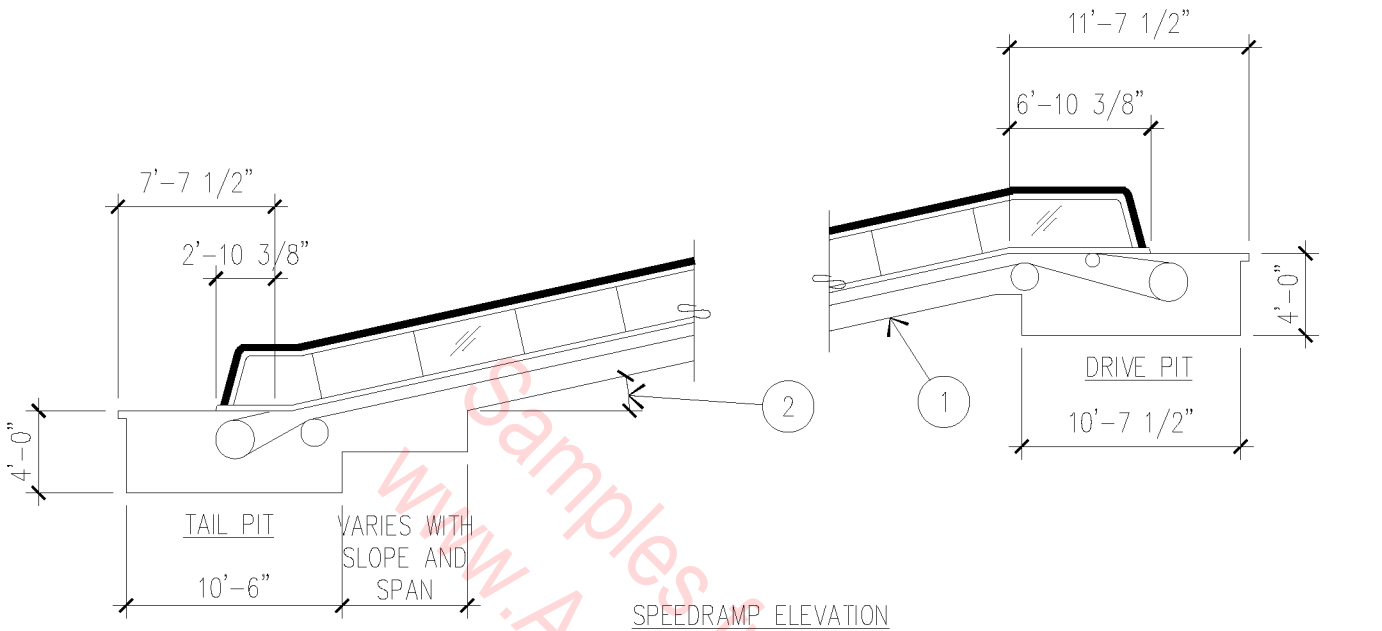
1. BOTTOM OF STRUCTURE.
2. 10° MAXIMUM WITH SHOPPING CARTS,
12° MAXIMUM WITHOUT SHOPPING CARTS.



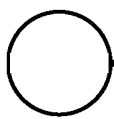
SPEEDWALK

1" = 10'-0"

14A-3004



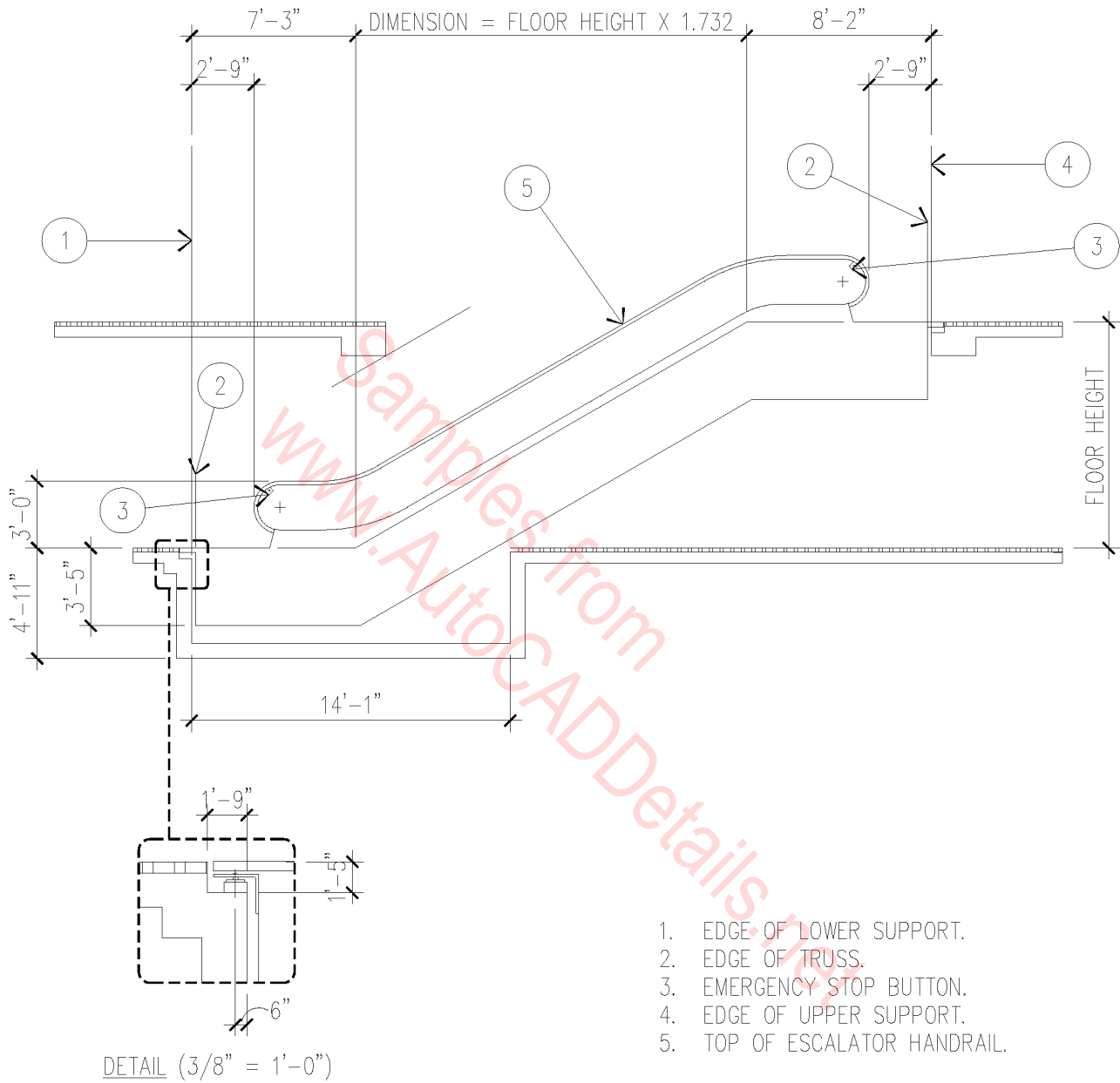
1. BOTTOM OF STRUCTURE.
2. 10° MAXIMUM WITH SHOPPING CARTS,
12° MAXIMUM WITHOUT SHOPPING CARTS.



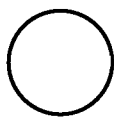
SPEEDWALK

1" = 10'-0"

14A-3004

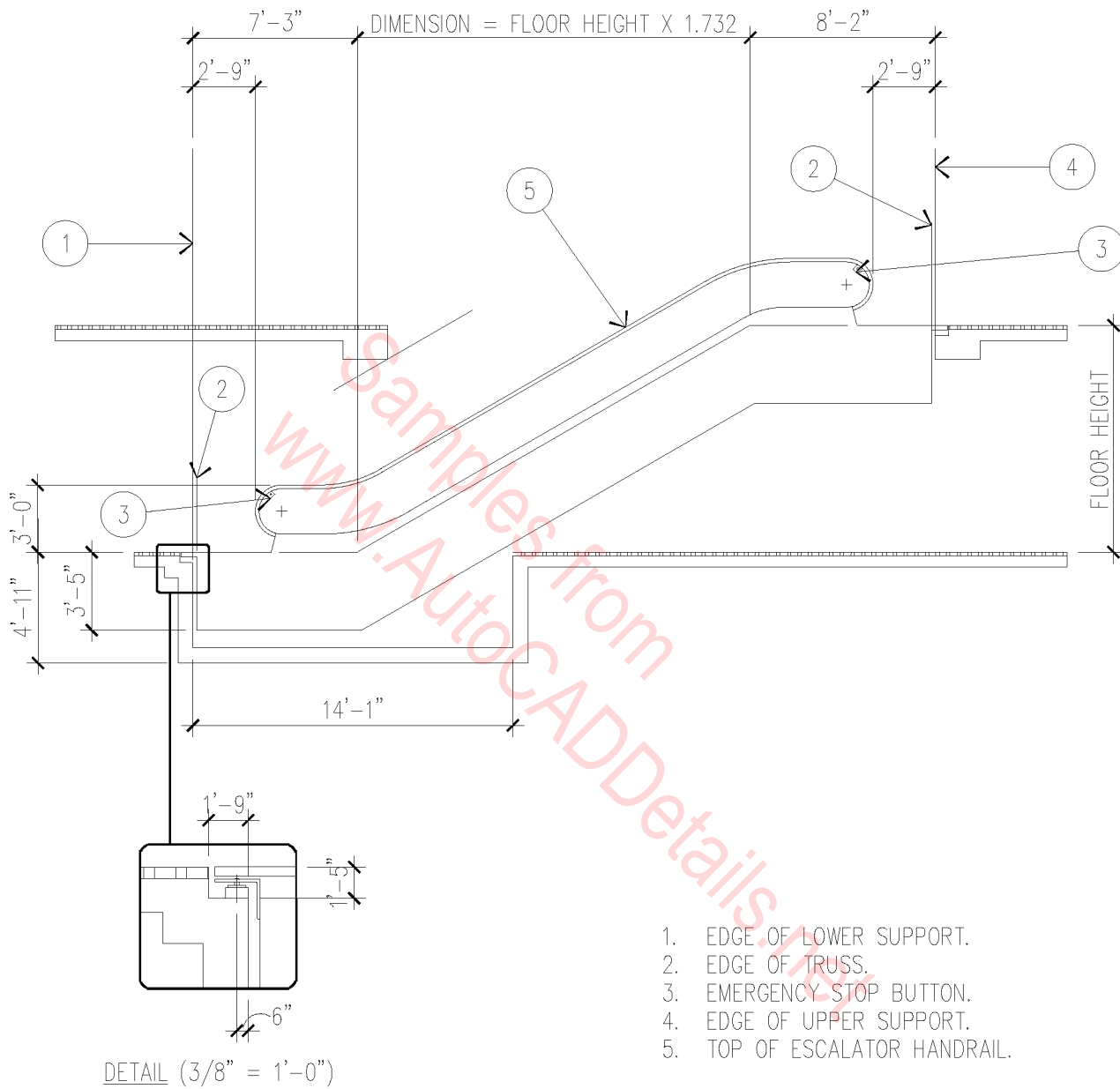


ESCALATORS AND MOVING WALKS

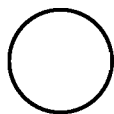


1/8" = 1'-0"

14A-3005

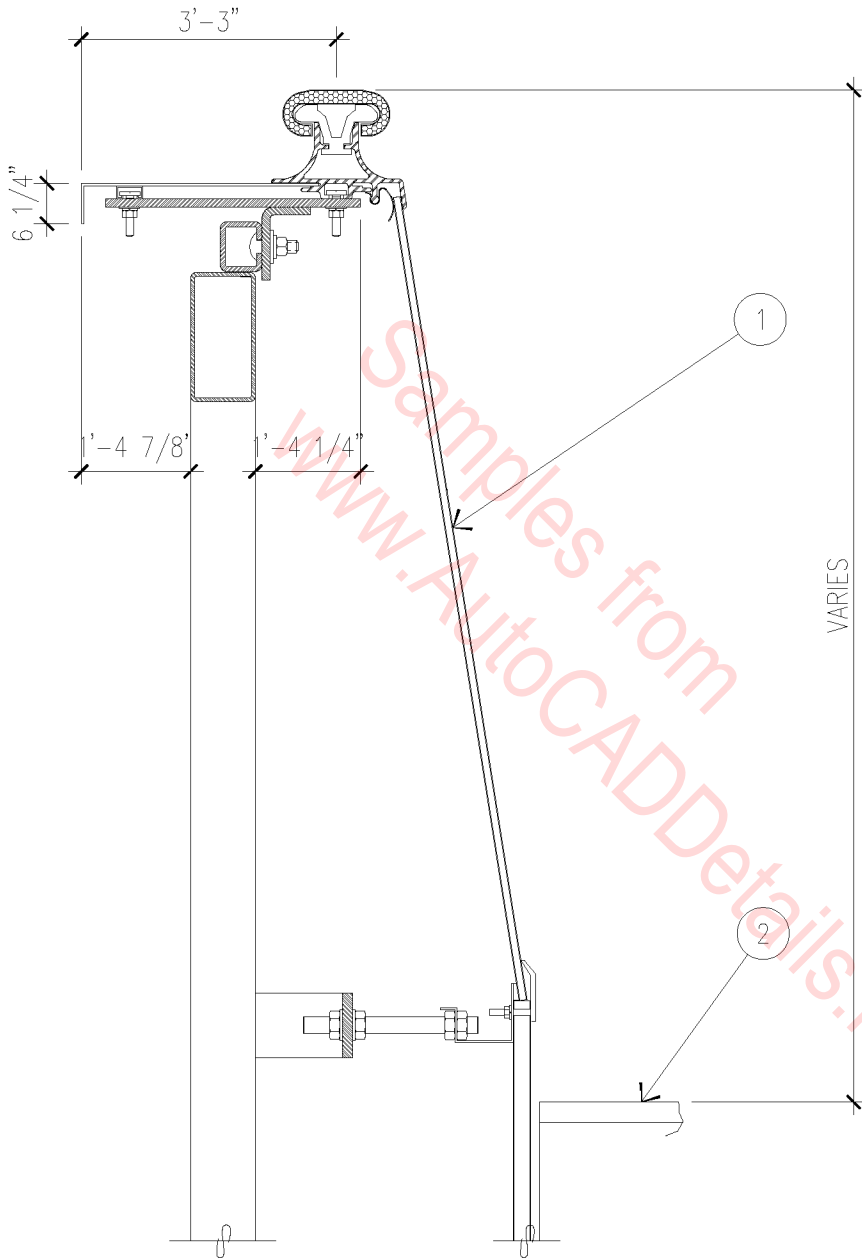


ESCALATORS AND MOVING WALKS

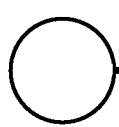


1/8" = 1'-0"

14A-3005



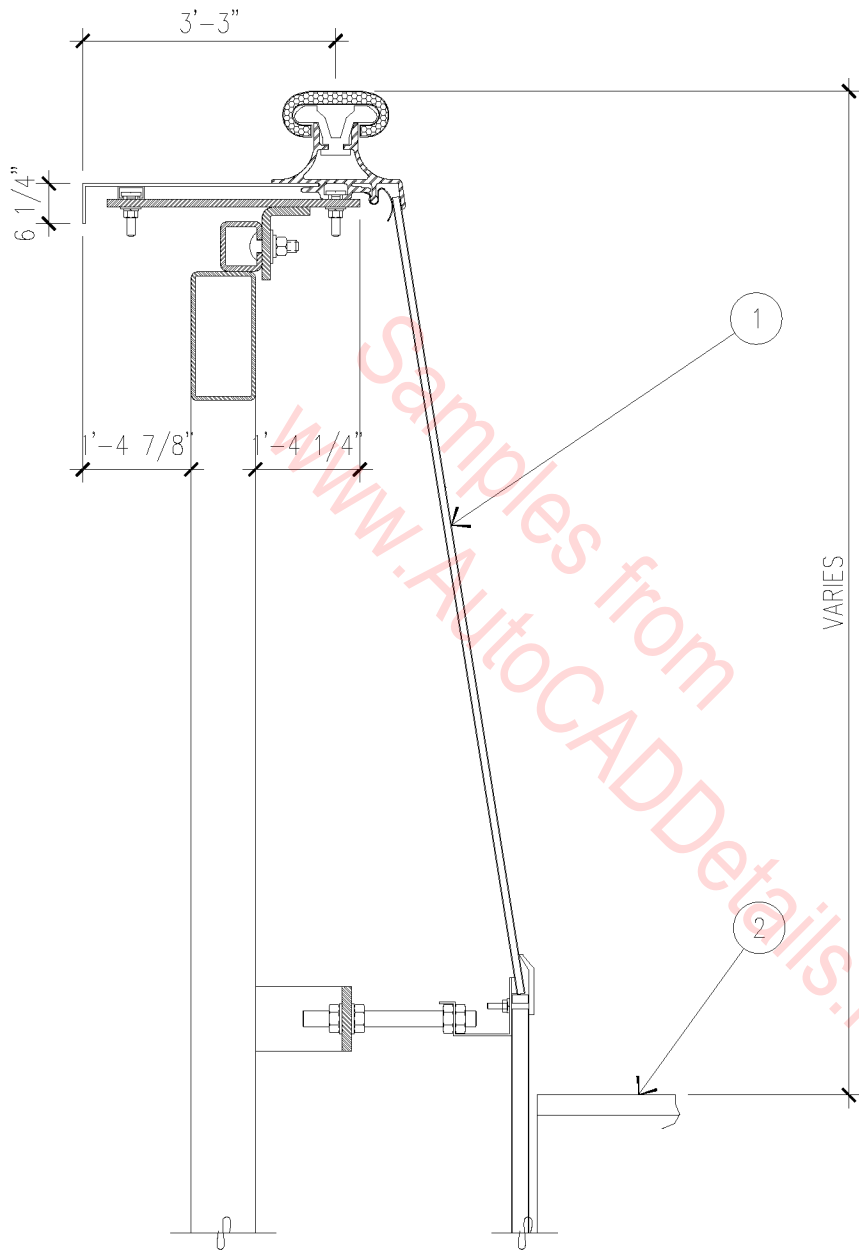
- 1. INNER PANEL.
- 2. TOP OF STEP.



SOLID BALUSTRADE

3/8" - 1'-0"

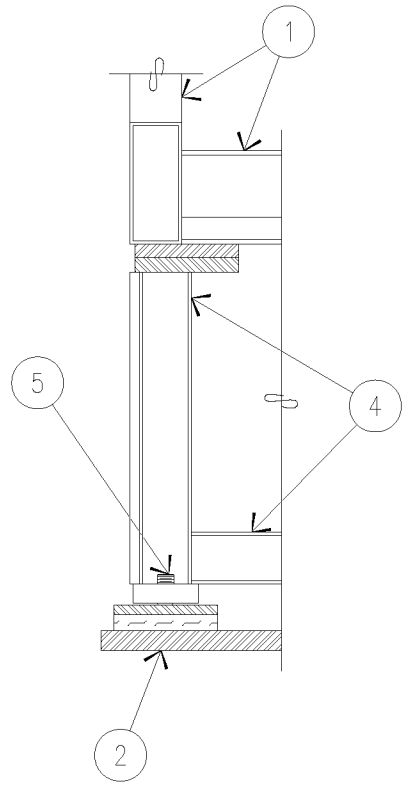
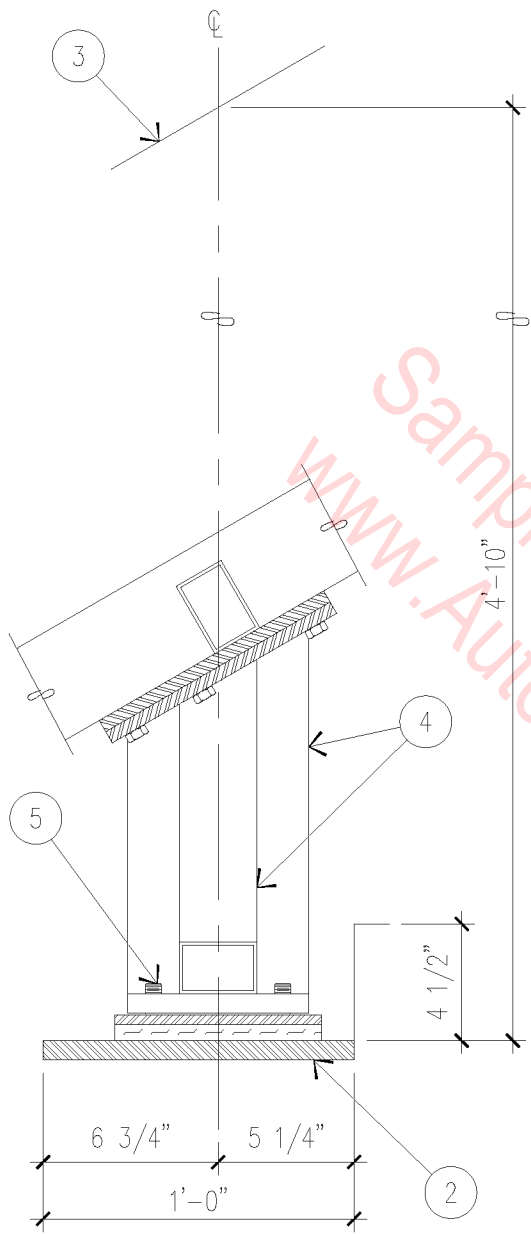
14A-3006



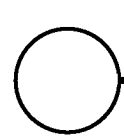
- 1. INNER PANEL.
- 2. TOP OF STEP.

○
—
SOLID BALUSTRADE
3/8" - 1'-0"

14A-3006



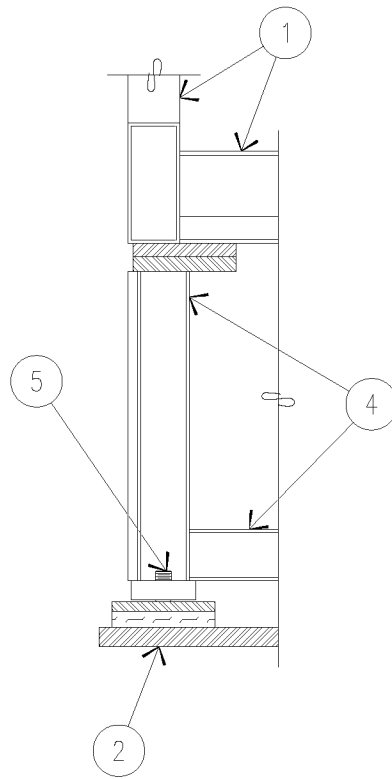
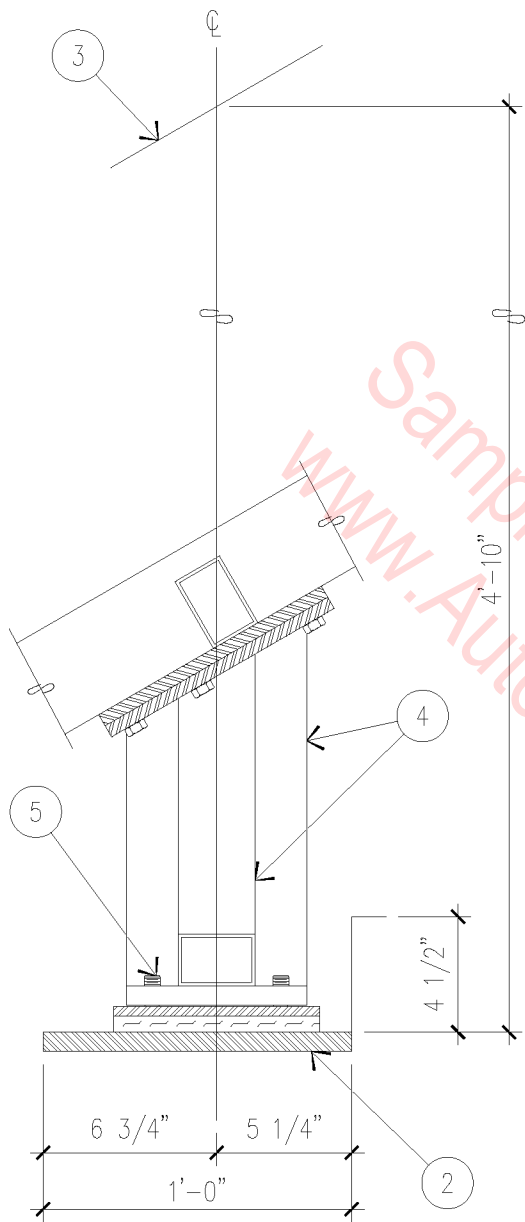
- 1. ESCALATOR TRUSS.
- 2. BEARING PLATE 12" X 3/4".
- 3. NOSE LINE.
- 4. SUPPORT.
- 5. SET SCREWS.



INTERMEDIATE SUPPORT

1 1/2" = 1'-0"

14A-3007

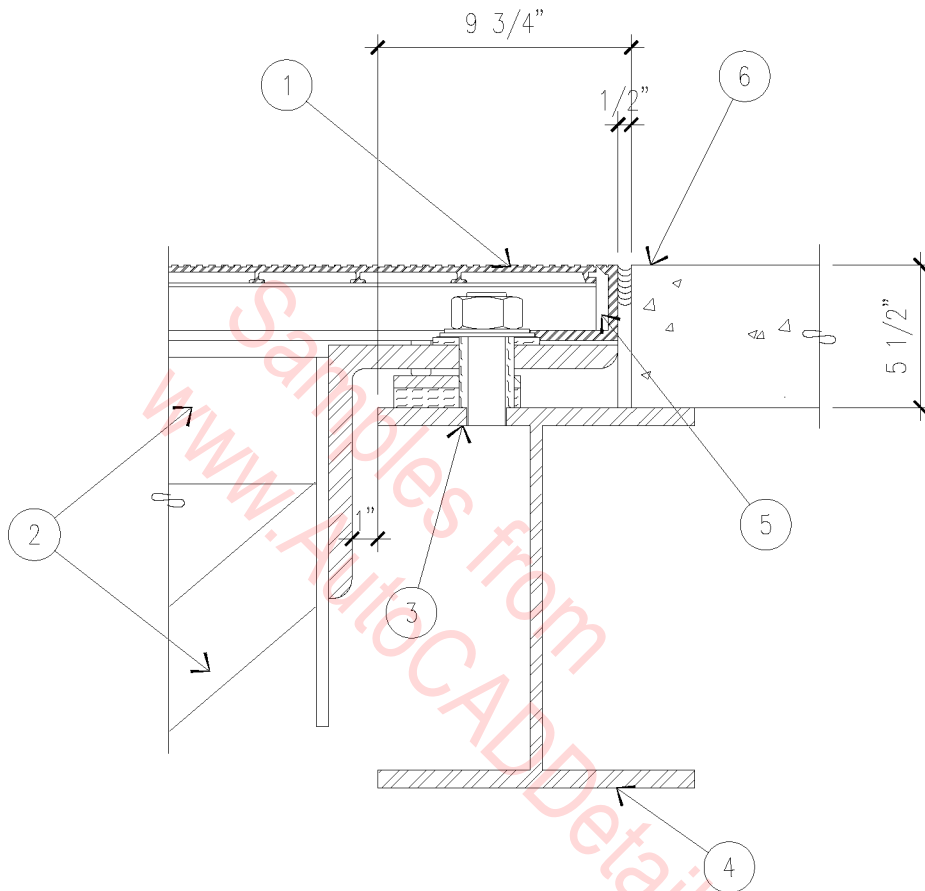


1. ESCALATOR TRUSS.
2. BEARING PLATE 12" X 3/4".
3. NOSE LINE.
4. SUPPORT.
5. SET SCREWS.

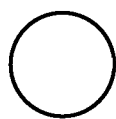
INTERMEDIATE SUPPORT

1 1/2" = 1'-0"

14A-3007



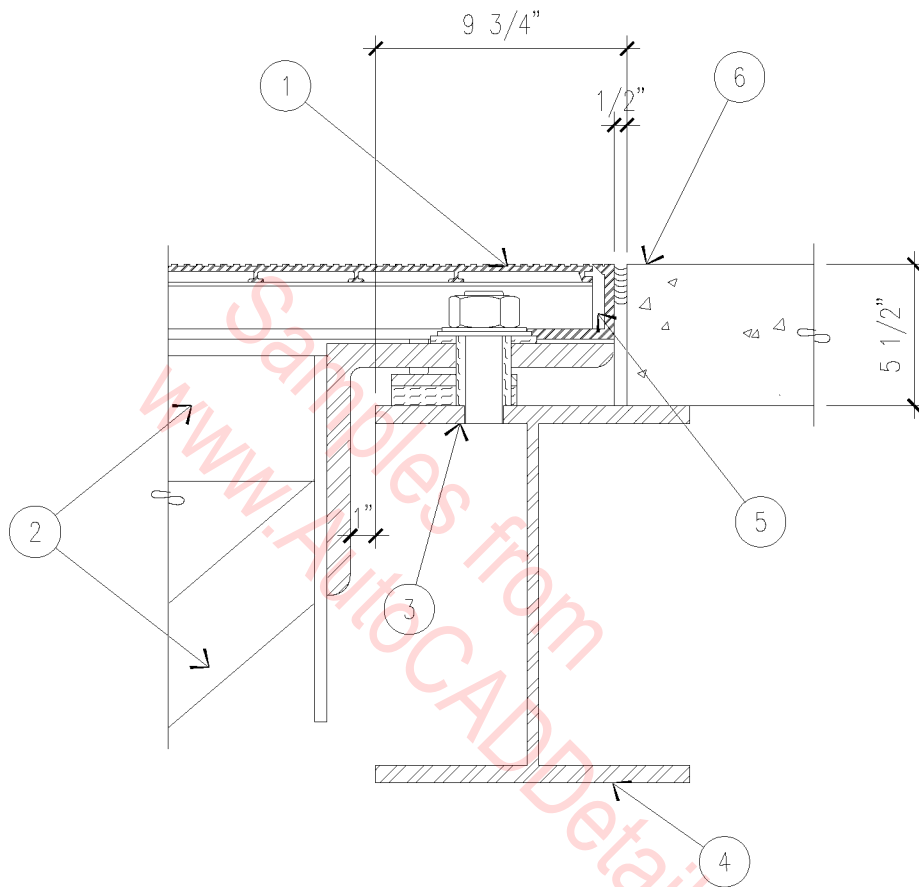
1. REMOVABLE NON-SKID ALUMINUM ACCESS COVER.
2. ESCALATOR TRUSS.
3. HOLD DOWN STUDS TO BE FASTENED TO STEEL SURFACE.
4. STEEL BEAM SUPPORTS.
5. FILL WITH SEALANT AFTER ESCALATOR IS SET.
6. FINISHED FLOOR.



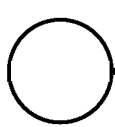
UPPER END SUPPORT

1 1/2" = 1'-0"

14A-3008



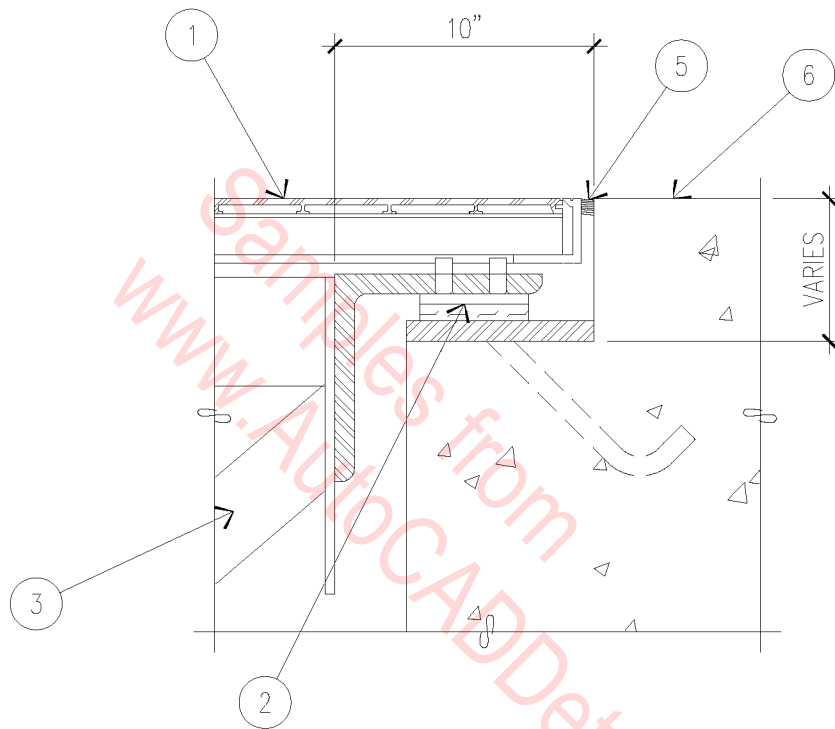
1. REMOVABLE NON-SKID ALUMINUM ACCESS COVER.
2. ESCALATOR TRUSS.
3. HOLD DOWN STUDS TO BE FASTENED TO STEEL SURFACE.
4. STEEL BEAM SUPPORTS.
5. FILL WITH SEALANT AFTER ESCALATOR IS SET.
6. FINISHED FLOOR.



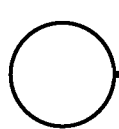
UPPER END SUPPORT

1 1/2" = 1'-0"

14A-3008



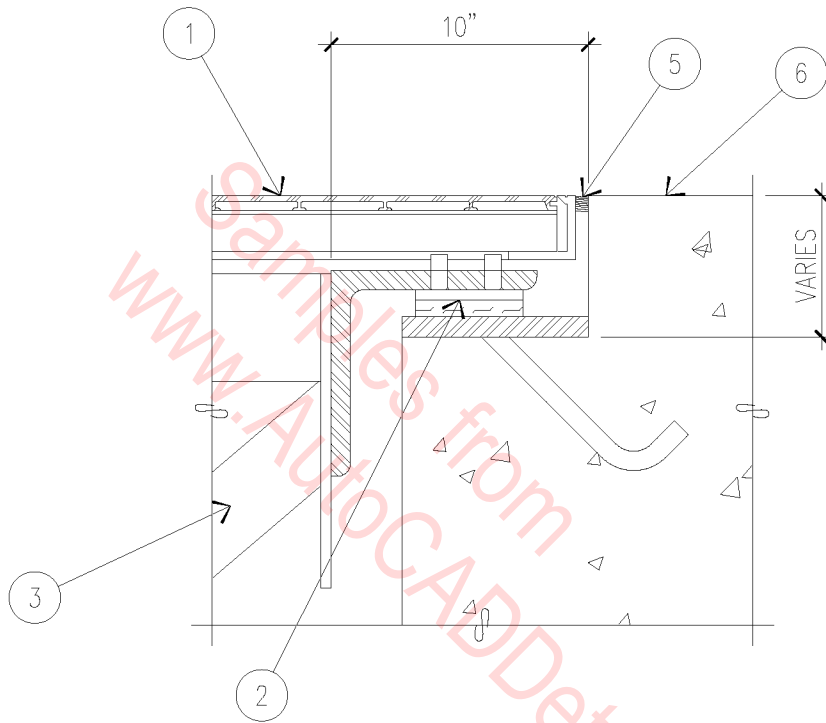
1. REMOVABLE NON-SKID ALUMINUM ACCESS COVER.
2. TEFLON PAD.
3. ESCALATOR TRUSS.
4. BASE PLATE AND ANCHORS.
5. FILL WITH SEALANT AFTER ESCALATOR IS SET.
6. FINISHED FLOOR.



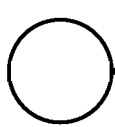
LOWER END SUPPORT

1 1/2" = 1'-0"

14A-3009



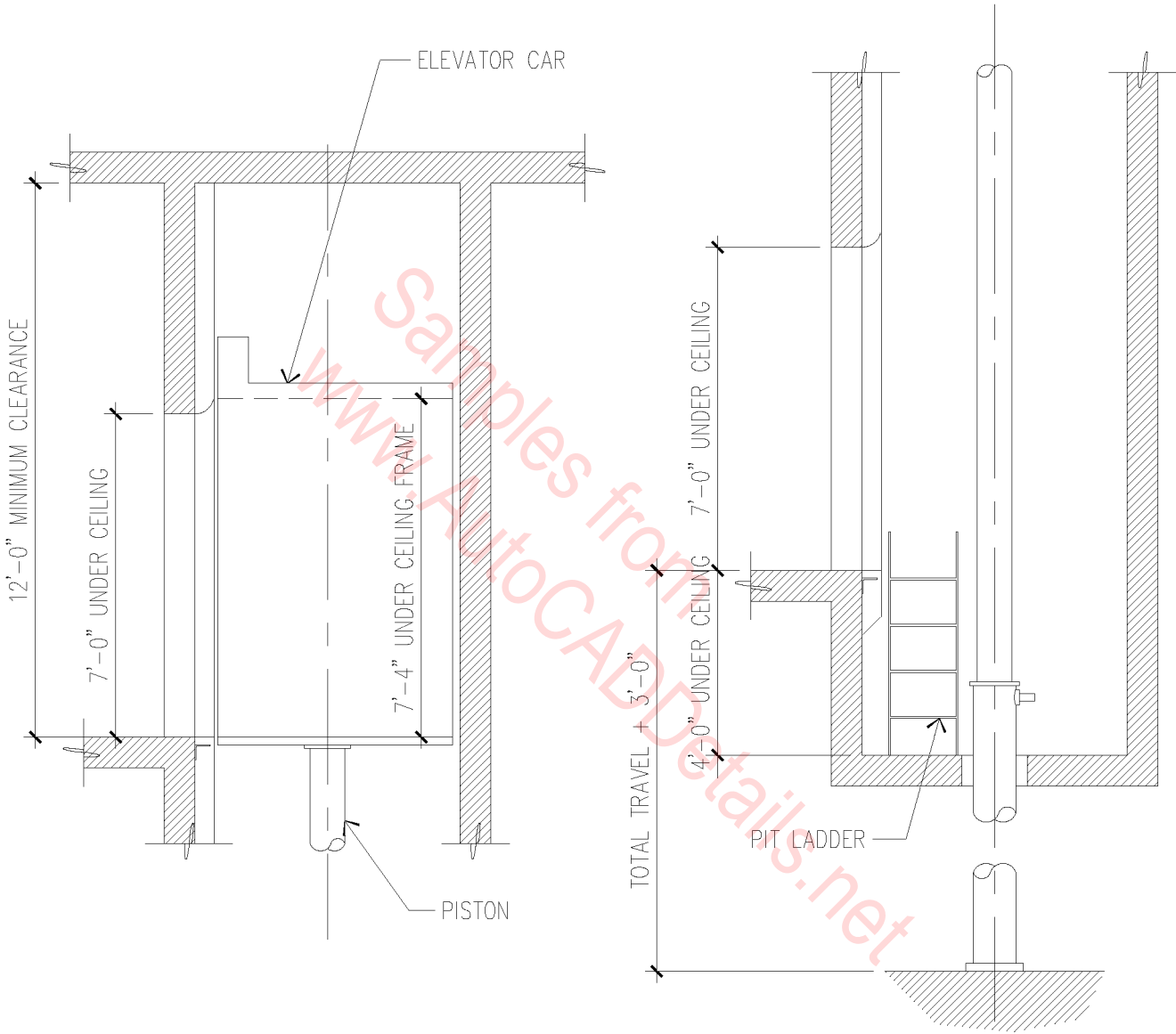
1. REMOVABLE NON-SKID ALUMINUM ACCESS COVER.
2. TEFLON PAD.
3. ESCALATOR TRUSS.
4. BASE PLATE AND ANCHORS.
5. FILL WITH SEALANT AFTER ESCALATOR IS SET.
6. FINISHED FLOOR.



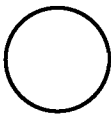
LOWER END SUPPORT

1 1/2" = 1'-0"

14A-3009

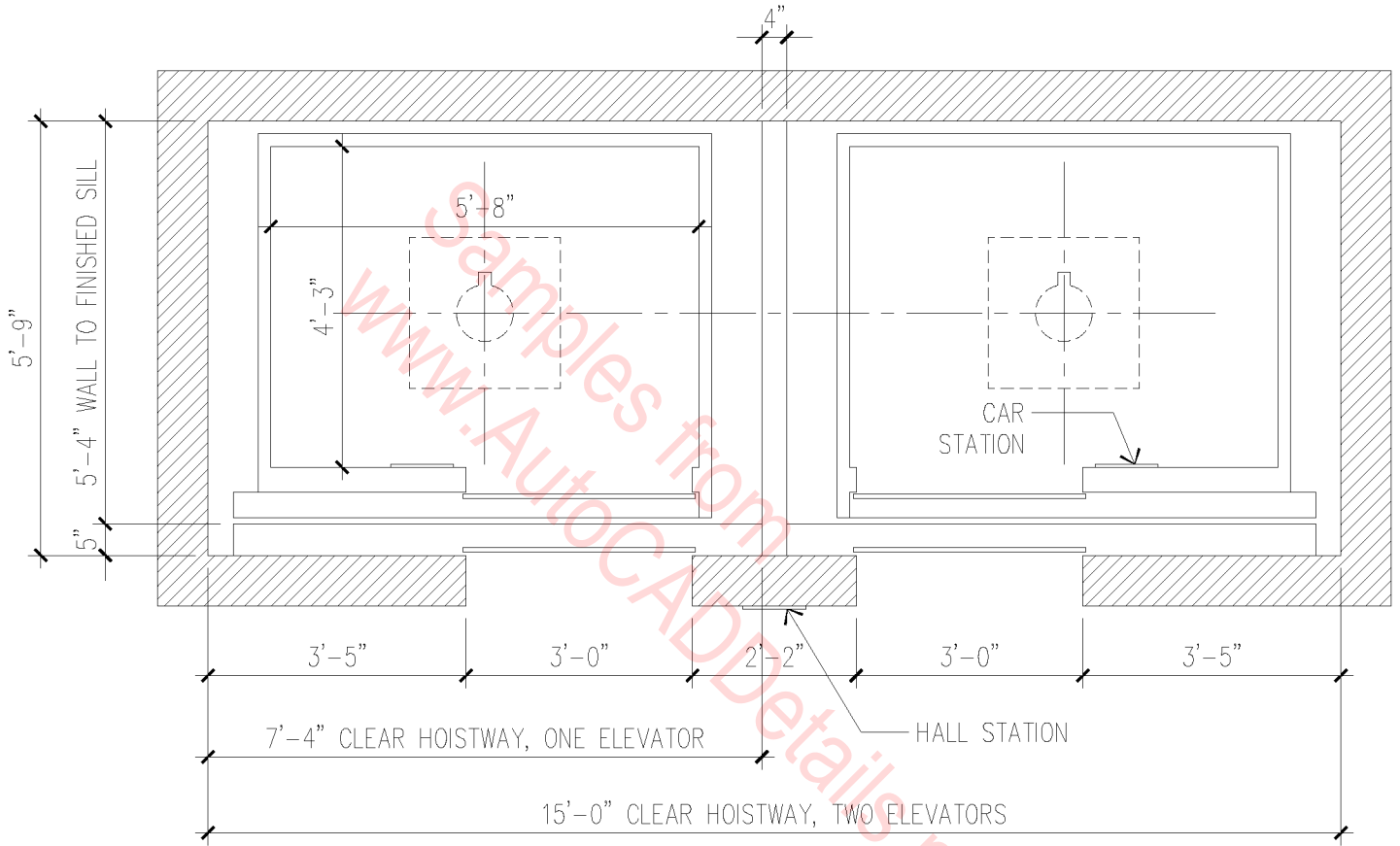


SECTION AT
HYDRAULIC ELEVATOR

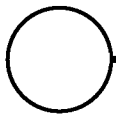


$1/4'' = 1'-0''$

14A-2001

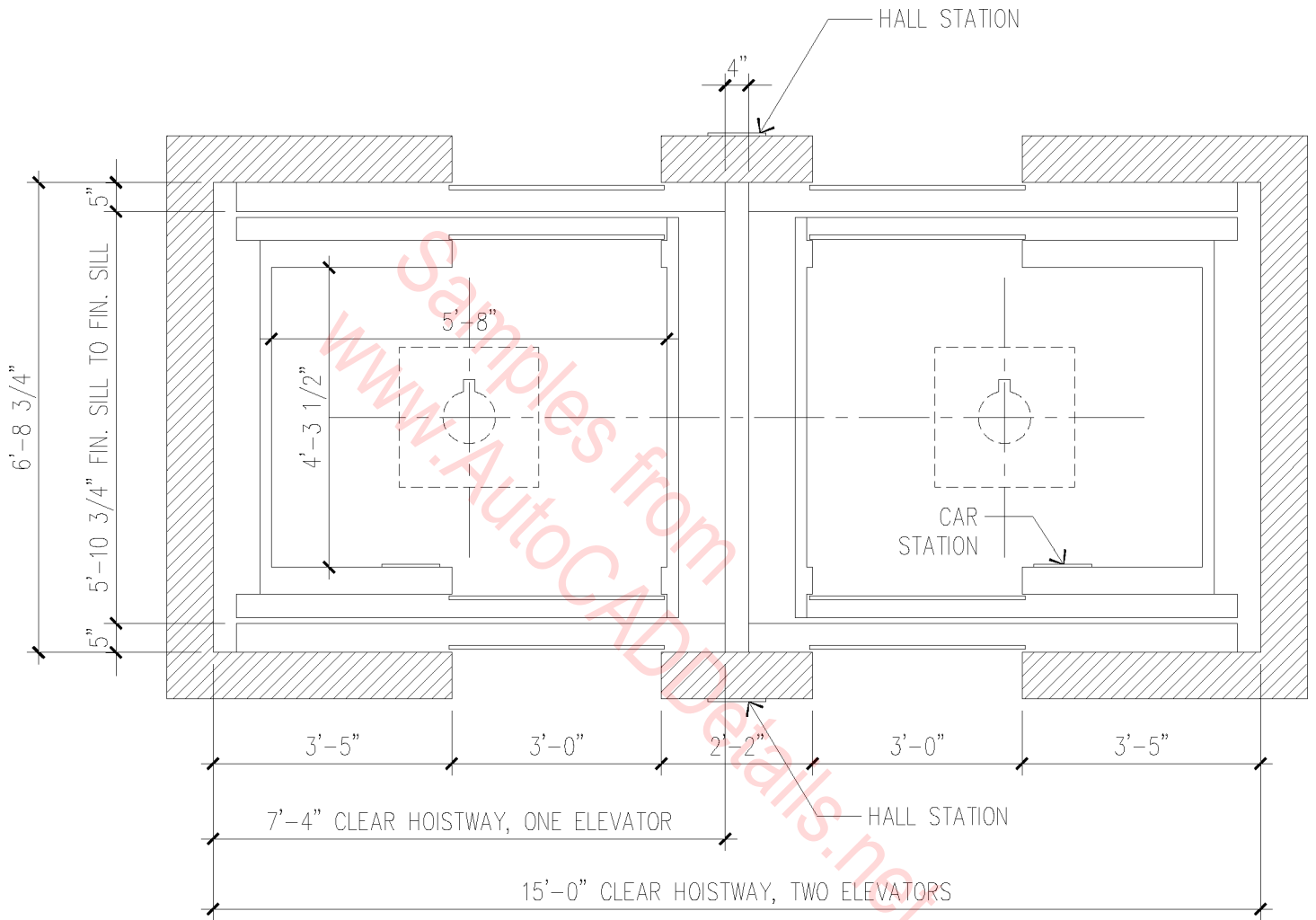


HYDRAULIC ELEVATOR HOISTWAY PLAN

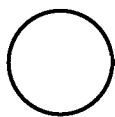


3/8" = 1'-0"

14A-2002

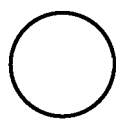
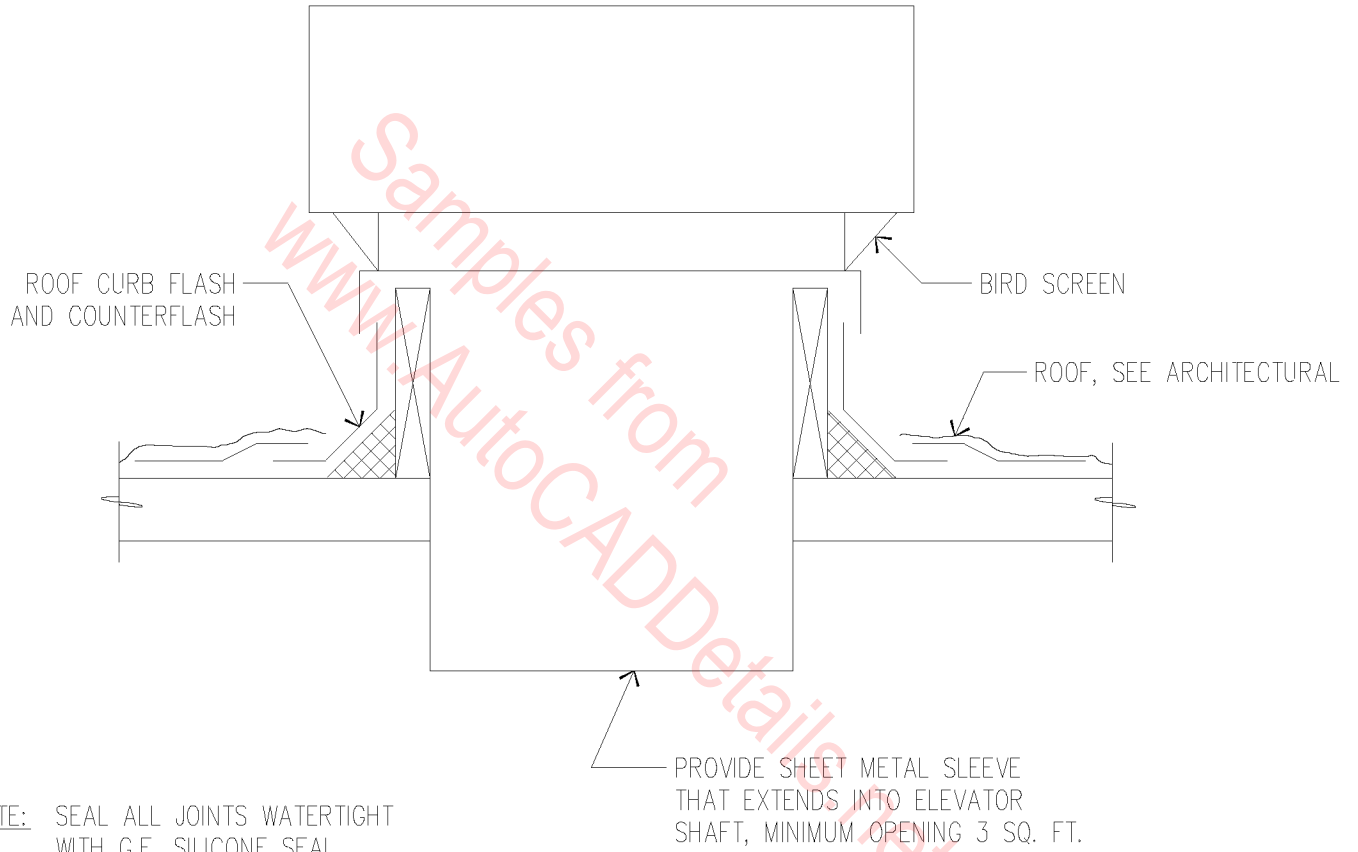


HYDRAULIC ELEVATOR HOISTWAY PLAN



3/8" = 1'-0"

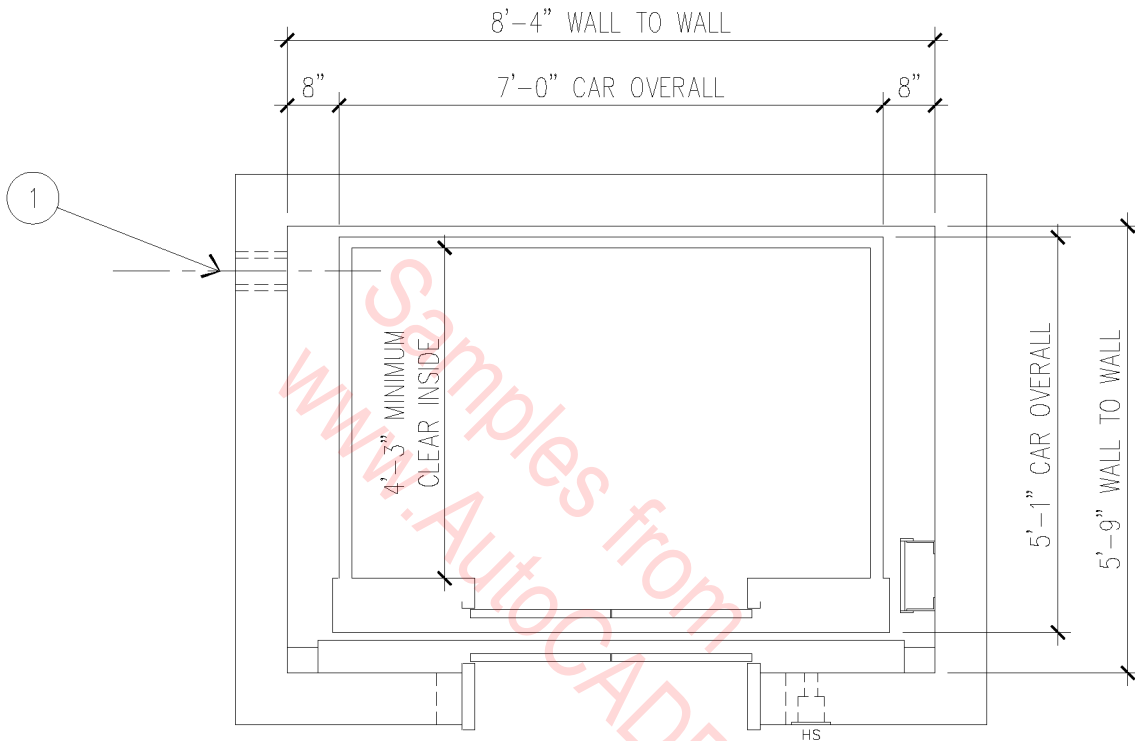
14A-2003



ELEVATOR RELIEF VENT

N.T.S.

14A-2004

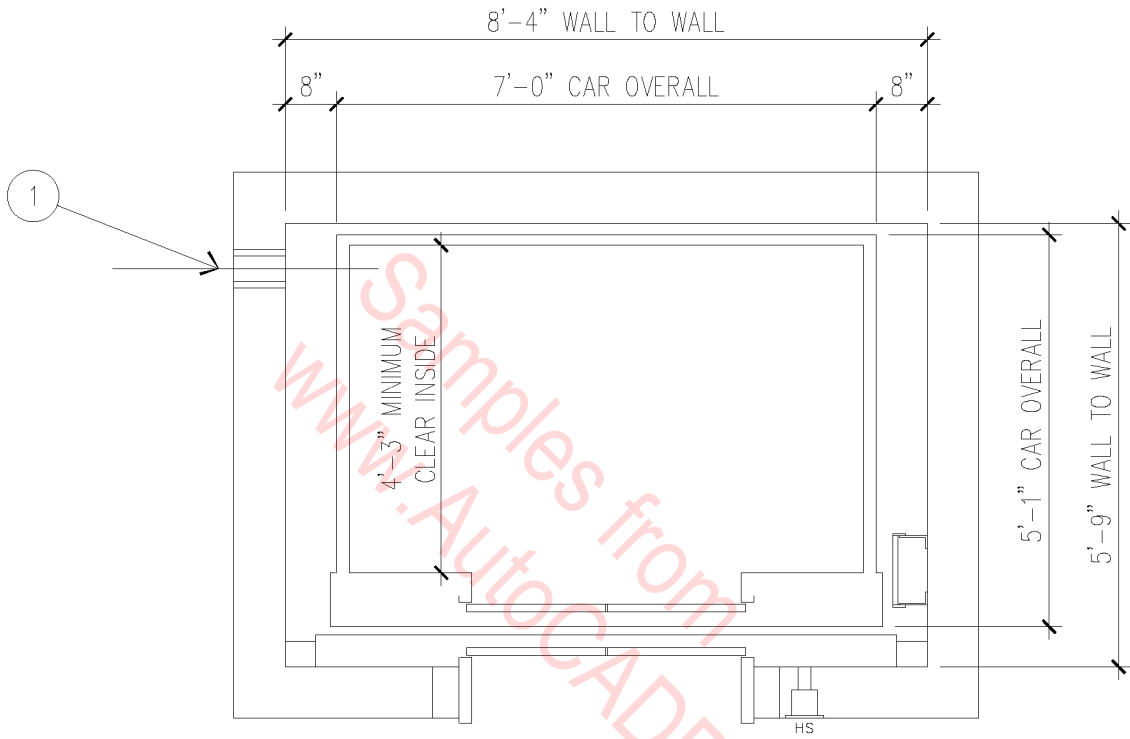


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

3/8" = 1'-0"

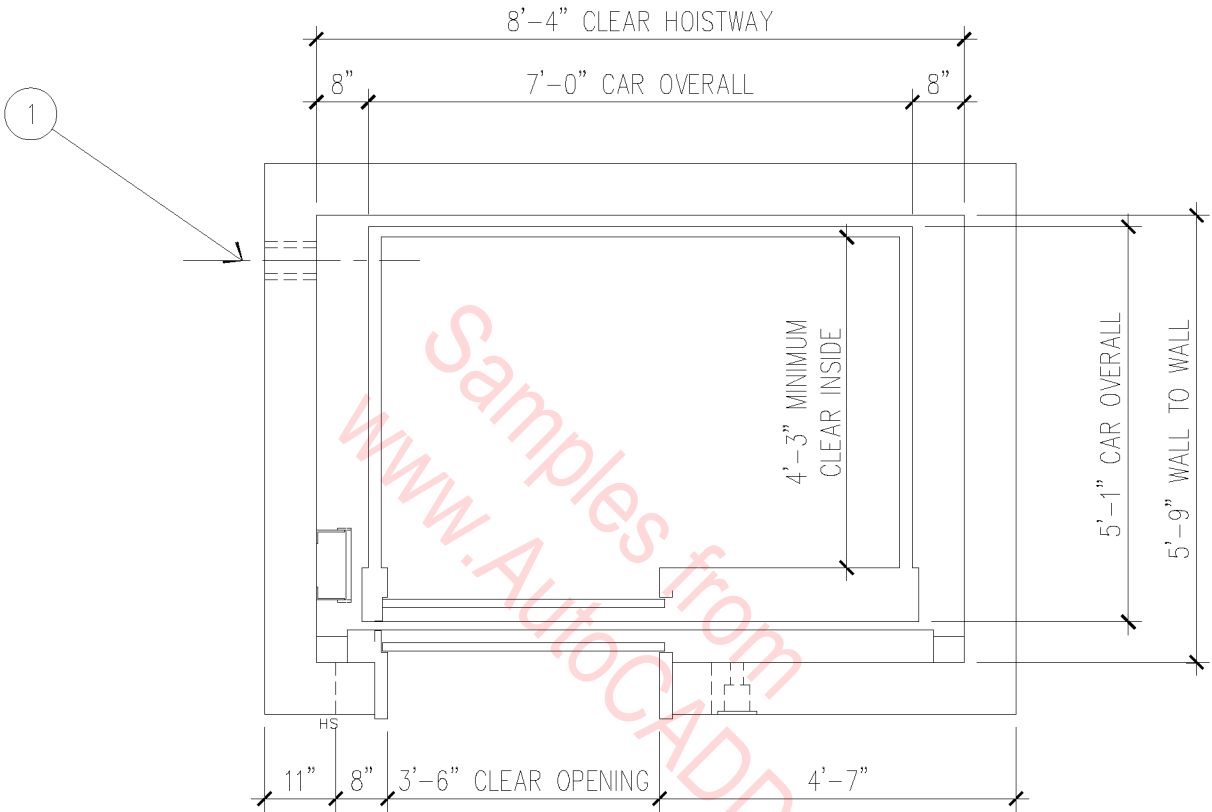
14A-2005



1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.


HOISTWAY PLAN
 3/8" = 1'-0"

14A-2005

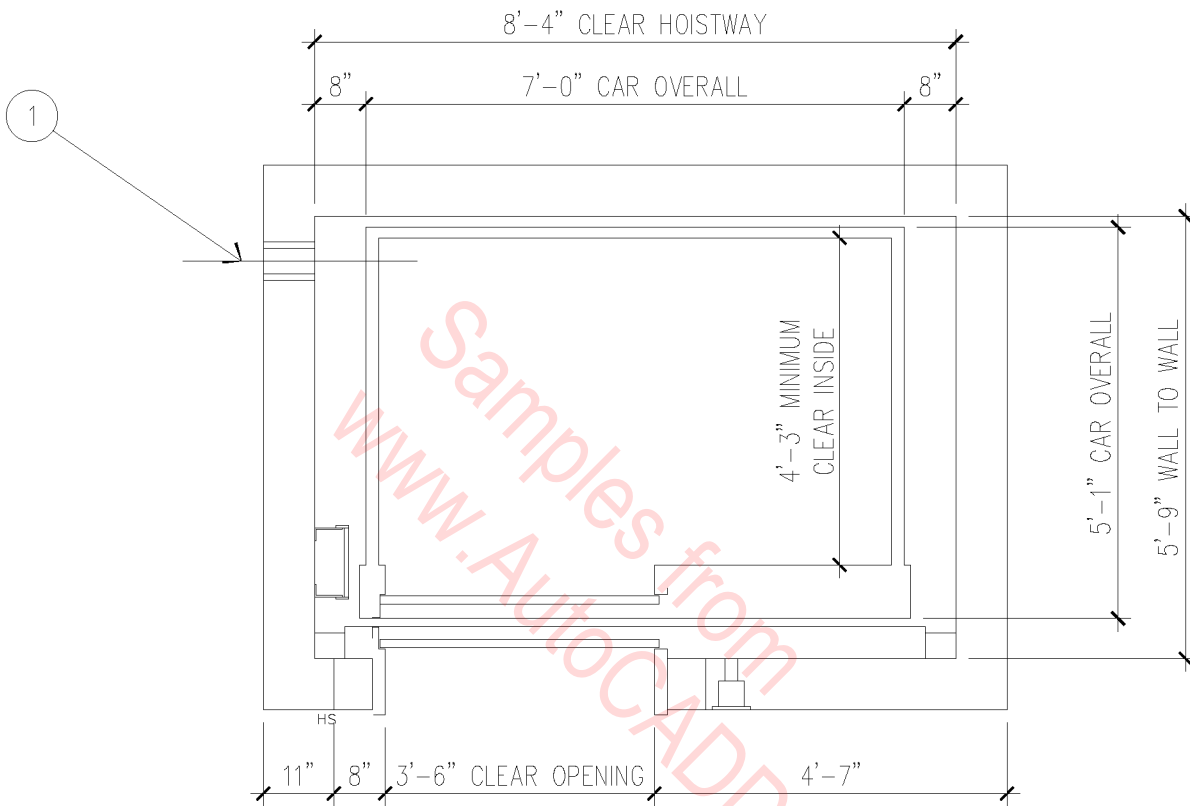


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

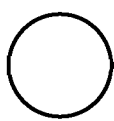
HOISTWAY PLAN

3/8" = 1'-0"

14A-2006



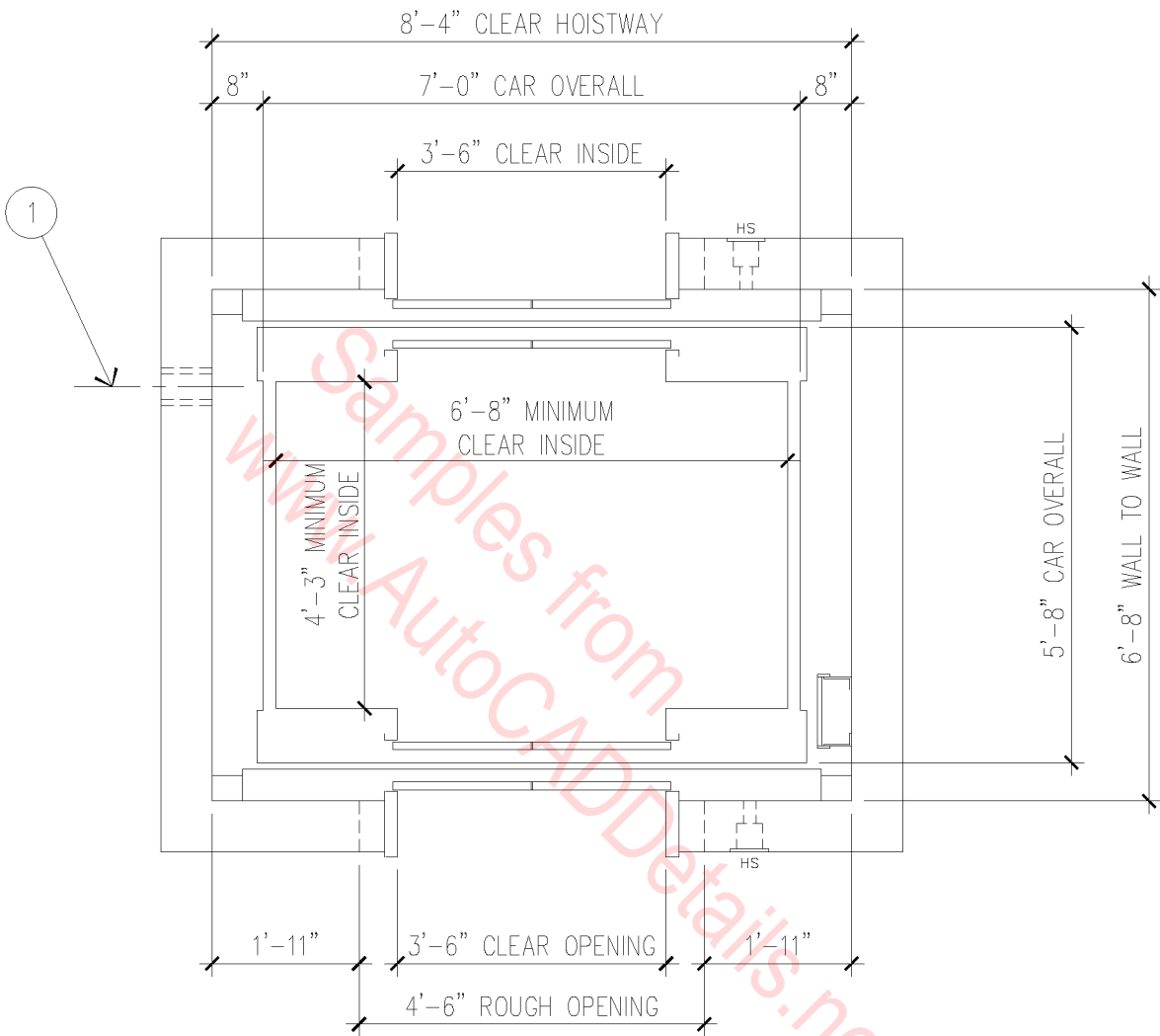
1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.



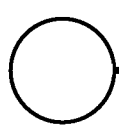
HOISTWAY PLAN

3/8" = 1'-0"

14A-2006



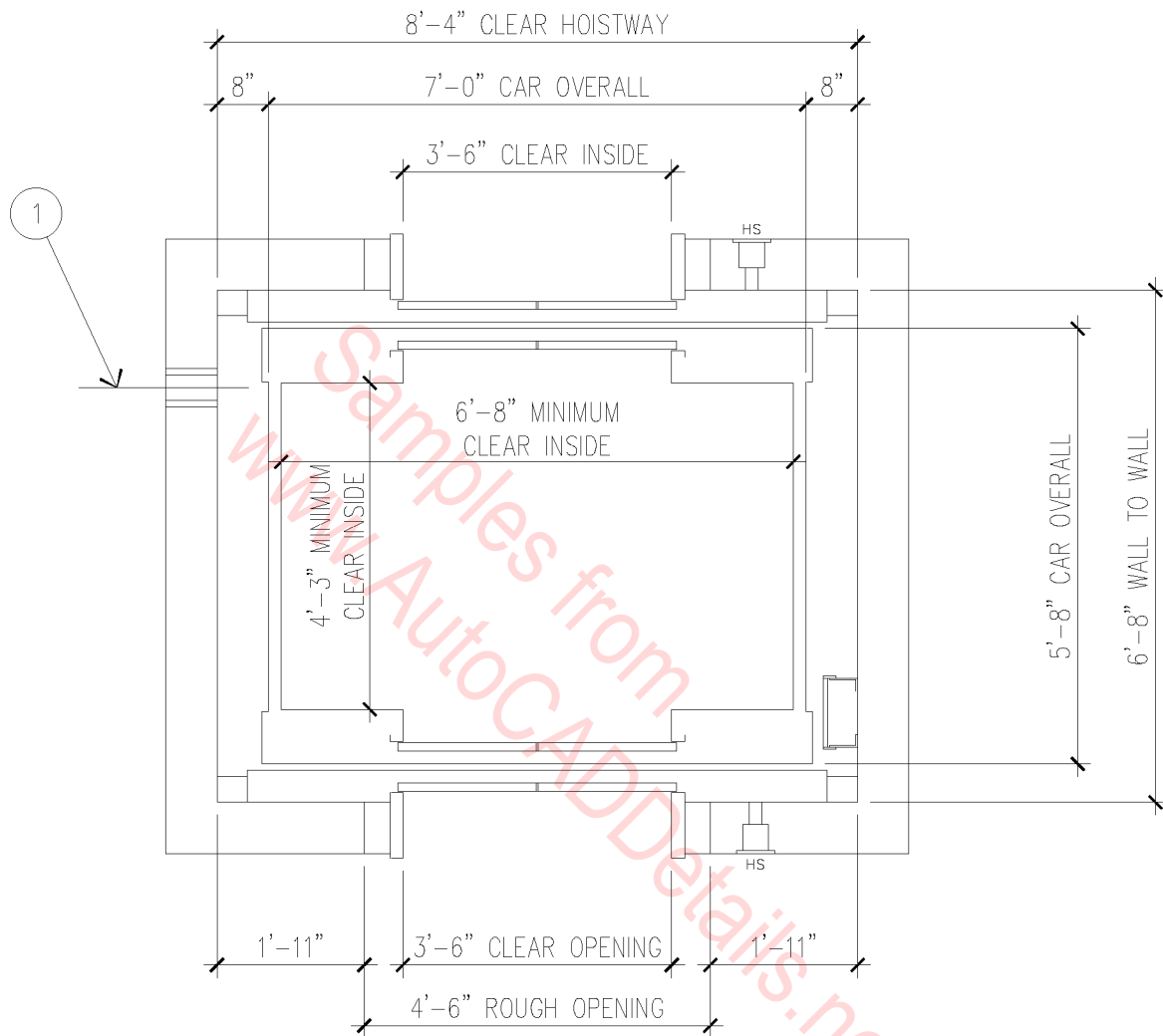
1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.



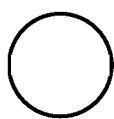
HOISTWAY PLAN

3/8" = 1'-0"

14A-2007



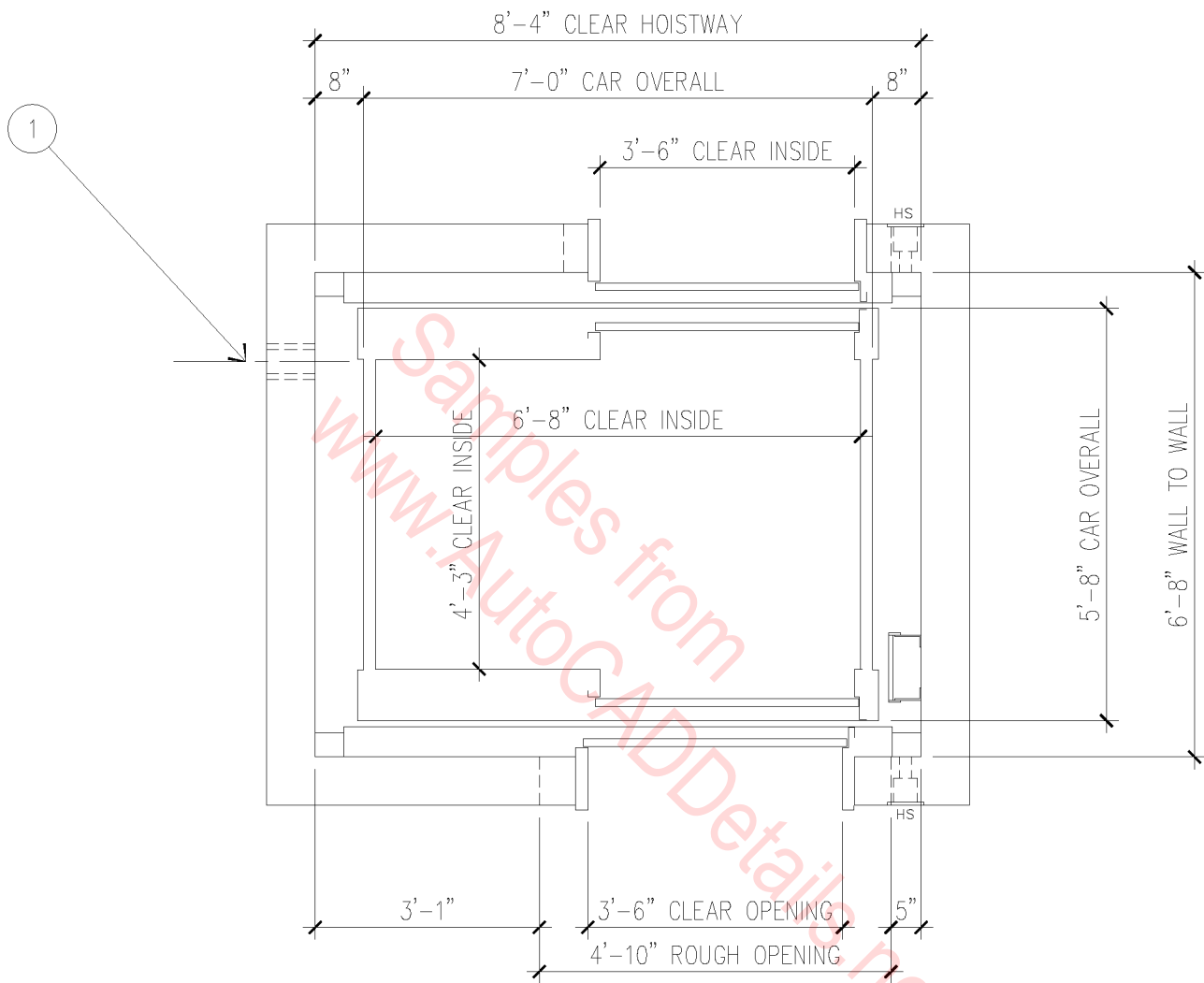
1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.



HOISTWAY PLAN

3/8" = 1'-0"

14A-2007

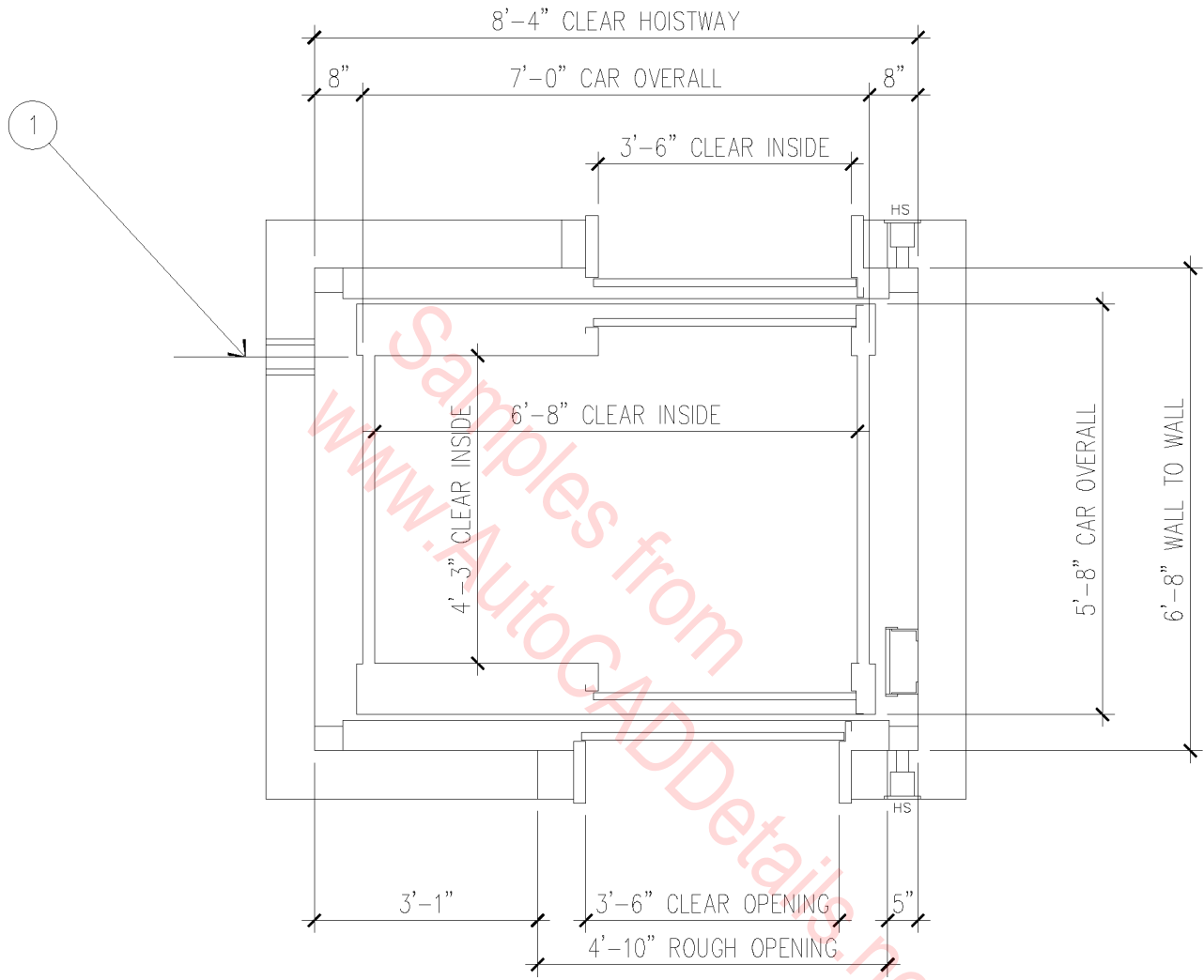


1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

3/8" = 1'-0"

14A-2008

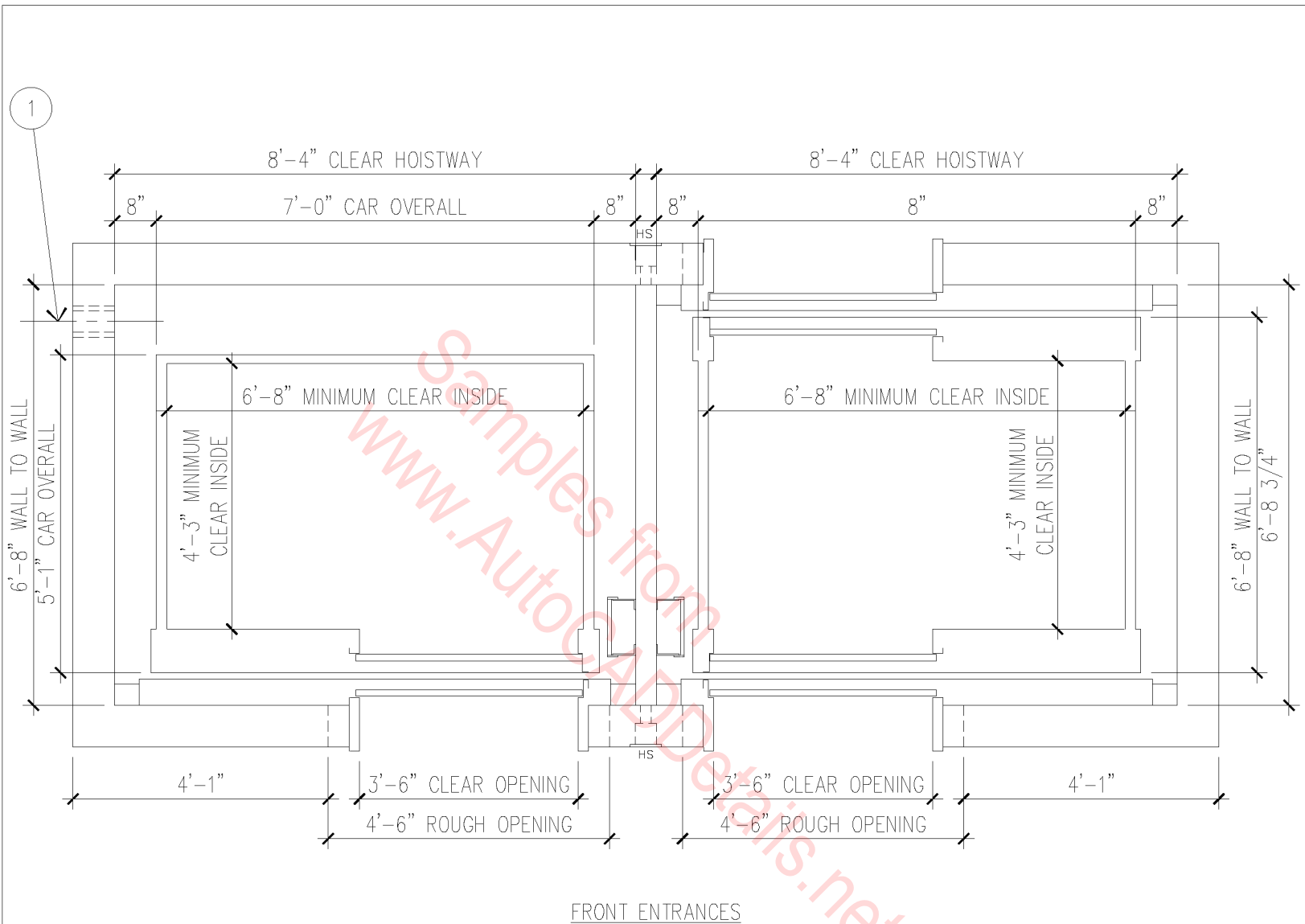


- 1. 4"W X 3"H ELECTRIC RACEWAY,
8" X 8" PIPE SLEEVE -
LOCATION DETERMINED BY
RELATIONSHIP TO MACHINE ROOM.

HOISTWAY PLAN

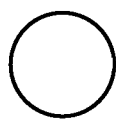
3/8" = 1'-0"

14A-2008



FRONT ENTRANCES

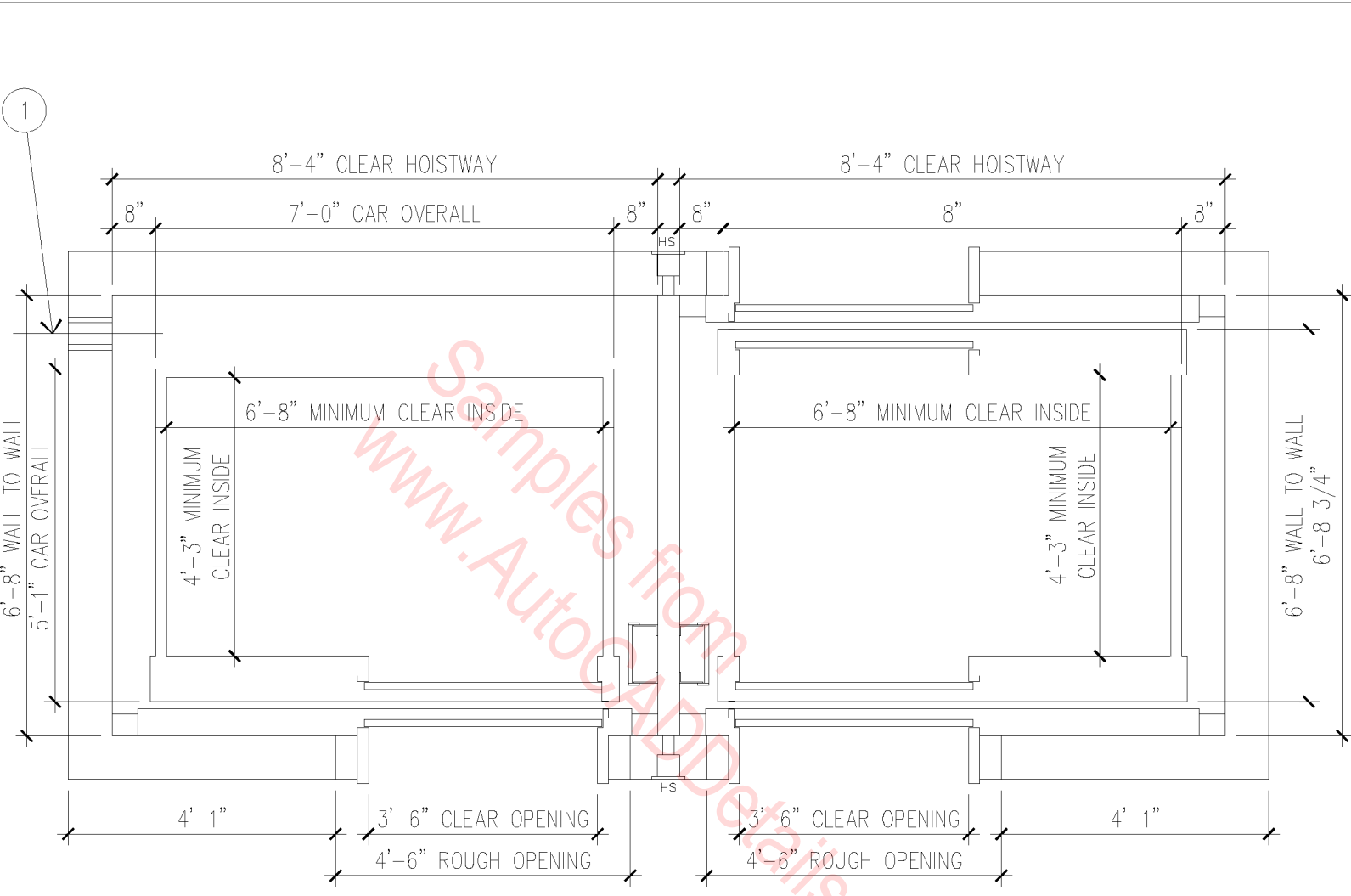
1. 4"W X 3"H ELECTRIC RACEWAY
8" X 8" PIPE SLEEVE, LOCATION
DETERMINED BY RELATIONSHIP TO
MACHINE ROOM.



HOISTWAY PLAN

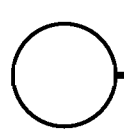
3/8" = 1'-0"

14A-2009



FRONT ENTRANCES

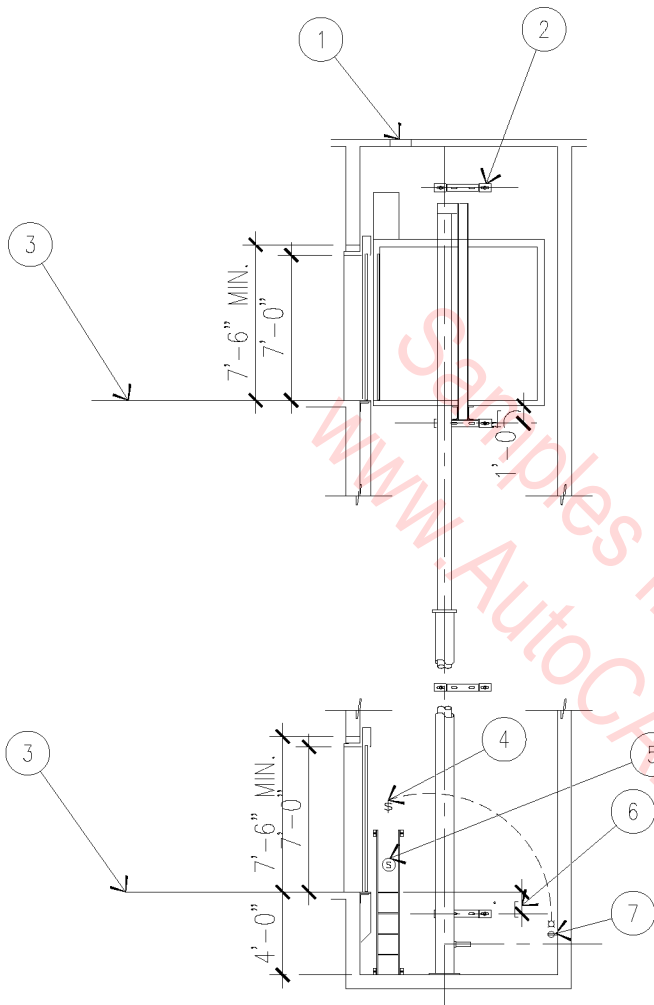
1. 4"W X 3"H ELECTRIC RACEWAY
8" X 8" PIPE SLEEVE, LOCATION
DETERMINED BY RELATIONSHIP TO
MACHINE ROOM.



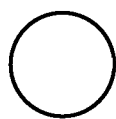
HOISTWAY PLAN

3/8" = 1'-0"

14A-2009



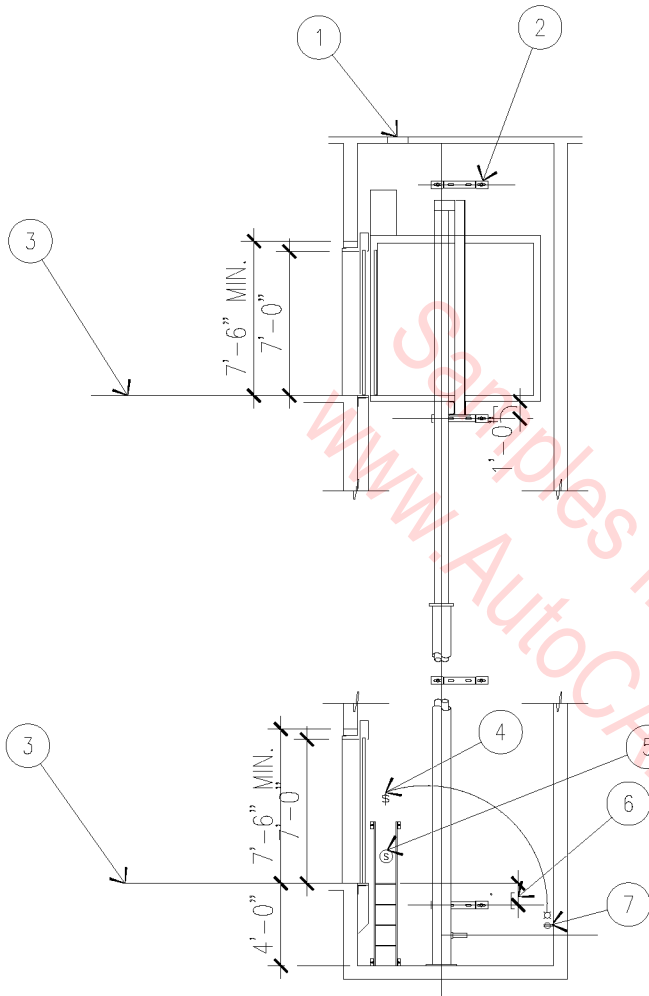
1. VENT HOIST WAY AS REQUIRED PER ASME A17.1, RULE 100.4.
2. TOP GUIDE RAIL BRACKET TO BE INSTALLED 10'-3" ABOVE FINISHED FLOOR IN OVERHEAD - SUPPORT TO BE PROVIDED BY CONTRACTOR.
3. FINISHED FLOOR.
4. PIT LIGHT BY GENERAL CONTRACTOR AT 4'-0" ABOVE F.F.
5. PIT STOP, 1'-6" ABOVE F.F.
6. MOUNT RAIL BRACKETS AT 1'-0" BELOW EACH FINISHED FLOOR LEVEL.
7. PIT LIGHT AND OUTLET BY GENERAL CONTRACTOR.



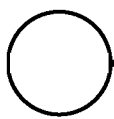
HOLELESS OILDRAULIC

1" = 10'-0"

14A-2010



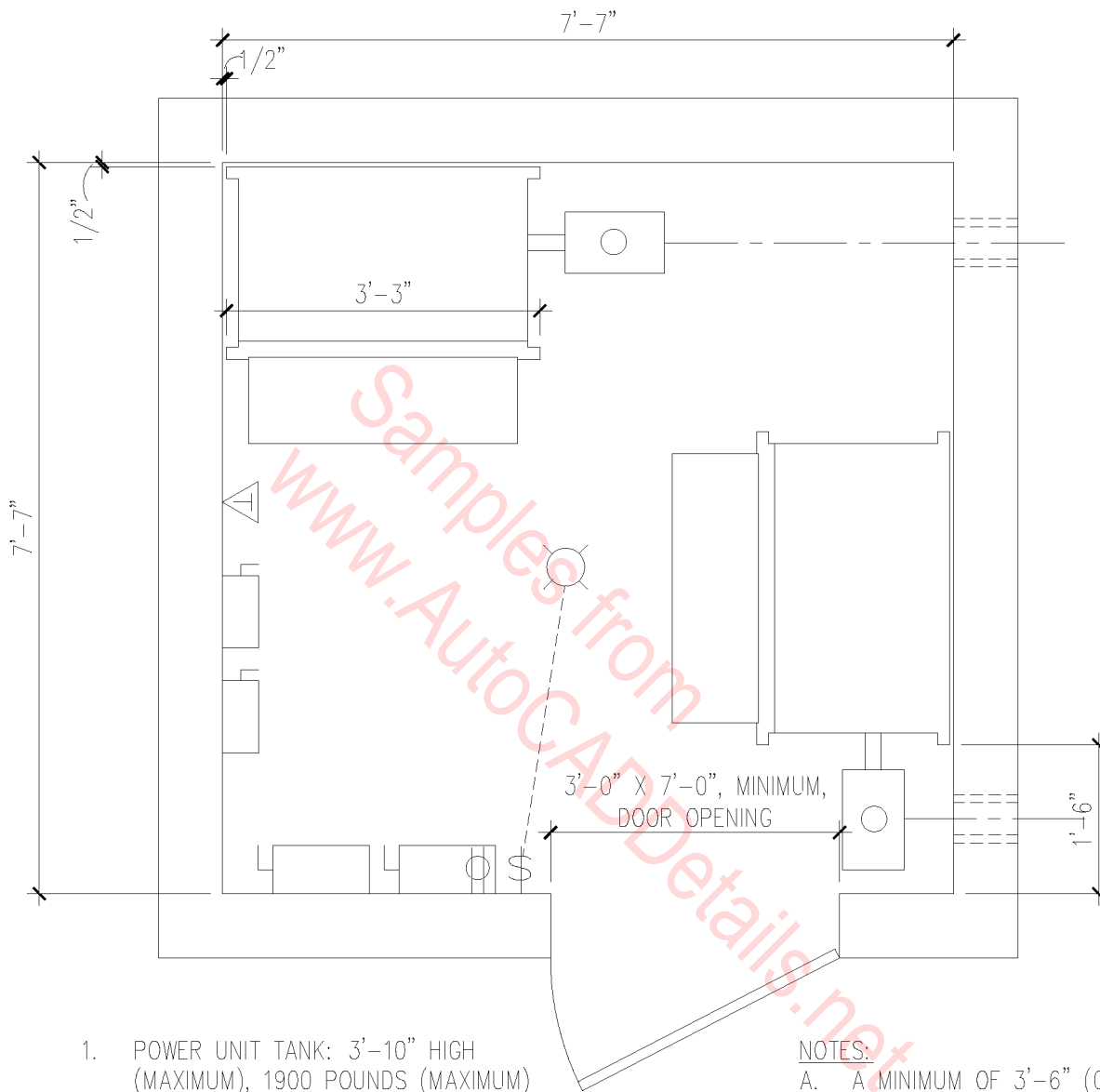
1. VENT HOIST WAY AS REQUIRED PER ASME A17.1, RULE 100.4.
2. TOP GUIDE RAIL BRACKET TO BE INSTALLED 10'-3" ABOVE FINISHED FLOOR IN OVERHEAD - SUPPORT TO BE PROVIDED BY CONTRACTOR.
3. FINISHED FLOOR.
4. PIT LIGHT BY GENERAL CONTRACTOR AT 4'-0" ABOVE F.F.
5. PIT STOP, 1'-6" ABOVE F.F.
6. MOUNT RAIL BRACKETS AT 1'-0" BELOW EACH FINISHED FLOOR LEVEL.
7. PIT LIGHT AND OUTLET BY GENERAL CONTRACTOR.



HOLELESS OILDRAULIC

1" = 10'-0"

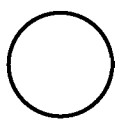
14A-2010



1. POWER UNIT TANK: 3'-10" HIGH (MAXIMUM), 1900 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 5'-5 3/4" HIGH.
3. CONNECTION.
4. LIGHT, SWITCH, AND CONVERTER OUTLET BY GENERAL CONTRACTOR.

NOTES:

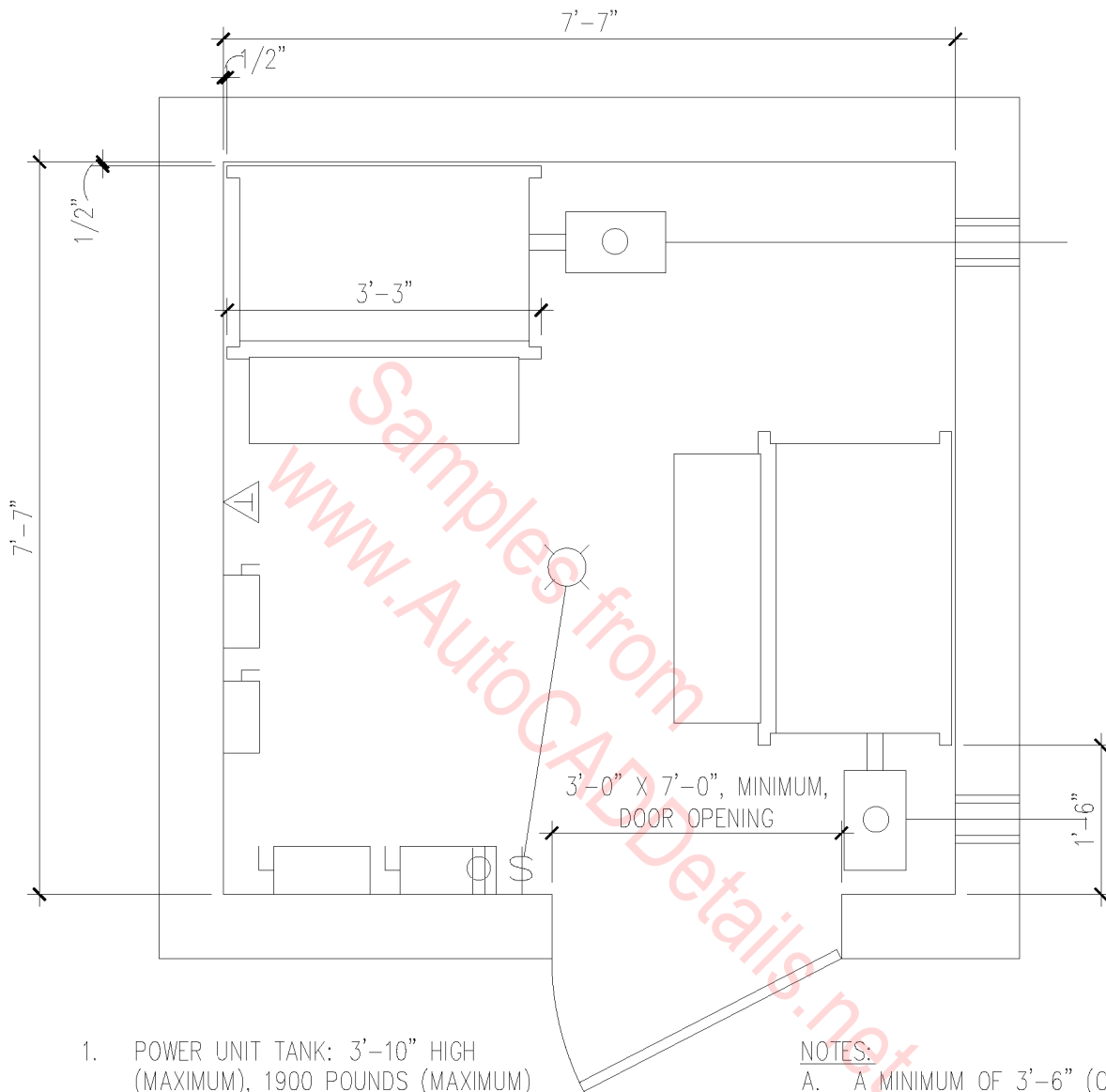
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 2" OIL LINE FROM TANK TO 2" SILENCER WITH 2" SHUTOFF VALVE AND 2" OIL LINE (0.154") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

1/2" = 1'-0"

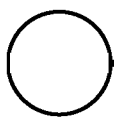
14A-2011



1. POWER UNIT TANK: 3'-10" HIGH (MAXIMUM), 1900 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 5'-5 3/4" HIGH.
3. CONNECTION.
4. LIGHT, SWITCH, AND CONVERTER OUTLET BY GENERAL CONTRACTOR.

NOTES:

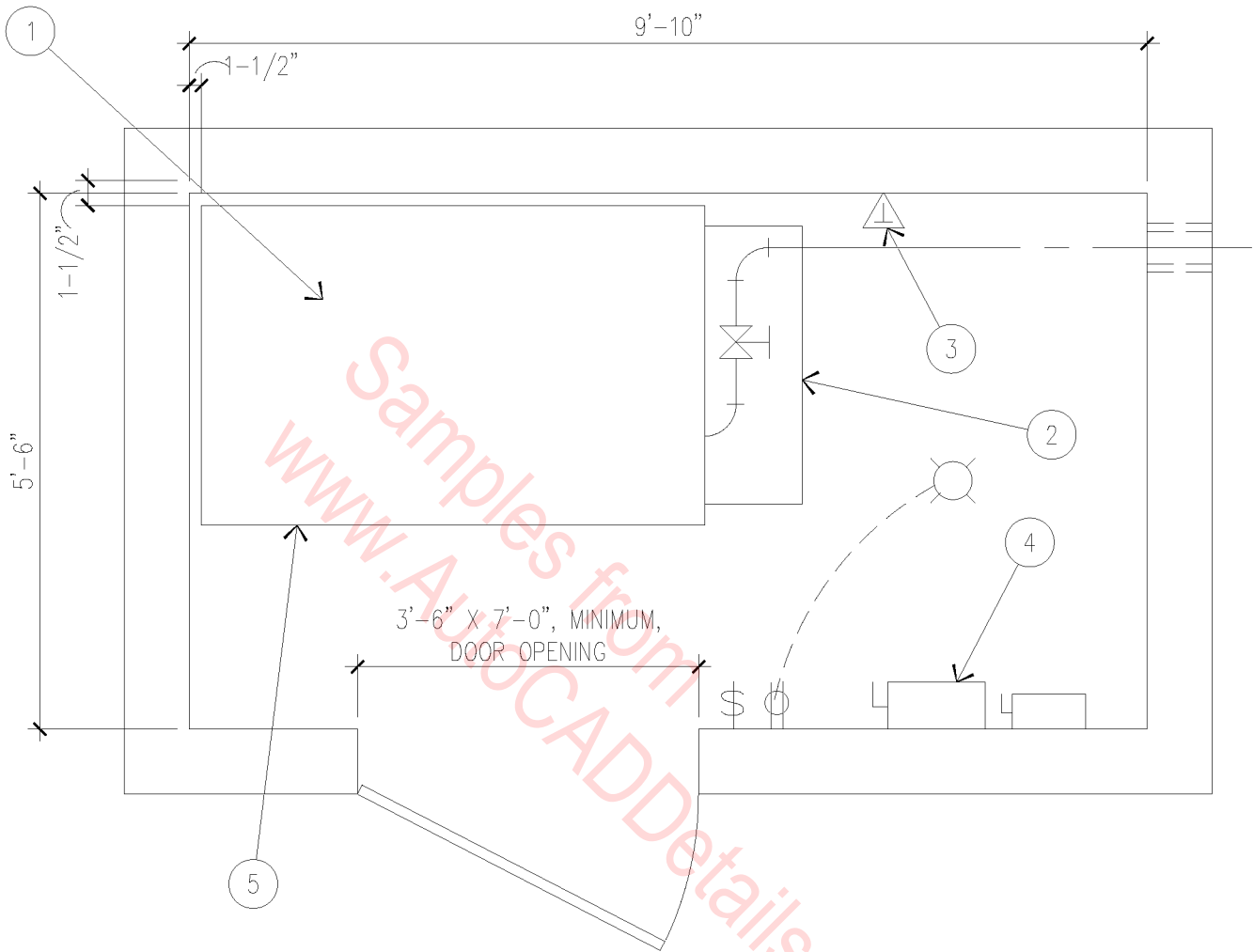
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 2" OIL LINE FROM TANK TO 2" SILENCER WITH 2" SHUTOFF VALVE AND 2" OIL LINE (0.154") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

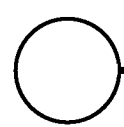
1/2" = 1'-0"

14A-2011



1. POWER UNIT TANK: 6'-3 1/2" HIGH (MAXIMUM), 5620 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 6'-10 1/4" HIGH.
3. TELEPHONE CONNECTION.
4. DISCONNECT SWITCH.
3. SHEAVE SIDE.

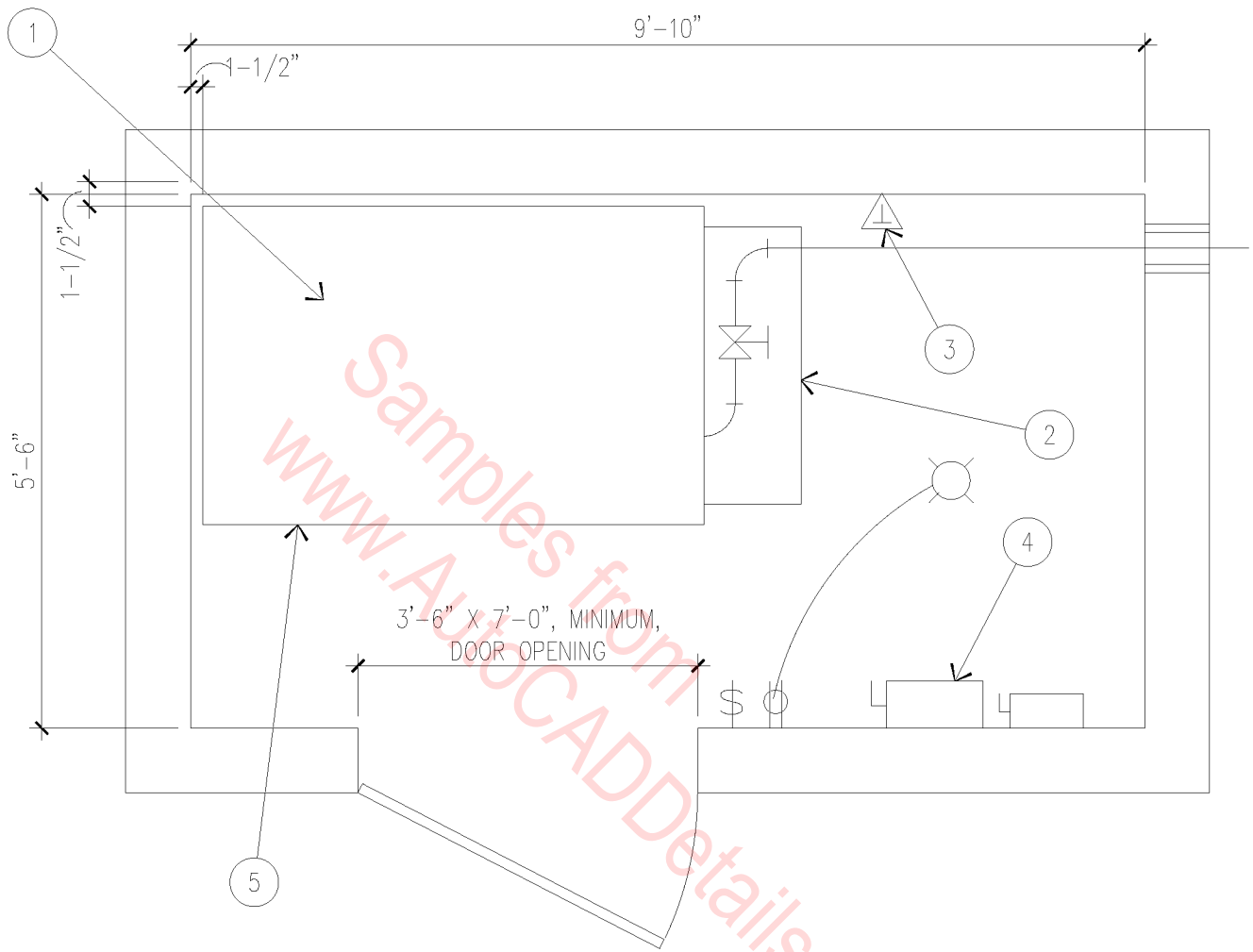
- NOTES:
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
 - B. 2" OIL LINE FROM TANK TO 2" SILENCER WITH 2" SHUTOFF VALVE AND 2" OIL LINE (0.154") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

1/2" = 1'-0"

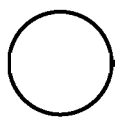
14A-2012



1. POWER UNIT TANK: 6'-3 1/2" HIGH (MAXIMUM), 5620 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 6'-10 1/4" HIGH.
3. TELEPHONE CONNECTION.
4. DISCONNECT SWITCH.
5. SHEAVE SIDE.

NOTES:

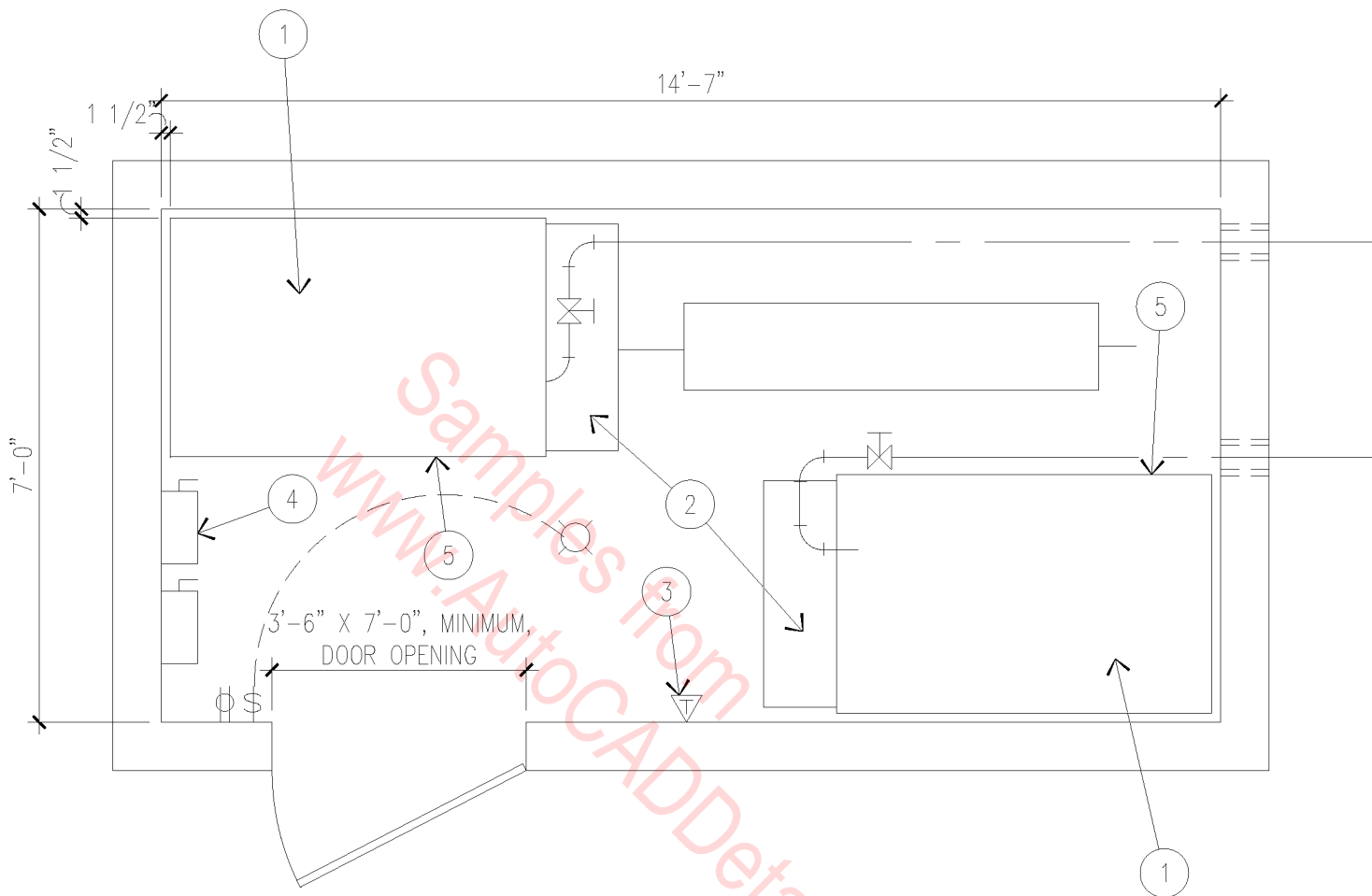
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 2" OIL LINE FROM TANK TO 2" SILENCER WITH 2" SHUTOFF VALVE AND 2" OIL LINE (0.154") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

1/2" = 1'-0"

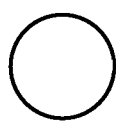
14A-2012



1. POWER UNIT TANK: 6'-3 1/2" HIGH (MAXIMUM), 5620 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 6'-10 1/4" HIGH.
3. TELEPHONE CONNECTION.
4. DISCONNECT SWITCH.
5. SHEAVE SIDE.
6. LIGHT, SWITCH, AND DUPLEX RECEPTACLE.

NOTES:

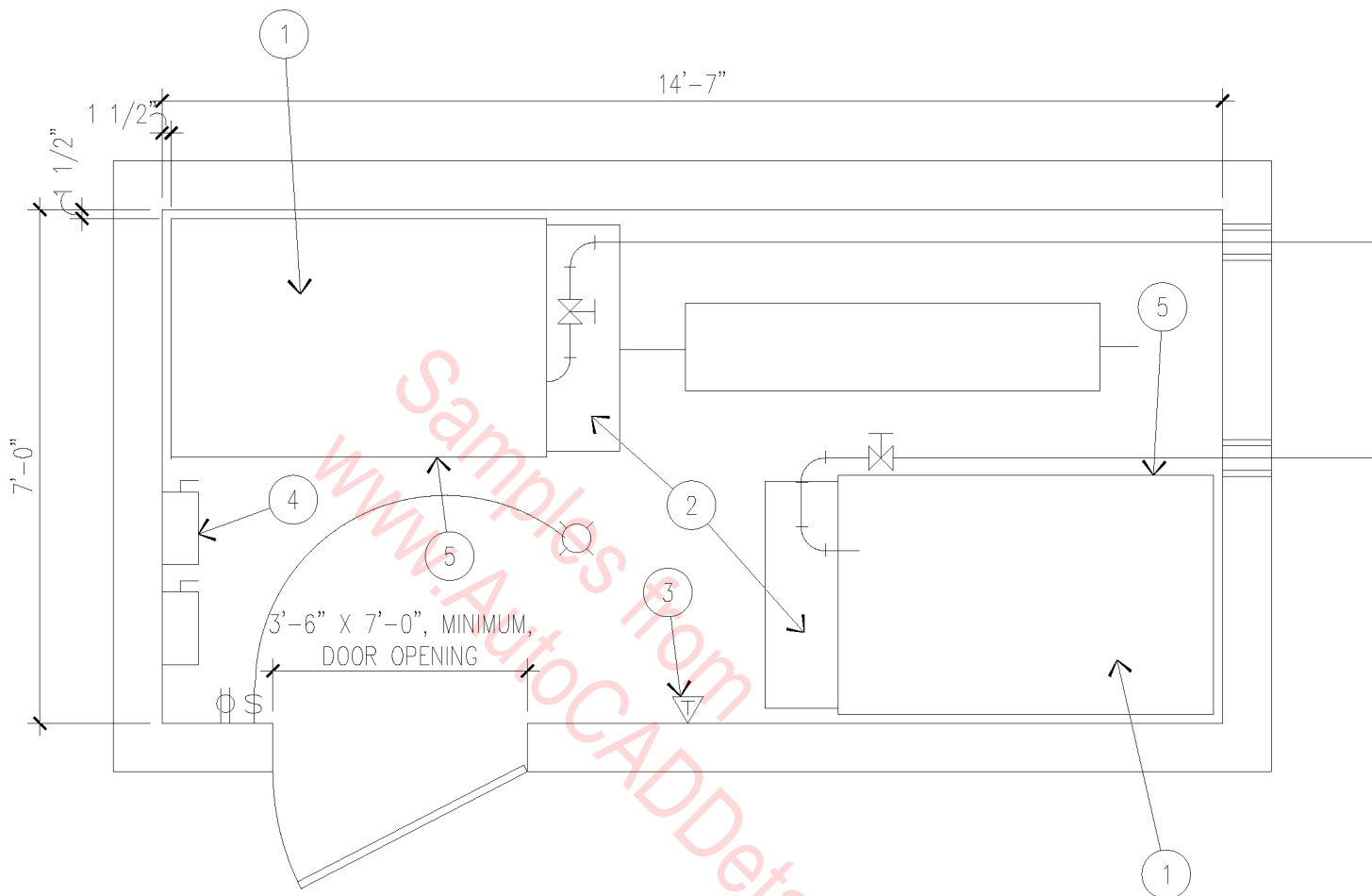
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 3" OIL LINE FROM TANK TO 3" SILENCER WITH 3" SHUTOFF VALVE AND 3" OIL LINE (0.216") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

3/8" = 1'-0"

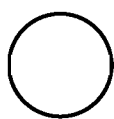
14A-2013



1. POWER UNIT TANK: 6'-3 1/2" HIGH (MAXIMUM), 5620 POUNDS (MAXIMUM) INCLUDING OIL.
2. CONTROLLER: 6'-10 1/4" HIGH.
3. TELEPHONE CONNECTION.
4. DISCONNECT SWITCH.
5. SHEAVE SIDE.
6. LIGHT, SWITCH, AND DUPLEX RECEPTACLE.

NOTES:

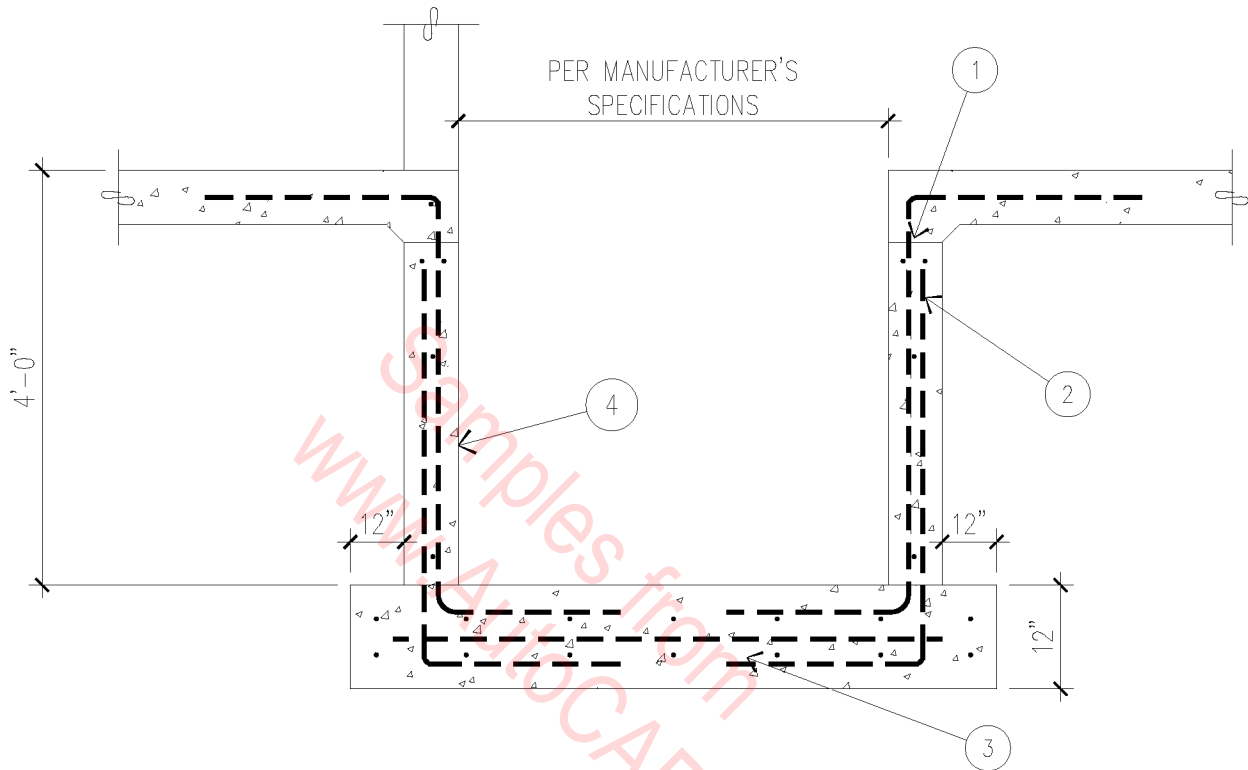
- A. A MINIMUM OF 3'-6" (OR 4'-0" WHEN FACING EACH OTHER) REQUIRED IN FRONT OF ELECTRICAL PANELS.
- B. 3" OIL LINE FROM TANK TO 3" SILENCER WITH 3" SHUTOFF VALVE AND 3" OIL LINE (0.216") FROM SHUTOFF VALVE TO JACK.



ELEVATOR EQUIPMENT

3/8" = 1'-0"

14A-2013



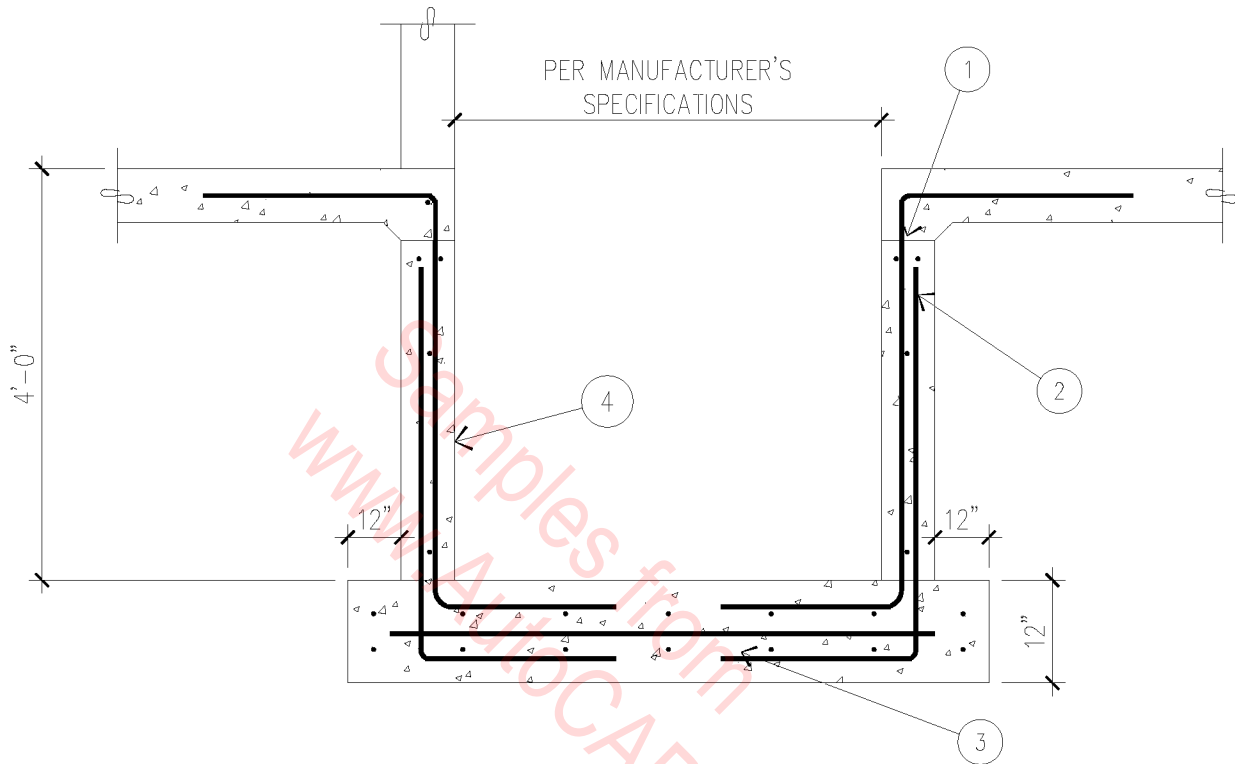
1. (1) #5 REBAR.
2. (2) #5 REBARS.
3. #6 REBAR AT 8" O.C., EACH WAY, TOP AND BOTTOM.
4. 6" CAST IN PLACE WALL WITH #6 AT 8" O.C., VERTICAL, AND #4 AT 16" O.C., HORIZONTAL.

NOTE: ALL INSERTS AND DIMENSIONS TO BE PROVIDED BY ELEVATOR COMPANY.

ELEVATOR PIT

1/2" = 1'-0"

14A-2014

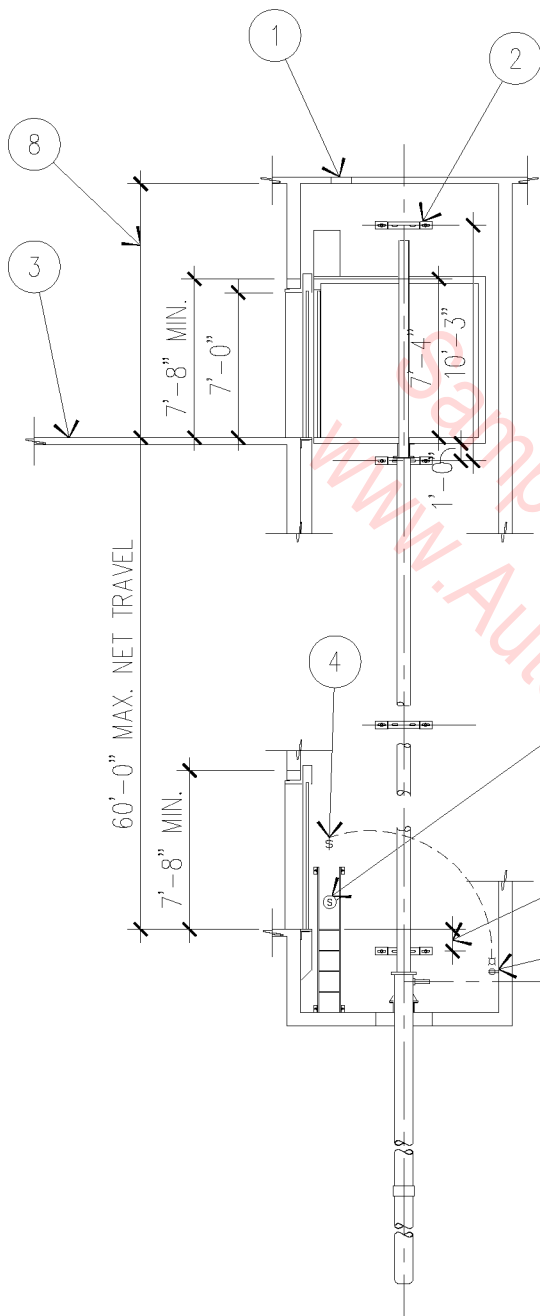


1. (1) #5 REBAR.
2. (2) #5 REBARS.
3. #6 REBAR AT 8" O.C., EACH WAY, TOP AND BOTTOM.
4. 6" CAST IN PLACE WALL WITH #6 AT 8" O.C., VERTICAL, AND #4 AT 16" O.C., HORIZONTAL.

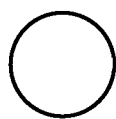
NOTE: ALL INSERTS AND DIMENSIONS TO BE PROVIDED BY ELEVATOR COMPANY.


ELEVATOR PIT
 1/2" = 1'-0"

14A-2014



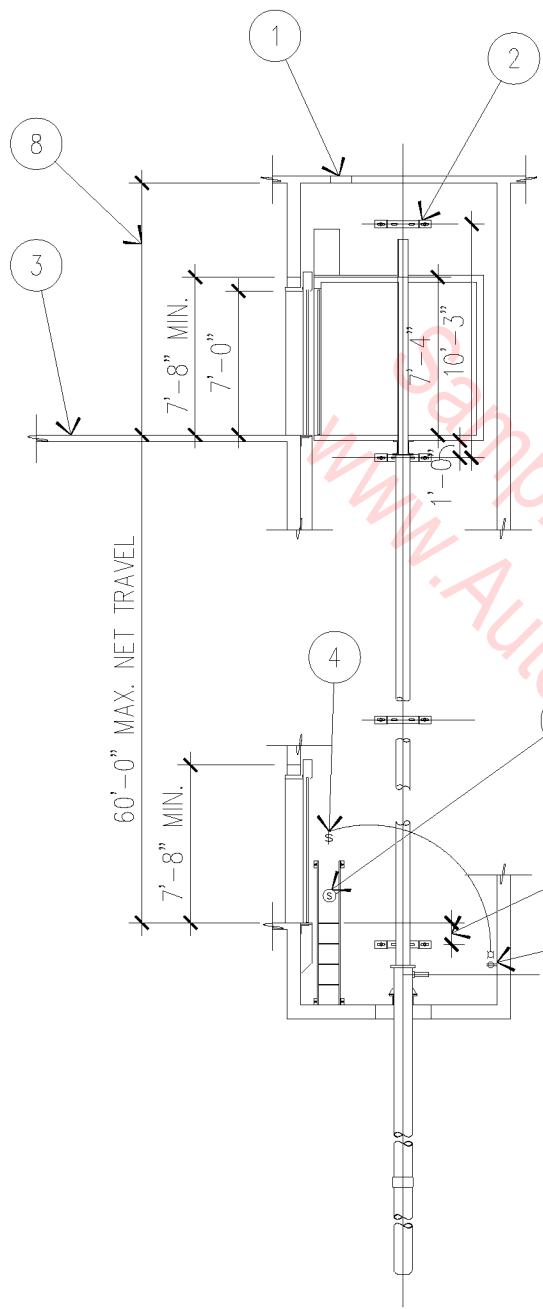
1. VENT HOIST WAY AS REQUIRED PER ASME A17.1, RULE 100.4.
2. TOP GUIDE RAIL BRACKET TO BE INSTALLED 10'-3" ABOVE FINISHED FLOOR IN OVERHEAD - SUPPORT TO BE PROVIDED BY CONTRACTOR.
3. FINISHED FLOOR.
4. PIT LIGHT, BY GENERAL CONTRACTOR, AT 4'-0" ABOVE F.F.
5. PIT STOP, 1'-6" ABOVE F.F.
6. MOUNT RAIL BRACKETS AT 1'-0" BELOW EACH FINISHED FLOOR LEVEL.
7. PIT LIGHT AND OUTLET BY GENERAL CONTRACTOR.
8. 12'-0" MINIMUM CLEAR REQUIRED AT 100 FEET PER MINUTE OR LESS WITH A TOP OVERLAY OF 6", 12'-3" MINIMUM CLEAR REQUIRED ABOVE 100 FEET PER MINUTE WITH TOP OVERLAY OF 9".



OILDRAULIC SECTION

1" = 10'-0"

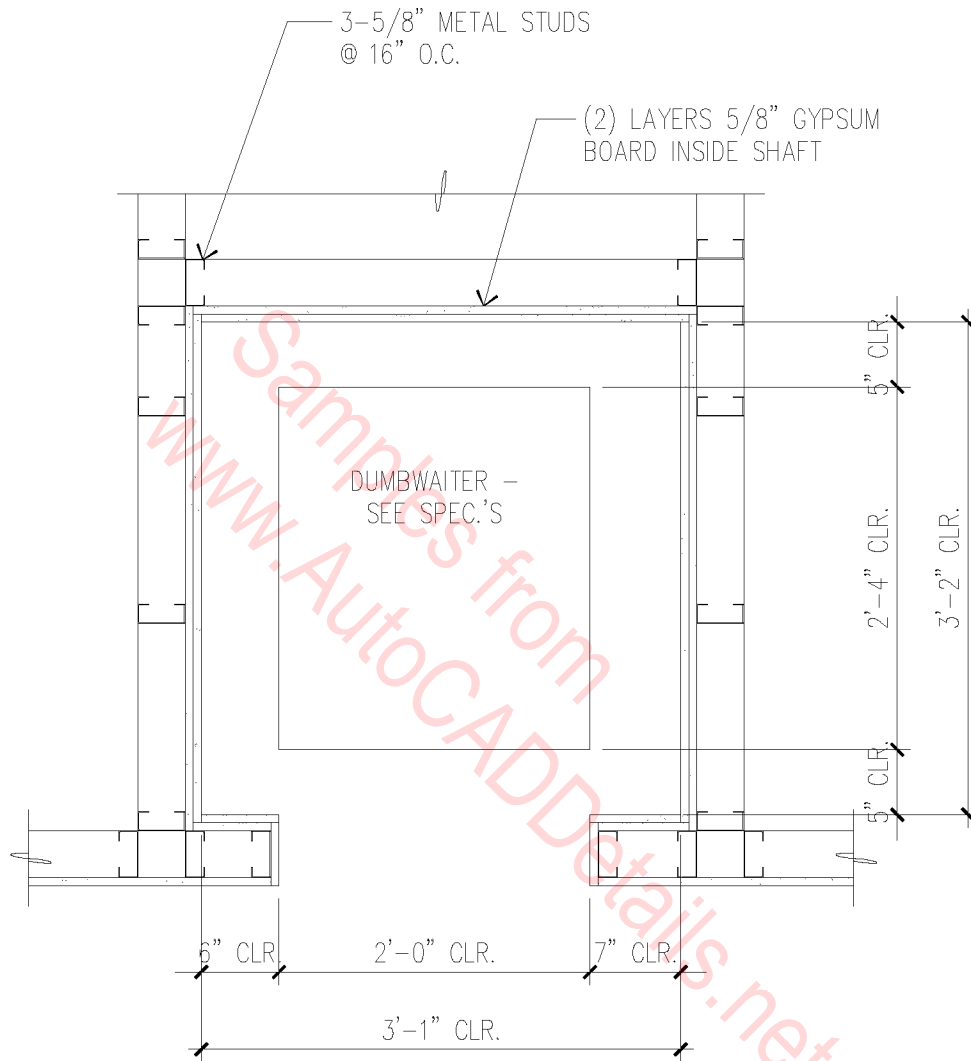
14A-2015



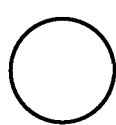
1. VENT HOIST WAY AS REQUIRED PER ASME A17.1, RULE 100.4.
2. TOP GUIDE RAIL BRACKET TO BE INSTALLED 10'-3" ABOVE FINISHED FLOOR IN OVERHEAD – SUPPORT TO BE PROVIDED BY CONTRACTOR.
3. FINISHED FLOOR.
4. PIT LIGHT, BY GENERAL CONTRACTOR, AT 4'-0" ABOVE F.F.
5. PIT STOP, 1'-6" ABOVE F.F.
6. MOUNT RAIL BRACKETS AT 1'-0" BELOW EACH FINISHED FLOOR LEVEL.
7. PIT LIGHT AND OUTLET BY GENERAL CONTRACTOR.
8. 12'-0" MINIMUM CLEAR REQUIRED AT 100 FEET PER MINUTE OR LESS WITH A TOP OVERLAY OF 6", 12'-3" MINIMUM CLEAR REQUIRED ABOVE 100 FEET PER MINUTE WITH TOP OVERLAY OF 9".

○ OILDRAULIC SECTION
 1" = 10'-0"

14A-2015



NOTE: COORDINATE SHAFT ENCLOSURE CLEARANCES WITH DUMBWAITER MANUFACTURER.

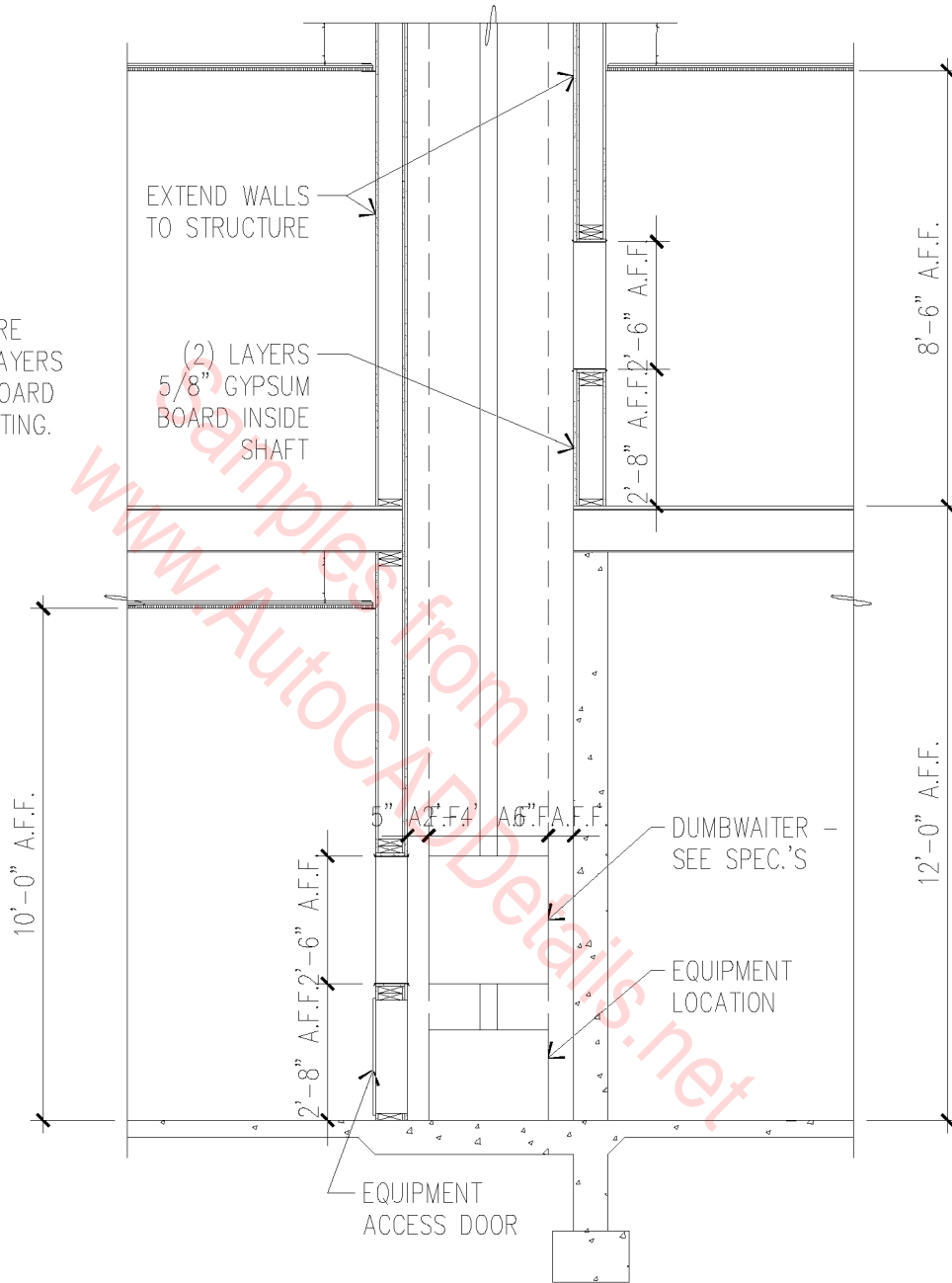


DUMBWAITER DETAIL

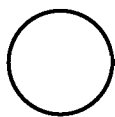
3/4" = 1'-0"

14A-4001

NOTE: SHAFT ENCLOSURE SHALL BE (2) LAYERS 5/8" GYPSUM BOARD FOR 2 HOUR RATING.

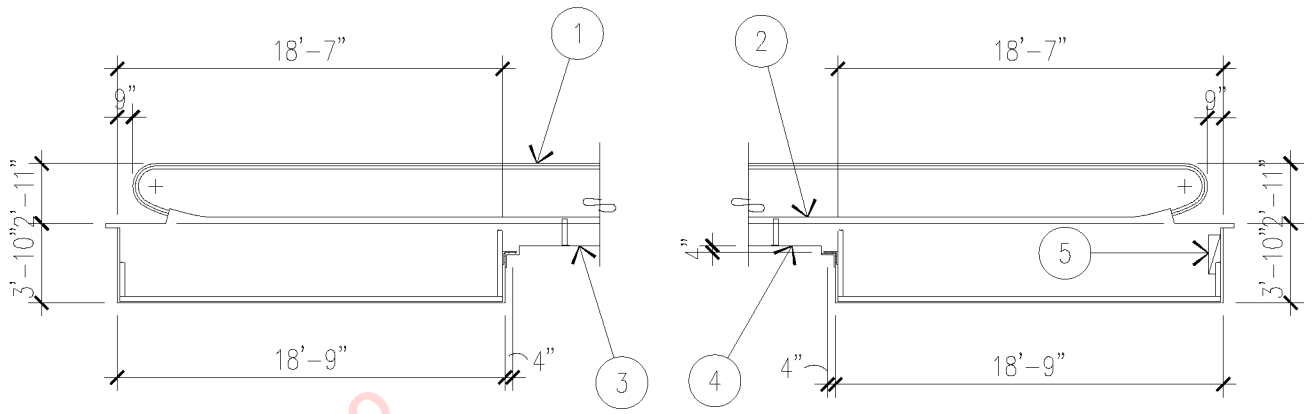


DUMBWAITER SHAFT ENCLOSURE



1/4" = 1'-0"

14A-4002

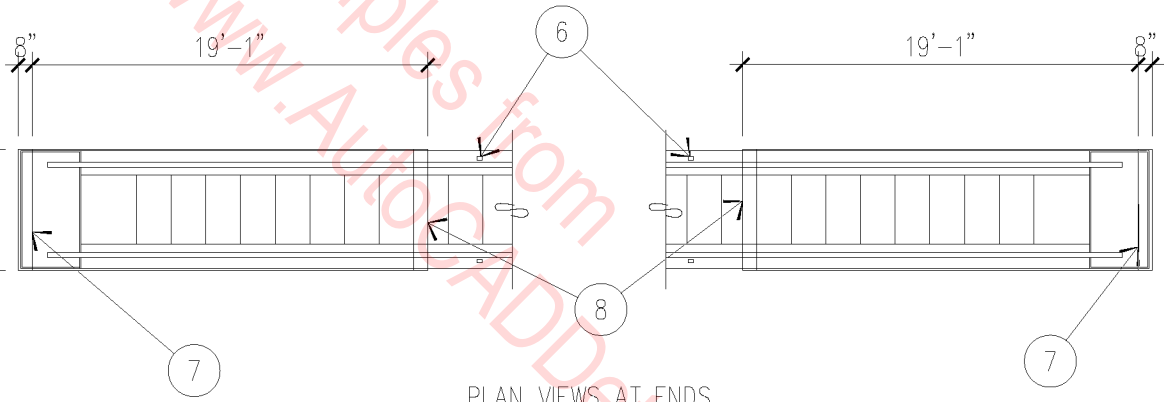


REVERSING END OF WALK

ELEVATION VIEWS AT ENDS

DRIVE END OF WALK

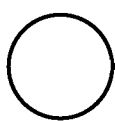
- 3W: 4'-4" (4'-6" R.O.)
- 4W: 5'-0" (5'-2" R.O.)
- 5W: 5'-8" (5'-10" R.O.)
- 7W: 7'-0" (7'-2" R.O.)



PLAN VIEWS AT ENDS

- 1. TOP OF HANDRAIL.
- 2. FINISH FLOOR LEVEL.
- 3. BOTTOM OF STANCHION WELLWAY.
- 4. FINISH FLOOR TO STANCHION WELL WAY FLOOR.
- 5. CONTROLLER.

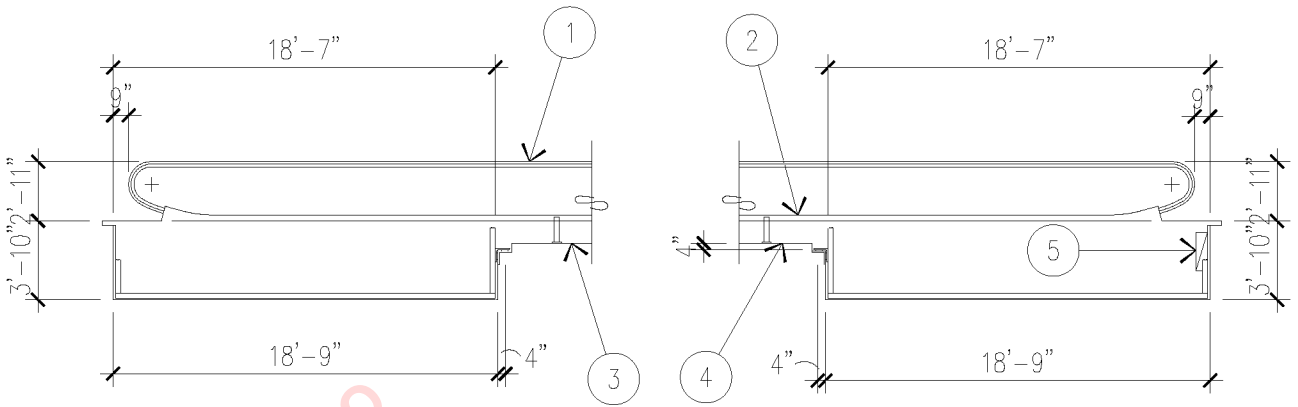
- 6. STANCHION LOAD LOCATION, 900 LB. REACTION TYPICAL PER LEG. GENERALLY 3'-0" SPACING BETWEEN LOAD LOCATIONS.
- 7. 10,000# REACTION.
- 8. 9,000# REACTION.



MOVING WALKWAY

1" = 10'-0"

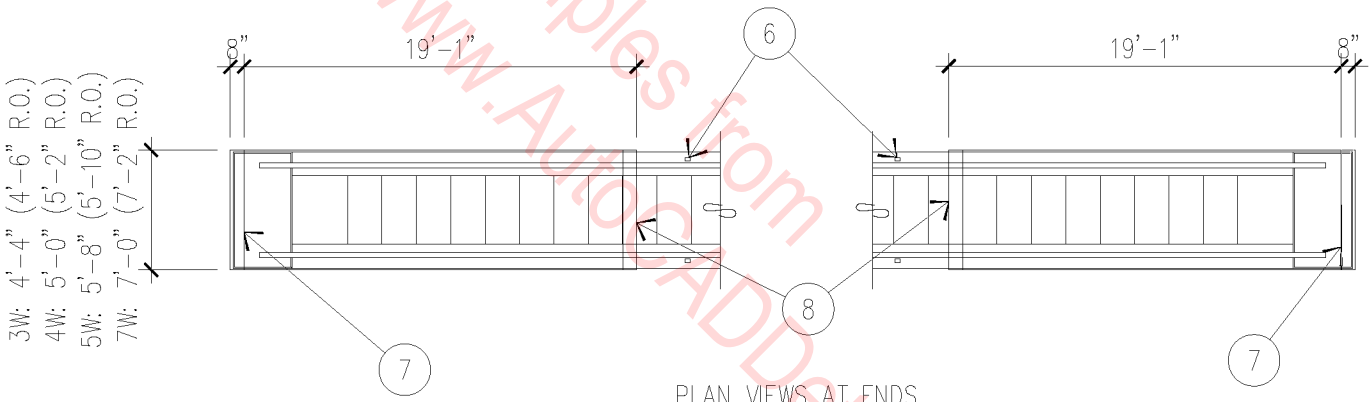
14A-4003



REVERSING END OF WALK

ELEVATION VIEWS AT ENDS

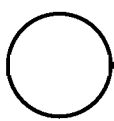
DRIVE END OF WALK



PLAN VIEWS AT ENDS

- 1. TOP OF HANDRAIL.
- 2. FINISH FLOOR LEVEL.
- 3. BOTTOM OF STANCHION WELLWAY.
- 4. FINISH FLOOR TO STANCHION WELL WAY FLOOR.
- 5. CONTROLLER.

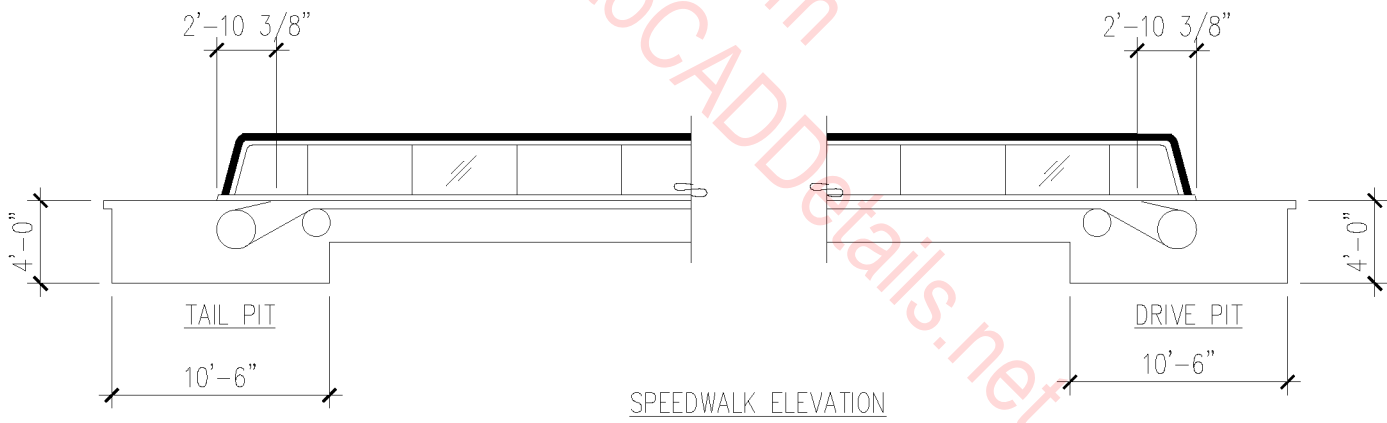
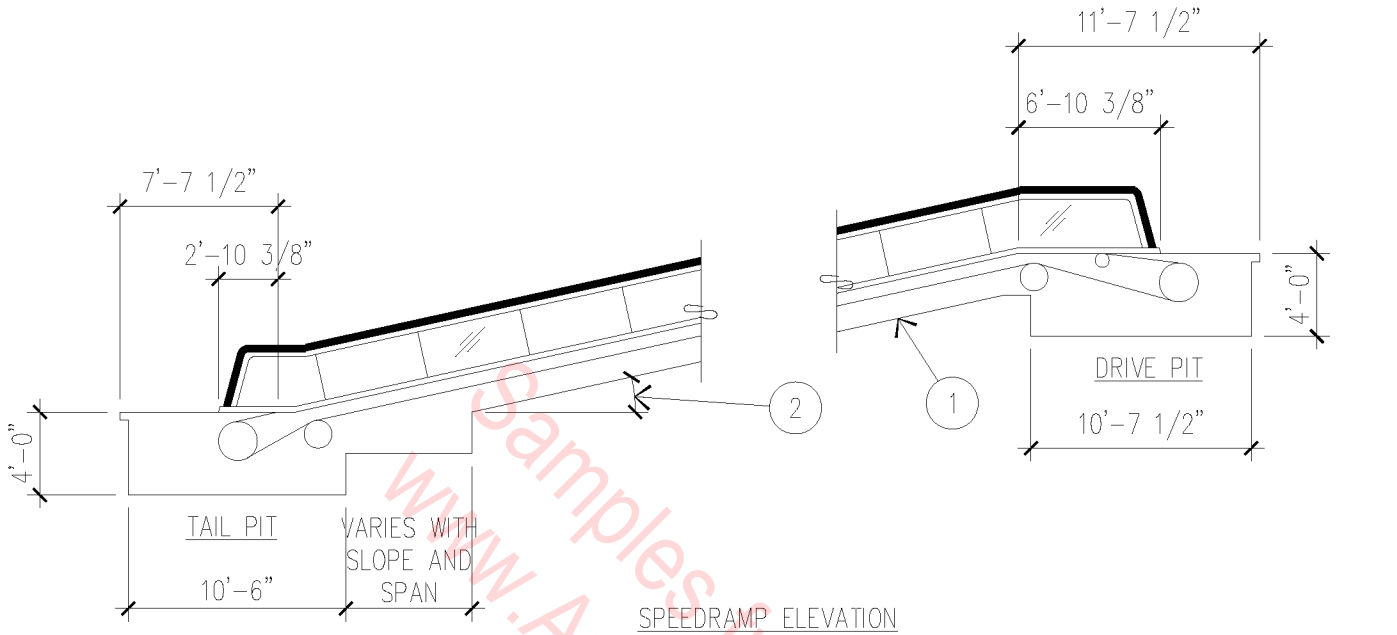
- 6. STANCHION LOAD LOCATION, 900 LB. REACTION TYPICAL PER LEG. GENERALLY 3'-0" SPACING BETWEEN LOAD LOCATIONS.
- 7. 10,000# REACTION.
- 8. 9,000# REACTION.



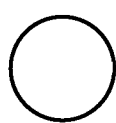
MOVING WALKWAY

1" = 10'-0"

14A-4003



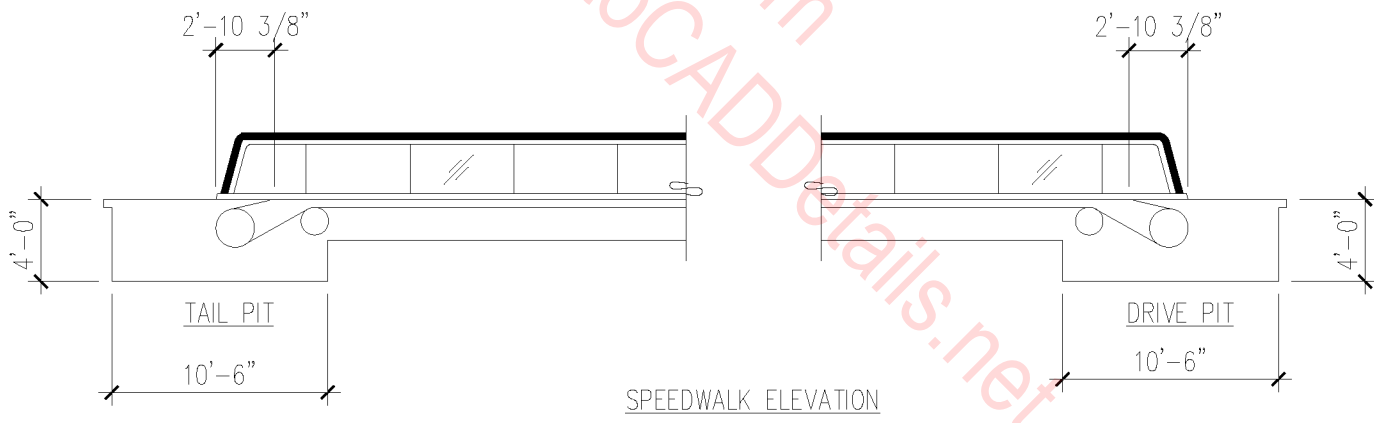
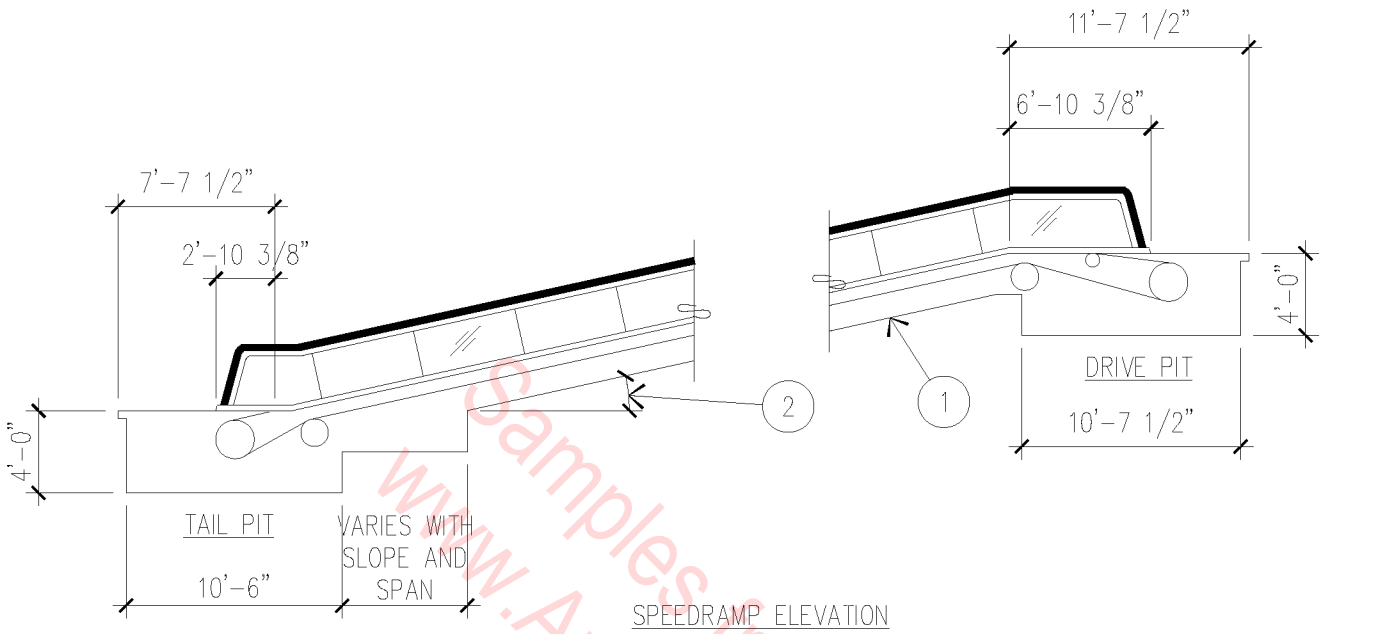
1. BOTTOM OF STRUCTURE.
2. 10° MAXIMUM WITH SHOPPING CARTS,
12° MAXIMUM WITHOUT SHOPPING CARTS.



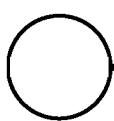
SPEEDWALK

1" = 10'-0"

14A-4004



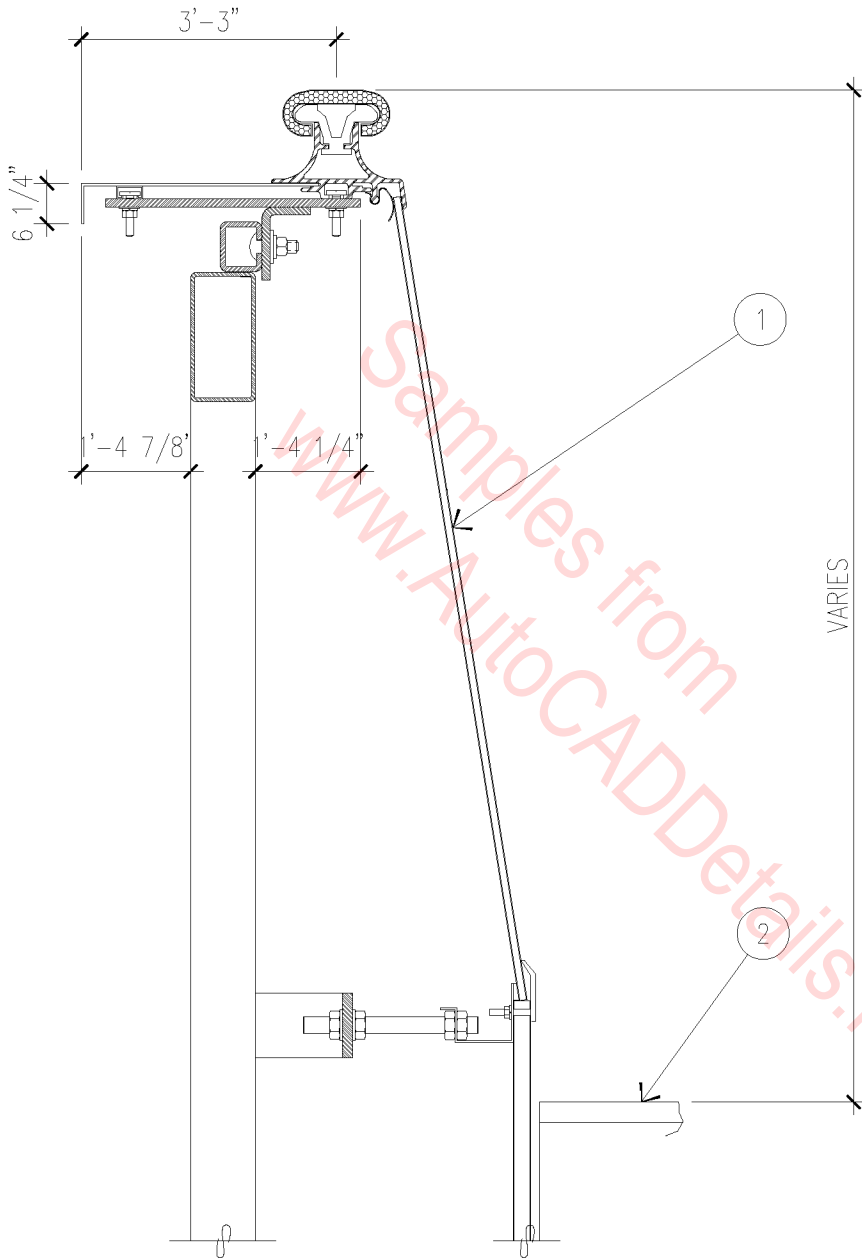
1. BOTTOM OF STRUCTURE.
2. 10° MAXIMUM WITH SHOPPING CARTS,
12° MAXIMUM WITHOUT SHOPPING CARTS.



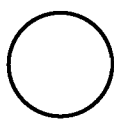
SPEEDWALK

1" = 10'-0"

14A-4004



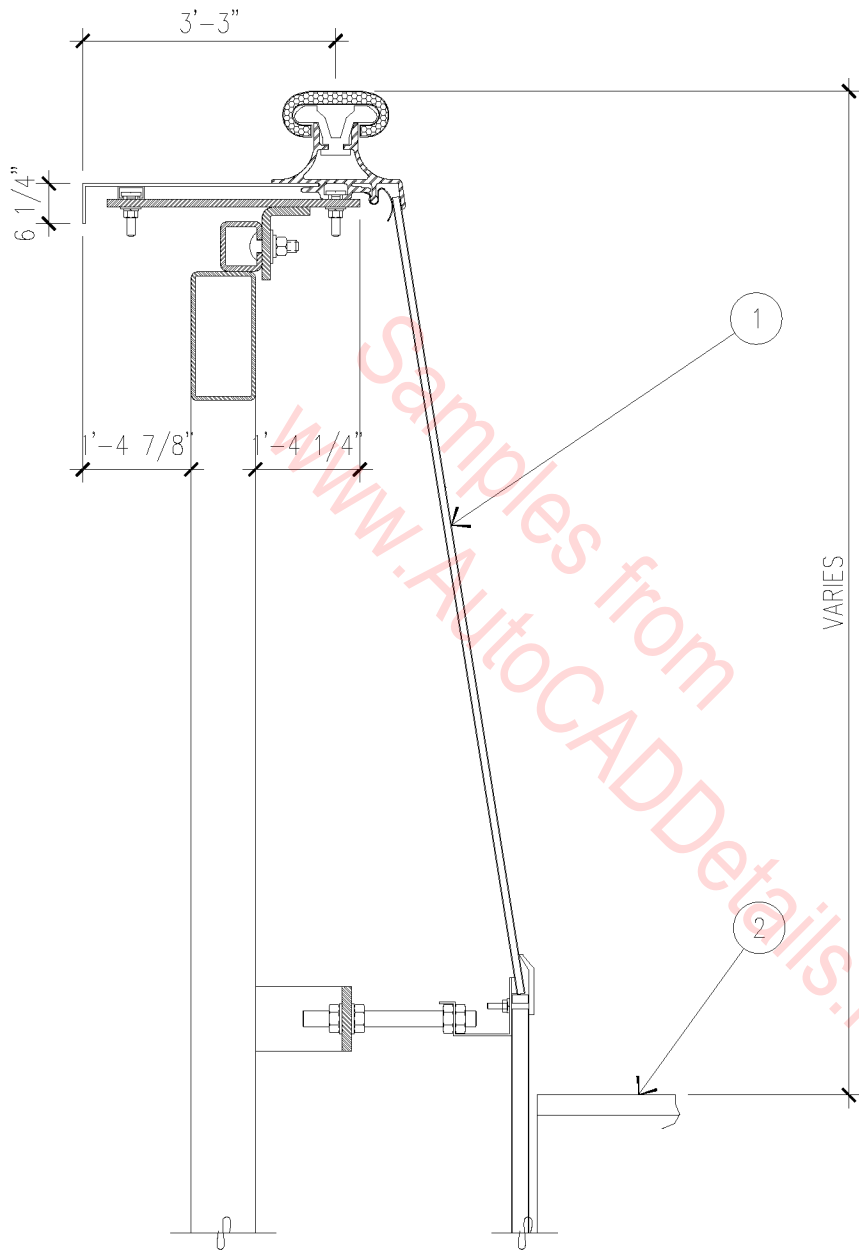
- 1. INNER PANEL.
- 2. TOP OF STEP.



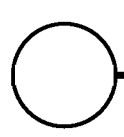
SOLID BALUSTRADE

3/8" - 1'-0"

14A-4005



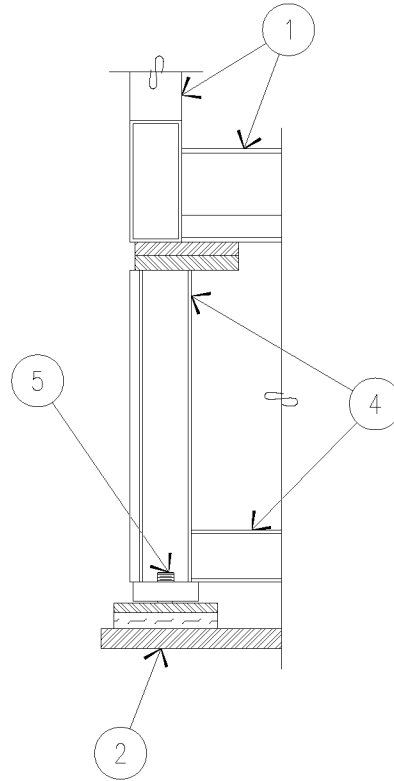
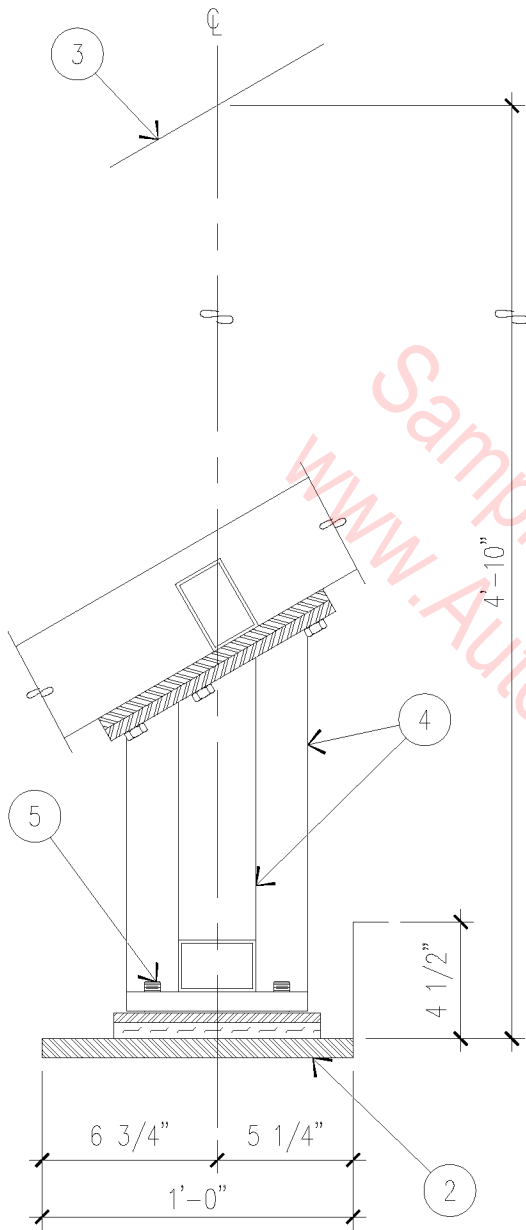
- 1. INNER PANEL.
- 2. TOP OF STEP.



SOLID BALUSTRADE

3/8" - 1'-0"

14A-4005

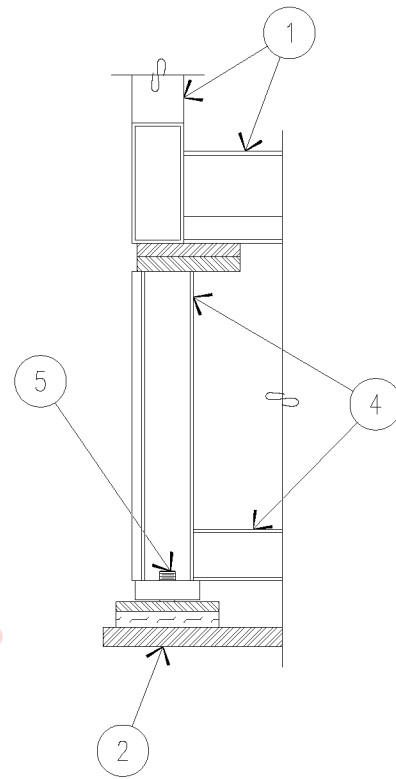
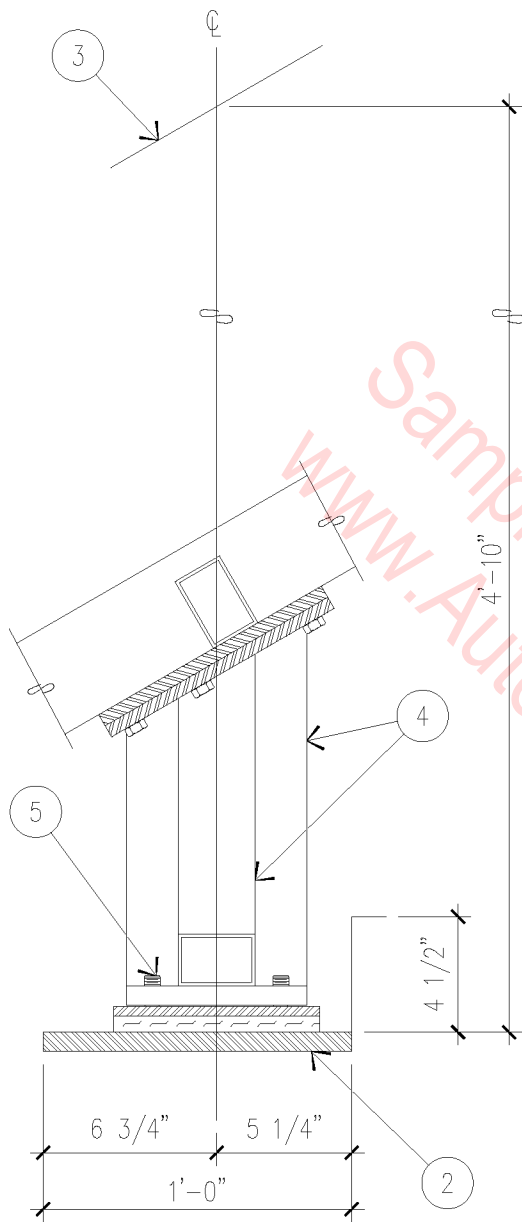


1. ESCALATOR TRUSS.
2. BEARING PLATE 12" X 3/4".
3. NOSE LINE.
4. SUPPORT.
5. SET SCREWS.

○ INTERMEDIATE SUPPORT

1 1/2" = 1'-0"

14A-4006

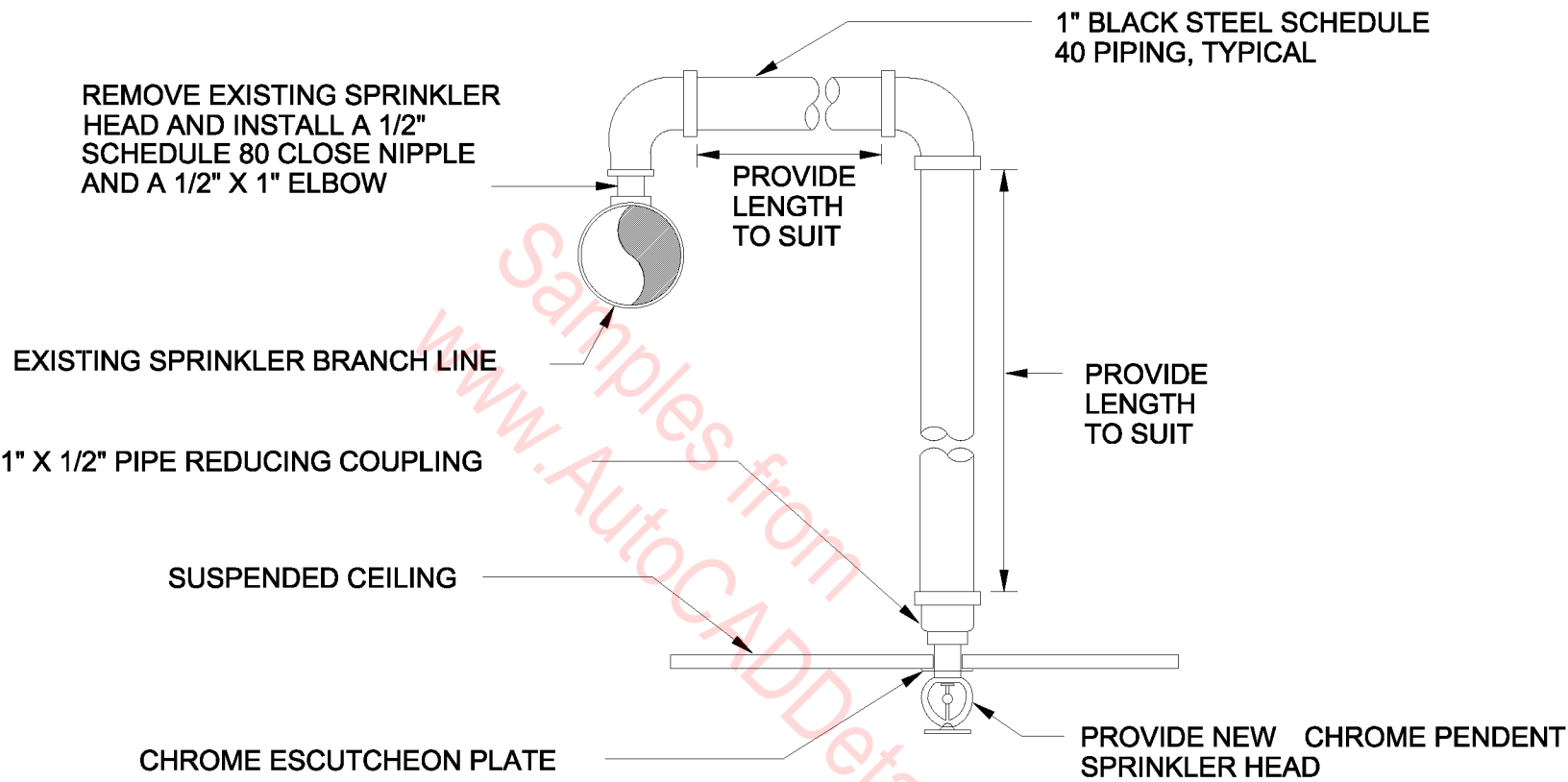


- 1. ESCALATOR TRUSS.
- 2. BEARING PLATE 12" X 3/4".
- 3. NOSE LINE.
- 4. SUPPORT.
- 5. SET SCREWS.

INTERMEDIATE SUPPORT

1 1/2" = 1'-0"

14A-4006

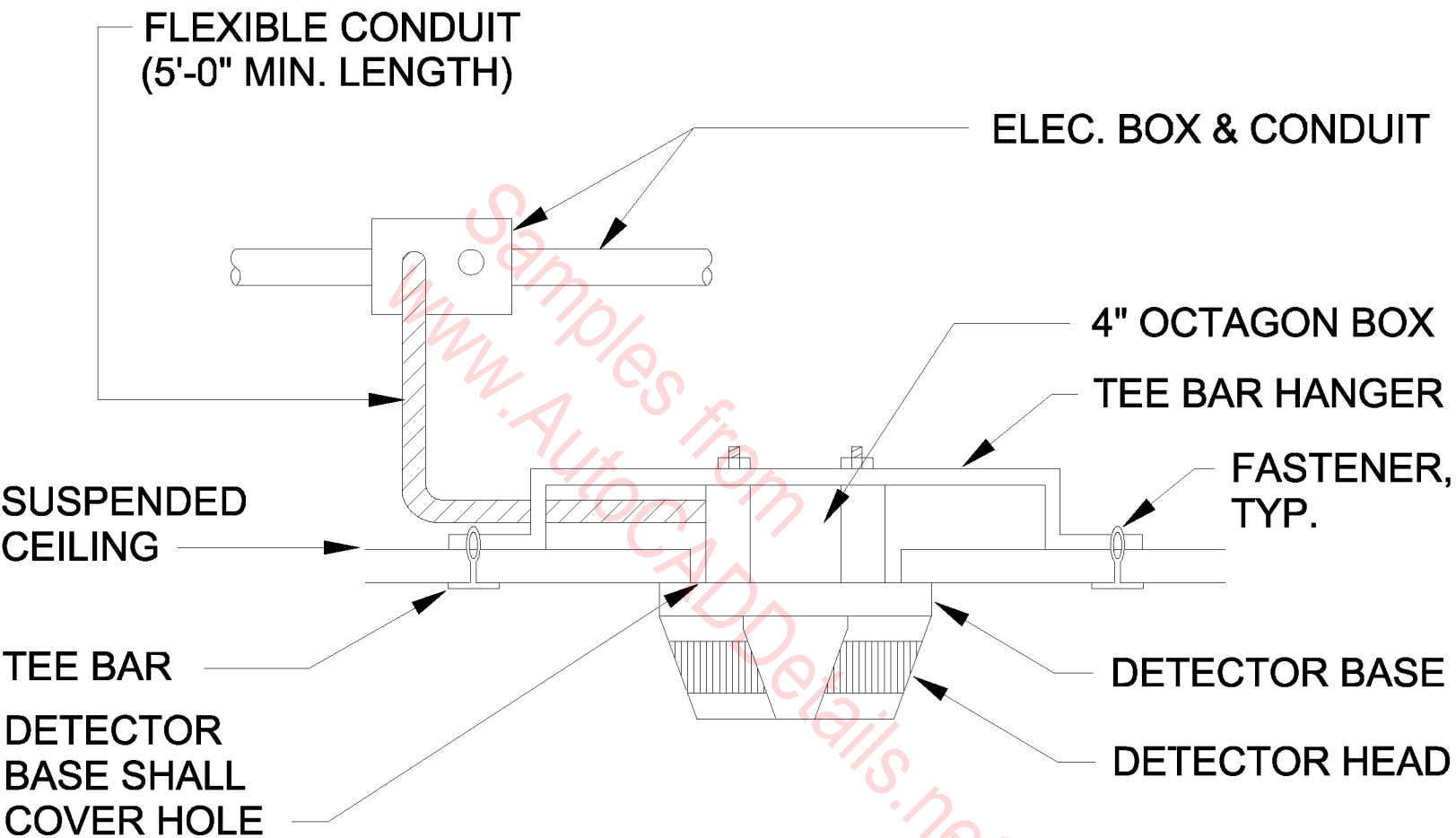


NOTES:

1. ADJUST SPRINKLER DROPS AS NECESSARY TO CLEAR OBSTRUCTIONS SUCH AS THE CEILING "T" BAR SUSPENSION SYSTEM, LIGHT FIXTURES, ETC. PROVIDE A PIPE HANGER IF THE HORIZONTAL OFFSET LENGTH EXCEEDS 24 INCHES.
2. THIS SPRINKLER HEAD DROP IS APPLICABLE ONLY WHERE IT IS NOT NECESSARY TO RETAIN AN UPRIGHT SPRINKLER FOR PROTECTION OF COMBUSTIBLE CONSTRUCTION ABOVE THE CEILING.

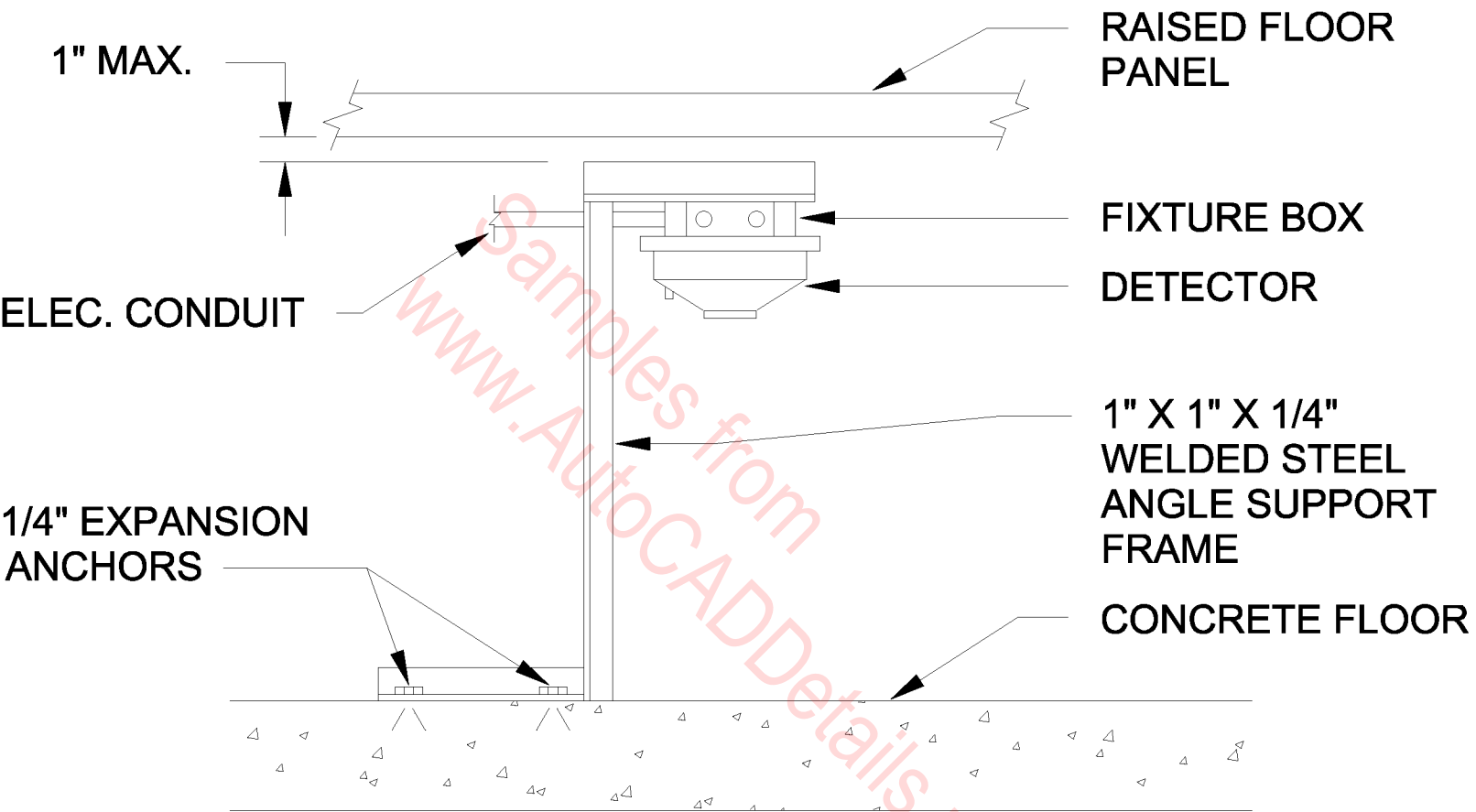
TYPICAL NEW SPRINKLER HEAD DROP

N.T.S.



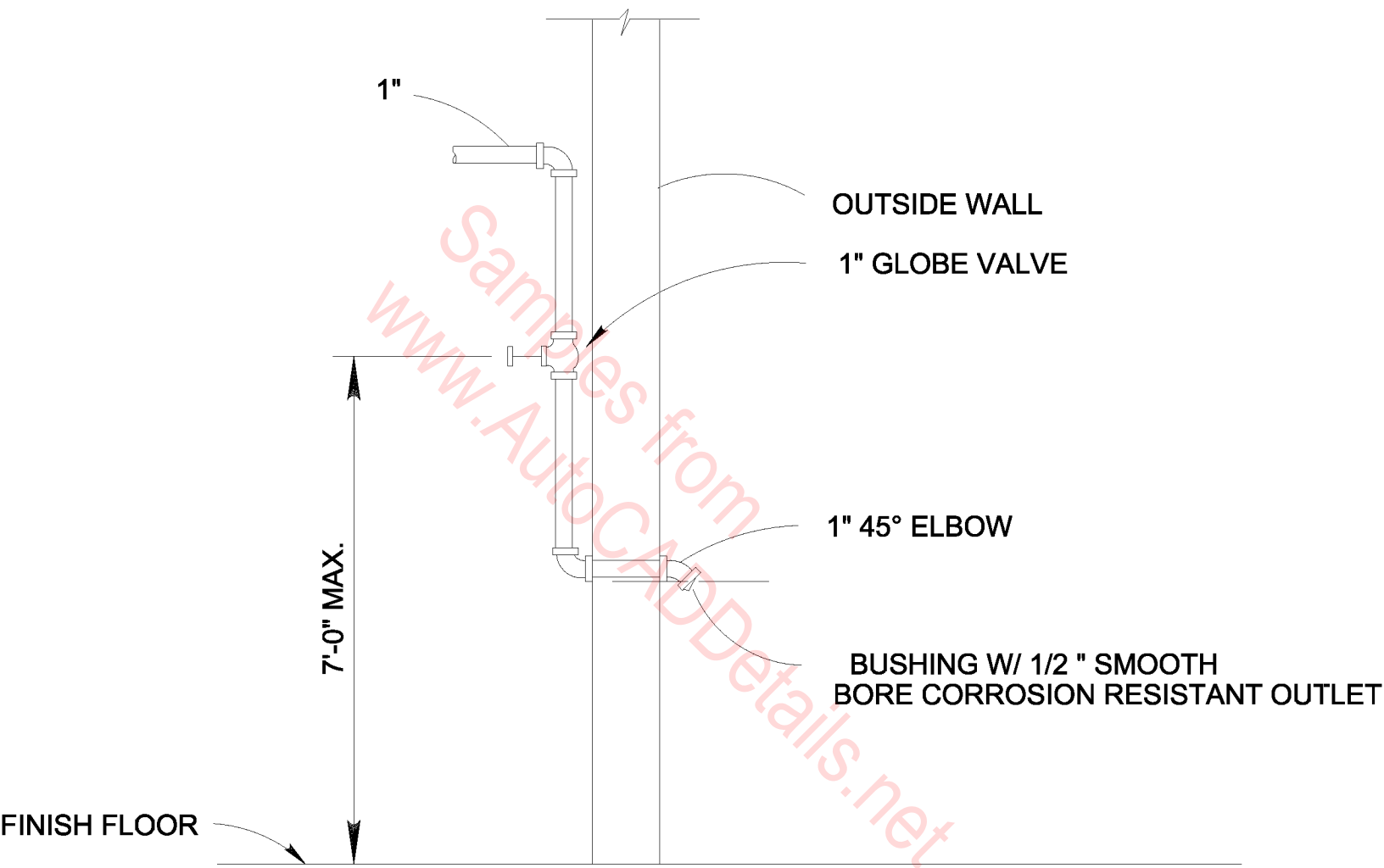
CEILING MOUNTED DETECTOR

N.T.S.



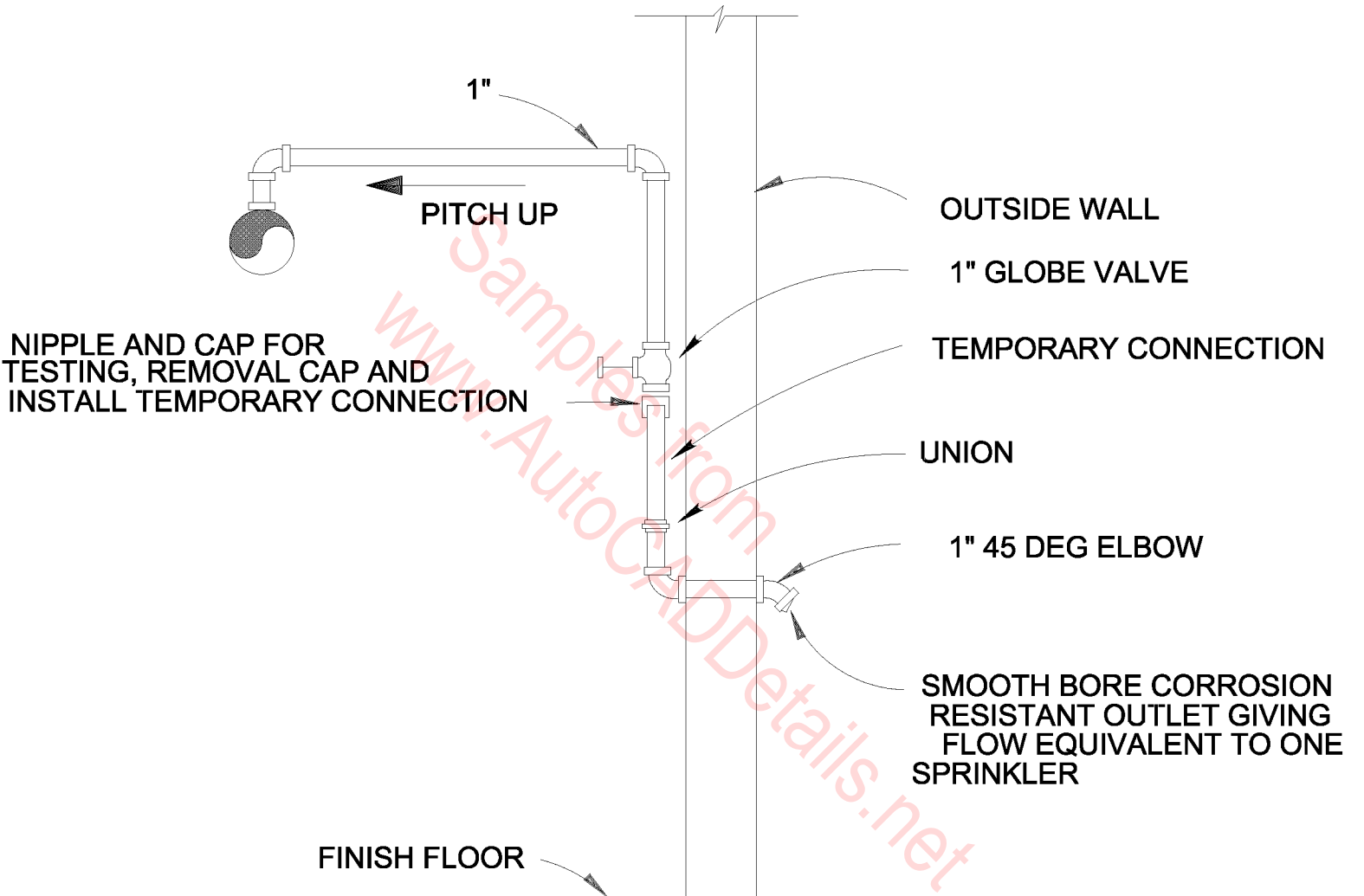
TYPICAL UNDERFLOOR SMOKE DETECTOR MOUNTING

N.T.S.



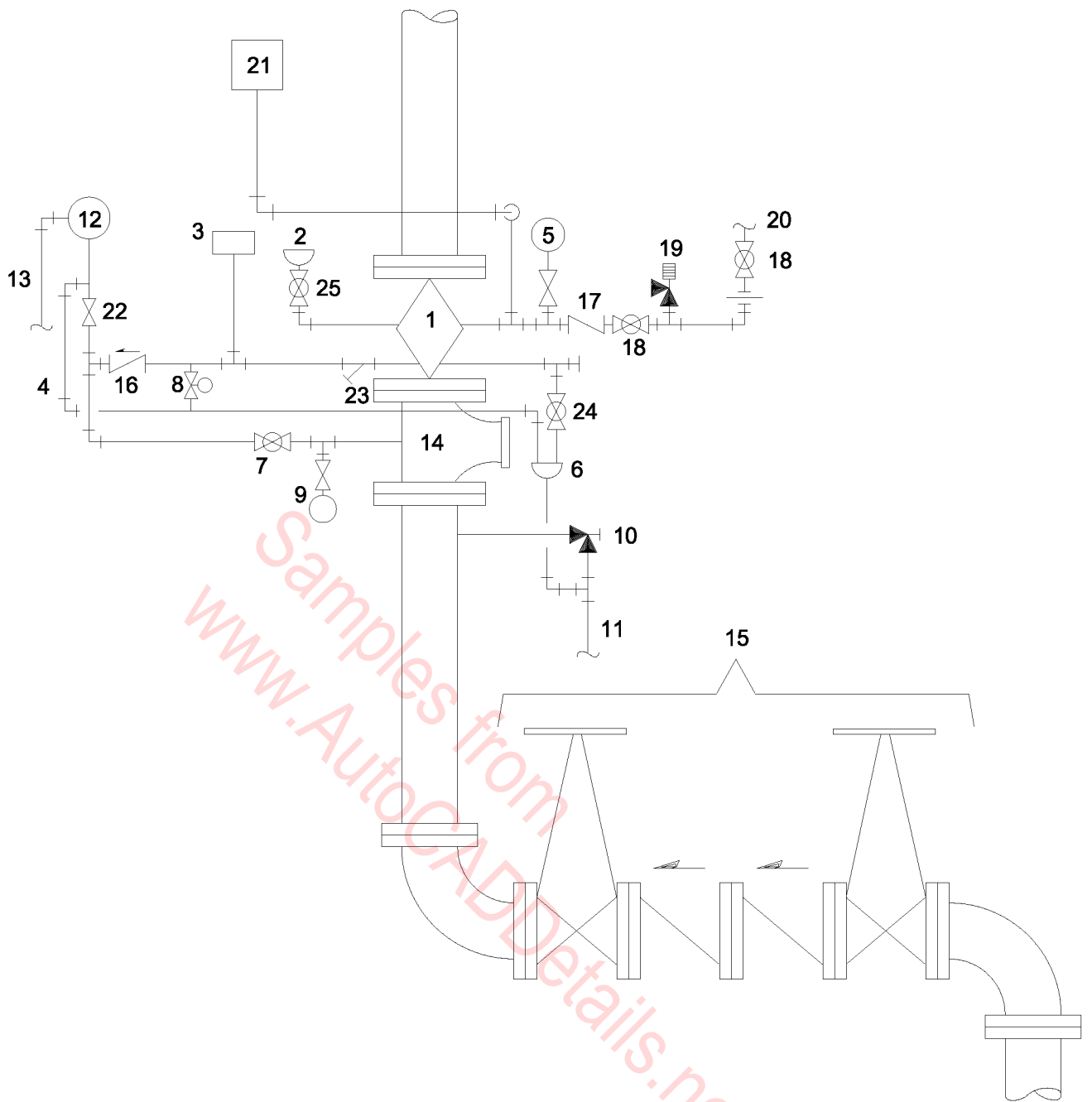
INSPECTORS TEST CONNECTION FOR WET PIPE SPRINKLER SYSTEM

N.T.S.



INSPECTORS TEST CONNECTION FOR DRY PIPE SPRINKLER SYSTEM

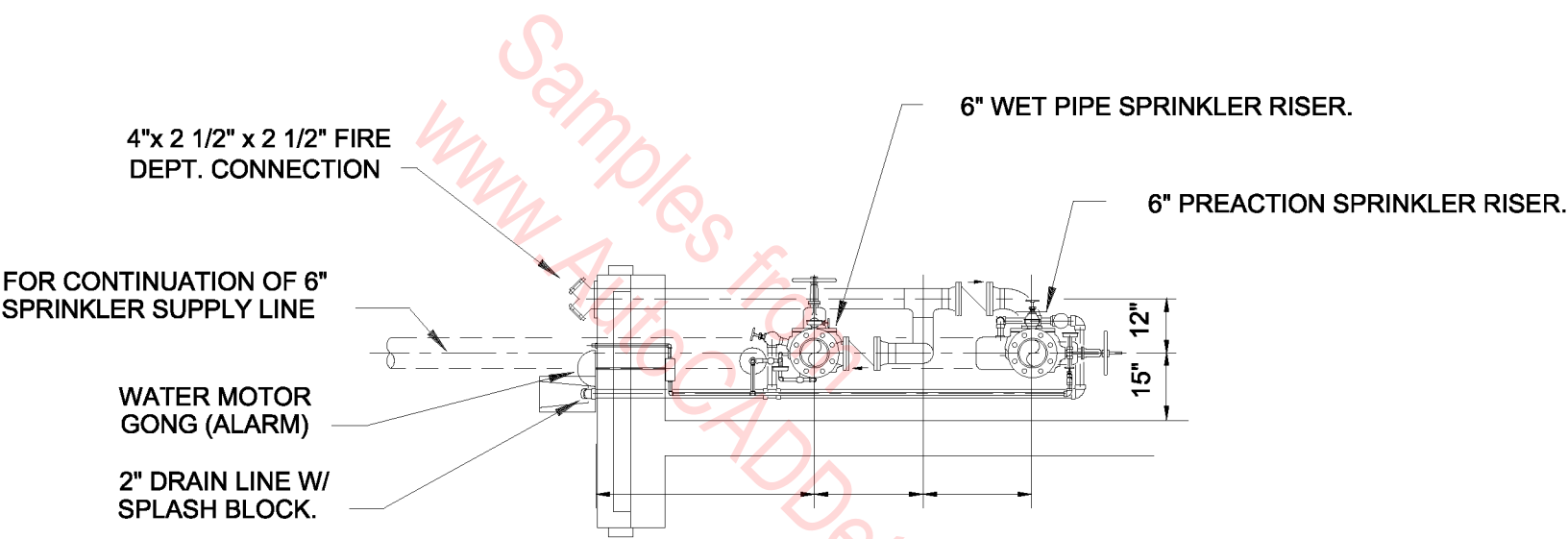
N.T.S.



- | | |
|---|--|
| <ol style="list-style-type: none"> 1. DRY PIPE VALVE 2. PRIMING CUP 3. LOCAL ALARM SWITCH OR ALARM TRANSMITTER 4. RESTRICTED ALARM VENT 5. AIR PRESSURE GAGE 6. DIP CUP 7. ALARM TEST VALVE (NORMALLY CLOSED) 8. AUTOMATIC DRAIN VALVE 9. WATER PRESSURE GAGE 10. MAIN DRAIN ANGLE VALVE 11. DRIP CUP AND MAIN DRAIN DISCHARGE TO
OUTSIDE OF BLDG. (4'-0" - PIPE LENGTH
INSIDE OF BLDG.) 12. WATER MOTOR GONG 13. DRAIN RUN THROUGH WALL TO OUTSIDE OF BLDG. | <ol style="list-style-type: none"> 14. TEE FOR FIRE DEPARTMENT CONNECTION 15. DOUBLE CHECK VALVE BACKFLOW PREVENTER WITH
OS & Y GATE VALVES (w/ TAMPER SWITCH) 16. CHECK VALVE TO PREVENT TRIPPING VALVE
WHEN TESTING ALARM 17. AIR LINE CHECK VALVE 18. AIR SUPPLY GLOBE VALVE (RENEWABLE DISC TYPE) 19. PRESSURE RELIEF VALVE 20. AIR SUPPLY LINE 21. ELECTRIC LOW AIR PRESSURE ALARM TRANSMITTER 22. ALARM CONTROL VALVE (NORMALLY OPEN) 23. STRAINER 24. DRAIN GLOBE VALVE 25. PRIMING VALVE (NORMALLY CLOSED) |
|---|--|

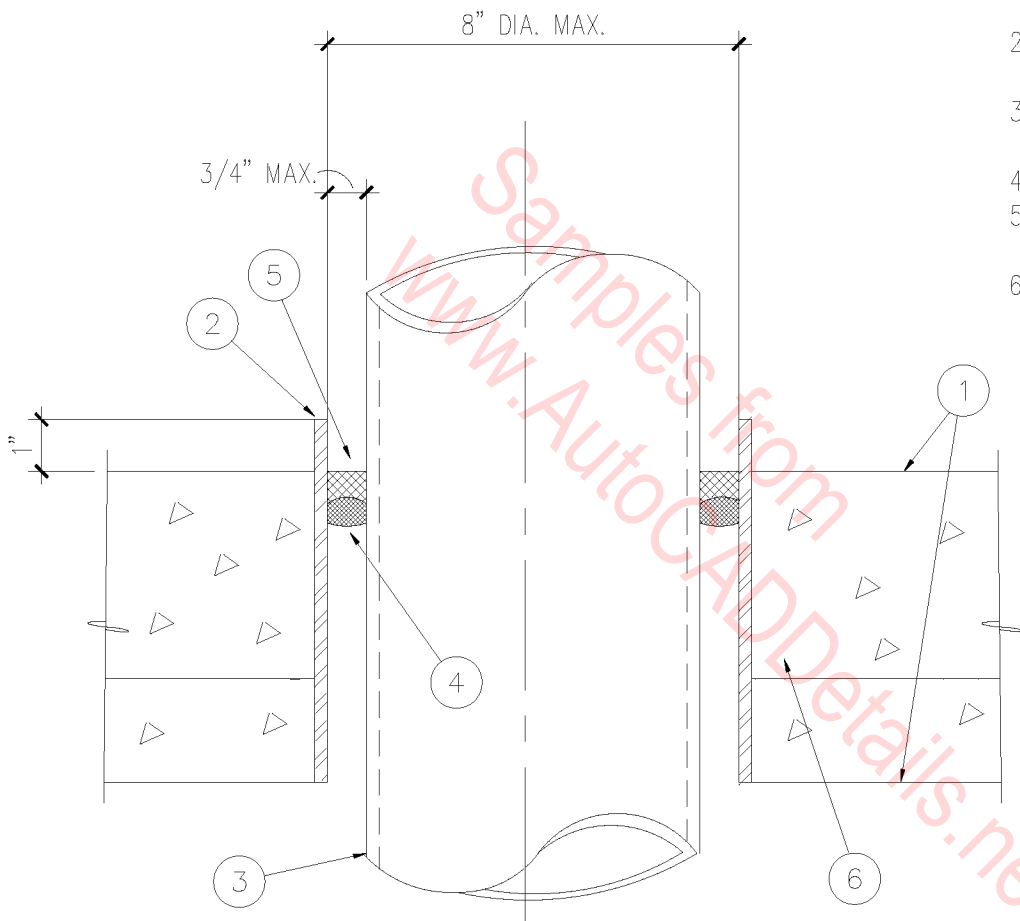
DRY PIPE SPRINKLER RISER DETAIL

N.T.S.



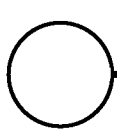
PRE-ACTION SPRINKLER RISER PLAN

N.T.S.



1. PRECAST CONCRETE DOUBLE TEE WITH 4" CONCRETE TOPPING UL DESIGN NO. J941.
2. STEEL PIPE SLEEVE SCHEDULE 40.
3. 6" DIA (MAX) STEEL PIPE OR CONDUIT.
4. POLYURETHANE BACKER ROD.
5. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.
6. ENCASE SLEEVE IN CONCRETE.

ASTM-E814 (UL1479) AND
UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

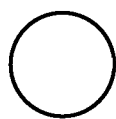
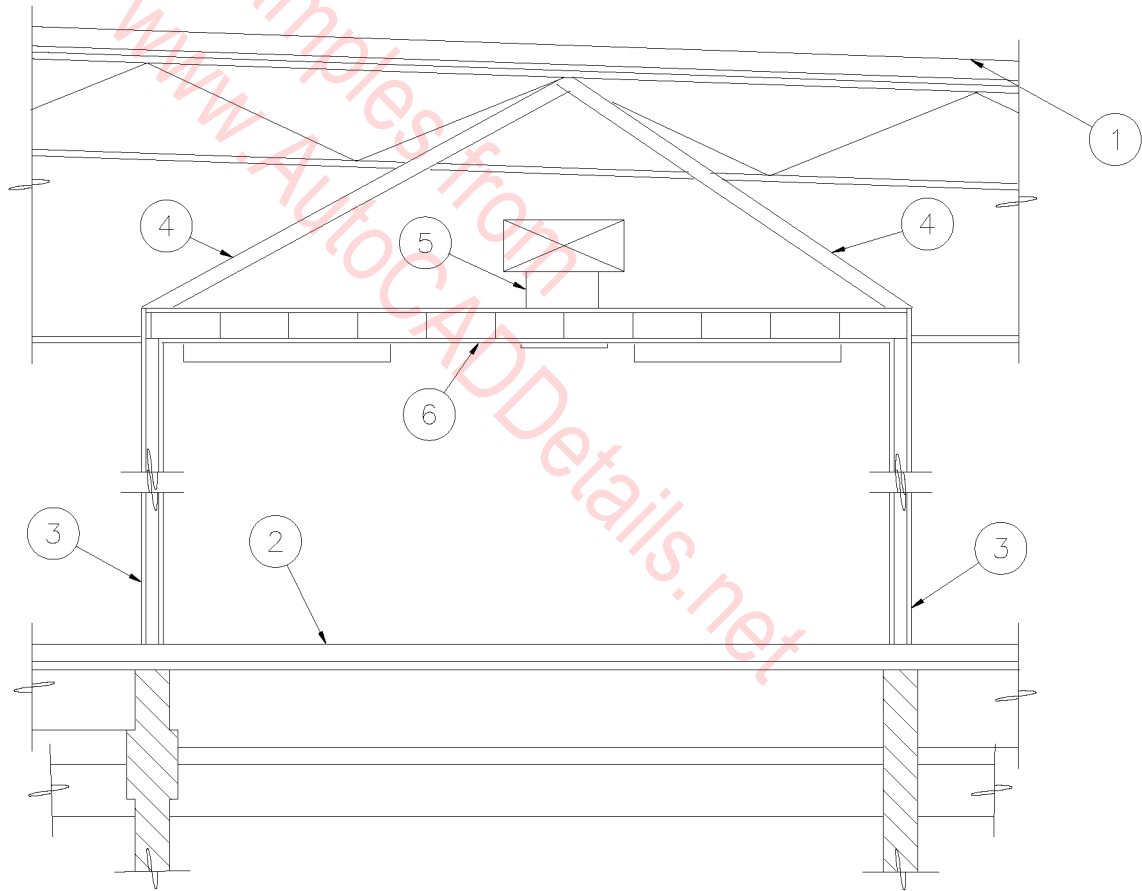


2 HR FLOOR PENETRATION

SCALE: 3" = 1'-0"

07B-5001

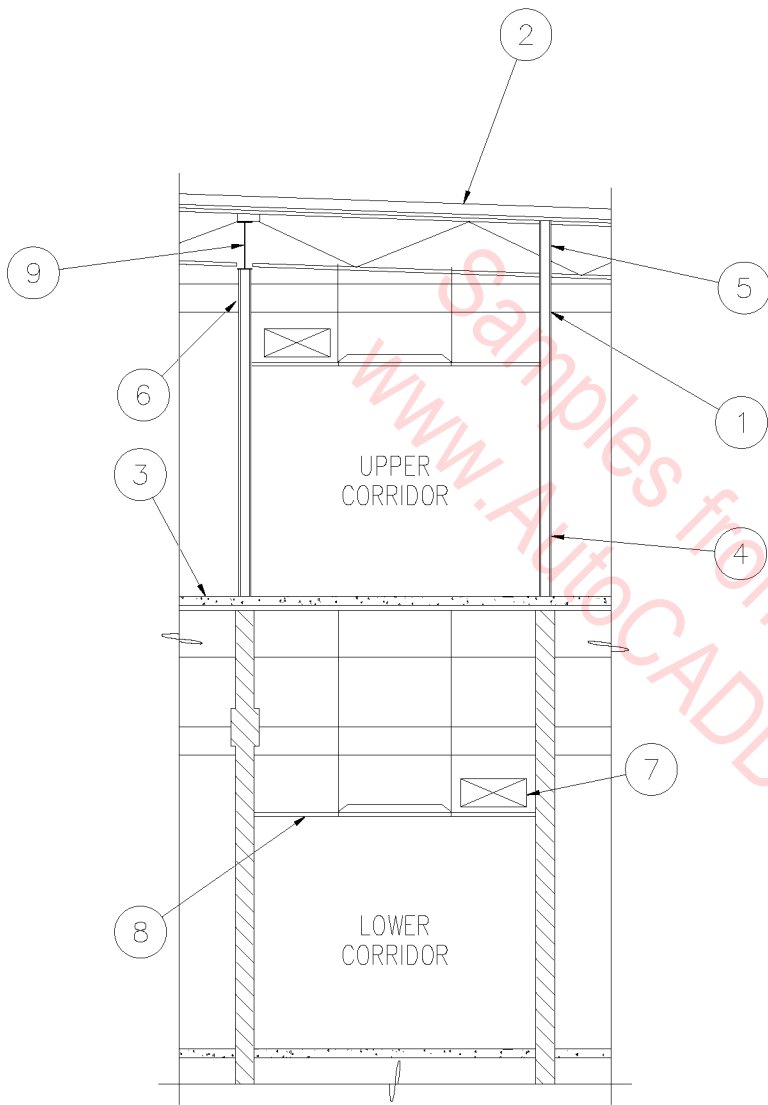
1. 2 HOUR RATED ROOF ASSEMBLY – LIGHT WEIGHT CONCRETE TOPPING ON STEEL DECK ON STEEL JOIST, UL DESIGN NO. P908.
2. 2 HOUR RATED FLOOR ASSEMBLY – 10' CONCRETE DOUBLE TEES WITH 4" CONCRETE TOPPING, UL DESIGN NO. J941.
3. 1 HOUR RATED WALL, 3-5/8" METAL STUDS AT 16" O.C. WITH 5/8" TYPE X GYPSUM WALLBOARD EACH SIDE.
4. 3-5/8 25 GAUGE METAL STUD BRACES AT 48" O.C.
5. PENETRATIONS THRU THE CEILING SHALL BE PROTECTED WITH EITHER FIRE DAMPERS OR UL LISTED POKE THRU DETAILS.
6. 1 HOUR RATED CEILING SYSTEM, METAL STUDS AT 16" O.C. WITH 5/8" TYPE X GYPSUM WALLBOARD EACH SIDE. FIRE TAPE ATTIC SIDE OF CEILING. SEE SPECIFICATIONS FOR DEPTH OF METAL STUD REQUIRED BY SPAN. SEE DETAIL 5 ON SHEET A902 FOR ADDITIONAL ONE HOUR REQUIREMENTS



1 HOUR ENCLOSURE

SCALE: 3" = 1'-0"

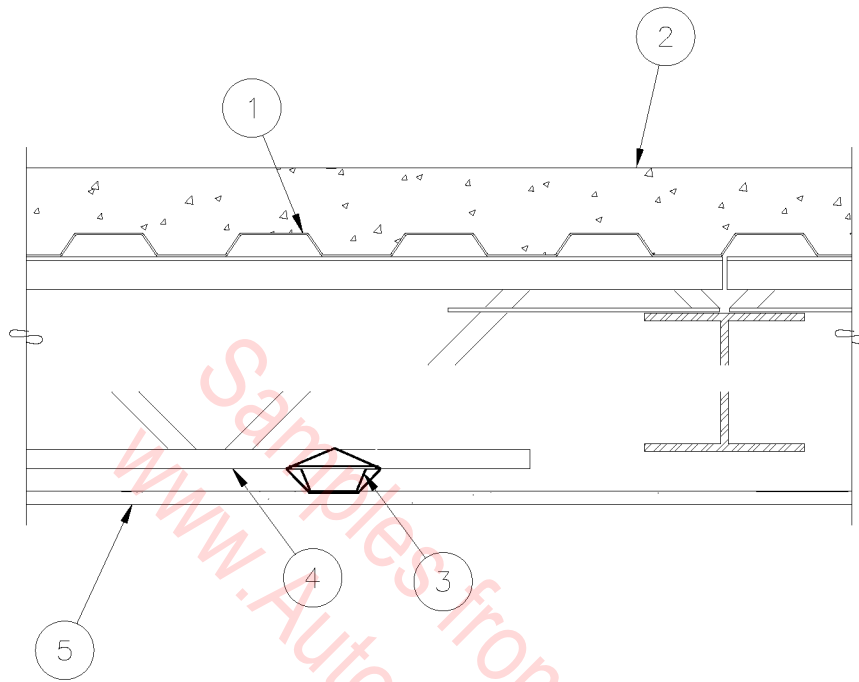
07B-5002



1. FIRE STOPPING SEALANT, 'TREMCO' DYMETRIC, POLYTREMDYNE TERPOLYMER.
2. 2 HOUR RATED ROOF ASSEMBLY - LIGHT WEIGHT CONCRETE TOPPING ON STEEL DECK ON STEEL JOIST, UL DESIGN NO. P908.
3. 2 HOUR RATED FLOOR ASSEMBLY - 10' CONCRETE DOUBLE TEES WITH 4" CONCRETE TOPPING, UL DESIGN NO. J941.
4. 1 HOUR RATED WALL, 3-5/8" METAL STUDS AT 16" O.C. WITH 5/8" TYPE 'X' GYPSUM WALLBOARD EACH SIDE.
5. EXTEND ONE HOUR RATED WALL TO ROOF DECK.
6. PENETRATIONS THRU THE WALLS SHALL BE PROTECTED WITH EITHER FIRE DAMPERS OR UL LISTED POKE THRU DETAILS.
7. DUCTS THAT ARE A MINIMUMS OF 0.19 INCH (26 GAUGE) STEEL DO NOT REQUIRE FIRE DAMPERS WHEN THE DUCT HAS NO OPENINGS INTO THE CORRIDOR.
8. UNRATED SUSPENDED CEILING AND UNPROTECTED LIGHT FIXTURES.
9. CEMENTITIOUS FIREPROOFING APPLIED IN A CONTOUR MANNER AT BEAM. AT JOIST APPLY IN A CONTOUR MANNER TO CREATE 1 HR. RATING FULL HEIGHT OF MEMBER.

○ 1 HOUR CORRIDOR
 1/8" = 1'-0"

07B-5003



1. ROOF DECK.
2. 2 1/2" CONCRETE ON RIBLATH OR CORRUGATED STEEL DECK OVER BAR JOIST.
3. METAL FUR CHANNEL AT 24" ON CENTER.
4. BAR JOIST.
5. 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANEL CEILING FURRED OR SUSPENDED.

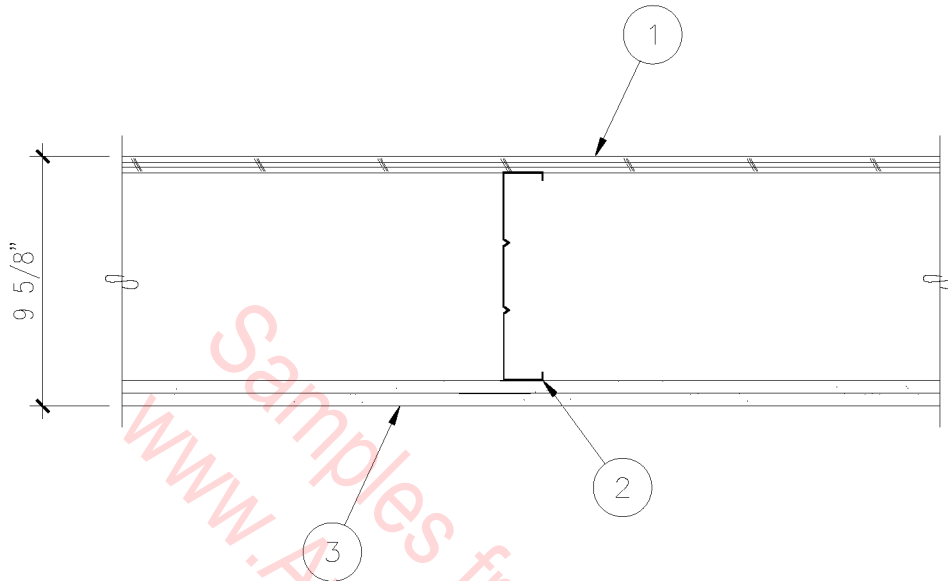
NOTES:

- A. PANELS ATTACHED WITH 1" TYPE "S" SCREWS AT 12" ON CENTER.
- B. JOINTS EXPOSED OR FINISHED.

2 HOUR UL DES G515
(WITH 2 HOUR BEAM)

1 1/2" = 1'-0"

07B-5004



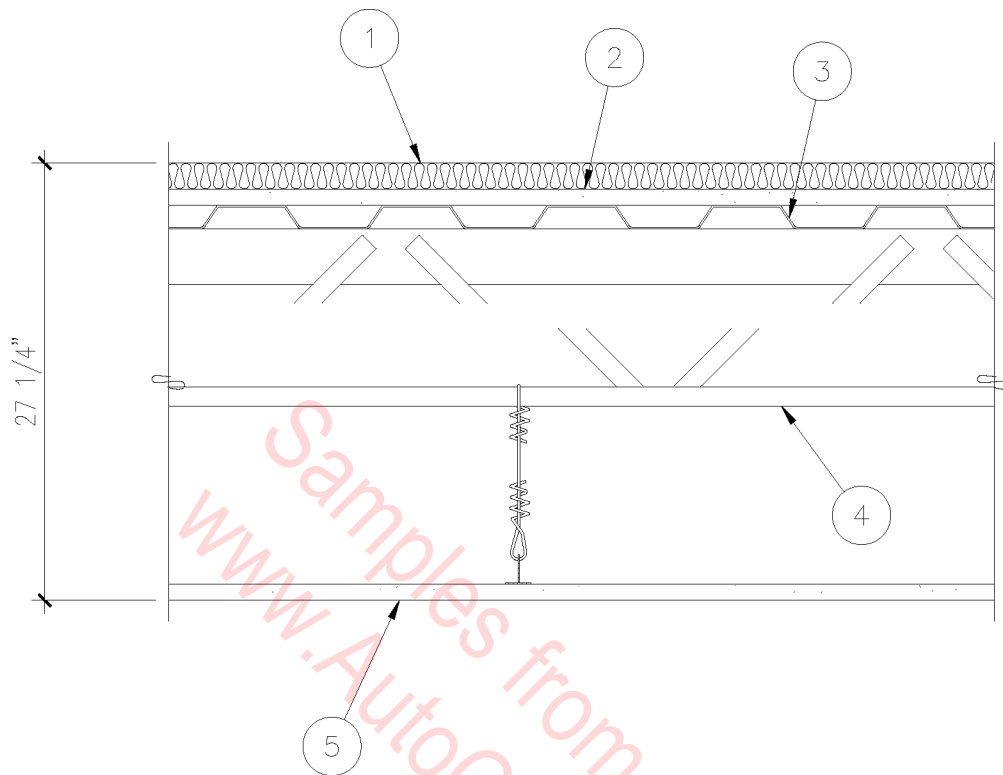
1. 5/8" T&G PLYWOOD FLOORING ATTACHED TO JOISTS WITH TYPE S-12 SCREWS.
2. 725SJ18 STEEL JOISTS AT 24" ON CENTER.
3. DOUBLE LAYER 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANEL CEILING.

NOTES:
 A. JOINTS UNFINISHED.
 B. DOUBLE LAYER GYPSUM PANELS AROUND BEAM.

1 HOUR UL DES L524
 (WITH 1 HOUR BEAM)

1 1/2" = 1'-0"

07B-5005



1. MINIMUM OF 1" ROOF INSULATION.
2. 5/8" GYPSUM BOARD OVER STEEL DECK.
3. STEEL ROOF DECK.
4. BAR JOIST.
5. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANEL CEILING.

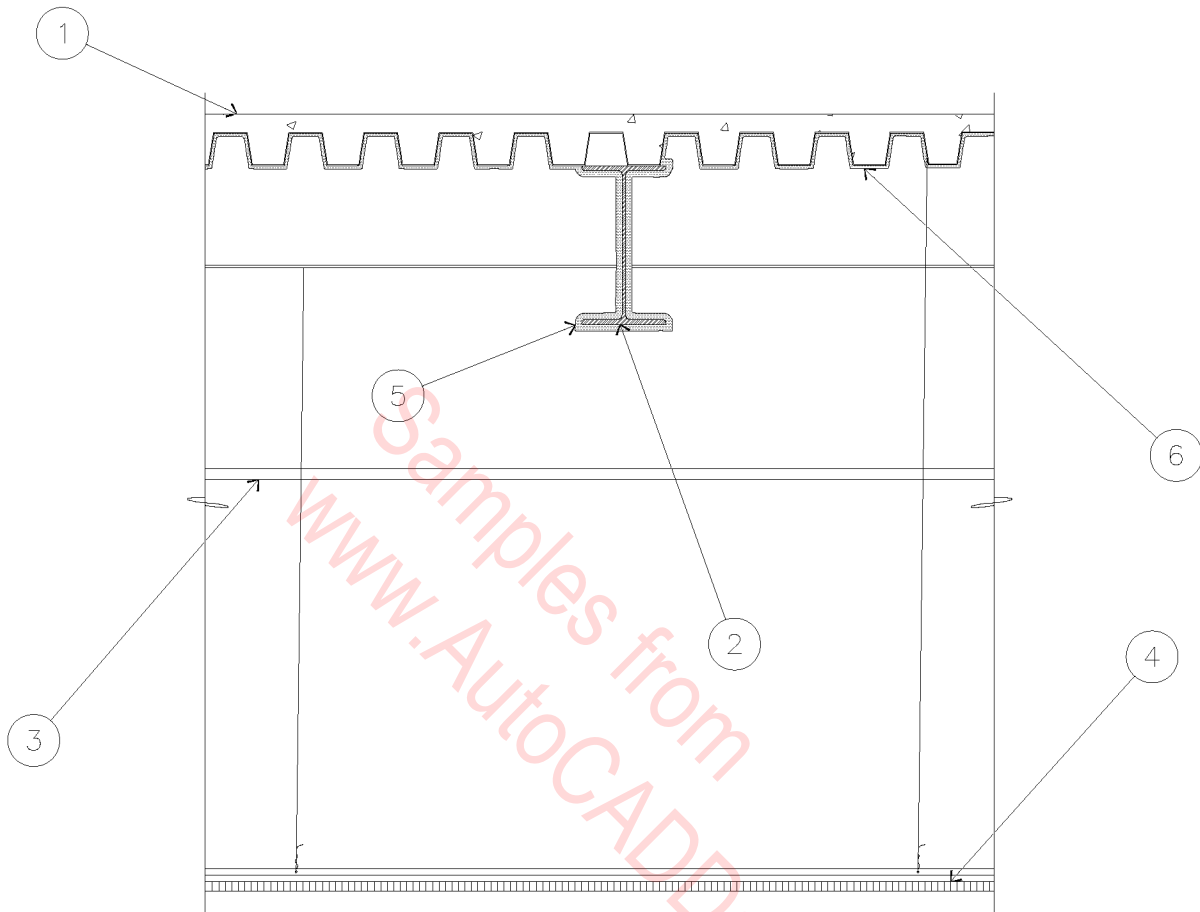
NOTES:

- A. SUSPENDED GRID WITH MAIN RUNNER AT 4'-0" ON CENTER AND CROSS TEE AT 2'-0" ON CENTER.
- B. GYPSUM PANELS SCREW ATTACHED BELOW GRID.
- C. JOINTS STAGGERED AND FINISHED.
- D. 1 HOUR RATING BASED ON ASSEMBLY WITH 1/2" THICK PANELS.

○ 1-1/2 HOUR UL DES P510

1 1/2" = 1'-0"

07B-5006



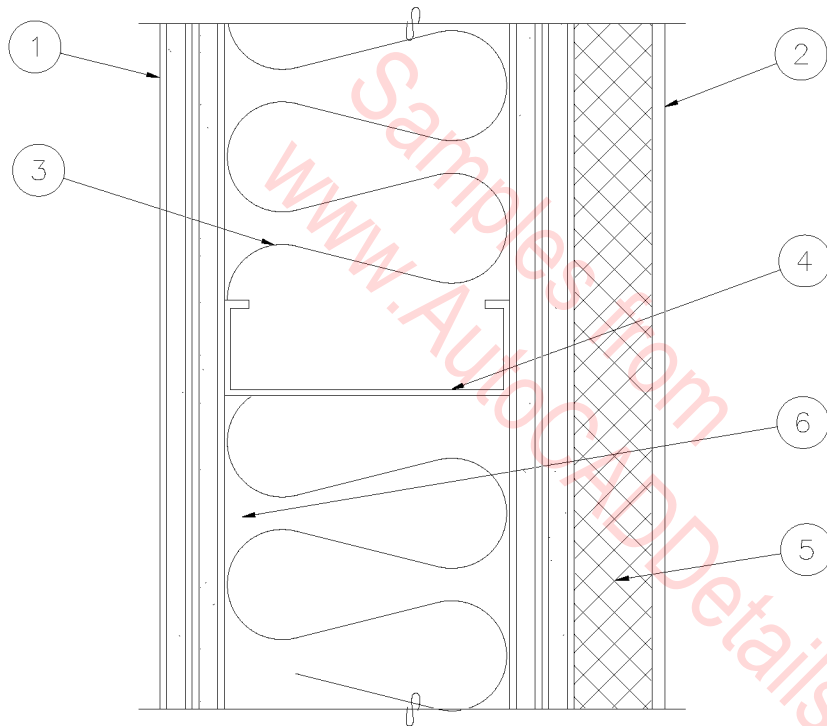
1. CONCRETE FLOOR OVER FLUTED STEEL DECK - STEEL DECK SHALL BE WELDED TO STEEL BEAMS.
2. WIDE FLANGE BEAM.
3. BEAM BEYOND.
4. SUSPENDED "TEE" GRID CEILING.
5. SPRAYED ON FIRE RESISTIVE FIBER COAT - 1/2" THICK (MINIMUM) AT STEEL BEAMS.
6. SPRAYED ON FIRE RESISTIVE FIBER COAT - 1/4" THICK (MINIMUM) AT STEEL DECK.

U.L. DESIGN NO. N805

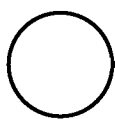
1 HOUR FLOOR ASSEMBLY

3/4" = 1'-0"

07B-5007



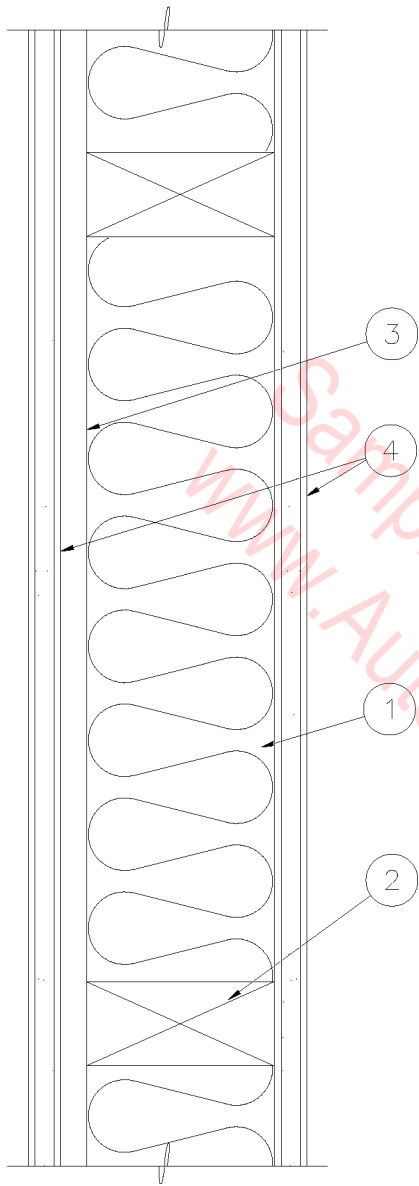
1. (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD.
2. SYNTHETIC STUCCO.
3. 5 1/2" BATT INSULATION.
4. 6" METAL STUDS.
5. 1 1/2" POLYSTYRENE INSULATION BOARD MECHANICALLY FASTENED AND GLUED.
6. 4 MIL. POLY VAPOR BARRIER.



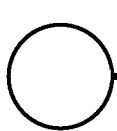
2 HOUR EXTERIOR WALL

SCALE: 3" = 1'-0"

07B-4001



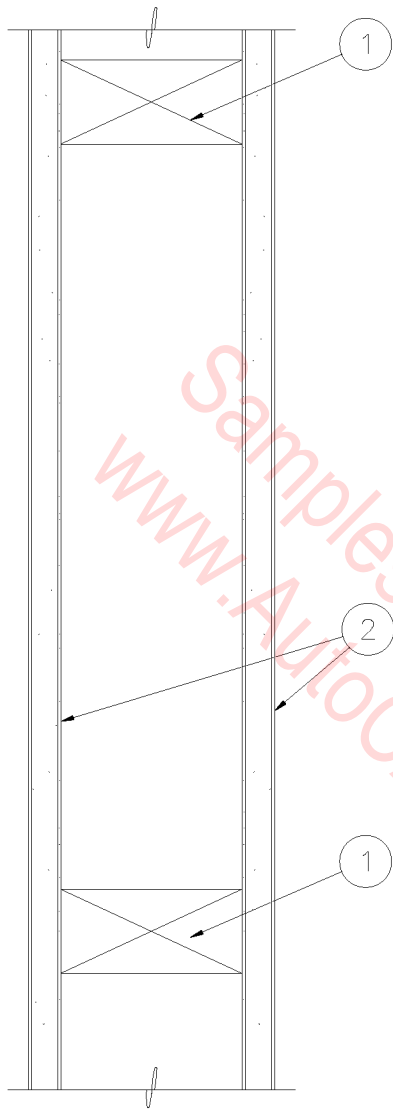
1. 3-1/2" BATT INSULATION.
2. 2" X 4" WOOD STUDS @ 16" O.C.
3. 1/2" AC 1 CHANNELS @ 24" O.C. ONE SIDE.
4. 5/8" TYPE "X" GYPSUM BOARD EACH SIDE.



1 HR. WOOD STUD WALL

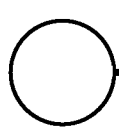
3" = 1'-0"

07B-4002



Samples from
www.AutocADDetails.net

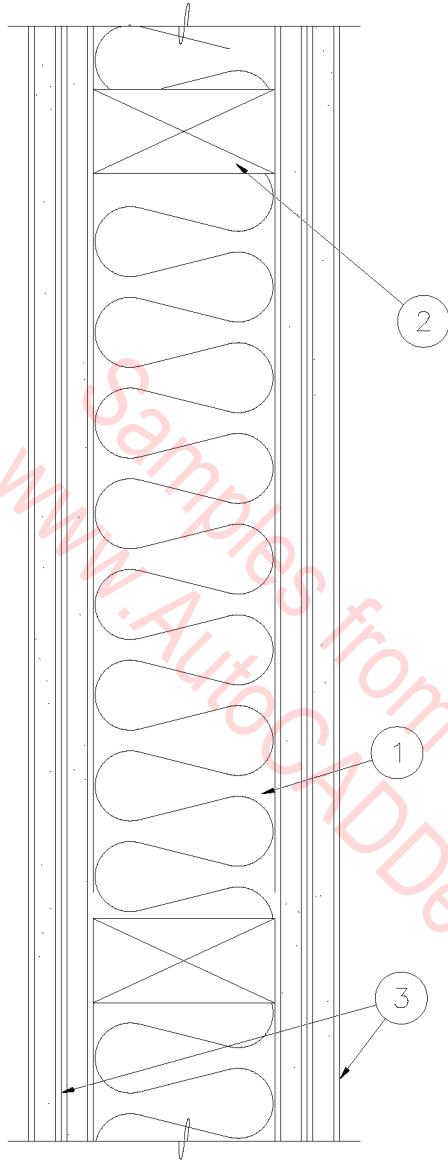
1. 2" X 4" WOOD STUDS @ 16" O.C.
2. 5/8" TYPE "X" GYPSUM BOARD EACH SIDE. (MOISTURE RESISTANT ON BATH SIDE).



1 HOUR INTERIOR WALL

3" = 1'-0"

07B-4003

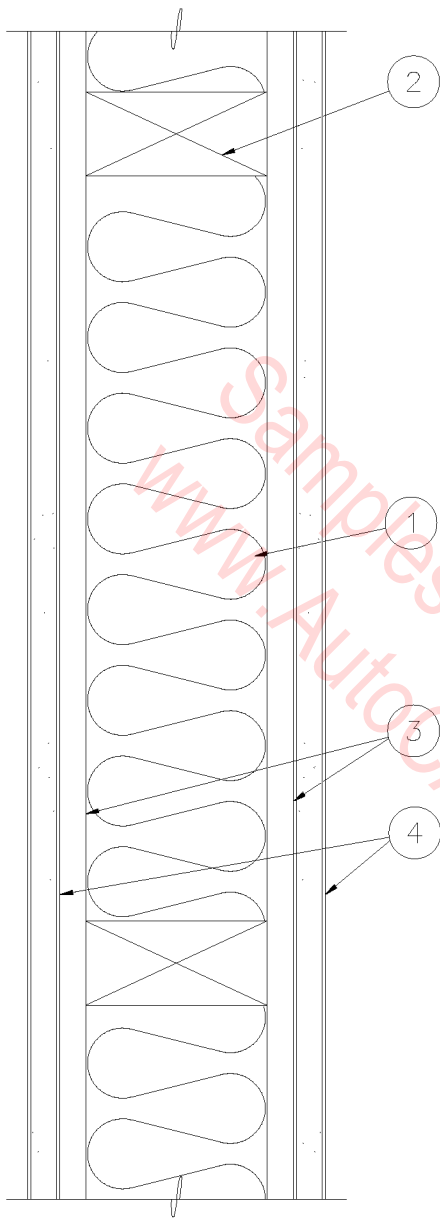


1. 3 1/2" BATT INSULATION.
2. 2" X 4" WOOD STUDS
16" O.C.
3. (2) LAYERS 5/8" TYPE
"X" GYPSUM BOARD
EACH SIDE.

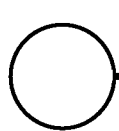
○ 2 HOUR INTERIOR WALL

3" = 1'-0"

07B-4004



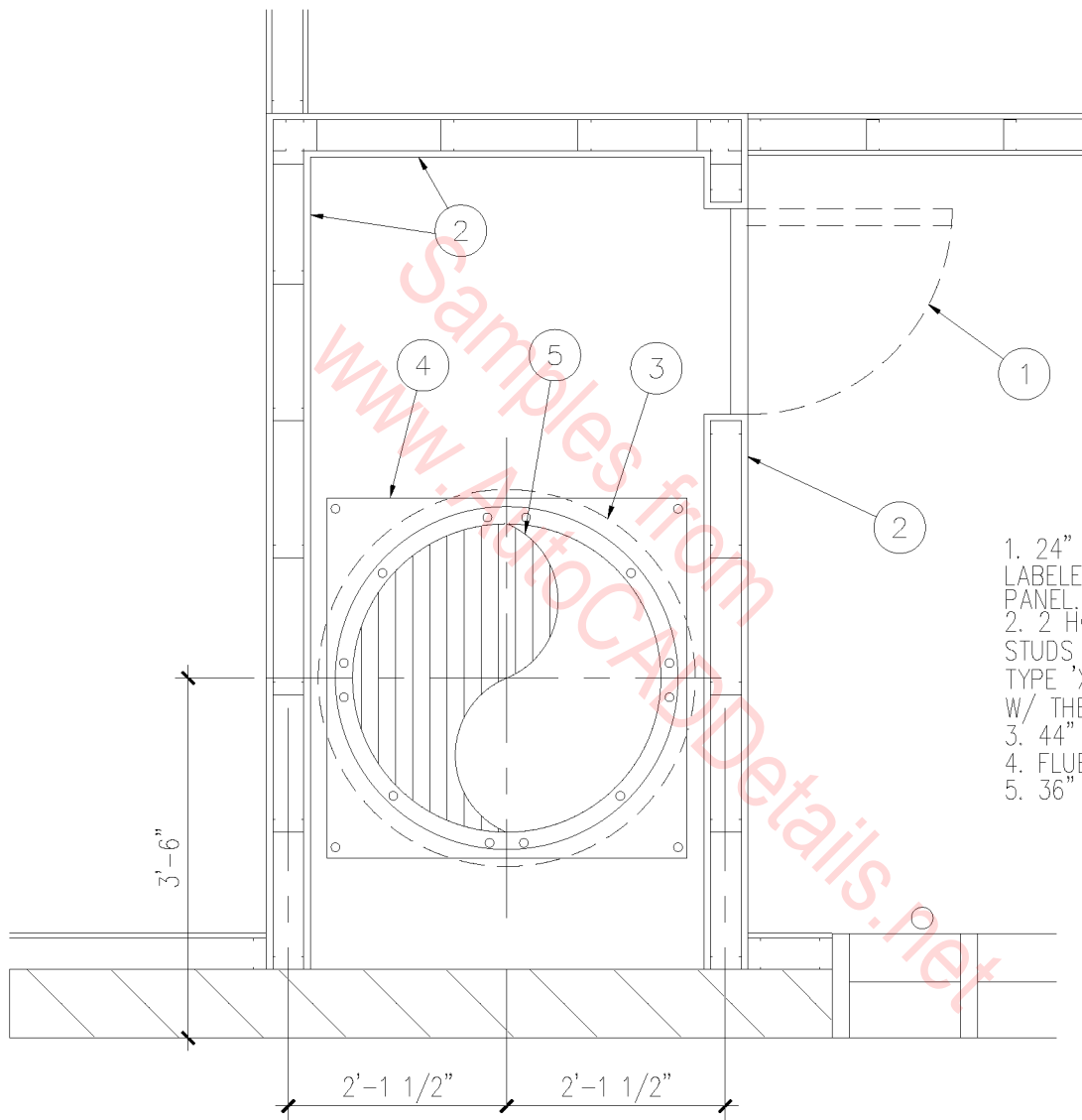
1. 3 1/2" MINERAL FIBER BATT INSULATION.
2. 2 X 4 WOOD STUDS @ 16" O.C.
3. RC-1 CHANNELS @ 24" O.C.
4. 5/8" TYPE "X" GYPSUM BOARD MOISTURE RESISTANT ON BATH SIDE.



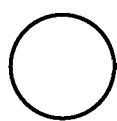
1 HOUR DEMISING WALL

3" = 1'-0"

07B-4005



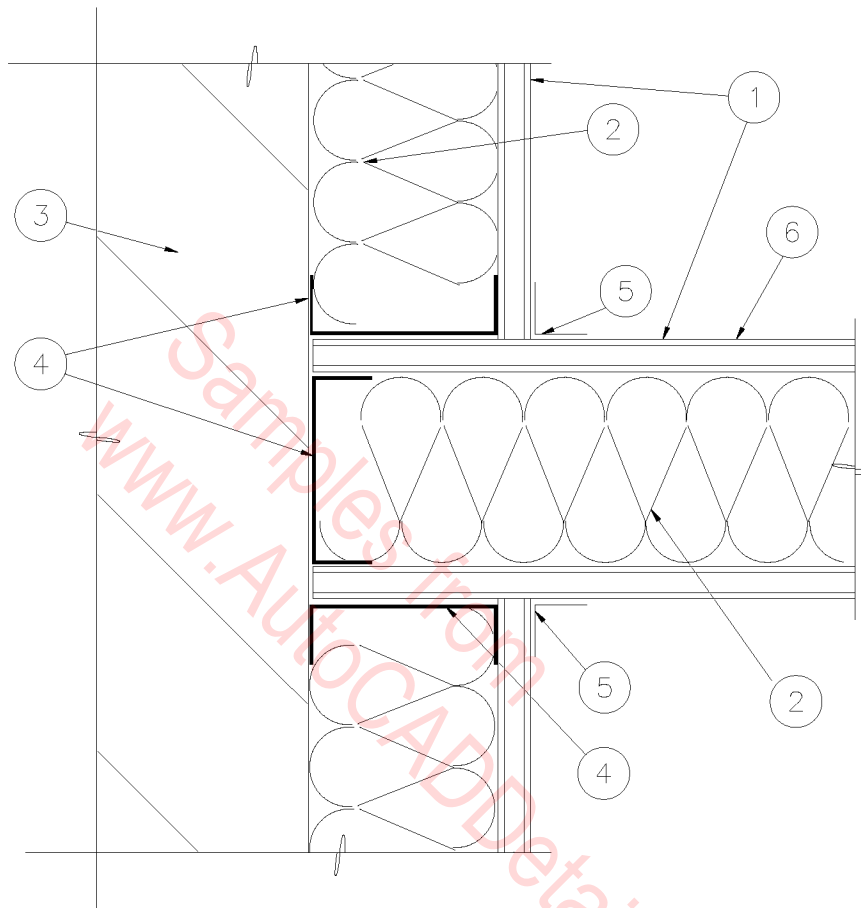
1. 24" X 24" 1-1/2 HOUR LABELED ACCESS PANEL.
2. 2 HOUR WALL 3-5/8" MTL. STUDS 16" O.C. WITH ONE LAYER OF 3/4" TYPE 'X' GYP. BD. EA. SIDE, INSULATED W/ THERMOFIBER INSULATION.
3. 44" ϕ HOLE IN FLOOR.
4. FLUE FLOOR PLATE.
5. 36" O.D. FLUE PIPE FROM BELOW.



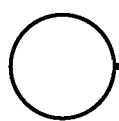
FLUE CHASE

SCALE: 1" = 1'-0"

07B-4006



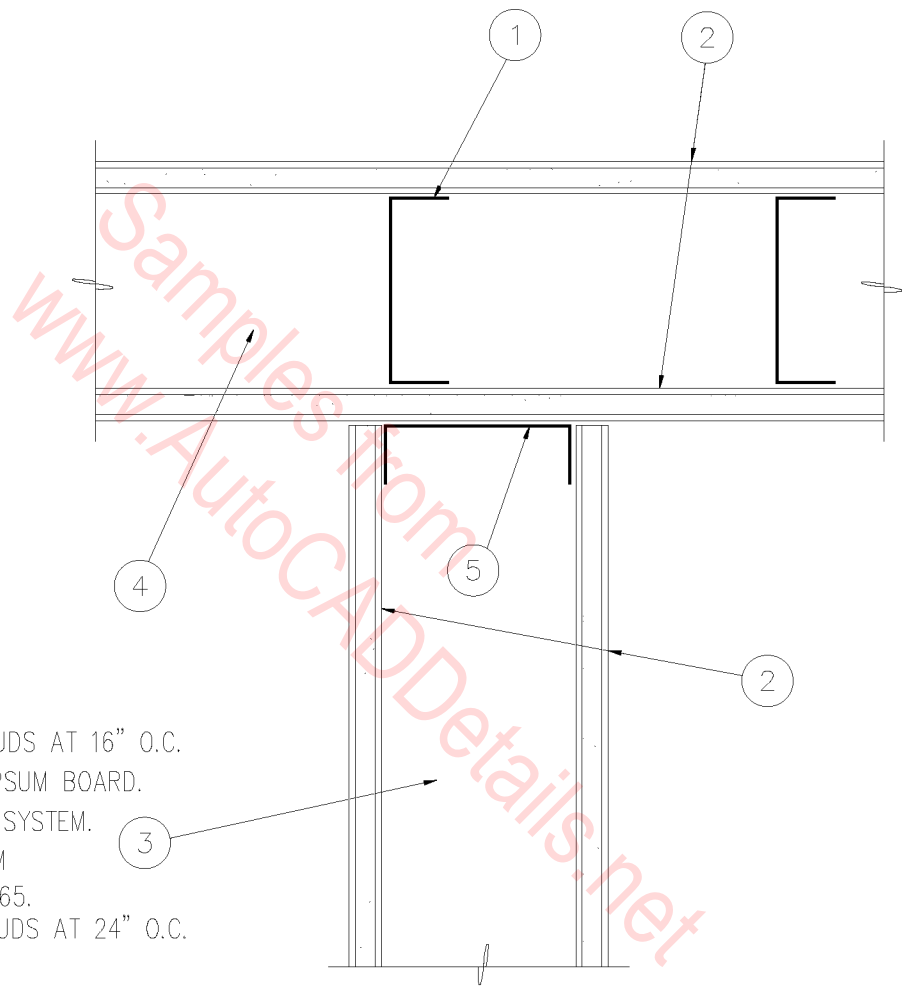
1. 5/8" TYPE 'X' GYPSUM BOARD.
2. INSULATION WHERE OCCURS.
3. MASONRY WALL.
4. 3-5/8" METAL STUDS
5. TAPE ALL JOINTS.
6. 1 HR CONSTRUCTION NON-BEARING WALL ASSEMBLY. UL DESIGN NO. U465.



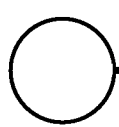
RESISTIVE WALL AT CMU

SCALE: 3" = 1'-0"

07B-4007



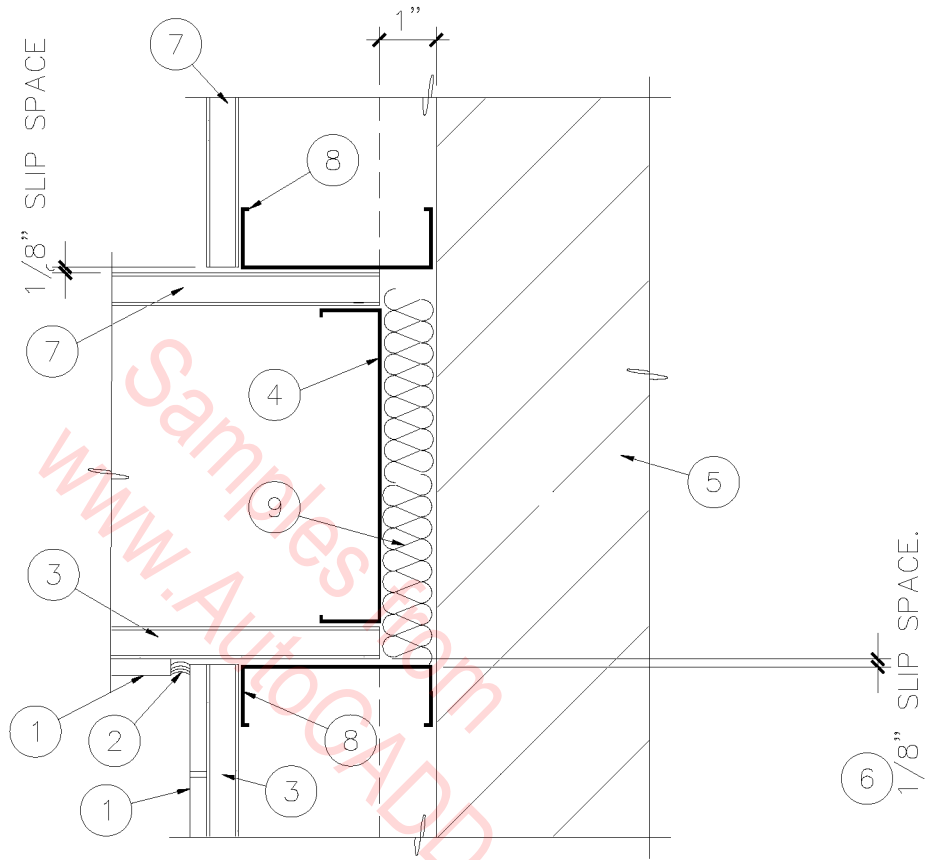
- 1. 3-5/8" METAL STUDS AT 16" O.C.
- 2. 5/8" TYPE 'X' GYPSUM BOARD.
- 3. NON-RATED WALL SYSTEM.
- 4. 1 HR WALL SYSTEM
UL DESIGN NO. U465.
- 5. 3-5/8" METAL STUDS AT 24" O.C.



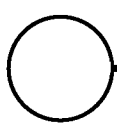
INTERSECTING WALL

SCALE: 3" = 1'-0"

07B-4008



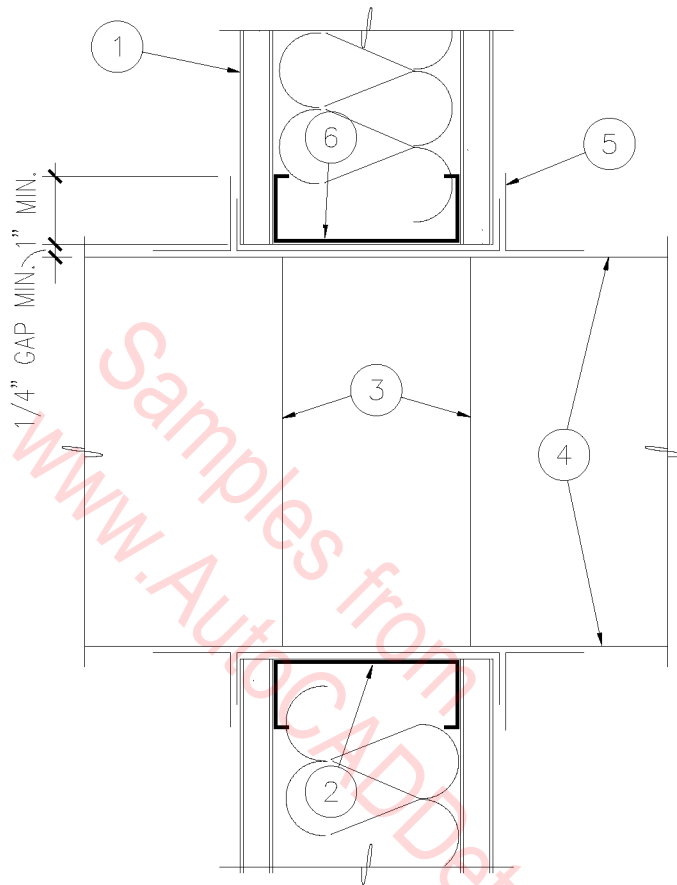
1. CERAMIC TILE.
2. SEALANT.
3. 5/8" MOISTURE-RESISTANT GYPSUM BOARD.
4. METAL STUD. DO NOT ATTACH TO MASONRY WALL.
5. MASONRY WALL.
6. EXPANSION JOINT SPACE.
7. 5/8" TYPE 'X' GYPSUM BOARD.
8. METAL STUDS.
9. FIRE SAFING MATERIAL.



1 HOUR EXPANSION JOINT

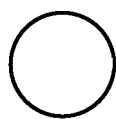
SCALE: 3" = 1'-0"

07B-4009



UL SAFETY STANDARD 555 AND NFPA 90A

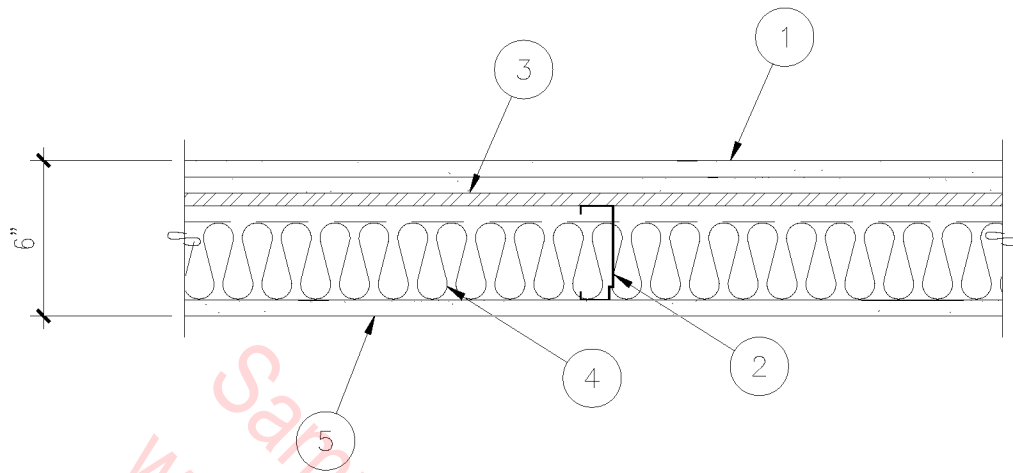
1. ONE HOUR WALL UL DESIGN NO. U465.
2. METAL RUNNER.
3. FIRE OR LEAKAGE (SMOKE) DAMPER. SEE MECHANICAL FOR TYPE AND LOCATION.
4. DAMPER SLEEVE SHALL NOT EXTEND MORE MORE THAN 9" ON THE OPERATOR/ACTUATOR SIDE.
5. ANGLE 1-1/2" X 1-1/2" X 14 GAGE.
6. 22 GA. G. I. SLEEVE.



DUCT THRU WALL

SCALE: 3" = 1'-0"

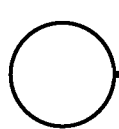
07B-4010



1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS SCREW ATTACHED TO CHANNEL.
2. 362SJ20 METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" SCREW ATTACHED TO STUDS.
4. 3" THERMAFIBER SAFB.
5. ONE LAYER 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANEL SCREW ATTACHED TO STUDS.

NOTES:

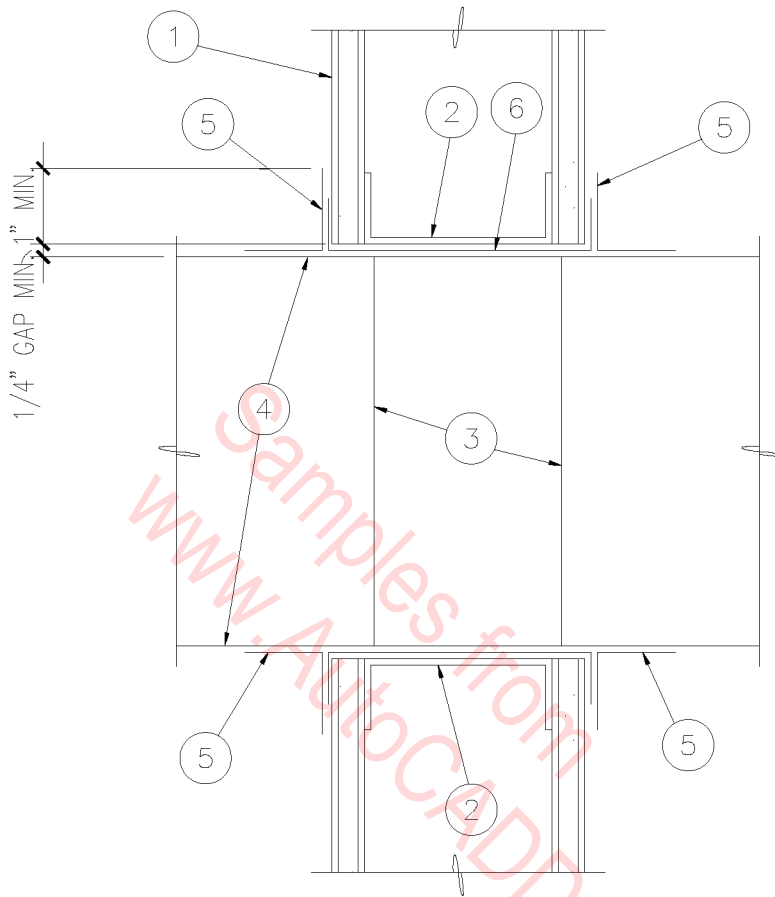
- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- E. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.



2 HOUR UL DES U453

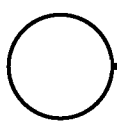
1 1/2" = 1'-0"

07B-4011



UL SAFETY STANDARD 555 AND NFPA 90A

1. ONE HOUR WALL UBC 43-B, 15-1.1.
2. METAL RUNNER.
3. FIRE OR LEAKAGE (SMOKE) DAMPER.
SEE MECHANICAL FOR TYPE AND
LOCATION.
4. DAMPER SLEEVE SHALL NOT EXTEND
MORE THAN 6" BEYOND THE FIRE
WALL AND NOT MORE THAN 9" ON
THE OPERATOR/ACTUATOR SIDE.
5. ANGLE 1-1/2" X 1-1/2" X 14 GAGE.
6. 22 GA. G. I. SLEEVE.

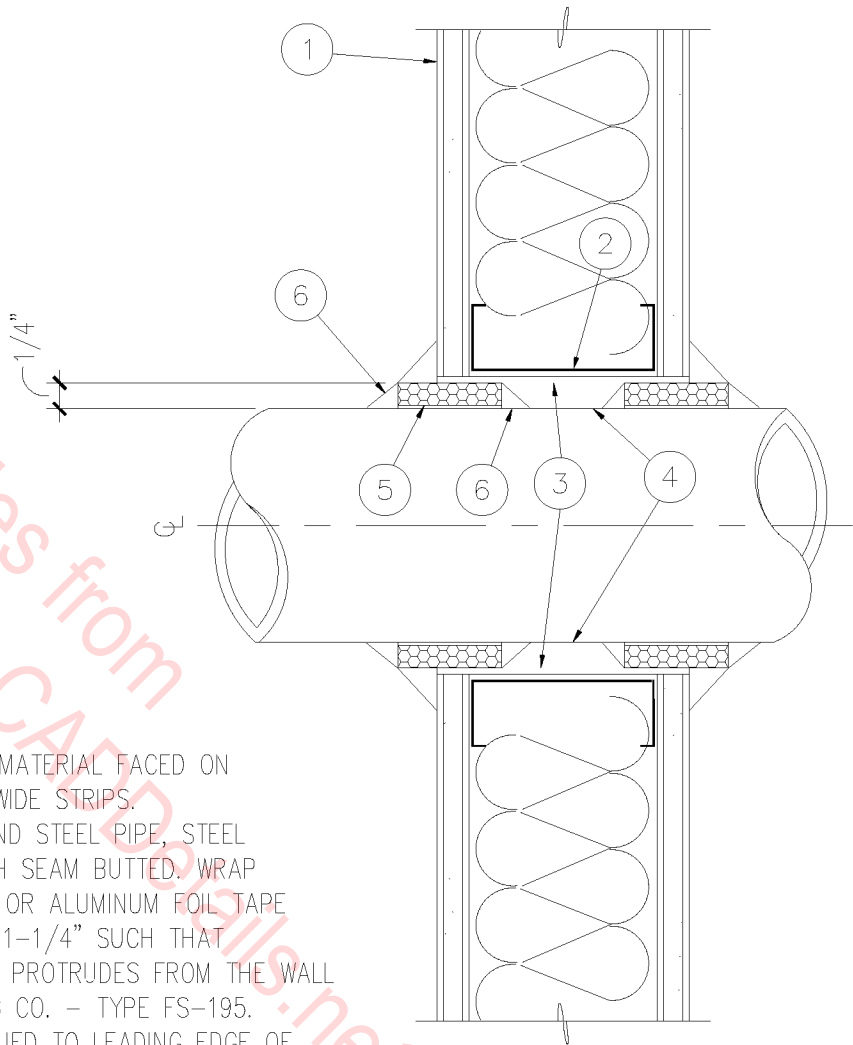


1 HR. DUCT PENETRATION

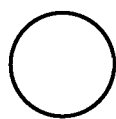
SCALE: 3" = 1'-0"

07B-4012

Samples from
www.AutoCADDetails.net



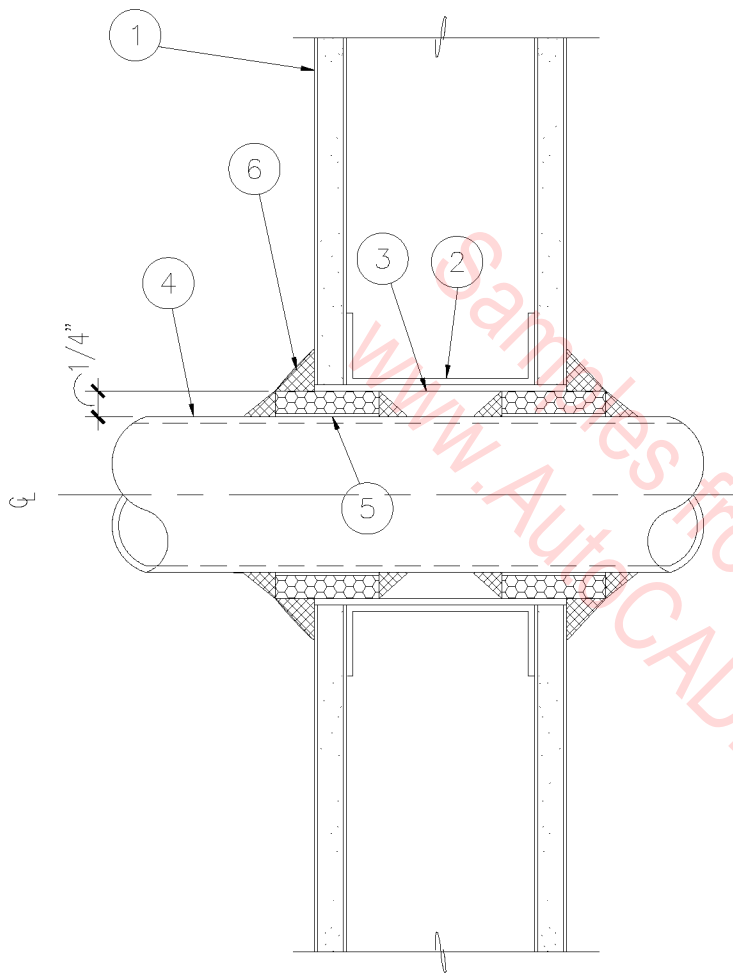
1. ONE HOUR WALL, UL DESIGN NO. U465.
2. 25 GA. G.I. RUNNER.
3. 22 GA. G.I. SLEEVE.
4. STEEL PIPE OR CONDUIT.
5. WRAP STRIP - 1/4" INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP TIGHTLY WRAPPED AROUND STEEL PIPE, STEEL CONDUIT OR PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROXIMATELY 1-1/4" SUCH THAT APPROXIMATELY 3/4" OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE. MINNESOTA MINING & MANUFACTURING CO. - TYPE FS-195.
6. CAULK - MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO LEADING EDGE OF WRAP STRIP PRIOR TO INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE. AFTER INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE A NOMINAL 1/4" DIA. CONTINUOUS BEAD IS TO BE APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED EDGE OF THE STRIP LAYER APPROXIMATELY 3/4" FROM THE WALL SURFACE. MINNESOTA MINING & MANUFACTURING CO. - TYPES CP-25 S/L, CP-25 N/S UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 148.



PIPE THRU RESIST. WALL

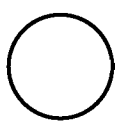
SCALE: 3" = 1'-0"

07B-4013



1. ONE HOUR WALL, UBC 43-B, 15-1.1.
2. 25 GA. G.I. RUNNER.
3. 22 GA. G.I. SLEEVE.
4. STEEL PIPE OR CONDUIT.
5. WRAP STRIP - 1/4" INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP TIGHTLY WRAPPED AROUND STEEL PIPE, STEEL CONDUIT OR PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROXIMATELY 1-1/4" SUCH THAT APPROXIMATELY 3/4" OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE.
MINNESOTA MINING & MANUFACTURING CO. TYPE FS-195.
6. CAULK - MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO LEADING EDGE OF WRAP STRIP PRIOR TO INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE. AFTER INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE A NOMINAL 1/4" DIA. CONTINUOUS BEAD IS TO BE APPLIED TO THE WRAP STRIP / WALL INTERFACE AND TO THE EXPOSED EDGE OF THE STRIP LAYER APPROXIMATELY 3/4" FROM THE WALL SURFACE.
MINNESOTA MINING & MANUFACTURING CO. TYPES CP-25 S/L, CP-25 N/S.

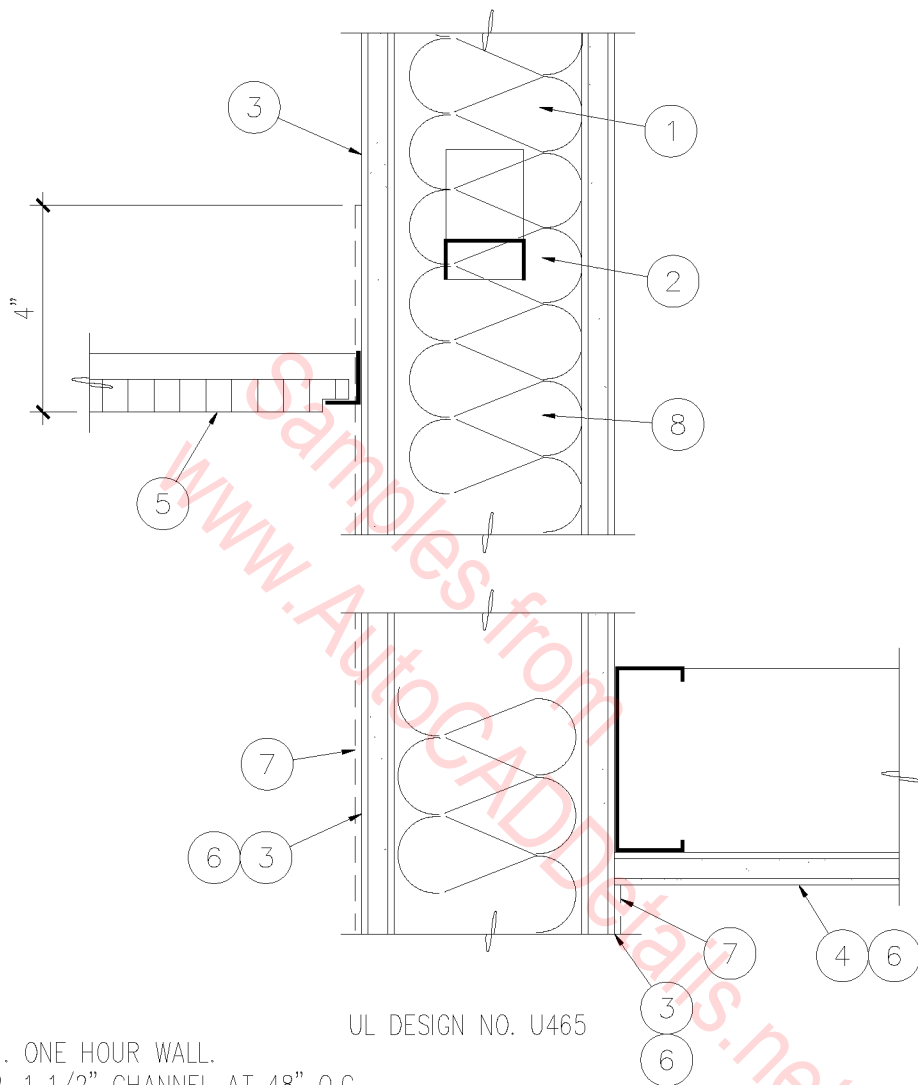
UL THROUGH-PENETRATION FIRESTOP SYSTEMS
(XHEZ) SYSTEM NO. 148



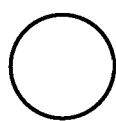
CONDUIT PENETRATION

3" = 1'-0"

07B-4014



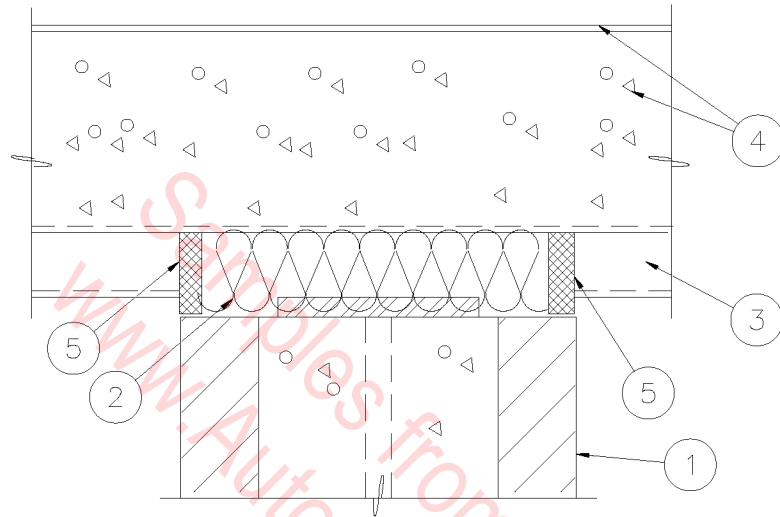
- UL DESIGN NO. U465
1. ONE HOUR WALL.
 2. 1 1/2" CHANNEL AT 48" O.C.
 3. 5/8" TYPE "X" GYPSUM BOARD.
 4. 5/8" TYPE "X" GYPSUM BOARD ON METAL STUDS (CEILING JOISTS).
 5. LAY-IN ACOUSTICAL PANELS IN SUSPENDED TEE GRID - WHERE APPLICABLE.
 6. SEE ROOM FINISH SCHEDULE FOR FINISH.
 7. CERAMIC TILE ON GLASS MESH MORTAR UNITS, IN LIEU OF GYPSUM BOARD WHERE APPLICABLE.
 8. 3-5/8" METAL STUDS UNLESS NOTED OTHERWISE.



CEILING AT 1 HR. WALL

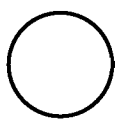
SCALE: 3" = 1'-0"

07B-4015



UL THROUGH-PENETRATION FIRESTOP SYSTEMS DESIGN NO. 327

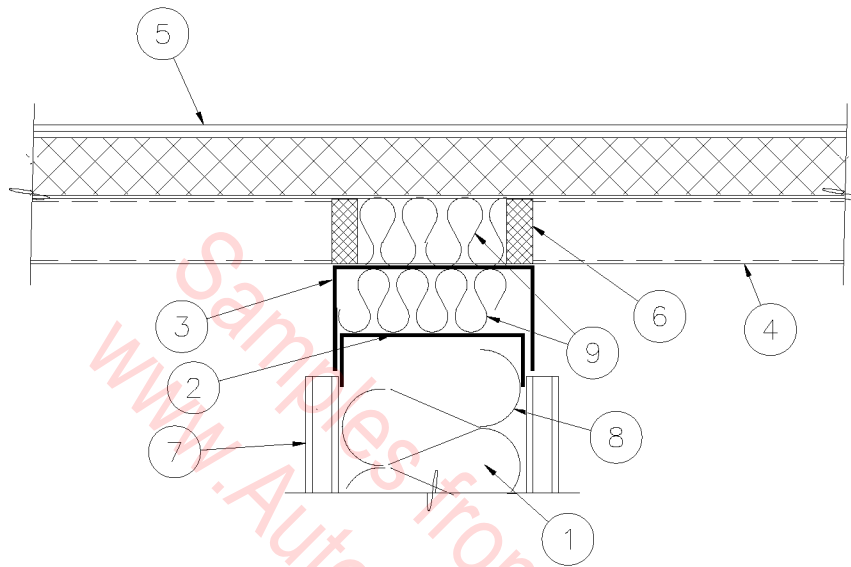
1. RATED C.M.U. WALL.
2. FIRE SAFING INSULATION.
3. METAL DECK.
4. CLASS A ROOFING SYSTEM OVER LIGHT WEIGHT CONCRETE FILL.
5. 1/2" 'TREMCO' FYRE-SIL SEALANT.



RESISTIVE WALL AT ROOF

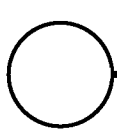
SCALE: 3" = 1'-0"

07B-4016



UL DESIGN NO. U465 ONE HOUR RATED WALL
 UL THROUGH-PENETRATION FIERIEST SYSTEM DESIGN NO. 327

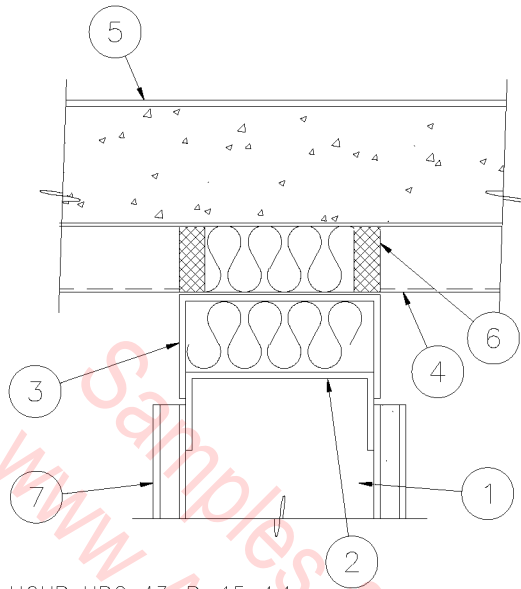
1. 3 5/8" METAL STUDS AT 16" O.C.
2. METAL RUNNER.
3. METAL RUNNER WITH 2" LEG.
4. METAL DECK.
5. ROOFING SYSTEM.
6. 1/2" 'TREMCO' FYRE-SIL SEALANT ON EACH SIDE OF FIRE SAFING.
7. 5/8" TYPE "X" GYPSUM BOARD.
8. R-11 3 1/2" BATT SOUND INSULATION WHERE APPLICABLE.
9. FIRE SAFING INSULATION.



WALL AT ROOF DECK

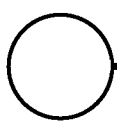
SCALE: 3" = 1'-0"

07B-4017



ONE HOUR UBC 43-B, 15-1.1
UL THROUGH-PENETRATION FIRESTOP SYSTEM DESIGN NO. 327

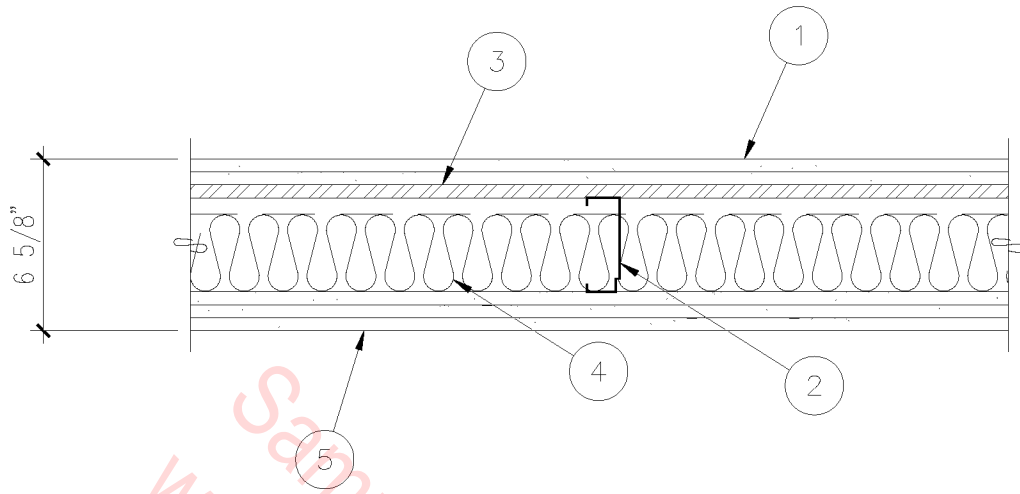
1. 3 5/8" METAL STUDS AT 16" O.C.
2. METAL RUNNER.
3. METAL RUNNER WITH 2" LEG.
4. METAL DECK.
5. CLASS "A" ROOFING SYSTEM ON LIGHT WEIGHT CONCRETE.
6. 1/2" 'TREMCO' FYRE-SIL SEALANT ON EACH SIDE OF FIRE SAFING MATERIAL.
7. 5/8" TYPE "X" GYPSUM BOARD.
8. FIRE SAFING INSULATION.



1 HR. WALL AT ROOF

SCALE: 3" = 1'-0"

07B-4018



1. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS SCREW ATTACHED TO CHANNEL.
2. 362SJ20 METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" SCREW ATTACHED TO STUDS.
4. 3" THERMAFIBER SAFB.
5. THREE LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS SCREW ATTACHED TO STUDS.

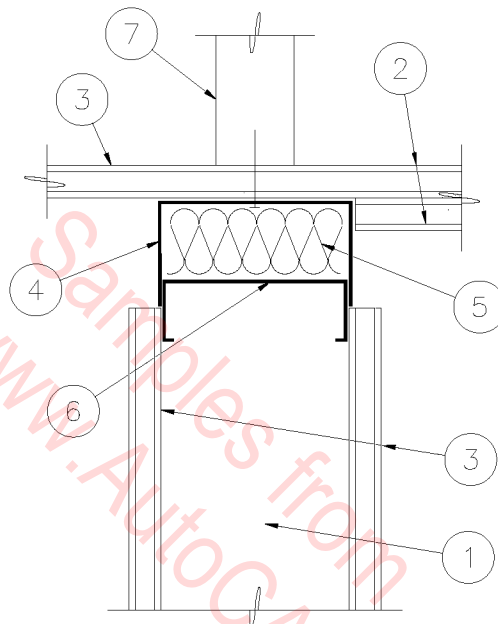
NOTES:

- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- E. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

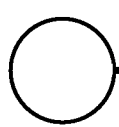
○ 3 HOUR UL DES U455

1 1/2" = 1'-0"

07B-4019



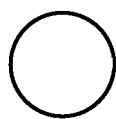
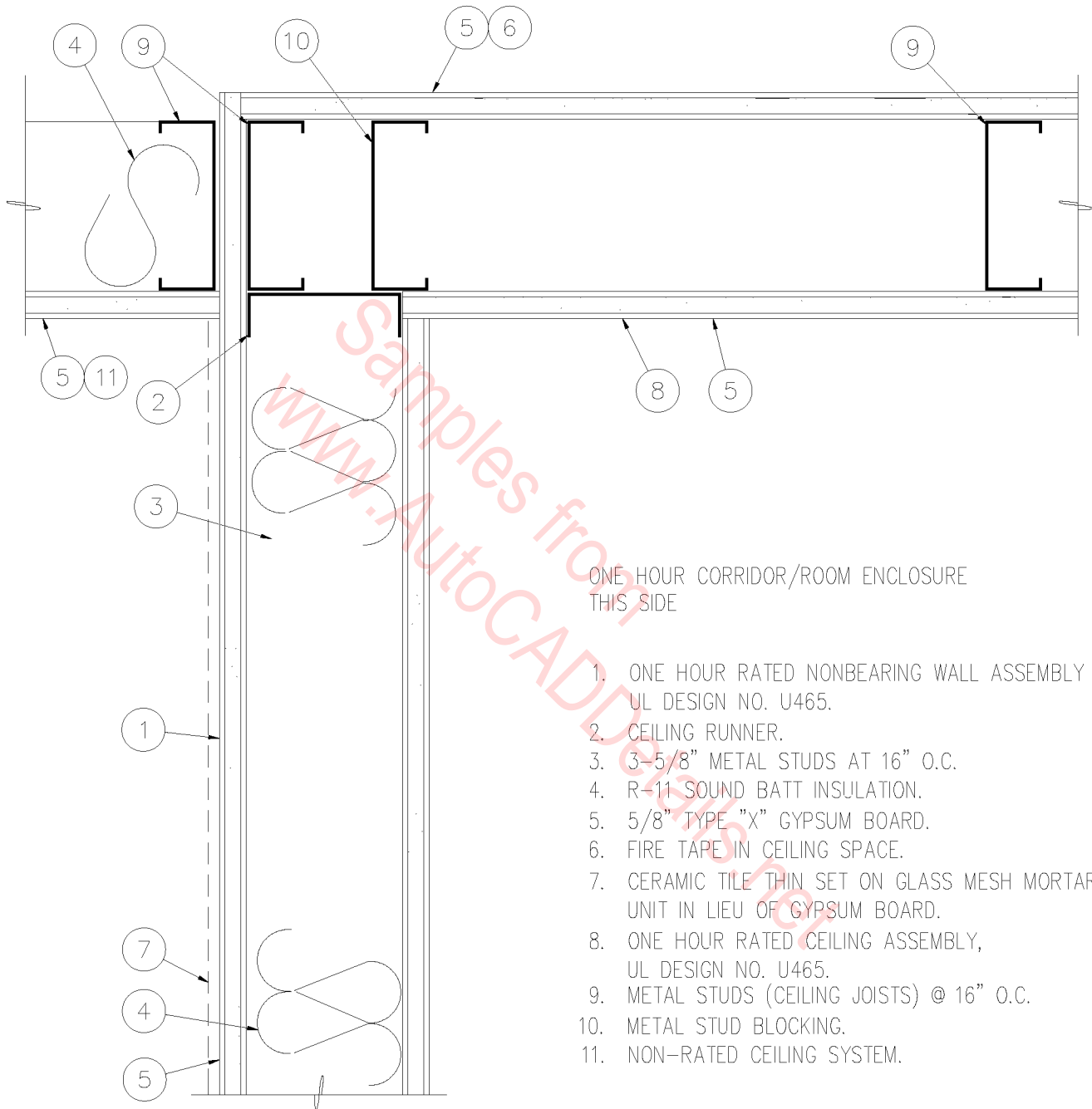
1. 1 HOUR PARTITION. UL DESIGN NO. U465.
2. (2) LAYERS, 5/8" TYPE 'X' GYPSUM BOARD.
3. 5/8" TYPE 'X' GYPSUM BOARD.
4. METAL RUNNER WITH 2" LEG.
5. FIRE SAFING INSULATION.
6. METAL RUNNER.
7. JOIST.



1 HOUR WALL AT CEILING

SCALE: 3" = 1'-0"

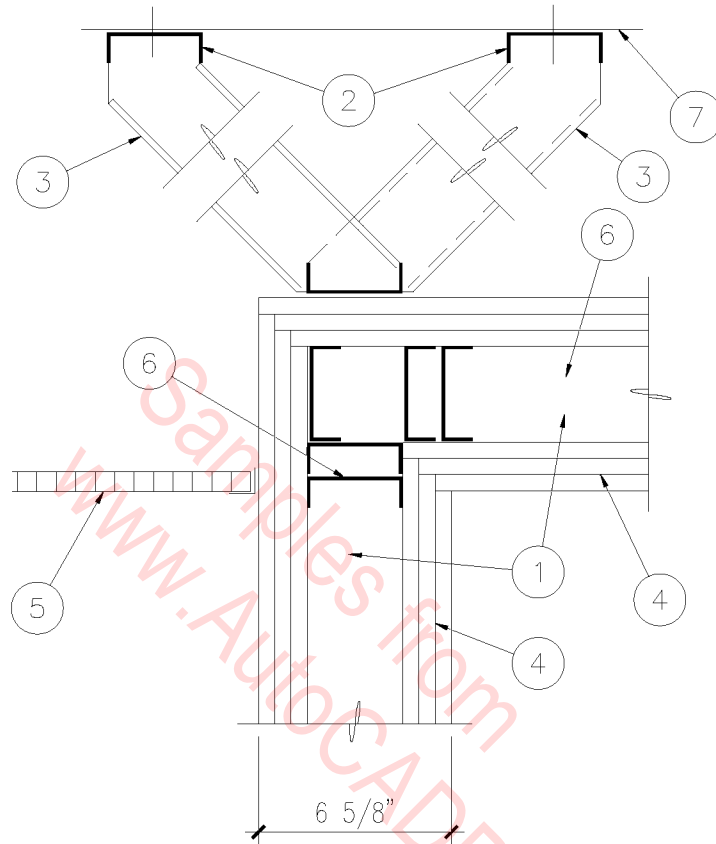
07B-4020



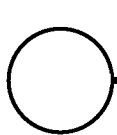
1 HOUR CORRIDOR

SCALE: 3" = 1'-0"

07B-4021



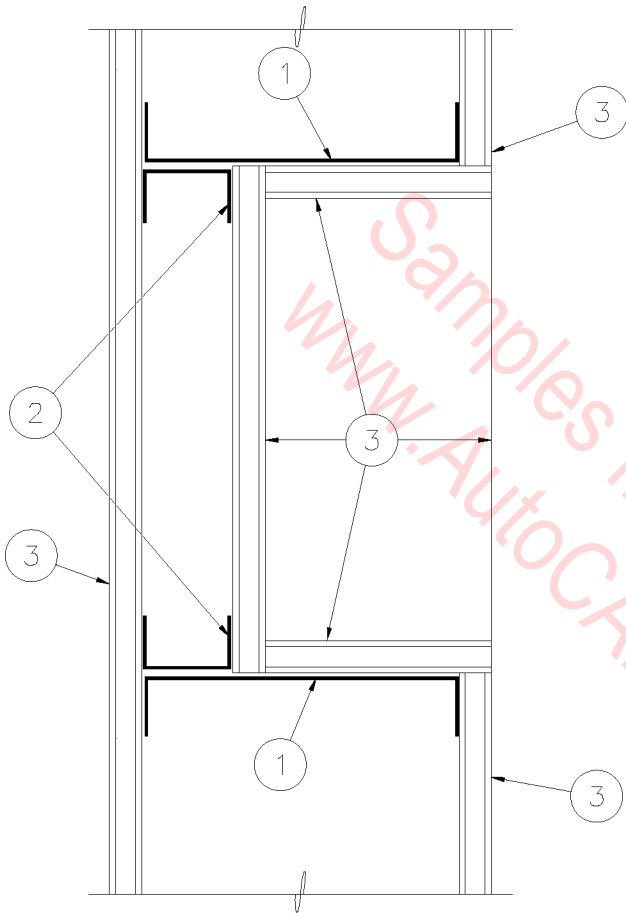
1. 3 HOUR FIRE ASSEMBLY.
UL DESIGN NO. U425.
2. ANCHOR RUNNER TO
STRUCTURE ABOVE.
3. 3-5/8" METAL STUD BRACING
AT 48" O.C. STAGGERED.
4. (3) LAYERS OF 1/2" TYPE 'X'
GYPSUM BOARD BOTH SIDES.
5. LAY-IN ACOUSTICAL CEILING.
6. 3-5/8" METAL STUDS.
7. STRUCTURE ABOVE.



3 HOUR WALL/CEILING

SCALE: 3" = 1'-0"

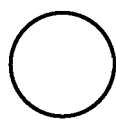
07B-4022



UL DESIGN
NO. U465.

1. 6" METAL STUDS AT 16" O.C.
2. 1-5/8" METAL STUDS.
3. 5/8" TYPE 'X' GYPSUM BOARD,
MUST COMPLETELY ENCLOSE
RECESS ON ALL SIDES, TOP
AND BOTTOM.

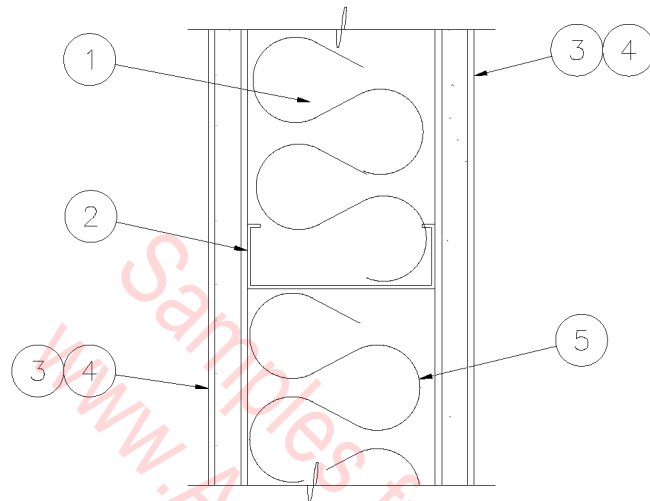
PLAN OR SECTION.



RECESS IN 1 HOUR WALL

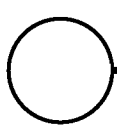
SCALE: 3" = 1'-0"

07B-4023



TWO HOUR RATED NONBEARING WALL ASSEMBLY, UL DESIGN NO. U491

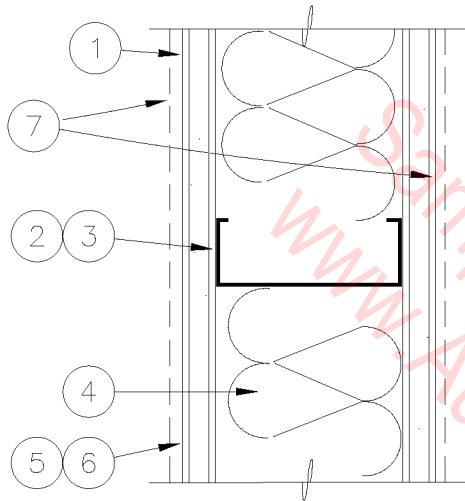
1. FLOOR & CEILING RUNNER (NOT SHOWN) 25 GA. WITH 1" HIGH RETURN LEGS, 3-5/8" WIDE. ANCHOR TO FLOOR AND CEILING WITH FASTENERS AT 24" O.C.
2. 3-5/8" WIDE X 1-5/16 LEGS, 3/8" RETURN X 25 GA. METAL STUDS AT 16" O.C.
3. 3/4" TYPE "X" GYPSUM BOARD WITH 1" TYPE "S" NO. 6 DRYWALL SCREWS TO EACH STUD. SELF-TAPPING STEEL SCREWS AT 8" O.C. ALONG EDGES OF BOARD AND 12" O.C. IN THE FIELD. JOINTS STAGGERED ON OPPOSITE SIDES OF THE ASSEMBLY.
4. JOINT TAPE AND COMPOUND - PREMIXED JOINT COMPOUND APPLIED IN TWO COATS TO JOINTS AND SCREW HEADS; PAPER TAPE, 2" WIDE, EMBEDDED IN FIRST LAYER OF COMPOUND OVER ALL JOINTS IN CEILING SPACE, ADDITIONAL COMPOUND AND TEXTURE REQUIRED IN EXPOSED AREAS.
5. 3" 'THERMAFIBER SAFB' BATT INSULATION.



2 HOUR WALL

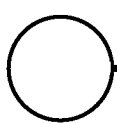
SCALE: 3" = 1'-0"

07B-4024



UL DESIGN NO. U465

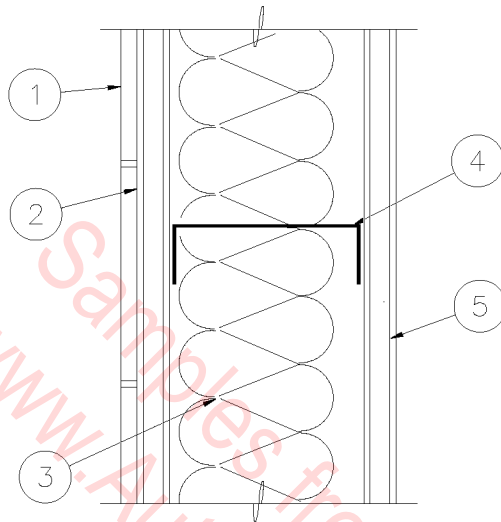
1. ONE HOUR NONBEARING WALL ASSEMBLY
UL DESIGN NO. U465.
2. FLOOR & CEILING RUNNER (NOT SHOWN) 25 GA.
WITH 1" HIGH RETURN LEGS, 3-5/8" WIDE.
ANCHOR TO FLOOR AND CEILING WITH
FASTENERS AT 24" O.C.
3. 3-5/8" WIDE X 1-5/16" LEGS, 3/8" RETURN
X 25 GA. METAL STUDS AT 16" O.C.
1-5/16" LEGS, 3/8" RETURN.
4. R-11, 3-1/2" SOUND BATT INSULATION,
WHERE APPLICABLE.
5. 5/8" TYPE "X" GYPSUM BOARD WITH 1" TYPE "S"
SELF-TAPPING STEEL SCREWS AT 8" O.C.
ALONG EDGES OF BOARD AND 12" O.C.
IN THE FIELD. JOINTS STAGGERED ON
OPPOSITE SIDES OF THE ASSEMBLY.
6. JOINT TAPE AND COMPOUND - PREMIXED JOINT
COMPOUND APPLIED IN TWO COATS TO JOINTS
AND SCREW HEADS; PAPER TAPE, 2" WIDE,
EMBEDDED IN FIRST LAYER OF COMPOUND
OVER ALL JOINTS IN CEILING SPACE (FIRE TAPE),
ADDITIONAL COMPOUND AND TEXTURE REQUIRED
IN EXPOSED AREAS.
7. CERAMIC TILE ON GLASS MESH MORTAR UNIT
IN LIEU OF GYPSUM BOARD WHERE APPLICABLE.



1 HOUR WALL

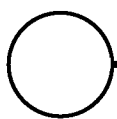
SCALE: 3" = 1'-0"

07B-4025



UL DESIGN NO. U445 SIMILAR

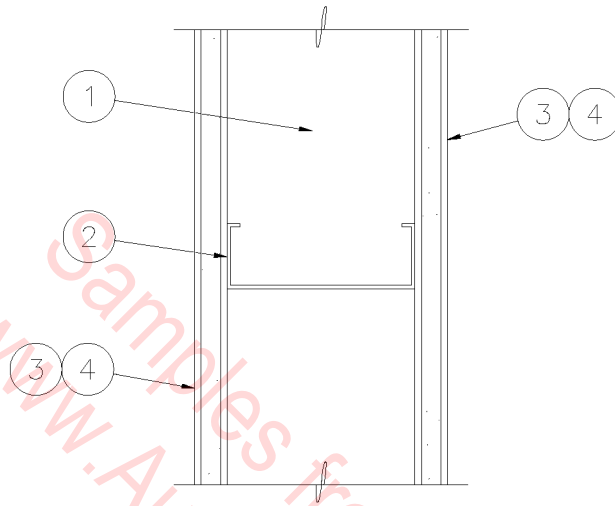
1. CERAMIC TILE.
2. 1/2" CEMENT BOARD ATTACHED TO STUDS WITH 1-5/8" LONG TYPE 'S' CORROSION RESISTANT SCREWS AT 6" O.C. TAPE JOINTS WITH GLASS FIBER MESH TAPE.
3. BATT INSULATION.
4. 3-5/8" METAL STUDS AT 16" O.C.
5. 5/8" TYPE 'X' GYPSUM BOARD ATTACHED TO STUDS WITH 1" LONG SELF-TAPPING SCREWS AT 8" O.C.



1 HOUR RESISTIVE WALL

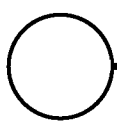
SCALE: 3" = 1'-0"

07B-4026



ONE HOUR RATED NONBEARING WALL ASSEMBLY, UBC 43-B, 15-1.1

1. FLOOR & CEILING RUNNER (NOT SHOWN) 25 GA. WITH 1" HIGH RETURN LEGS, 3-5/8" WIDE. ANCHOR TO FLOOR AND CEILING WITH FASTENERS AT 24" O.C.
2. 3-5/8" WIDE X 1-5/16 LEGS, 3/8" RETURN X 25 GA. METAL STUDS AT 16" O.C.
3. 5/8" TYPE X GYPSUM BOARD WITH 1" TYPE S NO. 6 DRYWALL SCREWS TO EACH STUD. SELF-TAPPING STEEL SCREWS AT 8" O.C. ALONG EDGES OF BOARD AND 12" O.C. IN THE FIELD. JOINTS STAGGERED ON OPPOSITE SIDES OF THE ASSEMBLY.
4. JOINT TAPE AND COMPOUND - PREMIXED JOINT COMPOUND APPLIED IN TWO COATS TO JOINTS AND SCREW HEADS; PAPER TAPE, 2" WIDE, EMBEDDED IN FIRST LAYER OF COMPOUND OVER ALL JOINTS IN CEILING SPACE, ADDITIONAL COMPOUND AND TEXTURE REQUIRED IN EXPOSED AREAS, SEE SPECIFICATIONS AND ROOM FINISH SCHEDULE.



1 HOUR RESISTIVE WALL

SCALE: 3" = 1'-0"

07B-4027

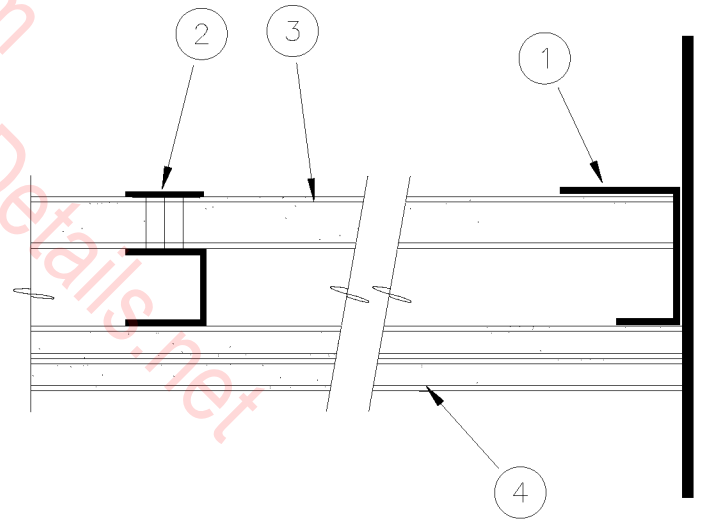
FIRE-RESISTIVE CONSTRUCTION

1. 'J' SHAPED RUNNER CHANNEL, 2-1/2" WIDE W/ UNEQUAL LEGS OF 1" AND 2", MIN. 24 GA. STEEL. RUNNER POSITIONED W/ SHORT LEG TOWARD FINISHED SIDE OF WALL. RUNNERS ATTACHED TO STRUCTURAL SUPPORT OR ADJACENT RUNNERS W/ STEEL FASTENERS LOCATED NOT GREATER THAN 2" FROM ENDS AND NOT GREATER THAN 24" O.C.
2. 2-1/2" WIDE 25 GA. STEEL "C-H" STUDS. MAX. 24" O.C.
3. 1" THICK GYP. BD. LINER PANELS BEARING U.L. CLASSIFICATION MARKING. EDGES INSERTED IN 'H' - SHAPED SECTION OF 'C-H' STUDS W/ FREE END OF PANEL ATTACHED TO LONG LEG OF J-RUNNER W/ 1-5/8" LONG TYPE "S" SELF-DRILLING STEEL SCREWS @ 12" O.C. MAX.
4. TWO LAYERS 5/8" TYPE "X" GYP. BD. BASE LAYER ATTACHED TO STUDS W/ 1" LONG TYPE S SELF-DRILLING STEEL SCREWS @ 24" O.C. ALONG THE EDGES AND IN THE FIELD OF THE BOARDS. FACE LAYER ATTACHED TO STUDS AND 'J' RUNNERS W/ 1-5/8" LONG TYPE S SELF-DRILLING STEEL SCREWS AT 12" O.C. ALONG THE EDGES AND IN THE FIELD OF THE BOARDS. STAGGER SCREWS AND PANEL JOINTS BETWEEN INNER AND OUTER LAYER.

NOTE: DETAIL PROVIDES 2-HR FIRE RESISTIVE SHAFT WALL ASSEMBLY PER U.L. DESIGN NO. U438

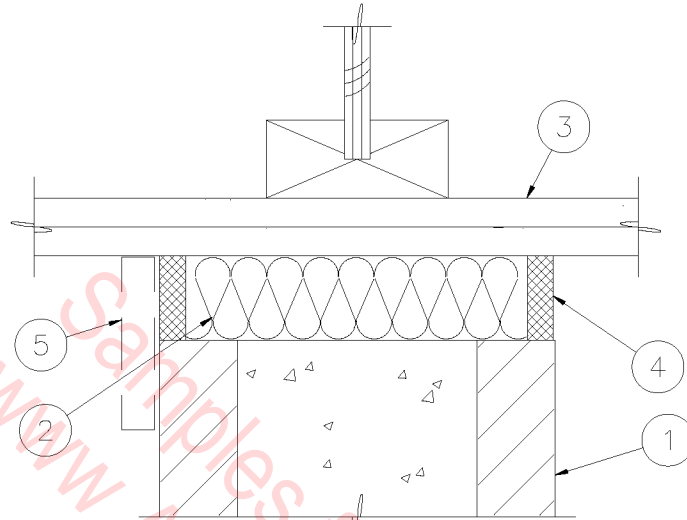
GENERAL NOTE

ALL PENETRATIONS OF FIRE-RESISTANT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS". THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL LISTING TO THE ARCHITECT, AND SUCH DRAWINGS SHALL BE AVAILABLE TO THE LOCAL BUILDING INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.



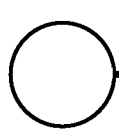
○ 2 HOUR SHAFT WALL
SCALE: 3' = 1'-0"

07B-4028



UL THROUGH-PENETRATION FIRESTOP SYSTEMS DESIGN NO. 327.

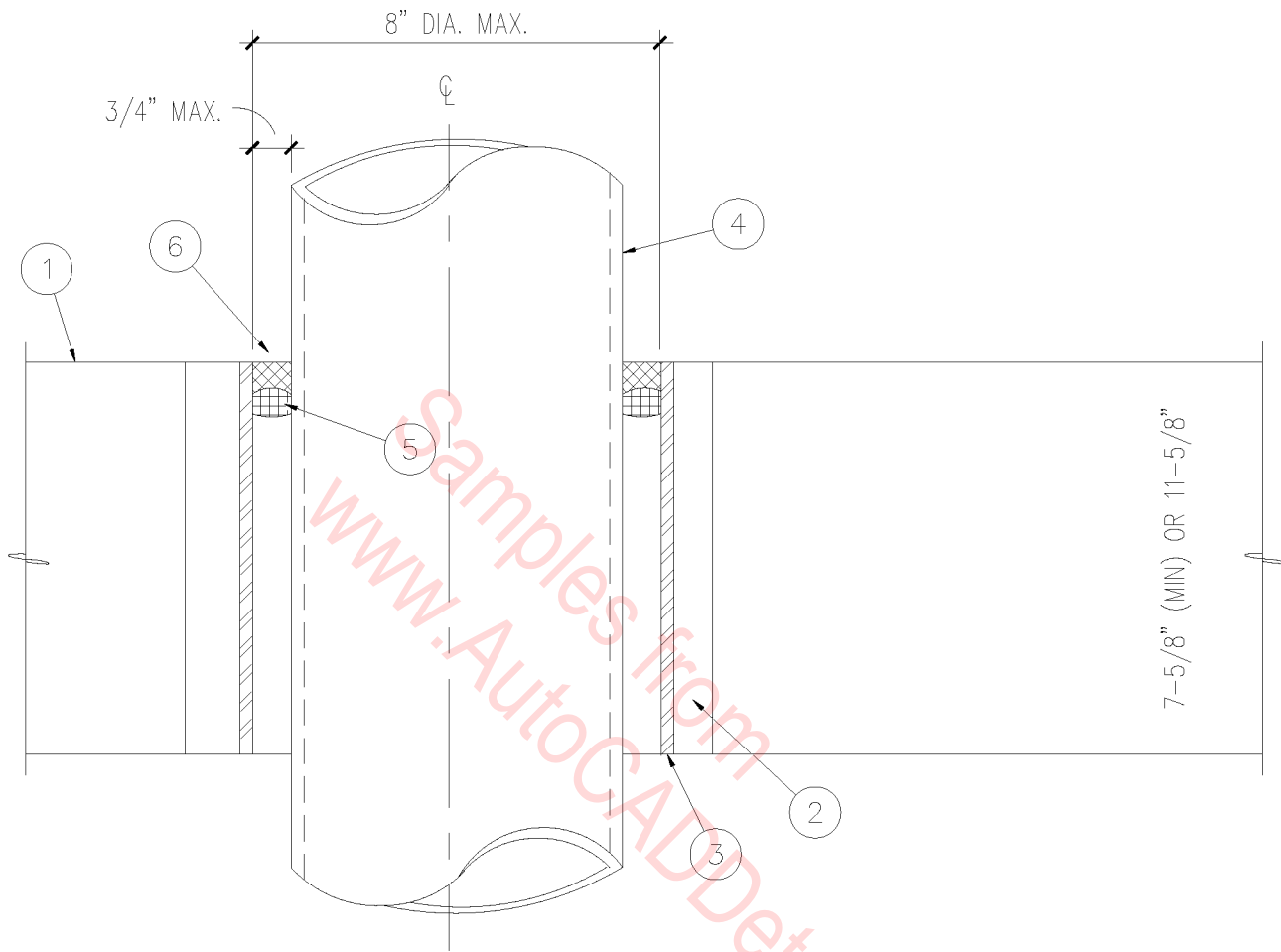
1. FIRE RESISTANT MASONRY WALL UL NO. U905.
2. FIRE SAFING INSULATION.
3. COMPOSITE SHEET ROOFING SYSTEM ON PLYWOOD DECK OR (2) LAYERS 5/8" TYPE 'X' GYPSUM BOARD, ATTACHED TO UNDERSIDE OF STRUCTURAL TRUSSES.
4. 1/2" 'TREMCO' FYRE-SIL SEALANT.
5. 5/8" TYPE 'X' GYPSUM BOARD, CONTINUOUS AT ALL EXPOSED LOCATIONS.



WALL @ ROOF DECK

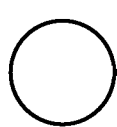
3" = 1'-0"

07B-4029



ASTM-E814 (UL 1479) AND
 UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

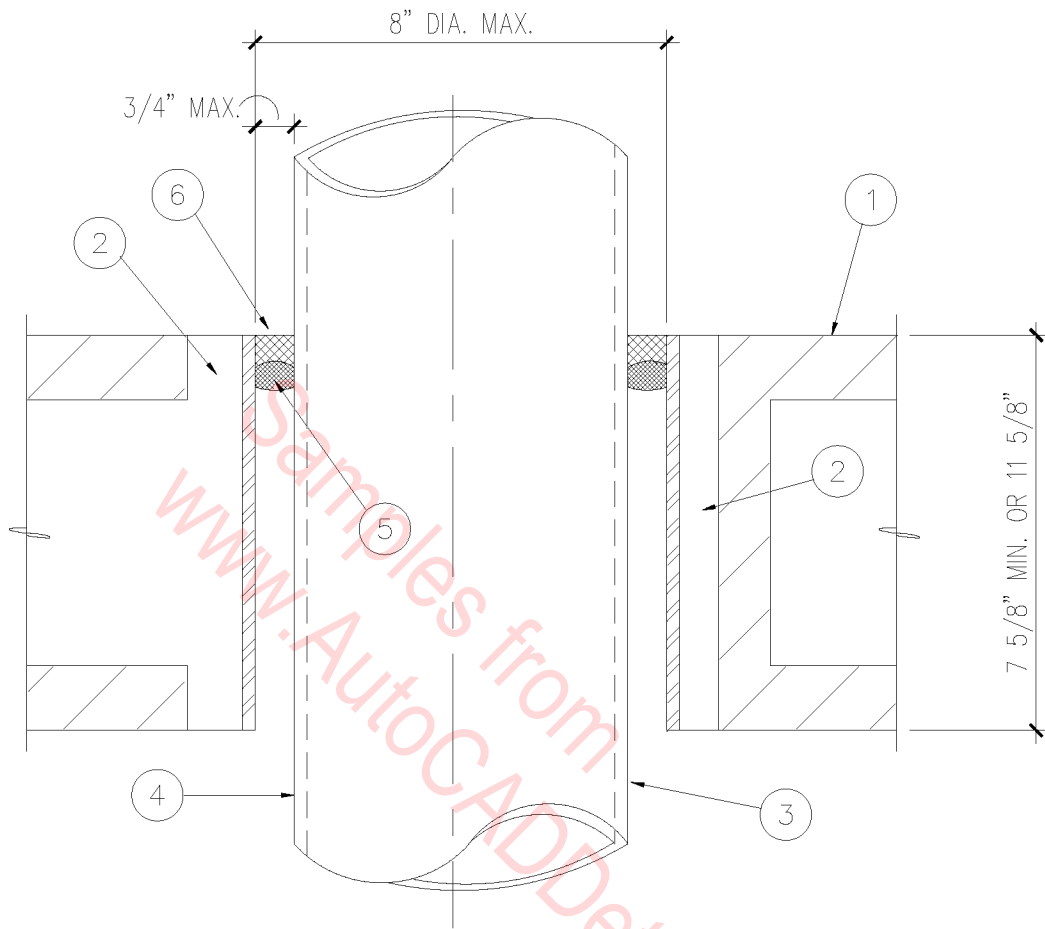
1. 8" CONCRETE MASONRY UNIT OR CONCRETE - 1 OR 2 HOUR WALL.
2. ENCASE SLEEVE IN GROUT.
3. STEEL PIPE SLEEVE - SCHEDULE 40.
4. 6" DIA MAX STEEL PIPE OR CONDUIT.
5. POLYURETHANE BACKER ROD.
6. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.



1 OR 2 HR PENETRATION

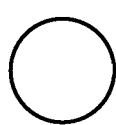
SCALE: 3" = 1'-0"

07B-4030



ASTM-E814 (UL 1479) AND
 UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

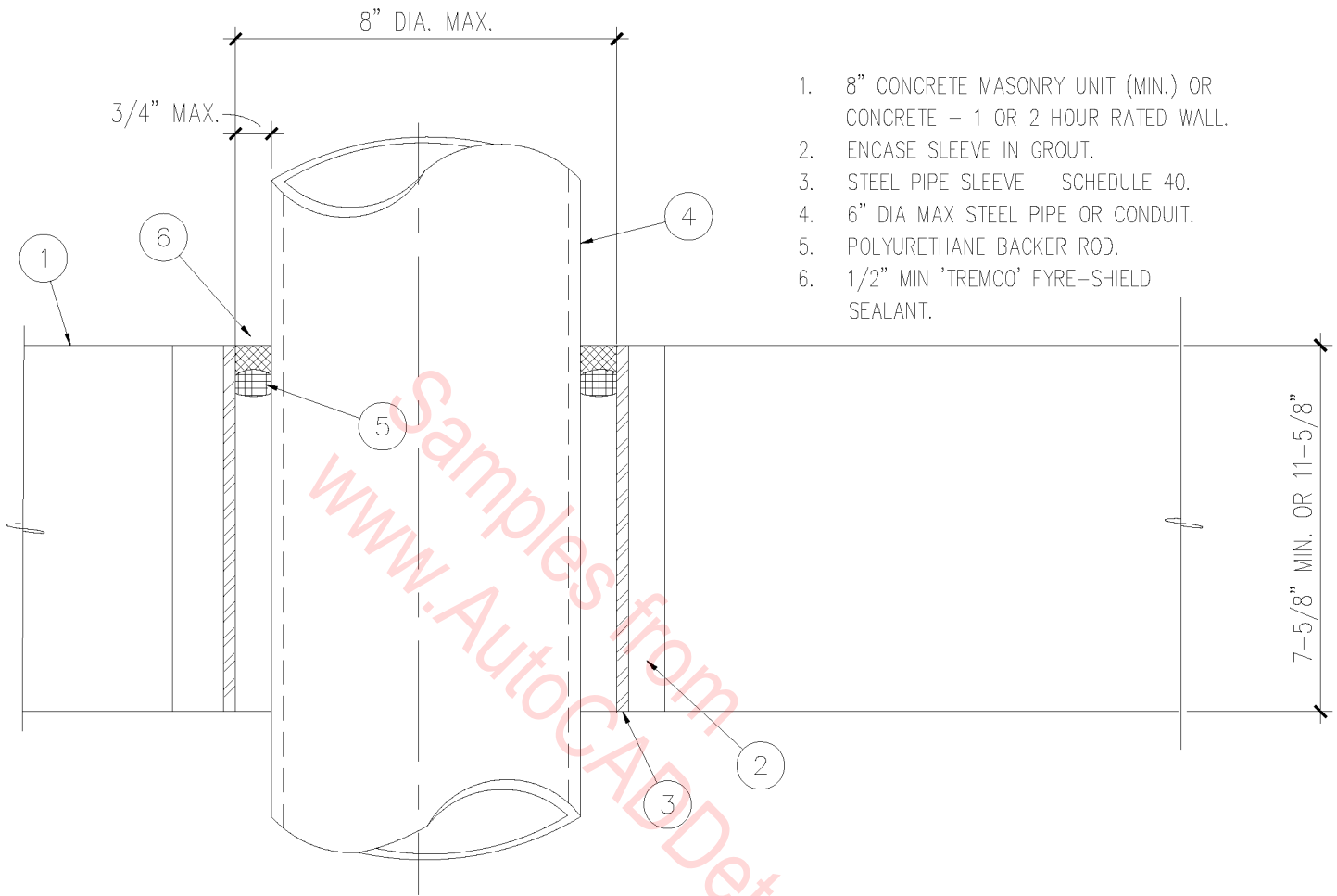
1. 8" CONCRETE MASONRY UNIT FIRE RATED.
2. ENCASE SLEEVE IN GROUT.
3. STEEL PIPE SLEEVE - SCHEDULE 40.
4. 6" DIA MAX STEEL PIPE OR CONDUIT.
5. POLYURETHANE BACKER ROD.
6. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.



2 HR PIPE PENETRATION

SCALE: 3" = 1'-0"

07B-4031



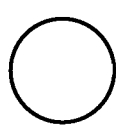
1. 8" CONCRETE MASONRY UNIT (MIN.) OR CONCRETE - 1 OR 2 HOUR RATED WALL.
2. ENCASE SLEEVE IN GROUT.
3. STEEL PIPE SLEEVE - SCHEDULE 40.
4. 6" DIA MAX STEEL PIPE OR CONDUIT.
5. POLYURETHANE BACKER ROD.
6. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.

ASTM-E814 (UL 1479) AND
 UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

FIRE-RESISTIVE CONSTRUCTION

GENERAL NOTE:

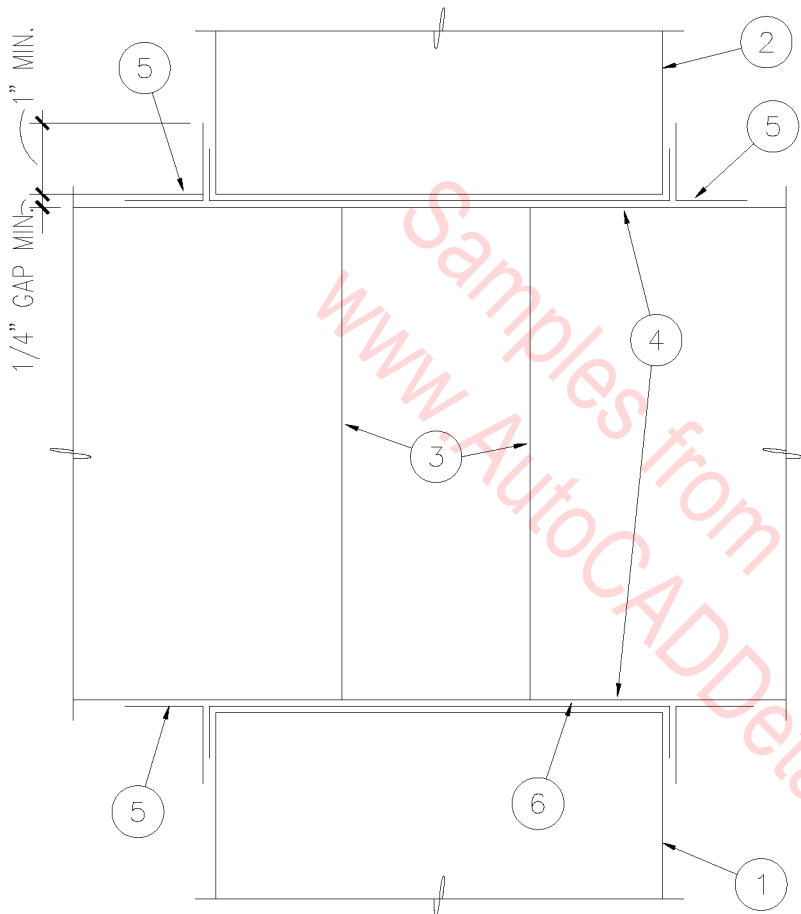
ALL PENETRATIONS OF FIRE-RESISTANT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS". THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL LISTING TO THE ARCHITECT, AND SUCH DRAWINGS SHALL BE AVAILABLE TO THE LOCAL BUILDING INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.



PIPE PENETRATION

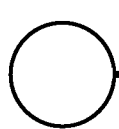
SCALE: 3" = 1'-0"

07B-4032



1. RATED MASONRY WALL OR CONCRETE WALL ONE OR TWO HOURS, SEE PLAN FOR LOCATION.
2. MASONRY OR CONCRETE LINTEL WHERE APPLICABLE.
3. FIRE OR LEAKAGE (SMOKE) DAMPER. SEE MECHANICAL FOR TYPE AND LOCATION.
4. DAMPER SLEEVE SHALL NOT EXTEND MORE THAN 6" BEYOND THE FIRE WALL AND NOT MORE THAN 9" ON THE OPERATOR/ACTUATOR SIDE.
5. ANGLE 1-1/2" X 1-1/2" X 14 GAGE.
6. 20 GA. G. I. SLEEVE.

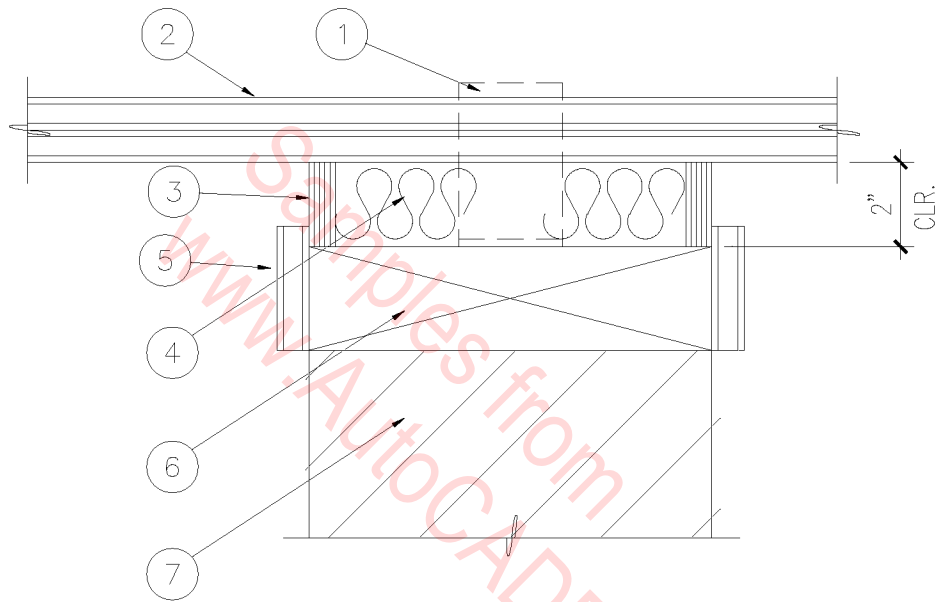
UL SAFETY STANDARD 555 AND NFPA 90A



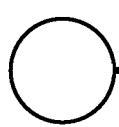
1 & 2 HR. PENETRATION

3" = 1'-0"

07B-4033



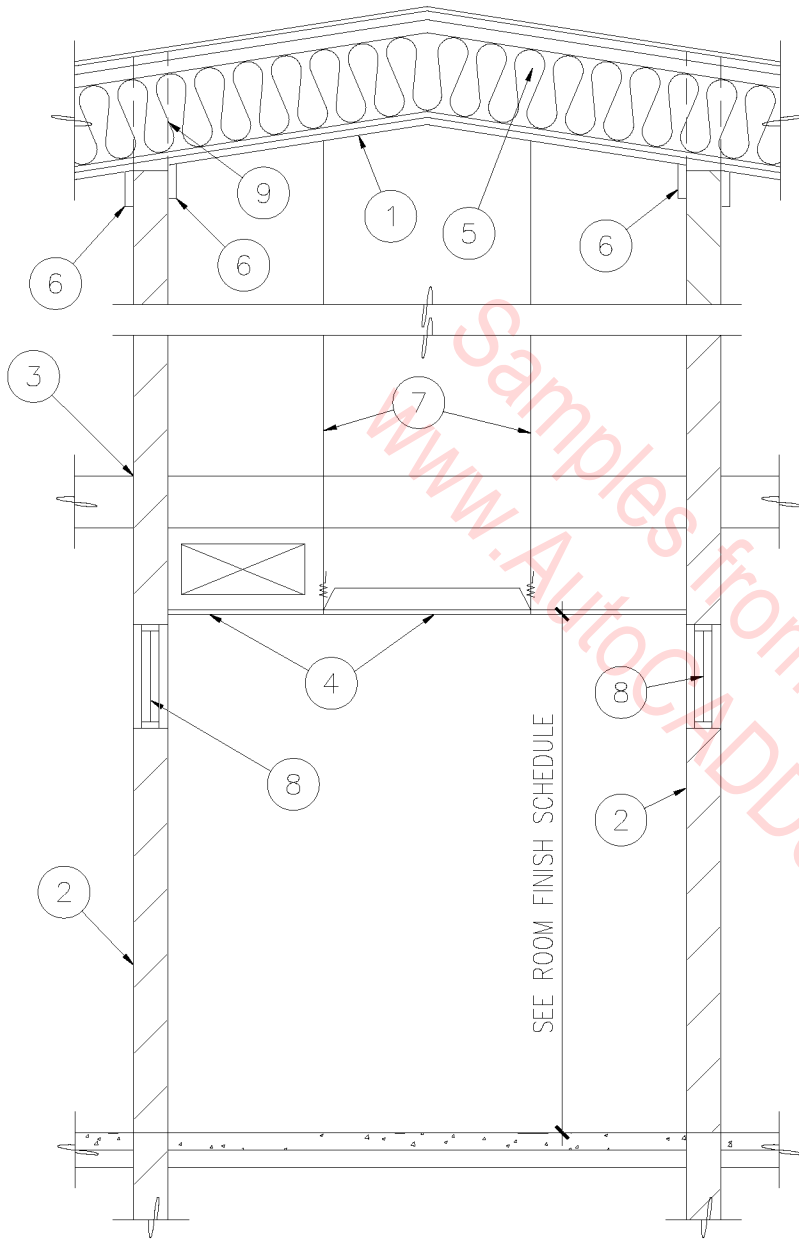
1. METAL STRAP FROM PLATE TO WOOD JOIST.
2. 2 LAYERS 5/8" TYPE 'X' GYP. BD. ON BOTTOM OF WOOD JOIST.
3. 1/2" MIN. DEPTH OF 3M FIRE BARRIER CP 25N/S (UL DES. NO. J900C) OR TREMCO FIRE-SIL SEALANT (UL DES. NO. 327).
4. MINERAL WOOD FIRE-SAFING.
5. 5/8" TYPE 'X' GYP. BD. STRIP.
ON EACH SIDE OF WOOD PLATE.
6. WOOD PLATE.
7. MASONRY WALL.



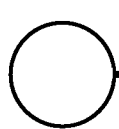
C.M.U. WALL @ JOIST

3" = 1'-0"

07B-4034



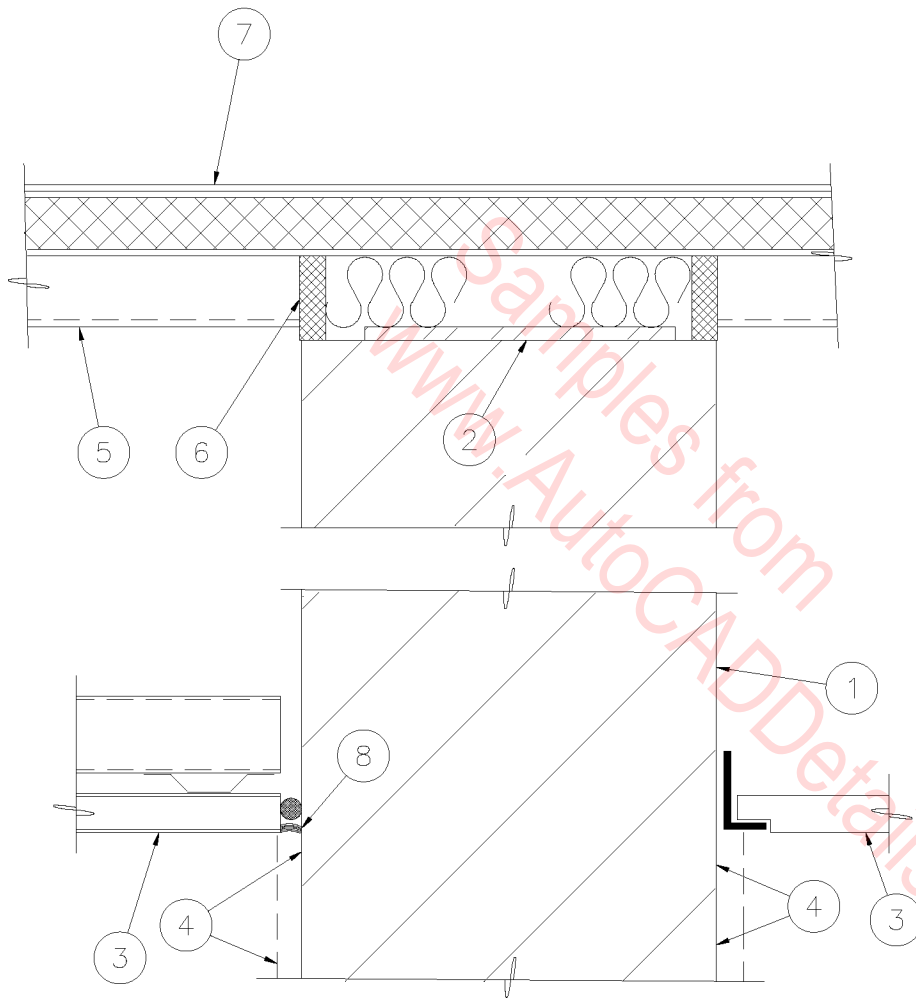
1. 1 HOUR RATED ROOF/CEILING SYSTEM.
2. 1 HOUR RATED CMU WALL.
3. PENETRATIONS THROUGH THE WALLS SHALL BE PROTECTED WITH EITHER FIRE DAMPERS OR UL LISTED POKE THROUGH DETAILS.
4. NON-RATED ACOUSTICAL CEILING AND UNPROTECTED LIGHT FIXTURE.
5. ROOF STRUCTURE.
6. 5/8" TYPE 'X' GYPSUM BOARD, 6" HIGH CONTINUOUS.
7. HANGER WIRE.
8. WIRE GLASS WINDOW.
9. MASONRY WALL TO UNDERSIDE OF PLYWOOD DECK WHERE OCCURS.



1 HOUR CORRIDOR

1/4" = 1'-0"

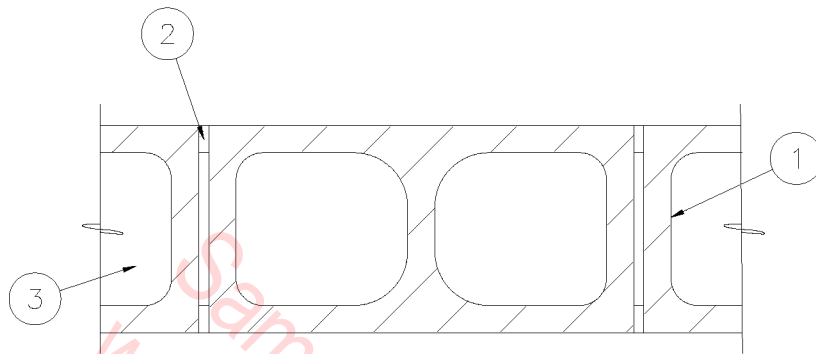
07B-4035



1. MASONRY WALL.
2. WELD PLATE.
3. CEILING WHERE APPLICABLE.
4. SEE ROOM FINISH SCHEDULE & WALL TYPES FOR MATERIAL & FINISH.
5. METAL ROOF DECK.
6. 1/2" 'TREMCO' FYRE-SIL SEALANT EACH SIDE ON FIRE SAFING UL DESIGN NO. 327 AT RATED WALL.
7. ROOFING SYSTEM ON RIGID INSULATION.
8. CASING BEAD AND SEALANT AT GYPSUM BOARD.

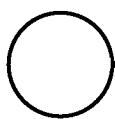
○ WALL @ ROOF DECK
 3" = 1'-0"

07B-4036



UBC TABLE 43-B ITEM 5-1.1.

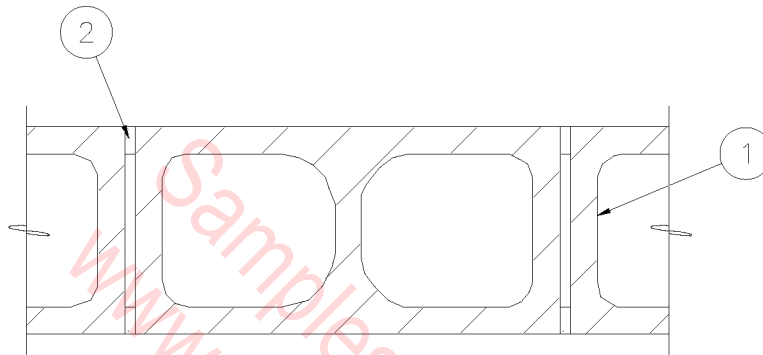
1. 8" NOMINAL CONCRETE MASONRY UNIT (CMU) WALL GROUTED SOLID.
2. MORTAR - BLOCKS LAID IN FULL BED OF MORTAR, NOMINAL 3/8" THICK, OF NOT LESS THAN 2-1/4 AND NOT MORE THAN 3-1/2 PARTS OF CLEAN SHARP SAND TO 1 PART PORTLAND CEMENT (PROPORTIONED BY VOLUME) AND NOT MORE THAN 50 PERCENT HYDRATED LIME (BY CEMENT VOLUME). VERTICAL JOINTS STAGGERED.
3. SOLID GROUT OR LOOSE FILL INSULATION.



4 HOUR MASONRY WALL

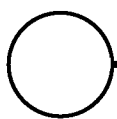
SCALE: 1 1/2" = 1'-0"

07B-4037



UL DESIGN NO. U901

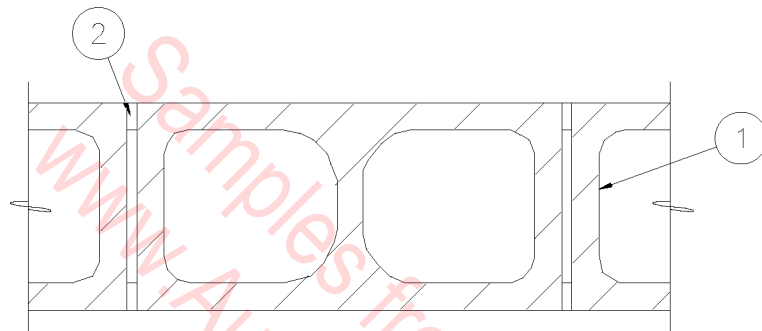
1. 8" NOMINAL CONCRETE MASONRY UNIT (CMU) WALL GROUTED SOLID.
2. MORTAR - BLOCKS LAID IN FULL BED ON MORTAR, NOMINAL 3/8" THICK, OF NOT LESS THAN 2-1/4 AND NOT MORE THAN 3-1/2 PARTS OF CLEAN SHARP SAND TO 1 PART PORTLAND CEMENT (PROPORTIONED BY VOLUME) AND NOT MORE THAN 50 PERCENT HYDRATED LIME (BY CEMENT VOLUME). VERTICAL JOINTS STAGGERED.



4 HOUR CMU WALL

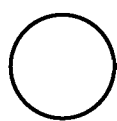
SCALE: 1 1/2" = 1'-0"

07B-4038



UL DESIGN NO. U905

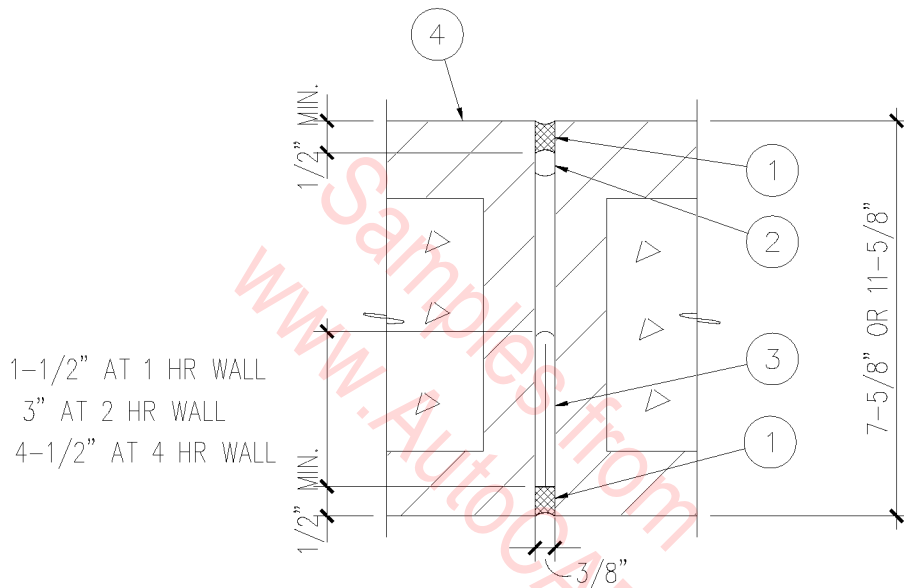
1. 8" NOMINAL CONCRETE MASONRY UNIT (CMU) WALL.
2. MORTAR - BLOCKS LAID IN FULL BED ON MORTAR, NOMINAL 3/8" THICK, OF NOT LESS THAN 2-1/4 AND NOT MORE THAN 3-1/2 PARTS OF CLEAN SHARP SAND TO 1 PART PORTLAND CEMENT (PROPORTIONED BY VOLUME) AND NOT MORE THAN 50 PERCENT HYDRATED LIME (BY CEMENT VOLUME). VERTICAL JOINTS STAGGERED.



2 HOUR C.M.U. WALL

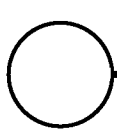
SCALE: 1 1/2" = 1'-0"

07B-4039



ICBO EVALUATION REPORT NO. 3196

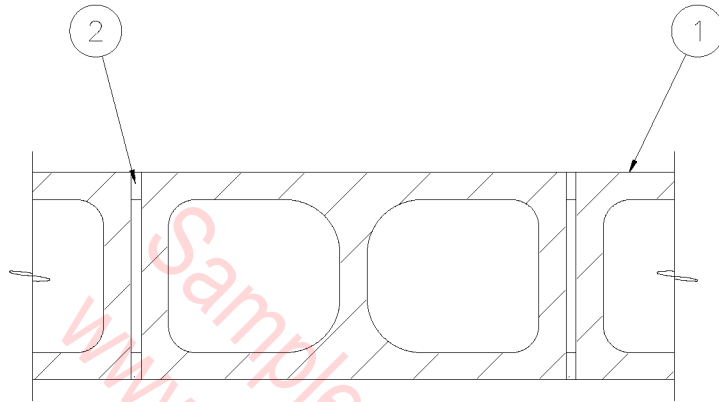
1. FIRE STOPPING SEALANT, 'TREMCO' DYMETRIC, POLYTREMDYNE TERPOLYMER.
2. JOINT FILLER - POLYETHYLENE CLOSED-CELL FOAM, BY 'DOW CHEMICAL'.
3. 'CERABLANKET-FS' - CERAMIC FIBER BLANKET INSULATION, BY 'JOHNS-MANVILLE'.
4. RATED MASONRY WALL.



1, 2 AND 4 HOUR JOINT

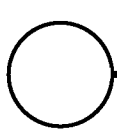
SCALE: 3" = 1'-0"

07B-4040



UBC TABLE 43-B ITEM 5-1.1.

1. 8" NOMINAL CONCRETE MASONRY UNIT (CMU) WALL.
2. MORTAR - BLOCKS LAID IN FULL BED OF MORTAR, NOMINAL 3/8" THICK, OF NOT LESS THAN 2-1/4 AND NOT MORE THAN 3-1/2 PARTS OF CLEAN SHARP SAND TO 1 PART PORTLAND CEMENT (PROPORTIONED BY VOLUME) AND NOT MORE THAN 50 PERCENT HYDRATED LIME (BY CEMENT VOLUME). VERTICAL JOINTS STAGGERED.

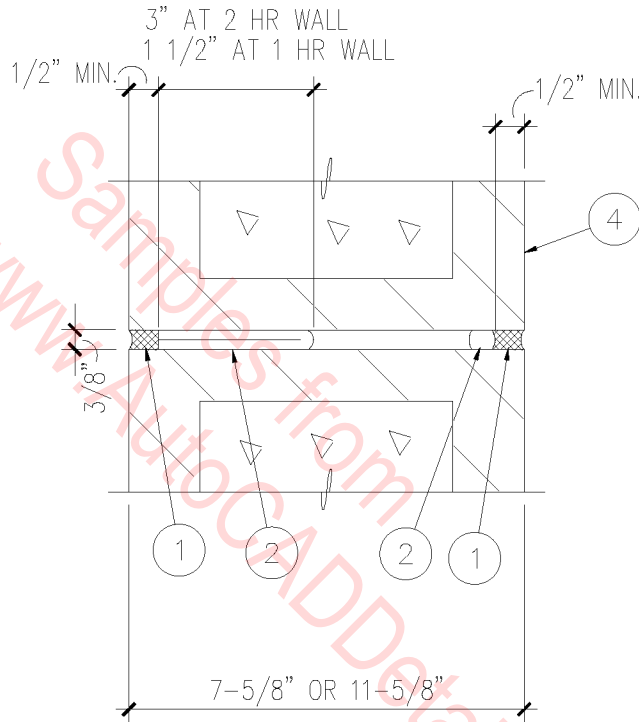


1 OR 2 HOUR CMU WALL

SCALE: 1 1/2" = 1'-0"

07B-4041

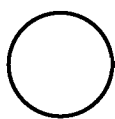
1. FIRE STOPPING SEALANT, 'TREMCO' DYMETRIC, POLYTREMDYNE TERPOLYMER.
2. JOINT FILLER - POLYETHYLENE CLOSED-CELL FOAM, BY 'DOW CHEMICAL'.
3. 'CERABLANKET-FS' - CERAMIC FIBER BLANKET INSULATION, BY 'JOHNS-MANVILLE'.
4. CMU WITH LIGHTWEIGHT COURSE AGGREGATE, 2 HOUR FIRE RESISTANCE.



GENERAL NOTE

ICBO EVALUATION REPORT NO. 3196

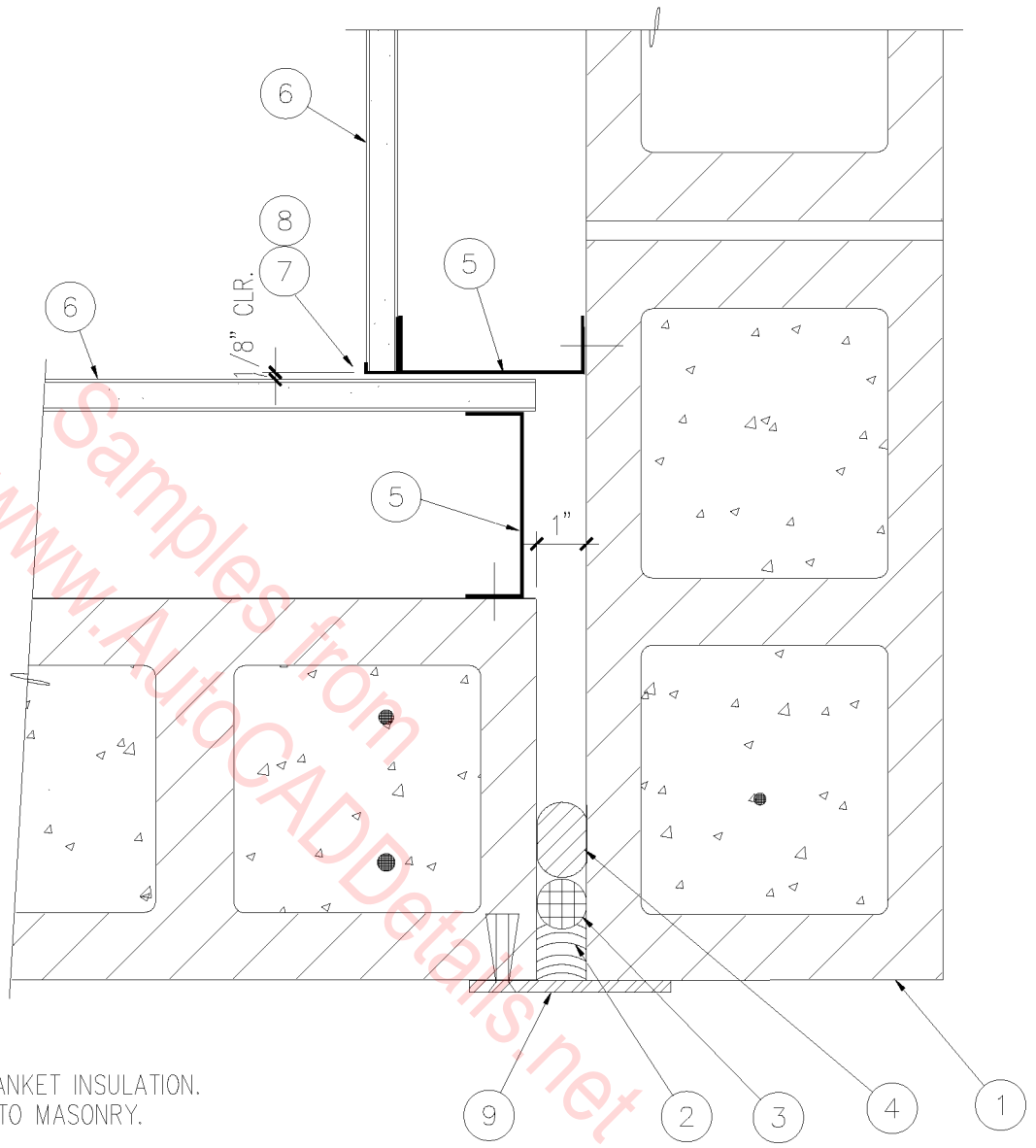
ALL PENETRATIONS OF FIRE-RESISTANT FLOORS OR WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS". THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL LISTING TO THE ARCHITECT, AND SUCH DRAWINGS SHALL BE AVAILABLE TO THE CITY INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.



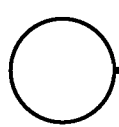
1-1/2 AND 3 HOUR CMU

SCALE: 3" = 1'-0"

07B-4042



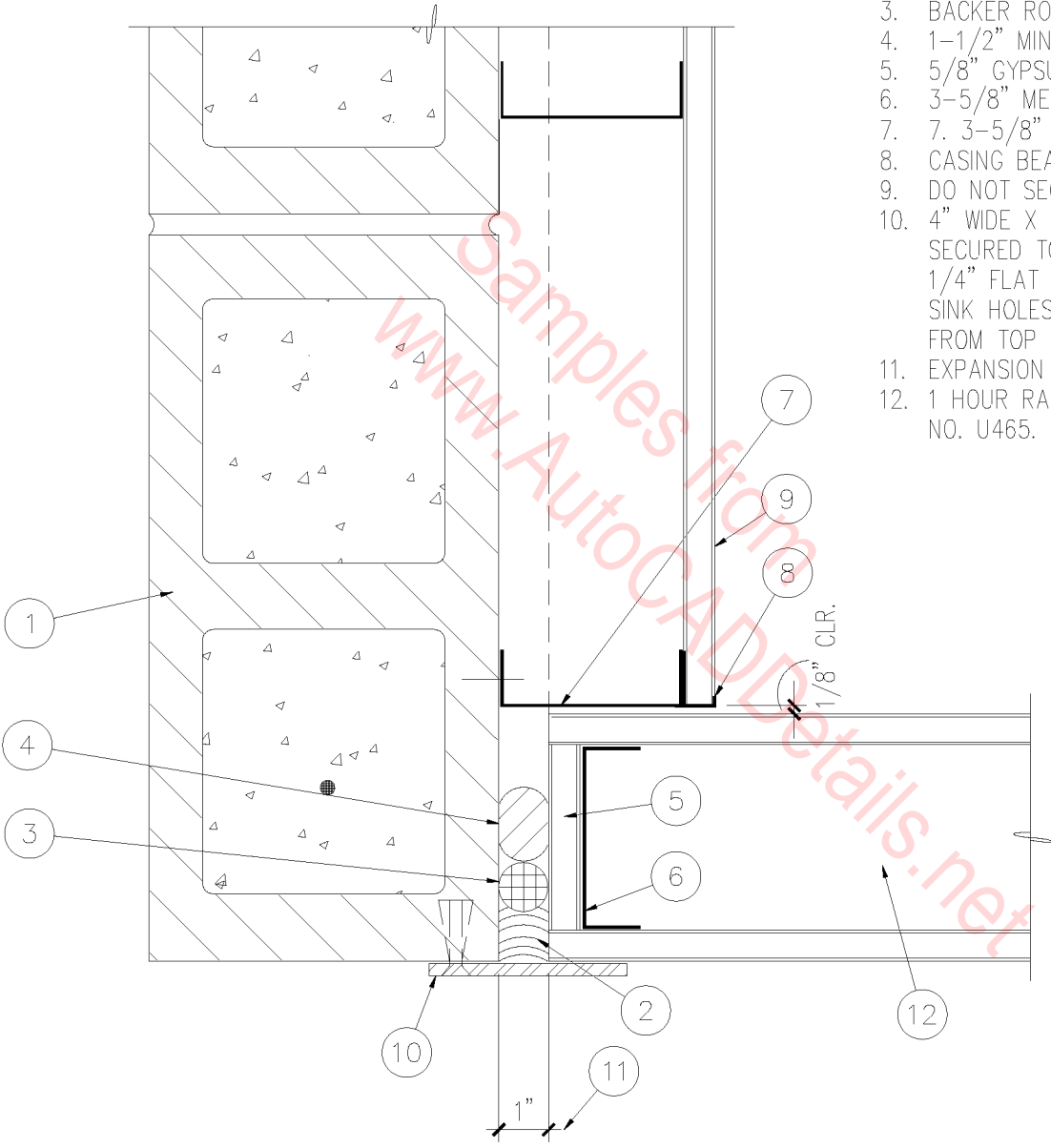
1. MASONRY WALL.
2. SEALANT, 7/8" MIN. DEPTH.
3. BACKER ROD.
4. 1-1/2" MIN. CERAMIC FIBER BLANKET INSULATION.
5. 3-5/8" METAL STUDS SECURE TO MASONRY.
6. 5/8" GYPSUM BOARD.
7. CASING BEAD.
8. DO NOT SECURE FURRED WALLS TOGETHER AT CORNER.
9. 4" WIDE X 1/4" THICK STEEL PLATE CLOSURE. SECURED AT ONE SIDE ONLY WITH 1/4" FLAT HEAD EXPANSION SCREWS IN COUNTERSUNK HOLES AT 24" O.C. PLATE CONTINUOUS FROM TOP OF BASE TO CEILING.



1 HOUR EXPANSION JOINT

SCALE: 3" = 1'-0"

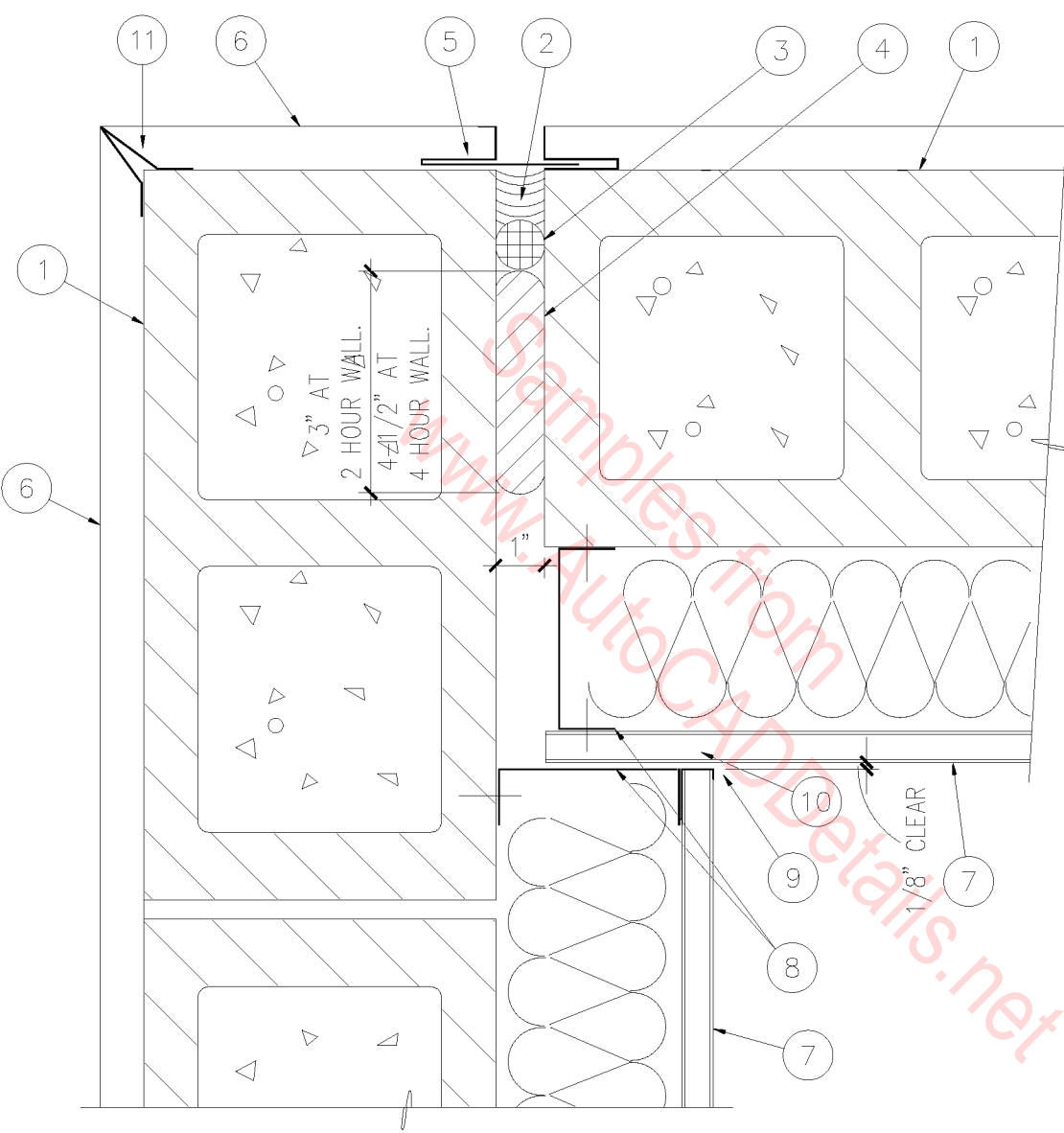
07B-4043



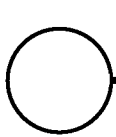
1. MASONRY WALL.
2. SEALANT, 7/8" MIN. DEPTH.
3. BACKER ROD.
4. 1-1/2" MIN. CERAMIC FIBER BLANKET INSULATION.
5. 5/8" GYPSUM BOARD. WRAP AROUND END STUD.
6. 3-5/8" METAL STUD.
7. 3-5/8" METAL STUD. SECURE TO MASONRY.
8. CASING BEAD.
9. DO NOT SECURE WALLS TOGETHER AT CORNER.
10. 4" WIDE X 1/4" THICK STEEL PLATE CLOSURE. SECURED TO MASONRY AT ONE SIDE ONLY WITH 1/4" FLAT HEAD EXPANSION SCREWS IN COUNTER-SINK HOLES AT 24" O.C. PLATE CONTINUOUS FROM TOP OF BASE TO CEILING.
11. EXPANSION JOINT.
12. 1 HOUR RATED CONSTRUCTION PER UL DESIGN NO. U465.

○ 1 HOUR EXPANSION JOINT
 3" = 1'-0"

07B-4044



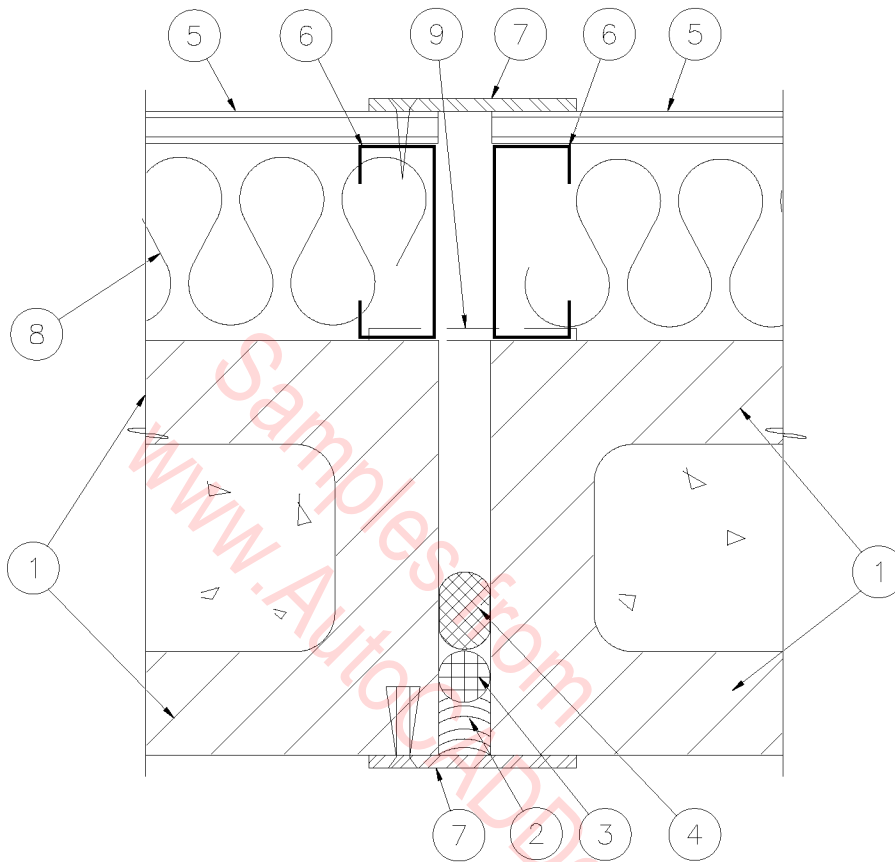
1. MASONRY WALL.
2. SEALANT, 7/8" MIN. DEPTH.
3. BACKER ROD.
4. CERAMIC FIBER BLANKET INSULATION.
5. PLASTER SLIP JOINT.
6. CEMENT PLASTER.
7. 5/8" "X" GYPSUM BOARD.
8. 3-5/8" METAL STUDS. SECURE TO MASONRY.
9. CASING BEAD.
10. DO NOT SECURE FURRED WALLS TOGETHER AT CORNER.
11. PLASTER CORNER BEAD.



2 & 4 HOUR EXP. JOINT

SCALE: 3" = 1'-0"

07B-4045

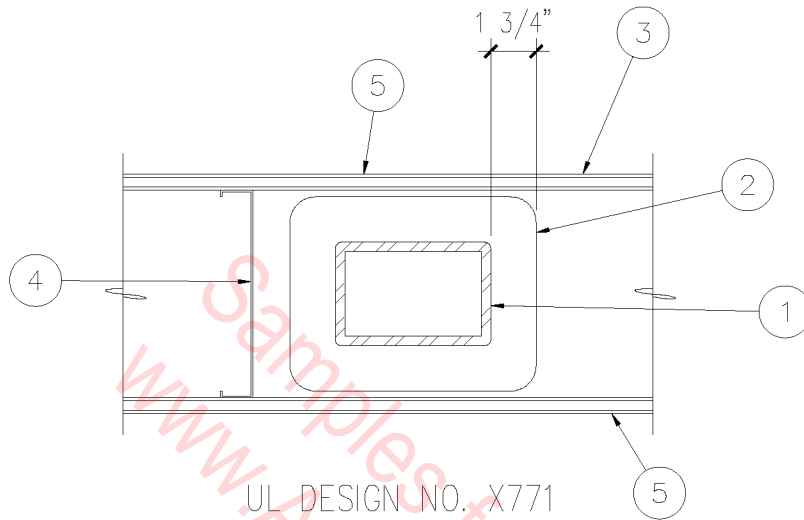


1. MASONRY WALL.
2. SEALANT, 7/8" MIN. DEPTH.
3. BACKER ROD.
4. CERAMIC FIBER BLANKET INSULATION: 1-1/2" AT 1 HOUR WALL, 4-1/2" AT 4 HOUR RATED WALL.
5. 5/8" TYPE 'X' GYPSUM BOARD WHERE OCCURS.
6. 3-5/8" METAL STUDS, WHERE OCCURS.
7. 4" WIDE X 1/4" THICK STEEL PLATE CLOSURE. SECURE AT EXTERIOR WITH 1/4" FLAT HEAD EXPANSION ANCHORS IN COUNTERSUNK HOLES AT 24" O.C. SECURE AT INTERIOR WITH #12 SHEET METAL SCREWS AT 6" O.C. IN COUNTERSUNK HOLES. SECURE AT ONE SIDE OF EXPANSION JOINT ONLY.
8. WALL INSULATION BATTS, WHERE OCCURS.
9. STEEL CLOSURE LOCATION AT INTERIOR MASONRY CONDITION.

2 & 4 HOUR EXPANSION JOINT

3" = 1'-0"

07B-4046



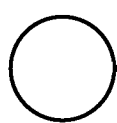
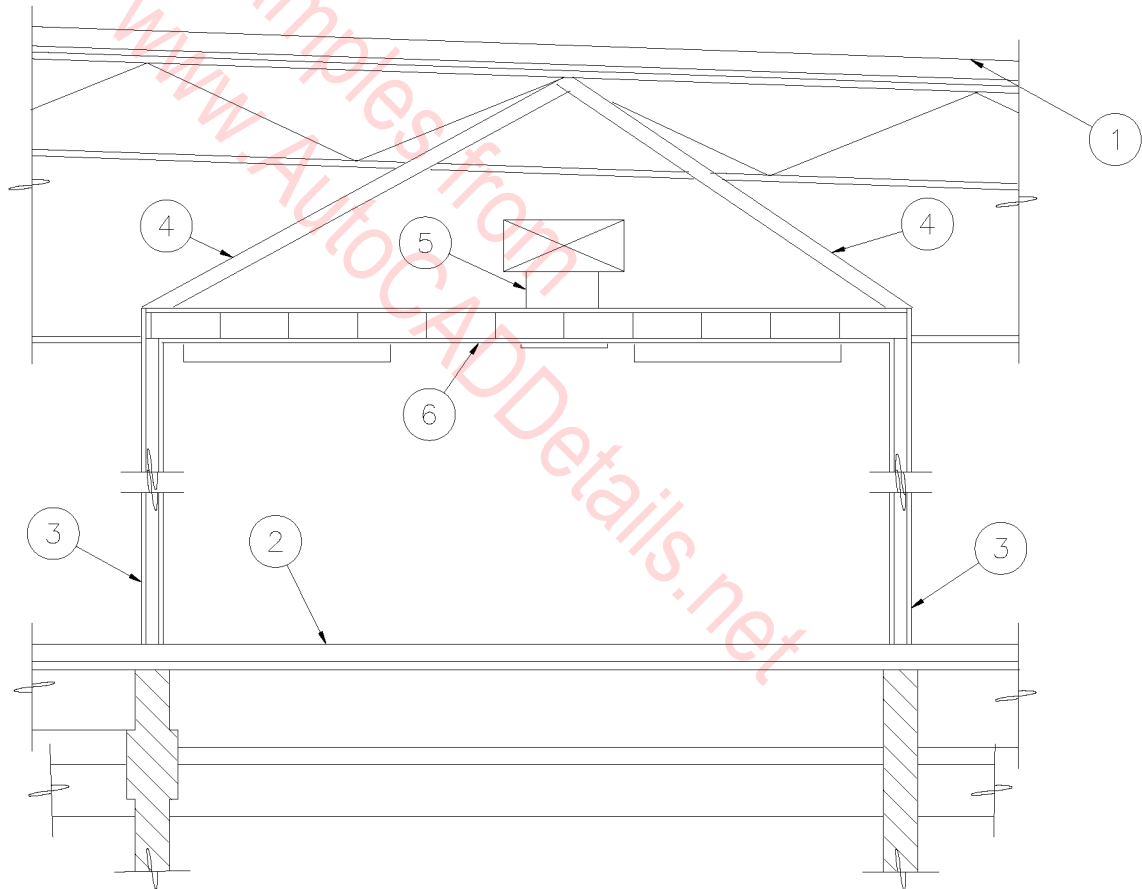
1. TUBE STEEL COLUMN.
2. CEMENTITIOUS MIXTURE – APPLIED BY MIXING WATER AND SPRAYING IN ONE OR MORE COATS TO STEEL SURFACE WHICH MUST BE CLEAN AND FREE OF DIRT, LOOSE SCALE AND OIL. MINIMUM AVERAGE AND INDIVIDUAL DENSITY OF 15/14 PCF RESPECTIVELY. FOR METHOD OF DENSITY DETERMINATION, SEE DESIGN INFORMATION SECTION, PRECEDING THESE DESIGNS.
APPLY 1-3/4 THICK UNIFORM COAT.
ZONOLITE CONSTRUCTION PRODUCTS DIVISION, W. R. GRACE & CO. TYPE MK-6CBF.
3. 1 HOUR WALL.
4. 8" 25 GA. METAL STUDS AT 16" O.C.
5. 5/8" TYPE "X" GYPSUM WALLBOARD.

2 HOUR COLUMN

SCALE: 3" = 1'-0"

07B-4047

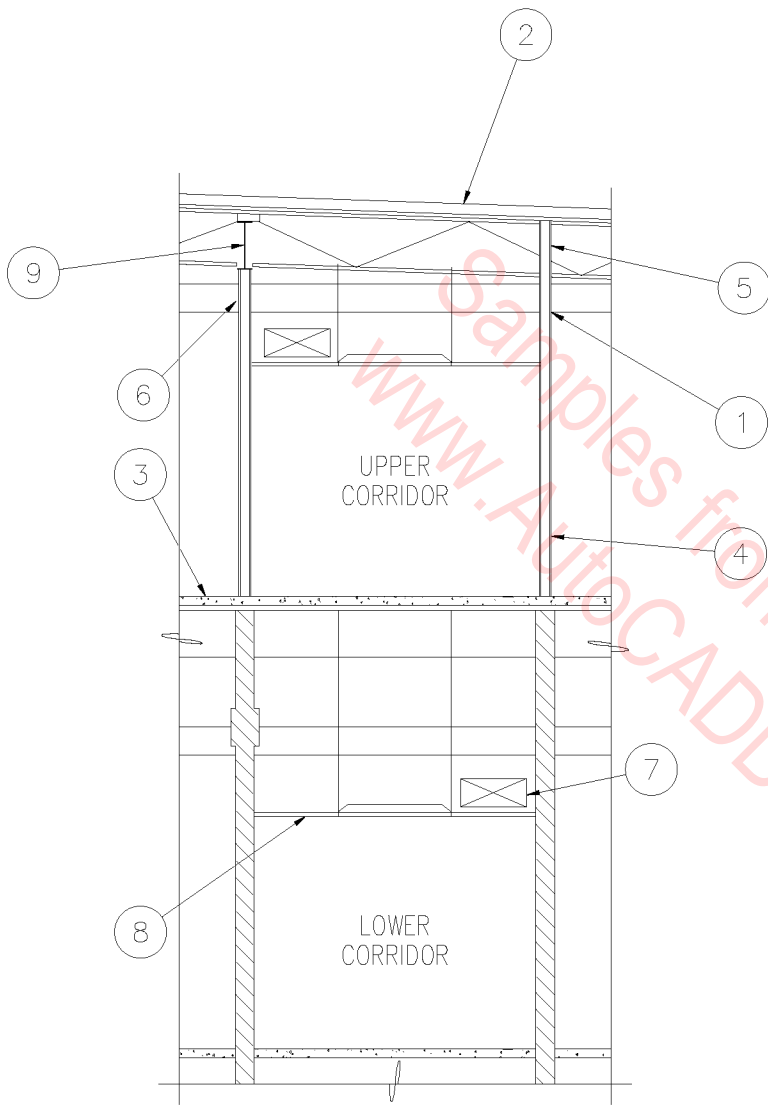
1. 2 HOUR RATED ROOF ASSEMBLY – LIGHT WEIGHT CONCRETE TOPPING ON STEEL DECK ON STEEL JOIST, UL DESIGN NO. P908.
2. 2 HOUR RATED FLOOR ASSEMBLY – 10' CONCRETE DOUBLE TEES WITH 4" CONCRETE TOPPING, UL DESIGN NO. J941.
3. 1 HOUR RATED WALL, 3-5/8" METAL STUDS AT 16" O.C. WITH 5/8" TYPE X GYPSUM WALLBOARD EACH SIDE.
4. 3-5/8 25 GAUGE METAL STUD BRACES AT 48" O.C.
5. PENETRATIONS THRU THE CEILING SHALL BE PROTECTED WITH EITHER FIRE DAMPERS OR UL LISTED POKE THRU DETAILS.
6. 1 HOUR RATED CEILING SYSTEM, METAL STUDS AT 16" O.C. WITH 5/8" TYPE X GYPSUM WALLBOARD EACH SIDE. FIRE TAPE ATTIC SIDE OF CEILING. SEE SPECIFICATIONS FOR DEPTH OF METAL STUD REQUIRED BY SPAN. SEE DETAIL 5 ON SHEET A902 FOR ADDITIONAL ONE HOUR REQUIREMENTS



1 HOUR ENCLOSURE

SCALE: 3" = 1'-0"

07B-4048

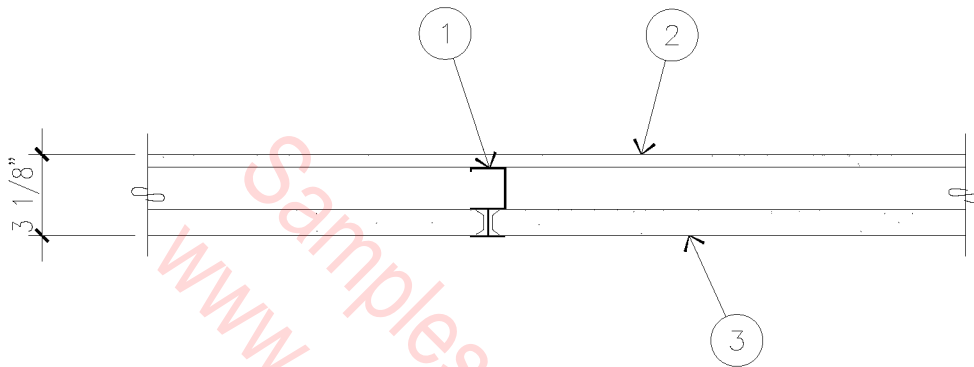


1. FIRE STOPPING SEALANT, 'TREMCO' DYMETRIC, POLYTREMDYNE TERPOLYMER.
2. 2 HOUR RATED ROOF ASSEMBLY - LIGHT WEIGHT CONCRETE TOPPING ON STEEL DECK ON STEEL JOIST, UL DESIGN NO. P908.
3. 2 HOUR RATED FLOOR ASSEMBLY - 10' CONCRETE DOUBLE TEES WITH 4" CONCRETE TOPPING, UL DESIGN NO. J941.
4. 1 HOUR RATED WALL, 3-5/8" METAL STUDS AT 16" O.C. WITH 5/8" TYPE 'X' GYPSUM WALLBOARD EACH SIDE.
5. EXTEND ONE HOUR RATED WALL TO ROOF DECK.
6. PENETRATIONS THRU THE WALLS SHALL BE PROTECTED WITH EITHER FIRE DAMPERS OR UL LISTED POKE THRU DETAILS.
7. DUCTS THAT ARE A MINIMUMS OF 0.19 INCH (26 GAUGE) STEEL DO NOT REQUIRE FIRE DAMPERS WHEN THE DUCT HAS NO OPENINGS INTO THE CORRIDOR.
8. UNRATED SUSPENDED CEILING AND UNPROTECTED LIGHT FIXTURES.
9. CEMENTITIOUS FIREPROOFING APPLIED IN A CONTOUR MANNER AT BEAM. AT JOIST APPLY IN A CONTOUR MANNER TO CREATE 1 HR. RATING FULL HEIGHT OF MEMBER.

○ 1 HOUR CORRIDOR

1/8" = 1'-0"

07B-4049



1. USG STEEL C-H STUDS AT 24" ON CENTER.
2. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS ATTACHED WITH SCREWS.
3. 1" SHEETROCK BRAND LINER PANELS SET BETWEEN C-H STUDS.

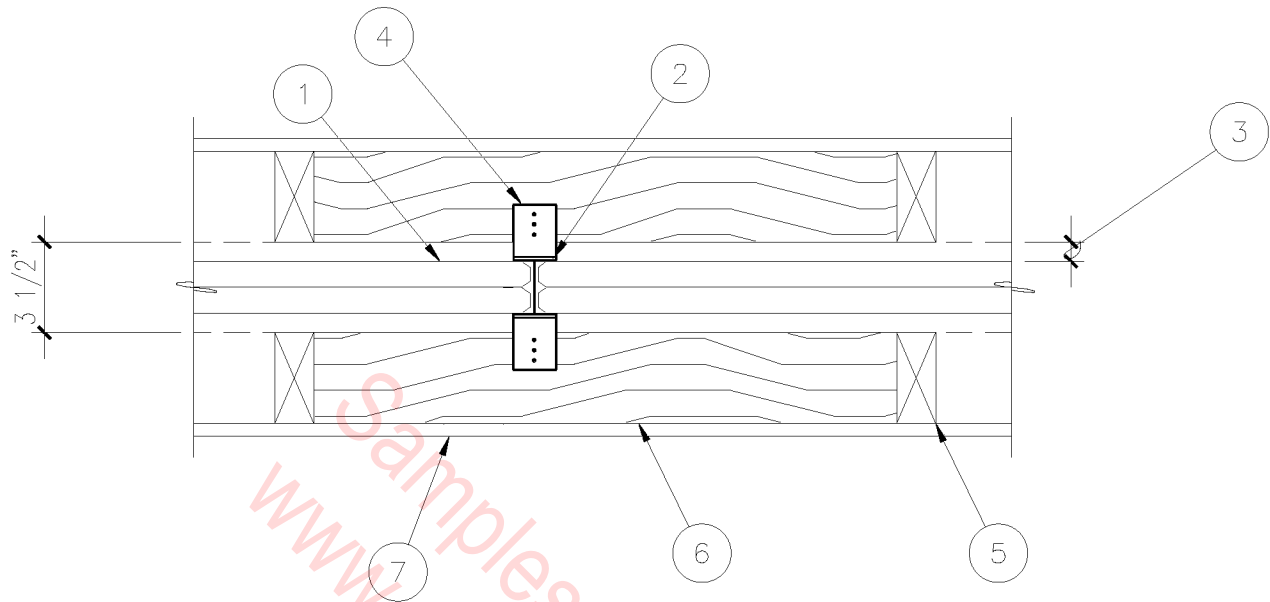
NOTES:

- JOINTS FINISHED.
- FIRE RATING ALSO APPLIES WITH IMPERIAL FIRECODE C BASE AND VENEER FINISH SURFACES.

○ 1 HOUR UL DES U469

1-1/2" = 1'-0"

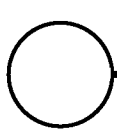
07B-4050



1. (2) 1" SHEETROCK BRAND GYPSUM PANELS.
2. USG ONE-PIECE STEEL H-STUDS AT 24" ON CENTER.
3. MINIMUM 3/4" AIR SPACE BOTH SIDES SEPARATING LINER PANELS FROM ANY ADJACENT COMBUSTIBLE CONSTRUCTION.
4. .063 x 2" x 2 1/4" ALUMINUM ANGLE CLIP ATTACHED TO H STUDS WITH 3/8" TYPE S SCREWS AND TO WOOD FRAMING WITH 1 1/4" TYPE W SCREWS.
5. 2" x 4" WOOD STUDS AT 24" ON CENTER.
6. 2" x 4" WOOD CROSS BRACE WHERE NEEDED FOR CLIP ATTACHMENT.
7. 1/2" MINIMUM GYPSUM WALLBOARD.

NOTES:

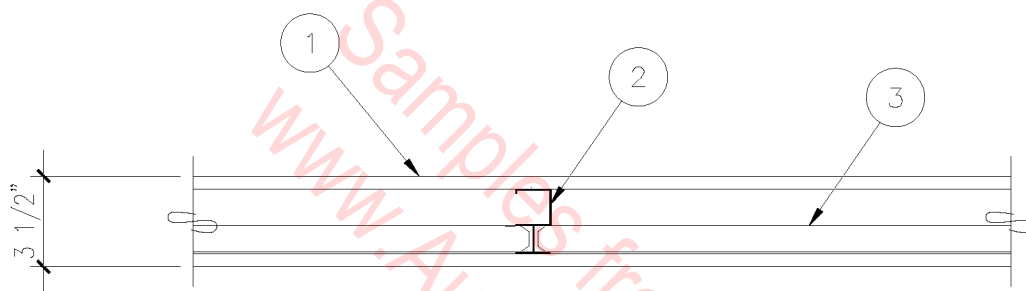
- CLIP ATTACHMENT AT 10'-0" MAX. VERTICALLY BETWEEN WOOD FRAMING AND H STUDS FOR WALLS UP TO 23'-0" HIGH.
- CLIP ATTACHMENT FOR WALLS UP TO 44'-0" HIGH ARE SPACED VERTICALLY AT 10'-0" FOR UPPER 24' PORTION OF WALL AND 5'-0" ON CENTER AT REMAINING LOWER PORTION OF WALL.



2 HOUR UL DES U336

1 1/2" = 1'-0"

07B-4051



1. 1/2" SHEETROCK BRAND, WATER RESISTANT, FIRECODE C CORE GYPSUM PANELS.
2. USG 25GA. STEEL C-H STUDS AT 24" ON CENTER.
3. 1" SHEETROCK BRAND GYPSUM LINER PANELS SET BETWEEN C-H STUDS.

NOTES:

- SINGLE LAYER PANELS EACH SIDE APPLIED VERTICALLY AND SCREW ATTACHED.
- JOINTS STAGGERED OPPOSITE SIDES.
- JOINTS FINISHED.
- CAULK PERIMETER.

○ 2 HOUR UL DES U467

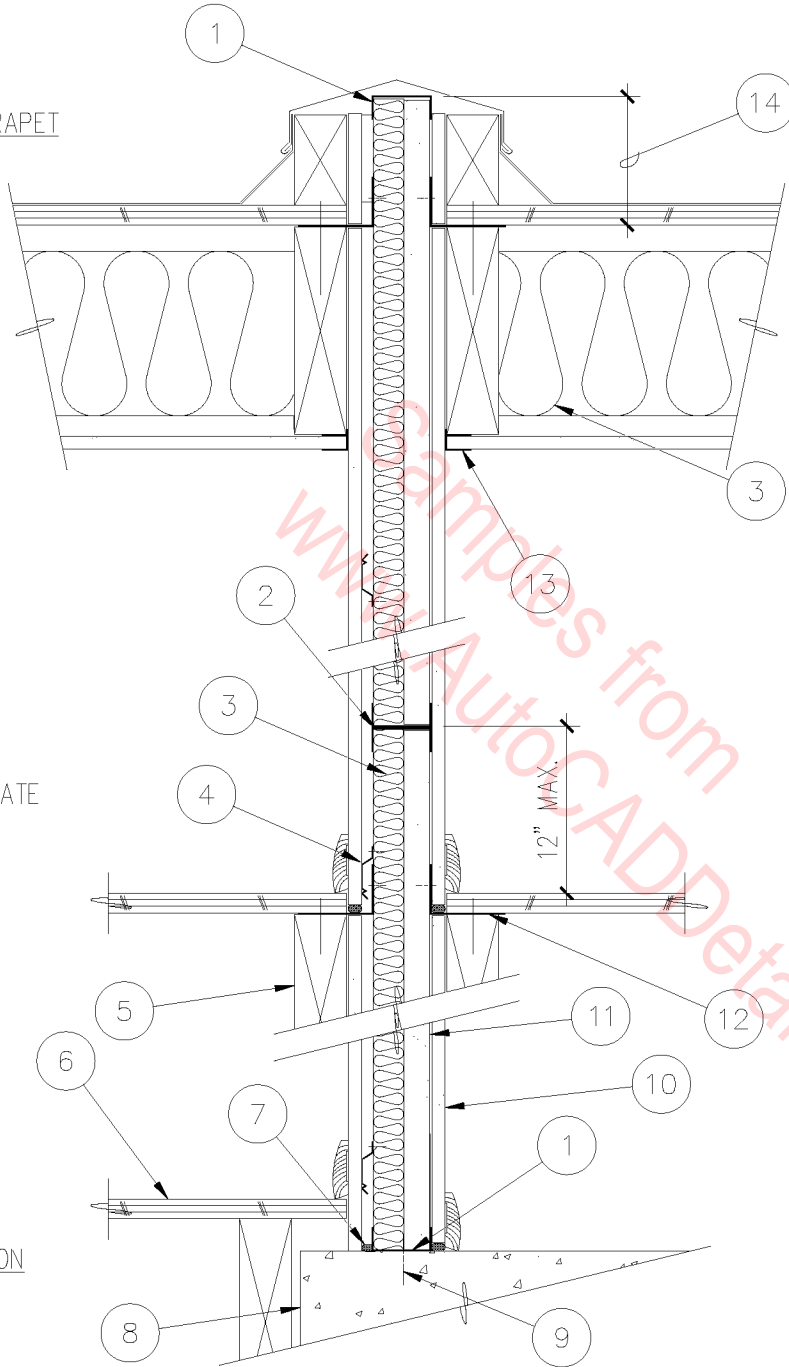
1-1/2" = 1'-0"

07B-4052

ROOF PARAPET

INTERMEDIATE FLOOR

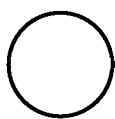
FOUNDATION



1. 2 1/2" USG STEEL C-RUNNERS.
2. (2) 2 1/2" USG STEEL C-RUNNERS.
3. THERMAFIBER SAFB.
4. RC-1 RESILIENT CHANNEL.
5. JOIST.
6. WOOD FLOORING.
7. SEALANT AS REQUIRED.
8. CONCRETE FLOOR OR FOUNDATION WALL.
9. SUITABLE FASTENERS AT 24" ON CENTER.
10. SHEETROCK BRAND GYPSUM, WATER RESISTANT, FIRECODE C CORE, GYPSUM PANELS EACH SIDE.
11. 1" SHEETROCK BRAND GYPSUM LINER PANELS.
12. .063" USG ALUMINUM ANGLE CLIPS ATTACHED TO JOIST WITH 1 1/4" TYPE W SCREWS.
13. SHEETROCK METAL TRIM.
14. VARIES BY CODE.

NOTES:

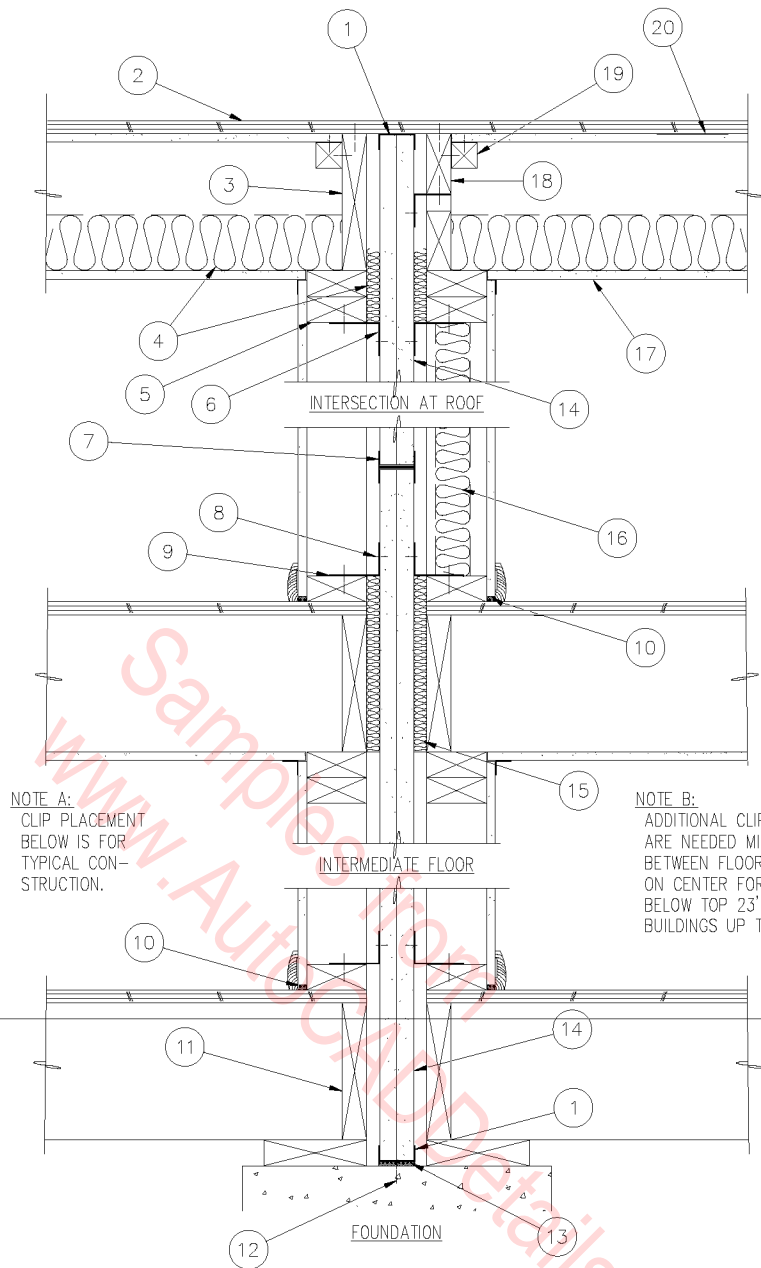
- FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.



2 HOUR CAVITY WALL

1 1/2" = 1'-0"

07B-4053



NOTE A:
CLIP PLACEMENT
BELOW IS FOR
TYPICAL CON-
STRUCTION.

NOTE B:
ADDITIONAL CLIP ANGLES
ARE NEEDED MID-HEIGHT
BETWEEN FLOORS (5'-0")
ON CENTER FOR AREA
BELOW TOP 23' OF
BUILDINGS UP TO 44'.

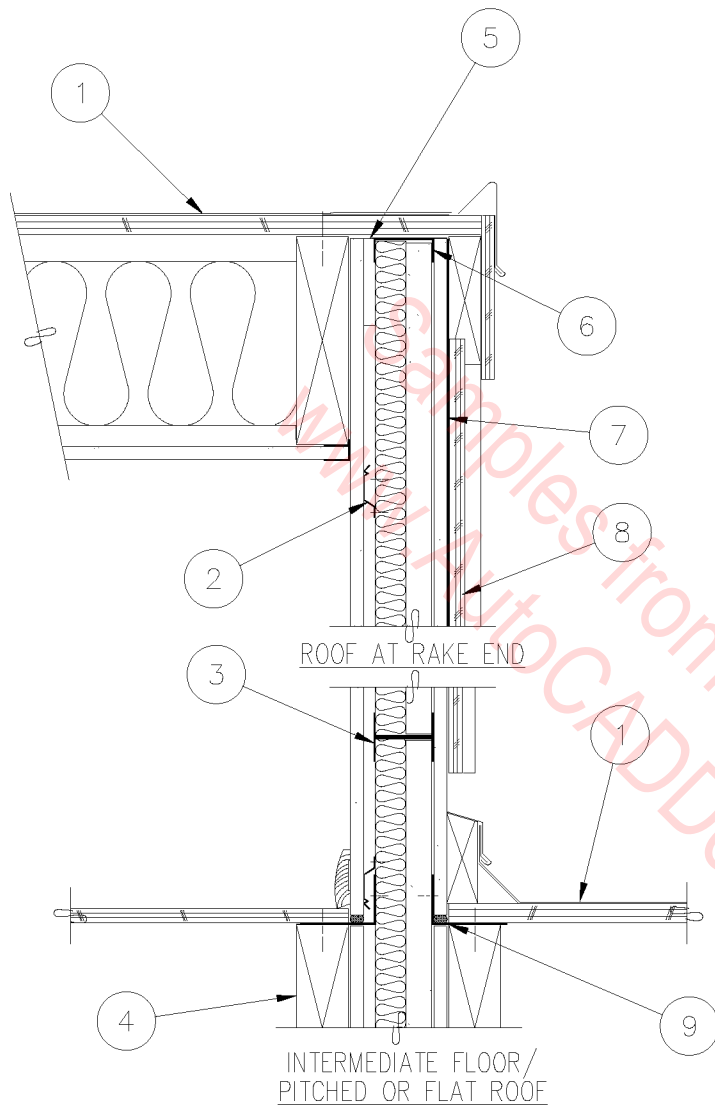
- | | |
|---|---|
| <ol style="list-style-type: none"> 1. 2" USG STEEL C-RUNNER. 2. ROOF DECK. 3. ROOF RAFTER. 4. THERMAFIBER FIRE BLOCKING AS REQUIRED. 5. 2" x 4" STUD FRAMING EACH SIDE. 6. .063" USG ALUMINUM ANGLE CLIP - SEE NOTE B. 7. TWO 2" USG STEEL C-RUNNERS. 8. 3/8" TYPE "S" PAN HEAD SCREW. 9. .063" USG ALUMINUM ANGLE CLIPS AT EACH FLOOR LEVEL - SEE NOTE B. 10. SEALANT. 11. JOIST. 12. SUITABLE FASTENERS AT 24" ON CENTER. 13. SEALANT UNDER TRACK. | <ol style="list-style-type: none"> 14. TWO 1" SHEETROCK BRAND GYPSUM LINER PANELS. 15. THERMAFIBER FIRE INSULATION BLOCKING AT EACH FLOOR LEVEL AS REQUIRED. 16. THERMAFIBER SAFB (OPTIONAL). 17. SHEETROCK BRAND GYPSUM PANELS AS REQUIRED. 18. ROOF TRUSS. 19. LEDGER. 20. AS REQUIRED BY CODE, 5/8" SHEETROCK BRAND GYPSUM PANELS, FIRECODE CORE, MAY BE USED AS UNDERLAYMENT TO THE UNTREATED ROOF SHEATHING WITH PANELS EXTENDING 5'-0" ON BOTH SIDES OF AREA SEPARATION WALL AND POSSIBLY ROOF SIDE AT RAKE END. |
|---|---|

NOTES:
FIBERGLASS INSULATION CAN NOT BE
SUBSTITUTED FOR THERMAFIBER INSULATION.

2 HOUR SOLID AREA SEPARATION WALL

1 1/2" = 1'-0"

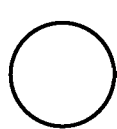
07B-4054



1. ROOFING AS REQUIRED.
2. RC-1 RESILIENT CHANNEL.
3. TWO 2 1/2" USG STEEL C-RUNNERS.
4. JOIST.
5. 1/2" x 3" GYPSUM PANEL FILLER STRIP.
6. 2 1/2" USG STEEL C-RUNNER.
7. #15 ASPHALT FELT.
8. EXTERIOR SURFACING.
9. SEALANT.

NOTES:

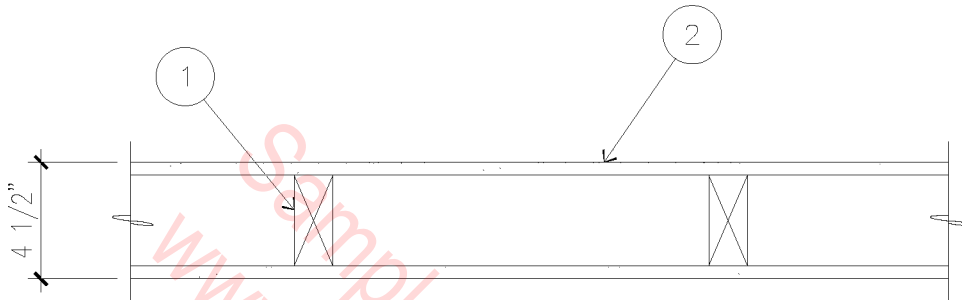
- A. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- B. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.



2 HOUR CAVITY WALL

1-1/2" = 1'-0"

07B-4055



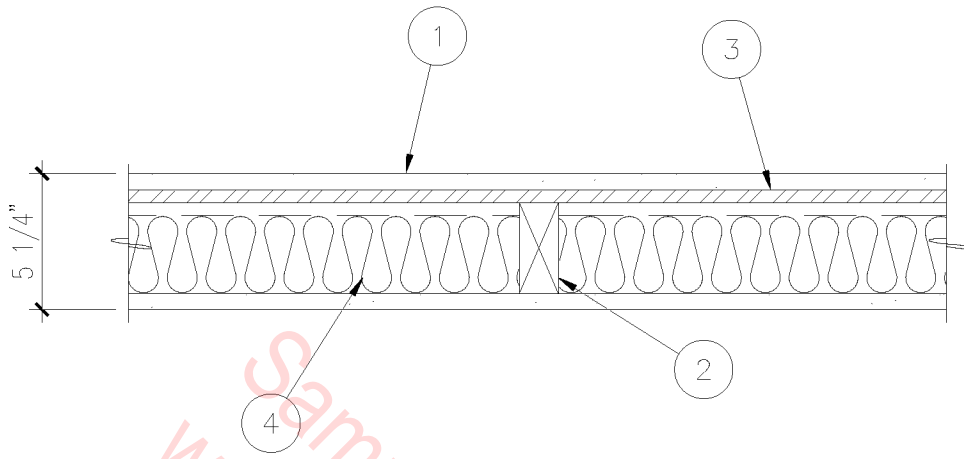
1. 2" x 4" WOOD STUD AT 16" ON CENTER.
2. 1/2" SHEETROCK BRAND GYPSUM PANELS
FIRECODE C CORE.

NOTES:

1. WALL PANELS TO BE NAILED AT 7" ON CENTER
WITH CEMENT COATED NAILS.
2. TAPE ALL JOINTS.

○ 45 MIN. — UL DES. U317
 1 1/2" = 1'-0"

07B-4056



1. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
2. 2" x 4" WOOD STUD AT 16" OR 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER.
4. 3" THERMAFIBER SAFB.

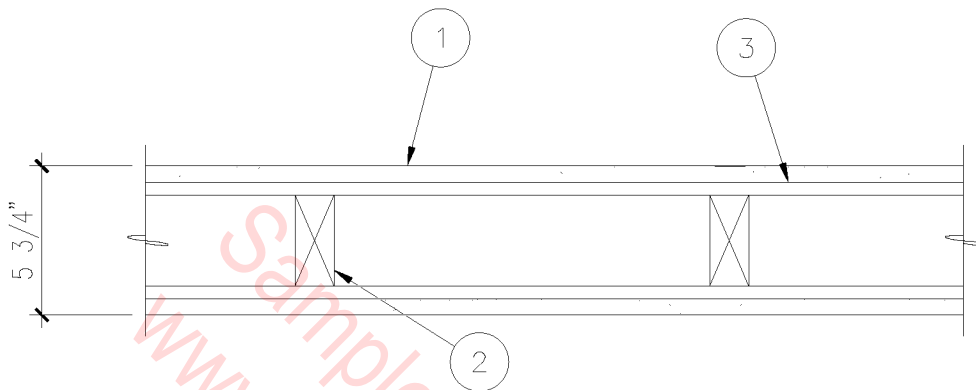
NOTES:

- A. PANELS ATTACHED TO RC-1 WITH 1" TYPE "S" SCREWS, ATTACH OPPOSITE SIDE DIRECTLY WITH 1 1/4" TYPE "W" SCREWS.
- B. END JOINTS BACK-BLOCKED WITH RC-1 CHANNEL.
- C. JOINTS FINISHED.
- D. CAULK PERIMETER.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- F. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 1 HOUR UL DES. U311

1 1/2" = 1'-0"

07B-4057



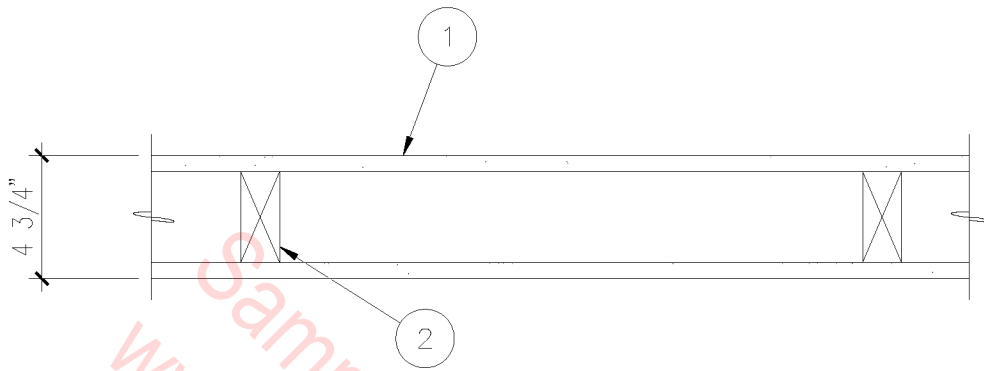
1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 2" x 4" WOOD STUD AT 16" O.C.
3. RC-1 CHANNEL BOTH SIDES SPACED HORIZONTALLY AT 24" ON CENTER.

NOTES:

- A. PANELS ATTACHED WITH 1" TYPE "S" SCREWS.
- B. CAULK PERIMETER.
- C. JOINTS FINISHED.
- D. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 1 HOUR T1396-OSU
 1 1/2" = 1'-0"

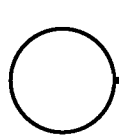
07B-4058



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS OR 5/8" SHEETROCK BRAND WATER RESISTANT FIRECODE CORE GYPSUM PANELS.
2. 2" x 4" WOOD STUD - SEE NOTES.

NOTES:

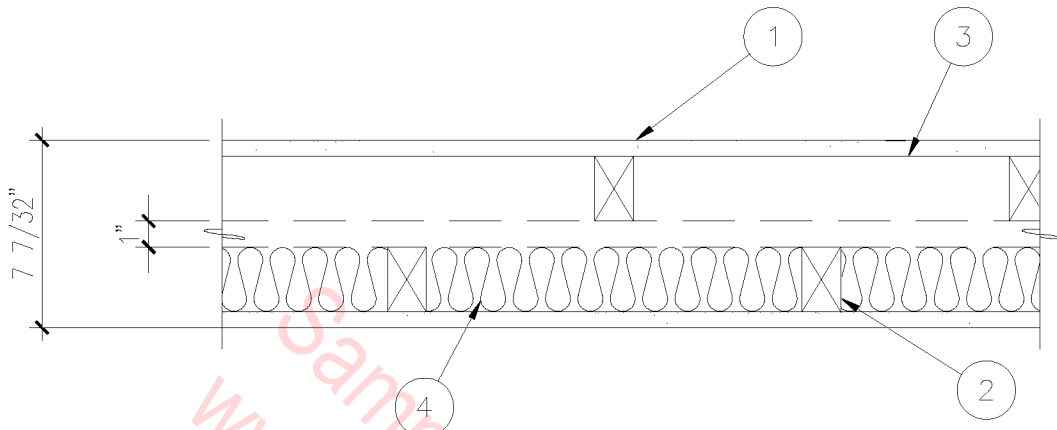
- A. PANELS NAILED AT 7" ON CENTER WITH 1 7/8" CEMENT COATED NAILS.
- B. UL DES U305 BASED ON 16" STUD SPACING, JOINTS EXPOSED OR FINISHED, PERIMETER CAULKED.
- C. UL DES U314 BASED ON 24" STUD SPACING, FINISHED JOINTS, PERIMETER CAULKED.



1 HOUR UL DES. U305/U314

1 1/2" = 1'-0"

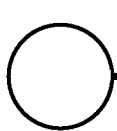
07B-4059



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 2" x 3" NON-LOAD BEARING STAGGERED WOOD STUDS AT 16" ON CENTER.
3. 2" x 3" PLATES 1" APART.
4. 3" THERMAFIBER SAFB ONE SIDE.

NOTES:

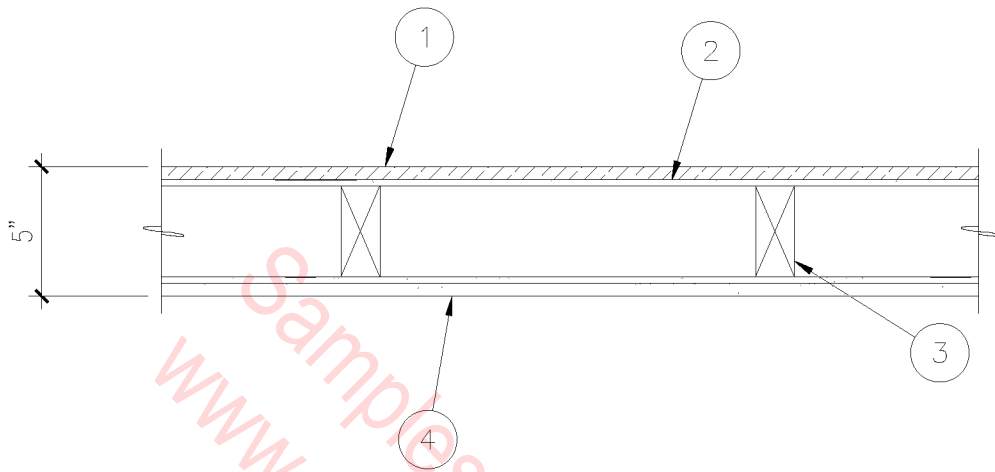
- A. PANELS NAILED AT 7" ON CENTER.
- B. JOINTS FINISHED.
- C. PERIMETER CAULKED.
- D. ESTIMATED FIRE RATING BASED ON UL DES U305.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.



1 HOUR EST. UL DES. U305

1 1/2" = 1'-0"

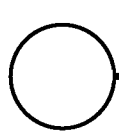
07B-4060



1. 1/2" PANEL FACE STRIP LAMINATE.
2. 1/4" SHEETROCK BRAND GYPSUM BOARD
BASE LAYER APPLIED VERTICALLY
WITH 4d COATED NAILS.
3. 2" x 4" WOOD STUD AT 16" ON CENTER.
4. 1/2" SHEETROCK BRAND FIRECODE C CORE
GYPSUM PANELS .

NOTES:

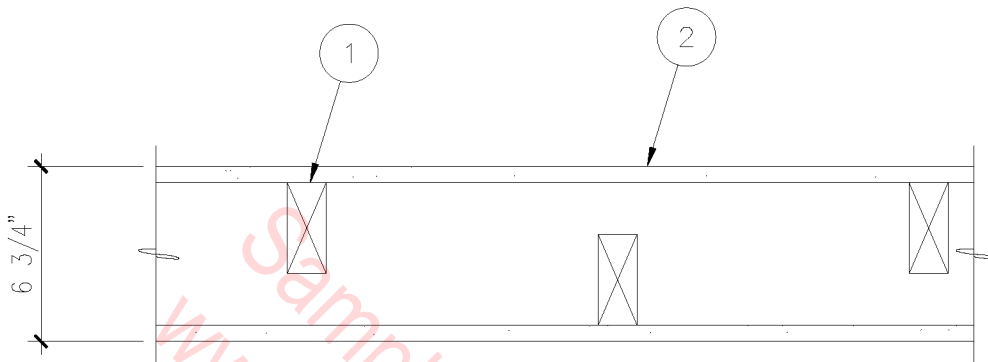
- A. JOINTS STAGGERED AND FINISHED.
- B. PERIMETER CAULKED.
- C. ESTIMATED FIRE RATING BASED
ON UL DES UL305.
- D. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL
REQUIRE LATERAL BRACING AND OFFER
ESTIMATED FIRE RATING.



1 HOUR EST. UL DES U305

1 1/2" = 1'-0"

07B-4061



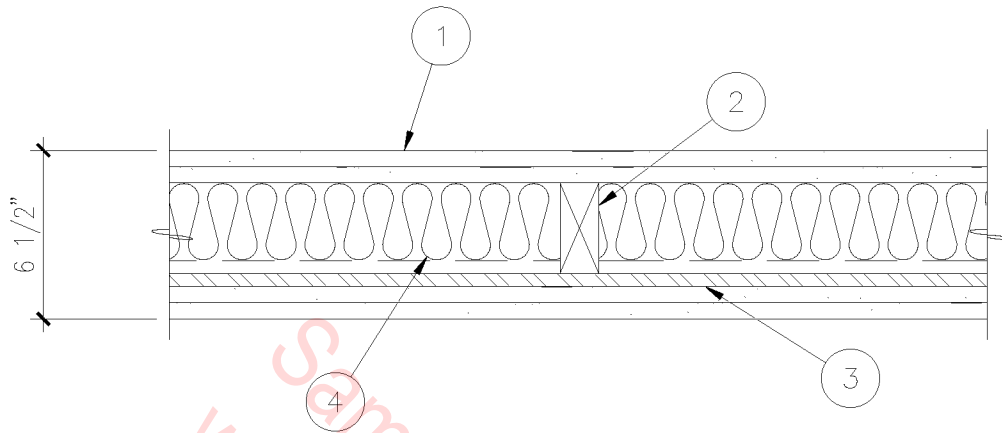
1. 2" x 4" WOOD STUDS STAGGERED AT 24" O.C. (MAX.) ON 2" x 6" COMMON PLATE.
2. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.

NOTES:

- A. JOINTS FINISHED.
- B. PERIMETER CAULKED.
- C. PANELS ATTACHED WITH 6d COATED NAILS OR 1 7/8" SCREWS AT 7" ON CENTER.

○ 1 HOUR UL DES U340
 1 1/2" = 1'-0"

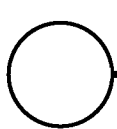
07B-4062



1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS BOTH SIDES.
2. 2" x 4" WOOD STUD AT 16" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER.
4. 3" THERMAFIBER SAFB.

NOTES:

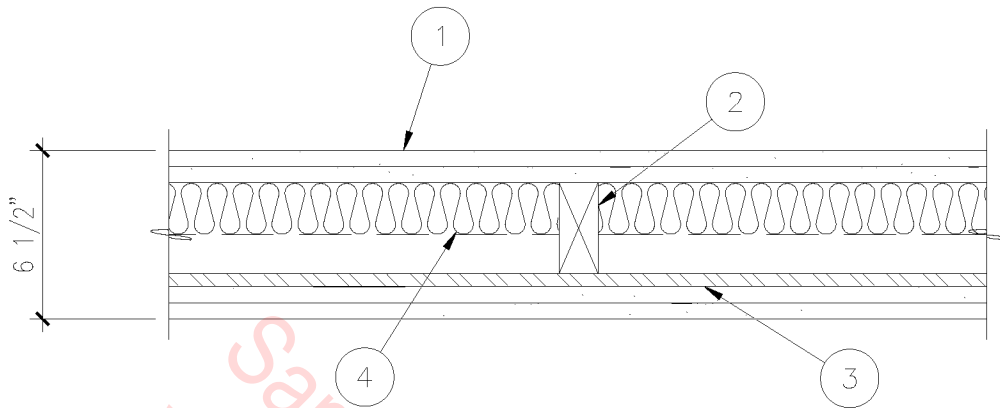
- A. BOTH BASE LAYERS APPLIED VERTICALLY AND FACE LAYERS APPLIED HORIZONTALLY.
- B. RESILIENT SIDE PANELS SCREW ATTACHED, OPPOSITE SIDE NAIL ATTACHED.
- C. BASE LAYERS PERIMETER CAULKED.
- D. JOINTS FINISHED.
- E. END JOINTS BACK-BLOCKED WITH RC-1 CHANNEL.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- G. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.



2 HOUR UL DES U334

1 1/2" = 1'-0"

07B-4063



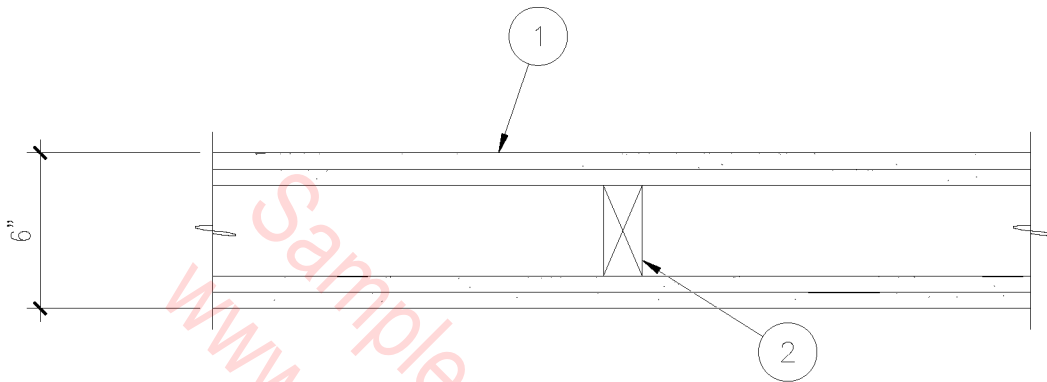
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS BOTH SIDES.
2. 2" x 4" WOOD STUD AT 16" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER.
4. 2" THERMAFIBER SAFB.

NOTES:

- A. BOTH BASE LAYERS APPLIED VERTICALLY AND FACE LAYERS APPLIED HORIZONTALLY.
- B. RESILIENT SIDE PANELS SCREW ATTACHED, OPPOSITE SIDE NAIL ATTACHED.
- C. RESILIENT LAYERS PERIMETER CAULKED.
- D. JOINTS FINISHED.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- F. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 2 HOUR T-4799-OSU
 1 1/2" = 1'-0"

07B-4064



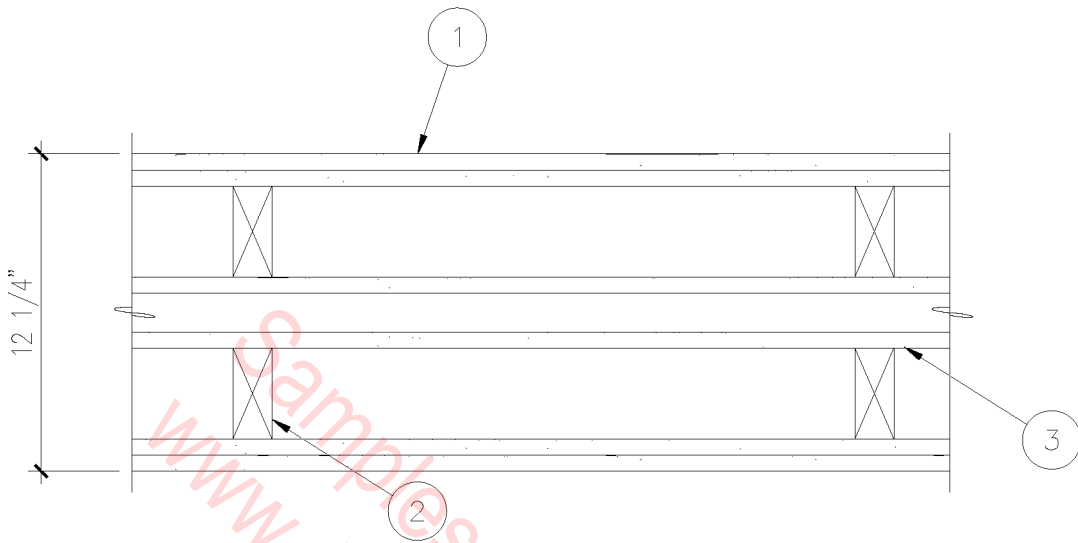
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS OR 5/8" SHEETROCK BRAND WATER RESISTANT FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. 2" x 4" WOOD STUD AT 16" ON CENTER.

NOTES:

- A. BASE LAYER ATTACHED WITH 1 7/8" NAILS AT 6" ON CENTER.
- B. FACE LAYER ATTACHED WITH 2 3/8" NAILS AT 8" ON CENTER.
- C. JOINTS FINISHED.

○ 2 HOUR UL DES U301
 1 1/2" = 1'-0"

07B-4065



1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS BOTH OUTER SIDES. BRAND WATER RESISTANT FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. TWO ROWS 2" x 4" WOOD STUD AT 24" ON CENTER.
3. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS INSIDE BOTH SIDES.

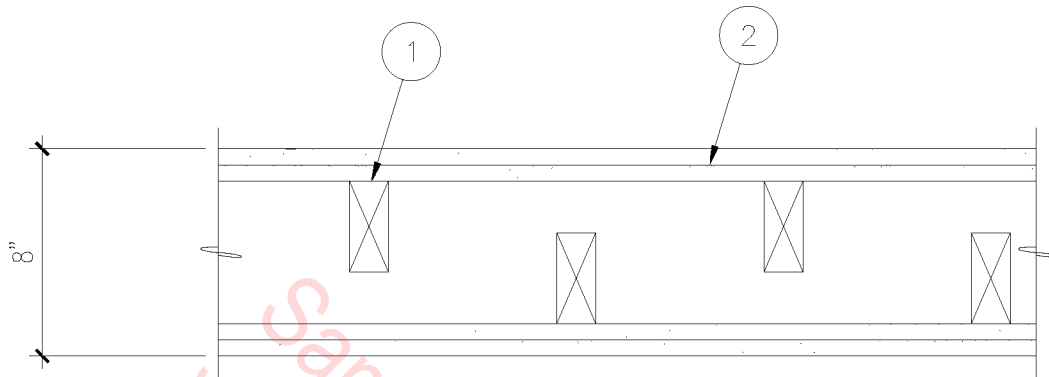
NOTES:

- A. BASE LAYER ATTACHED WITH 6d COATED NAILS AT 6" ON CENTER.
- B. FACE LAYER ATTACHED WITH 8d COATED NAILS AT 8" ON CENTER.
- C. JOINTS FINISHED.
- D. PERIMETER CAULKED.

○ 2 HOUR UL DES U342

1 1/2" = 1'-0"

07B-4066



1. 2" x 4" WOOD STUDS STAGGERED AT 16" ON CENTER ON 2" x 6" COMMON PLATE.
2. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.

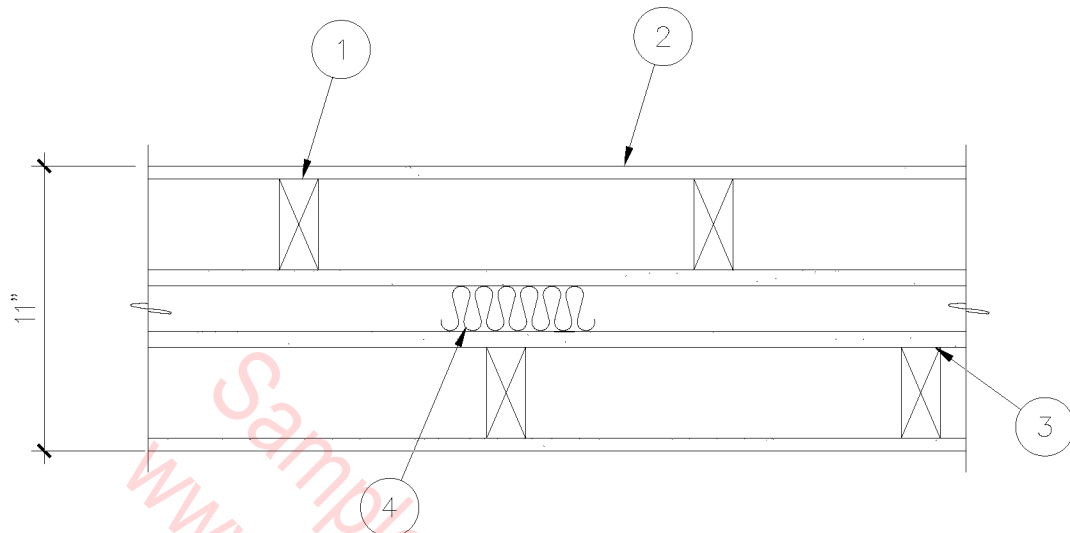
NOTES:

- A. JOINTS FINISHED.
- B. PERIMETER CAULKED.
- C. BASE LAYER ATTACHED WITH 6d COATED NAILS AT 6" ON CENTER.
- D. FACE LAYER ATTACHED WITH 8d COATED NAILS AT 8" ON CENTER.
- E. ESTIMATED FIRE RATING BASED ON UL DES U301.

○ 2 HOUR EST. UL DES U301

1 1/2" = 1'-0"

07B-4067



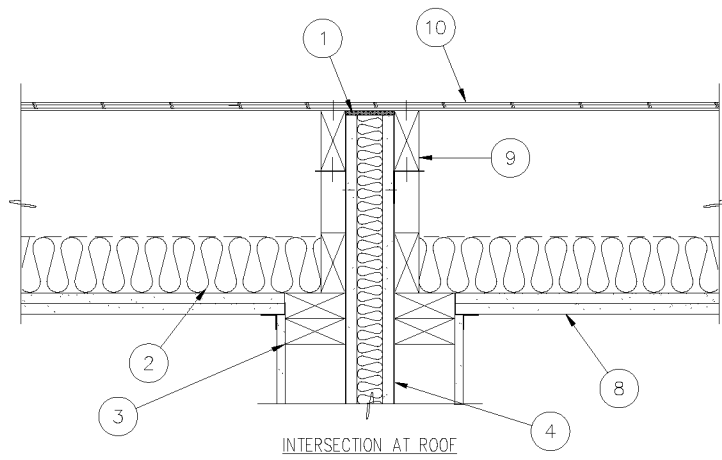
1. 2" x 4" WOOD STUDS AT 16" ON CENTER, STAGGERED IN OPPOSITE WALL.
2. 1/2" SHEETROCK BRAND GYPSUM BOARD BOTH EXTERIOR SIDES.
3. 5/8" SHEETROCK BRAND FIRECODE C CORE BOTH INTERIOR SIDES.
4. THERMAFIBER FIRE BLOCKING AT 9'-0" ON CENTER EACH WAY.

NOTES:

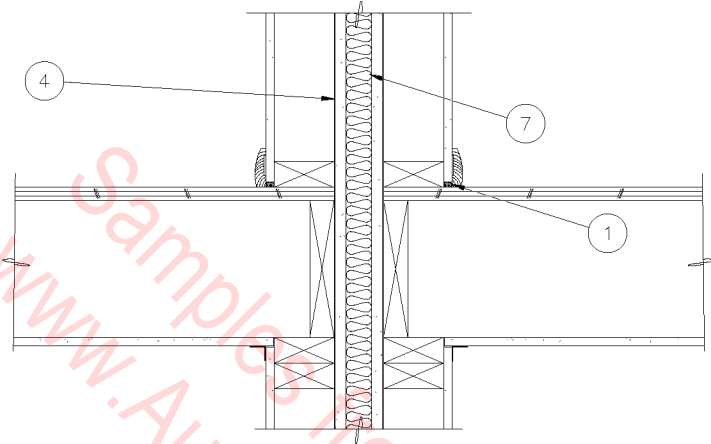
- A. JOINTS FINISHED.
- B. PERIMETER CAULKED BOTH SIDES OF INTERIOR PANELS.
- C. INTERIOR LAYERS ATTACHED WITH 6d COATED NAILS AT 6" ON CENTER.
- D. EXTERIOR LAYERS ATTACHED WITH 8d COATED NAILS AT 8" ON CENTER.
- E. ESTIMATED FIRE RATING BASED ON BEARING WALL UL DES U320.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 1/2 HOUR UL DES U320
 1 1/2" = 1'-0"

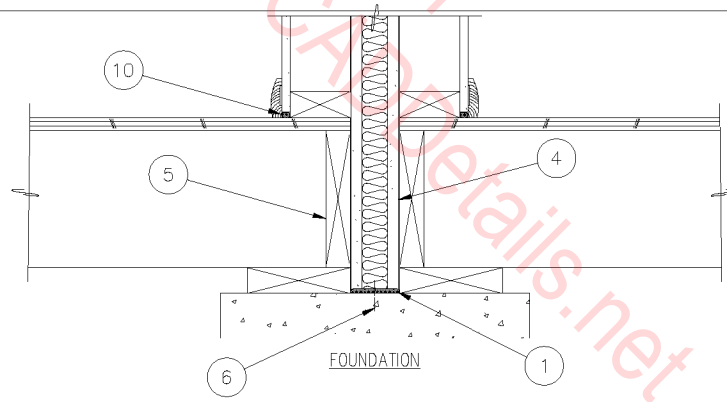
07B-4068



INTERSECTION AT ROOF



INTERMEDIATE FLOOR



FOUNDATION

1. SEALANT.
2. THERMAFIBER FIRE BLOCKING AS REQUIRED.
3. 2" x 4" STUD FRAMING EACH SIDE.
4. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS FULL HEIGHT.
5. JOIST.
6. SUITABLE FASTENERS AT 24" ON CENTER.
7. THERMAFIBER SAFB (OPTIONAL).
8. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
9. ROOF TRUSS.
10. ROOF DECK.

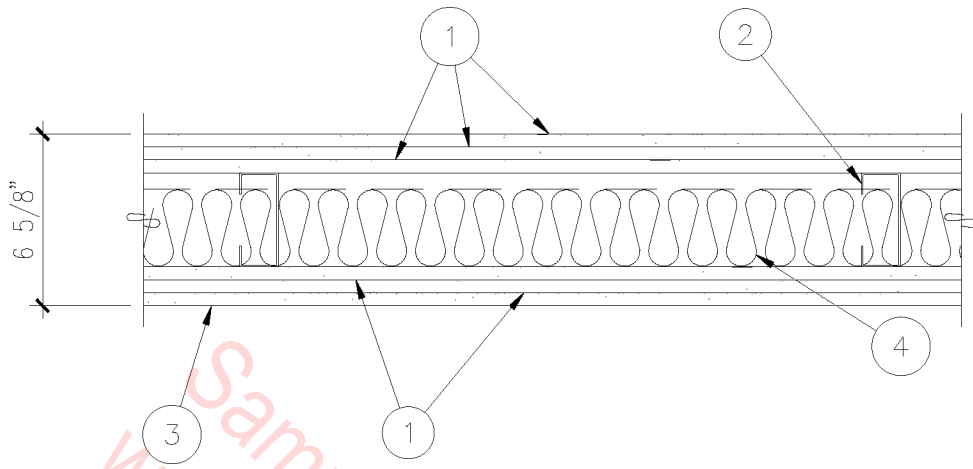
NOTES:

- A. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

1-1/2 HOUR SOLID
AREA SEPARATION WALL

1 1/2" = 1'-0"

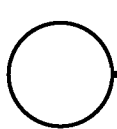
07B-4069



1. 1/2" SHEETROCK BRAND FIRECODE 'C' CORE GYPSUM PANELS.
2. 3 5/8" METAL STUDS AT 24" O.C.
3. 1/2" CEMENTITIOUS BACKER BOARD.
4. 3" THERMAFIBER SAFB.

NOTES:

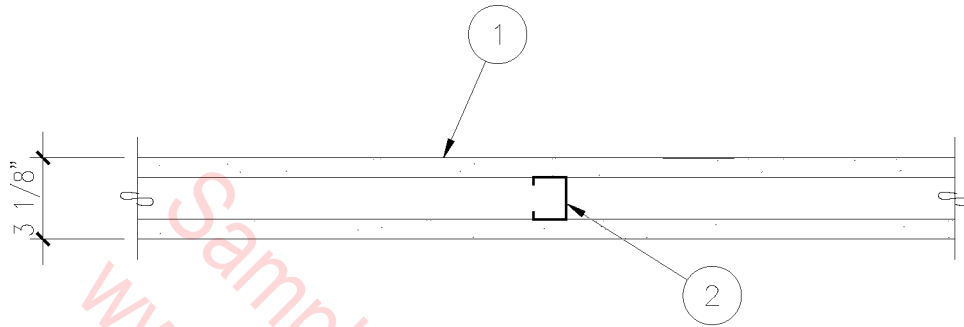
- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.



3 HOUR UL DES U478

1 1/2" = 1'-0"

07B-4070



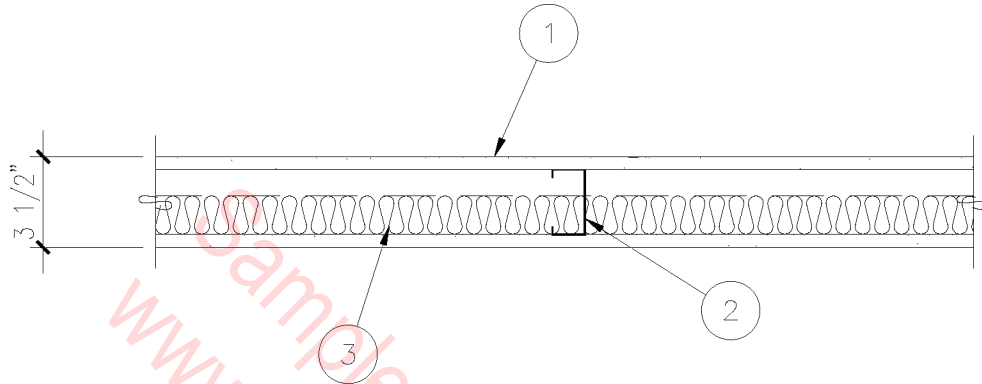
1. 3/4" SHEETROCK BRAND ULTRACODE CORE GYPSUM PANELS.
2. 1 5/8" METAL STUDS AT 24" ON CENTER.

NOTES:

- A. PANELS VERTICALLY ATTACHED TO STUDS WITH 1 1/2" TYPE "S" SCREWS 8" ON CENTER AT PERIMETER AND 12" ON CENTER FIELD.
- B. STAGGER AND FINISH JOINTS.

○ 1 HOUR UL DES U496
 1-1/2" = 1'-0"

07B-4071



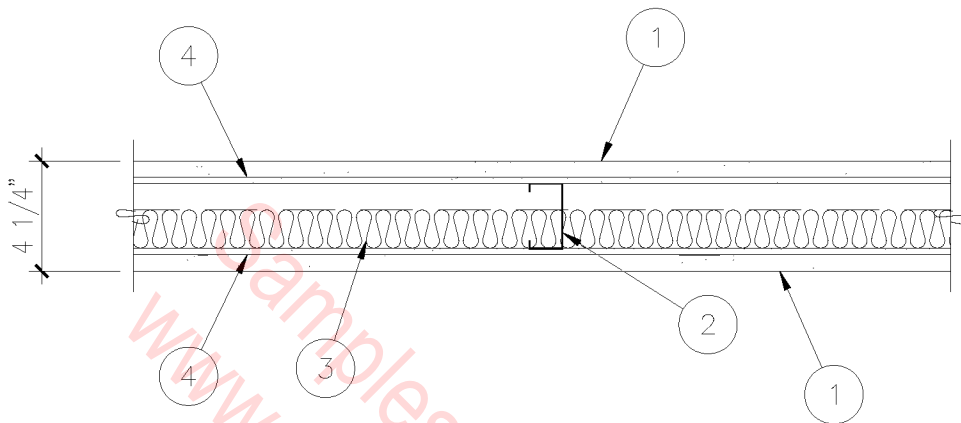
1. 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
2. 2 1/2" METAL STUDS AT 24" ON CENTER.
3. 1 1/2" THERMAFIBER SAFB.

NOTES:

- A. SINGLE LAYER PANELS EACH SIDE APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS FINISHED.
- C. PERIMETER CAULKED.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 HOUR UL DES U448
 1-1/2" = 1'-0"

07B-4072



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS FACE LAYER SCREW ATTACHED.
2. 2 1/2" METAL STUDS AT 24" ON CENTER.
3. 1 1/2" THERMAFIBER SAFB.
4. 1/4" SHEETROCK BRAND GYPSUM BOARD BASE LAYER SCREW ATTACHED.

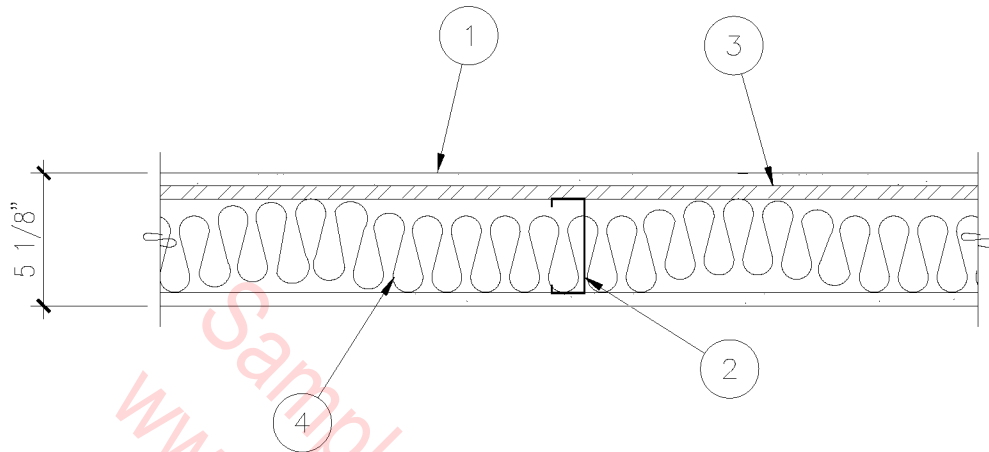
NOTES:

- A. ESTIMATED FIRE RATING BASED ON T-1174-OSU
- B. JOINTS FINISHED.
- C. PERIMETER CAULKED.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 HOUR EST. T-1174-OSU

1-1/2" = 1'-0"

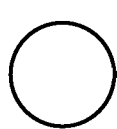
07B-4073



1. 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS, OR 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 3 5/8" METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER SCREW ATTACHED.
4. 3" THERMAFIBER SAFB 25" WIDE CREASED TO FIT CAVITY.

NOTES:

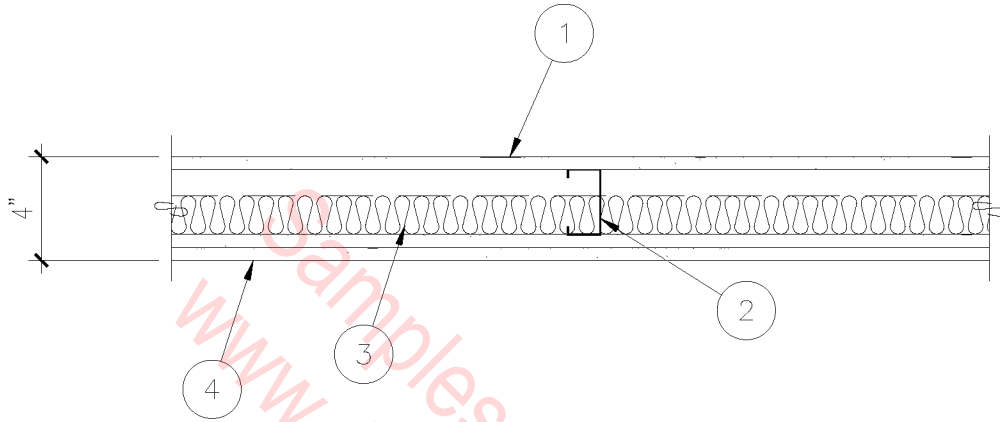
- A. PANELS VERTICALLY APPLIED AND SCREW ATTACHED.
- B. JOINTS STAGGERED FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- E. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.



1 HOUR UL DES U451

1-1/2" = 1'-0"

07B-4074



1. 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
2. 2 1/2" METAL STUDS AT 24" ON CENTER.
3. 1 1/2" THERMAFIBER SAFB.
4. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.

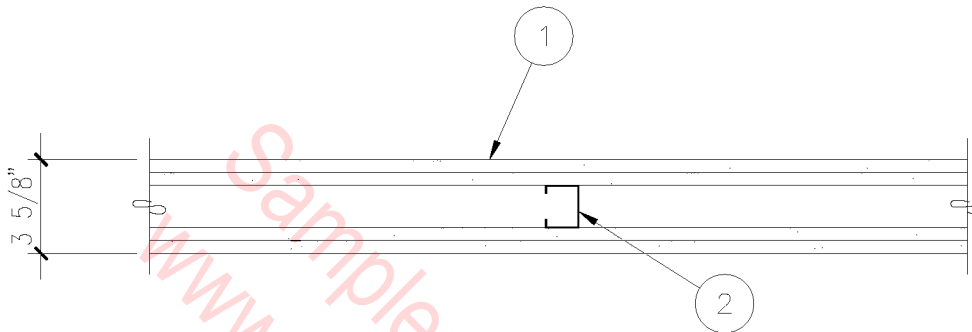
NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS STAGGERED AND FINISHED.
- C. PERIMETER CAULKED.
- D. ESTIMATED FIRE RATING BASED ON T-3362-OSU.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 HOUR EST. T-3362-OSU

1-1/2" = 1'-0"

07B-4075



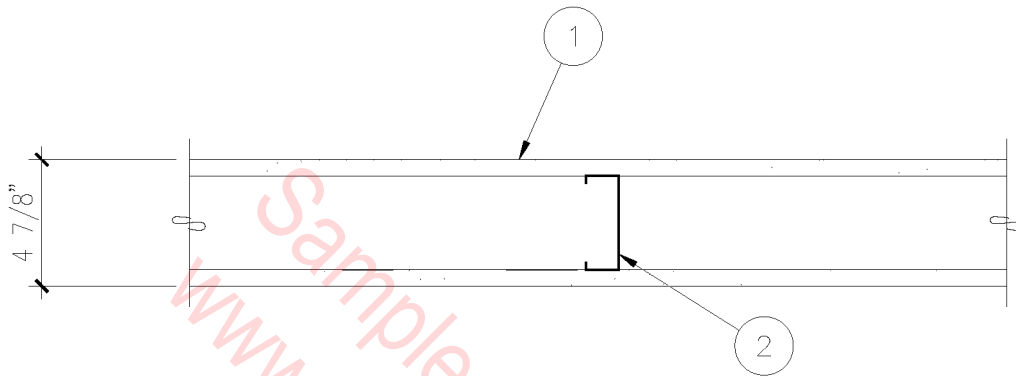
1. TWO LAYERS 1/2" SHEETROCK BRAND GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER.

NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. STAGGER AND FINISH JOINTS.
- C. CAULK PERIMETER.

○ 1 HOUR U OF C 9-21-64
 1-1/2" = 1'-0"

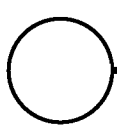
07B-4076



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 3 5/8" METAL STUDS AT 24" ON CENTER.

NOTES:

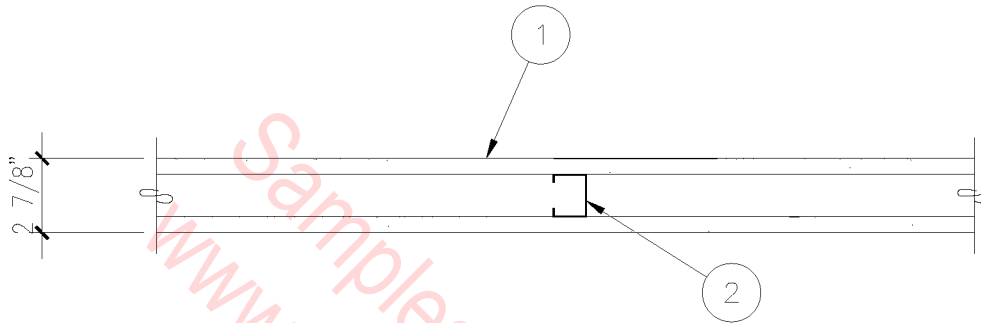
- A. SINGLE LAYER PANELS APPLIED VERTICALLY OR HORIZONTALLY AND SCREW ATTACHED.
- B. STAGGER AND FINISH JOINTS.
- C. CAULK PERIMETER.
- D. GA-WP-1200 BASE ON PANELS APPLIED HORIZONTALLY.



1 HOUR UL DES U465

1-1/2" = 1'-0"

07B-4077



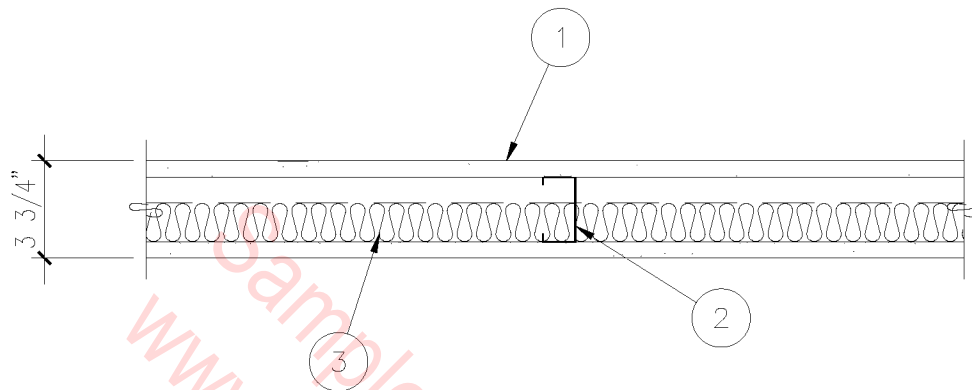
1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 1 5/8" METAL STUDS AT 24" ON CENTER.

NOTES:

- A. SINGLE LAYER PANELS APPLIED VERTICALLY SCREW ATTACHED AT 12" ON CENTER.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.

○ 1 HOUR U OF C 7-31-62
 1-1/2" = 1'-0"

07B-4078



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 2 1/2" METAL STUDS AT 24" ON CENTER.
3. 1 1/2" THERMAFIBER SAFB.

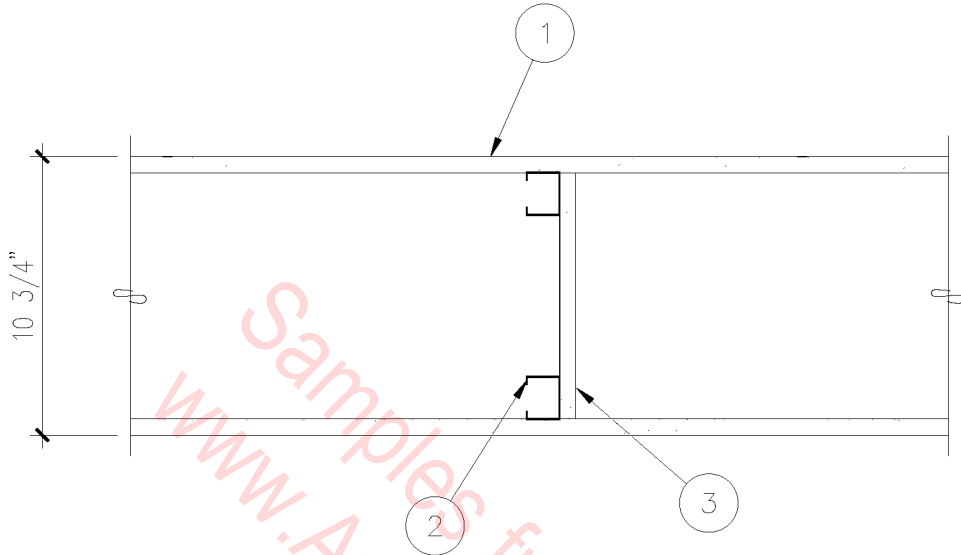
NOTES:

- A. PANELS APPLIED HORIZONTALLY AND SCREW ATTACHED, JOINTS FINISHED.
- B. OPPOSITE PANELS APPLIED VERTICALLY, JOINTS UNFINISHED.
- C. RATING ALSO APPLIES TO ASSEMBLY WITH 1/2" SHEETROCK BRAND GYPSUM PANELS FIRECODE C CORE, JOINTS FINISHED CEG 5-9-84.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 HOUR CEG 8-11-83

1-1/2" = 1'-0"

07B-4079



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER IN TWO ROWS SPACED 6 1/4" APART.
3. 5/8" GYPSUM PANEL GUSSETS OR STEEL RUN BRACES SPANNING CHASE SCREW ATTACHED TO STUDS.

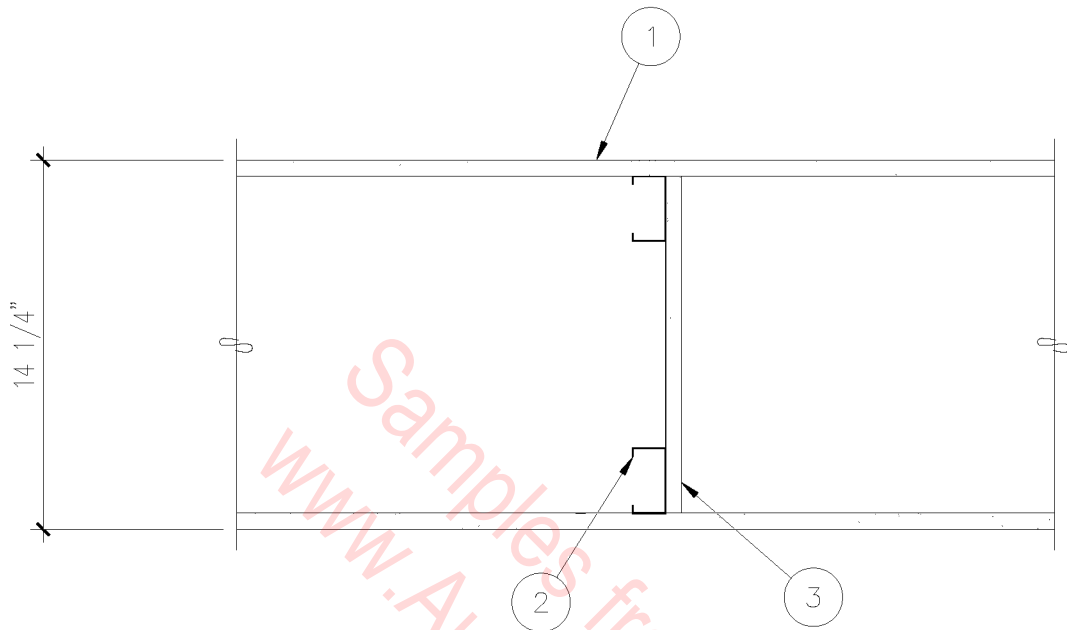
NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS STAGGERED AND FINISHED.

○ 1 HOUR UL DES U420

1-1/2" = 1'-0"

07B-4080



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. 2 1/2" METAL STUDS AT 24" ON CENTER IN TWO ROWS SPACED 8" APART.
3. 5/8" GYPSUM PANEL GUSSETS SPANNING CHASE ATTACHED TO STUDS AT QUARTER AND CENTER POINTS.

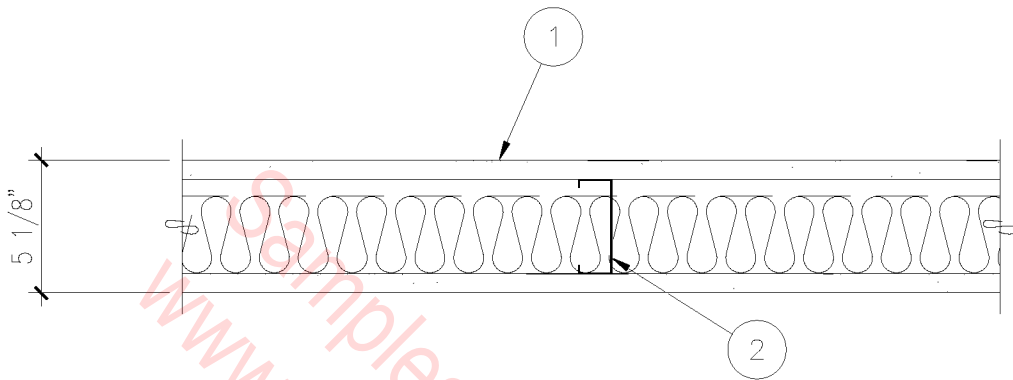
NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS STAGGERED AND FINISHED.

○ 1 HOUR UL DES U805

1-1/2" = 1'-0"

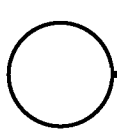
07B-4081



1. 3/4" SHEETROCK BRAND ULTRACODE CORE GYPSUM PANELS EACH SIDE.
2. 3 5/8" OR 3 1/2" METAL STUDS AT 24" ON CENTER.
3. 3" THERMAFIBER SAFB.

NOTES:

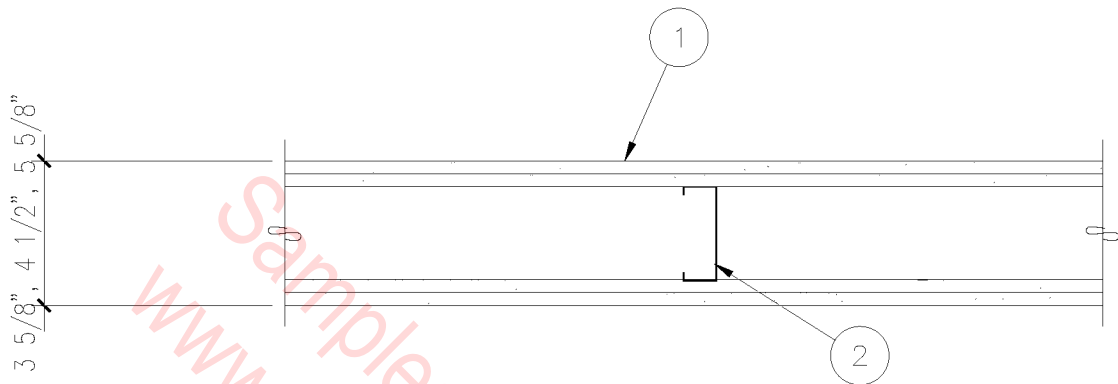
- A. PANELS VERTICALLY APPLIED AND SCREW ATTACHED AT 8" ON CENTER AT PERIMETER AND 12" ON CENTER ON FIELD.
- B. CAULK PERIMETER.
- C. JOINTS STAGGERED AND FINISHED.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.



2 HOUR UL DES U491

1-1/2" = 1'-0"

07B-4082



1. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8", 2 1/2", OR 3 5/8" METAL STUDS AT 24" ON CENTER.

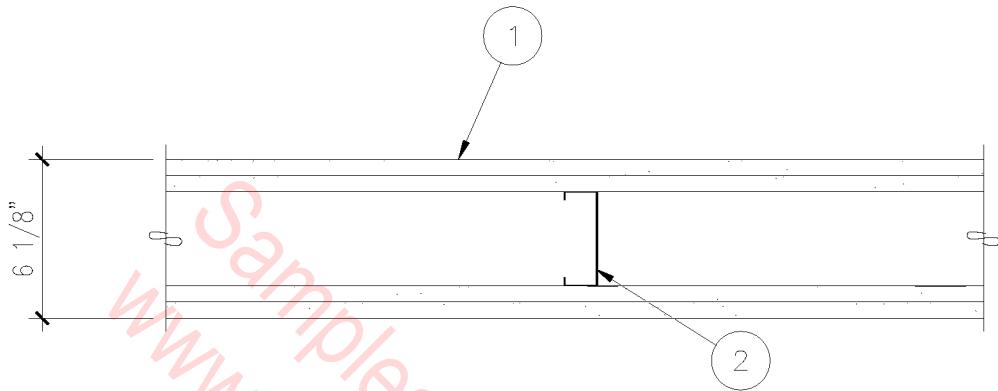
NOTES:

- A. BASE LAYER APPLIED VERTICALLY, SCREW ATTACHED.
- B. FACE LAYER APPLIED VERTICALLY OR HORIZONTALLY, JOINTS STAGGERED STRIP LAMINATE OR SCREW ATTACH.
- C. JOINTS FINISHED.
- D. CAULK PERIMETER.
- E. RATING BASED ON ASSEMBLY WITHOUT SOUND BATTEN BLANKETS.

○ 2 HOUR UL DES U412

1-1/2" = 1'-0"

07B-4083



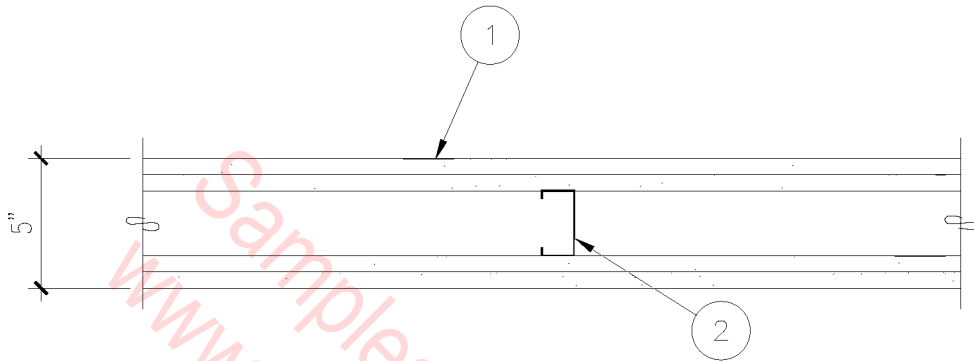
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE PLAIN OR VINYL FACED GYPSUM PANELS VERTICALLY APPLIED EACH SIDE.
2. 3 5/8" STUDS AT 24" ON CENTER.

NOTES:

- A. BASE LAYERS SCREW ATTACHED.
- B. FACE LAYER LAMINATED OR SCREW ATTACHED.
- C. JOINTS STAGGERED AND FINISHED OR UNFINISHED.
- D. CAULK PERIMETER.

○ 2 HOUR UL DES U411
 1-1/2" = 1'-0"

07B-4084



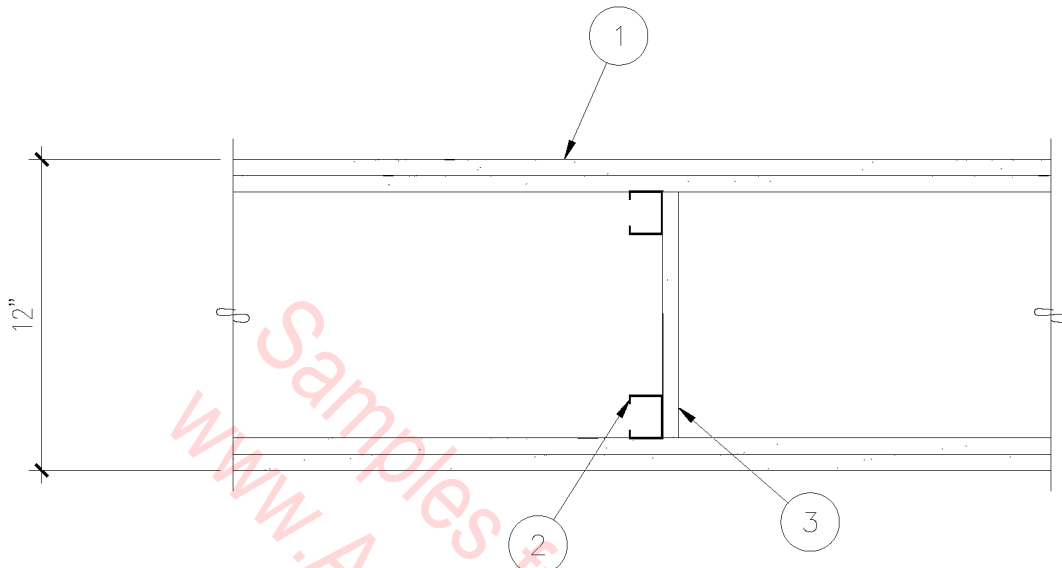
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. 2 1/2" STUDS AT 24" ON CENTER.

NOTES:

- A. PANELS APPLIED HORIZONTALLY AND JOINTS STAGGERED.
- B. BASE AND FACE LAYERS SCREW ATTACHED.
- C. CAULK PERIMETER.
- D. JOINTS FINISHED.

○ 2 HOUR GA-WP-1548
 1-1/2" = 1'-0"

07B-4085



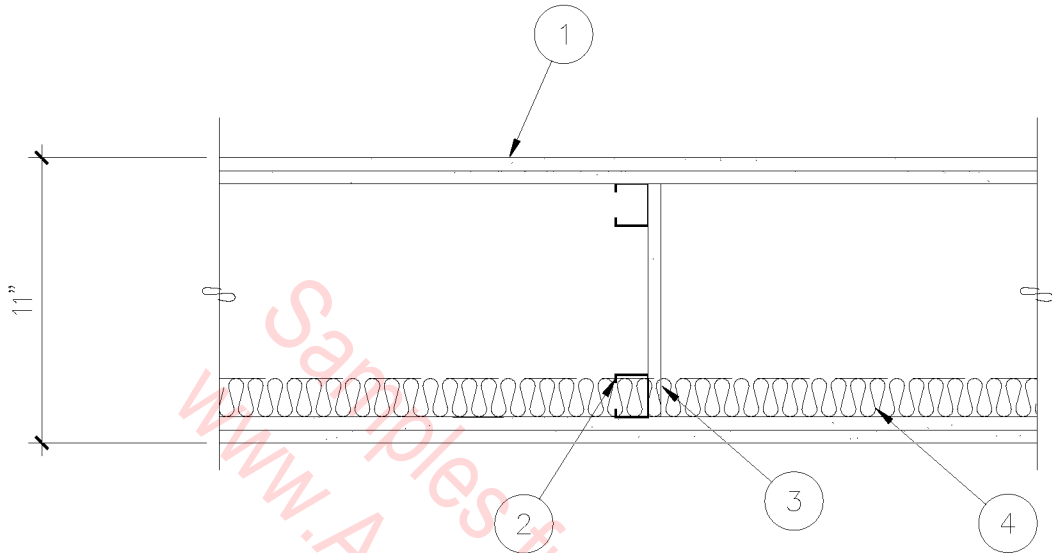
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER IN TWO ROWS SPACED 6 1/4" APART.
3. 5/8" GYPSUM PANEL GUSSETS OR STEEL RUN BRACES SPANNING CHASE SCREW ATTACHED TO STUDS.

NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS STAGGERED AND FINISHED.

○ 2 HOUR UL DES U420
 1-1/2" = 1'-0"

07B-4086



1. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER IN TWO ROWS SPACED 5 3/4" APART.
3. 1/2" GYPSUM PANEL GUSSETS SPANNING CHASE ATTACHED TO STUDS AT QUARTER POINTS.
4. 1 1/2" THERMAFIBER SAFB.

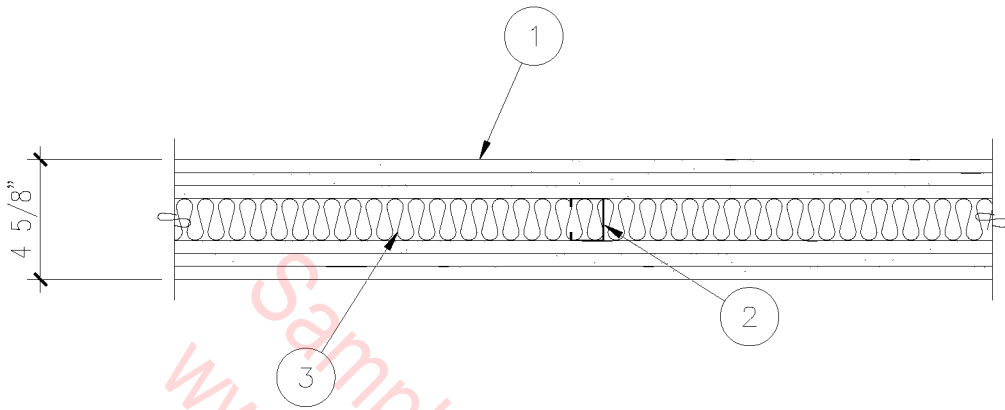
NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS STAGGERED AND FINISHED.
- C. ESTIMATED FIRE RATING BASED ON UL DES U412.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 2 HOUR EST. UL DES U412

1-1/2" = 1'-0"

07B-4087



1. THREE LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER.
3. THERMAFIBER SAFB (OPTIONAL).

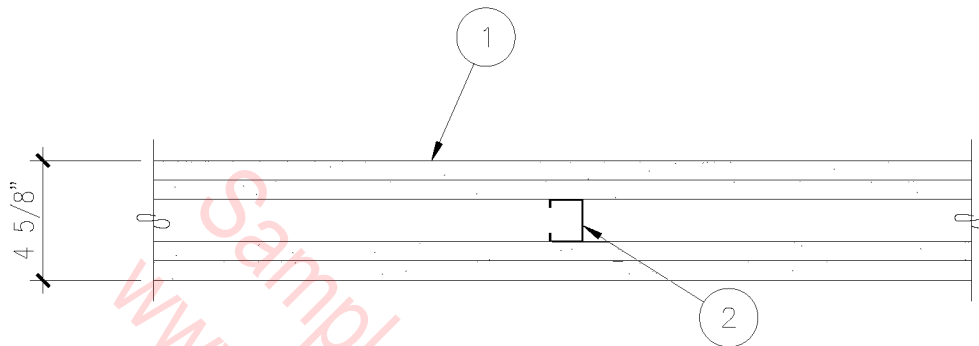
NOTES:

- A. BASE LAYERS APPLIED VERTICALLY.
- B. PANELS SCREW ATTACHED WITH JOINTS STAGGERED AND FINISHED.
- C. CAULK PERIMETER.
- D. RATING BASED ON ASSEMBLY WITH OR WITHOUT SAFB.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 3 HOUR UL DES U435

1-1/2" = 1'-0"

07B-4088



1. TWO LAYERS 3/4" SHEETROCK BRAND ULTRACODE CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER.

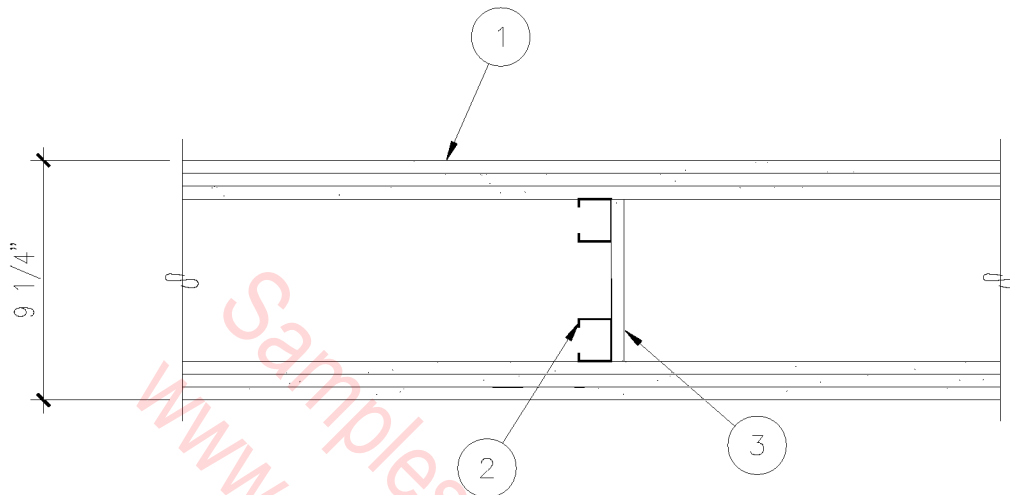
NOTES:

- A. BASE LAYER APPLIED VERTICALLY AND ATTACHED WITH 1 1/4" TYPE "S" SCREWS AT 24" ON CENTER.
- B. JOINTS FINISHED.
- C. FACE LAYER ATTACHED VERTICALLY OR HORIZONTALLY WITH 2 1/4" TYPE "S" SCREWS AT 12" ON CENTER.
- D. ATTACH HORIZONTAL JOINTS WITH TYPE "G" SCREWS MIDWAY BETWEEN FRAMING (24" ON CENTER).
- E. CAULK PERIMETER.

○ 3 HOUR UL DES U435

1-1/2" = 1'-0"

07B-4089



1. THREE LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER IN TWO ROWS SPACED 3" APART.
3. GYPSUM PANEL GUSSETS OR STEEL RUN BRACES SPANNING CHASE SCREW ATTACHED TO STUDS.

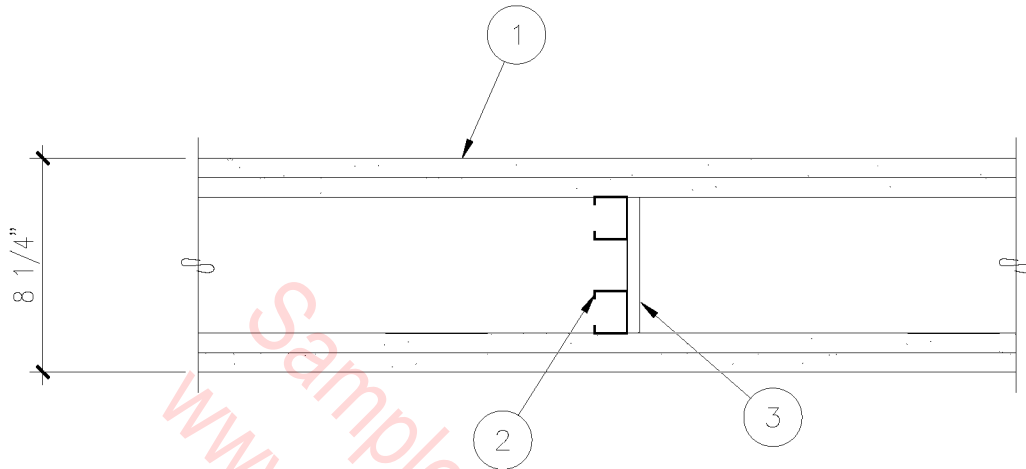
NOTES:

- A. PANELS APPLIED VERTICALLY AND SCREW ATTACHED.
- B. JOINTS STAGGERED AND FINISHED.
- C. 2 HOUR RATING APPLIES WITH TWO LAYERS PANELS EACH SIDE.
- D. 1 HOUR RATING APPLIES WITH ONE LAYER 5/8" PANELS EACH SIDE.

○ 3 HOUR UL DES U436

1-1/2" = 1'-0"

07B-4090



1. TWO LAYERS 3/4" SHEETROCK BRAND ULTRACODE CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER IN TWO ROWS SPACED 2" APART.
3. GYPSUM PANEL GUSSETS OR STEEL RUN BRACES SPANNING CHASE SCREW ATTACHED TO STUDS.

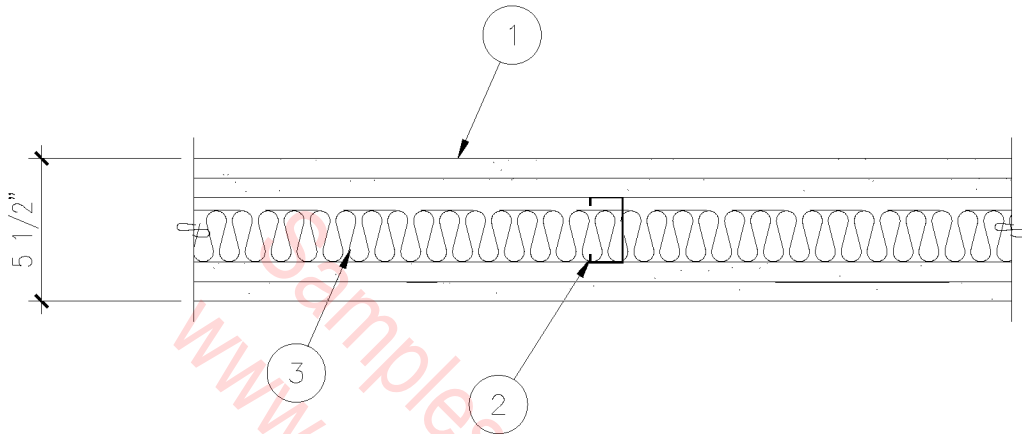
NOTES:

- A. BASE LAYER APPLIED VERTICALLY AND ATTACHED WITH 1 1/4" TYPE "S" SCREWS AT 24" ON CENTER.
- B. JOINTS STAGGERED AND FINISHED.
- C. FACE LAYER ATTACHED VERTICALLY OR HORIZONTALLY WITH 2 1/4" TYPE "S" SCREWS AT 12" ON CENTER.
- D. ATTACH HORIZONTAL JOINTS WITH TYPE "G" SCREWS MIDWAY BETWEEN FRAMING (24" ON CENTER).

○ 3 HOUR UL DES U436

1-1/2" = 1'-0"

07B-4091



1. TWO LAYERS 3/4" SHEETROCK BRAND ULTRACODE CORE GYPSUM PANELS EACH SIDE.
2. 2 1/2" METAL STUDS AT 24" ON CENTER.
3. 2" THERMAFIBER SAFB.

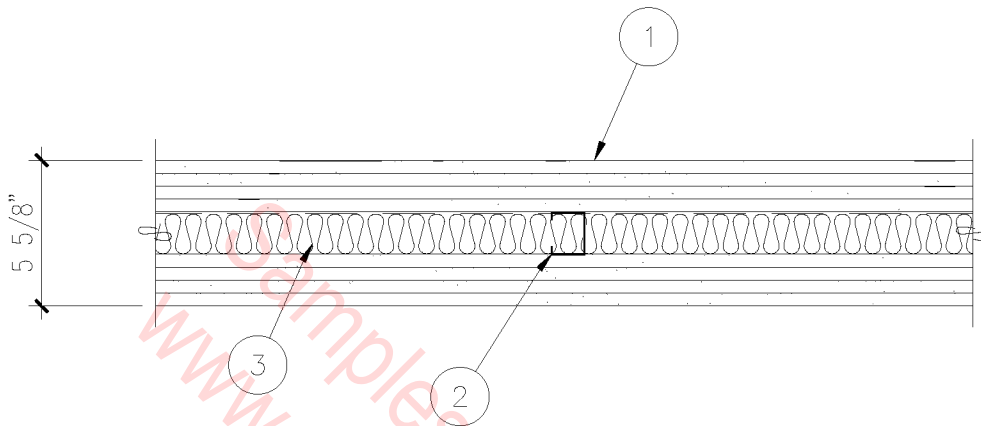
NOTES:

- A. BASE LAYER APPLIED VERTICALLY, JOINTS STAGGERED AND SCREW ATTACHED AT 24" ON CENTER.
- B. FACE LAYER APPLIED VERTICALLY OR HORIZONTALLY AND SCREW ATTACHED AT 12" ON CENTER.
- C. ATTACH HORIZONTAL JOINTS WITH TYPE "G" SCREWS MIDWAY BETWEEN FRAMING (24" ON CENTER).
- D. JOINTS FINISHED.
- E. CAULK PERIMETER.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 4 HOUR UL DES U490

1-1/2" = 1'-0"

07B-4092



1. FOUR LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS EACH SIDE.
2. 1 5/8" METAL STUDS AT 24" ON CENTER.
3. 2" THERMAFIBER SAFB (OPTIONAL).

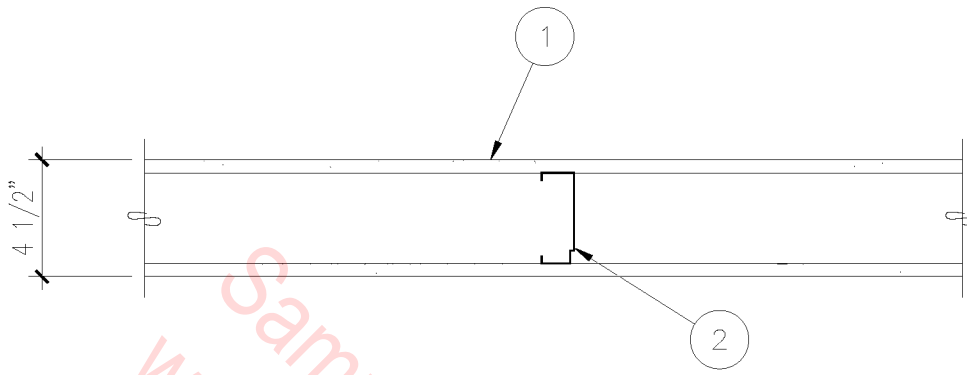
NOTES:

- A. BASE LAYER APPLIED VERTICALLY.
- B. FACE LAYER APPLIED HORIZONTALLY.
- C. PANELS SCREW ATTACHED WITH JOINTS STAGGERED AND FINISHED.
- D. CAULK PERIMETER.
- E. RATING BASED ON ASSEMBLY WITH OR WITHOUT SOUND BATTEN FIRE BLANKETS.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 4 HOUR UL DES U435

1-1/2" = 1'-0"

07B-4093



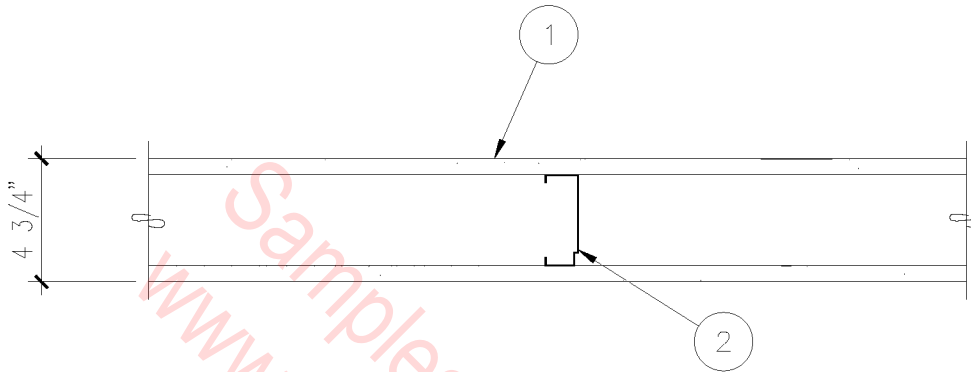
1. 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
2. 35SJ20 METAL STUDS AT 24" ON CENTER.

NOTES:

- A. PANELS APPLIED VERTICALLY AND ATTACHED WITH 1" TYPE S-12 SCREWS AT 12" ON CENTER.
- B. FINISH JOINTS.
- C. LOAD BEARING UP TO 100% ALLOWABLE STUD AXIAL.

○ 45 MIN. UL DES U425
 1-1/2" = 1'-0"

07B-4094



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 35SJ20 METAL STUDS AT 24" ON CENTER.

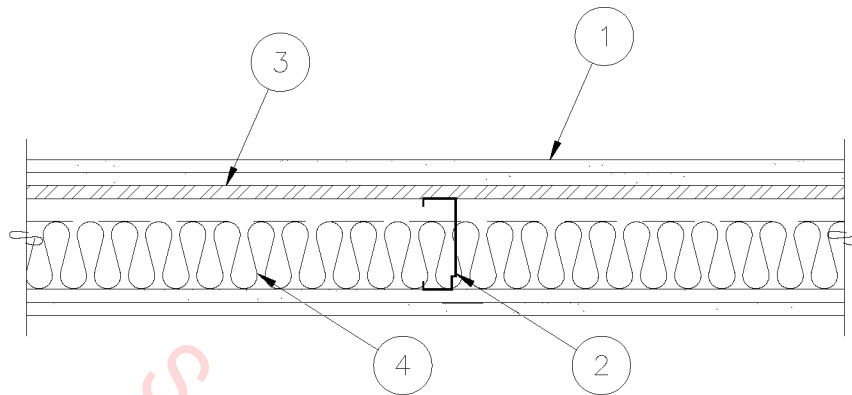
NOTES:

- A. PANELS APPLIED VERTICALLY AND ATTACHED WITH 1" TYPE S-12 SCREWS AT 12" ON CENTER.
- B. FINISH JOINTS.
- C. LOAD BEARING UP TO 100% ALLOWABLE STUD AXIAL.

○ 1 HOUR UL DES U425

1-1/2" = 1'-0"

07B-4095



1. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 35SJ20 METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" SCREW ATTACHED TO STUDS
4. 1", 1-1/2", 2", OR 3" THERMAFIBER SAFB.

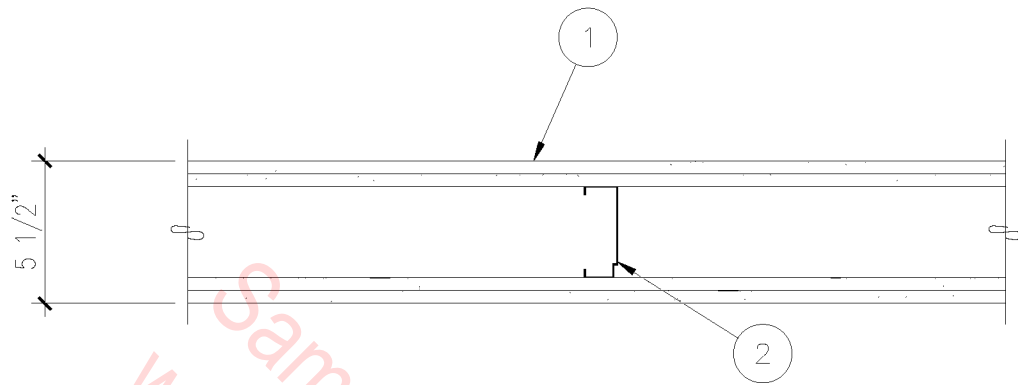
NOTES:

- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED .
- B. BASE LAYER ATTACHED WITH 1" TYPE S-12 SCREWS AT 12" ON CENTER.
- C. FACE LAYER ATTACHED WITH 1 5/8" TYPE S-12 SCREWS AT 12" ON CENTER.
- D. JOINTS FINISHED.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- F. LOAD BEARING UP TO 100% ALLOWABLE STUD AXIAL LOAD.
- G. RATING ALSO APPLIES WITH IMPERIAL FIRECODE C BASE AND VENEER FINISH SURFACE.
- H. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 HOUR UL DES U440

1-1/2" = 1'-0"

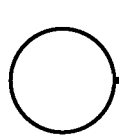
07B-4096



1. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
2. 35SJ20 METAL STUDS AT 24" ON CENTER.

NOTES:

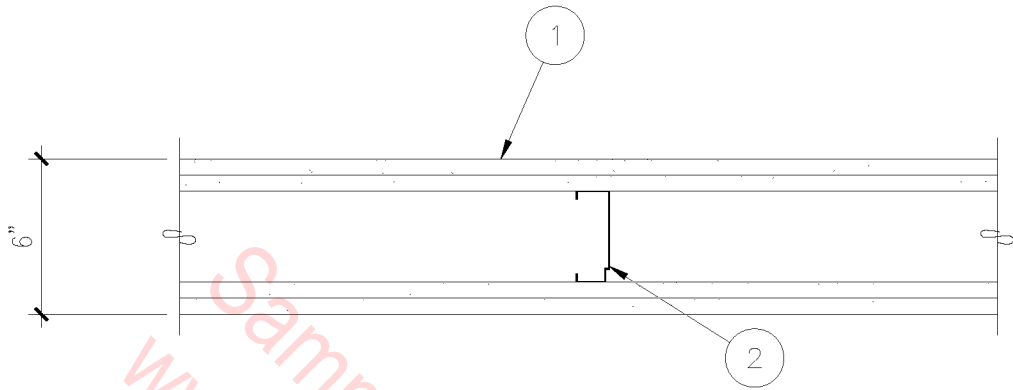
- A. PANELS APPLIED VERTICALLY.
- B. BASE LAYER ATTACHED WITH 1" TYPE S-12 SCREWS AT 12" ON CENTER.
- C. FACE LAYER ATTACHED WITH 1 5/8" TYPE S-12 SCREWS AT 12" ON CENTER.
- D. JOINTS FINISHED.
- E. LOAD BEARING UP TO 100% ALLOWABLE STUD AXIAL LOAD.



1-1/2 HOUR UL DES U425

1-1/2" = 1'-0"

07B-4097



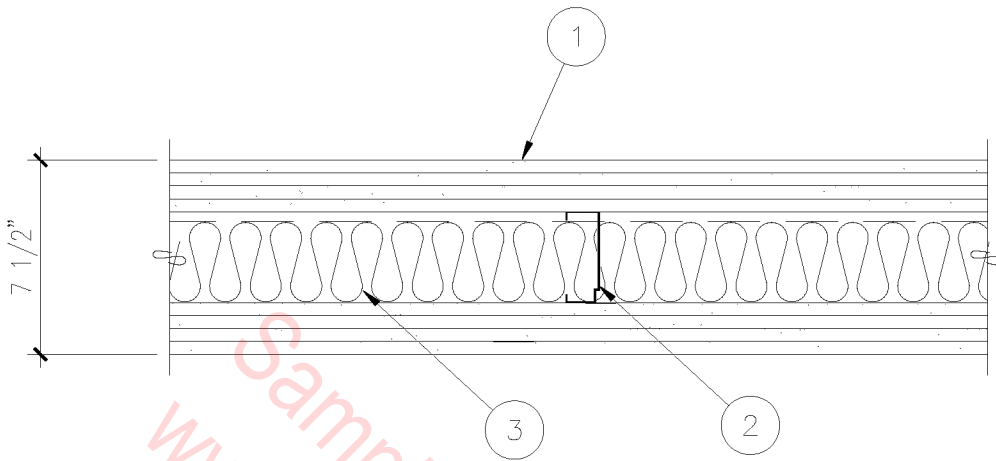
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 35SJ20 METAL STUDS AT 24" ON CENTER.

NOTES:

- A. PANELS APPLIED VERTICALLY.
- B. BASE LAYER ATTACHED WITH 1" TYPE S-12 SCREWS AT 12" ON CENTER.
- C. FACE LAYER ATTACHED WITH 1 5/8" TYPE S-12 SCREWS AT 12" ON CENTER.
- D. JOINTS FINISHED.
- E. LOAD BEARING UP TO 100% ALLOWABLE STUD AXIAL LOAD.

○ 2 HOUR UL DES U425
 1-1/2" = 1'-0"

07B-4098



1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 35SJ20 METAL STUDS AT 24" ON CENTER.
3. 1", 1 1/2", 2", OR 3" THERMAFIBER SAFB (OPTIONAL).

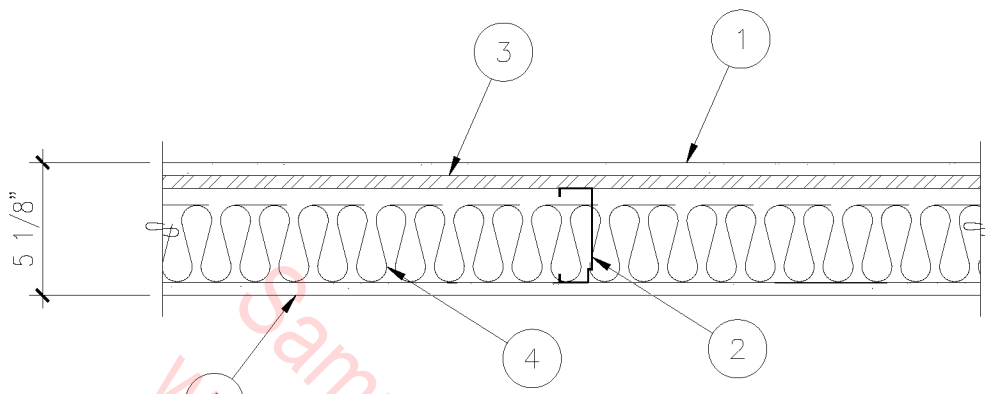
NOTES:

- A. BASE LAYERS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. BASE PANELS ATTACHED WITH TYPE S-12 SCREWS AT 48" ON CENTER.
- C. FACE LAYER APPLIED VERTICALLY OR HORIZONTALLY WITH 2 5/8" TYPE S-12 SCREWS AT 12" ON CENTER AND 1 1/2" TYPE "G" SCREWS IN PANELS.
- D. RATING ALSO APPLIES WITH IMPERIAL FIRECODE C BASE AND VENEER FINISH SURFACES.
- E. LOAD BEARING UP TO 100% ALLOWABLE STUD AXIAL LOAD.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 3 HOUR UL DES U426

1-1/2" = 1'-0"

07B-4099



1. 1/2" SHEETROCK BRAND FIRECODE50 C CORE GYPSUM PANELS SCREW ATTACHED TO CHANNEL AND/OR STUDS.
2. 362SJ20 METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" SCREW ATTACHED TO STUDS.
4. 3" THERMAFIBER SAFB.

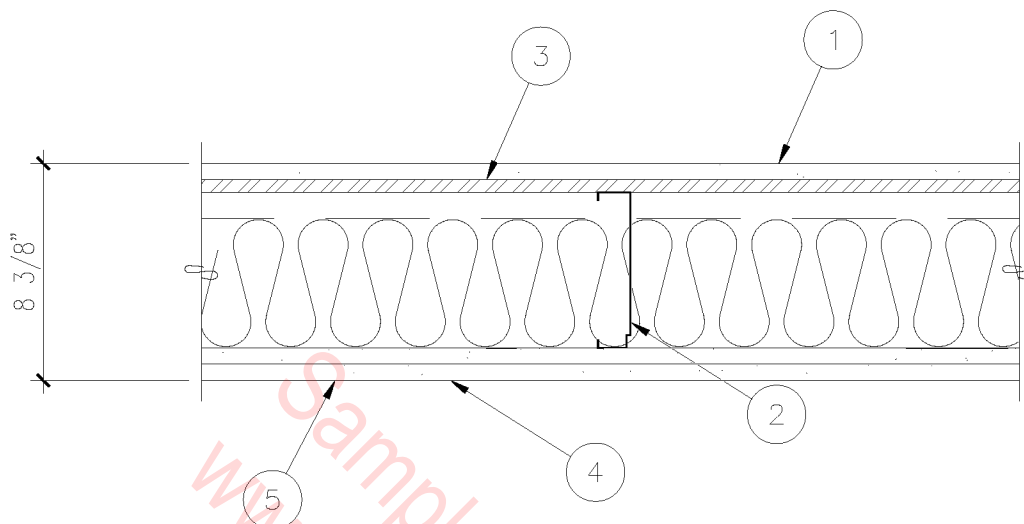
NOTES:

- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- E. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 1 HOUR UL DES U451

1-1/2" = 1'-0"

07B-4100



1. ONE LAYER 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANEL SCREW ATTACHED TO CHANNEL.
2. 60SJ20 METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" SCREW ATTACHED TO STUDS.
4. 5" THERMAFIBER SAFB.
5. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANEL SCREW ATTACHED TO STUDS.

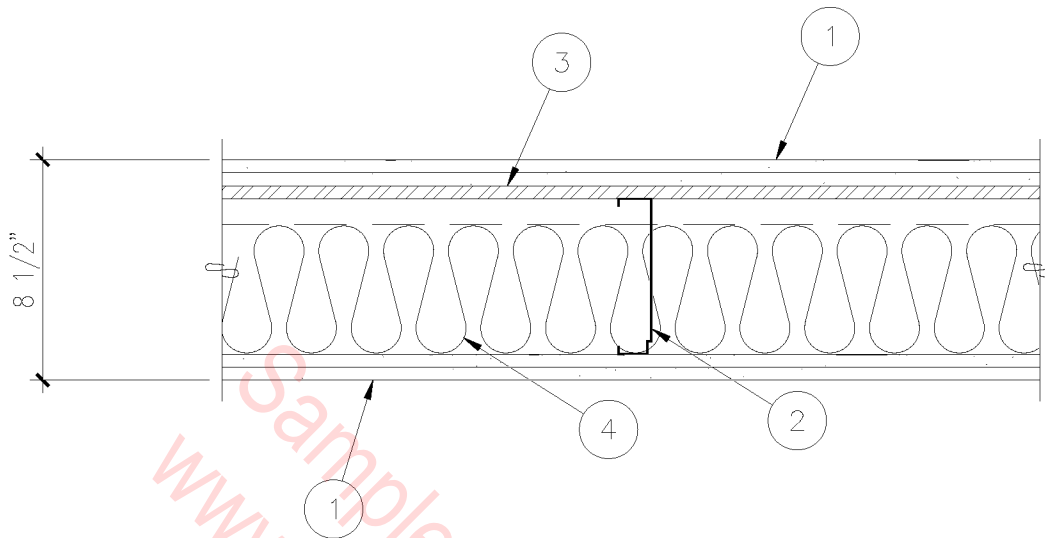
NOTES:

- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- E. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 1-1/2 HOUR UL DES U452

1-1/2" = 1'-0"

07B-4101



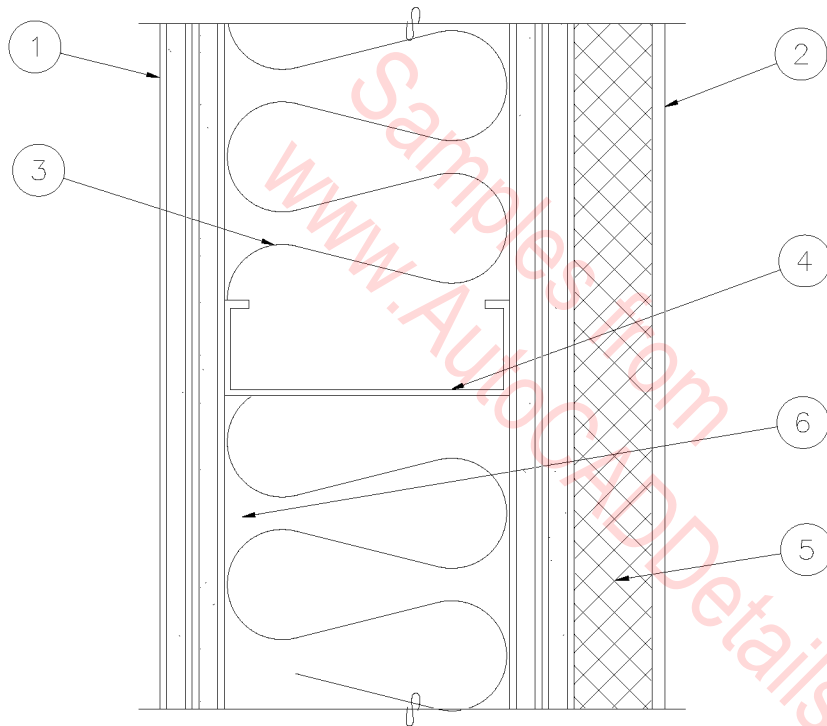
1. TWO LAYERS 1/2" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS SCREW ATTACHED TO CHANNEL AND/OR STUDS.
2. 60SJ20 METAL STUDS AT 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" SCREW ATTACHED TO STUDS.
4. 5" THERMAFIBER SAFB.

NOTES:

- A. PANELS APPLIED VERTICALLY WITH JOINTS STAGGERED.
- B. JOINTS FINISHED.
- C. CAULK PERIMETER.
- D. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- E. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 2 HOUR UL DES U454
 1-1/2" = 1'-0"

07B-4102

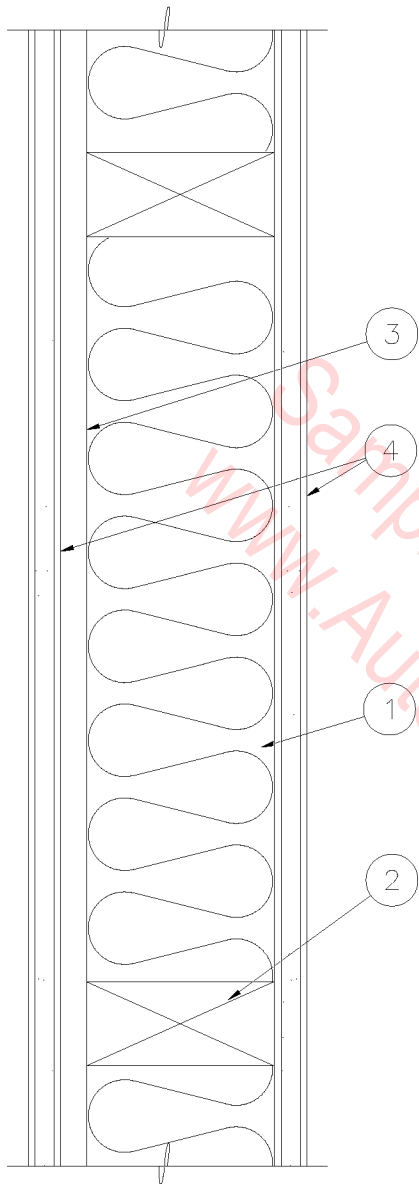


1. (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD.
2. SYNTHETIC STUCCO.
3. 5 1/2" BATT INSULATION.
4. 6" METAL STUDS.
5. 1 1/2" POLYSTYRENE INSULATION BOARD MECHANICALLY FASTENED AND GLUED.
6. 4 MIL. POLY VAPOR BARRIER.

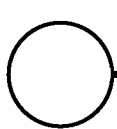
○ 2 HOUR EXTERIOR WALL

3" = 1'-0"

07B-2001



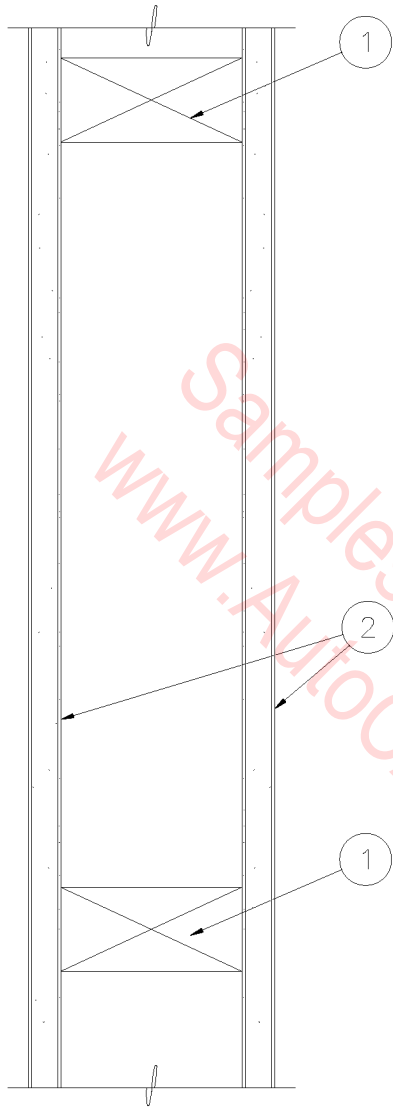
1. 3-1/2" BATT INSULATION.
2. 2" X 4" WOOD STUDS @ 16" O.C.
3. 1/2" AC 1 CHANNELS @ 24" O.C.
ONE SIDE.
4. 5/8" TYPE "X" GYPSUM BOARD
EACH SIDE.



1 HR. WOOD STUD WALL

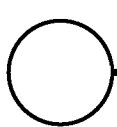
3" = 1'-0"

07B-2002



Samples from
www.AutocADDetails.net

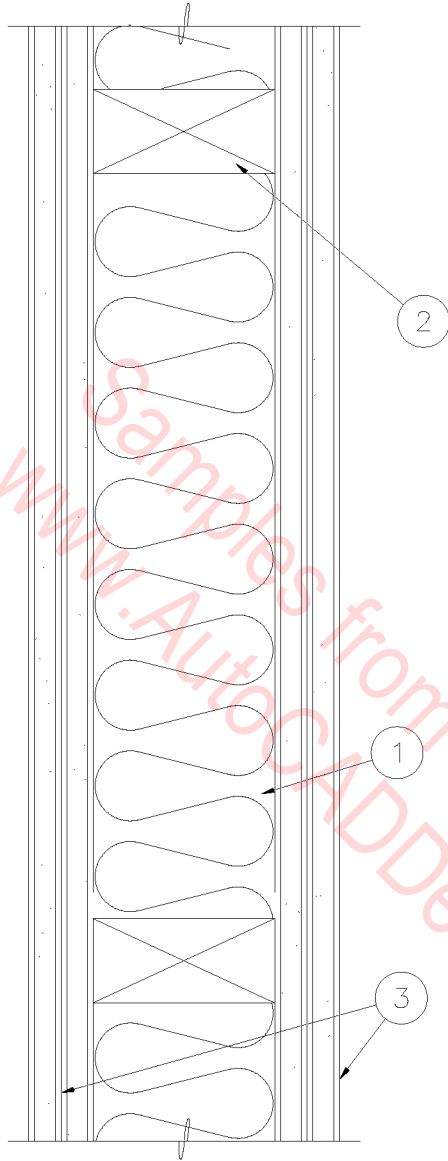
1. 2" X 4" WOOD STUDS @ 16" O.C.
2. 5/8" TYPE "X" GYPSUM BOARD EACH SIDE. (MOISTURE RESISTANT ON BATH SIDE).



1 HOUR INTERIOR WALL

3" = 1'-0"

07B-2003

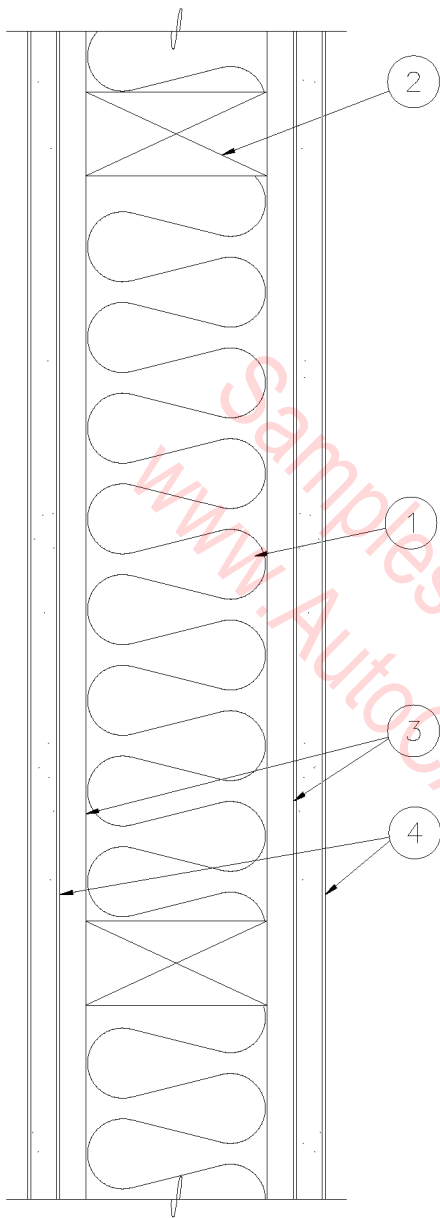


1. 3 1/2" BATT INSULATION.
2. 2" X 4" WOOD STUDS
16" O.C.
3. (2) LAYERS 5/8" TYPE
"X" GYPSUM BOARD
EACH SIDE.

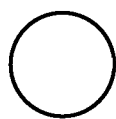
○
2 HOUR INTERIOR WALL

3" = 1'-0"

07B-2004



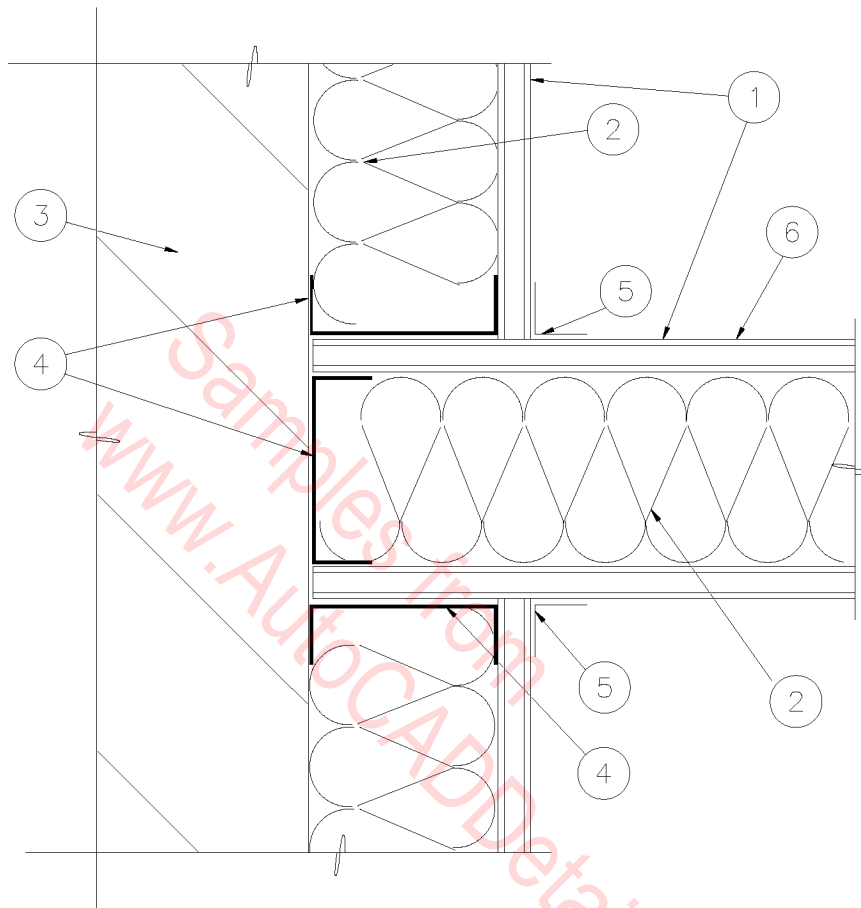
1. 3 1/2" MINERAL FIBER BATT INSULATION.
2. 2 X 4 WOOD STUDS @ 16" O.C.
3. RC-1 CHANNELS @ 24" O.C.
4. 5/8" TYPE "X" GYPSUM BOARD MOISTURE RESISTANT ON BATH SIDE.



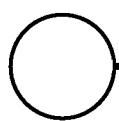
1 HOUR DEMISING WALL

3" = 1'-0"

07B-2005



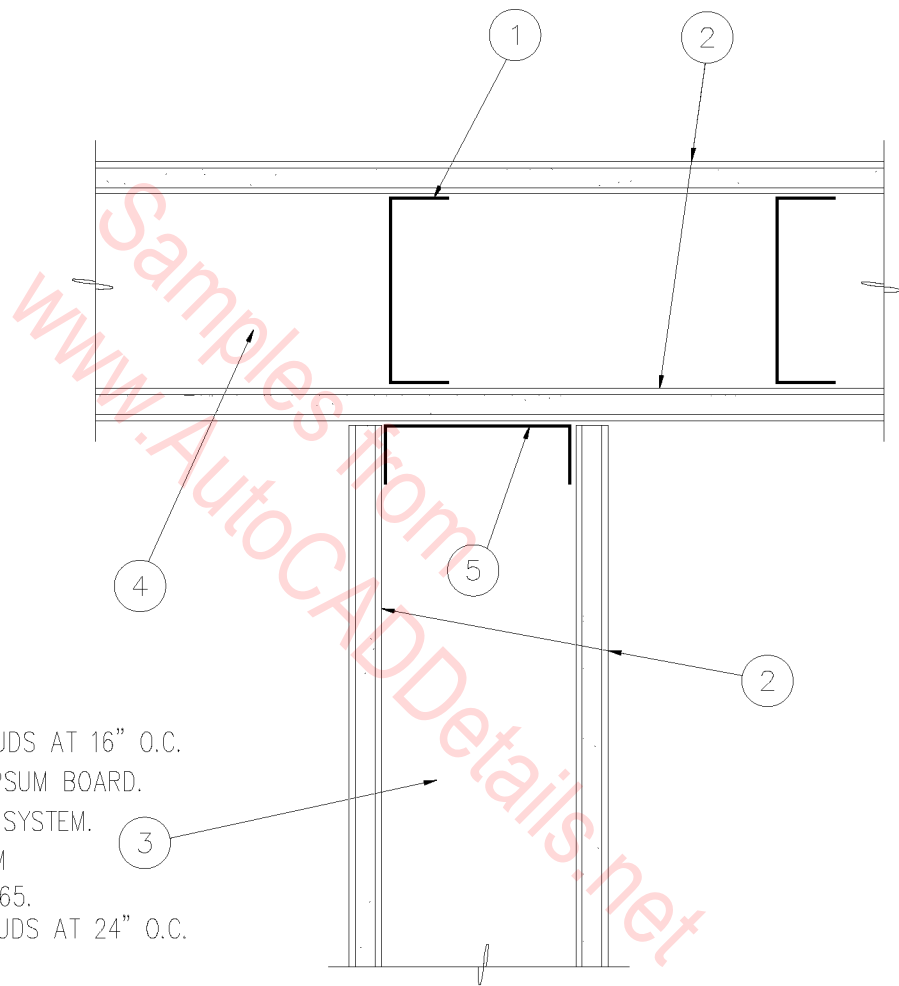
1. 5/8" TYPE 'X' GYPSUM BOARD.
2. INSULATION WHERE OCCURS.
3. MASONRY WALL.
4. 3-5/8" METAL STUDS
5. TAPE ALL JOINTS.
6. 1 HR CONSTRUCTION NON-BEARING
WALL ASSEMBLY.
UL DESIGN NO. U465.



RESISTIVE WALL AT CMU

3" = 1'-0"

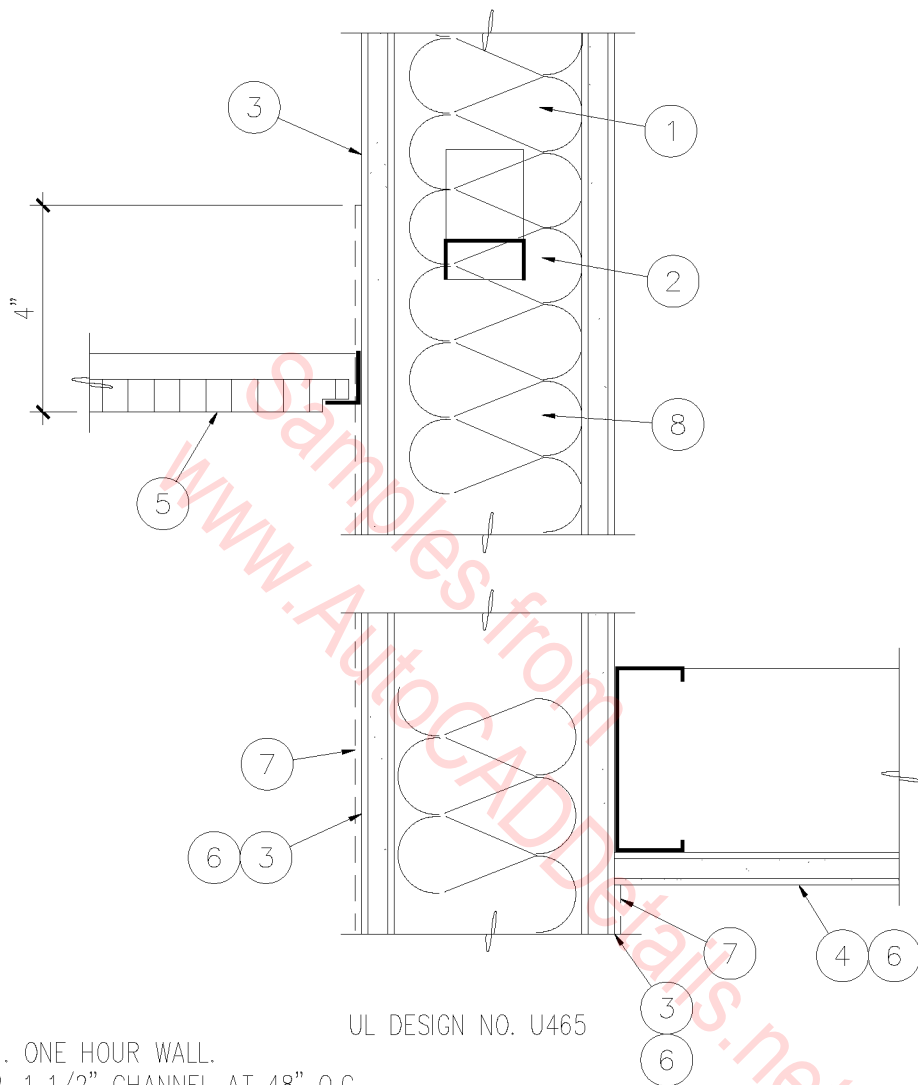
07B-2006



- 1. 3-5/8" METAL STUDS AT 16" O.C.
- 2. 5/8" TYPE 'X' GYPSUM BOARD.
- 3. NON-RATED WALL SYSTEM.
- 4. 1 HR WALL SYSTEM
UL DESIGN NO. U465.
- 5. 3-5/8" METAL STUDS AT 24" O.C.

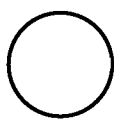
○ INTERSECTING WALL
 3" = 1'-0"

07B-2007



UL DESIGN NO. U465

1. ONE HOUR WALL.
2. 1 1/2" CHANNEL AT 48" O.C.
3. 5/8" TYPE "X" GYPSUM BOARD.
4. 5/8" TYPE "X" GYPSUM BOARD ON METAL STUDS (CEILING JOISTS).
5. LAY-IN ACOUSTICAL PANELS IN SUSPENDED TEE GRID - WHERE APPLICABLE.
6. SEE ROOM FINISH SCHEDULE FOR FINISH.
7. CERAMIC TILE ON GLASS MESH MORTAR UNITS, IN LIEU OF GYPSUM BOARD WHERE APPLICABLE.
8. 3-5/8" METAL STUDS UNLESS NOTED OTHERWISE.

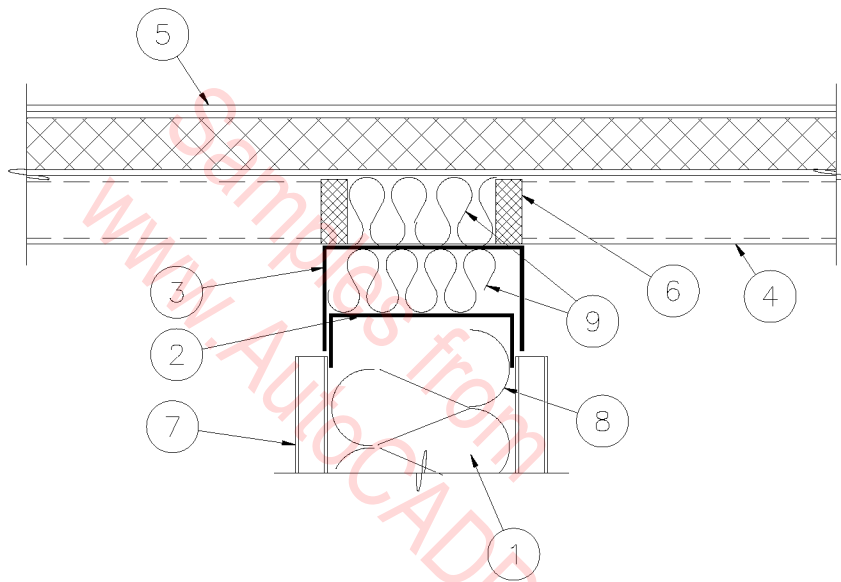


CEILING AT 1 HR WALL

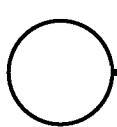
3" = 1'-0"

07B-2008

UL DESIGN NO. U465 ONE HOUR RESISTANT CONSTRUCTION.
 UL THROUGH-PENETRATION FIRESTOP SYSTEM DESIGN NO. 327



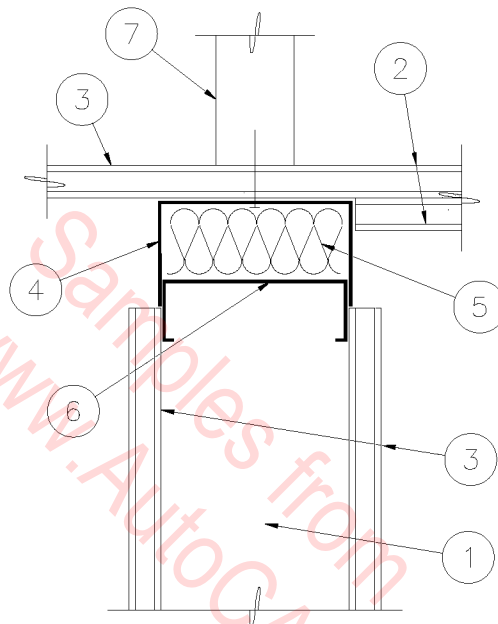
1. 3 5/8" METAL STUDS AT 16" O.C.
2. METAL RUNNER.
3. METAL RUNNER WITH 2" LEG.
4. METAL DECK.
5. ROOFING SYSTEM.
6. 1/2" 'TREMCO' FYRE-SIL SEALANT ON EACH SIDE OF FIRE SAFING.
7. 5/8" TYPE "X" GYPSUM BOARD.
8. R-11 3 1/2" BATT SOUND INSULATION WHERE APPLICABLE.
9. FIRE SAFING INSULATION.



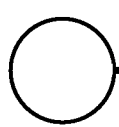
1 HR WALL AT DECK

3" = 1'-0"

07B-2009



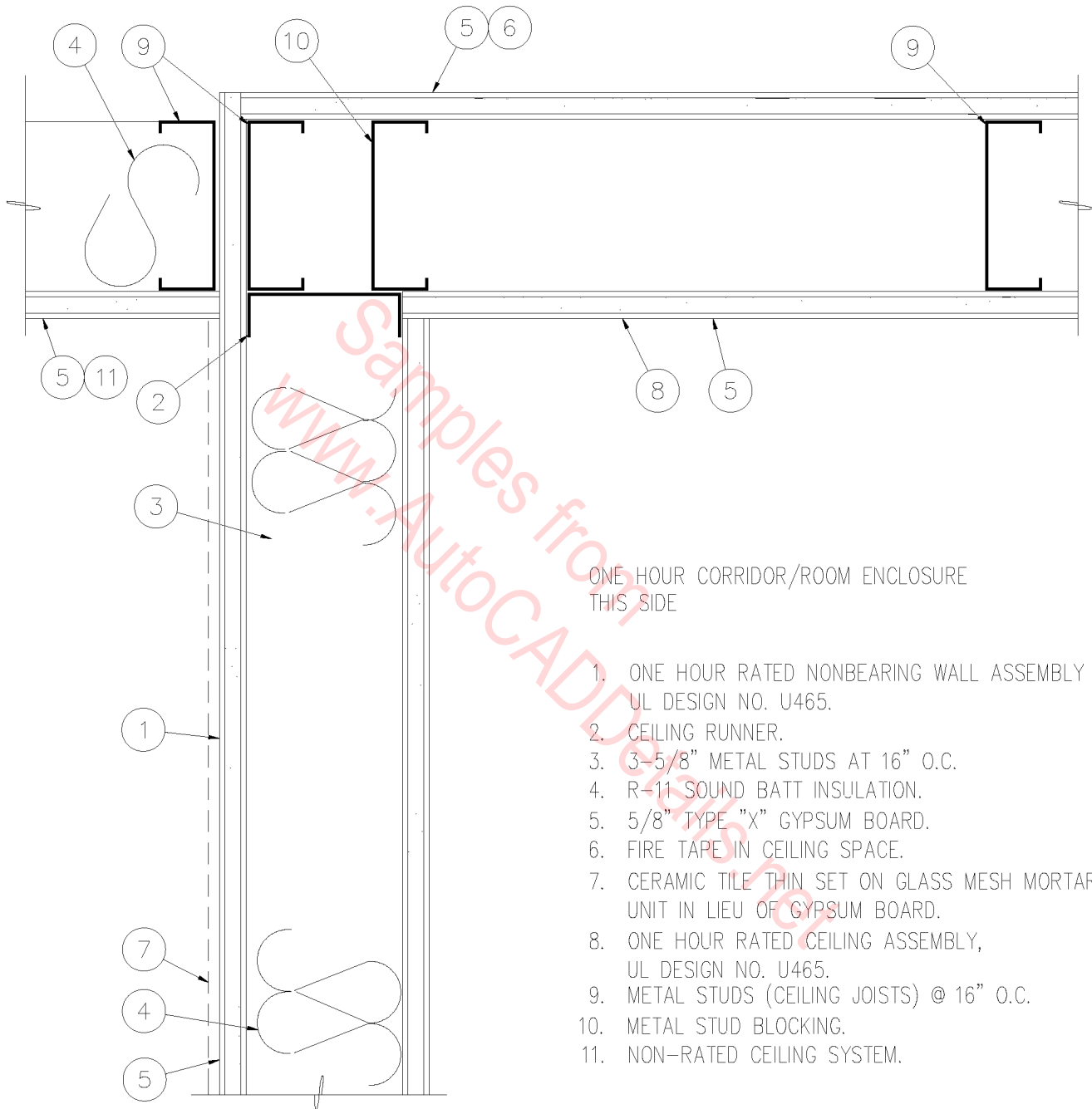
1. 1 HOUR PARTITION. UL DESIGN NO. U465.
2. (2) LAYERS, 5/8" TYPE 'X' GYPSUM BOARD.
3. 5/8" TYPE 'X' GYPSUM BOARD.
4. METAL RUNNER WITH 2" LEG.
5. FIRE SAFING INSULATION.
6. METAL RUNNER.
7. JOIST.



1 HOUR WALL AT CEILING

3" = 1'-0"

07B-2010

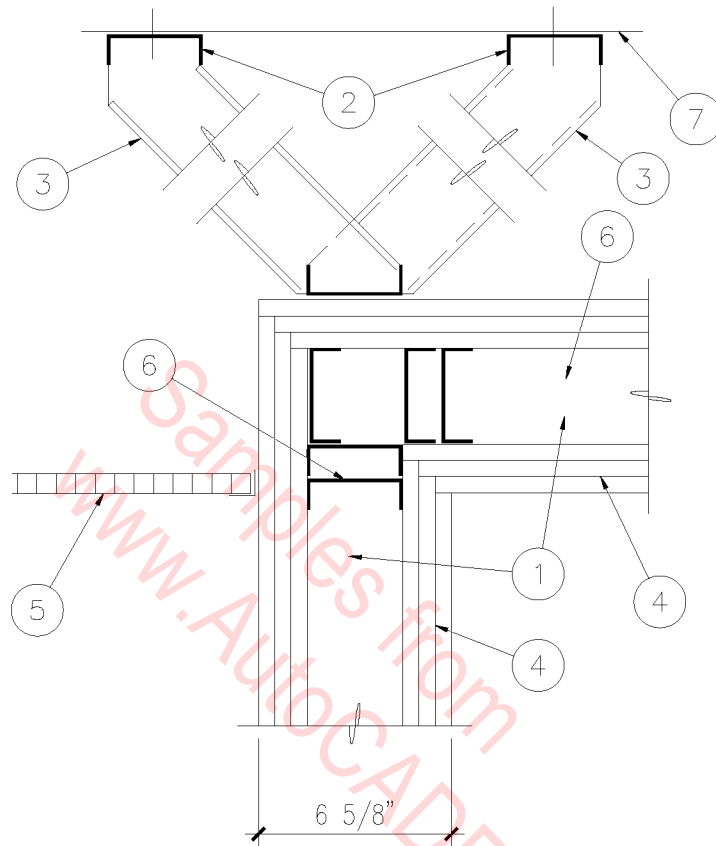


ONE HOUR CORRIDOR/ROOM ENCLOSURE
THIS SIDE

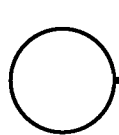
1. ONE HOUR RATED NONBEARING WALL ASSEMBLY
UL DESIGN NO. U465.
2. CEILING RUNNER.
3. 3-5/8" METAL STUDS AT 16" O.C.
4. R-11 SOUND BATT INSULATION.
5. 5/8" TYPE "X" GYPSUM BOARD.
6. FIRE TAPE IN CEILING SPACE.
7. CERAMIC TILE THIN SET ON GLASS MESH MORTAR
UNIT IN LIEU OF GYPSUM BOARD.
8. ONE HOUR RATED CEILING ASSEMBLY,
UL DESIGN NO. U465.
9. METAL STUDS (CEILING JOISTS) @ 16" O.C.
10. METAL STUD BLOCKING.
11. NON-RATED CEILING SYSTEM.

○ 1 HOUR CORRIDOR
3" = 1'-0"

07B-2011



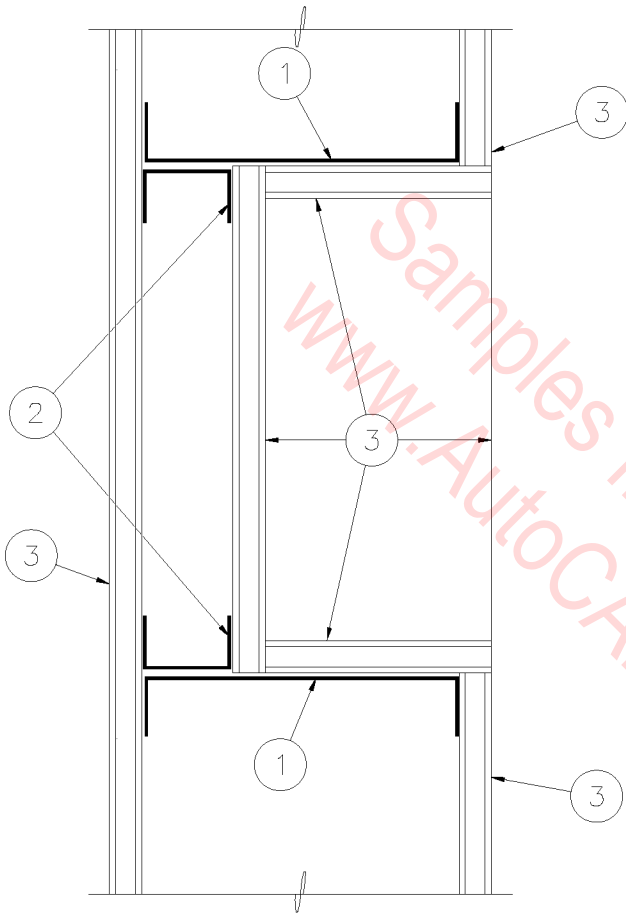
1. 3 HOUR FIRE ASSEMBLY.
UL DESIGN NO. U425.
2. ANCHOR RUNNER TO
STRUCTURE ABOVE.
3. 3-5/8" METAL STUD BRACING
AT 48" O.C. STAGGERED.
4. (3) LAYERS OF 1/2" TYPE 'X'
GYPSUM BOARD BOTH SIDES.
5. LAY-IN ACOUSTICAL CEILING.
6. 3-5/8" METAL STUDS.
7. STRUCTURE ABOVE.



3 HOUR WALL/CEILING

3" = 1'-0"

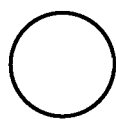
07B-2012



UL DESIGN
NO. U465.

1. 6" METAL STUDS AT 16" O.C.
2. 1-5/8" METAL STUDS.
3. 5/8" TYPE 'X' GYPSUM BOARD,
MUST COMPLETELY ENCLOSE
RECESS ON ALL SIDES, TOP
AND BOTTOM.

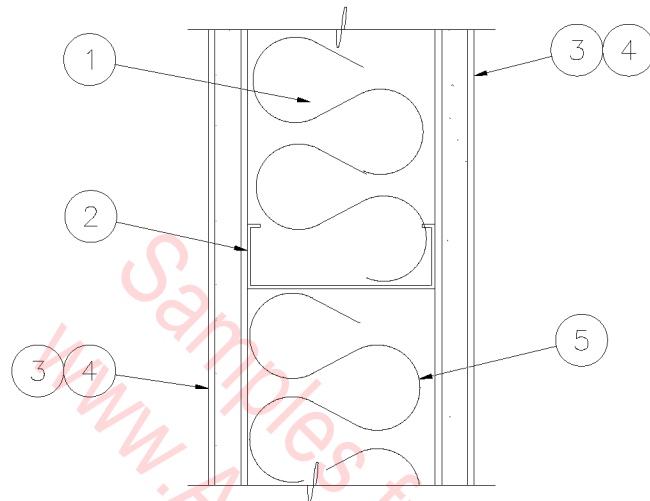
PLAN OR SECTION.



RECESS IN 1 HOUR WALL

3" = 1'-0"

07B-2013

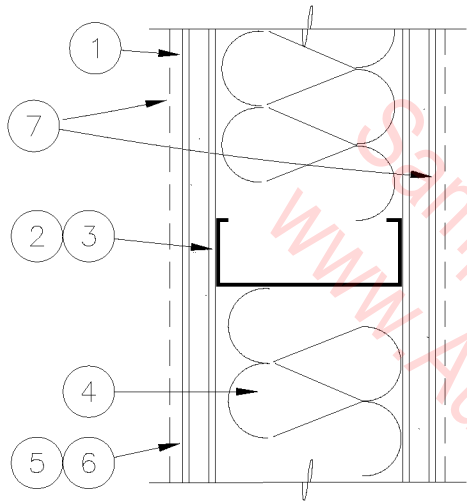


TWO HOUR RATED NONBEARING WALL ASSEMBLY, UL DESIGN NO. U491

1. FLOOR & CEILING RUNNER (NOT SHOWN) 25 GA. WITH 1" HIGH RETURN LEGS, 3-5/8" WIDE. ANCHOR TO FLOOR AND CEILING WITH FASTENERS AT 24" O.C.
2. 3-5/8" WIDE X 1-5/16 LEGS, 3/8" RETURN X 25 GA. METAL STUDS AT 16" O.C.
3. 3/4" TYPE "X" GYPSUM BOARD WITH 1" TYPE "S" NO. 6 DRYWALL SCREWS TO EACH STUD. SELF-TAPPING STEEL SCREWS AT 8" O.C. ALONG EDGES OF BOARD AND 12" O.C. IN THE FIELD. JOINTS STAGGERED ON OPPOSITE SIDES OF THE ASSEMBLY.
4. JOINT TAPE AND COMPOUND - PREMIXED JOINT COMPOUND APPLIED IN TWO COATS TO JOINTS AND SCREW HEADS; PAPER TAPE, 2" WIDE, EMBEDDED IN FIRST LAYER OF COMPOUND OVER ALL JOINTS IN CEILING SPACE, ADDITIONAL COMPOUND AND TEXTURE REQUIRED IN EXPOSED AREAS.
5. 3" 'THERMAFIBER SAFB' BATT INSULATION.

○ 2 HOUR WALL
 3" = 1'-0"

07B-2014

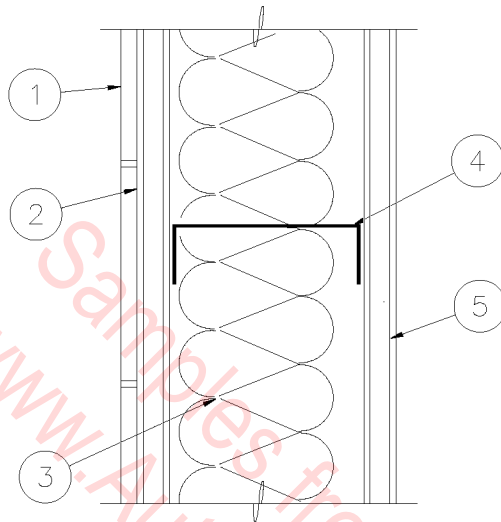


UL DESIGN NO. U465

1. ONE HOUR NONBEARING WALL ASSEMBLY
UL DESIGN NO. U465.
2. FLOOR & CEILING RUNNER (NOT SHOWN) 25 GA.
WITH 1" HIGH RETURN LEGS, 3-5/8" WIDE.
ANCHOR TO FLOOR AND CEILING WITH
FASTENERS AT 24" O.C.
3. 3-5/8" WIDE X 1-5/16" LEGS, 3/8" RETURN
X 25 GA. METAL STUDS AT 16" O.C.
1-5/16" LEGS, 3/8" RETURN.
4. R-11, 3-1/2" SOUND BATT INSULATION,
WHERE APPLICABLE.
5. 5/8" TYPE "X" GYPSUM BOARD WITH 1" TYPE "S"
SELF-TAPPING STEEL SCREWS AT 8" O.C.
ALONG EDGES OF BOARD AND 12" O.C.
IN THE FIELD. JOINTS STAGGERED ON
OPPOSITE SIDES OF THE ASSEMBLY.
6. JOINT TAPE AND COMPOUND - PREMIXED JOINT
COMPOUND APPLIED IN TWO COATS TO JOINTS
AND SCREW HEADS; PAPER TAPE, 2" WIDE,
EMBEDDED IN FIRST LAYER OF COMPOUND
OVER ALL JOINTS IN CEILING SPACE (FIRE TAPE),
ADDITIONAL COMPOUND AND TEXTURE REQUIRED
IN EXPOSED AREAS.
7. CERAMIC TILE ON GLASS MESH MORTAR UNIT
IN LIEU OF GYPSUM BOARD WHERE APPLICABLE.

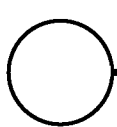
○ 1 HOUR WALL
3" = 1'-0"

07B-2015



UL DESIGN NO. U445 SIMILAR

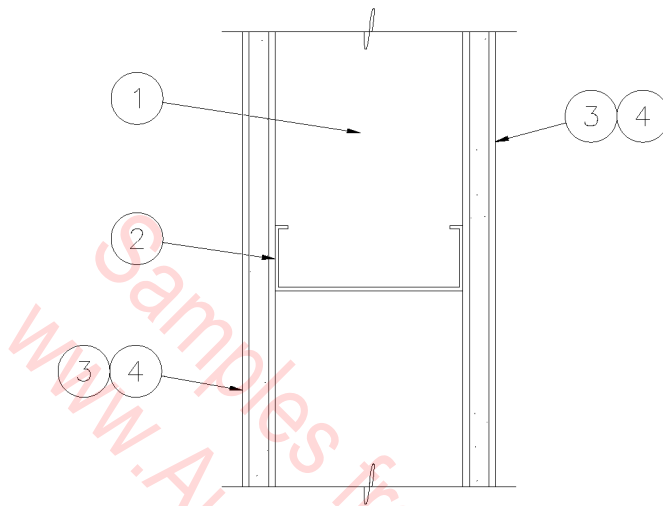
1. CERAMIC TILE.
2. 1/2" CEMENT BOARD ATTACHED TO STUDS WITH 1-5/8" LONG TYPE 'S' CORROSION RESISTANT SCREWS AT 6" O.C. TAPE JOINTS WITH GLASS FIBER MESH TAPE.
3. BATT INSULATION.
4. 3-5/8" METAL STUDS AT 16" O.C.
5. 5/8" TYPE 'X' GYPSUM BOARD ATTACHED TO STUDS WITH 1" LONG SELF-TAPPING SCREWS AT 8" O.C.



1 HOUR RESISTIVE WALL

3" = 1'-0"

07B-2016



ONE HOUR RATED NONBEARING WALL ASSEMBLY, UBC 43-B, 15-1.1

1. FLOOR & CEILING RUNNER (NOT SHOWN) 25 GA. WITH 1" HIGH RETURN LEGS, 3-5/8" WIDE. ANCHOR TO FLOOR AND CEILING WITH FASTENERS AT 24" O.C.
2. 3-5/8" WIDE X 1-5/16 LEGS, 3/8" RETURN X 25 GA. METAL STUDS AT 16" O.C.
3. 5/8" TYPE X GYPSUM BOARD WITH 1" TYPE S NO. 6 DRYWALL SCREWS TO EACH STUD. SELF-TAPPING STEEL SCREWS AT 8" O.C. ALONG EDGES OF BOARD AND 12" O.C. IN THE FIELD. JOINTS STAGGERED ON OPPOSITE SIDES OF THE ASSEMBLY.
4. JOINT TAPE AND COMPOUND - PREMIXED JOINT COMPOUND APPLIED IN TWO COATS TO JOINTS AND SCREW HEADS; PAPER TAPE, 2" WIDE, EMBEDDED IN FIRST LAYER OF COMPOUND OVER ALL JOINTS IN CEILING SPACE, ADDITIONAL COMPOUND AND TEXTURE REQUIRED IN EXPOSED AREAS, SEE SPECIFICATIONS AND ROOM FINISH SCHEDULE.

○
1 HOUR RESISTIVE WALL

3" = 1'-0"

07B-2017

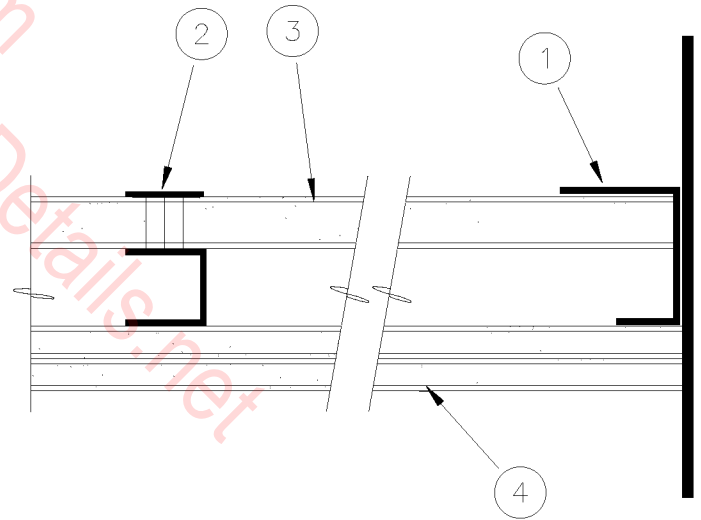
FIRE-RESISTIVE CONSTRUCTION

1. 'J' SHAPED RUNNER CHANNEL, 2-1/2" WIDE W/ UNEQUAL LEGS OF 1" AND 2", MIN. 24 GA. STEEL. RUNNER POSITIONED W/ SHORT LEG TOWARD FINISHED SIDE OF WALL. RUNNERS ATTACHED TO STRUCTURAL SUPPORT OR ADJACENT RUNNERS W/ STEEL FASTENERS LOCATED NOT GREATER THAN 2" FROM ENDS AND NOT GREATER THAN 24" O.C.
2. 2-1/2" WIDE 25 GA. STEEL "C-H" STUDS. MAX. 24" O.C.
3. 1" THICK GYP. BD. LINER PANELS BEARING U.L. CLASSIFICATION MARKING. EDGES INSERTED IN 'H' - SHAPED SECTION OF 'C-H' STUDS W/ FREE END OF PANEL ATTACHED TO LONG LEG OF J-RUNNER W/ 1-5/8" LONG TYPE "S" SELF-DRILLING STEEL SCREWS @ 12" O.C. MAX.
4. TWO LAYERS 5/8" TYPE "X" GYP. BD. BASE LAYER ATTACHED TO STUDS W/ 1" LONG TYPE S SELF-DRILLING STEEL SCREWS @ 24" O.C. ALONG THE EDGES AND IN THE FIELD OF THE BOARDS. FACE LAYER ATTACHED TO STUDS AND 'J' RUNNERS W/ 1-5/8" LONG TYPE S SELF-DRILLING STEEL SCREWS AT 12" O.C. ALONG THE EDGES AND IN THE FIELD OF THE BOARDS. STAGGER SCREWS AND PANEL JOINTS BETWEEN INNER AND OUTER LAYER.

NOTE: DETAIL PROVIDES 2-HR FIRE RESISTIVE SHAFT WALL ASSEMBLY PER U.L. DESIGN NO. U438

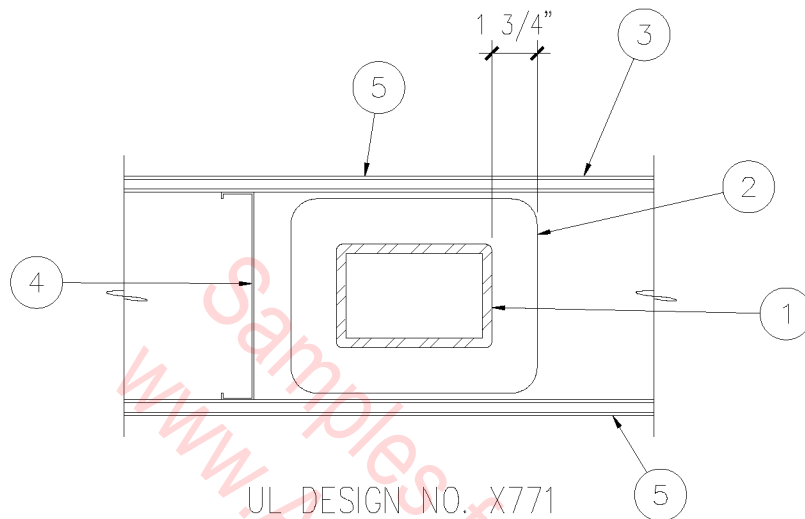
GENERAL NOTE

ALL PENETRATIONS OF FIRE-RESISTANT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS". THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL LISTING TO THE ARCHITECT, AND SUCH DRAWINGS SHALL BE AVAILABLE TO THE LOCAL BUILDING INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.



○ 2 HOUR SHAFT WALL
3" = 1'-0"

07B-2018

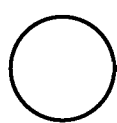
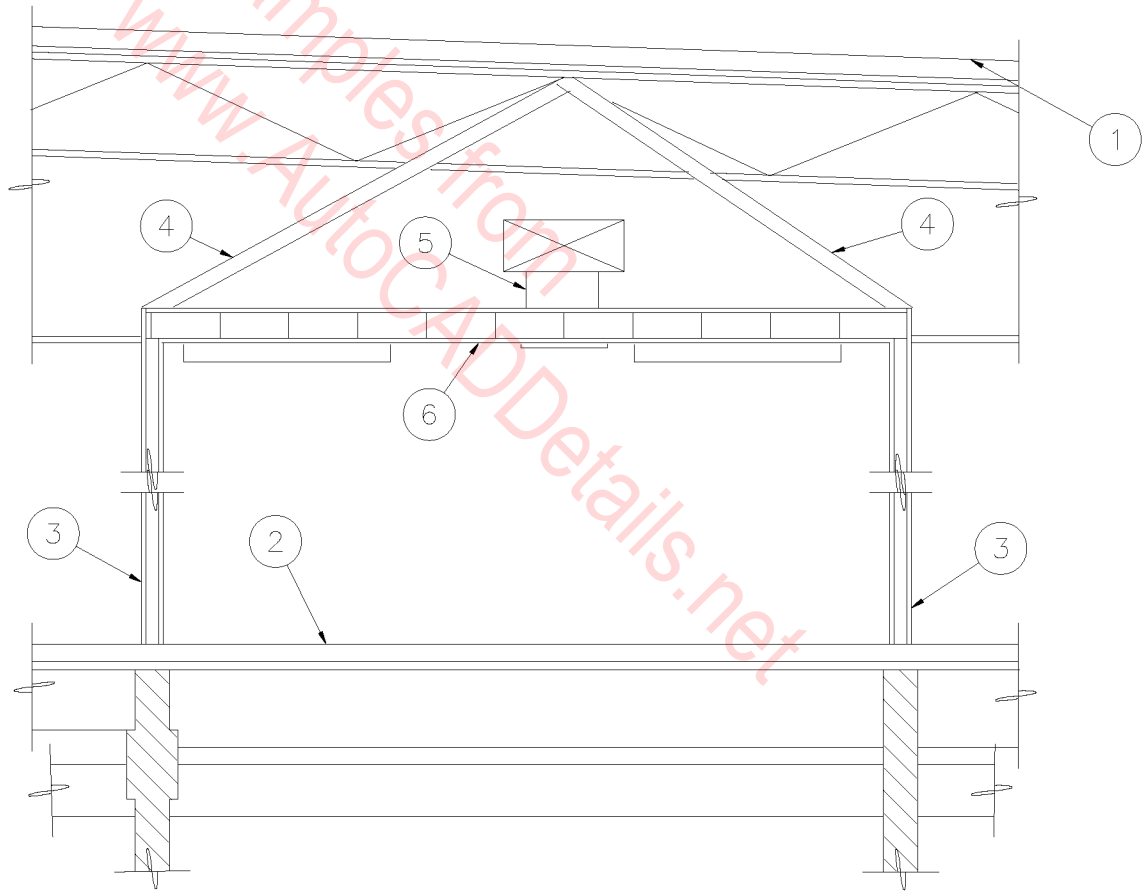


1. TUBE STEEL COLUMN.
2. CEMENTITIOUS MIXTURE – APPLIED BY MIXING WATER AND SPRAYING IN ONE OR MORE COATS TO STEEL SURFACE WHICH MUST BE CLEAN AND FREE OF DIRT, LOOSE SCALE AND OIL. MINIMUM AVERAGE AND INDIVIDUAL DENSITY OF 15/14 PCF RESPECTIVELY. FOR METHOD OF DENSITY DETERMINATION, SEE DESIGN INFORMATION SECTION, PRECEDING THESE DESIGNS.
APPLY 1-3/4 THICK UNIFORM COAT.
ZONOLITE CONSTRUCTION PRODUCTS DIVISION, W. R. GRACE & CO. TYPE MK-6CBF.
3. 1 HOUR WALL.
4. 8" 25 GA. METAL STUDS AT 16" O.C.
5. 5/8" TYPE "X" GYPSUM WALLBOARD.

○ 2 HOUR COLUMN
3" = 1'-0"

07B-2019

1. 2 HOUR RATED ROOF ASSEMBLY – LIGHT WEIGHT CONCRETE TOPPING ON STEEL DECK ON STEEL JOIST, UL DESIGN NO. P908.
2. 2 HOUR RATED FLOOR ASSEMBLY – 10' CONCRETE DOUBLE TEES WITH 4" CONCRETE TOPPING, UL DESIGN NO. J941.
3. 1 HOUR RATED WALL, 3-5/8" METAL STUDS AT 16" O.C. WITH 5/8" TYPE X GYPSUM WALLBOARD EACH SIDE.
4. 3-5/8 25 GAUGE METAL STUD BRACES AT 48" O.C.
5. PENETRATIONS THRU THE CEILING SHALL BE PROTECTED WITH EITHER FIRE DAMPERS OR UL LISTED POKE THRU DETAILS.
6. 1 HOUR RATED CEILING SYSTEM, METAL STUDS AT 16" O.C. WITH 5/8" TYPE X GYPSUM WALLBOARD EACH SIDE. FIRE TAPE ATTIC SIDE OF CEILING. SEE SPECIFICATIONS FOR DEPTH OF METAL STUD REQUIRED BY SPAN. SEE DETAIL 5 ON SHEET A902 FOR ADDITIONAL ONE HOUR REQUIREMENTS



1 HOUR ENCLOSURE

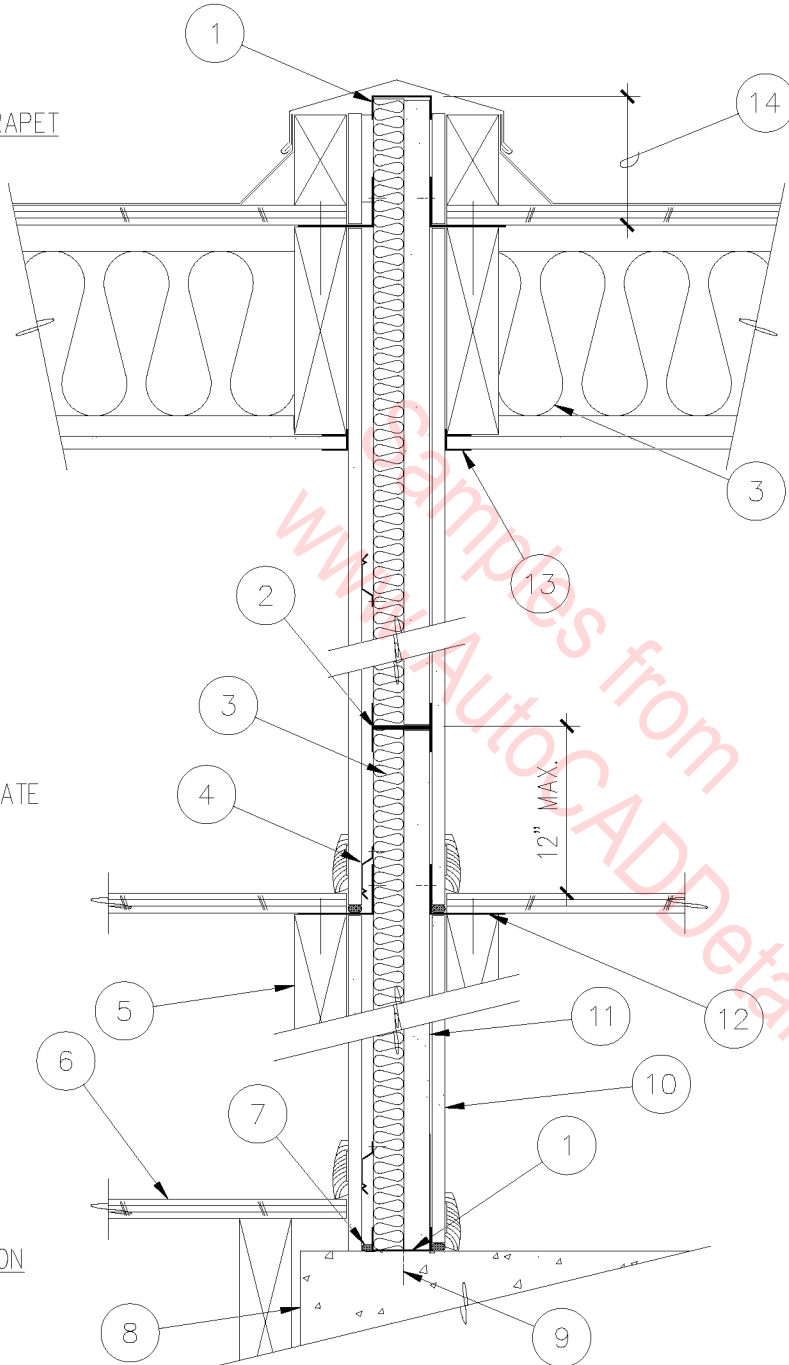
SCALE: 3" = 1'-0"

07B-2020

ROOF PARAPET

INTERMEDIATE FLOOR

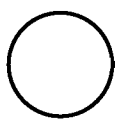
FOUNDATION



1. 2 1/2" USG STEEL C-RUNNERS.
2. (2) 2 1/2" USG STEEL C-RUNNERS.
3. THERMAFIBER SAFB.
4. RC-1 RESILIENT CHANNEL.
5. JOIST.
6. WOOD FLOORING.
7. SEALANT AS REQUIRED.
8. CONCRETE FLOOR OR FOUNDATION WALL.
9. SUITABLE FASTENERS AT 24" ON CENTER.
10. SHEETROCK BRAND GYPSUM, WATER RESISTANT, FIRECODE C CORE, GYPSUM PANELS EACH SIDE.
11. 1" SHEETROCK BRAND GYPSUM LINER PANELS.
12. .063" USG ALUMINUM ANGLE CLIPS ATTACHED TO JOIST WITH 1 1/4" TYPE W SCREWS.
13. SHEETROCK METAL TRIM.
14. VARIES BY CODE.

NOTES:

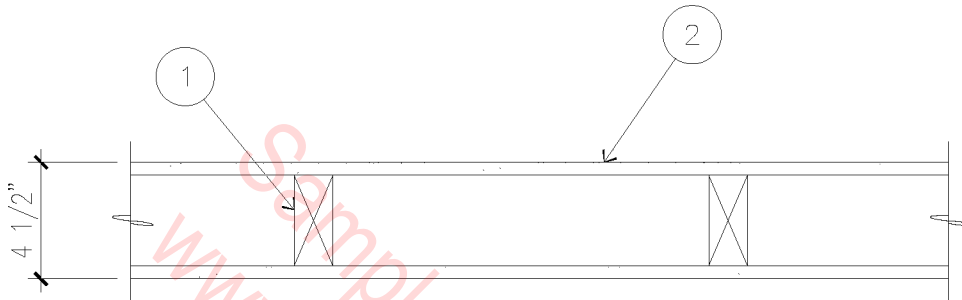
- FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.



2 HOUR CAVITY WALL

1 1/2" = 1'-0"

07B-2021



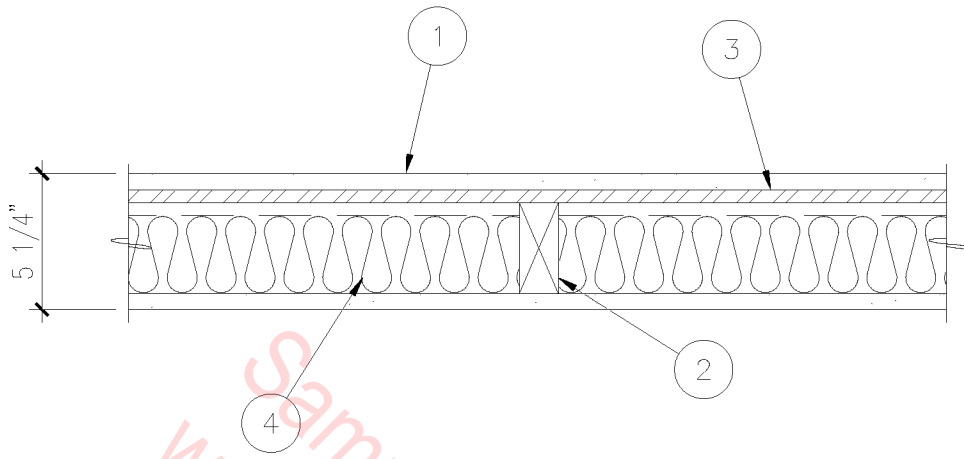
1. 2" x 4" WOOD STUD AT 16" ON CENTER.
2. 1/2" SHEETROCK BRAND GYPSUM PANELS
FIRECODE C CORE.

NOTES:

1. WALL PANELS TO BE NAILED AT 7" ON CENTER
WITH CEMENT COATED NAILS.
2. TAPE ALL JOINTS.

○ 45 MIN. — UL DES. U317
 1 1/2" = 1'-0"

07B-2022



1. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.
2. 2" x 4" WOOD STUD AT 16" OR 24" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER.
4. 3" THERMAFIBER SAFB.

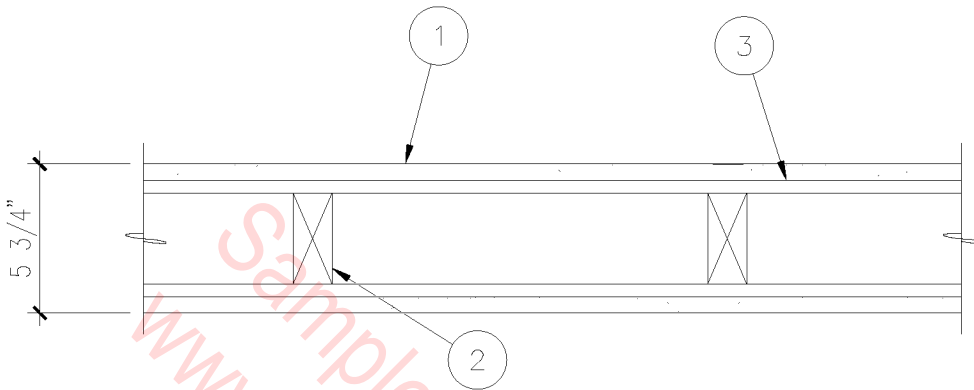
NOTES:

- A. PANELS ATTACHED TO RC-1 WITH 1" TYPE "S" SCREWS, ATTACH OPPOSITE SIDE DIRECTLY WITH 1 1/4" TYPE "W" SCREWS.
- B. END JOINTS BACK-BLOCKED WITH RC-1 CHANNEL.
- C. JOINTS FINISHED.
- D. CAULK PERIMETER.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- F. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 1 HOUR UL DES. U311

1 1/2" = 1'-0"

07B-2023



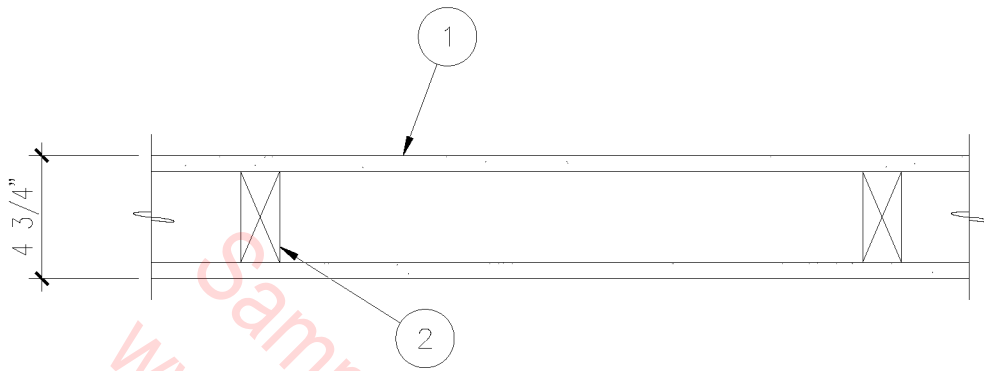
1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 2" x 4" WOOD STUD AT 16" O.C.
3. RC-1 CHANNEL BOTH SIDES SPACED HORIZONTALLY AT 24" ON CENTER.

NOTES:

- A. PANELS ATTACHED WITH 1" TYPE "S" SCREWS.
- B. CAULK PERIMETER.
- C. JOINTS FINISHED.
- D. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 1 HOUR T1396-OSU
 1 1/2" = 1'-0"

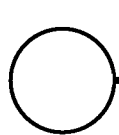
07B-2024



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS OR 5/8" SHEETROCK BRAND WATER RESISTANT FIRECODE CORE GYPSUM PANELS.
2. 2" x 4" WOOD STUD - SEE NOTES.

NOTES:

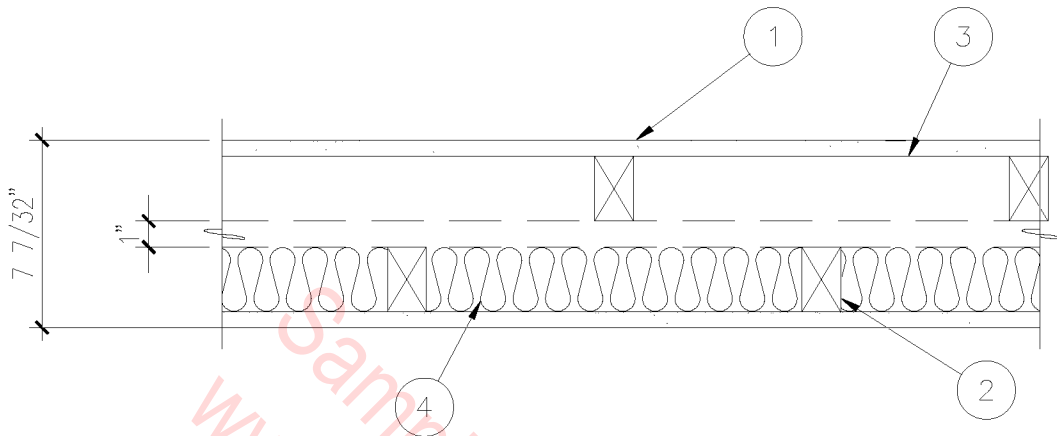
- A. PANELS NAILED AT 7" ON CENTER WITH 1 7/8" CEMENT COATED NAILS.
- B. UL DES U305 BASED ON 16" STUD SPACING, JOINTS EXPOSED OR FINISHED, PERIMETER CAULKED.
- C. UL DES U314 BASED ON 24" STUD SPACING, FINISHED JOINTS, PERIMETER CAULKED.



1 HOUR UL DES. U305/U314

1 1/2" = 1'-0"

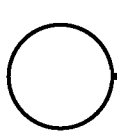
07B-2025



1. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS.
2. 2" x 3" NON-LOAD BEARING STAGGERED WOOD STUDS AT 16" ON CENTER.
3. 2" x 3" PLATES 1" APART.
4. 3" THERMAFIBER SAFB ONE SIDE.

NOTES:

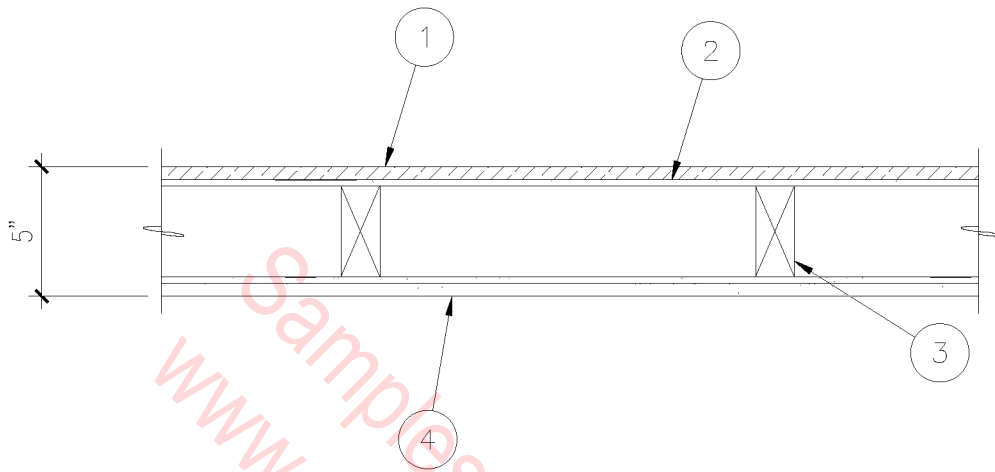
- A. PANELS NAILED AT 7" ON CENTER.
- B. JOINTS FINISHED.
- C. PERIMETER CAULKED.
- D. ESTIMATED FIRE RATING BASED ON UL DES U305.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.



1 HOUR EST. UL DES. U305

1 1/2" = 1'-0"

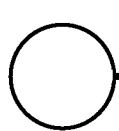
07B-2026



1. 1/2" PANEL FACE STRIP LAMINATE.
2. 1/4" SHEETROCK BRAND GYPSUM BOARD
BASE LAYER APPLIED VERTICALLY
WITH 4d COATED NAILS.
3. 2" x 4" WOOD STUD AT 16" ON CENTER.
4. 1/2" SHEETROCK BRAND FIRECODE C CORE
GYPSUM PANELS .

NOTES:

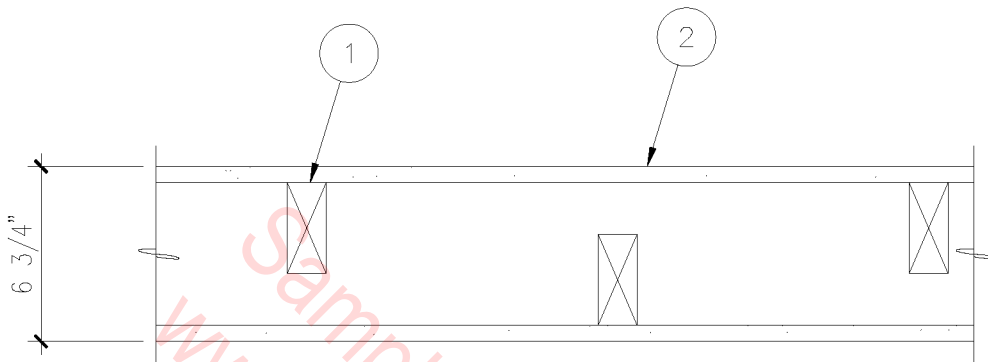
- A. JOINTS STAGGERED AND FINISHED.
- B. PERIMETER CAULKED.
- C. ESTIMATED FIRE RATING BASED
ON UL DES UL305.
- D. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL
REQUIRE LATERAL BRACING AND OFFER
ESTIMATED FIRE RATING.



1 HOUR EST. UL DES U305

1 1/2" = 1'-0"

07B-2027



1. 2" x 4" WOOD STUDS STAGGERED AT 24" O.C. (MAX.) ON 2" x 6" COMMON PLATE.
2. 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.

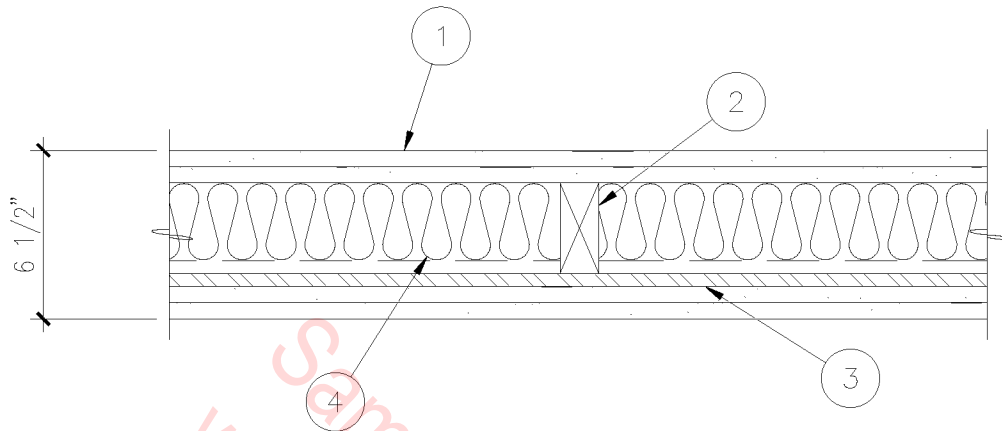
NOTES:

- A. JOINTS FINISHED.
- B. PERIMETER CAULKED.
- C. PANELS ATTACHED WITH 6d COATED NAILS OR 1 7/8" SCREWS AT 7" ON CENTER.

○ 1 HOUR UL DES U340

1 1/2" = 1'-0"

07B-2028



1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS BOTH SIDES.
2. 2" x 4" WOOD STUD AT 16" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER.
4. 3" THERMAFIBER SAFB.

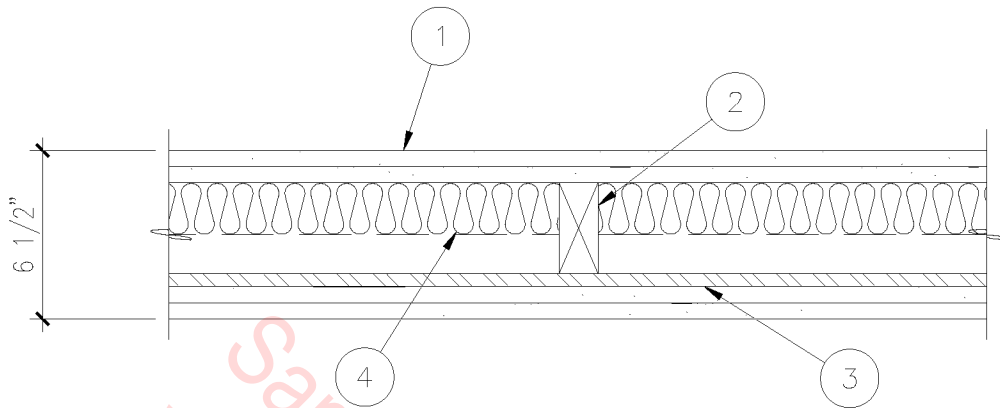
NOTES:

- A. BOTH BASE LAYERS APPLIED VERTICALLY AND FACE LAYERS APPLIED HORIZONTALLY.
- B. RESILIENT SIDE PANELS SCREW ATTACHED, OPPOSITE SIDE NAIL ATTACHED.
- C. BASE LAYERS PERIMETER CAULKED.
- D. JOINTS FINISHED.
- E. END JOINTS BACK-BLOCKED WITH RC-1 CHANNEL.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- G. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 2 HOUR UL DES U334

1 1/2" = 1'-0"

07B-2029



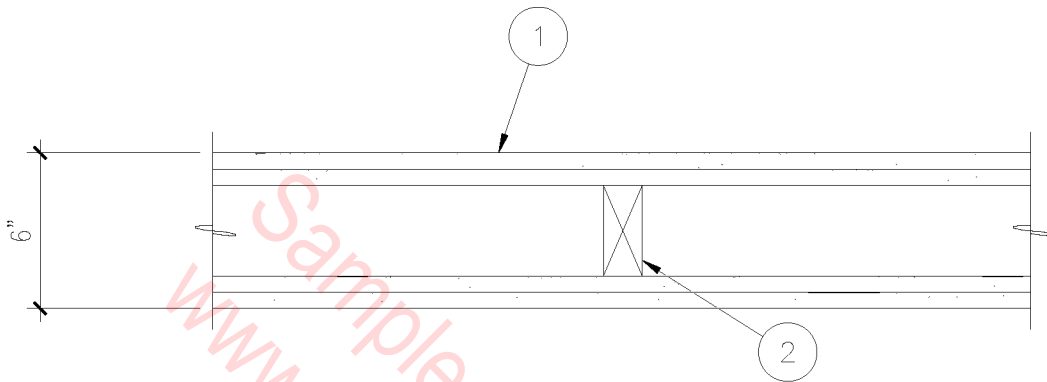
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS BOTH SIDES.
2. 2" x 4" WOOD STUD AT 16" ON CENTER.
3. RC-1 CHANNEL ONE SIDE SPACED AT 24" ON CENTER.
4. 2" THERMAFIBER SAFB.

NOTES:

- A. BOTH BASE LAYERS APPLIED VERTICALLY AND FACE LAYERS APPLIED HORIZONTALLY.
- B. RESILIENT SIDE PANELS SCREW ATTACHED, OPPOSITE SIDE NAIL ATTACHED.
- C. RESILIENT LAYERS PERIMETER CAULKED.
- D. JOINTS FINISHED.
- E. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.
- F. ASSEMBLIES WITH RC-1 RESILIENT CHANNEL REQUIRE LATERAL BRACING AND OFFER ESTIMATED FIRE RATING.

○ 2 HOUR T-4799-OSU
 1 1/2" = 1'-0"

07B-2030



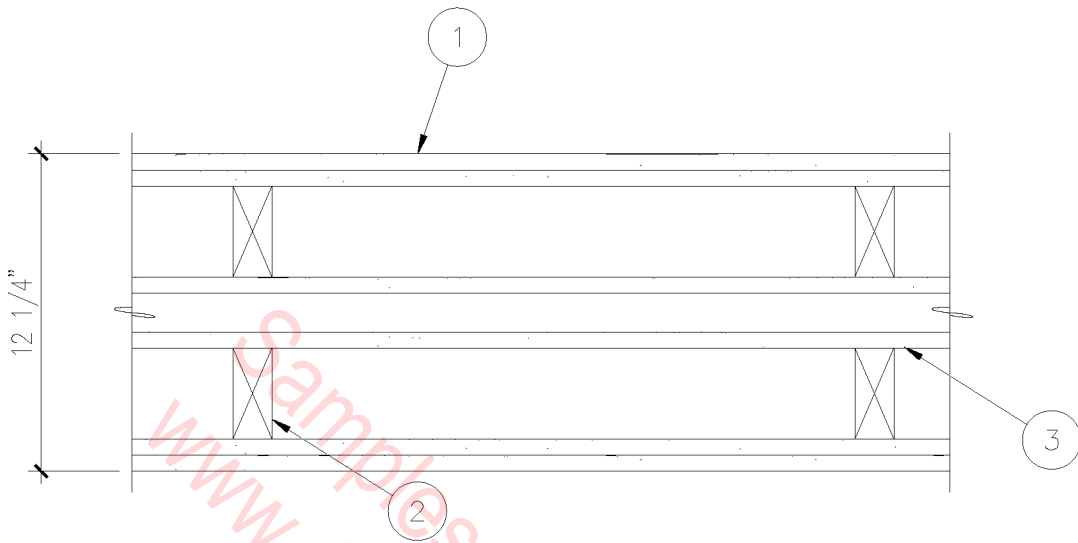
1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS OR 5/8" SHEETROCK BRAND WATER RESISTANT FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. 2" x 4" WOOD STUD AT 16" ON CENTER.

NOTES:

- A. BASE LAYER ATTACHED WITH 1 7/8" NAILS AT 6" ON CENTER.
- B. FACE LAYER ATTACHED WITH 2 3/8" NAILS AT 8" ON CENTER.
- C. JOINTS FINISHED.

○ 2 HOUR UL DES U301
 1 1/2" = 1'-0"

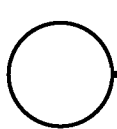
07B-2031



1. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS BOTH OUTER SIDES. BRAND WATER RESISTANT FIRECODE CORE GYPSUM PANELS EACH SIDE.
2. TWO ROWS 2" x 4" WOOD STUD AT 24" ON CENTER.
3. 5/8" SHEETROCK BRAND FIRECODE CORE GYPSUM PANELS INSIDE BOTH SIDES.

NOTES:

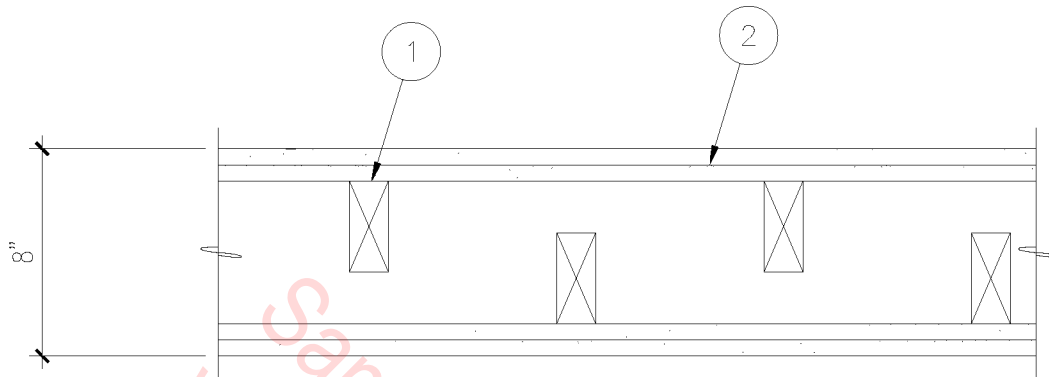
- A. BASE LAYER ATTACHED WITH 6d COATED NAILS AT 6" ON CENTER.
- B. FACE LAYER ATTACHED WITH 8d COATED NAILS AT 8" ON CENTER.
- C. JOINTS FINISHED.
- D. PERIMETER CAULKED.



2 HOUR UL DES U342

1 1/2" = 1'-0"

07B-2032



1. 2" x 4" WOOD STUDS STAGGERED AT 16" ON CENTER ON 2" x 6" COMMON PLATE.
2. TWO LAYERS 5/8" SHEETROCK BRAND FIRECODE C CORE GYPSUM PANELS.

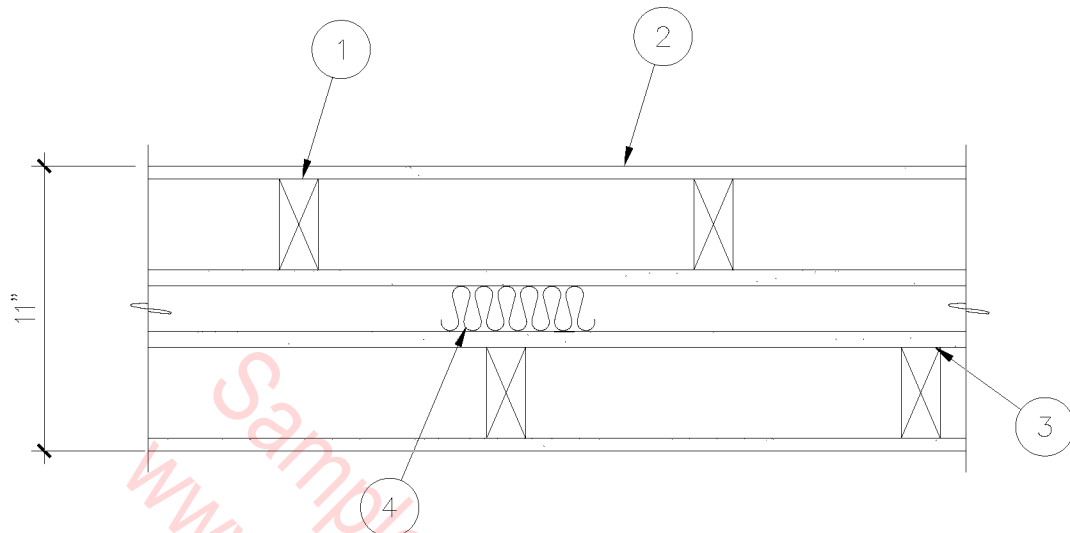
NOTES:

- A. JOINTS FINISHED.
- B. PERIMETER CAULKED.
- C. BASE LAYER ATTACHED WITH 6d COATED NAILS AT 6" ON CENTER.
- D. FACE LAYER ATTACHED WITH 8d COATED NAILS AT 8" ON CENTER.
- E. ESTIMATED FIRE RATING BASED ON UL DES U301.

○ 2 HOUR EST. UL DES U301

1 1/2" = 1'-0"

07B-2033



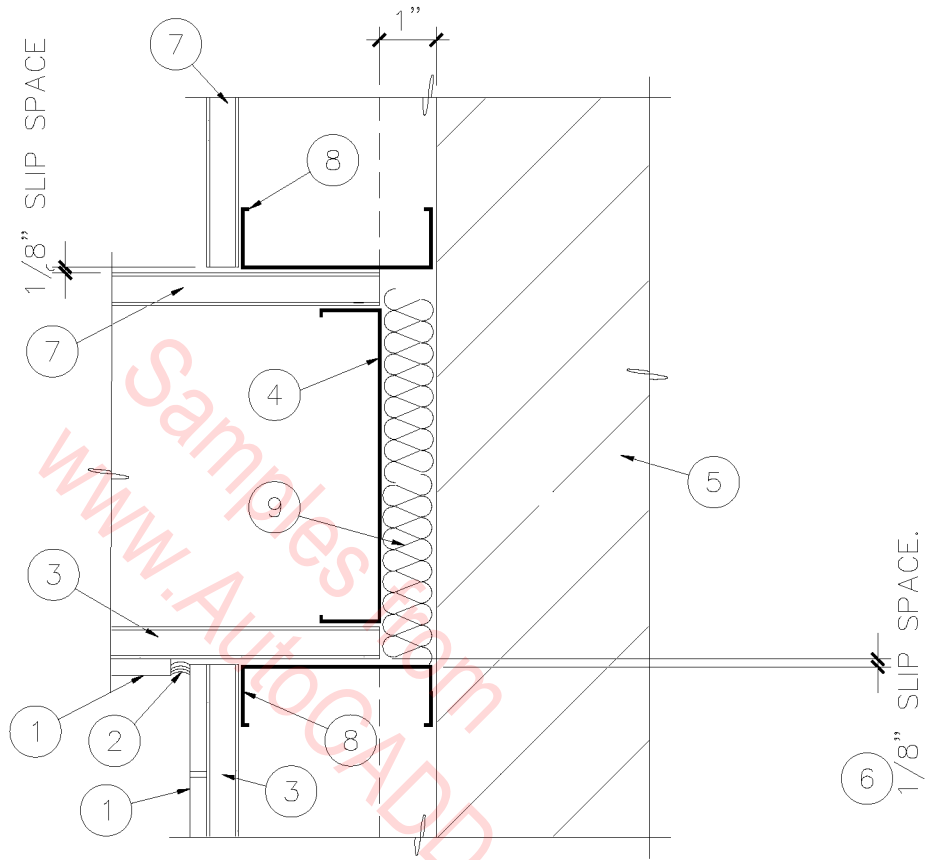
1. 2" x 4" WOOD STUDS AT 16" ON CENTER, STAGGERED IN OPPOSITE WALL.
2. 1/2" SHEETROCK BRAND GYPSUM BOARD BOTH EXTERIOR SIDES.
3. 5/8" SHEETROCK BRAND FIRECODE C CORE BOTH INTERIOR SIDES.
4. THERMAFIBER FIRE BLOCKING AT 9'-0" ON CENTER EACH WAY.

NOTES:

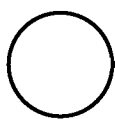
- A. JOINTS FINISHED.
- B. PERIMETER CAULKED BOTH SIDES OF INTERIOR PANELS.
- C. INTERIOR LAYERS ATTACHED WITH 6d COATED NAILS AT 6" ON CENTER.
- D. EXTERIOR LAYERS ATTACHED WITH 8d COATED NAILS AT 8" ON CENTER.
- E. ESTIMATED FIRE RATING BASED ON BEARING WALL UL DES U320.
- F. FIBERGLASS INSULATION CAN NOT BE SUBSTITUTED FOR THERMAFIBER INSULATION.

○ 1 1/2 HOUR UL DES U320
 1 1/2" = 1'-0"

07B-2034



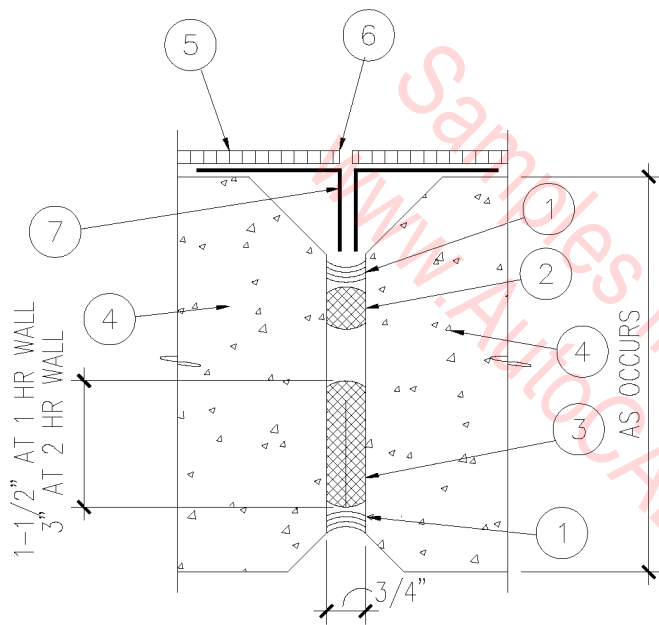
1. CERAMIC TILE.
2. SEALANT.
3. 5/8" MOISTURE-RESISTANT GYPSUM BOARD.
4. METAL STUD. DO NOT ATTACH TO MASONRY WALL.
5. MASONRY WALL.
6. EXPANSION JOINT SPACE.
7. 5/8" TYPE 'X' GYPSUM BOARD.
8. METAL STUDS.
9. FIRE SAFING MATERIAL.



1 HOUR EXPANSION JOINT

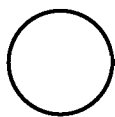
SCALE: 3" = 1'-0"

07B-3001



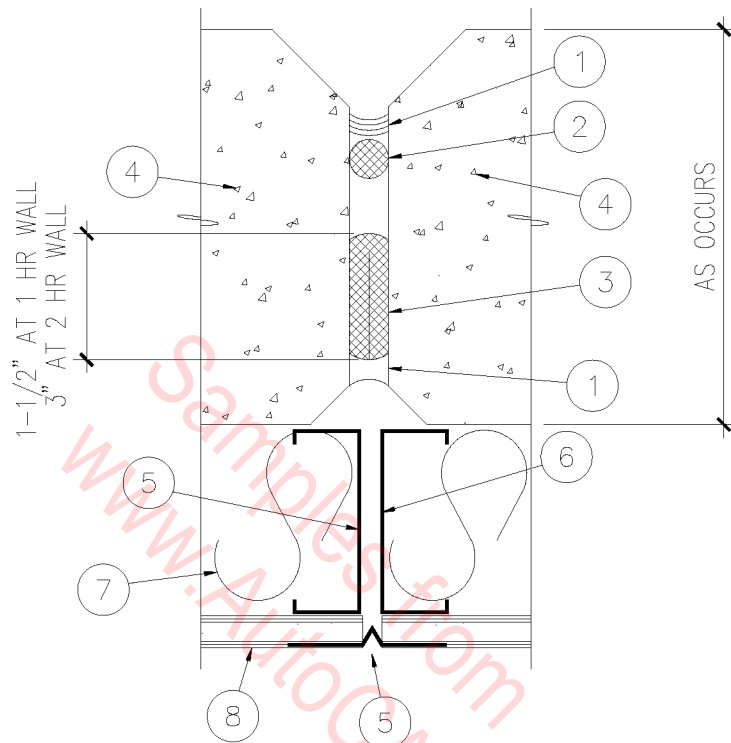
1. FIRE STOPPING SEALANT, 'TREMCO' DYMERIC, POLYTREMDYNE TERPOLYMER.
 2. JOINT FILLER - POLYETHYLENE CLOSED-CELL FOAM, BY 'DOW CHEMICAL'.
 3. 'CERABLANKET-FS' - CERAMIC FIBER BLANKET INSULATION, BY 'JOHNS-MANVILLE'.
 4. CONCRETE WALL.
 5. CERAMIC TILE ON THIN SET CEMENT MORTAR.
 6. SEALANT.
 7. METAL LATH CORNER
- ICBO EVALUATION REPORT NO. 3198.

CONTROL JOINT @ TILT UP WALL

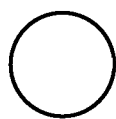


3" = 1'-0"

07B-3002



1. FIRE STOPPING SEALANT, 'TREMCO' DYMETRIC, POLYTREM DYNE TERPOLYMER.
2. JOINT FILLER - POLYETHYLENE CLOSED-CELL FOAM, BY 'DOW CHEMICAL'.
3. 'CERABLANKET-FS' - CERAMIC FIBER BLANKET INSULATION, BY 'JOHNS-MANVILLE'.
4. CONCRETE WALL.
5. METAL CONTROL JOINT.
6. METAL STUDS.
7. R-11 BATT INSULATION.
8. 5/8" GYPSUM BOARD.

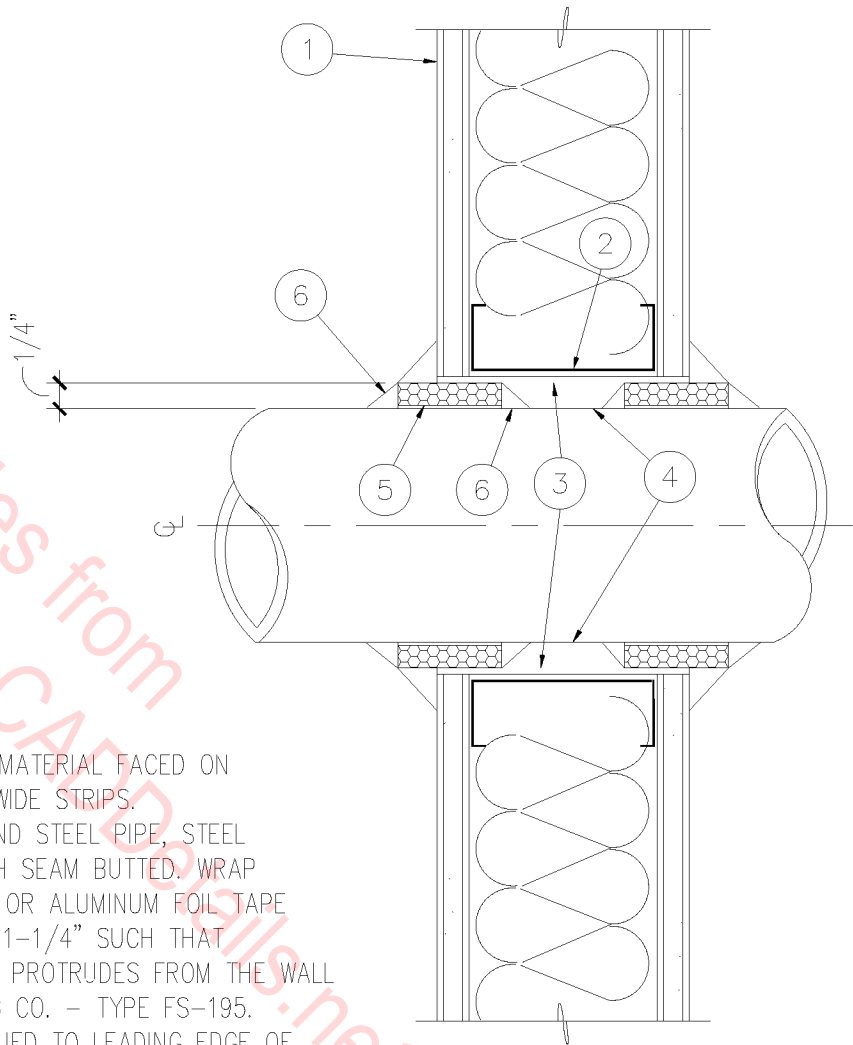


RATED CONTROL JOINT

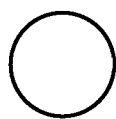
SCALE: 3" = 1'-0"

07B-3003

Samples from
www.AutoCADDetails.net



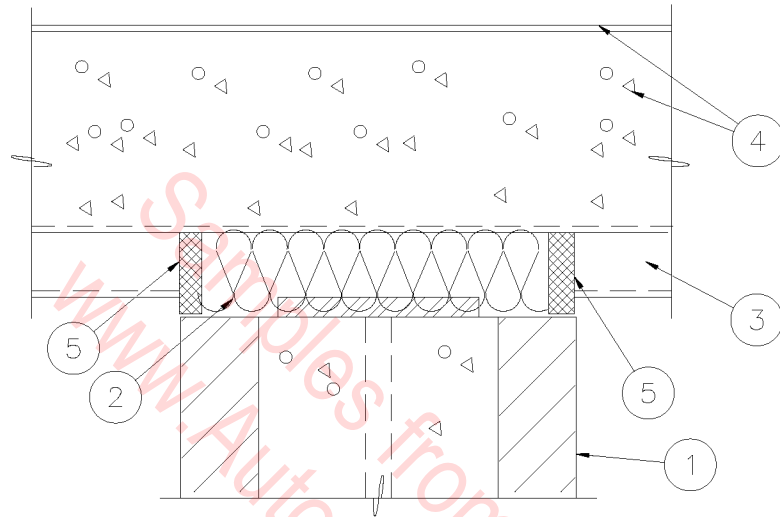
1. ONE HOUR WALL, UL DESIGN NO. U465.
2. 25 GA. G.I. RUNNER.
3. 22 GA. G.I. SLEEVE.
4. STEEL PIPE OR CONDUIT.
5. WRAP STRIP - 1/4" INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP TIGHTLY WRAPPED AROUND STEEL PIPE, STEEL CONDUIT OR PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROXIMATELY 1-1/4" SUCH THAT APPROXIMATELY 3/4" OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE. MINNESOTA MINING & MANUFACTURING CO. - TYPE FS-195.
6. CAULK - MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO LEADING EDGE OF WRAP STRIP PRIOR TO INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE. AFTER INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE A NOMINAL 1/4" DIA. CONTINUOUS BEAD IS TO BE APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED EDGE OF THE STRIP LAYER APPROXIMATELY 3/4" FROM THE WALL SURFACE. MINNESOTA MINING & MANUFACTURING CO. - TYPES CP-25 S/L, CP-25 N/S UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 148.



PIPE THRU RESIST. WALL

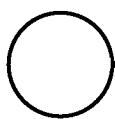
SCALE: 3" = 1'-0"

07B-3004



UL THROUGH-PENETRATION FIRESTOP SYSTEMS DESIGN NO. 327

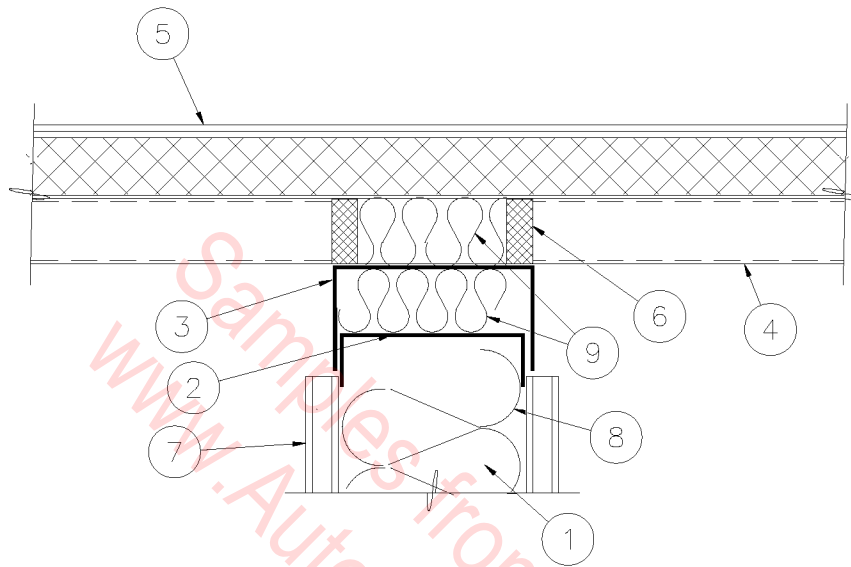
1. RATED C.M.U. WALL.
2. FIRE SAFING INSULATION.
3. METAL DECK.
4. CLASS A ROOFING SYSTEM OVER LIGHT WEIGHT CONCRETE FILL.
5. 1/2" 'TREMCO' FYRE-SIL SEALANT.



RESISTIVE WALL AT ROOF

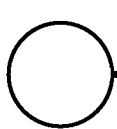
SCALE: 3" = 1'-0"

07B-3005



UL DESIGN NO. U465 ONE HOUR RATED WALL
 UL THROUGH-PENETRATION FIRESTOP SYSTEM DESIGN NO. 327

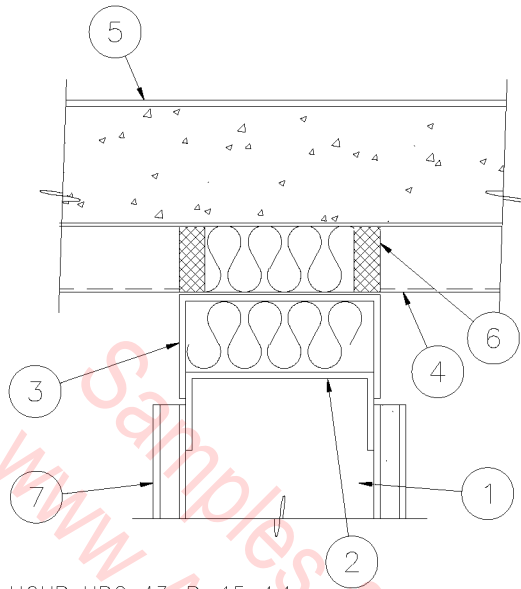
1. 3 5/8" METAL STUDS AT 16" O.C.
2. METAL RUNNER.
3. METAL RUNNER WITH 2" LEG.
4. METAL DECK.
5. ROOFING SYSTEM.
6. 1/2" 'TREMCO' FYRE-SIL SEALANT ON EACH SIDE OF FIRE SAFING.
7. 5/8" TYPE "X" GYPSUM BOARD.
8. R-11 3 1/2" BATT SOUND INSULATION WHERE APPLICABLE.
9. FIRE SAFING INSULATION.



WALL AT ROOF DECK

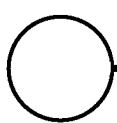
SCALE: 3" = 1'-0"

07B-3006



ONE HOUR UBC 43-B, 15-1.1
 UL THROUGH-PENETRATION FIRESTOP SYSTEM DESIGN NO. 327

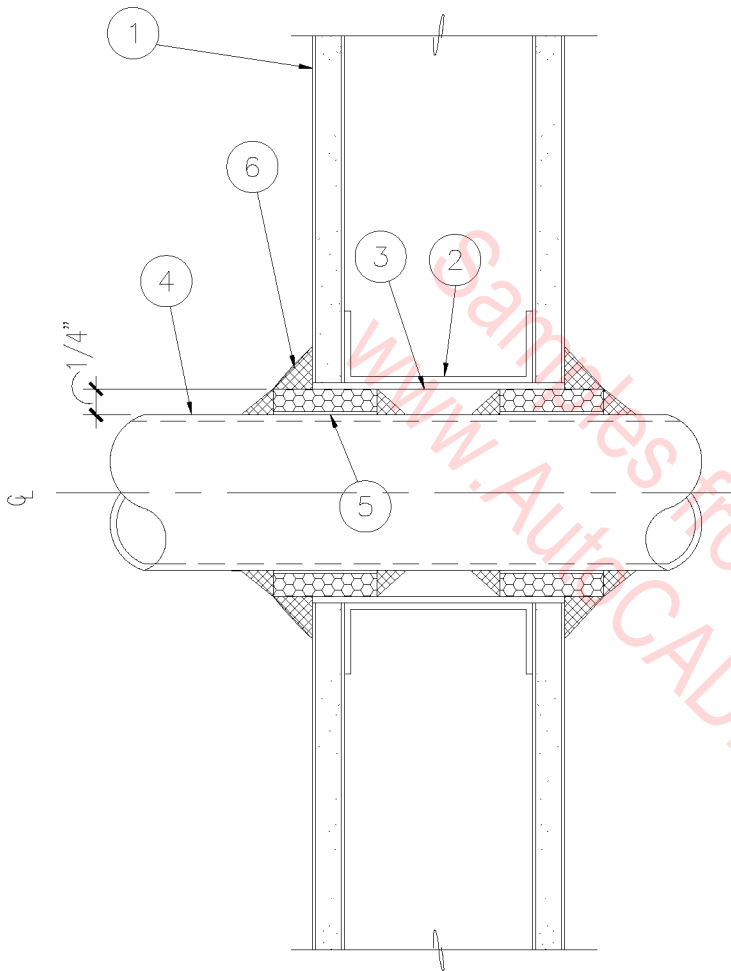
1. 3 5/8" METAL STUDS AT 16" O.C.
2. METAL RUNNER.
3. METAL RUNNER WITH 2" LEG.
4. METAL DECK.
5. CLASS "A" ROOFING SYSTEM ON LIGHT WEIGHT CONCRETE.
6. 1/2" 'TREMCO' FYRE-SIL SEALANT ON EACH SIDE OF FIRE SAFING MATERIAL.
7. 5/8" TYPE "X" GYPSUM BOARD.
8. FIRE SAFING INSULATION.



1 HR. WALL AT ROOF

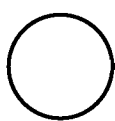
SCALE: 3" = 1'-0"

07B-3007



1. ONE HOUR WALL, UBC 43-B, 15-1.1.
2. 25 GA. G.I. RUNNER.
3. 22 GA. G.I. SLEEVE.
4. STEEL PIPE OR CONDUIT.
5. WRAP STRIP - 1/4" INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP TIGHTLY WRAPPED AROUND STEEL PIPE, STEEL CONDUIT OR PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROXIMATELY 1-1/4" SUCH THAT APPROXIMATELY 3/4" OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE.
MINNESOTA MINING & MANUFACTURING CO. TYPE FS-195.
6. CAULK - MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO LEADING EDGE OF WRAP STRIP PRIOR TO INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE. AFTER INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE A NOMINAL 1/4" DIA. CONTINUOUS BEAD IS TO BE APPLIED TO THE WRAP STRIP / WALL INTERFACE AND TO THE EXPOSED EDGE OF THE STRIP LAYER APPROXIMATELY 3/4" FROM THE WALL SURFACE.
MINNESOTA MINING & MANUFACTURING CO. TYPES CP-25 S/L, CP-25 N/S.

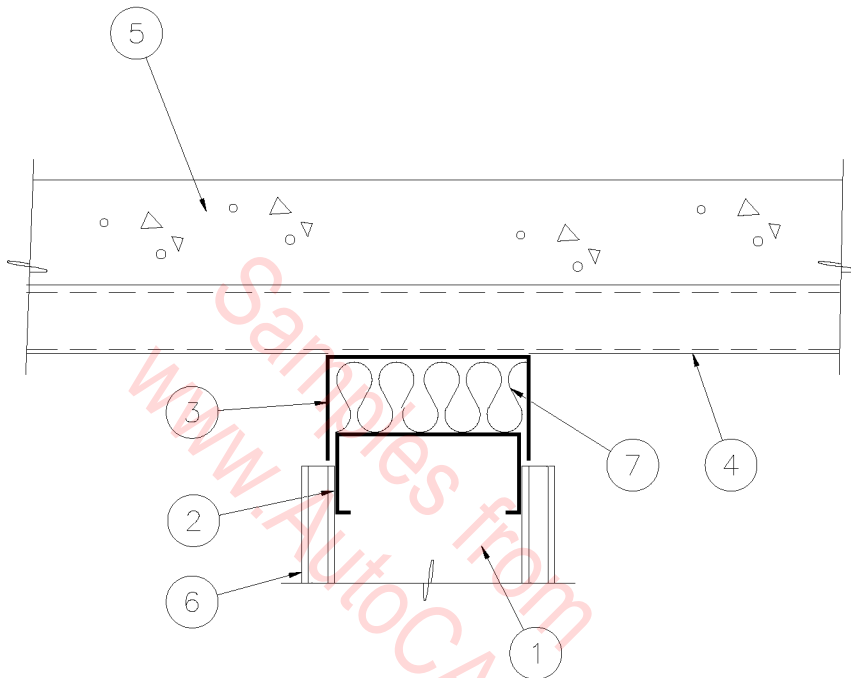
UL THROUGH-PENETRATION FIRESTOP SYSTEMS
(XHEZ) SYSTEM NO. 148



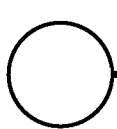
CONDUIT PENETRATION

3" = 1'-0"

07B-3008



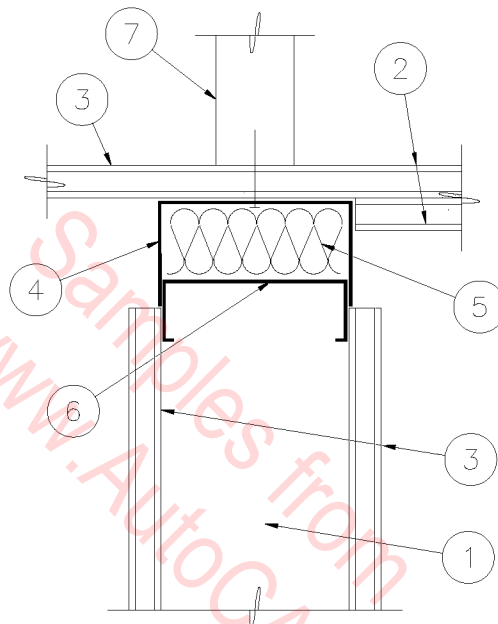
- | | |
|--------------------------------------|-----------------------------------|
| 1. 3 5/8" METAL STUDS AT
16" O.C. | 6. 5/8" TYPE "X" GYPSUM
BOARD. |
| 2. METAL RUNNER. | 7. FIRE SAFING MATERIAL. |
| 3. METAL RUNNER WITH 2" LEG. | |
| 4. METAL DECK. | |
| 5. LIGHT WEIGHT CONCRETE. | |



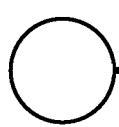
1 HR. WALL AT DECK

SCALE: 1" = 1'-0"

07B-3009



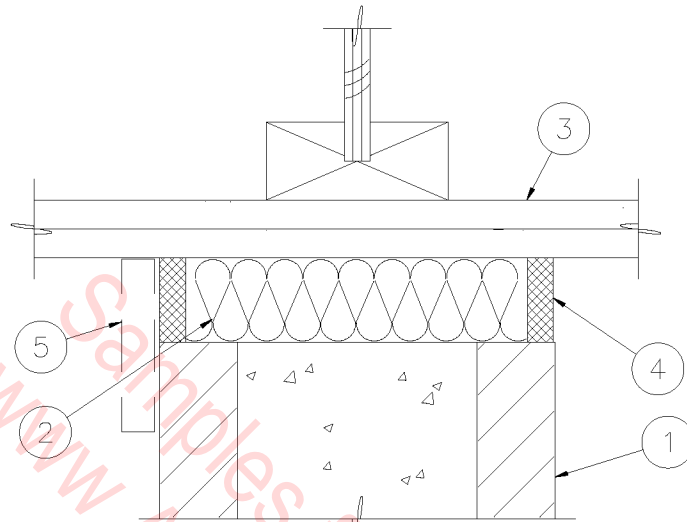
1. 1 HOUR PARTITION. UL DESIGN NO. U465.
2. (2) LAYERS, 5/8" TYPE 'X' GYPSUM BOARD.
3. 5/8" TYPE 'X' GYPSUM BOARD.
4. METAL RUNNER WITH 2" LEG.
5. FIRE SAFING INSULATION.
6. METAL RUNNER.
7. JOIST.



1 HOUR WALL AT CEILING

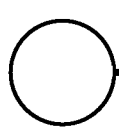
SCALE: 3" = 1'-0"

07B-3010



UL THROUGH-PENETRATION FIRESTOP SYSTEMS DESIGN NO. 327.

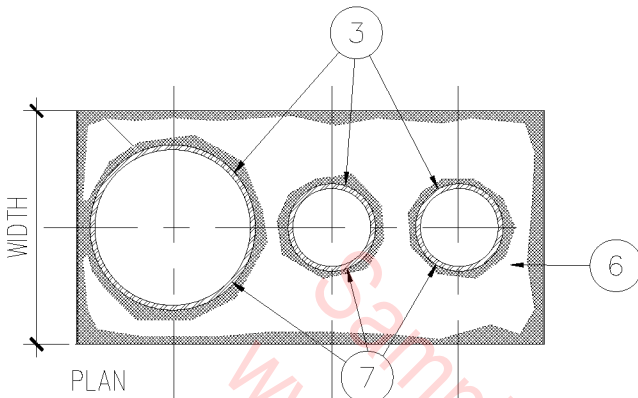
1. FIRE RESISTANT MASONRY WALL UL NO. U905.
2. FIRE SAFING INSULATION.
3. COMPOSITE SHEET ROOFING SYSTEM ON PLYWOOD DECK OR (2) LAYERS 5/8" TYPE 'X' GYPSUM BOARD, ATTACHED TO UNDERSIDE OF STRUCTURAL TRUSSES.
4. 1/2" 'TREMCO' FYRE-SIL SEALANT.
5. 5/8" TYPE 'X' GYPSUM BOARD, CONTINUOUS AT ALL EXPOSED LOCATIONS.



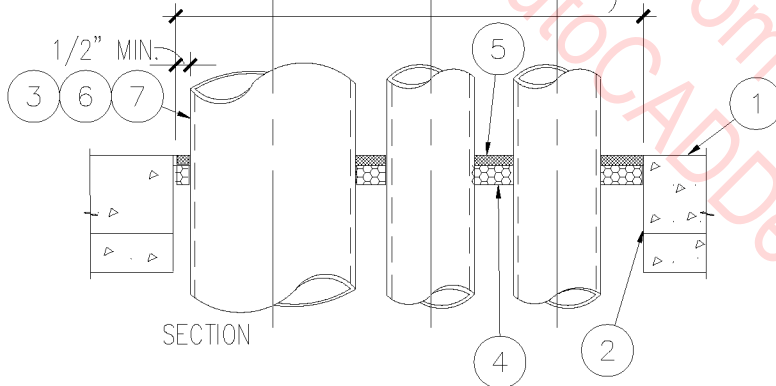
WALL @ ROOF DECK

3" = 1'-0"

07B-3011



LENGTH = 24" MAX. X WIDTH = 288 SQ INCHES MAX.



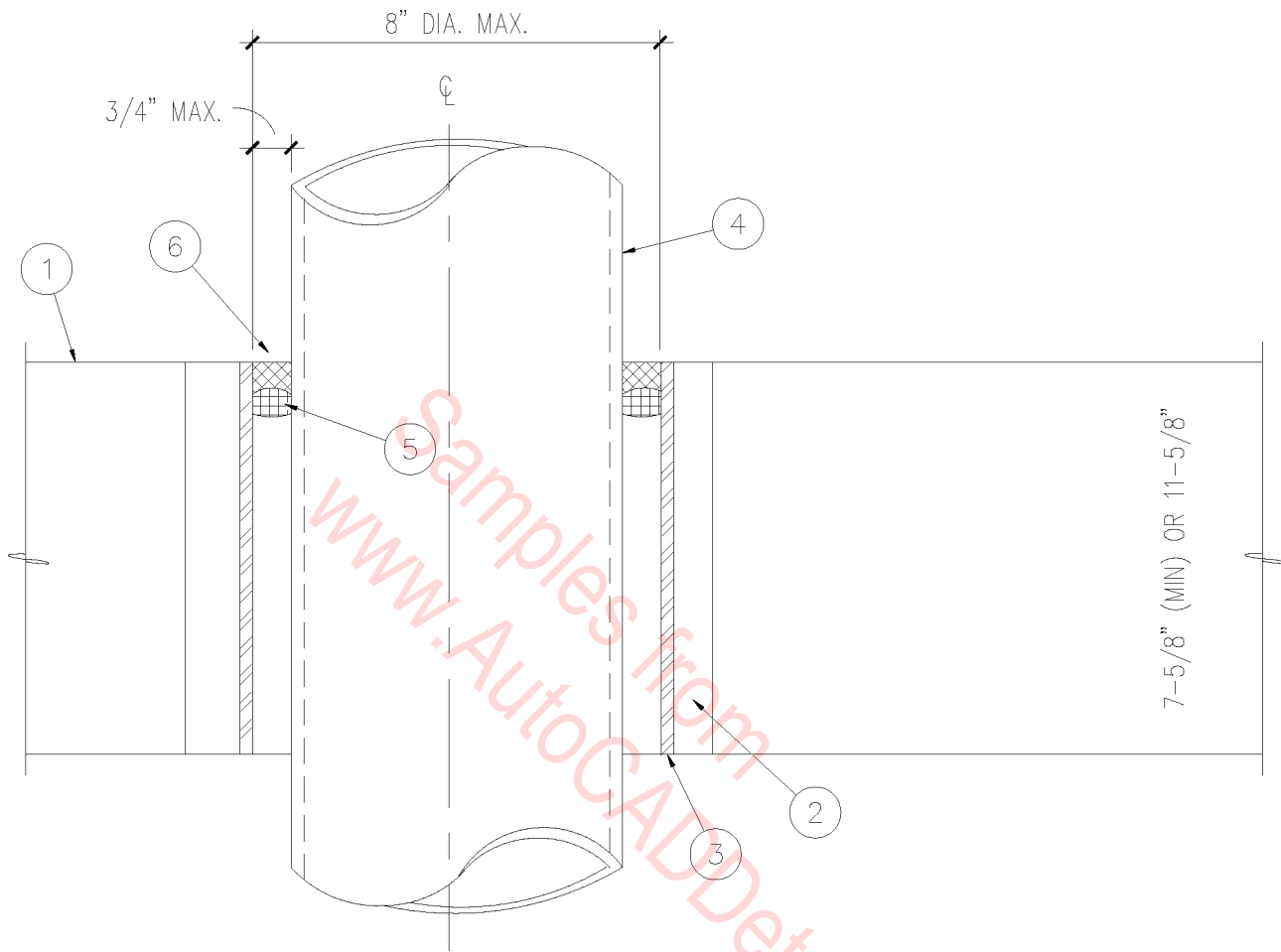
1. PRECAST CONCRETE DOUBLE TEE WITH 4" CONCRETE TOPPING
2 HOUR RATED, UL DESIGN NO. J941.
2. FORM SMOOTH OPENING THRU FLOOR WITH CONCRETE TOPPING.
3. 8" DIA STEEL PIPE, SCHEDULE 40, OR SMALLER.
4. FORMING MATERIAL.
5. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.
6. A MAXIMUM OF THREE PENETRATING ITEMS MAY BE INSTALLED WITHIN THE OPENING. OF THE THREE PENETRATING ITEMS, ONLY ONE OF THE PIPES CAN HAVE A DIAMETER GREATER THAN 4".
7. 4" DIA COPPER PIPE OR SMALLER.

ASTM-E814 (UL 1479) AND
UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 326

2 HR PIPE PENETRATION

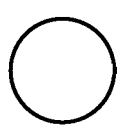
SCALE: 1" = 1'-0"

07B-3012



ASTM-E814 (UL 1479) AND
UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

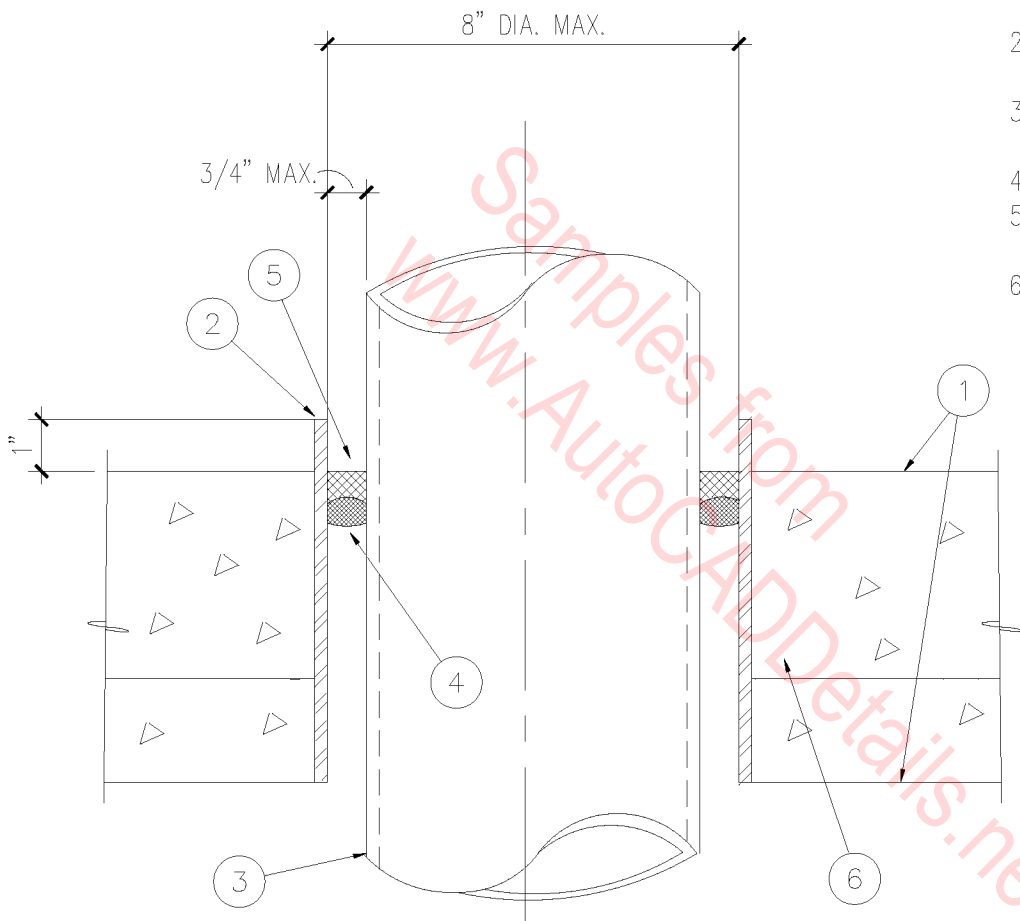
1. 8" CONCRETE MASONRY UNIT OR CONCRETE - 1 OR 2 HOUR WALL.
2. ENCASE SLEEVE IN GROUT.
3. STEEL PIPE SLEEVE - SCHEDULE 40.
4. 6" DIA MAX STEEL PIPE OR CONDUIT.
5. POLYURETHANE BACKER ROD.
6. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.



1 OR 2 HR PENETRATION

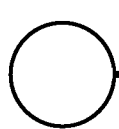
SCALE: 3" = 1'-0"

07B-3013



1. PRECAST CONCRETE DOUBLE TEE WITH 4" CONCRETE TOPPING UL DESIGN NO. J941.
2. STEEL PIPE SLEEVE SCHEDULE 40.
3. 6" DIA (MAX) STEEL PIPE OR CONDUIT.
4. POLYURETHANE BACKER ROD.
5. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.
6. ENCASE SLEEVE IN CONCRETE.

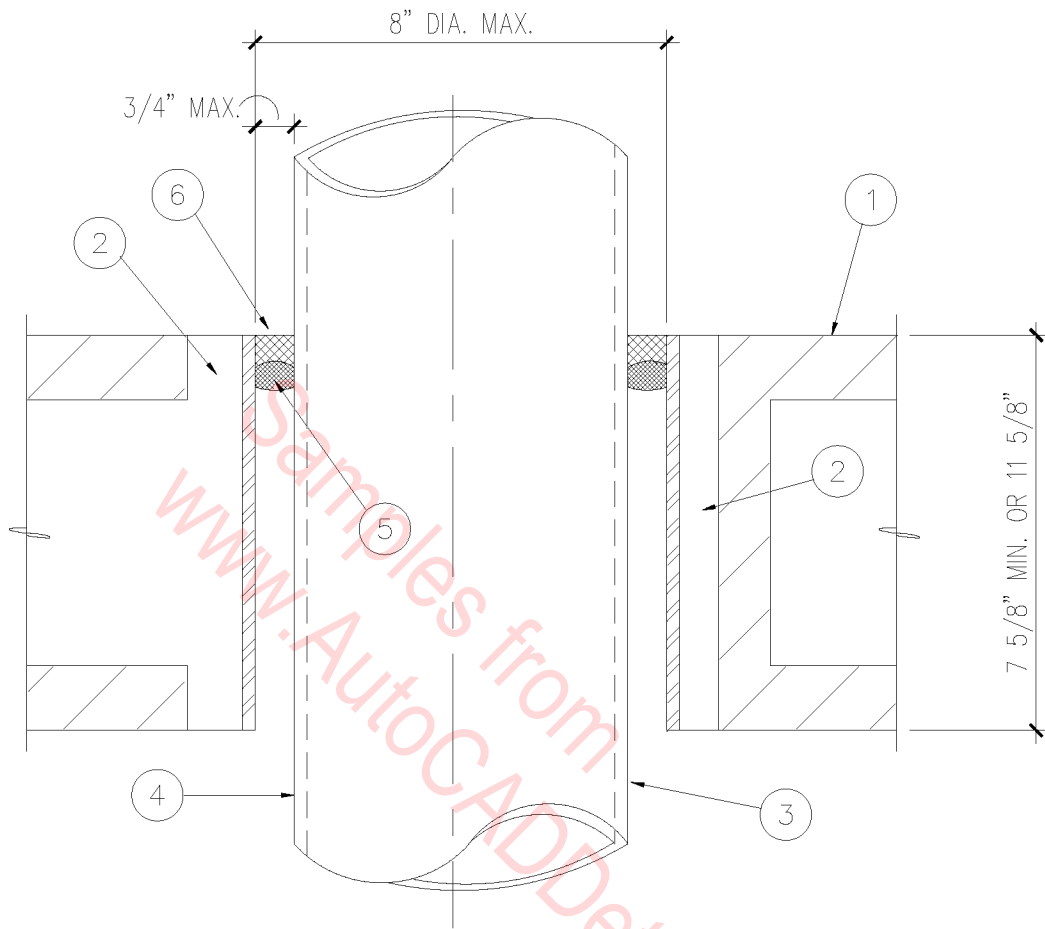
ASTM-E814 (UL1479) AND
 UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208



2 HR FLOOR PENETRATION

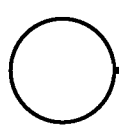
SCALE: 3" = 1'-0"

07B-3014



ASTM-E814 (UL 1479) AND
 UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

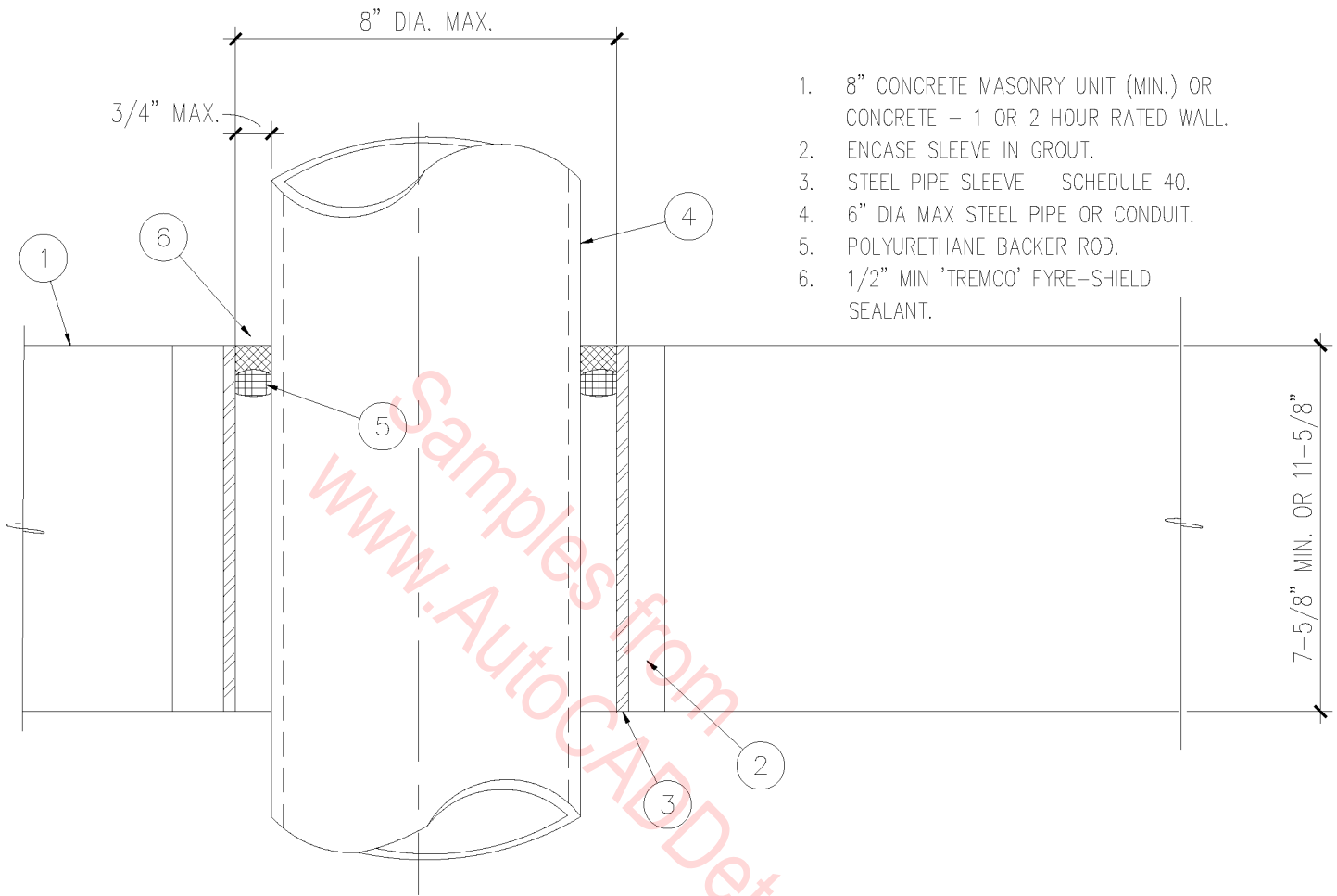
1. 8" CONCRETE MASONRY UNIT FIRE RATED.
2. ENCASE SLEEVE IN GROUT.
3. STEEL PIPE SLEEVE - SCHEDULE 40.
4. 6" DIA MAX STEEL PIPE OR CONDUIT.
5. POLYURETHANE BACKER ROD.
6. 1/2" MIN 'TREMCO' FYRE-SHIELD SEALANT.



2 HR PIPE PENETRATION

SCALE: 3" = 1'-0"

07B-3015

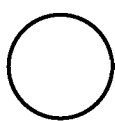


ASTM-E814 (UL 1479) AND
UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 208

FIRE-RESISTIVE CONSTRUCTION

GENERAL NOTE:

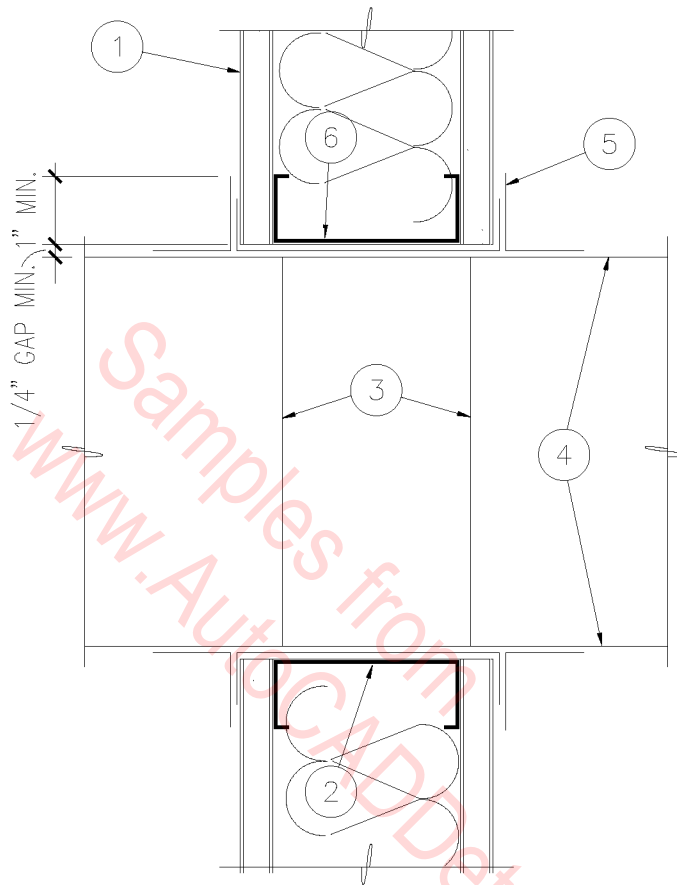
ALL PENETRATIONS OF FIRE-RESISTANT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS". THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL LISTING TO THE ARCHITECT, AND SUCH DRAWINGS SHALL BE AVAILABLE TO THE LOCAL BUILDING INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.



PIPE PENETRATION

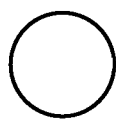
SCALE: 3" = 1'-0"

07B-3016



UL SAFETY STANDARD 555 AND NFPA 90A

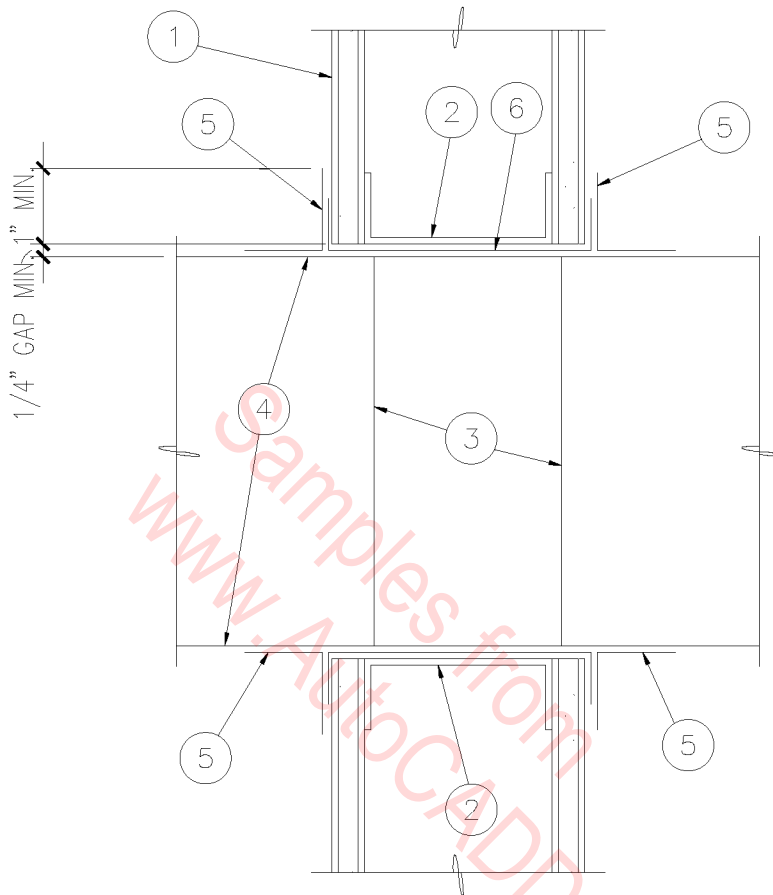
1. ONE HOUR WALL UL DESIGN NO. U465.
2. METAL RUNNER.
3. FIRE OR LEAKAGE (SMOKE) DAMPER. SEE MECHANICAL FOR TYPE AND LOCATION.
4. DAMPER SLEEVE SHALL NOT EXTEND MORE MORE THAN 9" ON THE OPERATOR/ACTUATOR SIDE.
5. ANGLE 1-1/2" X 1-1/2" X 14 GAGE.
6. 22 GA. G. I. SLEEVE.



DUCT THRU WALL

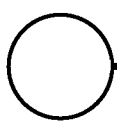
SCALE: 3" = 1'-0"

07B-6001



UL SAFETY STANDARD 555 AND NFPA 90A

1. ONE HOUR WALL UBC 43-B, 15-1.1.
2. METAL RUNNER.
3. FIRE OR LEAKAGE (SMOKE) DAMPER.
SEE MECHANICAL FOR TYPE AND
LOCATION.
4. DAMPER SLEEVE SHALL NOT EXTEND
MORE THAN 6" BEYOND THE FIRE
WALL AND NOT MORE THAN 9" ON
THE OPERATOR/ACTUATOR SIDE.
5. ANGLE 1-1/2" X 1-1/2" X 14 GAGE.
6. 22 GA. G. I. SLEEVE.

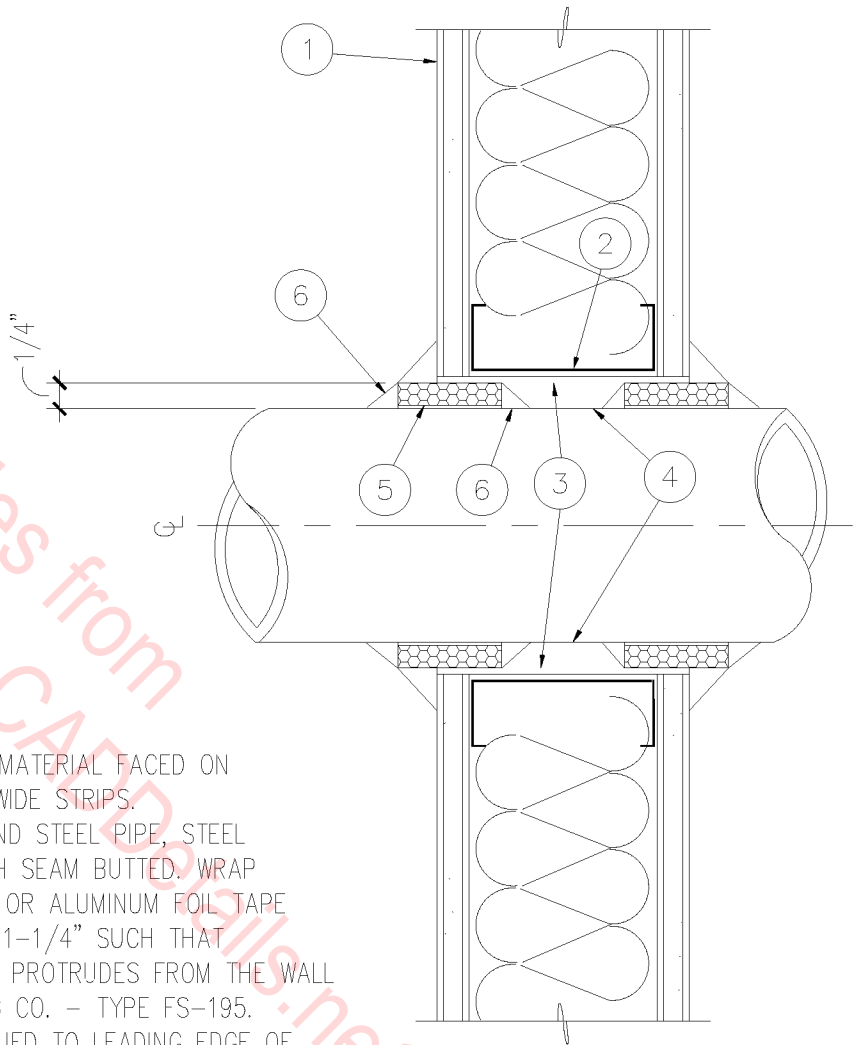


1 HR. DUCT PENETRATION

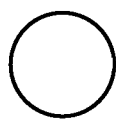
SCALE: 3" = 1'-0"

07B-6002

Samples from
www.AutoCADDetails.net



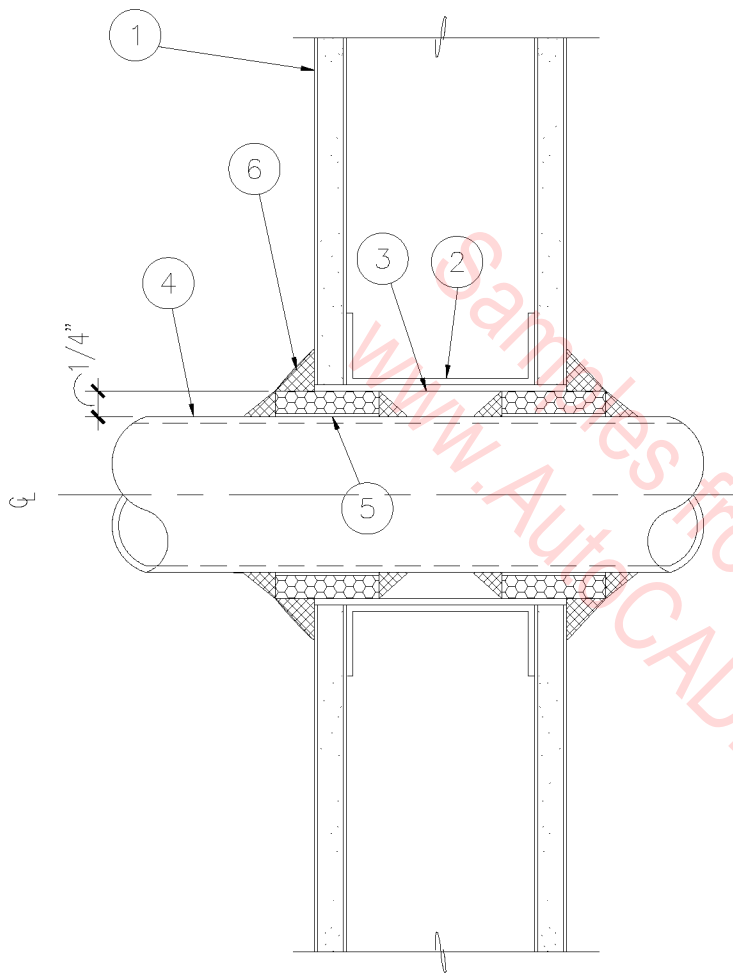
1. ONE HOUR WALL, UL DESIGN NO. U465.
2. 25 GA. G.I. RUNNER.
3. 22 GA. G.I. SLEEVE.
4. STEEL PIPE OR CONDUIT.
5. WRAP STRIP - 1/4" INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP TIGHTLY WRAPPED AROUND STEEL PIPE, STEEL CONDUIT OR PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROXIMATELY 1-1/4" SUCH THAT APPROXIMATELY 3/4" OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE. MINNESOTA MINING & MANUFACTURING CO. - TYPE FS-195.
6. CAULK - MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO LEADING EDGE OF WRAP STRIP PRIOR TO INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE. AFTER INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE A NOMINAL 1/4" DIA. CONTINUOUS BEAD IS TO BE APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED EDGE OF THE STRIP LAYER APPROXIMATELY 3/4" FROM THE WALL SURFACE. MINNESOTA MINING & MANUFACTURING CO. - TYPES CP-25 S/L, CP-25 N/S UL THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ) SYSTEM NO. 148.



PIPE THRU RESIST. WALL

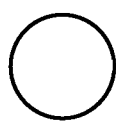
SCALE: 3" = 1'-0"

07B-6003



1. ONE HOUR WALL, UBC 43-B, 15-1.1.
2. 25 GA. G.I. RUNNER.
3. 22 GA. G.I. SLEEVE.
4. STEEL PIPE OR CONDUIT.
5. WRAP STRIP - 1/4" INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP TIGHTLY WRAPPED AROUND STEEL PIPE, STEEL CONDUIT OR PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROXIMATELY 1-1/4" SUCH THAT APPROXIMATELY 3/4" OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE.
MINNESOTA MINING & MANUFACTURING CO. TYPE FS-195.
6. CAULK - MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO LEADING EDGE OF WRAP STRIP PRIOR TO INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE. AFTER INSERTION OF WRAP STRIP LAYER IN ANNULAR SPACE A NOMINAL 1/4" DIA. CONTINUOUS BEAD IS TO BE APPLIED TO THE WRAP STRIP / WALL INTERFACE AND TO THE EXPOSED EDGE OF THE STRIP LAYER APPROXIMATELY 3/4" FROM THE WALL SURFACE.
MINNESOTA MINING & MANUFACTURING CO. TYPES CP-25 S/L, CP-25 N/S.

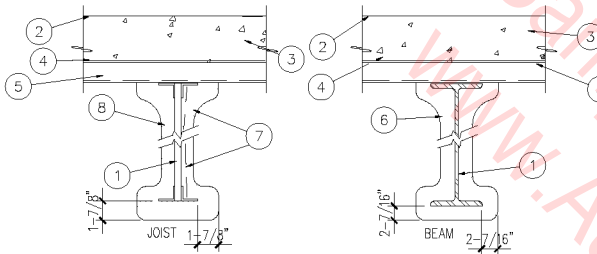
UL THROUGH-PENETRATION FIRESTOP SYSTEMS
(XHEZ) SYSTEM NO. 148



CONDUIT PENETRATION

3" = 1'-0"

07B-6004



UL DESIGN NO. P908

1. W6X16 OR W8X18 MIN. SIZE FOR 2 HOUR UNRESTRAINED OR TYPE 12J4 STEEL JOIST FOR 2 HOUR UNRESTRAINED

2. ROOF COVERING - CLASS A

3. INSULATING CONCRETE VERMICULITE CONCRETE, 6 CF OF VERMICULITE AGGREGATE TO 94 LB OF PORTLAND CEMENT AND 0.11LB OF AIR ENTRAINING AGENT MIXED WITH APPROXIMATELY 25 GAL. OF WATER. MINIMUM COMPRESSIVE STRENGTH SHALL BE 125 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C495. THE VERMICULITE CONCRETE SHALL BE POURED TO A DEPTH SUFFICIENT TO PROVIDE A MINIMUM THICKNESS OF 2 1/4" ABOVE THE CRESTS OF THE ROOF DECK UNITS (ITEM 5) AND TO PROVIDE A MINIMUM VOLUME OF 24.5 CF PER 100 SF OF ROOF DECK AREA. ZONOLITE CONSTRUCTION PRODUCTS DIVISION OF W.R. GRACE & CO.

4. REINFORCING MESH NO. 19 GA. GALVANIZED STEEL WIRE TWISTED TO FORM HEXAGONS 2" WIDE IN ADDITION, STRAIGHT 16 GA. GALV. STEEL WIRE WOVEN INTO THE MESH AND SPACED 6" APART FOR STIFFNESS. MESH INSTALLED WITHOUT ATTACHMENTS AND OVERLAPPED 6" AT THE SIDES. STIFFENERS INSTALLED PARALLEL WITH CORRUGATIONS. AS AN ALTERNATE, 4 X 8, 12/14 GA. OR 2 X 2, 14/14 GA. OR 2 X 2, 14/14 GA. WELDED WIREWELDED WIRE FABRIC MAY BE USED.

5. STEEL ROOF DECK - 1 1/2" DEEP, 36" WIDE, GALV. FLUTED STEEL DECK. FLUTES 6" O.C., CREST WIDTH 3 1/2" VERCOR MFG. INC. - TYPE HSB-36

6. HANGER WIRE, NO. 6 GA. GALV. STEEL WIRE, SPACED 16" O.C.

7. SPRAY APPLICATION OF CEMENTITIOUS MIXTURE ON STEEL BAR JOISTS AND TRUSSES. THE DIAMOND MESH 3/8" EXPANDED STEEL LATH 1.7 TO 3.4 LB/SQ YD IS SECURED TO ONE SIDE OF EACH STEEL JOIST WITH NO. 18 GA. GALV STEEL WIRE AT JOIST WEB AND BOTTOM CHORD MEMBERS SPACED 15" O.C. MAX. WHEN USED THE METAL LATH IS TO BE FULLY COVERED WITH CEMENTITIOUS MIXTURE WITH NO MIN THICKNESS REQUIREMENTS

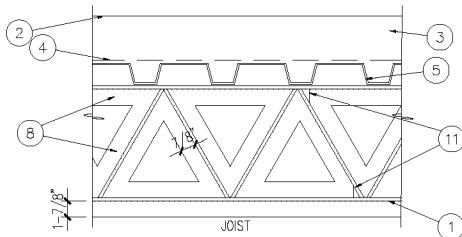
7A. NON-METALLIC FABRIC MESH - OPTIONAL - AS AN ALTERNATE TO METAL LATH, GLASS FIBER FABRIC MESH, WEIGHING APPROX. 2.5 OZ/SQ YD POLYPROPYLENE FABRIC MESH WEIGHING APPROX. 1.25 OZ/SQ YD OR EQUIVALENT MAY BE USED TO FACILITATE THE SPRAY APPLICATION. THE MESH IS SECURED

TO ONE SIDE OF EACH JOIST WEB MEMBER. THE METHOD OF ATTACHING THE MESH MUST BE SUFFICIENT TO HOLD THE MESH AND THE SPRAY-APPLIED CEMENTITIOUS MIXTURE MATERIAL IN PLACE DURING APPLICATION UNTIL IT HAS CURED. AN ACCEPTABLE METHOD TO ATTACH THE MESH IS BY EMBEDDING THE MESH IN MIN 1/4" LONG BEADS OF HOT-MELTED GLUE. THE BEADS OF GLUE SHALL BE PLACED A MAX OF 12" O.C. ALONG THE TOP CHORD OF THE BAR JOIST. ANOTHER METHOD TO SECURE THE MESH IS BY 1 1/4" LONG BY 1/2" WIDE HAIRPIN CLIPS FORMED FROM NO. 18 GA. OR HEAVIER STEEL WIRE

8. CEMENTITIOUS MIXTURE - SPRAY APPLIED TO BEAM OR JOIST IN MORE THAN ONE COAT TO A FINAL THICKNESS OF 1-3/8". MINIMUM BEAM SIZE W6X16 MINIMUM JOIST SIZE 12J4. CREST AREAS OF STEEL ROOF UNITS SHALL BE FILLED WITH CEMENTITIOUS MIXTURE ABOVE THE BEAM OR JOIST. BEAM OR JOIST SURFACES MUST BE CLEAN AND FREE OF DIRT, LOOSE SCALE AND OIL. MINIMUM AVERAGE DENSITY OF 15/14 PCF RESPECTIVELY. FOR METHOD OF DENSITY DETERMINATION, REFER TO DESIGN INFORMATION SECTION. ZONOLITE CONSTRUCTION PRODUCTS DIVISION, W. R. GRACE & CO. TYPE MK-6/CBF FOR TYPE 12J4 STEEL JOISTS, THE JOIST PROTECTION SHALL CONSIST OF THE ABOVE CEMENTITIOUS MIXTURES APPLIED IN A MANNER AND AT THE THICKNESSES SHOWN BELOW. WHEN METAL LATH (ITEM 7) IS USED, LATH SECURED TO ONE SIDE OF JOIST WITH 18 GA. GALVANIZED STEEL WIRE AT JOIST WEB AND BOTTOM CHORD MEMBERS SPACED 15" O.C.

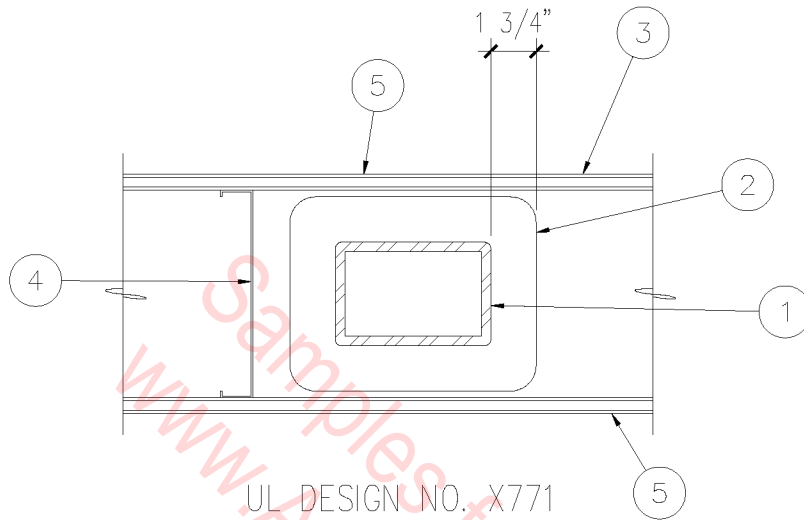
THICKNESS OF CEMENTITIOUS MIXTURE, INCHES	TYPE OF APPLICATION	UNRESTRAINED ASSEMBLY RATING, HOUR
1-7/8	APPLIED TO LATH WRAPPED ON ONE SIDE OF JOIST	2 HOUR
2-7/16	APPLIED DIRECTLY TO JOIST IN A CONTOUR MANNER	2 HOUR

11. STEEL BRIDGING - IN ACCORDANCE WITH AISC CURRENT SPECIFICATIONS. CONTINUOUS STEEL ANGLE, MIN. SIZE 1-1/4 BY 1-1/4 BY 1/8" WELDED TO TOP AND BOTTOM CHORDS. BRIDGING COATED WITH 3" THICKNESS OF CEMENTITIOUS MIXTURE FOR THE 2 ASSEMBLY AND BEAM RATINGS.



2 HOUR ROOF
3" = 1'-0"

07B-1001

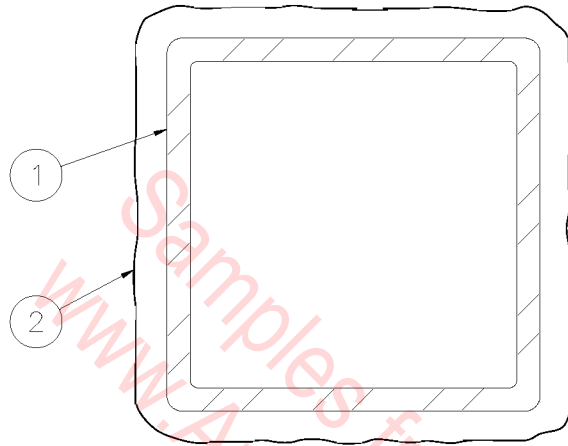


1. TUBE STEEL COLUMN.
2. CEMENTITIOUS MIXTURE – APPLIED BY MIXING WATER AND SPRAYING IN ONE OR MORE COATS TO STEEL SURFACE WHICH MUST BE CLEAN AND FREE OF DIRT, LOOSE SCALE AND OIL. MINIMUM AVERAGE AND INDIVIDUAL DENSITY OF 15/14 PCF RESPECTIVELY. FOR METHOD OF DENSITY DETERMINATION, SEE DESIGN INFORMATION SECTION, PRECEDING THESE DESIGNS.
APPLY 1-3/4 THICK UNIFORM COAT.
ZONOLITE CONSTRUCTION PRODUCTS DIVISION, W. R. GRACE & CO. TYPE MK-6CBF.
3. 1 HOUR WALL.
4. 8" 25 GA. METAL STUDS AT 16" O.C.
5. 5/8" TYPE "X" GYPSUM WALLBOARD.

2 HOUR COLUMN

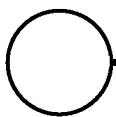
SCALE: 3" = 1'-0"

07B-1002



1. TUBE STEEL COLUMN
2. CEMENTITIOUS SPRAY - APPLIED
FIREPROOFING: 1" THICK FOR
4X4X1/4 T.S. COLUMNS AND
9/16" THICK FOR 6X6X3/8" T.S.
COLUMNS

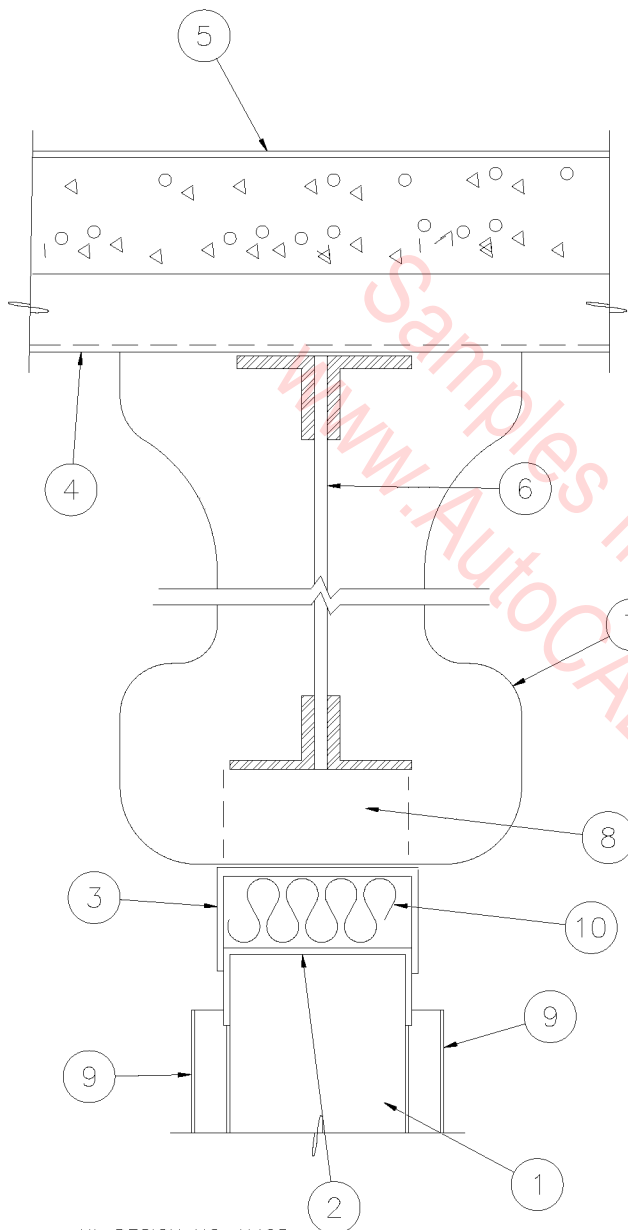
NOTE: DETAIL PROVIDES ONE-HOUR
FIRE RESISTANCE PER
U.L. DESIGN NO. X752



FIRE RESISTIVE COLUMN

SCALE: 3" = 1'-0"

07B-1003



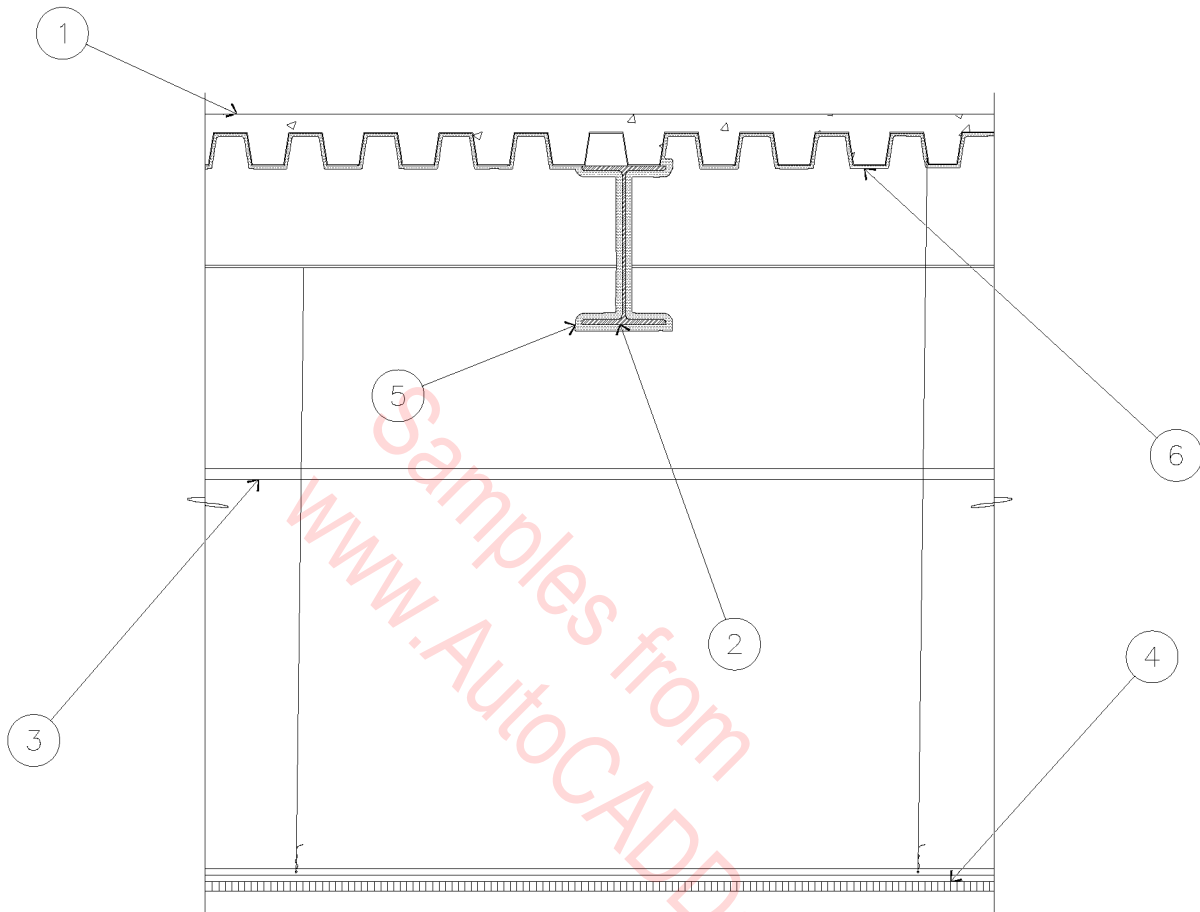
1. 3 5/8" METAL STUDS AT 16" O.C.
2. METAL RUNNER.
3. METAL RUNNER WITH 2" LEG.
4. METAL DECK.
5. ROOFING SYSTEM.
6. STEEL JOIST OR BEAM.
7. SPRAYED-ON FIREPROOFING ON JOIST OR BEAM.
8. 2 CLIP ANGLES AT 48" O.C. ANCHOR THRU FIREPROOFING.
9. 5/8" TYPE X GYPSUM WALLBOARD.
10. FIRE SAFING INSULATION.

UL DESIGN NO. U465

WALL AT JOIST/BEAM

SCALE: 3" = 1'-0"

07B-1004



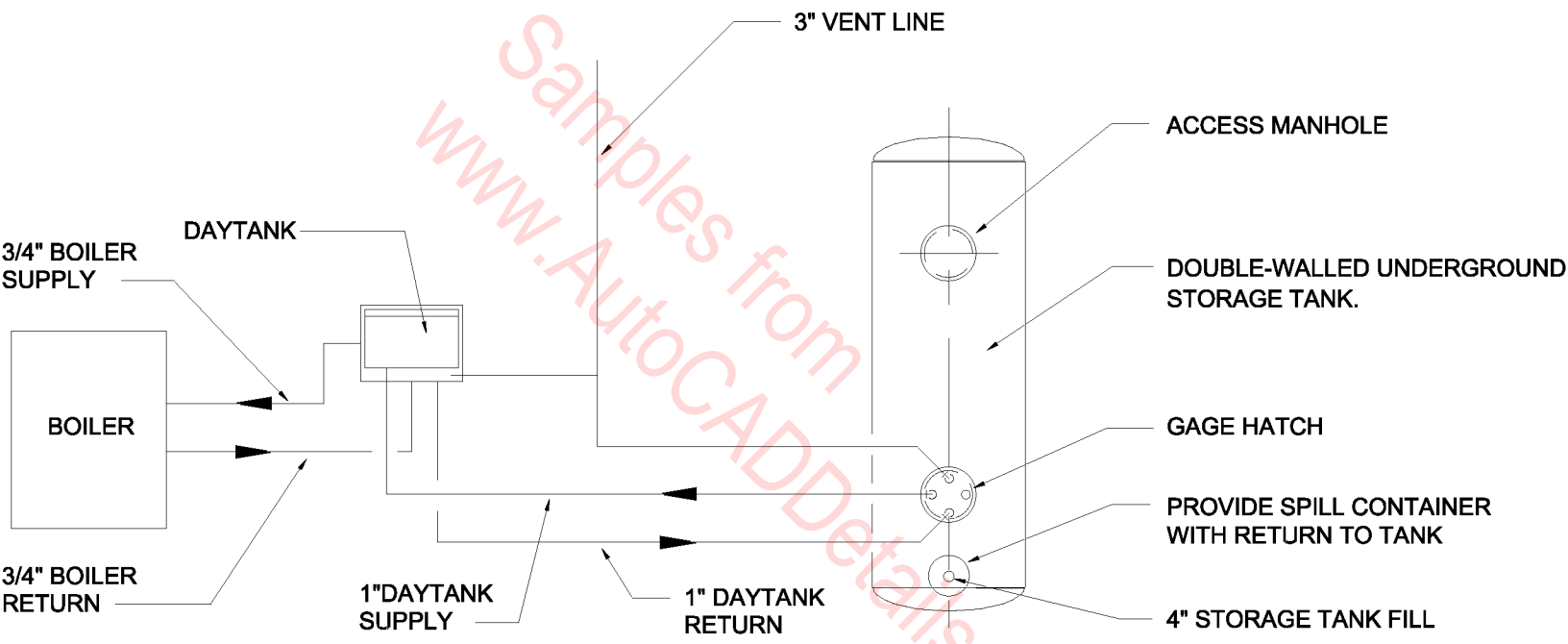
1. CONCRETE FLOOR OVER FLUTED STEEL DECK - STEEL DECK SHALL BE WELDED TO STEEL BEAMS.
2. WIDE FLANGE BEAM.
3. BEAM BEYOND.
4. SUSPENDED "TEE" GRID CEILING.
5. SPRAYED ON FIRE RESISTIVE FIBER COAT - 1/2" THICK (MINIMUM) AT STEEL BEAMS.
6. SPRAYED ON FIRE RESISTIVE FIBER COAT - 1/4" THICK (MINIMUM) AT STEEL DECK.

U.L. DESIGN NO. N805

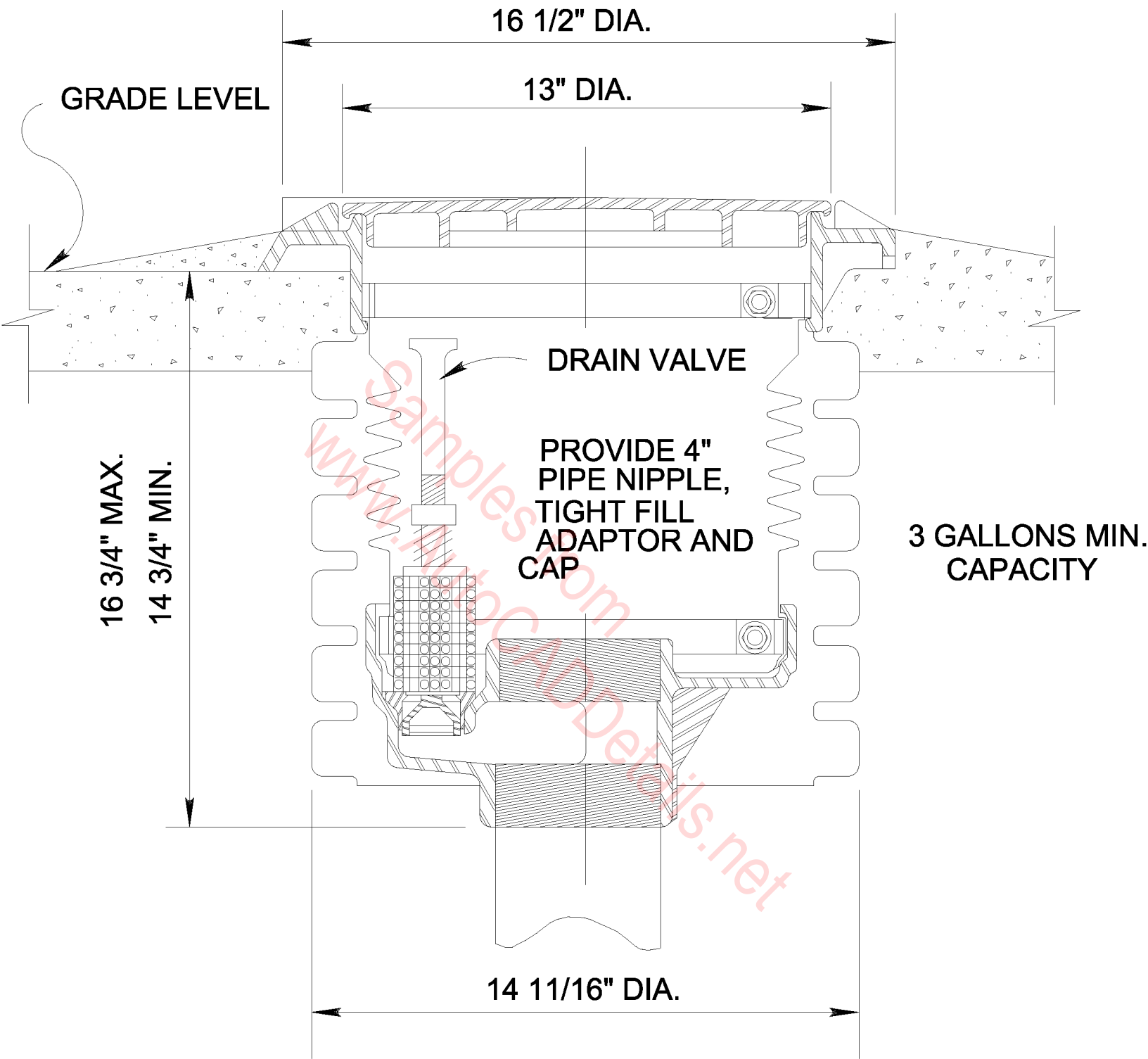
○ 1 HOUR FLOOR ASSEMBLY

3/4" = 1'-0"

07B-1005



TYP. BOILER FUEL OIL FLOW SCHEMATIC



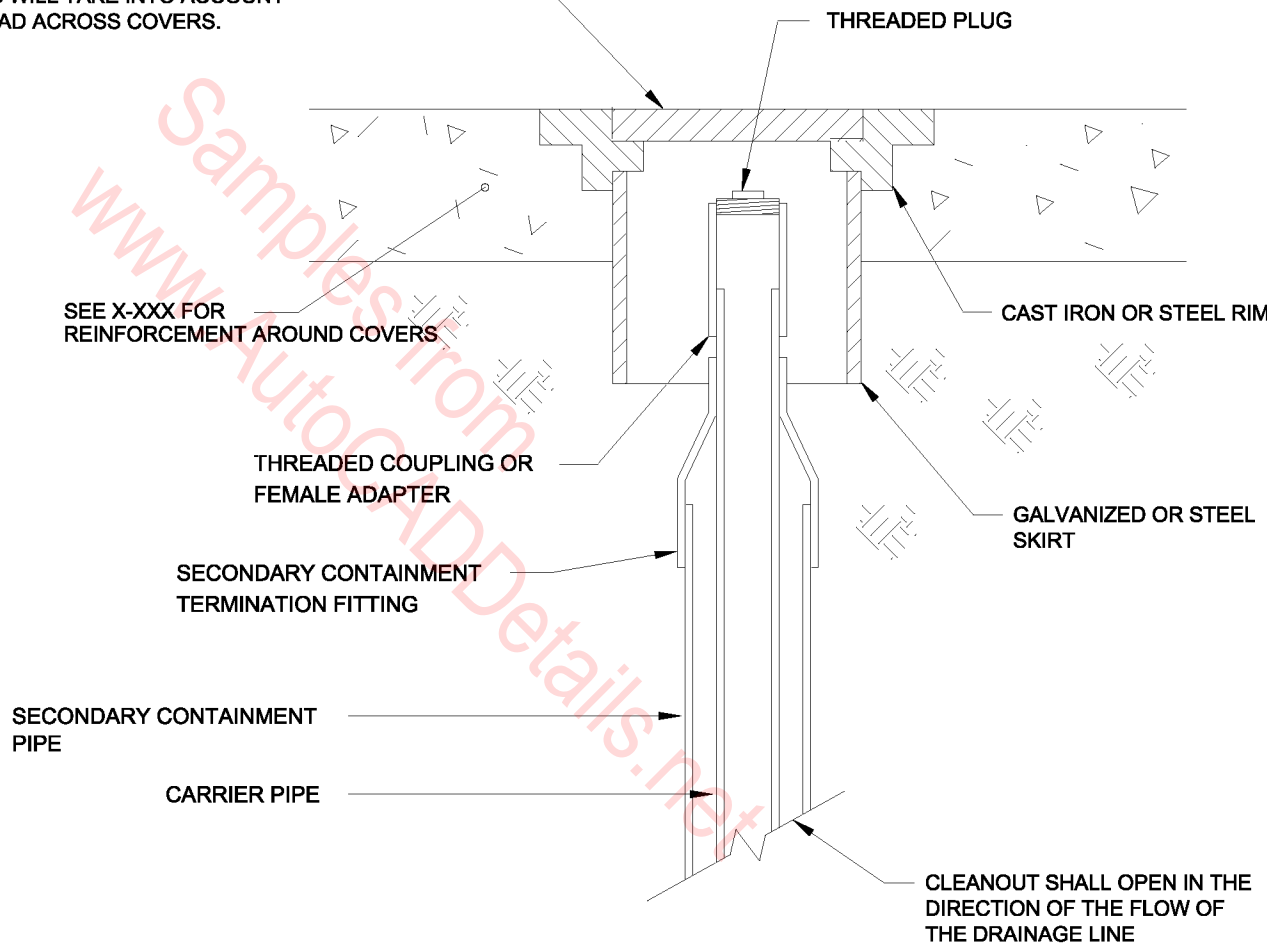
FILL LINE

SPILL CONTAINMENT BASIN

N.T.S.

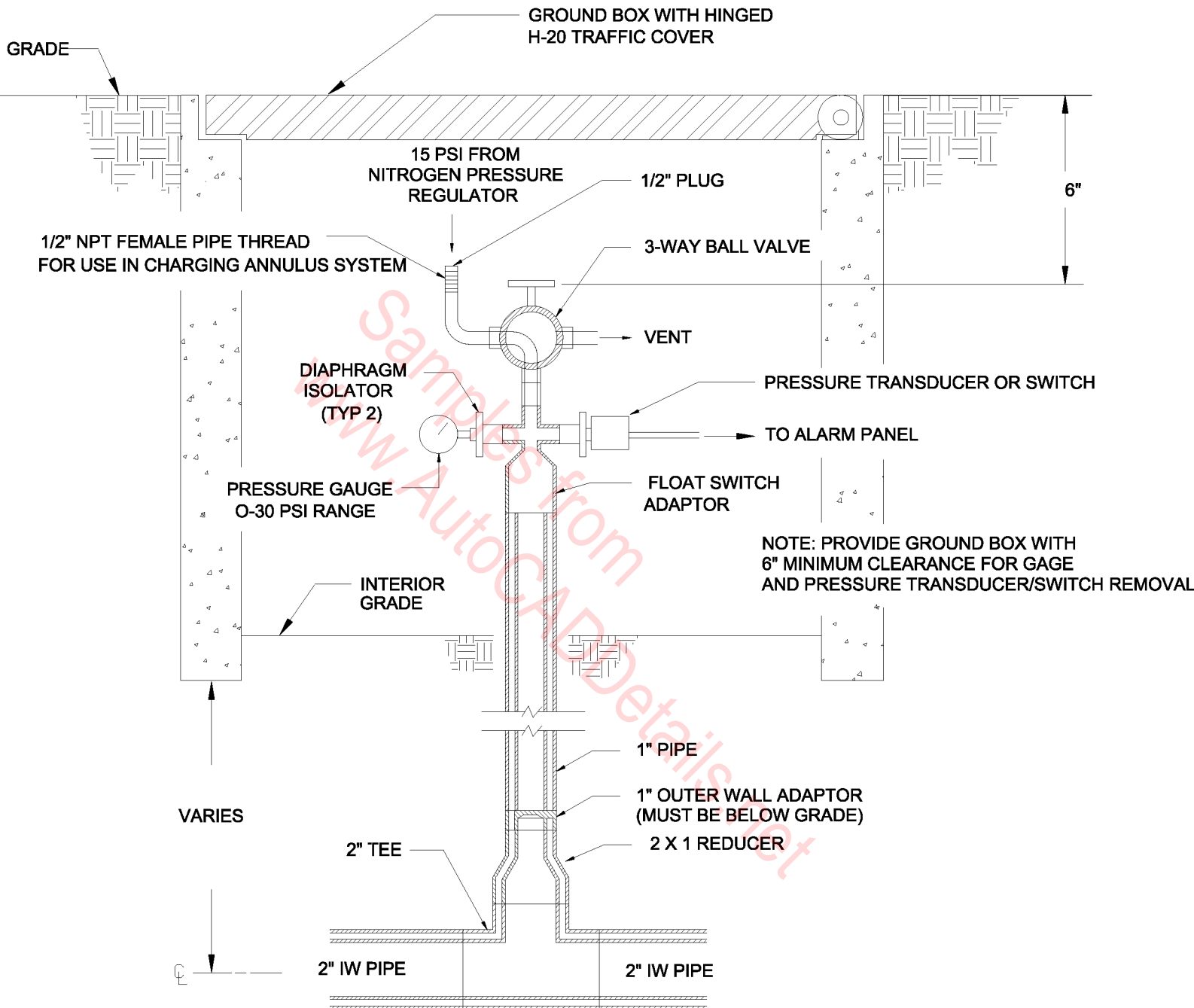
STEEL PLATE COVER, H-20 TRAFFIC RATING, CLEARLY LABEL TOP OF COVERS PER "HANDHOLE COVER MARKING SCHEDULE" (THIS SHEET) BY ONE OF THE FOLLOWING PROCESSES: GRINDING, STAMPING, OR ENGRAVING.

NOTE: UPON APPROVAL BY CONTRACTING OFFICER, ALTERNATIVE LABELING SCHEMES (I.E., NON-CORROSIVE TAGS ATTACHED TO PIPE RISERS) MAY BE USED. ALTERNATIVE LABELING SCHEMES WILL TAKE INTO ACCOUNT THAT "TRACK" VEHICLES MAY TREAD ACROSS COVERS.



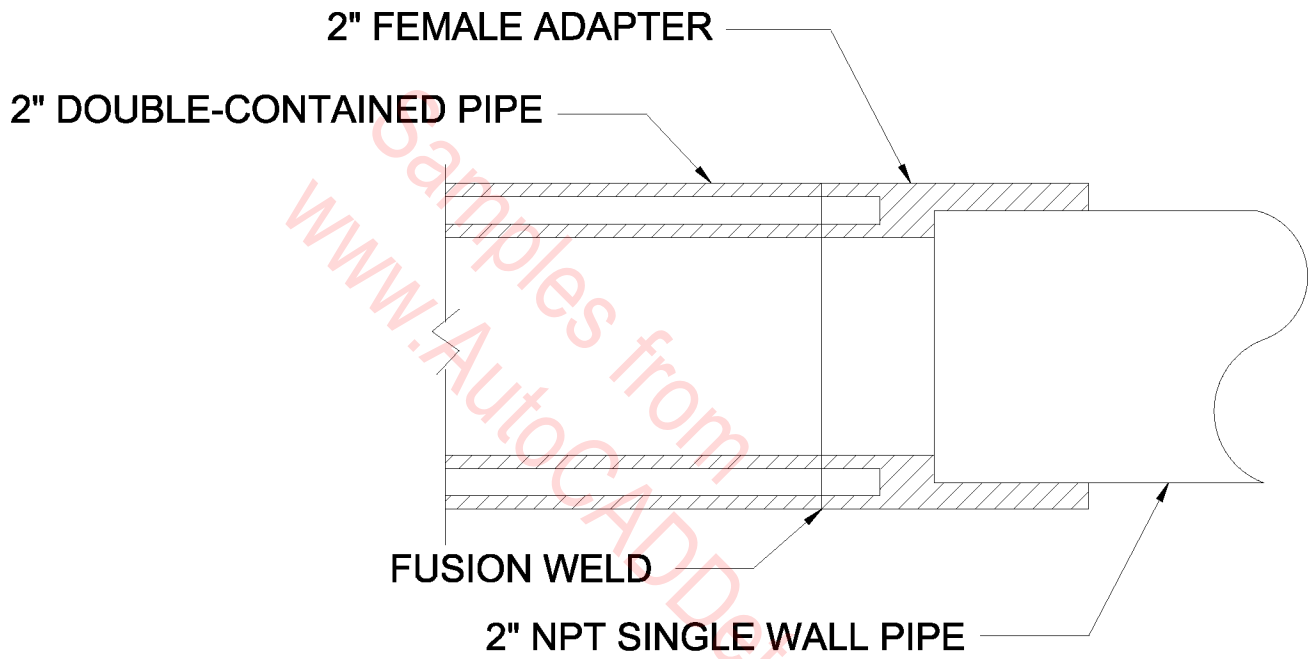
DOUBLE WALLED PIPE CLEANOUT TO GRADE/FLOOR CLEAN OUT

N.T.S.



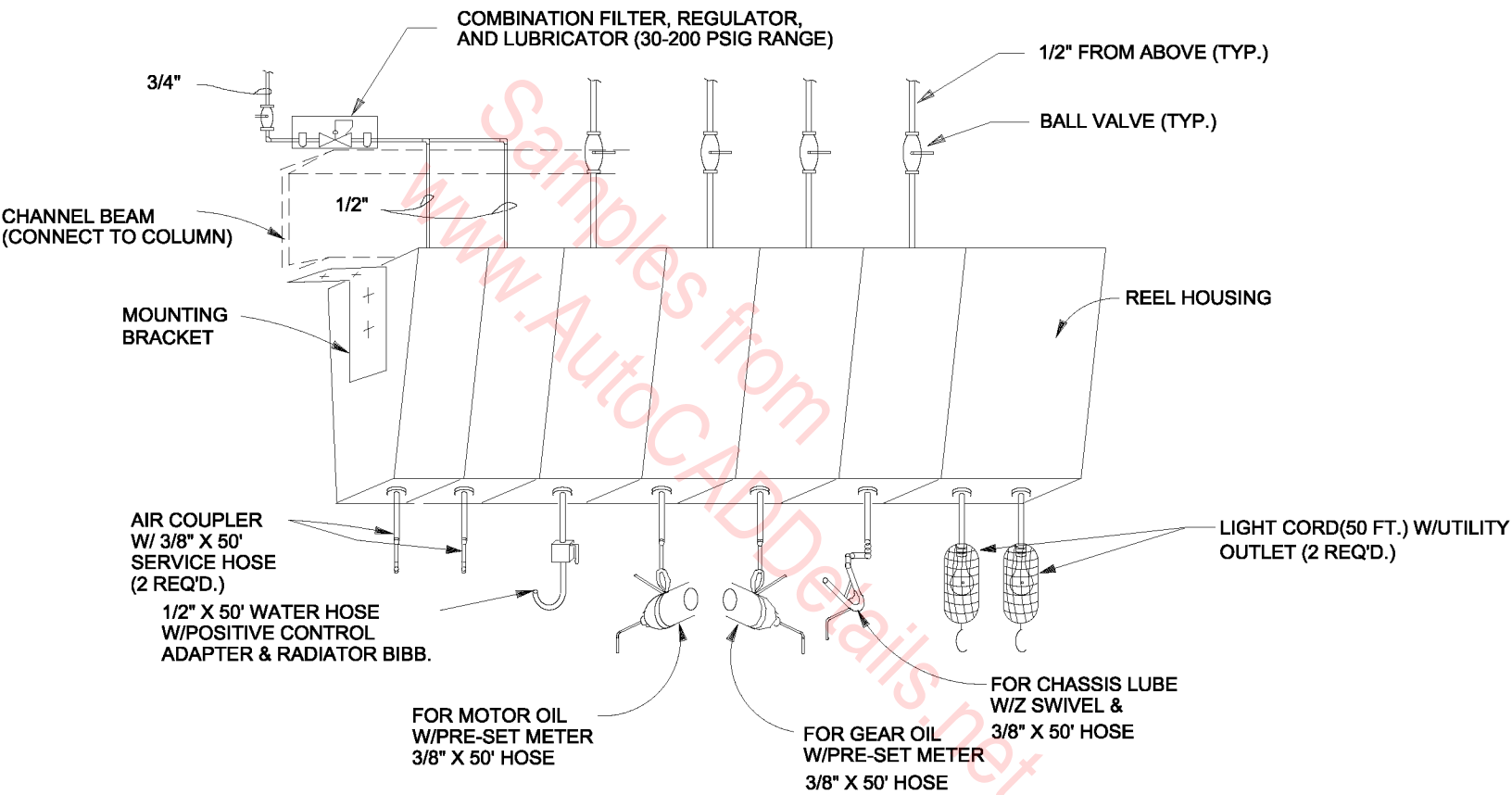
LOW PRESSURE NITROGEN LEAK DETECTION BOX SECTION

N.T.S.



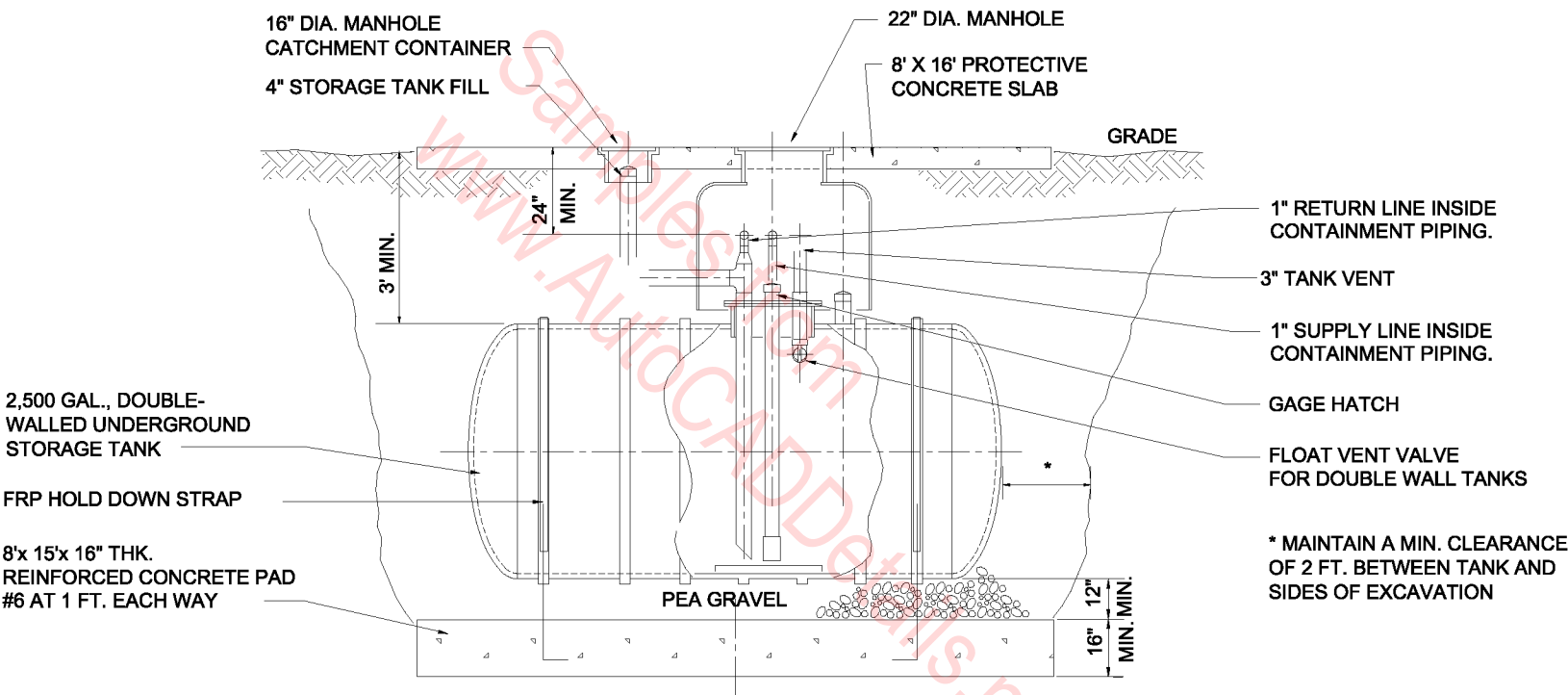
DOUBLE CONTAINED TO SINGLE WALL, NPT PIPE, TRANSITION DETAIL

N.T.S



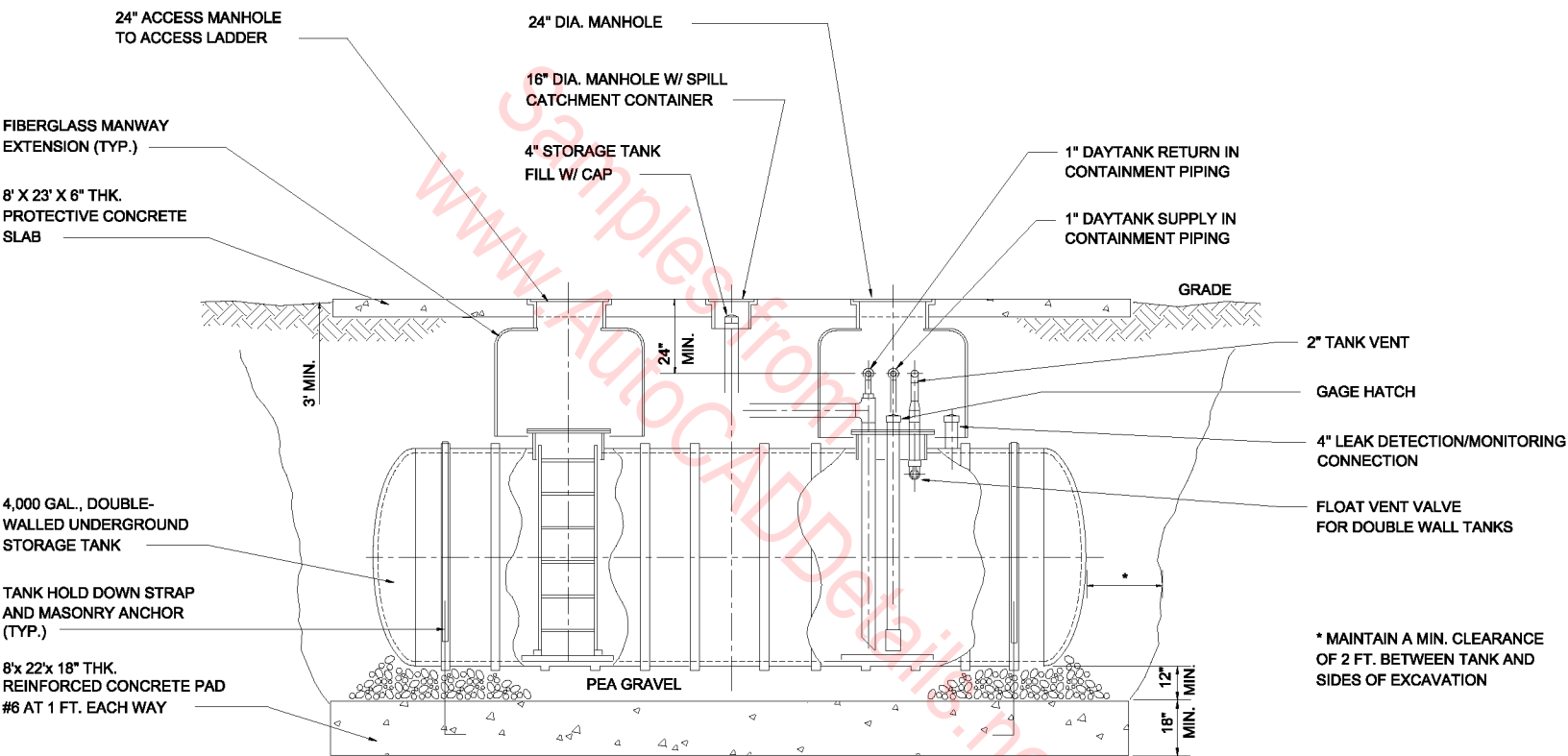
ENCLOSED REEL DETAIL

N.T.S.



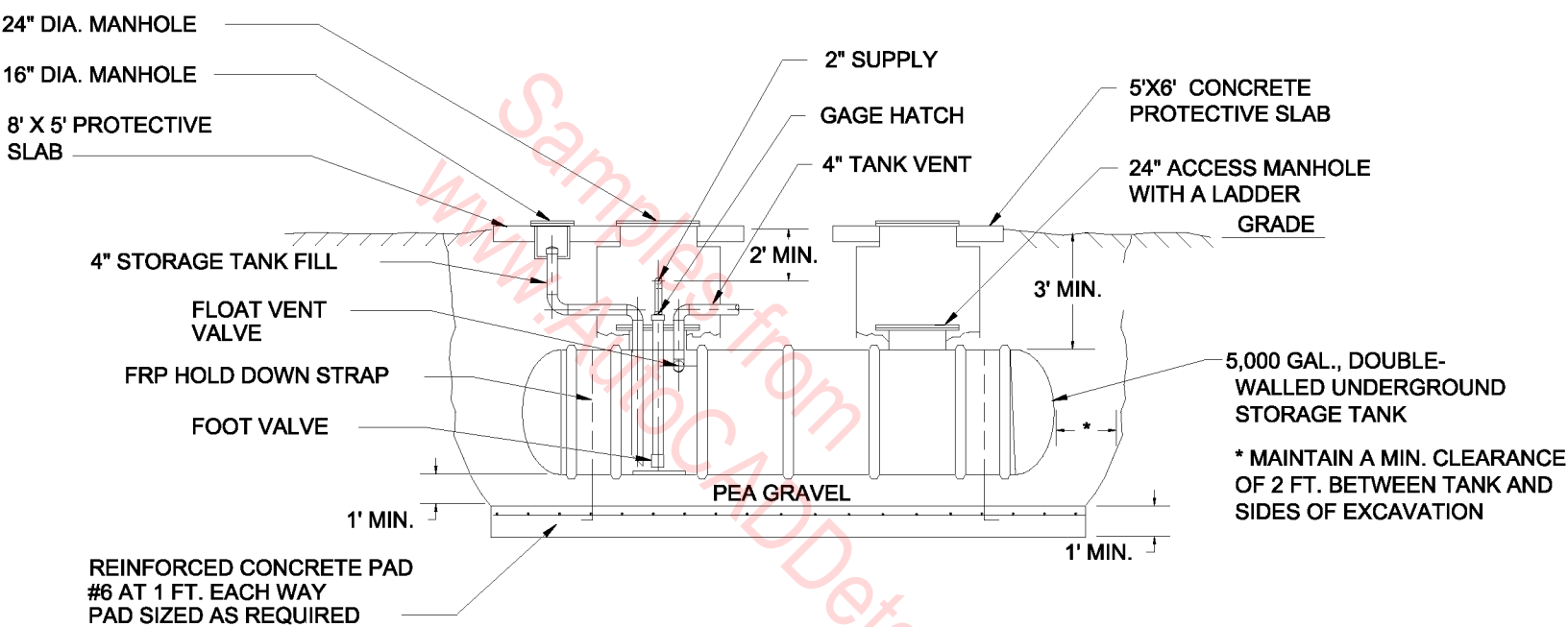
SECTION THRU 2500 GAL. TANK

SCALE: 3/8" = 1'-0"



SECTION THRU 4000 GAL. TANK

SCALE: 3/8" = 1'-0"

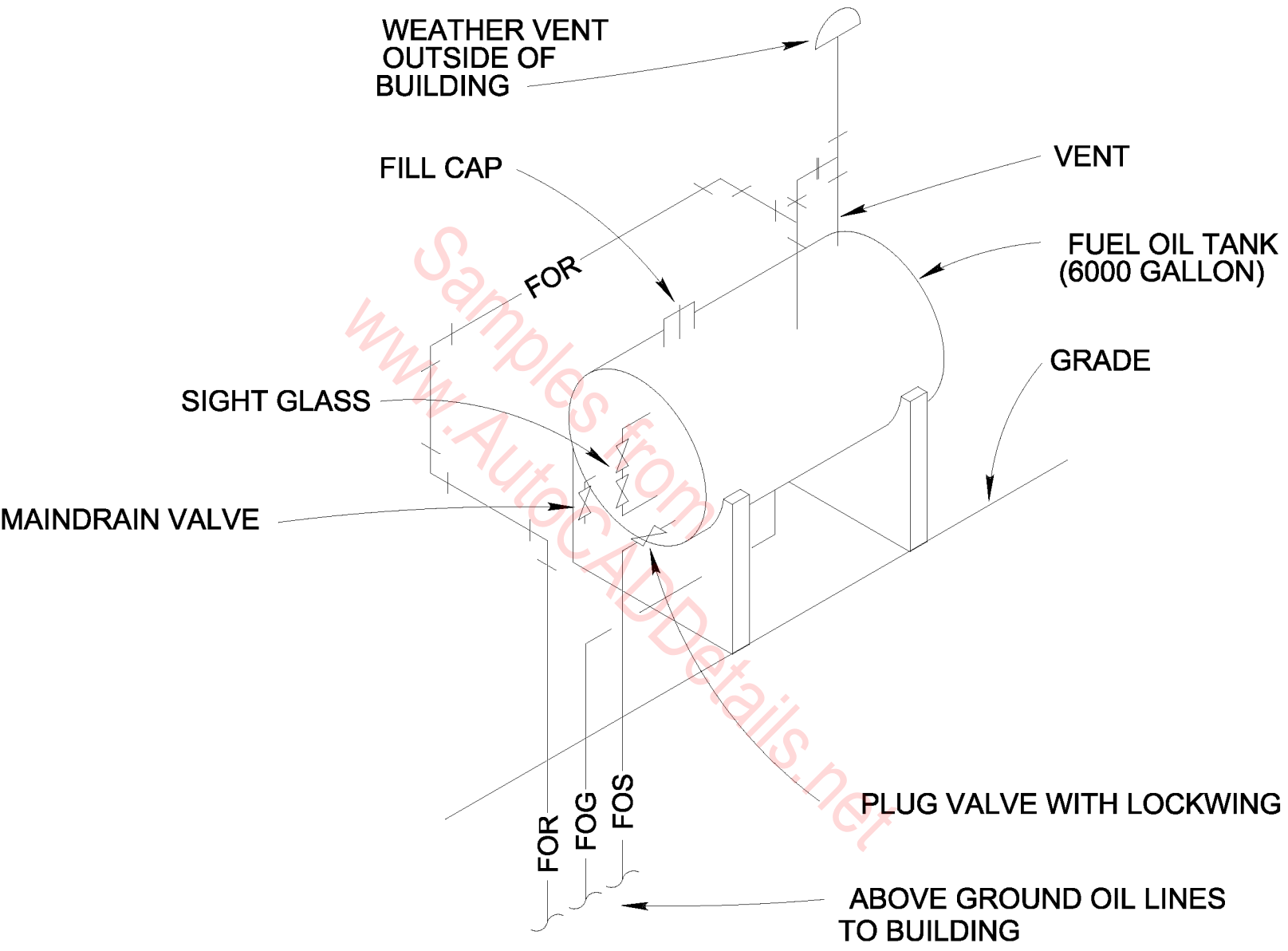


NOTES

1. TANKS SHALL BE INSTALLED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS, MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS AND NFPA 30.

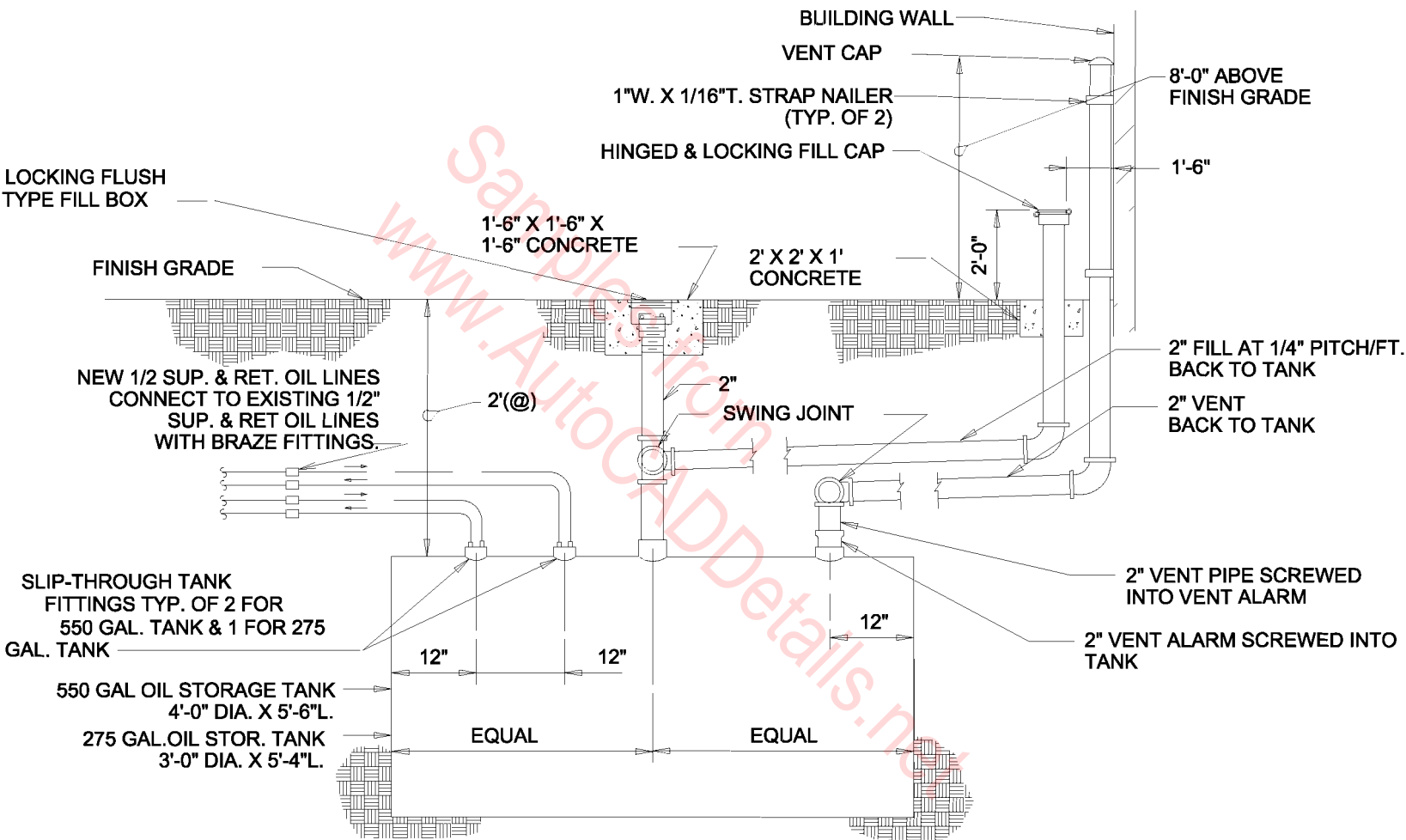
5000 GAL. UNDERGROUND FUEL STORAGE TANK

N.T.S.



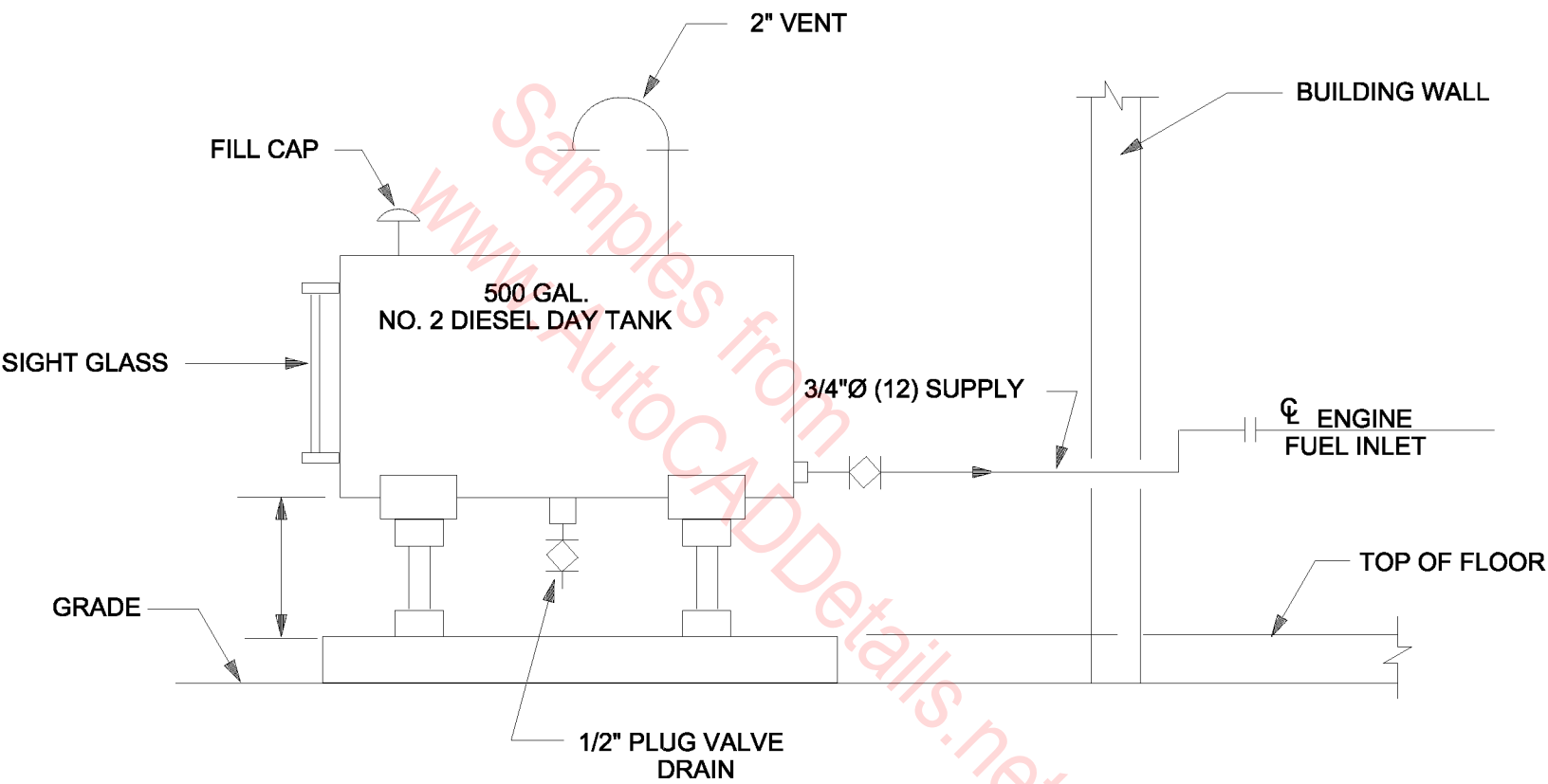
WASTE OIL STORAGE TANK DETAIL

N.T.S.



FUEL STORAGE TANK DETAIL

N.T.S.



ENGINE FUEL SUPPLY DETAIL

N.T.S.

1/2" N.P.T. CONNECTION
TO OIL LEVEL SWITCH

3/8" STEEL PLATE

3/4" N.P.T. FUEL
OIL RETURN FROM
HOT WATER BOILER

+/- 2"

+/- 5"

1-1/2" N.P.T.
FUEL OIL RETURN

1/2" N.P.T. OIL
LEVEL TEST VALVE
CONNECTION

2'-0"

+/- 3"

1-1/2" N.P.T.
FUEL OIL RETURN

4'-0"

3/16"

14" DIA. SCHEDULE 40
BLACK STEEL PIPE

2'-0"

1/2" N.P.T. TANK
DRAIN CONNECTION
VALVE

3/4" N.P.T. FUEL
OIL RETURN FROM
HOT WATER BOILER

+/- 3"

3/16"

3" x 3" x 1/4" PLATE
WELDED TO LEG SUPPORTS.
ANCHOR TO CONCRETE PAD
WITH EXPANSION BOLTS
(TYP. FOR 4)

+/- 12"

1-1/2" x 1-1/2" x 1/4"
ANGLE IRON SUPPORTS
WELDED TO TANK (TYP. 4)

6" CONCRETE PAD

FUEL OIL DAY TANK DETAIL

N.T.S.

MECHANICAL NOTES

- A. FLEX DUCT TO BE CLASS 1. [UMC 1004(b)]
- B. DUCTS SHALL BE SUPPORTED WITH 1-1/2" X 18 GA. GAL. METAL STRAPS @ 48" O.C. MAX ON FLEX DUCTS AND 72" O.C. ON RIGID DUCTS.[UMC TABLE 10-E]
- C. RIGID PIPE TO BE 26 GA. WITH 1" MINERAL FIBER BLANKET WITH VAPOR BARRIER. [UMC TABLE 10-D]
- E. 3/4" CONDENSATE DRAIN TO TERMINATE @ PLANTER AREA. SLOPE PIPE 1/8" PER FOOT MINIMUM. (EXISTING)

GENERAL
NOTES — MECHANICAL

NOT TO SCALE

01A-6001

GENERAL NOTES

1. VENT LINES AND DOMESTIC WATER LINES ARE SHOWN OUTSIDE WALLS FOR CLARITY.
2. DOMESTIC WATER SERVICE FOR THIS LEVEL SHALL BE ROUTED IN THE CEILING SPACE.
3. RE: CORRIDOR UTILITY COORDINATION NOTE ON DRAWING M-2.
4. INSTALL DOMESTIC WATER BALL VALVE SHUT-OFF FOR EACH MODULAR UNIT IN ACCESSIBLE PORTION OF CORRIDOR CEILING.
5. RE: WASTE AND VENT ISOMETRIC, DRAWINGS P-5 FOR SIZES NOT SHOWN ON THIS DRAWING.
6. COORDINATE DUCTWORK AND PIPING IN CORRIDOR CEILING WITH PLUMBING AND ELECTRICAL SERVICE LINES. ROUTE PLUMBING LINES IN TOP 12" OF CEILING SPACE, HEATING WATER LINES AND POWER DISTRIBUTION IN NEXT 6" DOWN, AND DUCTWORK AND EQUIPMENT IN THE NEXT 30" ALLOWING REMAINDER OF SPACE FOR CEILING AND LIGHTS.

GENERAL
NOTES — MECHANICAL

NOT TO SCALE

01A-6002

MECHANICAL NOTES

1. PROVIDE SPIN IN DAMPER AT ALL BRANCH CONNECTIONS.
2. ALL MECHANICAL EQUIPMENT LOCATIONS TO COMPLY WITH UMC.
3. COORDINATE EXACT DIFFUSER AND GRILL LOCATIONS WITH ELECTRICAL CONTRACTOR.
4. THE MAXIMUM LENGTH OF ANY FLEX DUCT SHALL NOT EXCEED 8 FEET.
5. LOCATE DUCTS BELOW BUILDING INSULATION.
6. ALL FLEX DUCT TO BE THERMAFLEX TYPE KM OR APPROVED EQUAL.
7. PROVIDE 1/2" LINEAR IN SUPPLY AND RETURN DUCT WORK WITHIN 5 FEET OF AHU.
8. ALL OUTSIDE AIR INTAKES SHALL BE MINIMUM 10 FEET FROM ANY EXHAUST OR PLUMBING VENTS.
9. EXTEND PVC DRAIN AS SHOWN.
10. ALL NEW DUCT WORK TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE GUIDE AND SMACNA STANDARDS.
11. DUCT WORK, DUCTS SHALL BE EITHER GALVANIZED SHEET METAL OR 1" THICK FIBERBOARD DUCT. DUCTS SHALL CONFORM TO THE DIMENSIONS ON THE DRAWING WHERE POSSIBLE.
12. ALL DUCTS SHALL BE SUBSTANTIALLY SUPPORTED WITH HANGERS ON MINIMUM 8' CENTERS. SHEET METAL DUCT SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

UP TO 12" MAX WIDTH	26 GAUGE STEEL
13" TO 30" MAX. WIDTH	24 GAUGE STEEL
31" TO 60" MAX. WIDTH	22 GAUGE STEEL
13. CONTRACTOR SHALL MAKE A THOROUGH TEST OF EACH SUPPLY, RETURN AND EXHAUST SYSTEM TO ASSURE PROPER AIR FLOW.
14. ALL DUCT WORK SHALL BE INSTALLED PER LATEST SMACNA MANUAL FOR LOW PRESSURE DESIGN
15. DUCT WORK SHALL CONFORM TO CHAPTER 10 UMC.
16. ALL INSULATION, MATERIAL COVERINGS AND ADHESIVES VAPOR BARRIERS AND TAPES SHALL CONFORM TO NFPA 90A FLAME SPREAD CLASSIFICATION NOT TO EXCEED 25 AND SMOKE DEVELOPMENT NO TO EXCEED 50.
17. PROVIDE 1/2" INTERIOR DUCT LINEAR AS INDICATED ON DRAWINGS.
18. THE EXHAUST DUCTS MUST TERMINATE 10 FEET HORIZONTALLY FROM OR 3 FEET ABOVE ALL AIR INTAKES.
19. EXHAUST DUCTS SHALL BE 26 GAUGE GALVANIZED STEEL.
20. ALL FACTORY MAKE DUCT MUST BE CLASS "0" OR CLASS "1".

GENERAL
NOTES - MECHANICAL

NOT TO SCALE

01A-6003

MECHANICAL SPECIFICATIONS

NOTE TO MECHANICAL CONTRACTOR: SUBMIT ALL MECHANICAL DRAWINGS TO ARCHITECT PRIOR TO COMMENCEMENT OF WORK OR PURCHASE OF MATERIALS. VERIFY ALL AGA HI/LOW COMBUSTION AIR REQUIREMENTS.

1. SHEET METAL WORK: DUCTS SHALL BE FABRICATED FROM ZINC COATED IRON OR STEEL, CLASS "0" OR "1" (IN ACCORDANCE WITH UMC.) DUCTS SHALL CONFORM TO DIMENSIONS ON THE DRAWINGS UNLESS LOCATION OF STRUCTURAL MEMBERS PROHIBITS. VERIFY WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO FABRICATION.
2. ALL DUCTS SHALL BE SUBSTANTIALLY SUPPORTED WITH HANGERS TO THE STRUCTURE. DUCT SUPPORT SHALL BE PER UMC 1004 AND TABLE 10-E.
3. DUCTWORK SHALL INCLUDE A NECESSARY VOLUME SPLITTER OR BALANCING DAMPERS AS INDICATED ON THE DRAWINGS OR AS REQUIRED FOR PROPER BALANCING AND CONTROL OF THE VENTILATION SYSTEM.
4. PROVIDE TURNING VANES ON ALL SQUARE ELBOWS – BOTH SUPPLY AND RETURN DUCTS.
5. PROVIDE AIR BALANCE REPORT VIA INDEPENDENT AABC CERTIFIED CONTRACTOR TO INSURE MECHANICAL EQUIPMENT IS OPERATING AT DESIGN CONDITIONS. DUCT INSTALLATION IS TO BE COMPLETE AND FREE OF AIR LEAKS, DIFFUSER, GRILLES AND REGISTERS ARE PERFORMING AS SHOWN ON DRAWING.
6. DUCTWORK IN ATTIC SPACE SHALL BE LINED WITH 2" FIBERGLASS INSULATION. LINE RECTANGULAR. SUPPLY DUCTWORK WITH 1" THICK FIBERGLASS INSULATION BELOW ROOF. OPTION: FIBERGLASS DUCTBOARD INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. RETURN DUCTWORK SHALL BE LINED WITH 1/2" THICK DUCTLINER. EXCEPTION: WHEN DUCT IS LOCATED IN CONDITION SPACE IT SHALL BE LINED UP TO 10' FROM HVAC UNIT.
7. VERIFY MOUNTING OF ALL MECHANICAL EQUIPMENT, GRILLES AND REGISTERS, DIFFUSERS, DUCTWORK, PIPING, ETC. PRIOR TO PURCHASING, MANUFACTURING AND INSTALLATION.
8. ROUND FLEXIBLE DUCTWORK (INSULATED) MAY BE USED AS SHOWN ON THE DRAWINGS IN LENGTHS NOT TO EXCEED 8'-0".
9. ALL DUCTWORK SHALL BE INSTALLED PER THE LATEST SMACNA MANUAL UMC CHAPTER 10, AND SHALL BE CLASS "0" OR CLASS "1".
10. PROVIDE FIRE DAMPERS AT ALL FIRE RATED PENETRATIONS. VERIFY LOCATIONS WITH ARCHITECTURAL DRAWINGS.
11. ALL INSULATION, MATERIAL, COVERINGS, ADHESIVES, VAPOR BARRIERS AND TAPES SHALL CONFORM TO NFPA '90A, FLAME SPREAD CLASSIFICATION NOT TO EXCEED 25 AND SMOKE DEVELOPMENT NOT TO EXCEED 50.
12. ALL MECHANICAL AIR DISTRIBUTION EQUIPMENT SHALL BE HUNG AND/OR SUPPORTED IN A LEVEL POSITION UNLESS SPECIFICALLY NOTED OTHERWISE. VIBRATION ISOLATORS SHALL BE UTILIZED TO INSURE FINAL EQUIPMENT INSTALLATION PRODUCES A MAXIMUM OF 45 dB ABOVE CEILING.
13. MECHANICAL CONTRACTOR SHALL COORDINATE ALL ELECTRICAL CONNECTIONS TO MECHANICAL EQUIPMENT BEFORE ANY ELECTRICAL CONNECTIONS ARE LOCATED FOR MECHANICAL EQUIPMENT.
14. BID MECHANICAL SYSTEM AS FOLLOWS:
 - A. HOT AIR SYSTEM – BASE BID.
 - B. HOT WATER SYSTEM – ALT. 1.
 - C. HOT AIR WITH INDIVIDUAL CONTROL – ALT. 2
 - D. HOT WATER WITH INDIVIDUAL CONTROL – ALT. 2A.
15. *DESIGN CONDITIONS – MAINTAIN 70° AT MINUS 15°.



MECHANICAL SPECIFICATIONS

NOT TO SCALE

01A-6004

PLUMBING SPECIFICATIONS:

FURNISH LABOR, MATERIALS TO COMPLETE WORK SPECIFIED OR INDICATED ON PLANS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: DRAINAGE, SEWER WASTE, VENT SYSTEMS, COLD WATER SYSTEM, HOT WATER SYSTEM, PLUMBING FIXTURES, AND WATER SERVICE. MATERIALS, METHODS AND DETAILS OF PLUMBING WORK SHALL CONFORM TO "UNIFORM PLUMBING CODE" AND APPLICABLE STATE AND LOCAL CODES (LATEST EDITION).

PIPE, PIPING INSTALLATION:

- A. METAL PIPE SHALL BE STRAIGHT, FREE FROM DENTS, SCARS, BURNS, AND DISTORTIONS, END REAMED OUT SMOOTH.
- B. PROVIDE PROPER ALLOWANCES FOR EXPANSION AND CONTRACTION.
- C. CLEAN PIPING WHEN INSTALLED, KEEP CLEAN.
- D. PITCH AND GRADE: 1. SOIL, WASTE DRAINAGE, UNIFORM 1/4" PER FOOT EXCEPT WHERE SHOWN OTHERWISE. 2. HOT AND COLD WATER; LEVEL OR SLIGHTLY PITCHED TOWARD DRAIN POINTS.

UNIONS:

- A. PROVIDE AT ALL VALVES AND EQUIPMENT WHEREVER NECESSARY TO ALLOW REPAIRS OR REPLACEMENT.
- B. PROVIDE UNION SAME AS THE PIPING IN WHICH THEY ARE BEING INSTALLED.
- C. UNIONS FOR STEEL PIPING 2" AND SMALLER, 150 PSI MALLEABLE IRON GROUND JOINT, BRASS TO IRON SEAT.
- D. UNIONS FOR COPPER PIPING 2" AND SMALLER SHALL BE COPPER TO COPPER TYPE.
- E. INSTALL DIELECTRIC UNIONS WHERE PIPING OF DISSIMILAR MATERIALS ARE JOINED.

PIPE AND FITTINGS:

- A. SCHEDULE 40, PVC PIPE SHALL BE ACCEPTABLE IN LIEU OF CAST IRON FOR DRAIN, WASTE AND VENT PIPING WHERE APPROVED BY THE LOCAL GOVERNING CODES AND ORDINANCES.
- B. IN LOCATIONS WHERE PVC IS NOT APPROVED FOR USE, PIPING SHALL BE SERVICE WEIGHT CAST IRON FOR SIZED LARGER THAN 1-1/2", OR GALVANIZED SCHEDULE 40 STEEL PIPE WITH MALLEABLE IRON SCREWED VENT FITTINGS FOR SIZES 1-1/2" AND SMALLER.
- C. FITTING TO BE SUITABLE FOR TYPE OF PIPE USED.
- D. ALL DOMESTIC HOT, COLD WATER LINES ABOVE THE BUILDING SLAB TO BE TYPE "1" HARD COPPER IS INSTALLED, JOINTS BETWEEN PIPE AND FITTINGS SHALL BE BRAZED. NO JOINTS WILL BE PERMITTED IN SOFT COPPER UNDER THE SLAB.
- E. ALL CHANGES IN PIPE SIZES IN SOIL PIPE SHALL BE MADE WITH REDUCED FITTINGS. WYE FITTINGS WITH 1/8" OR 1/16" BEND OR COMBINATION WYE AND 1/8" BEND FITTINGS SHALL BE USED WHERE CHANGES IN DIRECTION OCCUR. SANITARY LONG SWEEP BENDS OR TEES MAY BE USED FOR CONNECTIONS TO BRANCH LINES, TO FIXTURES, AND TO ALL VERTICAL RUNS OF PIPE. INSTALL IN ACCORDANCE WITH UPC APPENDIX "D".
- F. SLOPE ALL SEWER PIPING 3" AND SMALLER AT 2% PER FOOT AND 4" AND LARGER AT 1% PER FOOT. ROOF DRAIN PIPING WHERE SHOWN ON DRAWINGS, SHALL BE SAME AS SPECIFIED FOR WASTE PIPING.

VALVES:

- A. VALVES SHALL HAVE TEST RATING OF NOT LESS THAT 125 PSI.
- B. VALVE MATERIAL: BRONZE MATERIAL FOR SIZE 2" AND SMALLER, IRON BODY BRONZE MOUNTED FOR 2-1/2" AND LARGER.
- C. VALVE ENDS FOR THREADED PIPE: SCREWED FOR SIZE 2-1/2" AND SMALLER.
- D. VALVE ENDS FOR COPPER WATER TUBE TYPE "L": SOLDER-JOINT TYPE.
- E. GATE VALVES SHALL HAVE SOLID TAPERED WEDGE.
- F. GLOBE VALVES SHALL BE SCREWED BRONZE.
- G. CHECK VALVES, SWING TYPE, SCREWED, BRONZE BODY, COMPOSITION DISC.
- H. CHECK VALVES, SWING TYPE FLANGED, IRON BODY BRASS MOUNTED, BRONZE SEAT, COMPOSITION DISC.
- I. ALL VALVES TO BE BALL VALVES WHERE POSSIBLE.

CLEANOUTS:

- A. FULL SIZE CLEANOUTS SHALL BE INSTALLED AT THE BASE OF EACH WASTE OR SOIL STACK, AND AT THE END OF EACH HORIZONTAL RUN OF PIPE. THE DISTANCE BETWEEN CLEANOUTS IN HORIZONTAL RUNS OF PIPING SHALL NOT EXCEED 50'-0".
- B. ALL CLEANOUTS SHALL BE INSTALLED IN LOCATIONS EASILY ACCESSIBLE FOR RODDING (IN UNFURNISHED AREAS WHEREVER POSSIBLE) WHERE STACKS OR OTHER PIPING ARE CONCEALED, CLEANOUTS SHALL BE INSTALLED FLUSH WITH FLOOR AND PROVIDED WITH FLANGED CLEANOUT COVER. PROVIDE ACCESS PANELS AS REQUIRED.

ROOF FLASHING:

- A. VENTS THROUGH ROOF TERMINATE 12" ABOVE THE ROOF OR FIREWALL.
- B. FLASH WITH LONG BOOT LEAD FLASHING AROUND PIPE.
- C. THE BASE OF THE FLASHING SHALL BE MINIMUM 12" X 12" ON THE ROOF.

SANITARY SYSTEM:

- A. CONTRACTOR TO VERIFY ELEVATIONS OF SEWER MAINS BEFORE STARTING WORK. LAY PIPING TRUE TO LINE AND GRADE UNIFORMLY UNLESS OTHERWISE INDICATED OR DIRECTED, MAINTAIN 36" MINIMUM COVER ABOVE PIPING OUTSIDE BUILDINGS.

WATER SUPPLY SYSTEMS:

- A. BUILDING PIPING: PROVIDE A COMPLETE PIPING SYSTEM AS SHOWN ON PLANS INCLUDING SHUT-OFF AND DRAIN VALVE ON SERVICE TO ALL FIXTURES AND EQUIPMENT OUTLETS REQUIRING A COLD AND/OR HOT WATER SUPPLY. ALL BRANCH MAINS AND CONNECTIONS TO RISERS SHALL BE VALVED AND DRIP COCKS PROVIDED SO THAT THE ENTIRE SYSTEM MAY BE DRAINED. FIXTURE STOPS SHALL BE INSTALLED ON ALL FIXTURE CONNECTIONS.

TESTS FOR PLUMBING AND DRAINAGE SYSTEMS:

- A. ALL HOT AND COLD WATER LINES SHALL BE CAPPED OR PLUGGED AND TESTED WITH 125 LBS. HYDROSTATIC TEST AND PROVEN TIGHT BEFORE ANY PIPING IS COVERED OR CONCEALED IN ANY PART OF THE BUILDING.
- B. ALL WASTE AND VENT PIPING SHALL BE TESTED WITH WATER OR AIR FREEZE-PROOF AS REQUIRED BY THE UNIFORM PLUMBING CODE.
- C. GAS PIPING, IF ANY, SHALL BE TESTED AS REQUIRED BY LOCAL OR STATE GAS CODE.
- D. BEFORE FINAL ACCEPTANCE OF THE SYSTEM AS A WHOLE, THIS CONTRACTOR SHALL MAKE ALL ADJUSTMENTS AS REQUIRED AND PLACE THE ENTIRE PLUMBING SYSTEM IN SATISFACTORY OPERATING CONDITION.

PLUMBING EQUIPMENT:

- A. SILLCOCK: NIBCO FIG. NO. 62-8S, WITH ANTI-SIPHON PROTECTION.
- B. HOSE BIBBS: THREADED END, 3/4" SIZE, ADJUSTABLE FLANGE, INDEXED FOUR ARM HANDLE, BRASS, AMERICAN STANDARD OR EQUAL, WHERE NECESSARY.
- C. STOP VALVES: ALL FIXTURES, SILLCOCKS, YARD HYDRANTS, HOSE BIBBS, ROUGH-INS, ETC. TO BE SUPPLIED WITH STOP VALVES TO PREVENT SHUTTING DOWN ENTIRE WATER SYSTEM WHEN REPLACING FAUCET WASHERS.
- D. VACUUM BREAKERS: PROVIDE LINE SIZE VACUUM BREAKER ON ALL BRANCH LINES TO ALL OUTLETS WITH THREADED OUTLETS WHERE A GARDEN HOSE MAY BE ATTACHED AND WHERE INDICATED IN THE PLANS.

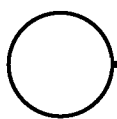
FIXTURES:

- A. FURNISH AND INSTALL PLUMBING FIXTURES, TYPE "A" QUALITY SPECIFIED IN THE FIXTURE LIST.
- B. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF FIXTURES UNTIL FINAL ACCEPTANCE OF THE BUILDING BY OWNER. ANY DAMAGED FIXTURE SHALL BE IMMEDIATELY REPLACED BY THIS CONTRACTOR REGARDLESS OF WHO CAUSED THE DAMAGE.
- C. ALL EXPOSED METAL PARTS REQUIRED FOR FIXTURE INSTALLATION SHALL BE CHROMIUM PLATED UNLESS A DIFFERENT PLATING OR FINISH IS SPECIFIED. THIS INCLUDES FIXTURE CONNECTIONS, FIXTURE STOPS, TRAPS DRAIN STRAINERS, ETC.
- D. PROVIDE LOW-FLOW PLUMBING FIXTURE DEVICES FOR: WATERCLOSETS 1.6 GPF, URINALS 1.5 GPF, LAVATORIES 2.75 GPM, SINKS 2.75 GPM, AND SHOWERS 3.0 GPM.
- E. BACKFLOW PREVENTER: PROVIDE WATTS SERIES 7 OR #9BD. DOUBLE CHECK VALVE TYPE (VERIFY WITH LOCAL CODES) AT ALL CONNECTIONS TO EQUIPMENT (ICE MAKERS, VENDING MACHINES, COFFEE MAKERS, ETC.)

WATER CALCULATIONS

WATER CLOSET	4 @ 3	=	12
LAVATORY	5 @ 1	=	5
BATHTUB	3 @ 2	=	6
SHOWER	1 @ 2	=	2
SINK	1 @ 2	=	2
DISH WASHER	1 @ 2	=	2
WASHER	1 @ 2	=	2
HOSE BIBB	1 @ 3	=	3
TOTAL			34

60 PSI - 34 @ 55'
PER TABLE 10-2



WATER CALCULATIONS

NOT TO SCALE

01A-6006

WATER CALCULATIONS

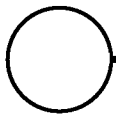
WATER CALCULATIONS:

W/C	1	5
LAVATORY	1	<u>2</u>
TOTAL F.U.		7
TOTAL F.U. AVAILABLE		23
TOTAL REMAINING		16

DESIGN PRESSURE = 60 PSI
LONGEST PIPE RUN = 55'
3/4" METER
3/4" BUILDING SUPPLY
PER TABLE 10-2 (15 FPS MAX. VELOCITY)

NOTE:

ALL WASTE PIPE SHALL BE SCHEDULE 40 A.B.S.
ALL WATER LINES SHALL BE TYPE "L" COPPER TUBING.
WATER CLOSETS SHALL BE HANDICAP ACCESSIBLE, 1-1/2 GALLON
CAPACITY.



WATER CALCULATIONS

NOT TO SCALE

01A-6007

FIRE SPECIFICATION

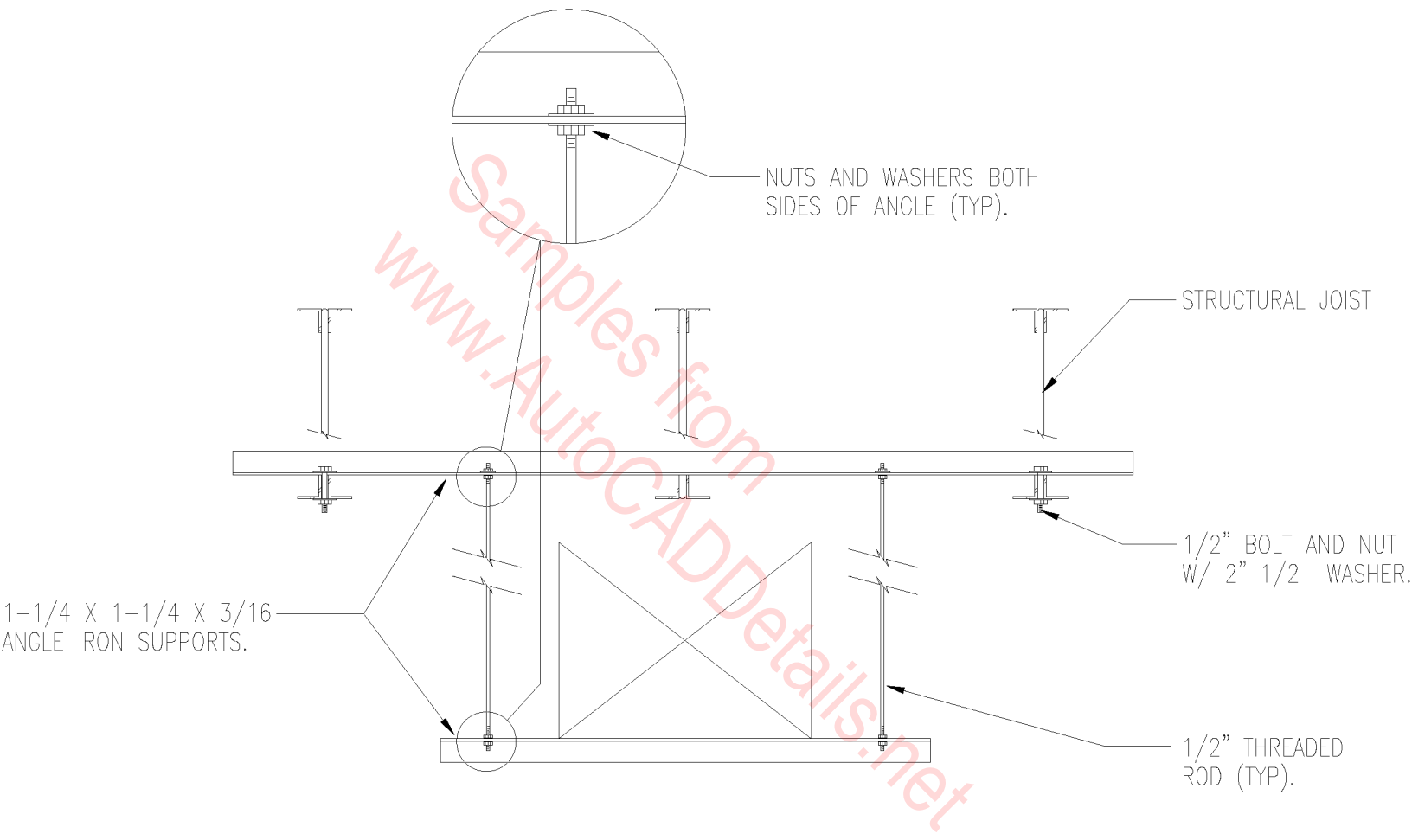
1. FIRE SPRINKLER CONTRACTOR SHALL PROVIDE A HYDRAULICALLY CALCULATED, WET PIPE SPRINKLER SYSTEM THROUGH-OUT THE ENTIRE BUILDING, INCLUDING EXTERIOR CANOPIES, IF APPLICABLE. SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS.
2. THE DESIGN AND INSTALLATION SHALL CONFORM TO THE GENERAL REQUIREMENTS OF APPLICABLE SECTIONS OF NFPA STANDARDS INCLUDING NFPA 13 & 13A, THE SPECIFIC REQUIREMENTS OF THE LOCAL FIRE PREVENTION BUREAU, AND THE OWNER'S INSURANCE AGENT.
3. THE HYDRAULIC CALCULATIONS AND SYSTEM SHALL CONFORM TO THE REQUIREMENTS OF APPLICABLE SECTIONS OF NFPA STANDARDS VERIFY BY ACTUAL TEST AT THE SITE THE AVAILABLE WATER FLOW RATE AND RESIDUAL PRESSURE. WHEN SUBMITTING SHOP DRAWINGS INCLUDE COPIES OF WATER SYSTEM TEST REPORTS AND ALL HYDRAULIC CALCULATION WITH SYSTEM CURVES. INDICATE LOCATION OF WATER FLOWS AND PRESSURE TESTS, AND SHOW THESE TEST RESULTS AS A BASIS FOR THE CALCULATIONS.
4. FIRE SPRINKLER WORK SHALL INCLUDE CONNECTION TO THE CITY WATER MAIN WITH ALL REQUIRED DEVICES, INCLUDING DETECTOR CHECK VALVE, UNDERGROUND PIPING, HYDRANTS, POST INDICATOR VALVES, BACKFLOW PREVENTER ASSEMBLIES, ALARM VALVES, SIAMESE PUMPER CONNECTION, VARIABLE PRESSURE ALARM, AND MISCELLANEOUS EQUIPMENT AS REQUIRED.
5. COORDINATE LOCATION OF ALL MAINS, LATERALS AND PENDANT DROPS WITH MECHANICAL DRAWINGS AND REFLECTED CEILING PLAN. PROVIDE TWO COMPLETE SETS OF SHOP DRAWINGS STAMPED BY THE FIRE PROTECTION AUTHORITY, TO THE ARCHITECT PRIOR TO FABRICATION OR INSTALLATION OF SPRINKLER SYSTEMS. PROVIDE EXCAVATION AND BACK-FILLING NECESSARY FOR INSULATION OF UNDERGROUND PIPING.
6. SPRINKLER PIPING SHALL BE CONCEALED ABOVE CEILINGS IN FINISHED AREAS AND SPRINKLER HEADS SHALL BE CHROME-PLATED. PIPING IN OTHER AREAS MAY BE EXPOSED AND SPRINKLER HEADS UPRIGHT OR PENDANT TYPE, AS REQUIRED, NATURAL FINISH. THE GENERAL SPRINKLER PIPING SHALL BE INSTALLED AT MAXIMUM HEIGHT THROUGH THE BUILDING STRUCTURE, ETC. PROVIDE SEISMIC BRACING AS REQUIRED TO MEET LOCAL CODES. PENDENT DROPS SHALL BE ADEQUATELY SUPPORTED/BRACED FROM STRUCTURE TO PREVENT PIPING FROM MOVING.
7. ANCHOR ALL UNDERGROUND MAINS, TEES, ELLS, BENDS, AND VALVES, WITH CONCRETE THRUST BLOCKS, BOLTED TIE RODS, TIE RODS AND CLAMPS OR A COMBINATION OF RODS AND THRUST BLOCKS, TO RESIST THE UNBALANCED THRUST OF WATER PRESSURE OF 200 PSI OR 50 PSI ABOVE MAXIMUM STATIC PRESSURE, WHICHEVER IS GREATER.
8. PROVIDE GUARD POST TO PROTECT ALL POST INDICATOR VALVES, FIRE HYDRANTS, SIAMESE CONNECTIONS, ETC., WHEN THESE ITEMS OCCUR WITHIN 5 FEET OF PAVED AREAS.
9. PROVIDE A PRINTED SHEET NEXT TO THE SPRINKLER RISER MAIN, PROTECTED BY GLASS OR TRANSPARENT PLASTIC COVER, GIVING BRIEF INSTRUCTION REGARDING CONTROL, EMERGENCY PROCEDURES AND OTHER DATA AS DEEMED NECESSARY.
10. UNDERGROUND FIRE SPRINKLER PIPING SHALL BE TRANSITE CLASS 150 INDUSTRIAL PRESSURE PIPE WITH RING-TITE COUPLINGS, AWWA C400-53T. FITTINGS WITH RING-TITE BELLS, AWWA C100-55. IF LOCAL CODES PERMIT, UL LISTED AND APPROVED LABELED PVC PIPE AND FITTINGS MAY BE USED.
11. ABOVE GROUND FIRE SPRINKLER PIPING SHALL BE SCHEDULE 40 BLACK STEEL, ASTM A-795, ANSI B-16 125 LB. FITTINGS, THREADED CAST IRON 2" AND SMALLER, AND CAST IRON FLANGED OR 150 LB STEEL FLANGED OR WELDING 2-1/2" OR LARGER LIGHTWEIGHT BLACK STEEL PIPE (SCHEDULE 10) MAY BE USED WHERE ALLOWED BY NFPA AND/OR LOCAL ORDINANCES.
12. FIRE PROTECTION VALVES: 175 WWP, U.L. LISTED, FM APPROVED. POST INDICATOR VALVES SHALL BE PROVIDED WITH EXTENSION SECTION (VERIFY LENGTH).
13. SUPPORT HORIZONTAL PIPING WITH VERTICALLY ADJUSTABLE MALLEABLE SWIVEL RING OR WROUGHT STEEL CLEVIS TYPE HANGERS, SUSPENDED ON THREADED STEEL RODS. CLEVIS TYPE FOR LARGE PIPING.
14. ALARM CHECK VALVES: FURNISH AND INSTALL AN APPROVED CHECK VALVE WITH RETARDING CHAMBERS, GAUGES, RELAYS, ETC., TO OPERATE ALARM BELL/WATER MOTOR GONG UPON FLOW OF WATER THROUGH SPRINKLER SYSTEM; VALVE TO BE UL APPROVED. PROVIDE WATER PIPING TO WATER MOTOR IN ACCORDANCE WITH CODE AND MANUFACTURER'S RECOMMENDATIONS EXTERIOR WALLS ADJACENT TO RISERS.
15. SPRINKLER HEADS USING APPROVED UPRIGHT OR PENDENT, SPRAY TYPE, REGULAR BRONZE, OR PROPER DEGREE RATINGS AS REQUIRED, INSTALLED WHERE INDICATED AND IN CONFORMITY TO NFPA 13. PENDENT SPRINKLER HEADS SHALL BE CHROME-PLATED WITH PLATED ESCUTCHEONS. COORDINATE TYPE OF HEADS (RECESSED OR CONCEALED) WITH ARCHITECT.
16. FIRE DEPARTMENT CONNECTION: PROVIDE POLISHED CHROME-PLATED, EXPOSED WALL OR STAND-ALONE SIAMESE CONNECTION INCLUDING DOUBLE CLAPPER CHECKS, PLUGS AND CHAINS. PROVIDE POLISHED BRASS WALL PLATE LETTERED "AUTO SPKR." FIRE DEPARTMENT CONNECTION SHALL BE LOCATED WITHIN FOUR FEET OF THE CURB LINE OF AN ACCESS ROAD OR PRIVATE STREET, AND BE WITHIN APPROPRIATE DISTANCE OF A FIRE HYDRANT WITH APPROVED FLOW. HOSE THREADS SHALL MATCH LOCAL FIRE DEPARTMENT EQUIPMENT
17. OS&Y OR BUTTERFLY VALVE SHALL BE UL LISTED, FM APPROVED. VALVE TO BE LOCKED OR SUPERVISED AND RISER TO BE PROTECTED FROM PUBLIC, BUT ACCESSIBLE TO FIRE DEPARTMENT. ALARM CHECK VALVE SHALL BE UL LISTED, FM APPROVED. VALVE TO BE LOCKED OR SUPERVISED AND VALVE TO BE PROTECTED FROM PUBLIC, BUT ACCESSIBLE TO FIRE DEPARTMENT.
18. PRIOR TO CONNECTING THE OVERHEAD SPRINKLER PIPING, FLUSH UNDERGROUND MAIN AND STANDPIPE CONNECTIONS IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER'S INSURANCE AND/OR THE LOCAL REGULATORY AGENCIES AND MEET WITH THEIR APPROVAL. IN ADDITION, HYDRAULICALLY TEST FIRE SPRINKLER SYSTEM AT 100 PSI IN PRESENCE OF LOCAL FIRE MARSHAL AND PROVE TO BE TIGHT. UPON COMPLETION OF FIRE SPRINKLER SYSTEM, SUBMIT CERTIFICATE WHICH INDICATES THAT WORK HAS BEEN FLUSHED AND TESTED IN ACCORDANCE WITH NFPA #13, AND NFPA #14, AND THAT SYSTEM IS OPERATIONAL, COMPLETE, AND HAS NO DEFECTS.



FIRE SPECIFICATION

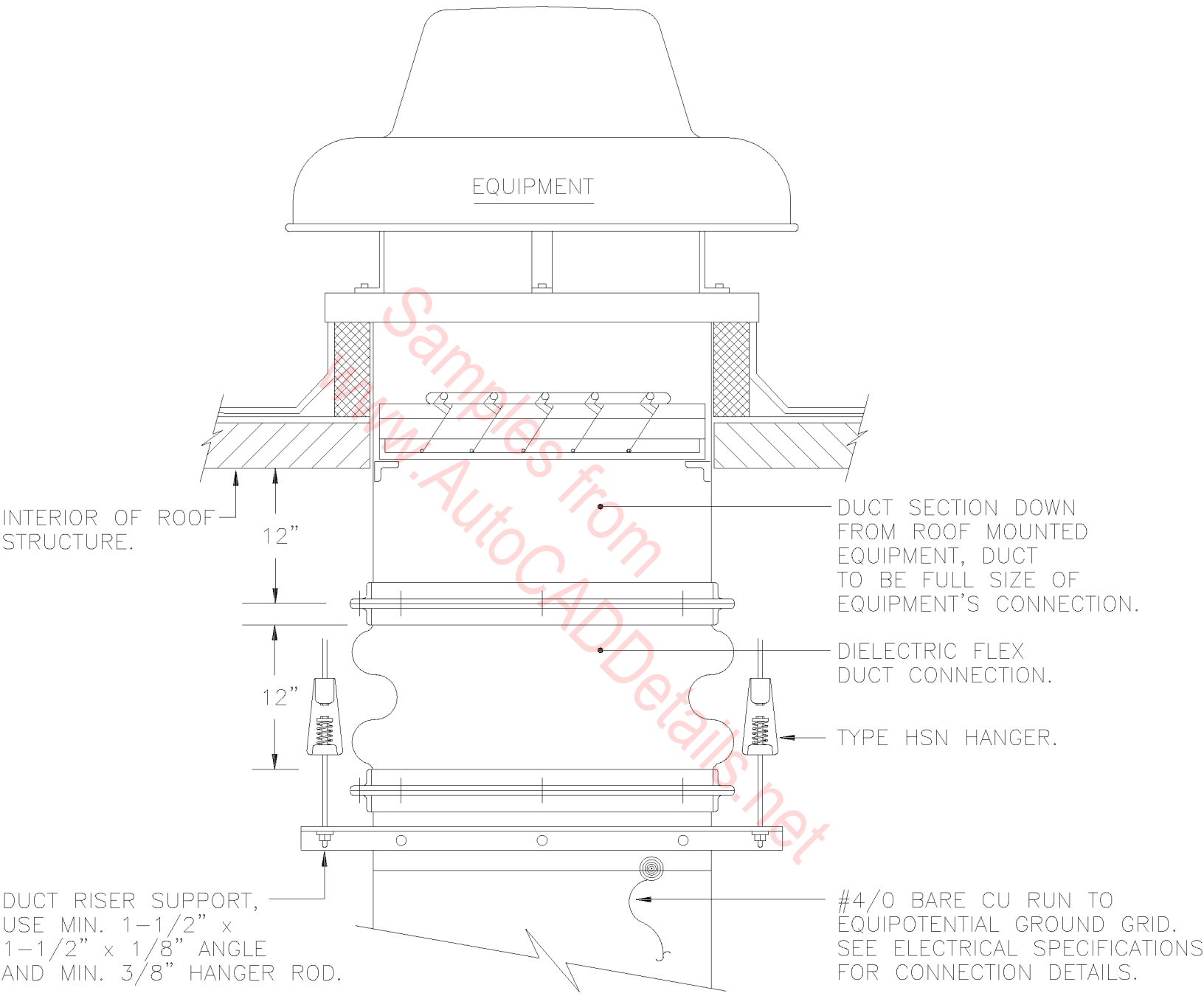
NOT TO SCALE

01A-6008



DUCT HANGER DETAIL

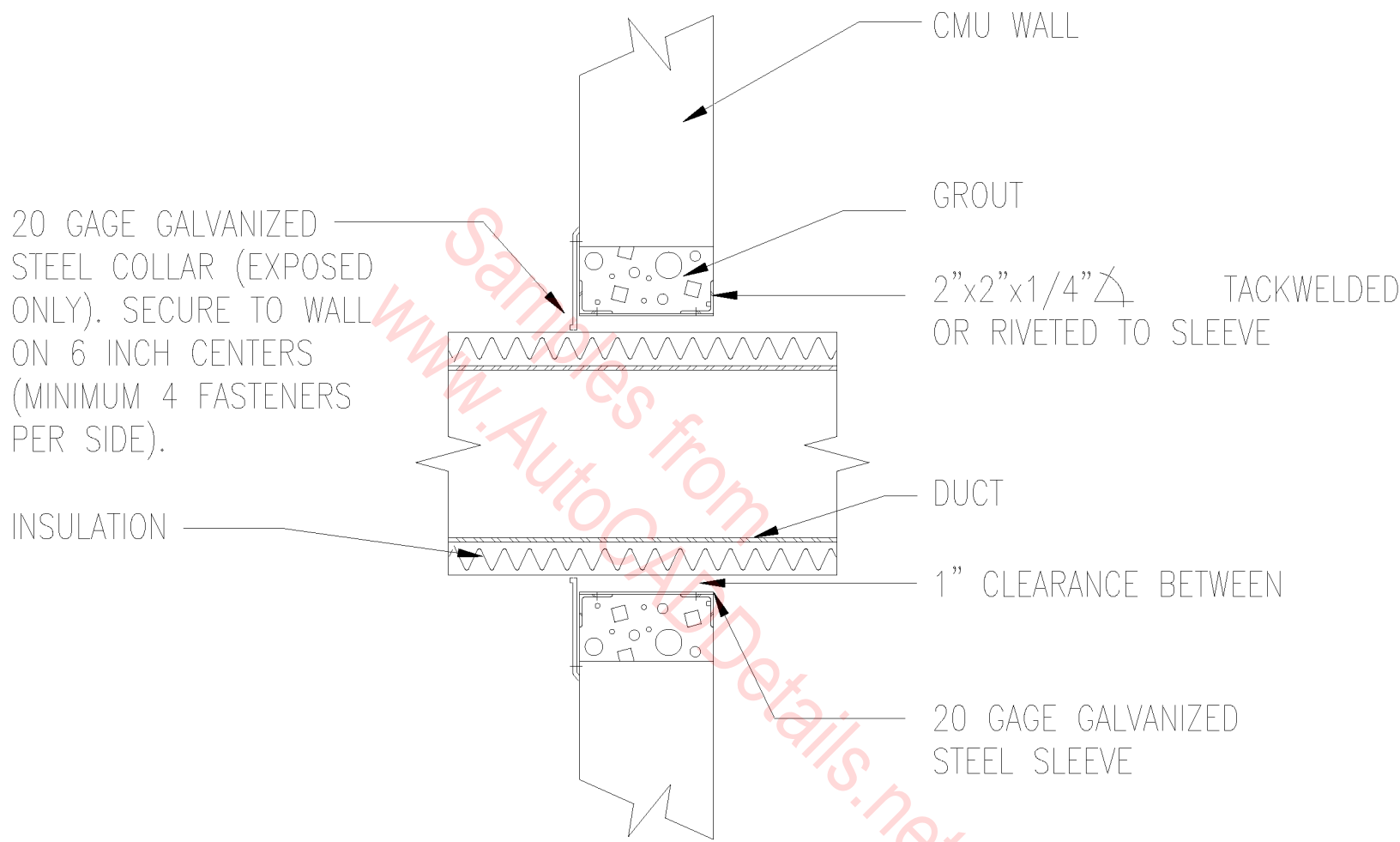
N.T.S.



DIELECTRIC FLEX DUCT CONNECTION

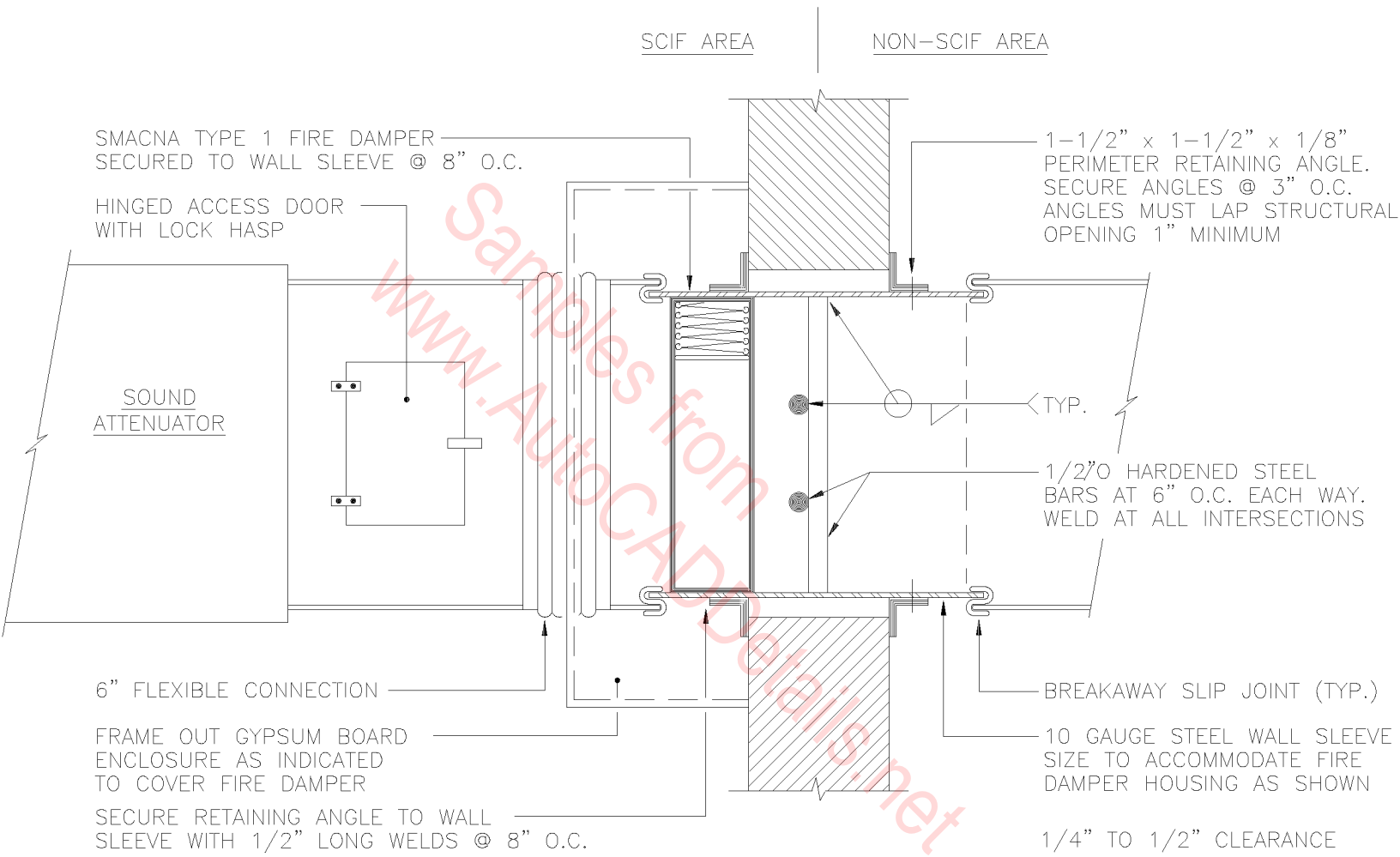
DETAIL FOR ROOF PENETRATIONS

N.T.S.



DUCT PENETRATION THROUGH WALL
 (NOT APPLICABLE TO FIRE-RATED WALLS)

N.T.S.

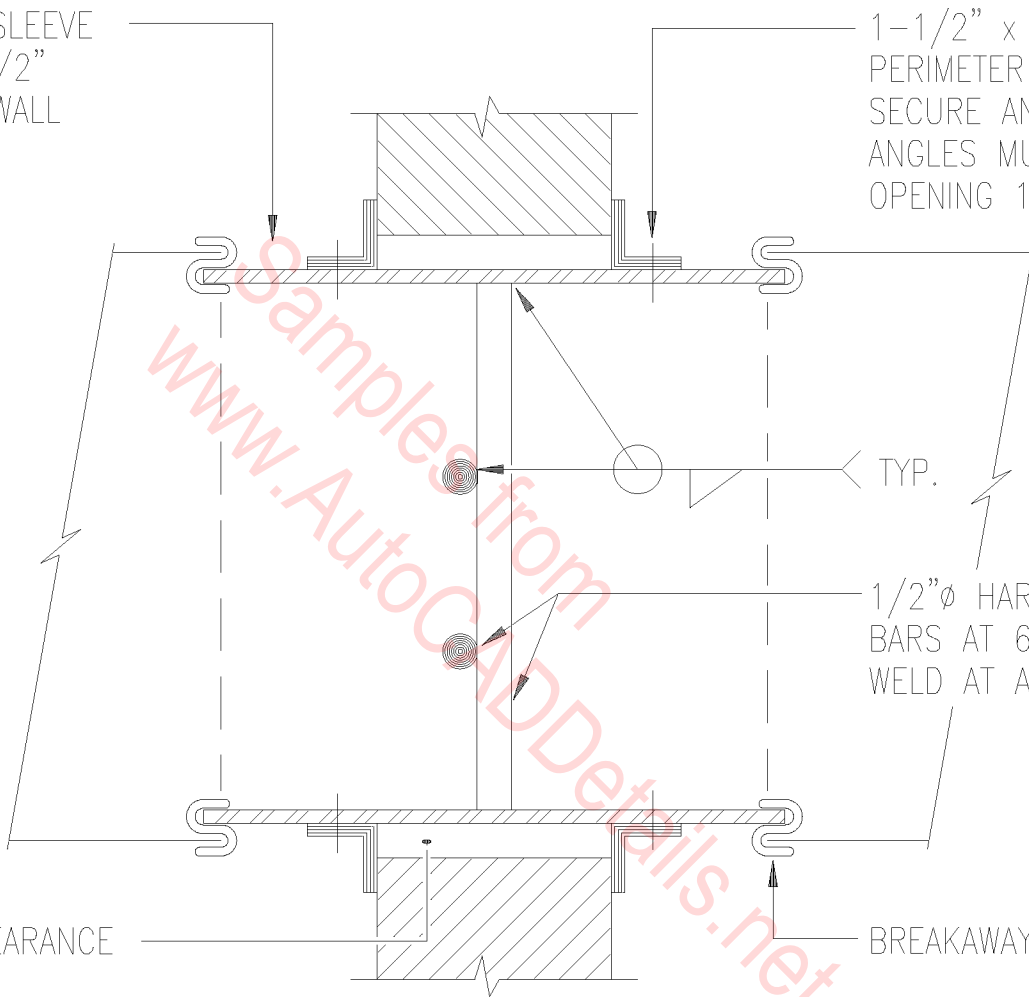


TYPICAL SCIF AREA DUCT
INSTALLATION DETAIL

N.T.S.

10 GAUGE STEEL SLEEVE
EXTEND +/- 2-1/2"
EACH SIDE FROM WALL

1-1/2" x 1-1/2" x 1/8"
PERIMETER RETAINING ANGLE.
SECURE ANGLES @ 3" O.C.
ANGLES MUST LAP STRUCTURAL
OPENING 1" MINIMUM



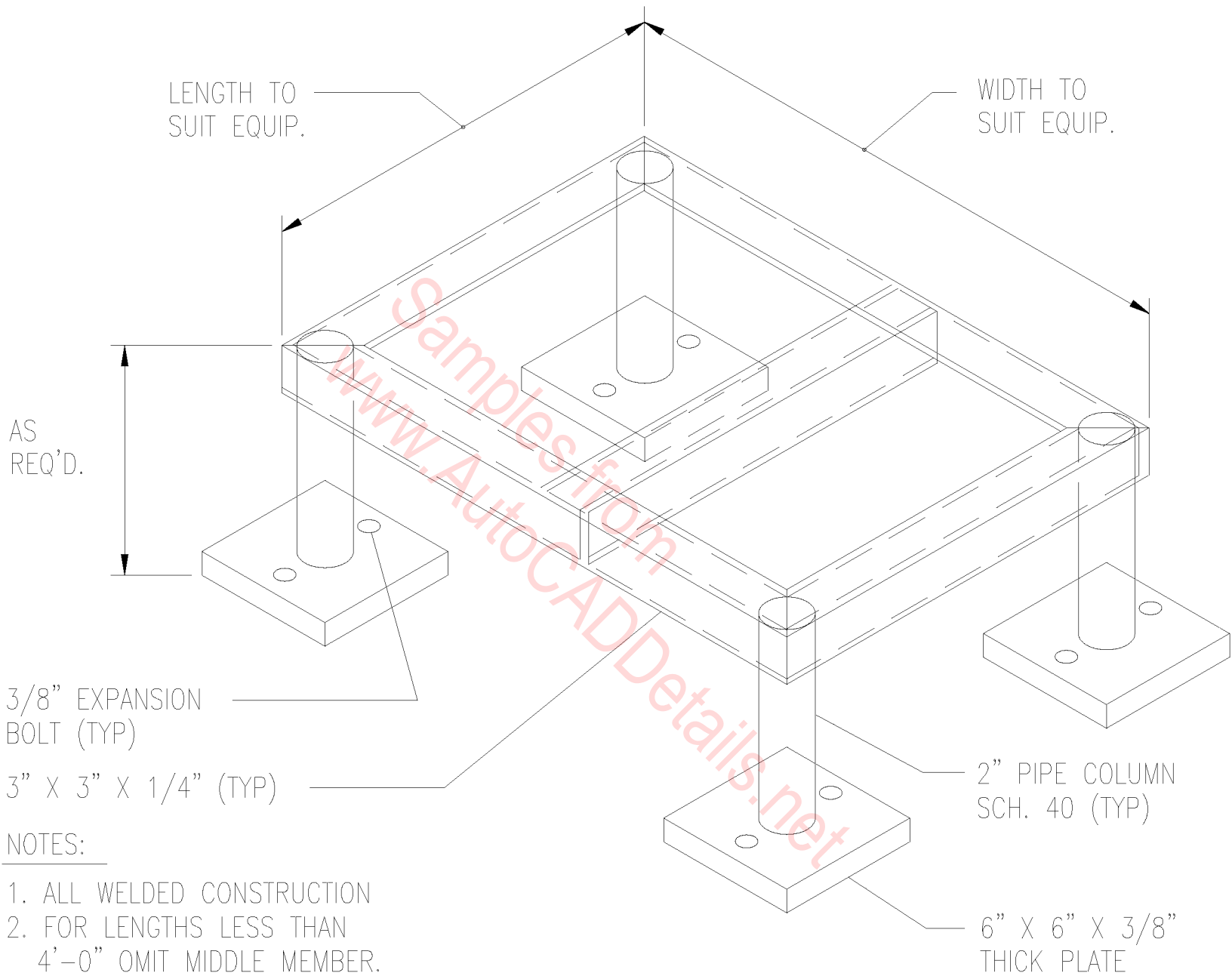
1/2"Ø HARDENED STEEL
BARS AT 6" O.C. EACH WAY.
WELD AT ALL INTERSECTIONS

1/4" TO 1/2" CLEARANCE

BREAKAWAY SLIP JOINT (TYP.)

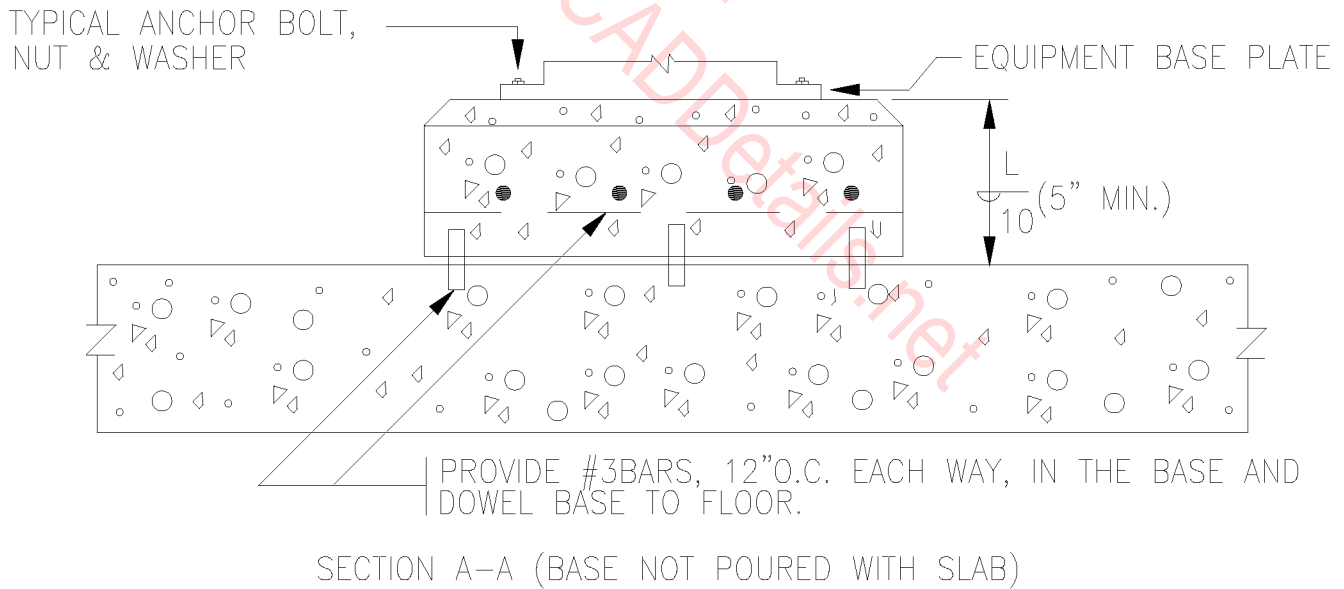
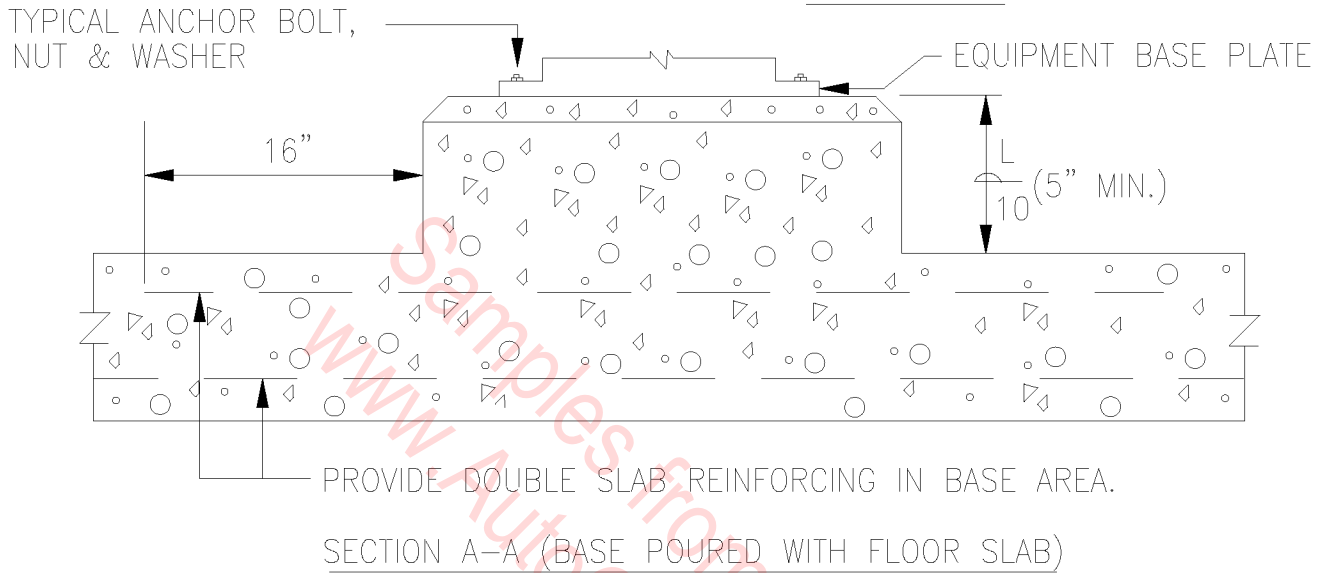
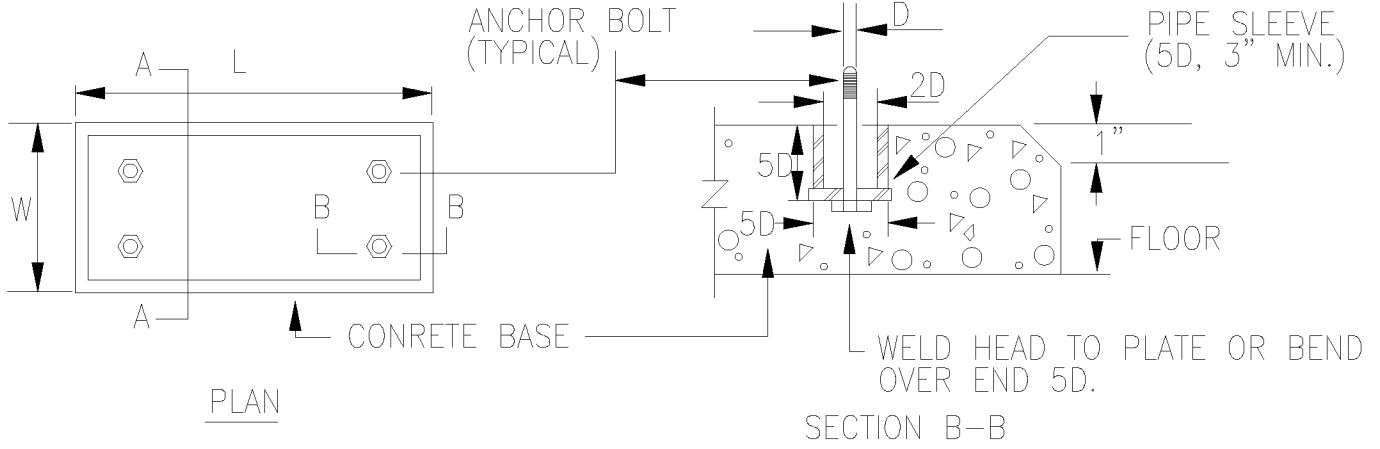
TYPICAL SECURITY BARS
INSTALLATION DETAIL

N.T.S.



TYPICAL SUPPORT FRAME DETAIL

N.T.S.

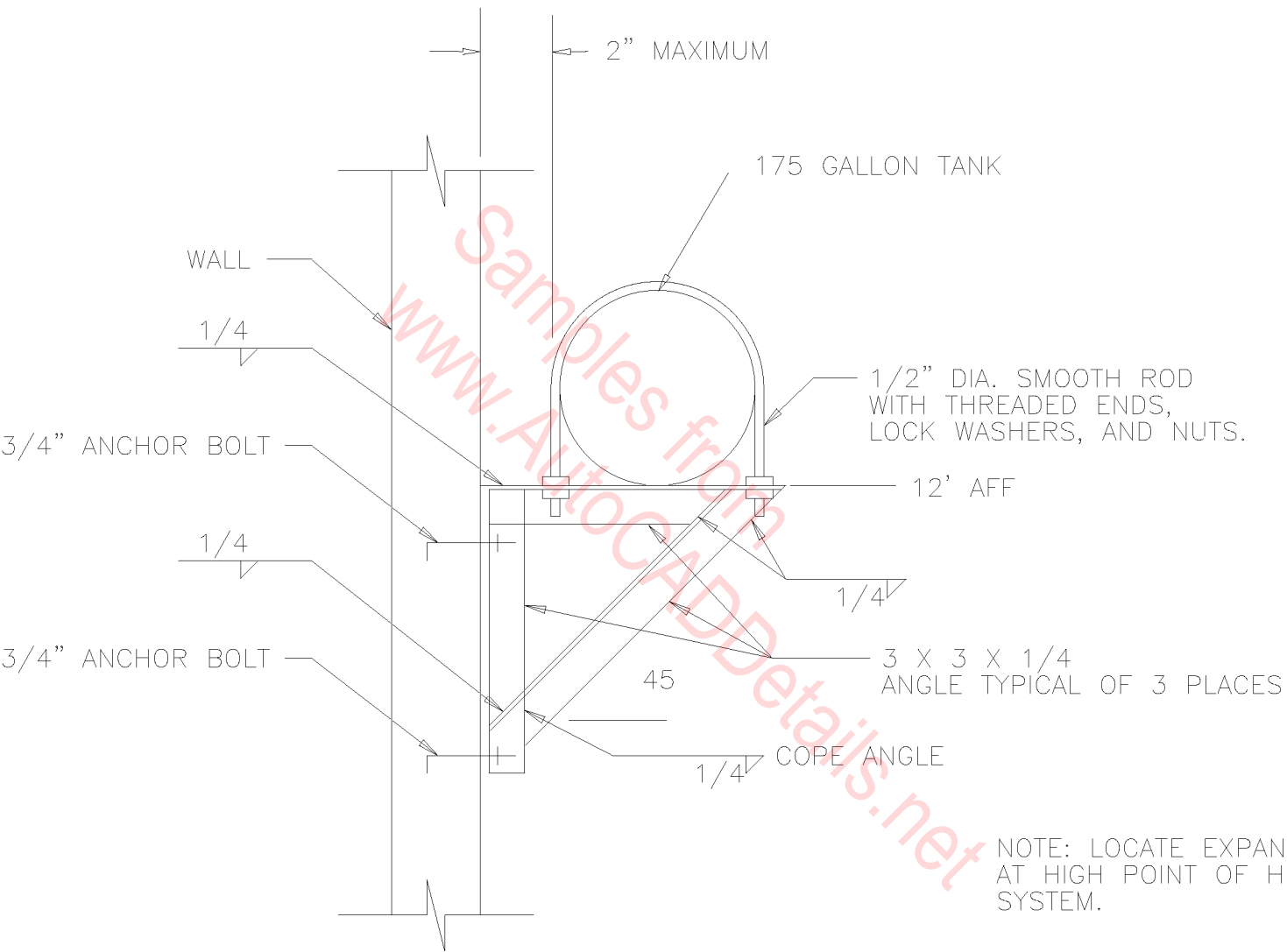


EQUIPMENT PAD DETAIL

N.T.S.

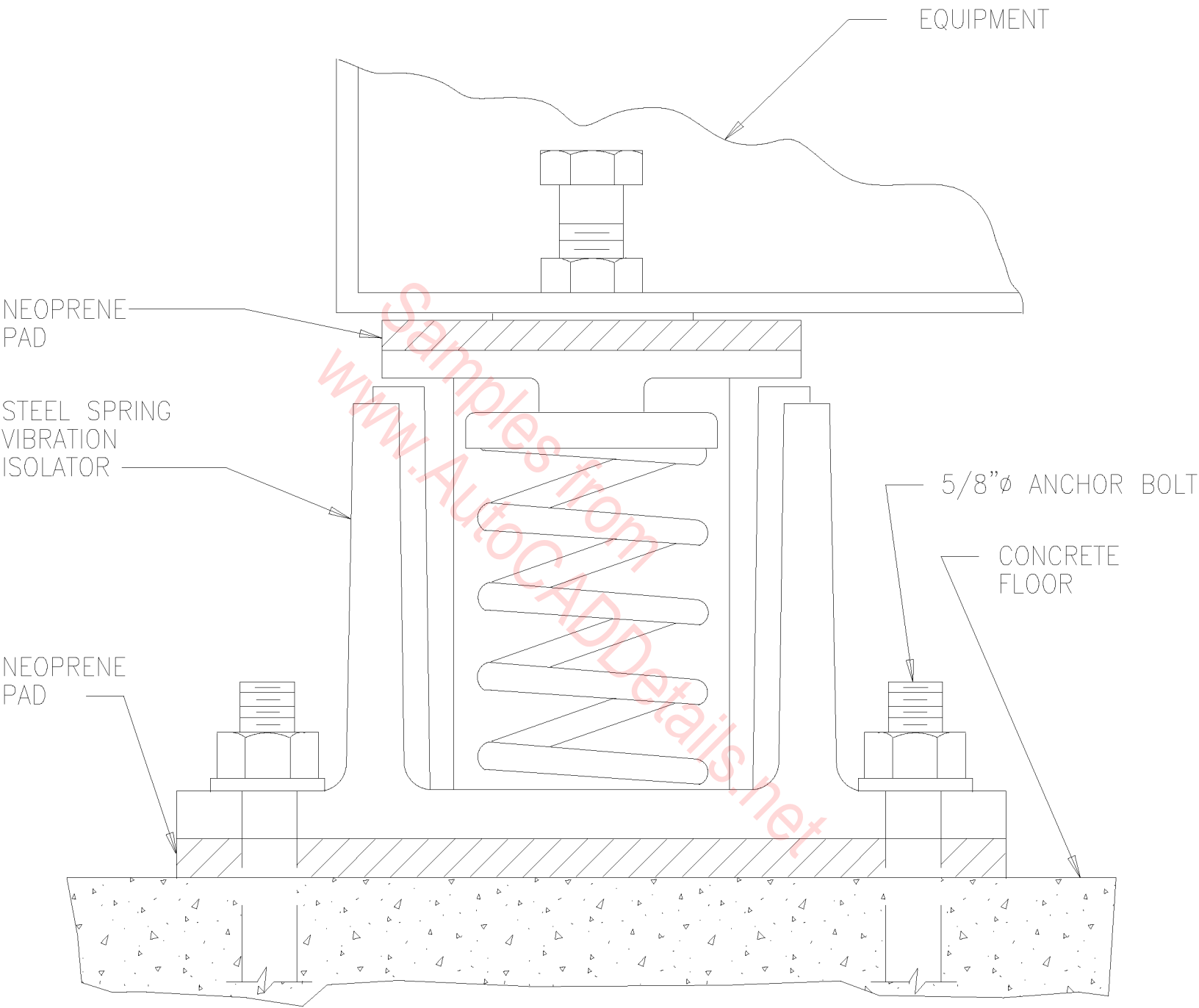
NOTE:

1. THIS DETAIL APPLIES TO EQUIPMENT NOT SPECIFIED TO BE MOUNTED ON SPRING ISOLATED BASES.
2. L AND W DIMENSIONS SHALL BE 6 INCHES GREATER THAN THE EQUIPMENT BASE PLATE.



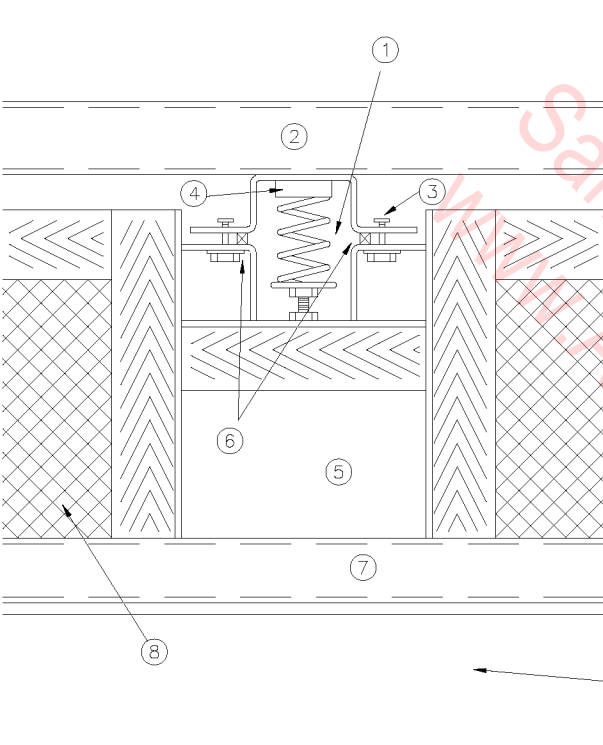
EXPANSION TANK SUPPORT

N.T.S.

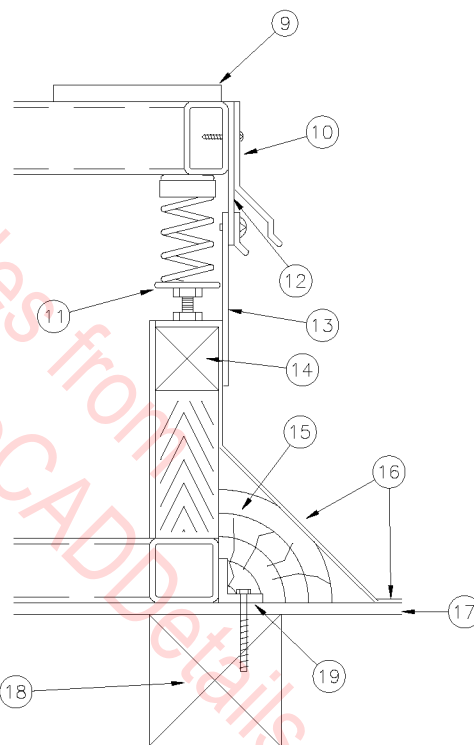


VIBRATION ISOLATOR DETAIL

N.T.S.



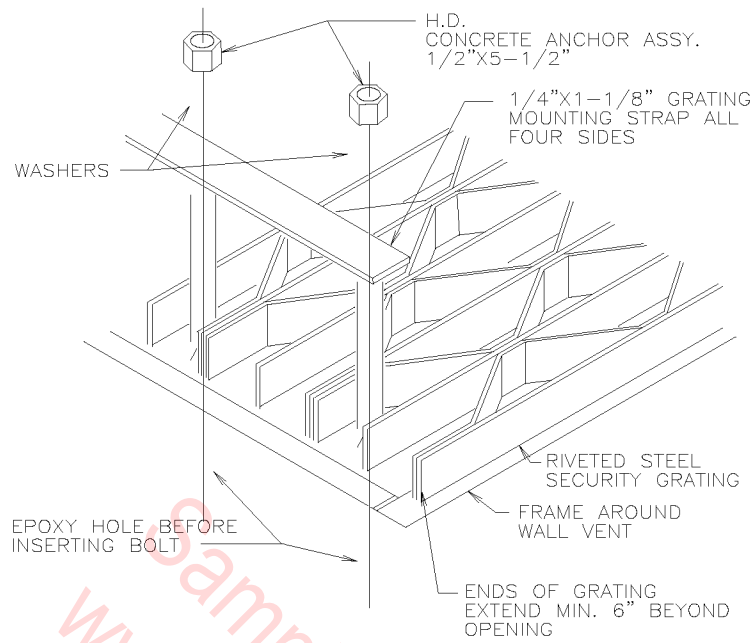
PARTIAL FRONT SECTION



SIDE VIEW

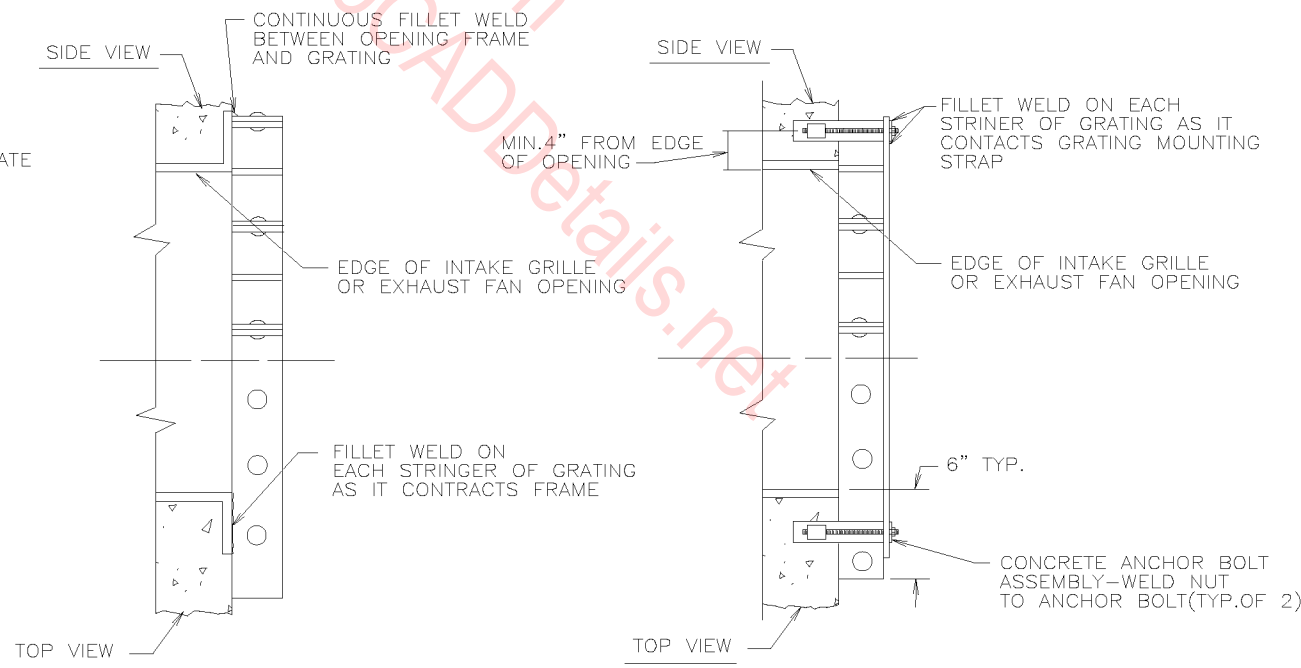
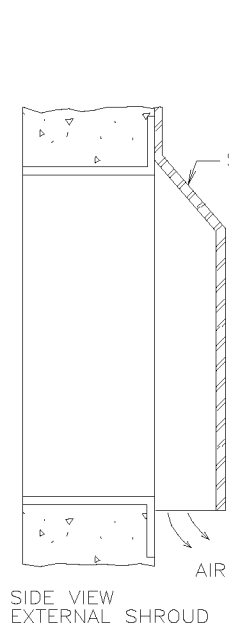
- ① 1" MINIMUM STATIC DEFLECTION
- ② 1 1/2" x 3" TUBE
- ③ RESTRAINING BOLT
- ④ ACOUSTICAL NEOPRENE SPRING CUP
- ⑤ SHEET METAL
- ⑥ REMOVABLE SPACER
- ⑦ 2" x 2" TUBE
- ⑧ RIGID CURB INSULATION (R-19)
- ⑨ CLOSED CELL NEOPRENE AIRSEAL
- ⑩ GALVANIZED FLASHING
- ⑪ STEEL CUP OR CASTING
- ⑫ CLOSED CELL NEOPRENE AIRSEAL
- ⑬ COVER PLATE
- ⑭ WOODEN PORT FRAME
- ⑮ CANT STRIP
- ⑯ ROOFING
- ⑰ PLYWOOD
- ⑱ STRUCTURAL FRAMING
- ⑲ SEISMIC ANGLE RESTRAINT WELDED TO BOTTOM TUBE. NUMBER OF ANGLES AND SIZE OF WOOD LAG SCREWS PER SPECIFICATION 15200.

TYPICAL A/C ROOFTOP SPRING CURB MOUNTING
 N.T.S.



SECURITY GRATING DETAILS

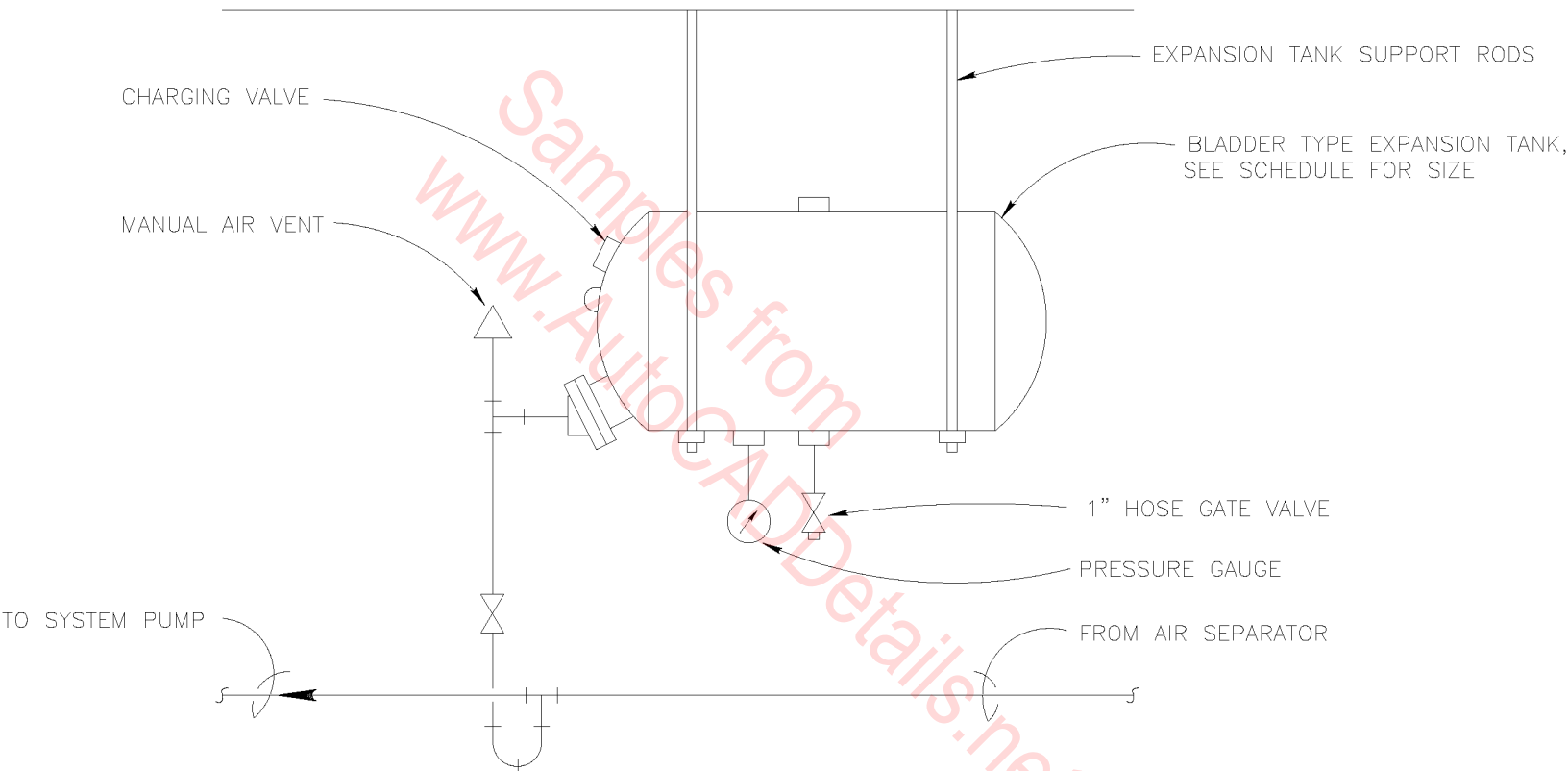
N.T.S.



NOTE: GRATING WILL BE INSTALLED OUTSIDE SECURE SPACE AT EXHAUST FAN OPENING AND INSIDE SECURE SPACE AT INTAKE GRILL OPENING

SECURITY GRATING DETAILS

N.T.S.



CHARGING VALVE

MANUAL AIR VENT

EXPANSION TANK SUPPORT RODS

BLADDER TYPE EXPANSION TANK,
SEE SCHEDULE FOR SIZE

1" HOSE GATE VALVE

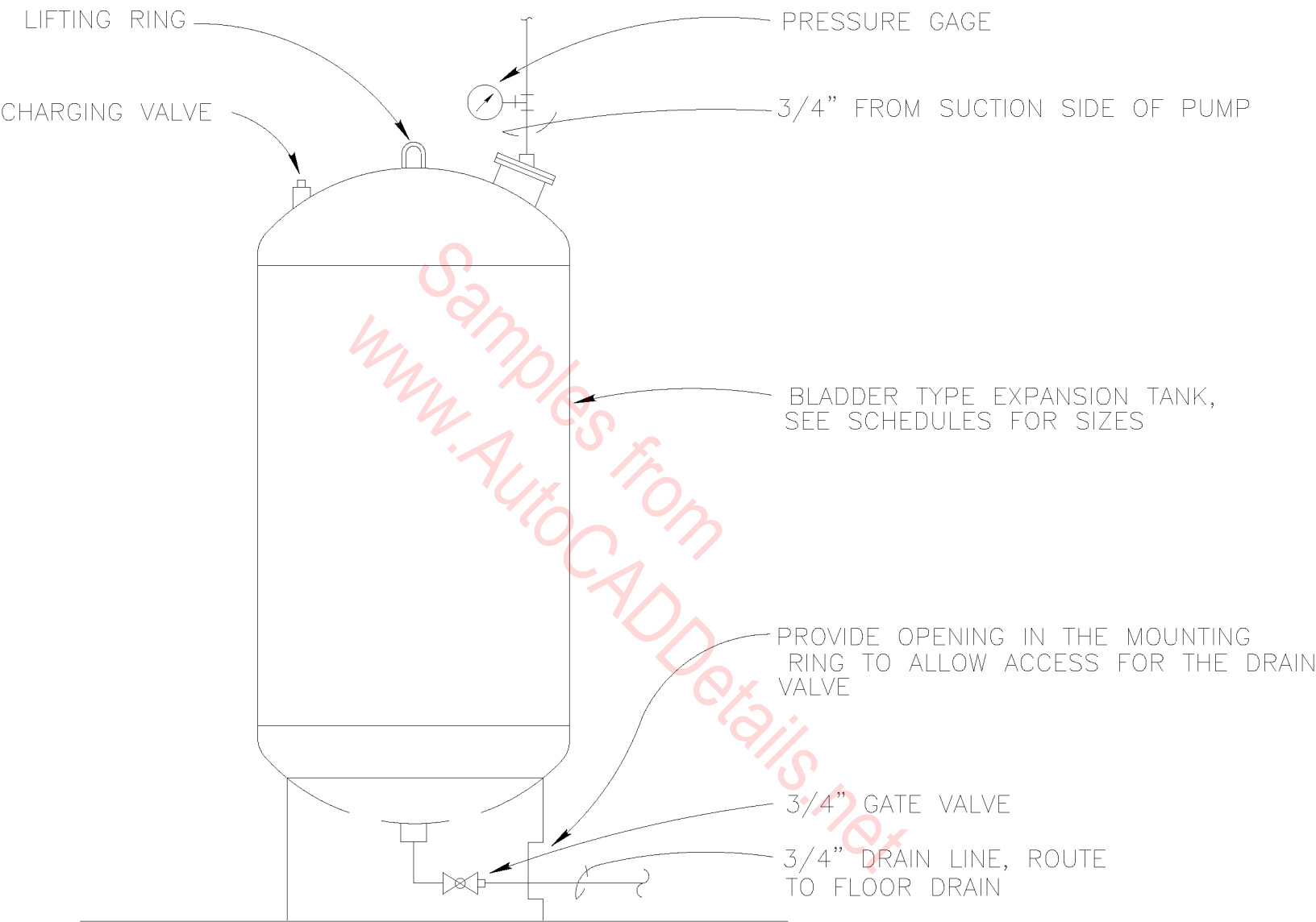
PRESSURE GAUGE

TO SYSTEM PUMP

FROM AIR SEPARATOR

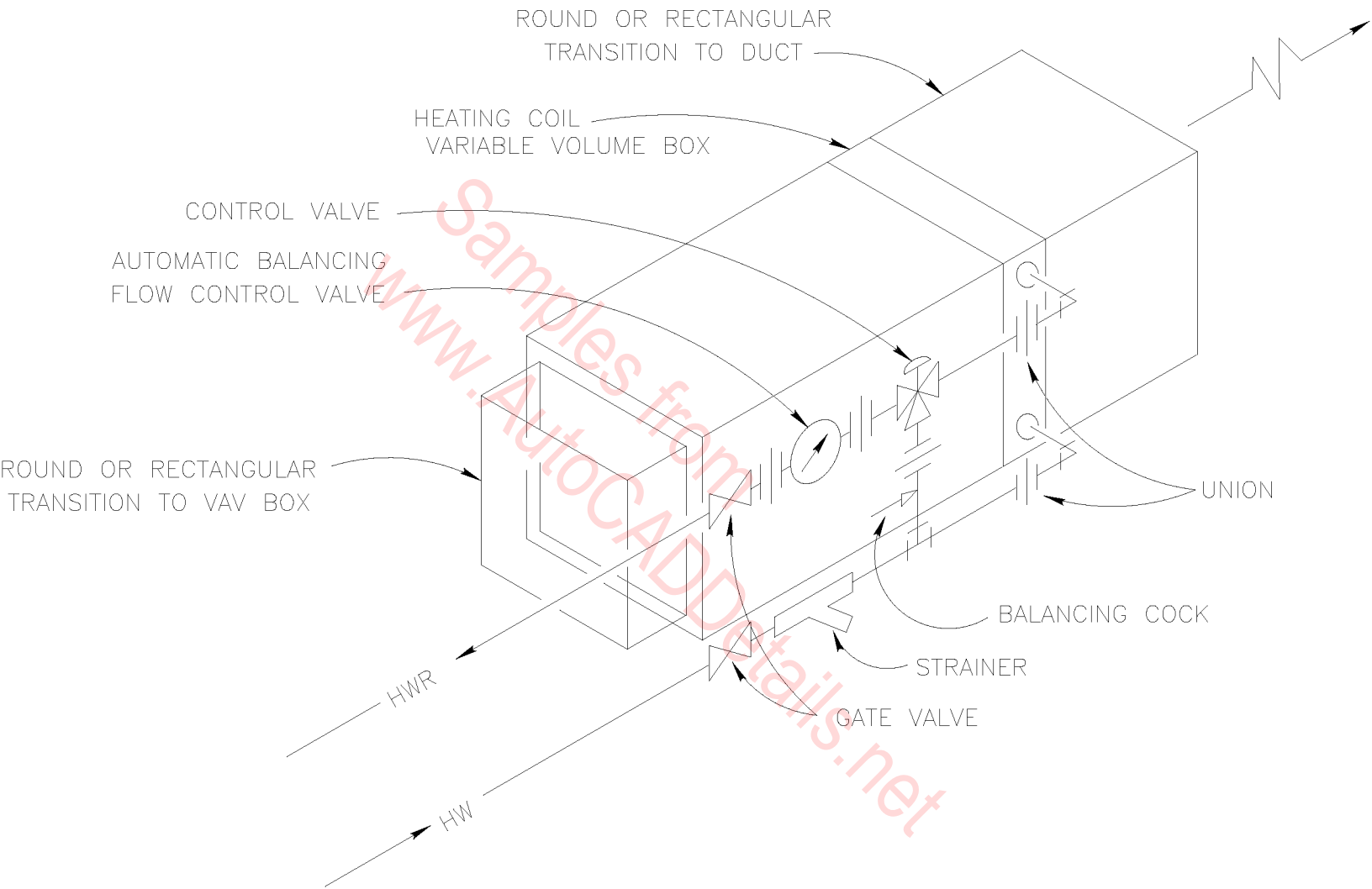
EXPANSION TANK DETAIL

N.T.S.

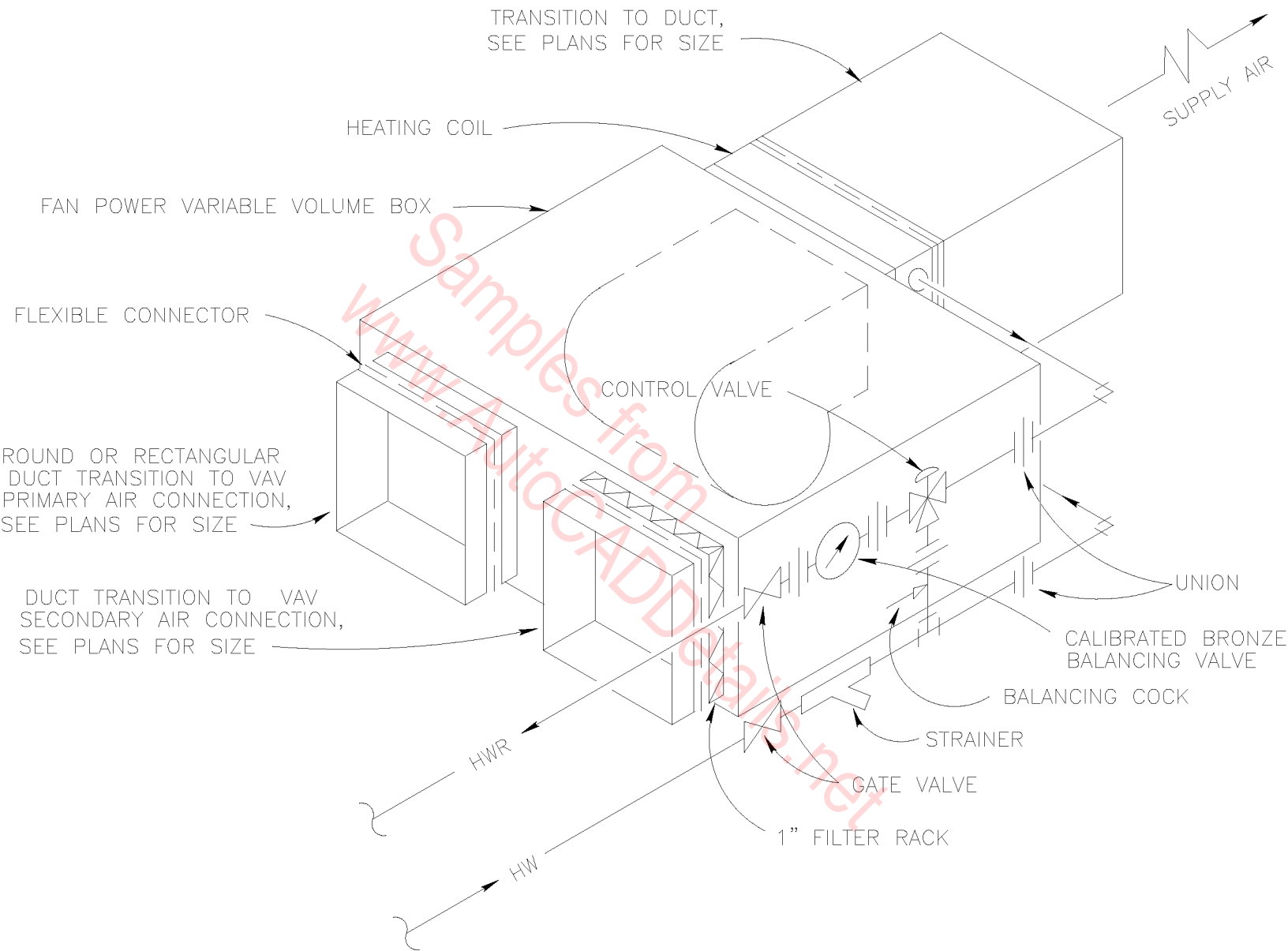


EXPANSION TANK DETAIL

N.T.S.

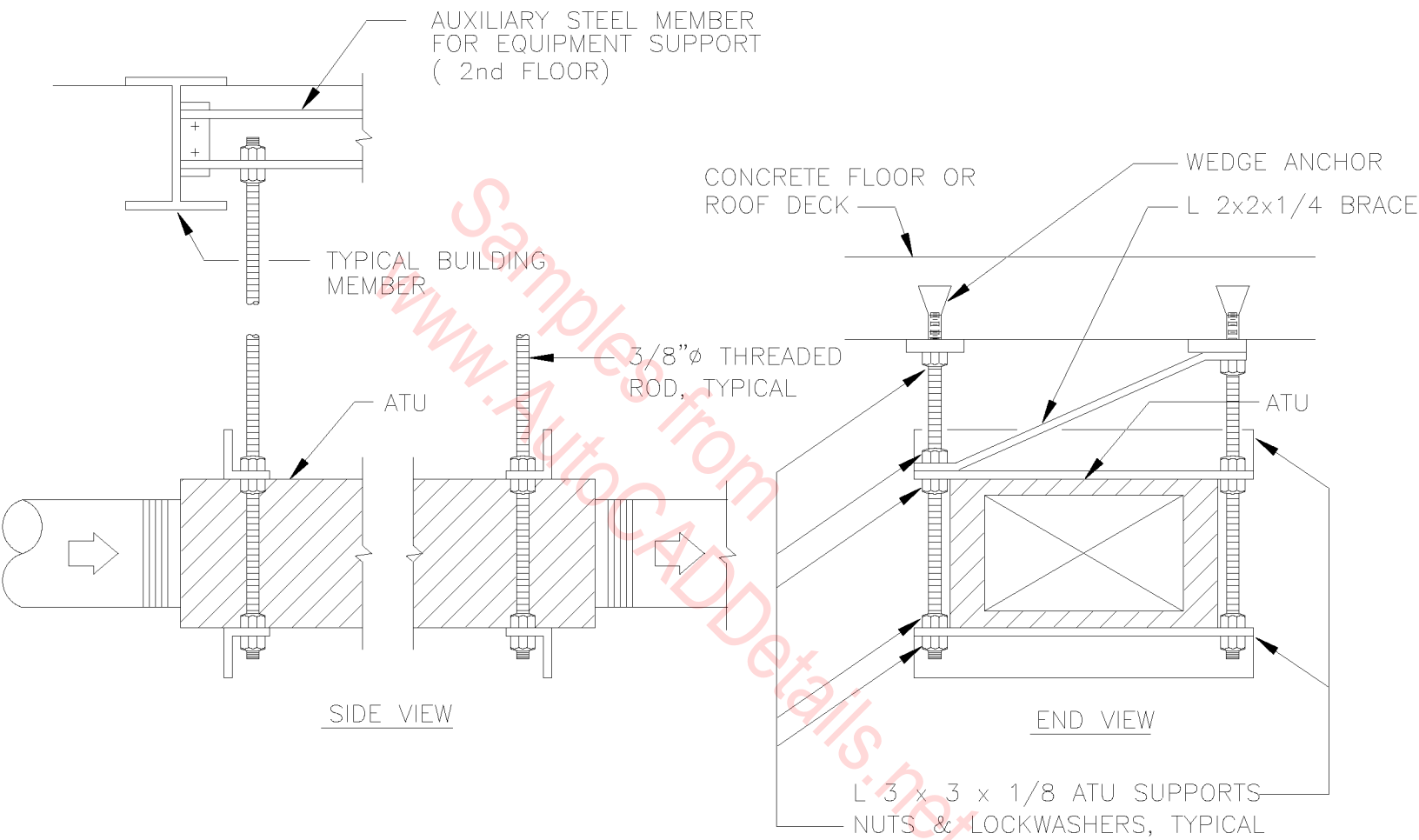


VARIABLE VOLUME BOX DETAIL
 N.T.S.



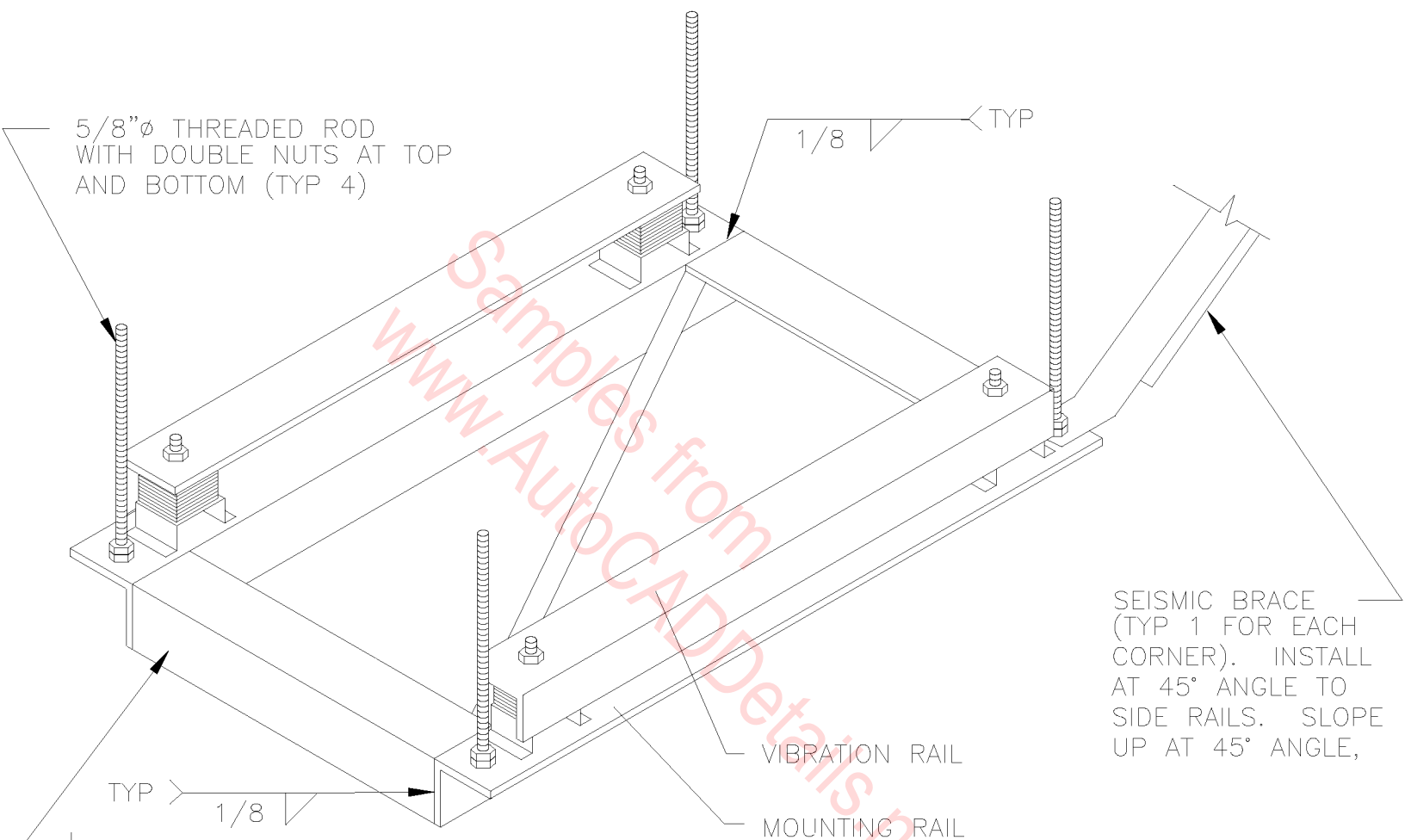
FAN POWERED VAV BOX DETAIL

N.T.S.



AIR TERMINAL
UNIT MOUNTING DETAIL

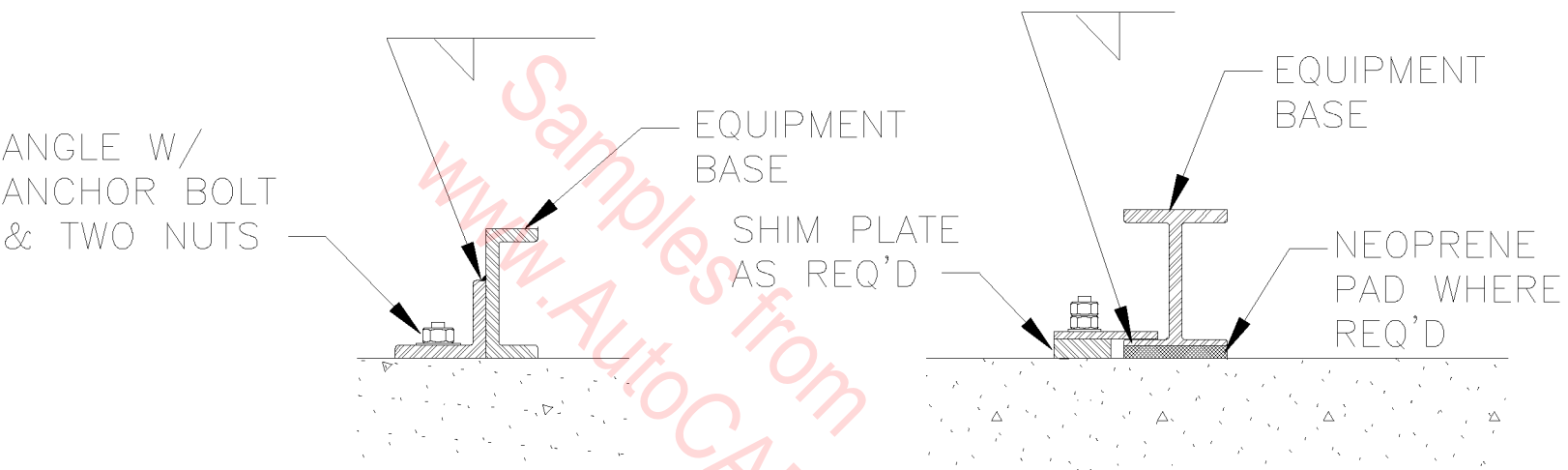
N.T.S.



NOTE TO DESIGNER:
 THREADED RODS AND
 ANGLES ARE TO BE SIZED
 BY THE DESIGNER

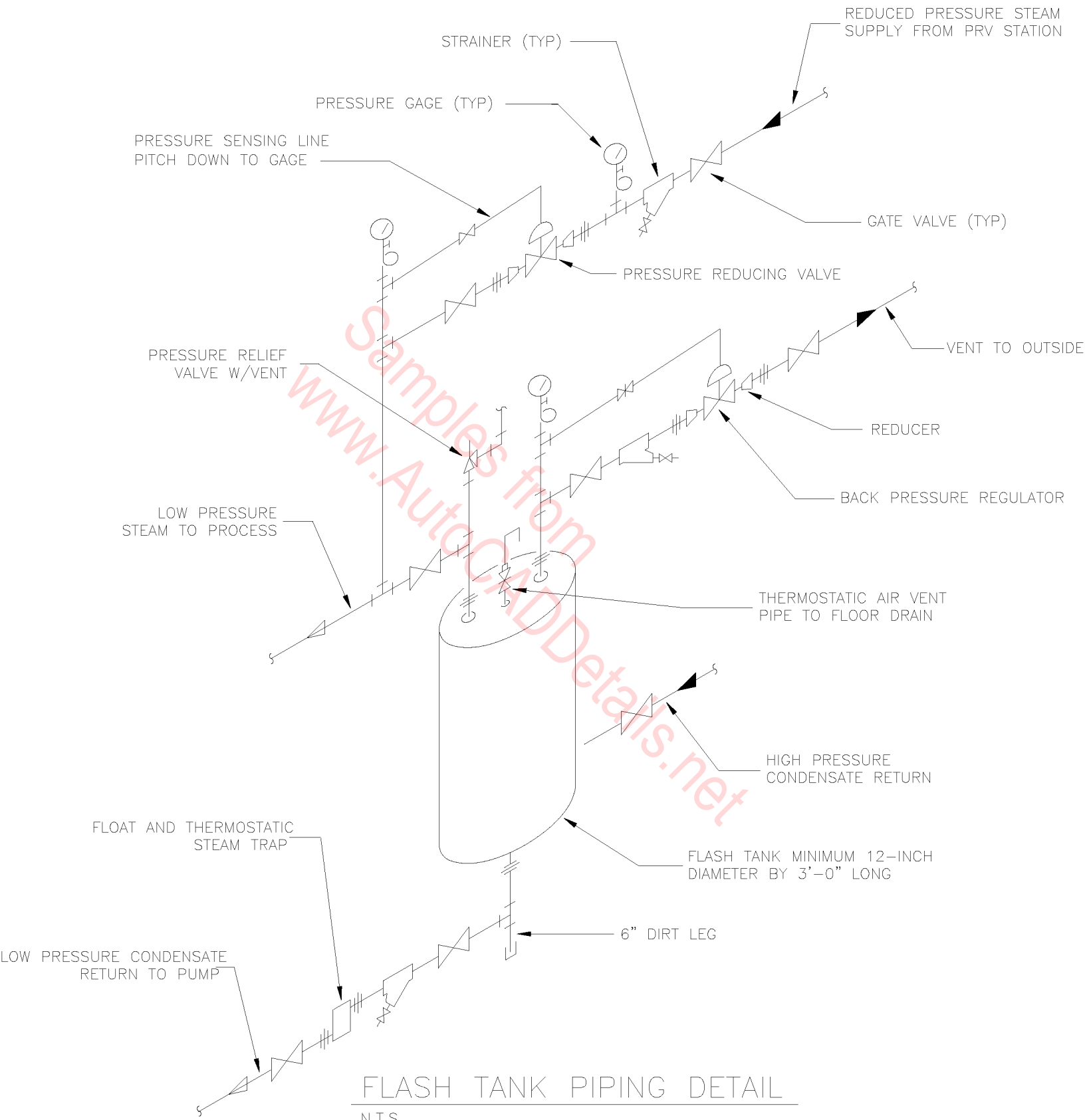
PLATFORM FOR SUSPENDING
EQUIPMENT FROM ROOF STRUCTURE

N.T.S.



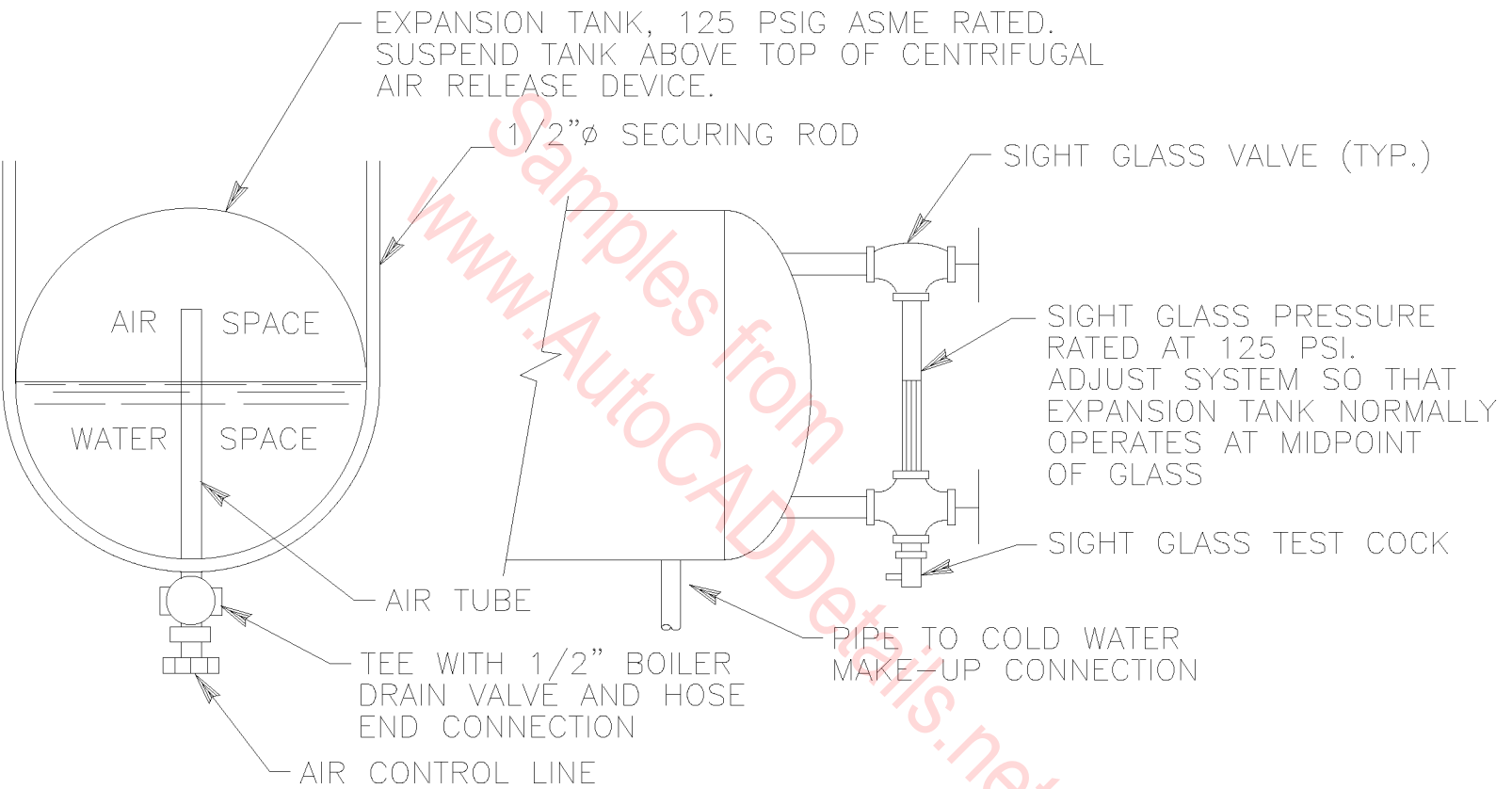
RESTRAINTS OF RIGIDLY MOUNTED MECHANICAL EQUIPMENT

N.T.S.



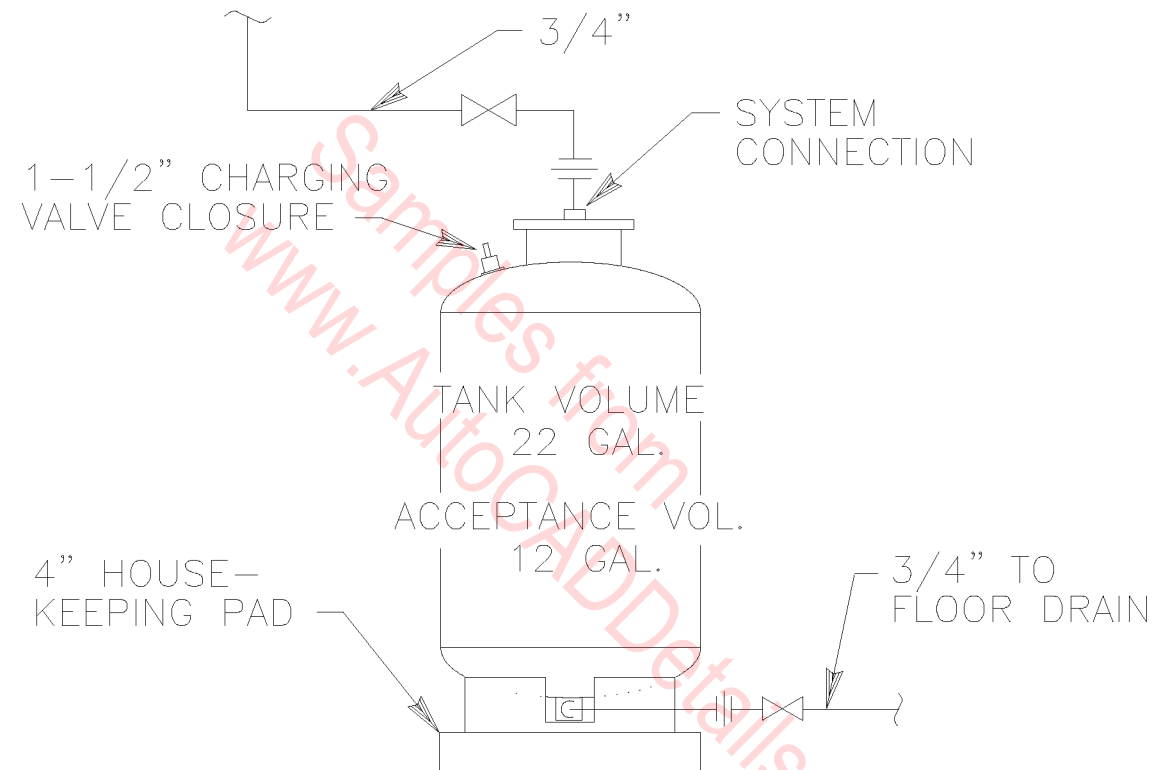
FLASH TANK PIPING DETAIL

N.T.S.



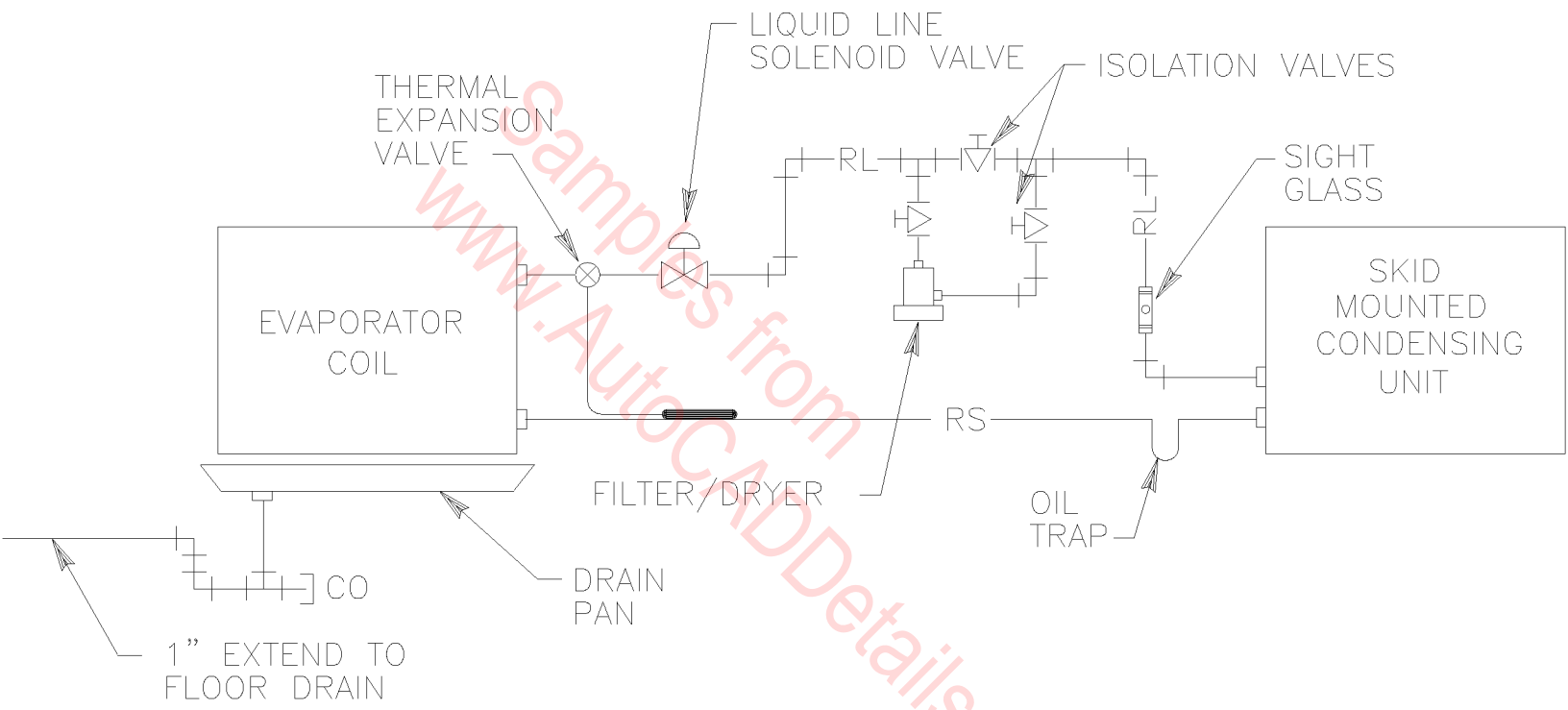
TYPICAL EXPANSION TANK MOUNTING DETAIL

N.T.S.



EXPANSION TANK INSTALLATION DETAIL

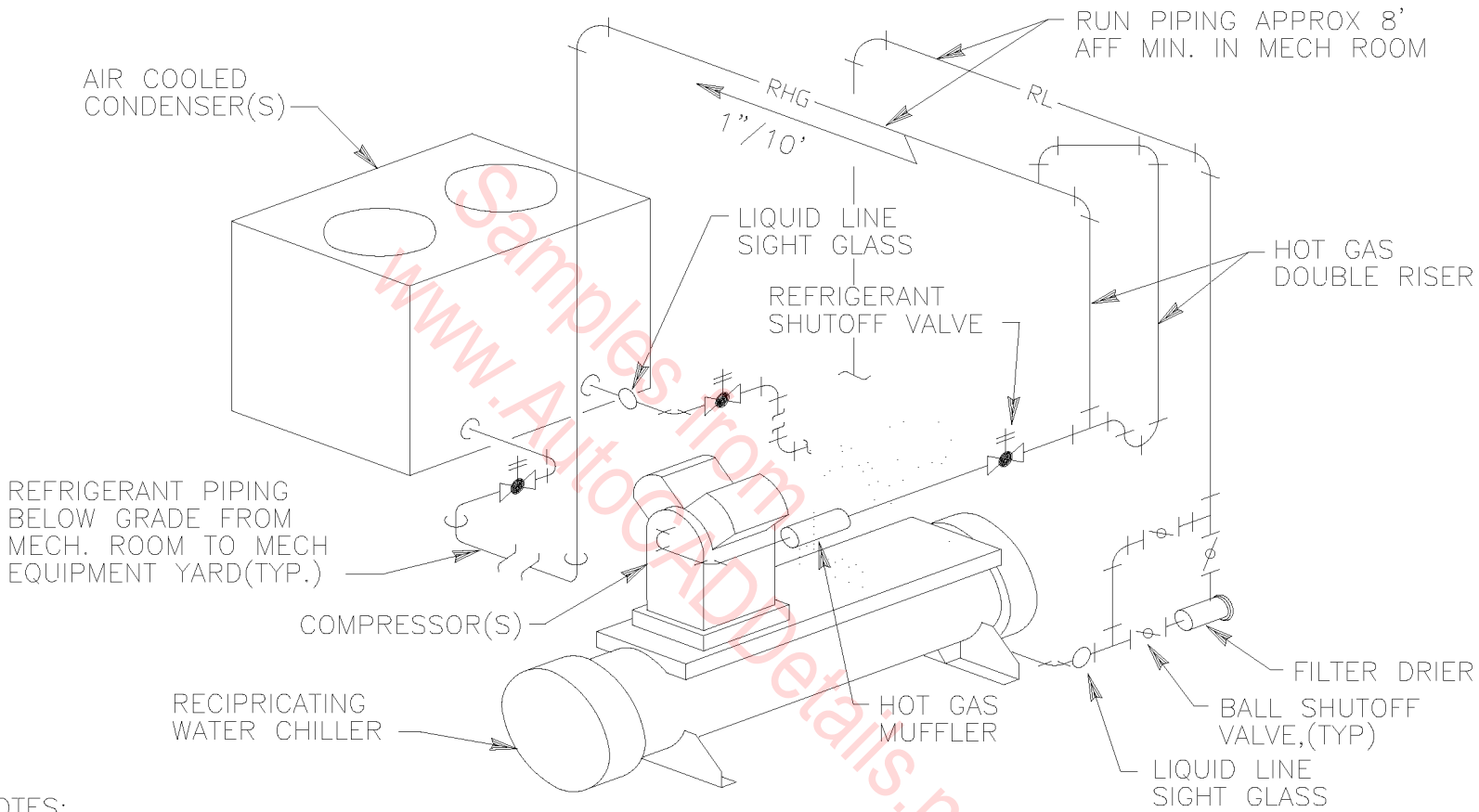
N.T.S.



NOTE: SIZES PER MANUFACTURER'S SPECIFICATIONS

TYPICAL REFRIGERANT PIPING DETAIL

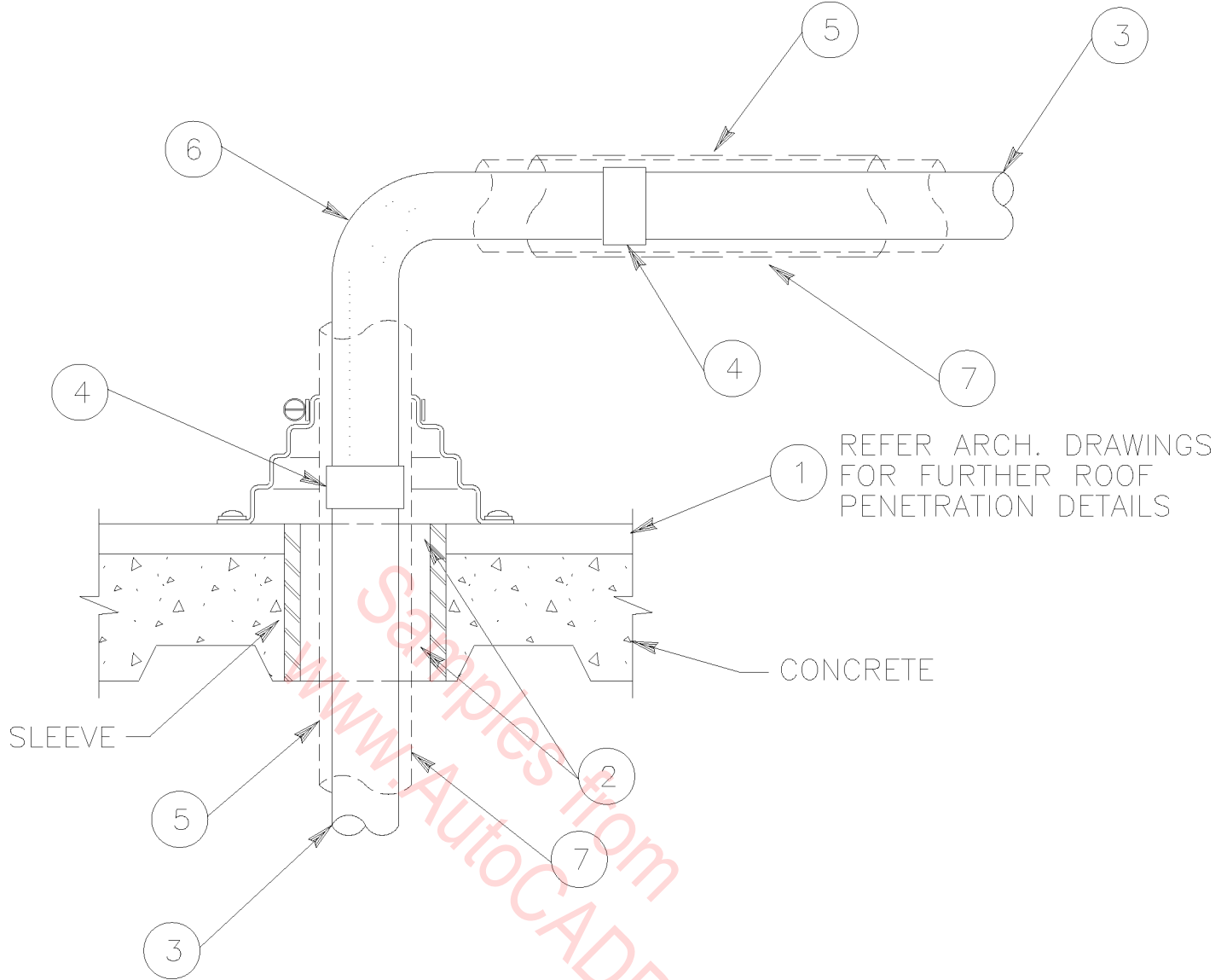
N.T.S.



- NOTES:
1. ANCHOR PIPING TO COMPRESSOR STAND.
 2. PROVIDE FLEXIBLE CONNECTORS AT EACH COMPRESSOR AND CONDENSER CONNECTION.
 3. REFRIGERANT LINES SHALL BE SIZED AND ROUTED IAW EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
 4. MULTIPLE REFRIGERANT CIRCUITS SHALL BE TYPICAL TO SINGLE CIRCUIT SHOWN.

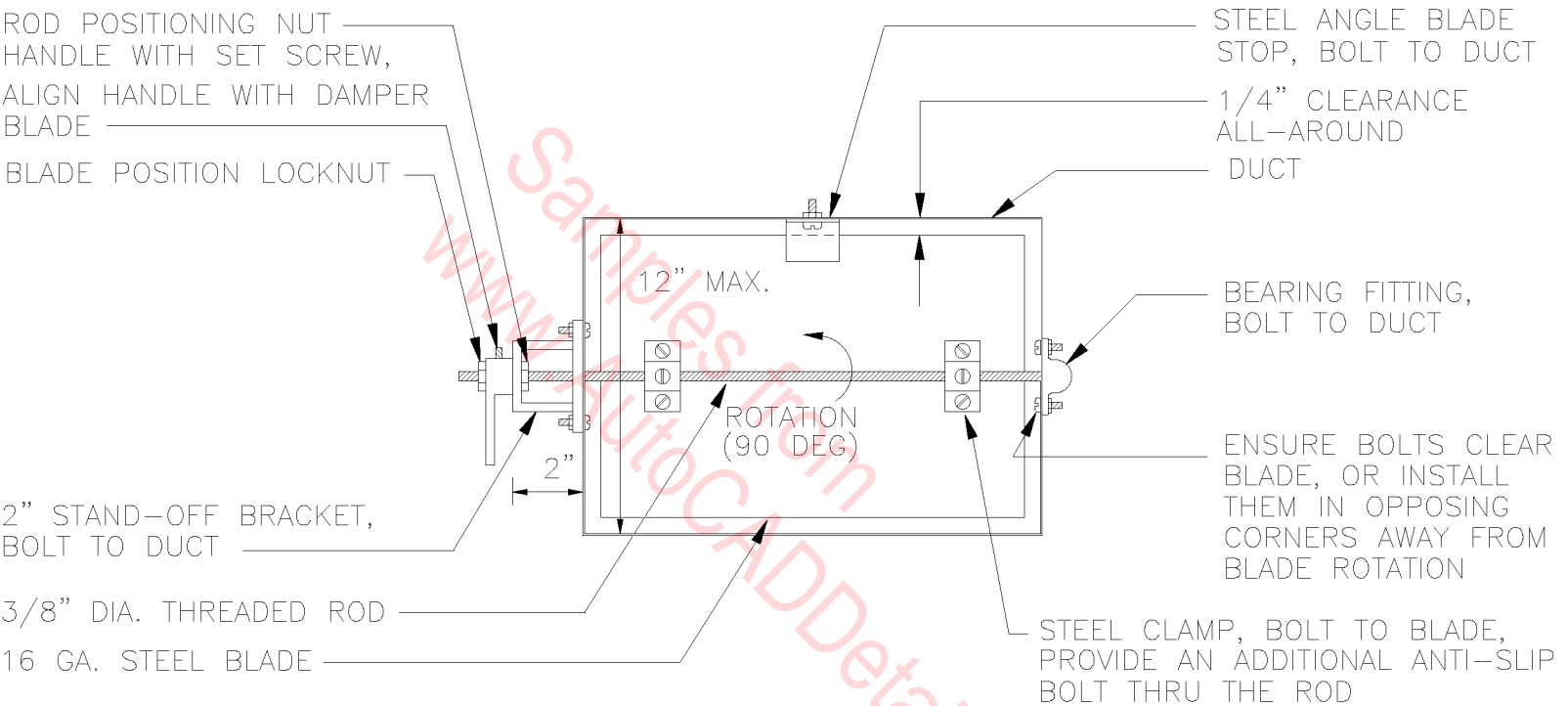
REFRIGERANT PIPING DIAGRAM

N.T.S.



- ① INSULATION AND BUILT UP ROOFING.
- ② SEAL PENETRATION GAS-TIGHT WITH INSULATION AND FLEXIBLE SEALANT COMPATIBLE WITH PIPE MATERIAL.
- ③ STANDARD PIPE MATERIAL FOR REFRIGERANT LINES, SUPPORT PIPE AWAY FROM BUILDING.
- ④ SUITABLE ADAPTING COUPLING TO CONNECT COPPER REFRIGERANT LINE TO HOSE SECTION.
- ⑤ PIPE INSULATION SHALL BE CONTINUOUS THRU BOUNDARY SURFACE(ROOF) AND BEYOND.
- ⑥ NON-METAL HIGH PRESSURE HOSE SECTION. HOSE SECTION AND ABOVE ROOF PIPING SHALL BE COVERED W/INSULATION AND BANDED ALUMINUM PIPE JACKET.
- ⑦ PIPE SUPPORT POINT. ENSURE HOSE DOES NOT CARRY ANY PIPE LOAD FROM REFRIGERANT LINES, SEE NOTE 3.

REFRIGERANT LINE PENETRATION



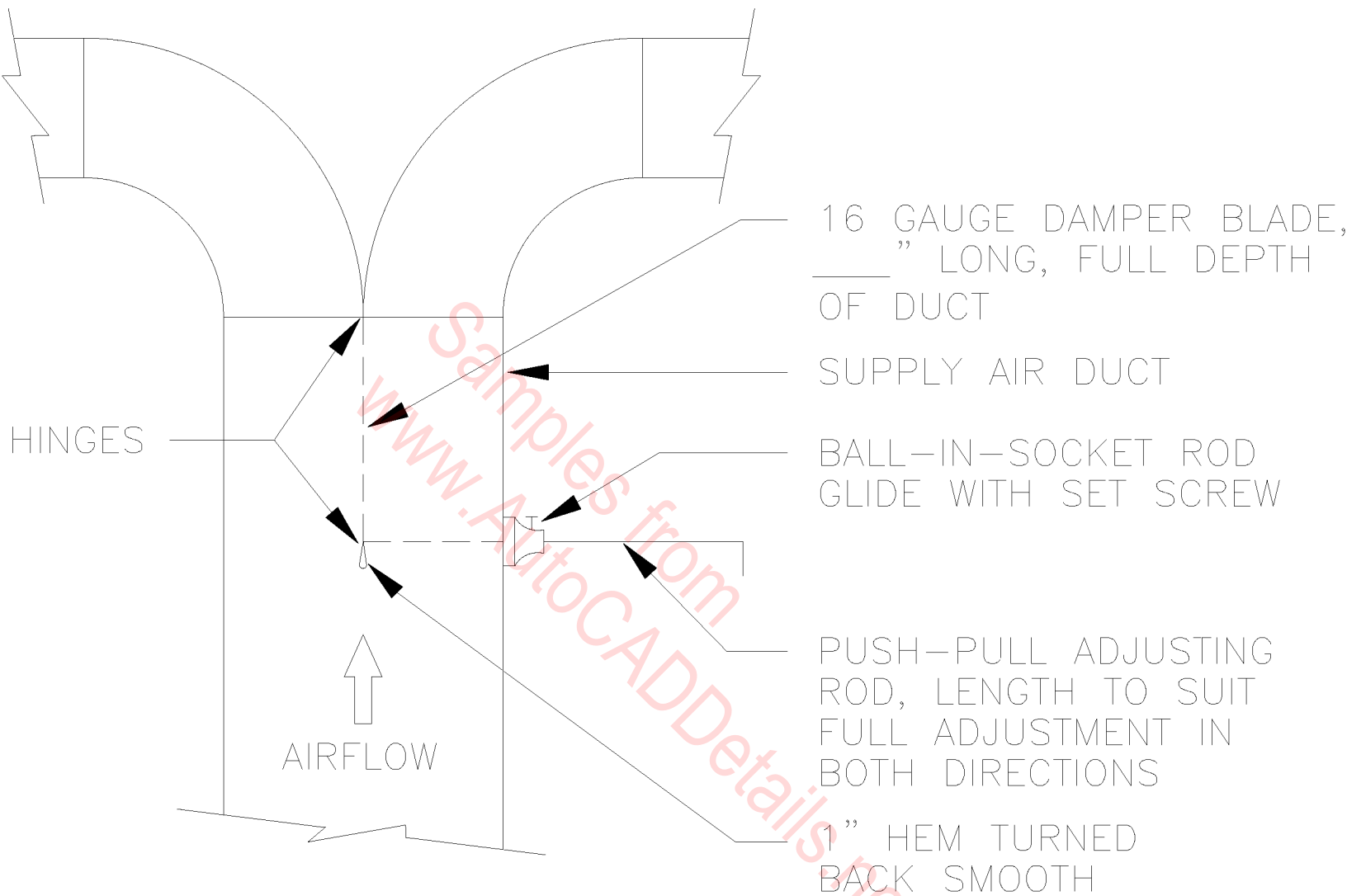
NOTES:

1. DAMPERS FOR ROUND DUCTS SHALL BE SIMILAR TO THE DAMPER SHOWN ABOVE.
2. ENSURE THAT FULL 90° DAMPER BLADE MOVEMENT IS UNOBSTRUCTED.
3. FOR DUCT HEIGHTS MORE THAN 12", PROVIDE FACTORY-FABRICATED OPPOSED BLADE DAMPERS

MANUAL DAMPER

(ADJUSTABLE SINGLE-BLADE BALANCING TYPE)

N.T.S.

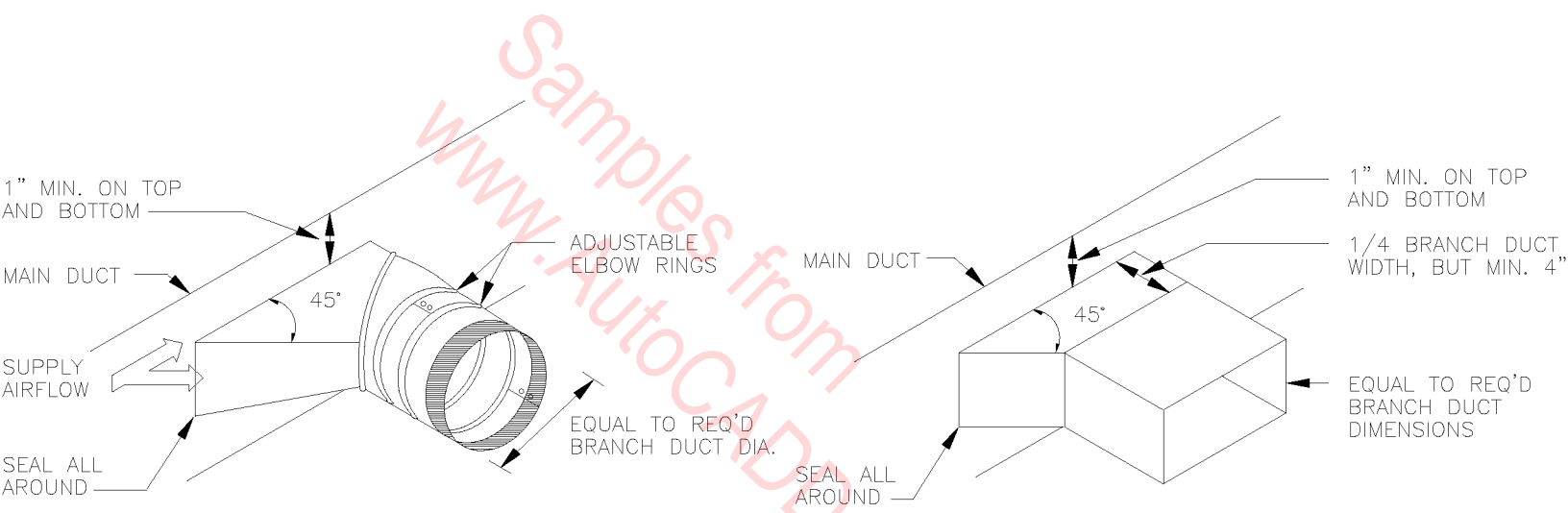


NOTES:

1. PROVIDE TWO ADJUSTING RODS FOR DUCTS OVER 24" DEEP.

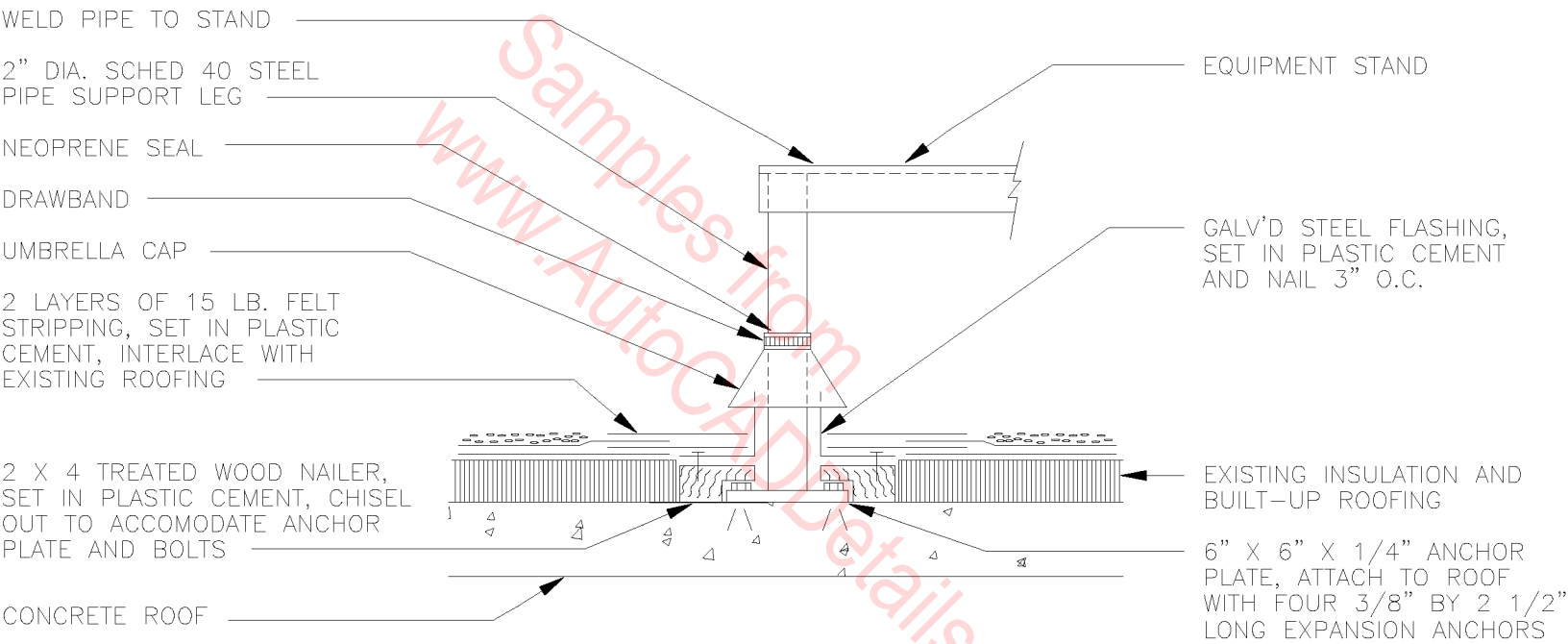
TYPICAL SPLITTER DAMPER

N.T.S.



TYPICAL BRANCH TAKE-OFF FITTING

N.T.S.



TYPICAL PIPE STAND SUPPORT LEG

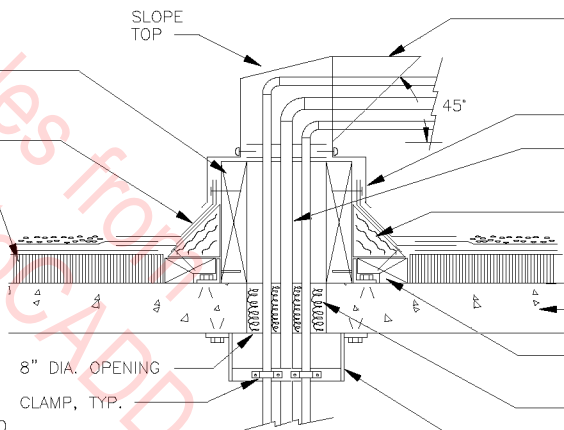
N.T.S.

2 X 10 TREATED WOOD BLOCKING,
SECURE TO ROOF WITH STEEL ANGLE
CLIPS USING 1/4" DIA. LAG SCREWS
AND EXPANSION ANCHORS

2 LAYERS OF 15 LB. FELT STRIPPING,
SET IN PLASTIC CEMENT AND INTERLACED
WITH EXISTING ROOFING

EXISTING INSULATION AND BUILT-UP ROOFING

SLOPE
TOP



GALV'D STEEL CAP AND RAIN HOOD,
SECURED TO FLASHING WITH SCREWS
3" O.C., DRILL HOLES IN SIDE UNDER
HOOD TO SUIT PIPING

GALV'D STEEL FLASHING, NAIL 3" O.C.

REFRIGERANT PIPING AND ELECTRICAL
CONDUIT (PIPE INSULATION NOT SHOWN)

4" TREATED WOOD CANT STRIP,
NAIL 3" O.C.

CONCRETE ROOF

2 X 4 TREATED WOOD NAILER,
CHISEL OUT AROUND CLIPS

FILL SPACE WITH EXPANDING
URETHANE FOAM INSULATION
(AFTER INSULATING PIPES)

STEEL PIPE HANGER, ATTACH TO
CEILING WITH 1/4" DIA. EXPANSION
ANCHORS

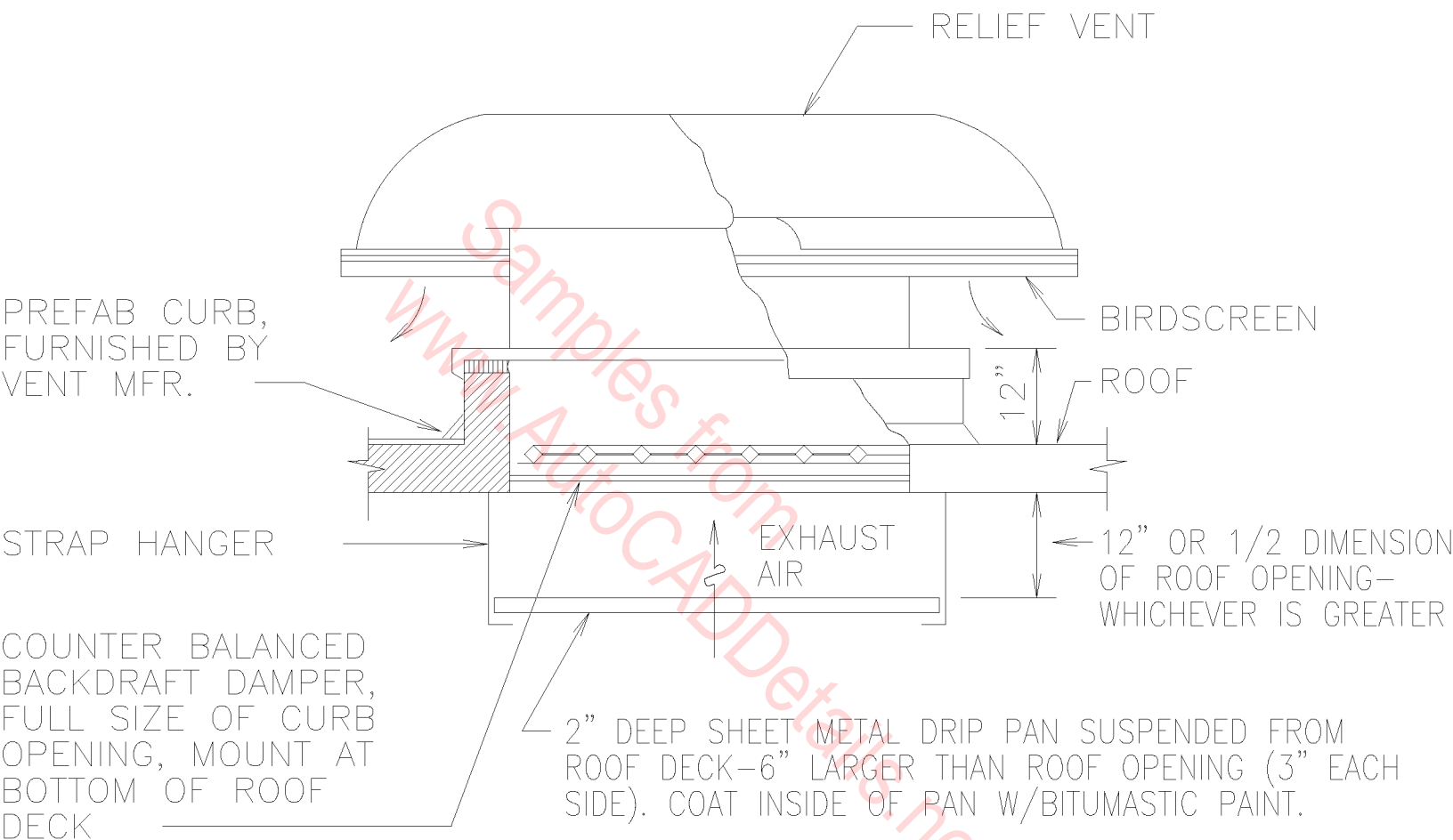
8" DIA. OPENING
CLAMP, TYP.

INSTALLATION SEQUENCE

1. CORE DRILL THE HOLE THROUGH THE ROOF.
2. INSTALL THE BLOCKING, CANT, ROOFING, AND FLASHING AS INDICATED.
3. INSTALL THE PIPE HANGER SUPPORT.
4. INSTALL THE VERTICAL SECTIONS OF THE NEW PIPES AND PROVIDE AN ELBOW AND A SHORT LENGTH OF HORIZONTAL PIPING ON EACH PIPE.
5. INSULATE THE INSTALLED SUCTION LINE REFRIGERANT PIPE.
6. INSTALL THE PORTION OF ELECTRICAL CONDUIT THAT WILL PASS THROUGH THE NEW ROOF OPENING AND HOODED FLASHING CAP.
7. DRILL THREE SEPARATE HOLES IN THE HOODED FLASHING CAP FOR THE TWO PIPES AND ONE ELECTRICAL CONDUIT.
8. INSTALL THE HOODED FLASHING CAP.
9. CAULK AROUND THE PIPE AND CONDUIT HOLES IN THE CAP AND ALSO ALL FLASHING SEAMS.
10. SPRAY URETHANE FOAM INSULATION IN THE VOID SPACE AROUND THE PIPES IN THE HOLE THROUGH THE ROOF.
11. INSTALL REMAINING PIPING AND CONDUIT.

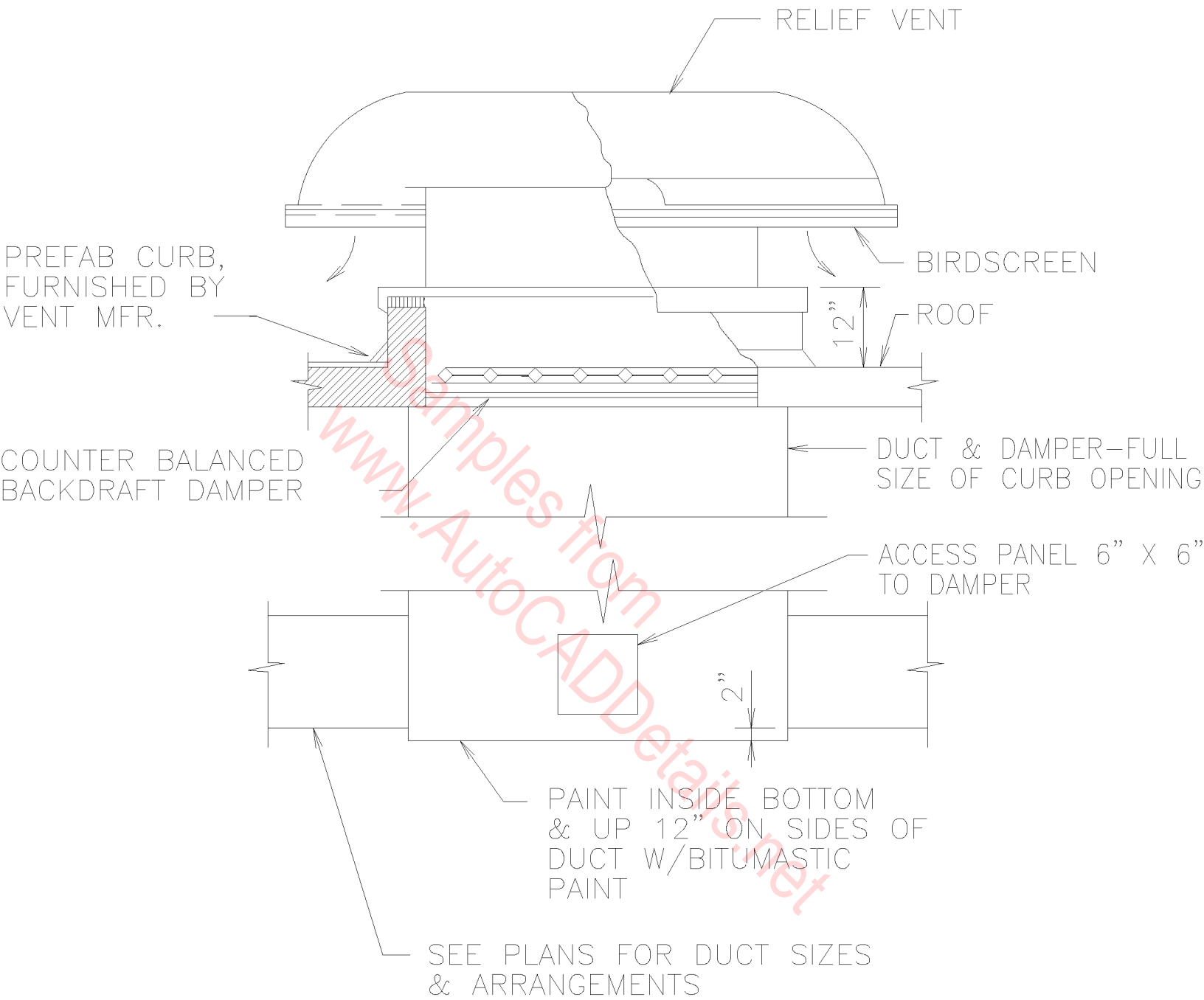
PIPING & CONDUIT ROOF PENETRATION

N.T.S.



TYPICAL RELIEF VENT DETAIL

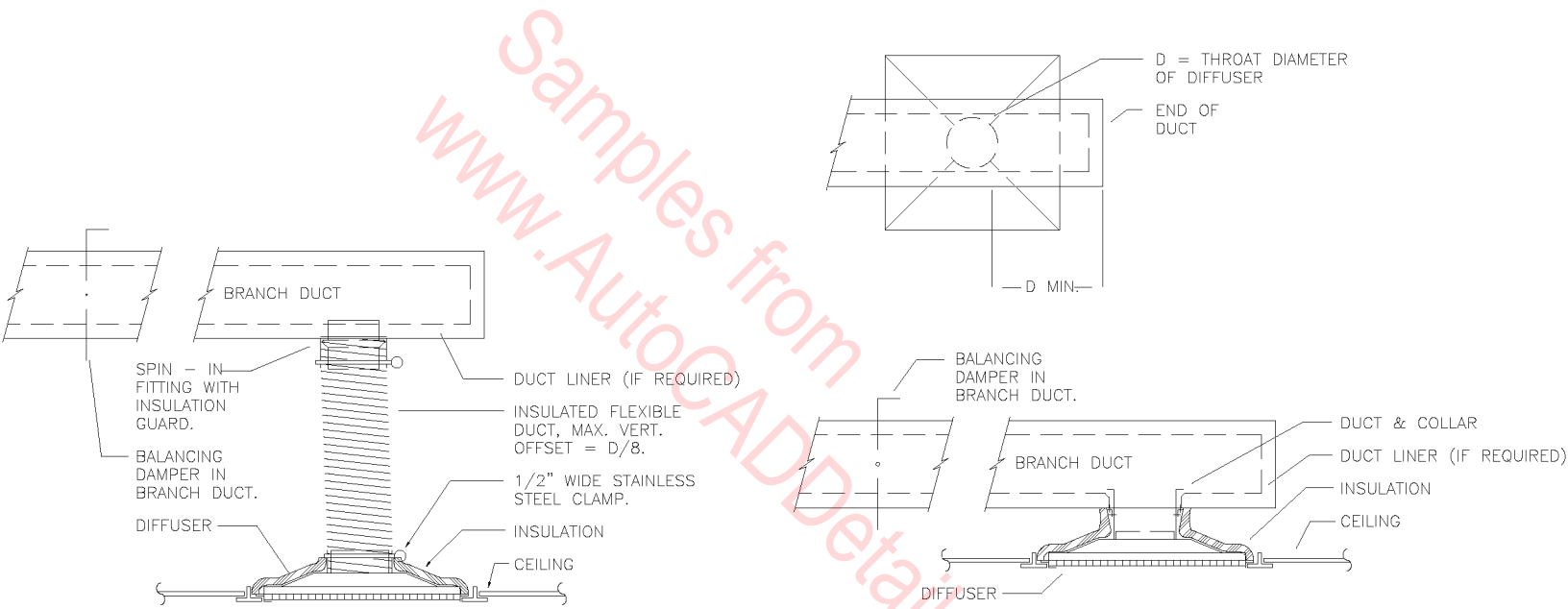
N.T.S.



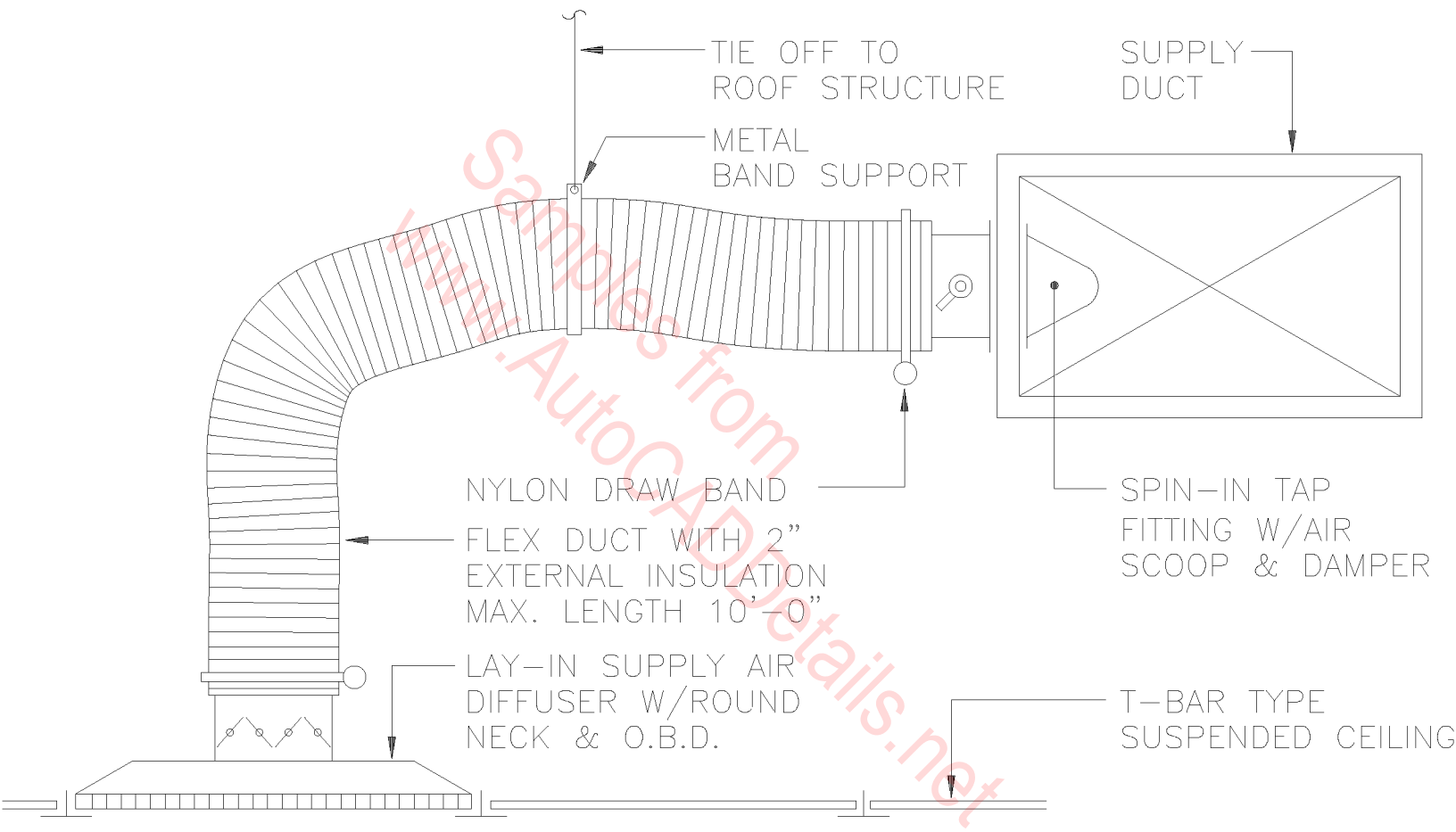
(WITH DUCT WORK)

TYPICAL RELIEF VENT DETAIL

N.T.S.

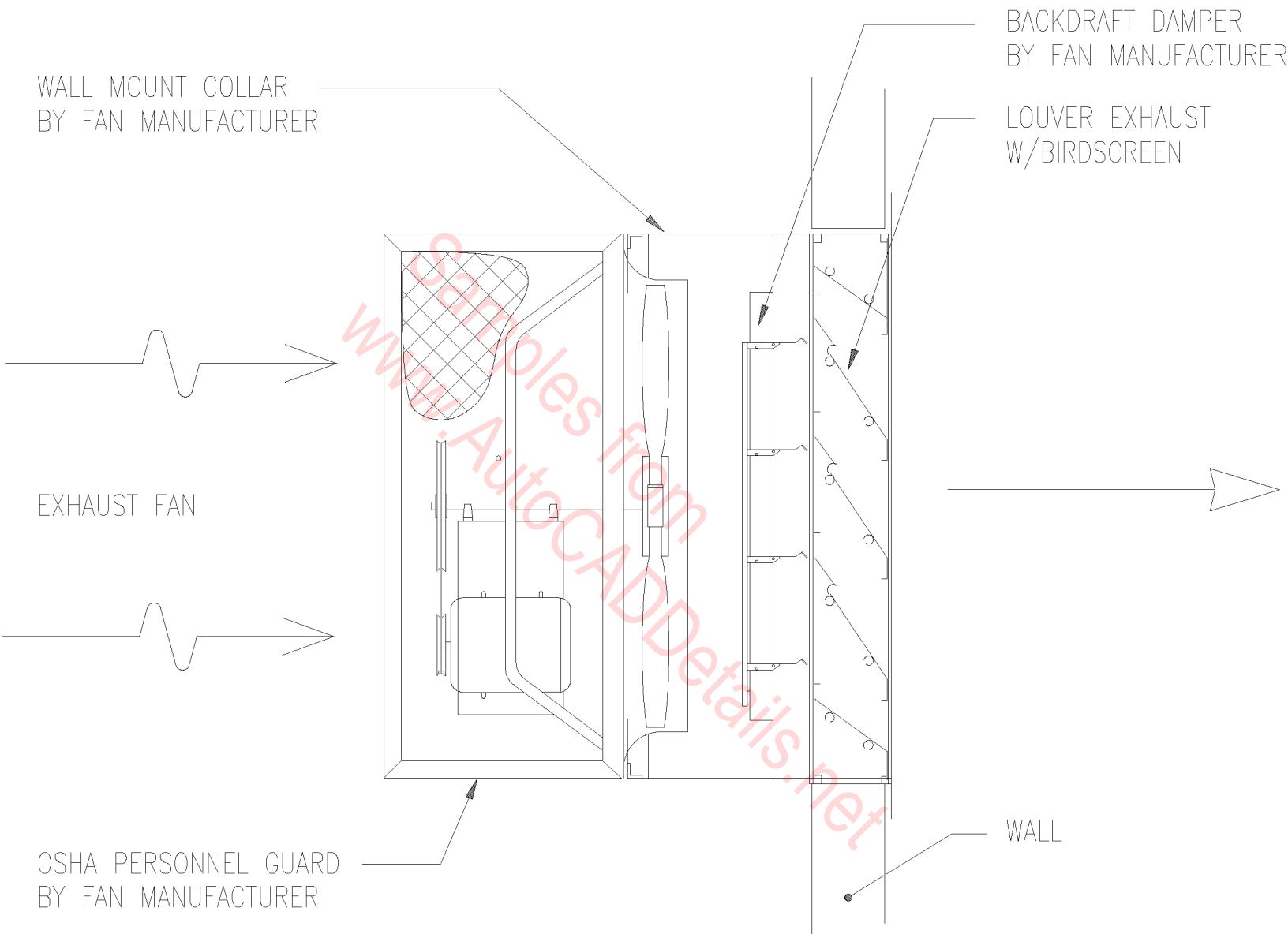


SUPPLY AIR DIFFUSER DETAIL
N.T.S.



SUPPLY AIR DIFFUSER DETAIL

N.T.S.



PROPELLER FAN DETAIL
N.T.S.

WALL MOUNT COLLAR
BY FAN MANUFACTURER

BACKDRAFT DAMPER
BY FAN MANUFACTURER

LOUVER EXHAUST
W/BIRDSCREEN

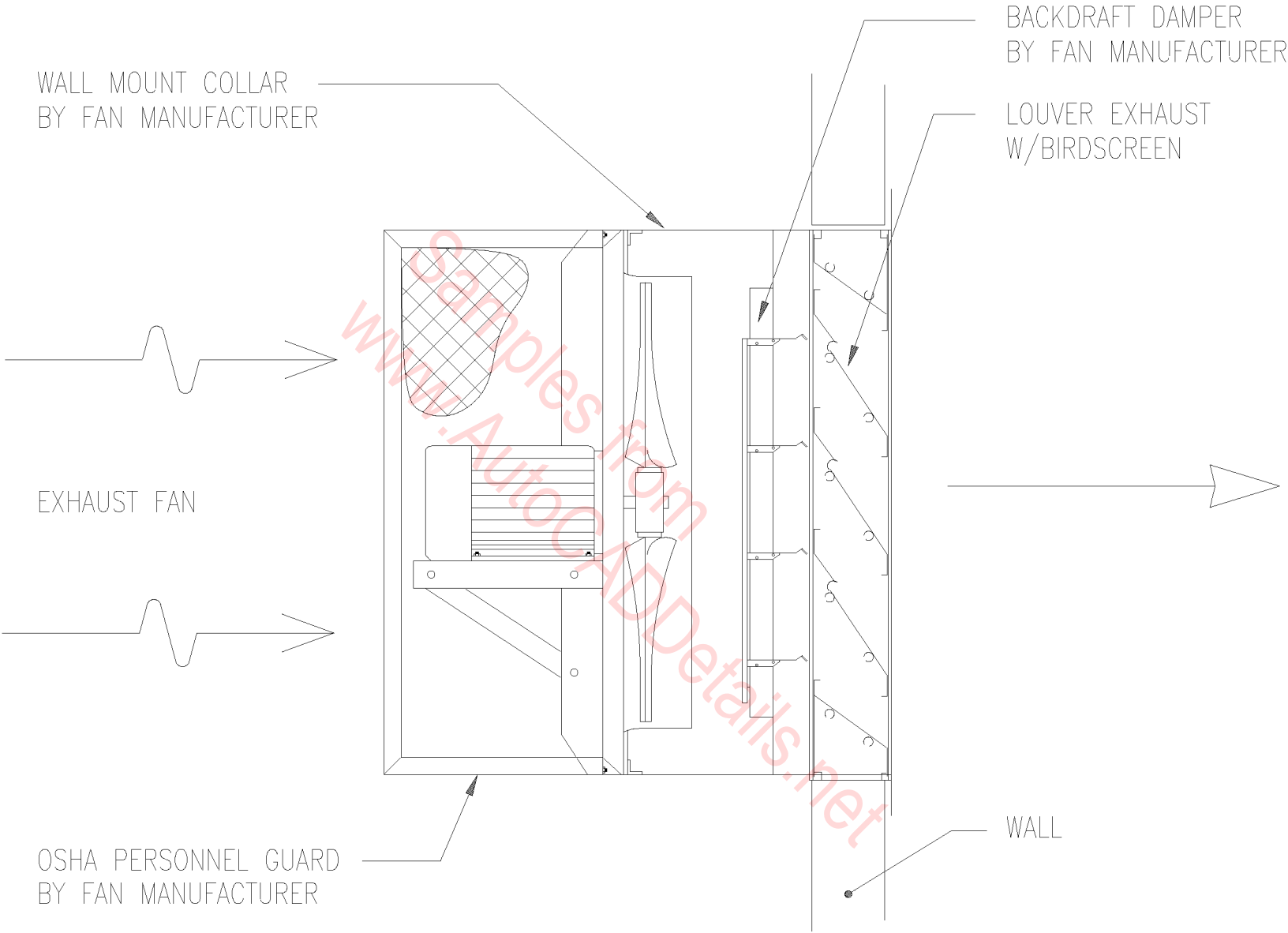
EXHAUST FAN

OSHA PERSONNEL GUARD
BY FAN MANUFACTURER

WALL

WALL FAN DETAIL

N.T.S.



ALUMINUM HOUSING

ANODIZED CORROSION
RESISTANT FINISH

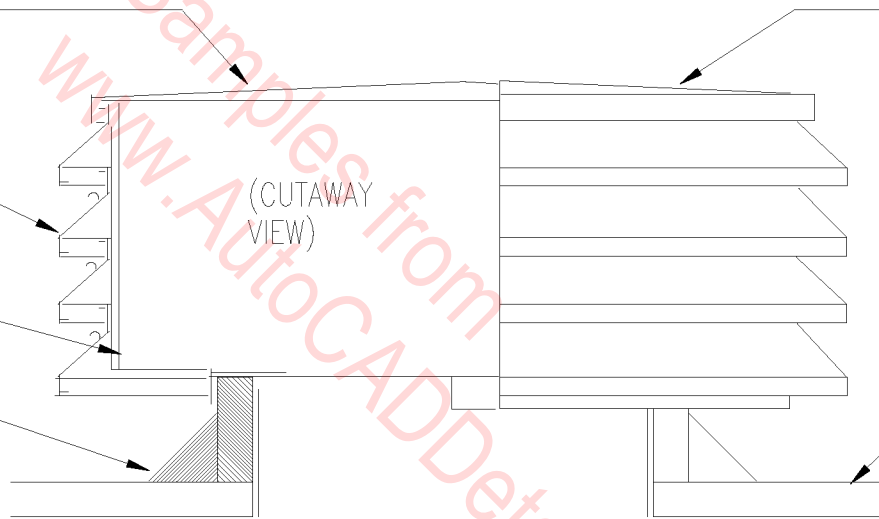
LOUVERED OPENINGS
BEADED TO EXCLUDE
DRIVING RAIN

(CUTAWAY
VIEW)

BIRDSCREEN

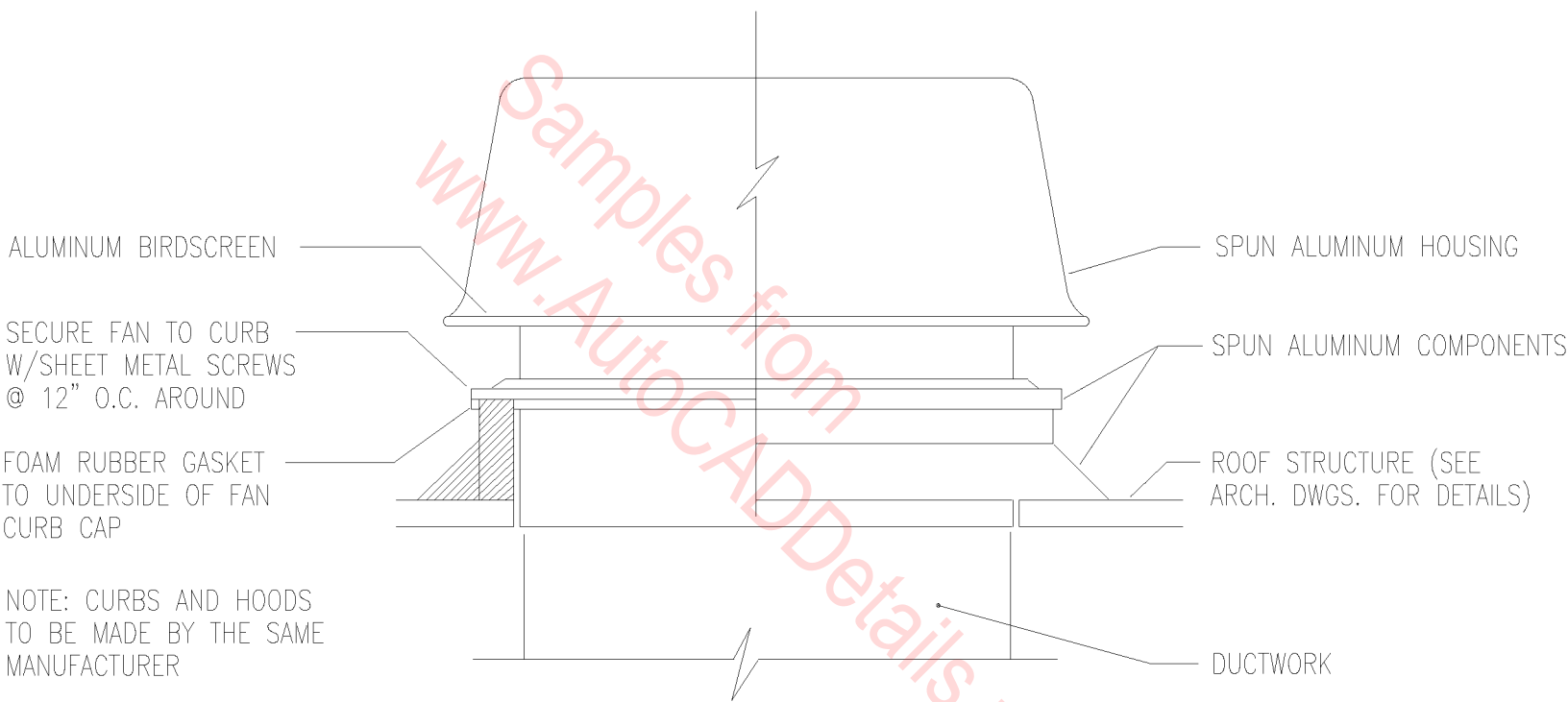
MANUFACTURER'S
STANDARD
ROOF CURB

ROOF
STRUCTURE



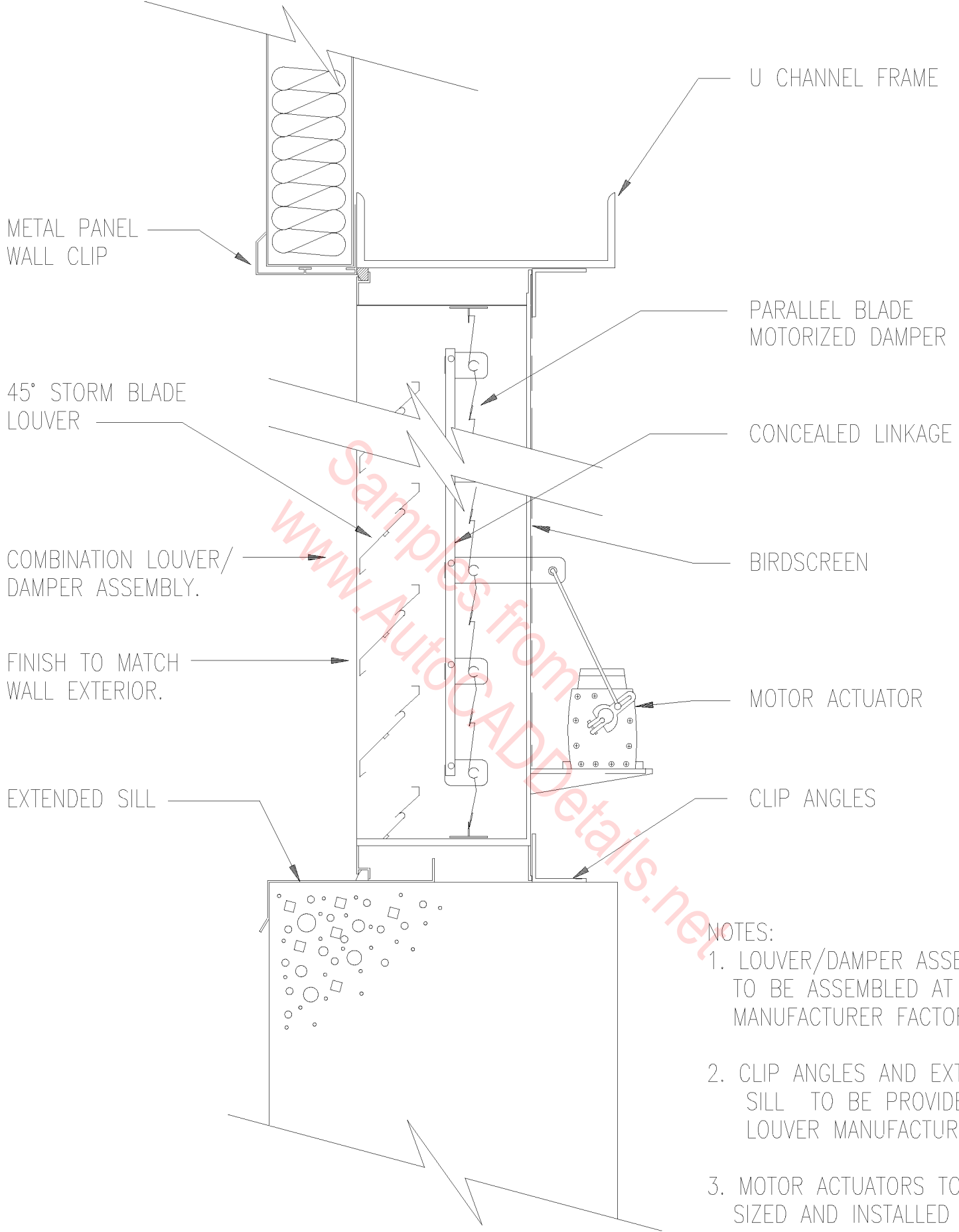
PENTHOUSE DETAIL

N.T.S.



RELIEF OR INTAKE VENT DETAIL

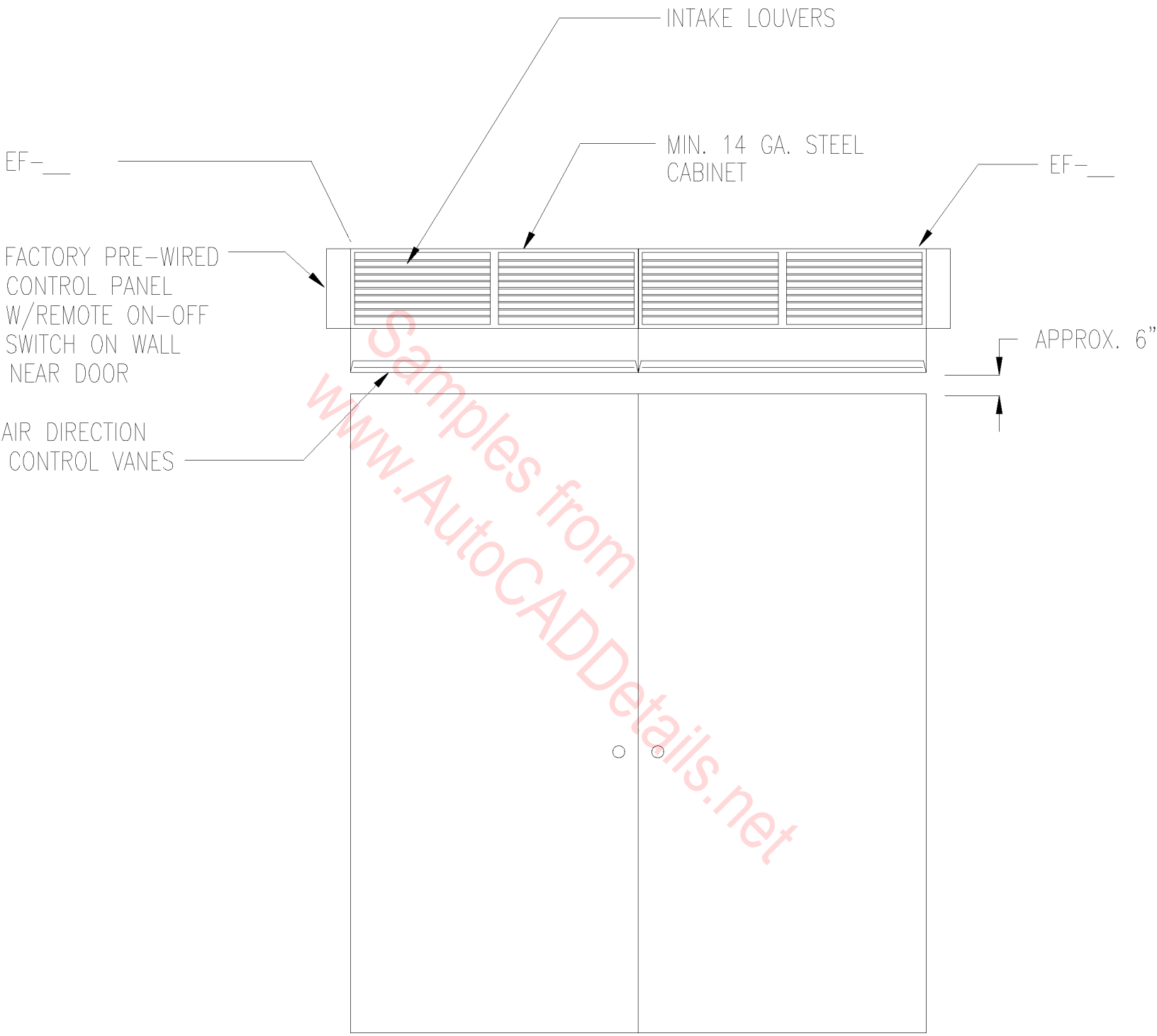
N.T.S.



- NOTES:
1. LOUVER/DAMPER ASSEMBLIES TO BE ASSEMBLED AT LOUVER MANUFACTURER FACTORY.
 2. CLIP ANGLES AND EXTENDED SILL TO BE PROVIDED BY LOUVER MANUFACTURER.
 3. MOTOR ACTUATORS TO BE SIZED AND INSTALLED BY LOUVER MANUFACTURER.
 4. INSTALLATION OF LOUVER TO BE IN ACCORDANCE WITH LOUVER MANUFACTURER'S RECOMMENDATIONS.

LOUVER/DAMPER DETAIL

N.T.S.



AIR CURTAIN FAN DETAIL

N.T.S.

WATERPROOF ALL SEAMS AND JOINTS IN DUCT.

INSULATE AND FINISH AS PER SPECIFICATIONS.

PROVIDE WATERTIGHT ROOF PENETRATIONS.

ROOF CURB AS PER SMACNA

ANGLE IRON SUPPORTS EVERY TEN FEET AS PER SMACNA.

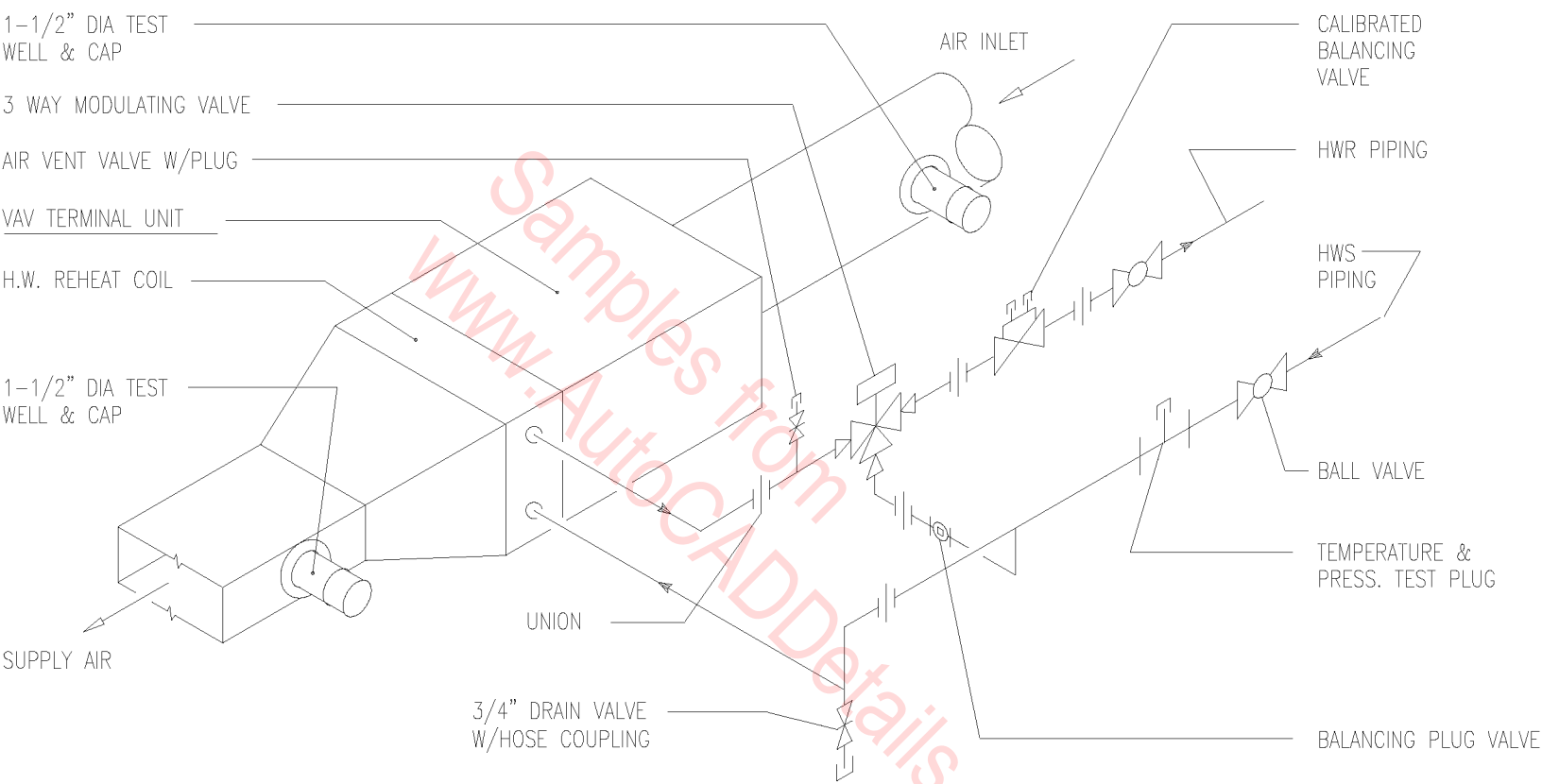
PIER BASE AS PER SMACNA.

DUCT EXISTING ROOF

DUCT ROOF PENETRATION AND SUPPORT DETAIL

N.T.S.

NOTE: PENETRATIONS THROUGH SKYLIGHTS SHALL BE MADE WATERPROOF. SEAL OPEN AREAS OF SKYLIGHT WITH SHEETMETAL AND PROVIDE SHEETMETAL CANT ANGLED TO DRAIN WATER AWAY FROM DUCT PENETRATION AND ONTO ROOF. ALL PENETRATIONS SHALL BE MADE IN ACCORDANCE WITH SMACNA MANUAL OR AS APPROVED BY THE CONTRACTING OFFICER.

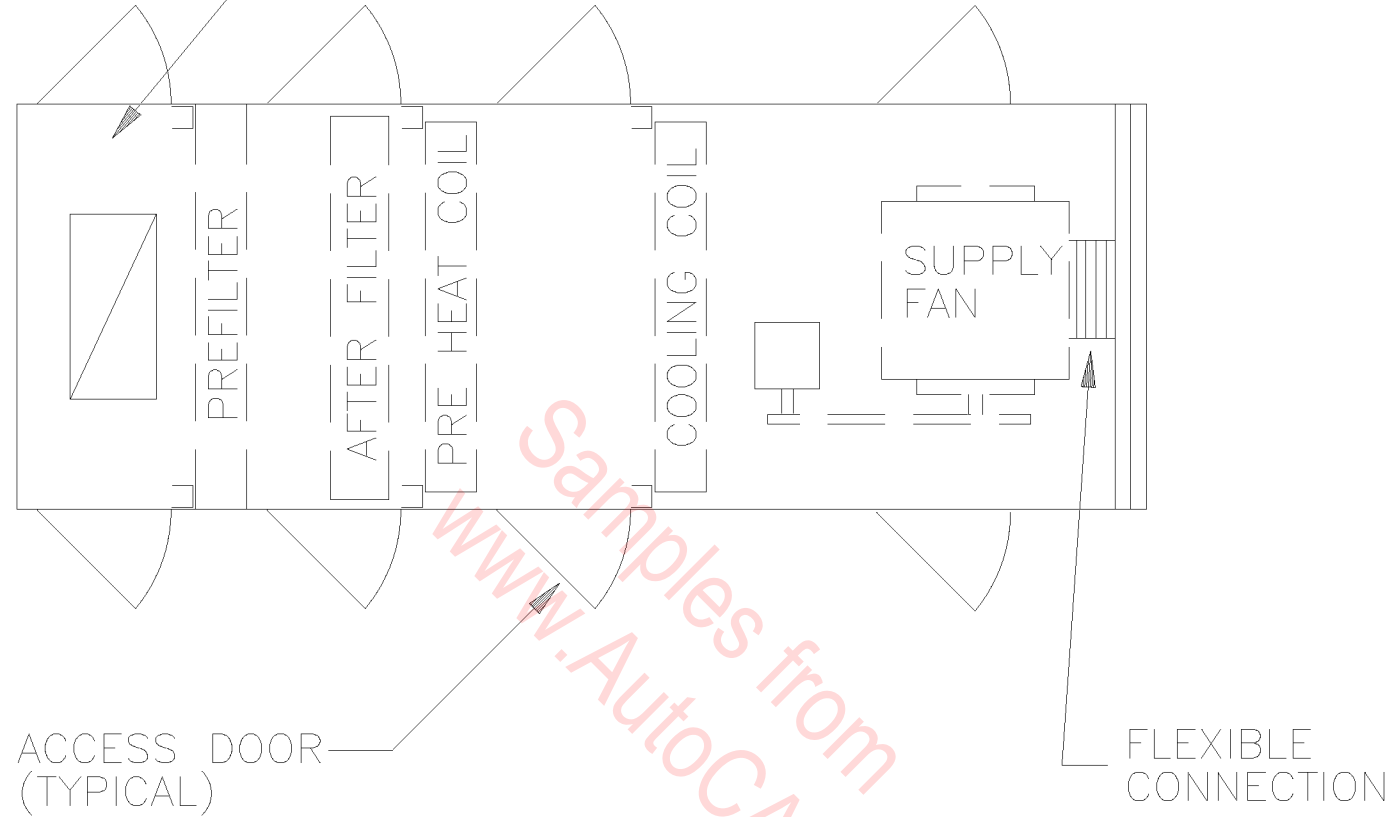


NOTE: PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS AND DRAIN VALVES W/ HOSE COUPLING AT ALL LOW POINTS.

VAV TERMINAL UNIT DETAIL

N.T.S.

RETURN AIR
PLENUM BY
AHU MFG.

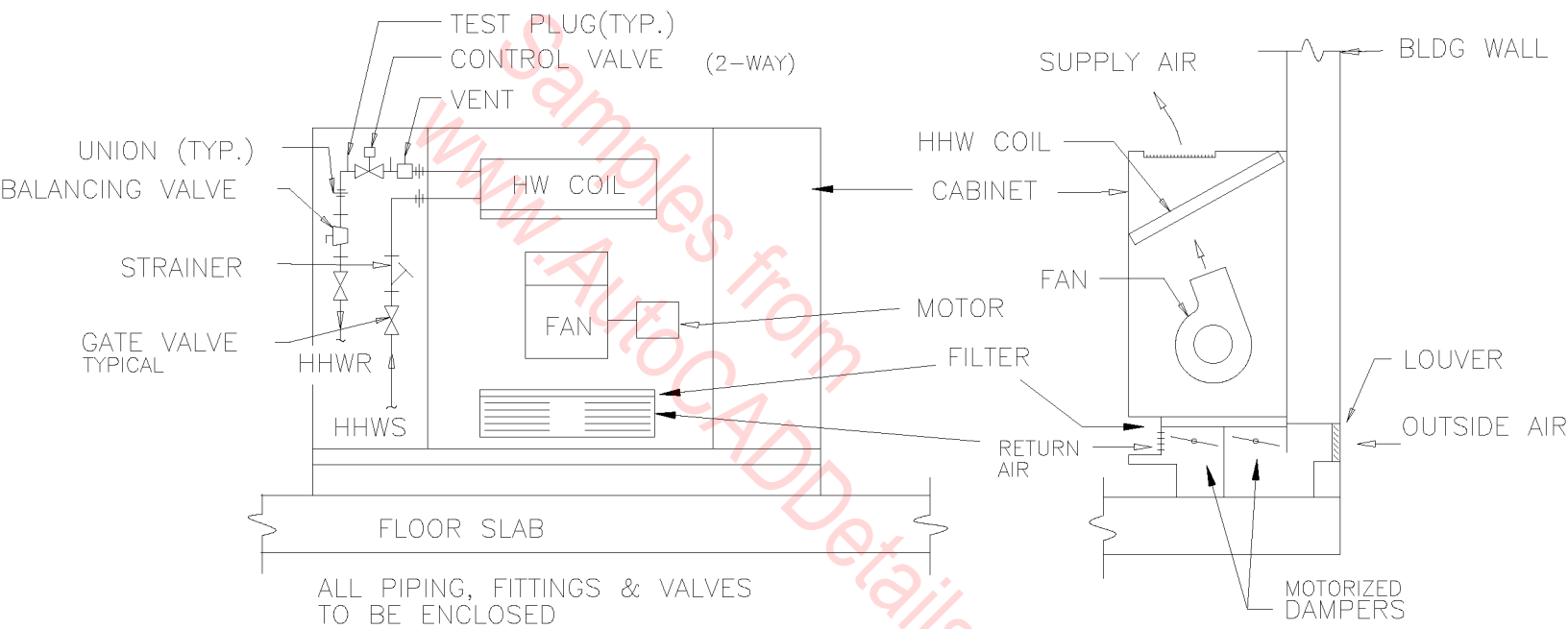


ACCESS DOOR SWING DETAIL FOR AIR HANDLING UNITS

N.T.S.

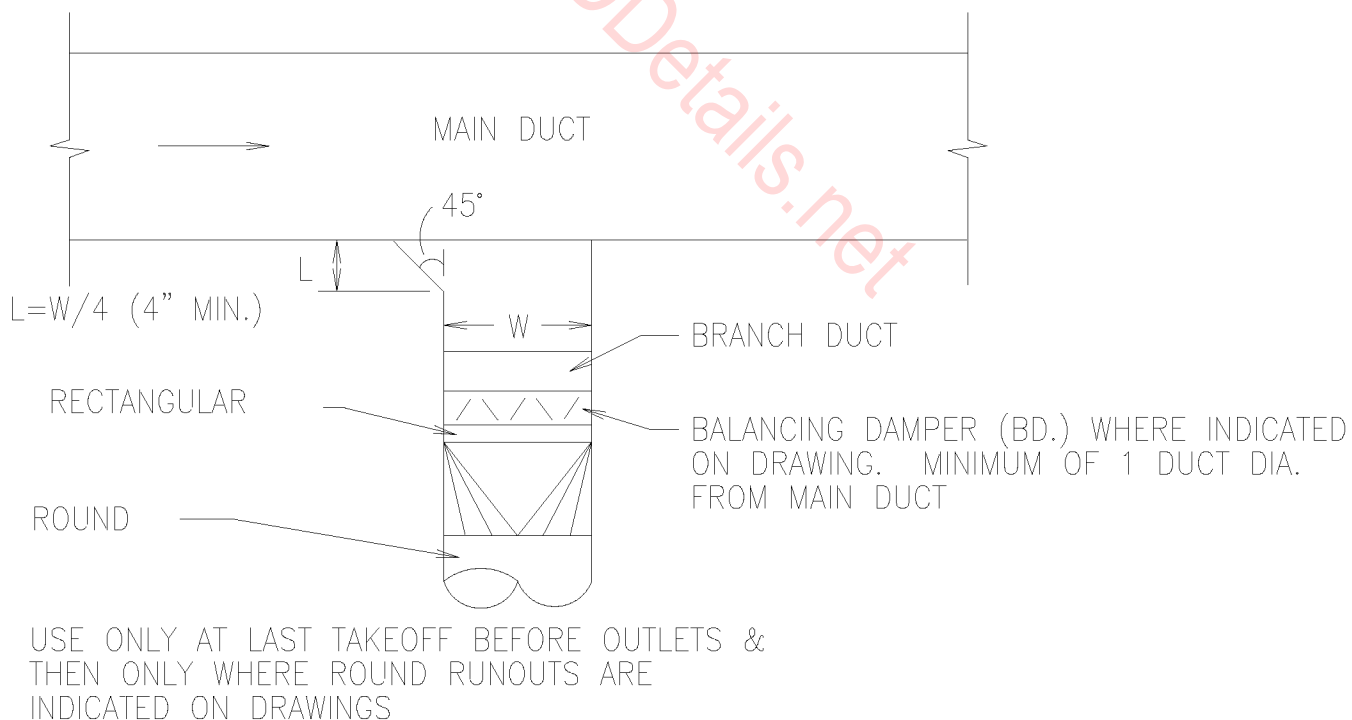
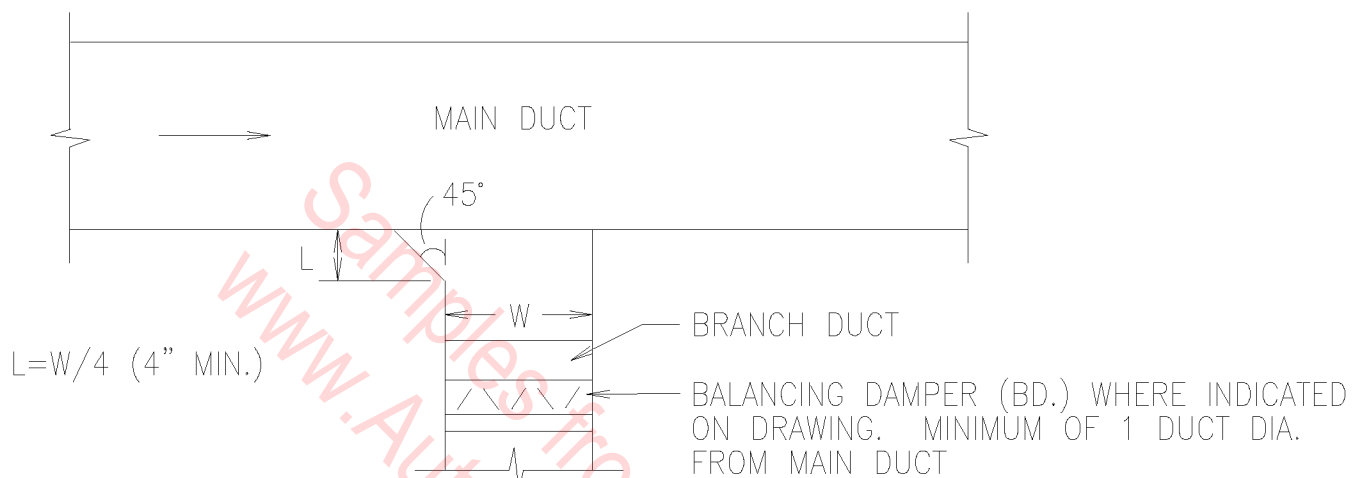
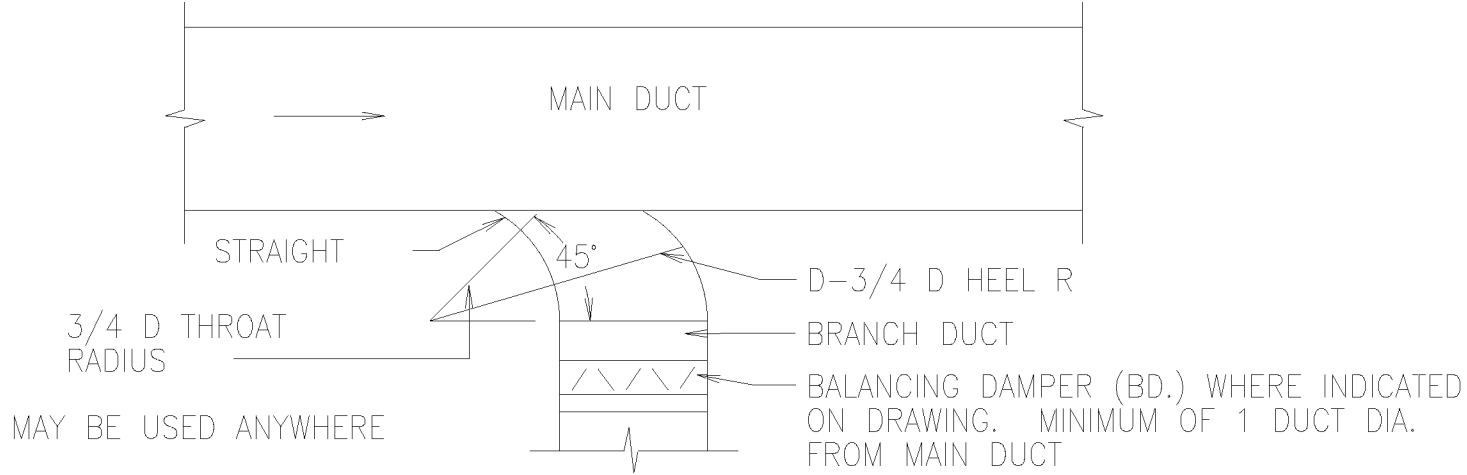
NOTES:

1. ACCESS DOORS SHALL BE GASKETED AND HINGED TO OPEN AGAINST FAN OPERATING PRESSURE TO PREVENT AIR LEAKAGE.
2. MINIMUM ACCESS DOOR WIDTH SHALL BE 12".
3. ACCESS DOOR HEIGHT SHALL BE DETERMINED BY UNIT CASING BUT NOT EXCEED 6'-0".
4. ACCESS DOORS ON FAN SUCTION SHALL OPEN OUTWARD.
5. ACCESS DOORS ON FAN DISCHARGE SIDE SHALL OPEN INWARD.



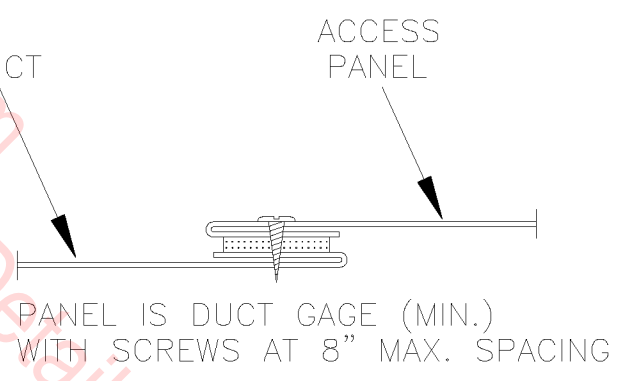
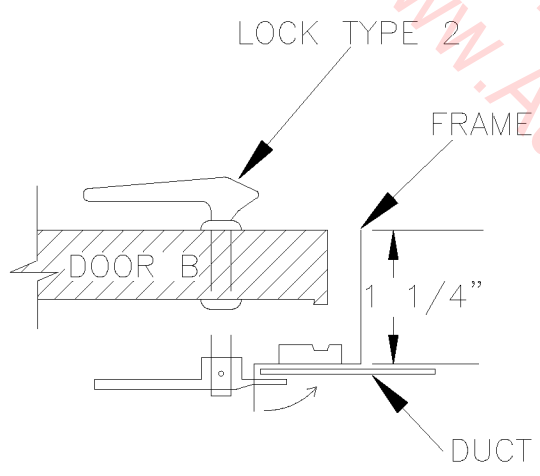
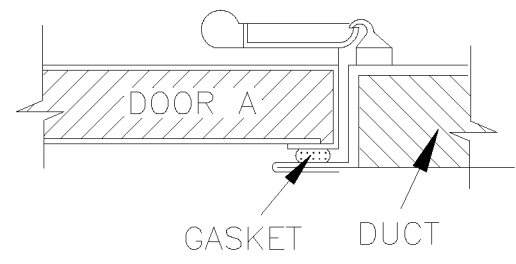
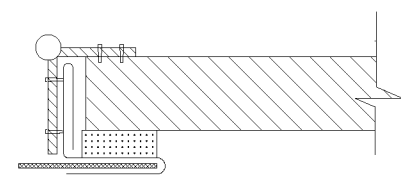
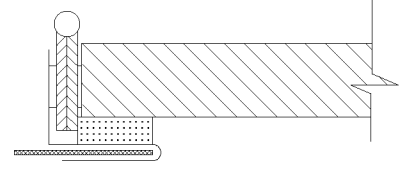
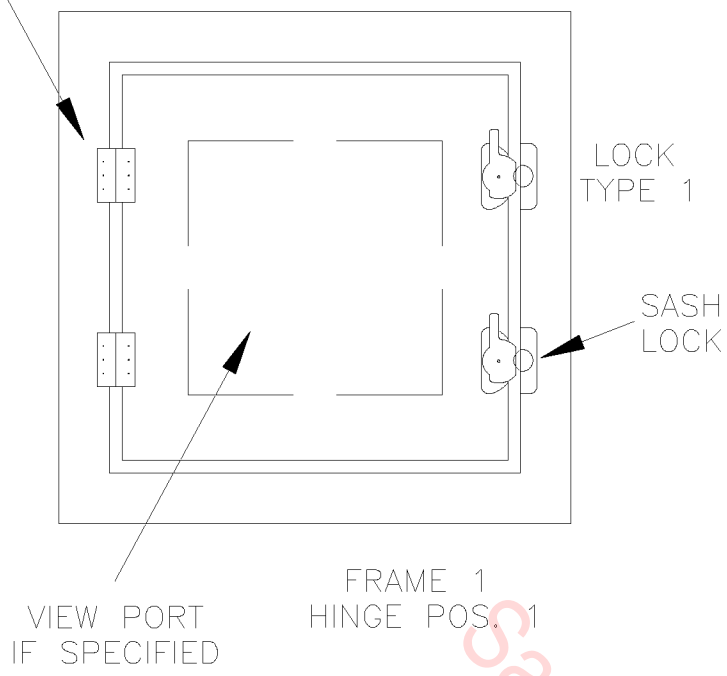
TYPICAL FAN COIL UNIT DETAIL

N.T.S.



TYPICAL BRANCH CONNECTION

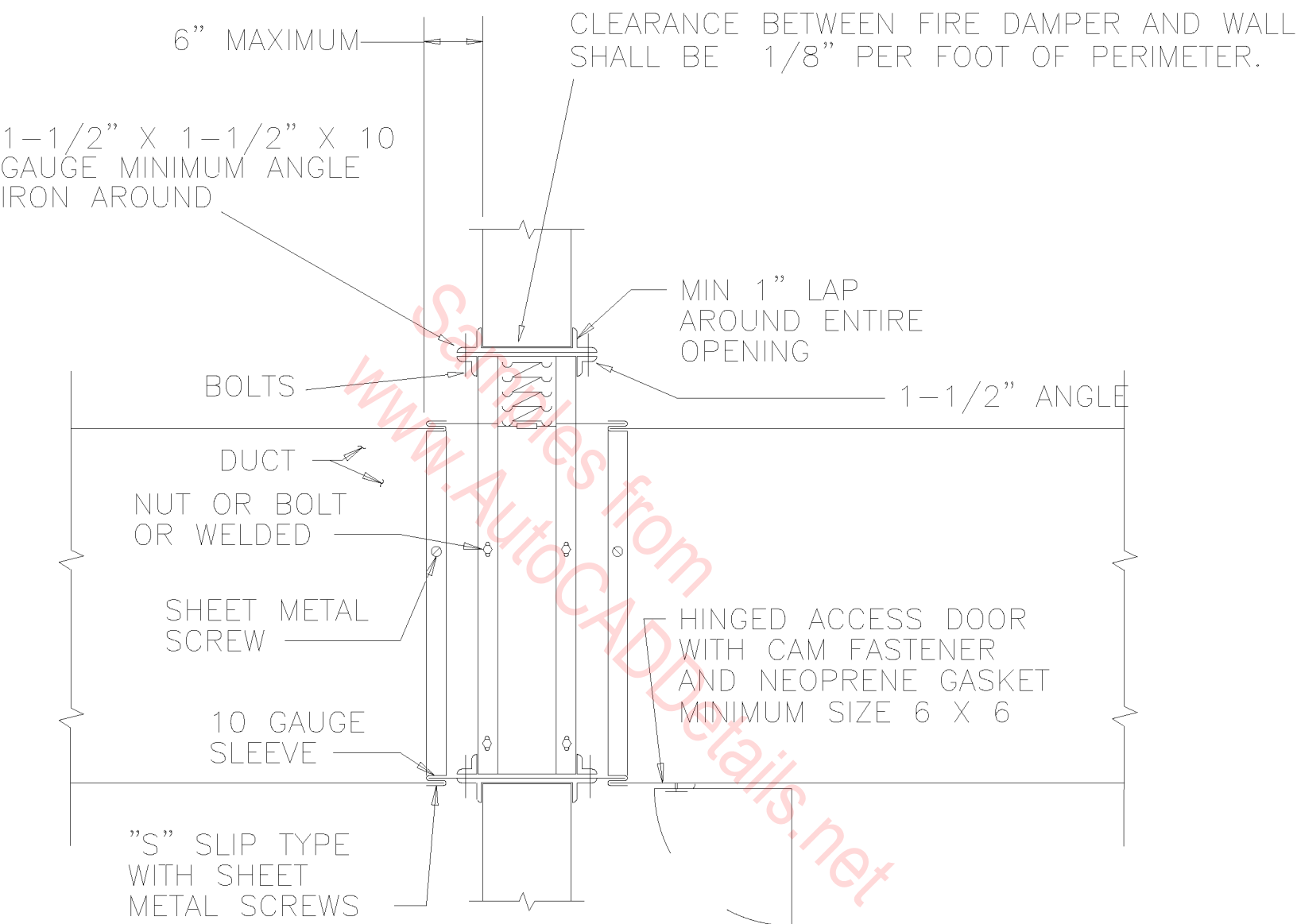
BUTT HINGE 1" x 1", OR PIANO HINGE



	DOOR SIZE	NO. HINGES	NO. LOCKS	METAL GAGE		
				FRAME	DOOR	BACK
2" W.G. STATIC AND LESS	12" x 12"	2	1-S	24	26	26
	16" x 20"	2	2-S	22	24	26
	24" x 24"	3	2-S	22	22	26
3" W.G. STATIC	12" x 12"	2	1-S	22	22	26
	16" x 20"	2	1-S, 1-T, 1-B	20	20	26
	24" x 24"	3	2-S, 1-T, 1-B	20	20	24
4" W.G. TO 10" W.G.	12" x 12"	2	1-S, 1-T, 1-B	20	20	26
	16" x 20"	3	2-S, 1-T, 1-B	18	18	24
	24" x 24"	3	2-S, 2-T, 2-B	18	18	24
S = SIDE OPPOSITE HINGES, T = TOP, B = BOTTOM						

DUCT ACCESS DOORS

N.T.S.

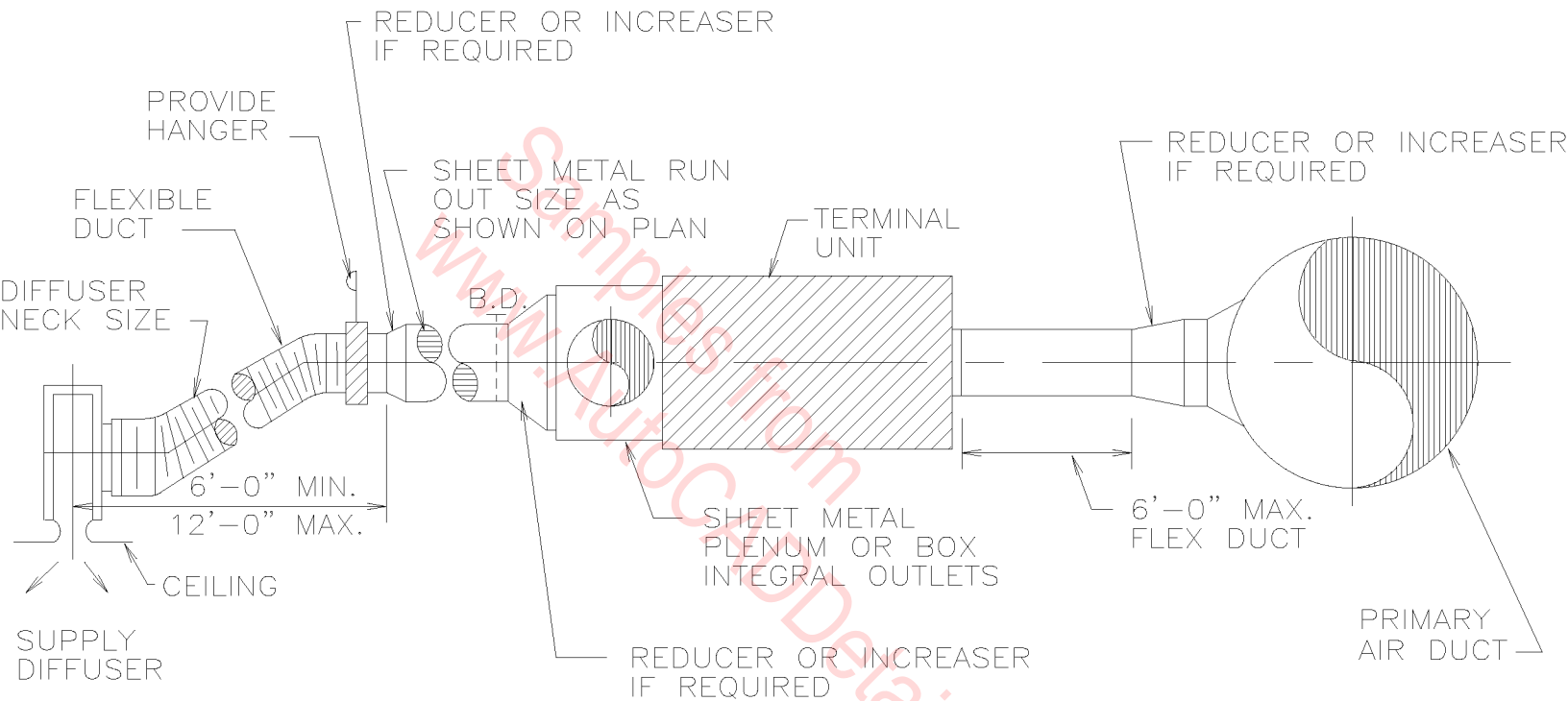


NOTE:

PROVIDE FIRE DAMPER FOR ROUND DUCT OR USE TRANSITIONS FOR ROUND TO SQUARE DUCT.

FIRE DAMPER WITH FUSIBLE LINK

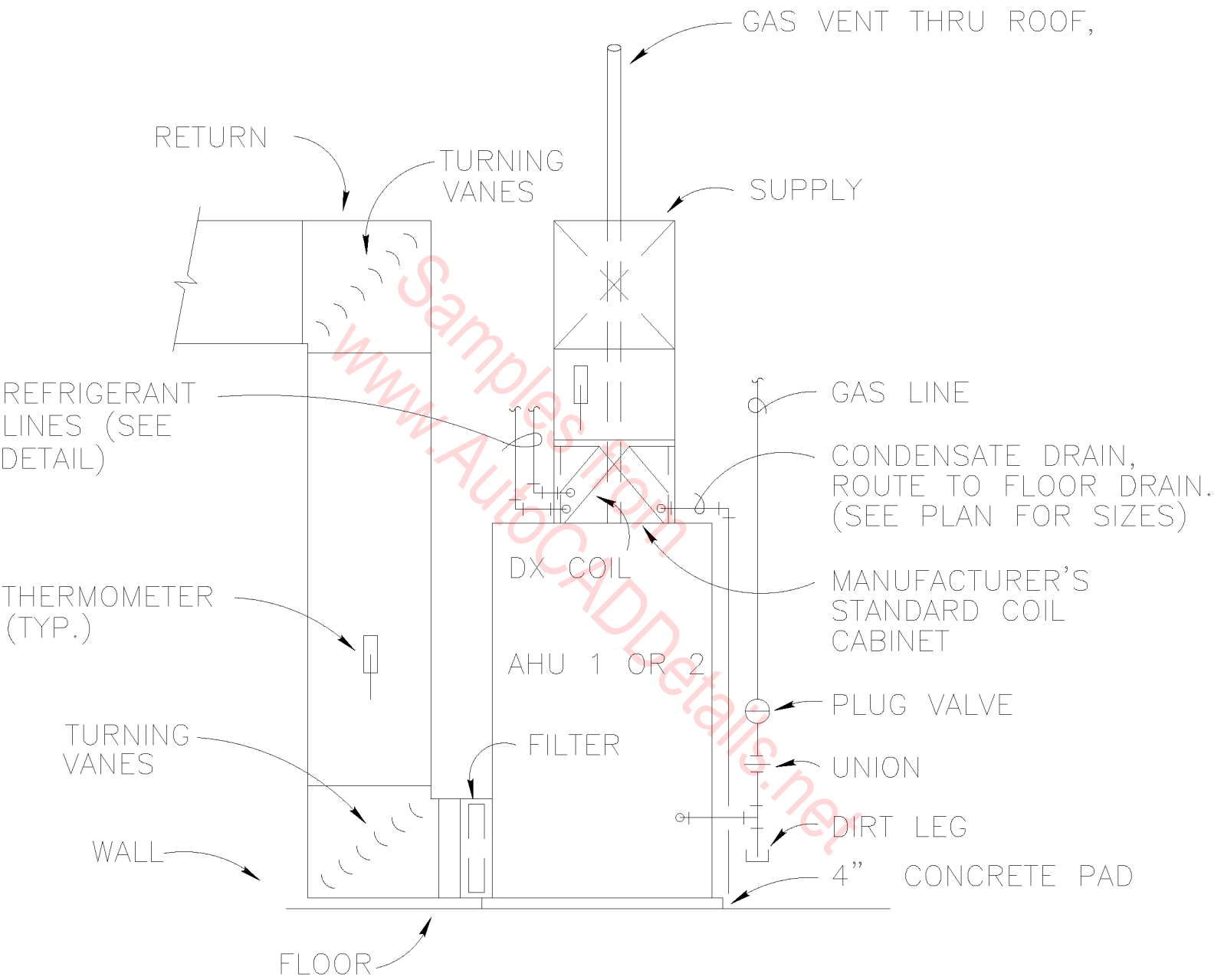
N.T.S.



TERMINAL UNIT DUCT TAKE-OFF

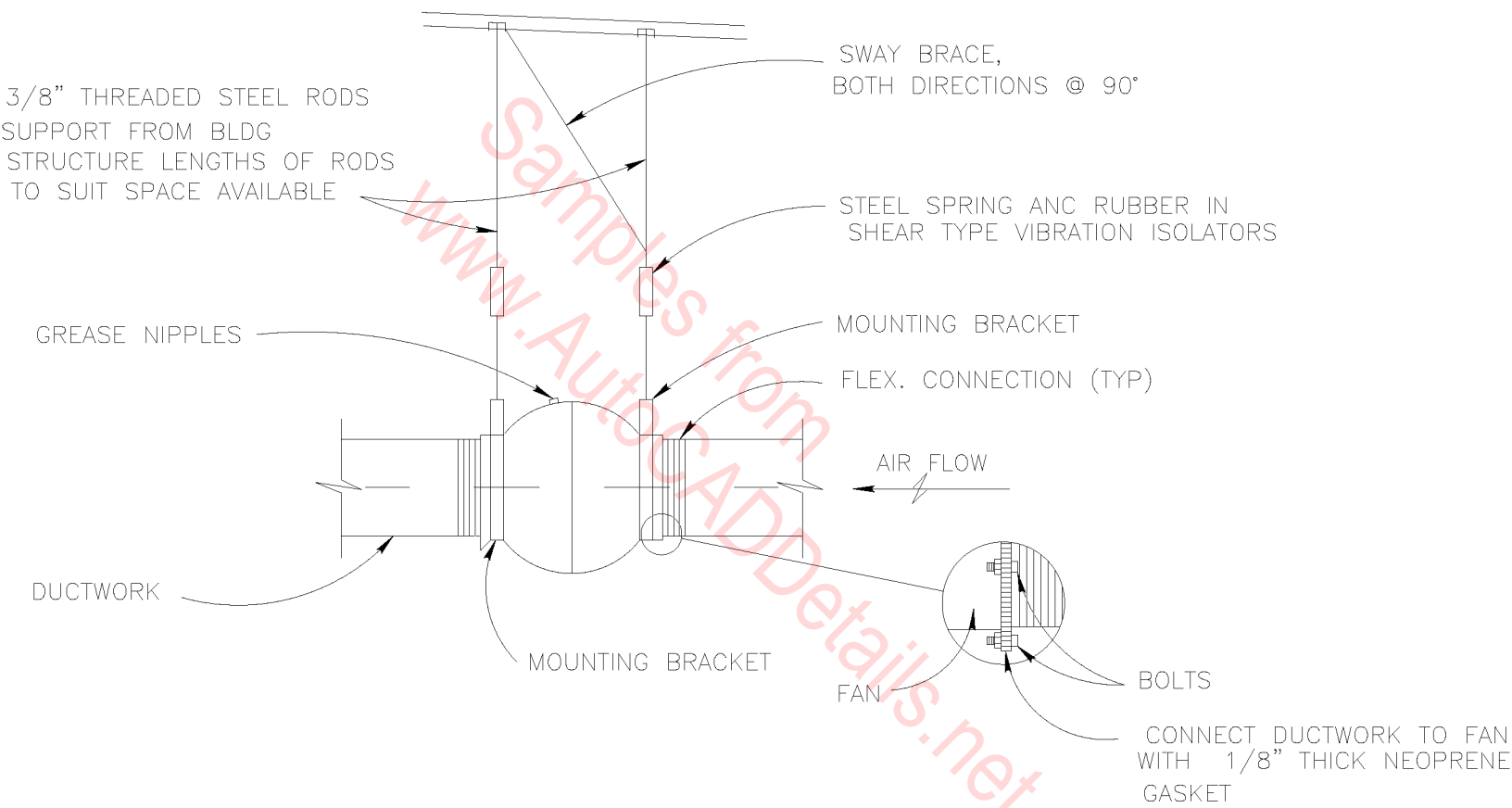
N.T.S.

APPLICABLE FOR DIFFUSERS SERVED
BY ROUND DUCTS ONLY.



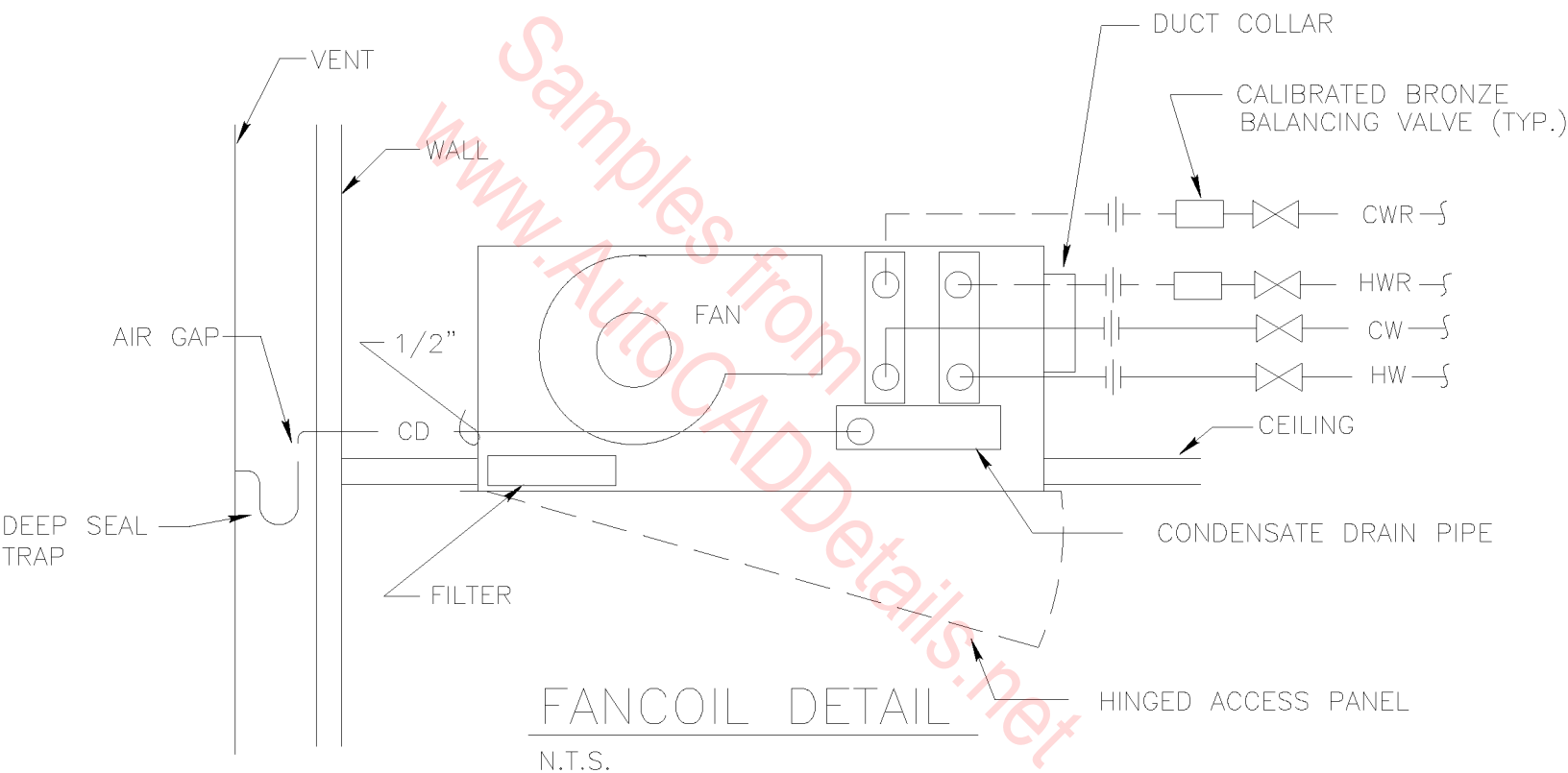
GAS-FIRED AIR HANDLING UNIT DETAIL

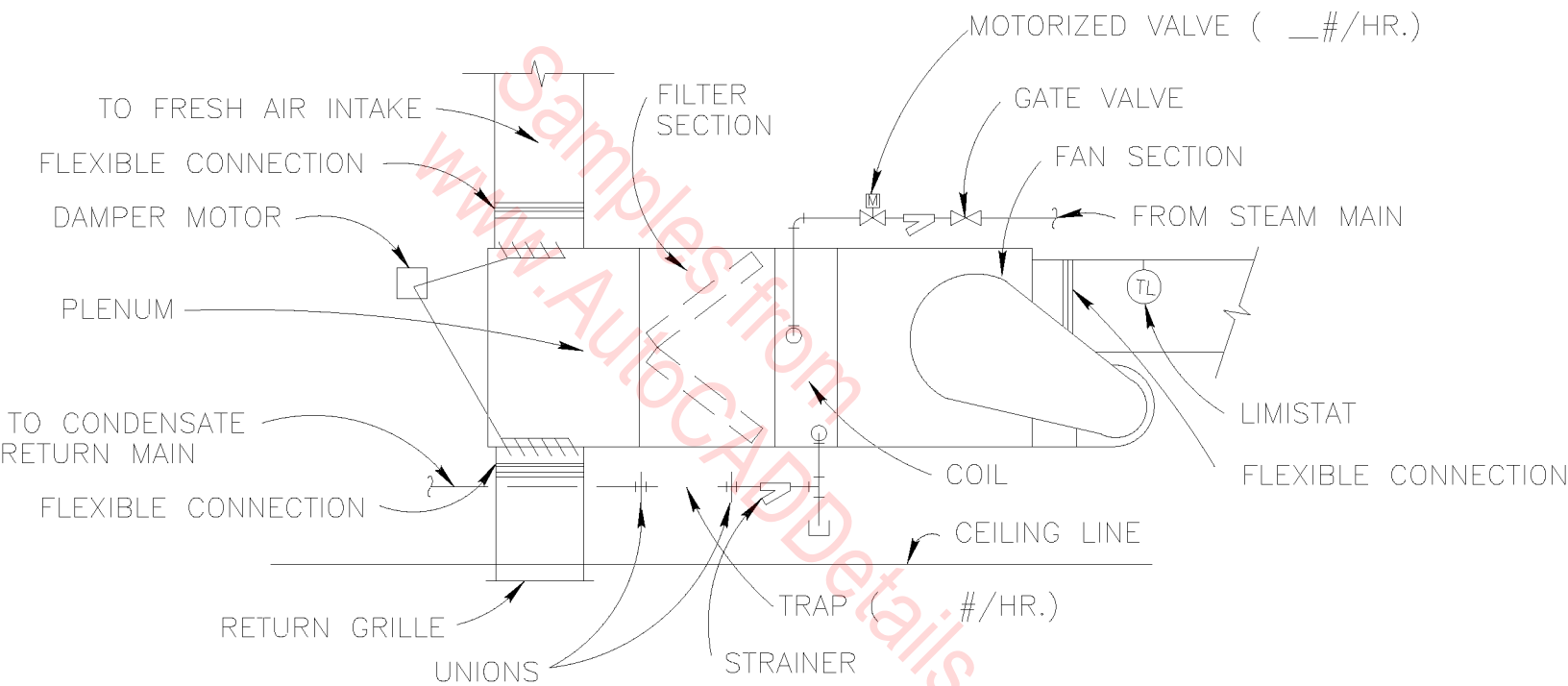
N.T.S.



CENTRIFUGAL IN-LINE FAN DETAIL

N.T.S.

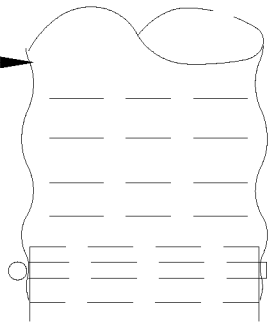




HEATING AND VENTILATING UNIT

CEILING TYPE
N.T.S.

ALTERNATE DUCT LOCATION

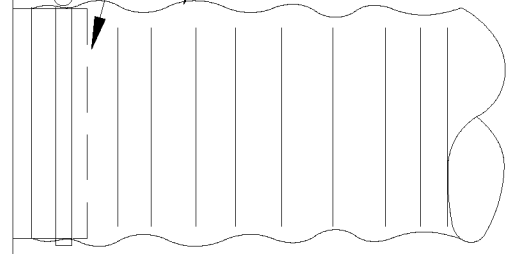


AIRTIGHT SEAL
W/ DUCT BAND

ROUND COLLAR

FLEX DUCT

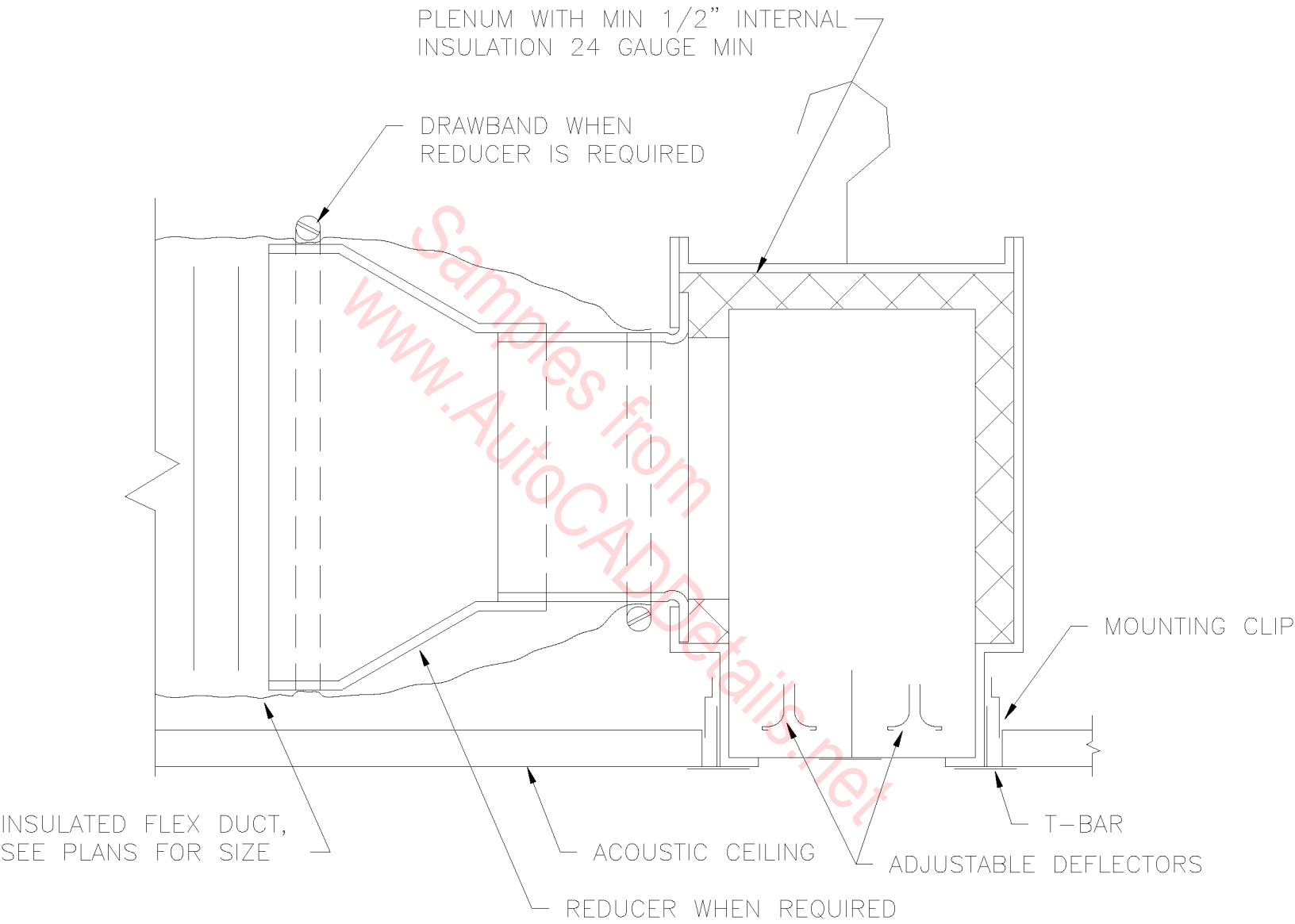
METAL BOX, METAL
ELBOW, OR FLEXIBLE
ELBOW



SQUARE OR
RECTANGULAR
CLG DIFFUSER

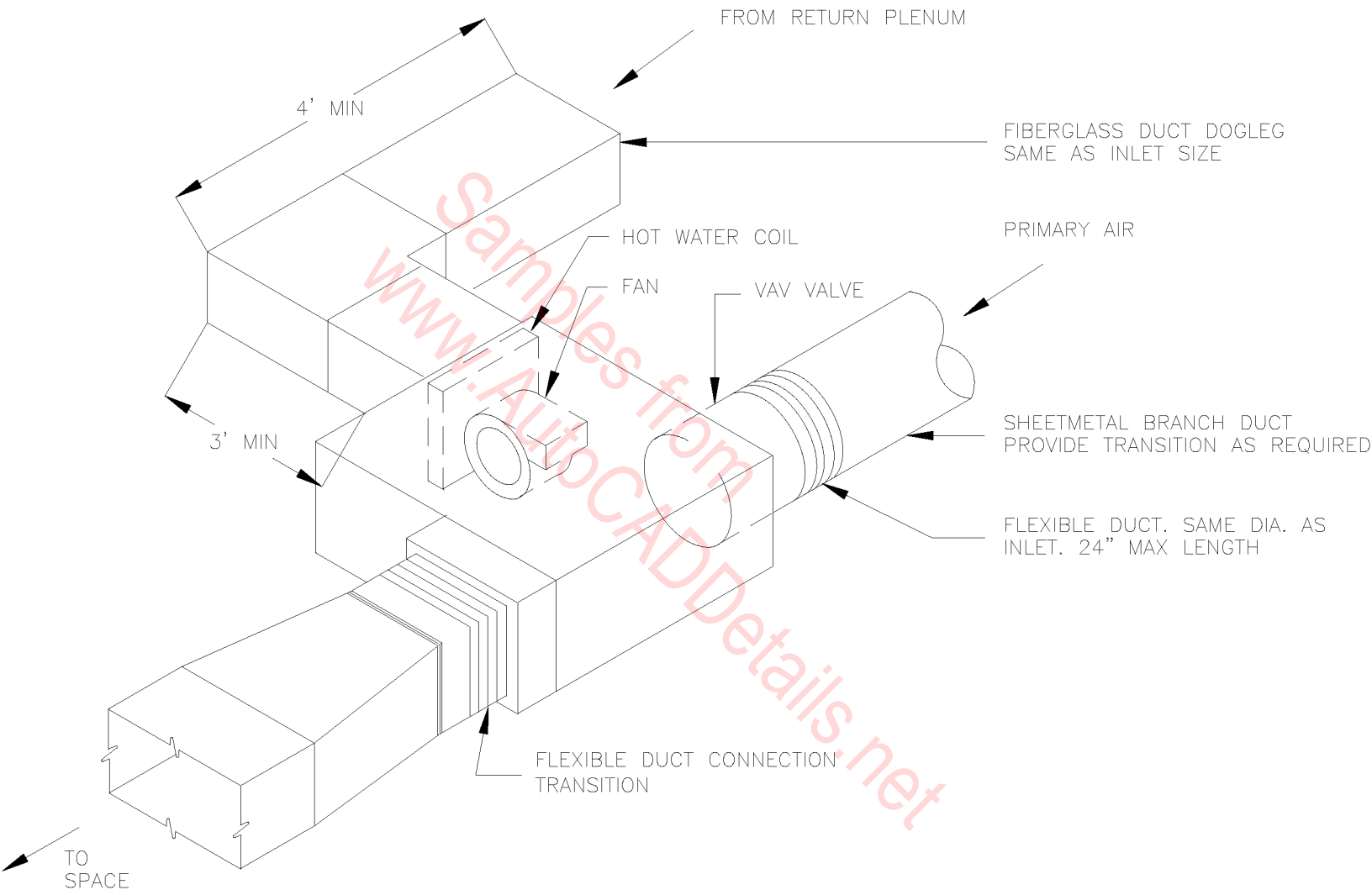
FLEXIBLE DUCT TO CEILING DIFFUSER

N.T.S.



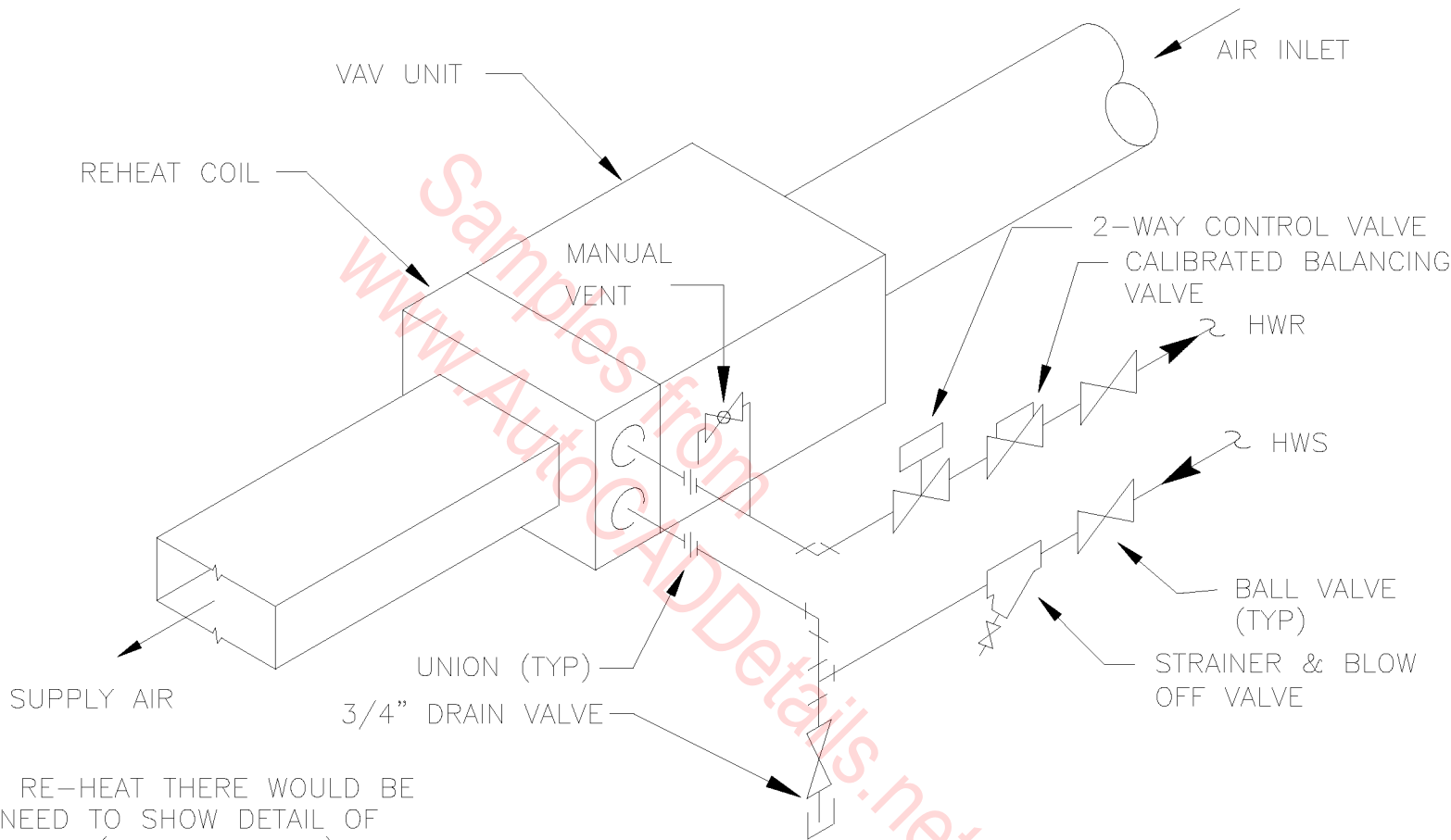
LINEAR SLOT DIFFUSER DETAIL

N.T.S.



FAN POWERED VAV DETAIL

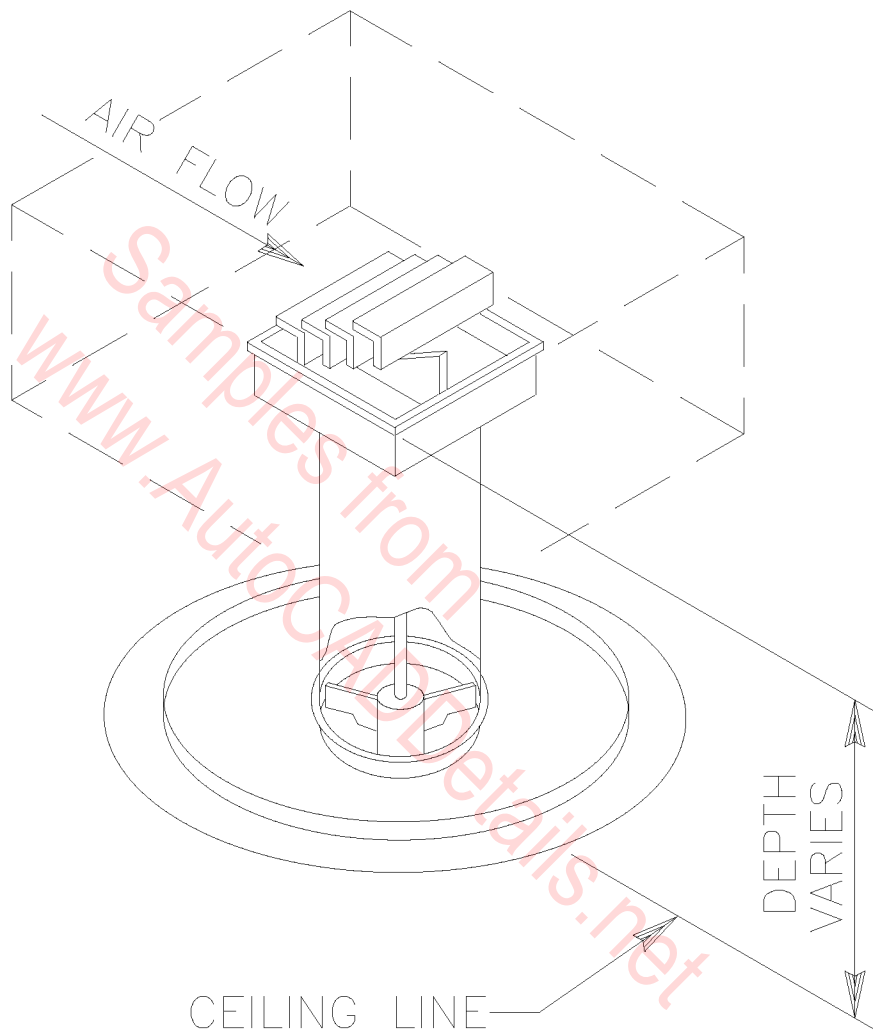
N.T.S.



W/O RE-HEAT THERE WOULD BE
 NO NEED TO SHOW DETAIL OF
 THIS UNIT (VAV-BOX ONLY)

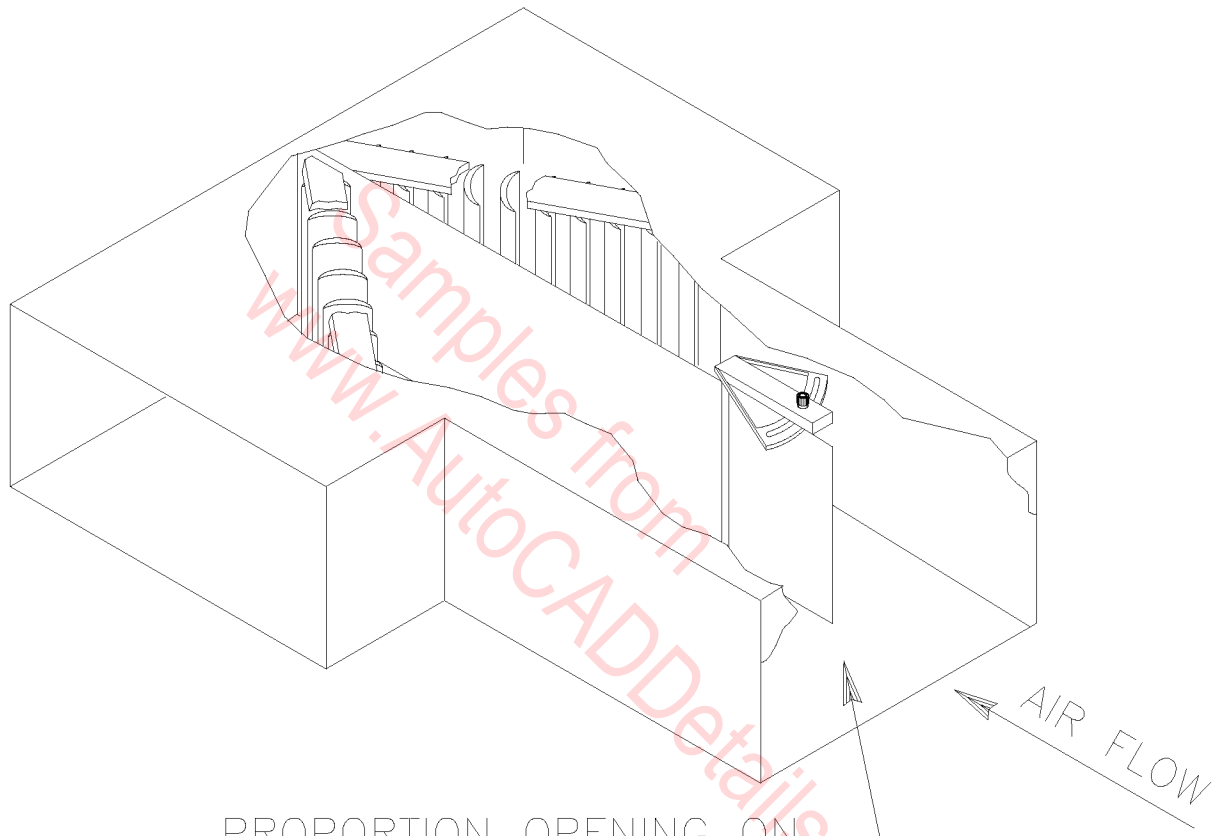
VAV UNIT WITH REHEAT COIL

N.T.S.



TYPICAL CEILING OUTLET DETAIL

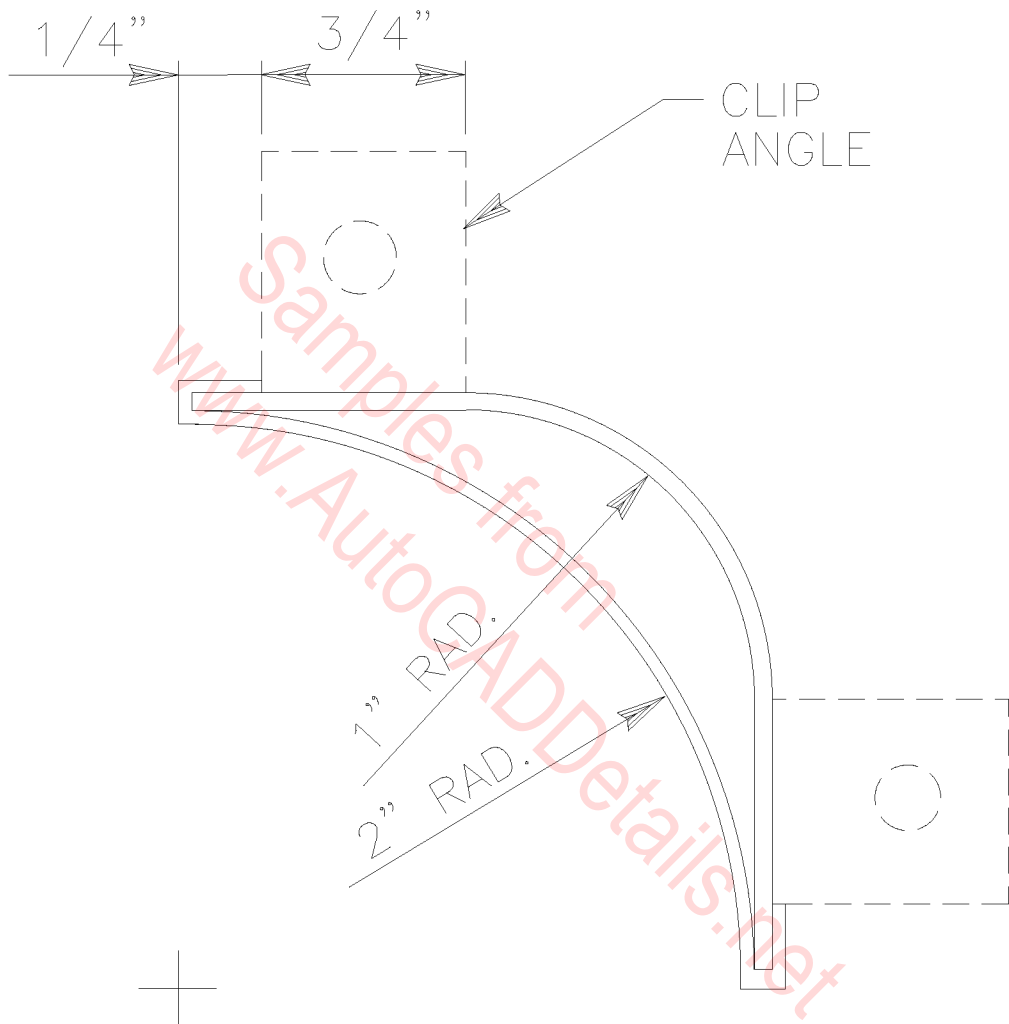
N.T.S.



PROPORTION OPENING ON
EACH SIDE OF SPLITTER
DAMPER ACCORDING TO
AIR QUANTITY

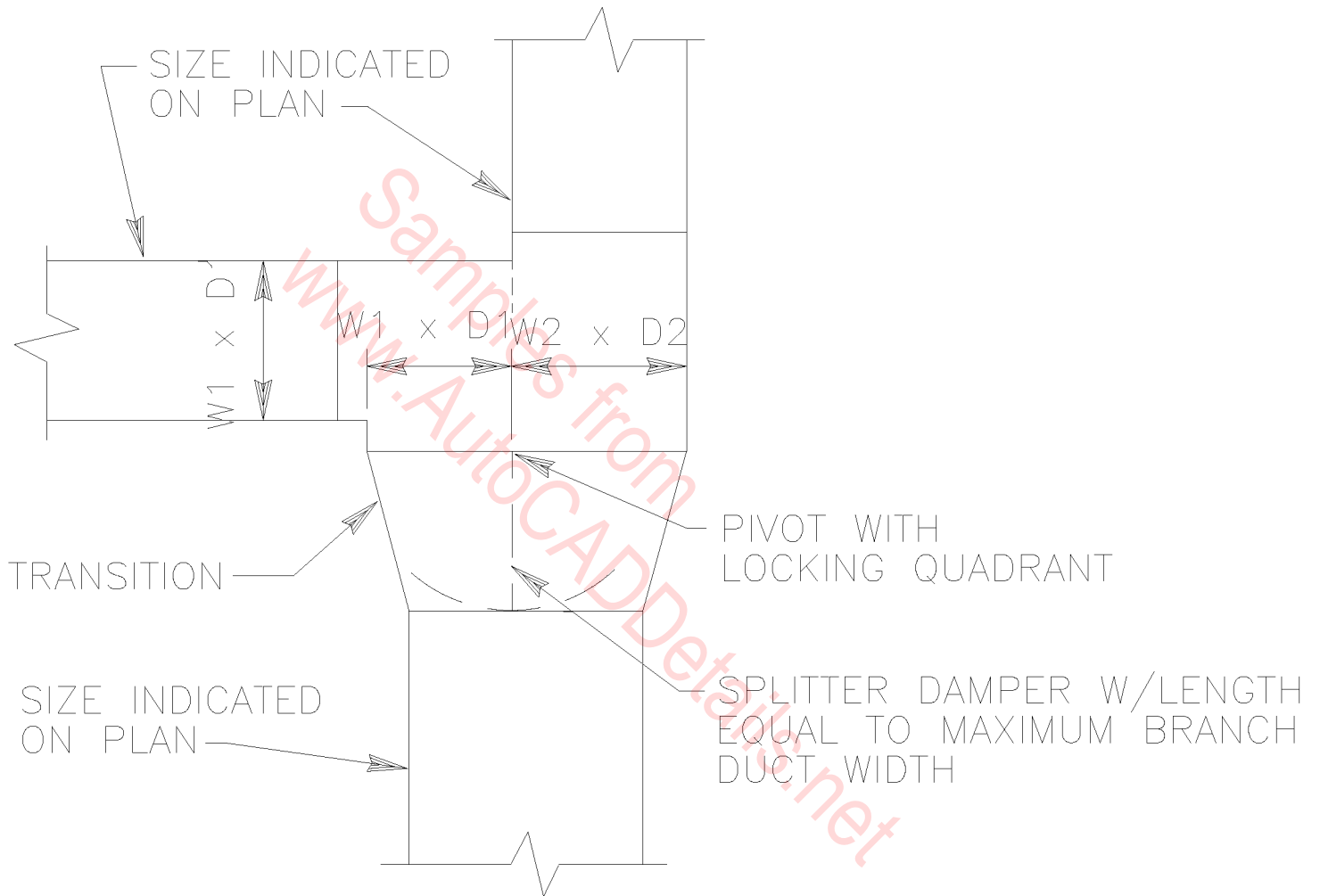
TYPICAL SPLITTER DAMPER DETAIL

N.T.S.



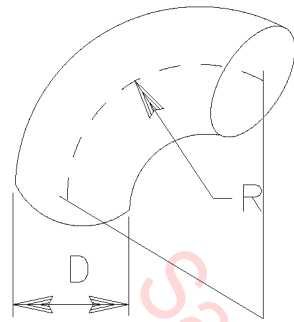
TYPICAL TURNING VANE DETAIL

N.T.S.



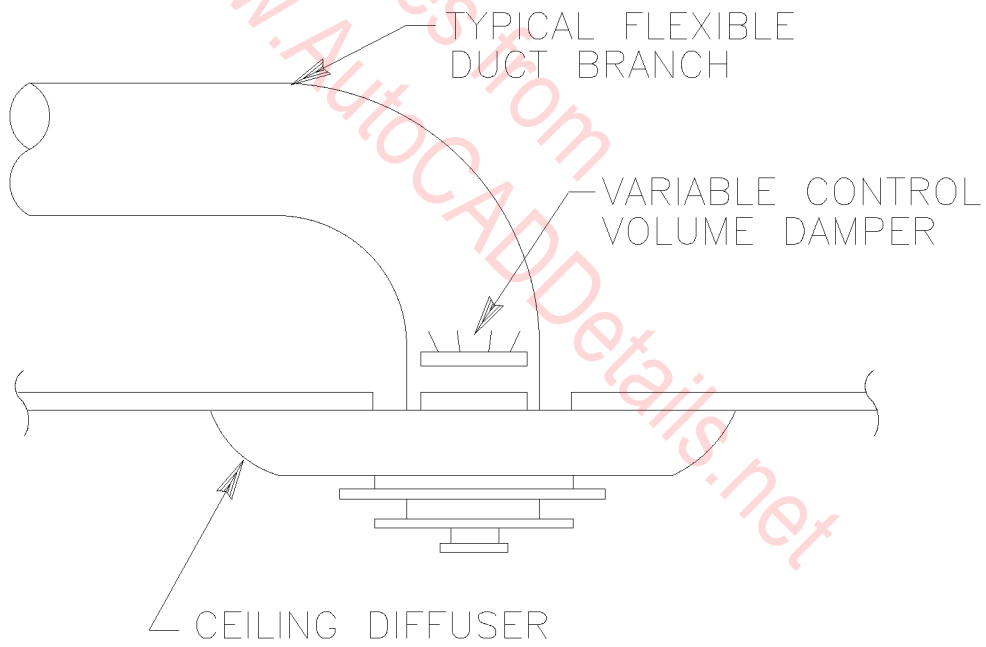
TYPICAL SPLITTER DAMPER DETAIL

N.T.S.



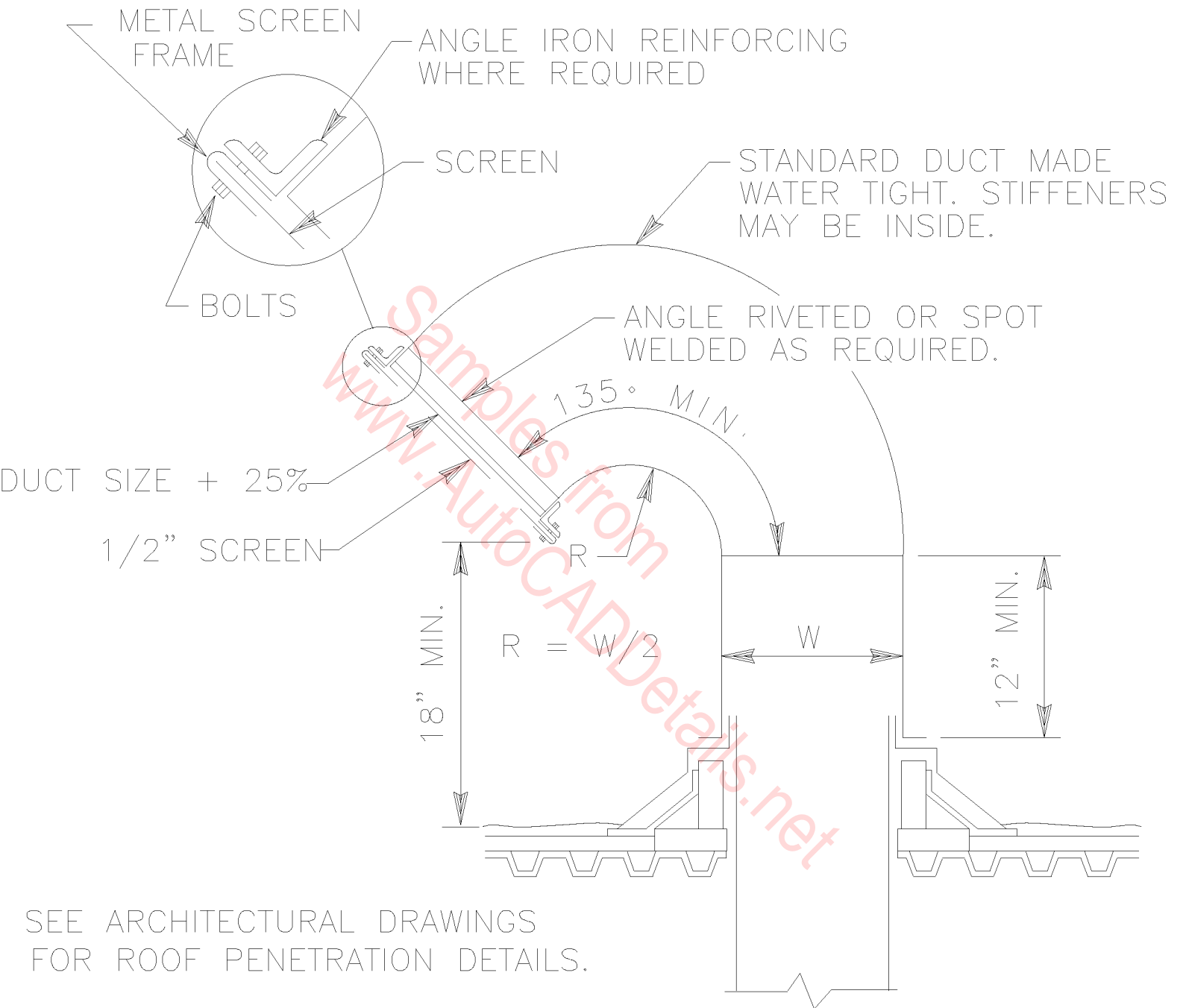
R/D = 1 FOR 6"
R/D = .5 FOR 8"

TYPICAL SMOOTH RADIUS ELBOW



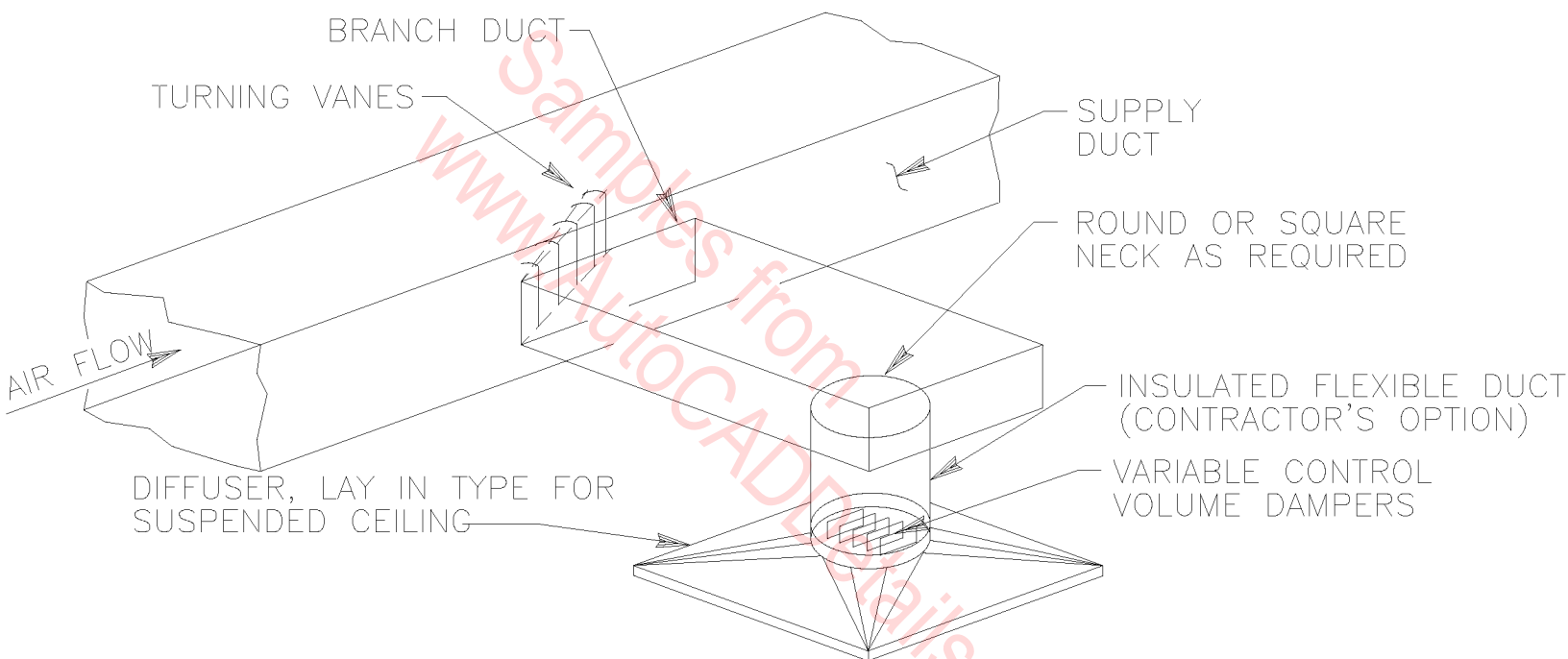
CEILING DIFFUSER CONNECTION DETAIL

N.T.S.



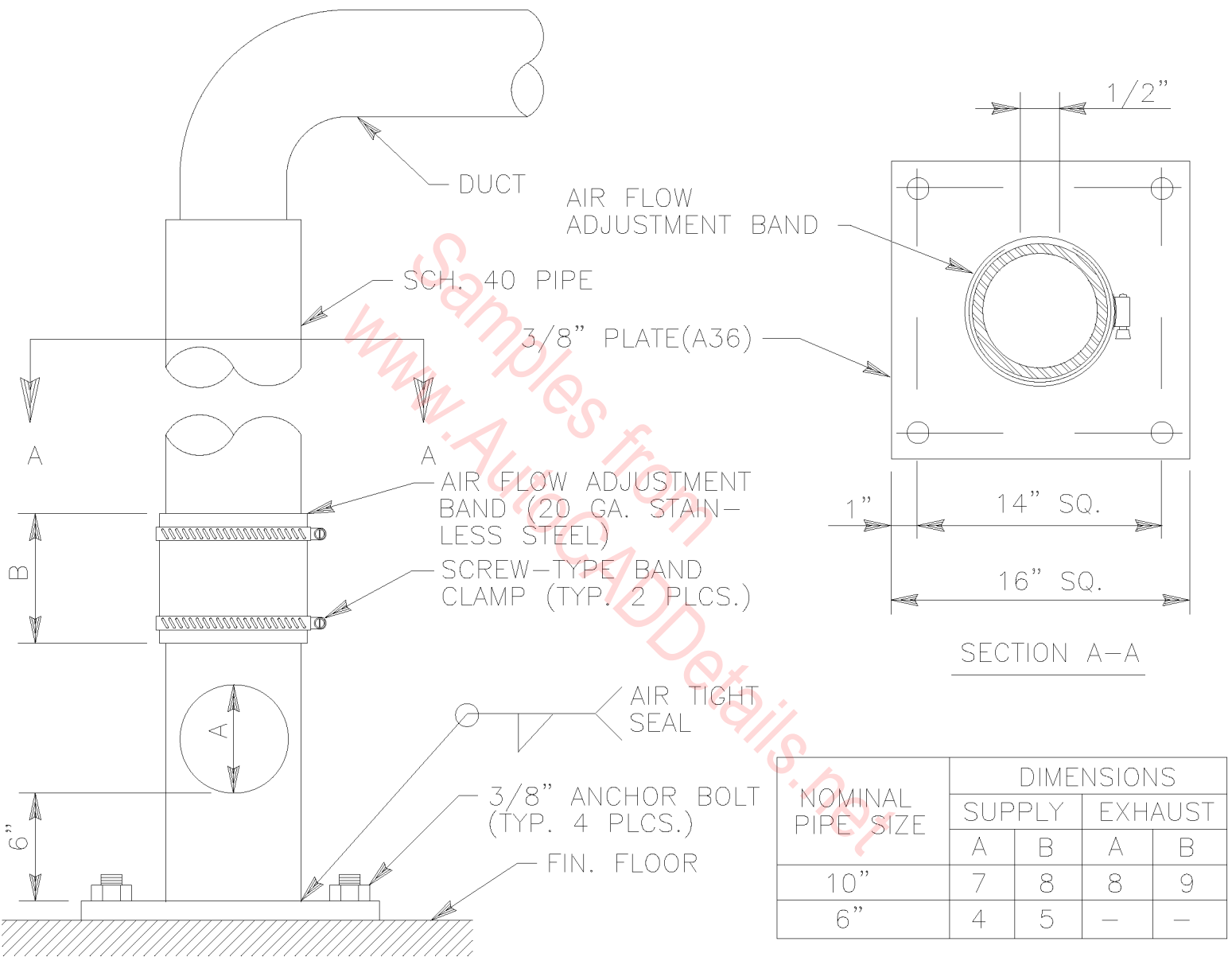
TYPICAL GOOSENECK DETAIL

N.T.S.



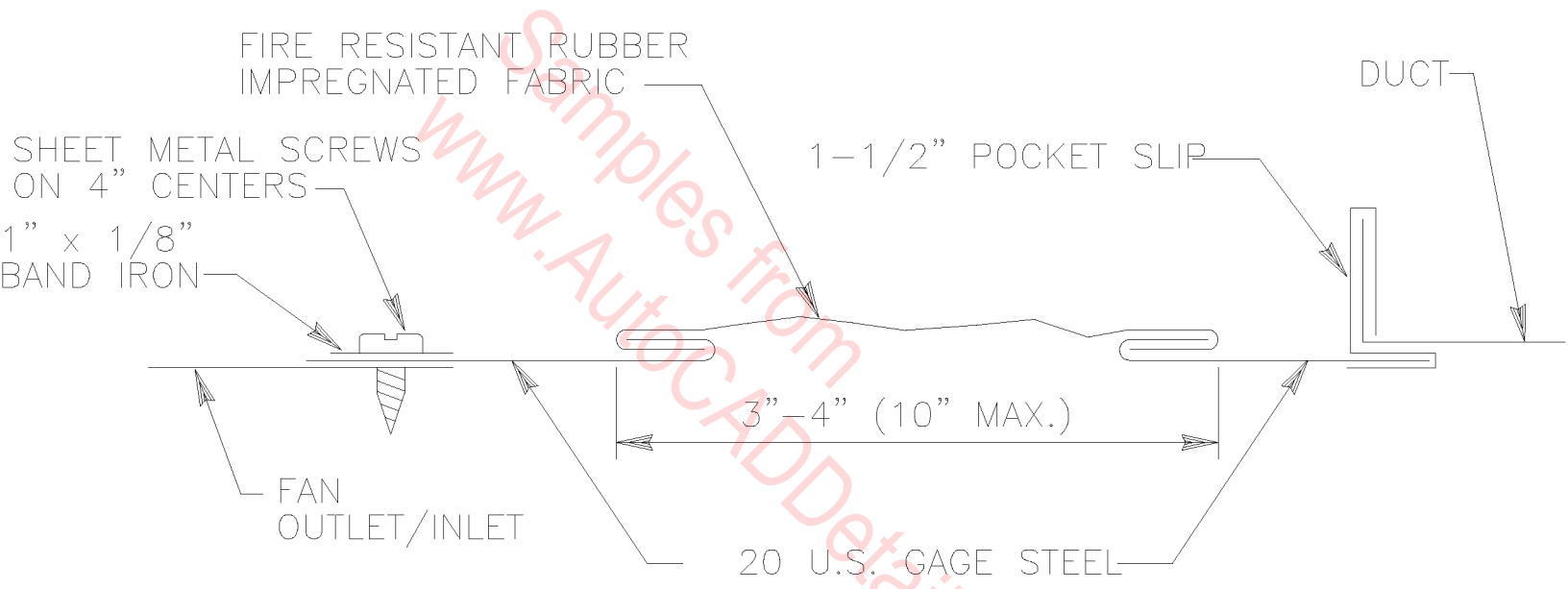
TYPICAL CEILING DIFFUSER DETAIL

N.T.S.



HEAVY DUTY SUPPLY AND EXHAUST DUCT

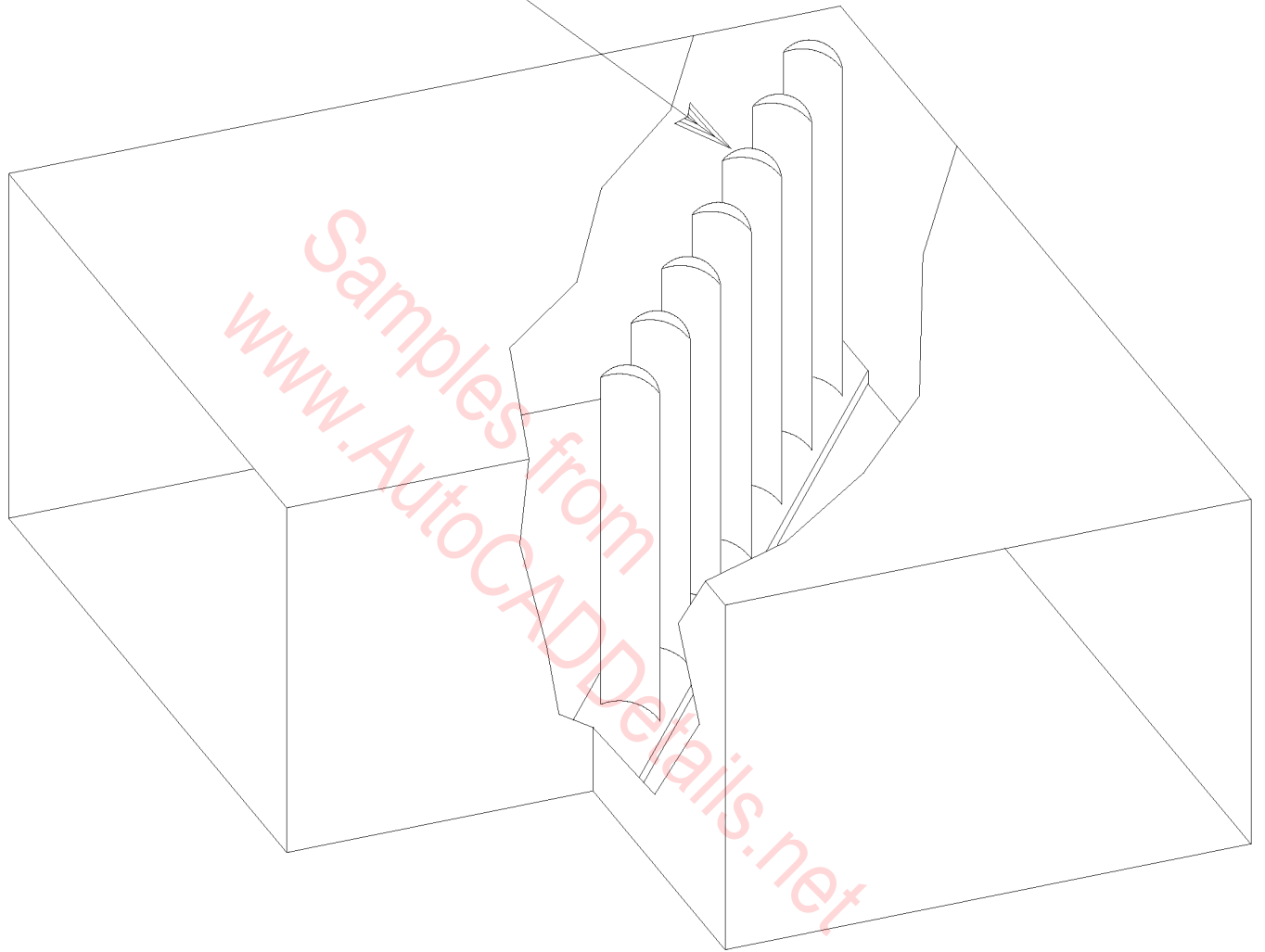
N.T.S.



TYPICAL FLEXIBLE CONNECTION DETAIL

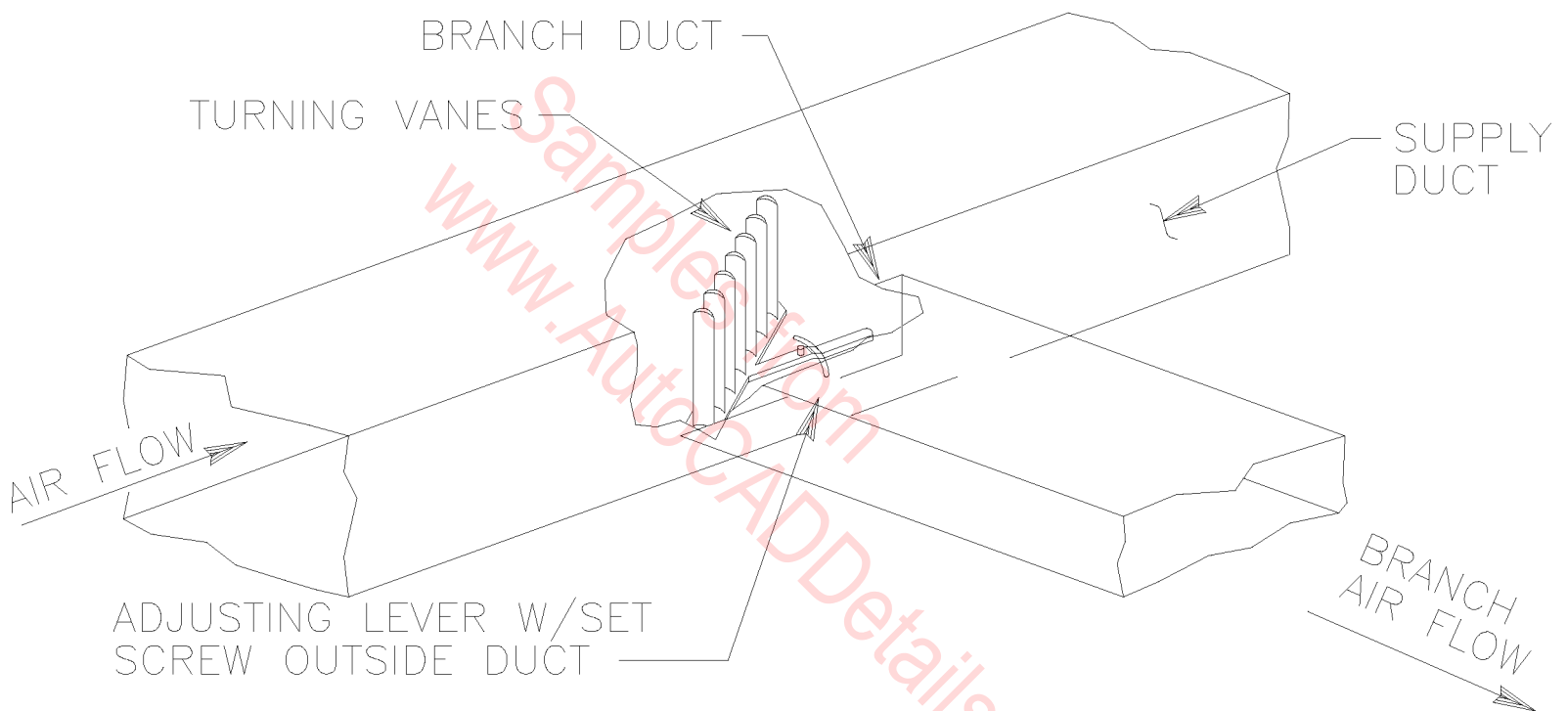
N.T.S.

TURNING VANES



TYPICAL ELBOW DETAIL

N.T.S.



TYPICAL BRANCH TAKE-OFF DETAIL

N.T.S.

1" DUCT LINER,
ALL SIDES

WALL

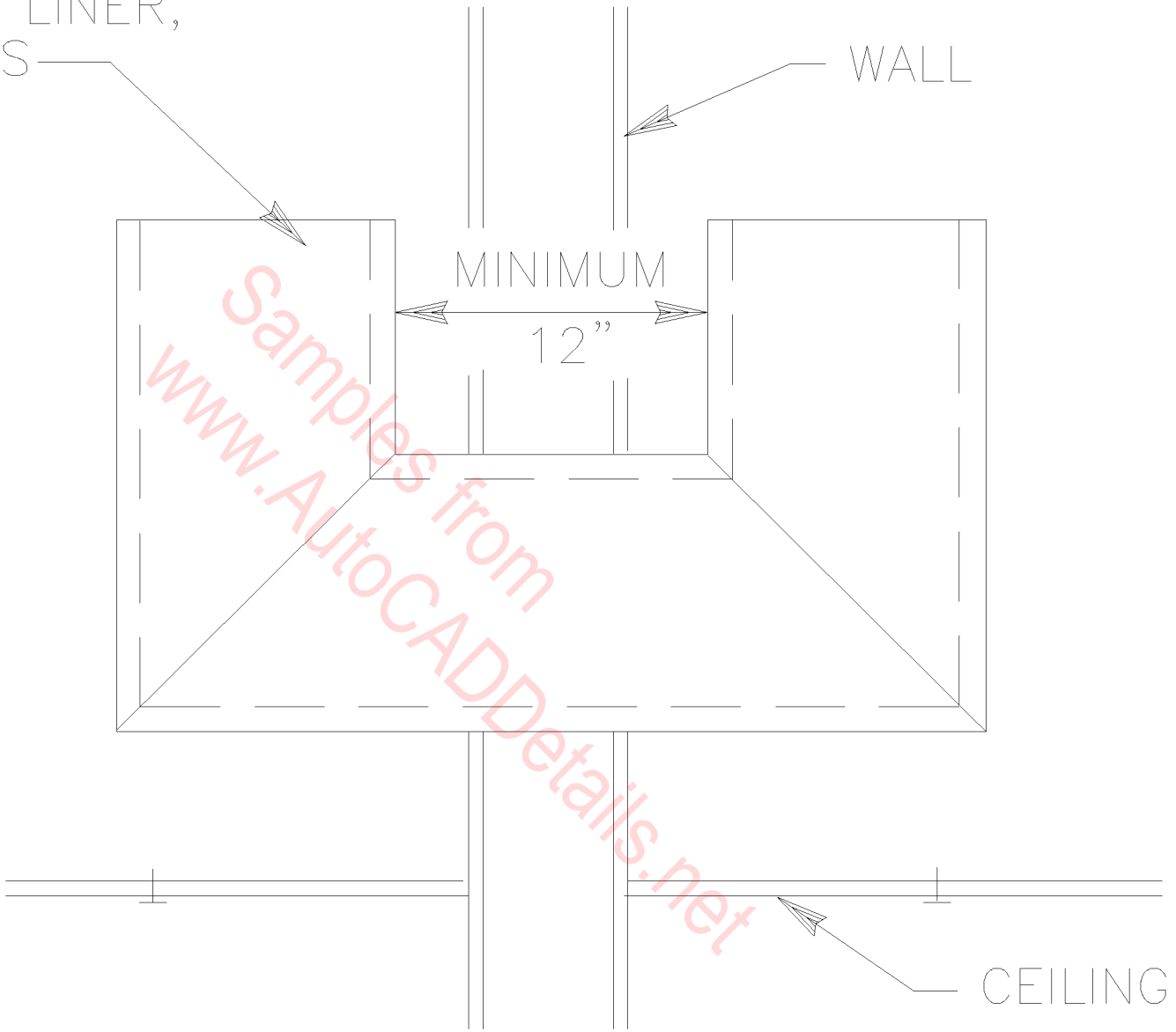
MINIMUM
12"

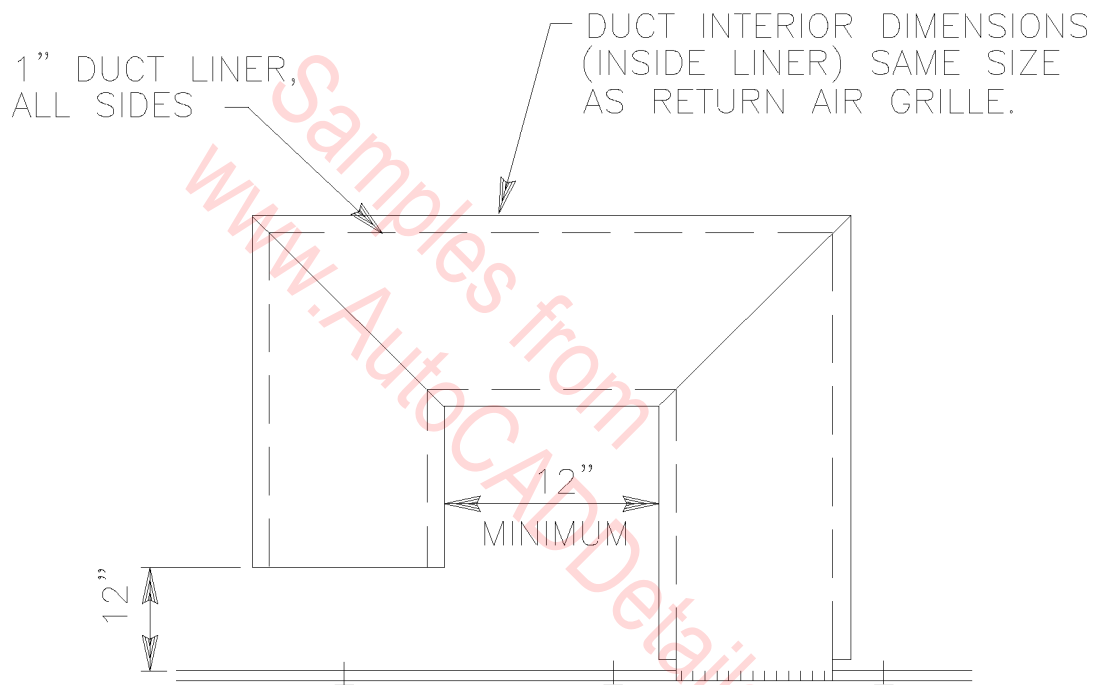
CEILING

TRANSFER DUCT DETAIL

N.T.S.

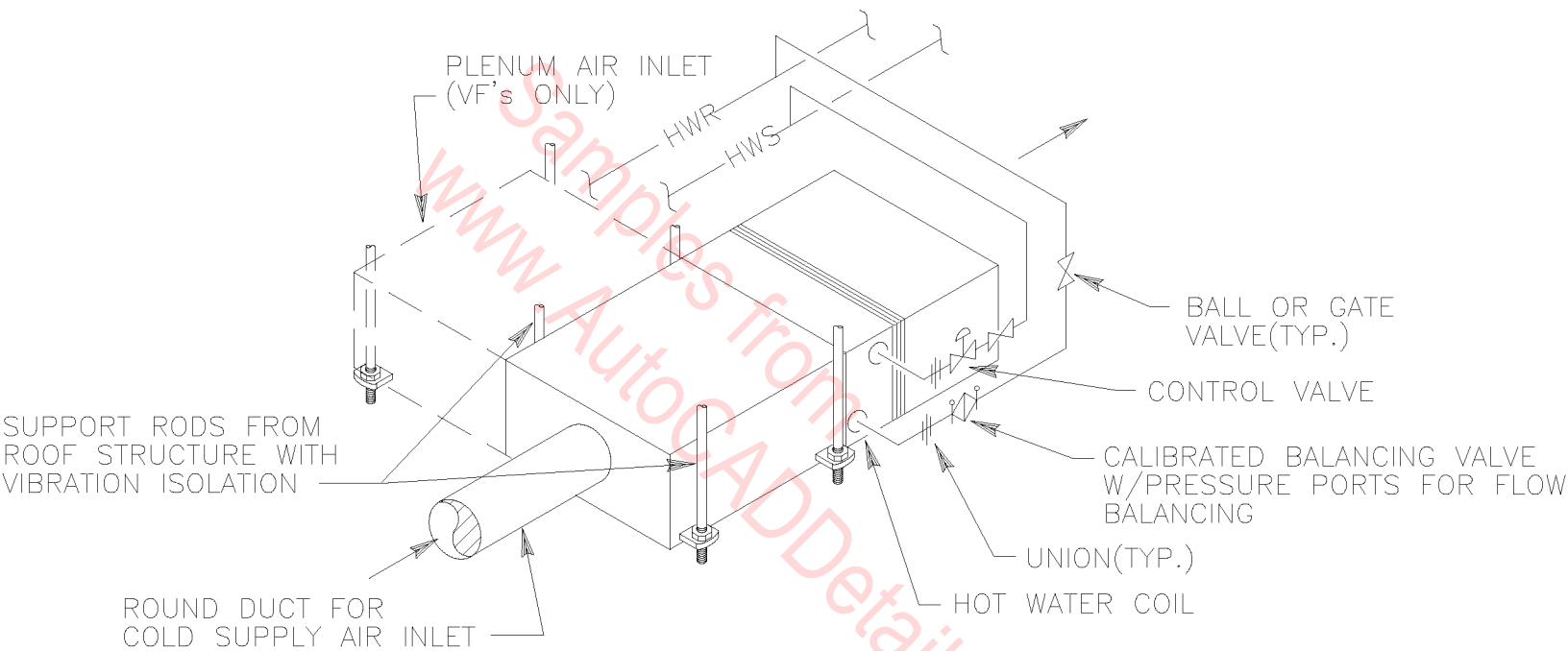
Samples from
www.AutoCADDetails.net





RETURN AIR SECURITY/SOUND TREATMENT

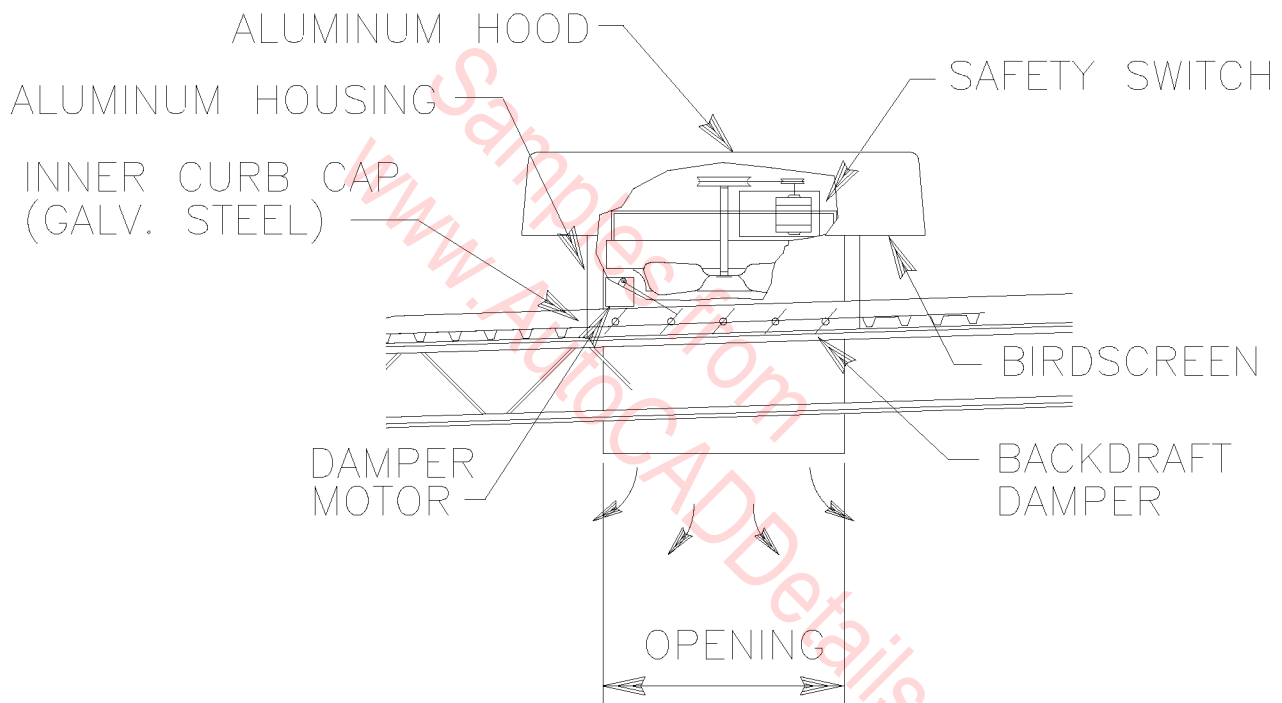
N.T.S.



HOT WATER COIL, ASSOCIATED PIPING AND FITTINGS
 APPLY TO HEATING AND COOLING TERMINALS ONLY.(VF's)

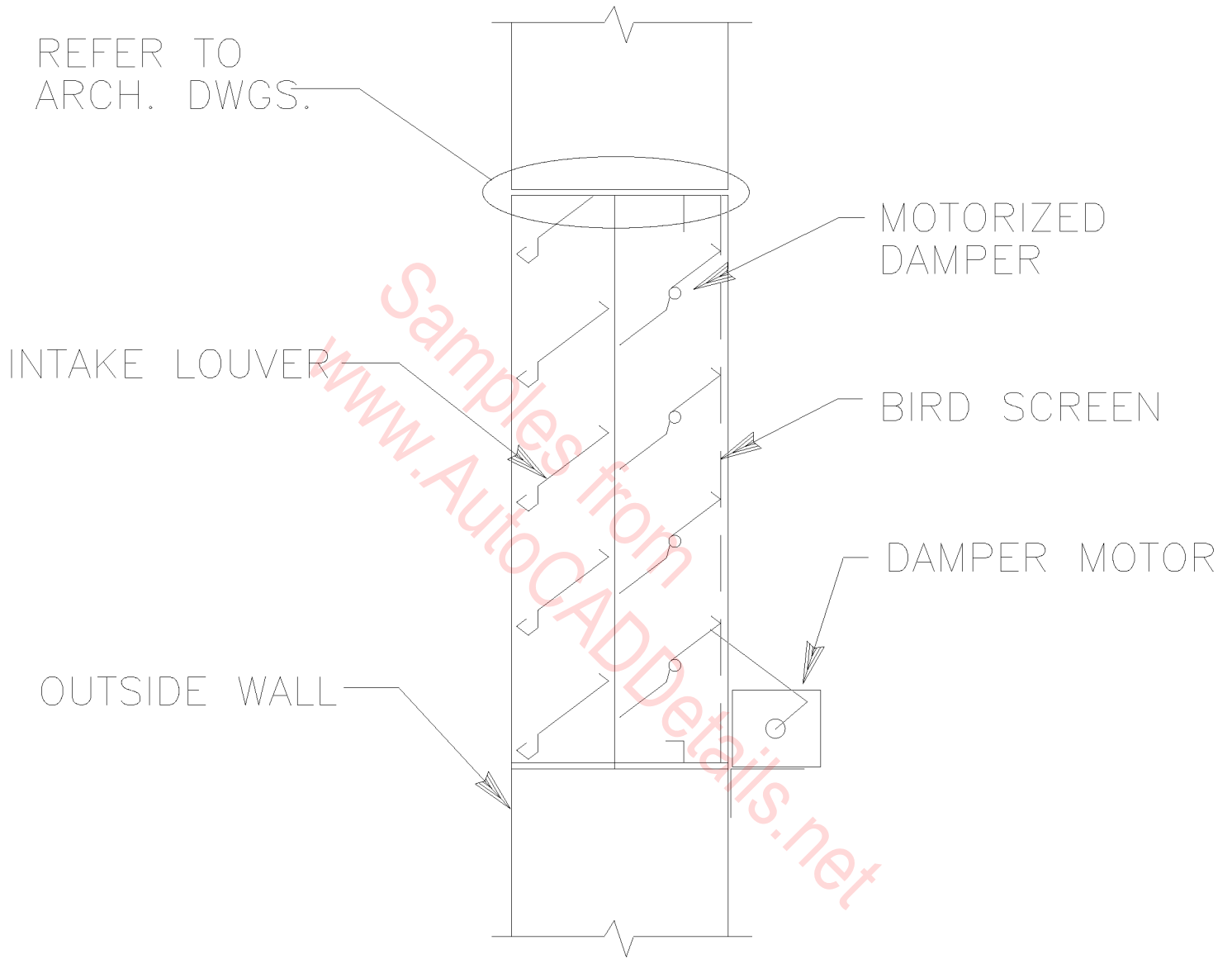
TYPICAL VAV TERMINAL UNIT

N.T.S.



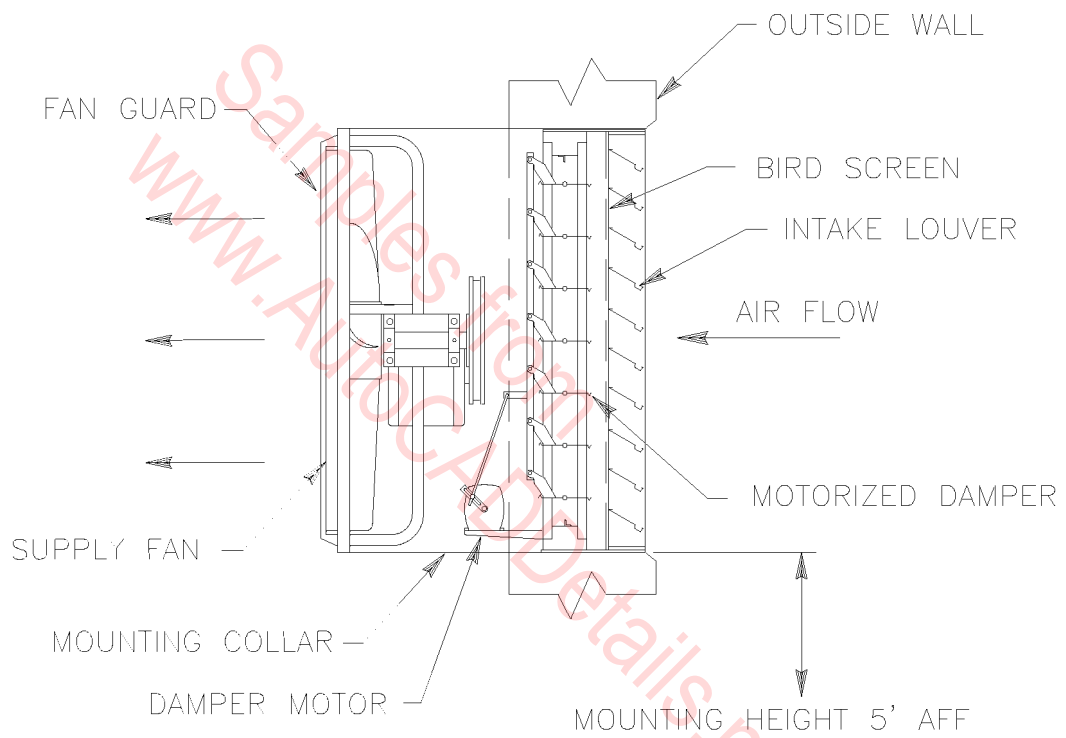
TYPICAL ROOF SUPPLY FAN DETAIL

N.T.S.



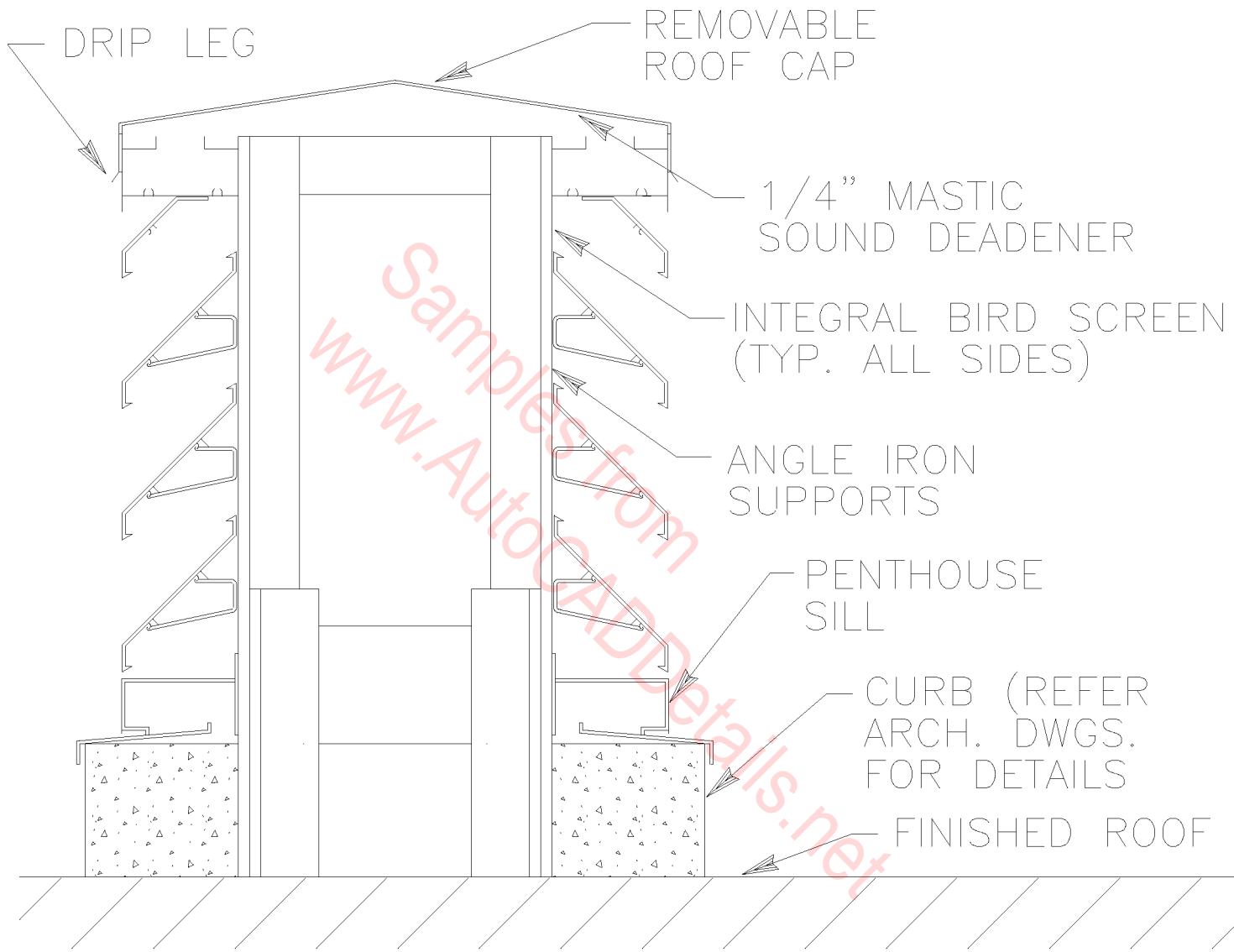
COMBINATION LOUVER/DAMPER

NON-DUCTED APPLICATION
N.T.S.



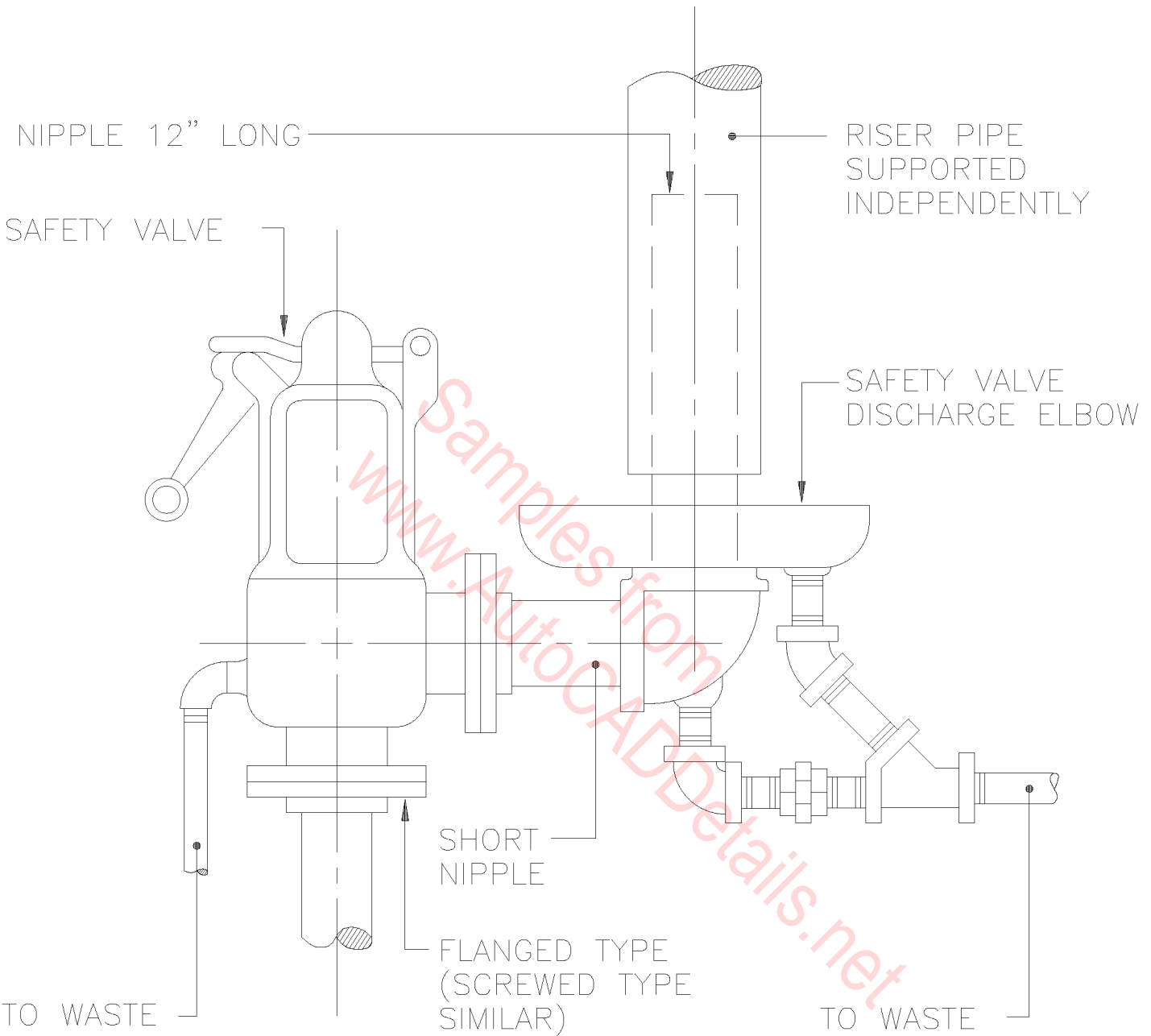
TYPICAL WALL MOUNTED VENTILATION FAN DETAIL

N.T.S.



INTAKE AIR PENTHOUSE DETAIL

N.T.S.

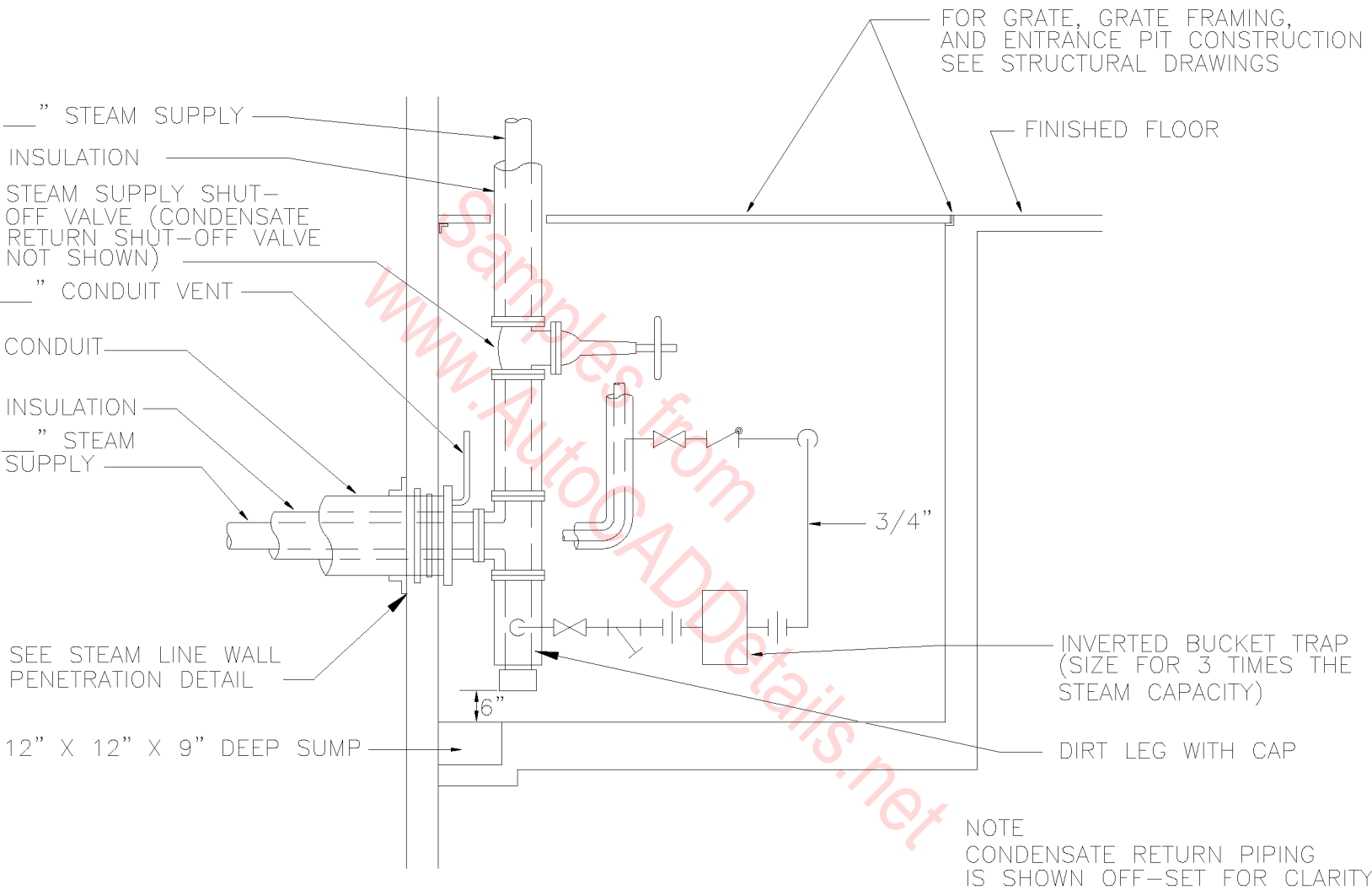


NOTE:

FOR VALVES UP TO 3" MAKE RISER PIPE NOMINAL 1" LARGER THAN DISCHARGE NIPPLE. OVER 3" MAKE RISER PIPE NOMINALLY 2" LARGER THAN DISCHARGE NIPPLE.

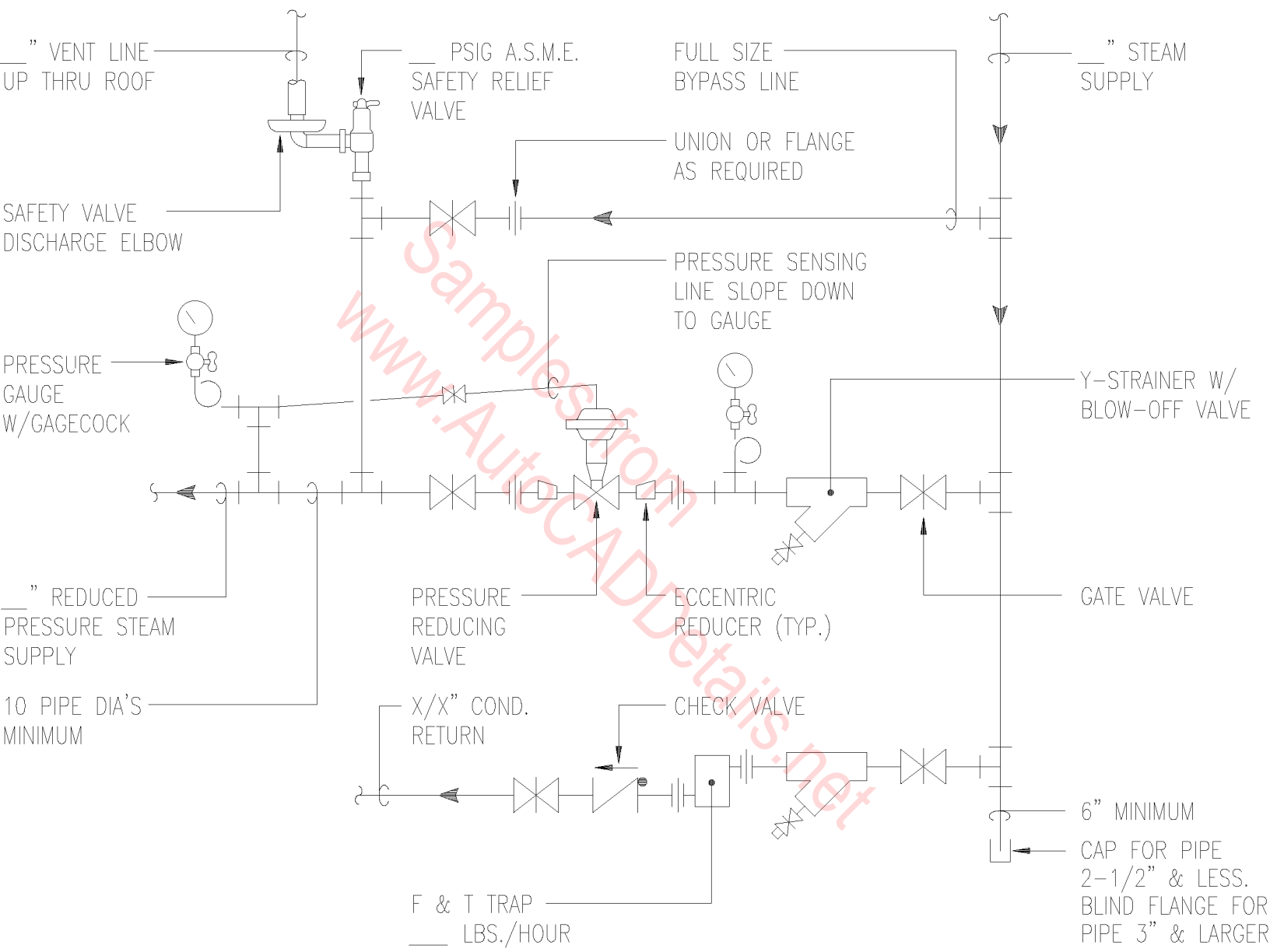
STEAM SAFETY RELIEF VALVE DETAIL

N.T.S.



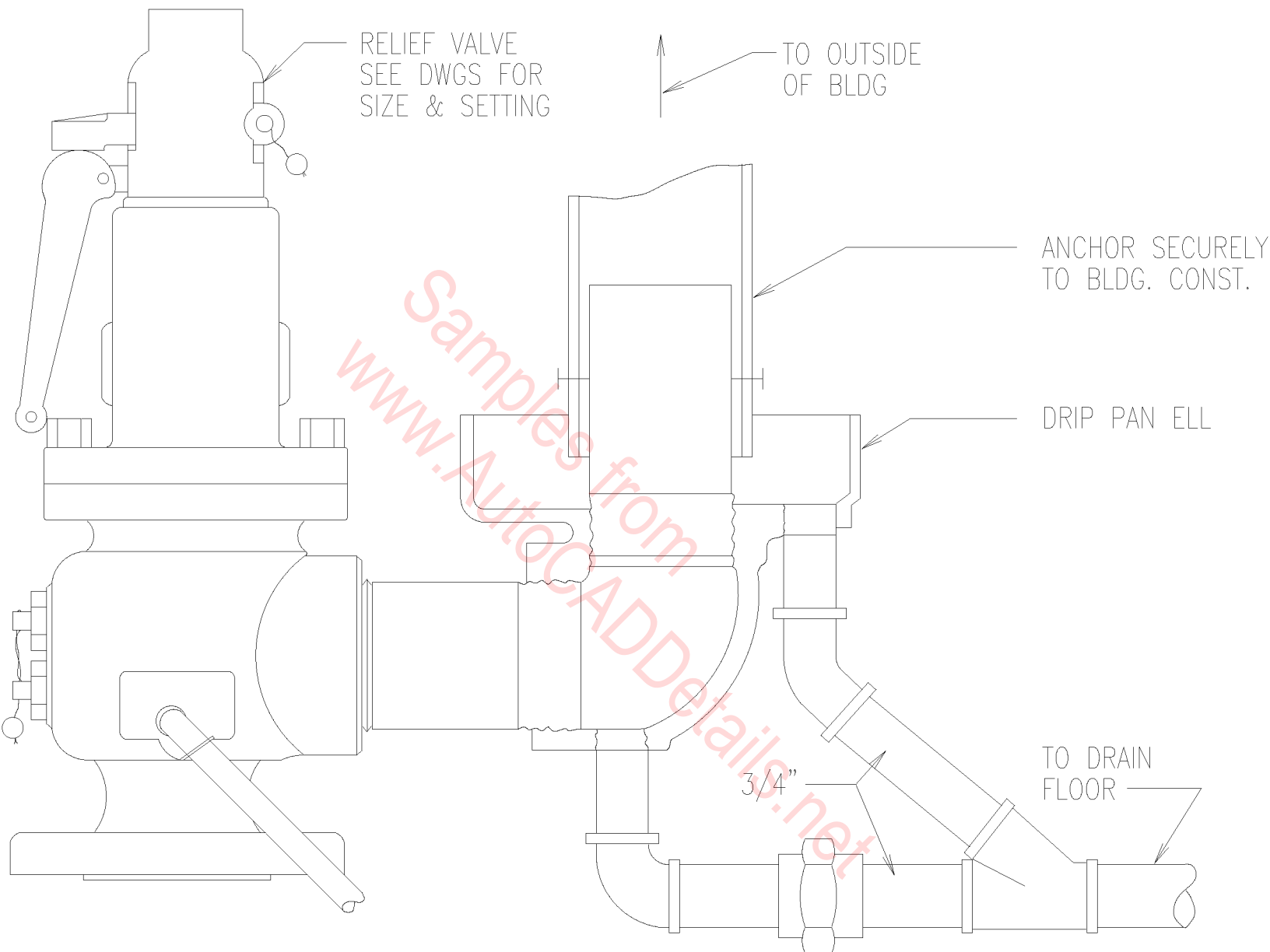
STEAM ENTRANCE AT BUILDING SECTION

N.T.S.



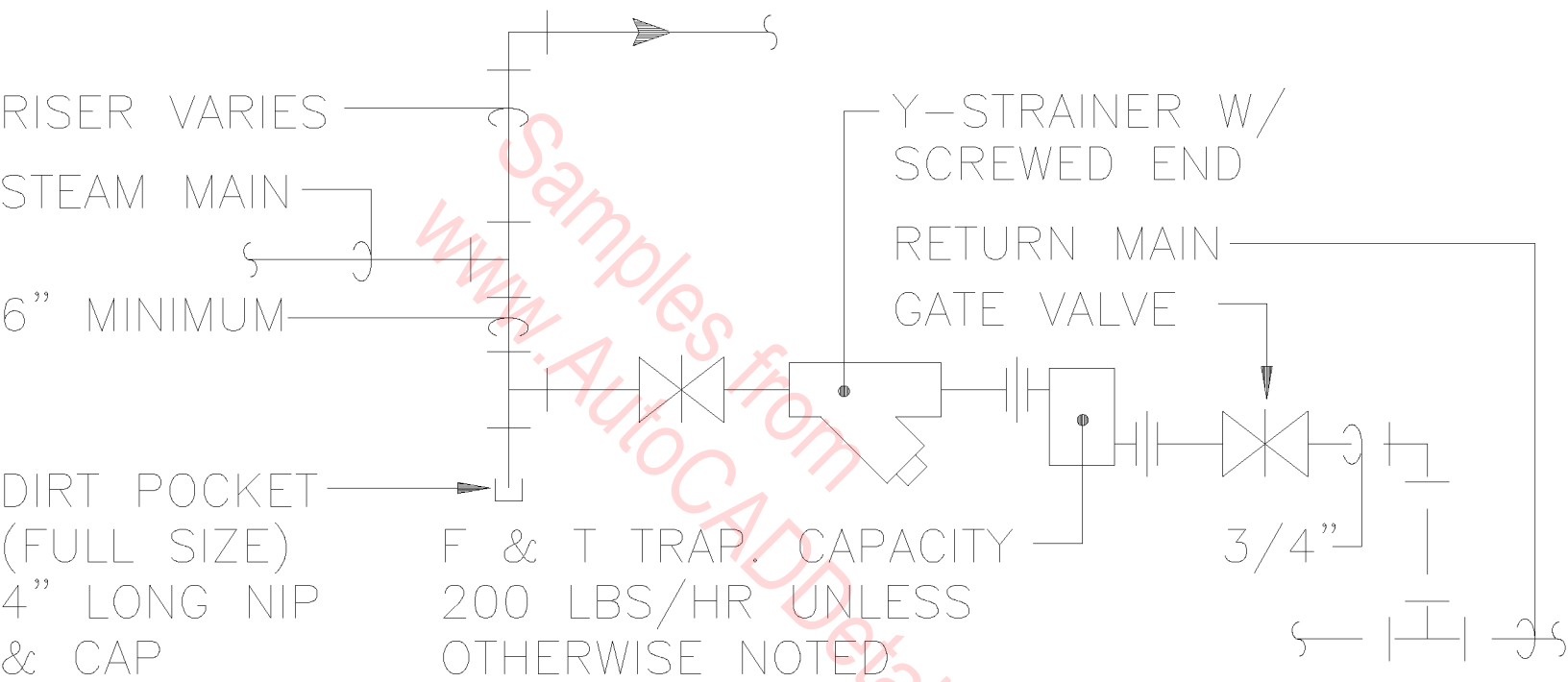
STEAM PRESSURE REDUCING STATION DETAIL

N.T.S.

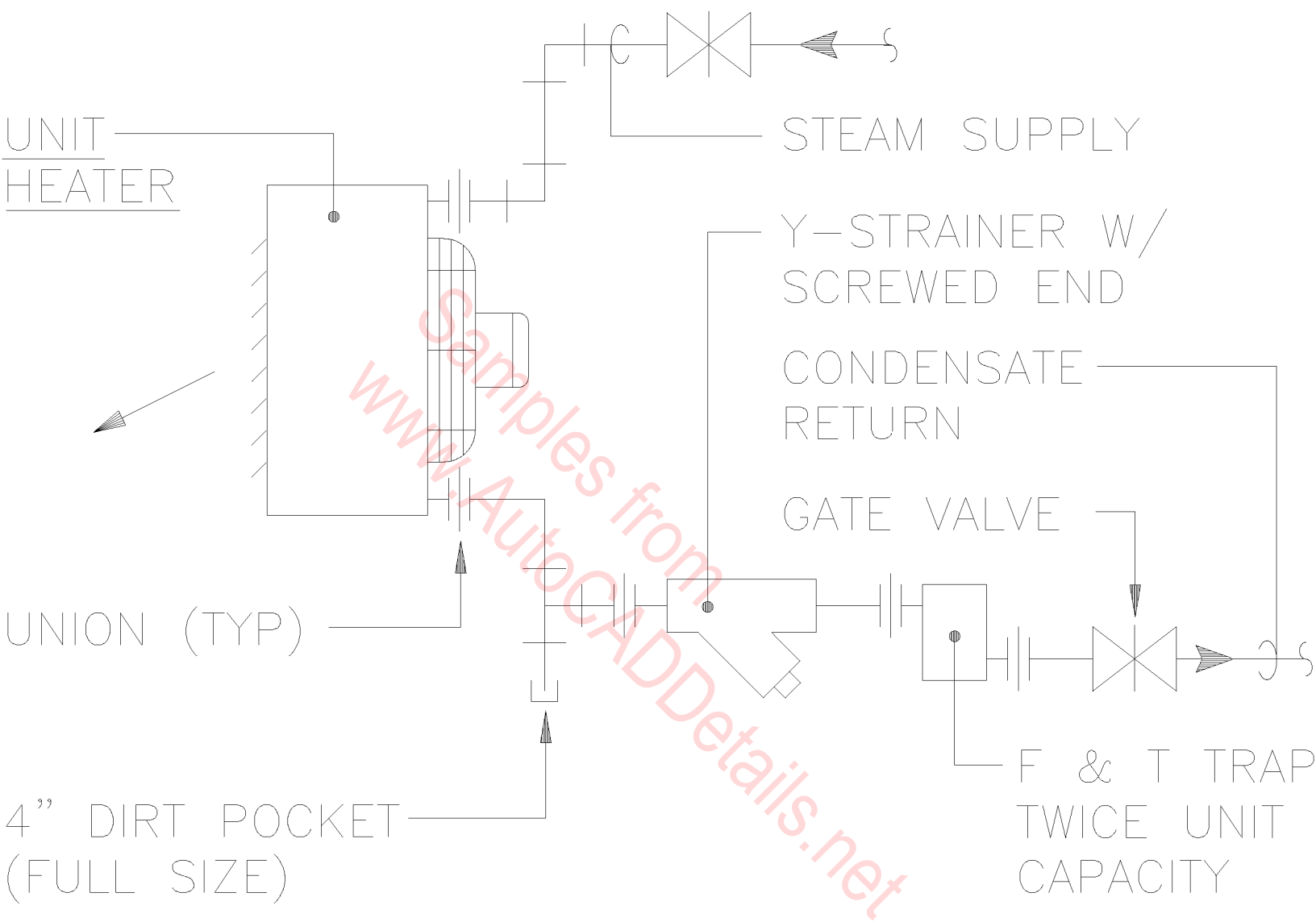


STEAM RELIEF VALVE DRIP PAN ELL

N.T.S.



LOW PRESSURE STEAM
DRIP & RISE DETAIL
 N.T.S.



HORIZONTAL STEAM
UNIT HEATER DETAIL
 N.T.S.

VACUUM BREAKER
[NOTE: REMOVE IF SAT.
PRESSURE IS BELOW
ATMOSPHERIC PRESS.]

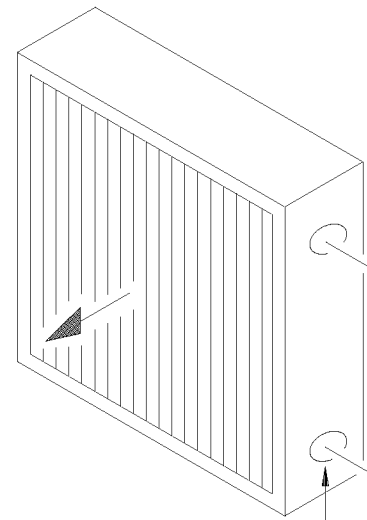
UNION OR FLANGE
(AS REQUIRED TYP.)

STEAM COIL
CONTROL VALVE

BYPASS LINE

GLOBE
VALVE

STEAM SUPPLY



FULL SIZE
COIL TAPPING
6" MINIMUM

CAP FOR PIPE 2" &
SMALLER. BLIND FLANGE
FOR PIPE 2-1/2" &
LARGER

www.AutoCADDetails.net

ECCENTRIC
REDUCER

CONDENSATE RETURN

GATE VALVE (TYP)

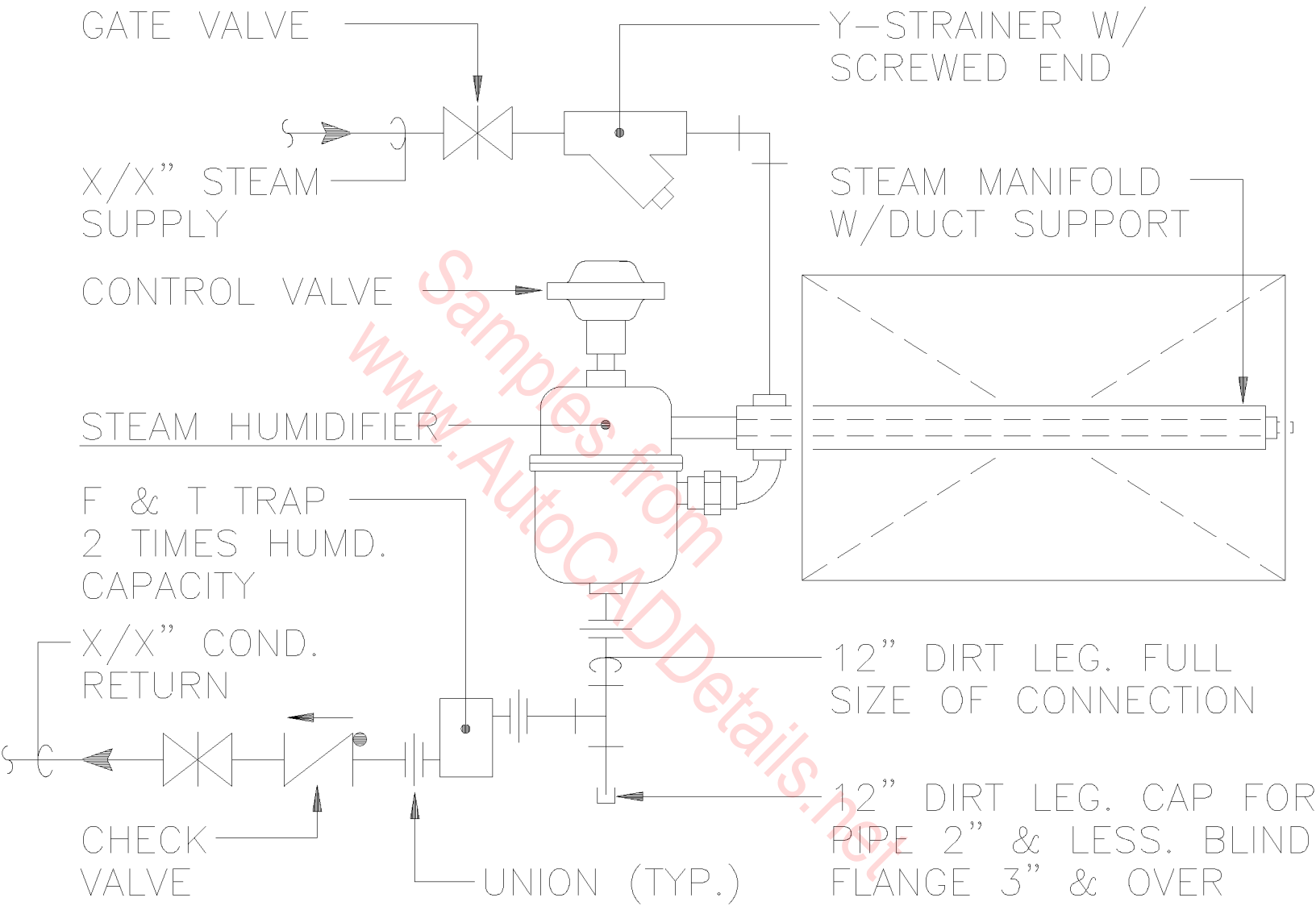
CHECK VALVE

FLOAT & THERMOSTATIC TRAP
(TWICE COIL CAPACITY)

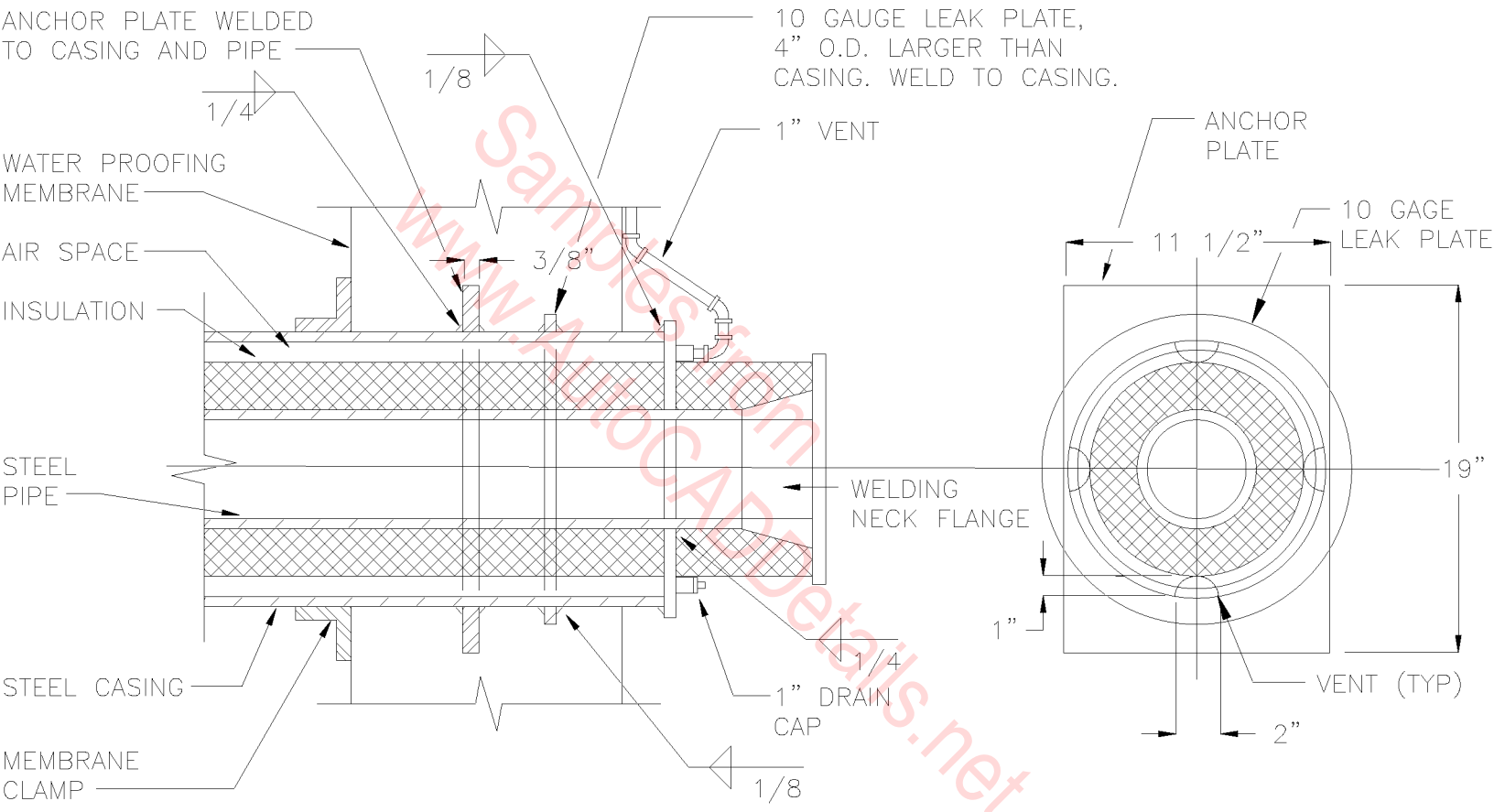
Y-STRAINER W/BLOW-OFF VALVE

STEAM COIL PIPING DETAIL

N.T.S.

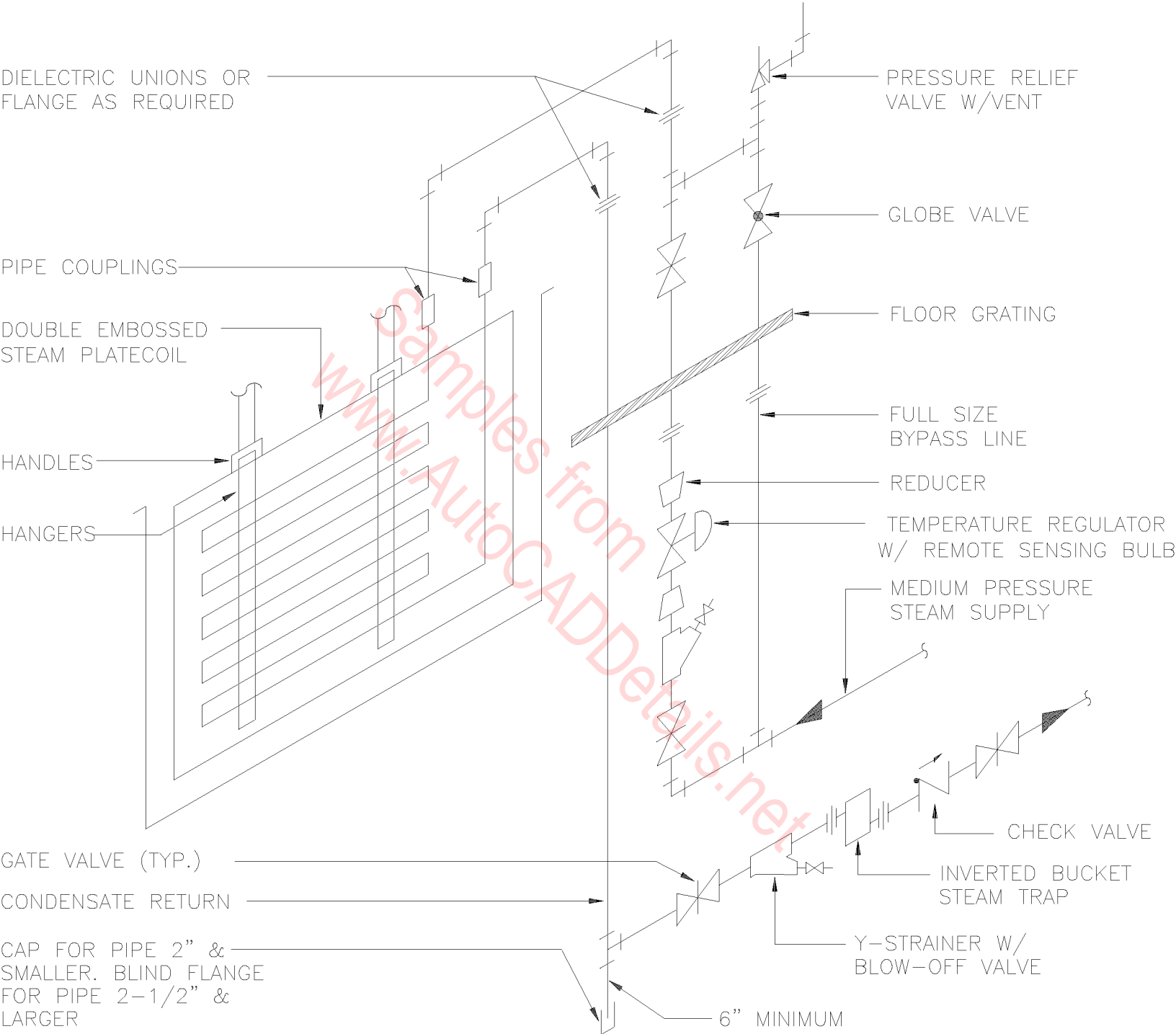


STEAM DUCT
HUMIDIFIER DETAIL
 N.T.S

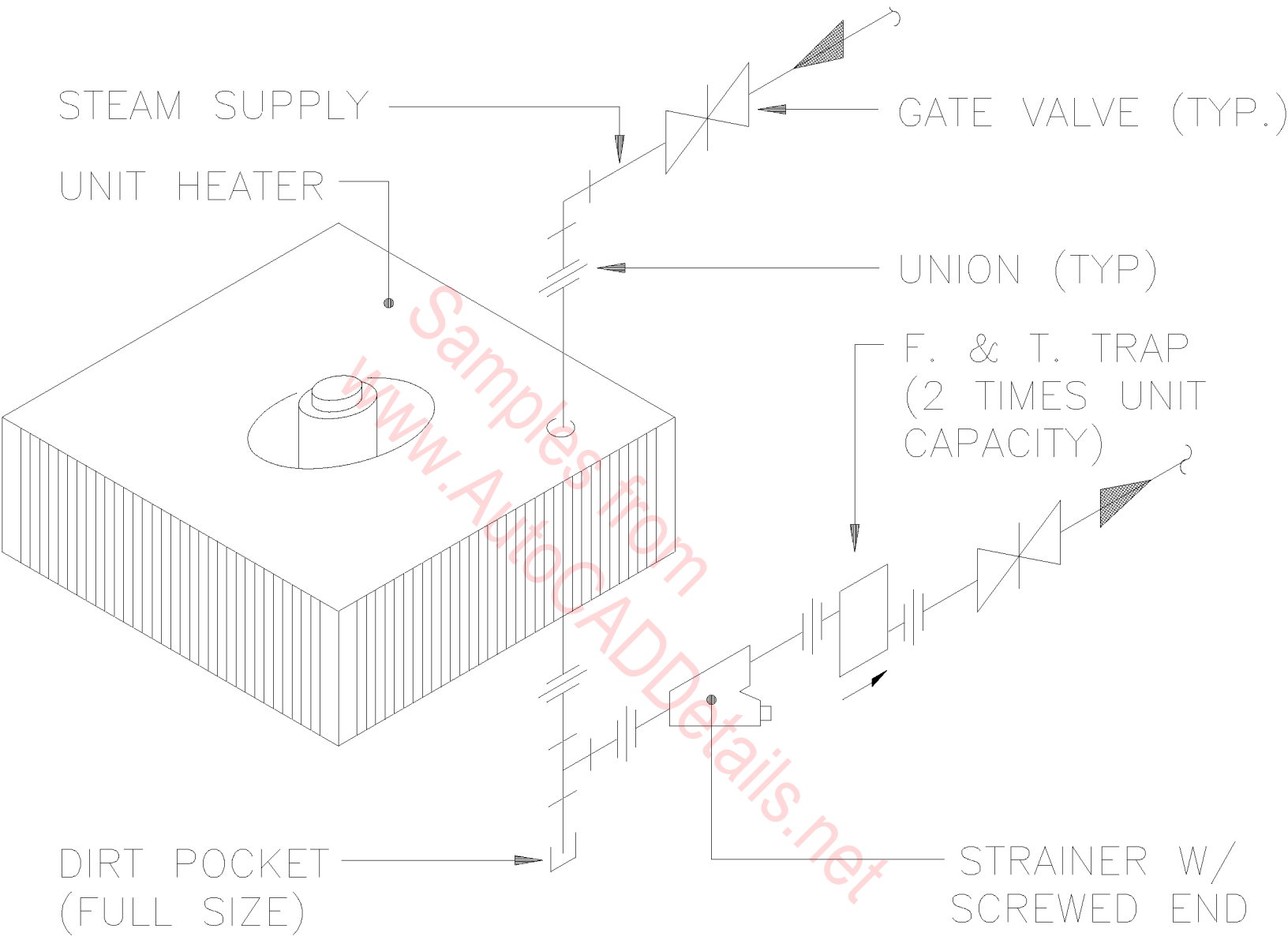


STEAM LINE WALL PENETRATION DETAIL

N.T.S.



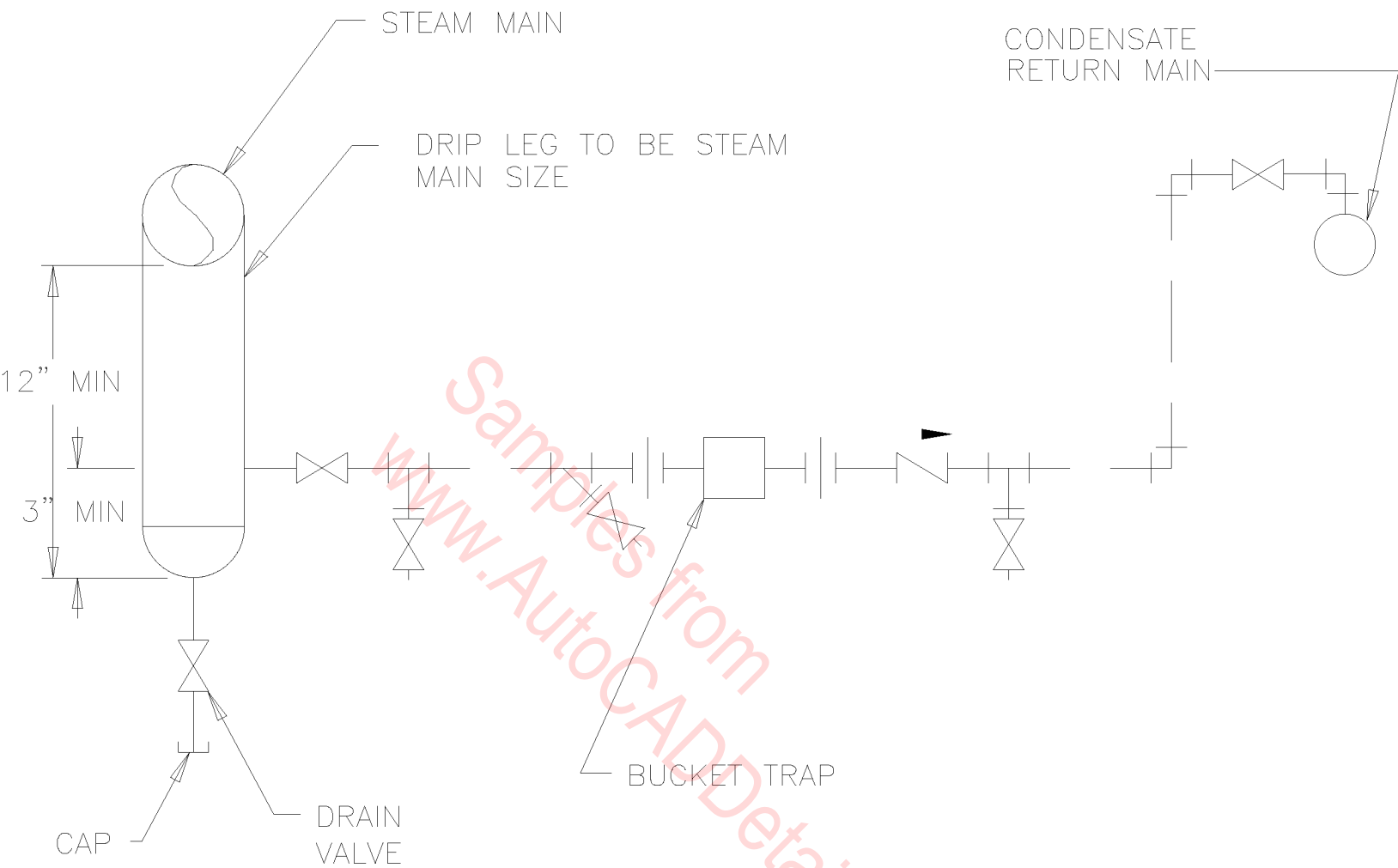
STEAM PLATECOIL PIPING DETAIL
 N.T.S.



VERTICAL STEAM

UNIT HEATER PIPING DETAIL




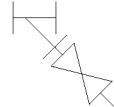
N.T.S.



Samples from
www.AutoCADDetails.com

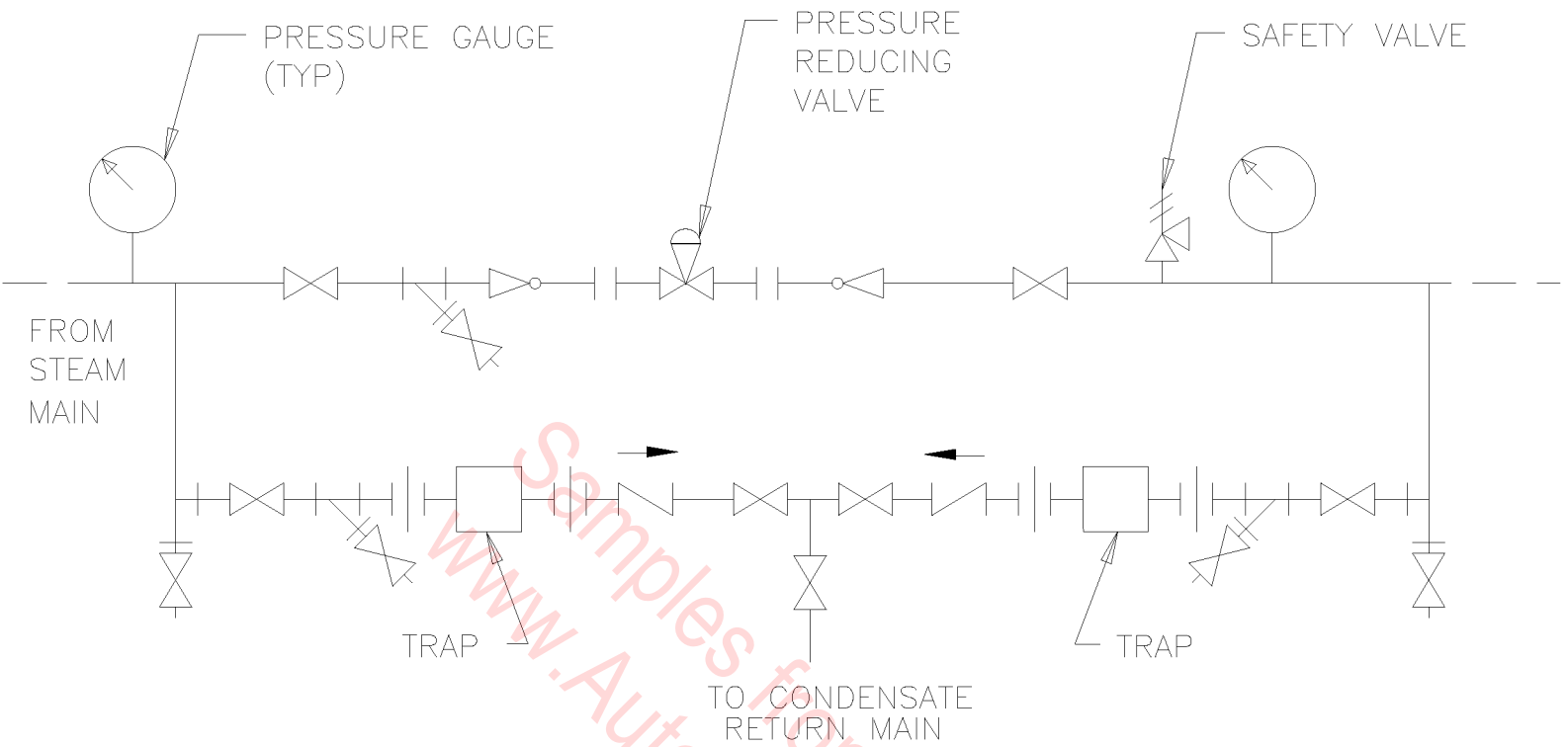
NOTES:

1. LOCATE SHUT-OFF VALVES AS CLOSE TO STEAM & CONDENSATE MAINS AS POSSIBLE
2. PIPING SIZE TO BE SIZE OF STEAM TRAP INLET
3. CR LINE TO ENTER TOP OF MAIN

LEGEND	
	UNION
	GATE VALVE
	CHECK VALVE
	STRAINER

STEAM TRAP INSTALLATION

N.T.S.



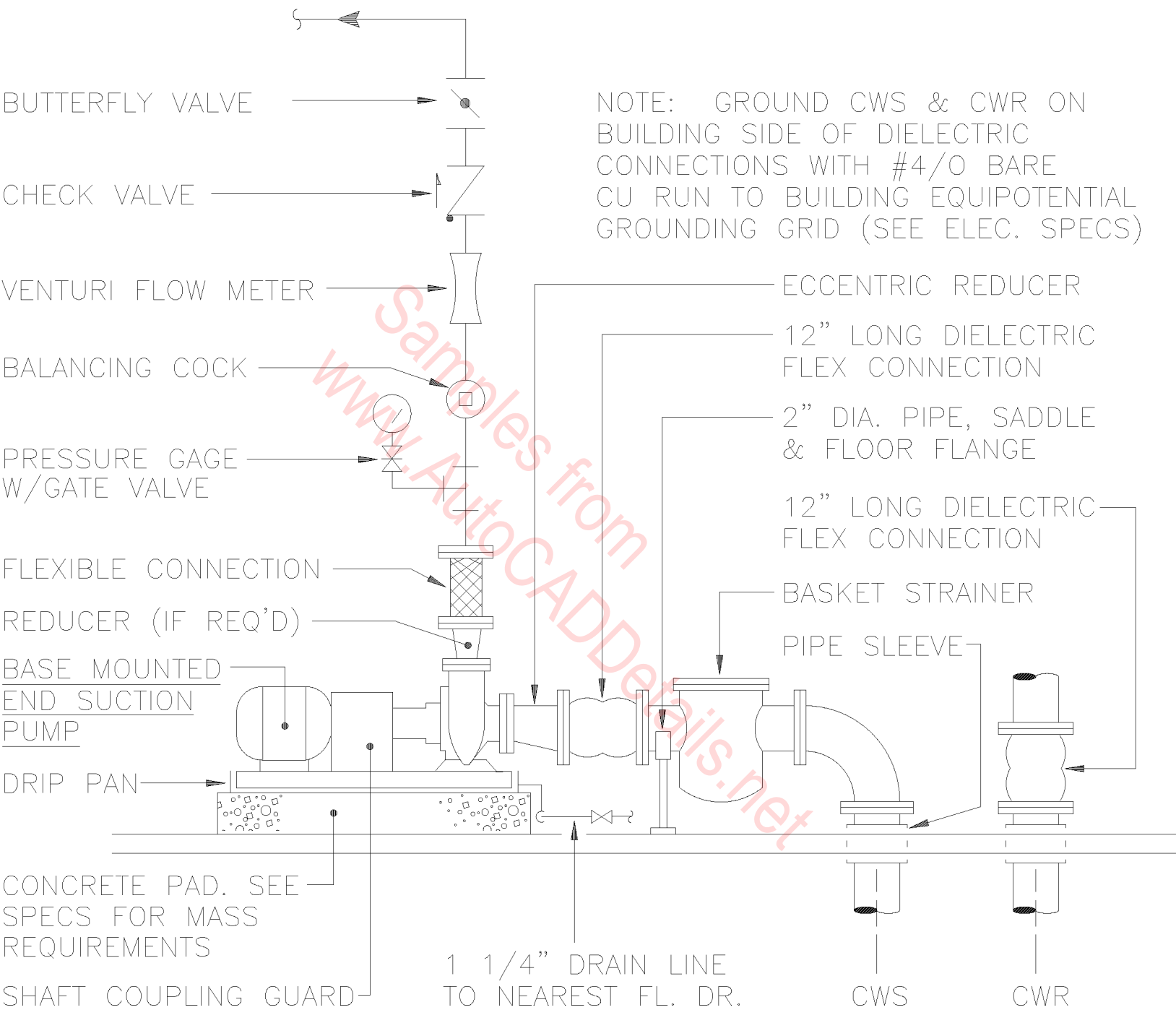
LEGEND	
	UNION
	CHECK VALVE
	GATE VALVE
	REDUCER
	STRAINER

NOTES:

1. PRV SHALL BE SIZED FOR REQUIRED CAPACITY
2. VALVE TO BE INSTALLED AS CLOSE TO CONDENSATE RETURN MAIN AS POSSIBLE
3. SAFETY VALVE SHALL BE SIZED PER MIL-HPBK 1003/8
4. SAFETY VALVE DISCHARGE SHALL BE PIPED TO OUTSIDE OF BLDG AND HIGH ENOUGH TO AVOID INJURY TO PERSONNEL

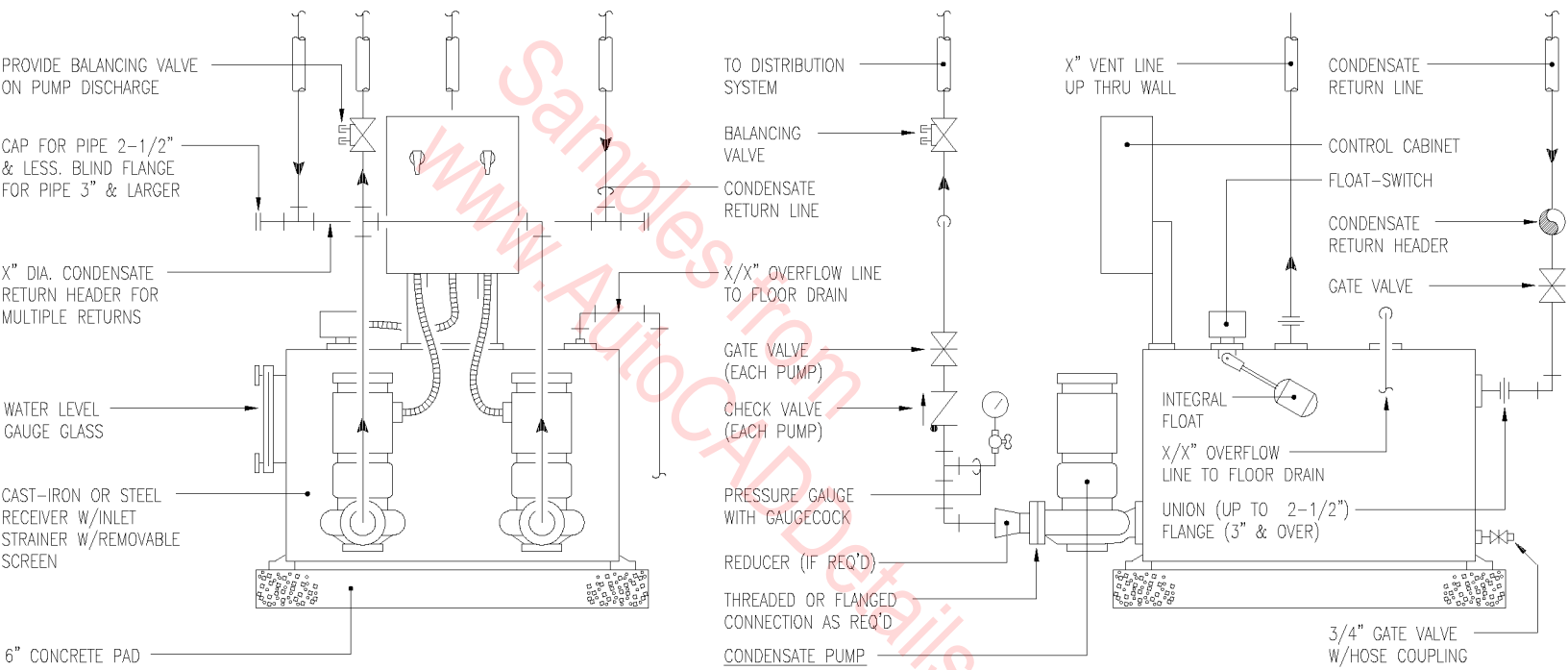
PRESSURE REDUCING STATION

FOR BUILDING PRV'S
N.T.S.

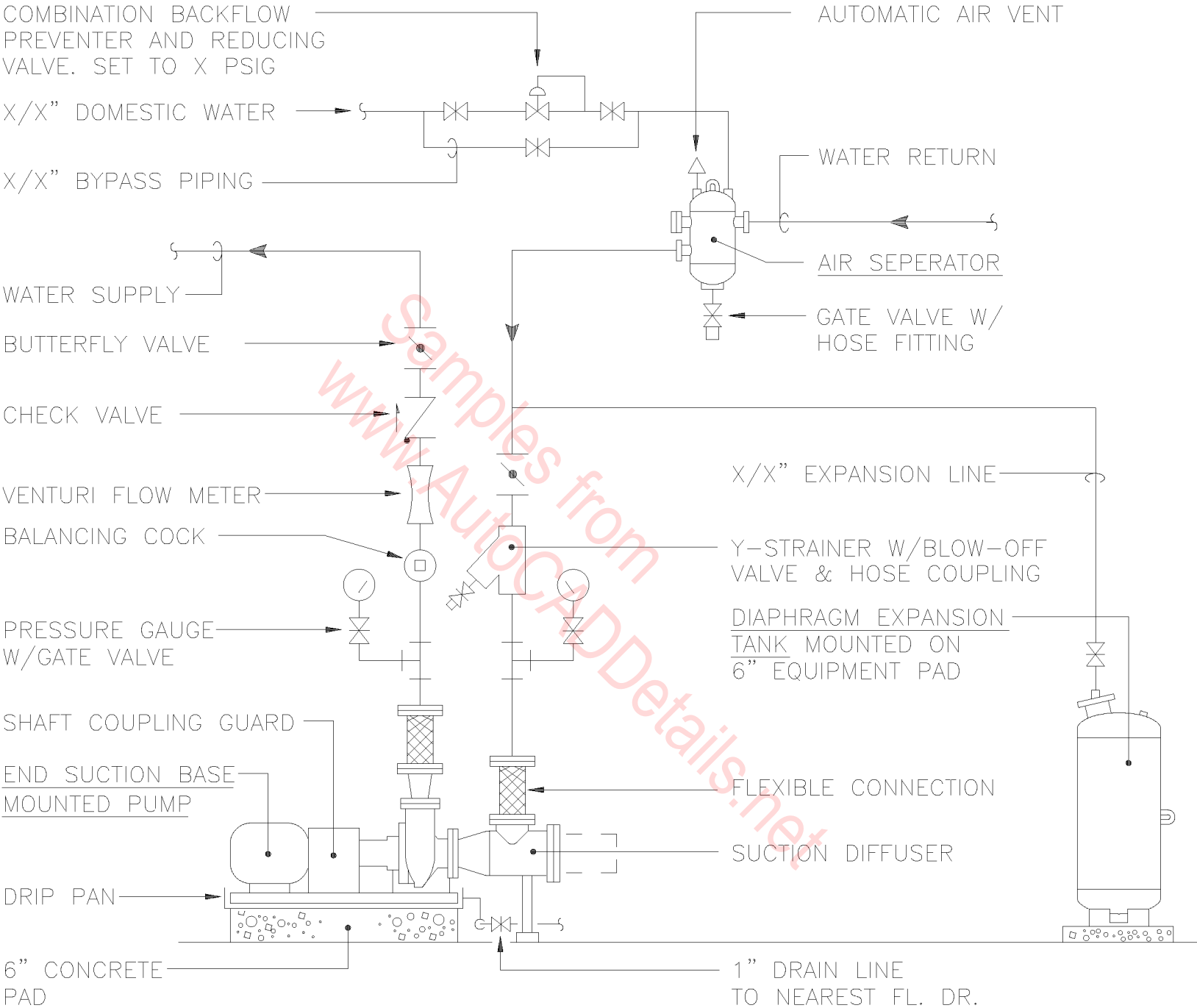


CONDENSER WATER PUMP DETAIL

N.T.S.

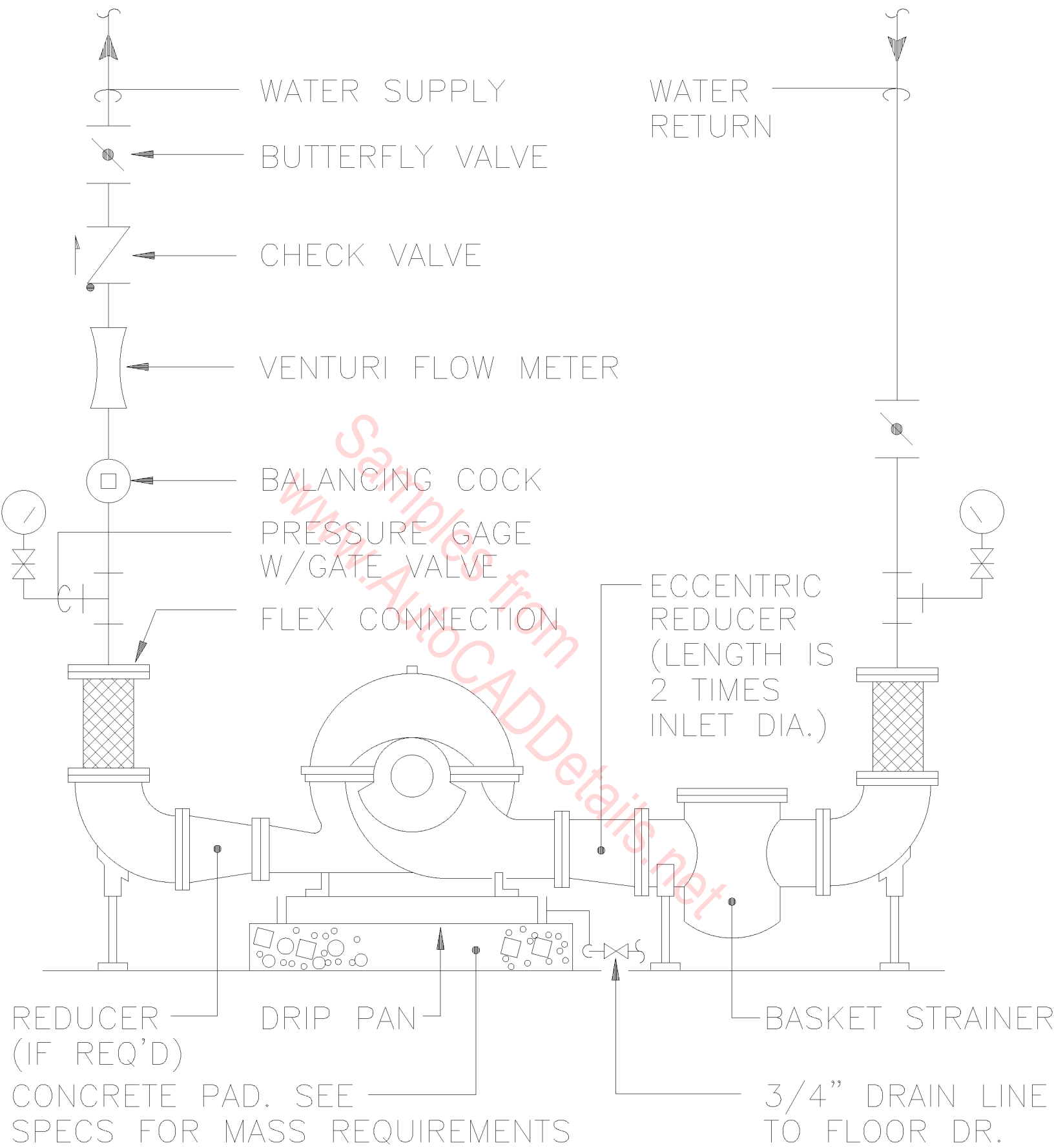


DUPLEX CONDENSATE
PUMP & RECEIVER DETAIL
 N.T.S.



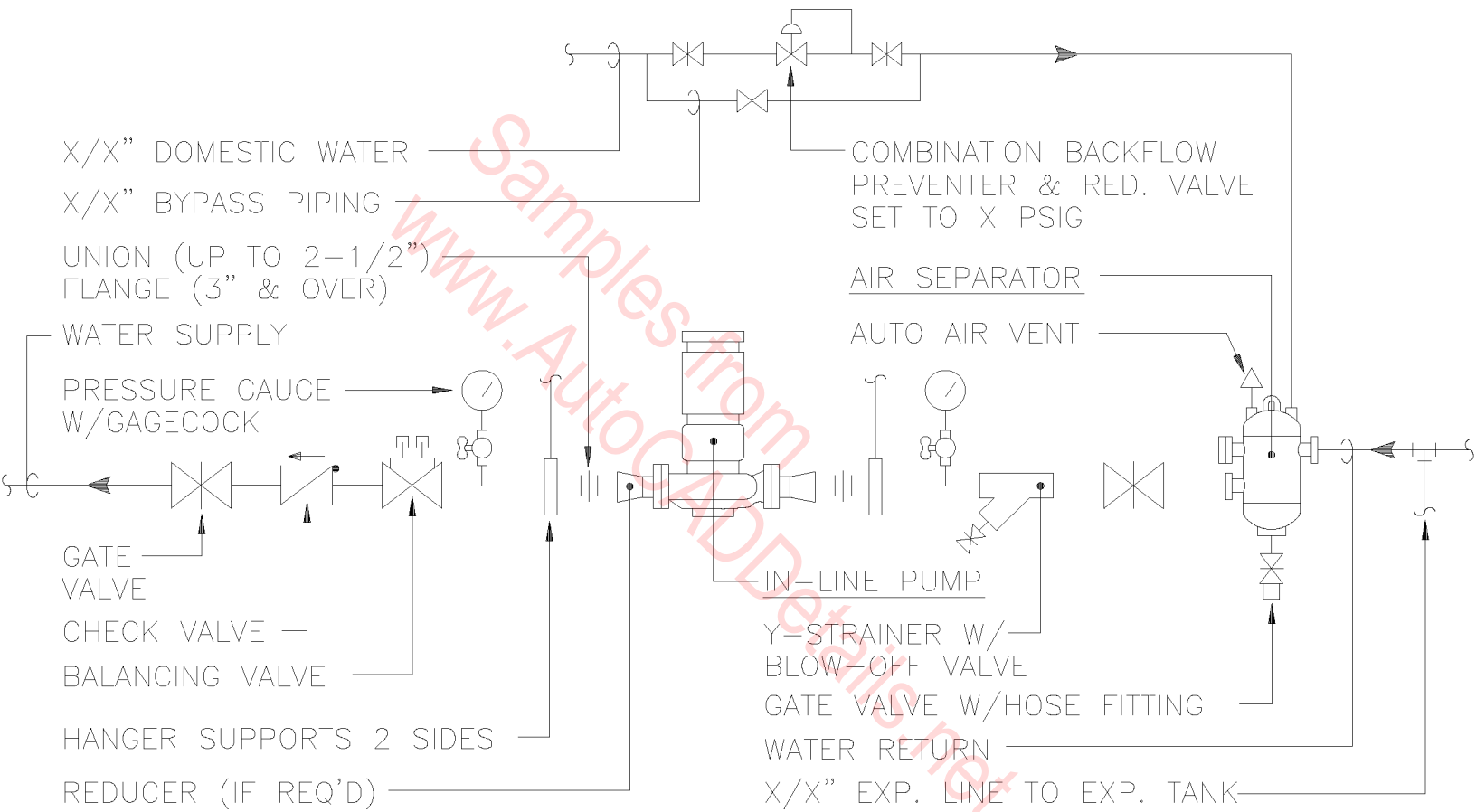
END-SUCTION PUMP, MAKEUP WATER, AND EXPANSION TANK DETAIL

N.T.S.

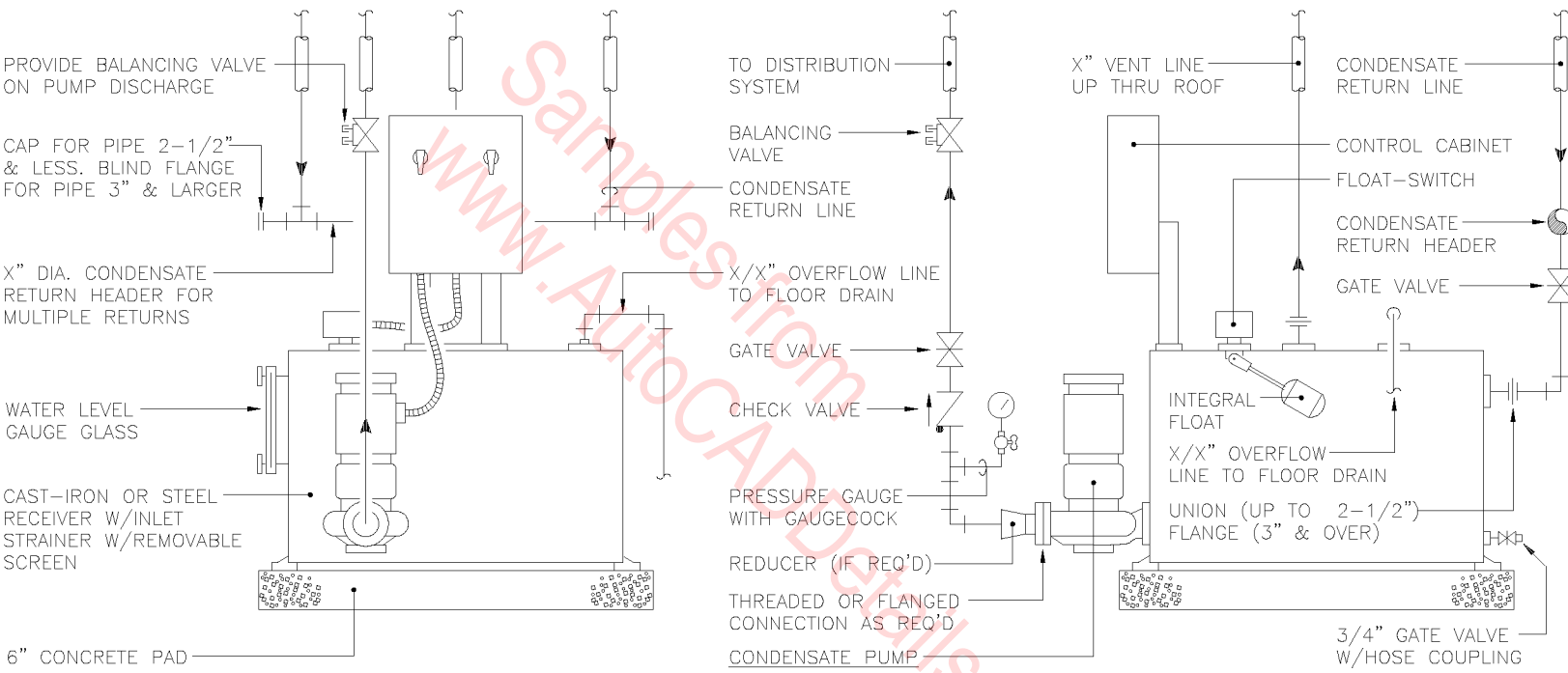


HORIZONTAL SPLIT-CASE WATER PUMP DETAIL

N.T.S.

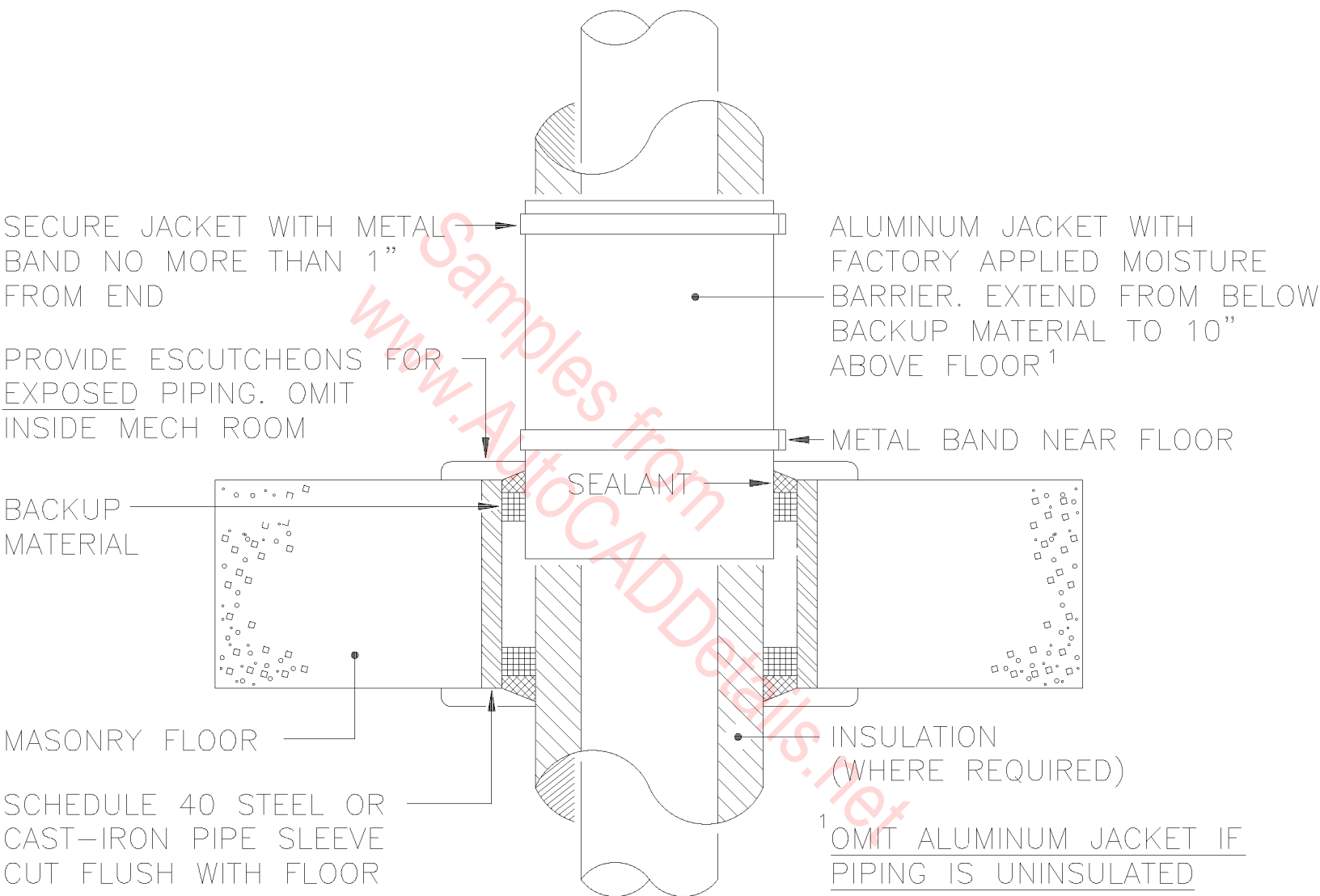


VERTICAL IN-LINE PUMP DETAIL
 N.T.S.

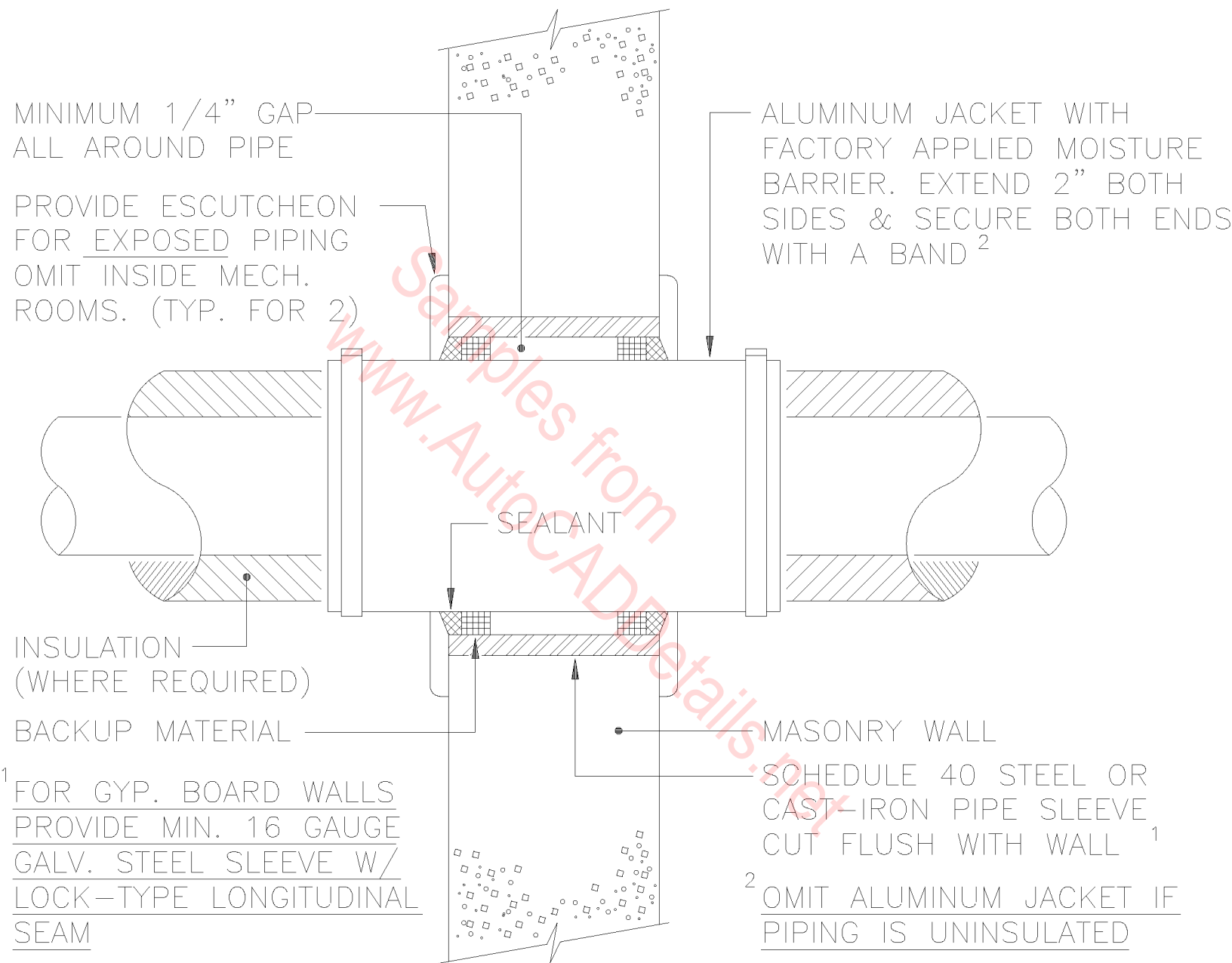


DESIGNER NOTE:
 UNIT WAS DESIGNED AROUND
 A SKIDMORE V-SERIES SYSTEM

SIMPLEX CONDENSATE
 PUMP & RECEIVER DETAIL
 N.T.S.

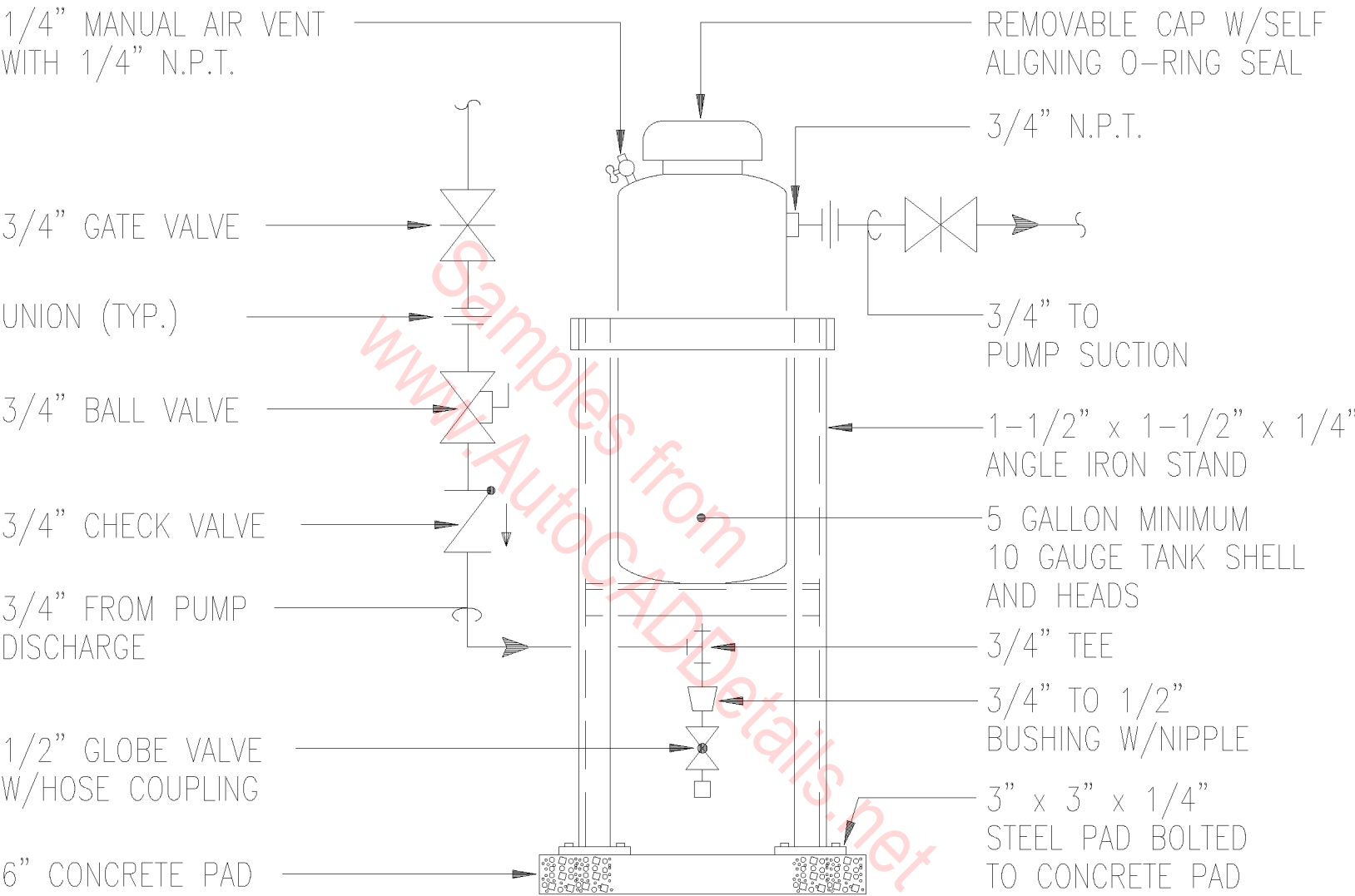


FLOOR PIPE PENETRATION DETAIL
 N.T.S.



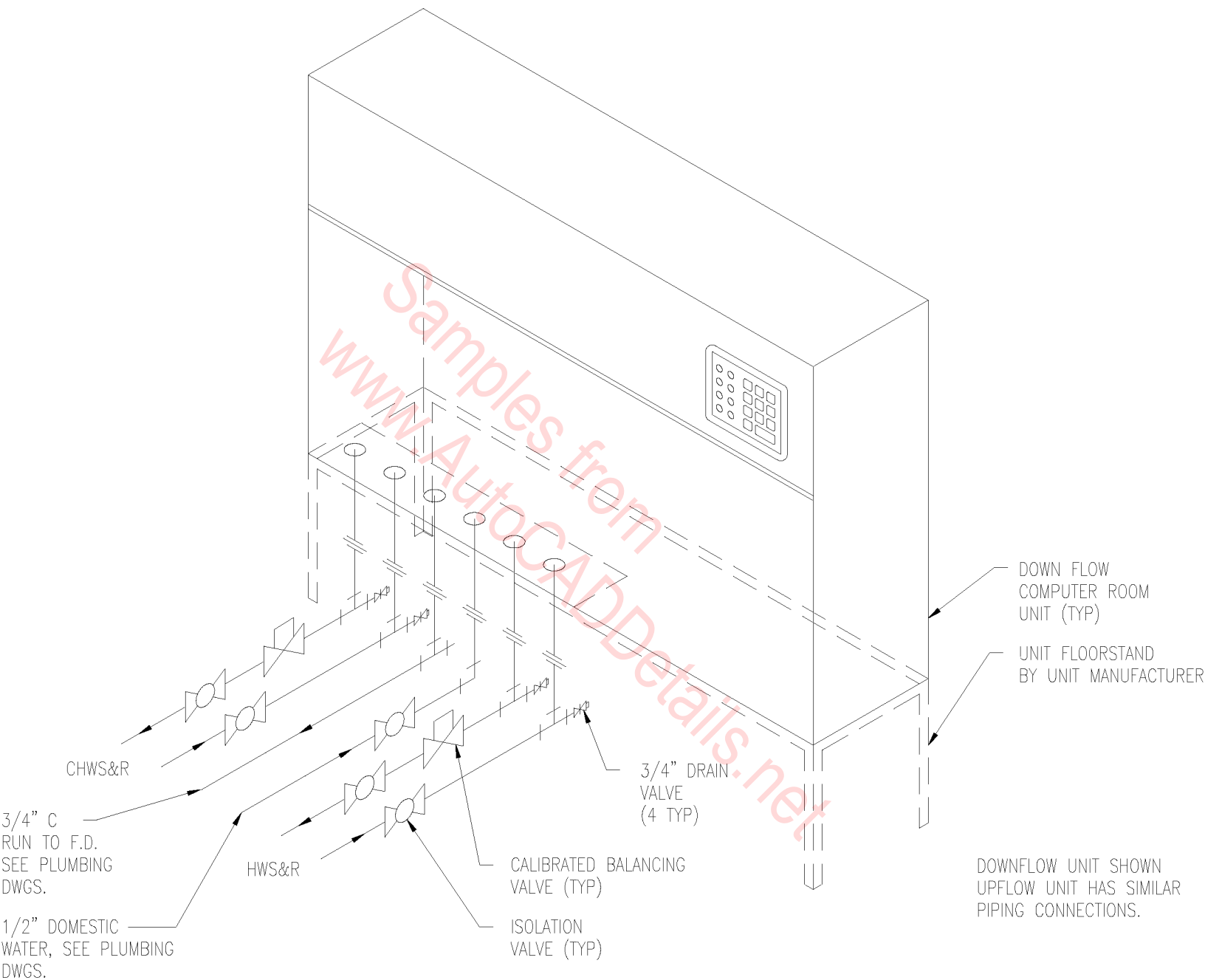
WALL PIPE PENETRATION DETAIL

N.T.S.



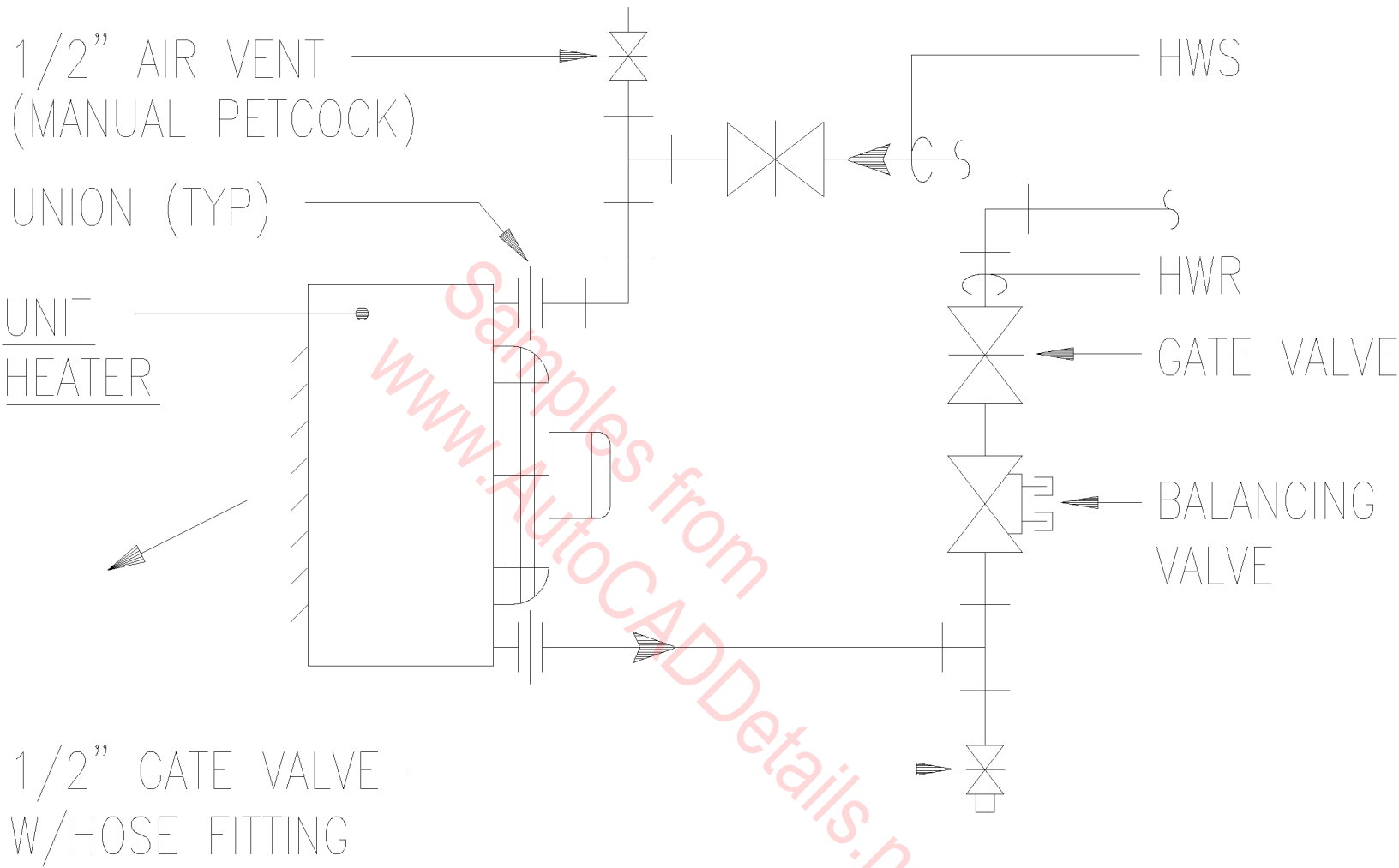
WATER TREATMENT
 ONE SHOT FEEDER DETAIL

N.T.S.



TYPICAL COMPUTER ROOM UNIT PIPING

N.T.S.



HORIZONTAL HOT WATER

UNIT HEATER DETAIL

N.T.S.

4" CONCRETE COVER W/
CAST-IN STEEL HANDLE

MARKER

GRADE

12"

2" CONDENSATE
DRAIN PIPE

CLEAN LOOSE
PEA GRAVEL

36" DIA. x 48" LONG
CONCRETE PIPE

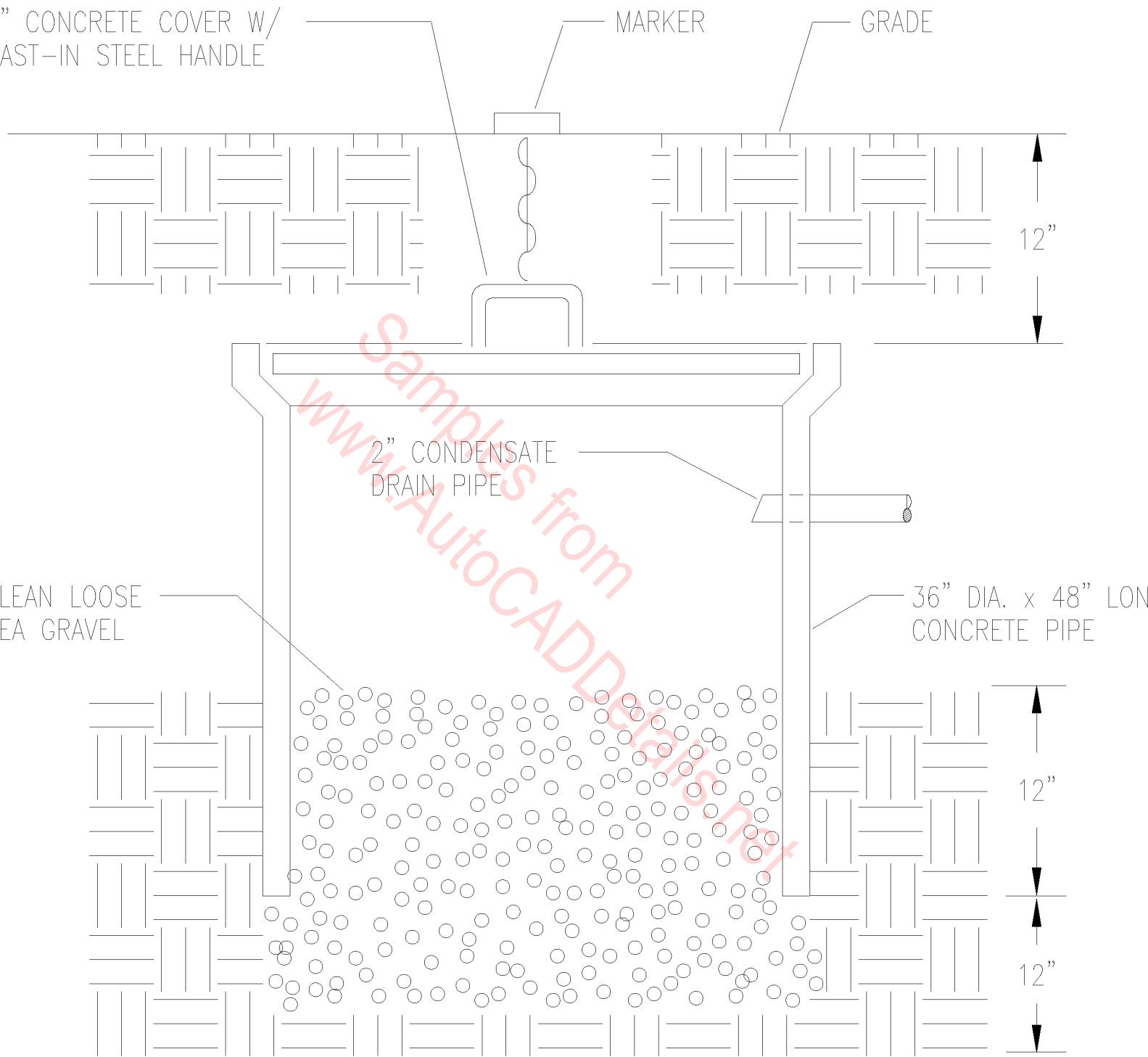
12"

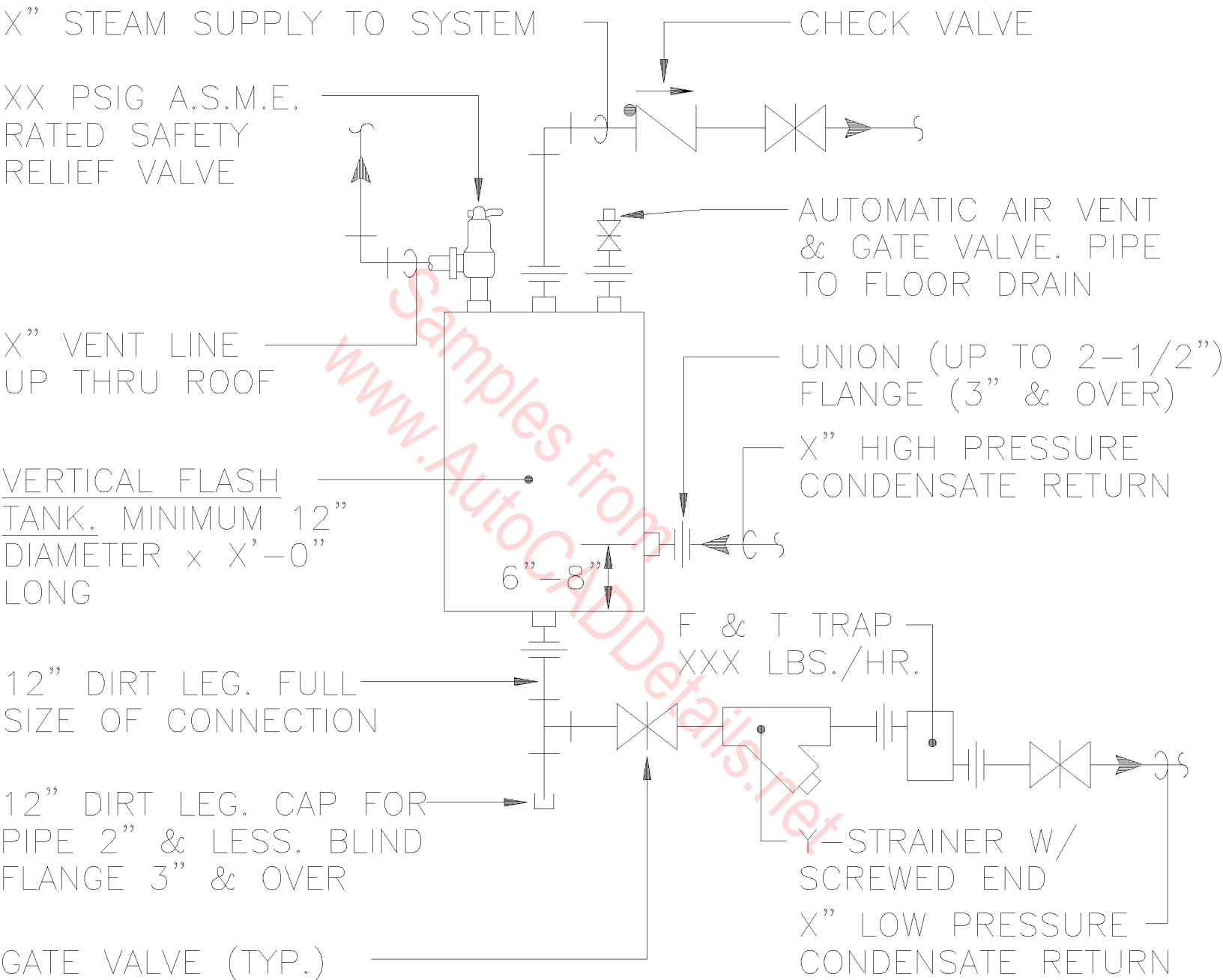
12"

DRY WELL DETAIL

N.T.S.

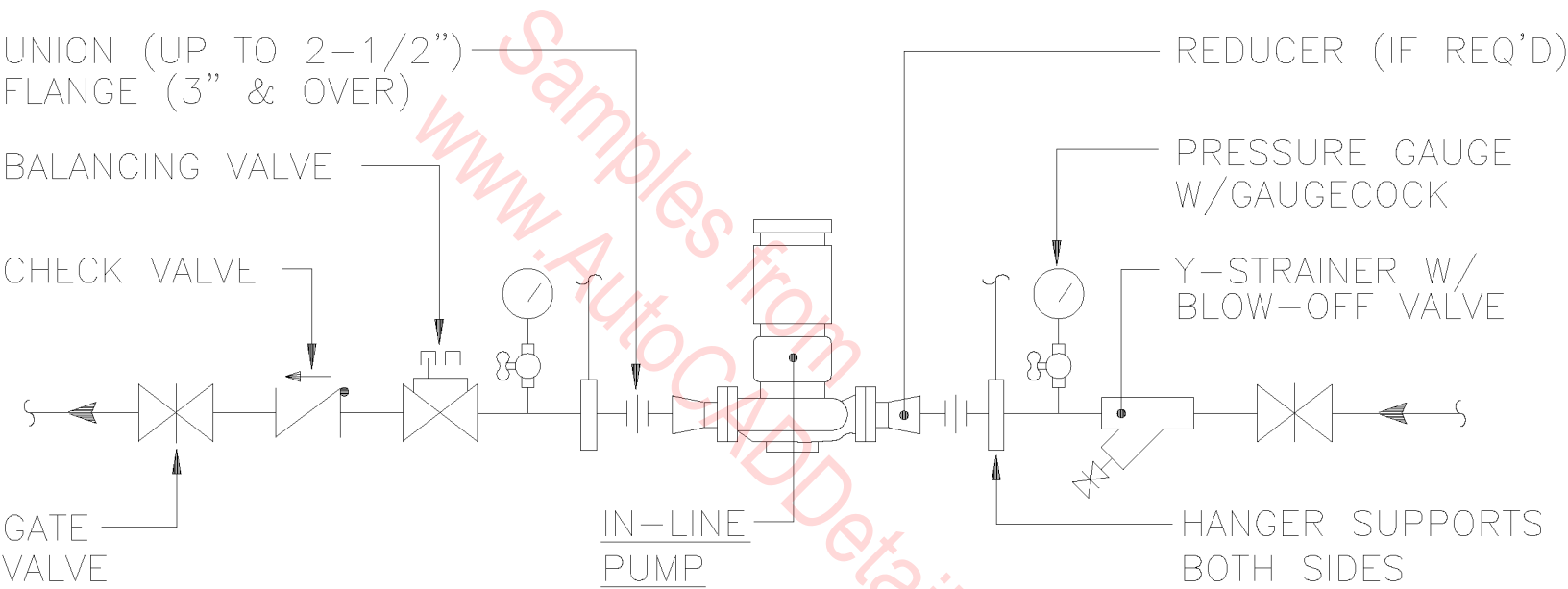
www.Samples from
AutocADDetails.net





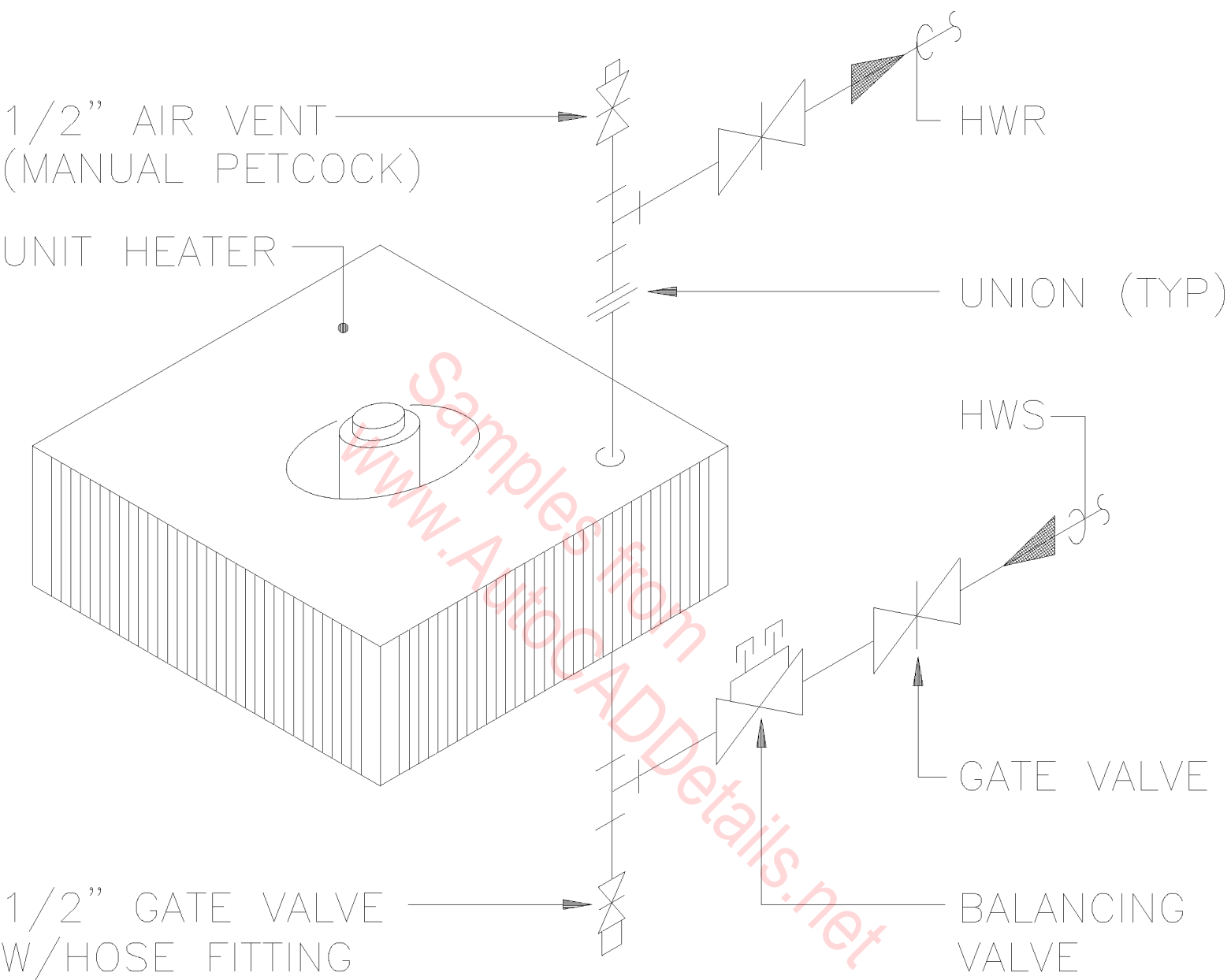
FLASH TANK PIPING DETAIL

N.T.S.

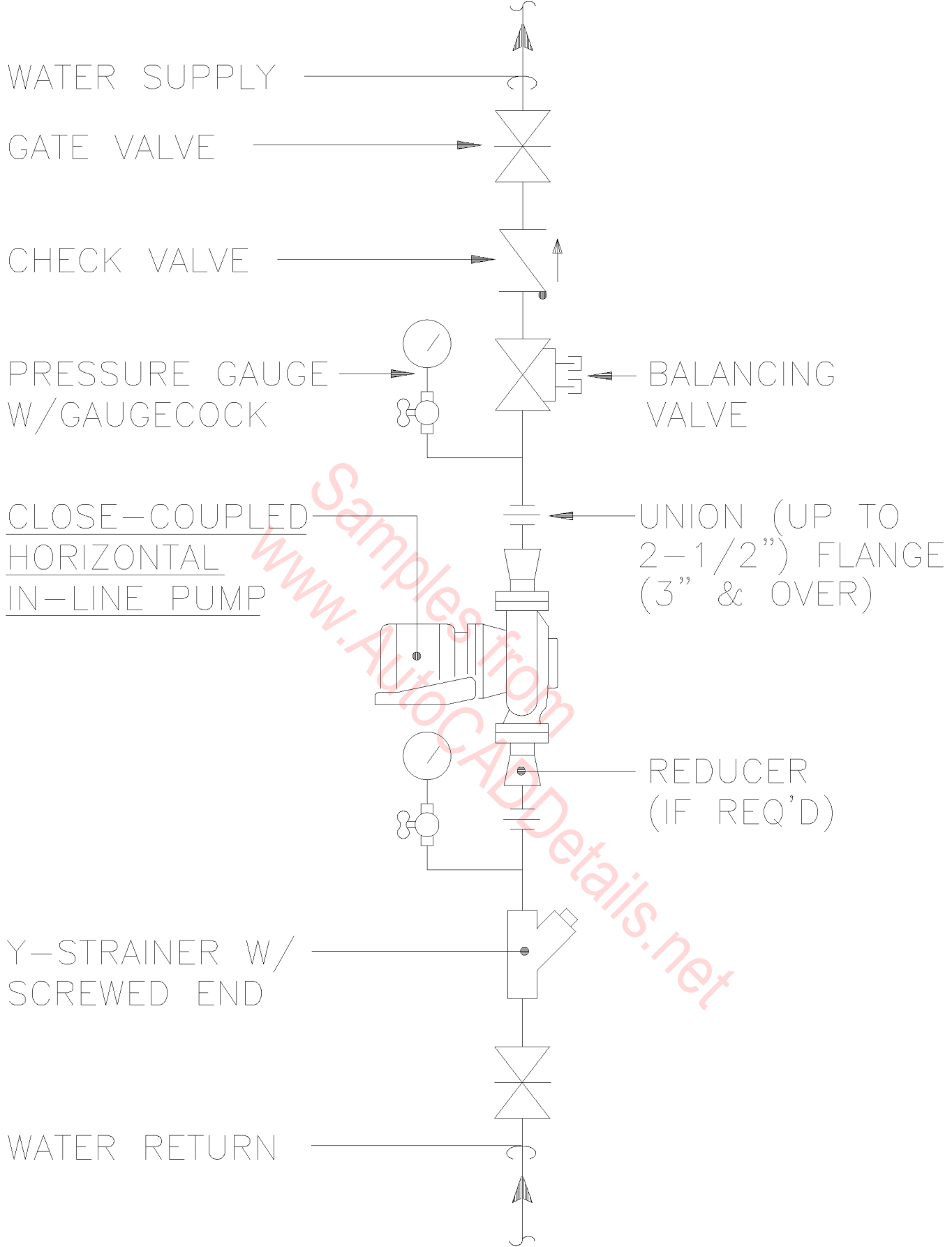


VERTICAL IN-LINE PUMP DETAIL

N.T.S.

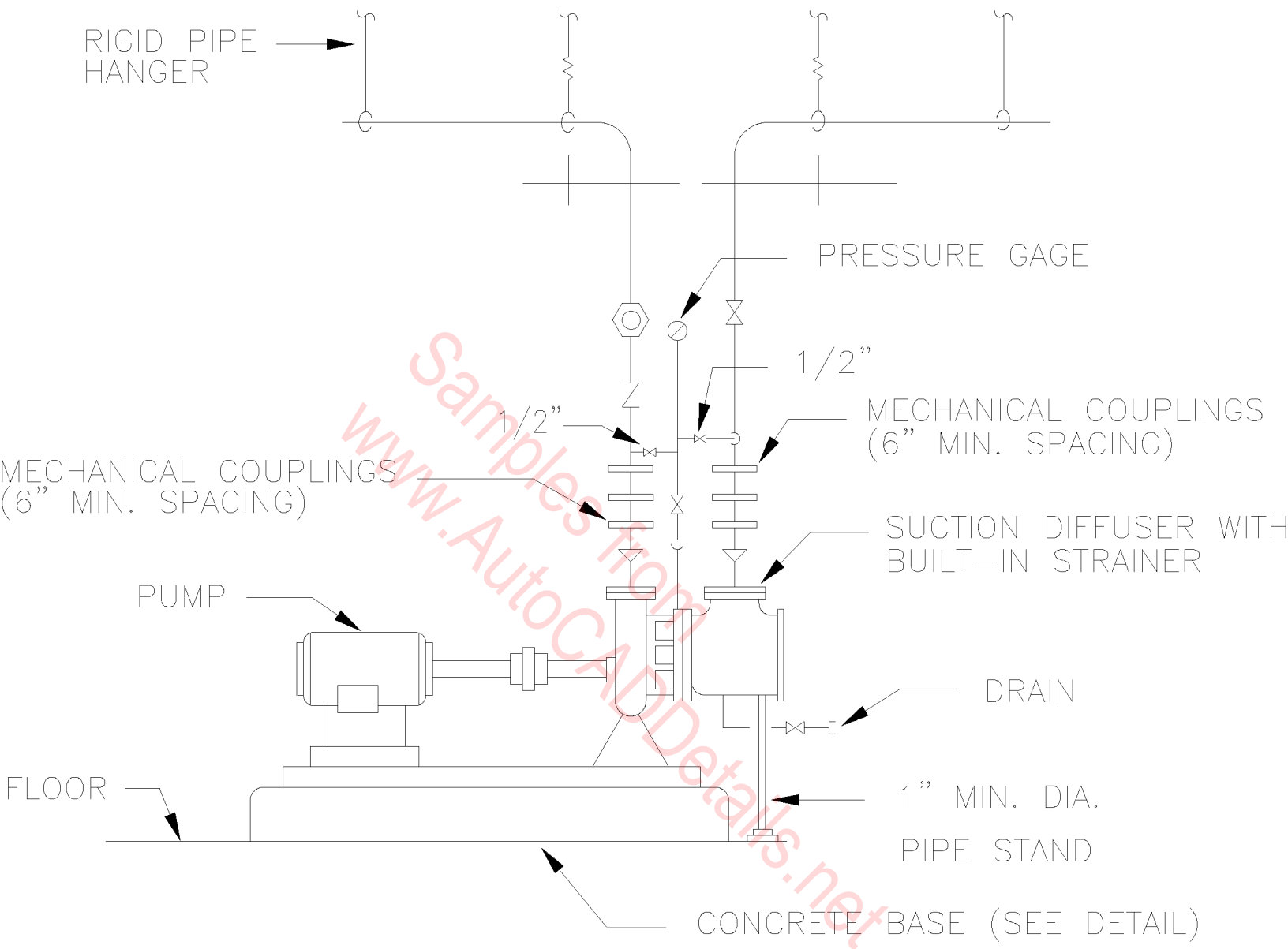


VERTICAL HOT WATER
 UNIT HEATER PIPING DETAIL
 N.T.S.



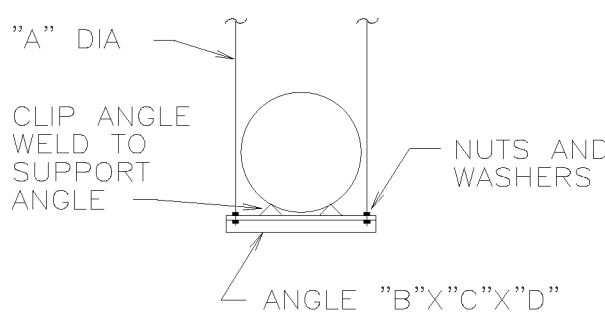
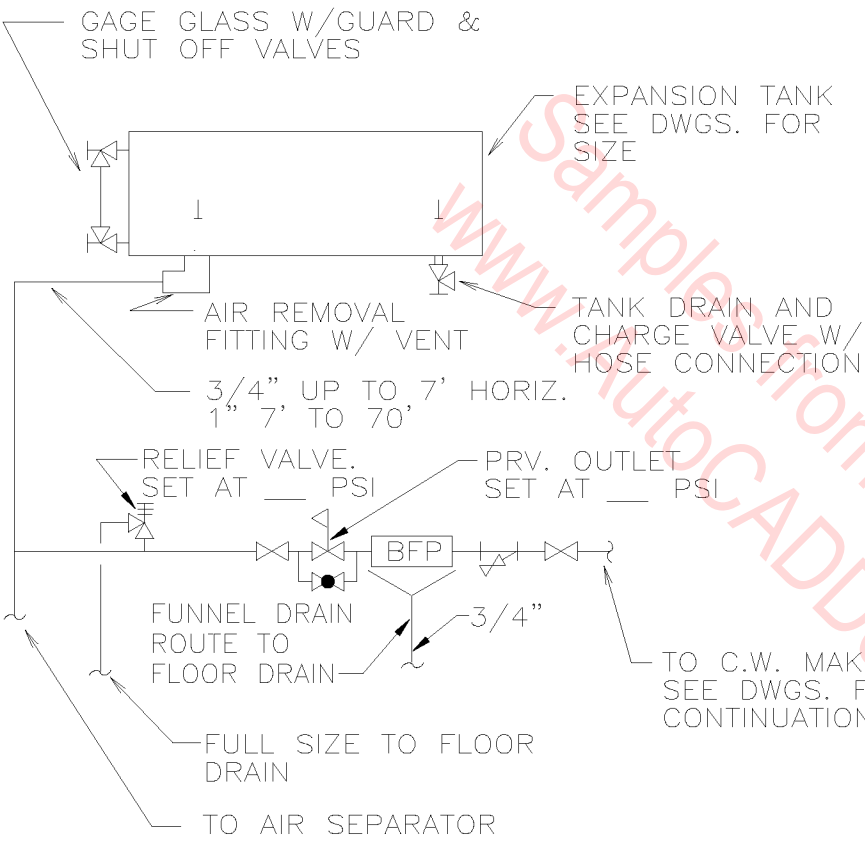
CLOSE-COUPLED HORIZONTAL IN-LINE PUMP DETAIL

N.T.S.



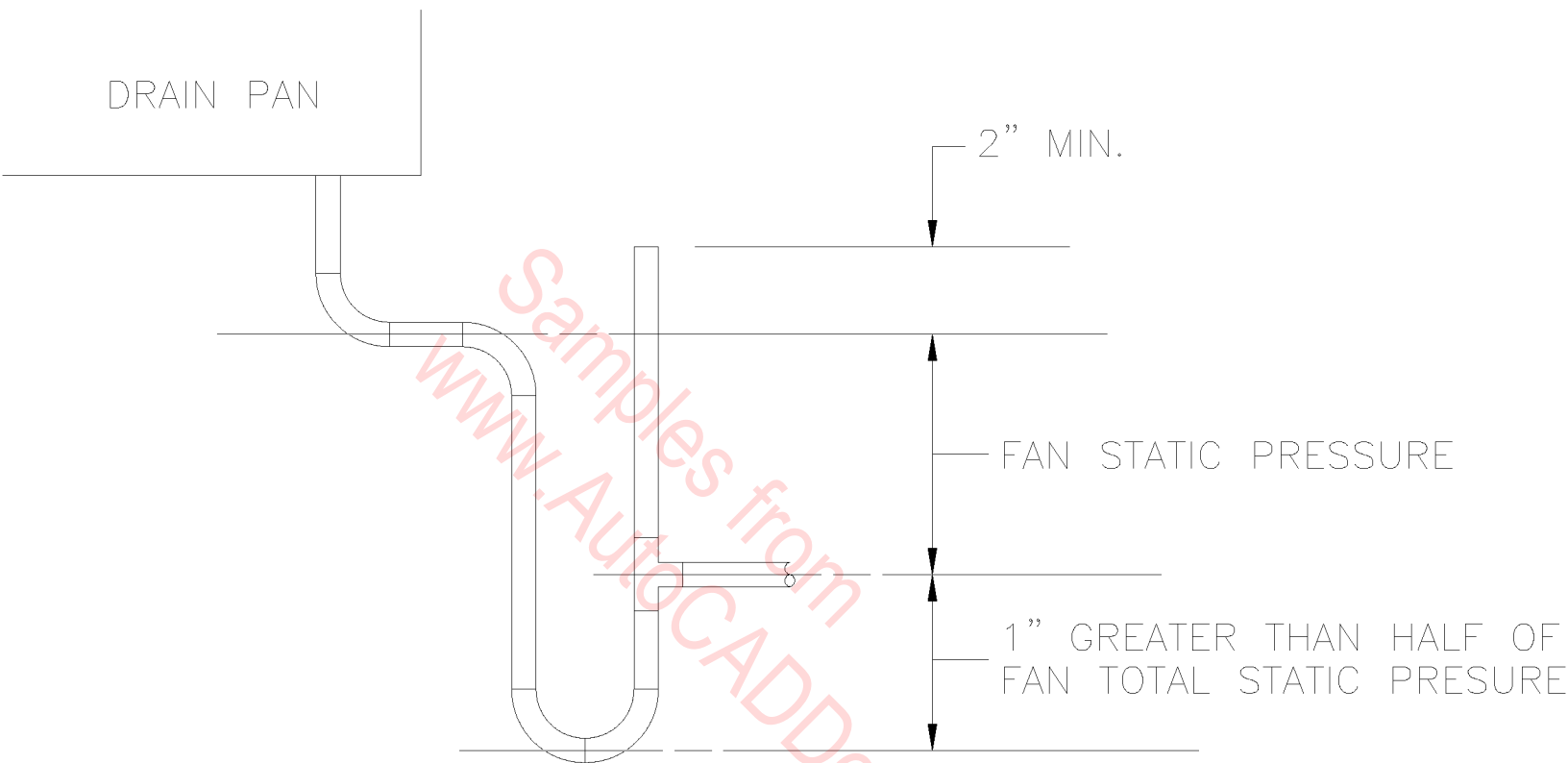
TYPICAL CONNECTION TO FLOOR
MOUNTED SINGLE SUCTION WATER
PUMPS

N.T.S.



GAL	A	B	C	D
0-50	1/2"	2"	2"	1/4"
0-100	5/8"	3"	3"	1/4"

EXPANSION TANK 0-100 GALLONS
N.T.S.

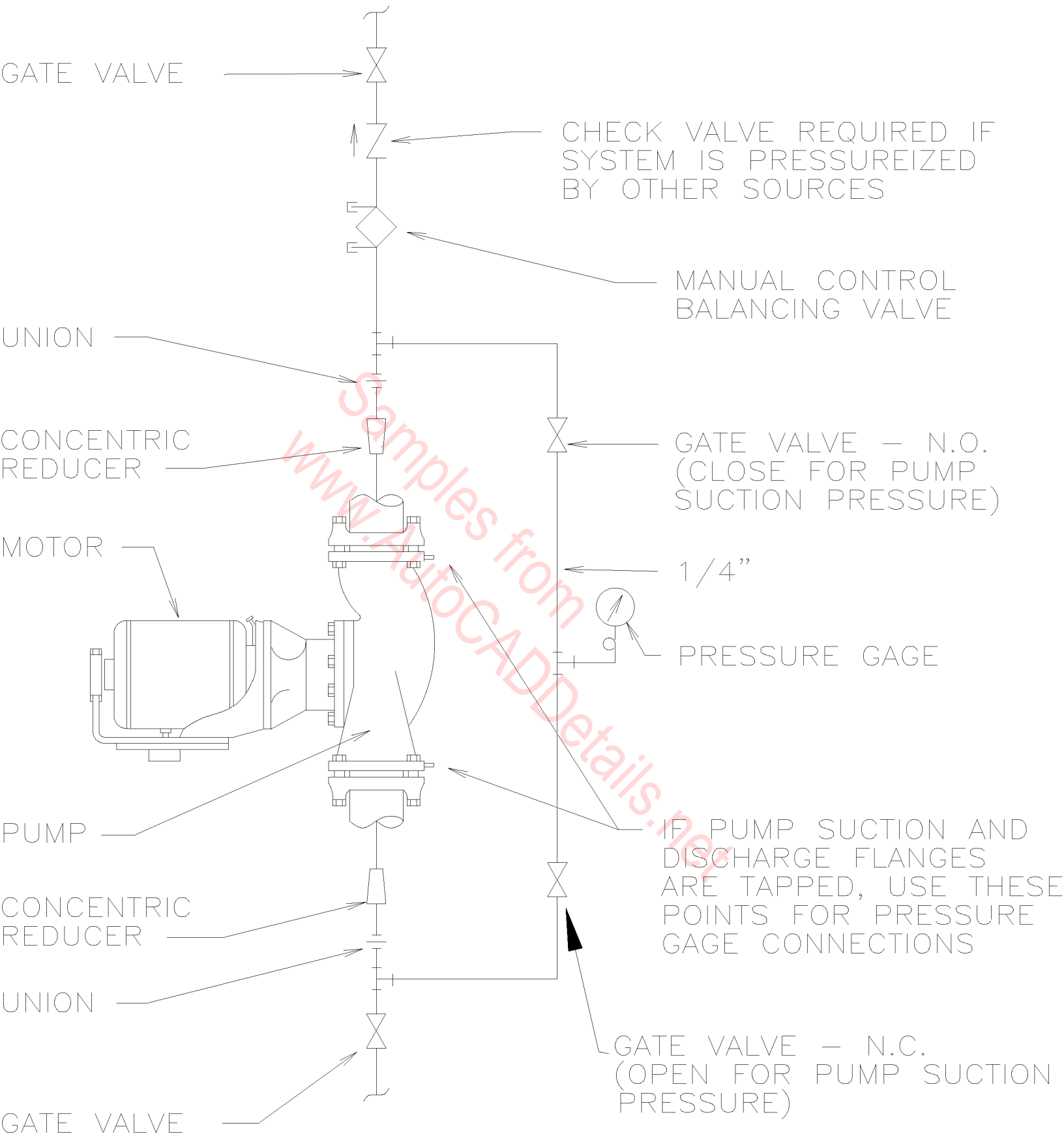


NOTE:

1. DRAIN LINE SHALL BE INSULATED.
2. DRAIN LINE SHALL PENETRATE THE ROOF LINE WITHIN THE CONFINEMENT OF THE HVAC EQUIPMENT CURB.

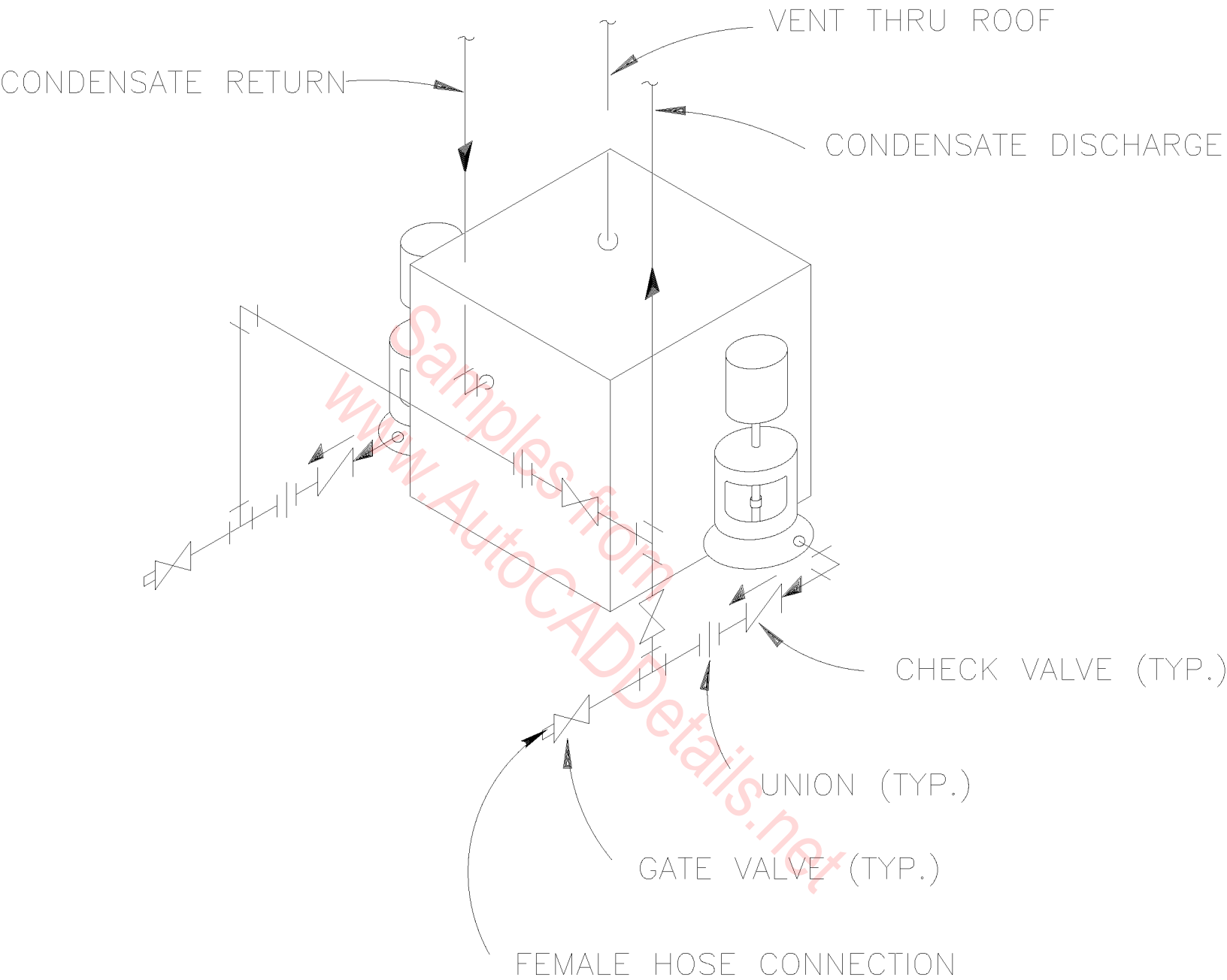
CONDENSATE DRAIN TRAP DETAIL

N.T.S.



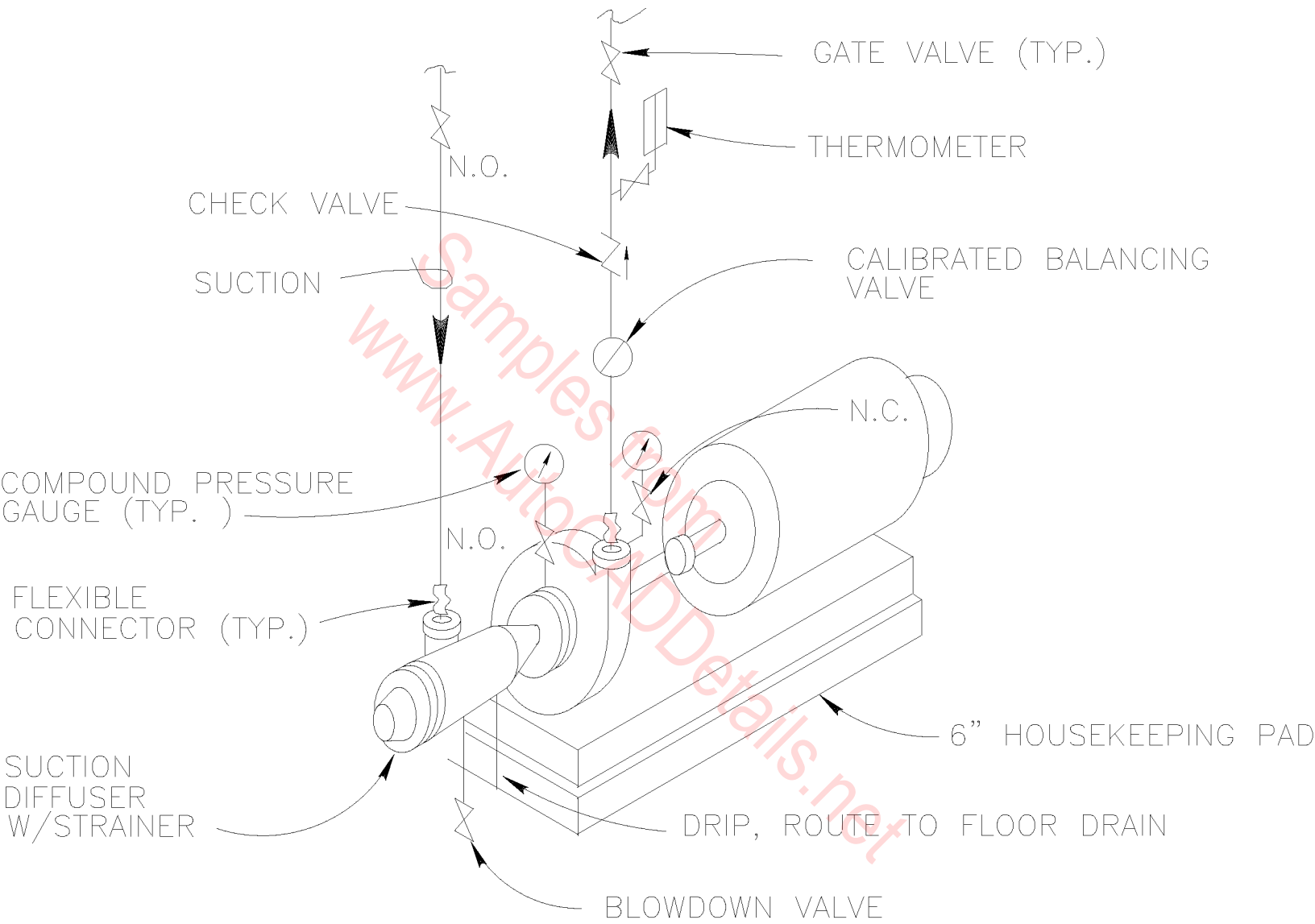
INLINE CENTRIFUGAL PUMP

N. T. S.



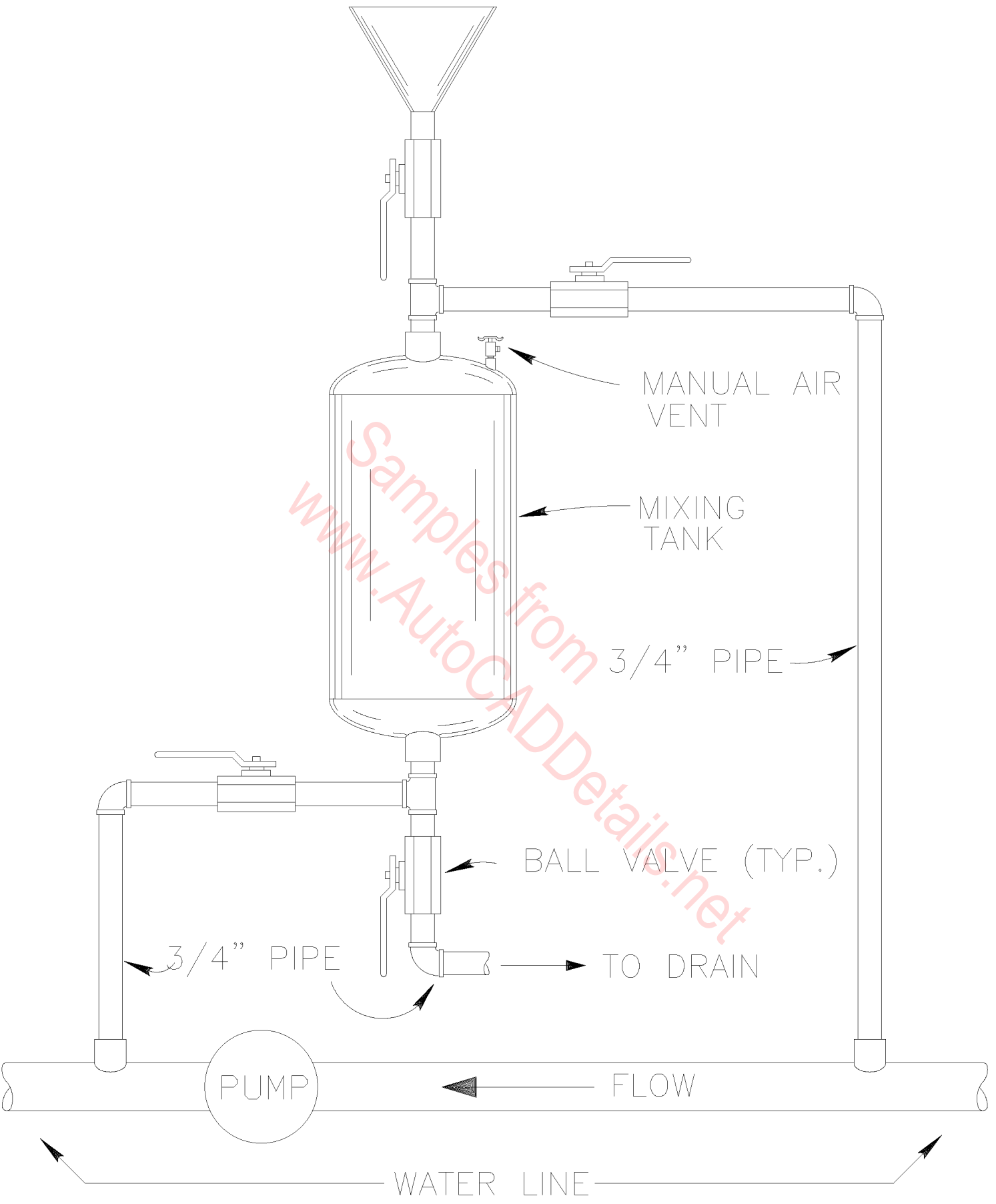
DUPLEX CONDENSATE PUMP CONNECTION DETAIL

N.T.S.



END SUCTION PUMP DETAIL

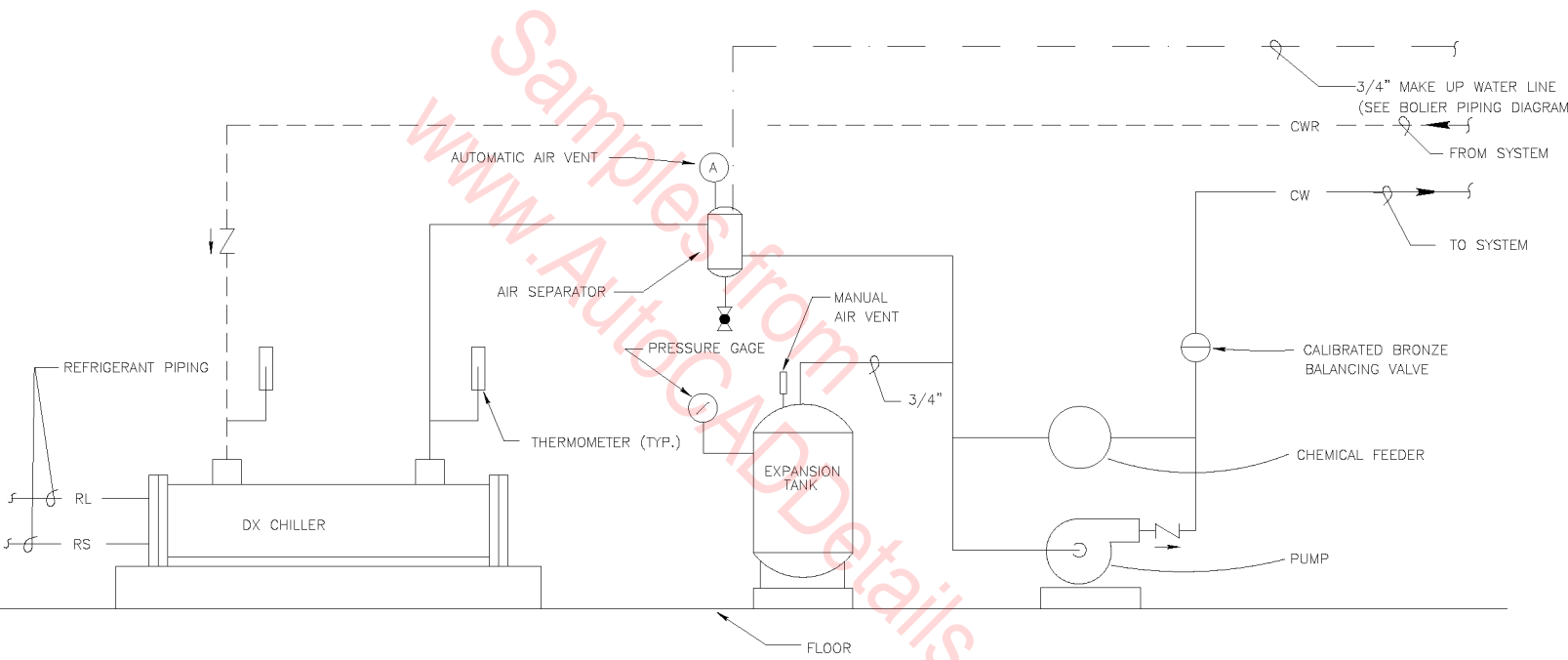
N.T.S.



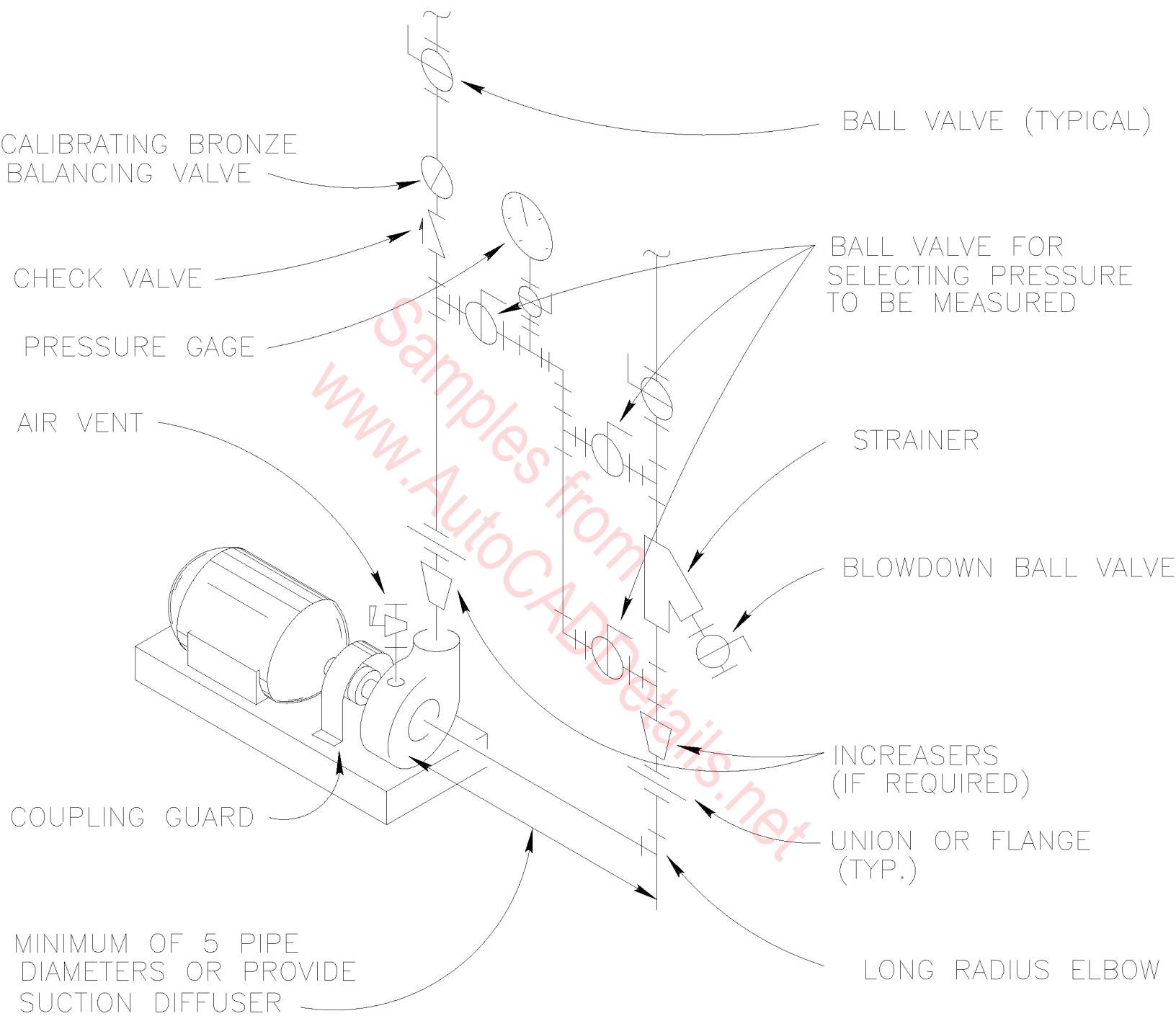
Samples from
www.AutoCADDetails.net

CHEMICAL FEEDER DETAIL

N. T. S.



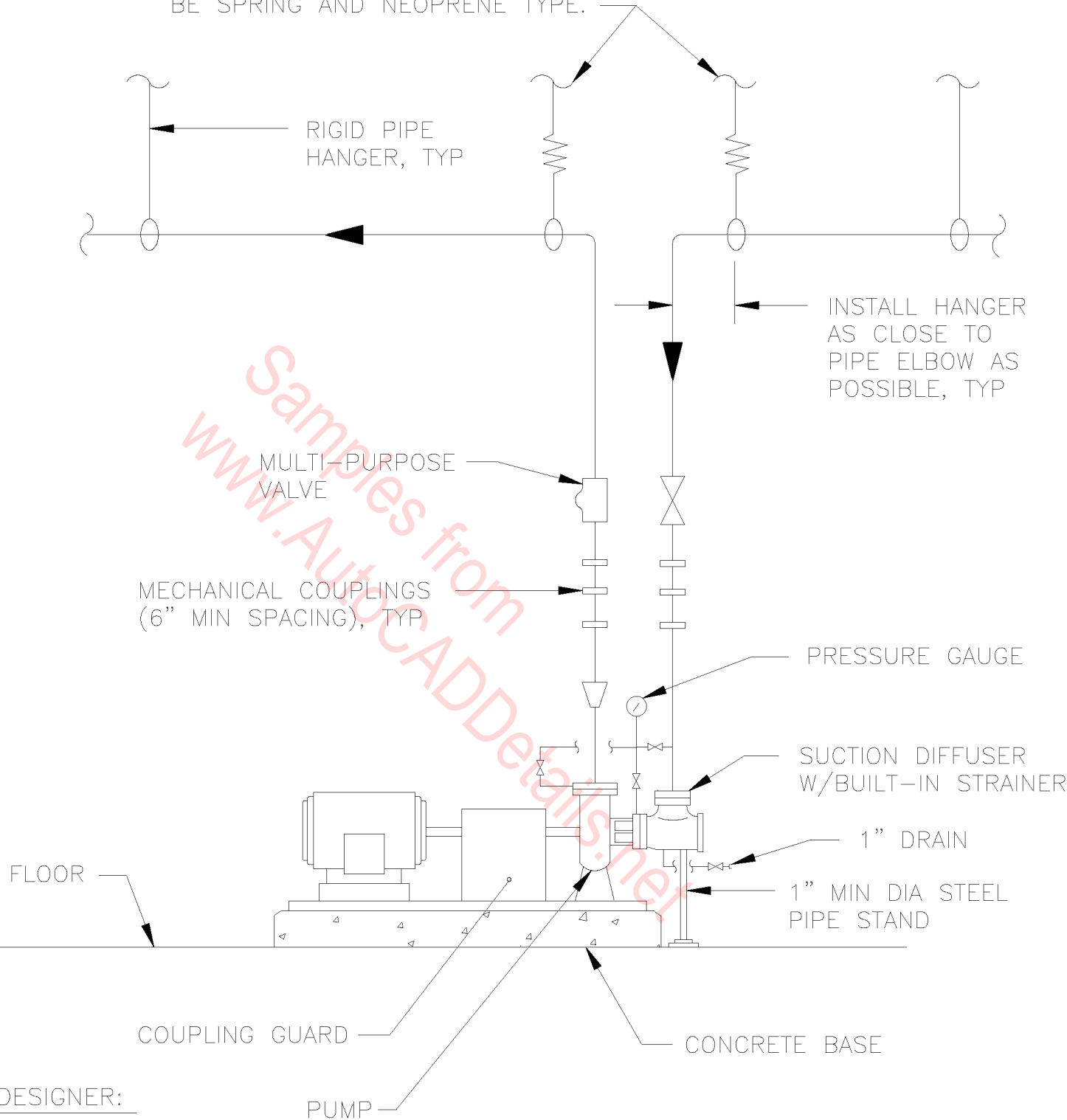
CHILLED WATER PIPING DIAGRAM
 N.T.S.



PUMP CONNECTION DETAIL

N.T.S.

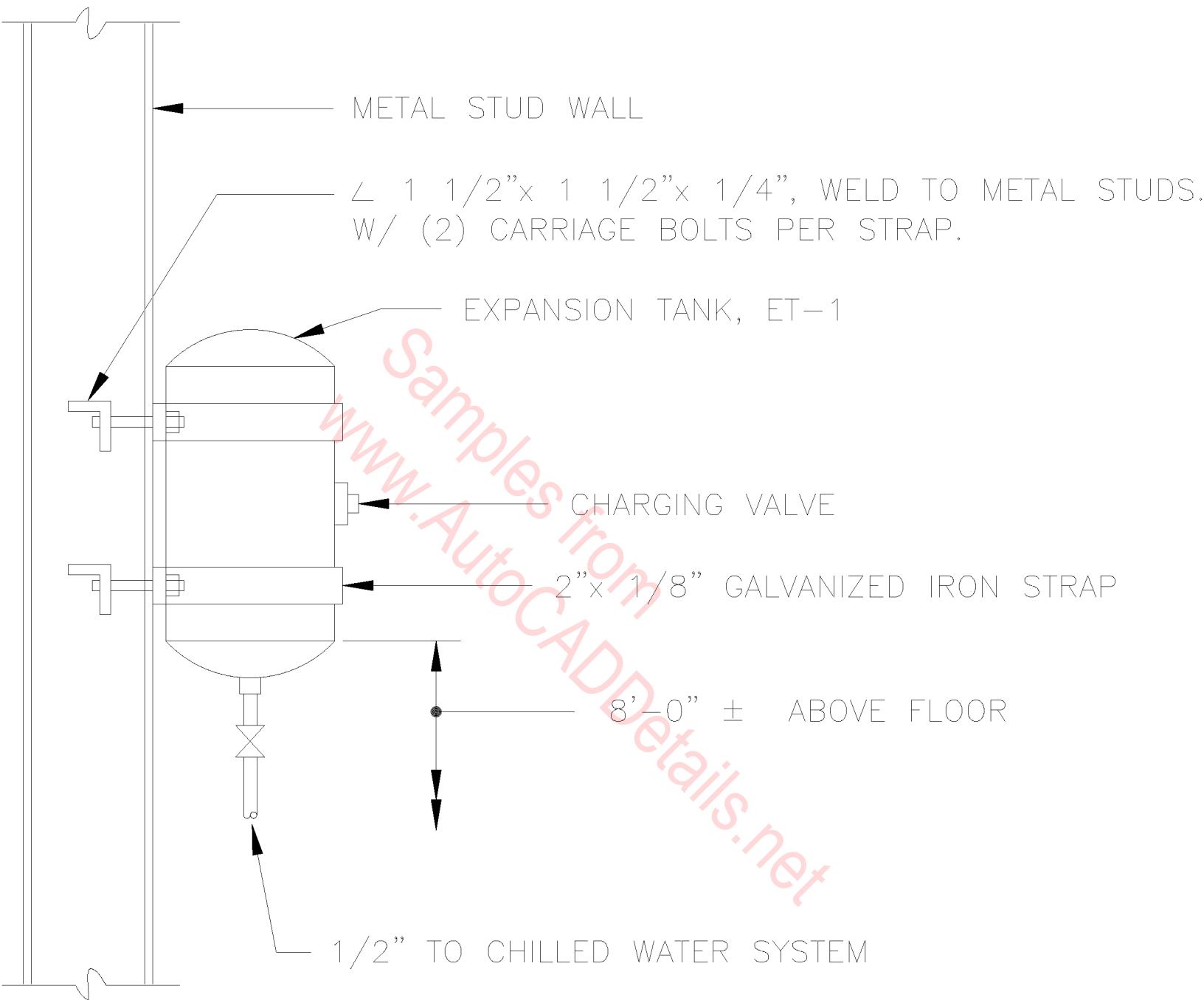
FIRST 3 HANGERS FOR EACH PIPE AND BRANCH SHALL BE SPRING AND NEOPRENE TYPE.



NOTE TO DESIGNER:
SPRING ISOLATION HANGERS ARE RECOMMENDED FOR PIPING SYSTEMS OVER 10 HP.

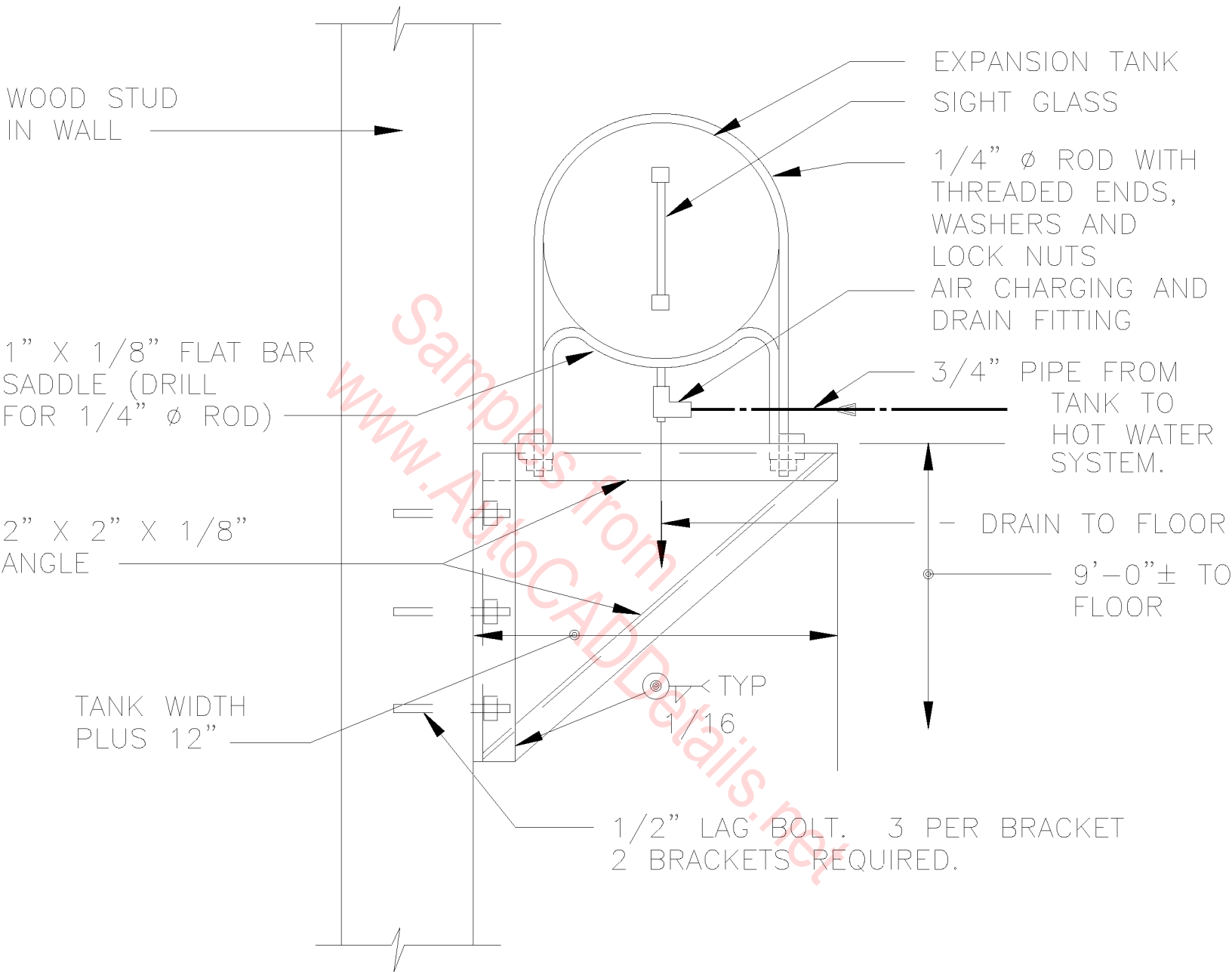
FLOOR MOUNTED PUMP DETAIL

N.T.S.



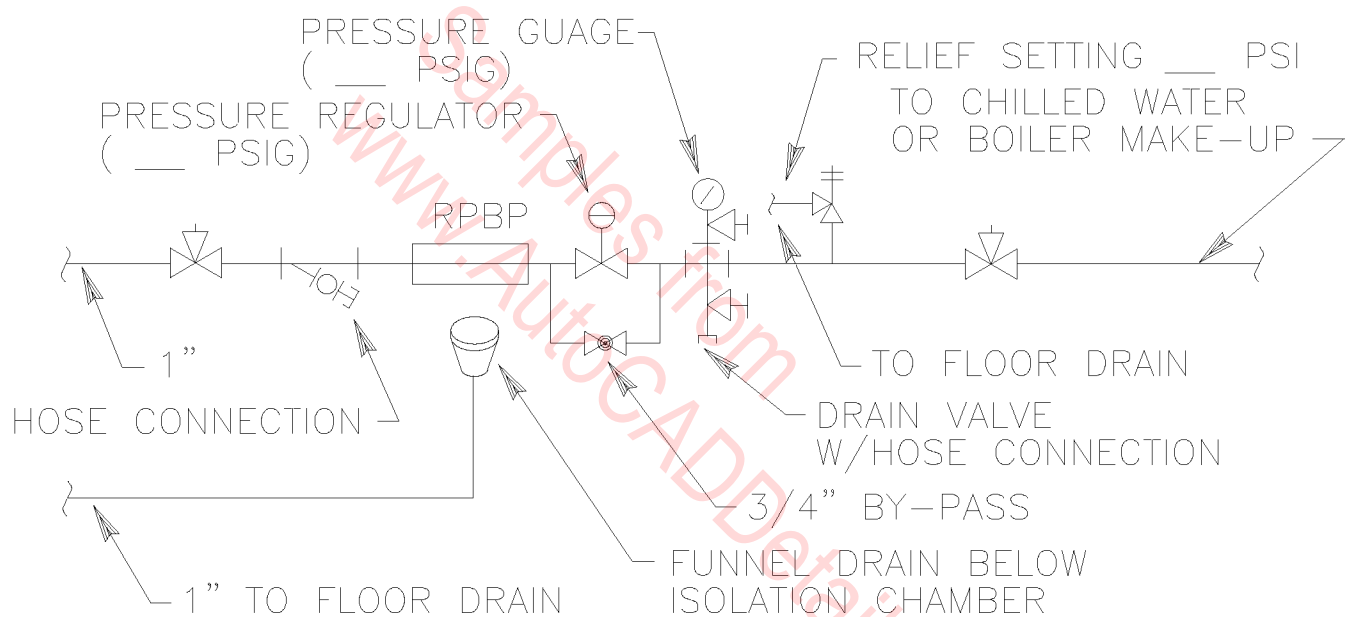
WALL MOUNTED
EXPANSION TANK DETAIL

N.T.S.



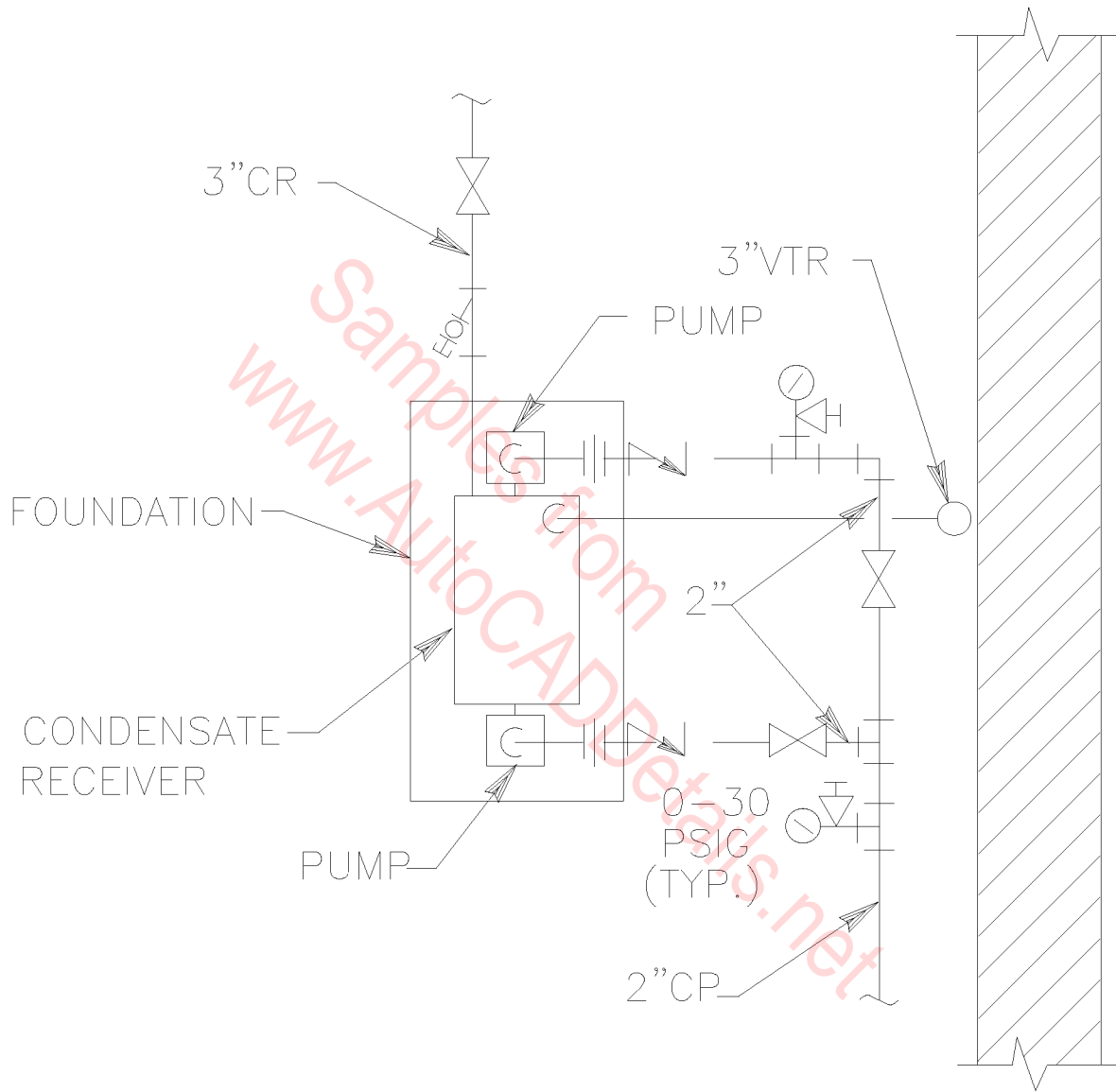
WALL MOUNTED
EXPANSION TANK DETAIL

N.T.S.



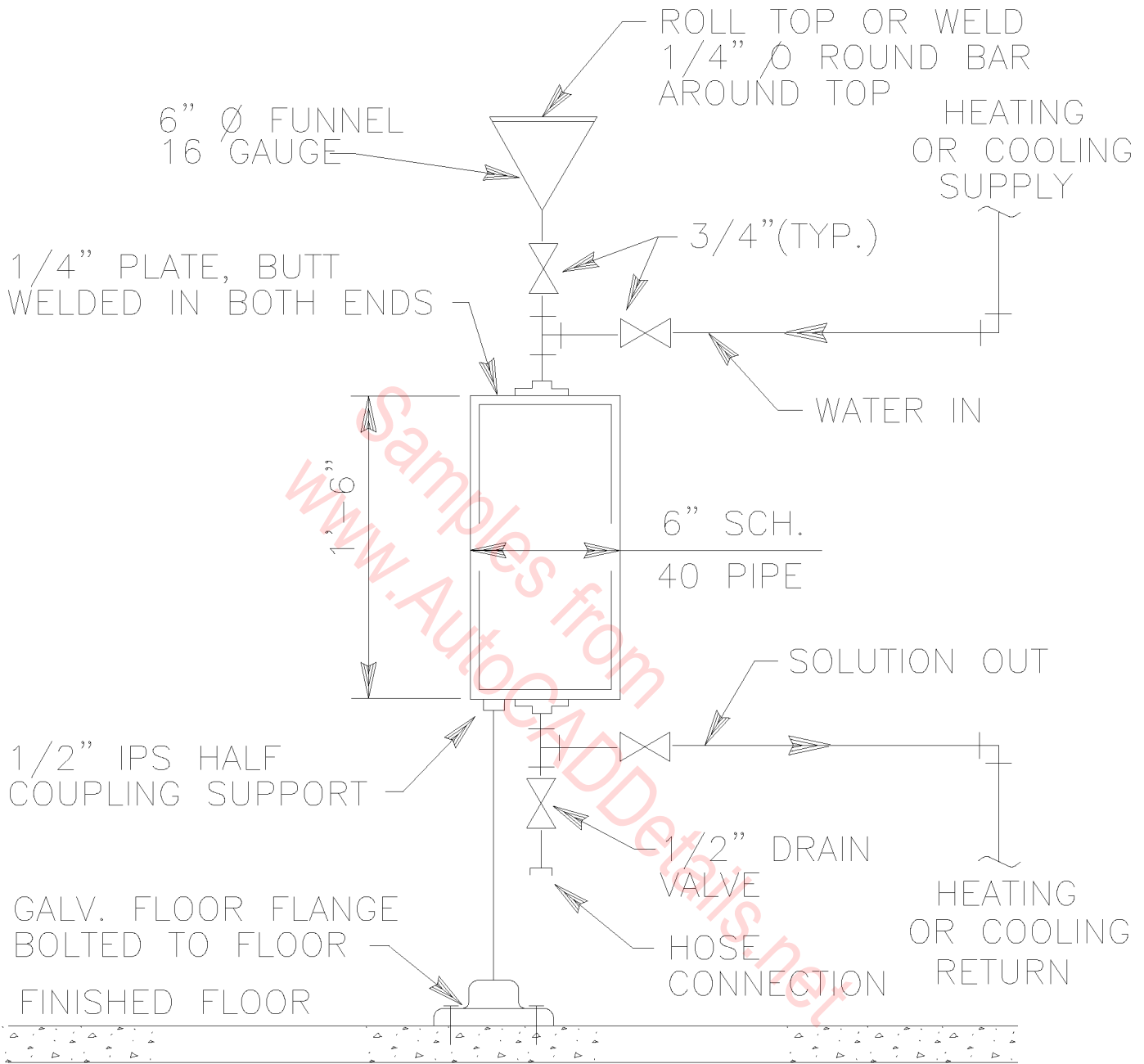
TYPICAL MAKE-UP WATER SPOOL DETAIL

N.T.S.



DUPLEX CONDENSATE PUMP DETAIL

N.T.S.

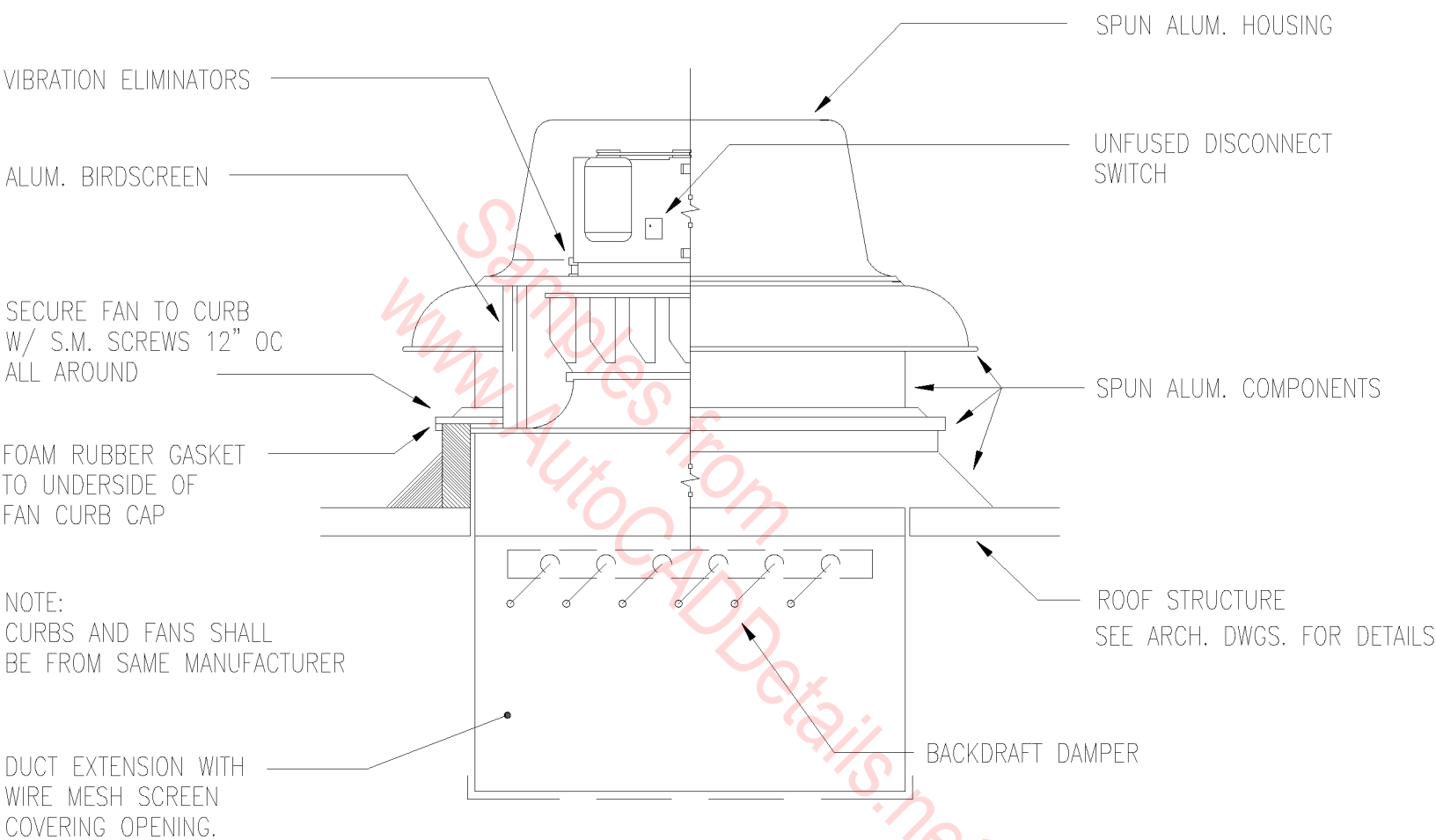


NOTES:

1. CHEMICAL FEEDER SHALL BE 2' AFF MIN.
2. COMMERCIAL CHEMICAL FEEDER MAY BE SUBSTITUTED PROVIDED IT MEETS ALL DETAILED REQUIREMENTS.

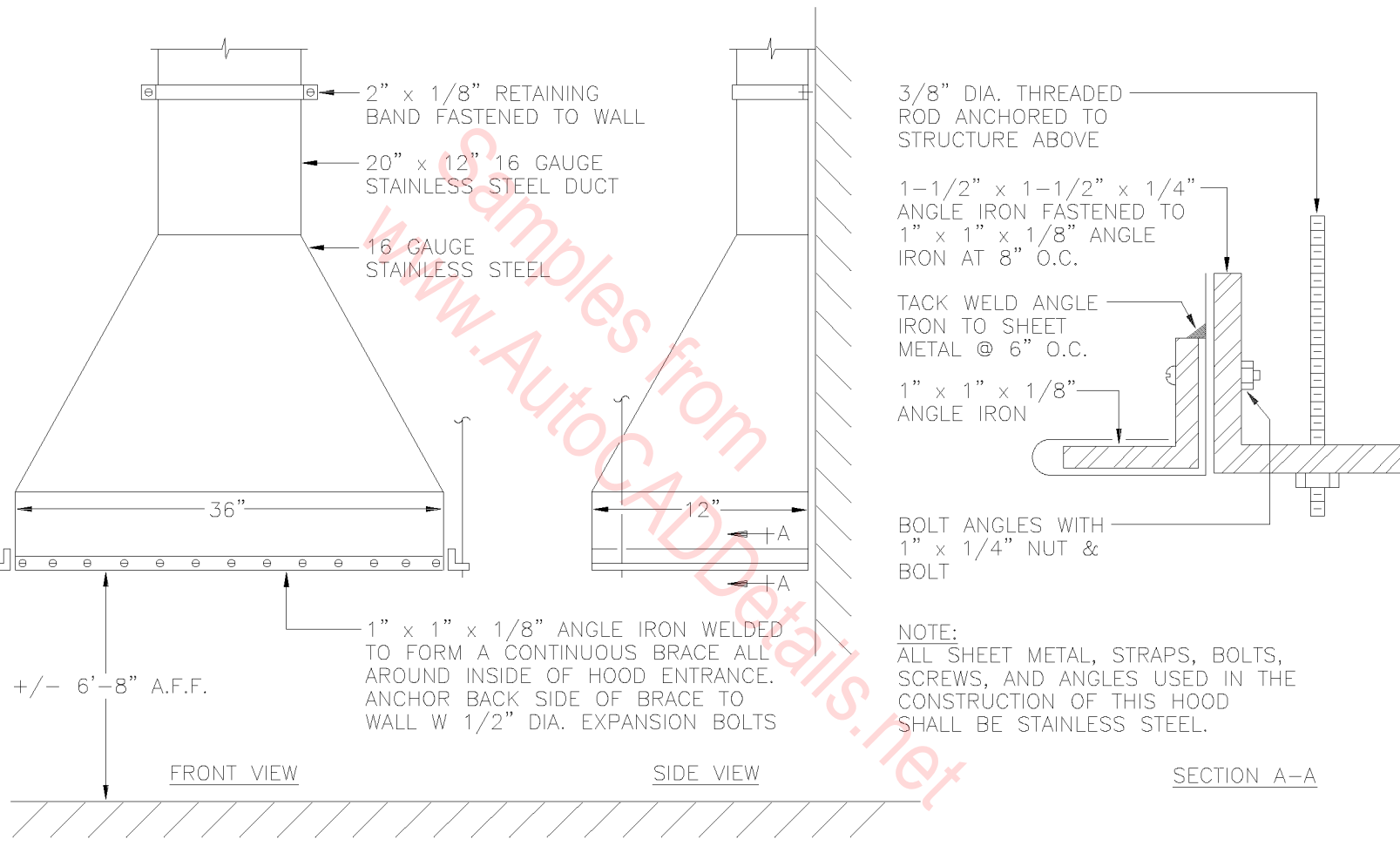
TYPICAL CHEMICAL FEEDER DETAIL

N.T.S.

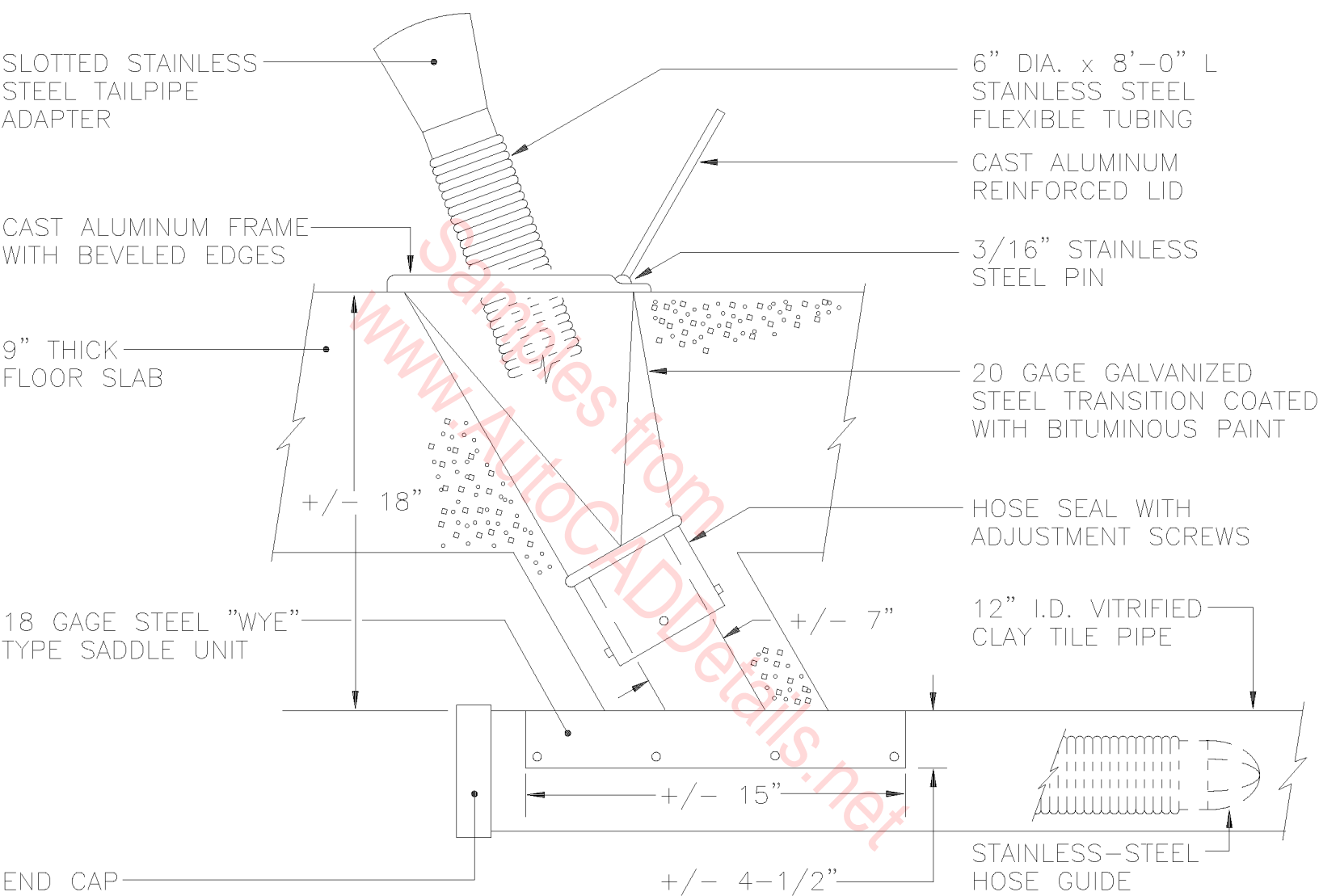


ROOF MOUNTED CENTRIFUGAL
EXHAUST FAN DETAIL

N.T.S.

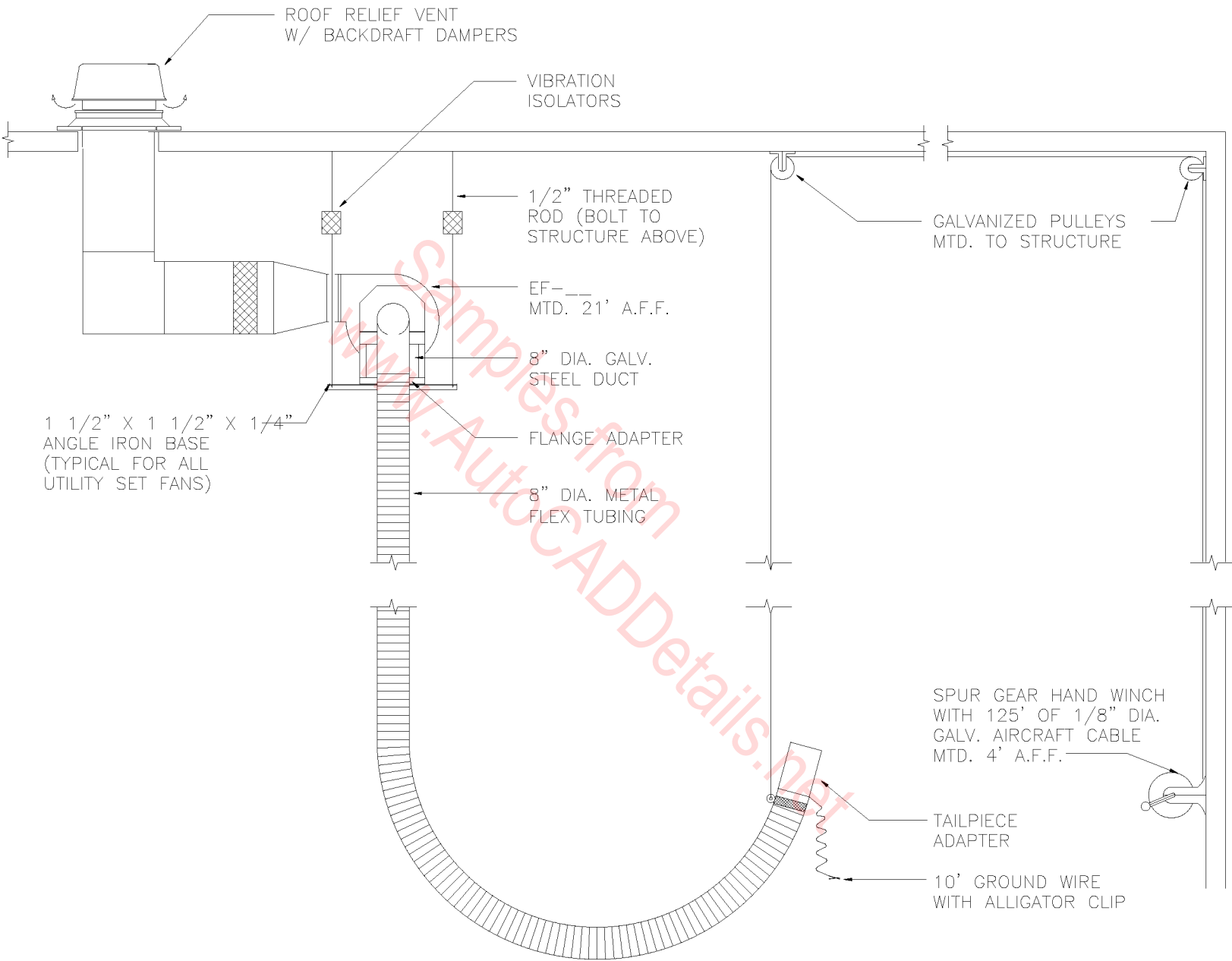


EXHAUST HOOD DETAIL
N.T.S.



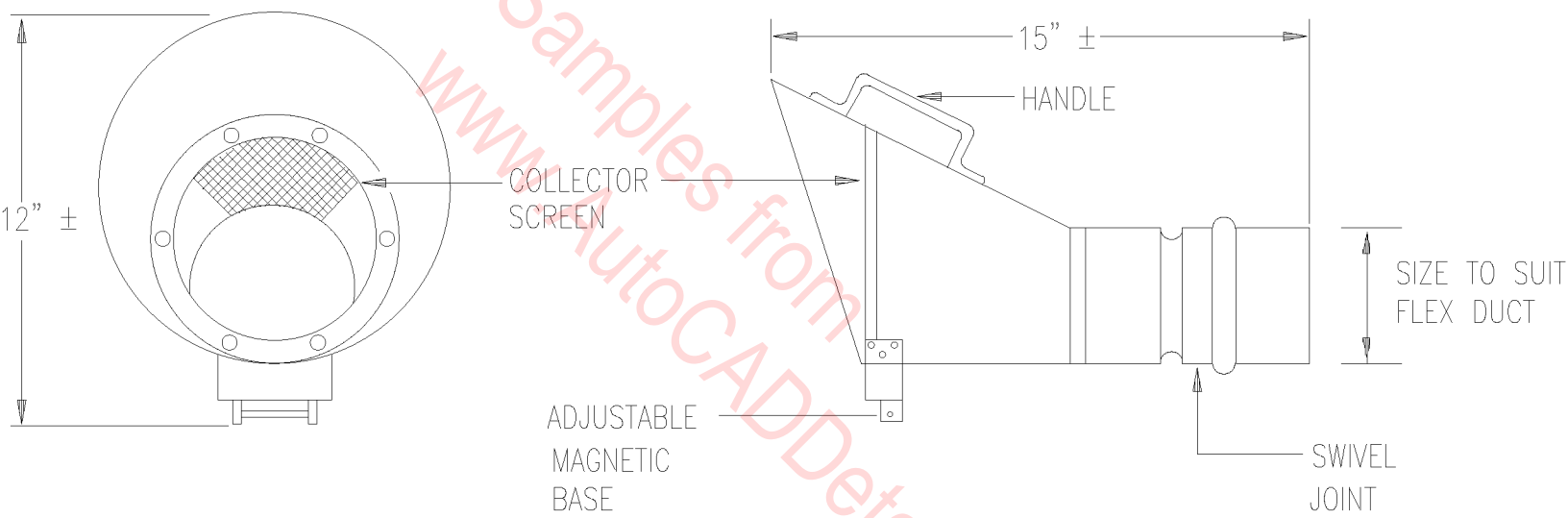
ENGINE EXHAUST
FLOOR OUTLET DETAIL

N.T.S



FUEL TANK EXHAUST FAN DETAIL

N.T.S.



EXHAUST RECEPTOR DETAIL

N.T.S.

CROSS BROKEN
ALUMINUM CAP

RIVET

INSECT
SCREEN

CORNER CAP

DUCT
(TYPICAL)

ALUMINUM
EXTRUDED
LOUVERS

PREFABRICATED INSULATED
SHEET METAL CURB WITH WOOD NAILER.

ROOFING

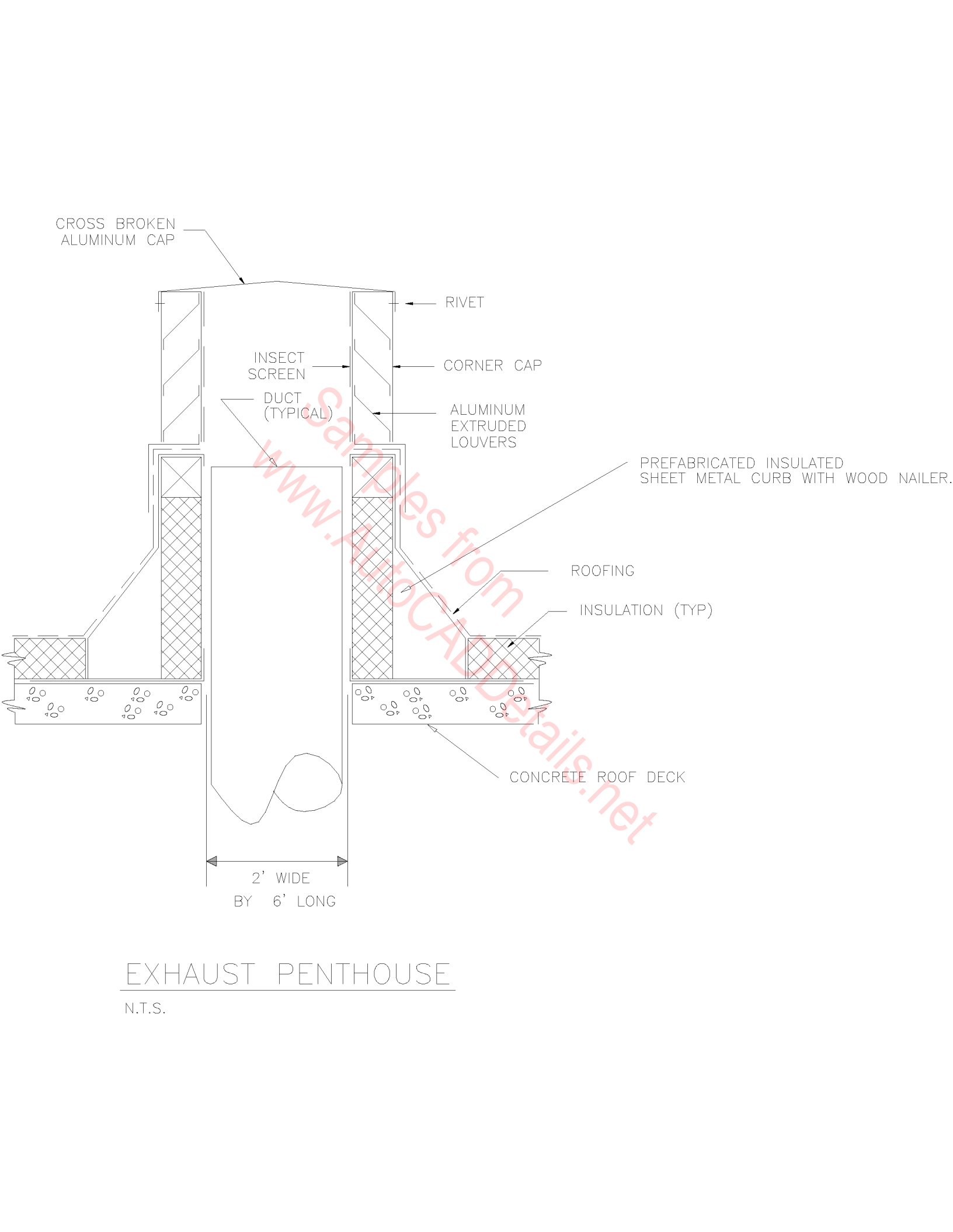
INSULATION (TYP)

CONCRETE ROOF DECK

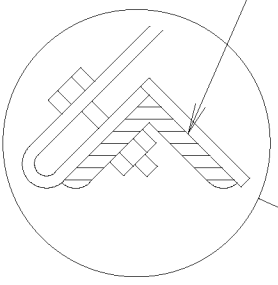
2' WIDE
BY 6' LONG

EXHAUST PENTHOUSE

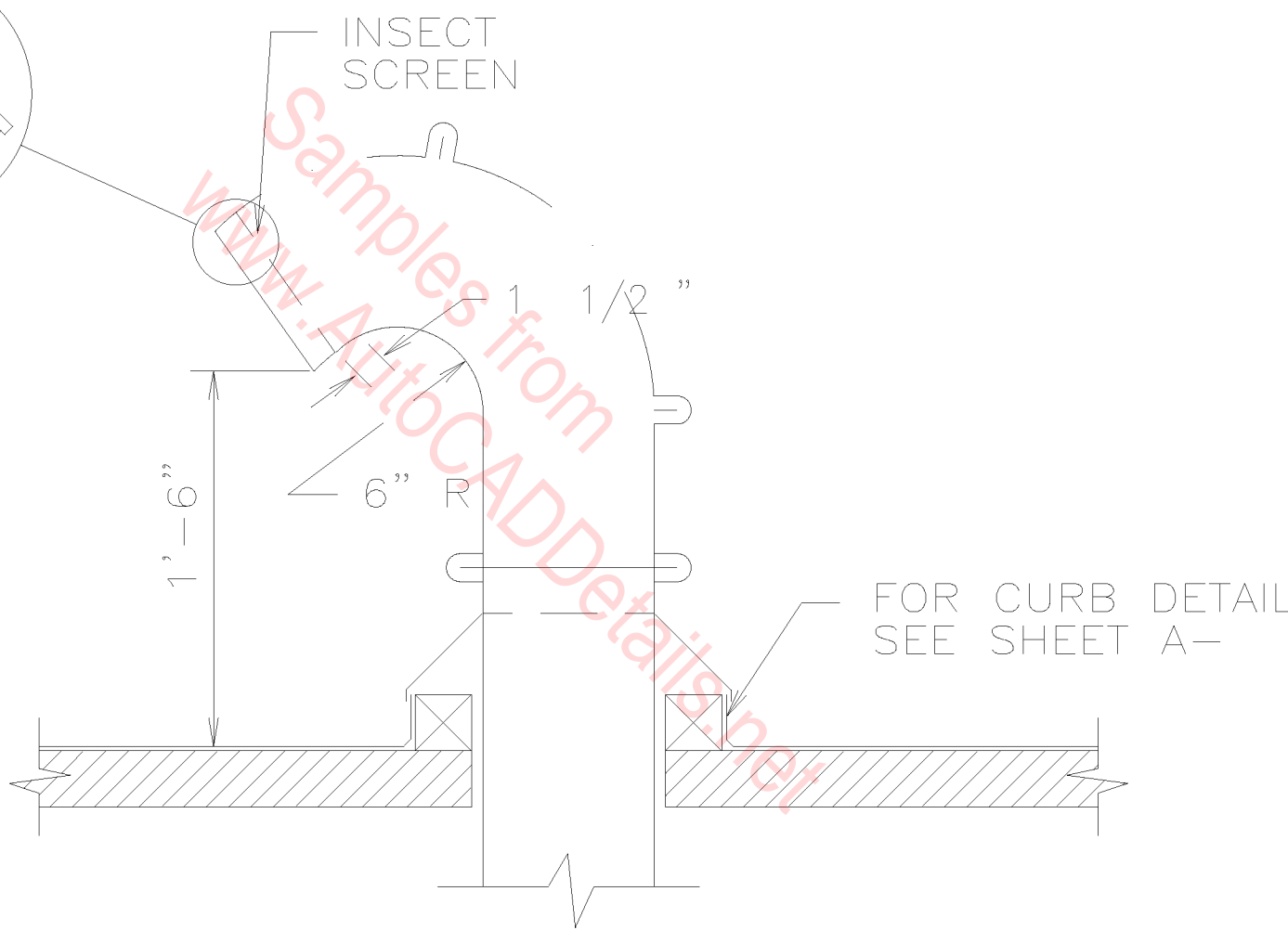
N.T.S.



1 1/2 x 1 1/2 x 1/8 Δ ALL
AROUND BOLTED WITH
1/4" D BOLTS TO DUCT

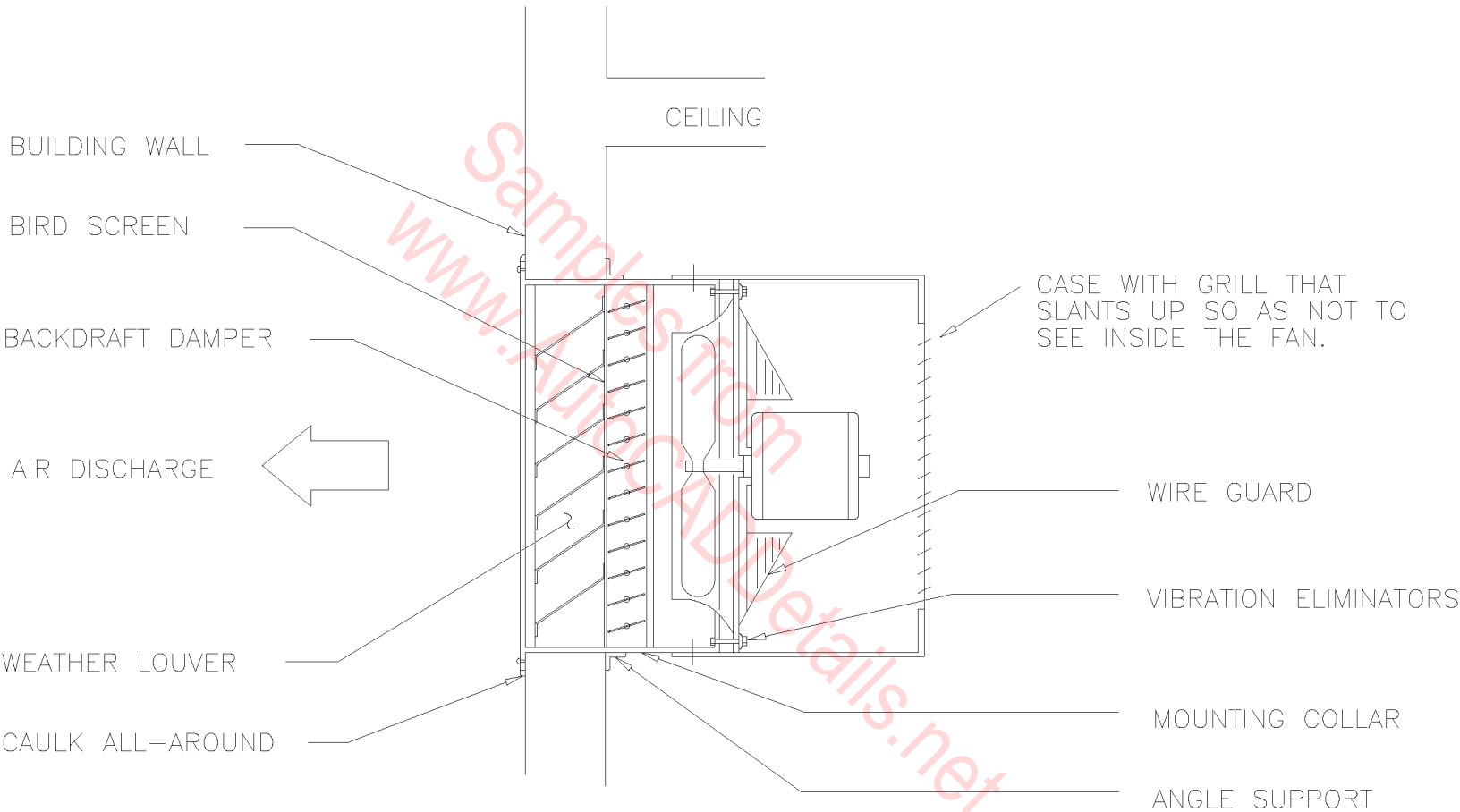


INSECT
SCREEN



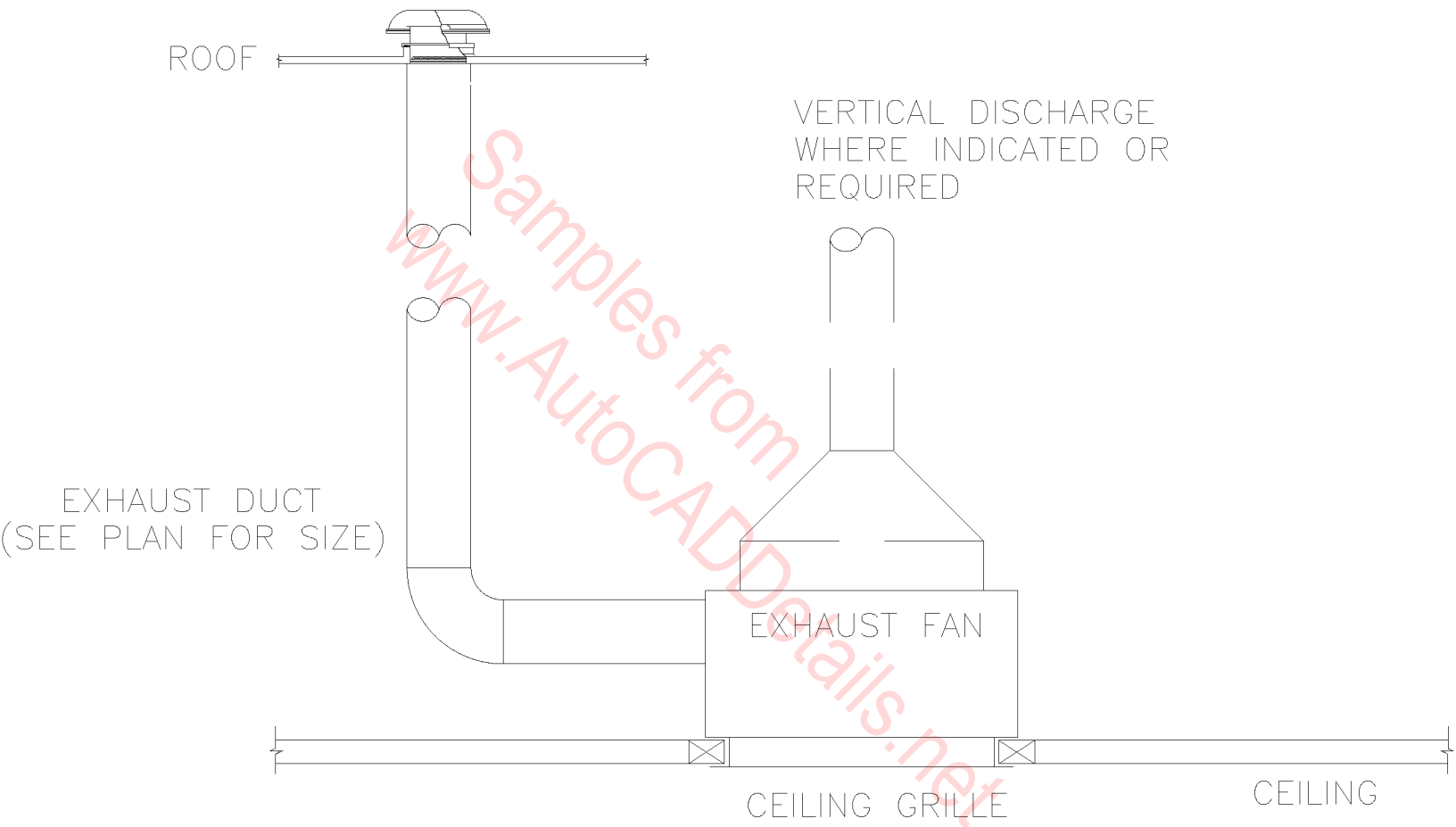
GOOSENECK DETAIL

N.T.S.



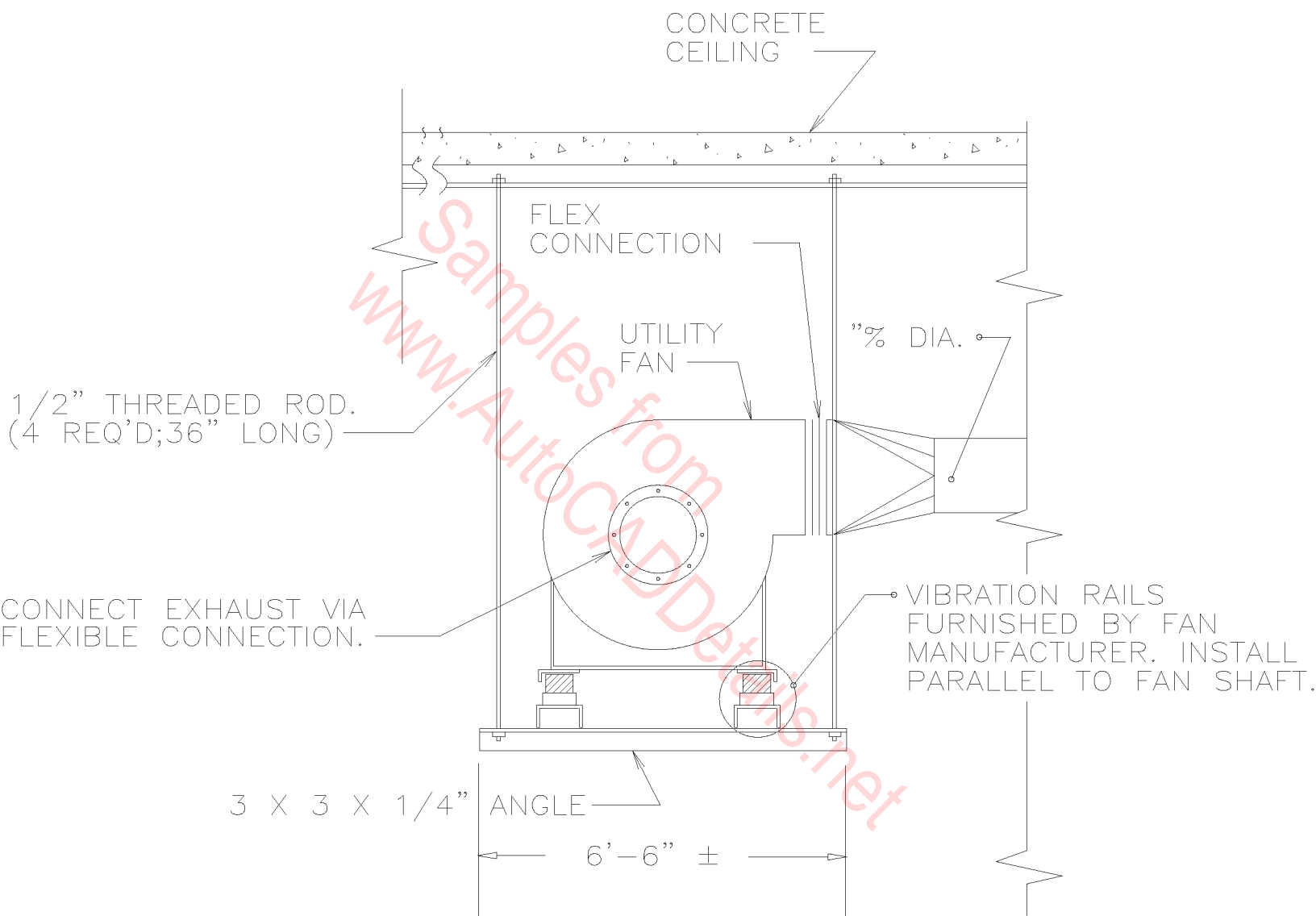
EXHAUST FAN DETAIL

N.T.S.



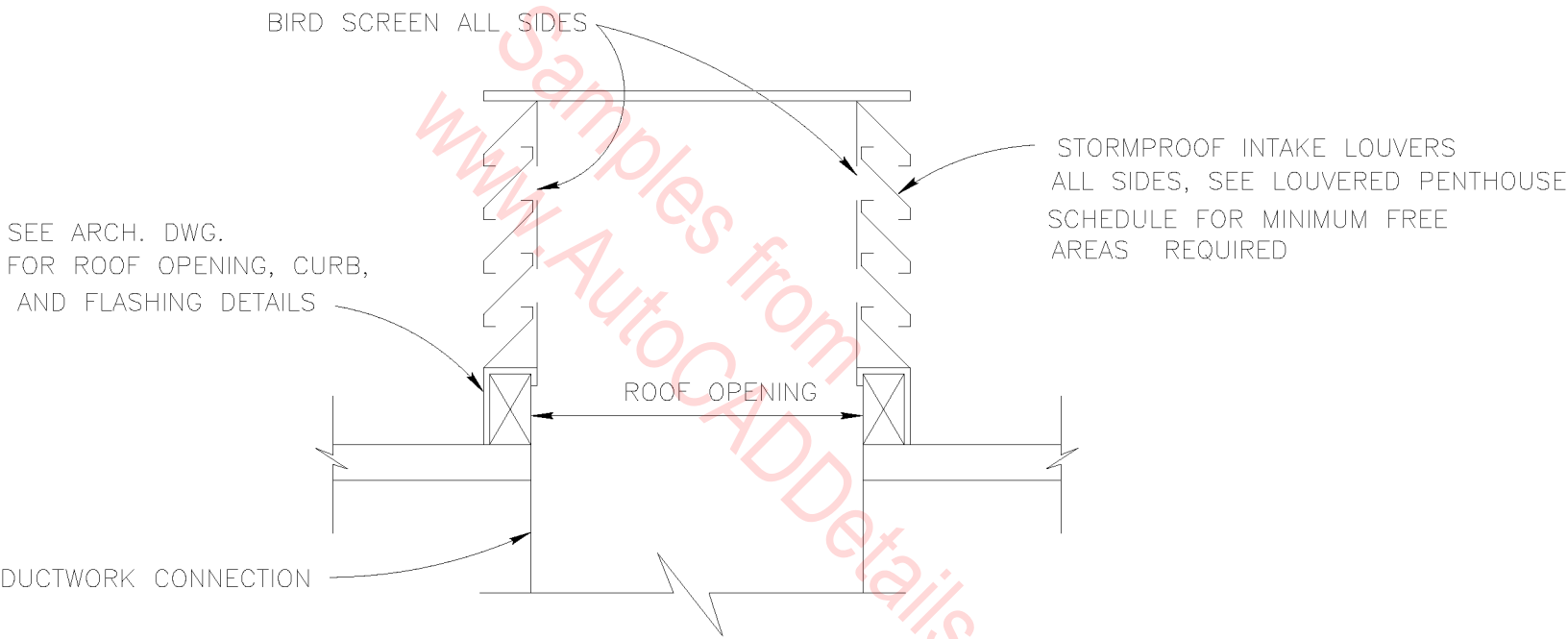
CEILING EXHAUST FAN DETAIL

N.T.S.



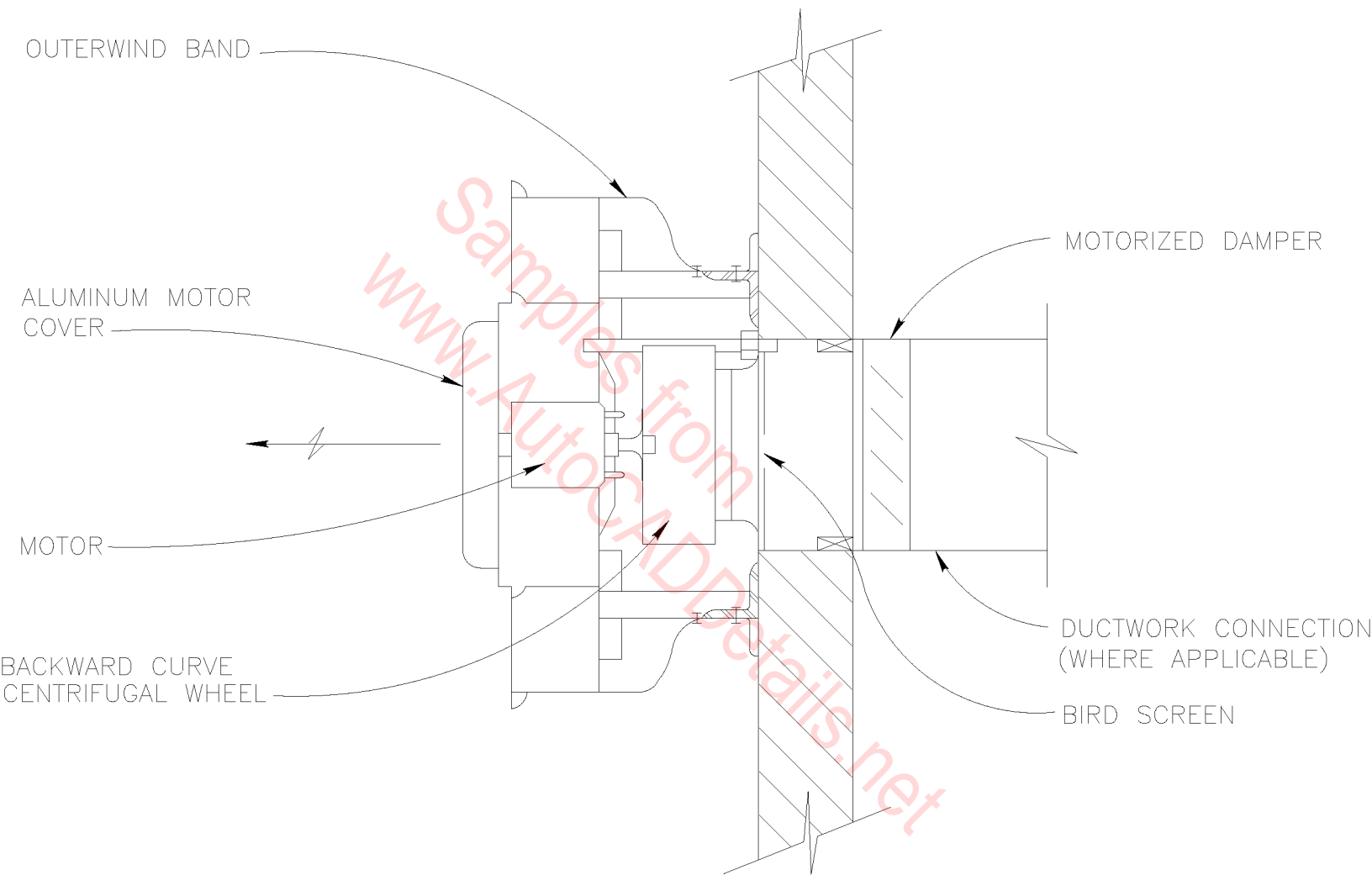
EXHAUST FAN DETAIL

N.T.S.



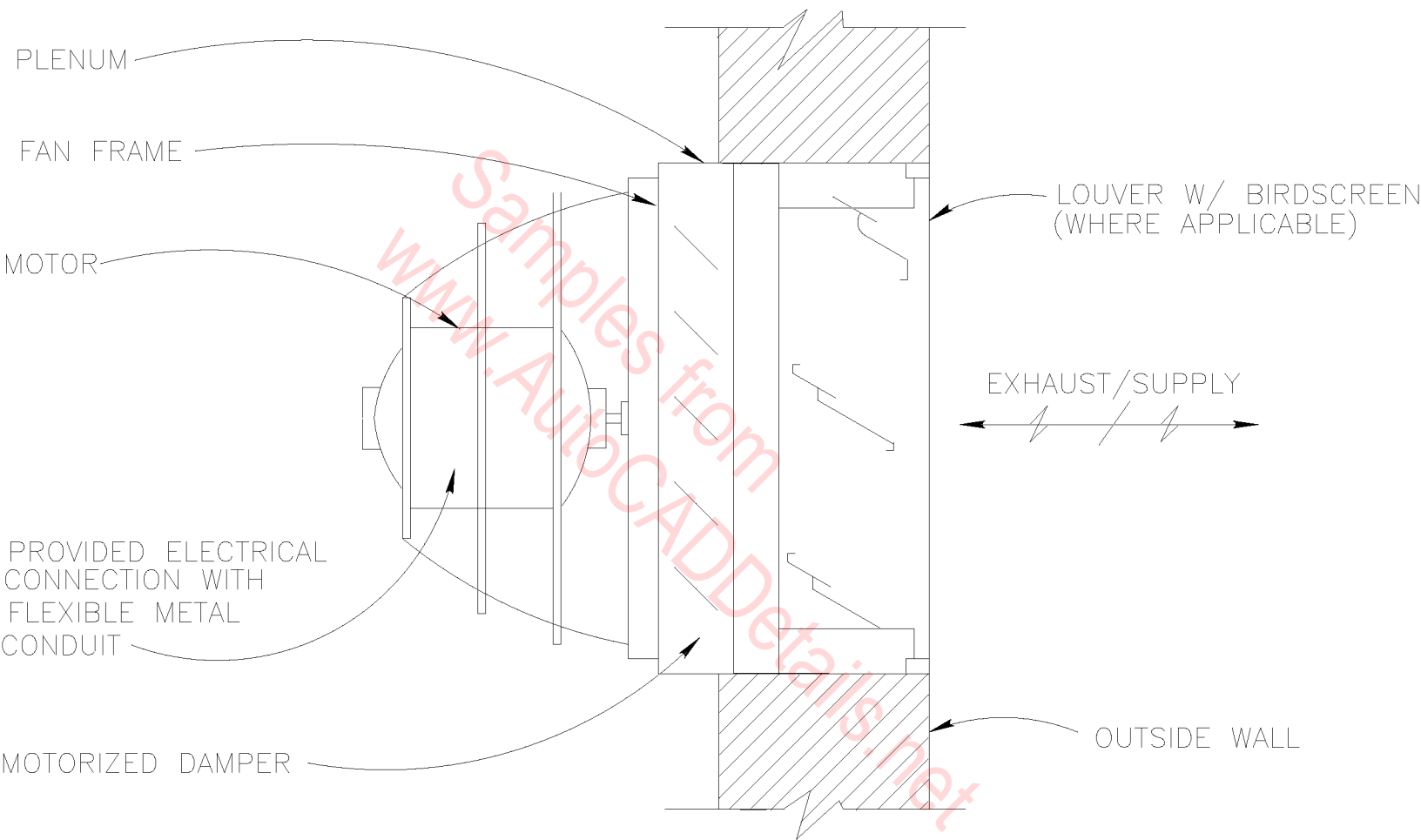
CEILING EXHAUST FAN DETAIL

N.T.S.



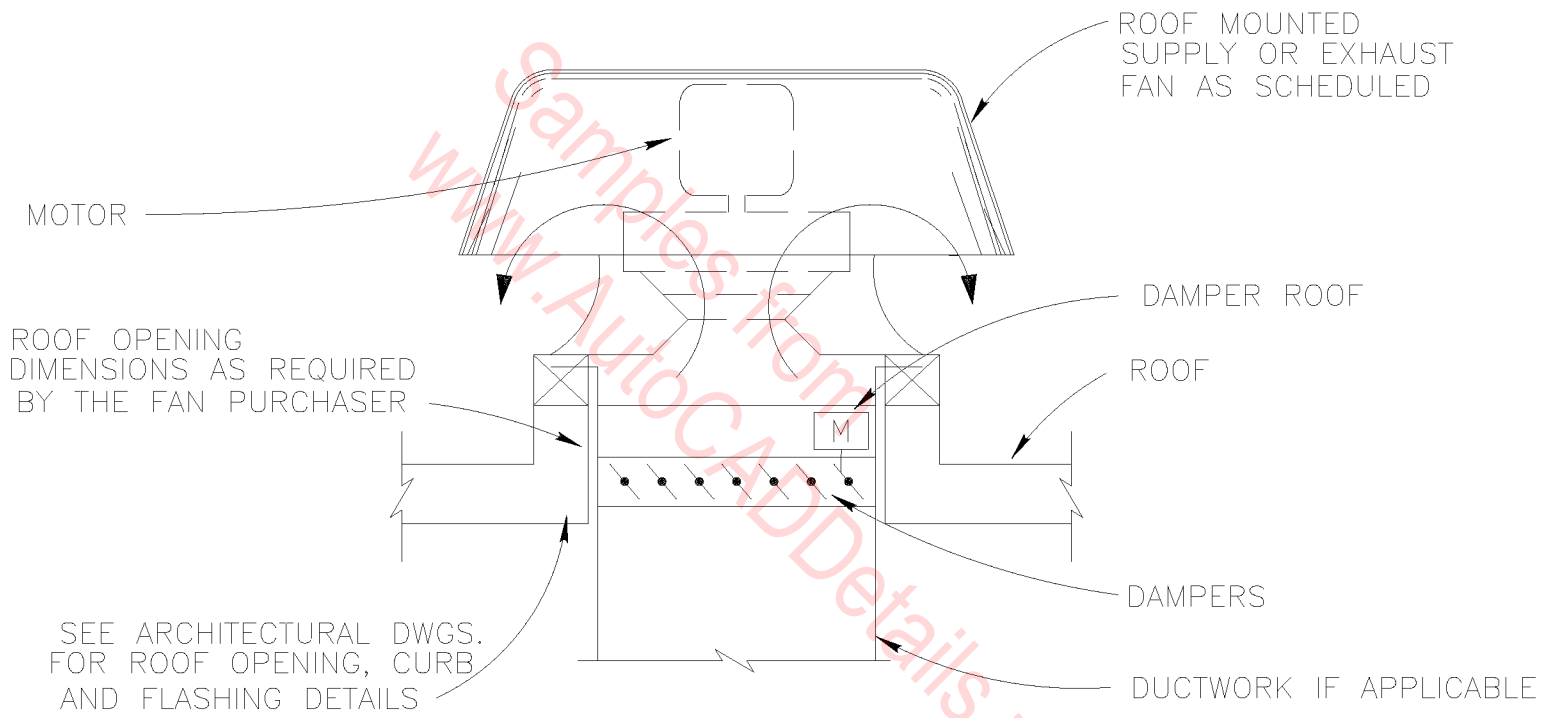
CENTRIFUGAL WALL EXHAUST FAN DETAIL

N.T.S.



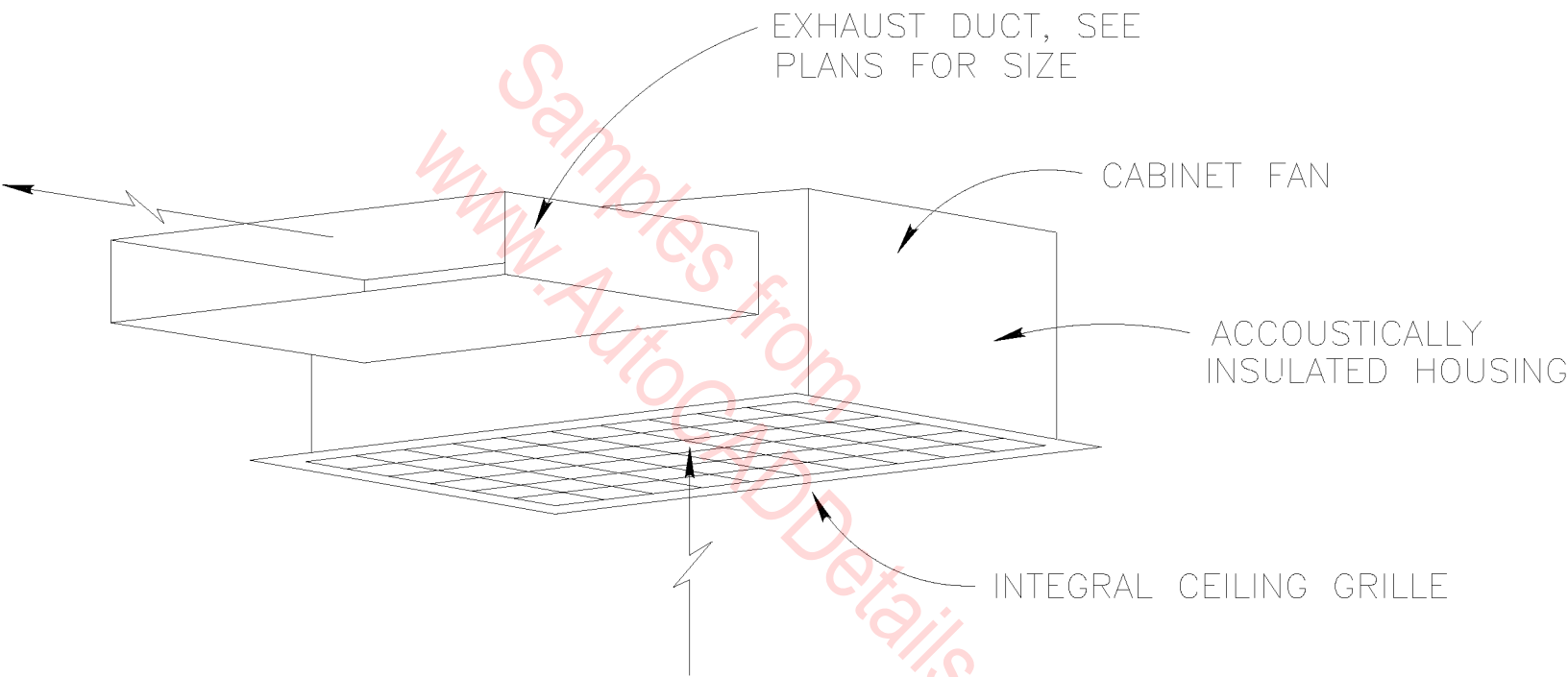
PROPELLER EXHAUST/SUPPLY FAN DETAIL

N.T.S.



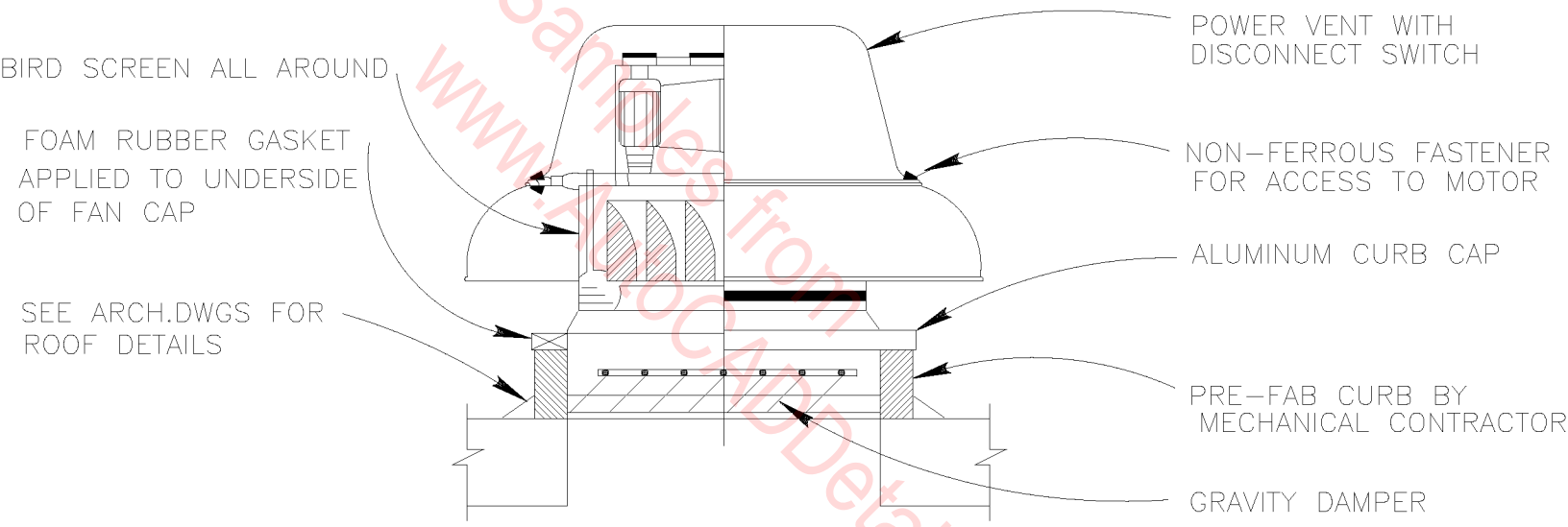
ROOF MOUNTED EXHAUST & SUPPLY FAN DETAIL

N.T.S.



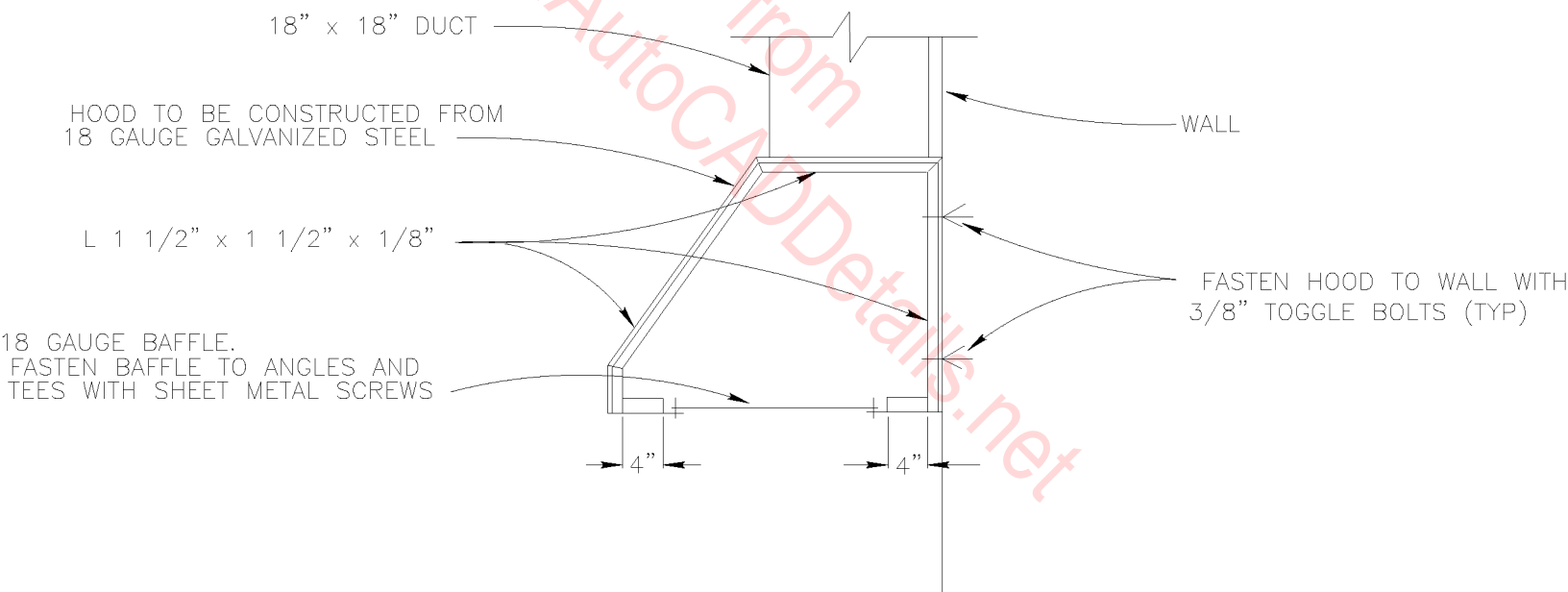
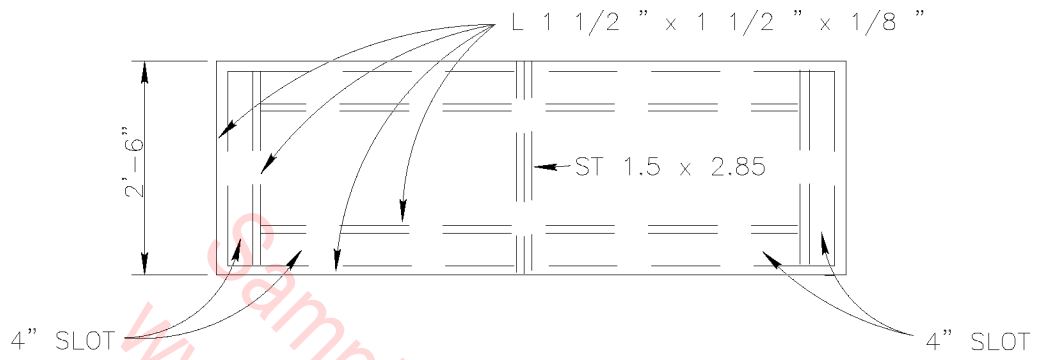
CEILING EXHAUST FAN DETAIL

N.T.S.



ROOF MOUNTED EXHAUST FAN DETAIL

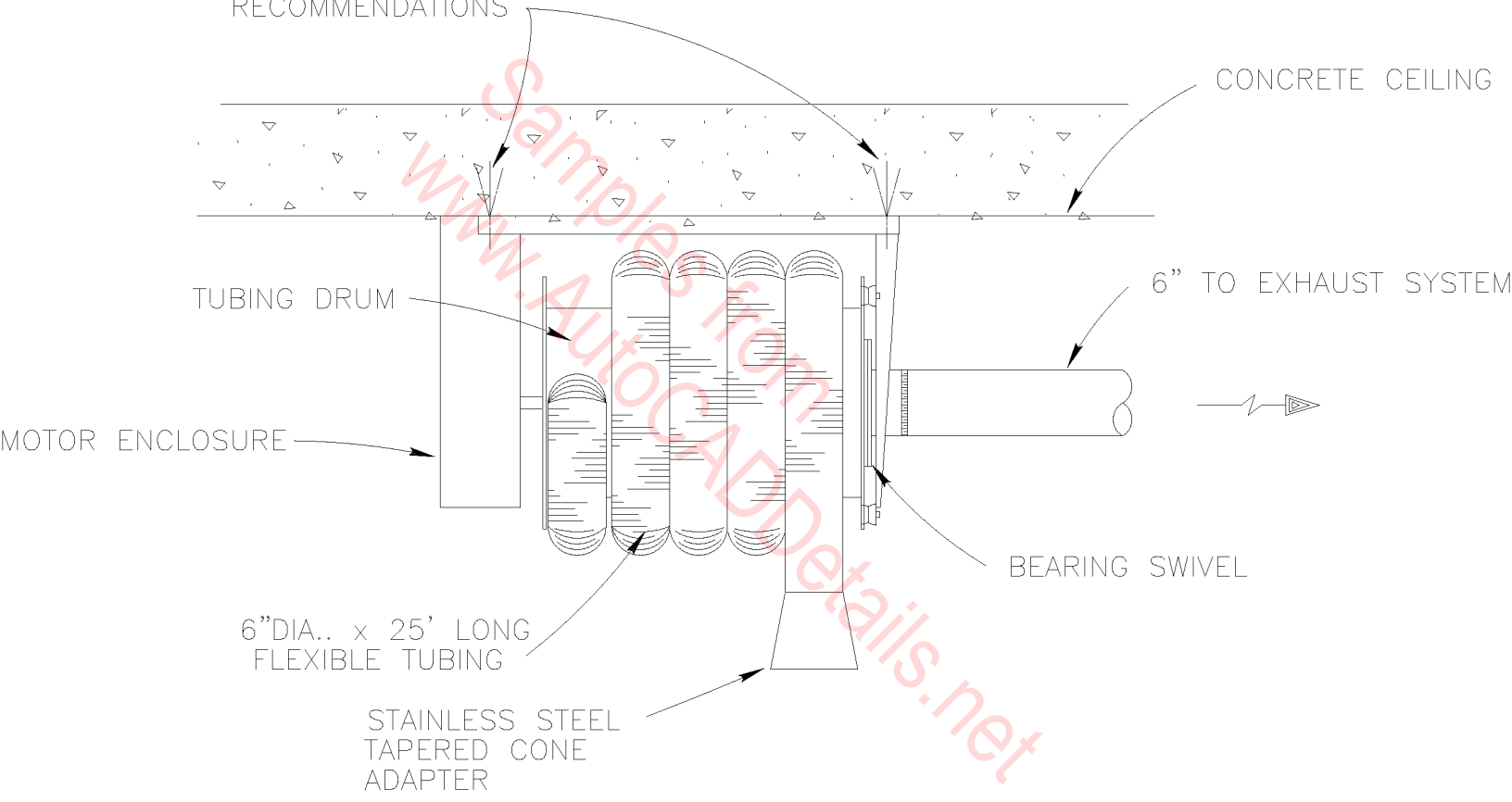
N.T.S.



EXHAUST HOOD DETAIL

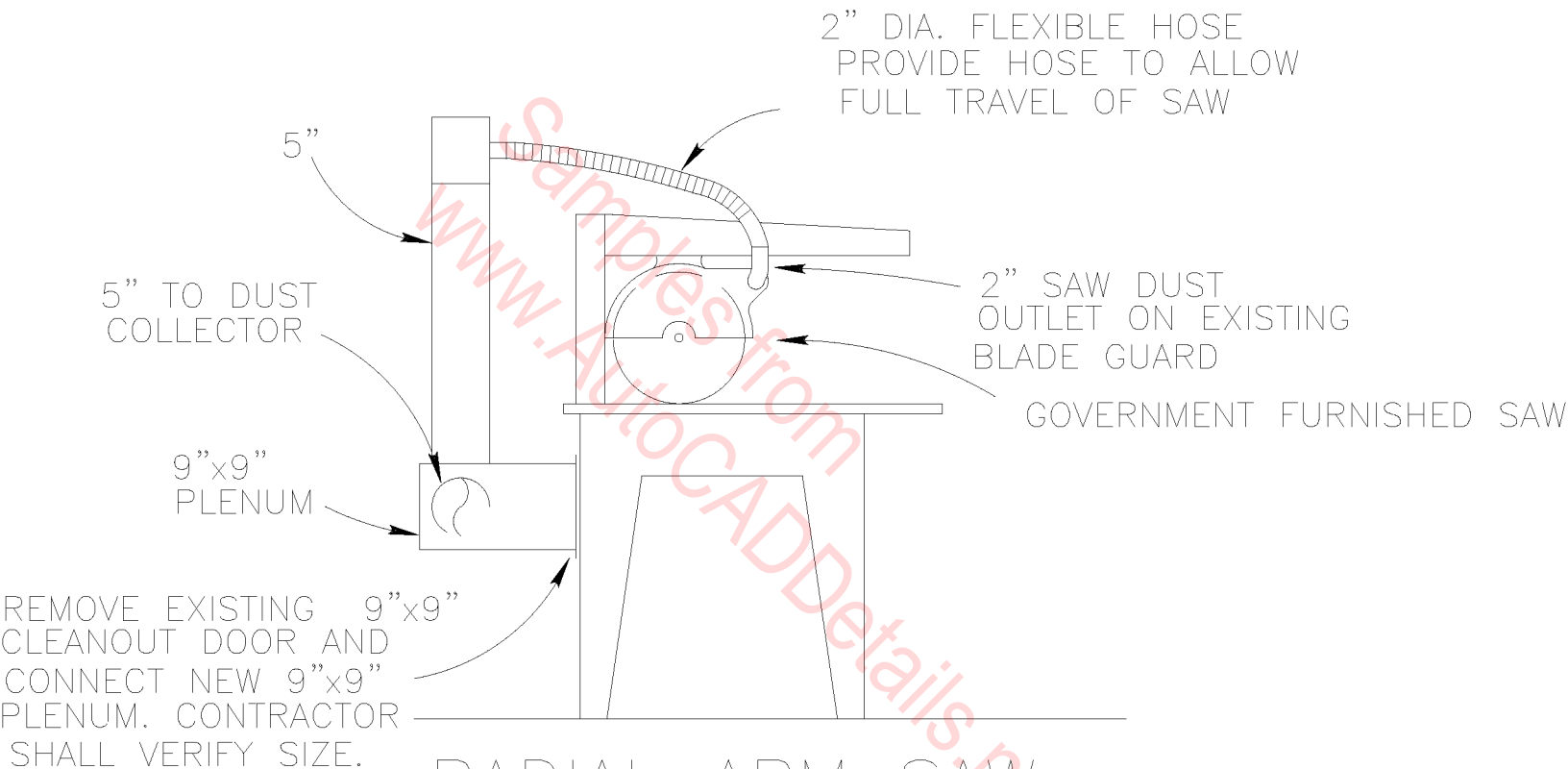
N.T.S.

ANCHOR EXHAUST WHEEL
TO CEILING IN ACCORDANCE
W/ REEL MANUFACTURER'S
RECOMMENDATIONS



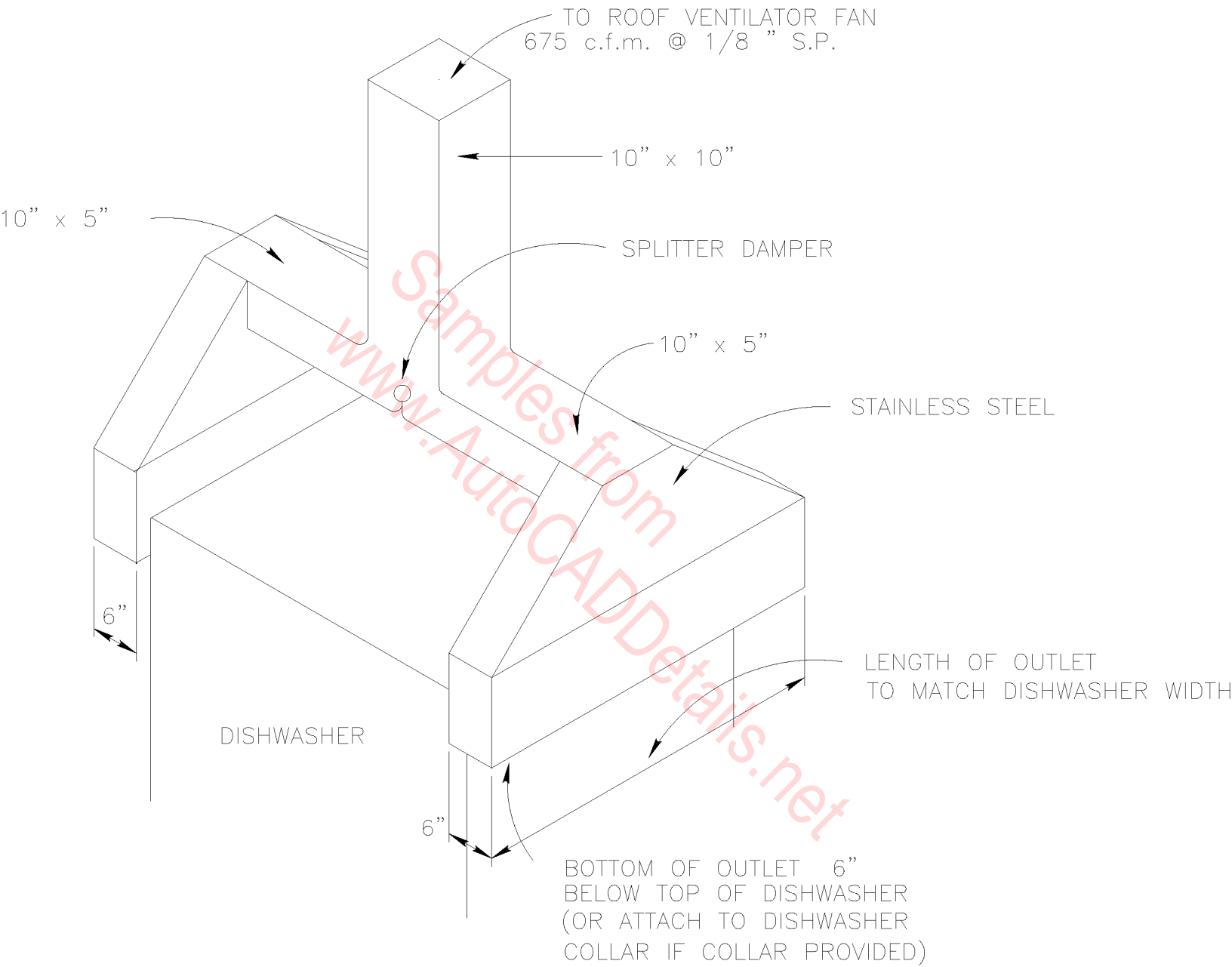
VEHICLE EXHAUST REEL

N.T.S.



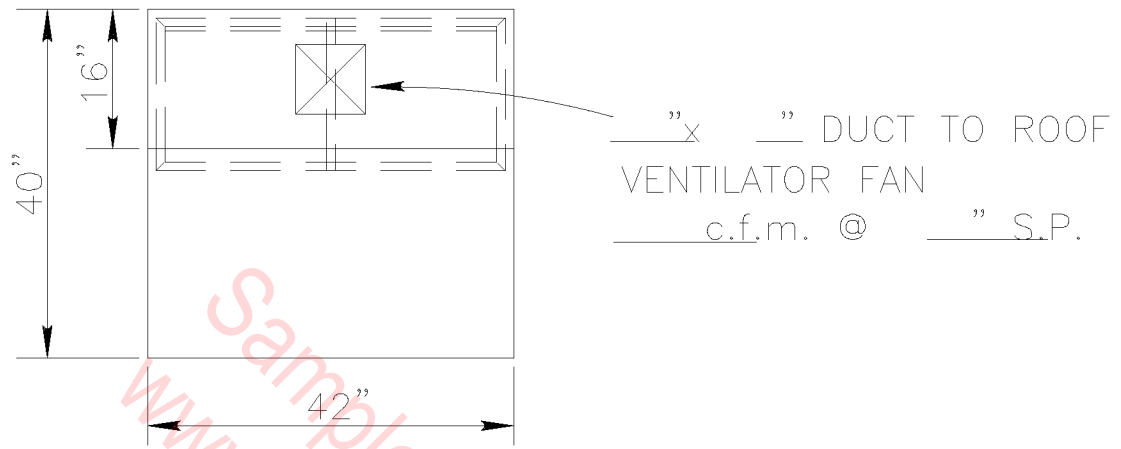
RADIAL ARM SAW
DUST COLLECTION SYSTEM

N.T.S.

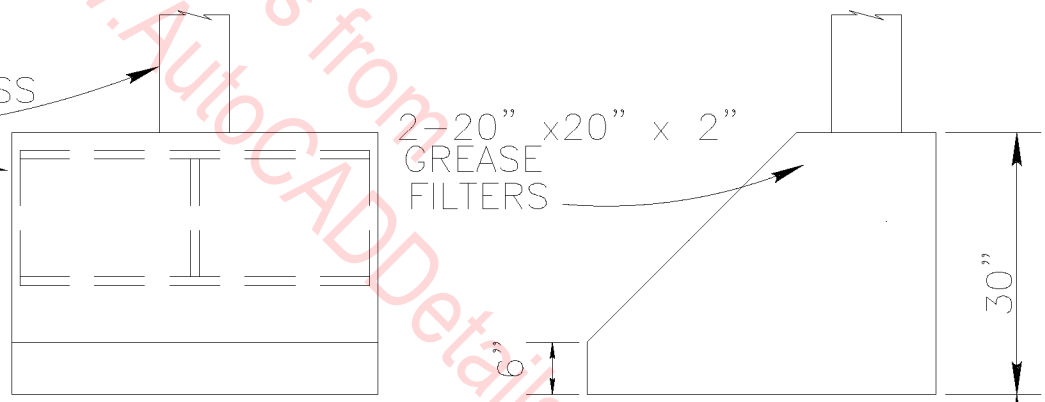


DISHWASHER HOOD DETAIL

N.T.S.

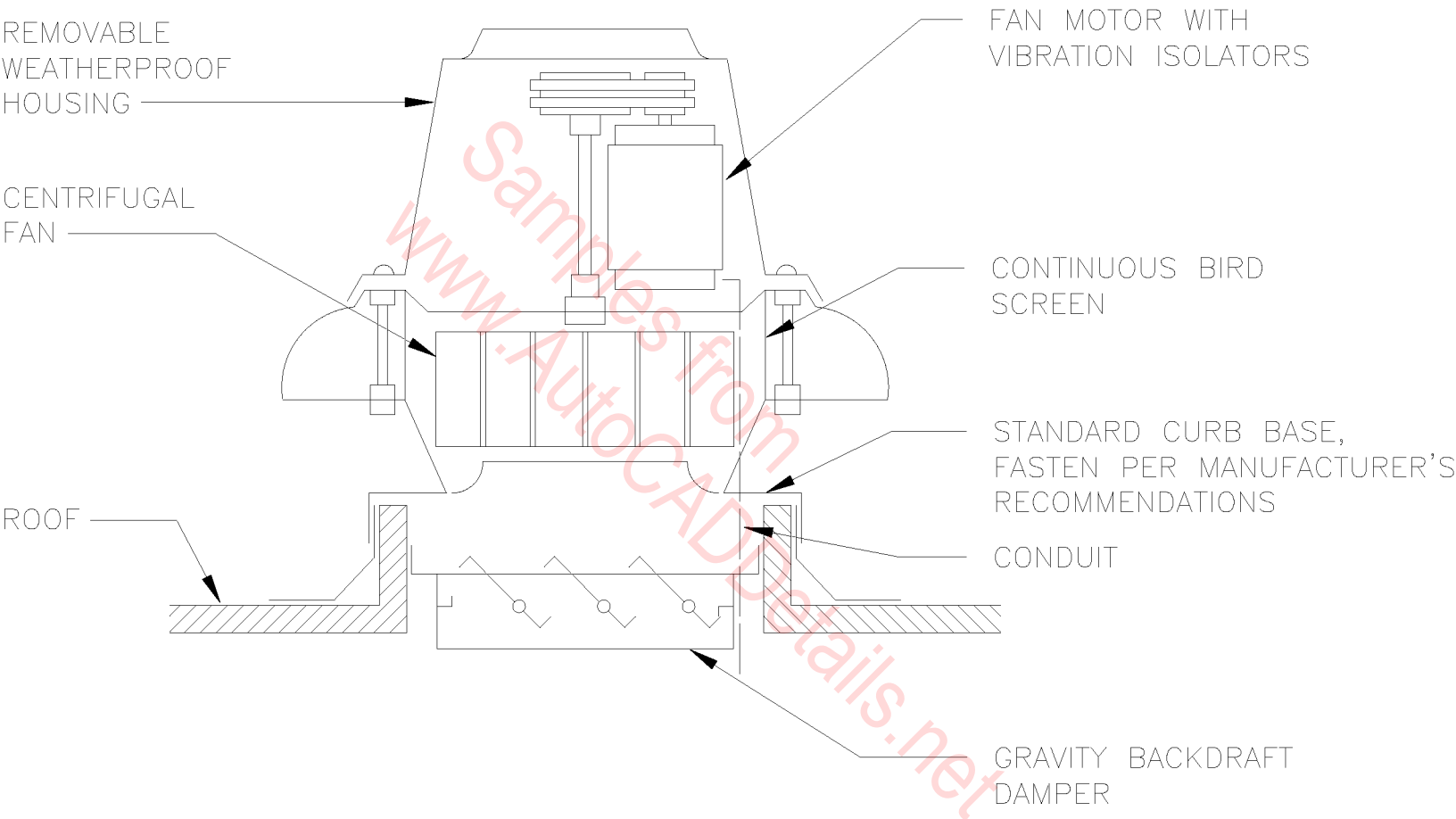


HOOD & DUCT TO BE CONSTRUCTED OF 18 GAUGE STAINLESS STEEL



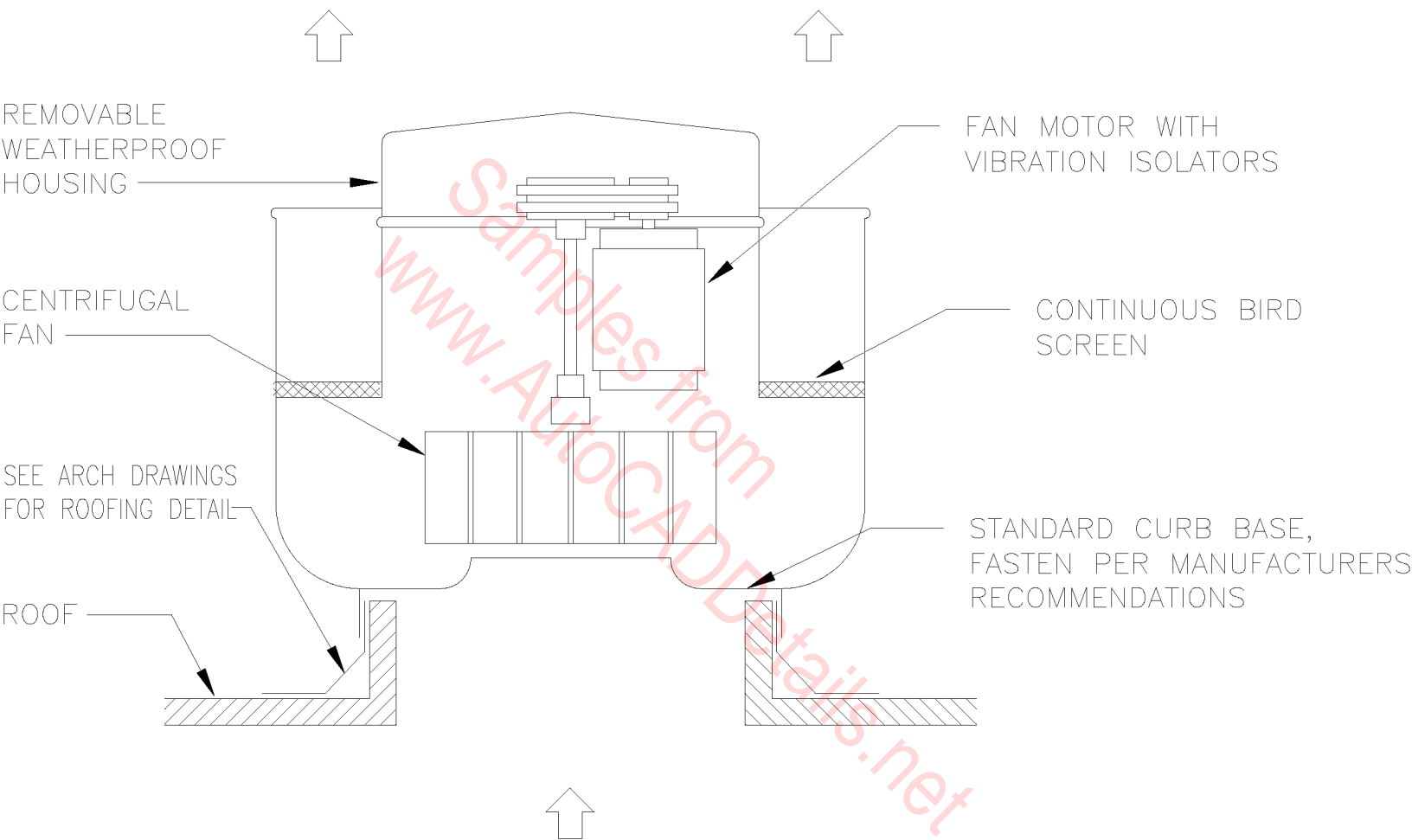
NOTE TO DESIGNER:
DIMENSIONS TO BE REVISED AS REQUIRED BY DESIGN EQUIPMENT

RANGE AND GRIDDLE HOOD
N.T.S.



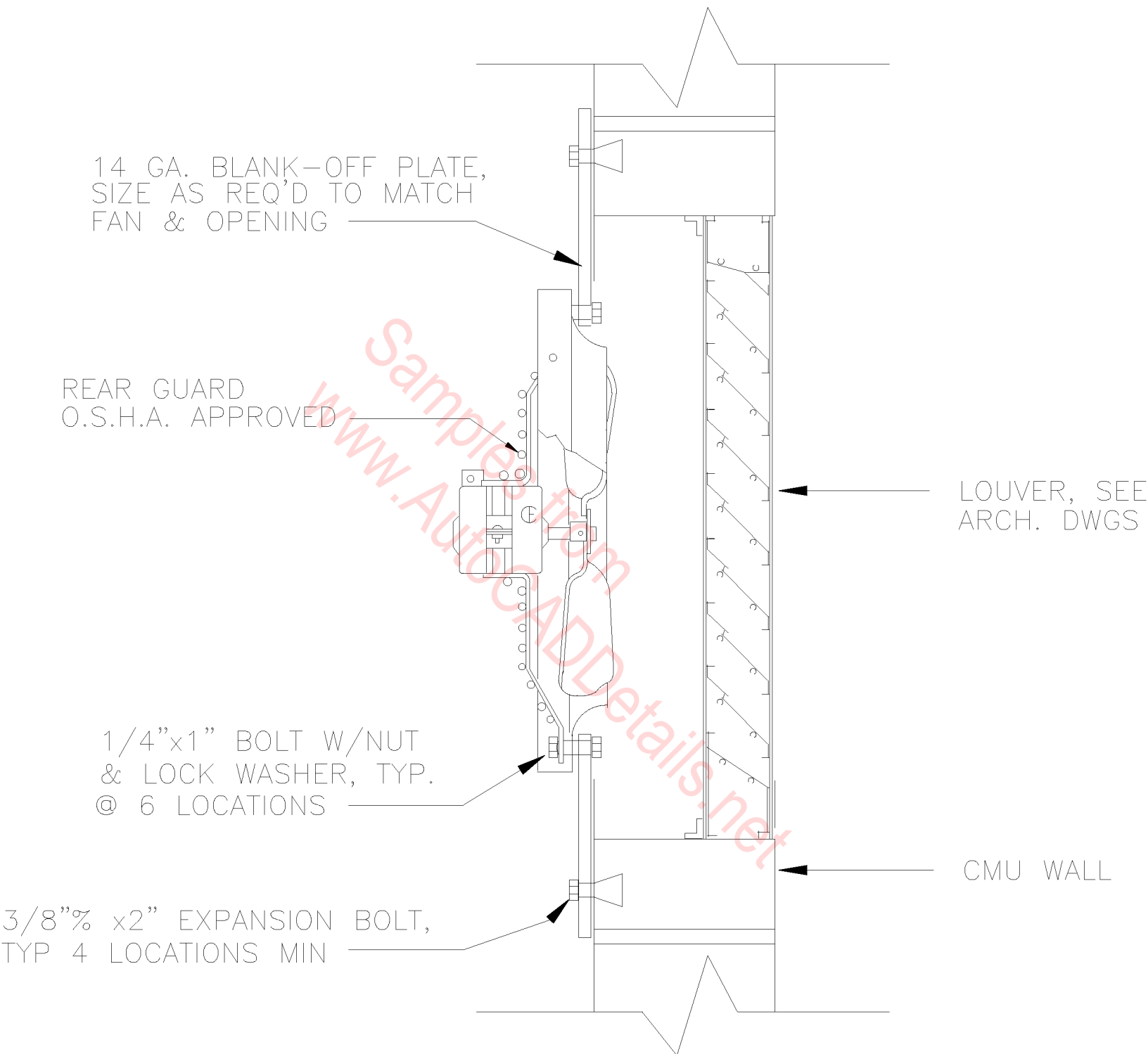
POWER ROOF VENTILATOR DETAIL

N.T.S.



UPBLAST POWER ROOF VENTILATOR DETAIL

N.T.S.



WALL MOUNTED EXHAUST FAN

N.T.S.

FOR OVERHEAD ATTACHMENTS SEE
___ AND ___

SIZE OR TRANSITION
TO MATCH FAN FLANGE

3/8" DIA
THREADED ROD,
TYP 4

EXHAUST
FAN

BACKDRAFT DAMPER
IN FAN BOX

FOR
OVERHEAD
ATTACHMENT
SEE ___

CEILING

PROVIDE DOUBLE NUTS
WITH LOCKWASHER AT
TOP & BOTTOM OF FLANGE

GRILLE

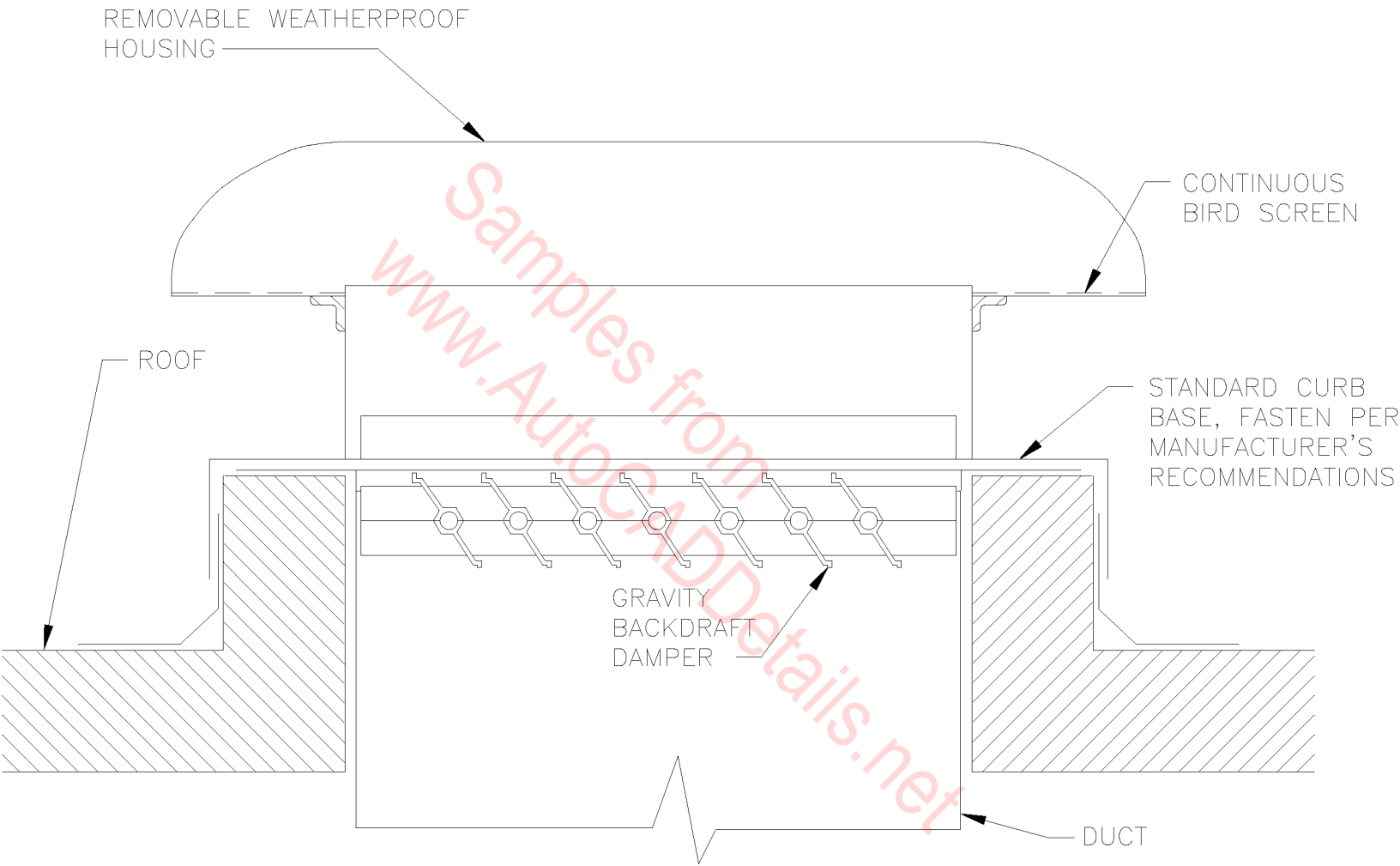
OPTIONAL
SEISMIC BRACE,
TYP 2, INSTALL
ON DIAGONAL
CORNERS IF
REQUIRED FOR
SEISMIC SUPPORT,
SEE SPECS. FOR SIZE

NOTE TO DESIGNER:

EXTENT OF SUPPORT IS DEPENDENT ON SIZE
OF FAN AND SEISMIC ZONE

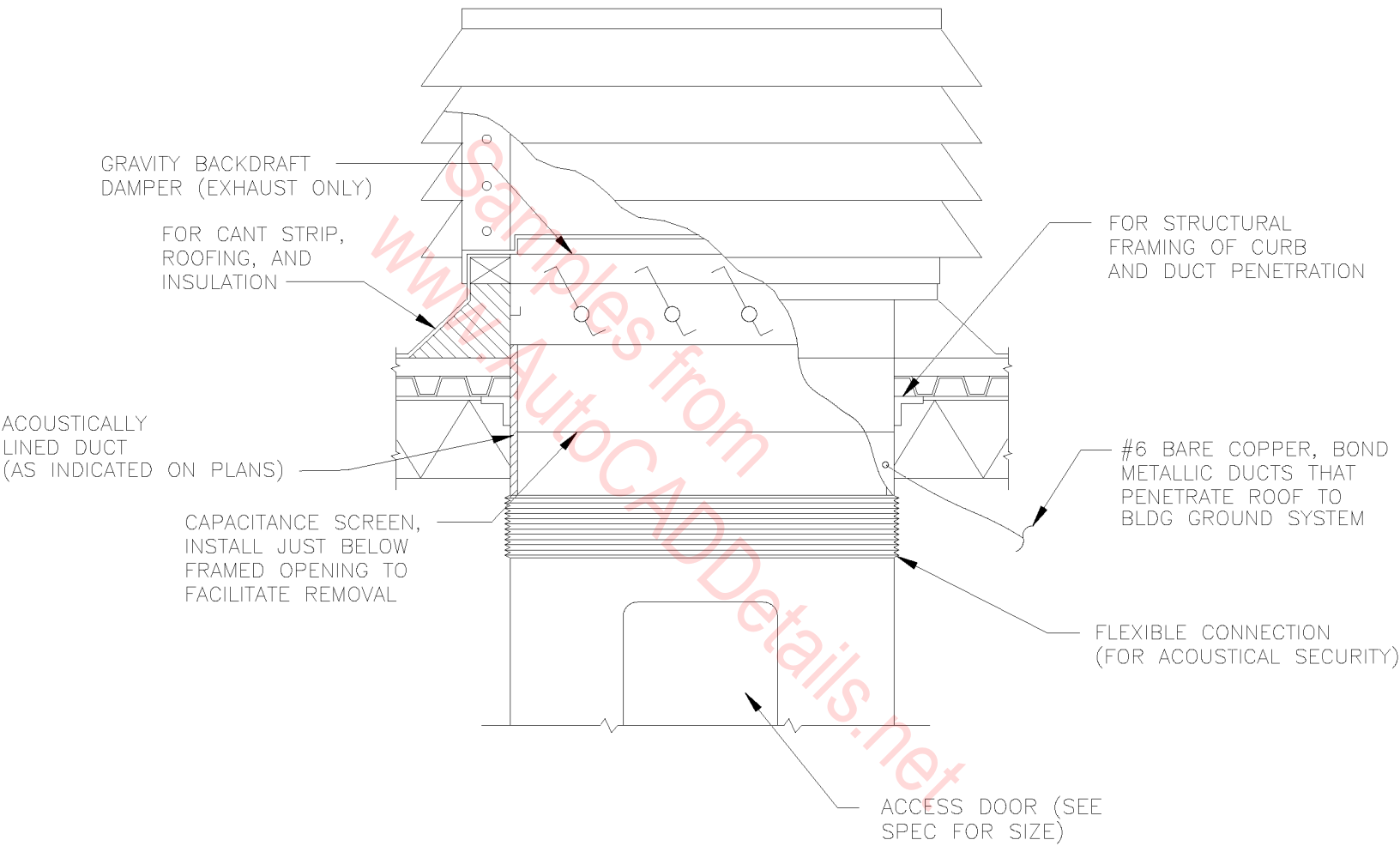
CEILING EXHAUST FAN

N.T.S.



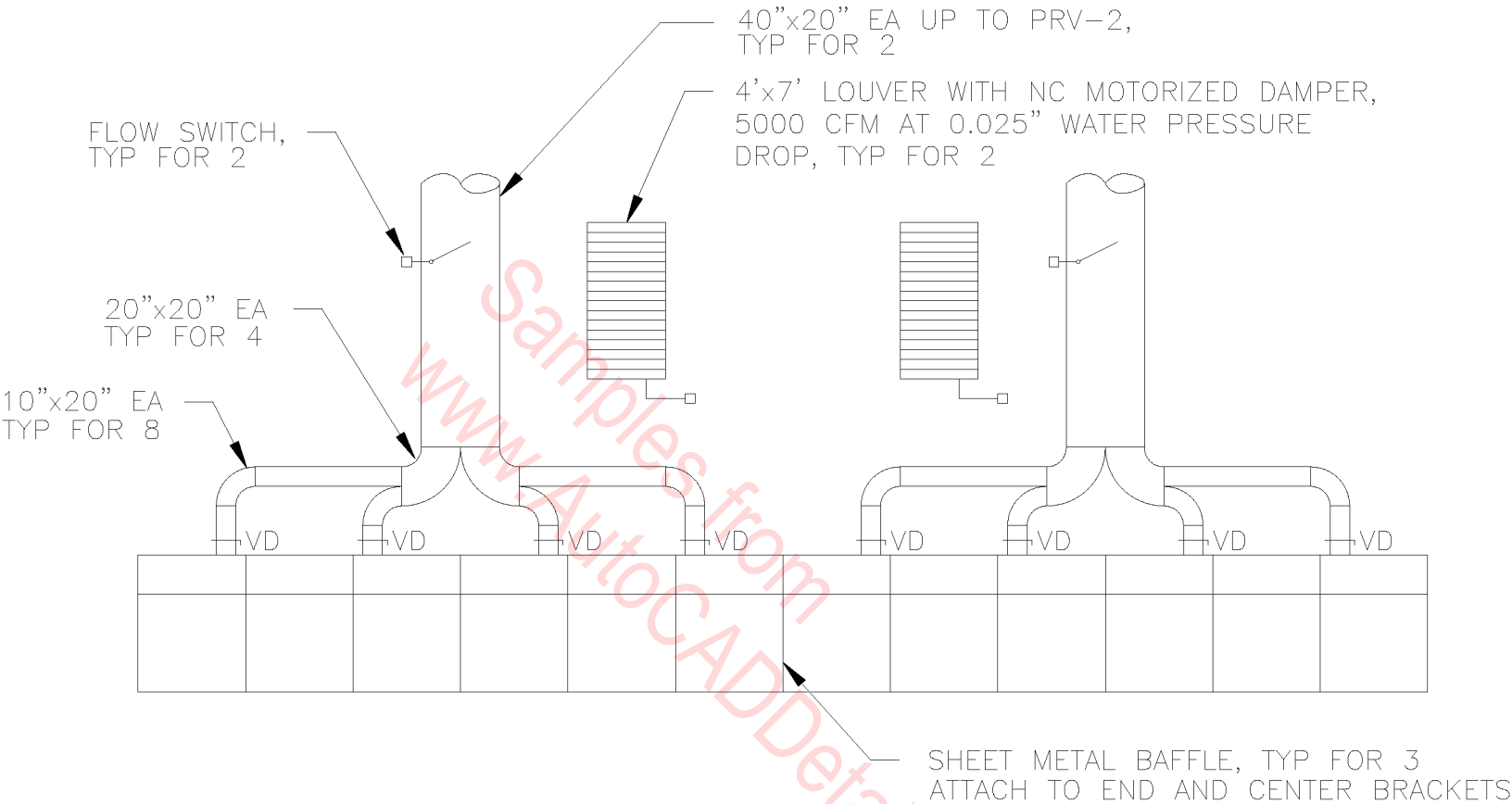
RELIEF HOOD DETAIL

N.T.S.



INLET OR EXHAUST LOUVERED PENTHOUSE

N.T.S.

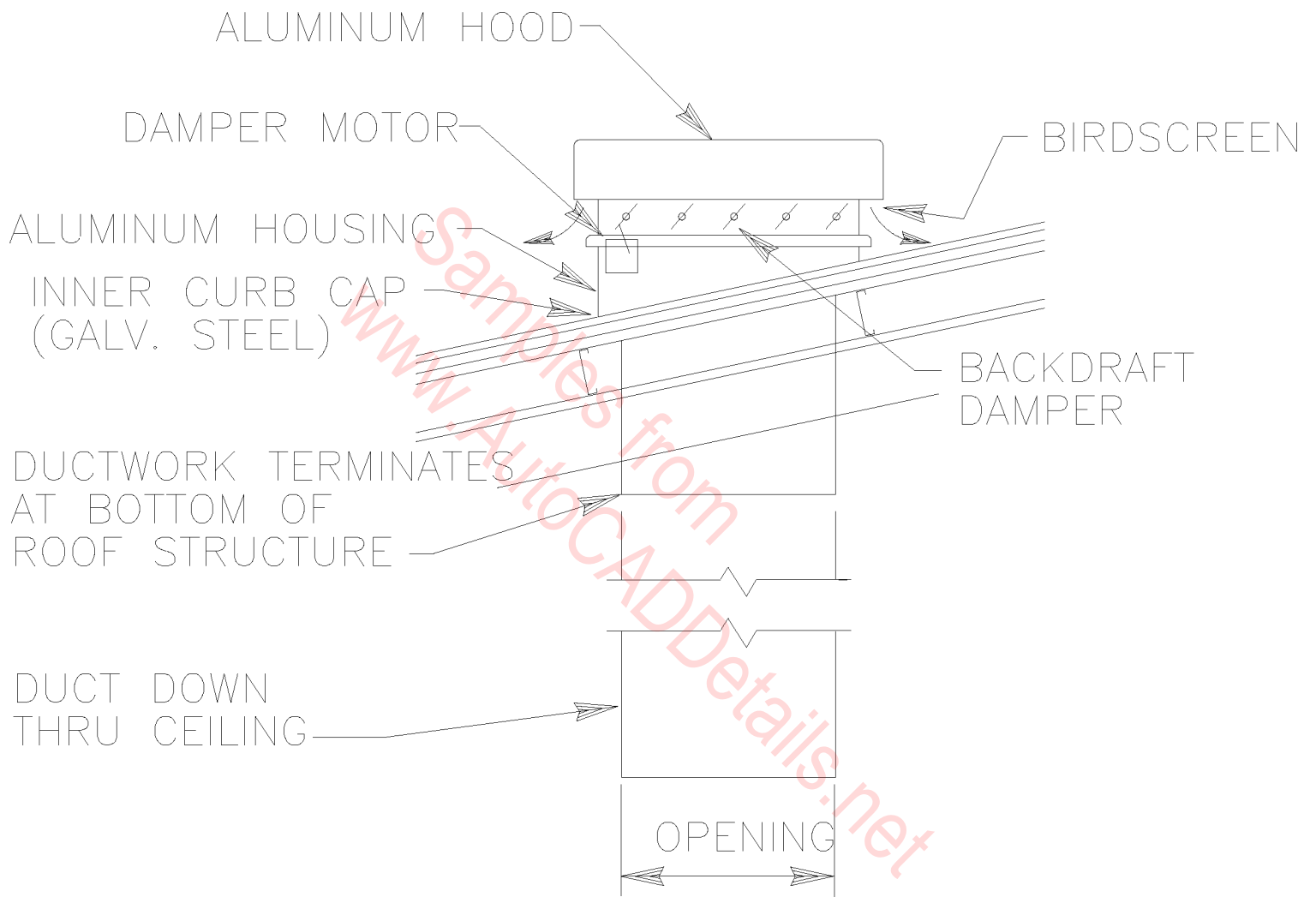


EXHAUST HOOD DETAIL

N.T.S.

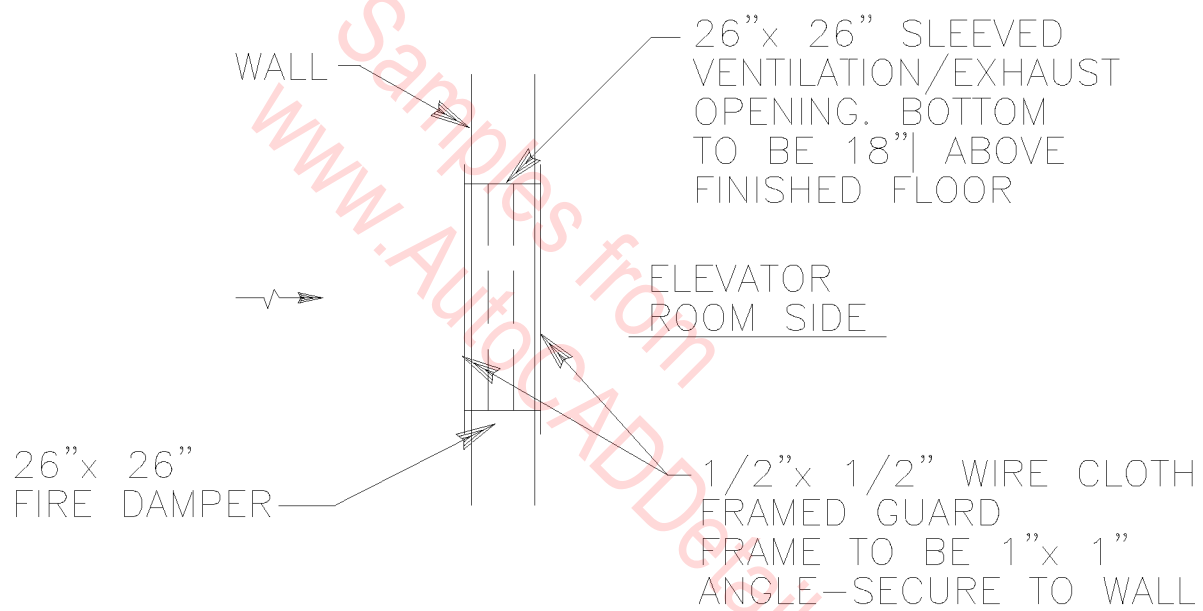
BATTERY AREA EXHAUST SEQUENCE OF CONTROLS

1. MOTORIZED DAMPERS SHALL OPEN FULL WHEN THE RESPECTIVE [PRV-X] IS ENERGIZED. CONTROL MAY BE BY THE FLOW SWITCH OR SEPARATE CONTACT.
2. BATTERY CHARGERS SHALL RECEIVE POWER ONLY UPON ACTIVATION OF THE RESPECTIVE FLOW SWITCH. SEE ELECTRICAL DWGS FOR WIRING.



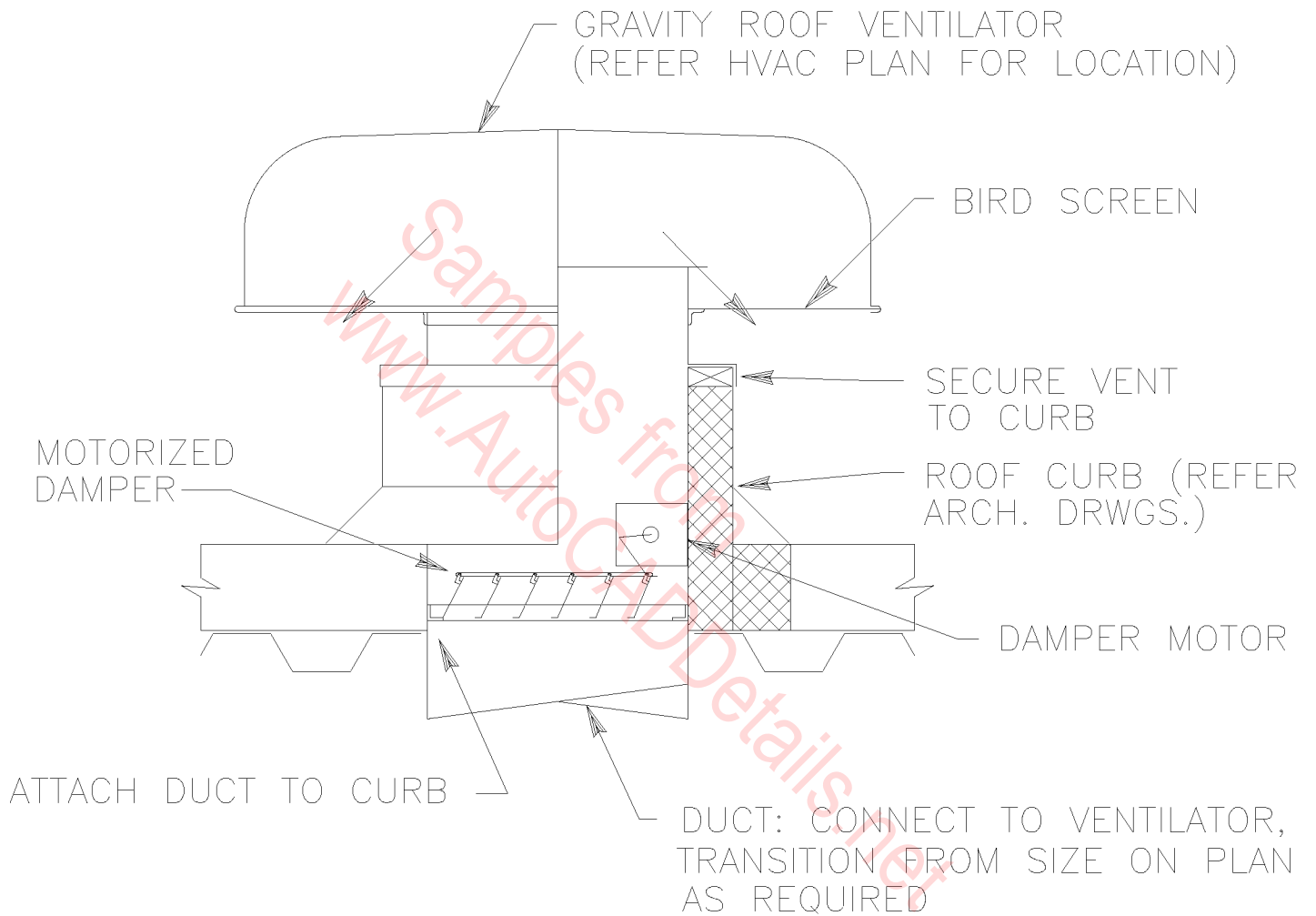
TYPICAL ROOF EXHAUST VENT

N.T.S.



VENTILATION/EXHAUST OPENING DETAIL

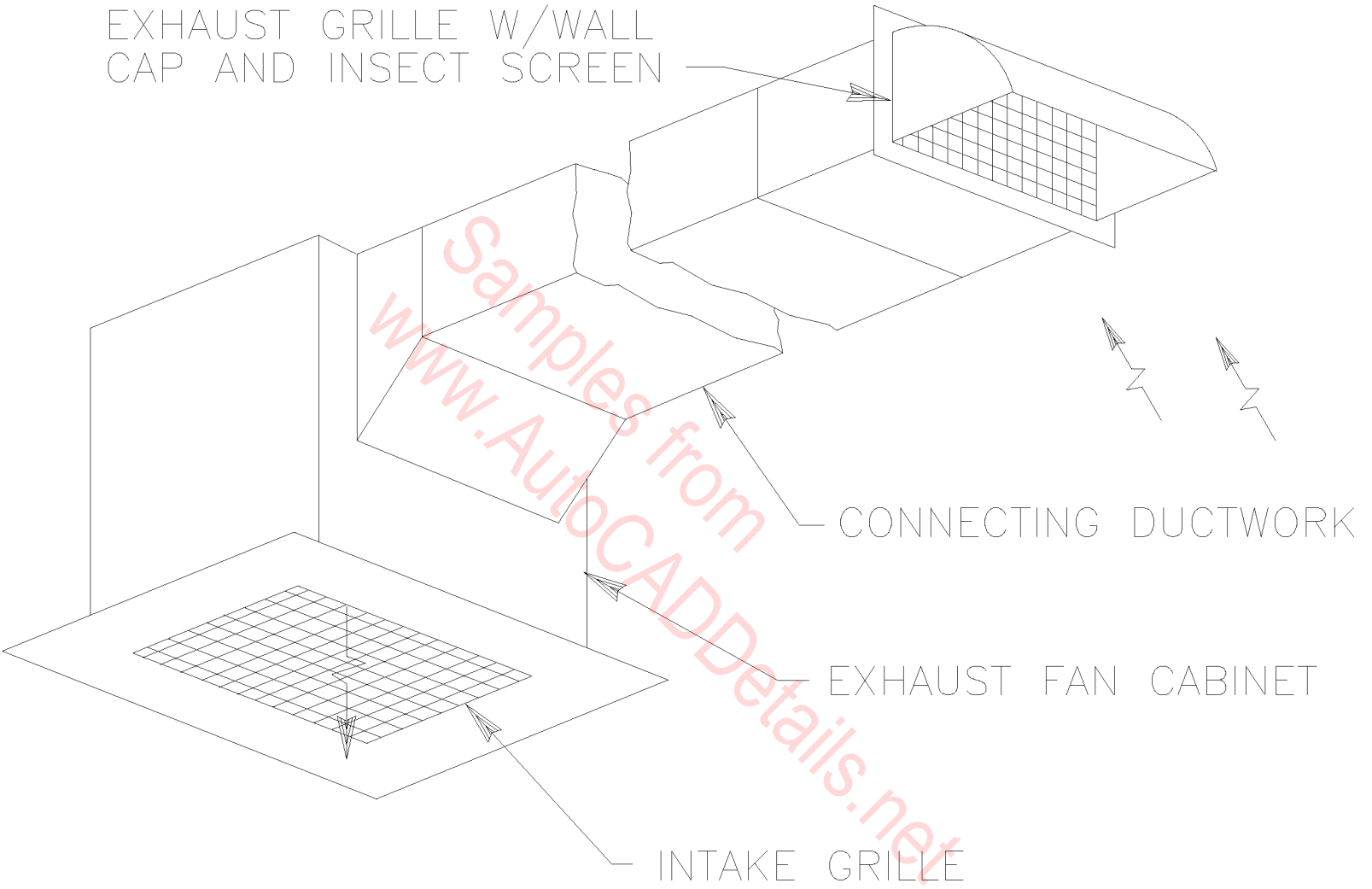
N.T.S.



TYPICAL GRAVITY VENTILATOR DETAIL

ROOF MOUNTED—INTAKE
N.T.S.

EXHAUST GRILLE W/WALL
CAP AND INSECT SCREEN



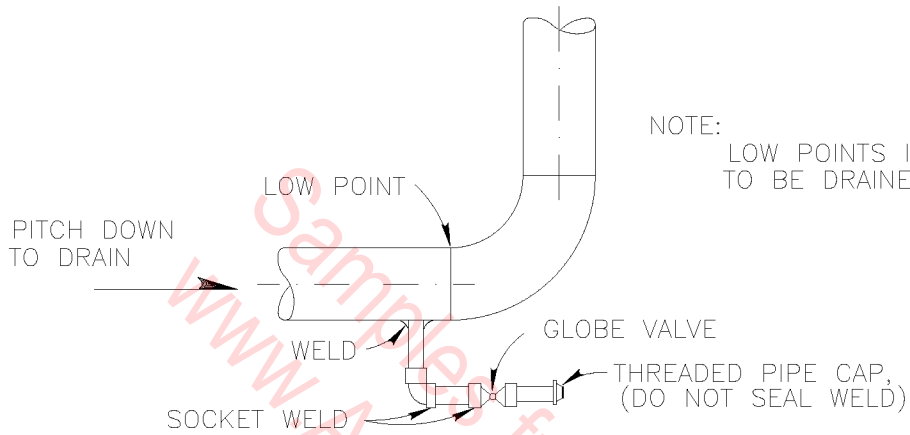
CONNECTING DUCTWORK

EXHAUST FAN CABINET

INTAKE GRILLE

CEILING EXHAUST FAN DETAIL

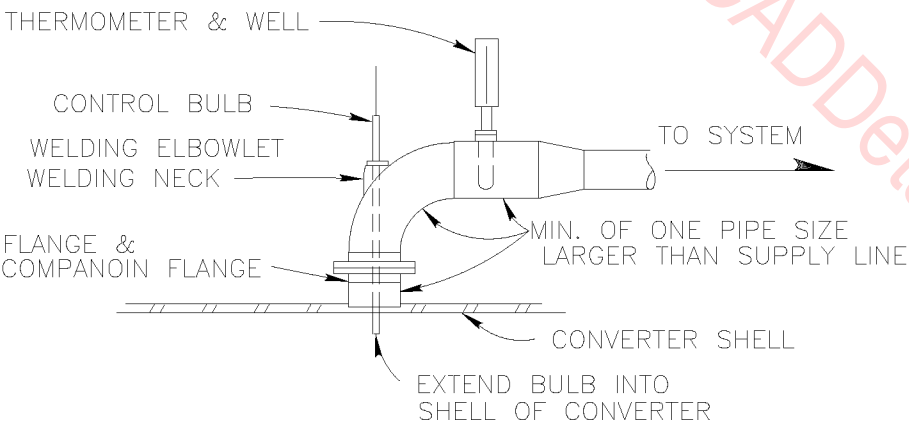
N.T.S.



NOTE:
LOW POINTS IN ALL PIPING
TO BE DRAINED

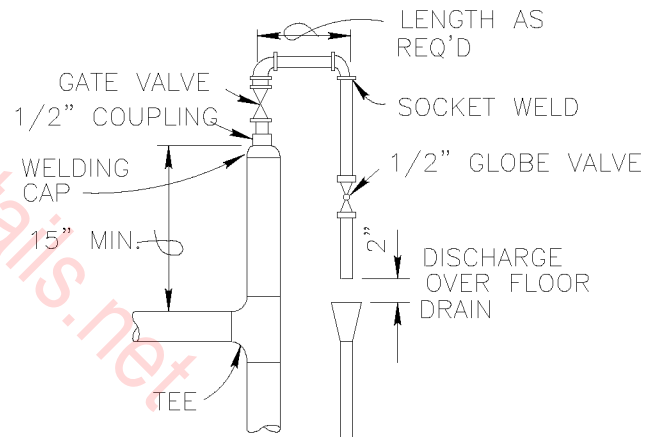
HTW DRAIN DETAIL

N.T.S.



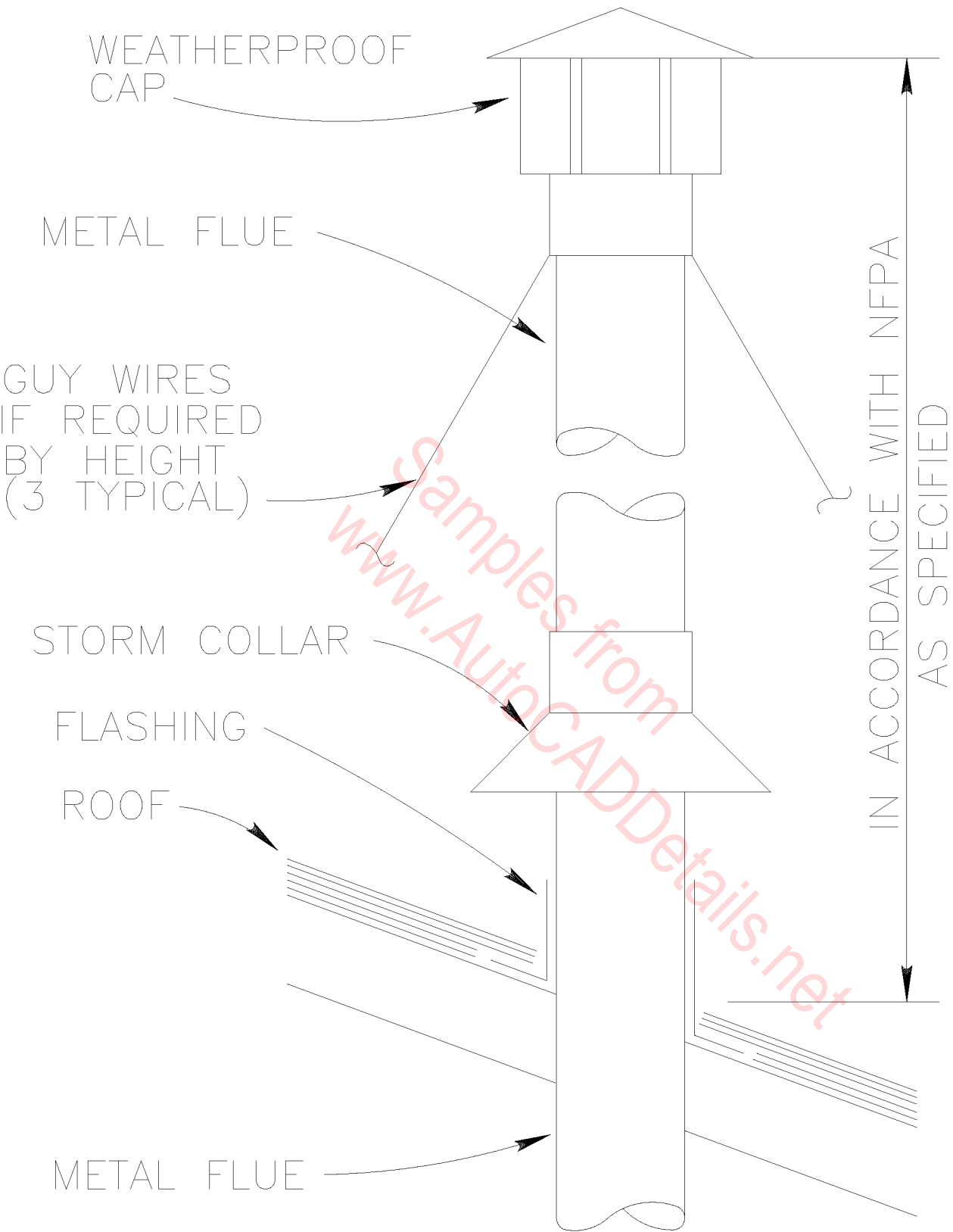
CONTROL BULB DETAIL

N.T.S.



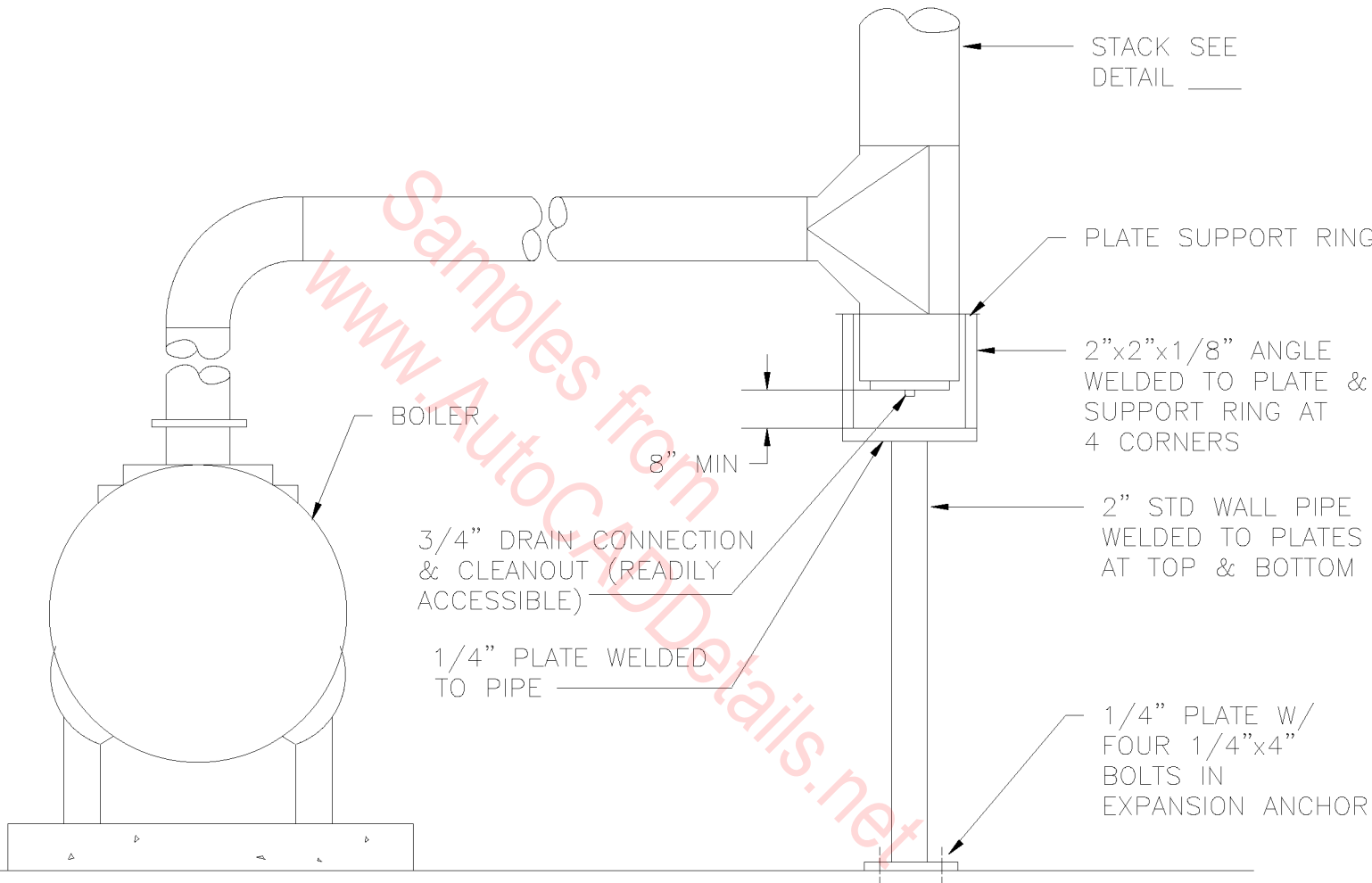
HTW AIR VENT DETAIL

N.T.S.



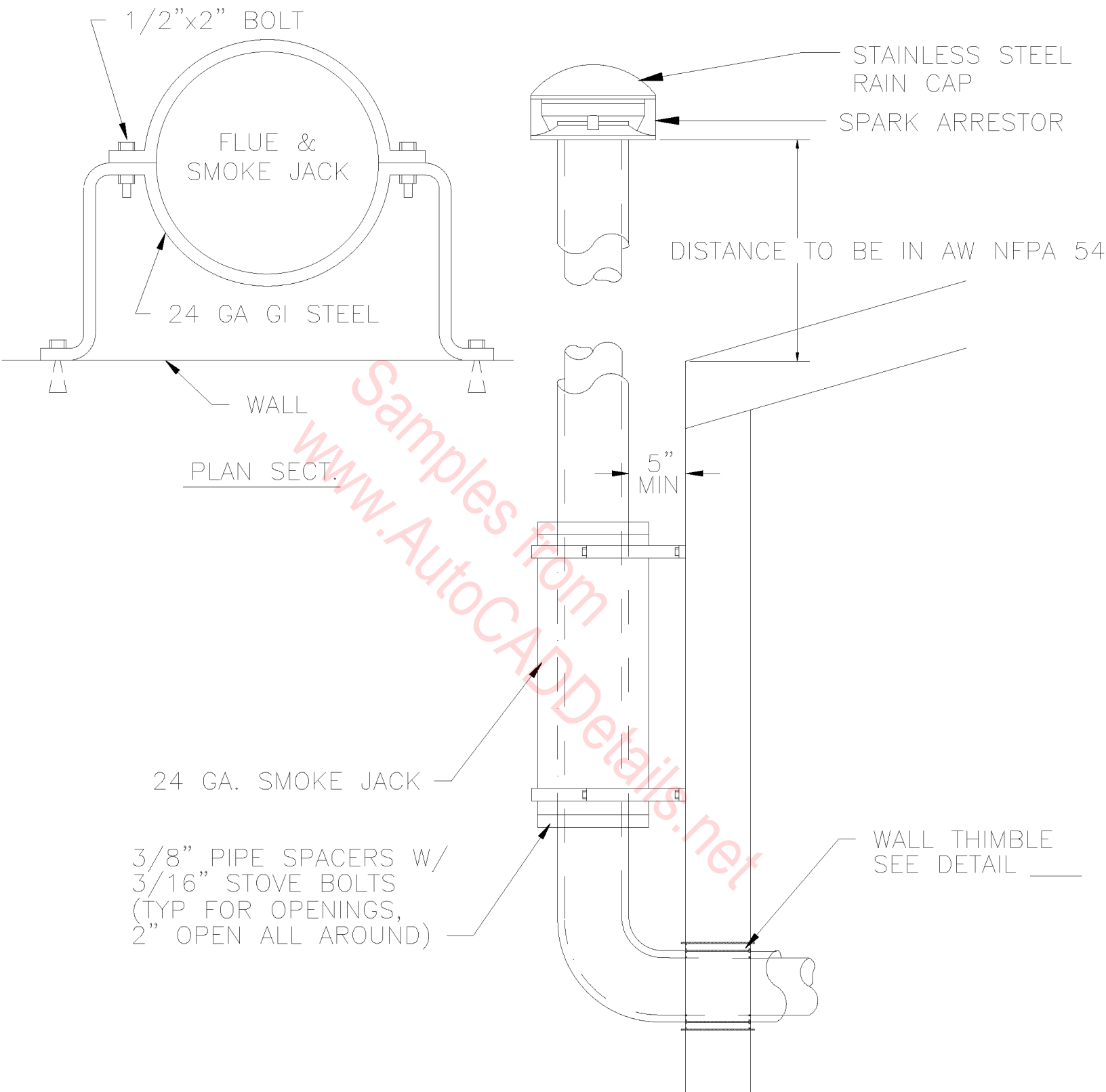
METAL FLUE STACK DETAIL

N.T.S.



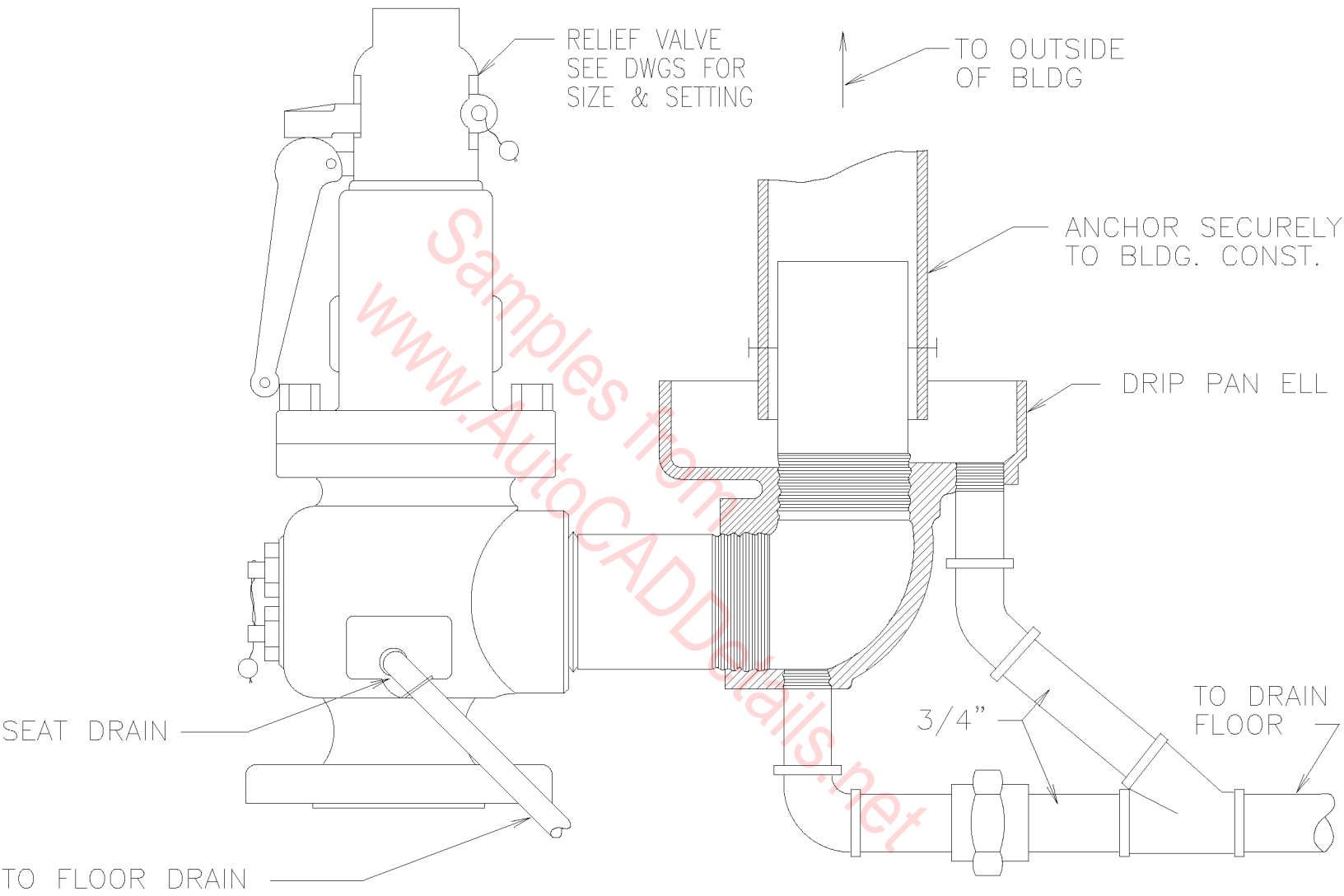
BOILER FLUE CONNECTION DETAIL

N.T.S.



FLUE STACK & WALL PENETRATION

N.T.S.



STEAM RELIEF VALVE DRIP PAN ELL

N.T.S.

BYPASS — INSTALL IN HORIZONTAL PLANE, LEVEL WITH TRAP OR IN VERTICAL PLANE, BELOW TRAP

1-1/2" TO COND. TANK AND PUMP

1-1/2" FROM CONVERTOR

1-1/2"

STRAINER

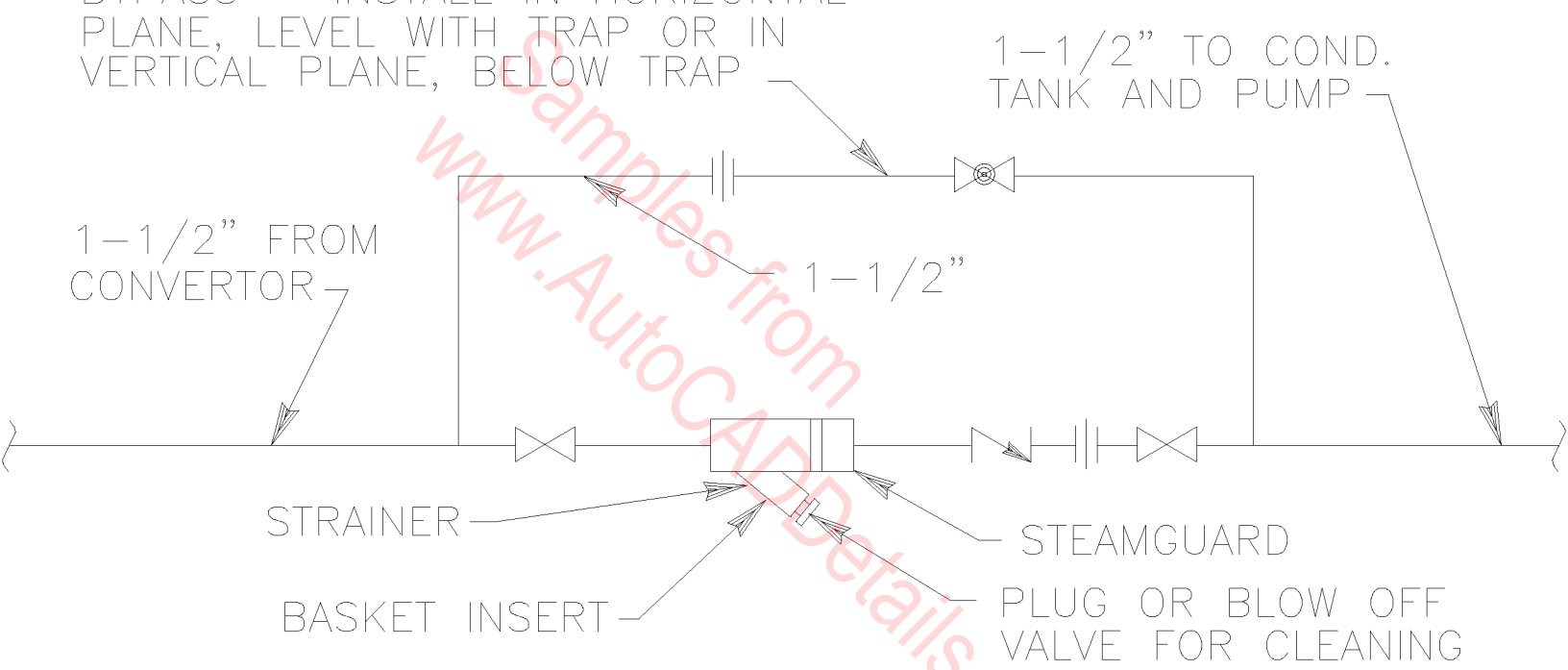
STEAMGUARD

BASKET INSERT

PLUG OR BLOW OFF VALVE FOR CLEANING

TYPICAL STEAMGUARD DETAIL

N.T.S.



PILOT OPERATED
PRESSURE-REDUCING
VALVE, CAPACITY AS
SHOWN ON HEATING PLANS

ASME SAFETY
VALVE (SAME PIPE
SIZE AS PRV)

GALV.
VTR

INLET PRESSURE
GAUGE

REDUCED PRESS.
GAUGE

FITTINGS TO
BE ONE SIZE
LARGER THAN
PRV

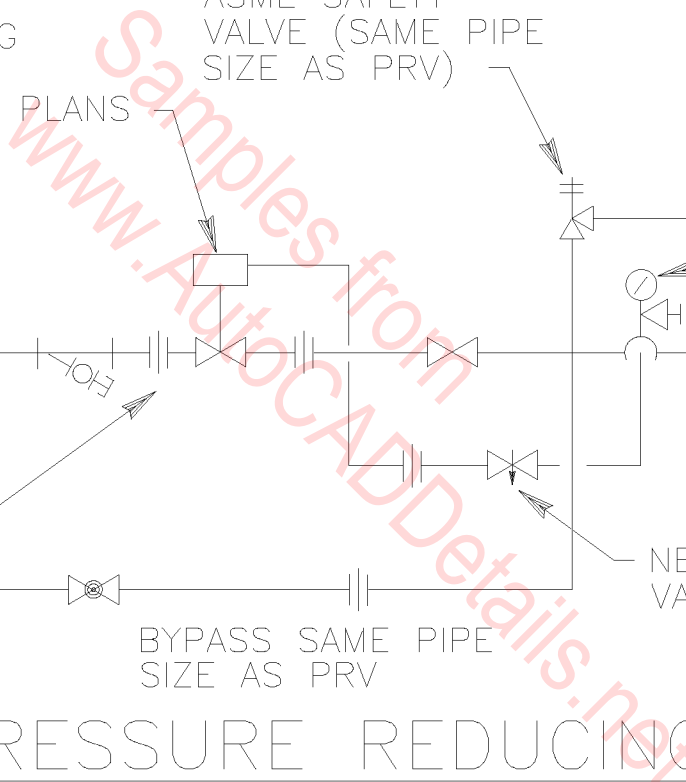
TO
CONVERTOR

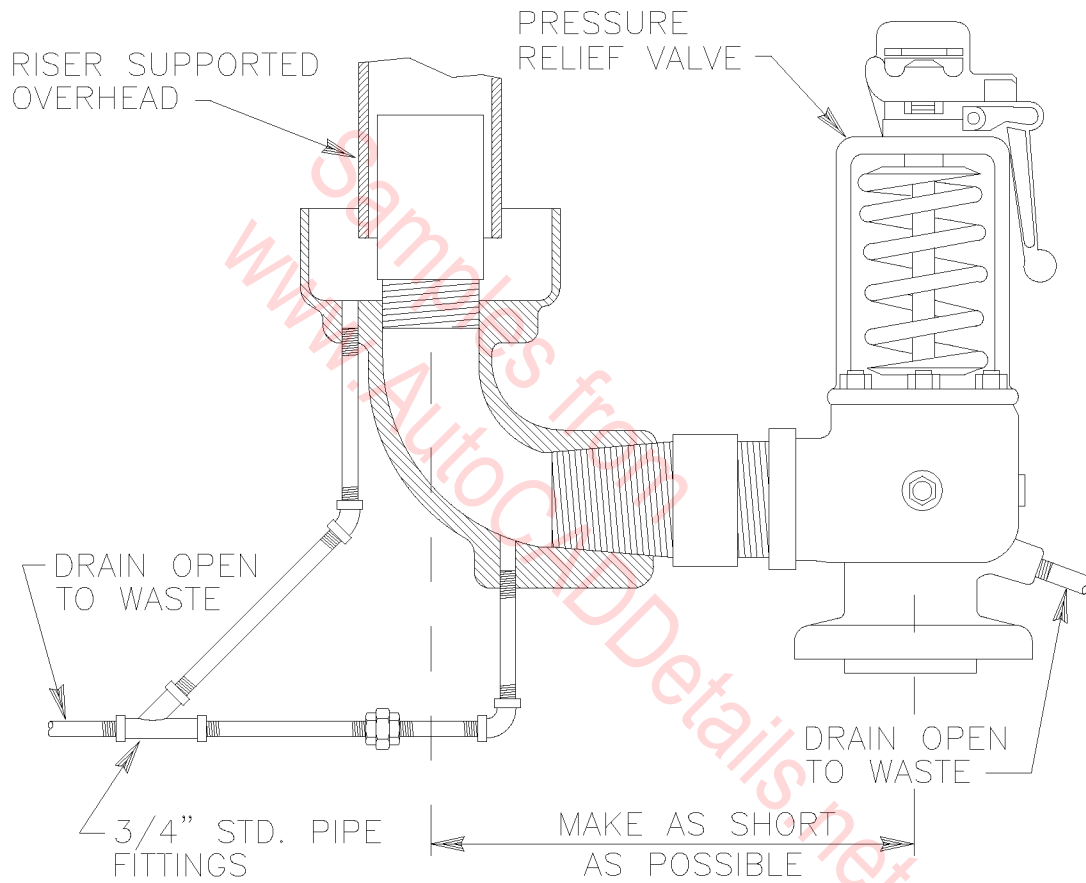
NEEDLE
VALVE

BYPASS SAME PIPE
SIZE AS PRV

TYPICAL PRESSURE REDUCING SET DETAIL

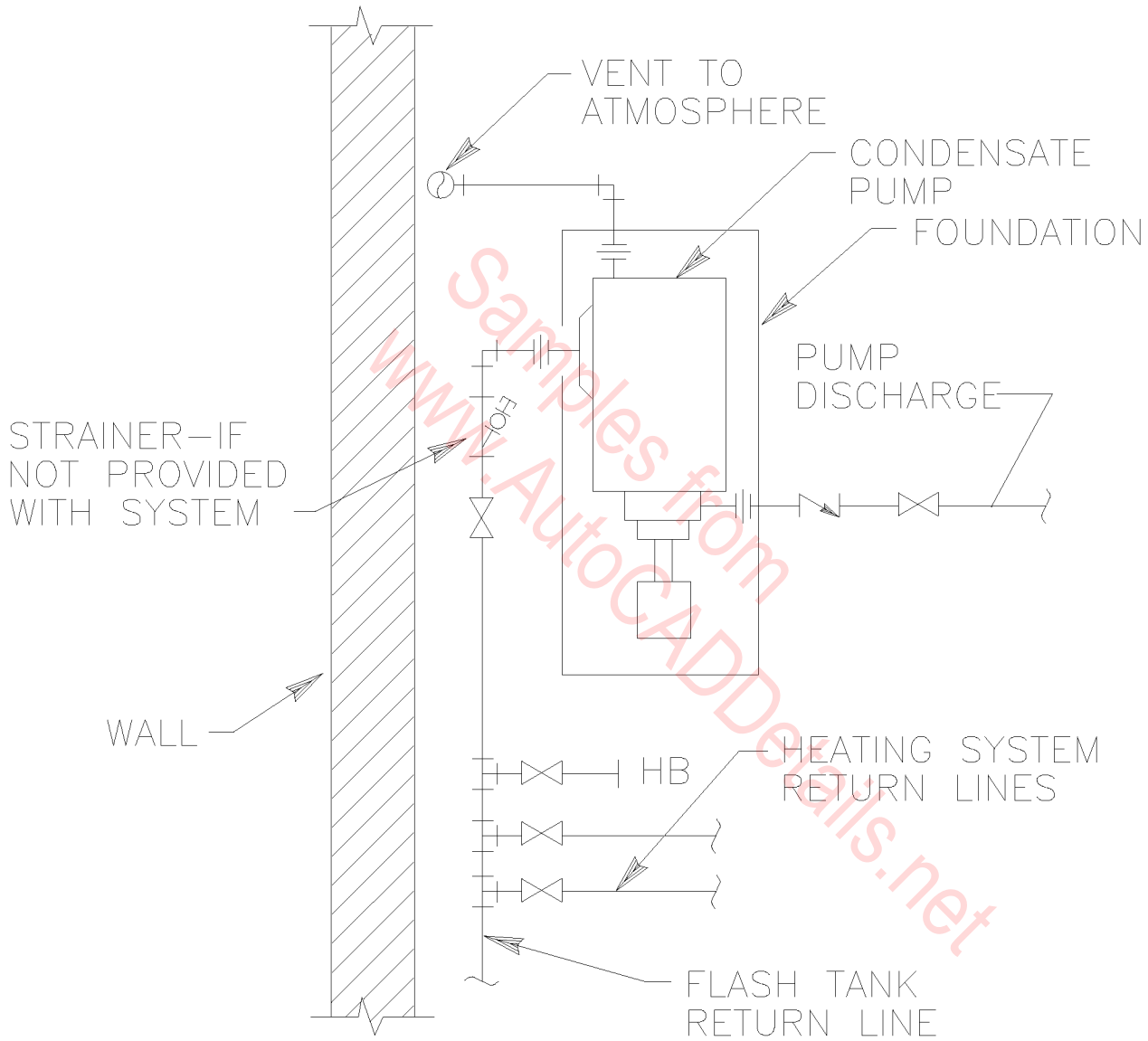
N.T.S.





DRIPPED ELBOW-SAFETY VALVE VENT DETAIL

N.T.S.

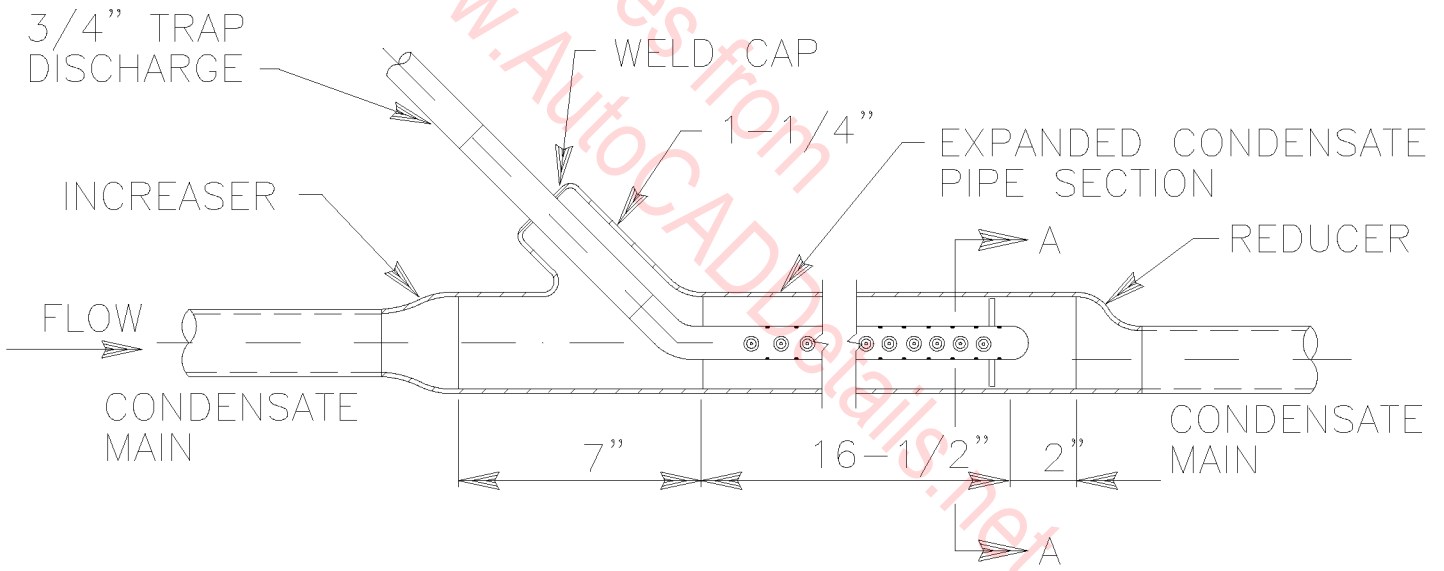
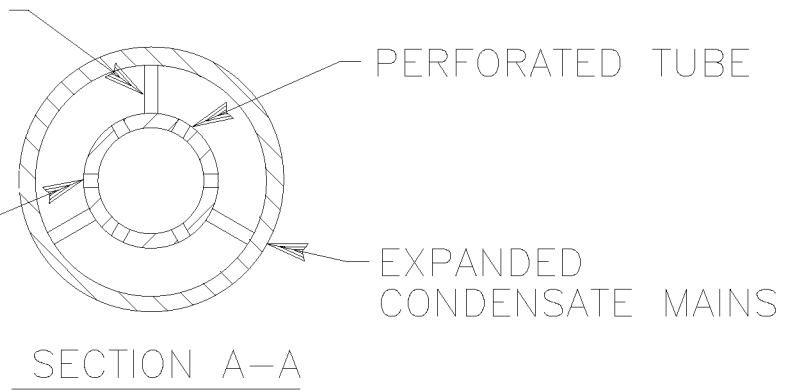


SIMPLEX CONDENSATE PUMP DETAIL

N.T.S.

1" x 1/8" THICK GUIDE FINS
WELDED TO PERFORATED TUBE

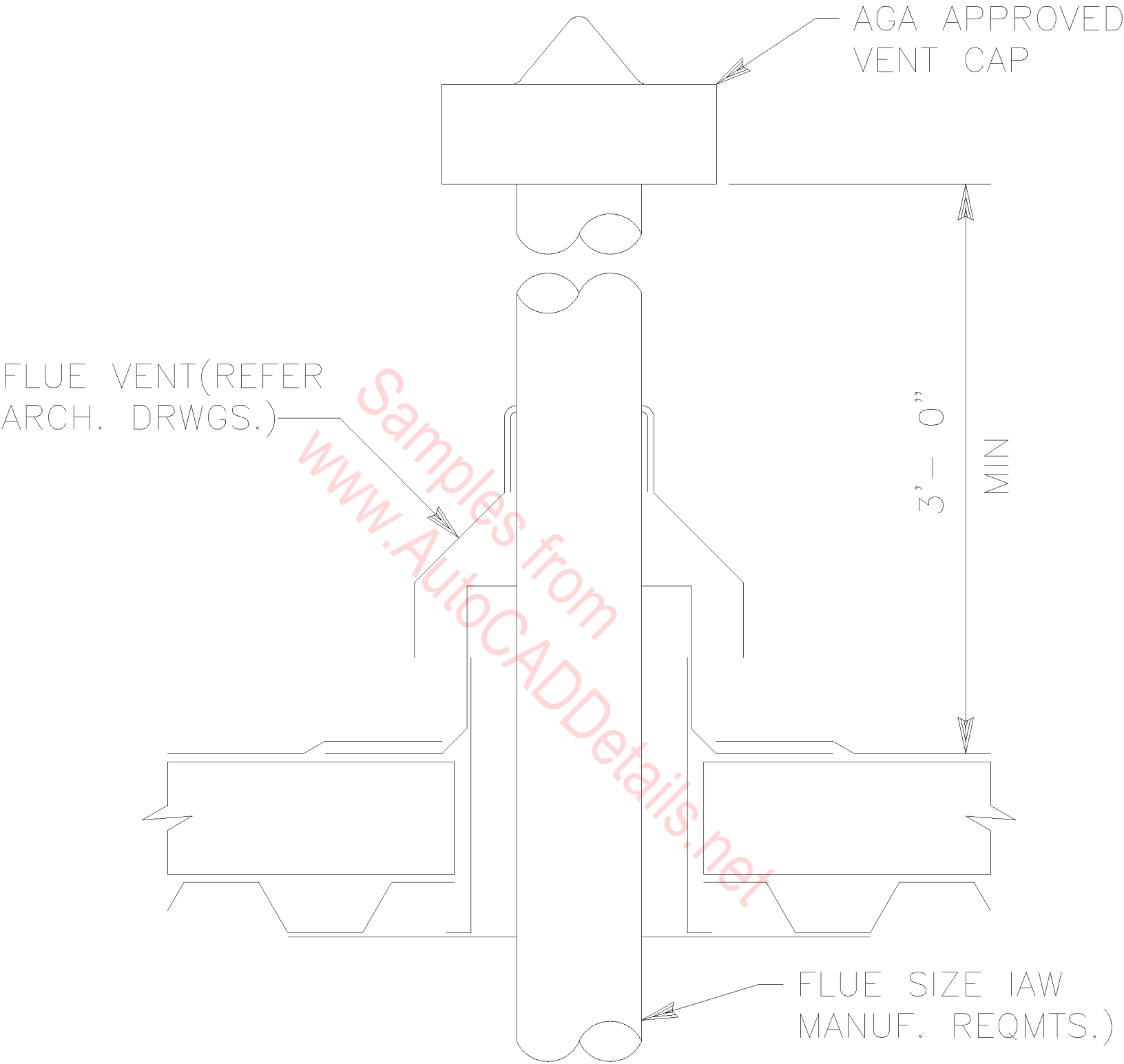
EQUALLY SPACED HOLES
IN PIPE PERIMETER



ALL PIPE SHALL BE SCH. 80, 3/4"
PERFORATED TUBE W/ (78) 1/8"
HOLES @ 1-1/8" C-C IN ROWS

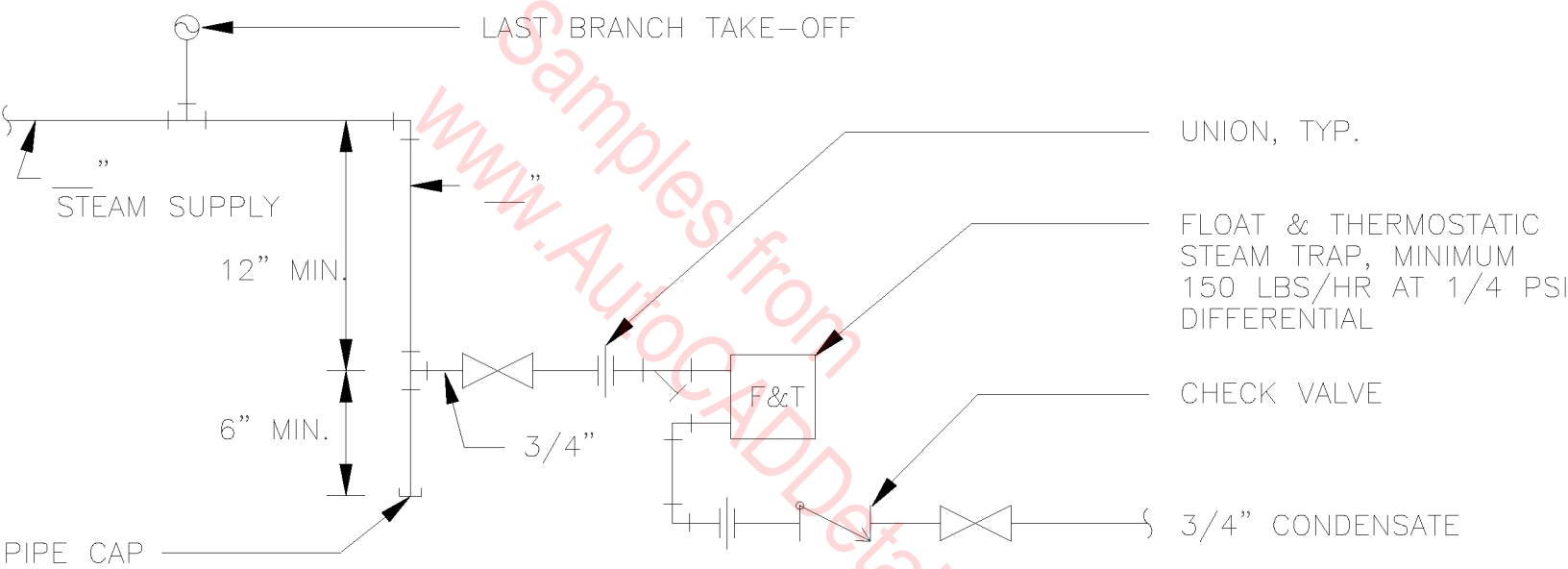
TRAP DISCHARGE CONNECTION DETAIL

TRAPPED HPS MAINS ONLY
N.T.S.

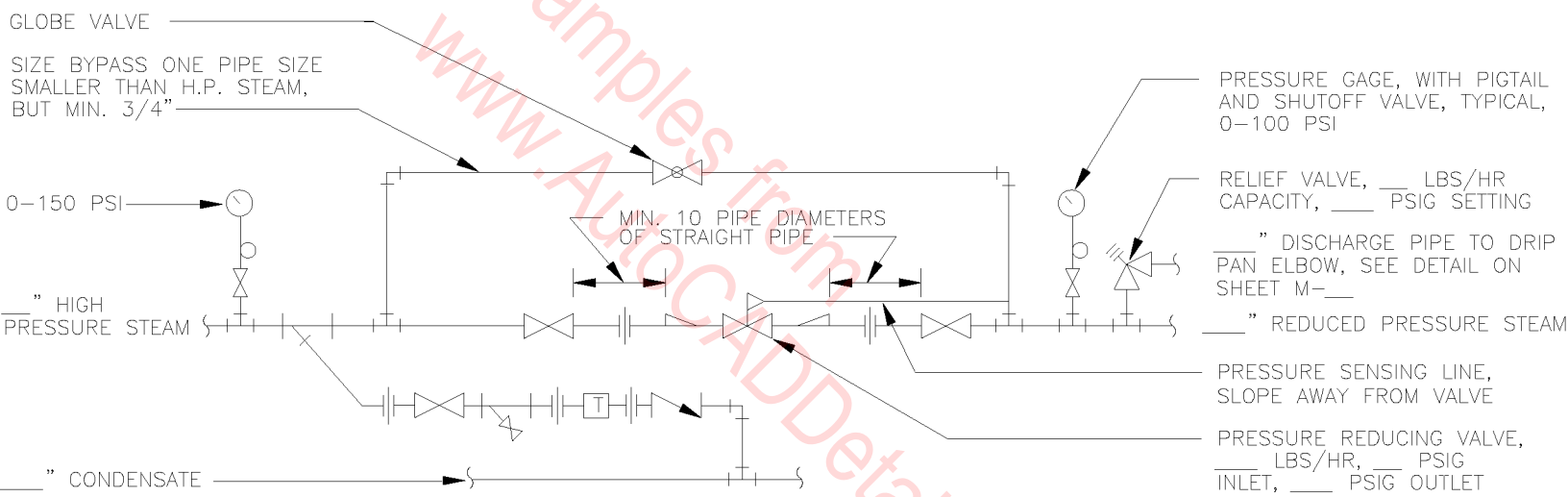


TYPICAL FLUE VENT DETAIL

BOILER, AND UNIT HEATERS
N.T.S.



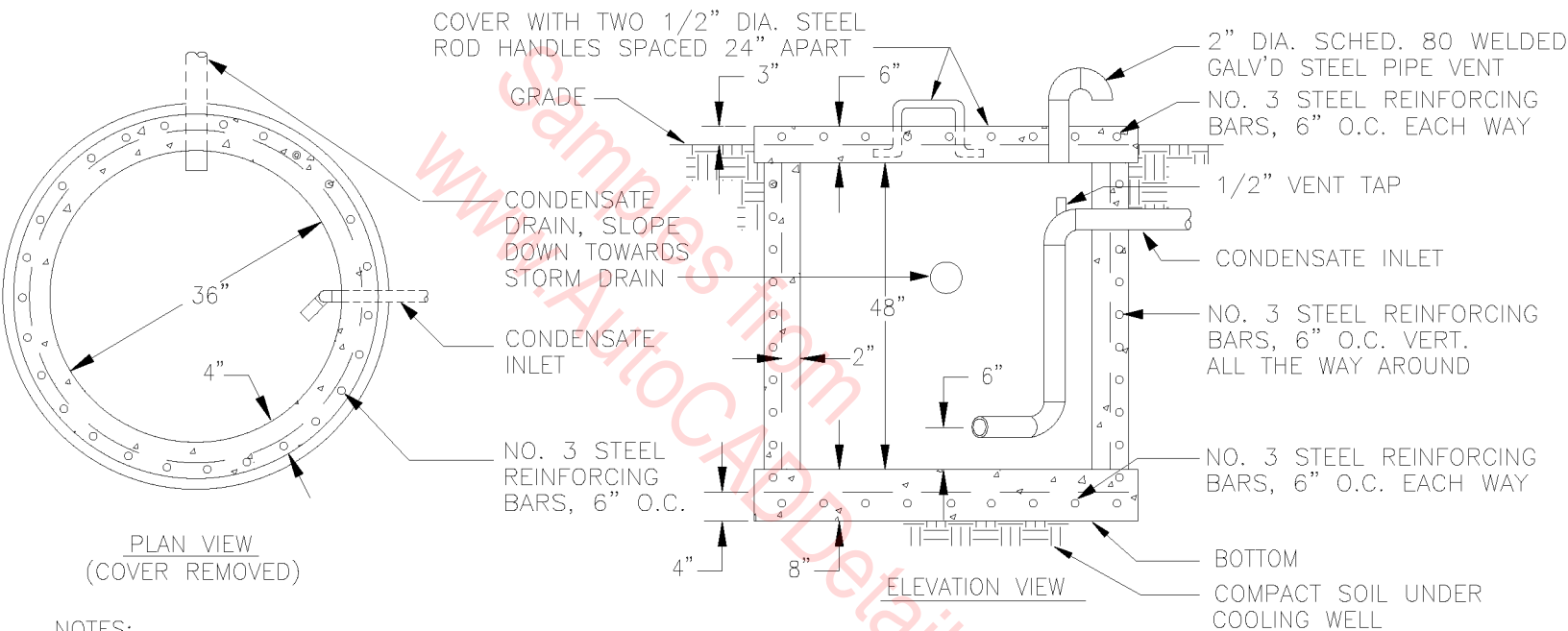
END-OF-MAIN STEAM TRAP
 N.T.S.



STEAM PRESSURE REDUCING STATION

N.T.S.

Samples from
 www.AutoCADDetails.net

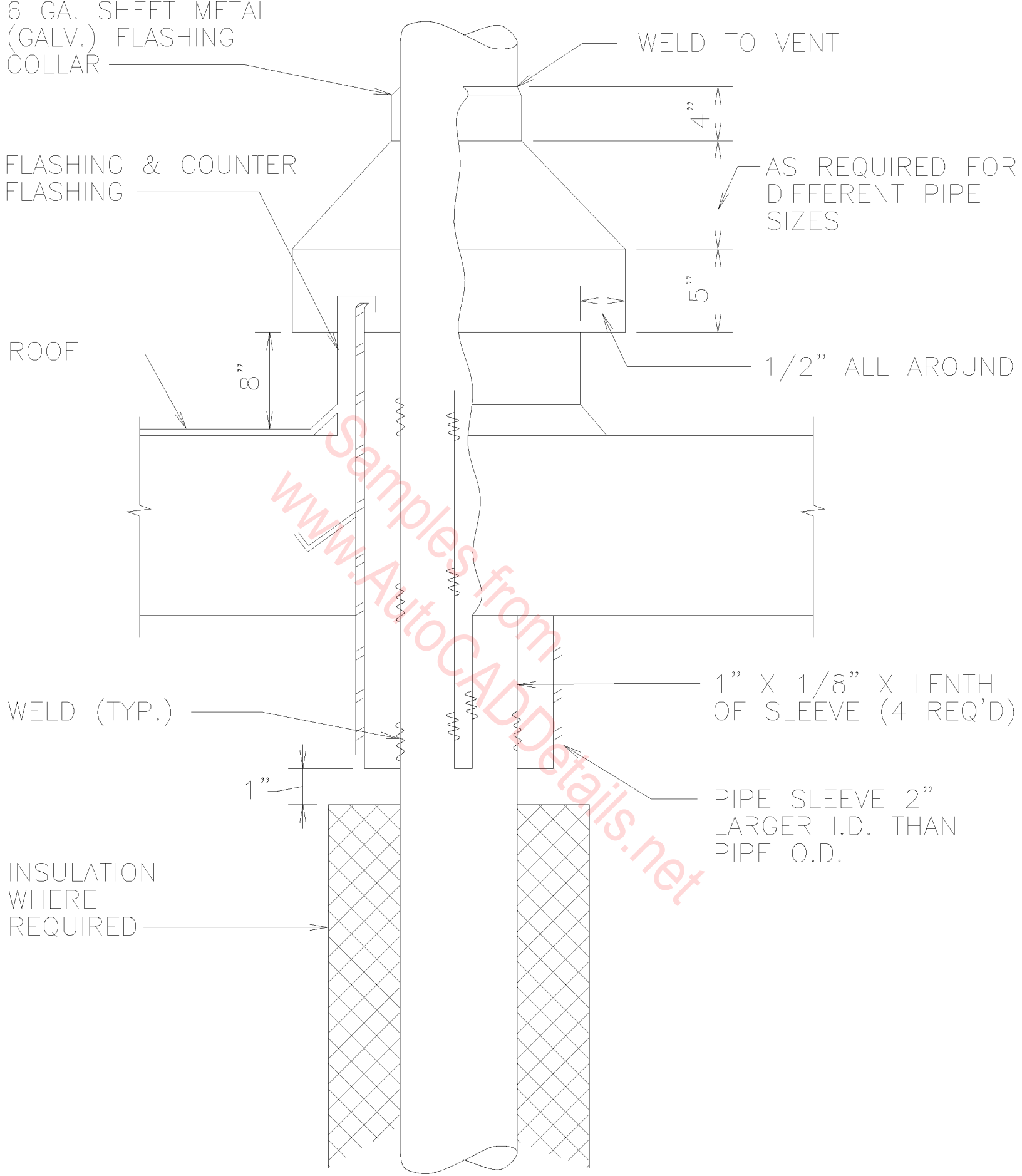


NOTES:

1. FABRICATE COOLING WELL FROM PRECAST OR CAST-IN-PLACE CONCRETE. SET BOTTOM ON COMPACTED SOIL.
2. CAULK COOLING WELL BOTTOM SEAM AND ALL PIPE PENETRATIONS WITH CEMENT MORTAR.
3. SEE PLANS FOR PIPE SIZES.

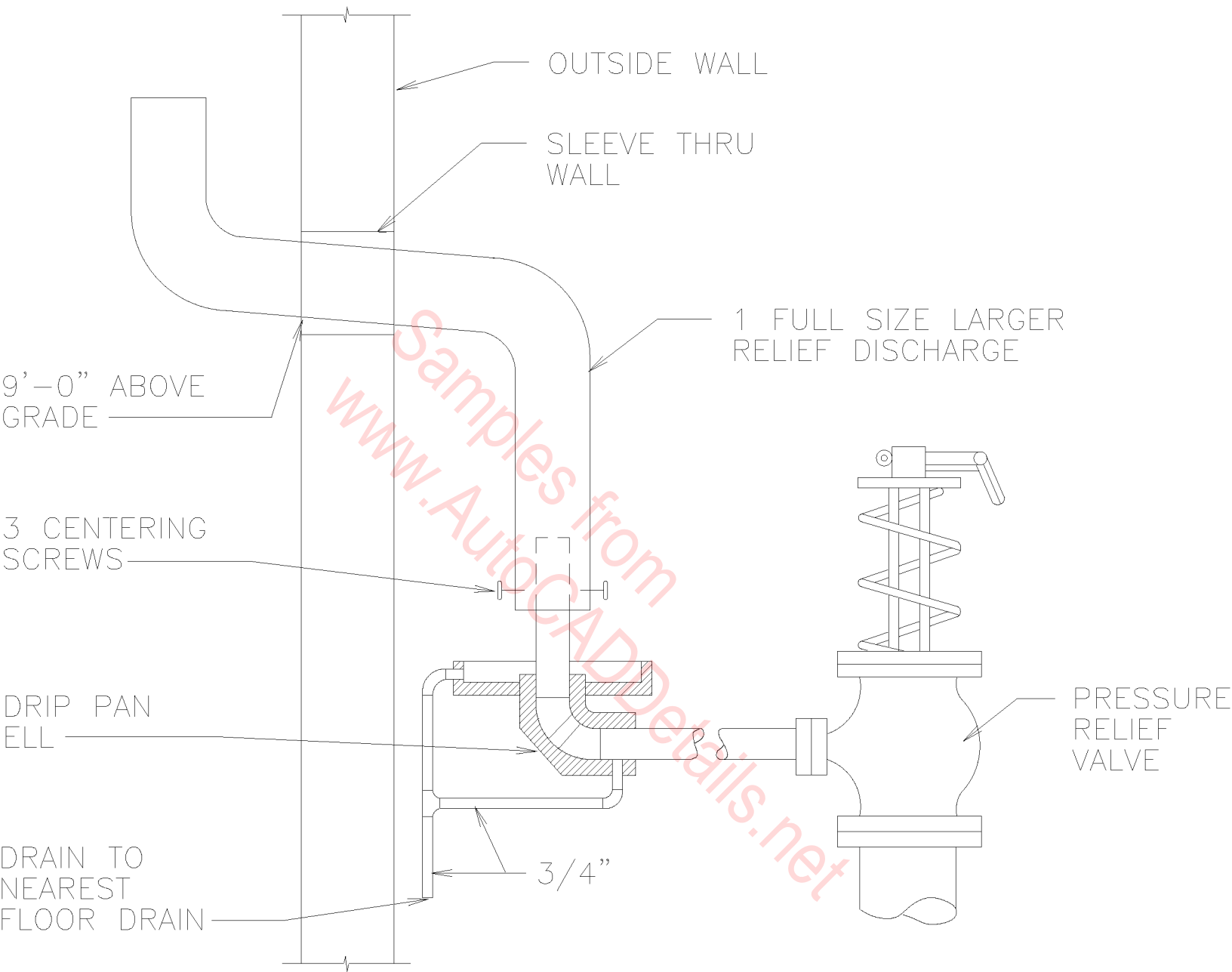
COOLING WELL

N.T.S.



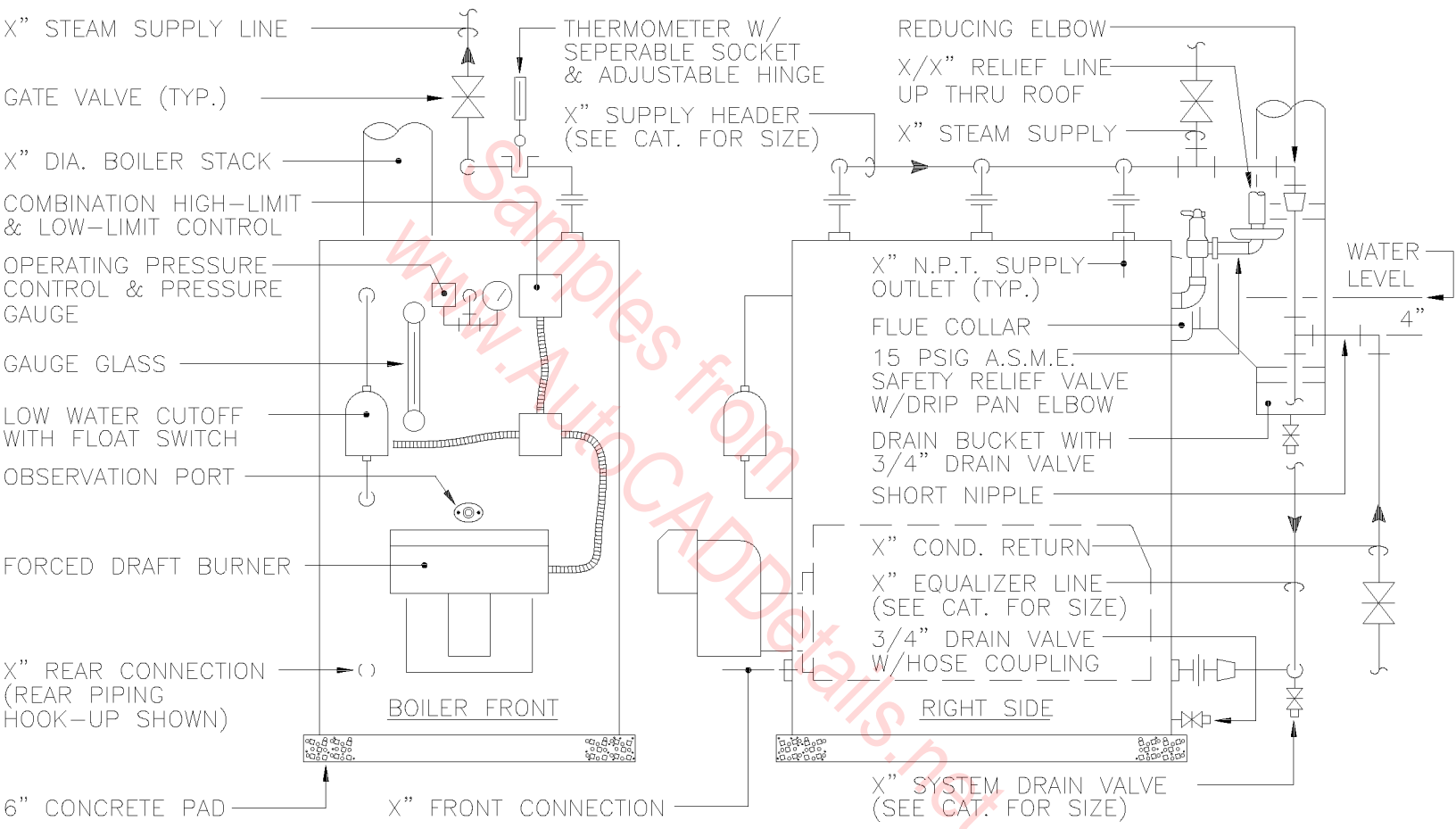
HOT VENT DETAIL

N.T.S.



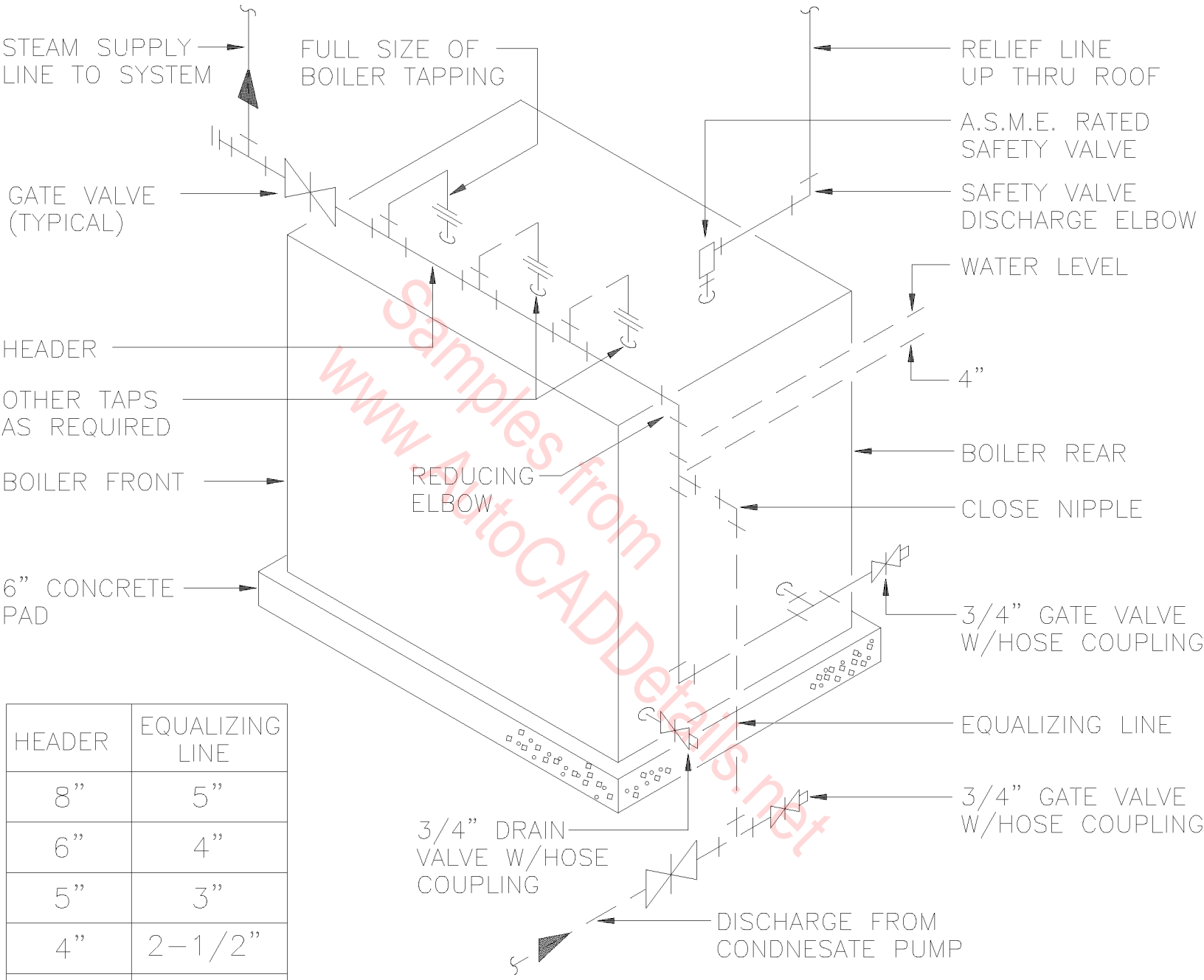
RELIEF VALVE PIPING DETAIL

N.T.S.



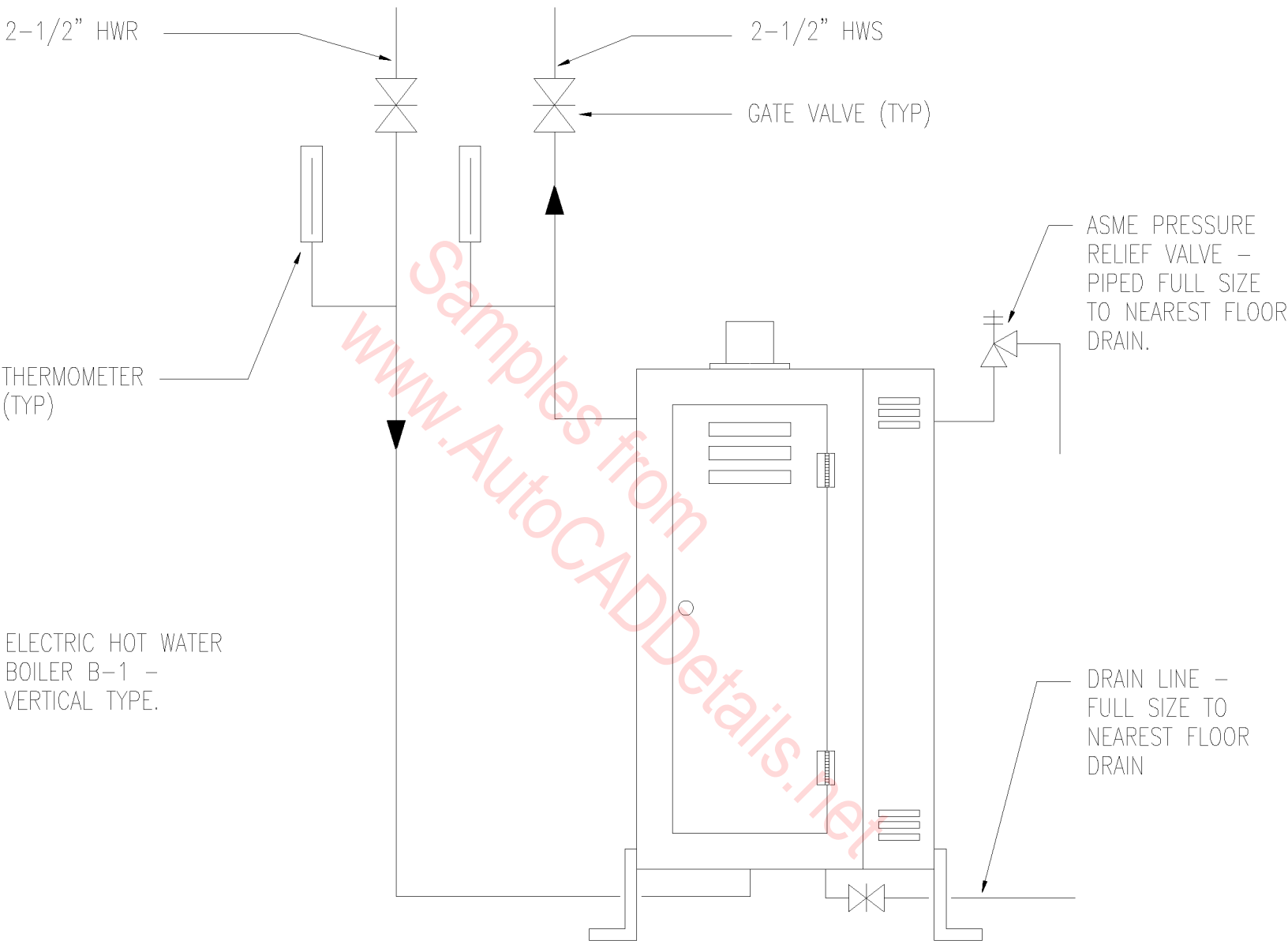
STEAM SECTIONAL CAST-IRON
FORCED-DRAFT BOILER DETAIL
 N.T.S

DESIGNER NOTE:
 MAX. BOILER WORKING
 PRESSURE - 15 PSIG



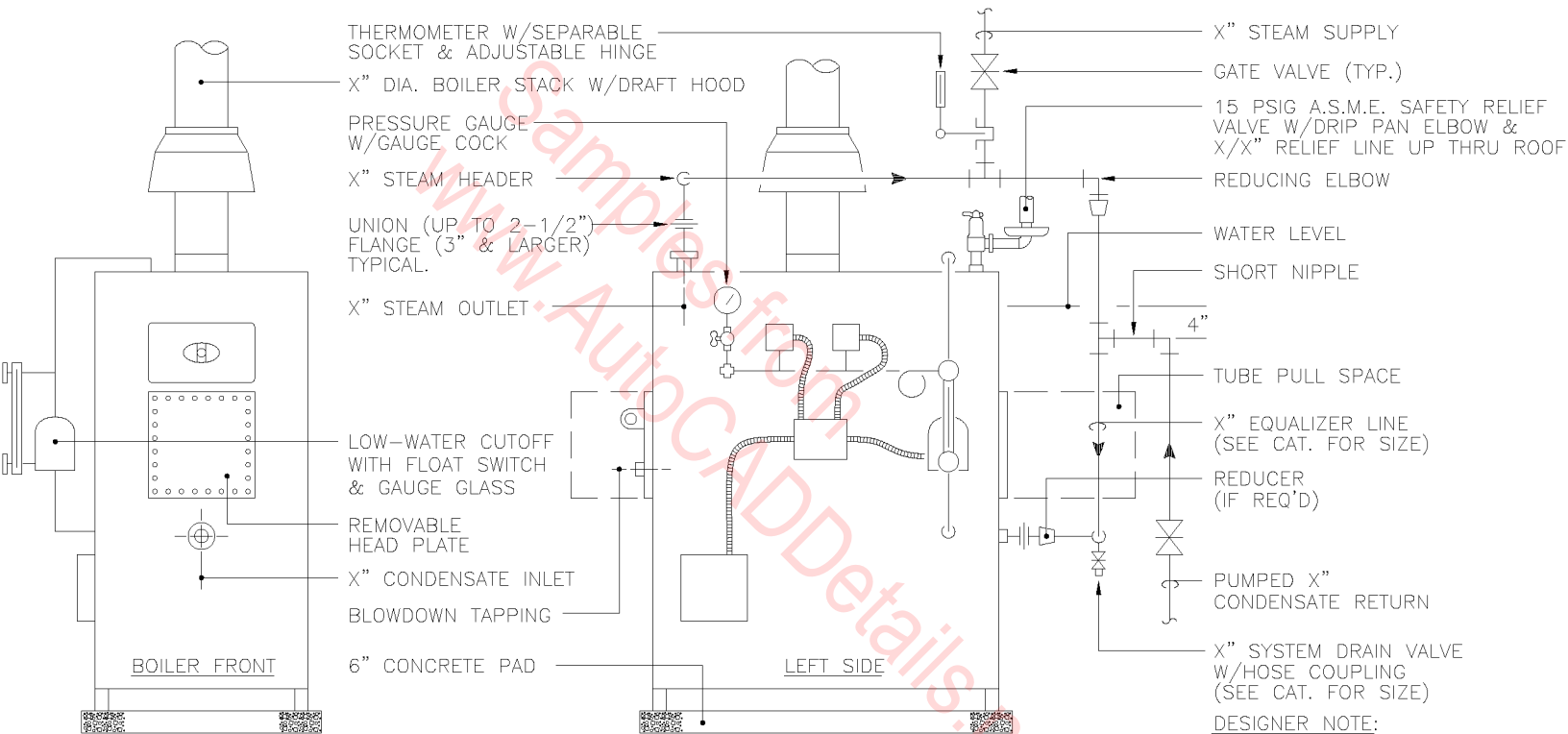
HEADER	EQUALIZING LINE
8"	5"
6"	4"
5"	3"
4"	2-1/2"
3"	2"
2-1/2"	1-1/2"
2"	1-1/2"

LOW PRESSURE STEAM
BOILER PIPING DETAIL
 N.T.S.



ELECTRIC HOT WATER BOILER DETAIL

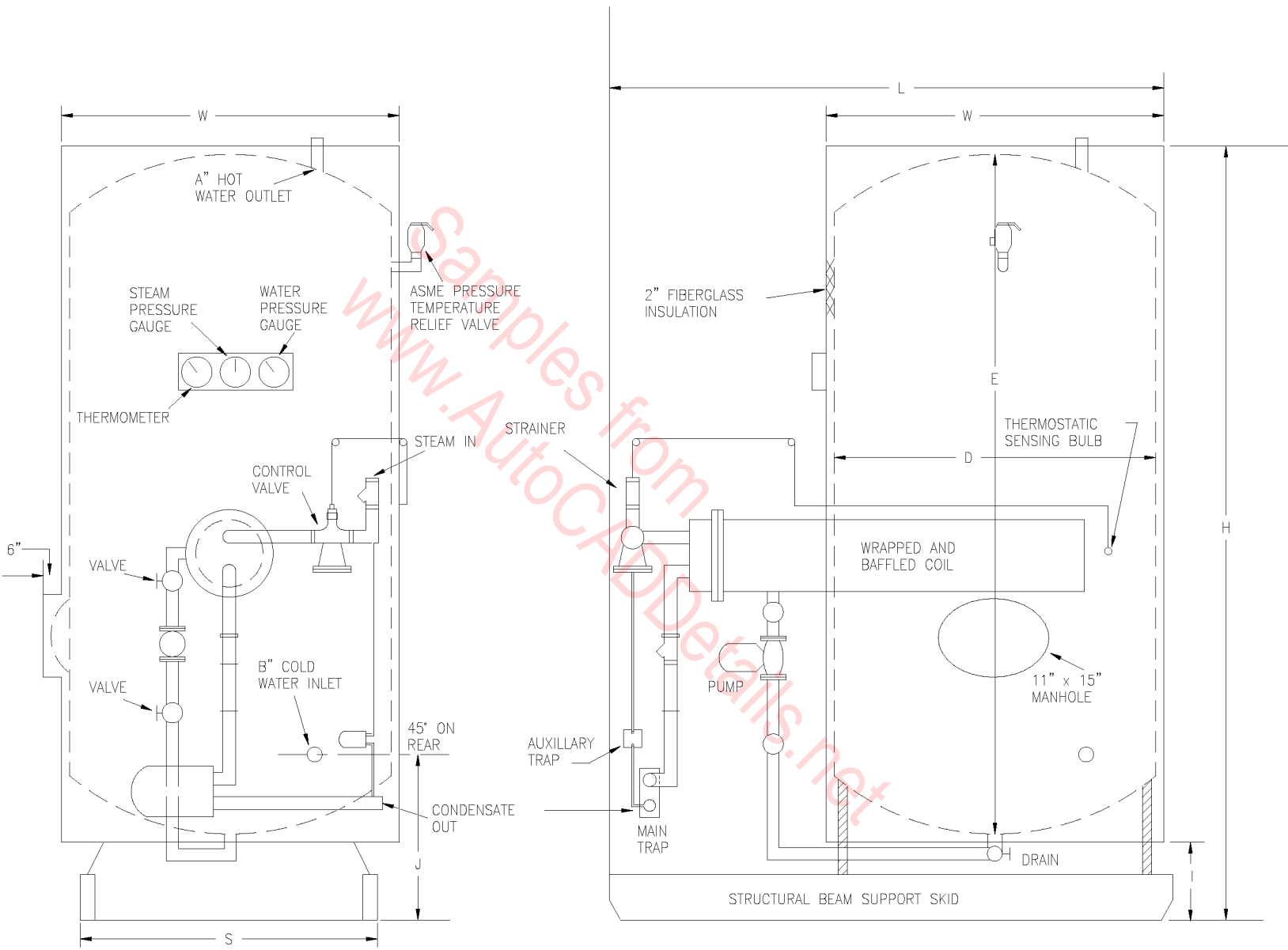
N.T.S.



DESIGNER NOTE:
HAND HOLE OPENING
FOR GROSS OUTPUT
OF 1,600,000 BTUH
& LARGER

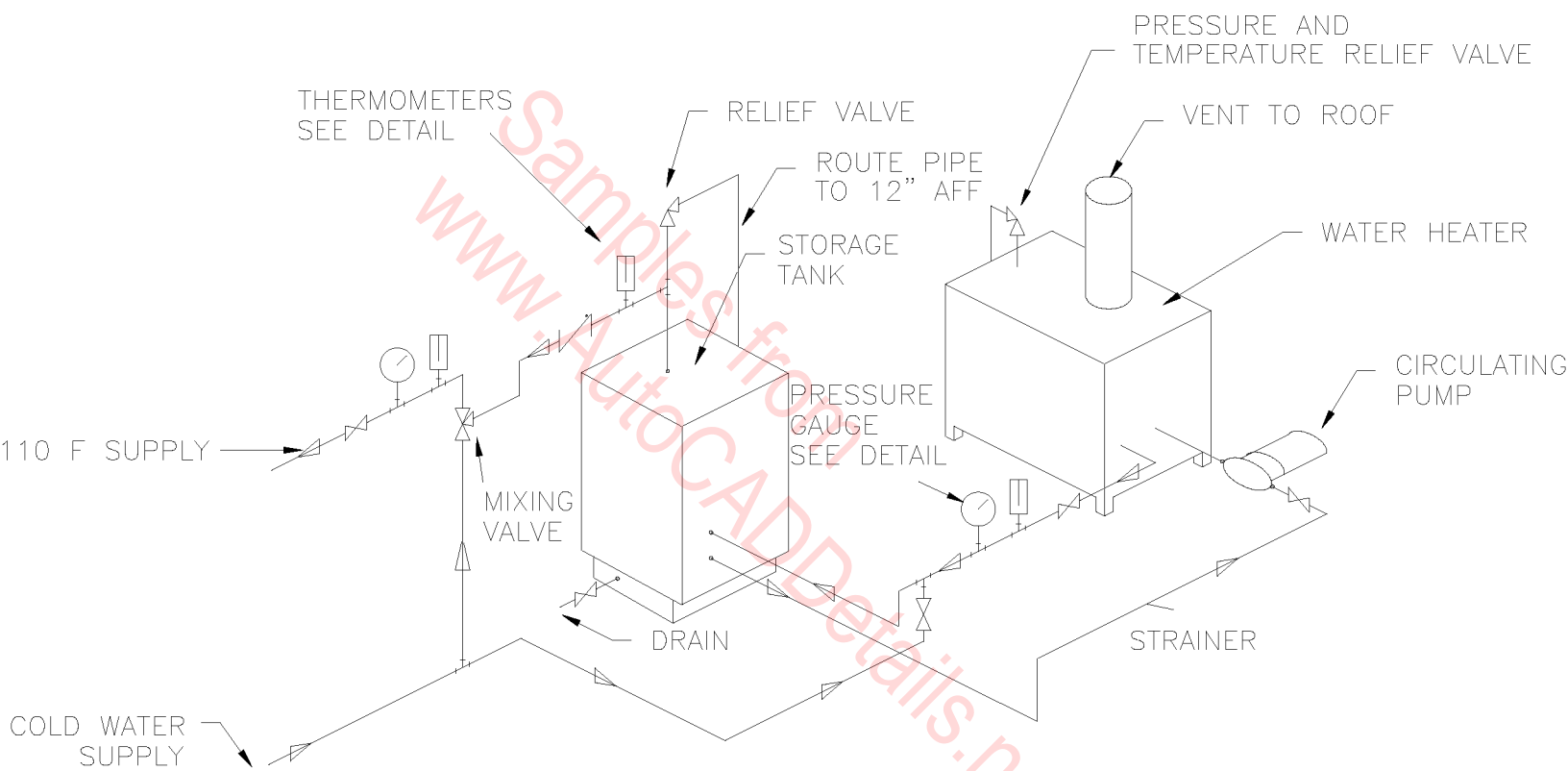
STEAM WATER-TUBE
ATMOSPHERIC BOILER DETAIL
N.T.S

DESIGNER NOTE:
MAX. BOILER WORKING
PRESSURE - 15 PSIG
DESIGNER NOTE:
VERIFY CLEARANCES
FOR TUBE PULL
SPACE EITHER END



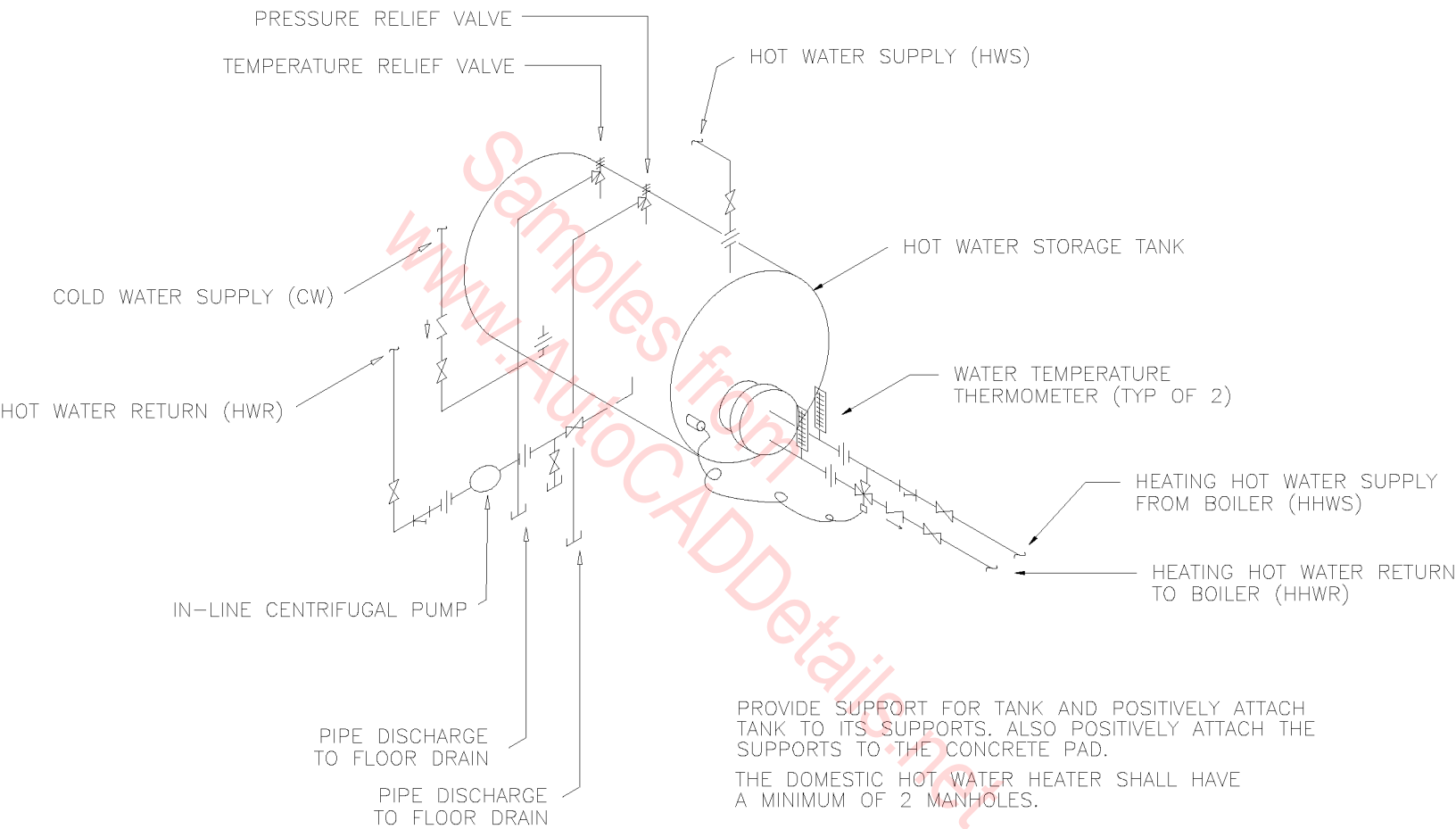
DOMESTIC HOT WATER TANK AND TANK HEATER WITH STEAM INPUT

N.T.S.



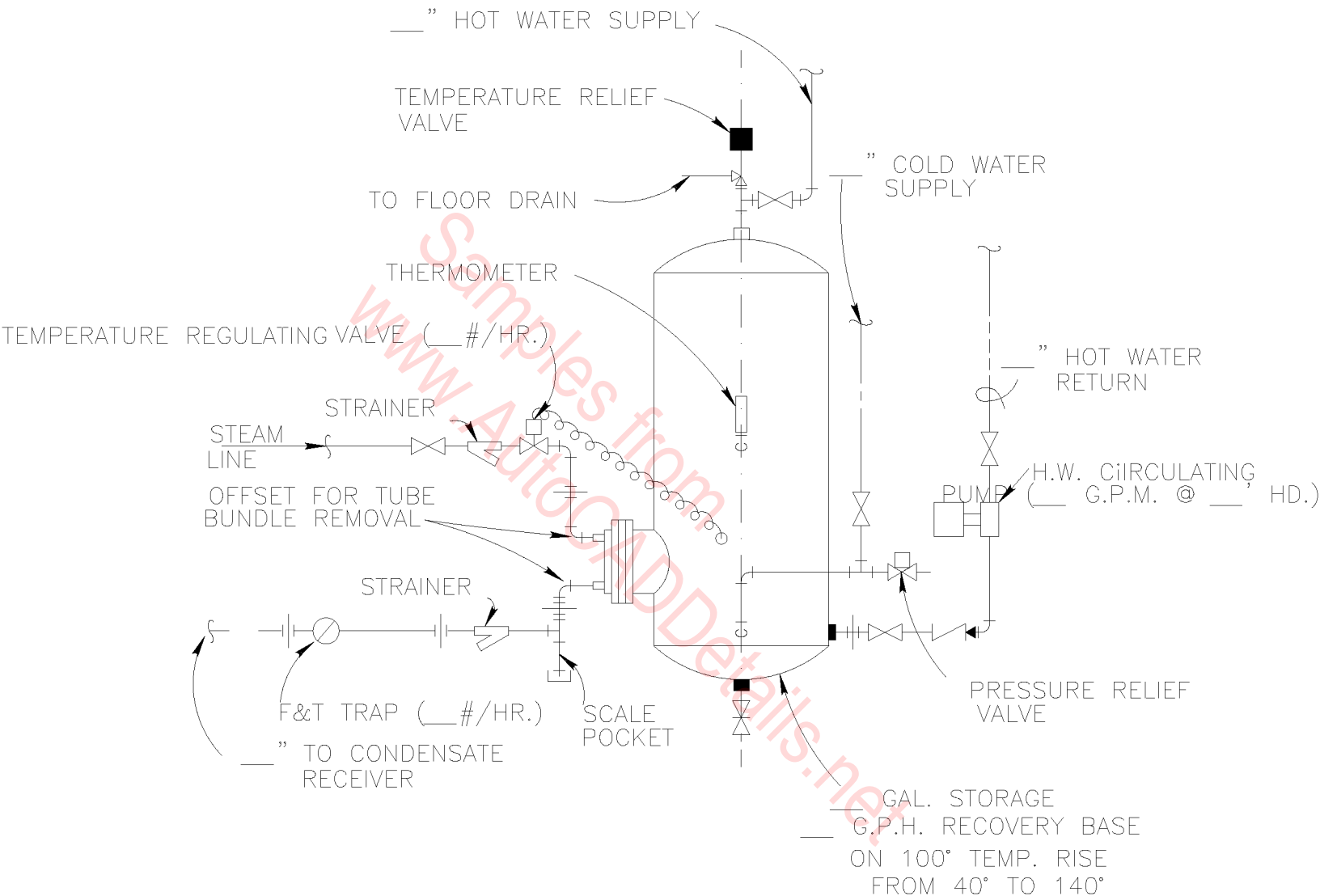
DOMESTIC HOT WATER SCHEMATIC DETAIL

N.T.S.



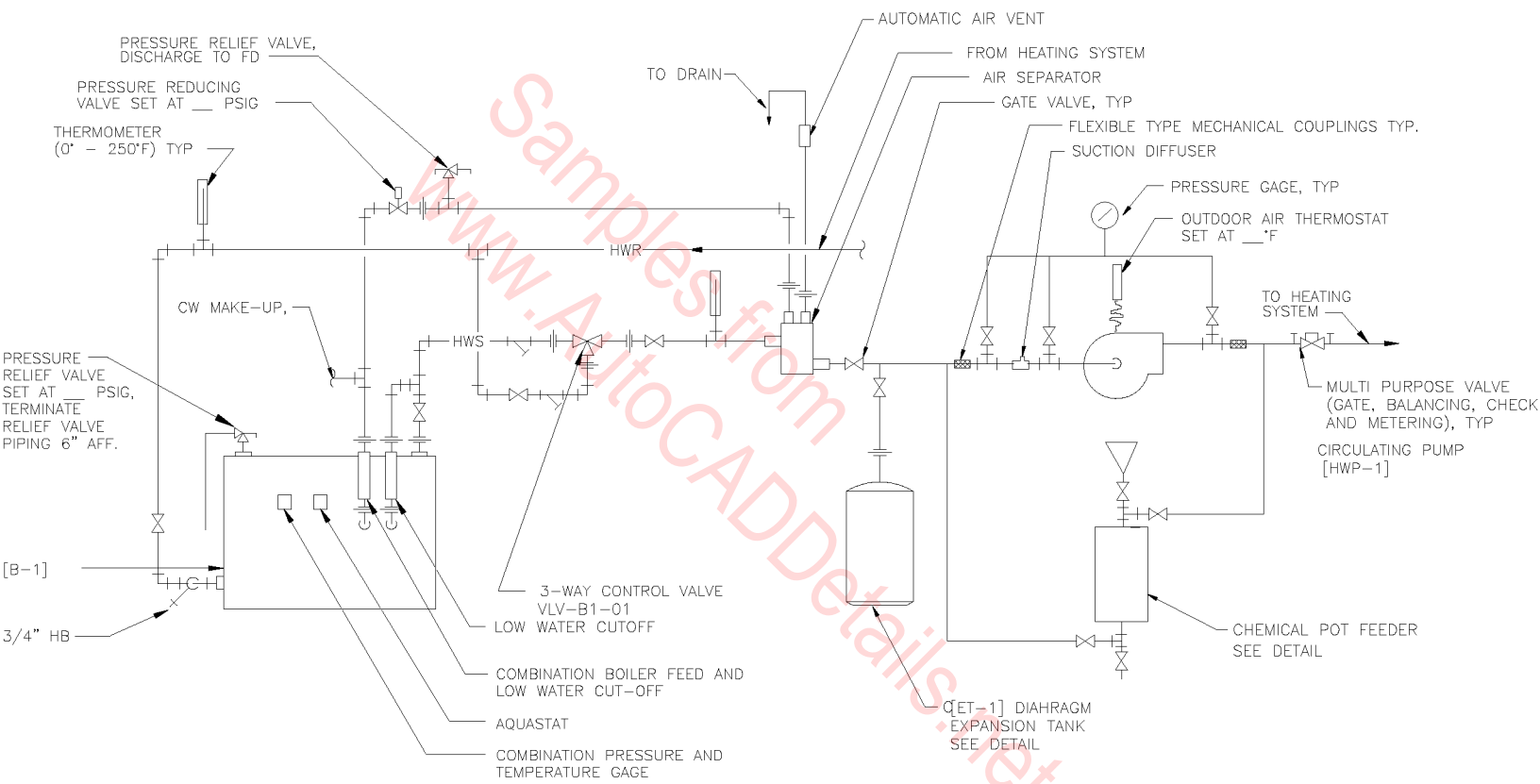
DOMESTIC HOT WATER GENERATOR SCHEMATIC

N.T.S.



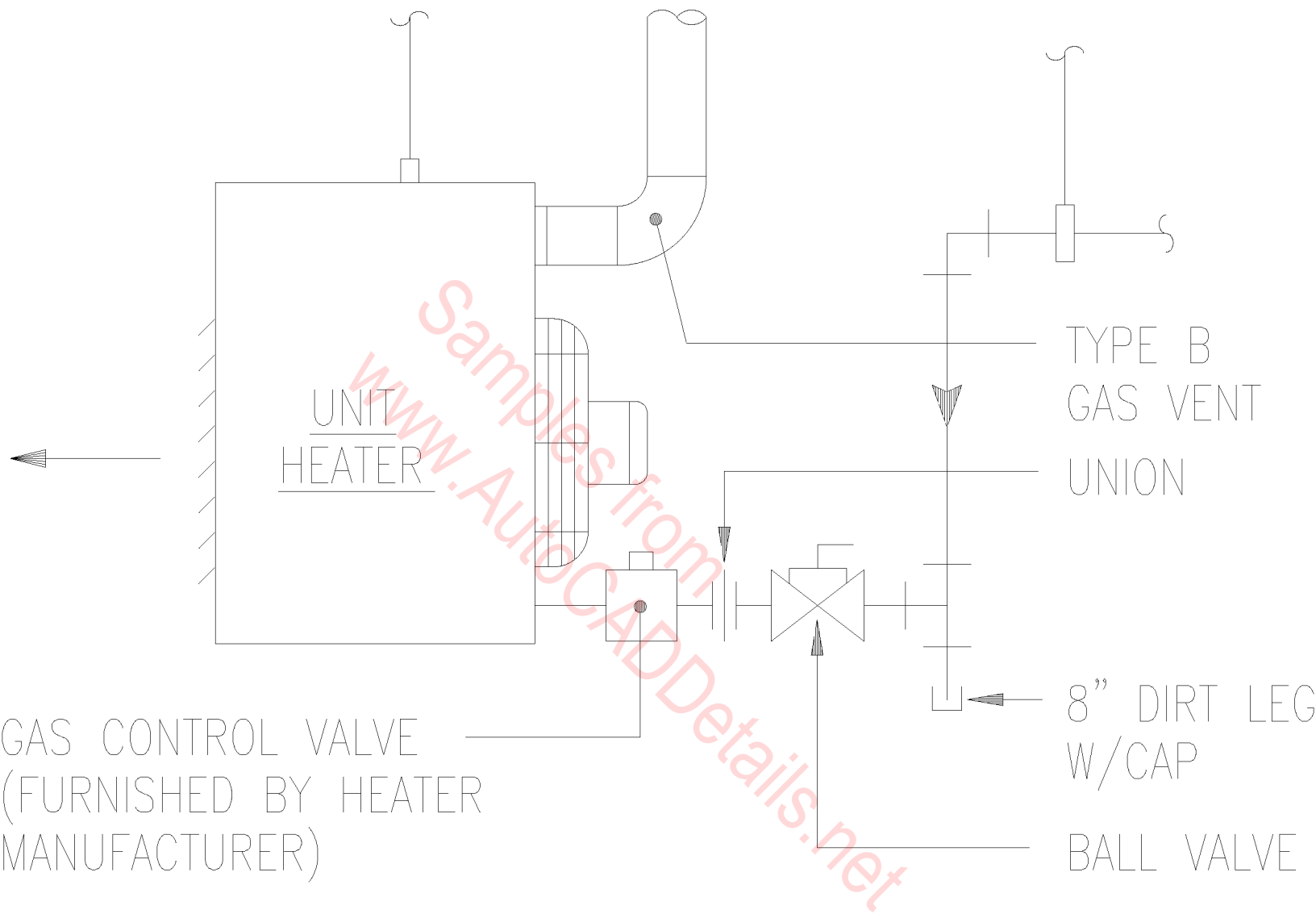
VERTICAL HOT WATER GENERATOR CONNECTIONS

N.T.S.



BOILER PIPING SCHEMATIC

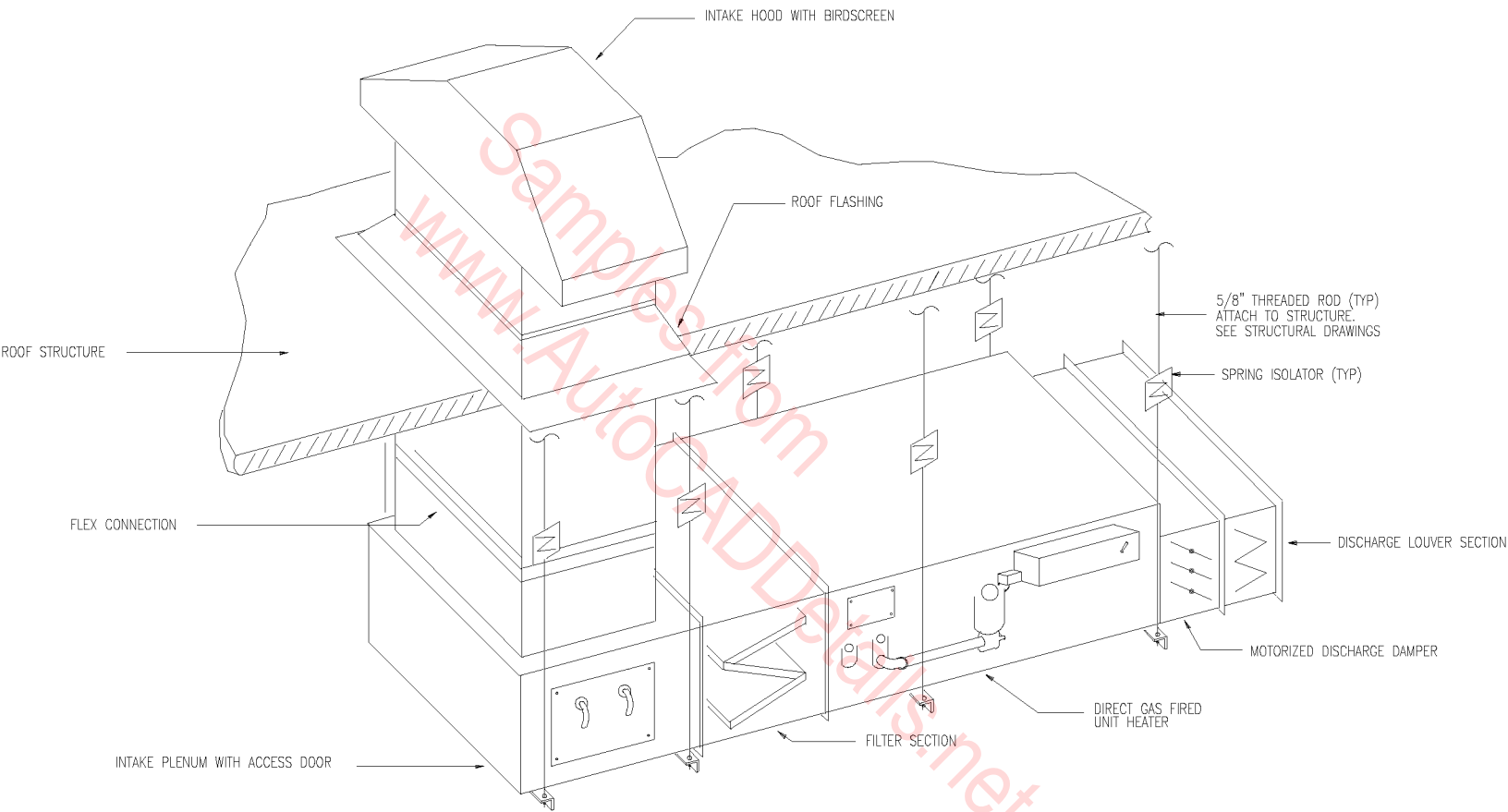
N.T.S.



GAS FIRED

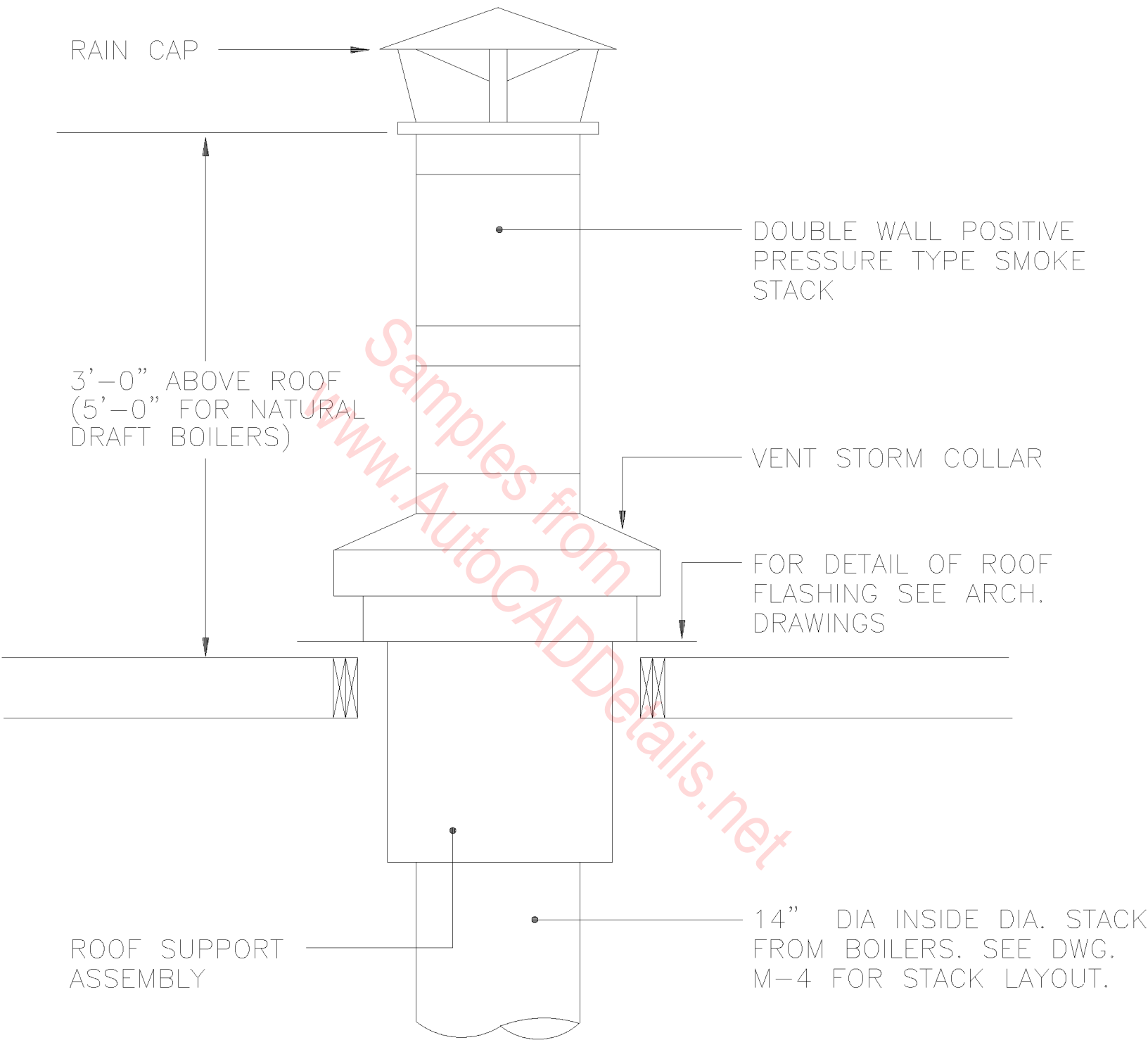
UNIT HEATER DETAIL

N.T.S.



GAS FIRED MAKE-UP UNIT HEATER

N.T.S.



RAIN CAP

DOUBLE WALL POSITIVE PRESSURE TYPE SMOKE STACK

3'-0" ABOVE ROOF
(5'-0" FOR NATURAL DRAFT BOILERS)

VENT STORM COLLAR

FOR DETAIL OF ROOF FLASHING SEE ARCH. DRAWINGS

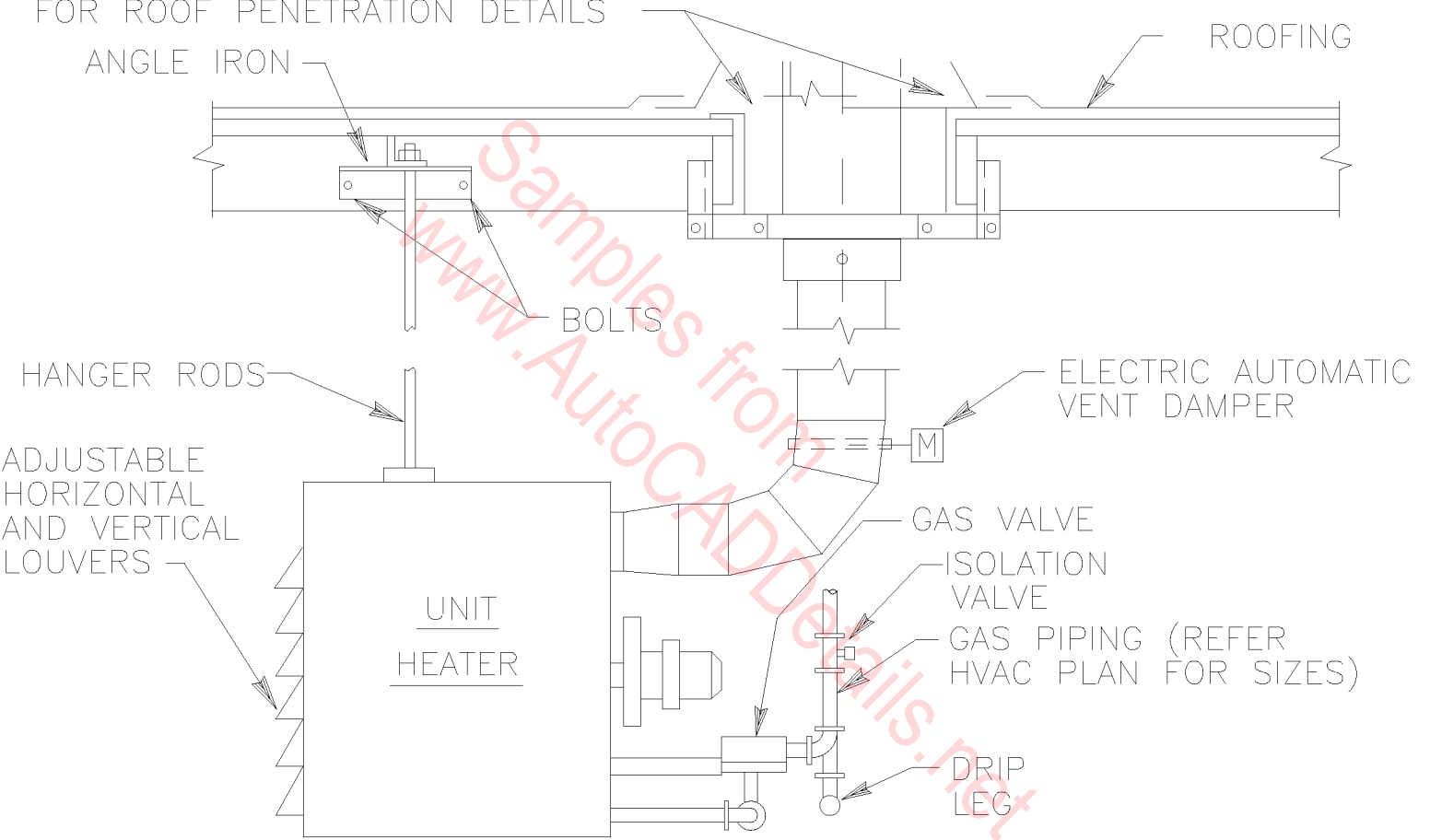
ROOF SUPPORT ASSEMBLY

14" DIA INSIDE DIA. STACK FROM BOILERS. SEE DWG. M-4 FOR STACK LAYOUT.

BOILER STACK DETAIL

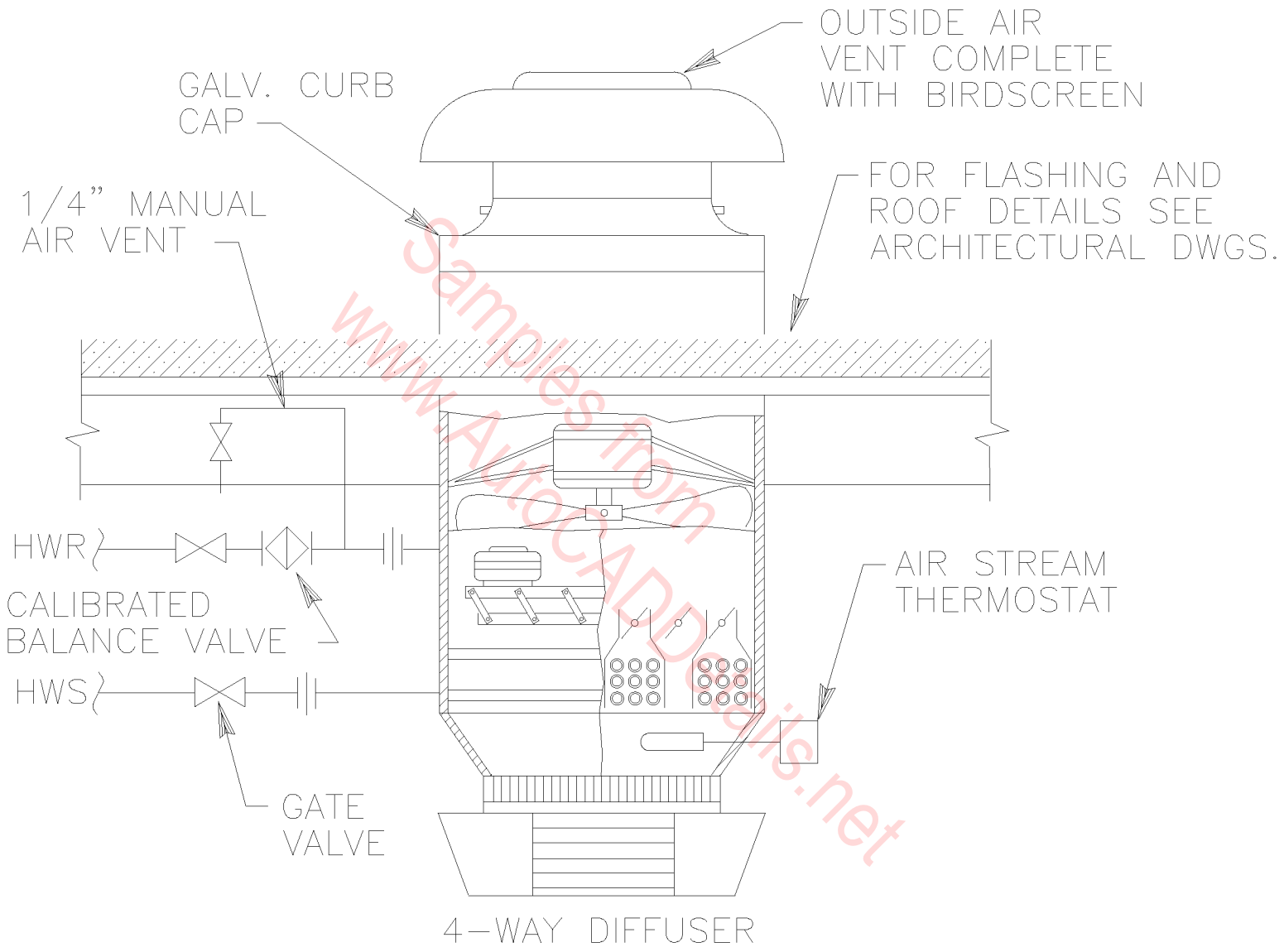
N.T.S.

REFER ARCHITECTURAL DRAWINGS
FOR ROOF PENETRATION DETAILS



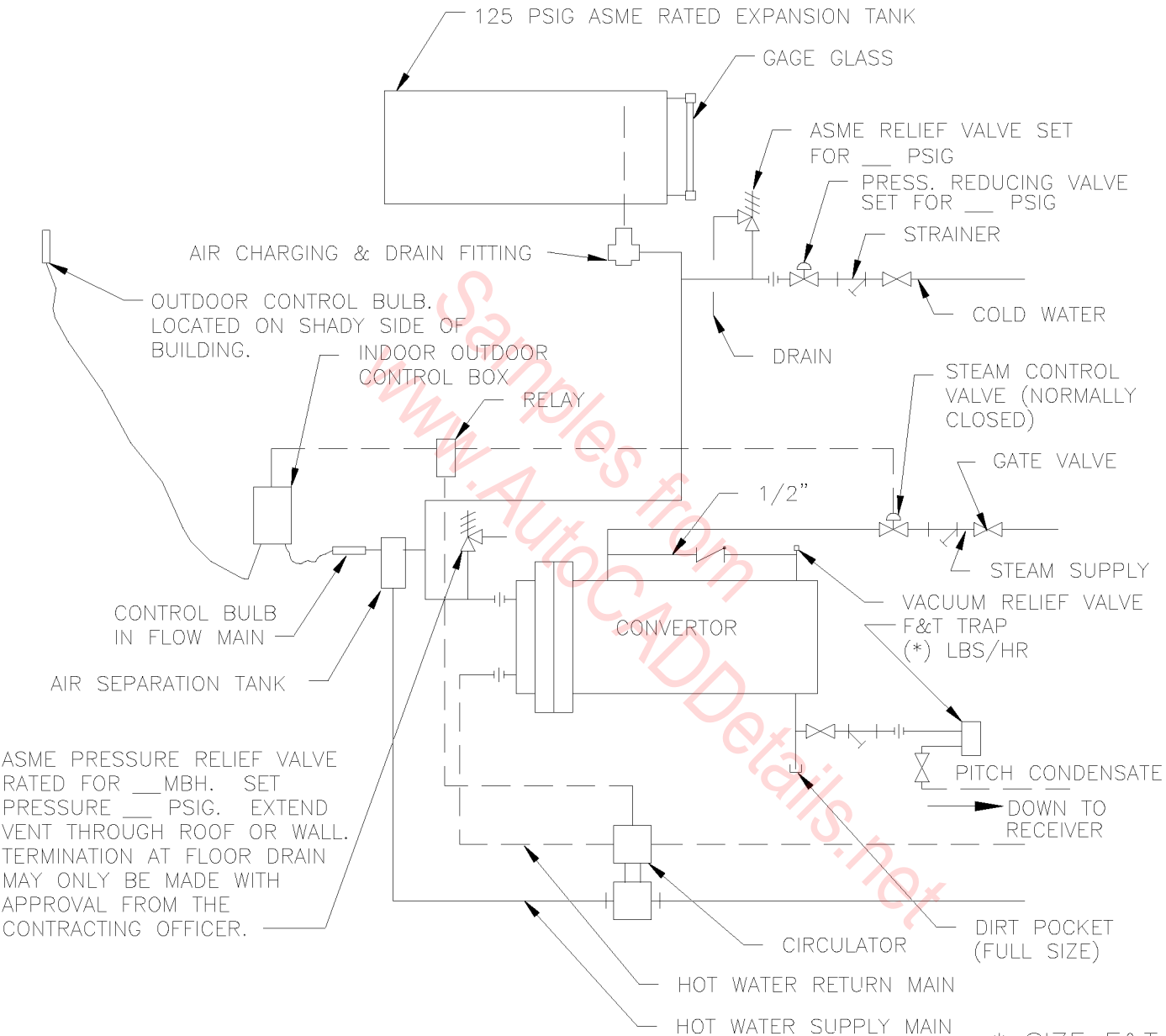
TYPICAL GAS FIRED UNIT HEATER DETAIL

N.T.S.



TYPICAL MAKE-UP AIR UNIT DETAIL

N.T.S.

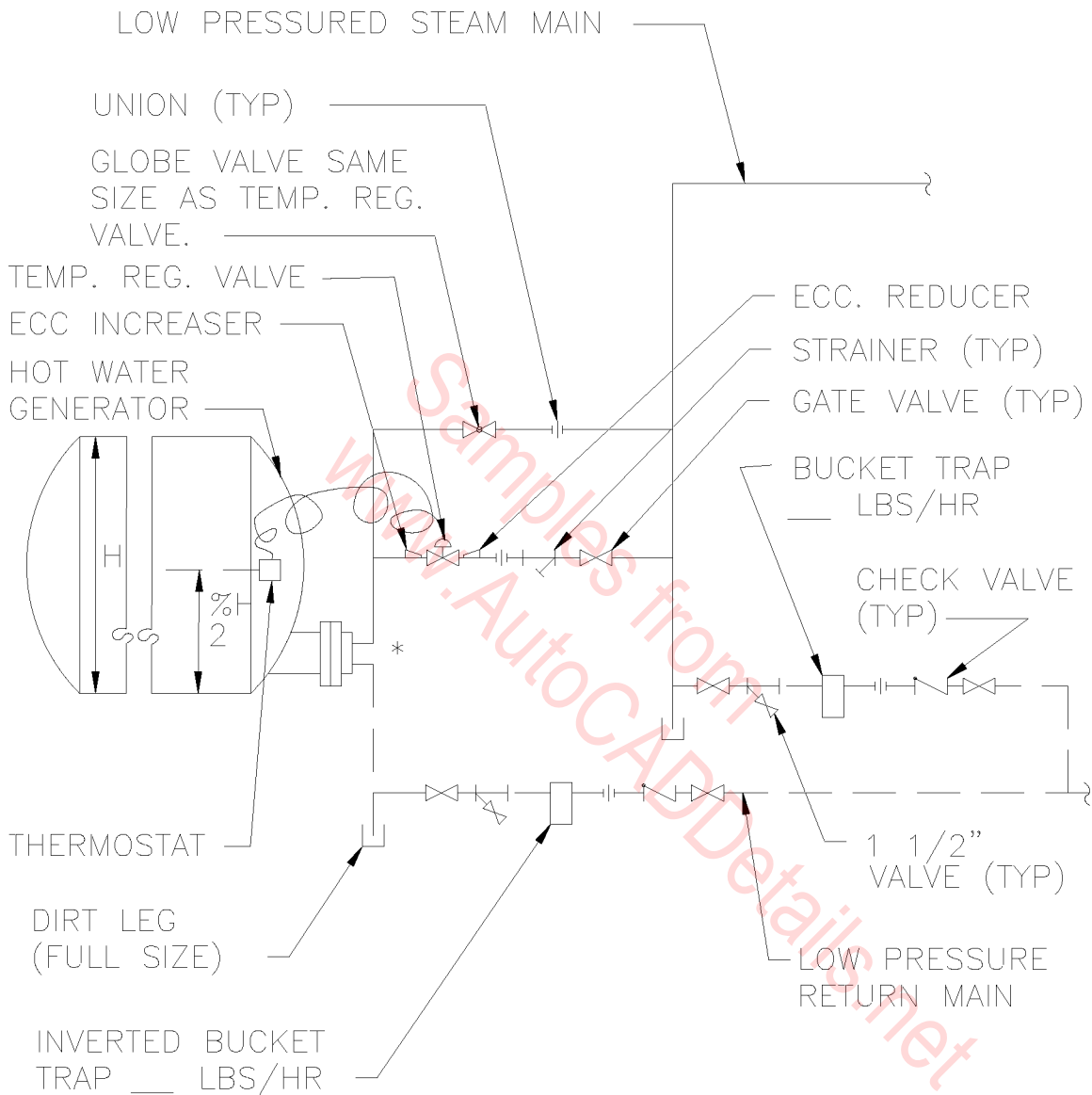


CONVERTOR PIPING

OUTDOOR CONTROL ON STEAM

N.T.S.

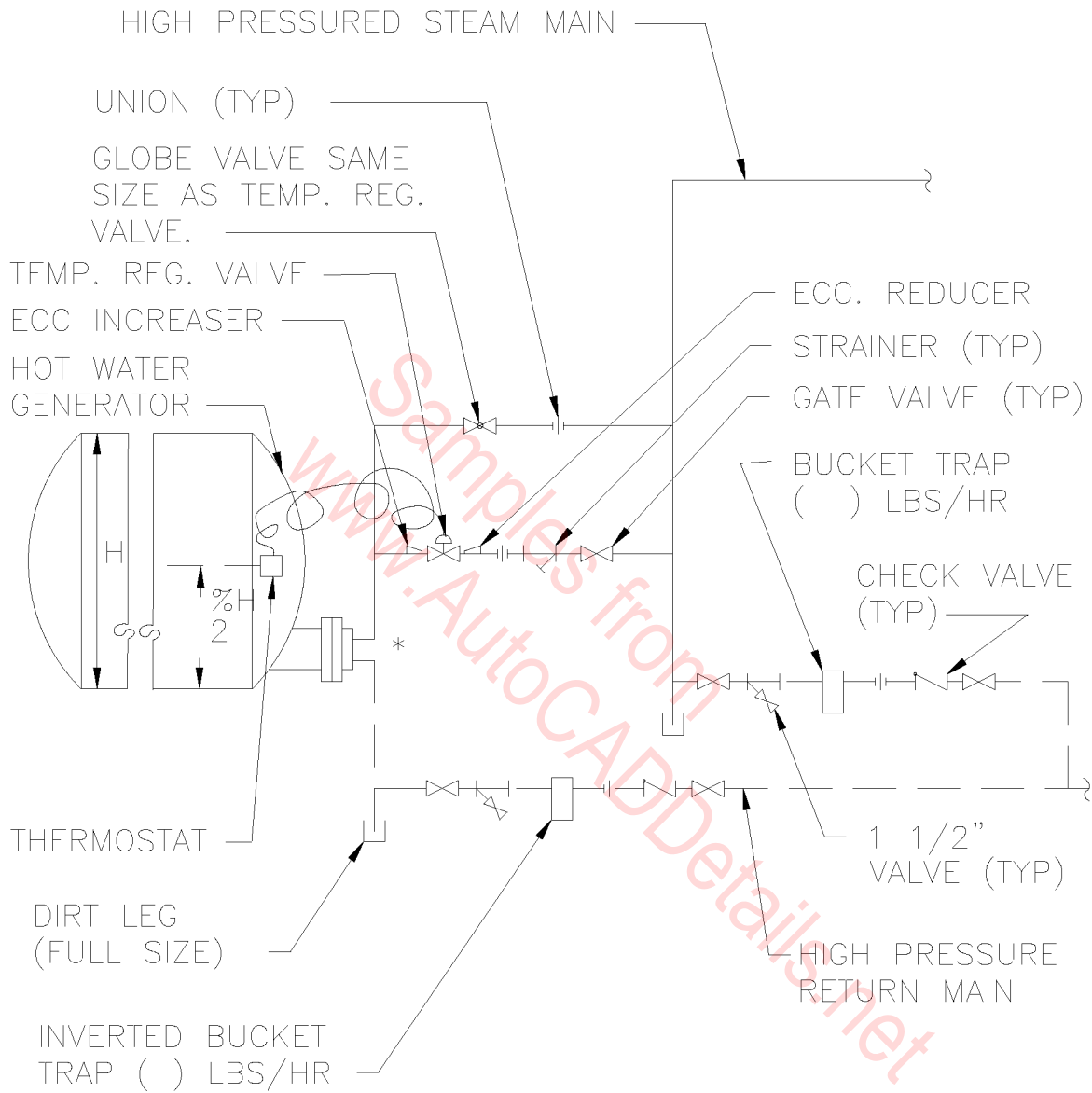
* SIZE F&T TRAP 3 TO 4 TIMES THE SIZE OF THE STEAM CONTROL VALVE CAPACITY.



PIPING CONNECTIONS—LOW PRESSURE STEAM
 HOT WATER GENERATOR — STEAM HEATED

N.T.S.

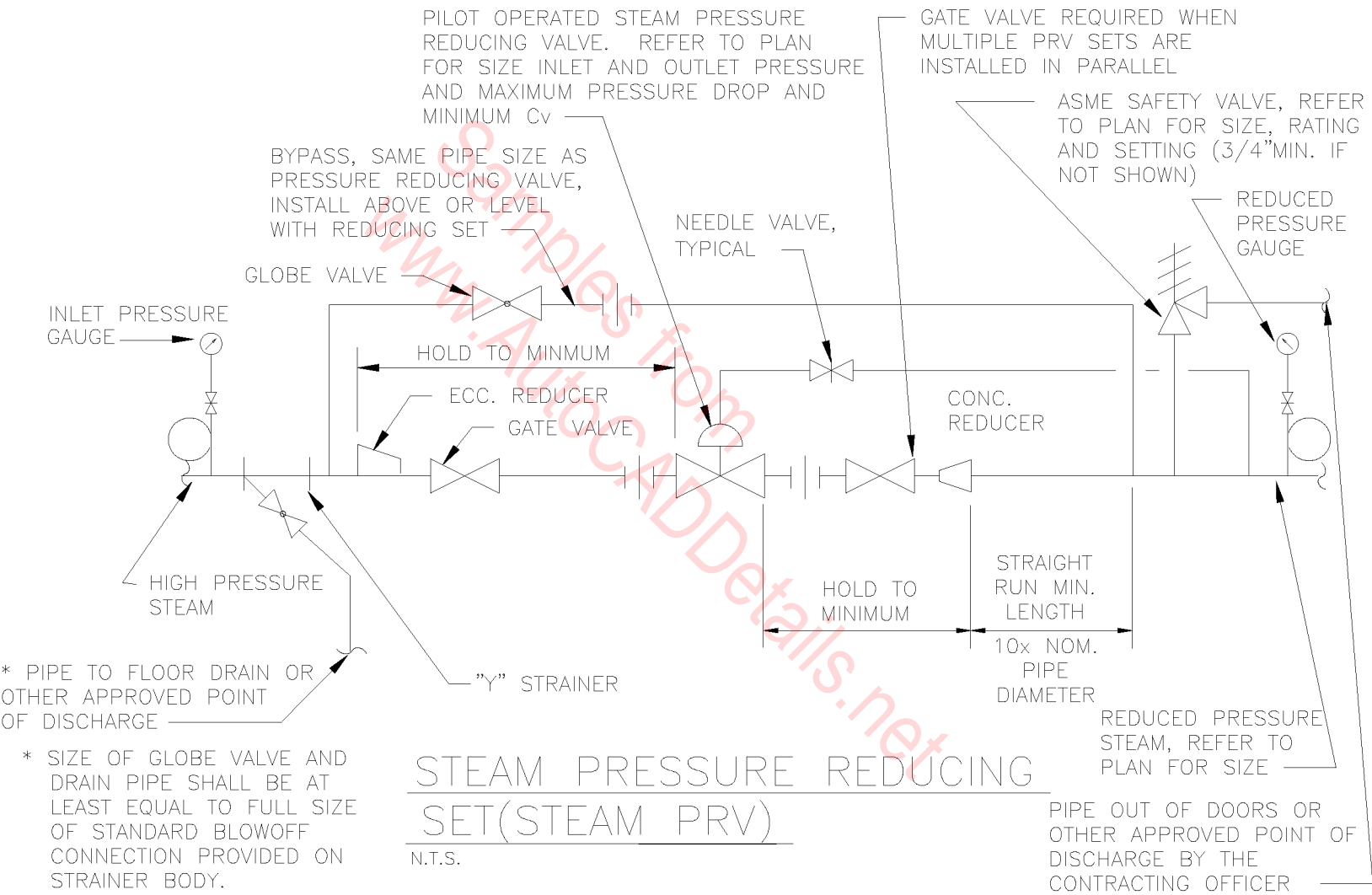
* LENGTH OF TUBE BUNDLE SHALL BE A MINIMUM OF 2/3rds THE LENGTH OF THE HOT WATER GENERATOR.

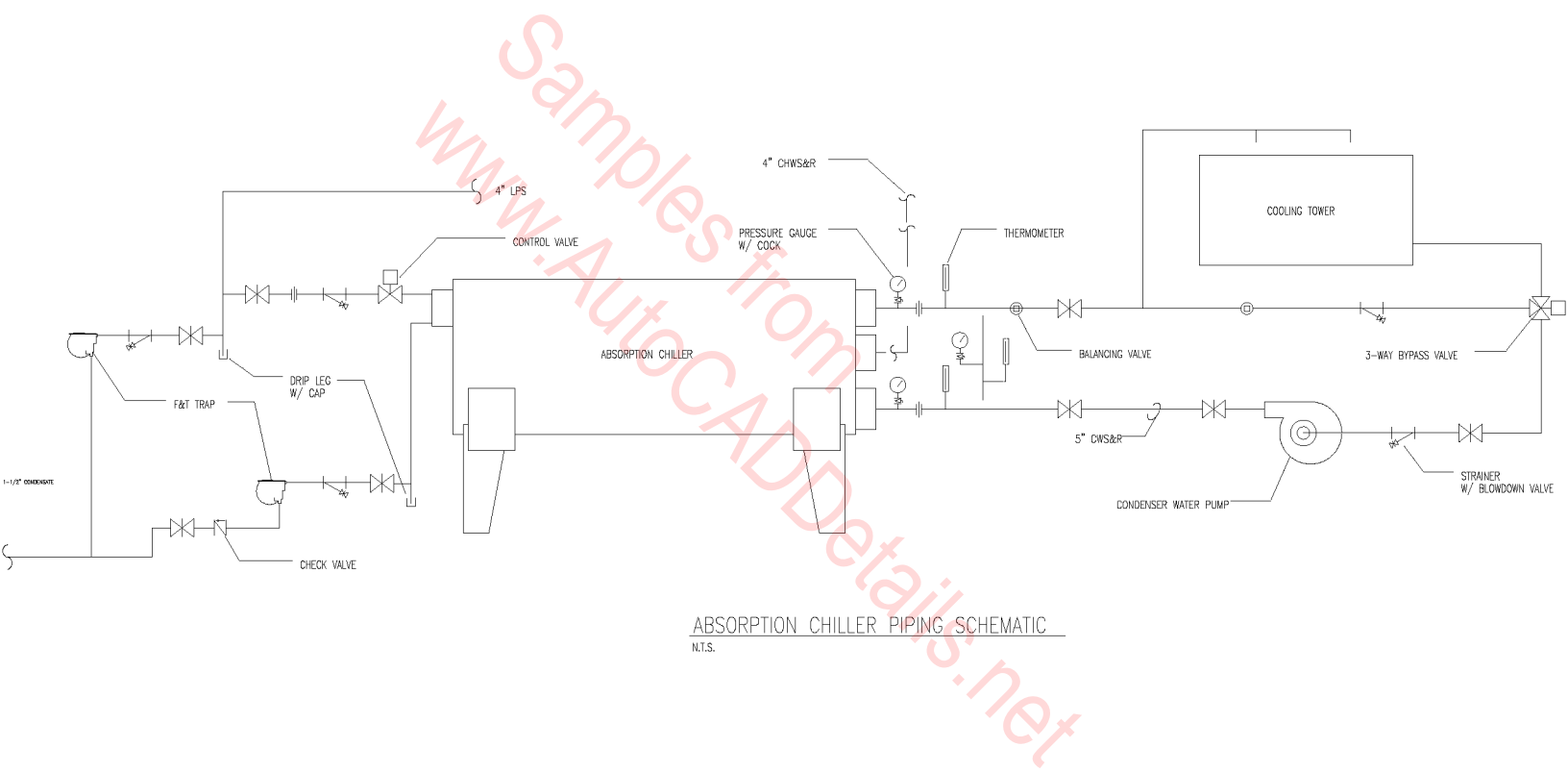


PIPING CONNECTIONS—HIGH PRESSURE STEAM HOT WATER GENERATOR — STEAM HEATED

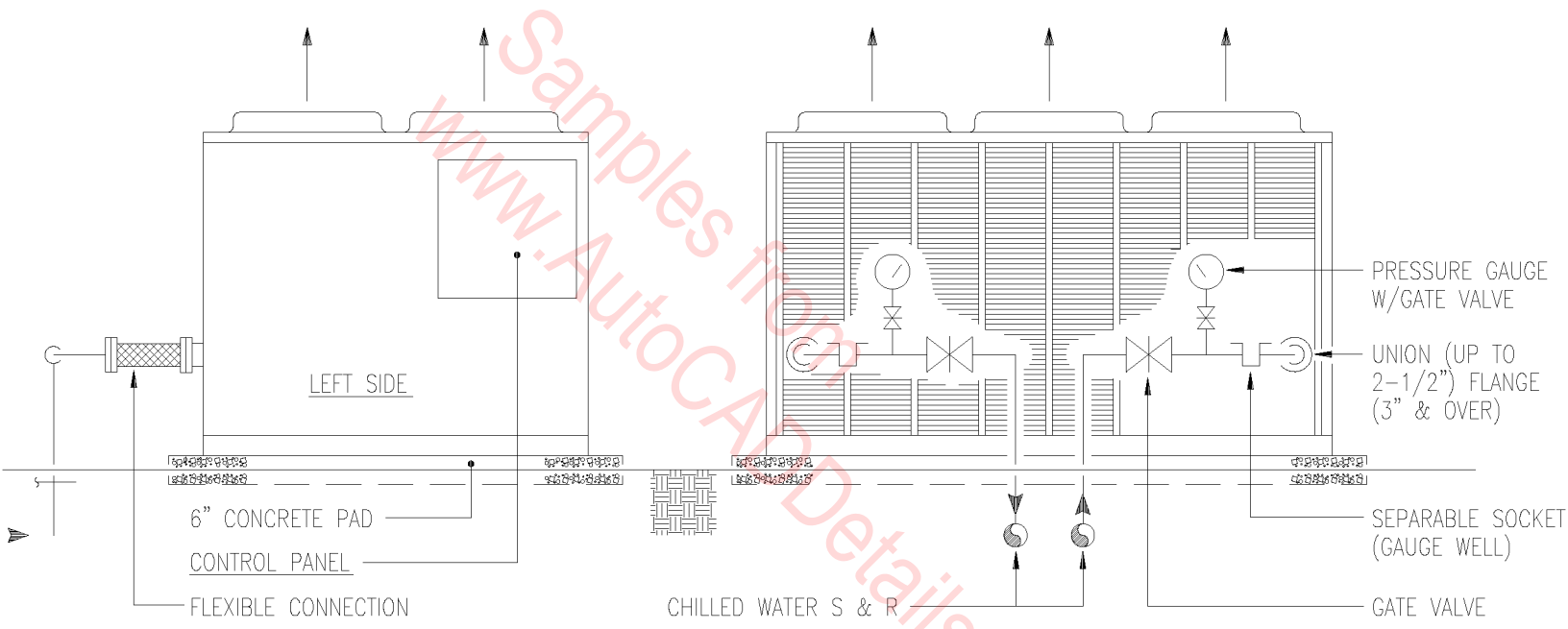
N.T.S.

* LENGTH OF TUBE BUNDLE SHALL BE A MINIMUM OF 2/3rds THE LENGTH OF THE HOT WATER GENERATOR.

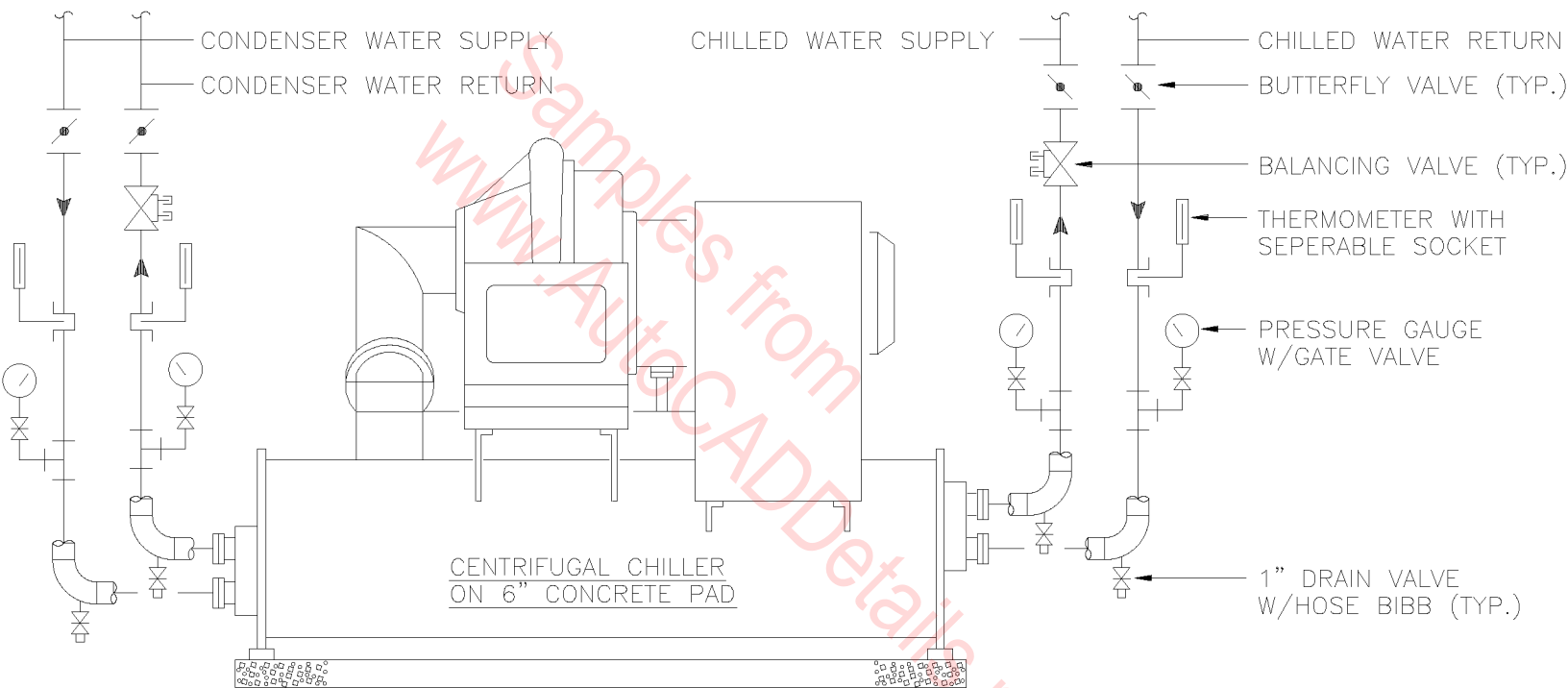




ABSORPTION CHILLER PIPING SCHEMATIC
 N.T.S.

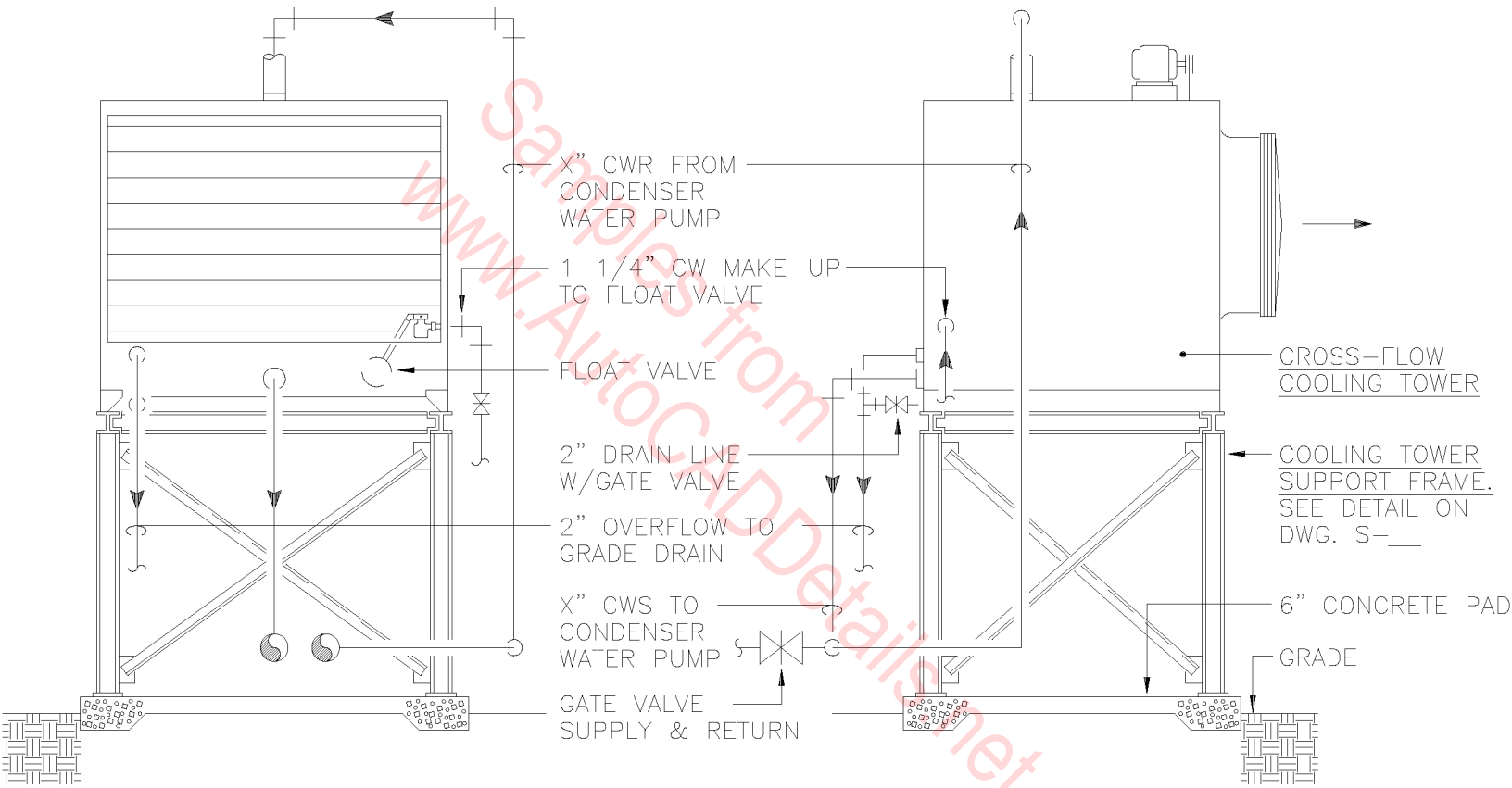


AIR-COOLED CHILLER PIPING CONNECTION DETAIL
 N.T.S.



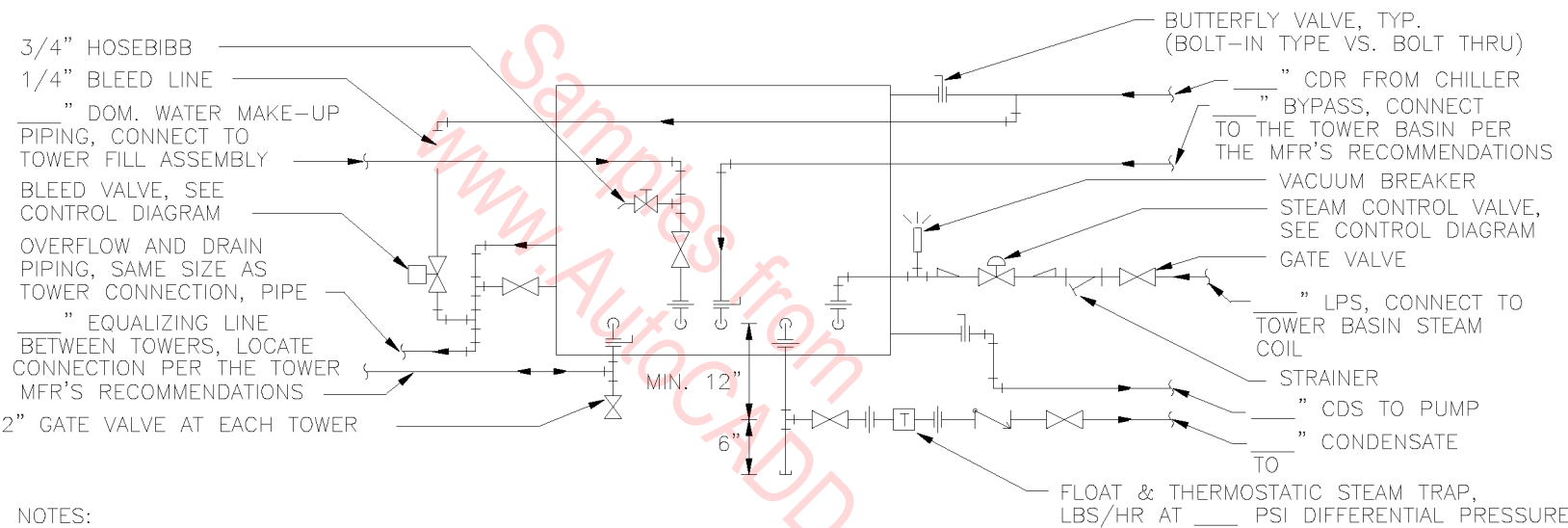
CENTRIFUGAL CHILLER DETAIL

N.T.S.



CROSS-FLOW COOLING TOWER DETAIL

N.T.S.

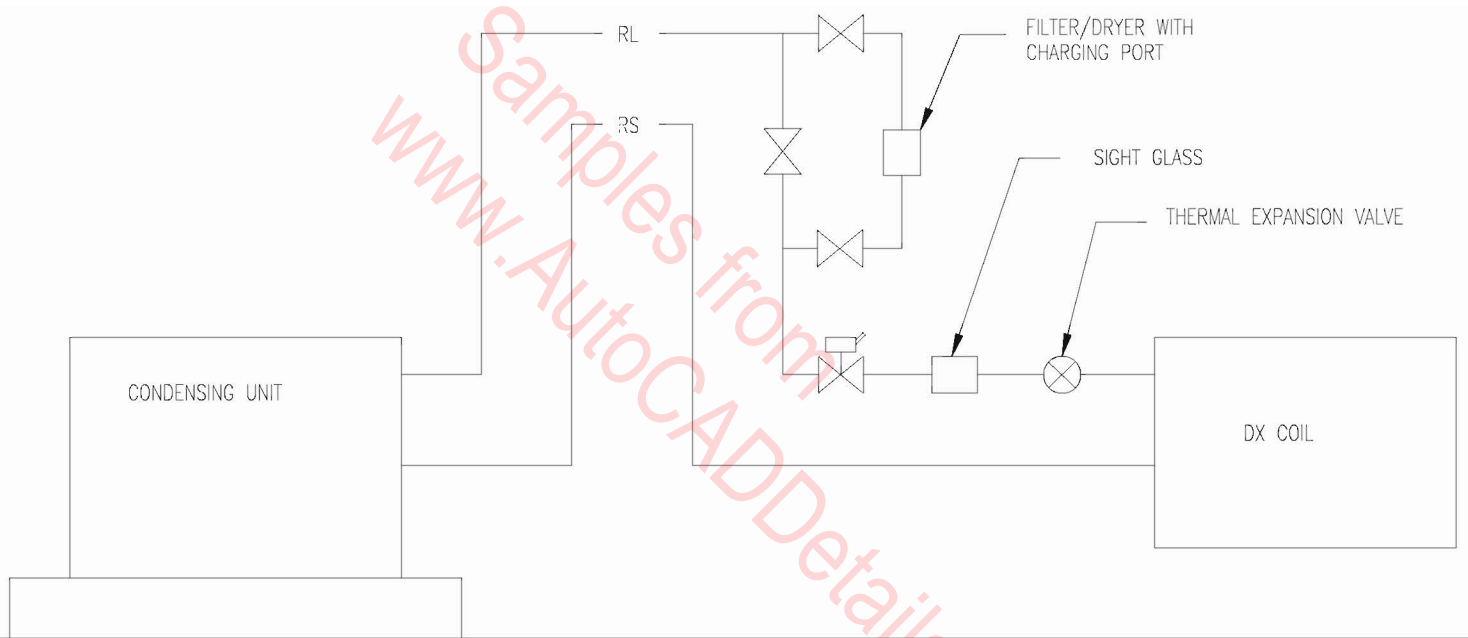


NOTES:

1. PROVIDE THERMOSTATICALLY-CONTROLLED ELECTRIC SELF-LIMITING HEAT TRACING TAPE UNDERNEATH THE INSULATION ON ALL NEW PIPING LOCATED OUTDOORS EXCLUDING THE STEAM, CONDENSATE, AND DRAIN PIPING SERVING THE TOWER. LOCATE THE THERMOSTAT AS SHOWN ON THE PLANS WITH A SUN SHIELD AND SET IT TO ENERGIZE THE HEAT TAPE AT AN OUTDOOR TEMPERATURE BELOW 45 DEG. F.
2. PROVIDE PIPE SUPPORTS PER DETAIL " ON SHEET M- ". SPACE SUPPORTS IN ACCORDANCE WITH SECTION 15501 OF THE SPECIFICATIONS.
3. INSTALL PIPING TO PERMIT COMPLETE MAINTENANCE ACCESS TO THE TOWER.

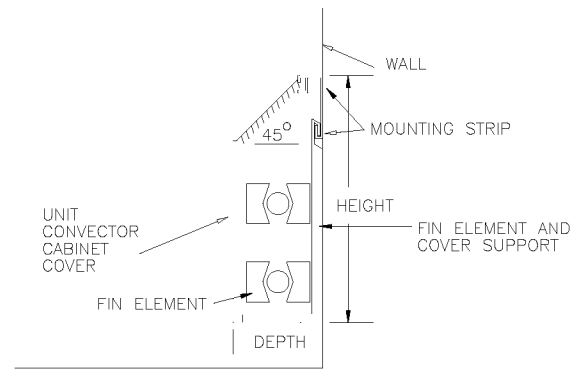
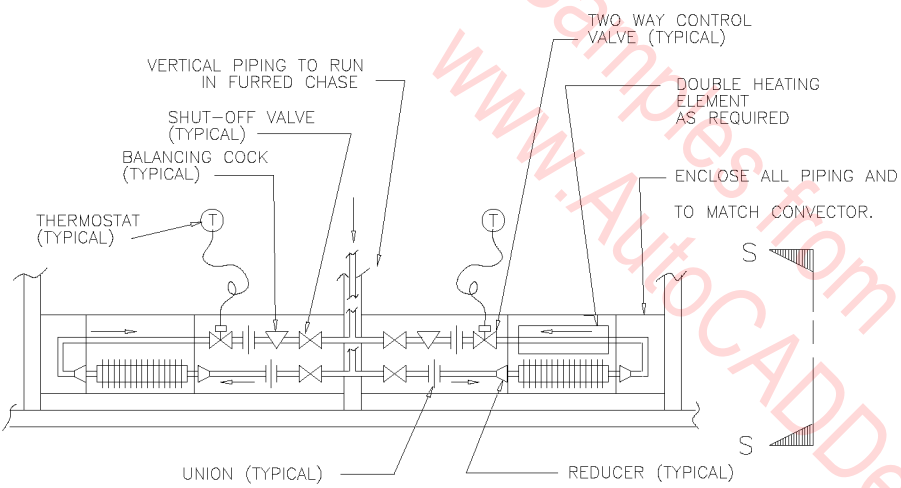
COOLING TOWER PIPING

N.T.S.



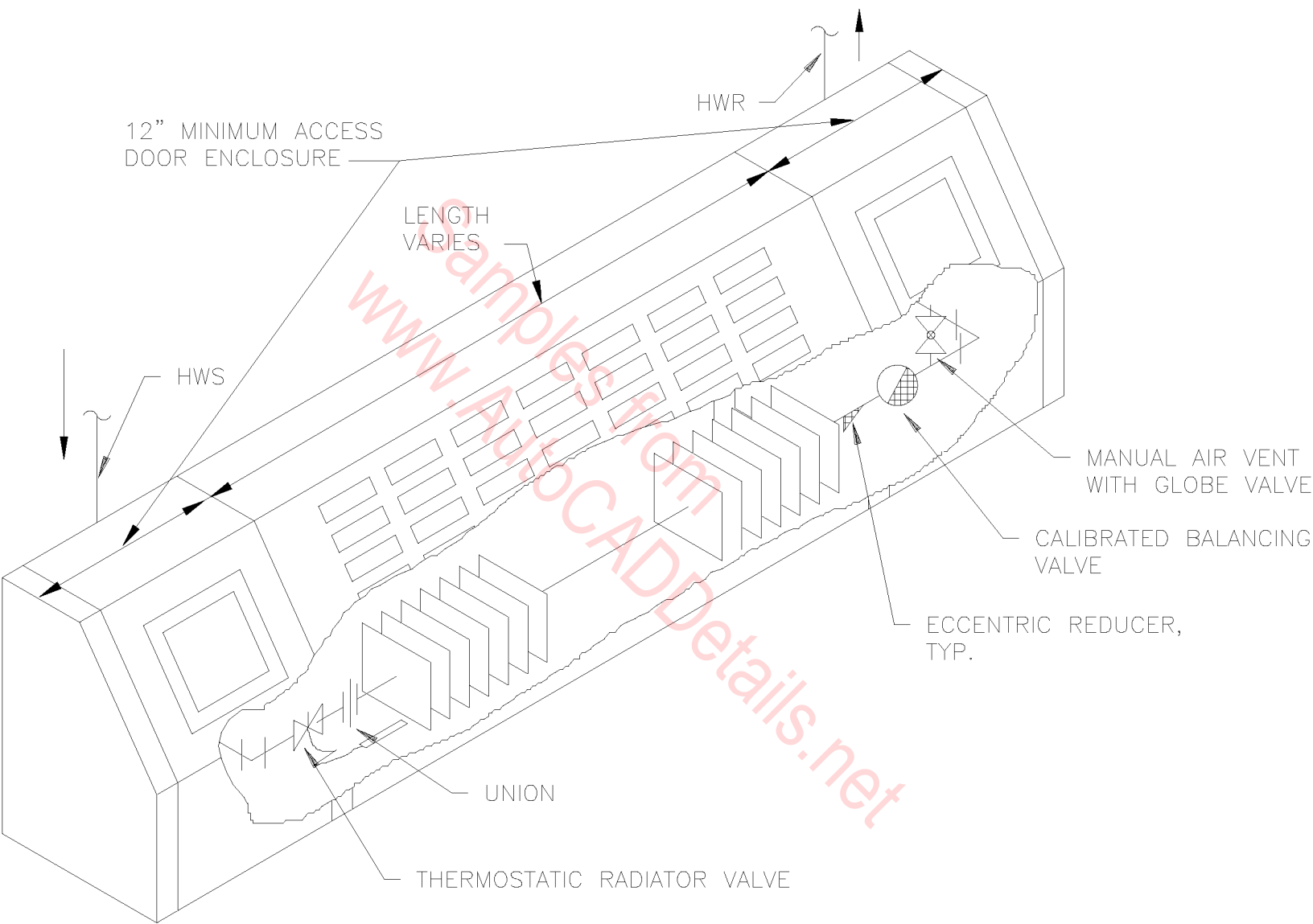
REFRIGERANT PIPING SCHEMATIC

N.T.S.



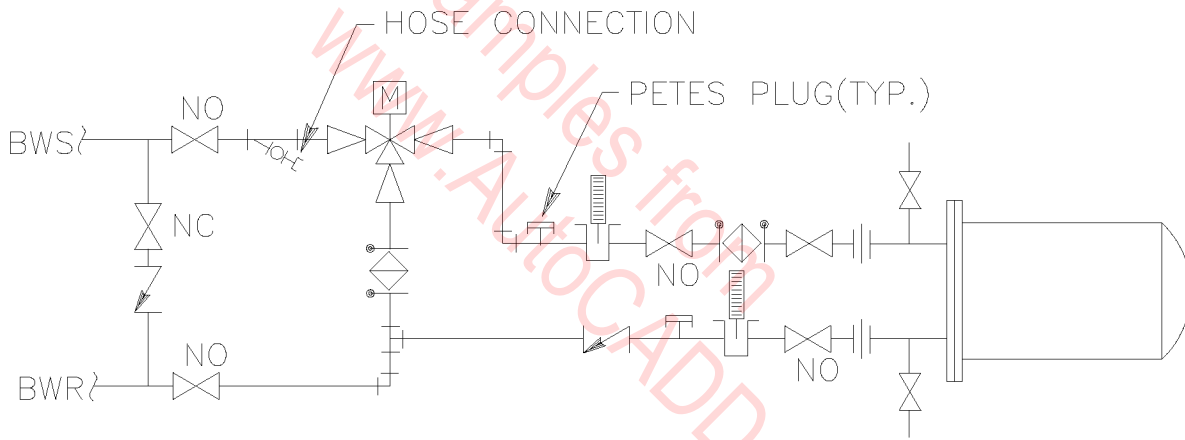
SECTION S

TYPICAL UNIT CONVECTOR DETAIL
N.T.S.



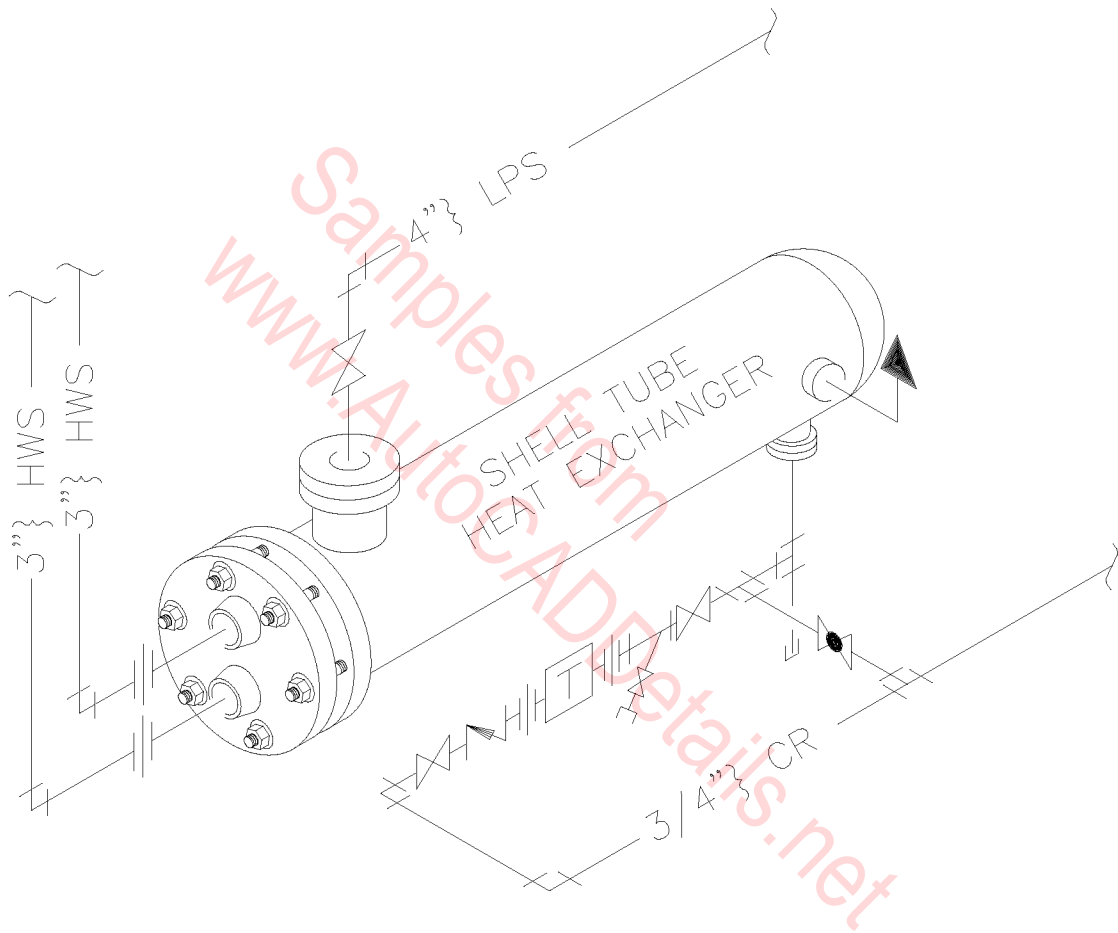
SINGLE TIER RADIATOR

N.T.S.



TYPICAL HEAT EXCHANGER PIPING SCHEMATIC

HEATING MEDIA ONLY
 N.T.S.



HEAT EXCHANGER CONNECTION DETAIL

N.T.S.

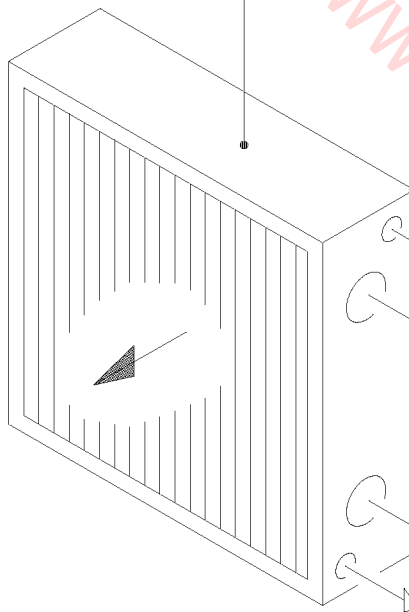
BALANCING PLUG VALVE
(SEE NOTE NO. 1)

AIR VENT (3/4" GATE
VALVE WITH CAP)

THERMOMETER WITH
SEPARABLE SOCKET

COIL AIR VENT
VALVE W/PLUG

HOT WATER OR
COOLING COIL



2-WAY MODULATING VALVE
(SEE NOTE NO. 1)

REDUCER

BALANCING
VALVE

UNION

CHWR & HWR
PIPING

CHWS & HWS
PIPING

BALL VALVE (UP TO
1-1/2") GATE VALVE
(2" & OVER)

Y-STRAINER w/
BLOW-OFF VALVE

PRESSURE GAUGE
W/GATE VALVE

3/4" DRAIN W/GATE VALVE
& HOSE COUPLING

3/4" COIL DRAIN VALVE
W/HOSE COUPLING

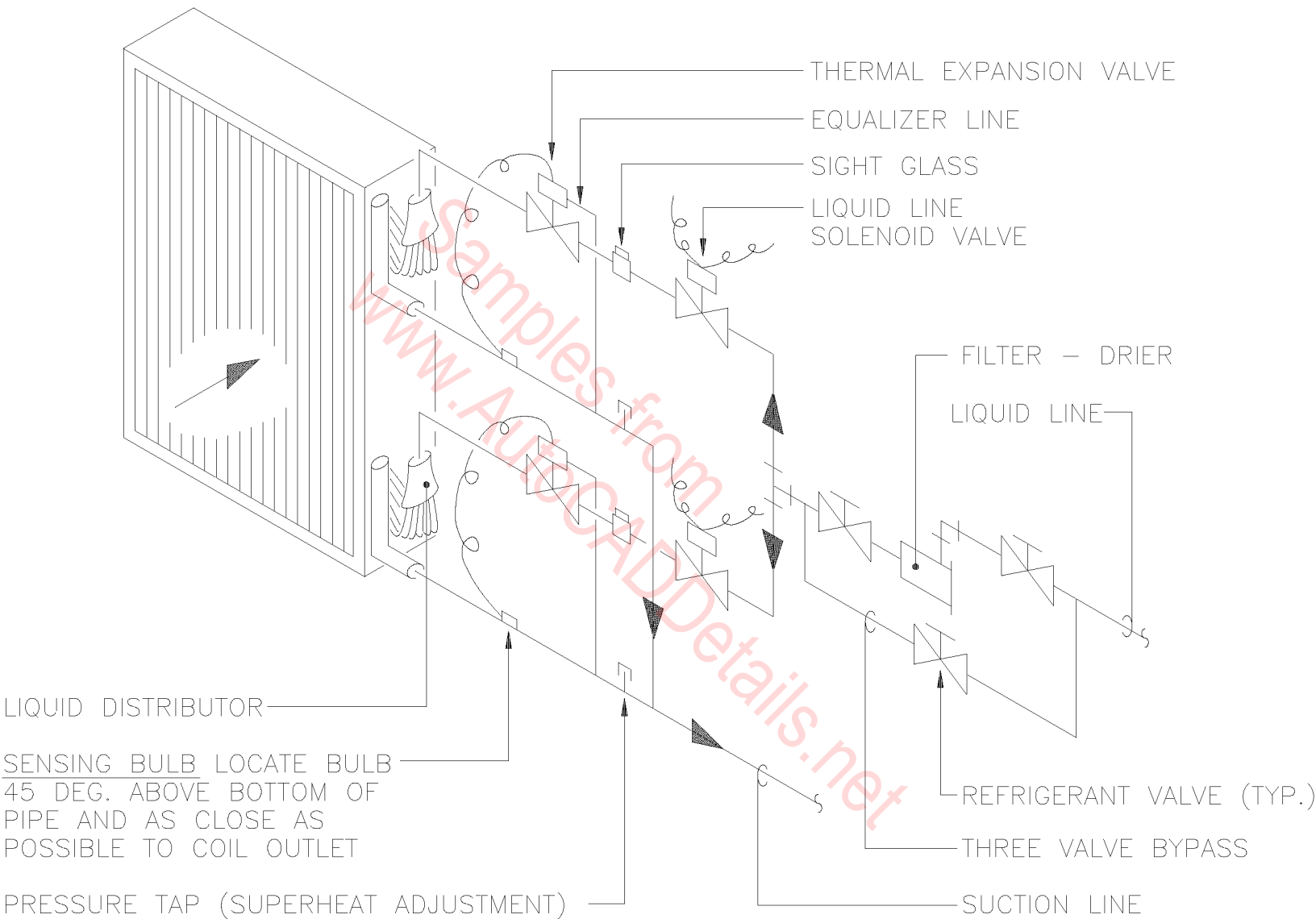
NOTE:

1. WHERE 3-WAY MODULATING
VALVES ARE REQUIRED
PROVIDE ADDITIONAL PIPING
& ACCESSORIES AS SHOWN.

AIR HANDLING UNIT COIL PIPING

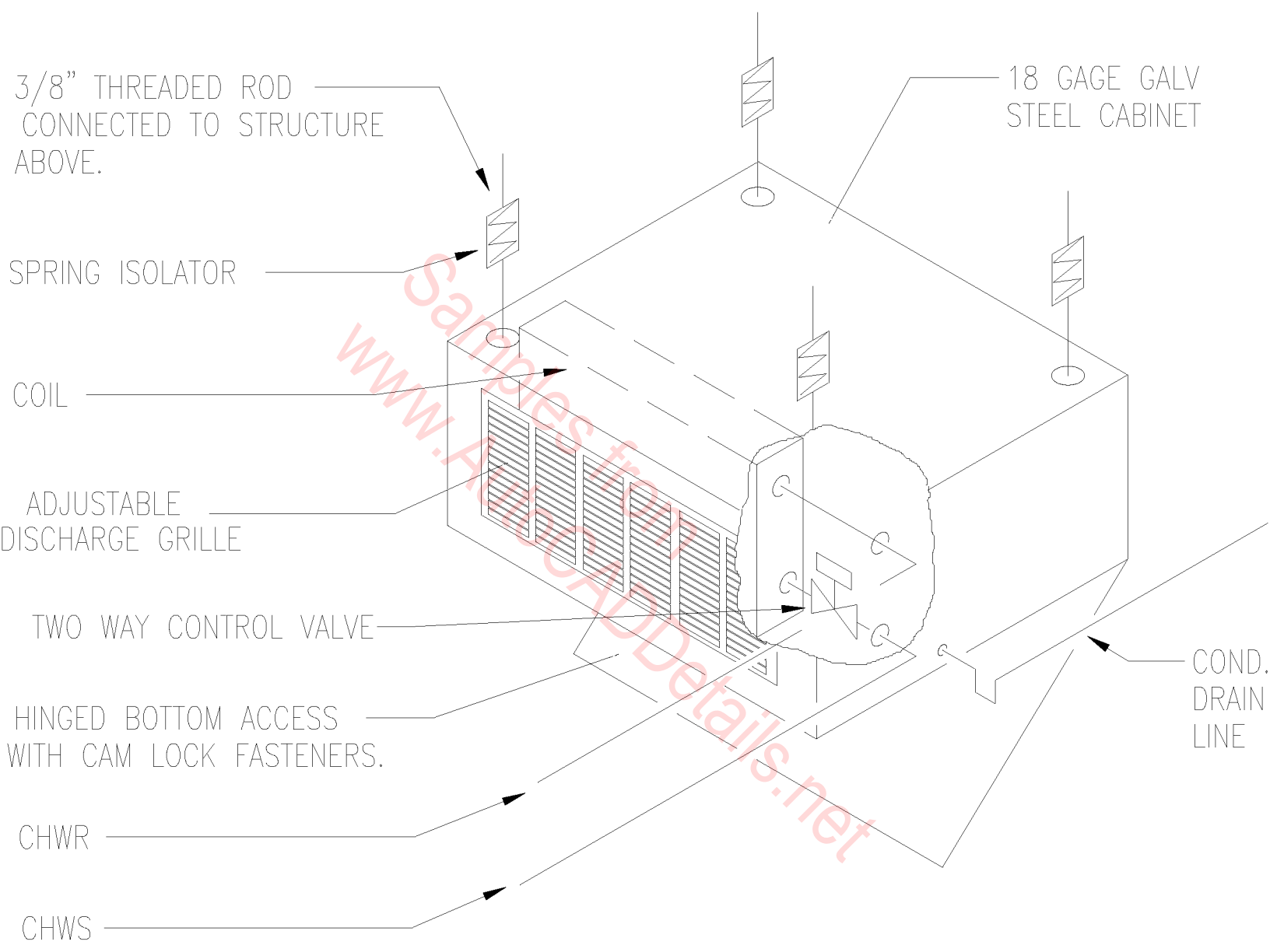
(SINGLE COIL CONNECTIONS)

N.T.S.

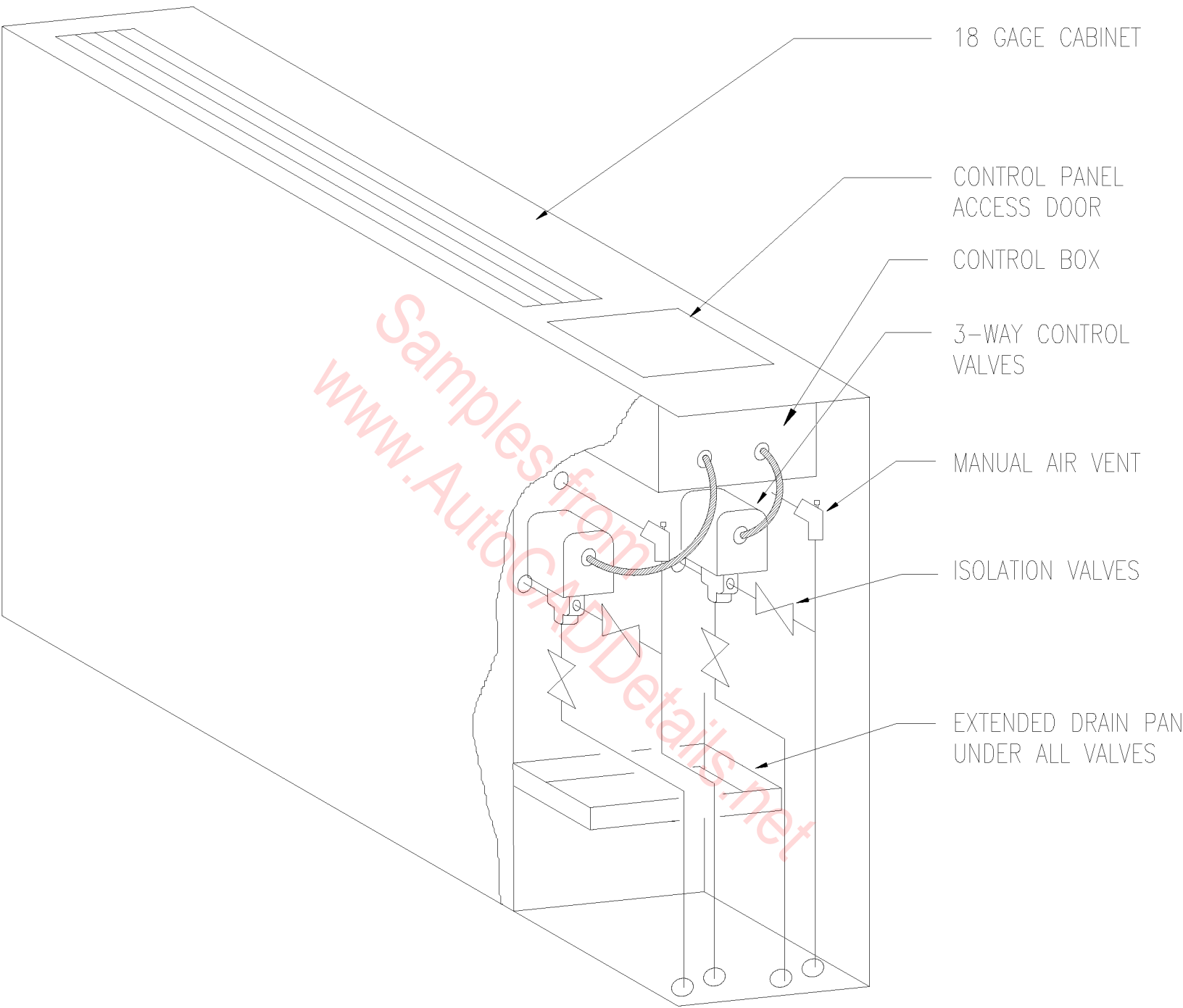


REFRIGERANT COIL DETAIL

N.T.S.



HORIZONTAL FAN COIL UNIT DETAIL
 N.T.S.



18 GAGE CABINET

CONTROL PANEL
ACCESS DOOR

CONTROL BOX

3-WAY CONTROL
VALVES

MANUAL AIR VENT

ISOLATION VALVES

EXTENDED DRAIN PAN
UNDER ALL VALVES

TYPICAL FAN COIL UNIT DETAIL

N.T.S.

AIR VENT (3/4" GATE VALVE WITH CAP)

THERMOMETER WITH SEPARABLE SOCKET

COIL AIR VENT VALVE W/PLUG

HOT WATER OR COOLING COIL

BALANCING PLUG VALVE (SEE NOTE NO. 1)

2-WAY MODULATING VALVE (SEE NOTE NO. 1)

REDUCER

CALIBRATED BALANCING VALVE

UNION

CHWR & HWR PIPING

CHWS & HWR PIPING

BALL VALVE (UP TO 1-1/2"). GATE VALVE (2" & OVER).

Y-STRAINER W/BLOW-OFF VALVE

PRESSURE GAGE W/GATE VALVE

3/4" DRAIN W/GATE VALVE & HOSE COUPLING

CALIBRATED BALANCING VALVE

3/4" DRAIN W/GATE VALVE & HOSE COUPLING

3/4" COIL DRAIN VALVE W/HOSE COUPLING (TYPICAL FOR BOTH COILS)

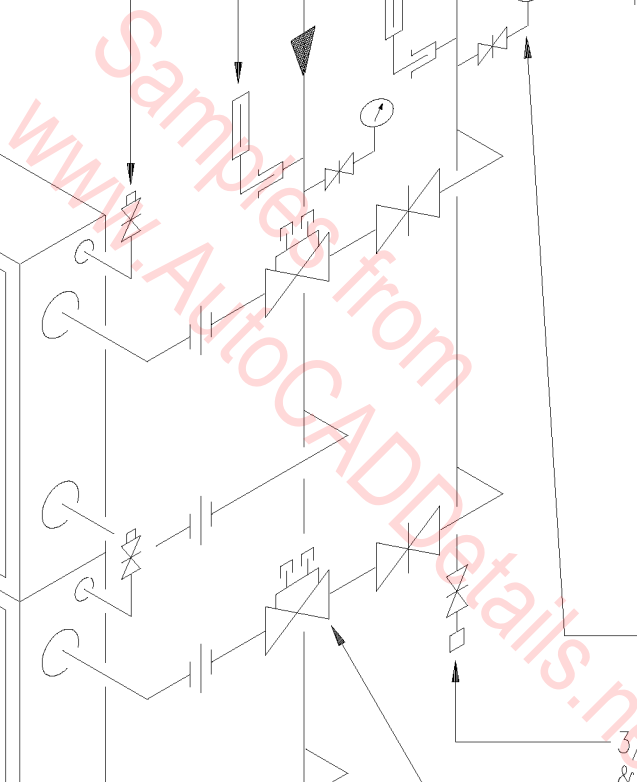
NOTE:

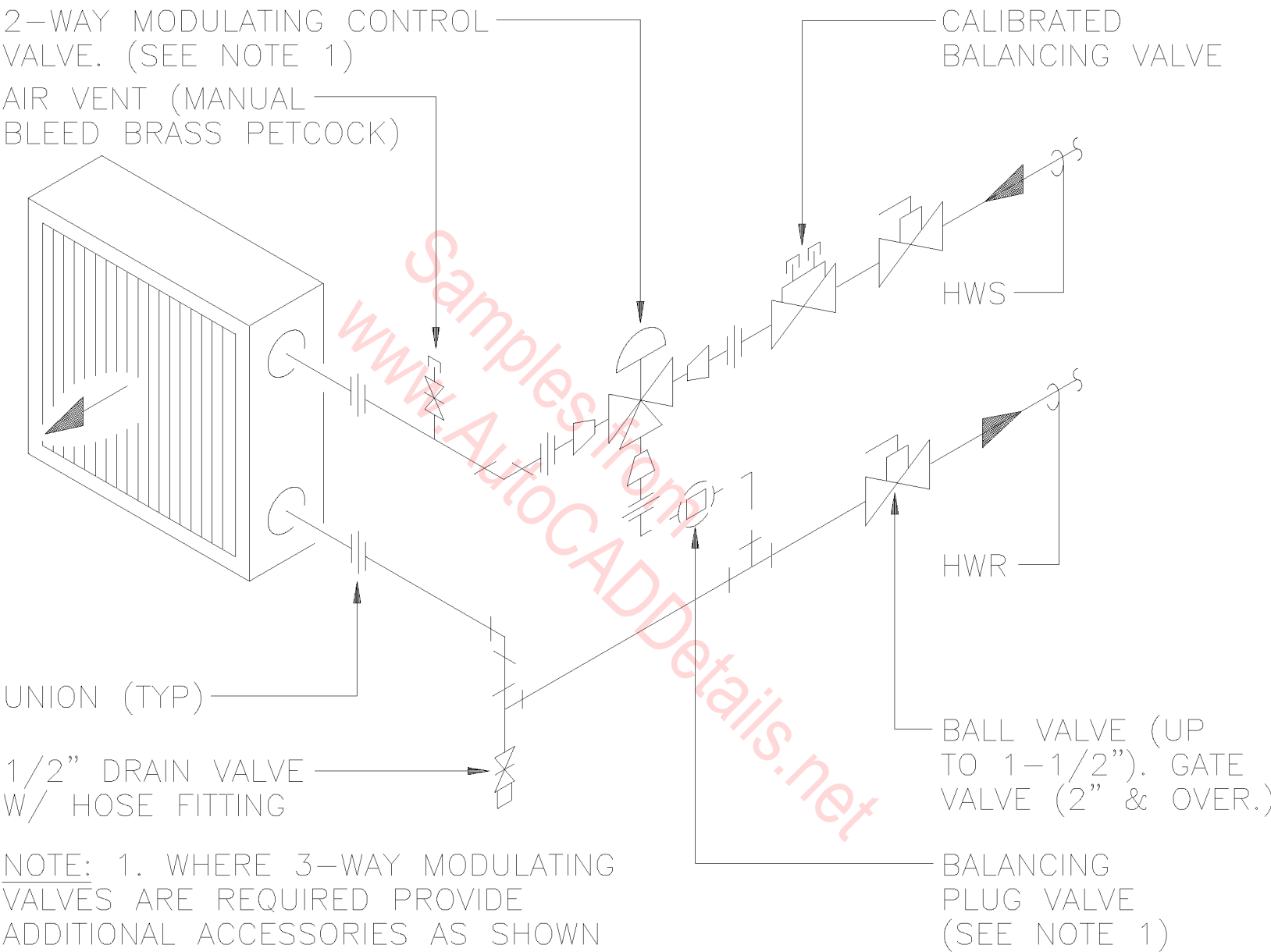
1. WHERE 3-WAY MODULATING VALVES ARE REQUIRED PROVIDE ADDITIONAL PIPING & ACCESSORIES AS SHOWN.

AIR HANDLING UNIT COIL PIPING

(STACKED COIL CONNECTIONS)

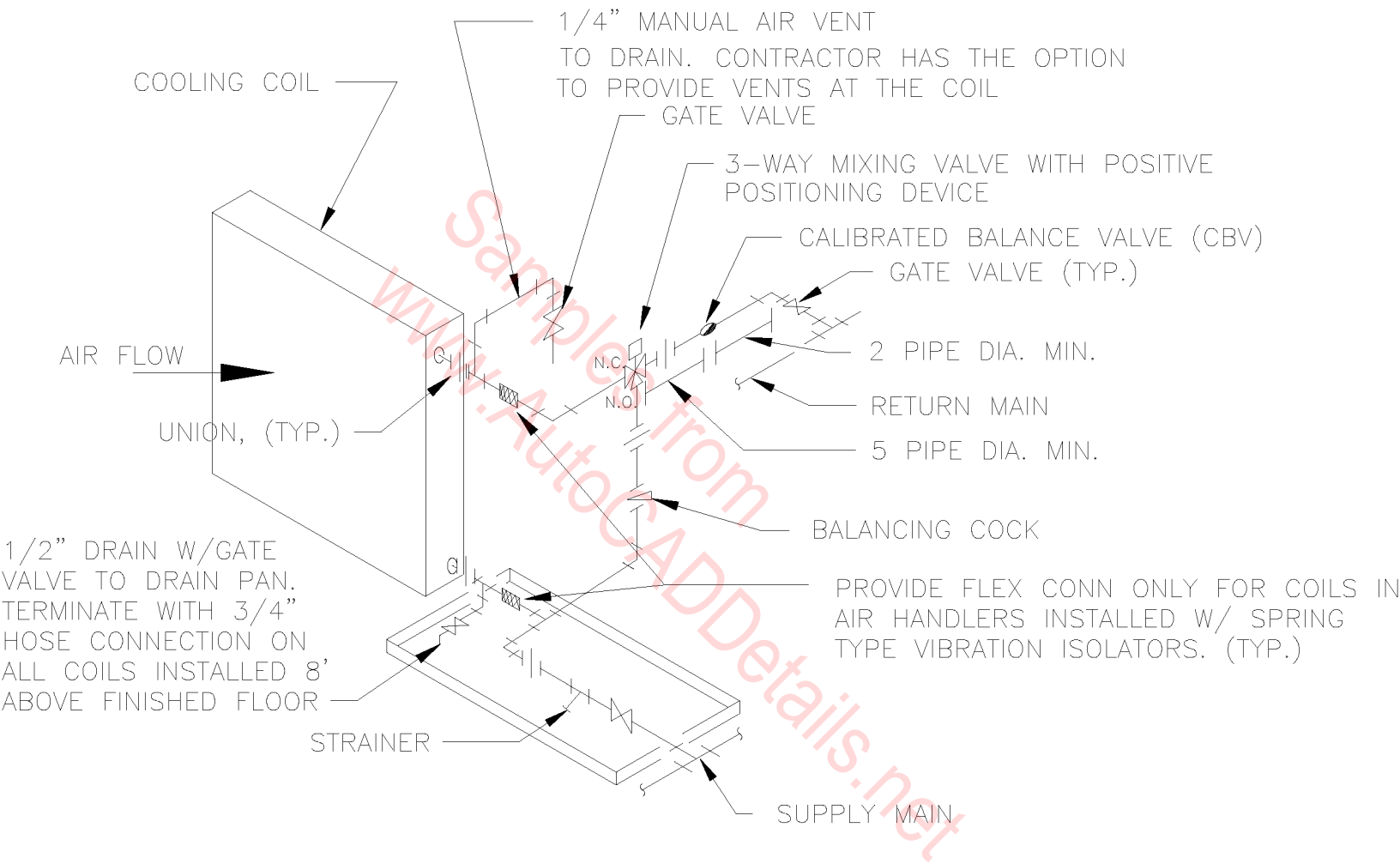
N.T.S.





VAV HEATING COIL DETAIL

N.T.S.



CHILLED WATER COIL
CONNECTION (3-WAY MIXING VALVE)

N.T.S.

PROVIDE FLEX CONN ONLY FOR COILS IN AIR HANDLERS INSTALLED W/ SPRING TYPE VIBRATION ISOLATORS.

1/4" MANUAL AIR VENT TO DRAIN PAN CONTRACTOR HAS THE OPTION TO PROVIDE VENTS AT THE COIL

COOLING COIL

GLOBE VALVE

SUPPLY MAIN

RETURN MAIN

AIR FLOW

UNION, (TYP.)

GATE VALVE (TYP.)

2 PIPE DIA. MIN.

CALIBRATED BALANCE VALVE (TYP)

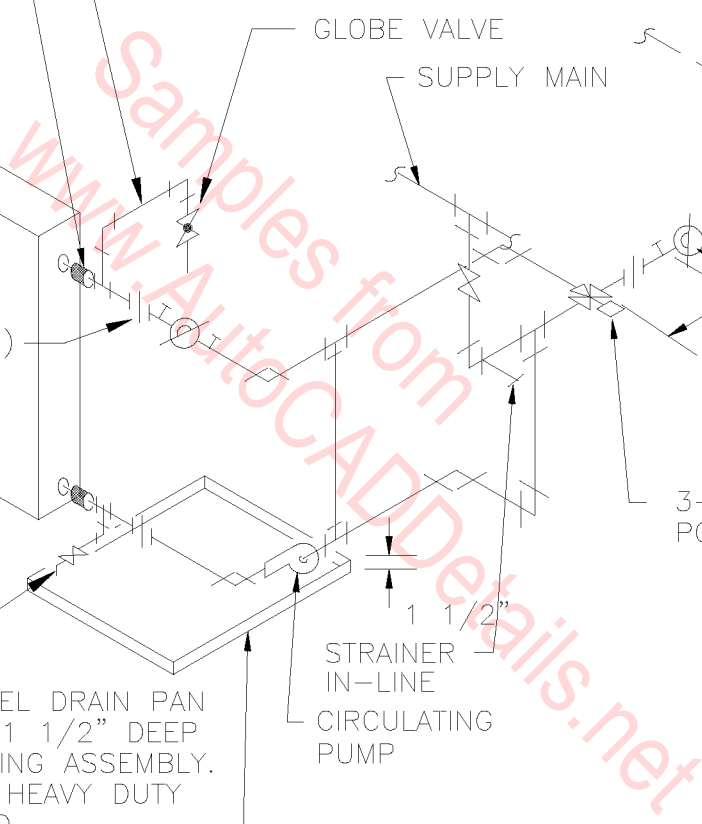
5 PIPE DIA. MIN.

3-WAY MIXING VALVE WITH POSITIVE POSITIONING DEVICE

1/2" DRAIN W/GATE VALVE TO DRAIN PAN. TERMINATE WITH 3/4" HOSE CONNECTION ON ALL COILS INSTALLED 8' ABOVE FINISHED FLOOR

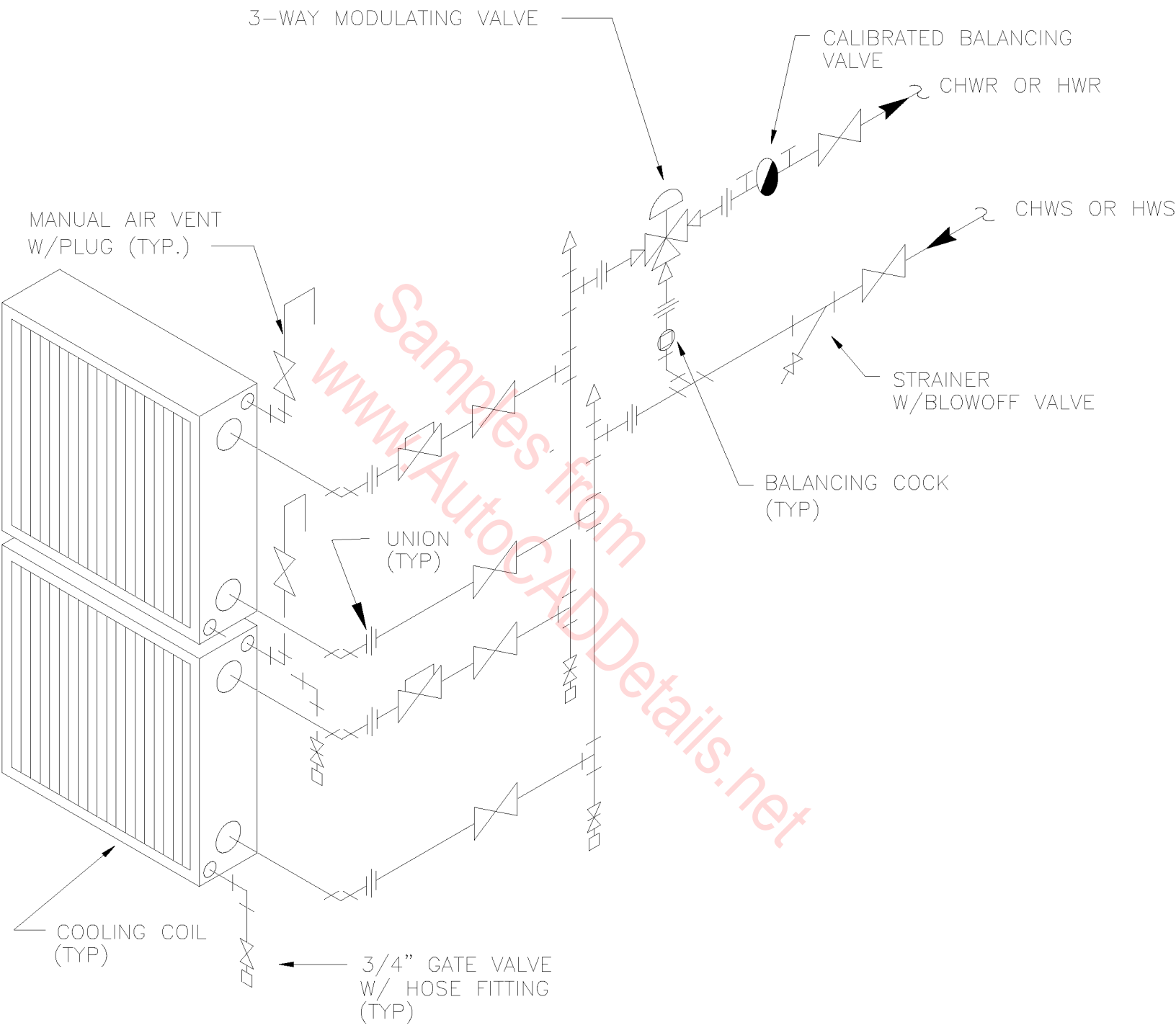
18 GAGE GALVANIZED STEEL DRAIN PAN 12" WIDE x 24" LONG x 1 1/2" DEEP LOCATED UNDER COIL PIPING ASSEMBLY. AT CONTRACTORS OPTION HEAVY DUTY PLASTIC MAY BE PROVIDED.

1 1/2"
STRAINER IN-LINE
CIRCULATING PUMP



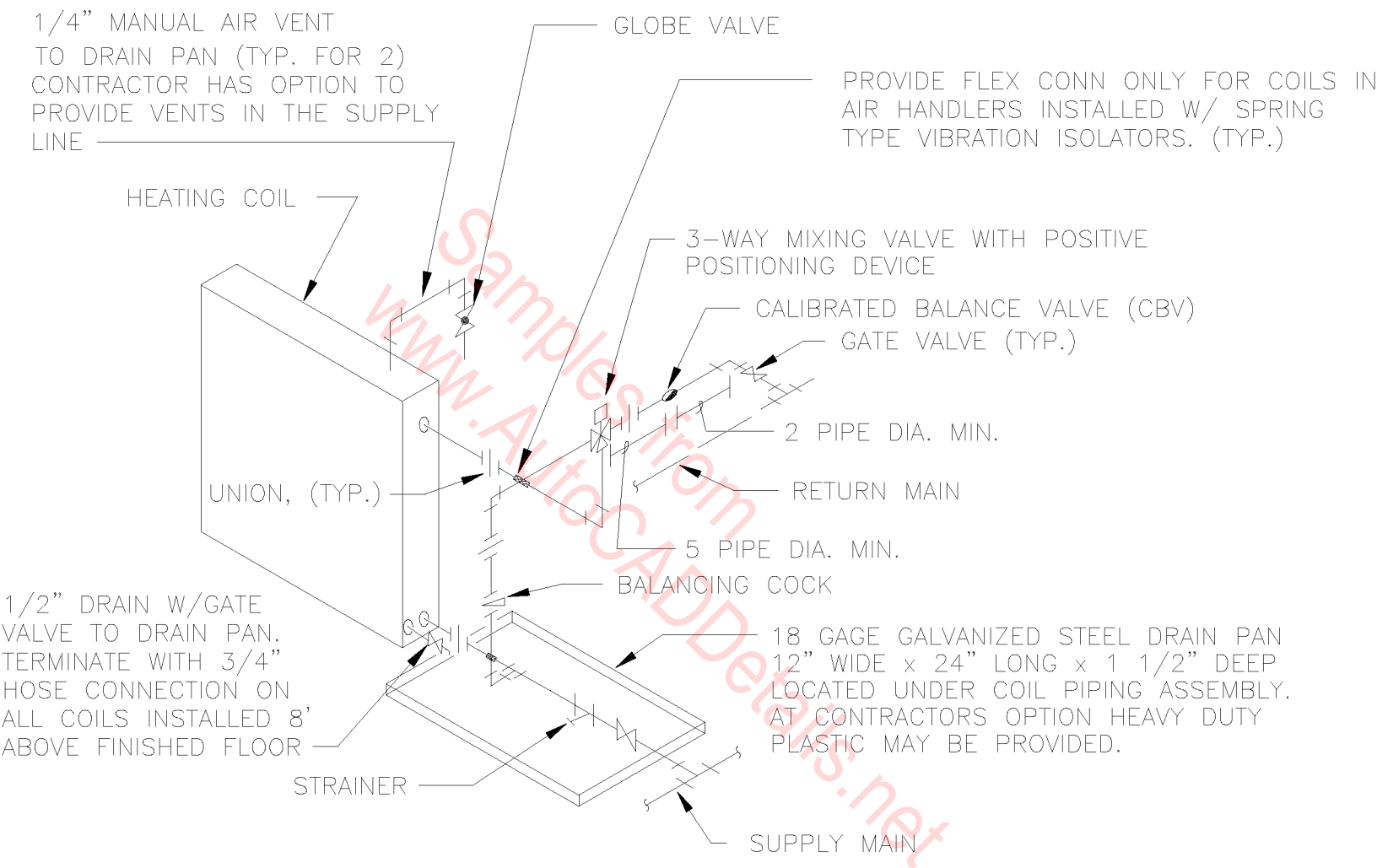
TYPICAL CONNECTIONS TO CHILLED WATER COIL WITH INDIVIDUAL CIRCULATING PUMP

N.T.S.



STACKED COILS DETAIL

N.T.S.



HOT WATER COIL
CONNECTION (3-WAY MIXING VALVE)

N.T.S.

PROVIDE FLEX CONN ONLY FOR COILS IN AIR HANDLERS INSTALLED W/ SPRING TYPE VIBRATION ISOLATORS. (TYPICAL).

HEATING COIL

1/4" MANUAL AIR VENT TO DRAIN PAN (TYP. FOR 2) CONTRACTOR HAS THE OPTION TO PROVIDE VENTS AT THE COIL

GLOBE VALVE

2-WAY MODULATING CONTROL VALVE

5 PIPE DIA. MIN.

2 PIPE DIA. MIN.

GATE VALVE, TYPICAL

RETURN MAIN

CALIBRATED BALANCING VALVE

UNION, TYPICAL

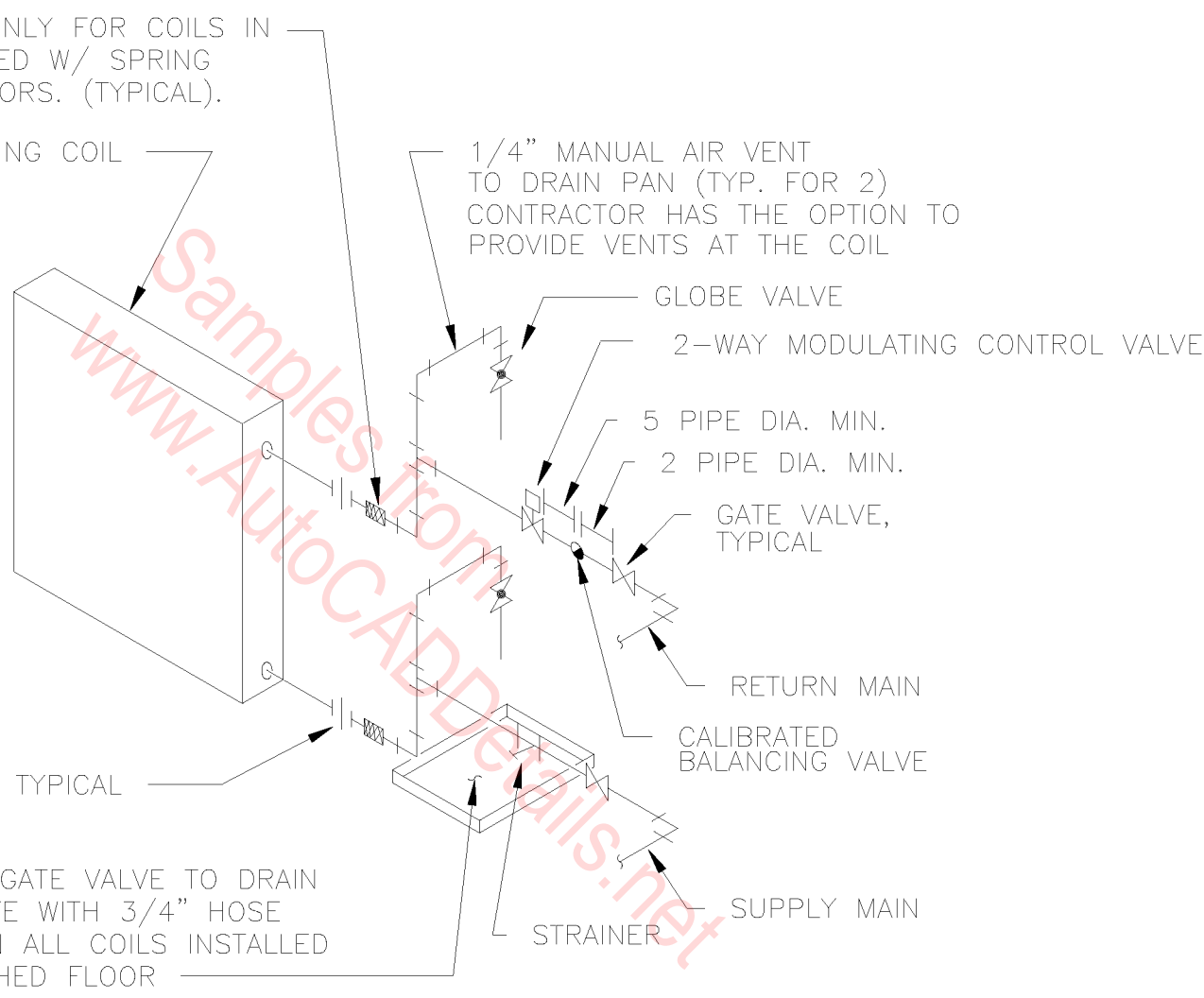
SUPPLY MAIN

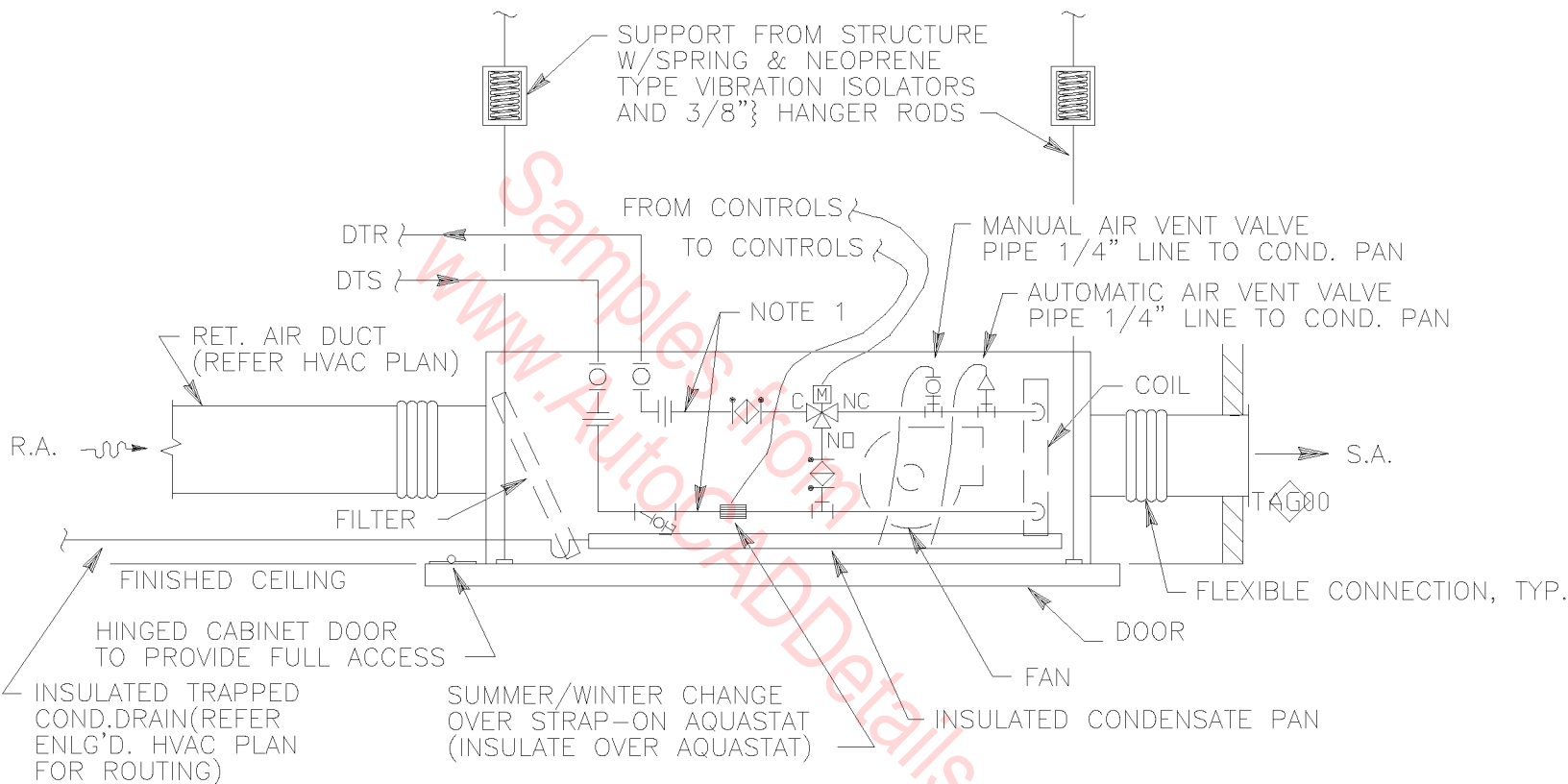
STRAINER

1/2" DRAIN W/GATE VALVE TO DRAIN PAN. TERMINATE WITH 3/4" HOSE CONNECTION ON ALL COILS INSTALLED 8' ABOVE FINISHED FLOOR

HOT WATER COIL WITH 2-WAY MIXING VALVE

N.T.S.



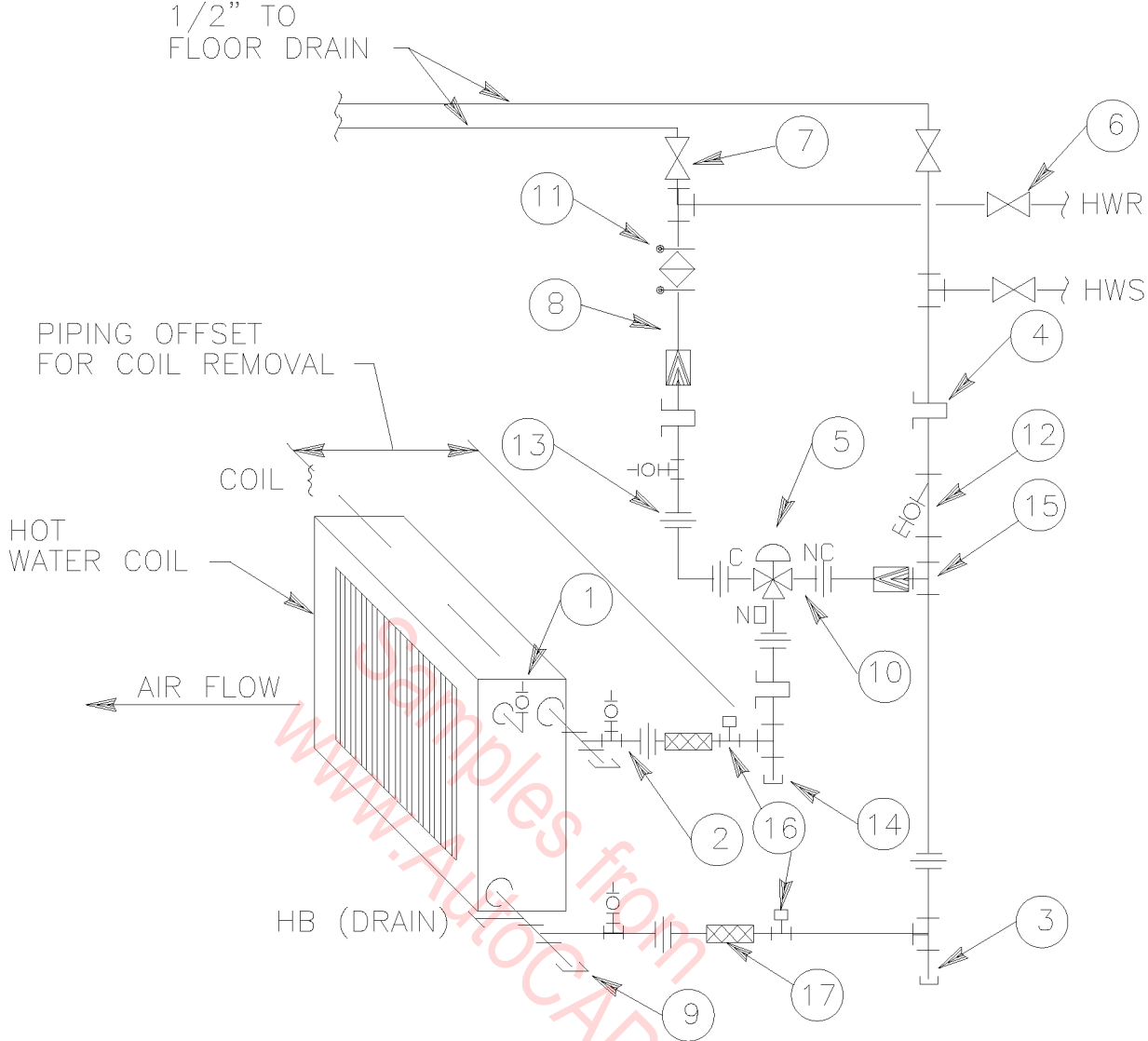


NOTES:

1. PROVIDE 3" LONG REMOVABLE SECTION OF PIPE INSULATION FOR STRAP-ON THERMOMETERS.
2. ALL VALVES, PIPING AND EQUIPMENT SHOWN TO BE LOCATED INSIDE FAN COIL UNIT CABINET WITH ACCESS FROM BELOW UNIT.

TYPICAL FAN COIL UNIT PIPING SCHEMATIC

(DUCTED INSTALLATION)
N.T.S.



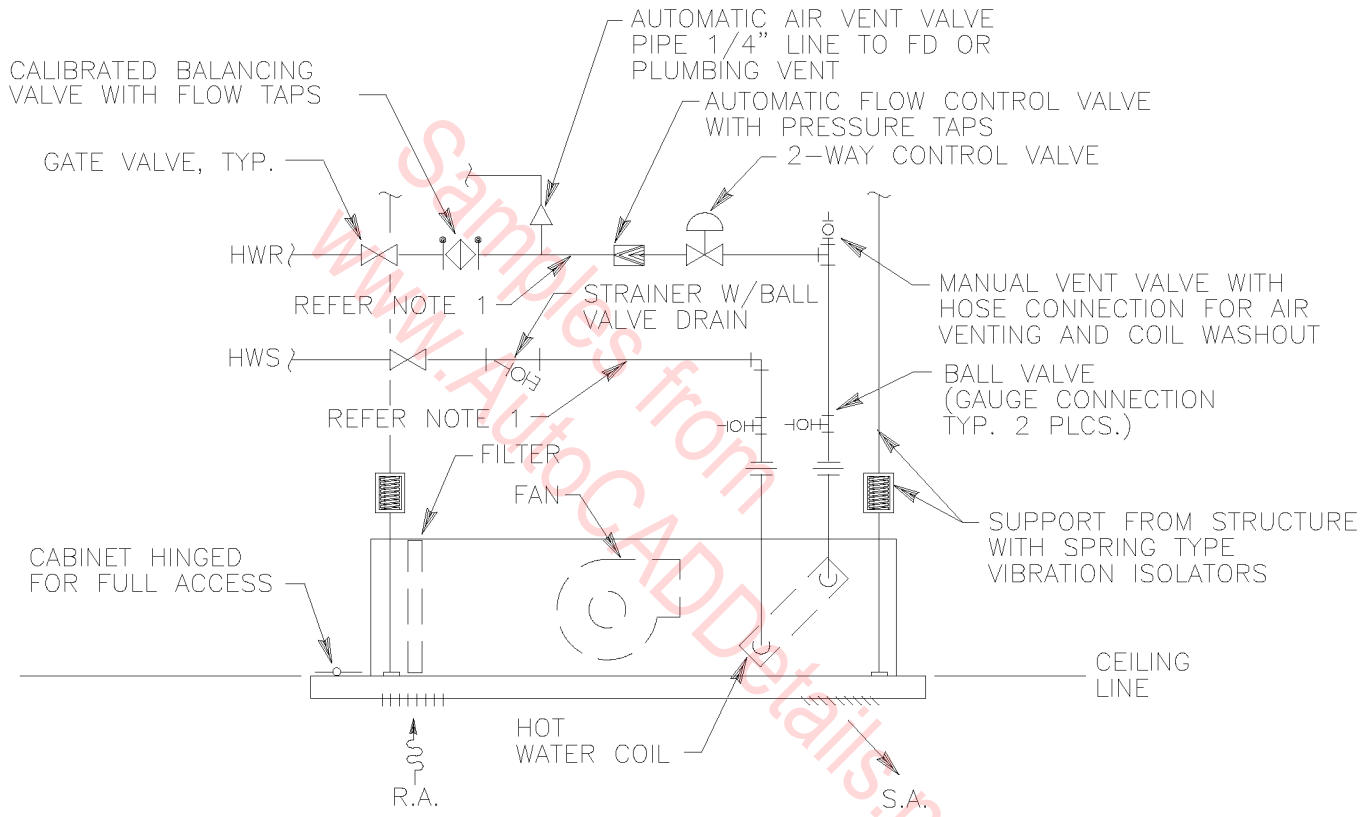
LEGEND

- | | |
|---|---|
| <ul style="list-style-type: none"> ① MANUAL COIL VENT ② BALL VALVE(GAUGE CONNECTION), TYP. ③ DIRT LEG 3/4"x 4" LONG ④ THERMOWELL, TYP. ⑤ 3-WAY CONTROL VALVE ⑥ GATE VALVE, TYP. ⑦ MANUAL AIR VENT VALVE, TYP. ⑧ AUTOMATIC FLOW CONTROL VALVE WITH PRESSURE TAPS, TYP. ⑨ COIL BLOWOUT CAP, TYP. | <ul style="list-style-type: none"> ⑩ PIPING AT 3-WAY VALVE SHALL BE SAME SIZE AS PORTS ⑪ CALIBRATED BALANCING VALVE WITH FLOW CHECKING TAPS ⑫ STRAINER WITH BALL VALVE DRAIN ⑬ UNION, TYP. ⑭ PIPE CAP, TYP. ⑮ PIPE TEE, TYP. ⑯ (PETES) PLUG ⑰ FLEXIBLE CONNECTION, TYP. |
|---|---|

NOTES:

1. COILS W/2 ROWS OR GREATER SHALL BE PIPED FOR COUNTER FLOW OF WATER AND AIR.
2. PROVIDE PIPING REDUCERS AS REQUIRED.
3. VERIFY PIPING CONNECTIONS FOR 3-WAY VALVE WITH TEMPERATURE CONTROL CONTRACTOR.

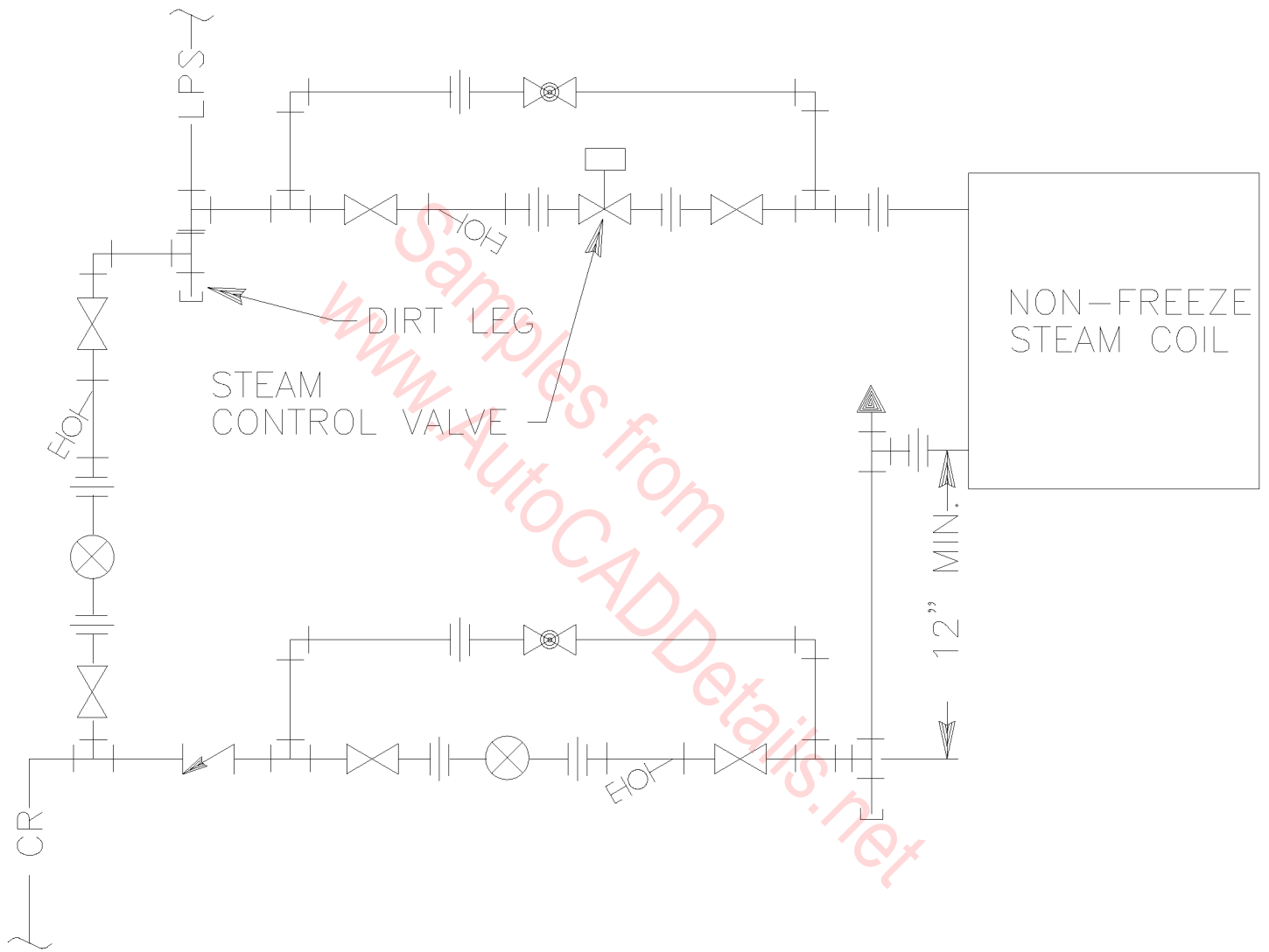
TYPICAL HOT WATER COIL PIPING SCHEMATIC



- NOTES:
1. PROVIDE 3" LONG REMOVABLE SECTION OF PIPE INSULATION FOR STRAP-ON THERMOMETERS

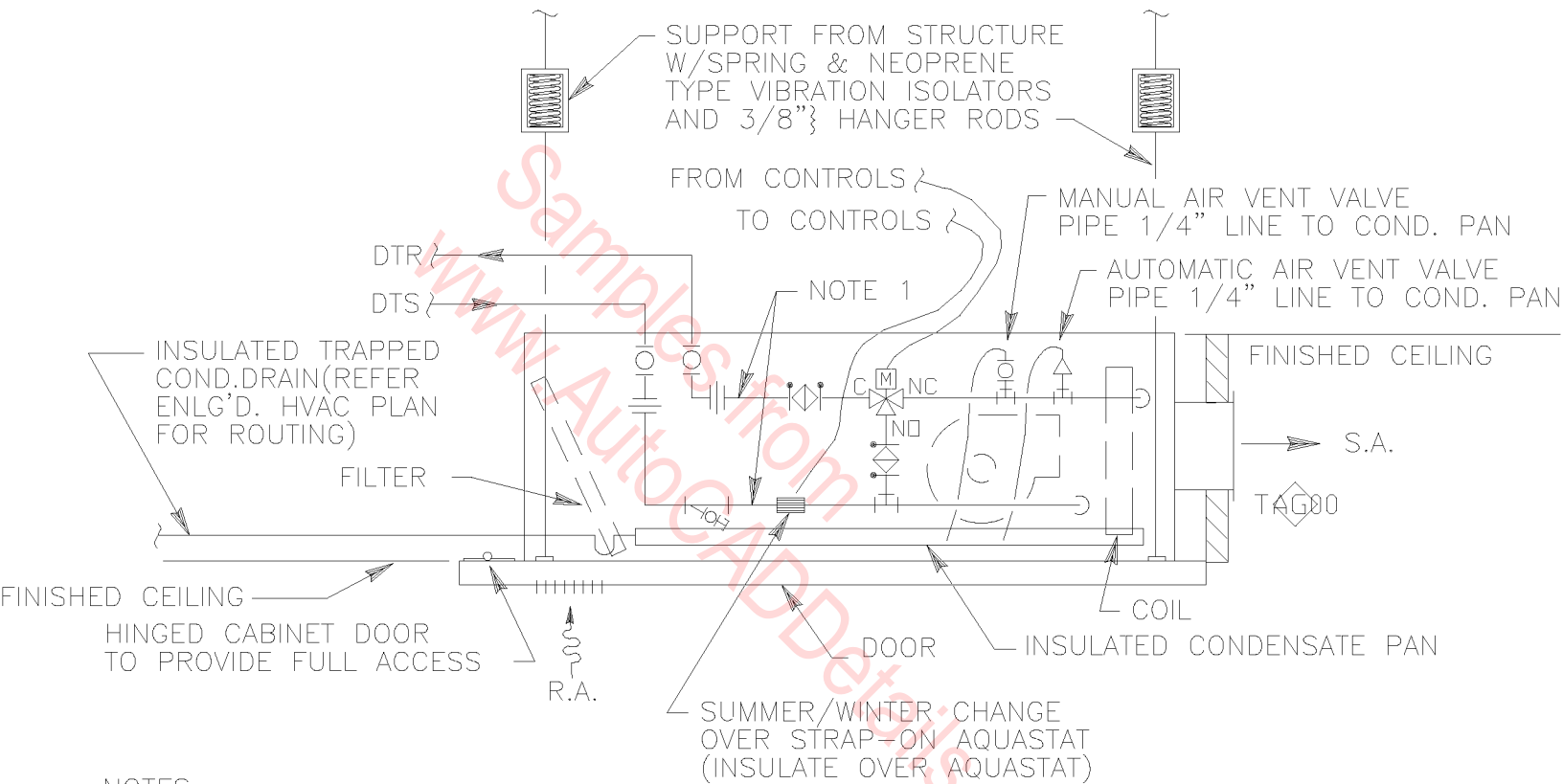
TYPICAL HEATING ONLY FAN COIL UNIT PIPING SCHEMATIC

N.T.S.



TYPICAL STEAM COIL PIPING DETAIL

N.T.S.

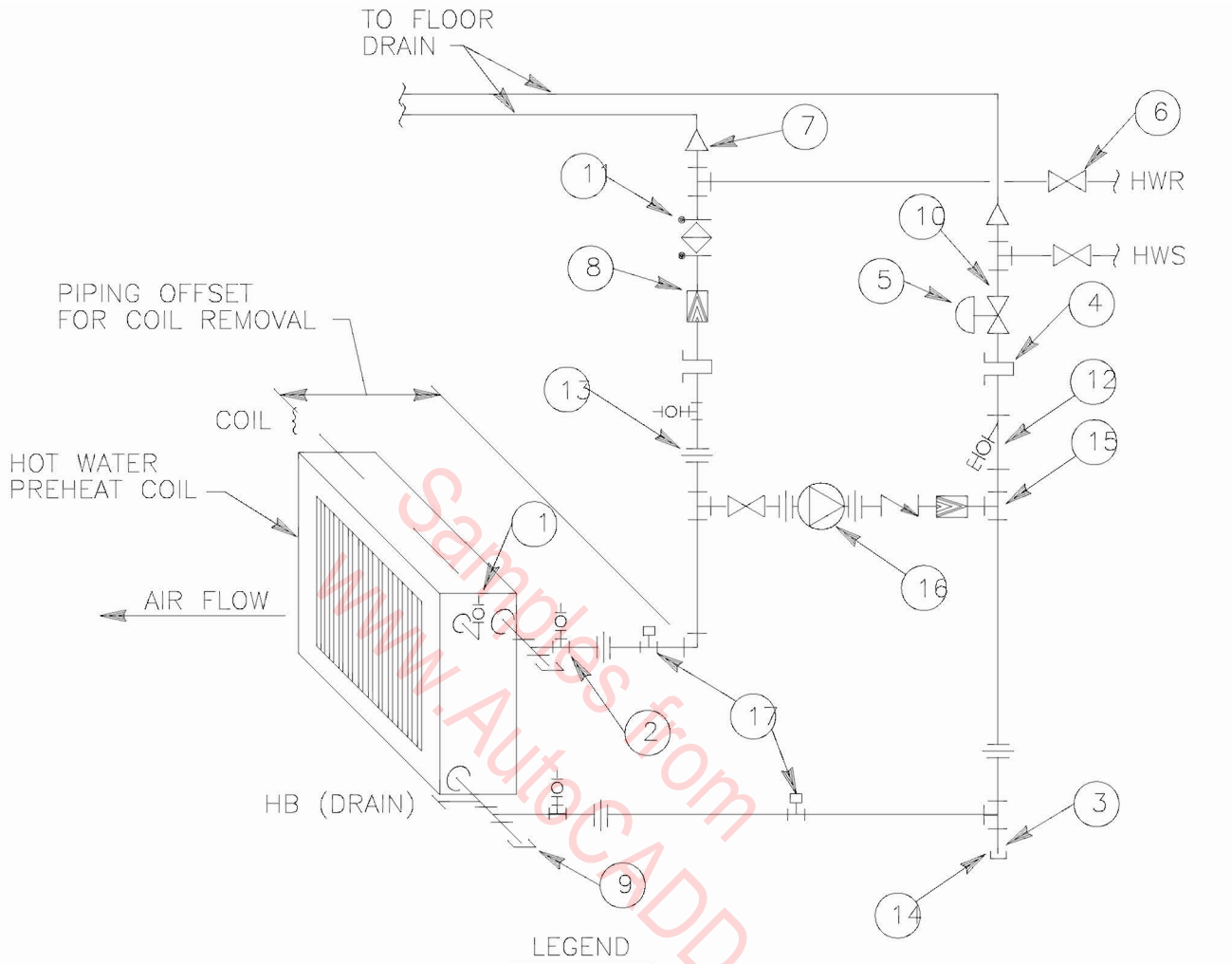


NOTES:

1. PROVIDE 3" LONG REMOVABLE SECTION OF PIPE INSULATION FOR STRAP-ON THERMOMETERS.
2. ALL VALVES, PIPING AND EQUIPMENT SHOWN TO BE LOCATED INSIDE FAN COIL UNIT CABINET WITH ACCESS FROM BELOW UNIT.

TYPICAL FAN COIL UNIT PIPING SCHEMATIC

DIRECT SUPPLY & RETURN
N.T.S.



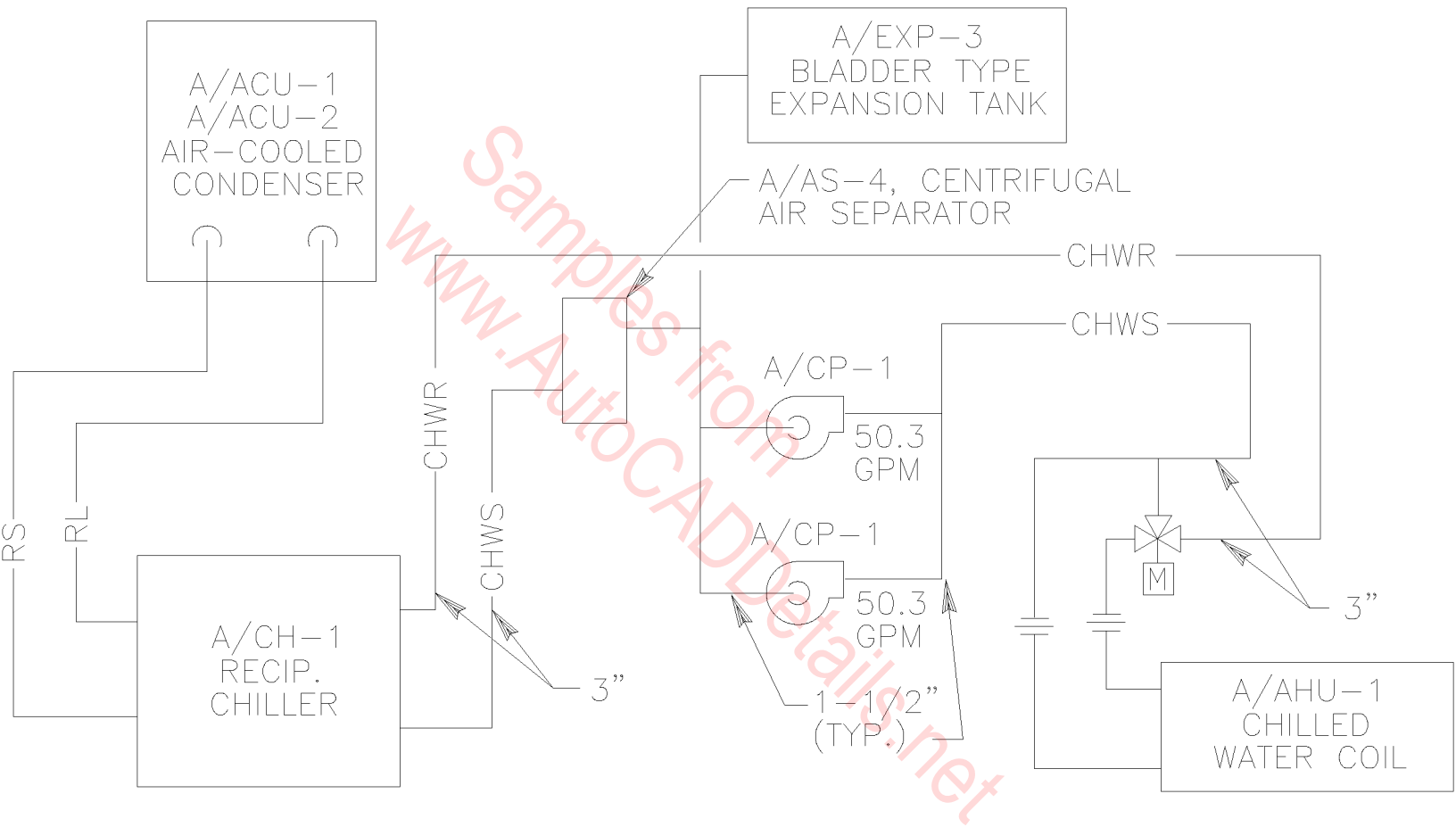
- | | |
|---|--|
| ① MANUAL VENT | ⑨ COIL BLOWOUT CAP, TYP. |
| ② BALL VALVE(GAUGE CONNECTION) | ⑩ PIPING AT TWO-POSITION VALVE SHALL BE SAME SIZE AS PORTS |
| ③ DIRT LEG 3/4"x 4" LC'NG | ⑪ CALIBRATED BALANCING VALVE WITH FLOW CHECKING TAPS |
| ④ THERMOWELL, TYP. | ⑫ STRAINER WITH BALL VALVE DRAIN |
| ⑤ TWO-POSITION CONTROL VALVE | ⑬ UNION, TYP. |
| ⑥ GATE VALVE, TYP. | ⑭ PIPE CAP, TYP. |
| ⑦ AUTOMATIC AIR VENT VALVE, TYP. | ⑮ PIPE TEE, TYP. |
| ⑧ AUTOMATIC FLOW CONTROL VALVE WITH PRESSURE TAPS, TYP. | ⑯ PUMP |
| | ⑰ (PETES) PLUG |

NOTES:

1. COILS W/2 ROWS OR GREATER SHALL BE PIPED FOR COUNTER FLOW OF WATER AND AIR.
2. PROVIDE PIPING REDUCERS AS REQUIRED.

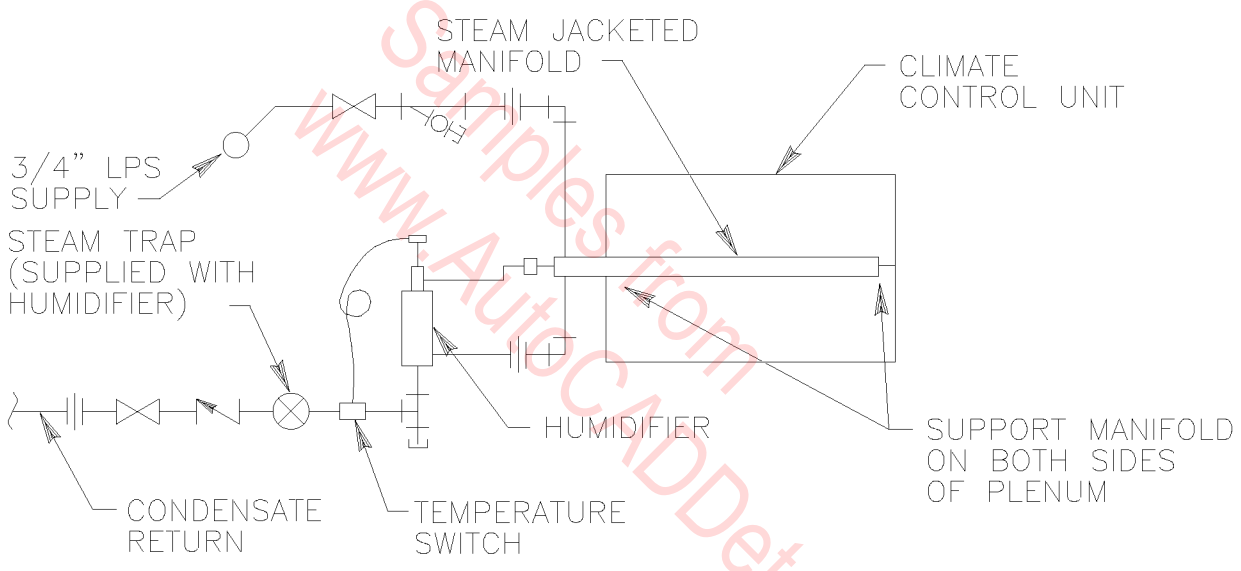
TYPICAL HOT WATER PREHEAT COIL PIPING SCHEMATIC

N.T.S.



CHILLED WATER FLOW DIAGRAM

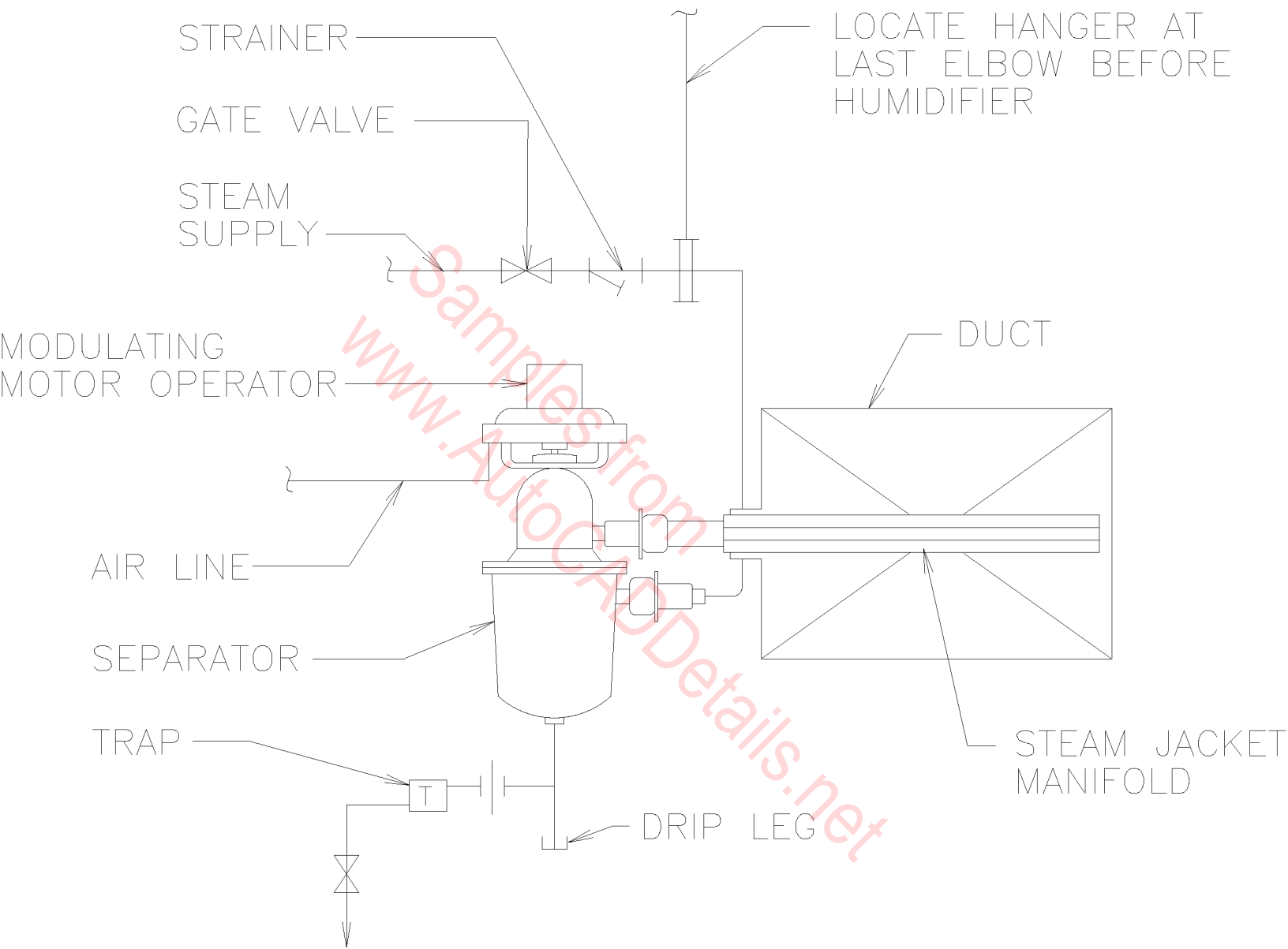
N.T.S.



NOTE: INSULATE ALL PIPING. MANIFOLDS SHALL BE INSTALLED TO DISCHARGE STEAM OPPOSITE AIR FLOW.

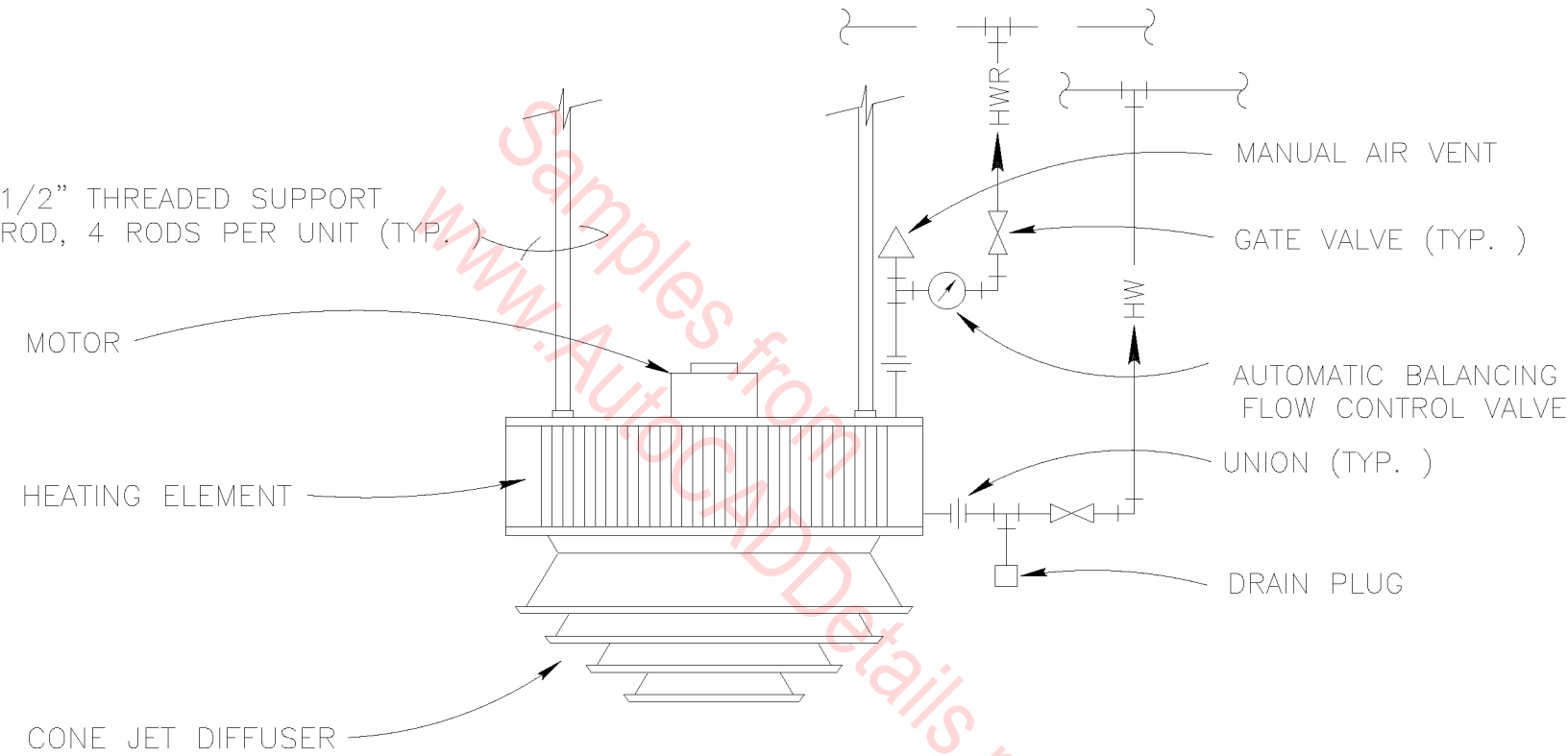
TYPICAL HUMIDIFIER CONDENSATE RETURN DETAIL

N.T.S.

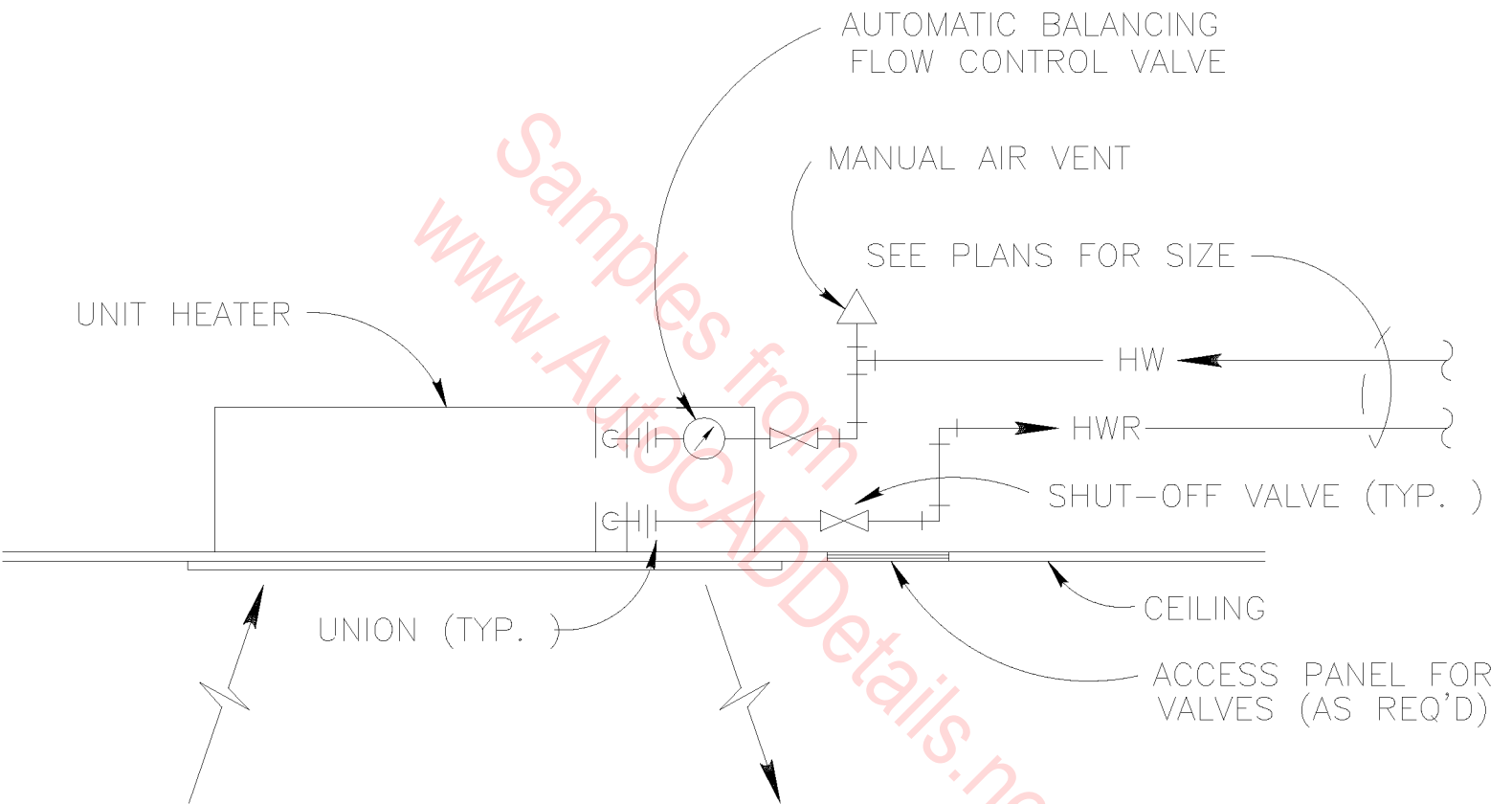


HUMIDIFIER PIPING DETAIL

N.T.S.

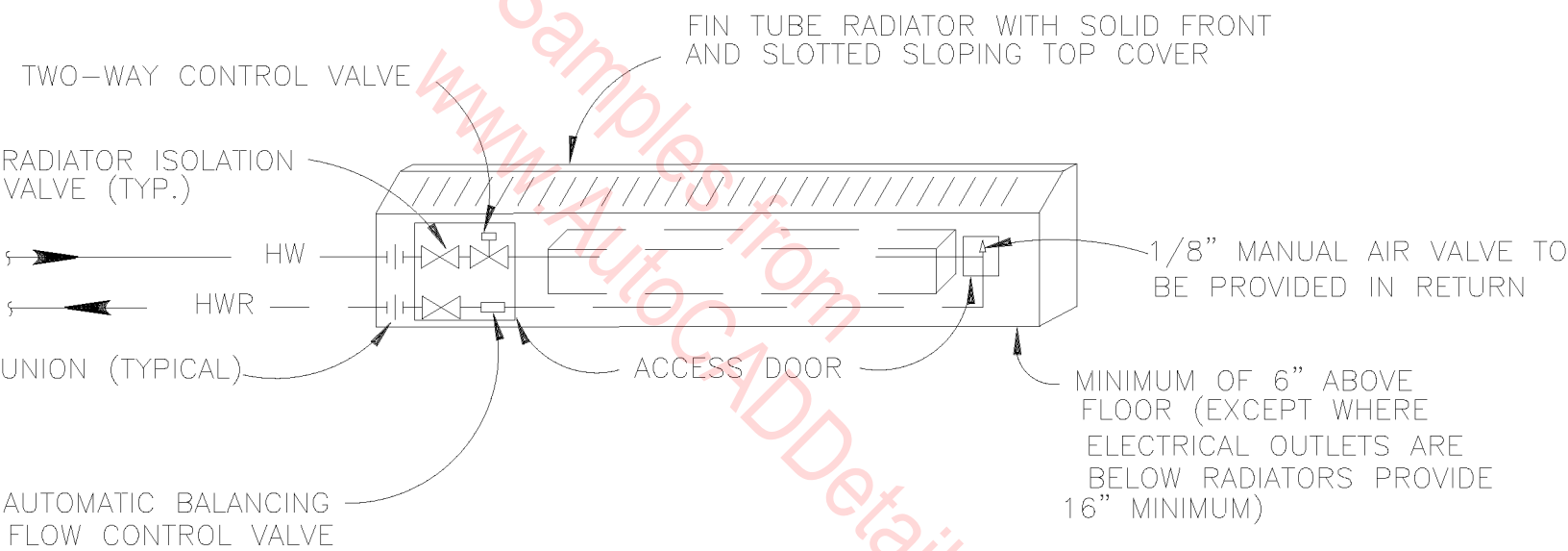


VERTICAL UNIT HEATER DETAIL
 N.T.S.

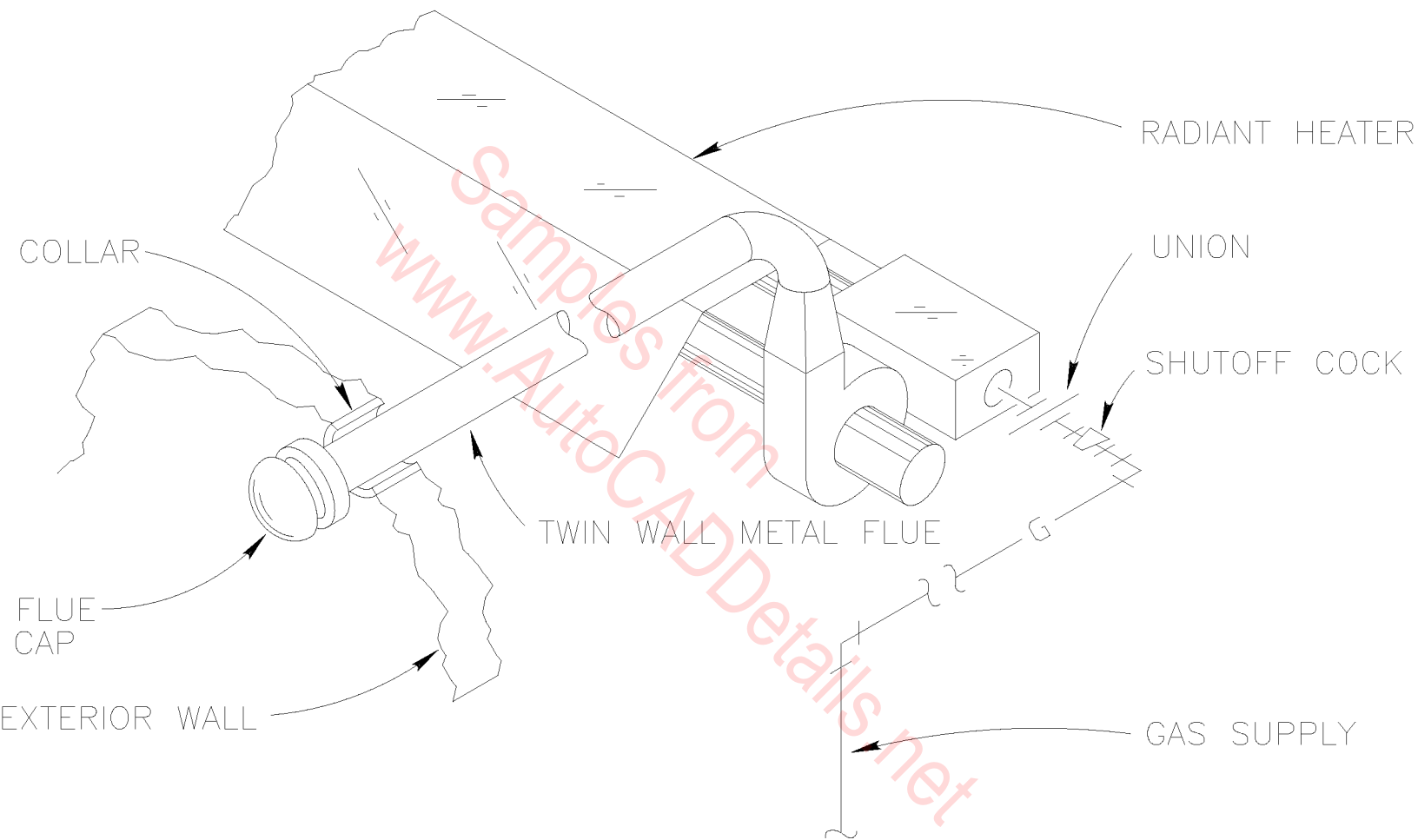


HOT WATER CABINET UNIT HEATER DETAIL

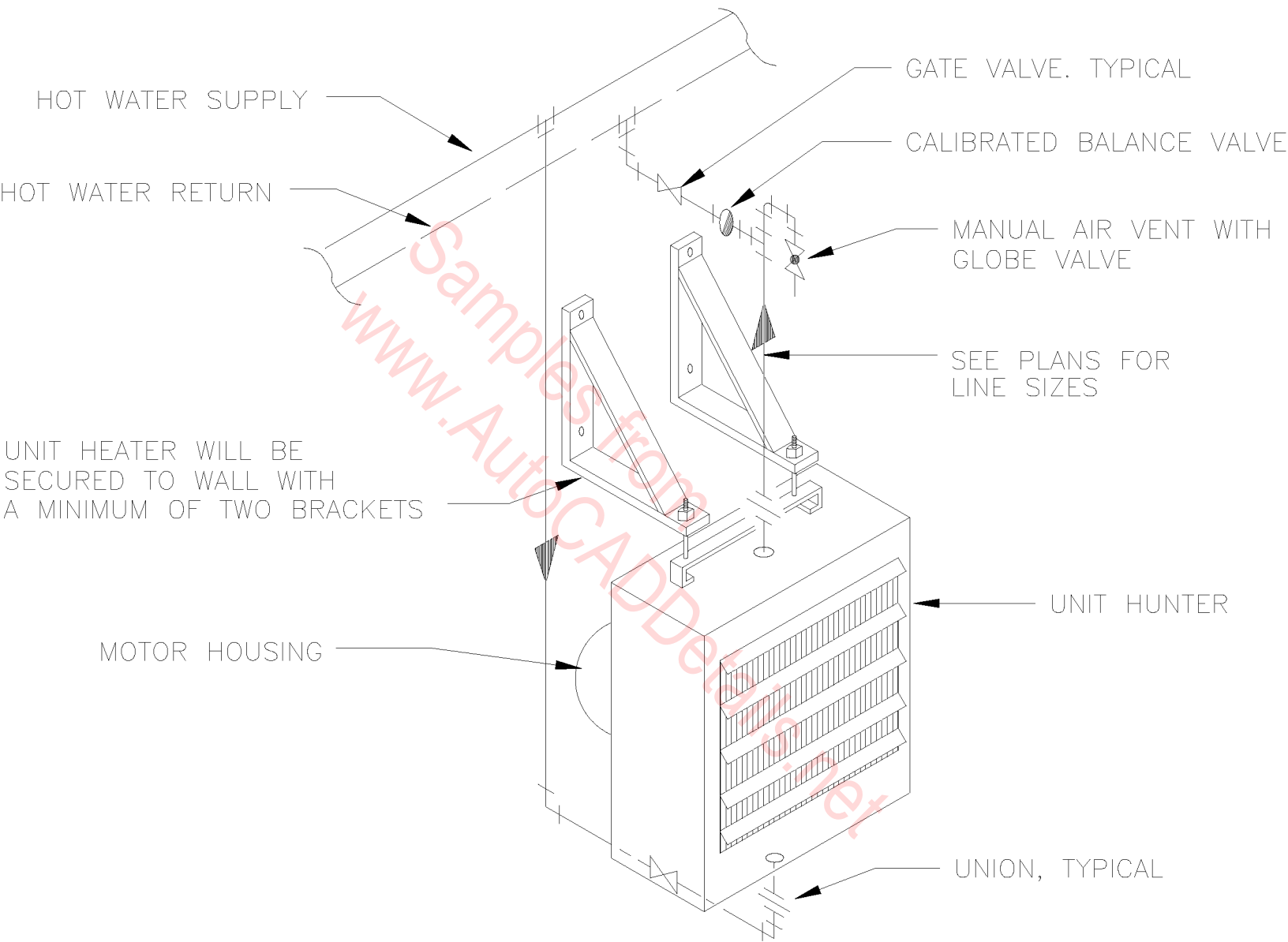
N.T.S.



FIN TUBE RADIATOR DETAIL
 N.T.S.



RADIANT HEATER & FLUE PIPE DETAIL
N.T.S.



HOT WATER UNIT HEATER DETAIL

N.T.S.

UNIT HEATER SHALL BE SECURED TO WALL WITH A MINIMUM OF TWO BRACKETS. BRACKETS PER MANUFACTURERS RECOMMENDATIONS

5/8"φ EXPANSION BOLTS TYP. FOR SIX

TWO 5/8"φ BOLTS, EACH SIDE OF FRAME WITH LOCK WASHERS

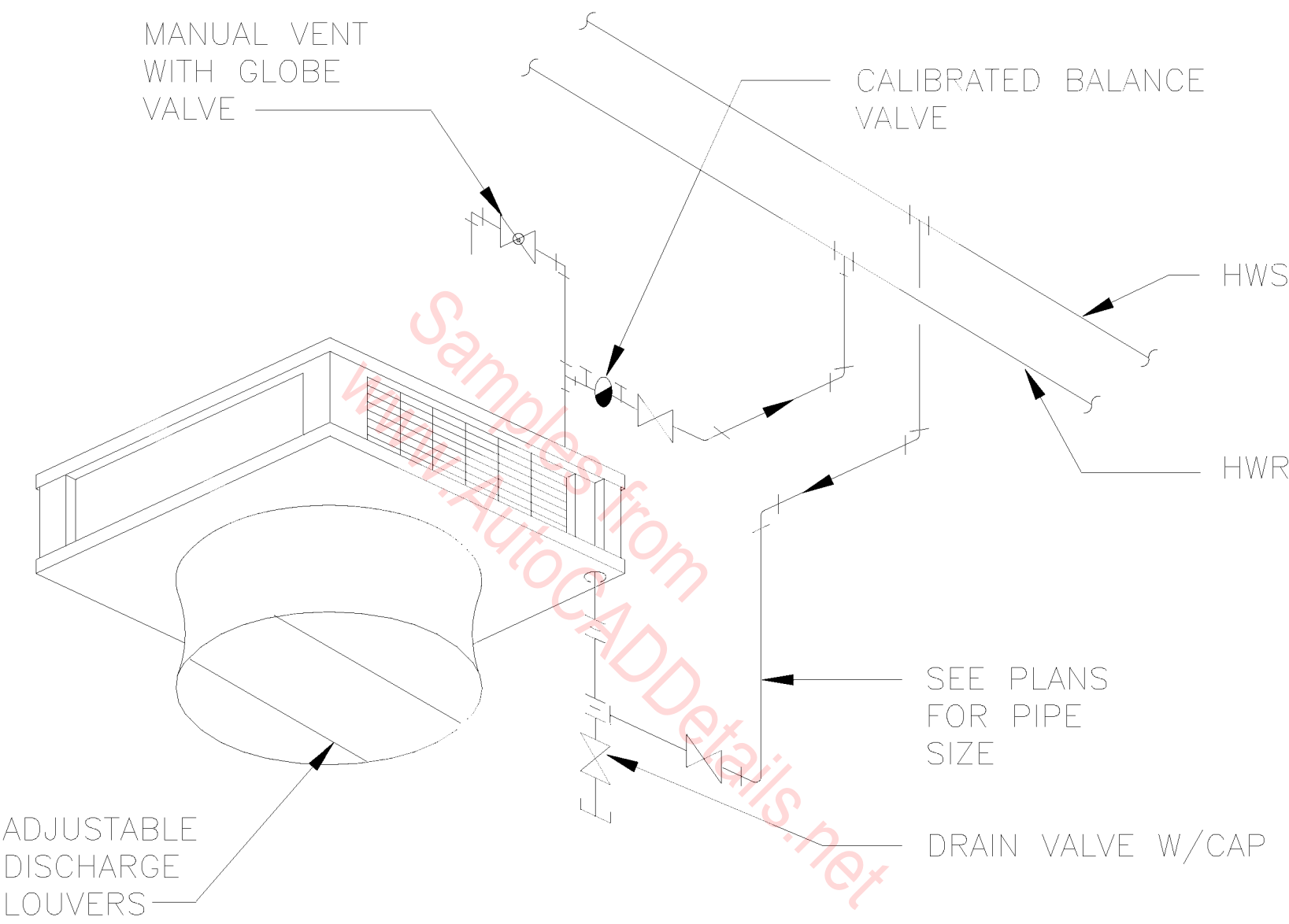
UNIT HEATER

SEISMIC BRACE

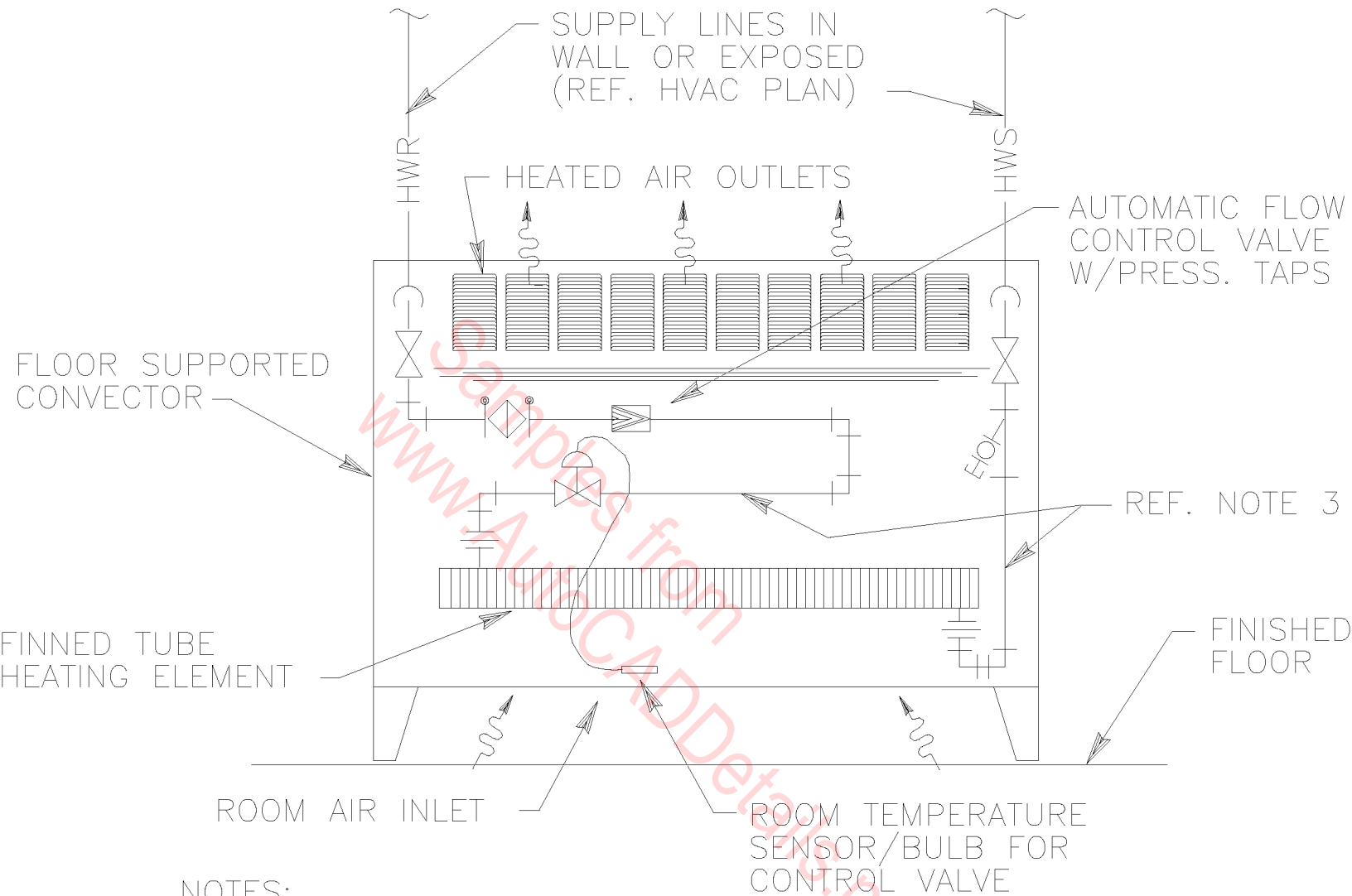
Samples from
www.AutocADDetails.net

ELECTRIC UNIT HEATER DETAIL

N.T.S.



BLOW-DOWN HOT WATER
UNIT HEATER DETAIL
 N.T.S.

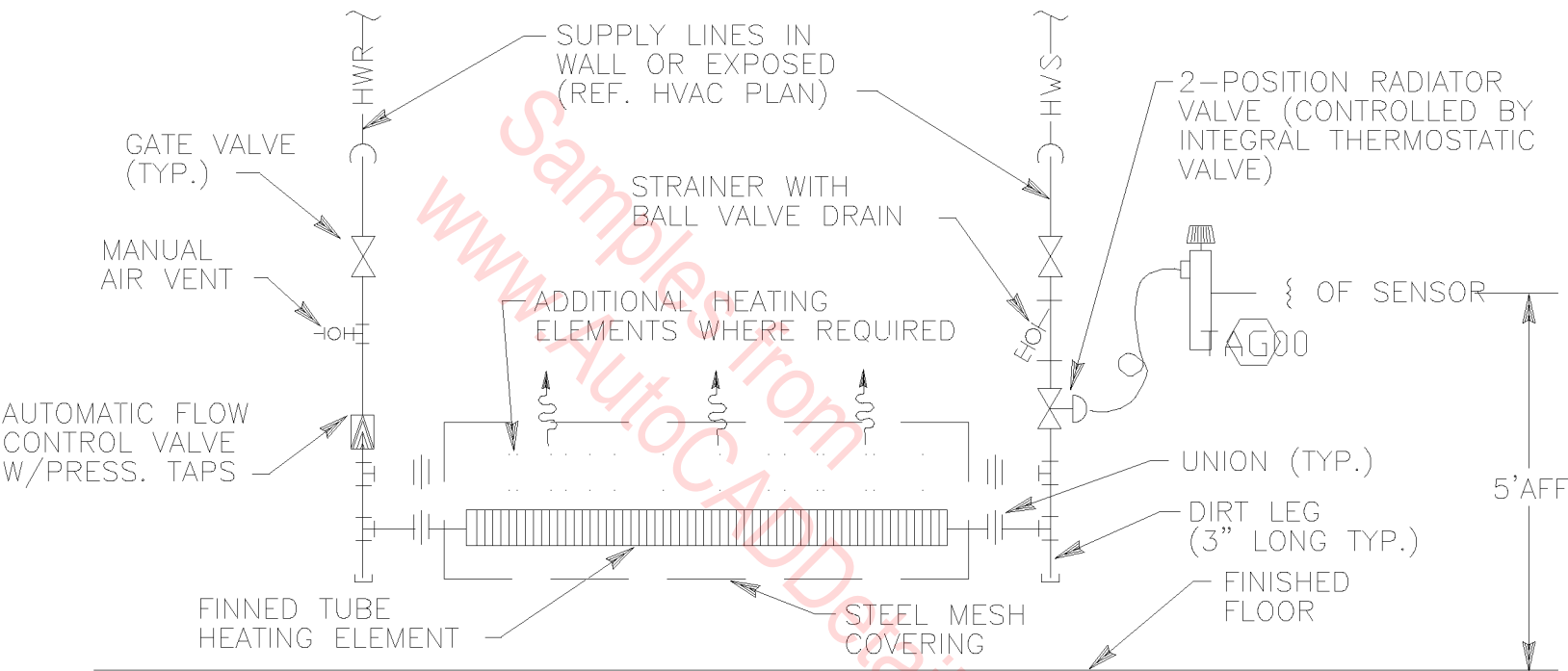


NOTES:

1. CABINET SHALL PROVIDE FULL ACCESS TO PIPING, VALVES, HEATING ELEMENT(S) AND TEMPERATURE SENSING BULB/VALVE CONTROLLER.
2. PROVIDE MANUAL AIR VENTING VALVE AND THE HEATING ELEMENT.
3. PROVIDE 3" LONG REMOVABLE SECTION OF PIPE INSULATION FOR STRAP-ON THERMOMETERS, INSIDE CABINET.

TYPICAL CONVECTOR PIPING

N.T.S.

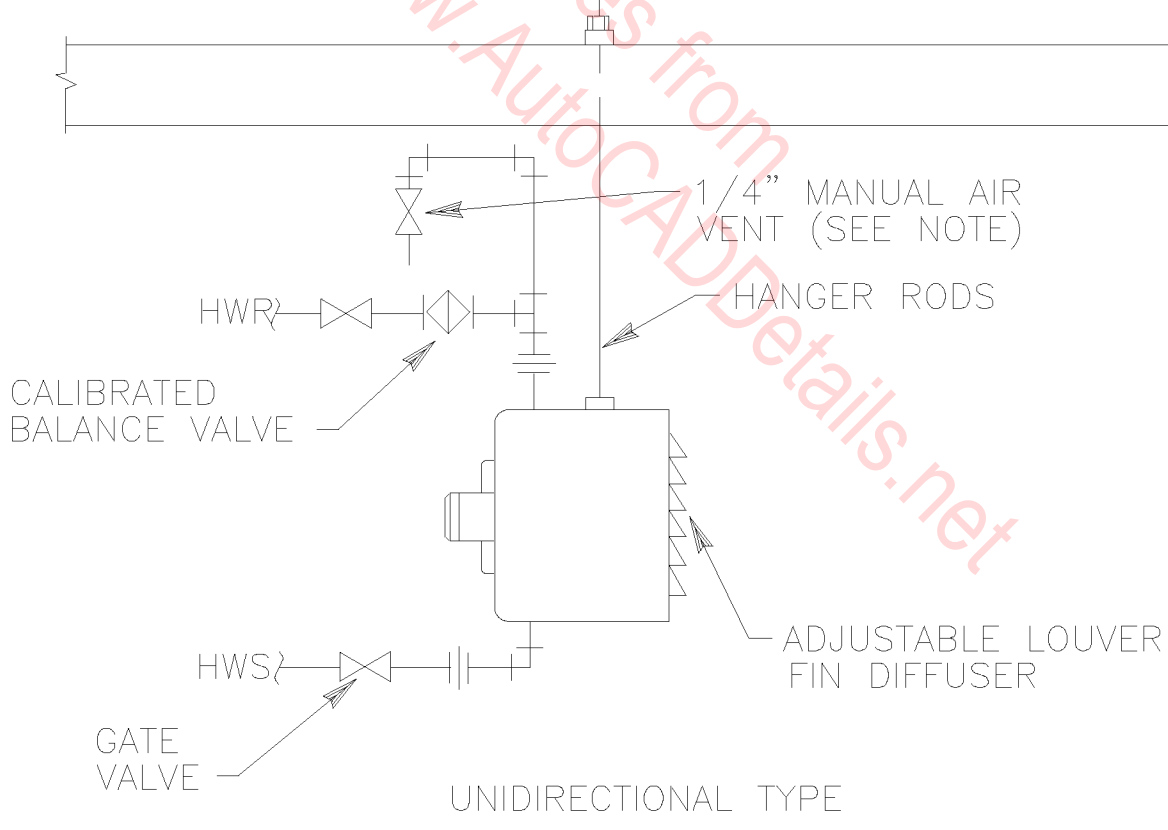
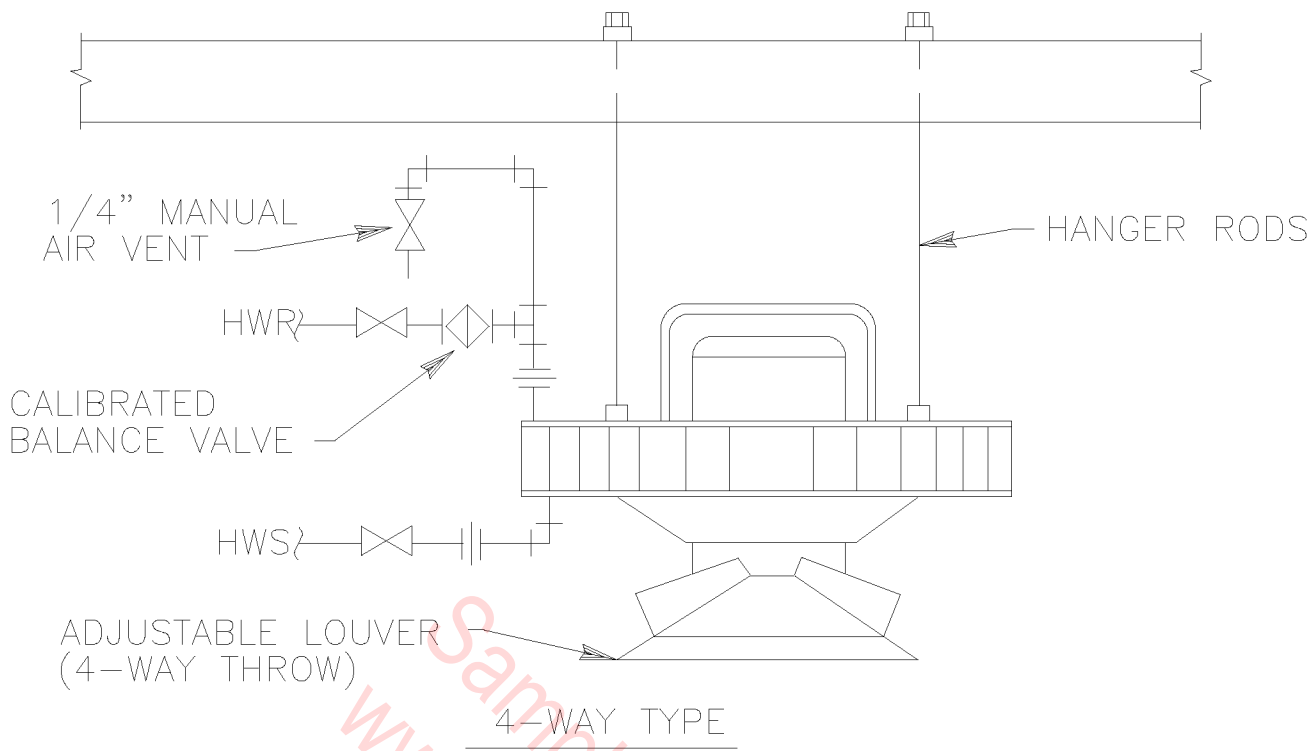


NOTE:

1. PROVIDE PIPING REDUCERS AS REQUIRED.
2. WALL MOUNT SENSOR/CONTROLLER. COVER IT AND CAPILLARY TUBING TO PREVENT PHYSICAL DAMAGE.

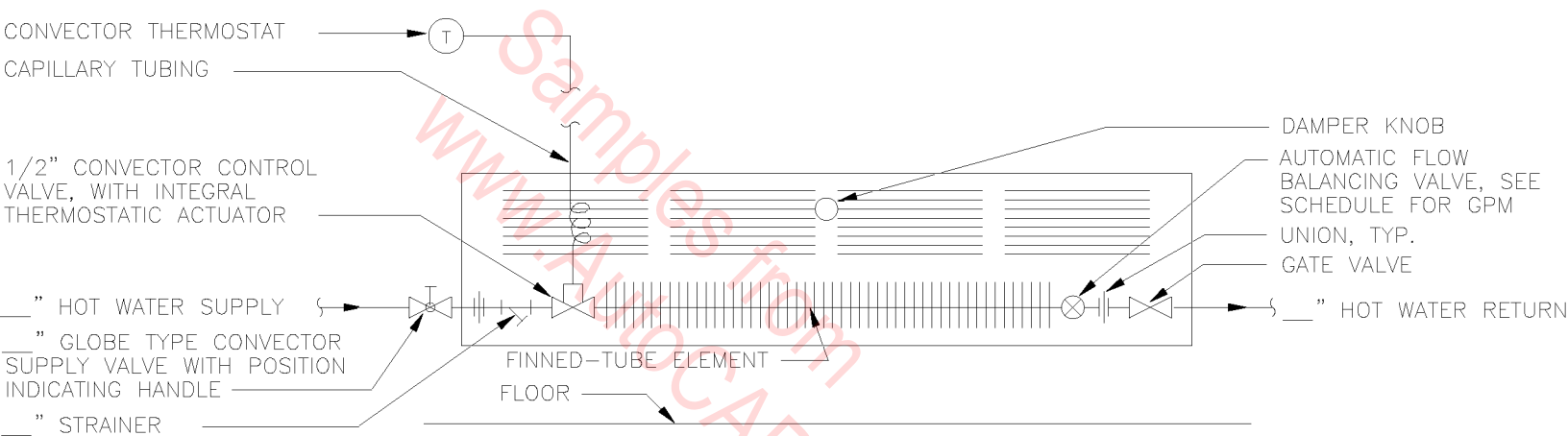
FIN TUBE CONVECTOR PIPING SCHEMATIC

N.T.S.



NOTE:
 TERMINATE MANUAL AIR VENT AT WALL 7'-0" AFF WITH
 GLOBE VALVE WHEN THE UNIT HEATER IS 12'-0" OR
 MORE ABOVE FINISHED FLOOR.

TYPICAL CONNECTIONS TO UNIT HEATERS

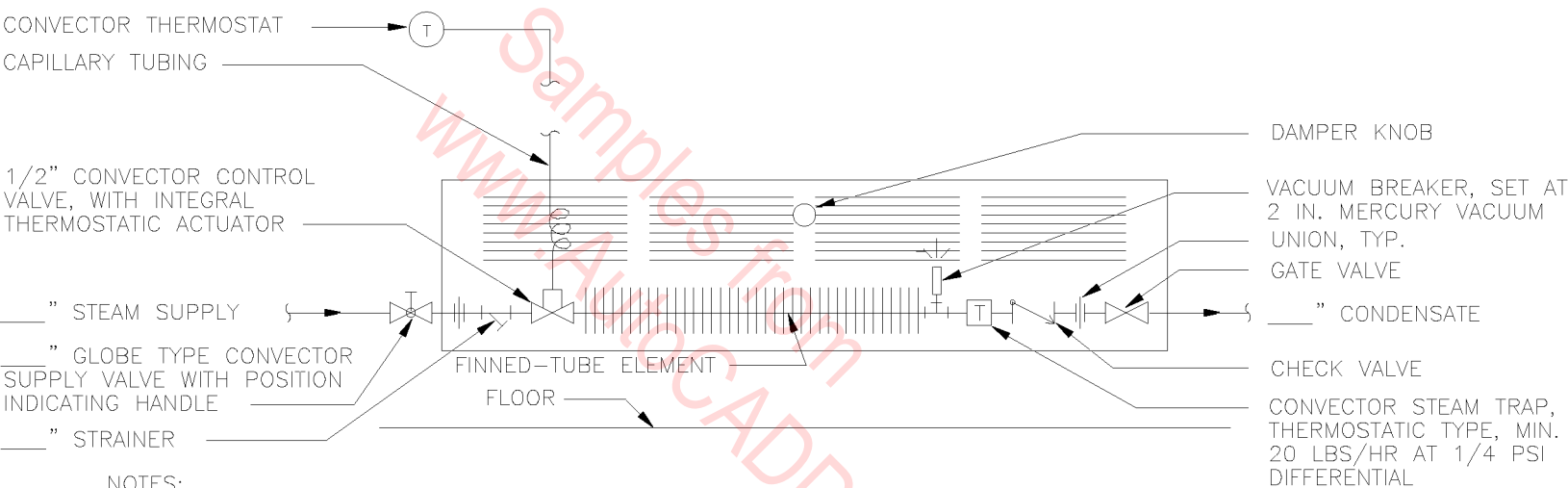


NOTES:

1. THE CONVECTOR ENCLOSURE SHALL ENCLOSE THE VALVES AS SHOWN.
2. MOUNT THE CONVECTOR THERMOSTAT 5 FT. AFF. DO NOT LOCATE IT IN THE WARM AIR STREAM DIRECTLY ABOVE THE CONVECTOR. MOUNT THE CAPILLARY CONTROL TUBING NEATLY ON THE WALL RUNNING IT IN ONLY HORIZONTAL OR VERTICAL DIRECTIONS. LOCATE EXCESS TUBING WITHIN THE ENCLOSURE.
3. PROVIDE PIPING REDUCERS AND ADAPTERS AS NEEDED.
4. MOUNT CONVECTORS IN ACCORDANCE WITH THE MFR'S INSTRUCTIONS ___ IN. AFF.

TYPICAL HOT WATER BASEBOARD CONVECTOR PIPING

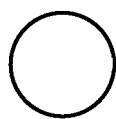
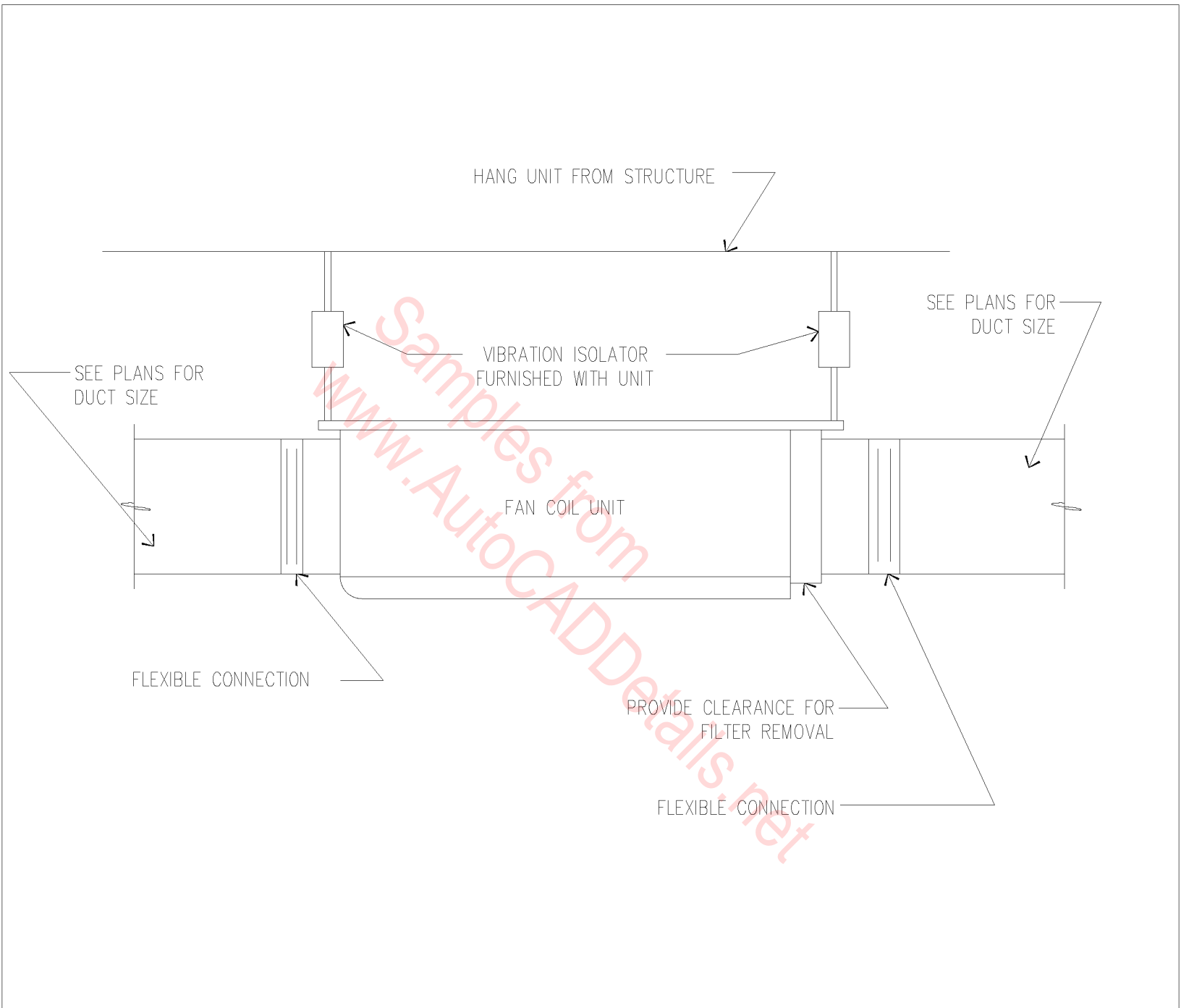
N.T.S.



NOTES:

1. THE CONVECTOR ENCLOSURE SHALL ENCLOSE THE VALVES AS SHOWN.
2. MOUNT THE CONVECTOR THERMOSTAT 5 FT. AFF. DO NOT LOCATE IT IN THE WARM AIR STREAM DIRECTLY ABOVE THE CONVECTOR. MOUNT THE CAPILLARY CONTROL TUBING NEATLY ON THE WALL RUNNING IT IN ONLY HORIZONTAL OR VERTICAL DIRECTIONS. LOCATE EXCESS TUBING WITHIN THE ENCLOSURE.
3. PROVIDE PIPING REDUCERS AND ADAPTERS AS NEEDED.
4. SLOPE THE FINNED-TUBE ELEMENT FOR MAXIMUM DRAINAGE.
5. MOUNT CONVECTORS IN ACCORDANCE WITH THE MFR'S INSTRUCTIONS _____ IN. AFF.

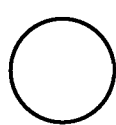
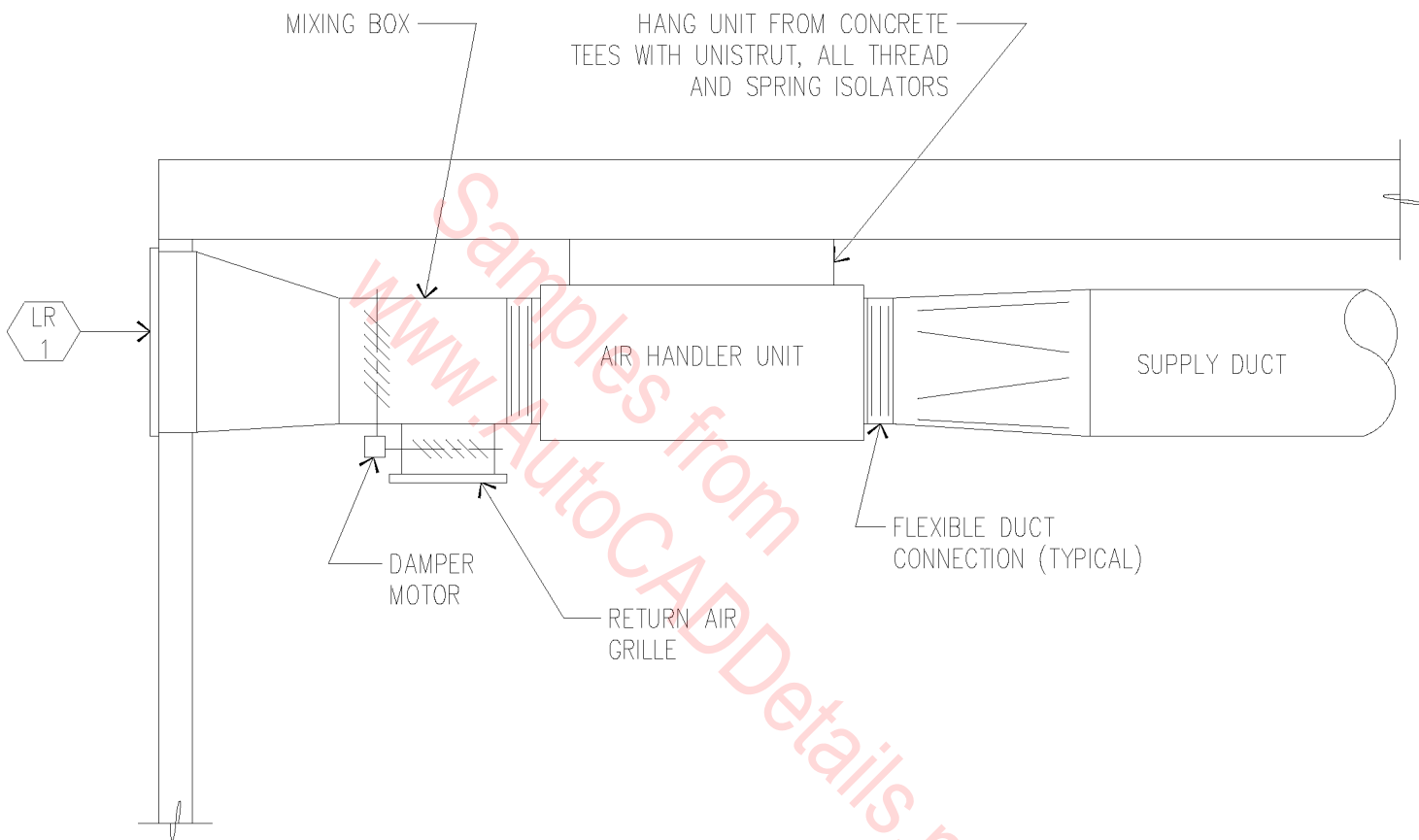
TYPICAL STEAM BASEBOARD CONVECTOR PIPING
N.T.S.



FAN COIL UNIT DETAIL

N.T.S.

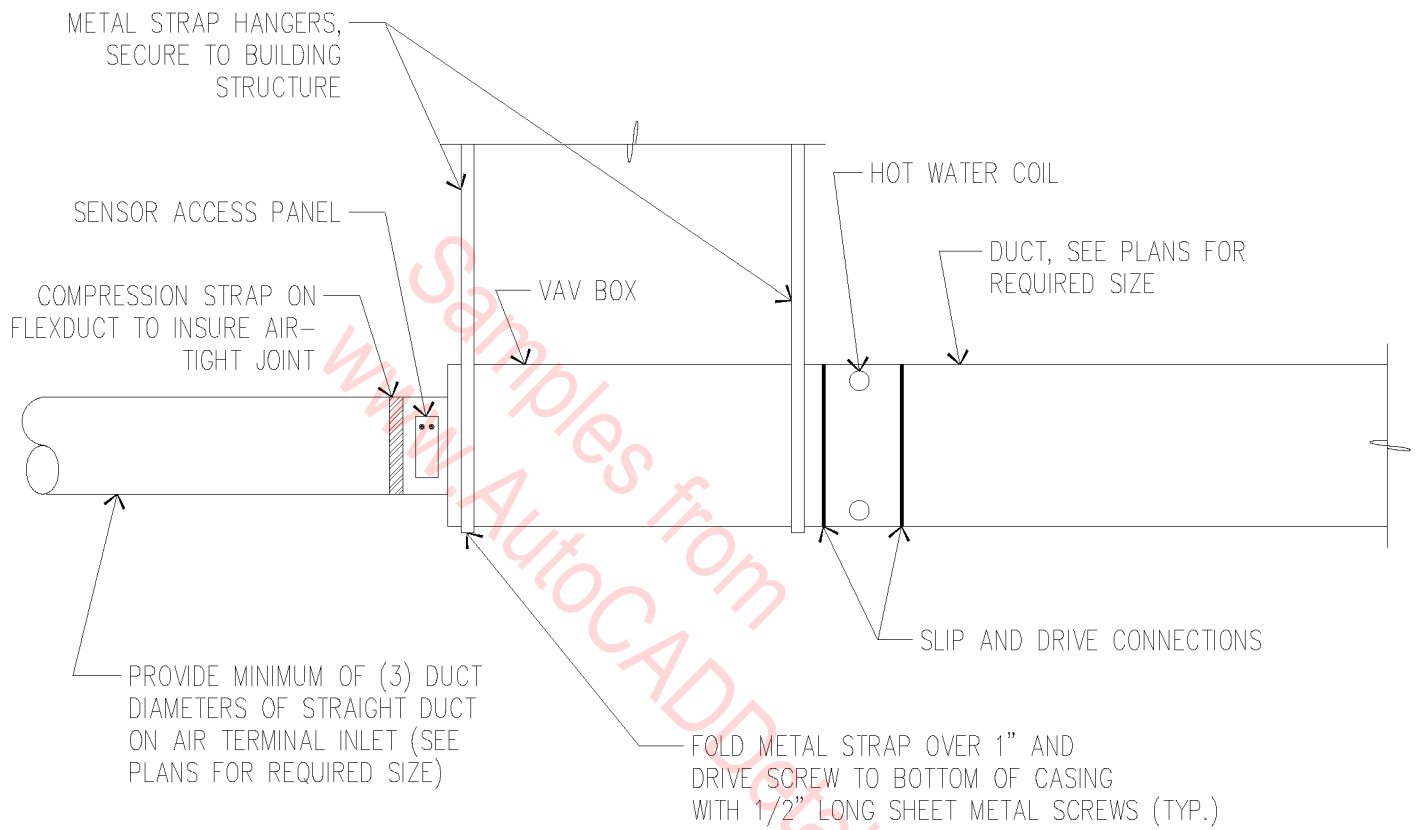
15B-3001



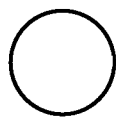
AIR HANDLER UNIT

N.T.S.

15B-3002

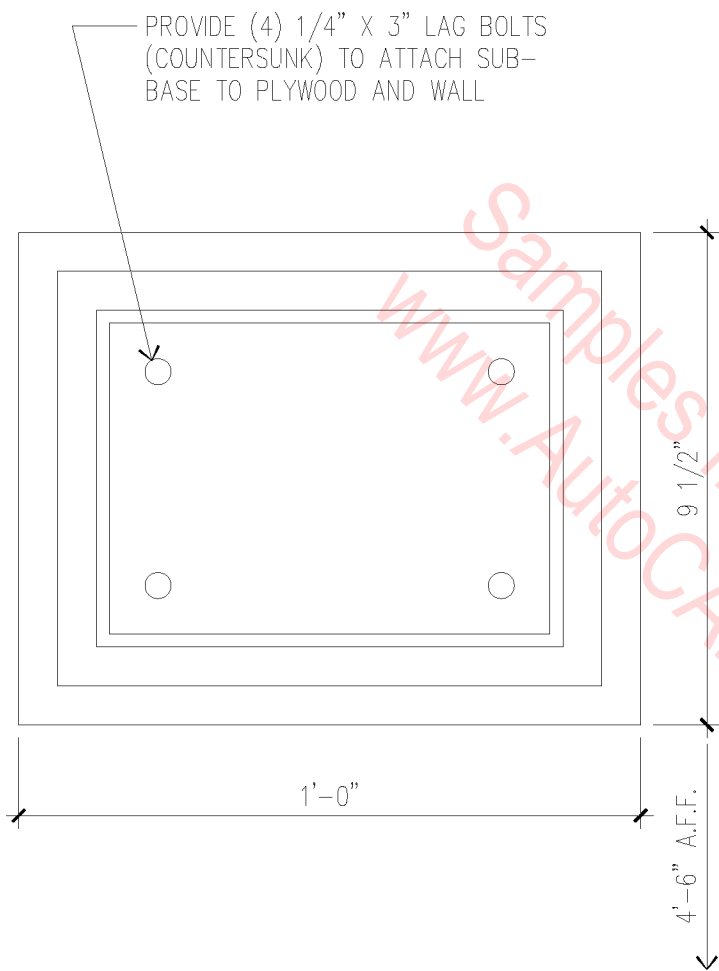


VARIABLE AIR VOLUME BOX

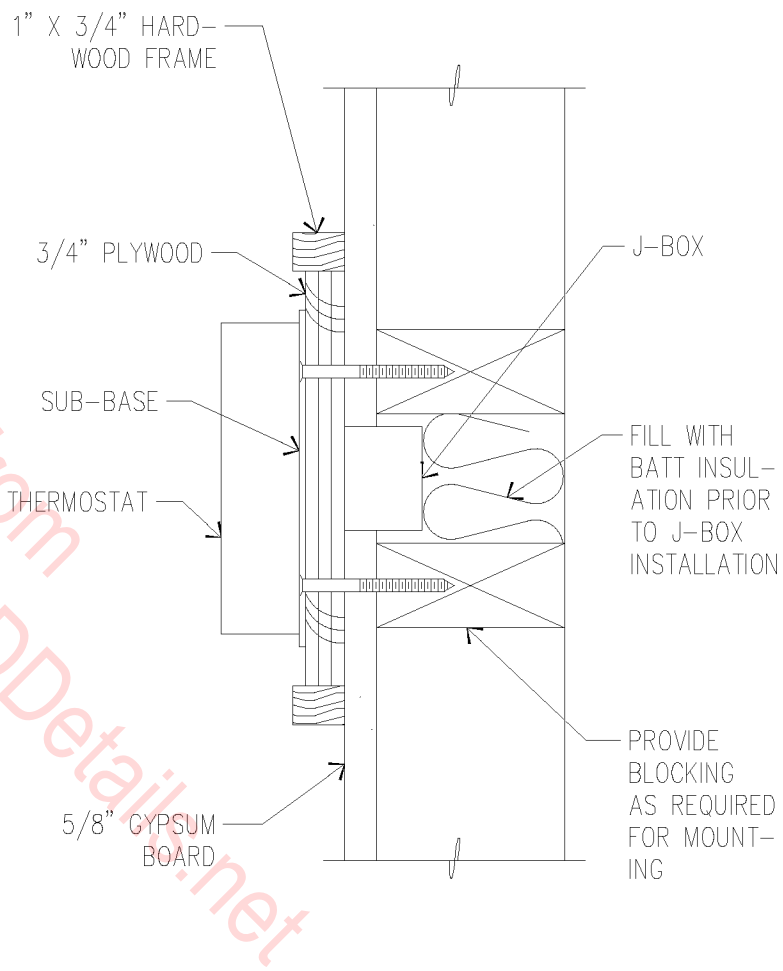


N.T.S.

15B-3003

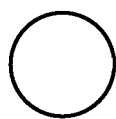


ELEVATION



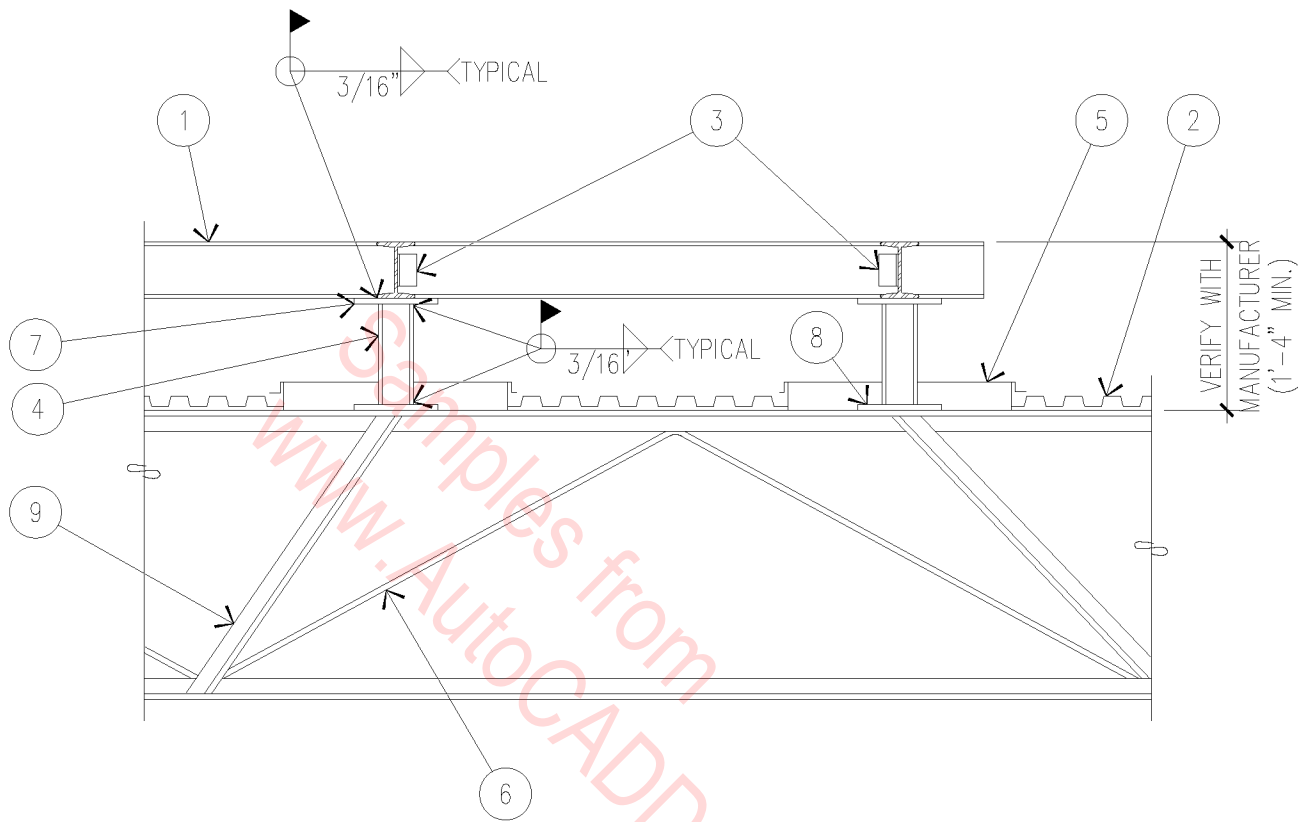
SECTION

INSULATED THERMOSTAT BASE



3" = 1'-0"

15B-3004



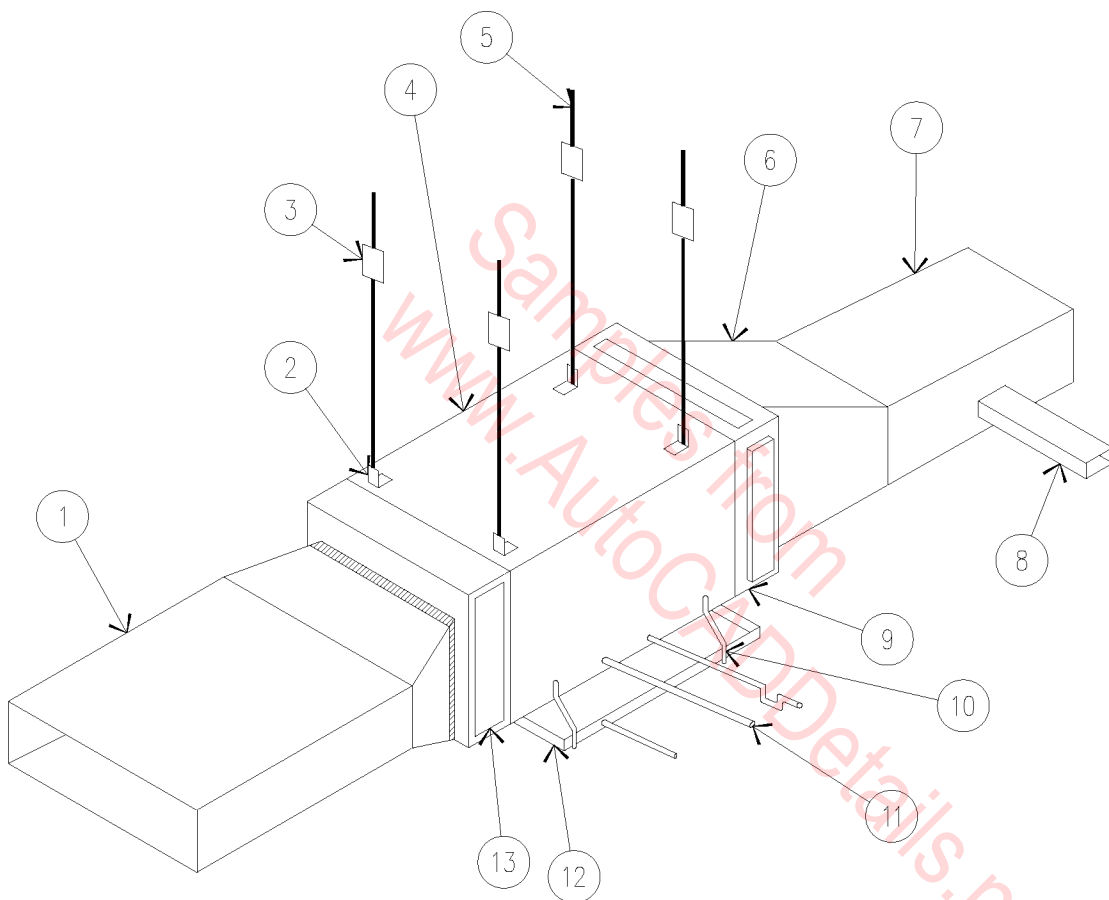
1. W6 X 12 WIDE FLANGE BEAM.
2. STEEL ROOF DECKING.
3. 2 1/2" X 2 1/2" X 1/4" X 3" LONG STEEL ANGLE.
4. 3" ϕ GALVANIZED PIPE.
5. PITCH PAN.
6. STEEL JOIST, SEE STRUCTURAL.
7. 6" X 6" X 1/2" CAP PLATE.
8. 4" X 4" X 1/2" PLATE, WELD TO TOP OF JOIST AND TUBE WITH 3/16" FILLET X 2" EACH SIDE.
9. ADD ANGLE UNDER POINTS OF SUPPORT IF OTHER THAN PANEL POINTS (TYPICAL).

NOTE: SEE ARCHITECTURAL DRAWINGS FOR PLAN LOCATIONS.

TYPICAL A/C UNIT SUPPORT

NOT TO SCALE

15B-3005

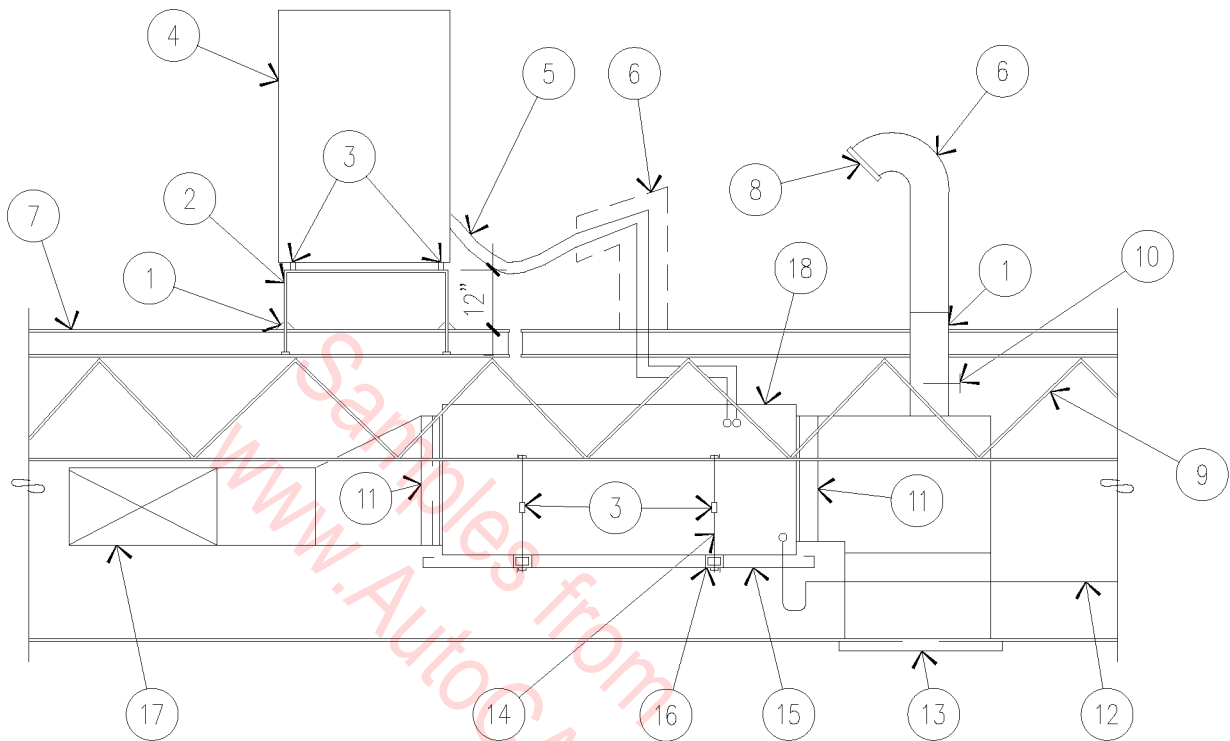


1. SUPPLY AIR DUCT. FLEXIBLE CONNECTOR.
2. 3" X 3" X 1/8" ANGLES.
3. SPRING TYPE VIBRATION ISOLATORS (4 REQUIRED).
4. AIR HANDLING UNIT.
5. 3/8" HANGING ROD (THREADED) TO BE FASTENED TO STRUCTURE.
6. TRANSITION AS REQUIRED.
7. RETURN AIR DUCT.
8. OUTSIDE AIR DUCT WITH AIR VOLUME DAMPER.
9. 1" GALVANIZED DRAIN PAN STRAPPED TO AIR HANDLING UNIT.
10. CONDENSATE DRAIN WITH 'P' TRAP.
11. REFRIGERANT LINES TO CONDENSING UNIT.
12. AUXILIARY DRAIN PAN.
13. ELECTRIC HEAT ASSEMBLY.

AIR HANDLING UNIT HANGING DETAIL

NOT TO SCALE

15B-3006

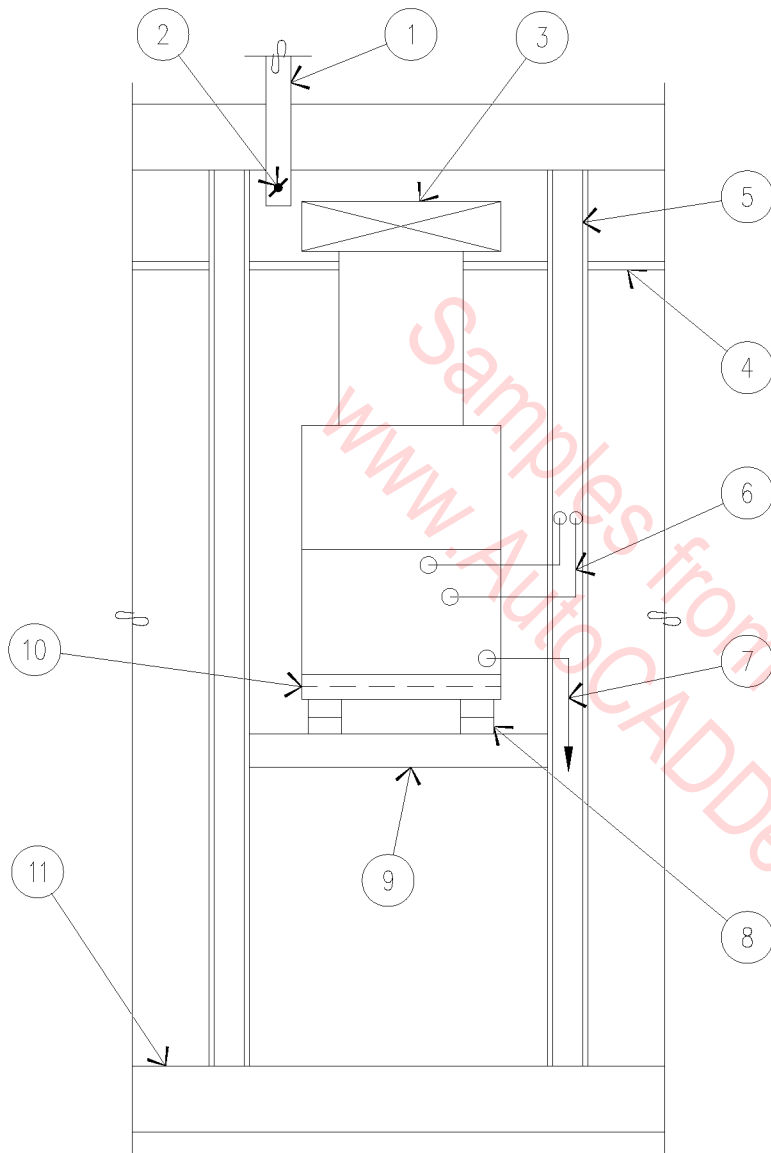


- | | |
|---------------------------------|--|
| 1. FLASHING. | 11. FLEXIBLE CONNECTION. |
| 2. ANGLE IRONS. | 12. CONDENSATE LINE. |
| 3. VIBRATION ISOLATORS. | 13. RAG WITH FILTER. |
| 4. CONDITIONING UNIT. | 14. STEEL RODS BOLTED TO STEEL JOIST. |
| 5. INSULATED REFRIGERANT LINES. | 15. AUXILIARY DRAIN PAN TO DRAIN ABOVE SINK THROUGH CEILING. |
| 6. GOOSENECK. | 16. 1 1/2" THICK SPACERS. |
| 7. ROOF, SEE ARCHITECTURAL. | 17. SUPPLY AIR DUCT. |
| 8. AIR FILTER. | 18. EVAPORATOR. |
| 9. STEEL JOIST, SEE STRUCTURAL. | |
| 10. VOLUME DAMPER. | |

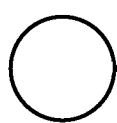
TYPICAL EVAPORATIVE AND CONDITIONING UNIT DETAIL

NOT TO SCALE

15B-3007



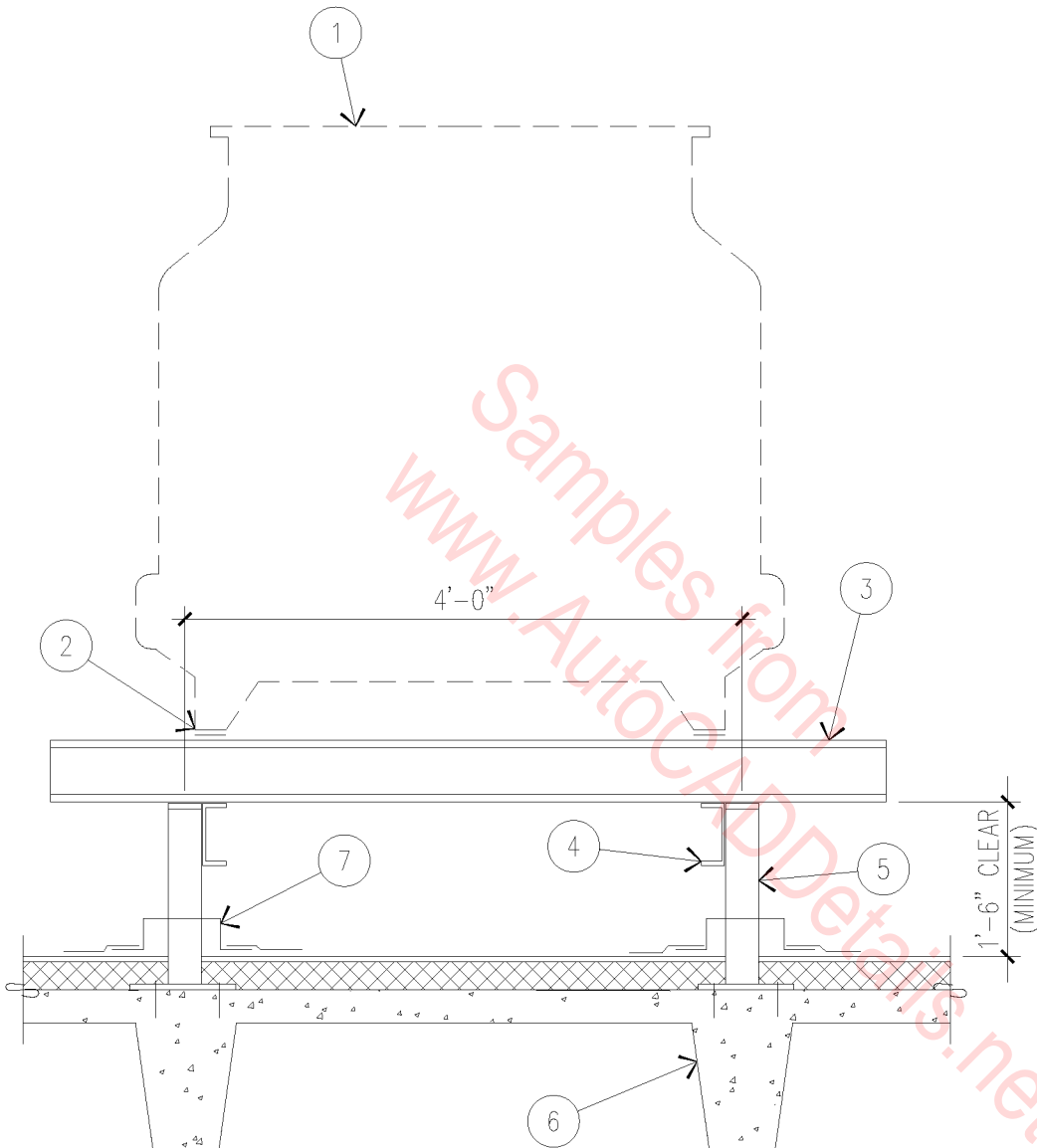
1. OUTSIDE AIR DUCT.
2. MANUAL DAMPER.
3. SUPPLY AIR DUCT.
4. FINISHED CEILING.
5. STUD PARTITION.
6. REFRIGERANT LINES.
7. CONDENSER DRAIN WITH 'P' TRAP.
8. NON-SKID NEOPRENE ACOUSTICAL ISOLATOR PAD.
9. STEEL SUPPORT.
10. FILTER.
11. FINISHED FLOOR.



AIR HANDLER UNIT

NOT TO SCALE

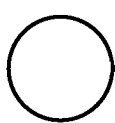
15B-3008



1. ROOF MOUNTED COOLING TOWER.
2. ATTACH TO FRAME WITH HURRICANE STRAPS OR ANGLES WITH 1/2" THROUGH BOLTS AND 1" WASHERS.
3. C3 X 4.1 CHANNELS WELDED TO BOTTOM CHANNELS, SPACED AS REQUIRED PER EQUIPMENT SPECIFICATIONS.
4. C3 X 4.1 CHANNELS WELDED TO 3" X 3" X 1/4" STEEL POSTS.
5. 3" X 3" X 1/4" STEEL POSTS ON 6" X 6" X 1/4" STEEL PLATES WITH 4 1/2" EXPANSION BOLTS INTO CONCRETE.
6. EXISTING CONCRETE TWIN-TEE SYSTEM - ALIGN STEEL POSTS OVER BEAMS.
7. GALVANIZED METAL PITCH PANS, FILL WITH PITCH.

NOTES:

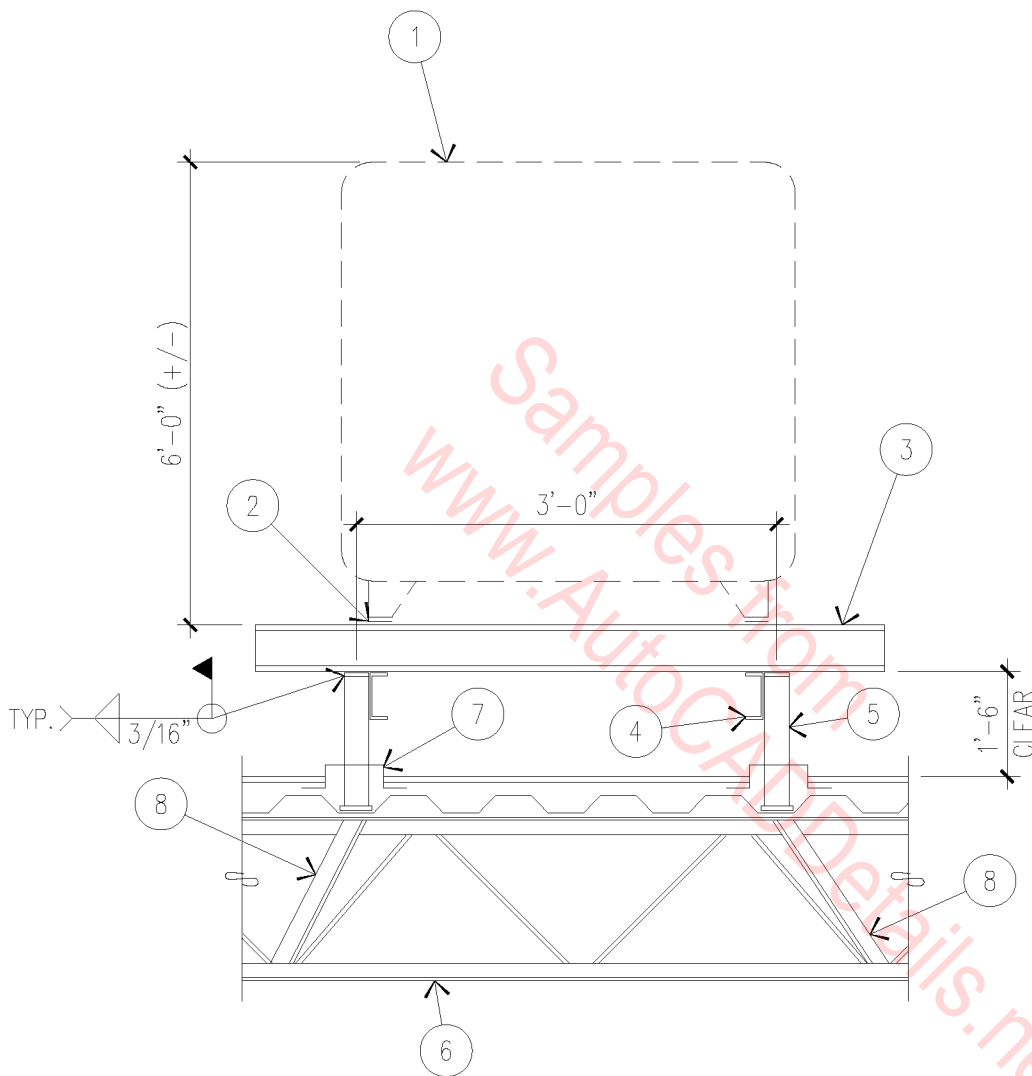
- A. INSTALL ROOF MOUNTED COOLING TOWER PER MANUFACTURER'S SPECIFICATIONS. COORDINATE EXACT LOCATION WITH LANDLORD, LANDLORD'S ROOFING CONTRACTOR, AND LANDLORD'S ENGINEER.
- B. COOLING TOWER SHALL BE DESIGNED FOR 120 M.P.H. WIND LOADS.
- C. WEIGHT APPROXIMATELY 441 POUNDS WHEN FULL WITH WATER.



COOLING TOWER DETAIL

NOT TO SCALE

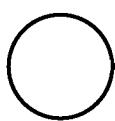
15B-3009



1. ROOF MOUNTED SPLIT CHILLER UNIT.
2. ATTACH TO FRAME WITH STEEL ANGLES AND 1/2" THROUGH BOLTS AND 1" WASHERS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
3. C3 X 4.1 CHANNELS WELDED TO BOTTOM CHANNELS, SPACED AS REQUIRED PER EQUIPMENT SPECIFICATIONS.
4. C3 X 4.1 CHANNELS WELDED TO 3" X 3" X 1/4" STEEL POSTS.
5. 3" X 3" X 1/4" STEEL POSTS ON 4" X 4" X 1/4" STEEL PLATES, FULL WELD TO STEEL JOISTS, ALL 3/16" FILLET WELDS.
6. EXISTING OPEN WEB STEEL JOISTS - SEE STRUCTURAL.
7. GALVANIZED METAL PITCH PANS, FILL WITH PITCH.
8. ADD STEEL VERTICALS (L 2" X 2" X 1/4") FROM LOCATION OF LOAD TO NEAREST PANEL POINT ON OPPOSITE CHORD OF JOIST (TYPICAL) UNLESS STEEL POSTS ARE OVER PANEL POINTS.

NOTES:

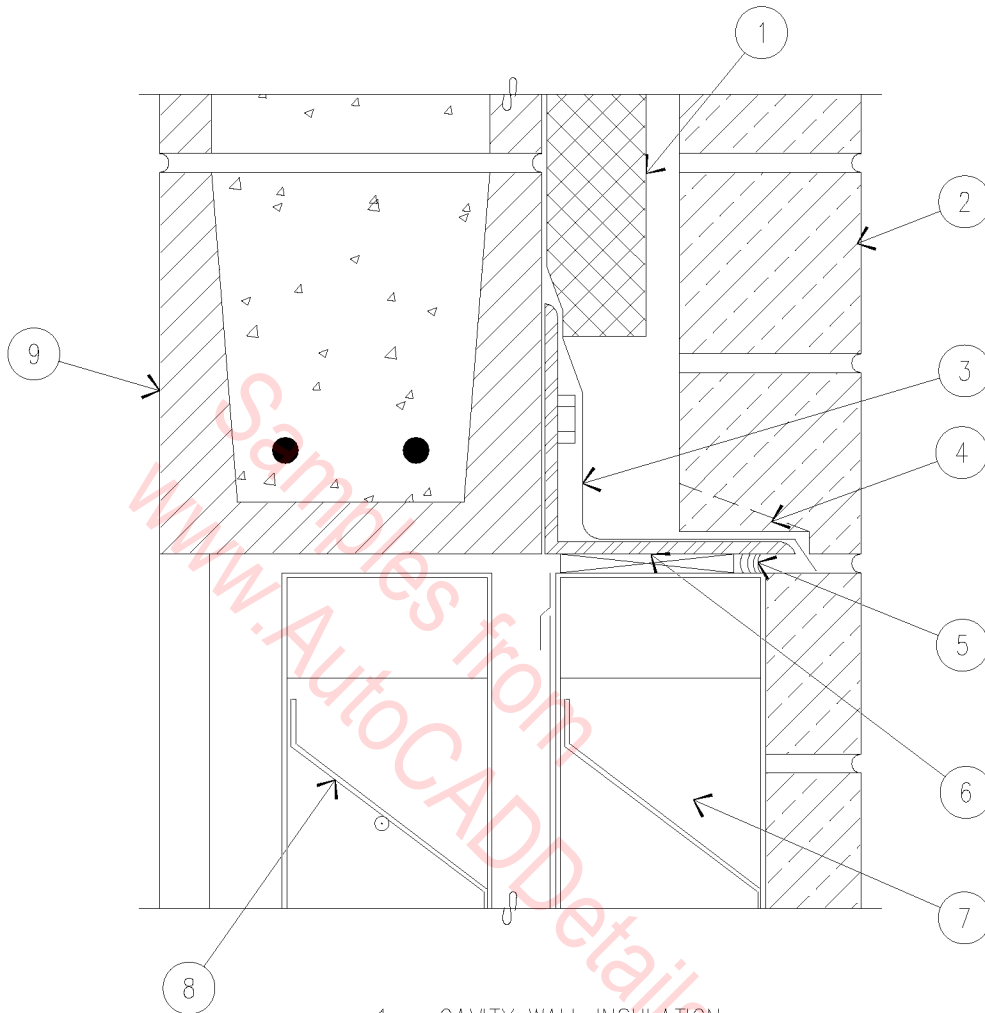
- A. INSTALL ROOF MOUNTED SPLIT CHILLER UNIT PER MANUFACTURER'S SPECIFICATIONS. COORDINATE EXACT LOCATION WITH LANDLORD, LANDLORD'S ROOFING CONTRACTOR, AND LANDLORD'S ENGINEER.
- B. CHILLER SHALL BE DESIGNED FOR 110 M.P.H. WIND LOADS, SEE STRUCTURAL NOTES.
- C. WEIGHT APPROXIMATELY 300 POUNDS - SPLIT UNIT WITH FULL SUMP TANK.



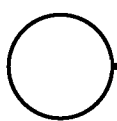
CHILLER UNIT DETAIL

NOT TO SCALE

15B-3010



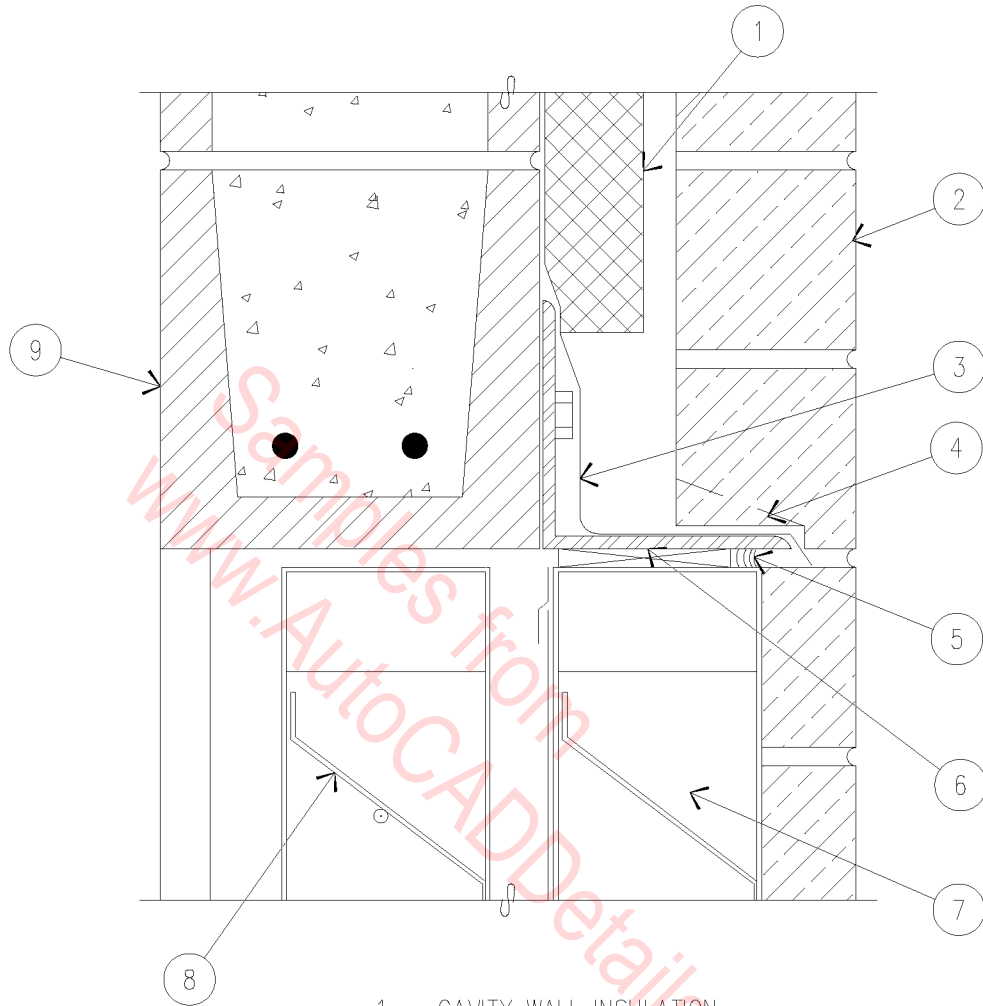
1. CAVITY WALL INSULATION.
2. FACE BRICK.
3. THROUGH WALL FLASHING.
4. WEEP HOLES @ 32" O.C.
5. SILICONE SEALANT.
6. STEEL ANGLE LINTEL.
7. LOUVER WITH BIRDSCREEN.
8. MOTORIZED DAMPER.
9. MASONRY LINTEL.



LOUVER HEAD

3" = 1'-0"

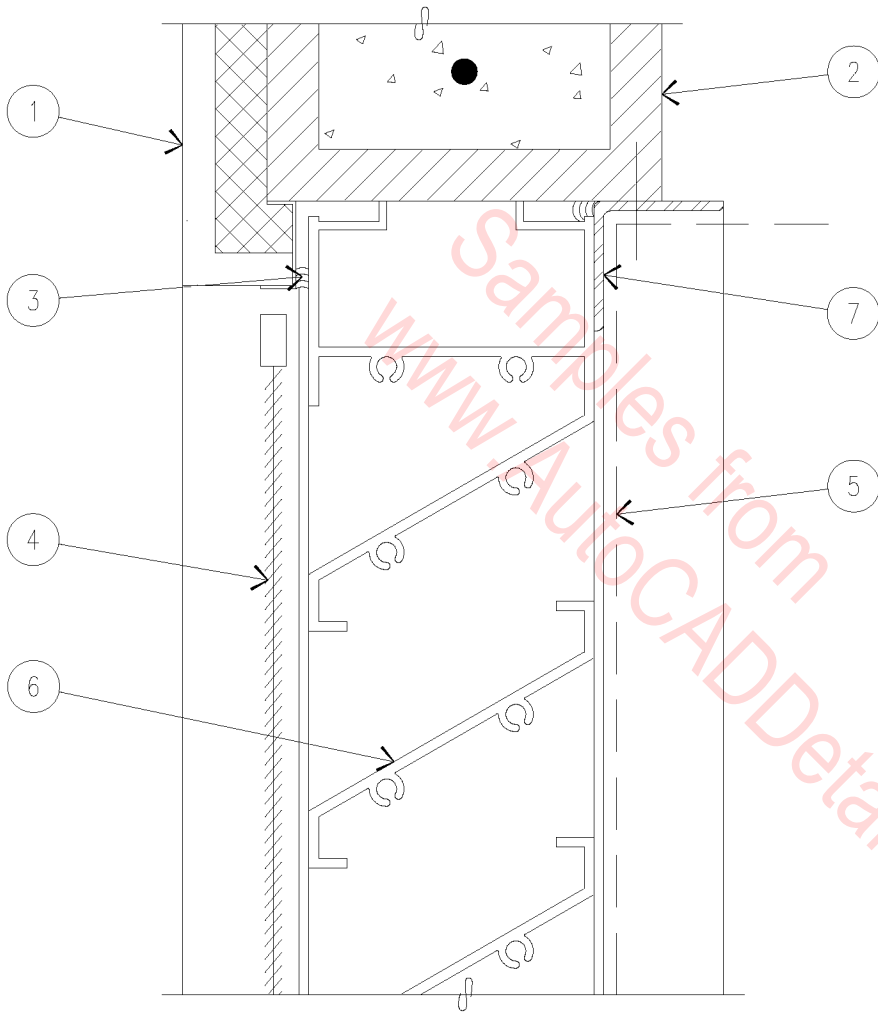
15B-3011



1. CAVITY WALL INSULATION.
2. FACE BRICK.
3. THROUGH WALL FLASHING.
4. WEEP HOLES @ 32" O.C.
5. SILICONE SEALANT.
6. STEEL ANGLE LINTEL.
7. LOUVER WITH BIRDSCREEN.
8. MOTORIZED DAMPER.
9. MASONRY LINTEL.


LOUVER HEAD
 3" = 1'-0"

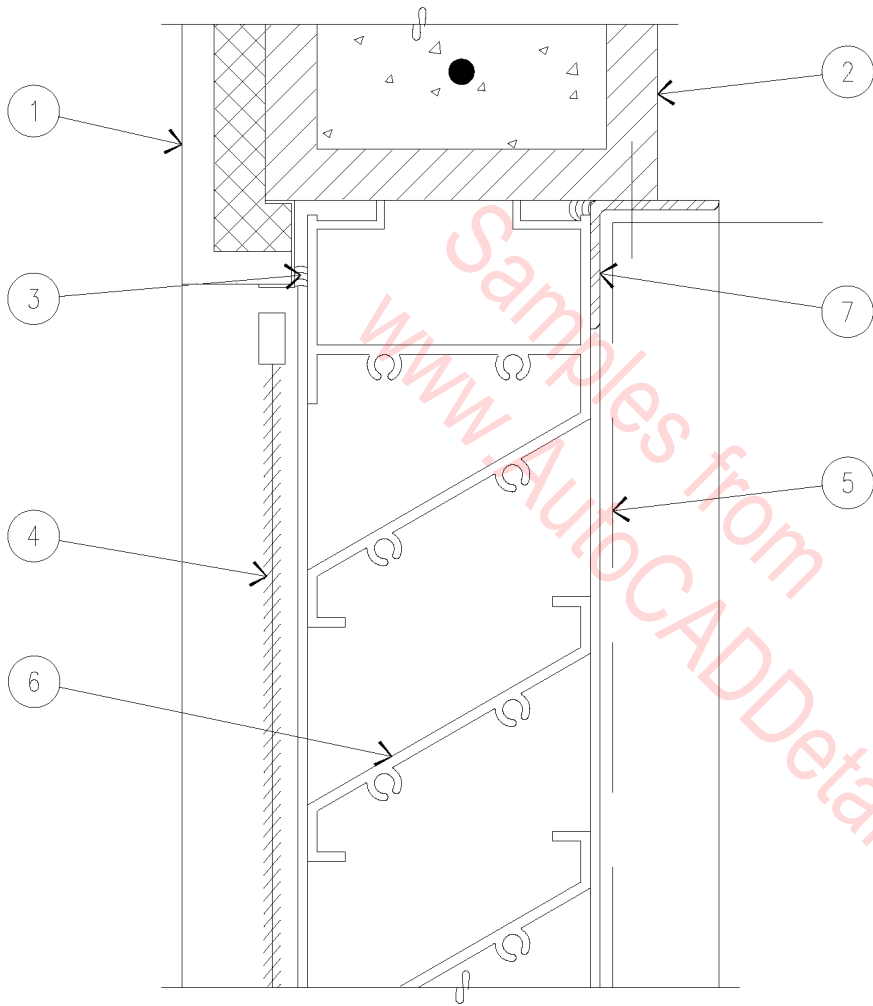
15B-3011



1. SYNTHETIC STUCCO OVER FIBERMESH LATH AND RIGID INSULATION.
2. 8" CMU.
3. SEALANT.
4. INSECT SCREEN.
5. DUCT - WHERE OCCURS.
6. LOUVER, PAINT TO MATCH EXTERIOR WALL SURFACE.
7. 2 1/2" X 2 1/2" X 3/16" STEEL ANGLE.

 LOUVER HEAD
 3" = 1'-0"

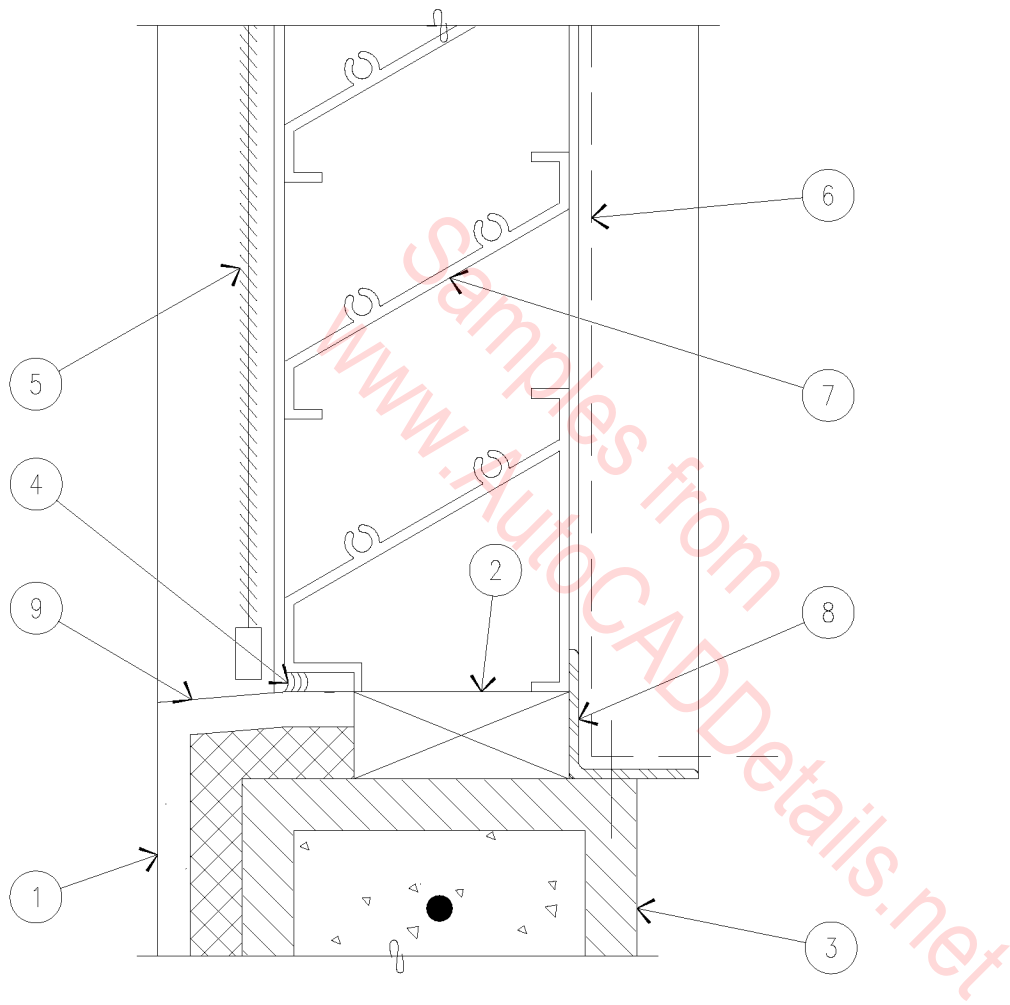
15B-3012



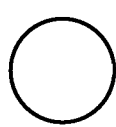
1. SYNTHETIC STUCCO OVER FIBERMESH LATH AND RIGID INSULATION.
2. 8" CMU.
3. SEALANT.
4. INSECT SCREEN.
5. DUCT - WHERE OCCURS.
6. LOUVER, PAINT TO MATCH EXTERIOR WALL SURFACE.
7. 2 1/2" X 2 1/2" X 3/16" STEEL ANGLE.


 LOUVER HEAD
 3" = 1'-0"

15B-3012



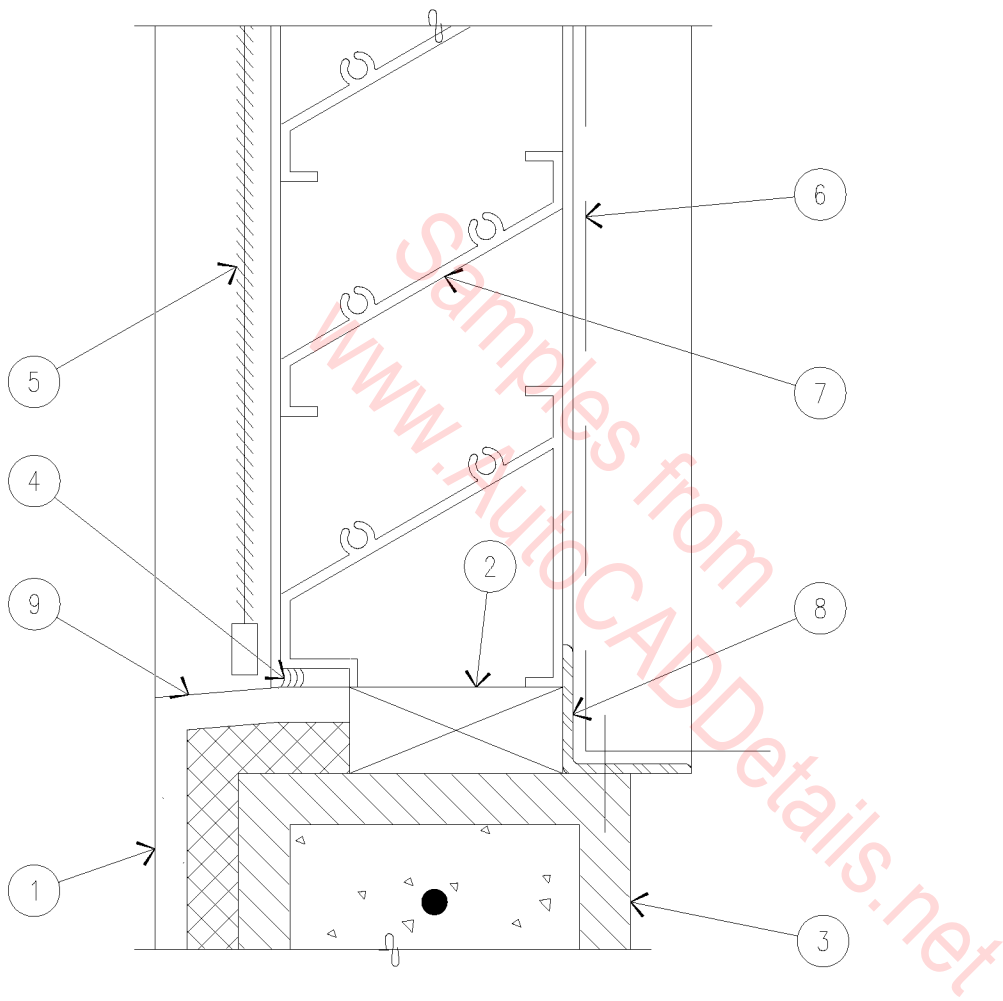
1. SYNTHETIC STUCCO OVER FIBERMESH LATH AND RIGID INSULATION.
2. WOOD BLOCKING AS NEEDED.
3. 8" CMU.
4. SEALANT.
5. INSECT SCREEN.
6. DUCT - WHERE OCCURS.
7. LOUVER, PAINT TO MATCH EXTERIOR WALL SURFACE.
8. 2 1/2" X 2 1/2" X 3/16" STEEL ANGLE.
9. 1:12 SLOPE.



LOUVER HEAD

3" = 1'-0"

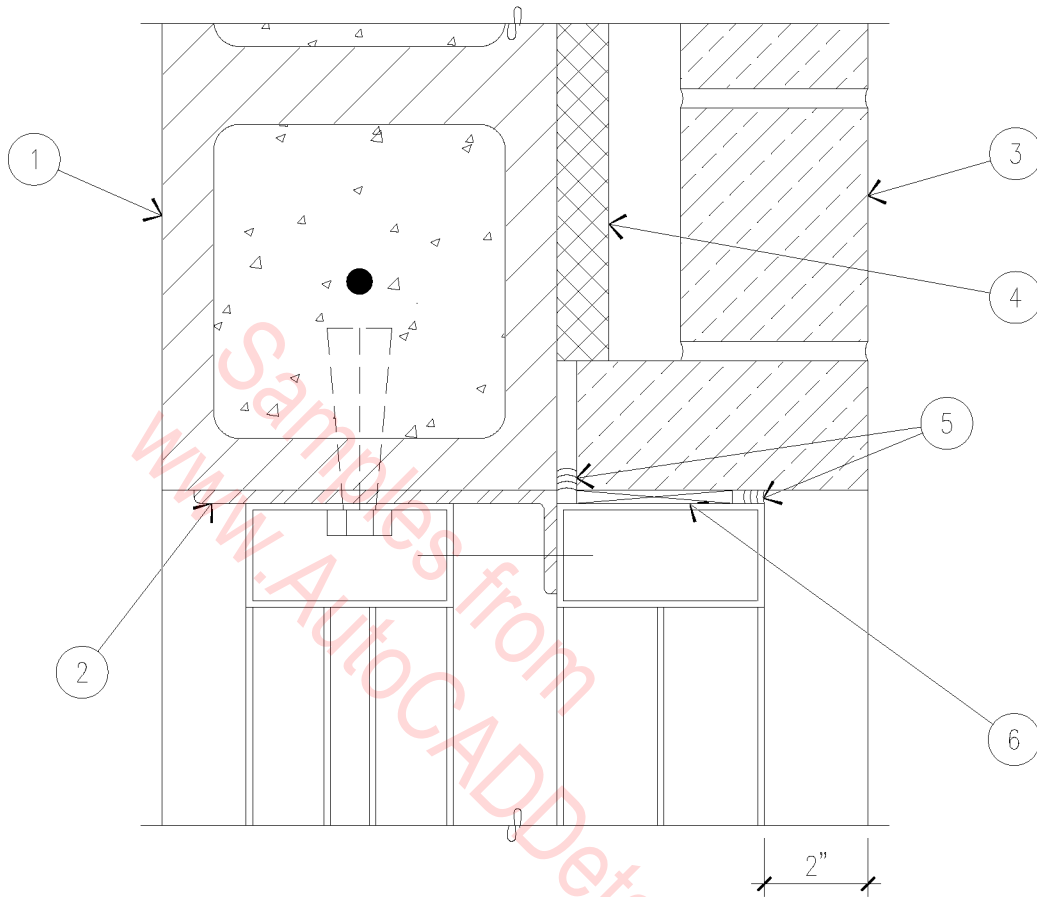
15B-3013



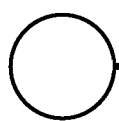
1. SYNTHETIC STUCCO OVER FIBERMESH LATH AND RIGID INSULATION.
2. WOOD BLOCKING AS NEEDED.
3. 8" CMU.
4. SEALANT.
5. INSECT SCREEN.
6. DUCT - WHERE OCCURS.
7. LOUVER, PAINT TO MATCH EXTERIOR WALL SURFACE.
8. 2 1/2" X 2 1/2" X 3/16" STEEL ANGLE.
9. 1:12 SLOPE.

 LOUVER HEAD
 3" = 1'-0"

15B-3013



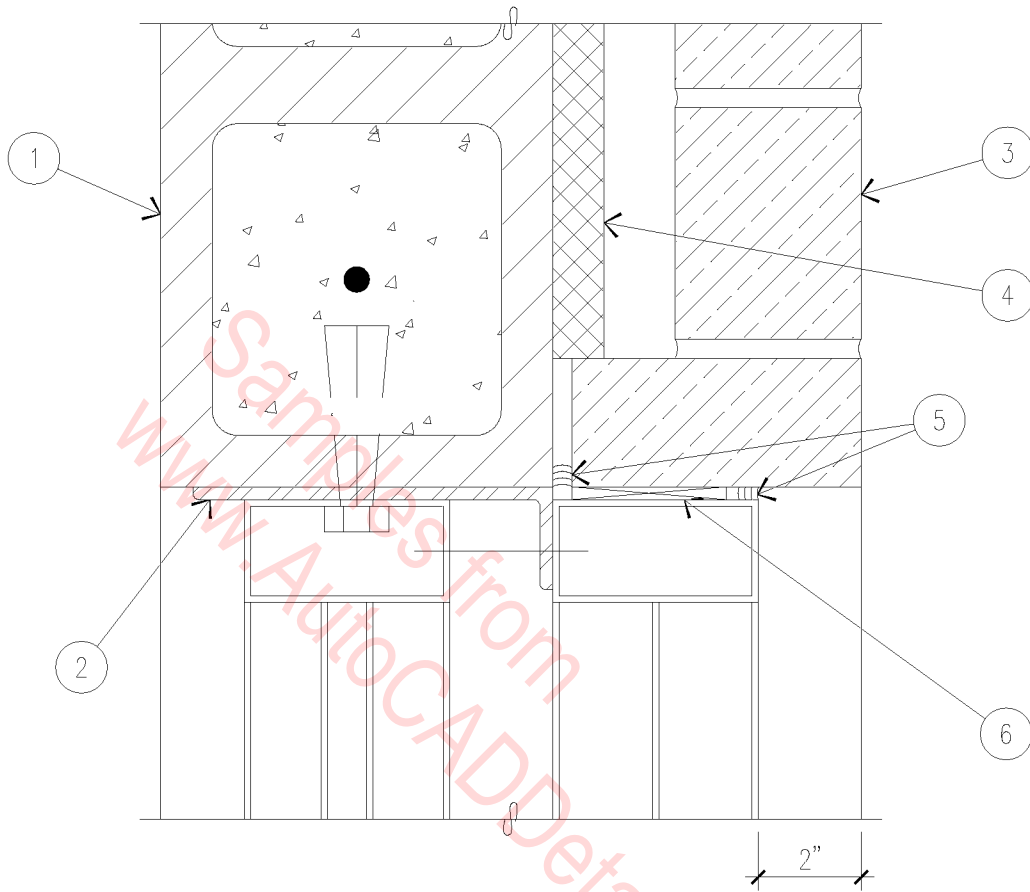
1. 8" CMU WALL.
2. 7" X 2" X 1/4" BENT PLATE AT JAMBS WITH (3) 5/8" ϕ WEDGE TYPE EXPANSION ANCHORS WITH 4" MINIMUM EMBED.
3. FACE BRICK.
4. CAVITY WALL INSULATION.
5. SILICONE SEALANT.
6. SHIM, AS REQUIRED.



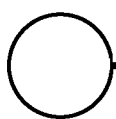
LOUVER JAMB

3" = 1'-0"

15B-3014



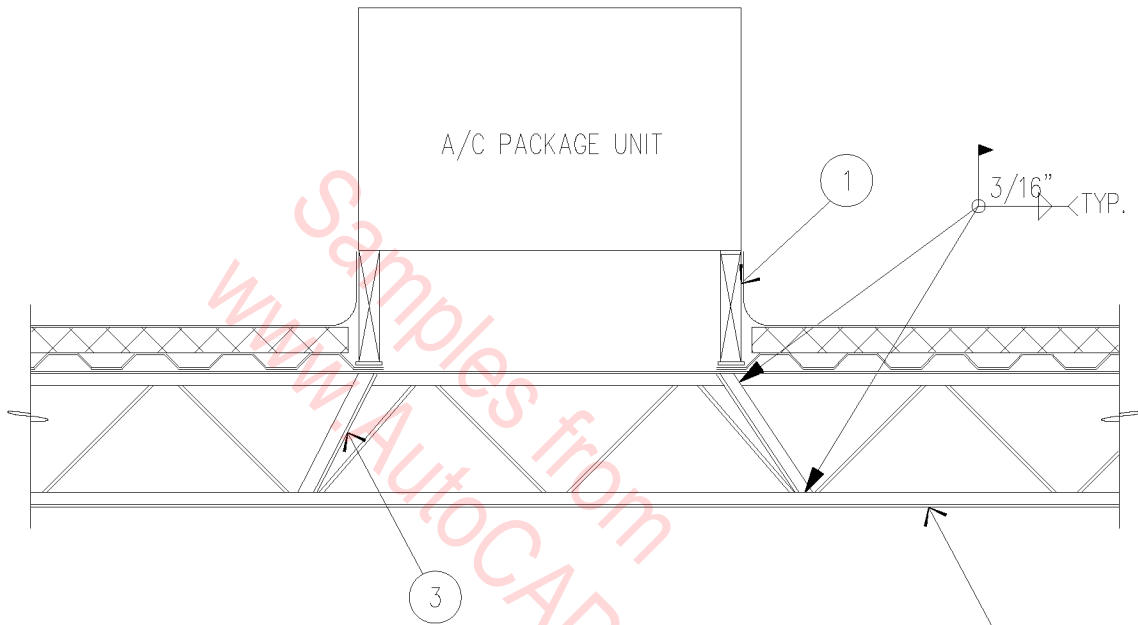
1. 8" CMU WALL.
2. 7" X 2" X 1/4" BENT PLATE AT JAMBS WITH (3) 5/8" ϕ WEDGE TYPE EXPANSION ANCHORS WITH 4" MINIMUM EMBED.
3. FACE BRICK.
4. CAVITY WALL INSULATION.
5. SILICONE SEALANT.
6. SHIM, AS REQUIRED.



LOUVER JAMB

3" = 1'-0"

15B-3014

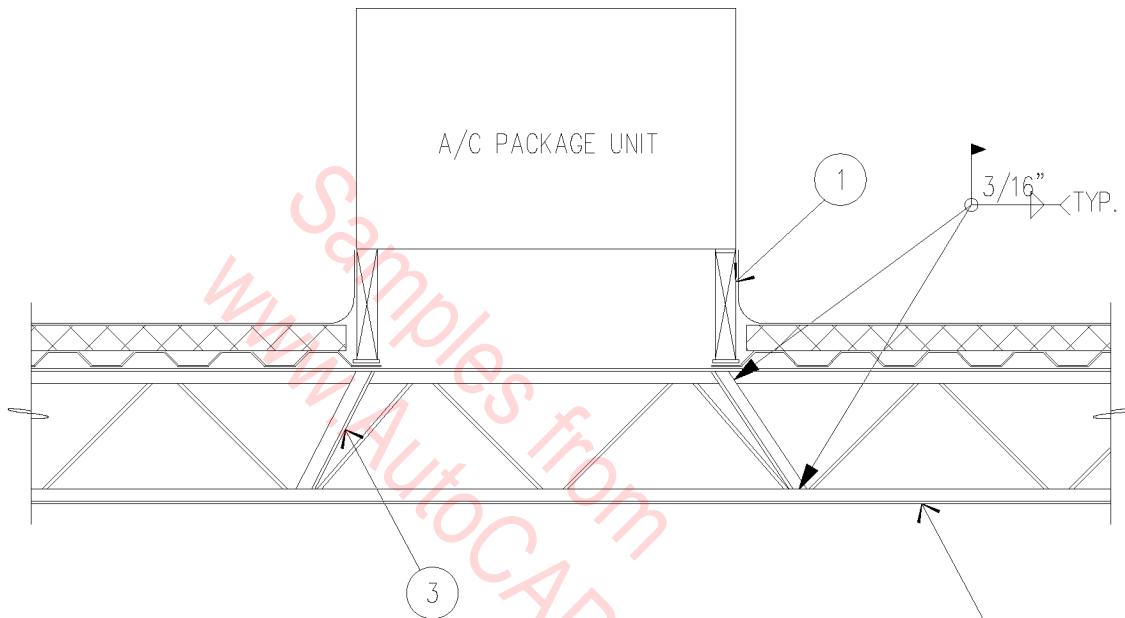


1. A/C CURB.
2. EXISTING OPEN WEB STEEL JOISTS.
3. ADD STEEL VERTICAL UNDER POSTS UNLESS ON PANEL POINTS
 $\nless 2" \times 2" \times 1/4"$ FROM LOCATION OF LOAD TO NEAREST PANEL POINT ON OPPOSITE CHORD OF JOIST (TYPICAL).

JOIST REINFORCEMENT AT A/C UNITS

N.T.S.

15B-3015

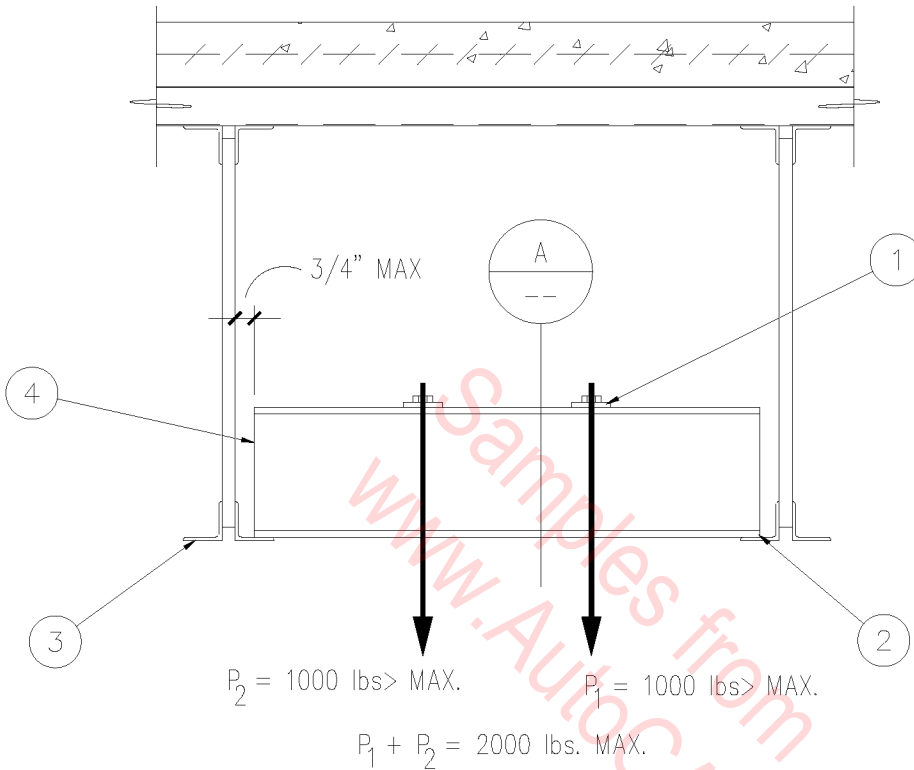


1. A/C CURB.
2. EXISTING OPEN WEB STEEL JOISTS.
3. ADD STEEL VERTICAL UNDER POSTS UNLESS ON PANEL POINTS
 $\nless 2" \times 2" \times 1/4"$ FROM LOCATION OF LOAD TO NEAREST PANEL POINT ON OPPOSITE CHORD OF JOIST (TYPICAL).

JOIST REINFORCEMENT AT A/C UNITS

N.T.S.

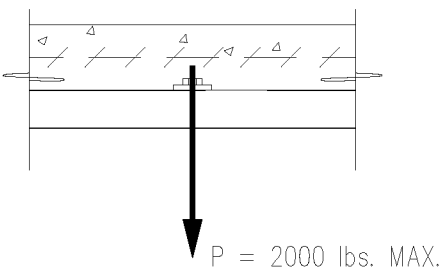
15B-3015



$P_2 = 1000 \text{ lbs.} > \text{MAX.}$
 $P_1 = 1000 \text{ lbs.} > \text{MAX.}$
 $P_1 + P_2 = 2000 \text{ lbs. MAX.}$

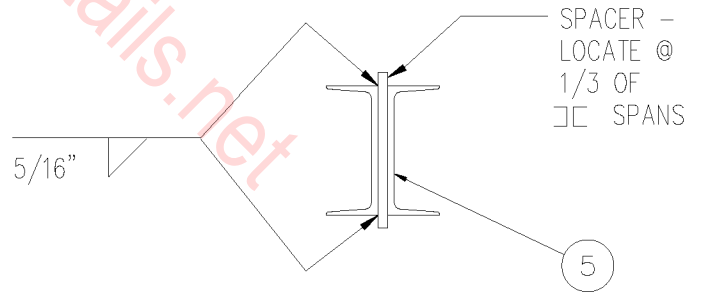
SUSPENDED FROM GIRDERS

1. 4" X 4" X 1/4" CUT WASHER - TYP.
2. FIELD WELD OR CLAMP ENDS OF CHANNELS TO BEAM OR GIRDER
3. MAXIMUM LOAD TO ANY BEAM OR GIRDER NOT TO EXCEED 2000 LBS.
4. (2) C5 X 6.7 CHANNELS LOCATE AS REQUIRED FOR MECHANICAL EQUIPMENT
5. (2) C5 X 6.7 CHANNELS

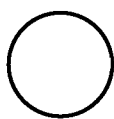


$P = 2000 \text{ lbs. MAX.}$

SUSPENDED FROM SLAB



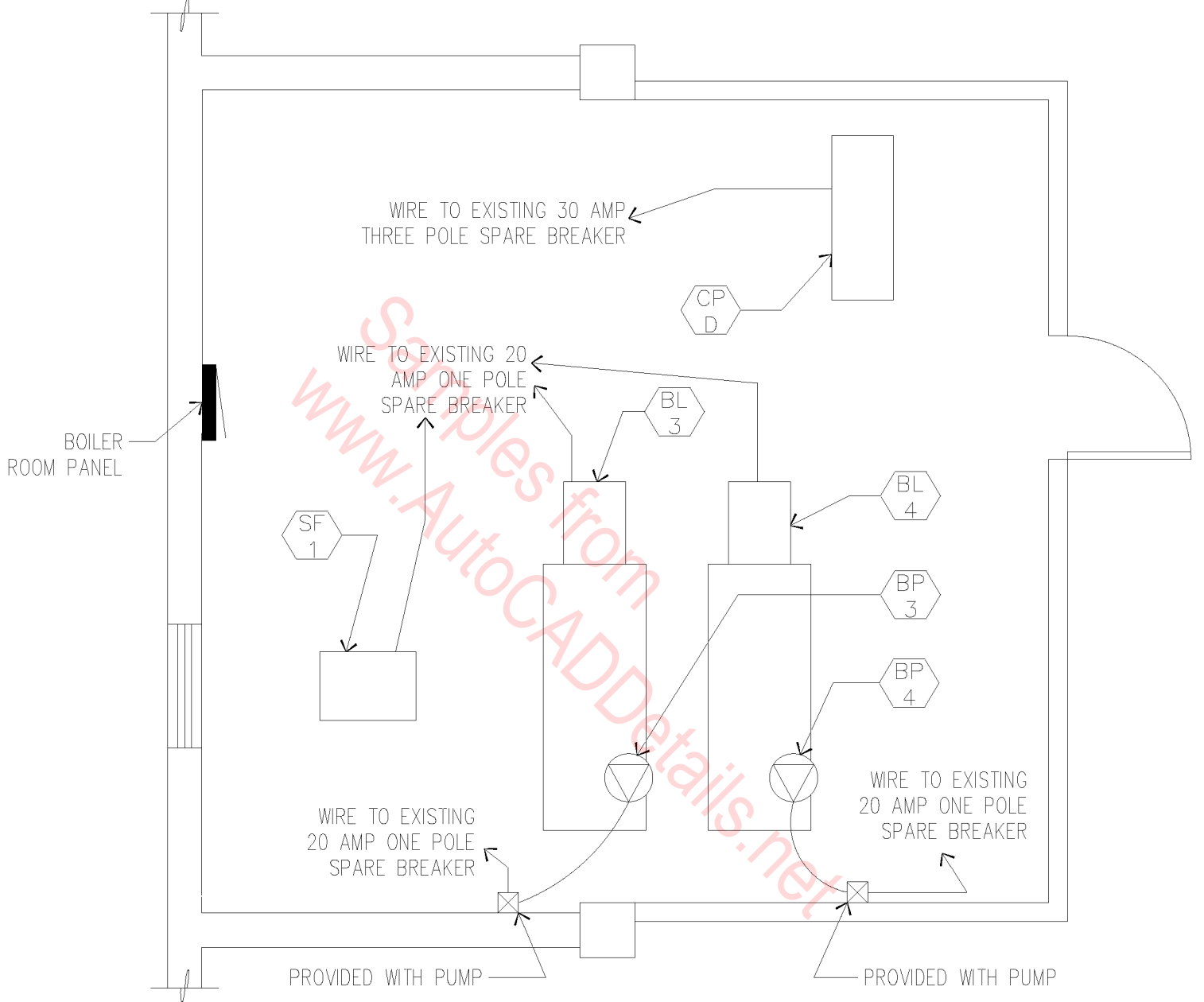
SECTION A



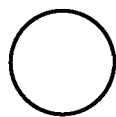
MECHANICAL HANGER

N.T.S.

15B-1001



BOILER ROOM PARTIAL PLAN



1/4" = 1'-0"

15B-1002

3" HS/HR RE: PARKING LEVEL PLAN
THIS SHEET FOR CONTINUATION

EXTEND 2-1/2" GAS LINE TO EXISTING
GAS SERVICE TO BOILERS AND MAKE
NEW CONNECTION

CP
D
CP
E (FUTURE)

EXTEND 3" HS/HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE CROSS CONNECTION PIPING

20" X 20"
INSTALL SHEET
METAL PLENUM
BEHIND (E)
OUTSIDE AIR
LOUVER -
MAKE SF-1
COMBUSTION
AIR DUCT
CONNECTION
TO PLENUM

EXTEND 4" HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE HR CONNECTION

FUTURE BOILER LOCATION

4" ϕ
(E) BLIND FLANGE FOR
FUTURE CONNECTION (TYP.)

MAKE CONNECTION TO (E) 3"
FLANGE (TYP. OF 4)

MAKE 14" ϕ CONNECTION TO EXISTING 20" ϕ 'T'
FITTING AND EXTEND 14" ϕ POSITIVE PRESSURE
VENT AS SHOWN, MAKE (2) 10" ϕ CONNECTIONS
FROM NEW BOILERS

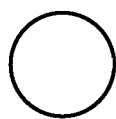
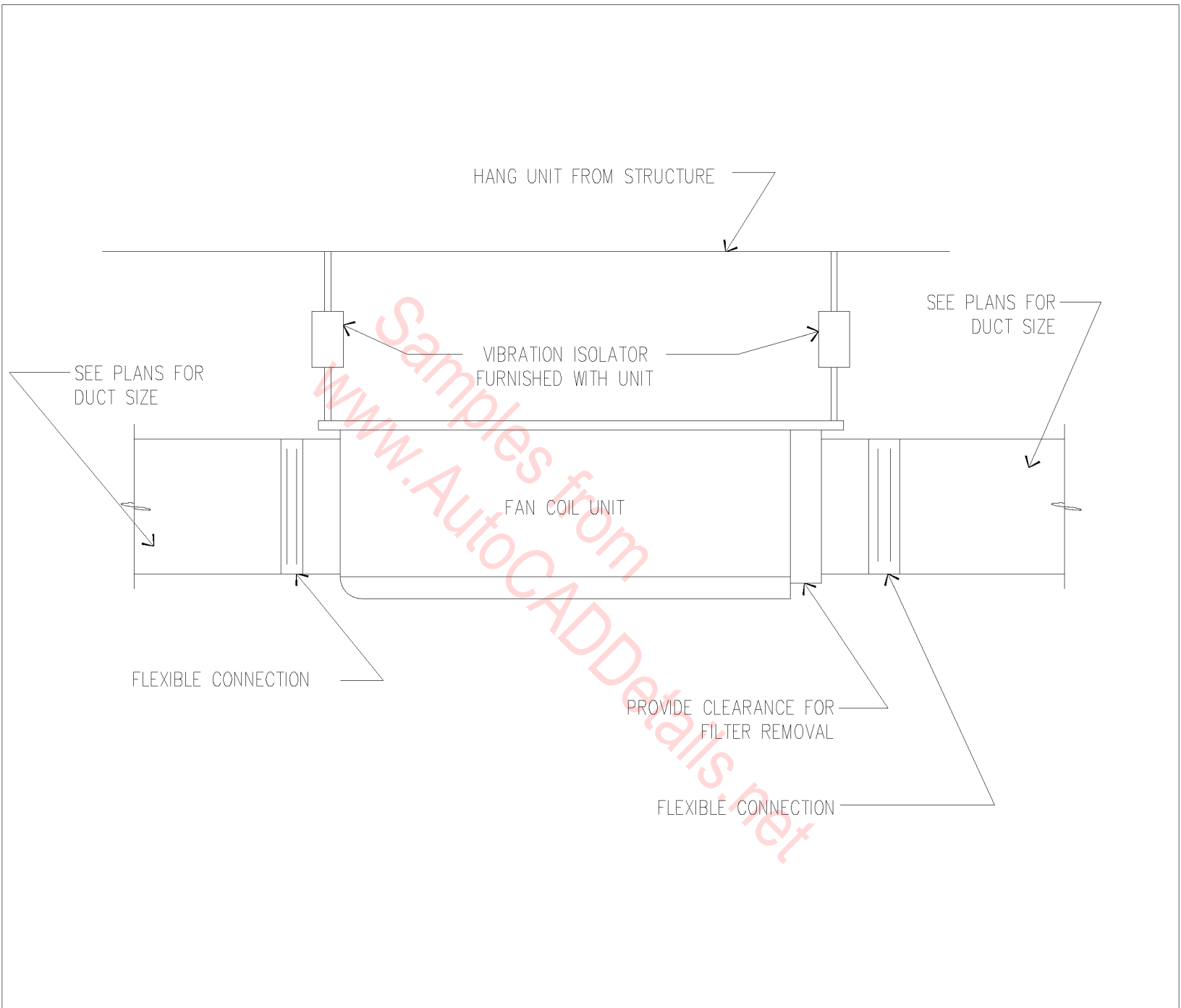
BL 3
BP 3
BL 4
BP 4

- NOTES: 1. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND PIPING SHOWN AS DASHED IS EXISTING TO REMAIN.
2. HOLD ALL NEW PIPING AS HIGH AS POSSIBLE IN SPACE.
3. EXTEND (E) GAS SERVICE AS REQUIRED TO PROVIDE NEW 2" GAS SERVICE TO EACH NEW BOILER.

BOILER ROOM PARTIAL PLAN

1/4" = 1'-0"

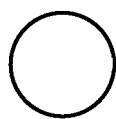
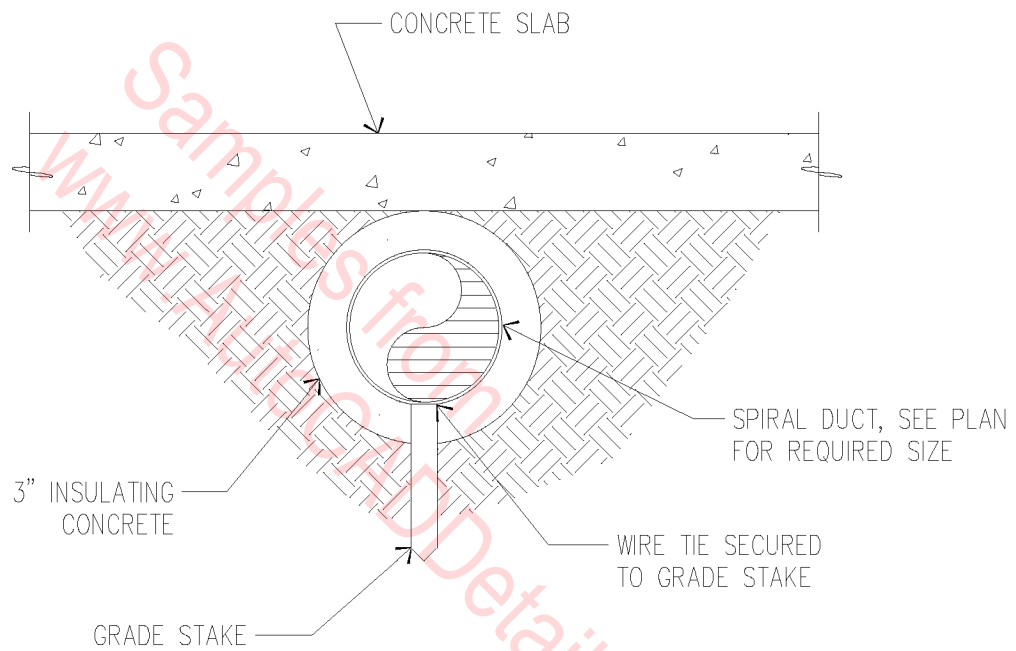
15B-1003



FAN COIL UNIT DETAIL

N.T.S.

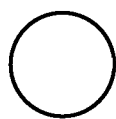
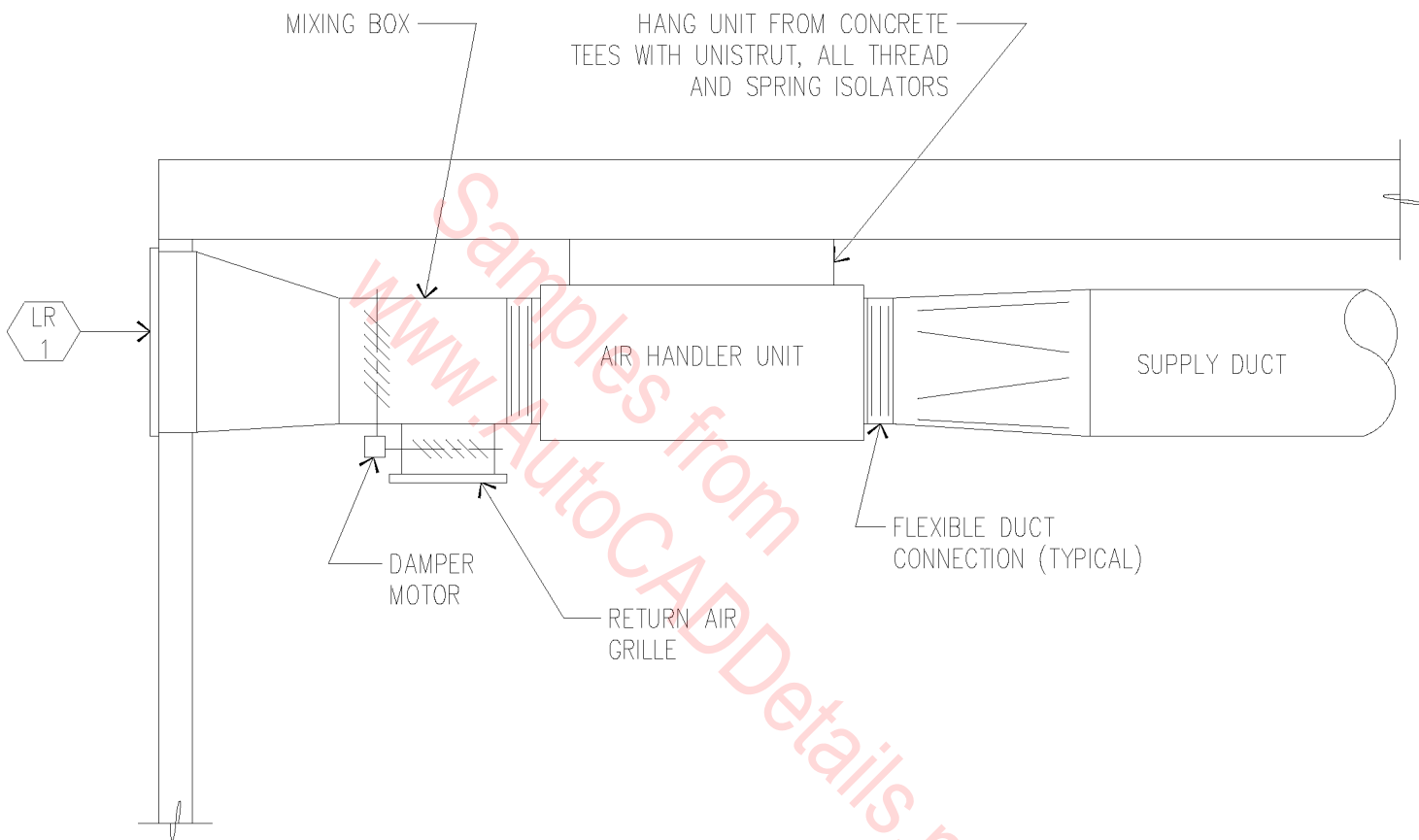
15B-1004



UNDER SLAB DUCT DETAIL

N.T.S.

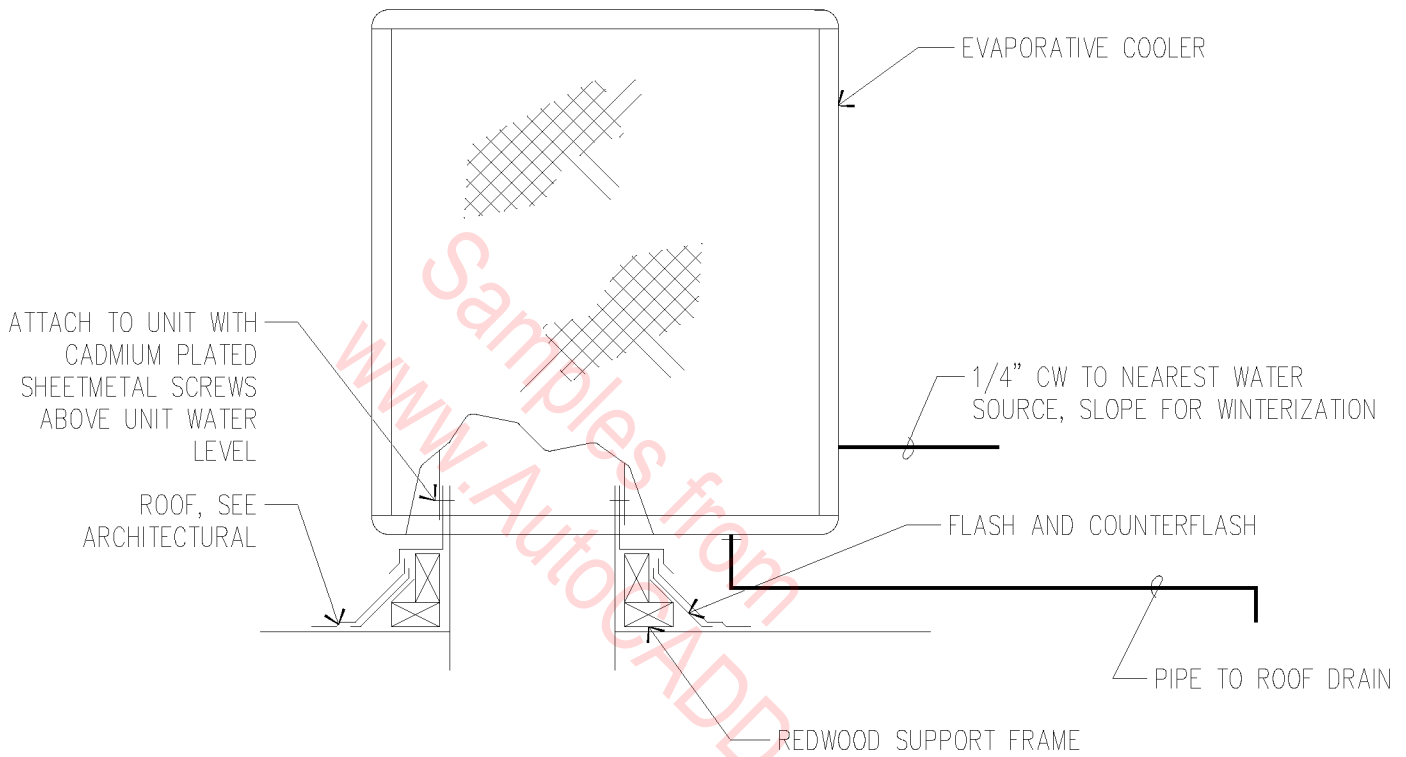
15B-1005



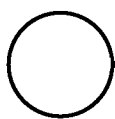
AIR HANDLER UNIT

N.T.S.

15B-1006



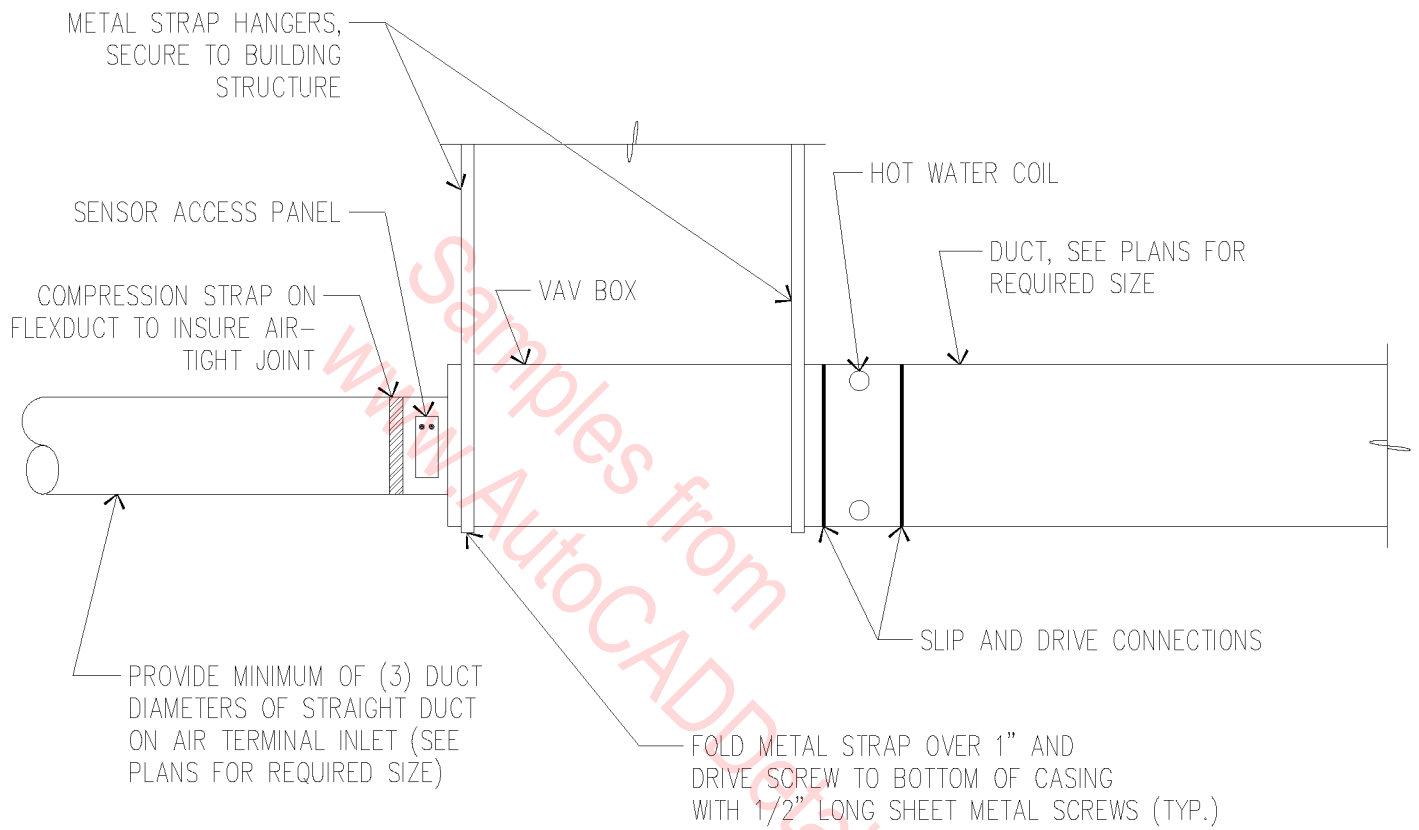
NOTE: SEAL ALL JOINTS WATERTIGHT WITH G.E. SILICONE SEAL.



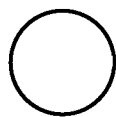
EVAPORATIVE COOLER

N.T.S.

15B-1007

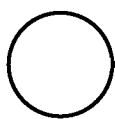
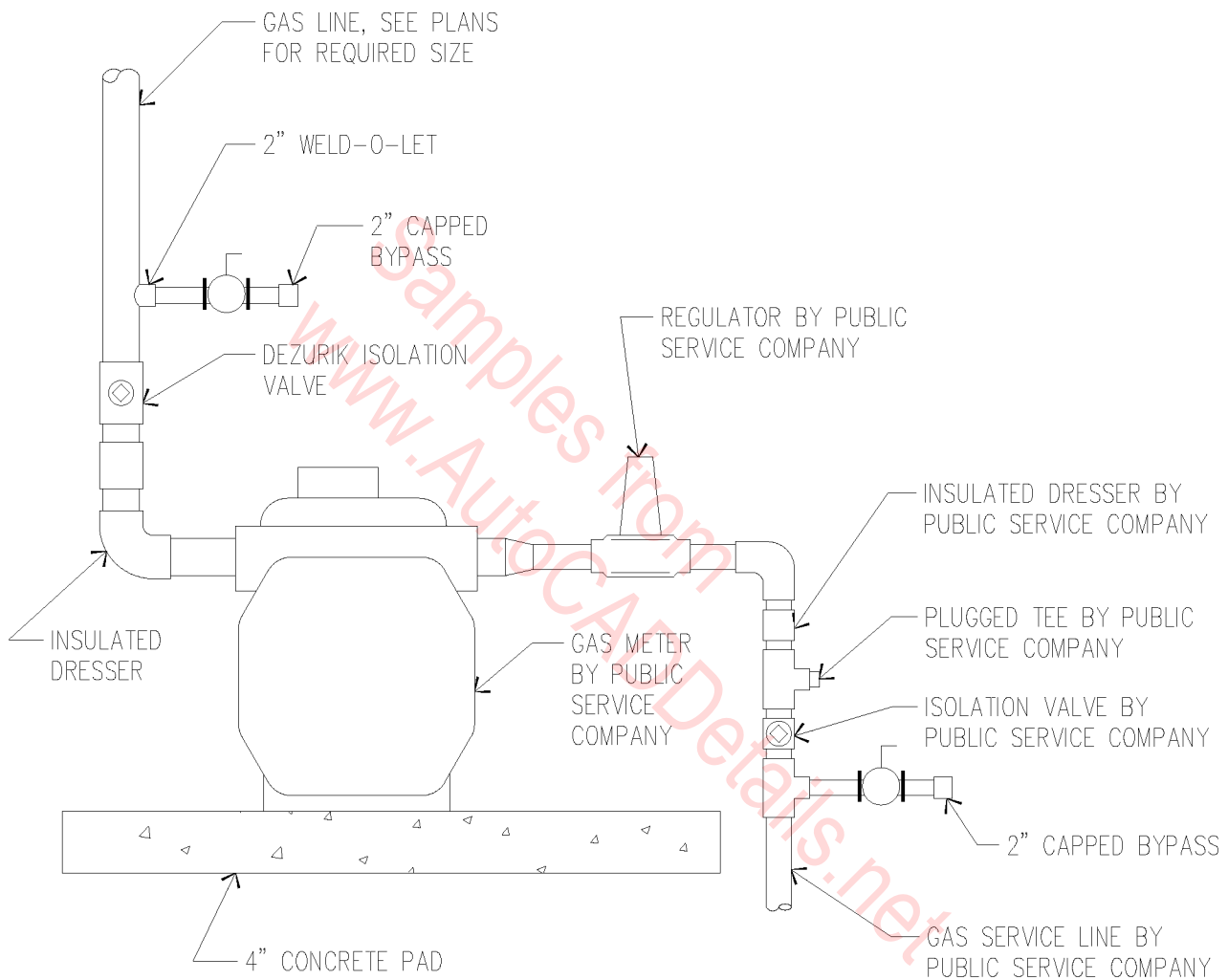


VARIABLE AIR VOLUME BOX



N.T.S.

15B-1008



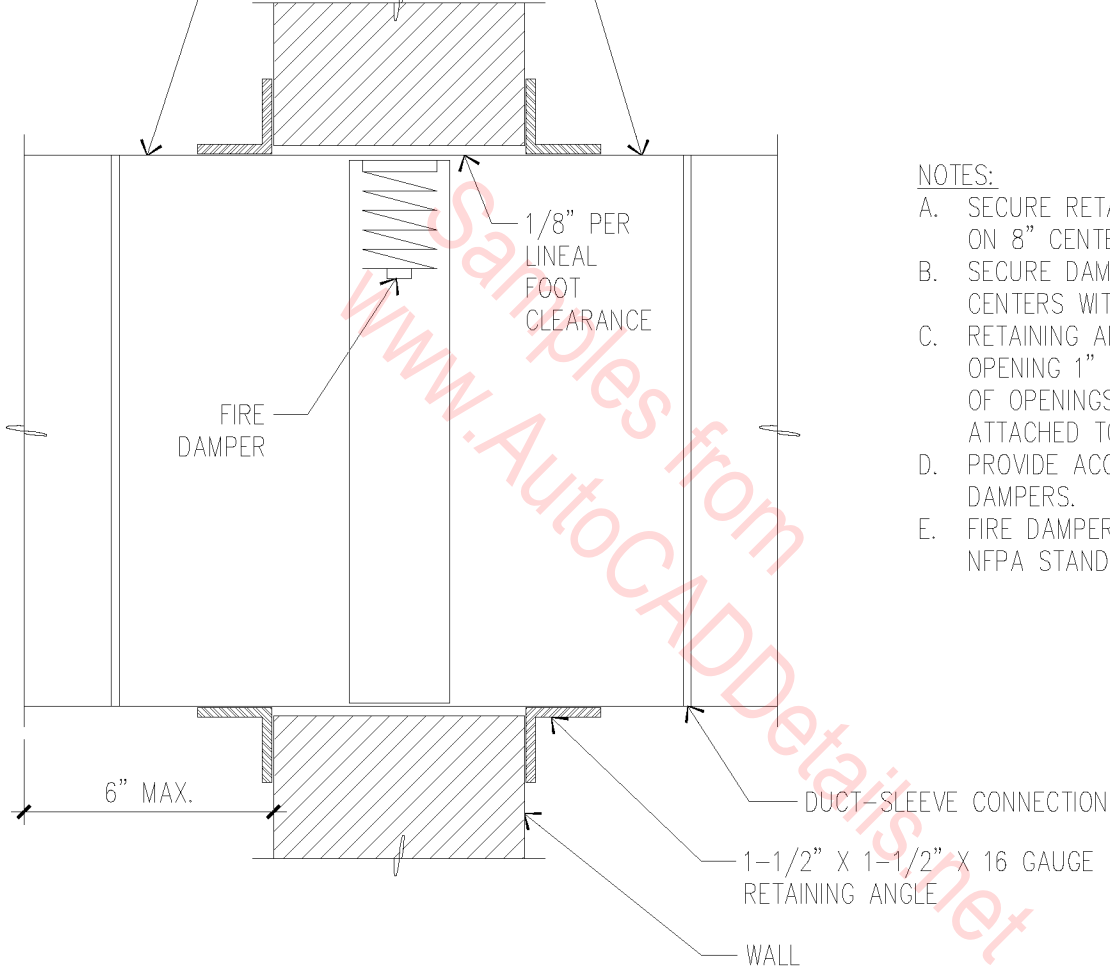
GAS METER DETAIL

N.T.S.

15B-1009

STEEL SLEEVE, 16 GAUGE MINIMUM

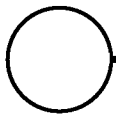
DUCT, SEE PLANS FOR SIZE



NOTES:

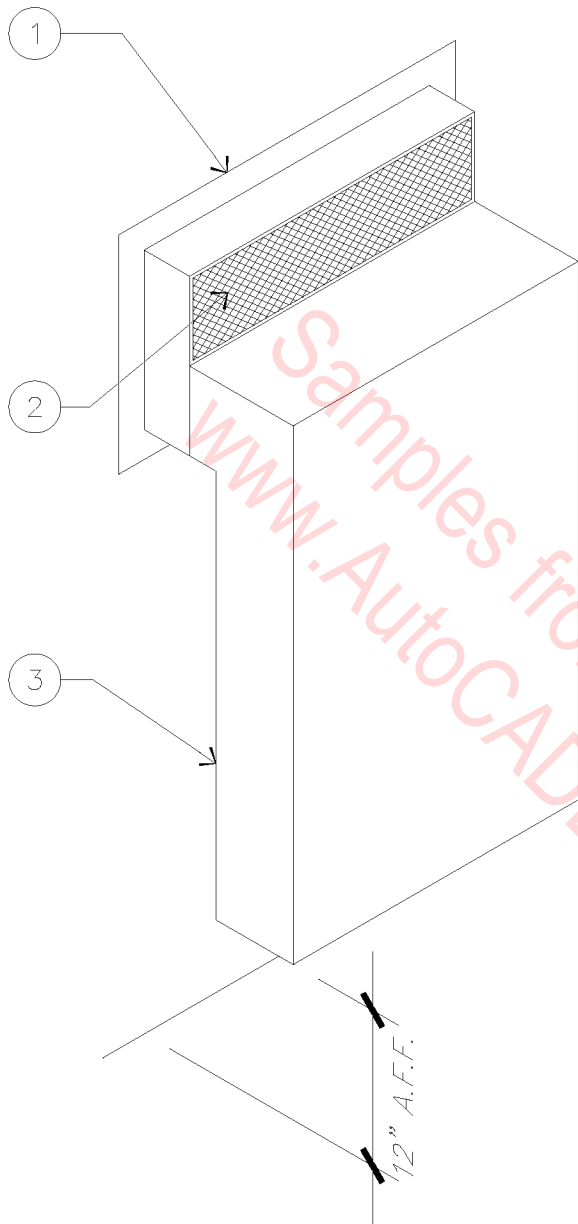
- A. SECURE RETAINING ANGLE TO SLEEVE ON 8" CENTERS WITH 1/4" NUTS AND BOLTS.
- B. SECURE DAMPER TO SLEEVE ON 8" CENTERS WITH 1/4" NUTS AND BOLTS
- C. RETAINING ANGLES MUST LAP STRUCTURAL OPENING 1" MINIMUM AND COVER CORNERS OF OPENINGS. ANGLES MUST NOT BE ATTACHED TO EACH OTHER AT CORNERS.
- D. PROVIDE ACCESS DOORS AT ALL FIRE DAMPERS.
- E. FIRE DAMPERS TO BE INSTALLED PER NFPA STANDARD 90A.

FIRE DAMPER INSTALLATION DETAIL



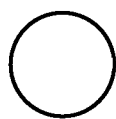
N.T.S.

15B-1010



- 1. SCREENED OPENING.
- 2. PROVIDE SCREENED INLET TO DUCT.
- 3. COMBUSTION AIR DUCT.

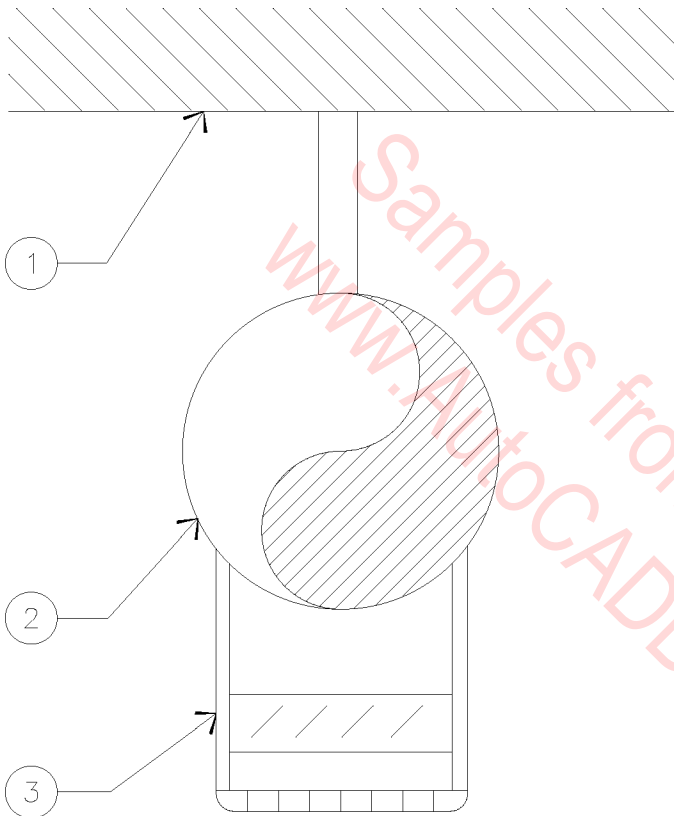
Samples from
www.AutoCADDetails.net



COMBUSTION AIR DETAIL

3/4" = 1'-0"

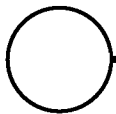
15B-1011



1. CEILING.
2. SUPPLY AIR DUCT.
3. MECHANICAL CONTRACTOR TO PROVIDE SHEET METAL BOOT TO MATCH OUTSIDE DIMENSION OF SUPPLY REGISTER WITH EDGES TURNED IN FOR MOUNTING.

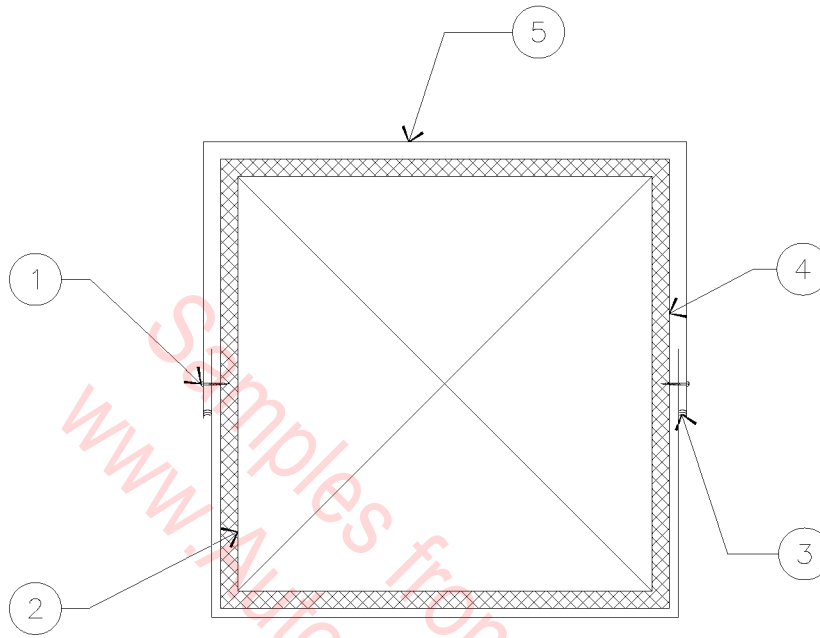
NOTE: SUPPORT DUCTWORK FROM CONCRETE TEES. COORDINATE LOCATIONS WITH ARCHITECT.

SUPPLY REGISTER MOUNTING DETAIL

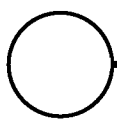


N.T.S.

15B-1012



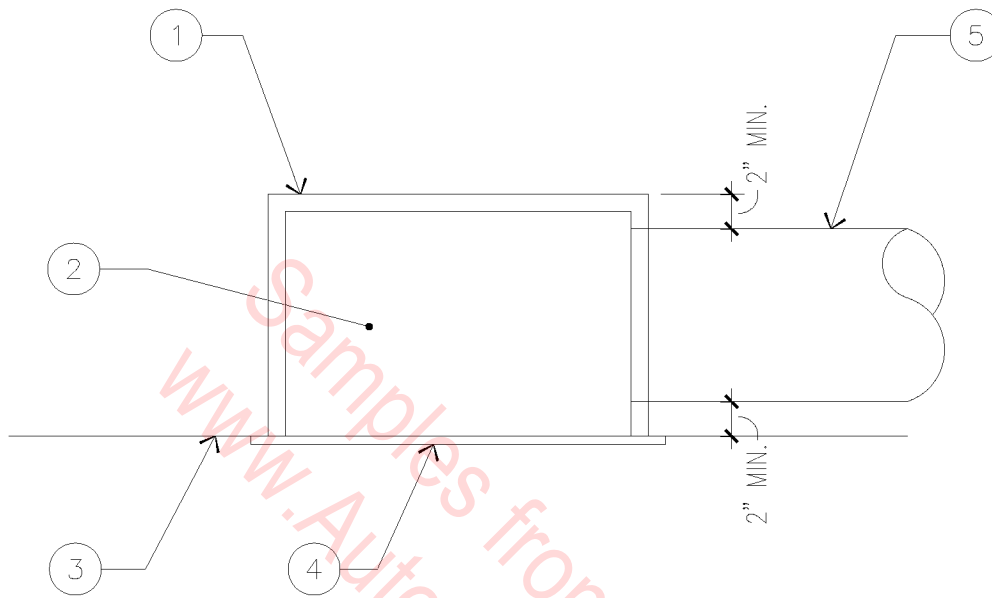
1. 1-1/2" SHEETMETAL SCREWS
@ 6" O.C.
2. SHEETMETAL DUCTWORK PER
SPECIFICATIONS.
3. SEAL WATERTIGHT WITH G.E.
SILICONE.
4. 1" DUCTBOARD.
5. 26 GAUGE GALVANIZED
WRAP.



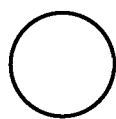
DUCT ON ROOF

1" = 1'-0"

15B-1013



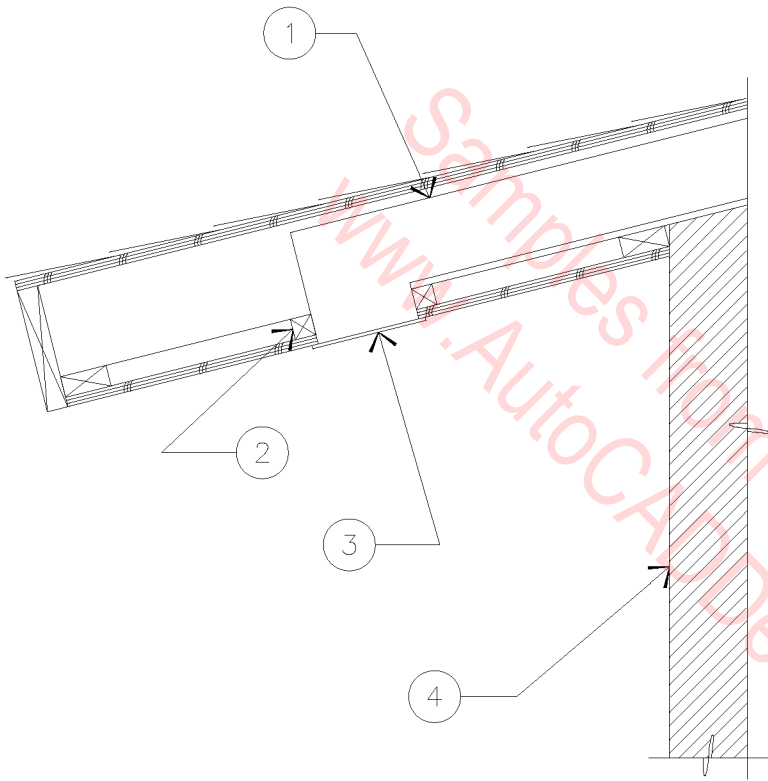
1. 1" FIBERGLASS DUCTBOARD
SOUND CHAMBER.
2. PAINT INTERIOR FLAT BLACK.
3. CEILING.
4. RETURN AIR GRILLE.
5. ROUND DUCT, ROUTE TO RETURN
AIR MAIN. SEE PLANS FOR
REQUIRED SIZE.



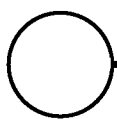
RETURN AIR DUCT

1" = 1'-0"

15B-1014



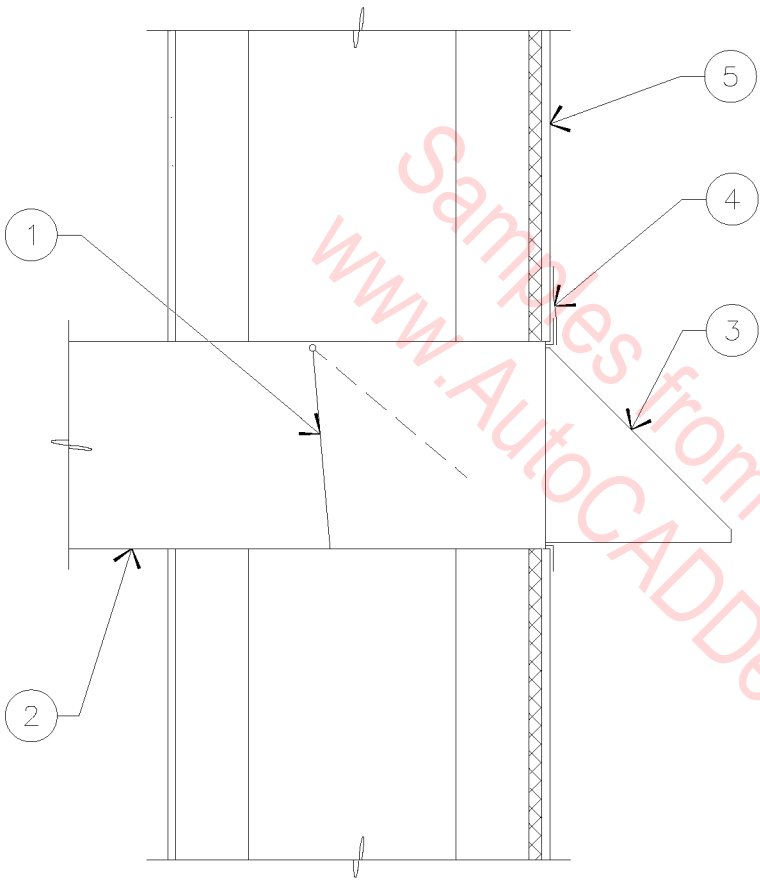
1. SEE PLANS FOR REQUIRED DUCT SIZE.
2. 2 X 2 FURRING STRIPS ALL AROUND DUCT PENETRATION.
3. SOFFIT GRILLE WITH SCREEN.
4. EXTERIOR WALL.



SOFFIT GRILLE DETAIL

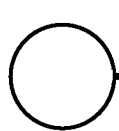
$3/4'' = 1'-0''$

15B-1015



1. BACKDRAFT DAMPER.
2. DUCT FROM EXHAUST FAN, SEE PLANS FOR REQUIRED SIZE.
3. WALL CAP.
4. FLASH AND COUNTERFLASH.
5. SEE ARCHITECTURAL PLANS FOR WALL CONSTRUCTION.

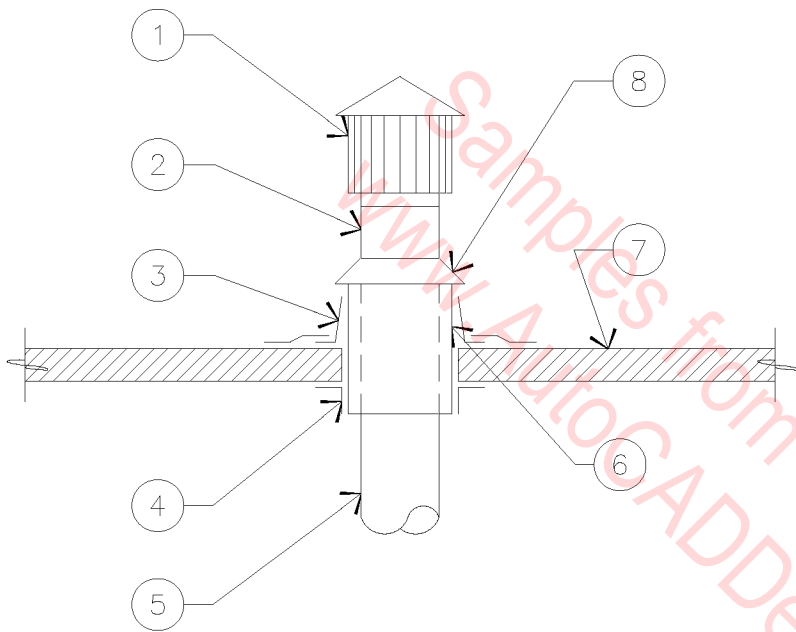
NOTE: SEAL ALL JOINTS WATERTIGHT WITH G.E. SILICONE SEAL.



EXHAUST WALL CAP

3/4" = 1'-0"

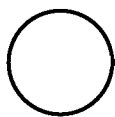
15B-1016



1. BREIDERT VENT CAP.
2. METALBESTOS VENT.
3. FLASHING.
4. ATTACH THIMBLE TO ROOF DECKING.
5. TYPE "B" FLUE, SEE PLANS FOR SIZE.
6. VENTILATED ROOF THIMBLE, METALBESTOS OR EQUAL.
7. VERIFY ROOF CONSTRUCTION.
8. STORM COLLAR.

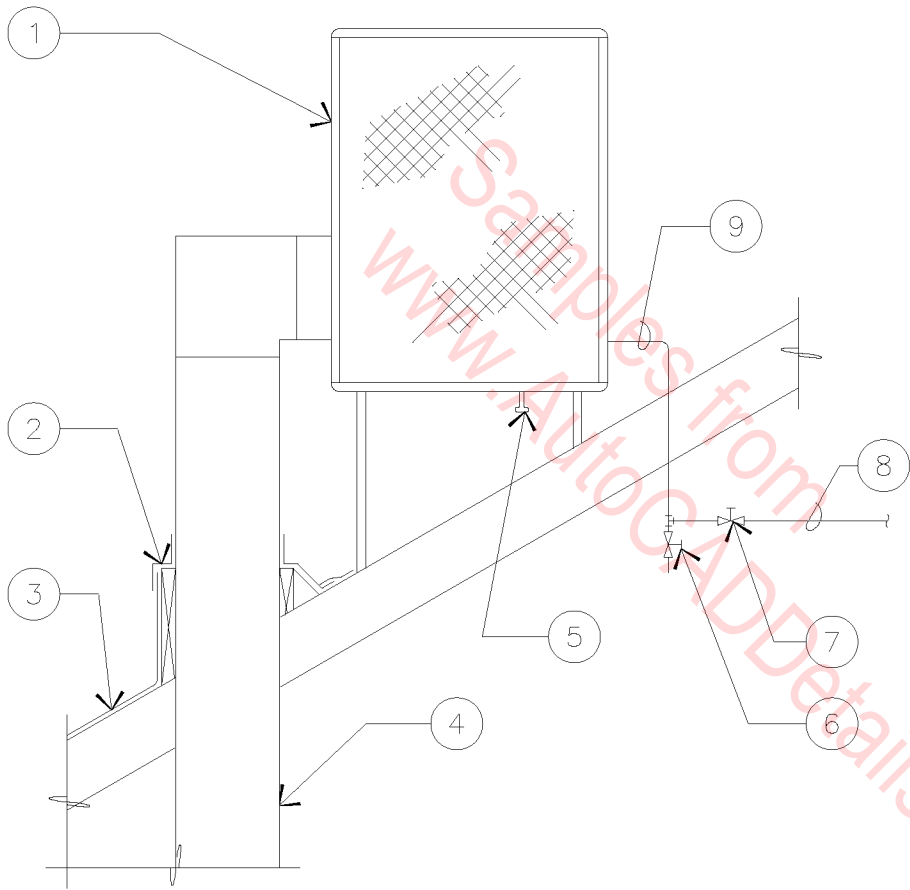
NOTE: INSTALL FLUE AT HEIGHT REQUIRED BY LOCAL AND UMC CODES.

TYPE "B" FLUE THROUGH ROOF

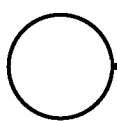


3/4" = 1'-0"

15B-1017



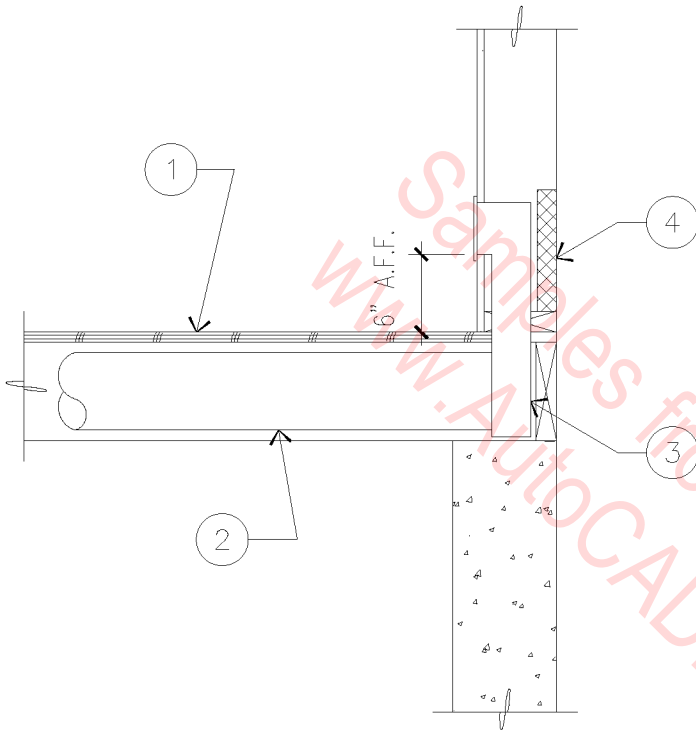
1. EVAPORATIVE COOLER.
2. FLASH AND COUNTERFLASH.
3. ROOF, SEE ARCHITECTURAL PLANS.
4. SEE PLANS FOR REQUIRED DUCT SIZE.
5. ROUTE DRAIN LINE TO NEAREST ROOF DRAIN.
6. DRAIN DOWN VALVE, PIPE TO NEAREST FLOOR DRAIN.
7. GATE VALVE.
8. 3/8" COLD WATER LINE.
9. 1/4" COLD WATER LINE TO NEAREST WATER SOURCE, SLOPE FOR WINTERIZATION.



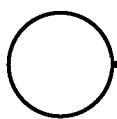
EVAPORATIVE COOLER

1/2" = 1'-0"

15B-1018



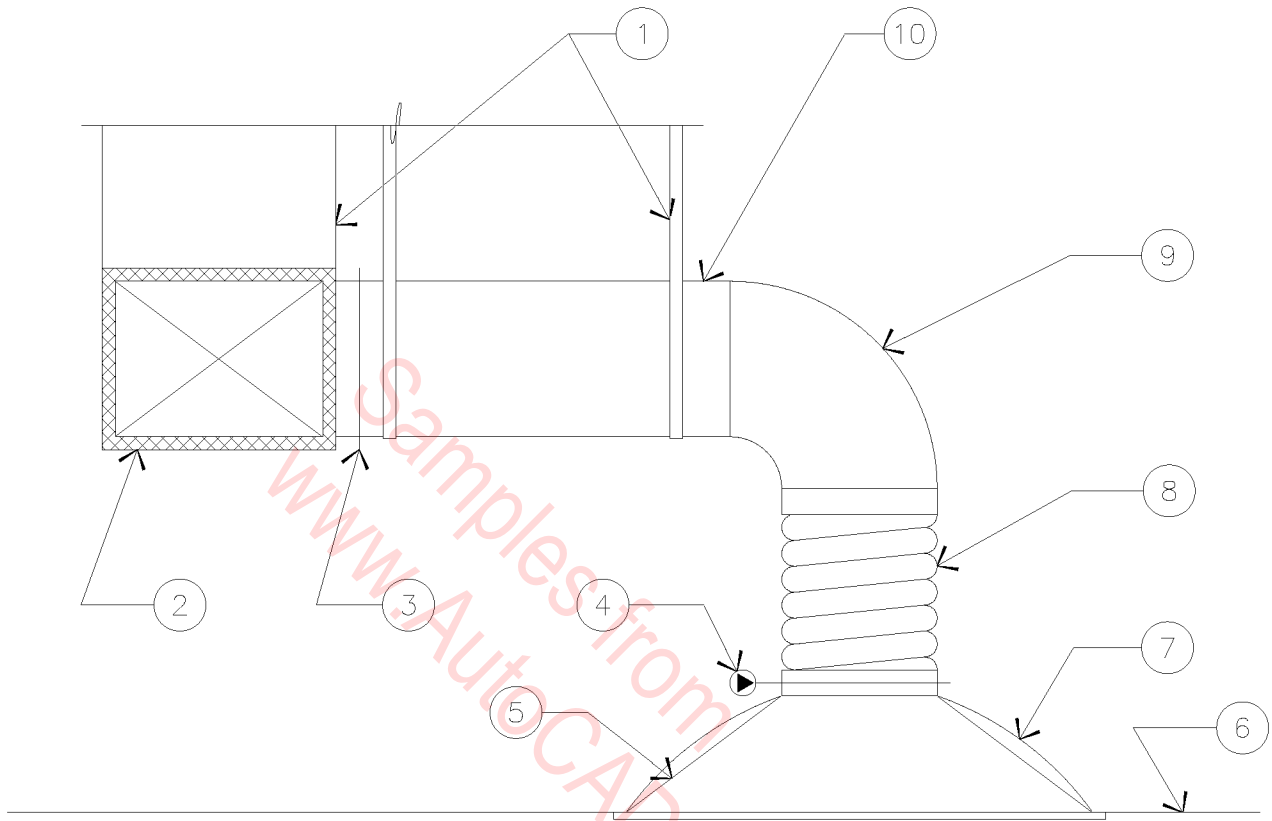
1. FLOOR.
2. ROUND SUPPLY AIR DUCT, SEE PLANS FOR REQUIRED SIZE.
3. SUPPLY AIR PLENUM IN WALL CAVITY, SEE PLANS FOR REQUIRED SIZE.
4. PROVIDE MINIMUM 1-1/2" RIGID INSULATION IN WALL CAVITY PRIOR TO SHEETMETAL INSTALLATION.



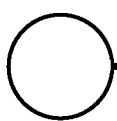
SUPPLY REGISTER

3/4" = 1'-0"

15B-1019



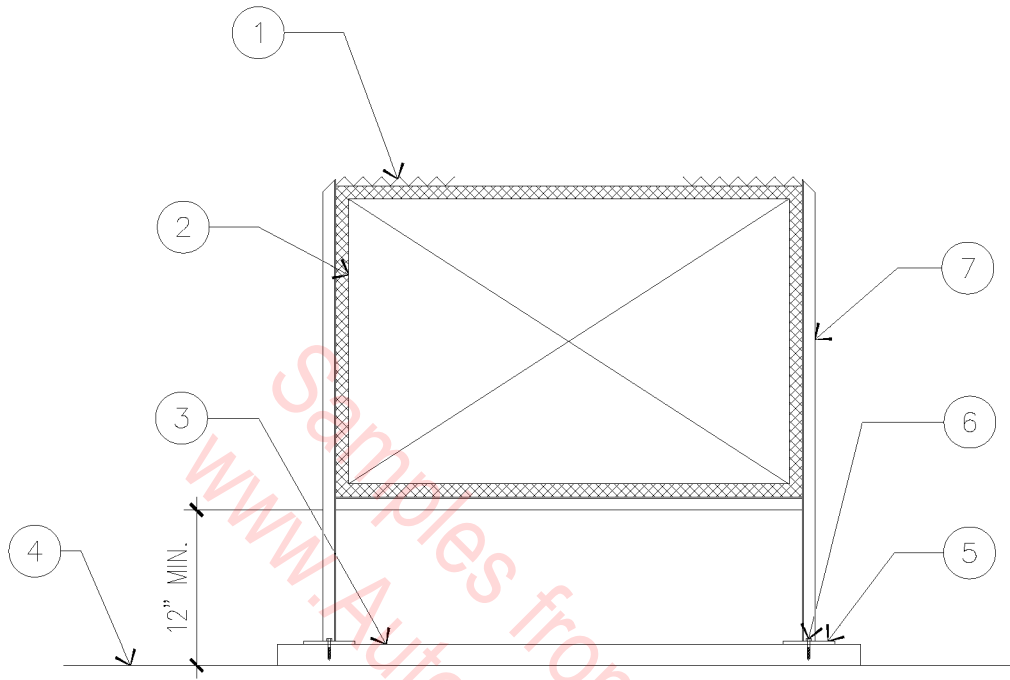
1. SUPPORT STRAPS FROM STRUCTURE ABOVE.
2. SHEETMETAL DUCT PER SMACNA STANDARDS WITH INSULATION PER SPECIFICATIONS.
3. VOLUME DAMPER AND EXTRACTOR, TYPICAL.
4. U.L. FIRE DAMPER.
5. SUPPLY DIFFUSER.
6. CEILING.
7. RADIATION BLANKET.
8. U.L. CLASS ONE FLEXIBLE DUCT, MAXIMUM LENGTH 3'-0".
9. RIGID ROUND METAL ELBOW.
10. RIGID ROUND METAL DUCT.



DUCTWORK INSTALLATION

3/4" = 1'-0"

15B-1020

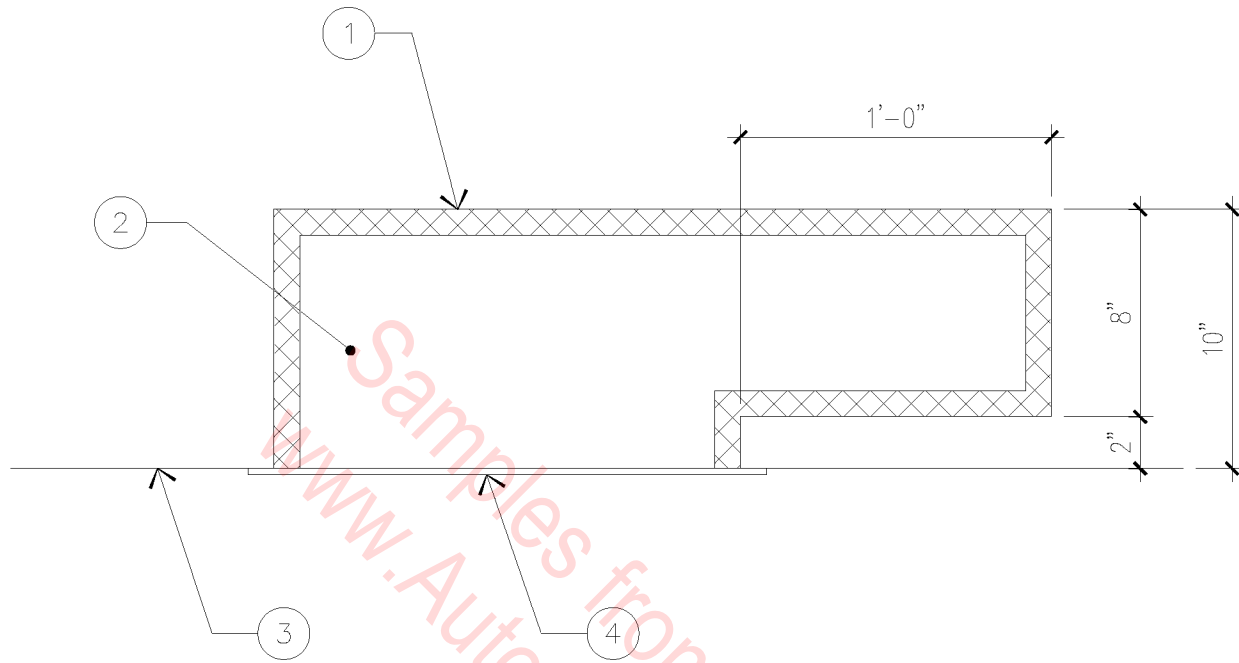


1. #14 GALVANIZED WIRE.
2. INSULATED DUCTWORK PER SPECIFICATIONS.
3. 2 X 6 REDWOOD.
4. ROOF DECK, SEE ARCHITECTURAL PLANS.
5. 4" X 4" X 1/4" BASE PLATE WELDED TO LEG.
6. 3/8" X 1-1/2" LAG SCREW.
7. 1" X 1" X 1/8" ANGLE.

○ DUCT ON ROOF

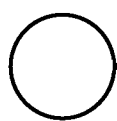
3/4" = 1'-0"

15B-1021



1. 1" FIBERGLASS DUCTBOARD SOUND CHAMBER.
2. PAINT INTERIOR FLAT BLACK.
3. CEILING.
4. RETURN AIR GRILLE.

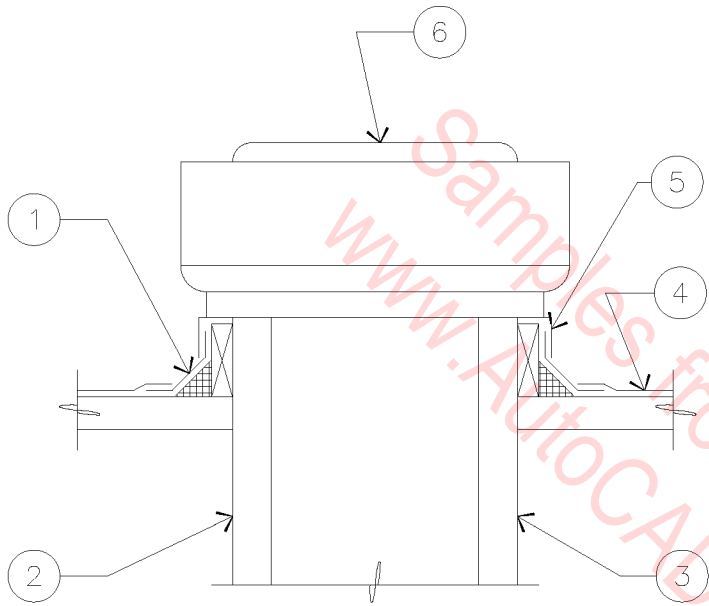
NOTE: FACE OPENING TOWARD CENTER OF BUILDING UNLESS OTHERWISE NOTED.



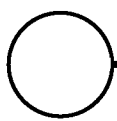
DUCTWORK INSTALLATION

1-1/2" = 1'-0"

15B-1022



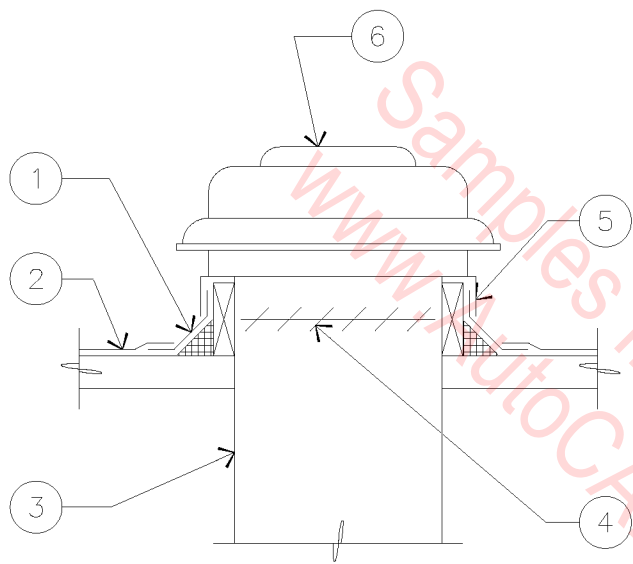
1. ROOF CURB, FLASH AND COUNTERFLASH.
2. 3" AIR SPACE.
3. WELDED EXHAUST DUCT, SEE PLANS FOR REQUIRED SIZE.
4. ROOF.
5. ANCHOR FAN BASE SECURELY TO VENTILATED CURB.
6. EXHAUST FAN.



KITCHEN EXHAUST FAN

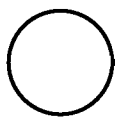
3/4" = 1'-0"

15B-1023



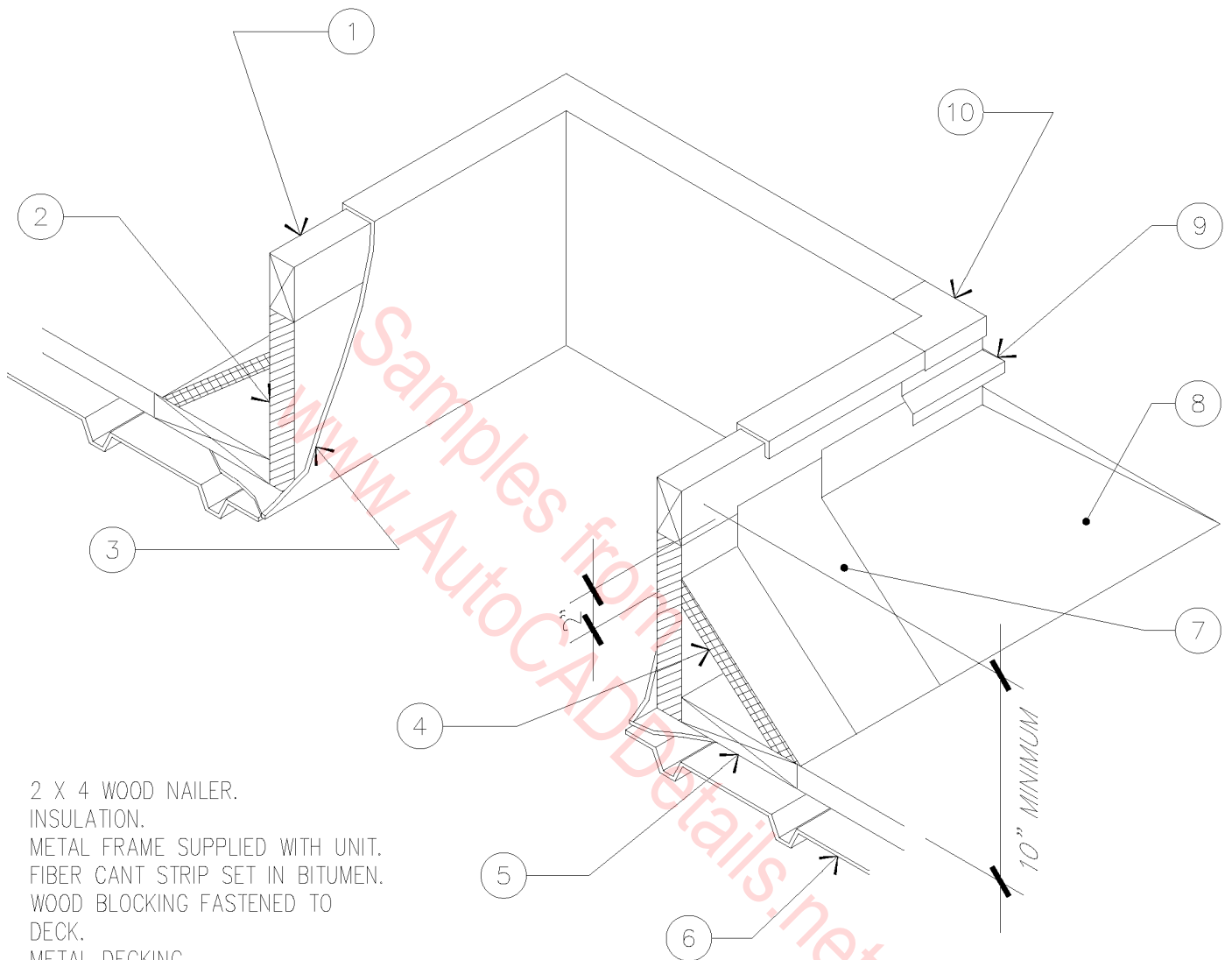
1. ROOF CURB, FLASH AND COUNTERFLASH.
2. ROOF.
3. EXHAUST DUCT, SEE PLAN FOR REQUIRED SIZE.
4. BACKDRAFT DAMPER.
5. ANCHOR FAN BASE SECURELY TO VENTILATED CURB.
6. EXHAUST FAN.

ROOF MOUNTED EXHAUST FAN

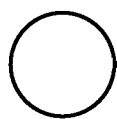


3/4" = 1'-0"

15B-1024



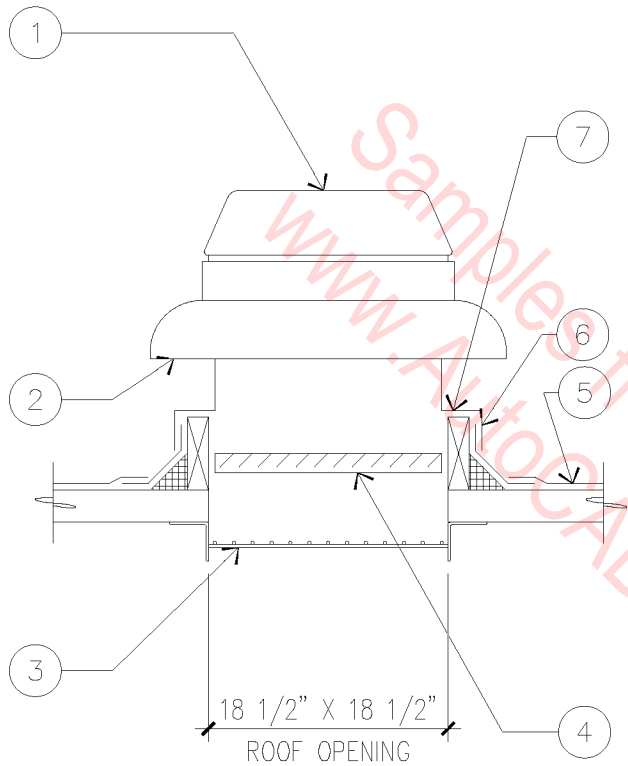
1. 2 X 4 WOOD NAILER.
2. INSULATION.
3. METAL FRAME SUPPLIED WITH UNIT.
4. FIBER CANT STRIP SET IN BITUMEN.
5. WOOD BLOCKING FASTENED TO DECK.
6. METAL DECKING.
7. BASE FLASHING.
8. COUNTERFLASHING EXTENDED DOWN TO PROTECT AGAINST FOOT DAMAGE.
9. COUNTERFLASHING FASTENED APPROXIMATELY 18" O.C.
10. FLASHING RECEIVER.



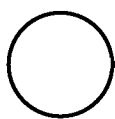
EQUIPMENT CURB

1" = 1'-0"

15B-1025



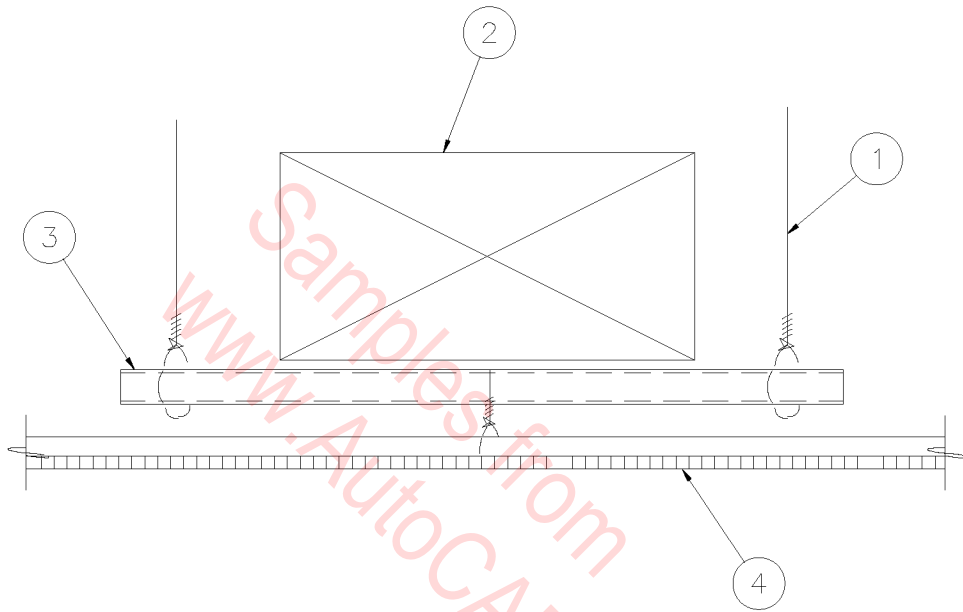
1. EXHAUST FAN.
2. BIRDSCREEN.
3. FLASHING AND SECURITY BARS FURNISHED AND INSTALLED BY GENERAL CONTRACTOR.
4. BACKDRAFT DAMPER FURNISHED WITH EXHAUST FAN.
5. ROOF, SEE ARCHITECTURAL PLANS.
6. ROOF CURB, FURNISHED WITH EXHAUST FAN.
7. ANCHOR FAN BASE SECURELY TO CURB.



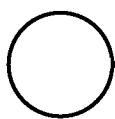
ATTIC EXHAUSTER

3/4" = 1'-0"

15B-1026



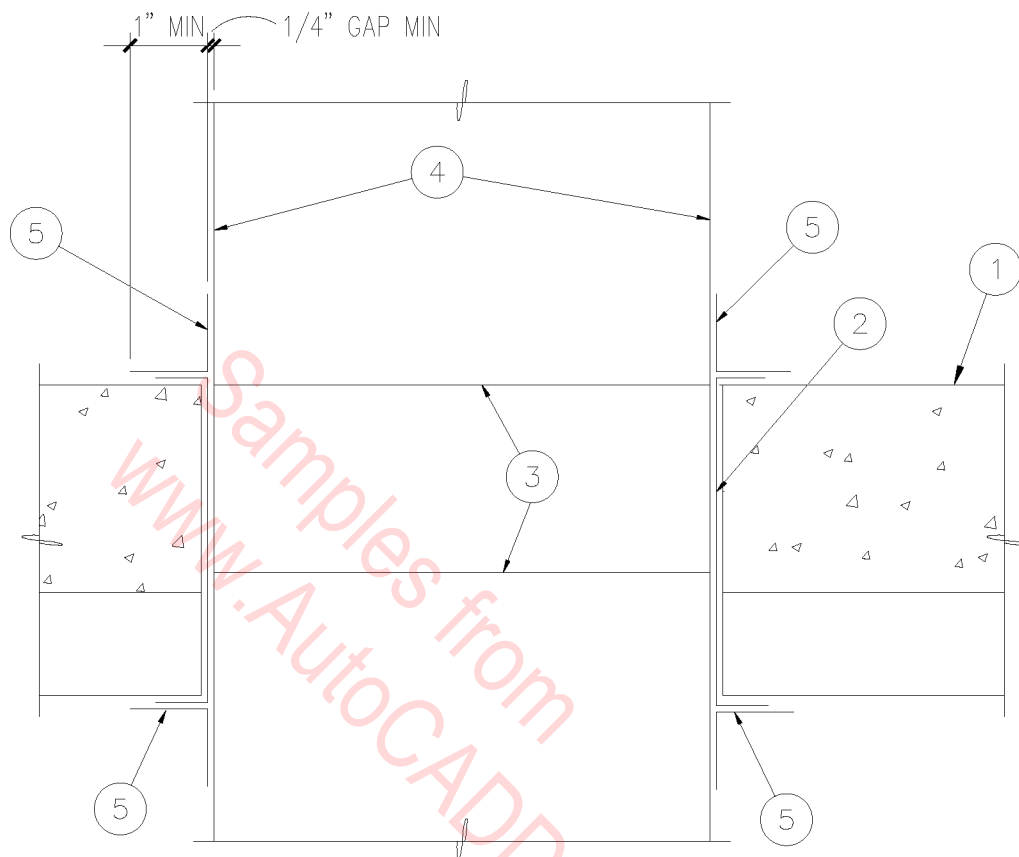
1. HANGER WIRE.
2. DUCT.
3. CHANNEL, SIZE AS
REQUIRED BY SPAN.
4. SUSPENDED CEILING.



CEILING @ DUCT

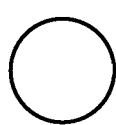
3" = 1'-0"

15B-5001



UL SAFETY STANDARD 555 AND NFPA 90A

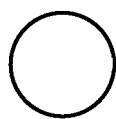
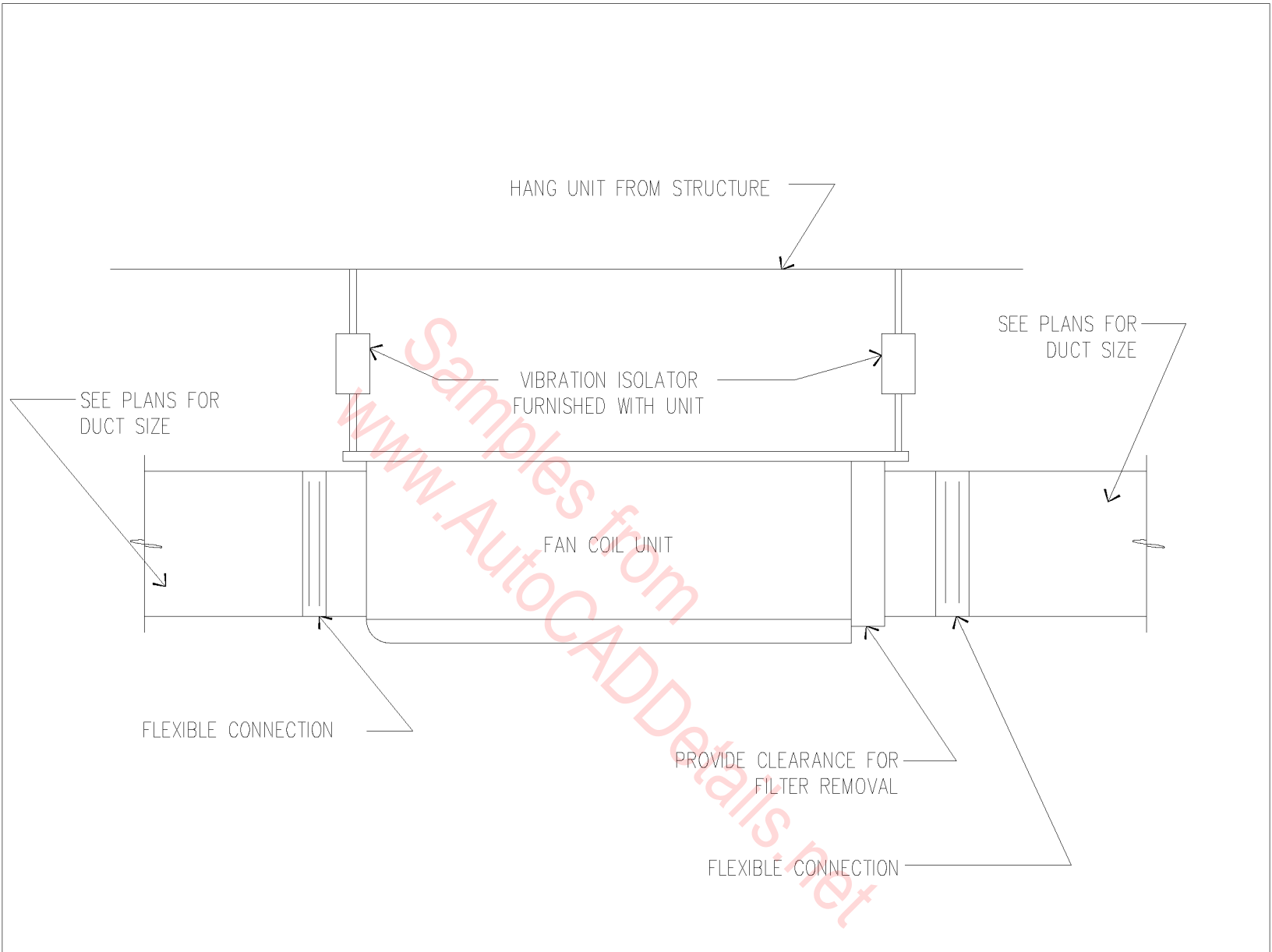
1. PRECAST CONCRETE DOUBLE TEE WITH 4" CONCRETE TOPPING, UL DESIGN NO. J941.
2. 20 GA. G.I. SLEEVE THRU FLOOR.
3. FIRE DAMPER, SEE MECHANICAL FOR TYPE AND LOCATION.
4. DAMPER SLEEVE SHALL NOT EXTEND MORE THAN 6" BEYOND THE FIRE WALL OR FLOOR AND NOT MORE THAN 9" ON THE OPERATOR/ACTUATOR SIDE.
5. ANGLE 1-1/2" X 1-1/2" X 14 GAGE.



FLOOR PENETRATION

3" = 1'-0"

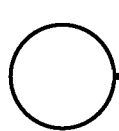
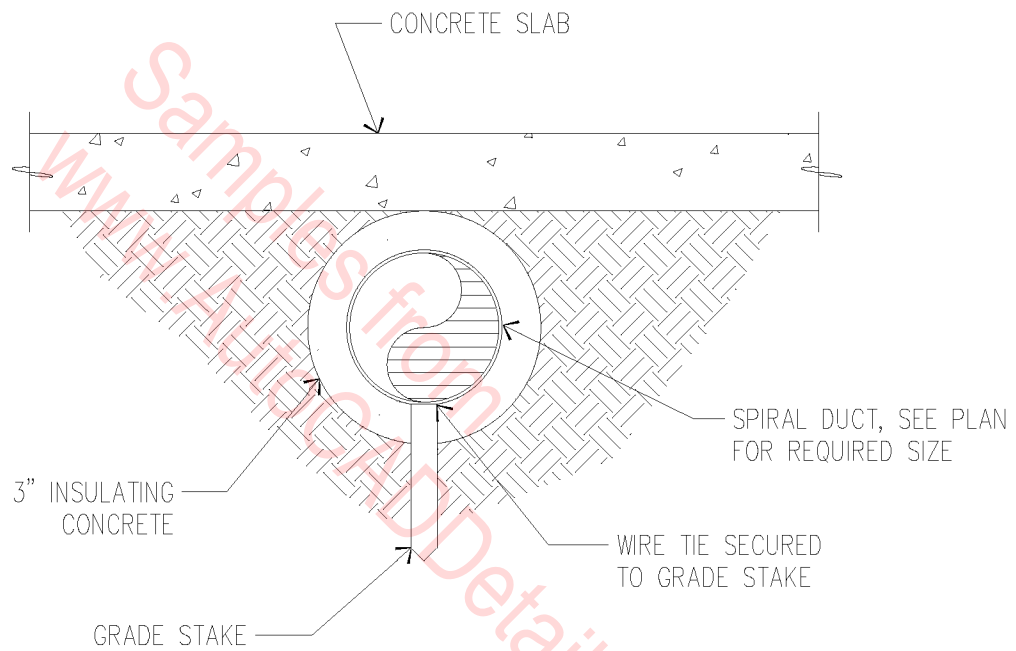
15B-5002



FAN COIL UNIT DETAIL

N.T.S.

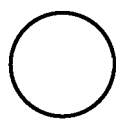
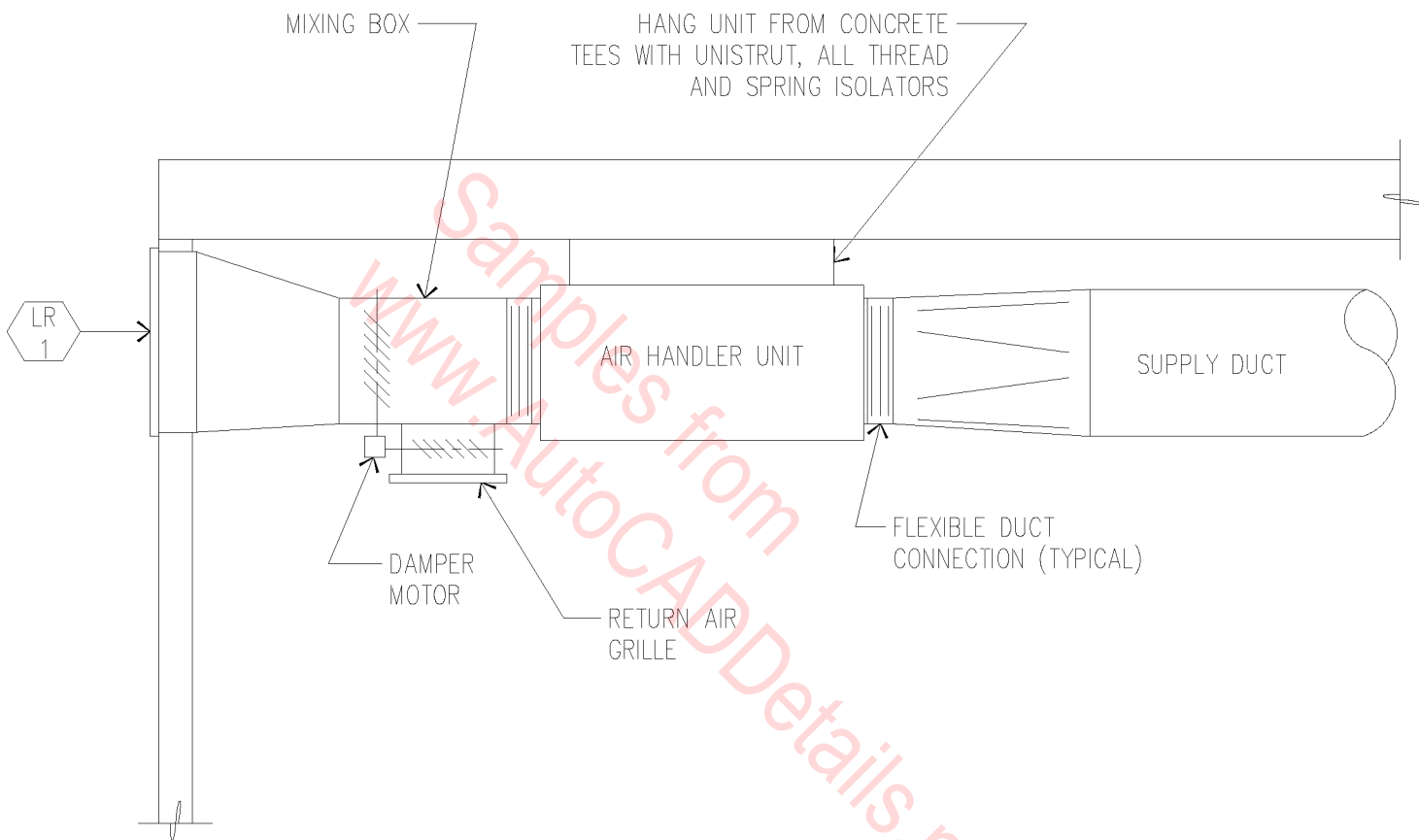
15B-5003



UNDER SLAB DUCT DETAIL

N.T.S.

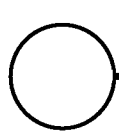
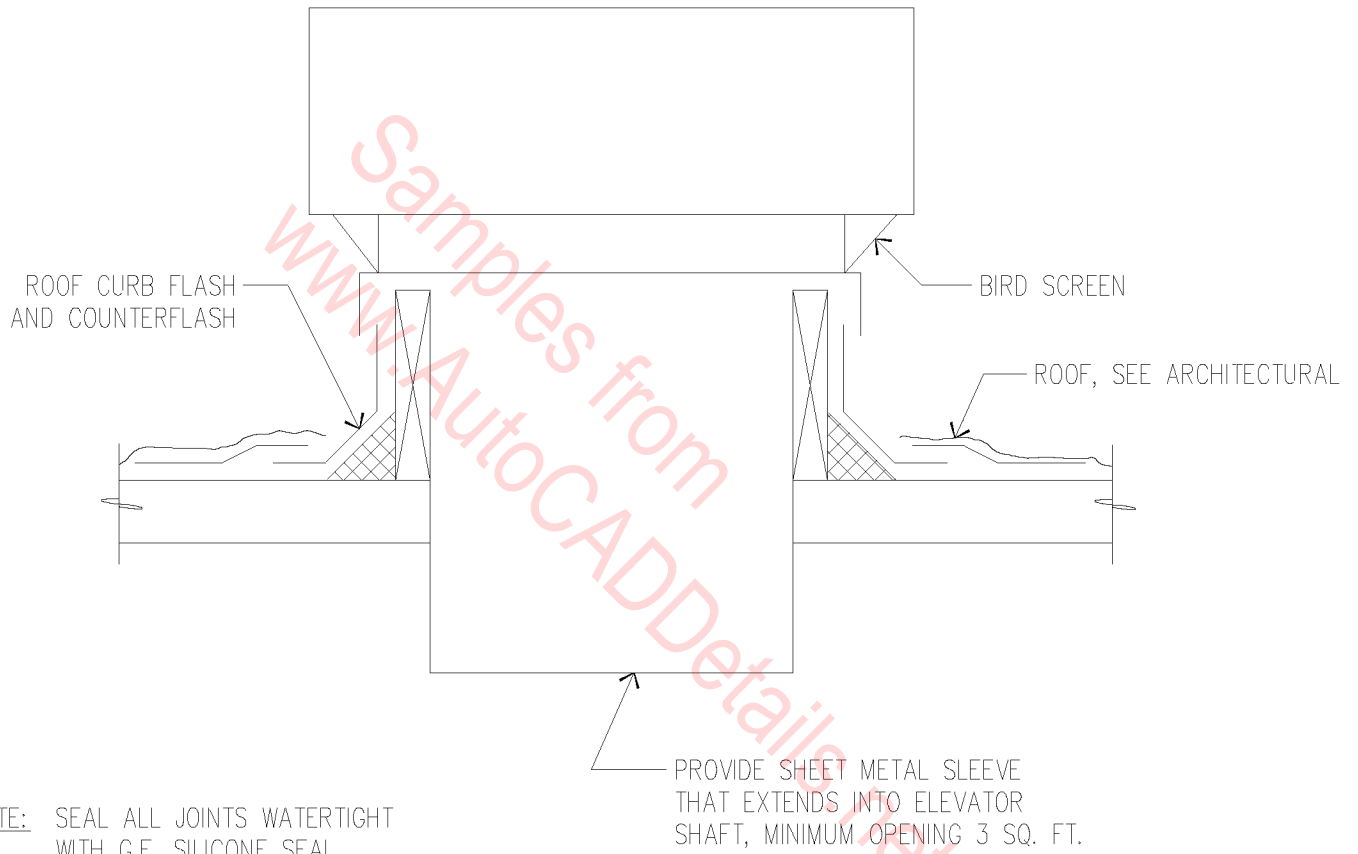
15B-5004



AIR HANDLER UNIT

N.T.S.

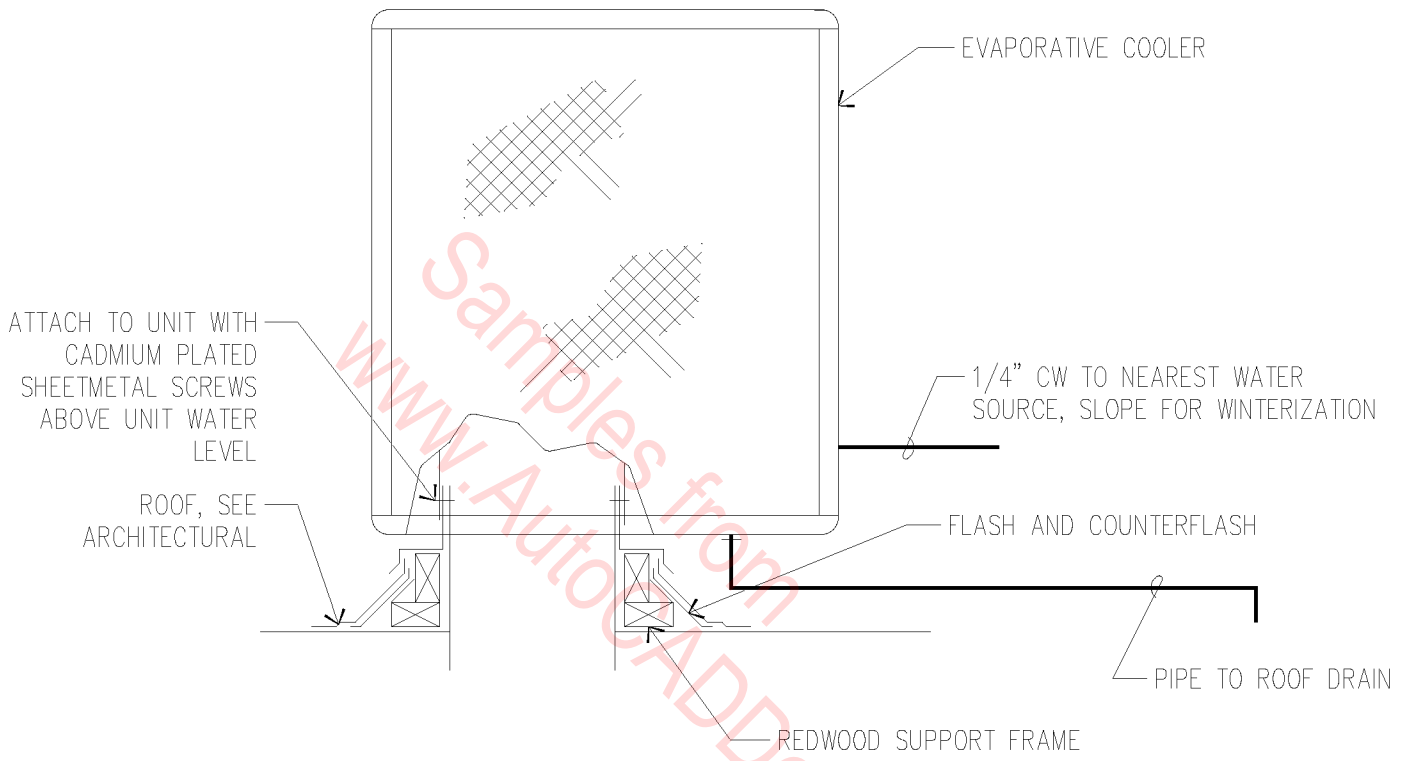
15B-5005



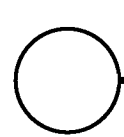
ELEVATOR RELIEF VENT

N.T.S.

15B-5006



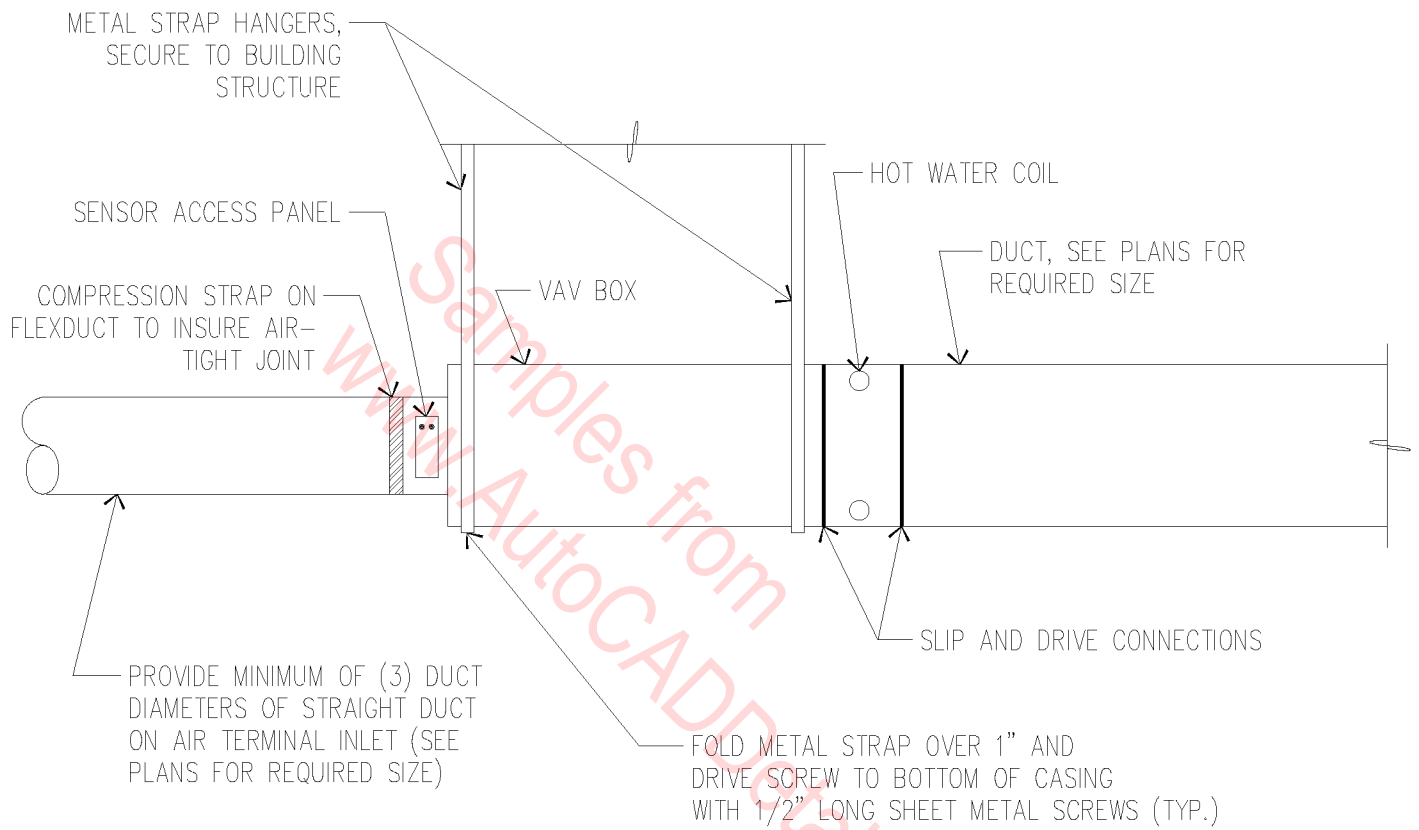
NOTE: SEAL ALL JOINTS WATERTIGHT WITH G.E. SILICONE SEAL.



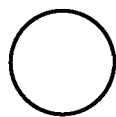
EVAPORATIVE COOLER

N.T.S.

15B-5007

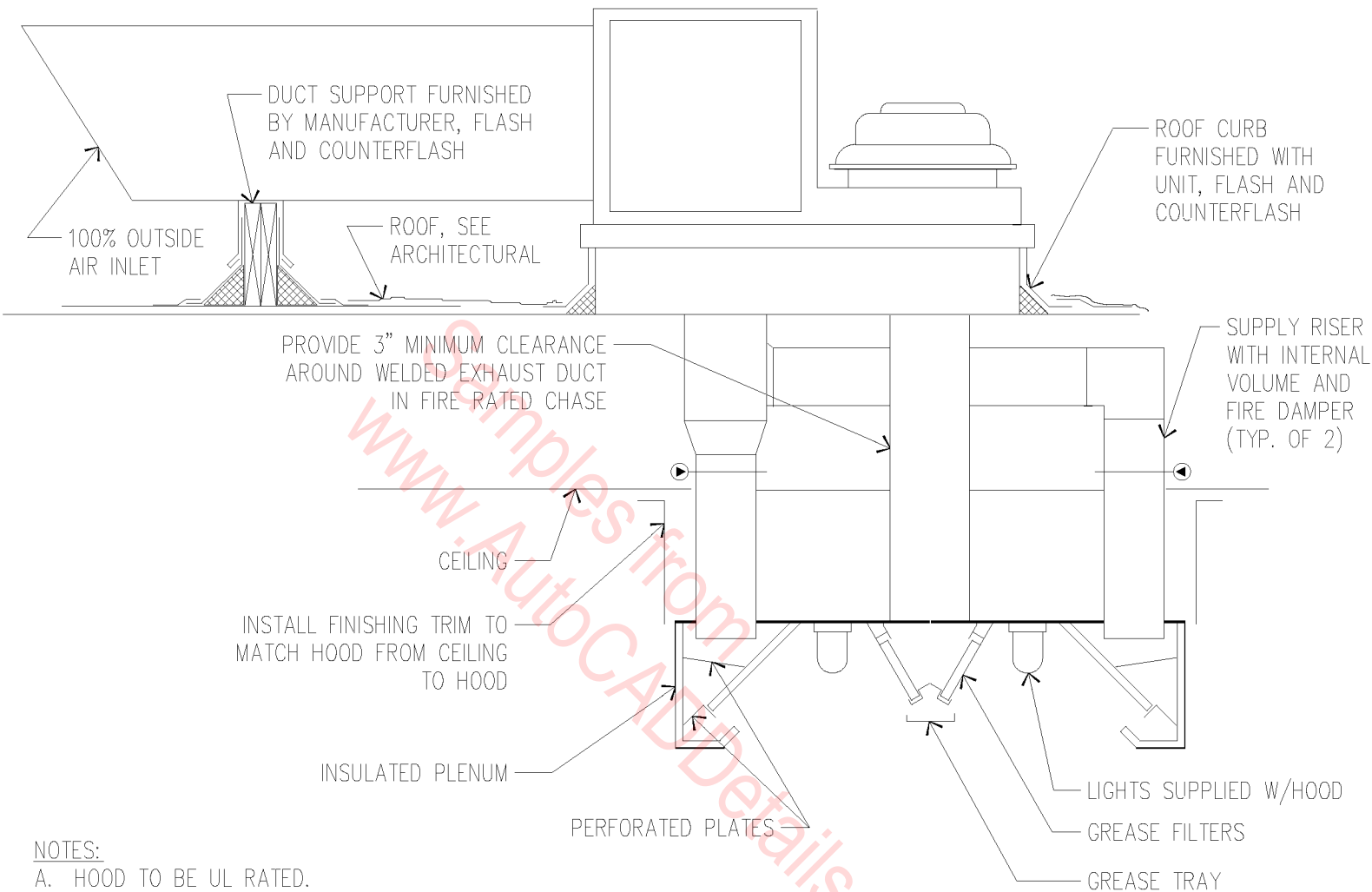


VARIABLE AIR VOLUME BOX



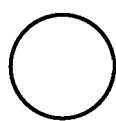
N.T.S.

15B-5008



NOTES:

- A. HOOD TO BE UL RATED.
- B. HOOD CONSTRUCTION TO COMPLY WITH NFPA 96.
EXHAUST DUCT TO BE 16 GA. STEEL WELD ASSEMBLY PER LOCAL BUILDING DEPARTMENT.
- C. AS A SUBCONTRACTOR TO THE MECHANICAL CONTRACTOR, A FIRE PROTECTION CONTRACTOR SHOULD PIPE HOODS, SUPPLY AND INSTALL PULL STATION, CHEMICAL BOTTLES AND ALL APPURTENANCES TO MEET LOCAL AND NFPA CODES. CONTRACTOR SHALL ALSO PROVIDE GAS SOLENOID VALVE TO BE INSTALLED BY MECHANICAL CONTRACTOR AND MICROSWITCH FOR CONNECTION BY ELECTRICAL CONTRACTOR.



KITCHEN HOOD & FAN

N.T.S.

15B-5009

ROOF CURB
FURNISHED WITH
UNIT, FLASH AND
COUNTERFLASH

DUCT SUPPORT FURNISHED
WITH UNIT, FLASH AND
COUNTERFLASH

ROOF, SEE
ARCHITECTURAL

100% OUTSIDE
AIR INLET

PROVIDE 3" MINIMUM
CLEARANCE AROUND
WELDED EXHAUST DUCT
IN FIRE RATED CHASE

SUPPLY DUCT, SEE
PLAN FOR SIZE

EXHAUST DUCT, SEE
PLAN FOR SIZE

LISTED FIRE DAMPER
IN SUPPLY DUCT
COLLAR

CEILING

18"

48"

REMOVABLE AIR
DIFFUSER

INSTALL FINISHING
TRIM TO MATCH
HOOD FROM HOOD
TO CEILING

24"

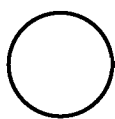
INSULATED PLENUM

LIGHTS TO BE SUPPLIED
WITH HOOD

REMOVABLE GREASE TRAY CUP

NOTES:

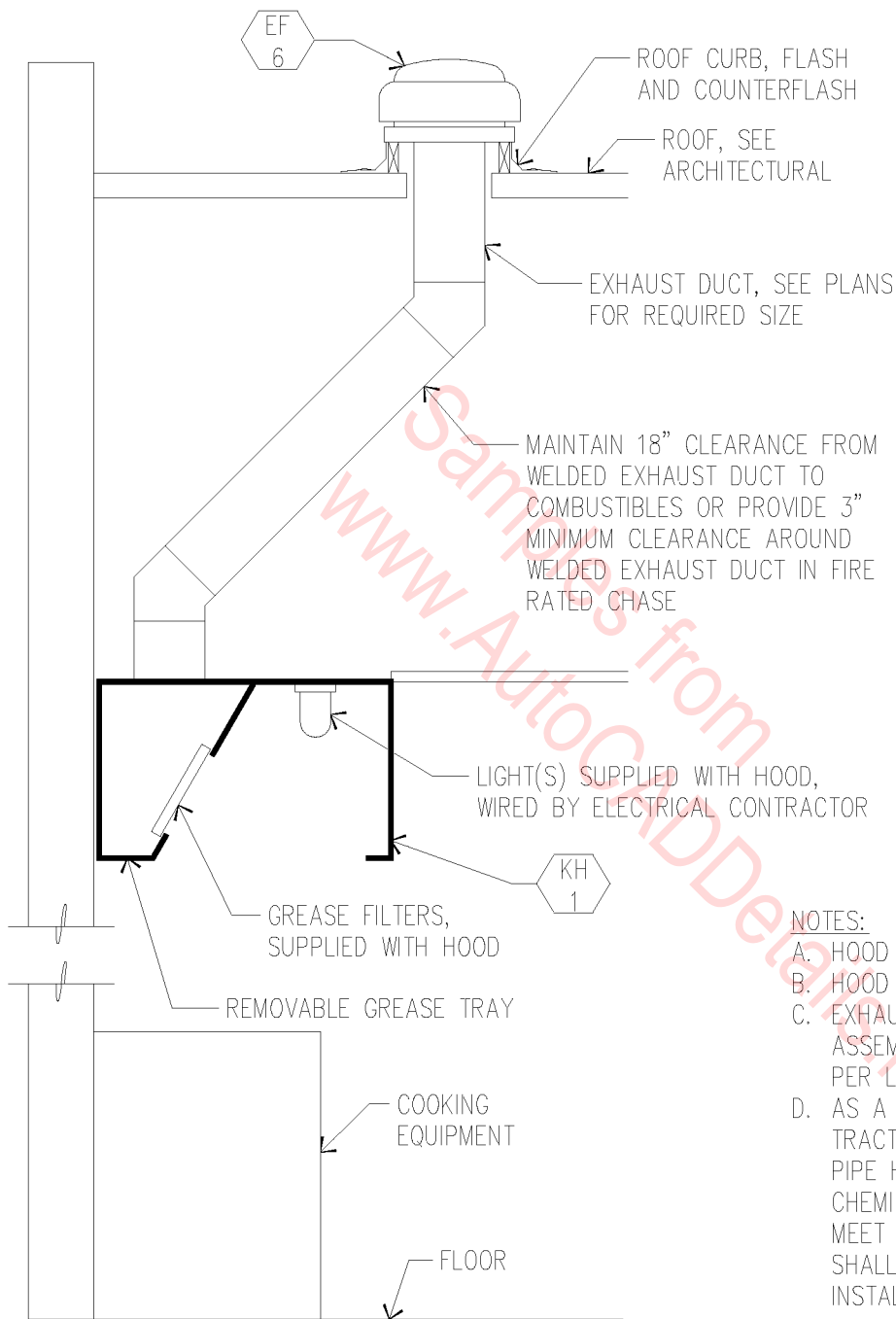
- A. HOOD TO BE UL RATED.
- B. HOOD CONSTRUCTION TO COMPLY WITH NFPA 96.
- C. HOOD TO BE FABRICATED AND INSTALLED PER CHAPTER 20 OF THE 1988 UMC.
- E. SEAL ALL JOINTS WITH G.E. SILICONE SEAL.



KITCHEN HOOD & FAN

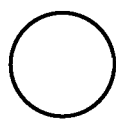
N.T.S.

15B-5010



NOTES:

- A. HOOD TO BE UL RATED.
- B. HOOD CONSTRUCTION TO COMPLY WITH NFPA 96.
- C. EXHAUST DUCT TO BE 16 GAUGE STEEL WELD ASSEMBLY OR GASKET/BOLTED FLANGE ASSEMBLY PER LOCAL BUILDING DEPARTMENT.
- D. AS A SUBCONTRACTOR TO THE MECHANICAL CONTRACTOR, A FIRE PROTECTION CONTRACTOR SHALL PIPE HOODS, SUPPLY AND INSTALL PULL STATION, CHEMICAL BOTTLES, AND ALL APPURTENANCES TO MEET LOCAL AND NFPA CODES. CONTRACTOR SHALL ALSO PROVIDE SOLENOID VALVE TO BE INSTALLED BY MECHANICAL CONTRACTOR.



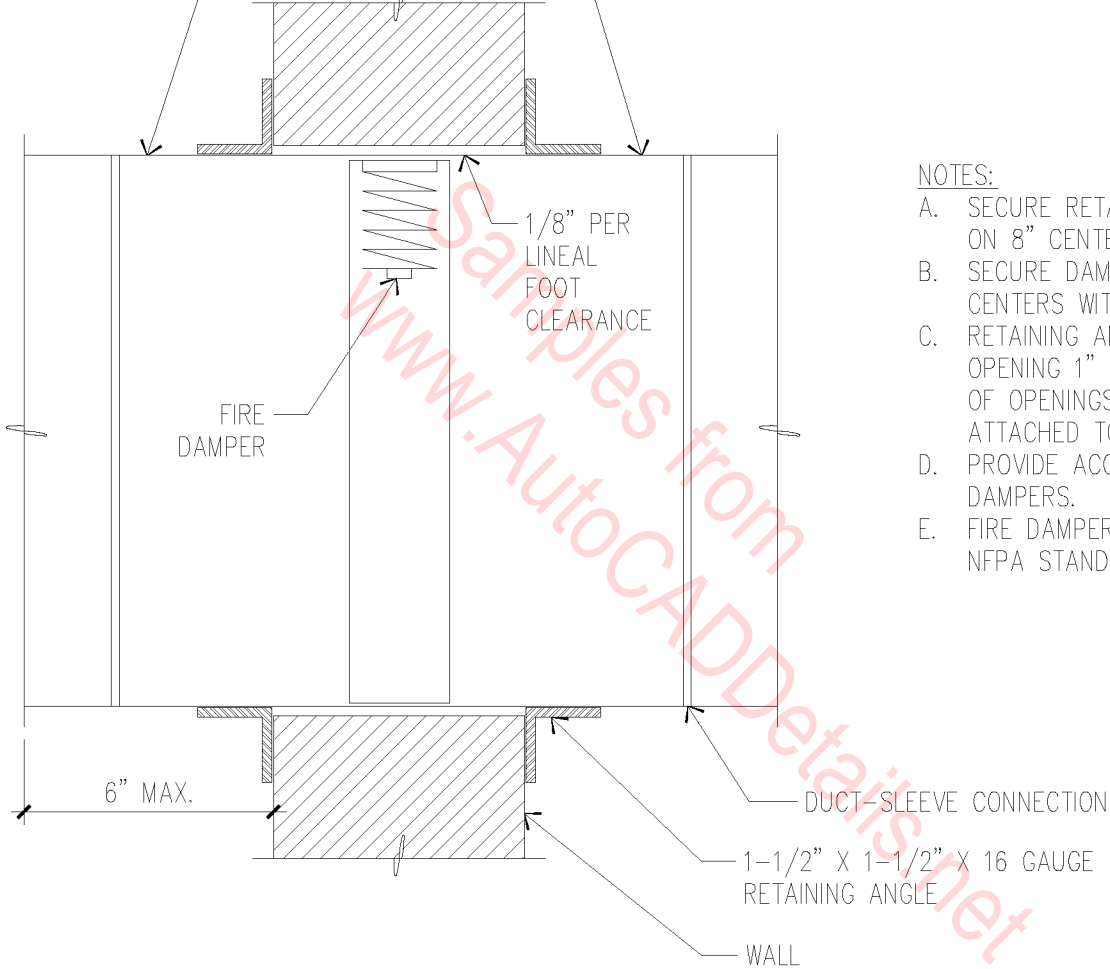
KITCHEN HOOD DETAIL

N.T.S.

15B-5011

STEEL SLEEVE, 16 GAUGE MINIMUM

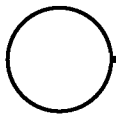
DUCT, SEE PLANS FOR SIZE



NOTES:

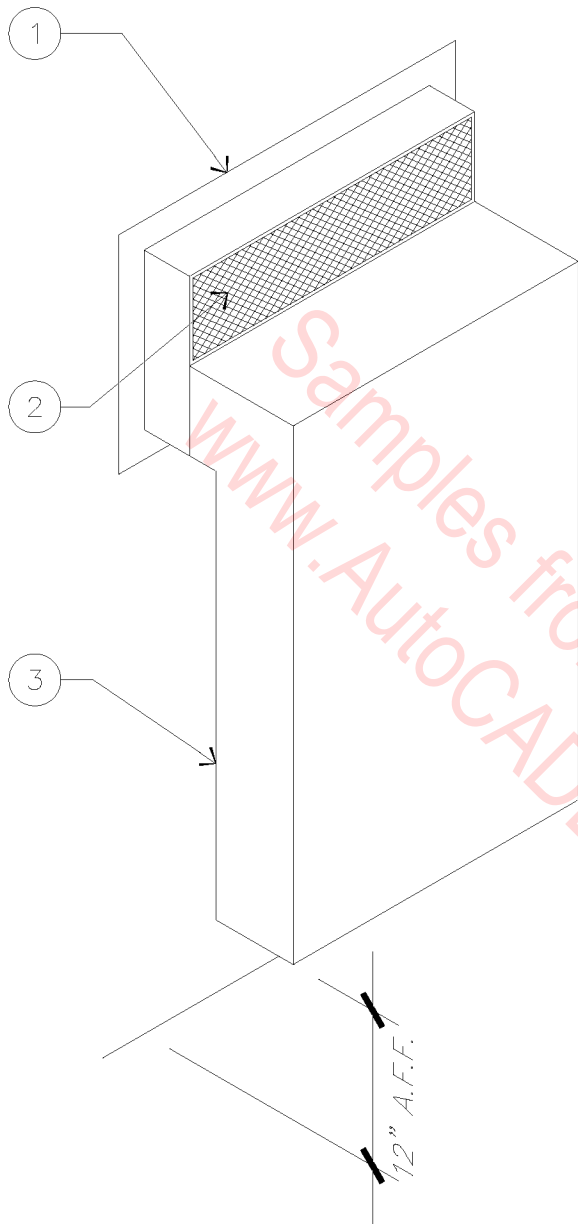
- A. SECURE RETAINING ANGLE TO SLEEVE ON 8" CENTERS WITH 1/4" NUTS AND BOLTS.
- B. SECURE DAMPER TO SLEEVE ON 8" CENTERS WITH 1/4" NUTS AND BOLTS
- C. RETAINING ANGLES MUST LAP STRUCTURAL OPENING 1" MINIMUM AND COVER CORNERS OF OPENINGS. ANGLES MUST NOT BE ATTACHED TO EACH OTHER AT CORNERS.
- D. PROVIDE ACCESS DOORS AT ALL FIRE DAMPERS.
- E. FIRE DAMPERS TO BE INSTALLED PER NFPA STANDARD 90A.

FIRE DAMPER INSTALLATION DETAIL



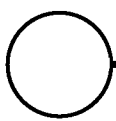
N.T.S.

15B-5012



- 1. SCREENED OPENING.
- 2. PROVIDE SCREENED INLET TO DUCT.
- 3. COMBUSTION AIR DUCT.

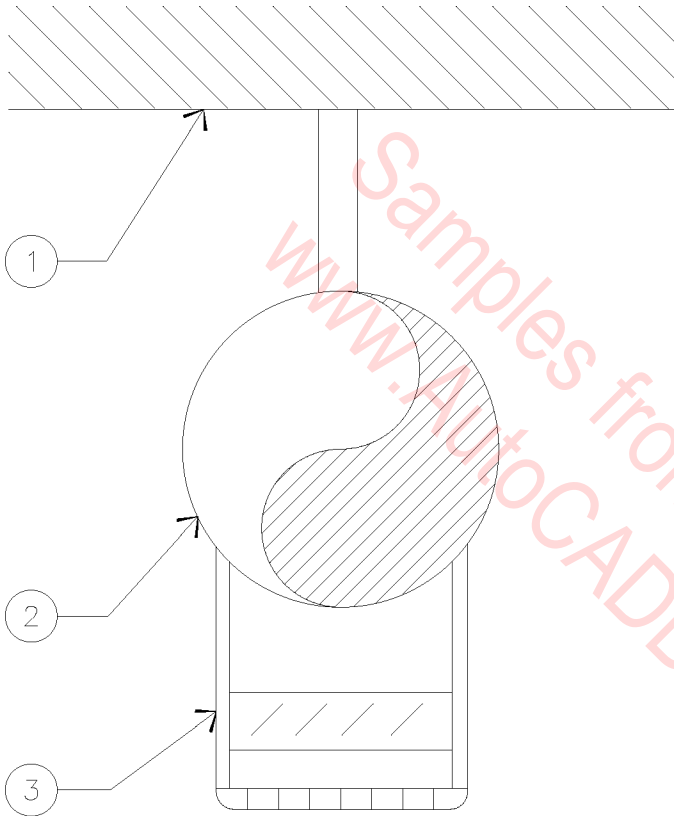
Samples from
www.AutoCADDetails.net



COMBUSTION AIR DETAIL

3/4" = 1'-0"

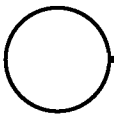
15B-5013



1. CEILING.
2. SUPPLY AIR DUCT.
3. MECHANICAL CONTRACTOR TO PROVIDE SHEET METAL BOOT TO MATCH OUTSIDE DIMENSION OF SUPPLY REGISTER WITH EDGES TURNED IN FOR MOUNTING.

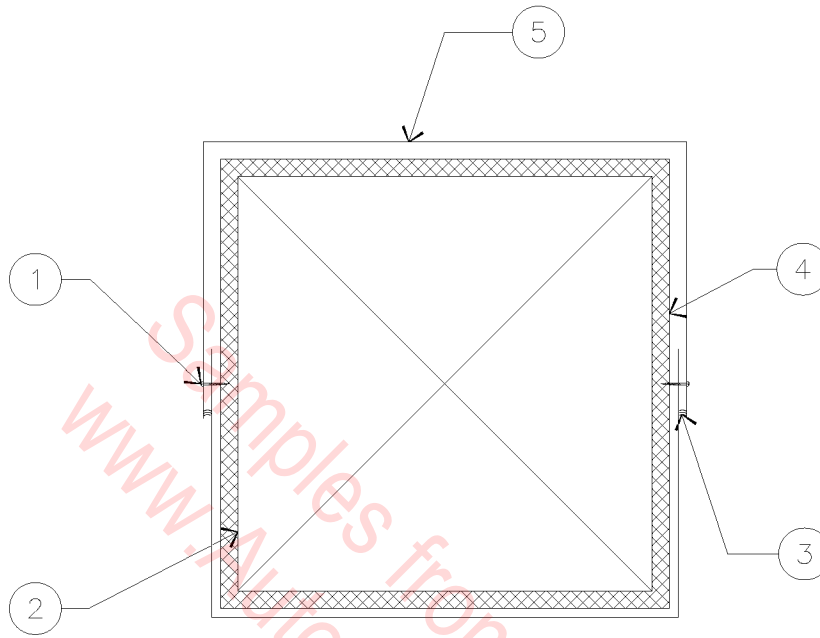
NOTE: SUPPORT DUCTWORK FROM CONCRETE TEES. COORDINATE LOCATIONS WITH ARCHITECT.

SUPPLY REGISTER MOUNTING DETAIL

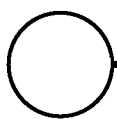


N.T.S.

15B-5014



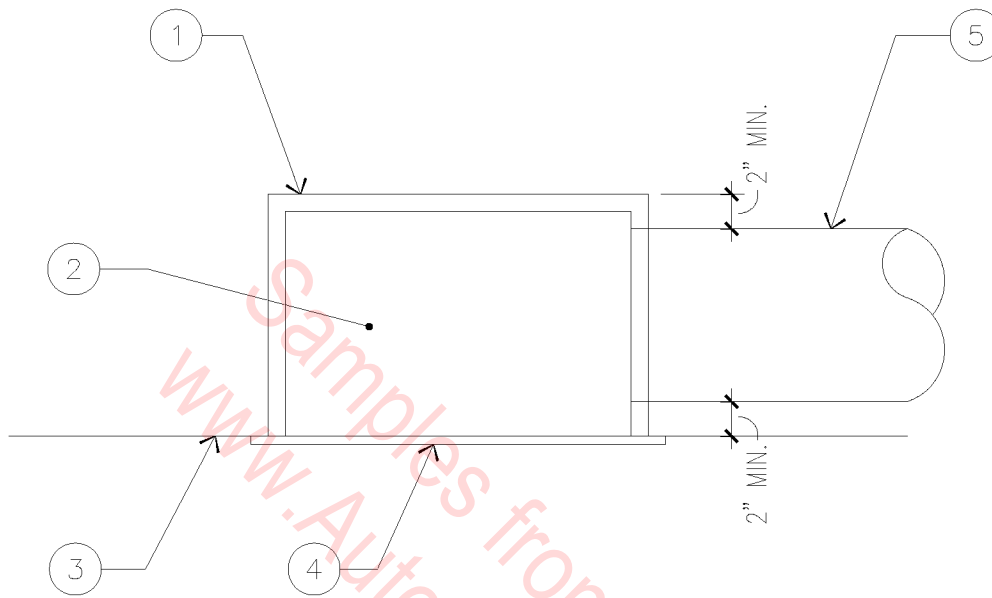
1. 1-1/2" SHEETMETAL SCREWS @ 6" O.C.
2. SHEETMETAL DUCTWORK PER SPECIFICATIONS.
3. SEAL WATERTIGHT WITH G.E. SILICONE.
4. 1" DUCTBOARD.
5. 26 GAUGE GALVANIZED WRAP.



DUCT ON ROOF

1" = 1'-0"

15B-5015

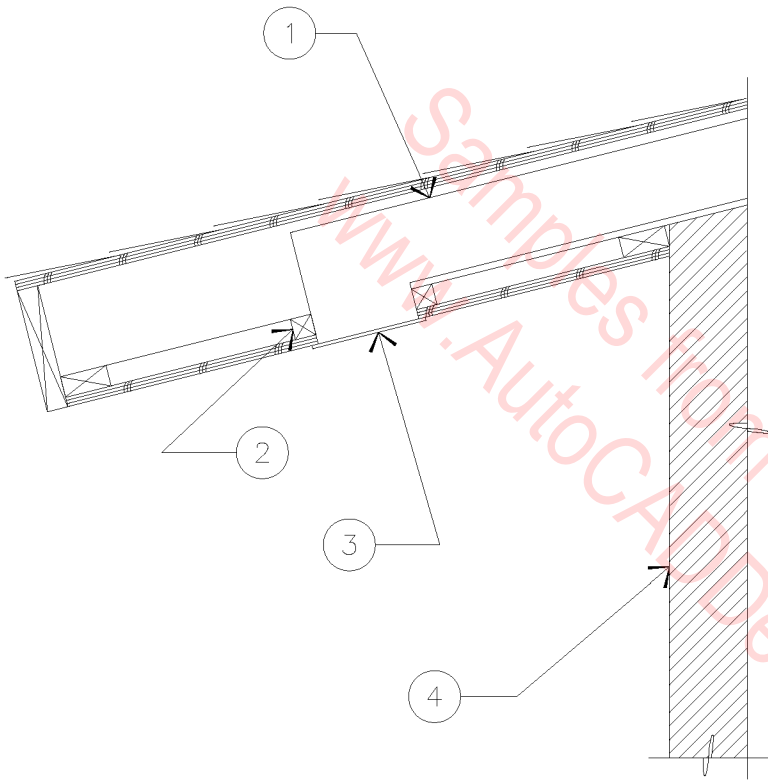


1. 1" FIBERGLASS DUCTBOARD SOUND CHAMBER.
2. PAINT INTERIOR FLAT BLACK.
3. CEILING.
4. RETURN AIR GRILLE.
5. ROUND DUCT, ROUTE TO RETURN AIR MAIN. SEE PLANS FOR REQUIRED SIZE.

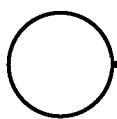
○ RETURN AIR DUCT

1" = 1'-0"

15B-5016



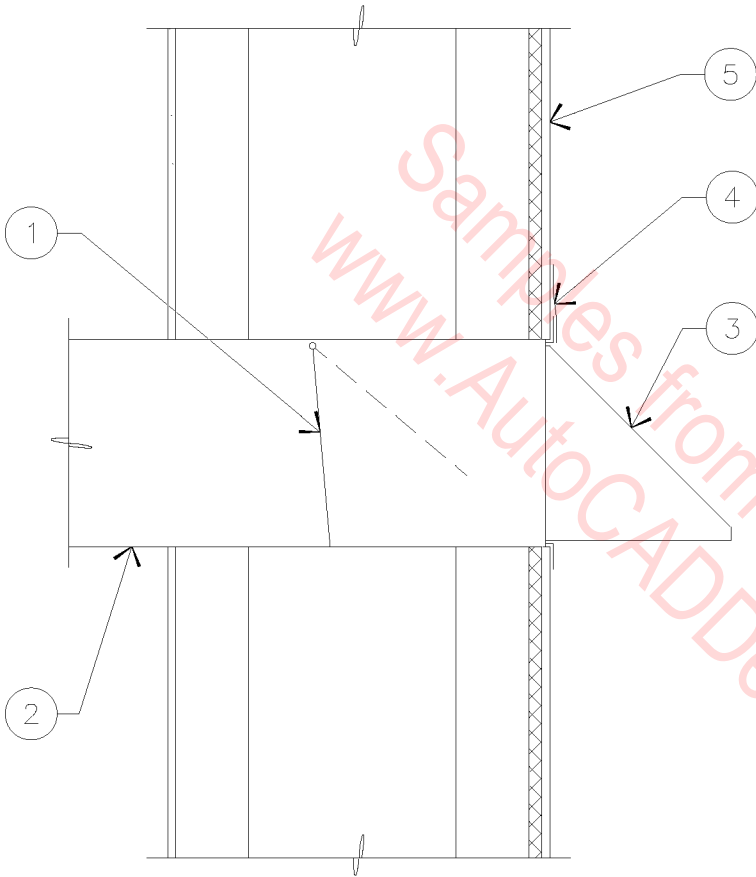
1. SEE PLANS FOR REQUIRED DUCT SIZE.
2. 2 X 2 FURRING STRIPS ALL AROUND DUCT PENETRATION.
3. SOFFIT GRILLE WITH SCREEN.
4. EXTERIOR WALL.



SOFFIT GRILLE DETAIL

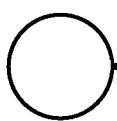
$3/4'' = 1'-0''$

15B-5017



1. BACKDRAFT DAMPER.
2. DUCT FROM EXHAUST FAN, SEE PLANS FOR REQUIRED SIZE.
3. WALL CAP.
4. FLASH AND COUNTERFLASH.
5. SEE ARCHITECTURAL PLANS FOR WALL CONSTRUCTION.

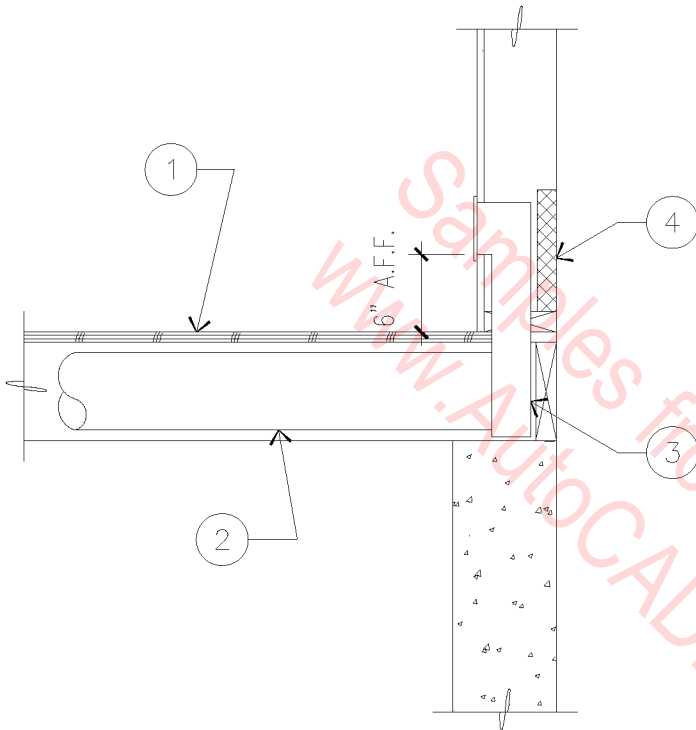
NOTE: SEAL ALL JOINTS WATERTIGHT WITH G.E. SILICONE SEAL.



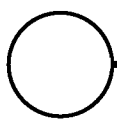
EXHAUST WALL CAP

$3/4'' = 1'-0''$

15B-5018



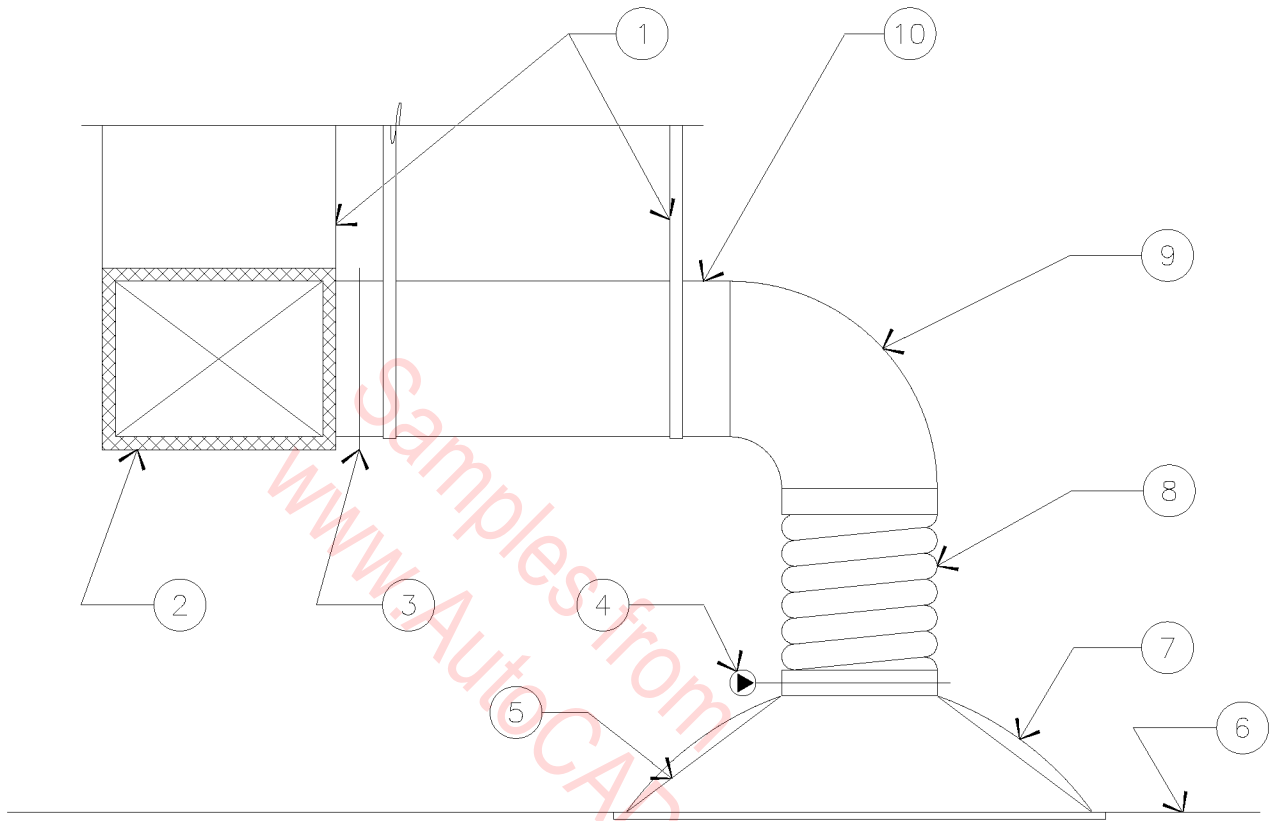
1. FLOOR.
2. ROUND SUPPLY AIR DUCT, SEE PLANS FOR REQUIRED SIZE.
3. SUPPLY AIR PLENUM IN WALL CAVITY, SEE PLANS FOR REQUIRED SIZE.
4. PROVIDE MINIMUM 1-1/2" RIGID INSULATION IN WALL CAVITY PRIOR TO SHEETMETAL INSTALLATION.



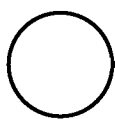
SUPPLY REGISTER

3/4" = 1'-0"

15B-5019



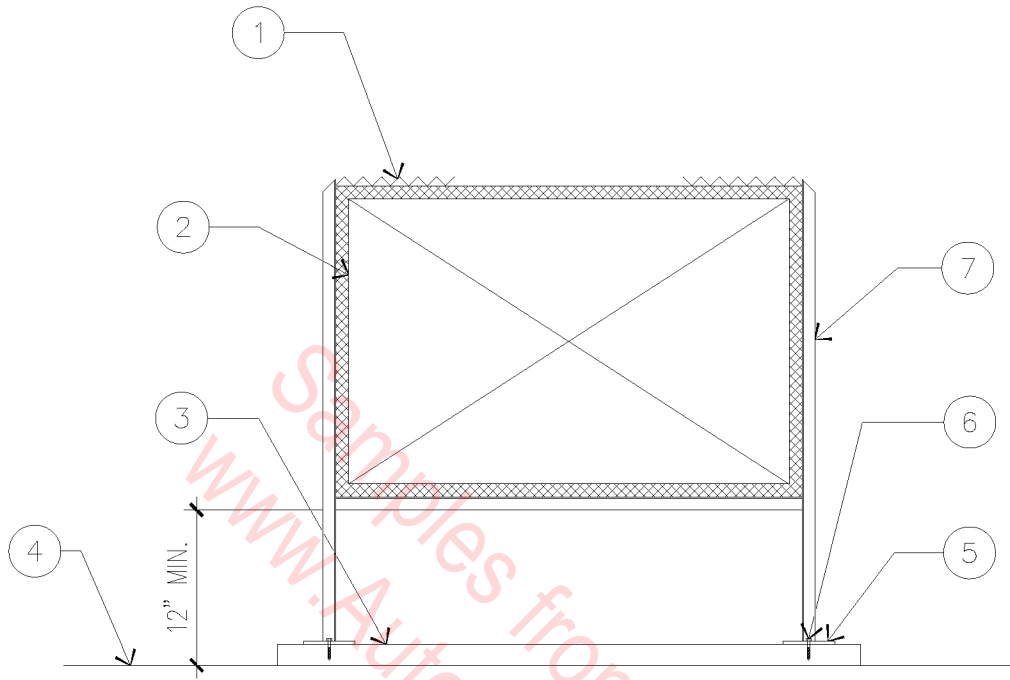
1. SUPPORT STRAPS FROM STRUCTURE ABOVE.
2. SHEETMETAL DUCT PER SMACNA STANDARDS WITH INSULATION PER SPECIFICATIONS.
3. VOLUME DAMPER AND EXTRACTOR, TYPICAL.
4. U.L. FIRE DAMPER.
5. SUPPLY DIFFUSER.
6. CEILING.
7. RADIATION BLANKET.
8. U.L. CLASS ONE FLEXIBLE DUCT, MAXIMUM LENGTH 3'-0".
9. RIGID ROUND METAL ELBOW.
10. RIGID ROUND METAL DUCT.



DUCTWORK INSTALLATION

3/4" = 1'-0"

15B-5020

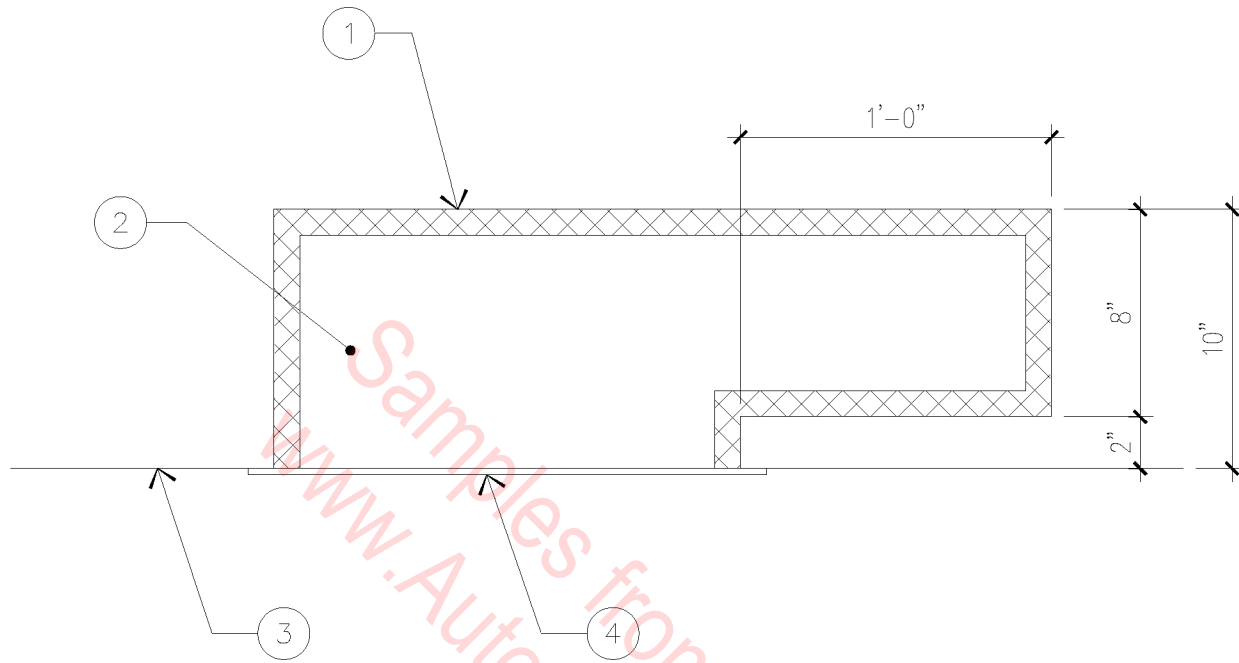


1. #14 GALVANIZED WIRE.
2. INSULATED DUCTWORK PER SPECIFICATIONS.
3. 2 X 6 REDWOOD.
4. ROOF DECK, SEE ARCHITECTURAL PLANS.
5. 4" X 4" X 1/4" BASE PLATE WELDED TO LEG.
6. 3/8" X 1-1/2" LAG SCREW.
7. 1" X 1" X 1/8" ANGLE.

DUCT ON ROOF

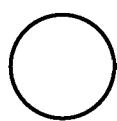
3/4" = 1'-0"

15B-5021



1. 1" FIBERGLASS DUCTBOARD SOUND CHAMBER.
2. PAINT INTERIOR FLAT BLACK.
3. CEILING.
4. RETURN AIR GRILLE.

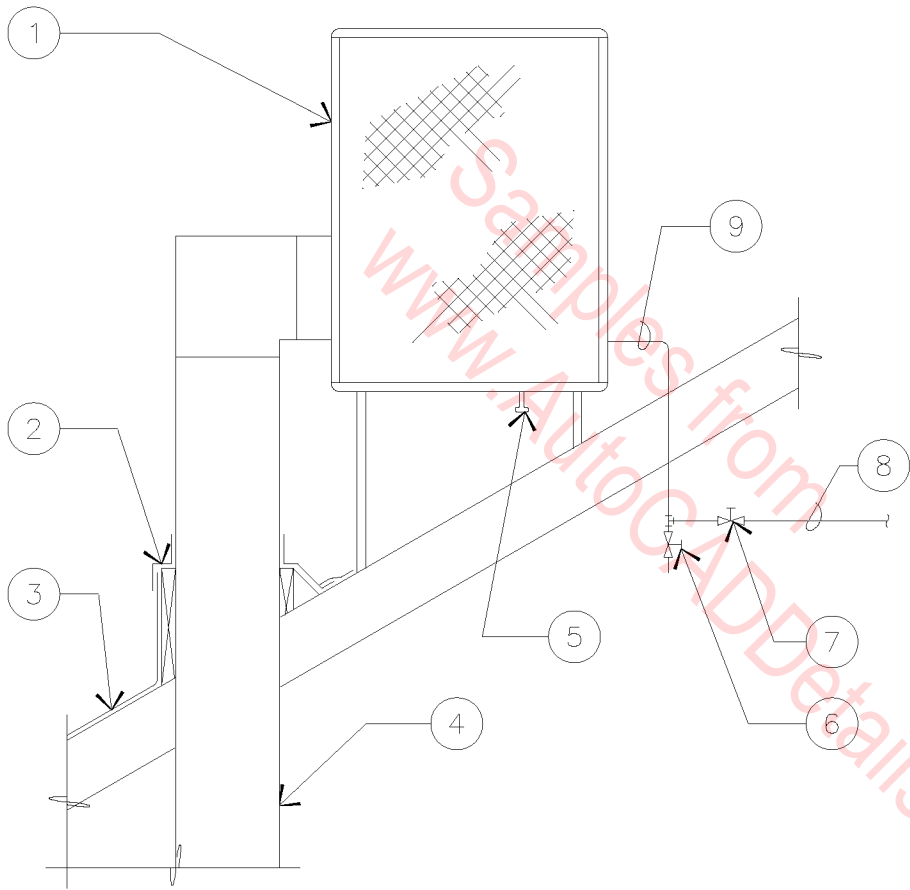
NOTE: FACE OPENING TOWARD CENTER OF BUILDING UNLESS OTHERWISE NOTED.



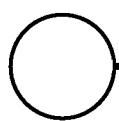
DUCTWORK INSTALLATION

1-1/2" = 1'-0"

15B-5022



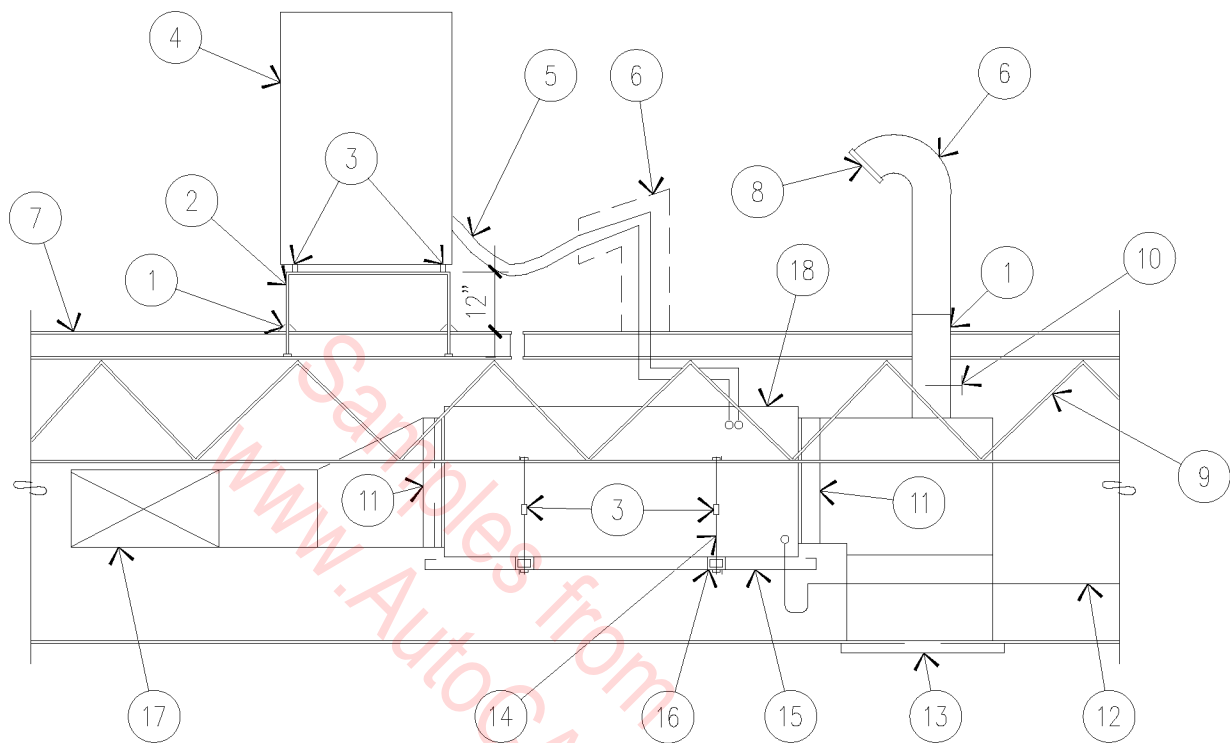
1. EVAPORATIVE COOLER.
2. FLASH AND COUNTERFLASH.
3. ROOF, SEE ARCHITECTURAL PLANS.
4. SEE PLANS FOR REQUIRED DUCT SIZE.
5. ROUTE DRAIN LINE TO NEAREST ROOF DRAIN.
6. DRAIN DOWN VALVE, PIPE TO NEAREST FLOOR DRAIN.
7. GATE VALVE.
8. 3/8" COLD WATER LINE.
9. 1/4" COLD WATER LINE TO NEAREST WATER SOURCE, SLOPE FOR WINTERIZATION.



EVAPORATIVE COOLER

1/2" = 1'-0"

15B-5023

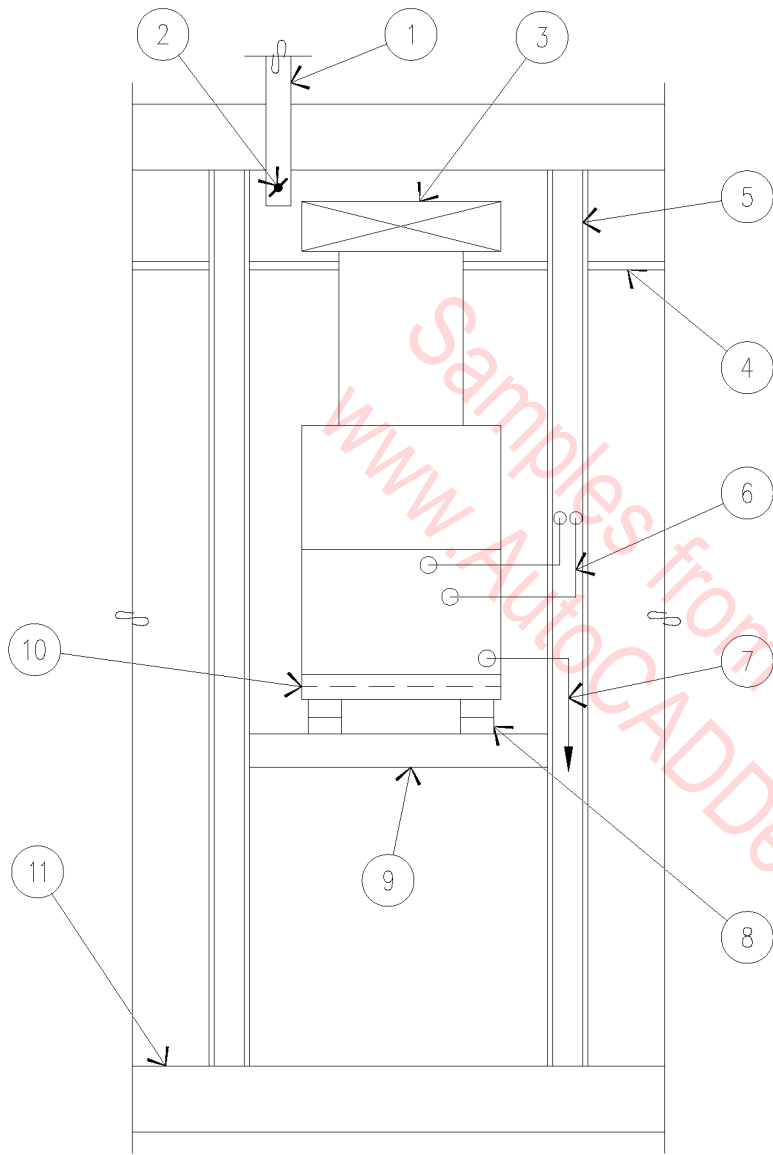


- | | |
|---------------------------------|--|
| 1. FLASHING. | 11. FLEXIBLE CONNECTION. |
| 2. ANGLE IRONS. | 12. CONDENSATE LINE. |
| 3. VIBRATION ISOLATORS. | 13. RAG WITH FILTER. |
| 4. CONDITIONING UNIT. | 14. STEEL RODS BOLTED TO STEEL JOIST. |
| 5. INSULATED REFRIGERANT LINES. | 15. AUXILIARY DRAIN PAN TO DRAIN ABOVE SINK THROUGH CEILING. |
| 6. GOOSENECK. | 16. 1 1/2" THICK SPACERS. |
| 7. ROOF, SEE ARCHITECTURAL. | 17. SUPPLY AIR DUCT. |
| 8. AIR FILTER. | 18. EVAPORATOR. |
| 9. STEEL JOIST, SEE STRUCTURAL. | |
| 10. VOLUME DAMPER. | |

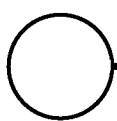
TYPICAL EVAPORATIVE AND CONDITIONING UNIT DETAIL

NOT TO SCALE

15B-5024



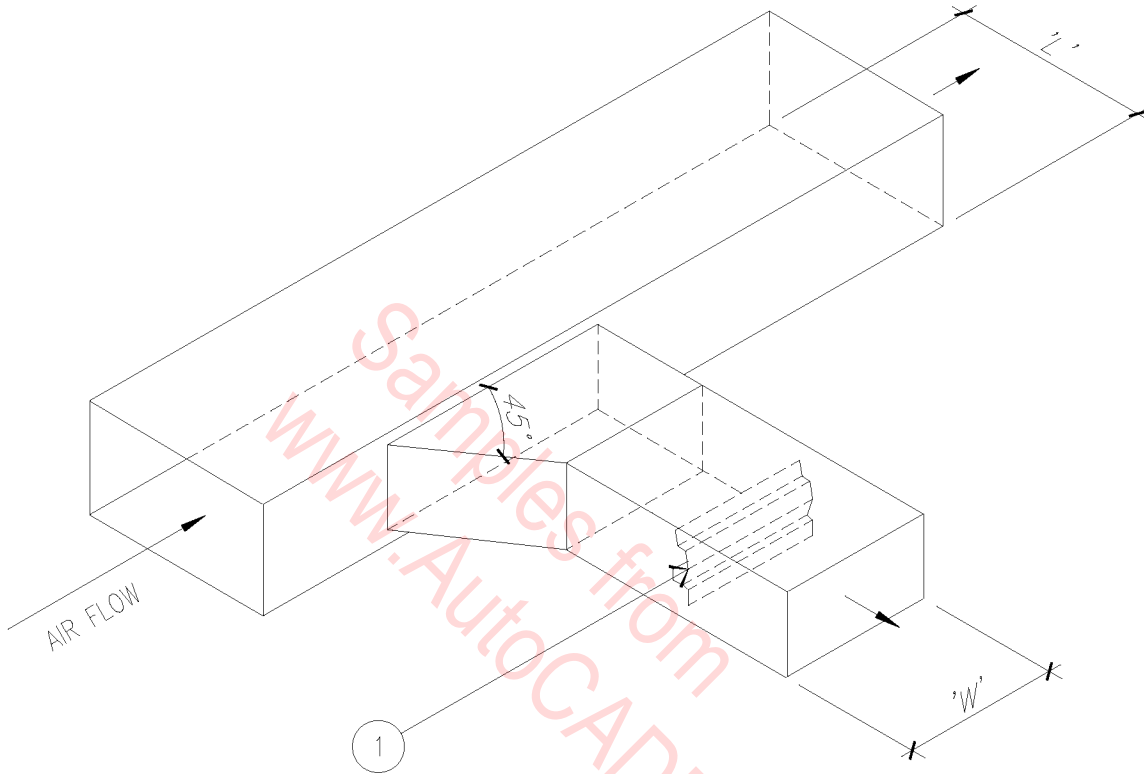
1. OUTSIDE AIR DUCT.
2. MANUAL DAMPER.
3. SUPPLY AIR DUCT.
4. FINISHED CEILING.
5. STUD PARTITION.
6. REFRIGERANT LINES.
7. CONDENSER DRAIN WITH 'P' TRAP.
8. NON-SKID NEOPRENE ACOUSTICAL ISOLATOR PAD.
9. STEEL SUPPORT.
10. FILTER.
11. FINISHED FLOOR.



AIR HANDLER UNIT

NOT TO SCALE

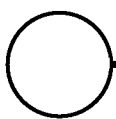
15B-5025



1. VOLUME DAMPER – PROVIDE CONCEALED CEILING DAMPER REGULATOR.

NOTES:

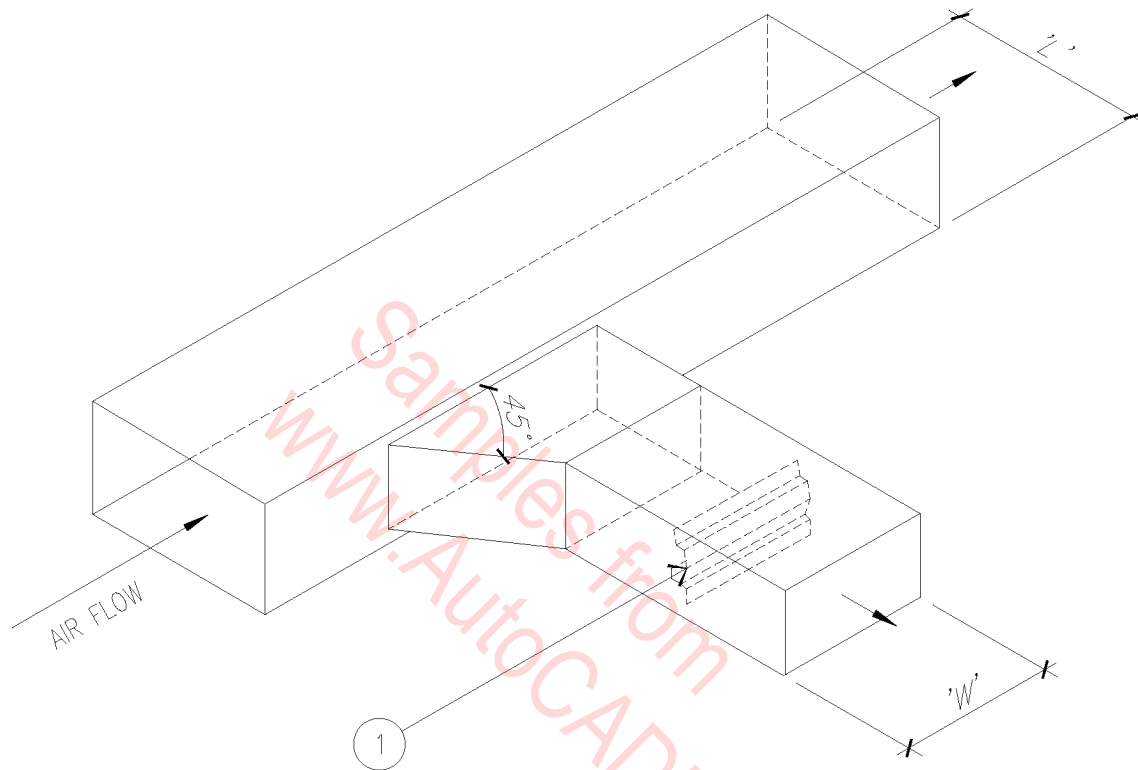
- A. DO NOT INSTALL DAMPERS CLOSER THAN TWO DUCT WIDTHS TO ELBOWS OR INTERSECTIONS.
- B. 'L' = 1/4 'W' (4" MINIMUM).



BRANCH DUCT TAKE-OFF

N.T.S.

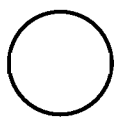
15B-5026



1. VOLUME DAMPER – PROVIDE CONCEALED CEILING DAMPER REGULATOR.

NOTES:

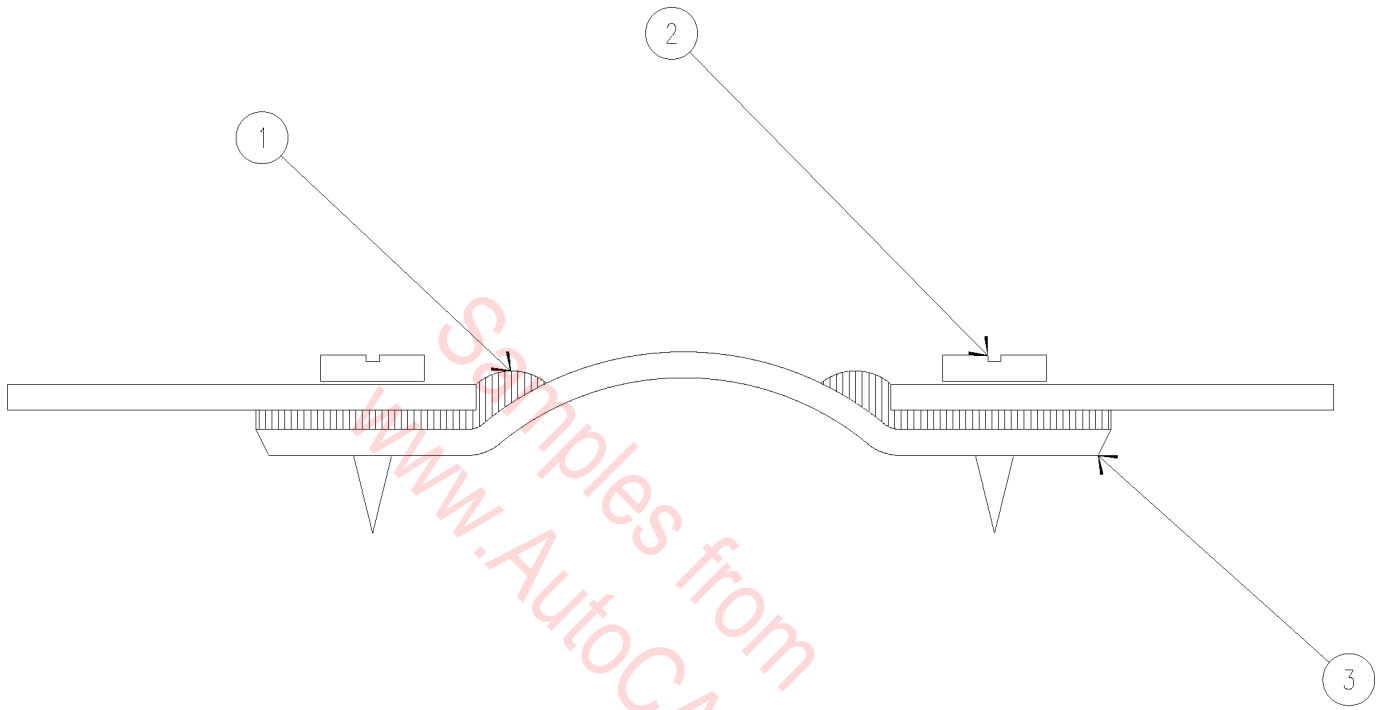
- A. DO NOT INSTALL DAMPERS CLOSER THAN TWO DUCT WIDTHS TO ELBOWS OR INTERSECTIONS.
 B. 'L' = 1/4 'W' (4" MINIMUM).



BRANCH DUCT TAKE-OFF

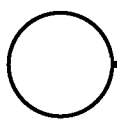
N.T.S.

15B-5026



1. SILICONE SEALANT.
2. STAINLESS STEEL SHEET METAL SCREWS OR BLIND RIVETS AT 15 DEGREE INTERVALS MAXIMUM (MINIMUM OF 3 FASTENERS).
3. JOINT SHALL BE TIGHT TO INSIDE OF DUCT.

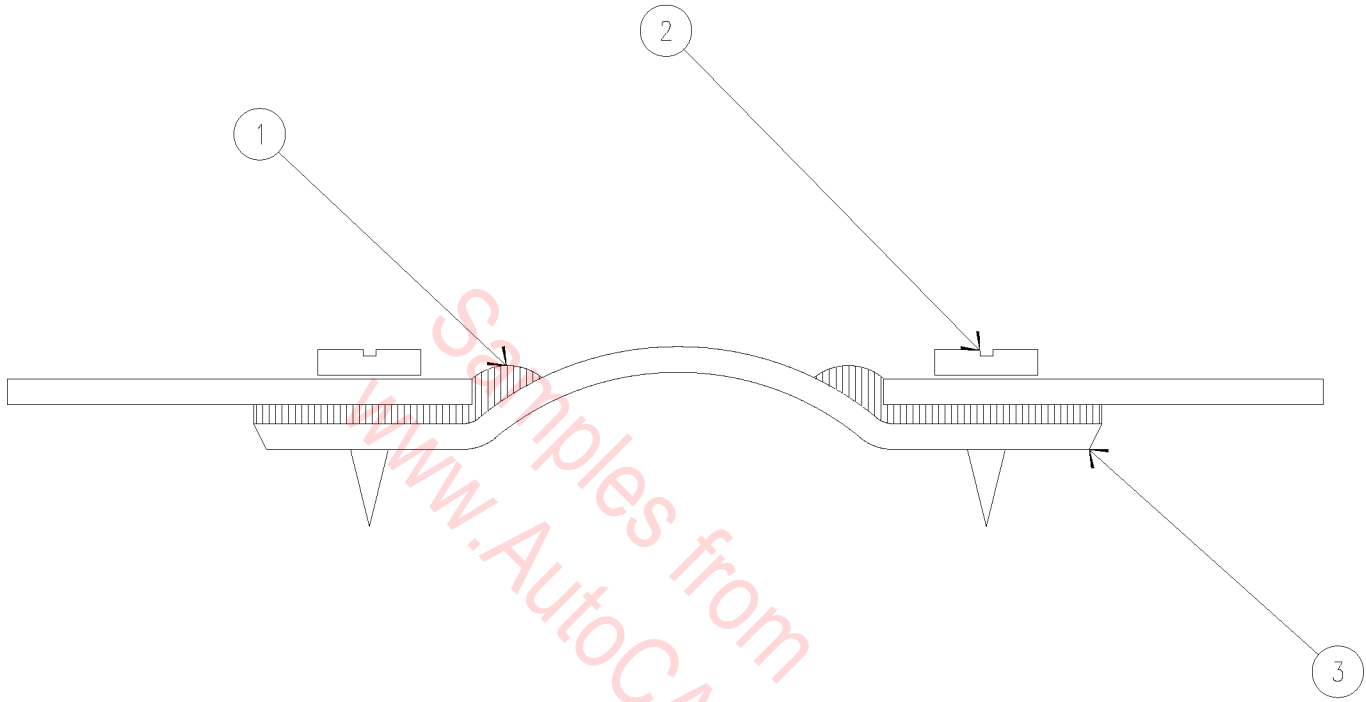
NOTE: SILICONE SEALANT MAY ONLY BE USED ON FIELD CONNECTIONS WHERE STAINLESS STEEL DUCTS CONNECT WITH EXHAUST FAN AND LABORATORY HOOD CONNECTIONS. ALL OTHER EXHAUST DUCT CONNECTIONS AND JOINTS SHALL BE TIG OR MIG WELDED.



DUCT CONNECTION

N.T.S.

15B-5027

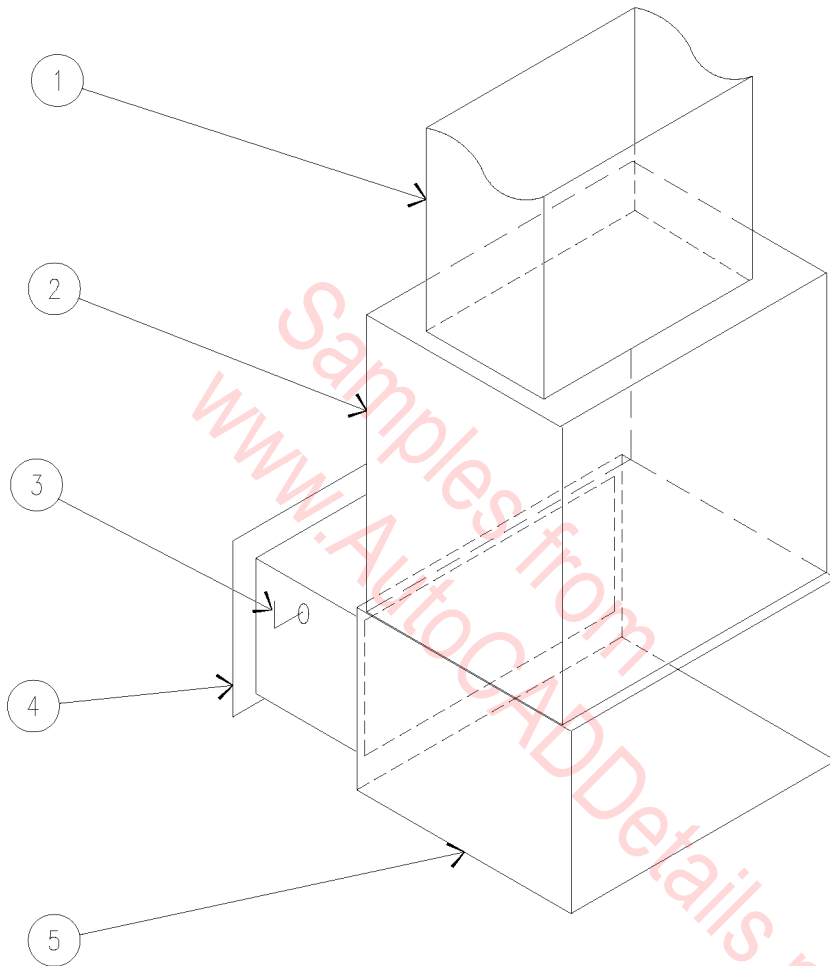


1. SILICONE SEALANT.
2. STAINLESS STEEL SHEET METAL SCREWS OR BLIND RIVETS AT 15 DEGREE INTERVALS MAXIMUM (MINIMUM OF 3 FASTENERS).
3. JOINT SHALL BE TIGHT TO INSIDE OF DUCT.

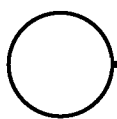
NOTE: SILICONE SEALANT MAY ONLY BE USED ON FIELD CONNECTIONS WHERE STAINLESS STEEL DUCTS CONNECT WITH EXHAUST FAN AND LABORATORY HOOD CONNECTIONS. ALL OTHER EXHAUST DUCT CONNECTIONS AND JOINTS SHALL BE TIG OR MIG WELDED.


DUCT CONNECTION
 N.T.S.

15B-5027



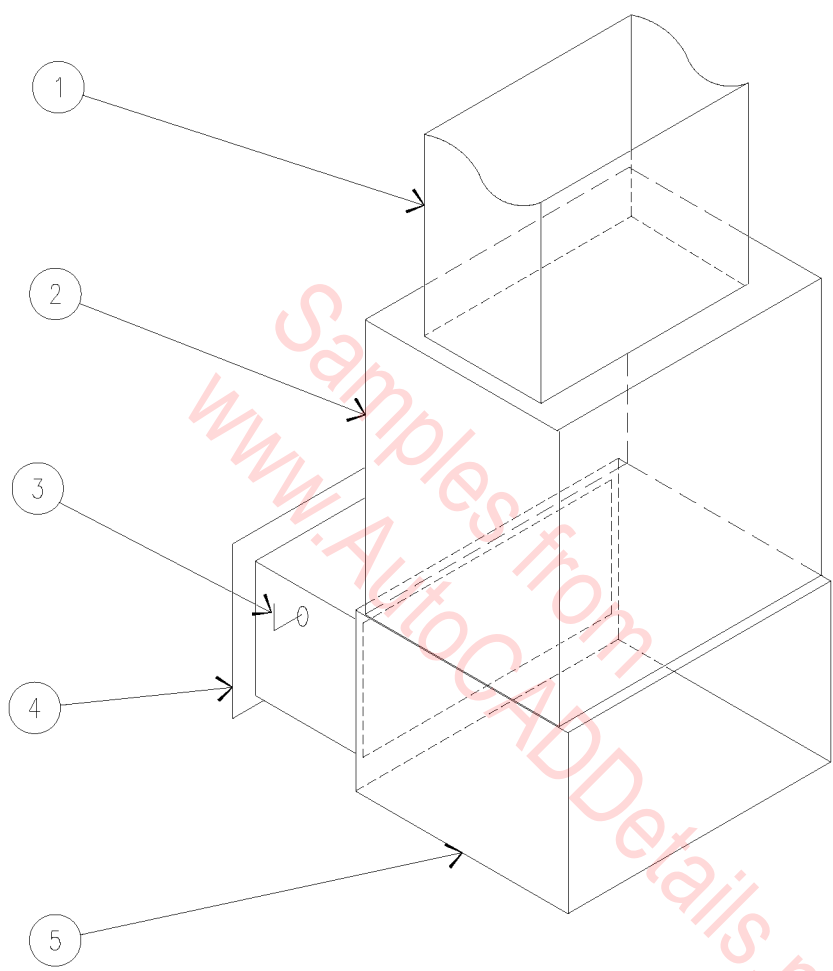
- | | |
|--|---|
| 1. SUPPLY AIR DUCT UP FROM UNIT TAP (TYPICAL). | 4. RETURN AIR GRILLE. |
| 2. FAN COIL UNIT. | 5. 18" HIGH RETURN AIR PLENUM SUPPORTED WITH ANGLE IRON ON FOUR CORNERS WITH BRACKET SUPPORT. |
| 3. OPPOSED BLADE DAMPER. | |



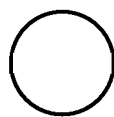
FAN COIL SUPPLIER

N.T.S.

15B-5028



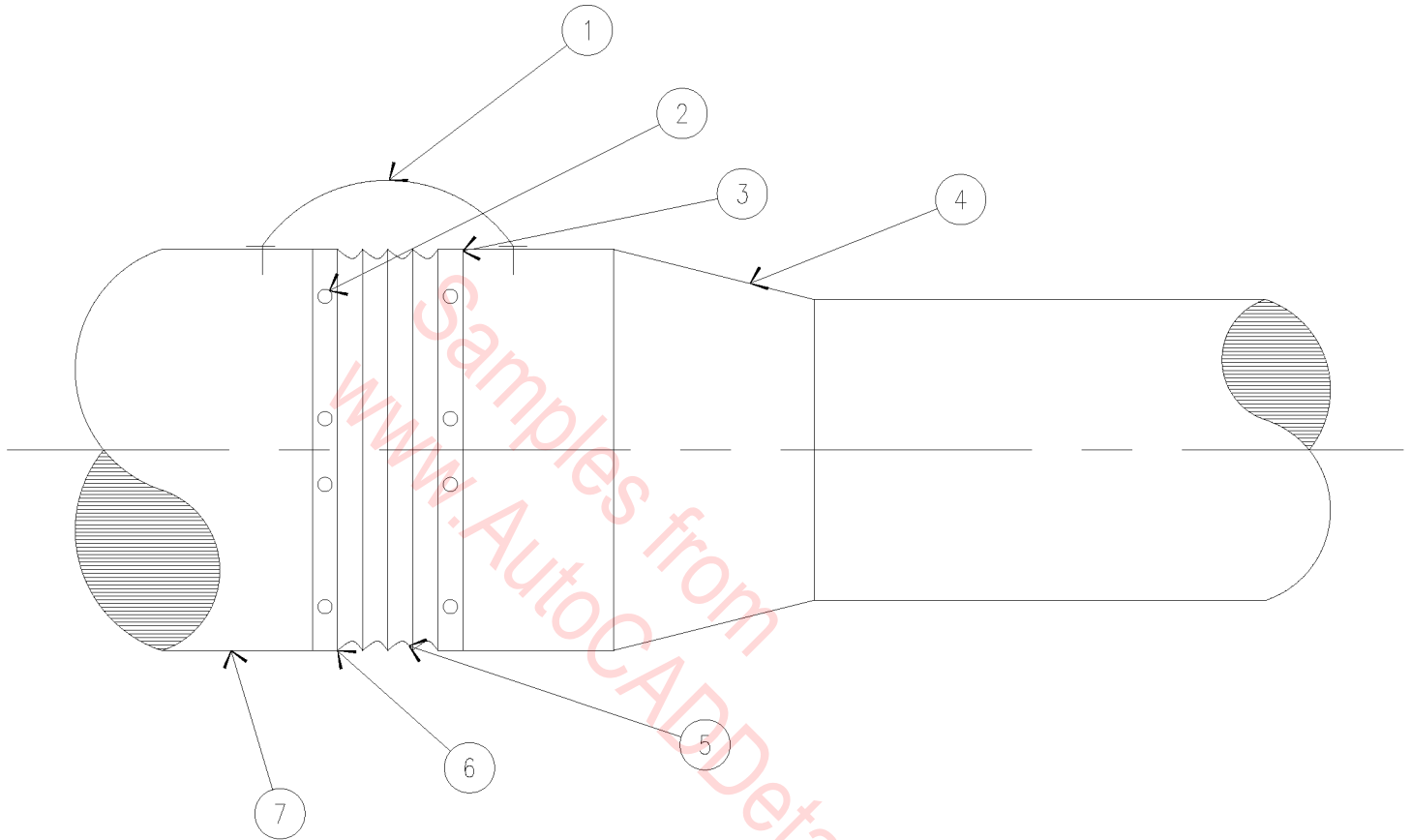
- | | |
|--|---|
| 1. SUPPLY AIR DUCT UP FROM UNIT TAP (TYPICAL). | 4. RETURN AIR GRILLE. |
| 2. FAN COIL UNIT. | 5. 18" HIGH RETURN AIR PLENUM SUPPORTED WITH ANGLE IRON ON FOUR CORNERS WITH BRACKET SUPPORT. |
| 3. OPPOSED BLADE DAMPER. | |



FAN COIL SUPPLIER

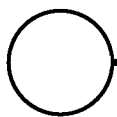
N.T.S.

15B-5028



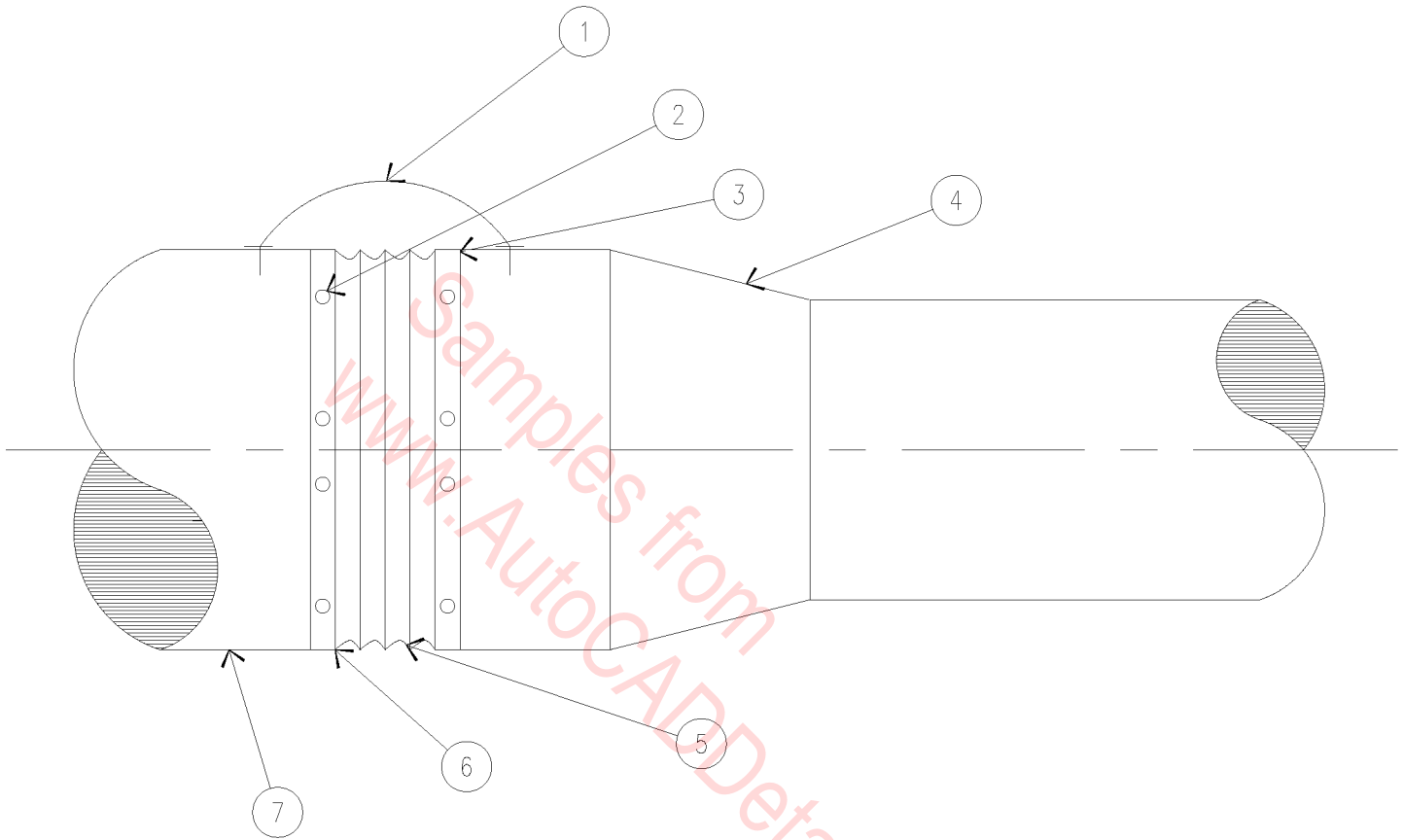
- | | |
|---|---|
| <ol style="list-style-type: none"> 1. GROUNDING WIRE. 2. STAINLESS STEEL SHEET METAL SCREWS OR BLIND RIVETS AT 15" MAXIMUM (MINIMUM 3 FASTENERS). 3. SEAL JOINT WITH SILICONE. 4. TRANSITION AS REQUIRED. | <ol style="list-style-type: none"> 5. ACID RESISTANT FLEXIBLE CONNECTION. 6. GALVANIZED FLEXIBLE CONNECTION ASSEMBLY WITH "EISENHEISS" COATING ON INSIDE OF METAL SURFACES. 7. EXHAUST FAN OUTLET. |
|---|---|

FLEXIBLE CONNECTION TO EXHAUST FAN



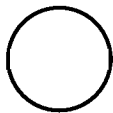
N.T.S.

15B-5029



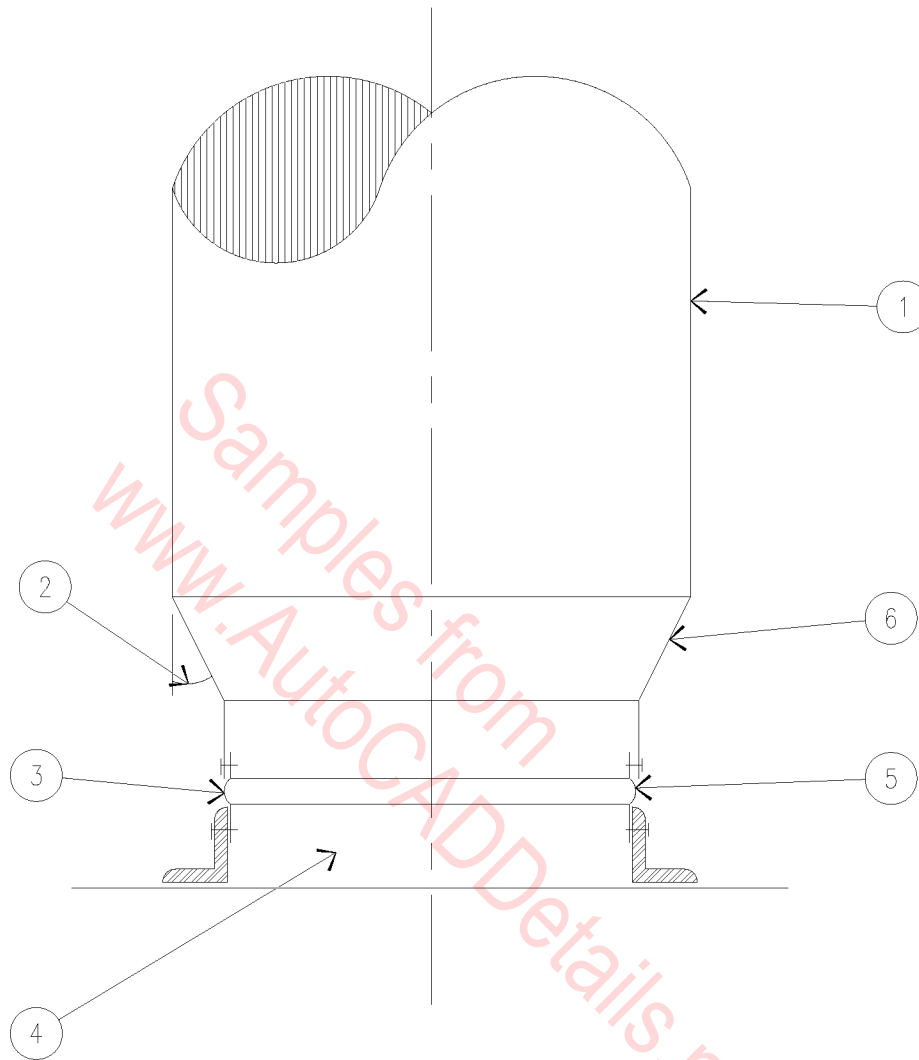
- | | |
|---|---|
| 1. GROUNDING WIRE. | 5. ACID RESISTANT FLEXIBLE CONNECTION. |
| 2. STAINLESS STEEL SHEET METAL
SCREWS OR BLIND RIVETS AT 15"
MAXIMUM (MINIMUM 3 FASTENERS). | 6. GALVANIZED FLEXIBLE CONNECTION
ASSEMBLY WITH "EISENHEISS" COATING
ON INSIDE OF METAL SURFACES. |
| 3. SEAL JOINT WITH SILICONE. | 7. EXHAUST FAN OUTLET. |
| 4. TRANSITION AS REQUIRED. | |

FLEXIBLE CONNECTION TO EXHAUST FAN

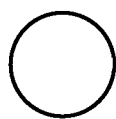


N.T.S.

15B-5029



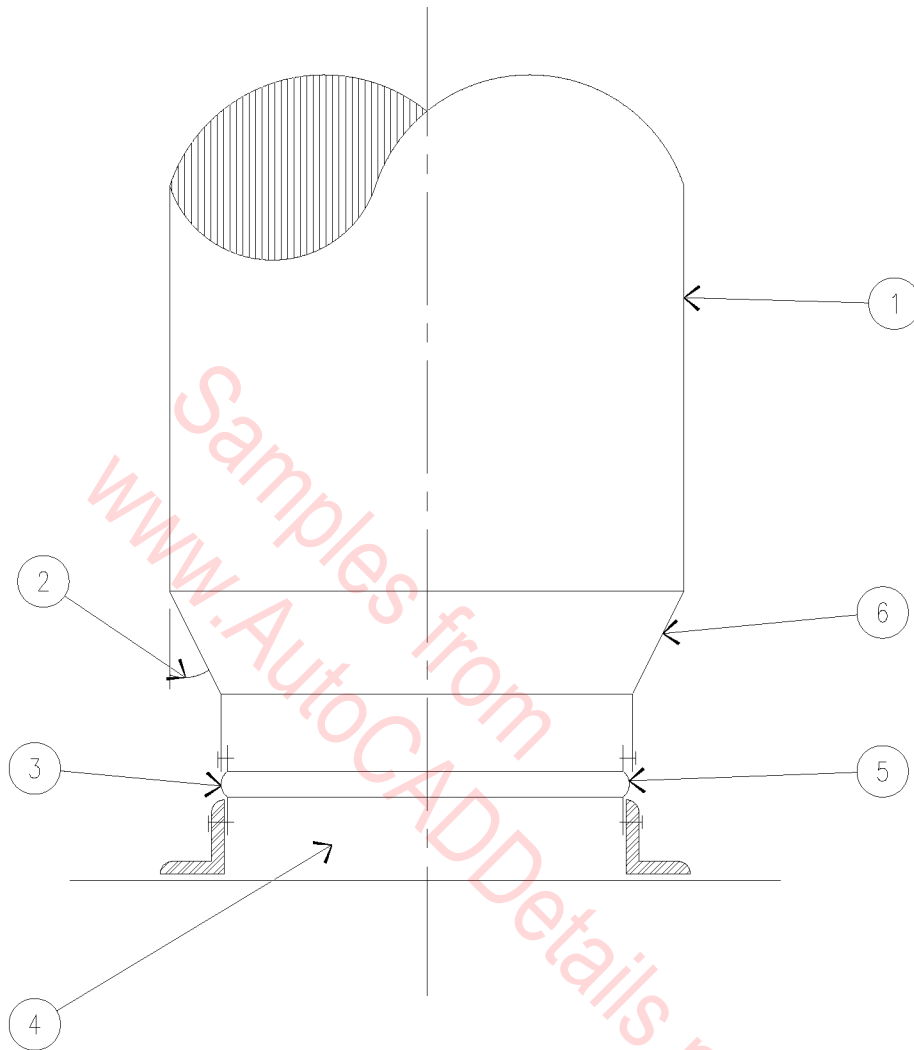
1. EXHAUST DUCT.
2. 30° MAXIMUM.
3. SLIP JOINT.
4. EXISTING HOOD OUTLET.
5. SILICONE SEALANT.
6. TRANSITION AS REQUIRED.



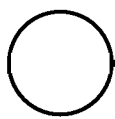
HOOD CONNECTION

N.T.S

15B-5030



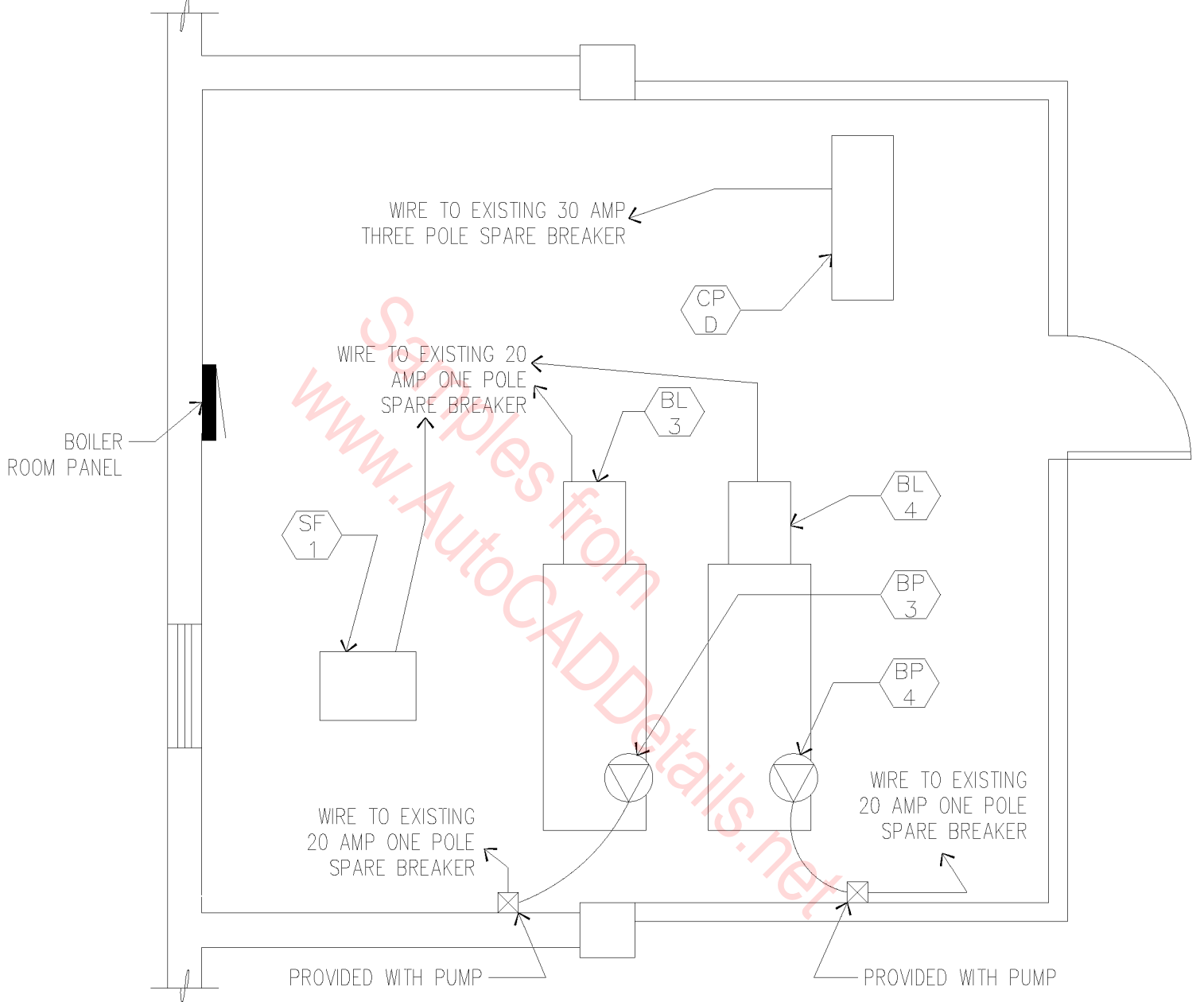
1. EXHAUST DUCT.
2. 30° MAXIMUM.
3. SLIP JOINT.
4. EXISTING HOOD OUTLET.
5. SILICONE SEALANT.
6. TRANSITION AS REQUIRED.



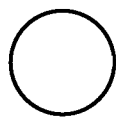
HOOD CONNECTION

N.T.S

15B-5030



BOILER ROOM PARTIAL PLAN



1/4" = 1'-0"

15B-2001

3" HS/HR RE: PARKING LEVEL PLAN
THIS SHEET FOR CONTINUATION

EXTEND 2-1/2" GAS LINE TO EXISTING
GAS SERVICE TO BOILERS AND MAKE
NEW CONNECTION

CP
D
CP
E (FUTURE)

EXTEND 3" HS/HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE CROSS CONNECTION PIPING

20" X 20"
INSTALL SHEET
METAL PLENUM
BEHIND (E)
OUTSIDE AIR
LOUVER -
MAKE SF-1
COMBUSTION
AIR DUCT
CONNECTION
TO PLENUM

EXTEND 4" HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE HR CONNECTION

FUTURE BOILER LOCATION

4" ϕ
(E) BLIND FLANGE FOR
FUTURE CONNECTION (TYP.)

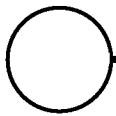
MAKE CONNECTION TO (E) 3"
FLANGE (TYP. OF 4)

MAKE 14" ϕ CONNECTION TO EXISTING 20" ϕ 'T'
FITTING AND EXTEND 14" ϕ POSITIVE PRESSURE
VENT AS SHOWN, MAKE (2) 10" ϕ CONNECTIONS
FROM NEW BOILERS

BL 3
BP 3
BL 4
BP 4

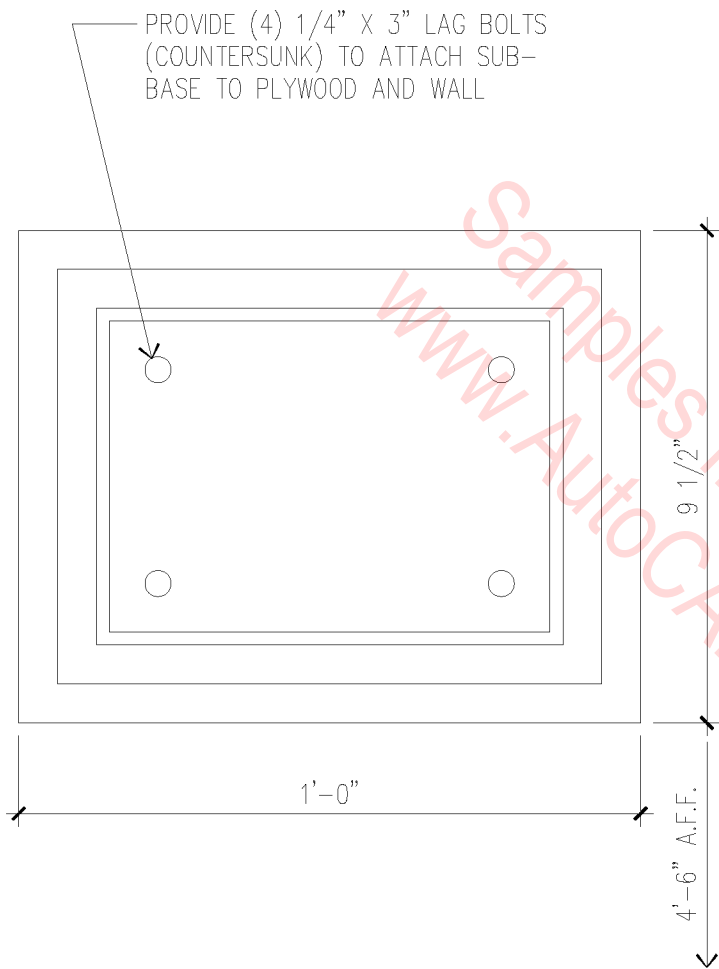
- NOTES: 1. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND PIPING SHOWN AS DASHED IS EXISTING TO REMAIN.
2. HOLD ALL NEW PIPING AS HIGH AS POSSIBLE IN SPACE.
3. EXTEND (E) GAS SERVICE AS REQUIRED TO PROVIDE NEW 2" GAS SERVICE TO EACH NEW BOILER.

BOILER ROOM PARTIAL PLAN

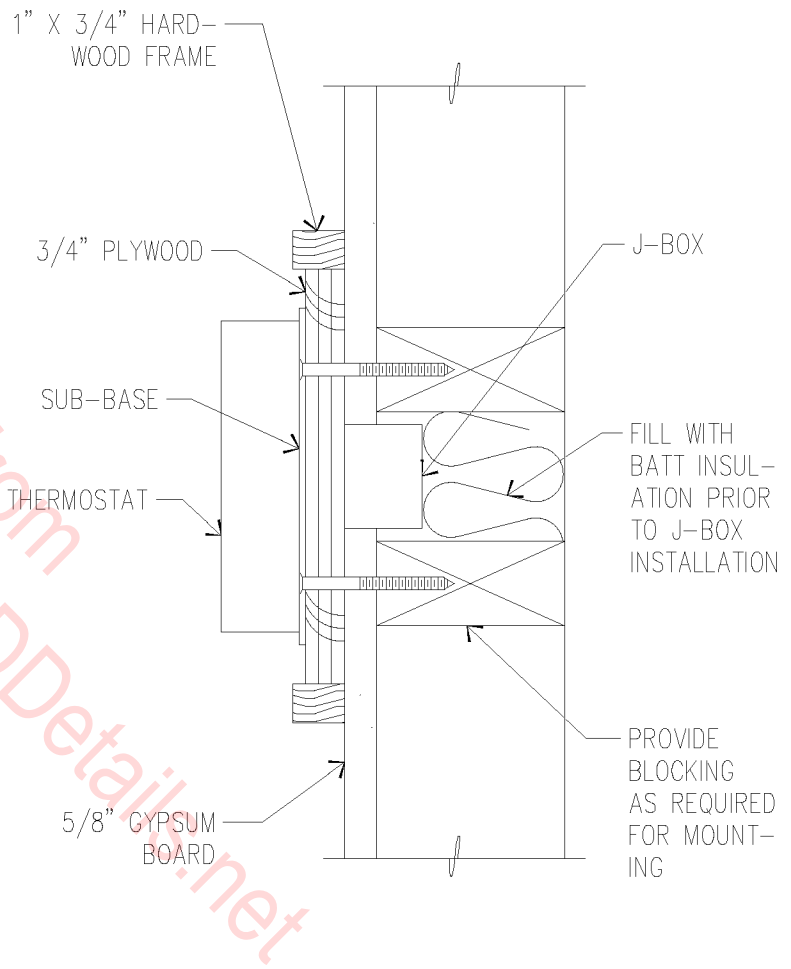


1/4" = 1'-0"

15B-2002

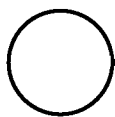


ELEVATION



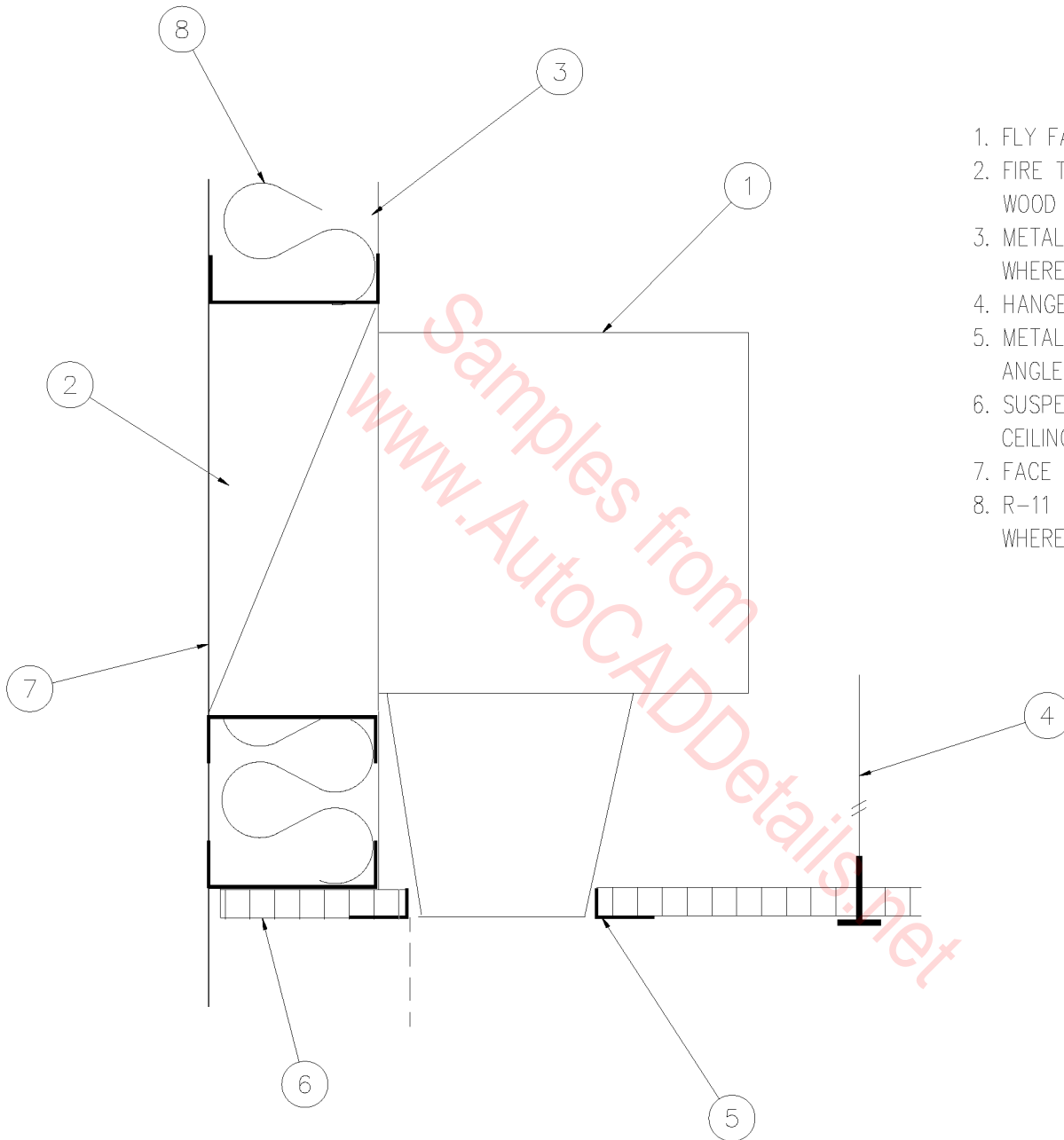
SECTION

INSULATED THERMOSTAT BASE

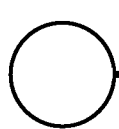


3" = 1'-0"

15B-2003



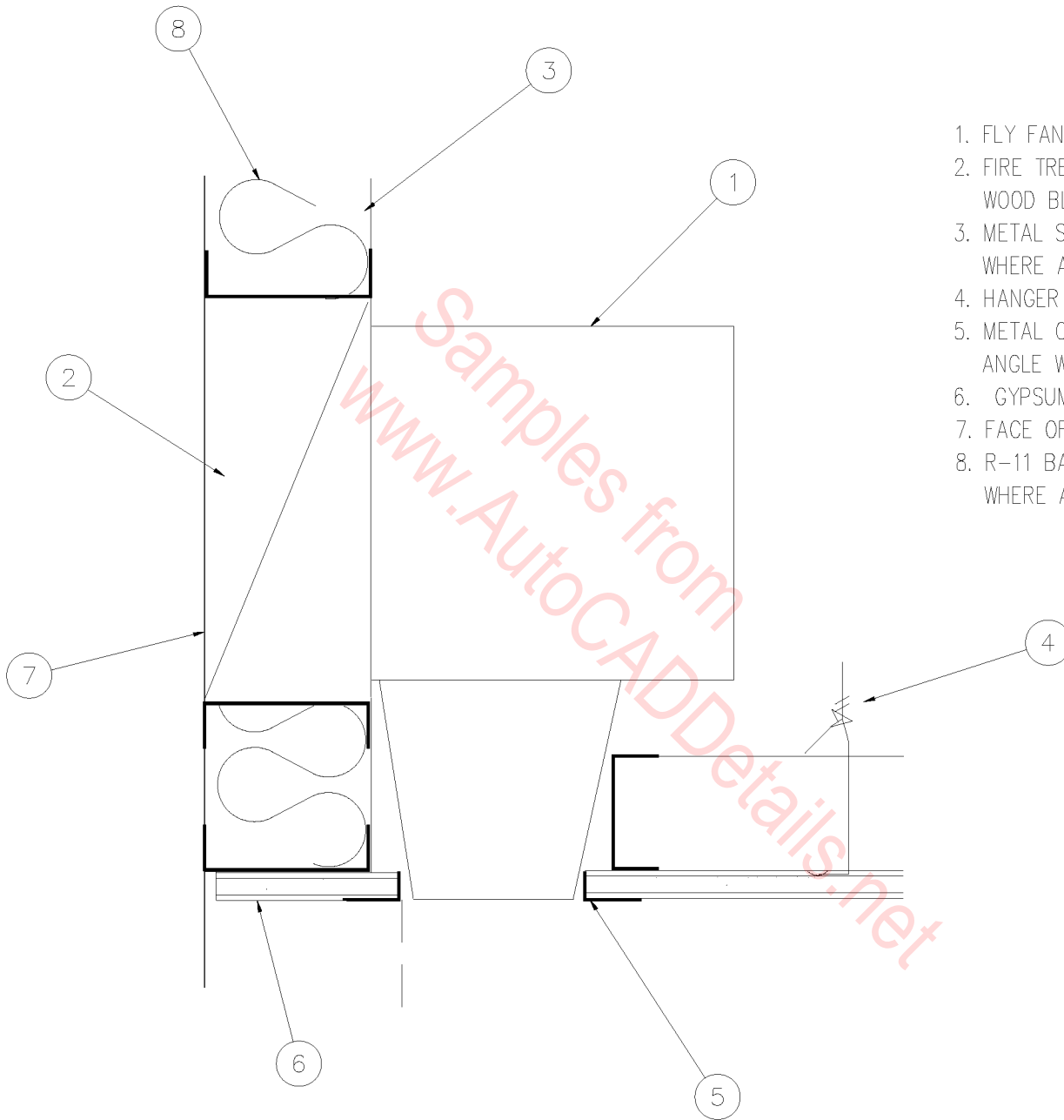
1. FLY FAN.
2. FIRE TREATED WOOD BLOCKING.
3. METAL STUDS AT 16" O.C. WHERE APPLICABLE.
4. HANGER WIRE.
5. METAL CASING OR WALL ANGLE WHERE APPLICABLE.
6. SUSPENDED ACOUSTIC TILE CEILING.
7. FACE OF WALL.
8. R-11 BATT INSULATION WHERE APPLICABLE.



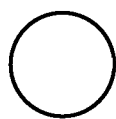
FLY FAN AT SUSP. CLG.

SCALE: 3" = 1'-0"

15B-4001



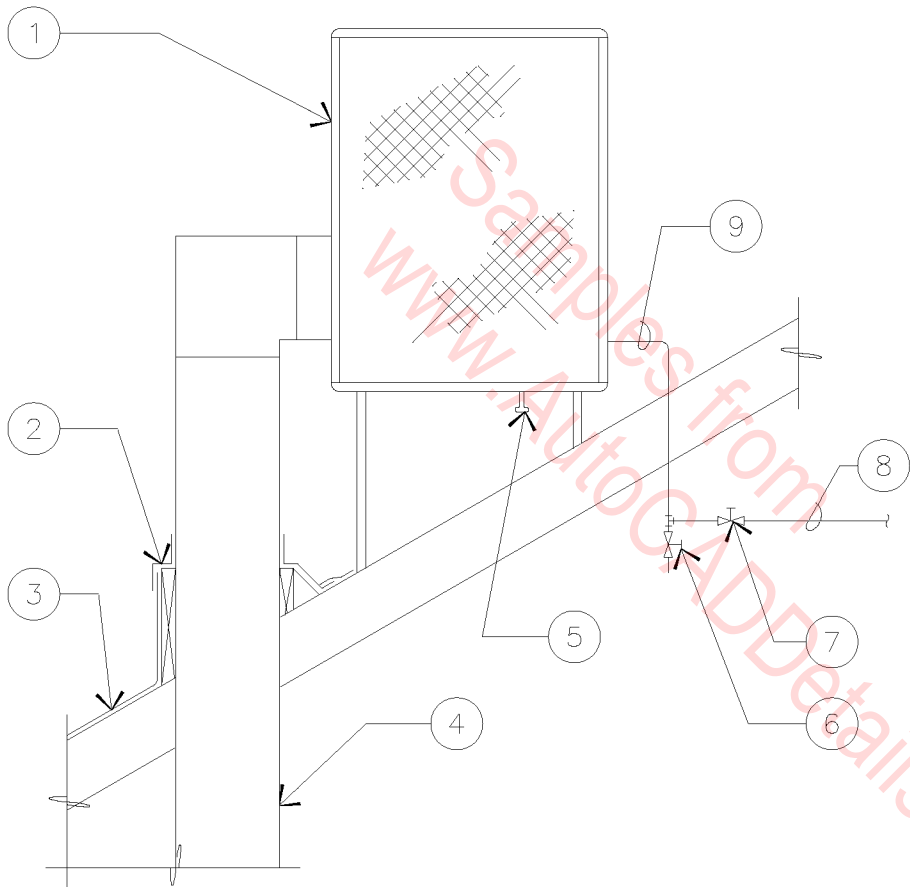
1. FLY FAN.
2. FIRE TREATED WOOD BLOCKING.
3. METAL STUDS AT 16" O.C. WHERE APPLICABLE.
4. HANGER WIRE.
5. METAL CASING OR WALL ANGLE WHERE APPLICABLE.
6. GYPSUM BOARD CEILING.
7. FACE OF WALL.
8. R-11 BATT INSULATION WHERE APPLICABLE.



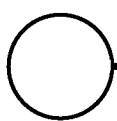
FLY FAN AT CEILING

SCALE: 3" = 1'-0"

15B-4002



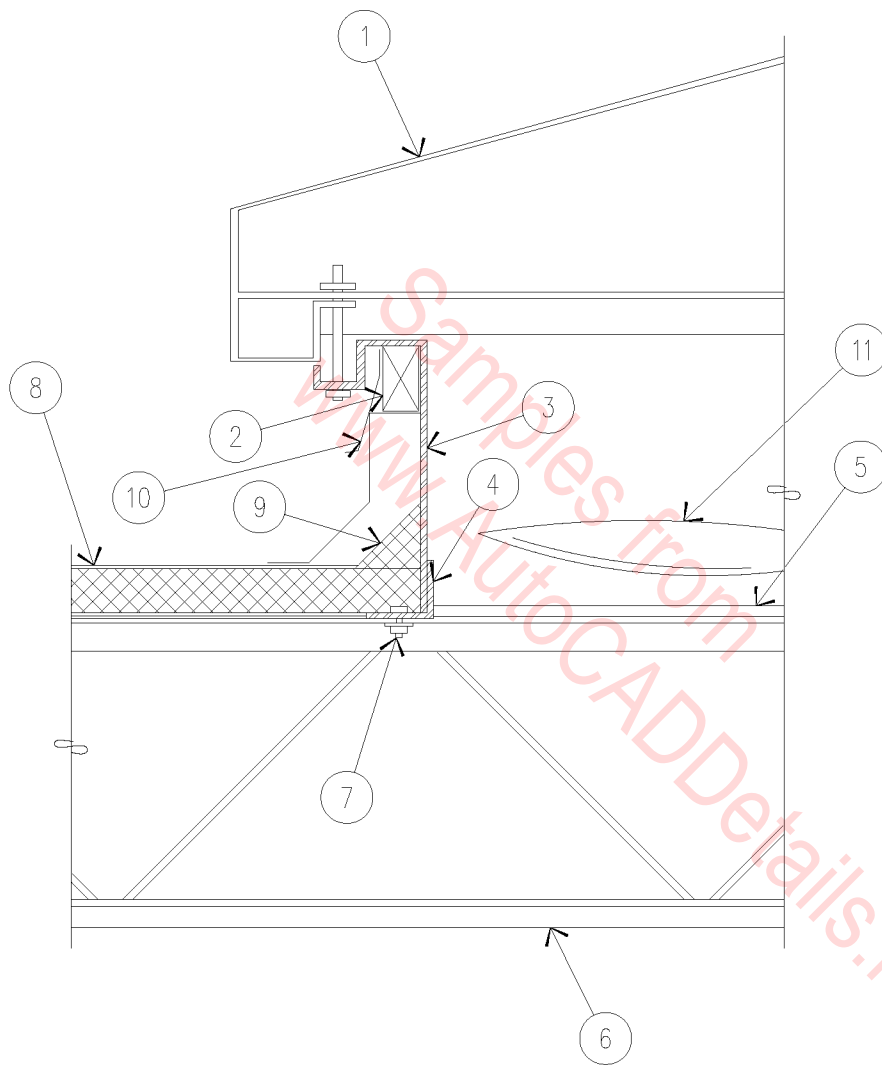
1. EVAPORATIVE COOLER.
2. FLASH AND COUNTERFLASH.
3. ROOF, SEE ARCHITECTURAL PLANS.
4. SEE PLANS FOR REQUIRED DUCT SIZE.
5. ROUTE DRAIN LINE TO NEAREST ROOF DRAIN.
6. DRAIN DOWN VALVE, PIPE TO NEAREST FLOOR DRAIN.
7. GATE VALVE.
8. 3/8" COLD WATER LINE.
9. 1/4" COLD WATER LINE TO NEAREST WATER SOURCE, SLOPE FOR WINTERIZATION.



EVAPORATIVE COOLER

1/2" = 1'-0"

15B-4003

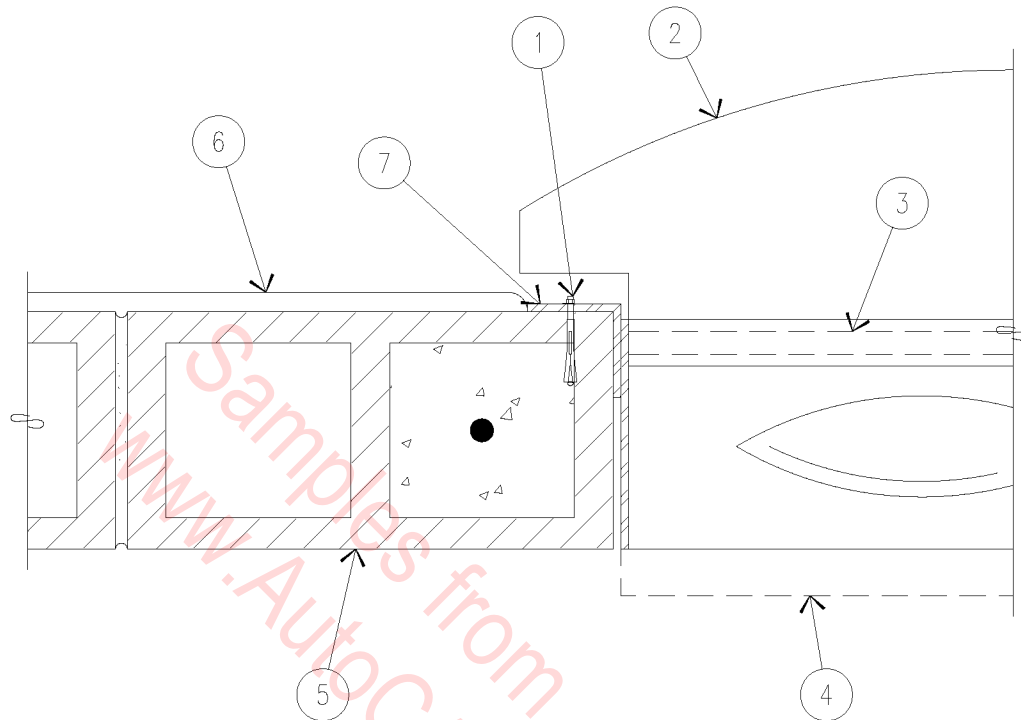


1. HEAVY DUTY METAL FAN HOUSING – APPROVED FOR 120 M.P.H. WIND LOADS.
2. CONTINUOUS PRESSURE TREATED 2 X 4 WOOD NAILER.
3. ROOF FAN STEEL FRAME, BOLT TO STEEL JOISTS.
4. 3" X 3" X 1/4" STEEL ANGLE FRAME.
5. WELD BURGLAR BARS TO FRAME AT 8" O.C.
6. STEEL BAR JOIST, SEE STRUCTURAL.
7. 1/2" THROUGH BOLTS WITH 1" WASHERS AT 12" O.C. (TYPICAL ALL SIDES).
8. EXISTING BUILT-UP ROOF, SEE ARCHITECTURAL.
9. FIBER CANT STRIP, FLASHING, AND ROOFING.
10. GALVANIZED METAL COUNTER FLASHING.
11. FAN BLADE.

ROOF MOUNTED EXHAUST FAN

NOT TO SCALE

15B-4004

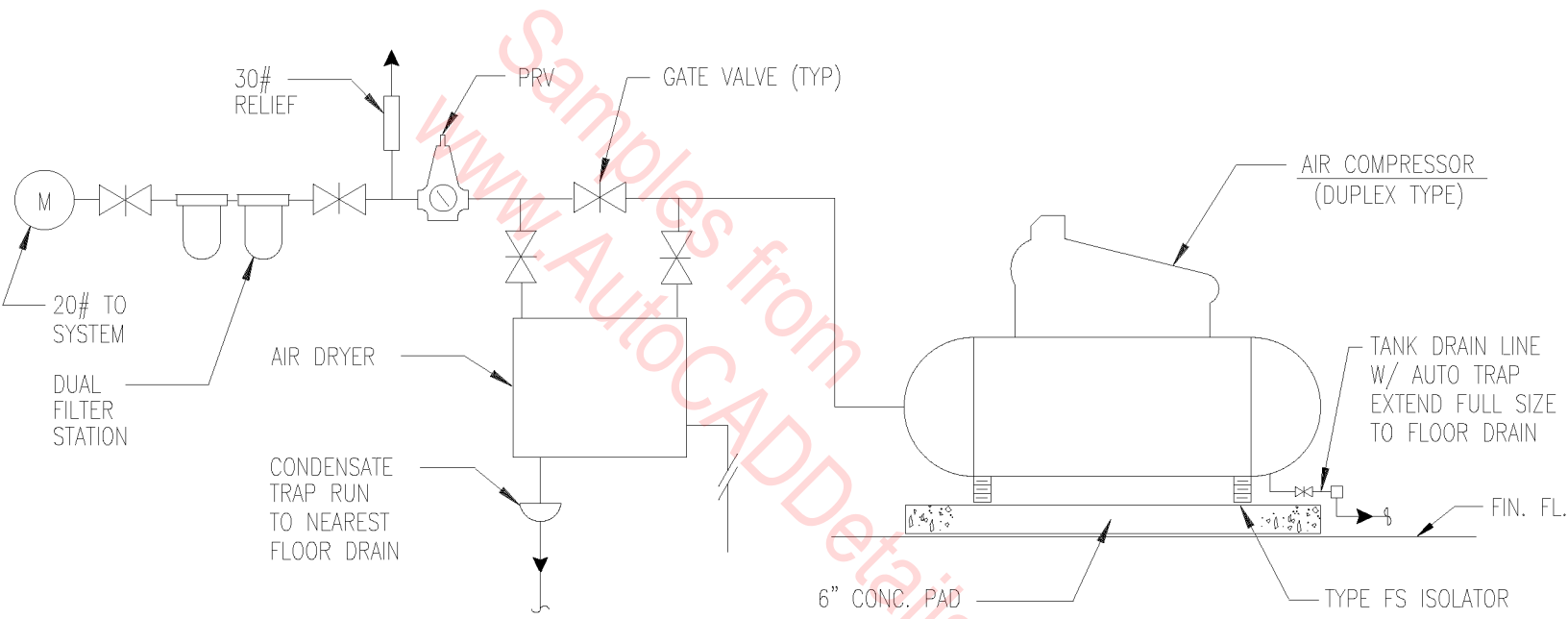


1. TAPCON MASONRY FASTENERS,
3/16" ϕ , 1 1/2" EMBEDMENT, PULL-
OUT VALUE 430-557 LBS., SHEAR
VALUE 650 LBS., SPACING: 12" O.C.
(MAXIMUM), (2) AT EACH CORNER,
25% SAFETY FACTOR.
2. FAN HOUSING.
3. GRAVITY LOUVERS.
4. SAFETY WIRE GUARD.
5. EXISTING 8" CONCRETE BLOCK.
6. MATCH EXISTING STUCCO AND
PAINT.
7. EXHAUST FAN STEEL FRAME.

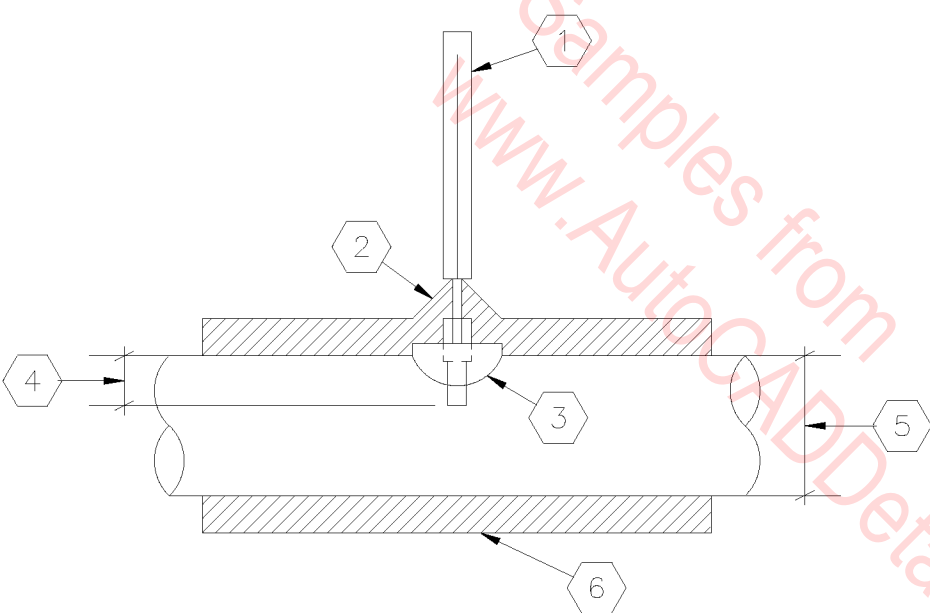
WALL MOUNTED EXHAUST FAN

NOT TO SCALE

15B-4005

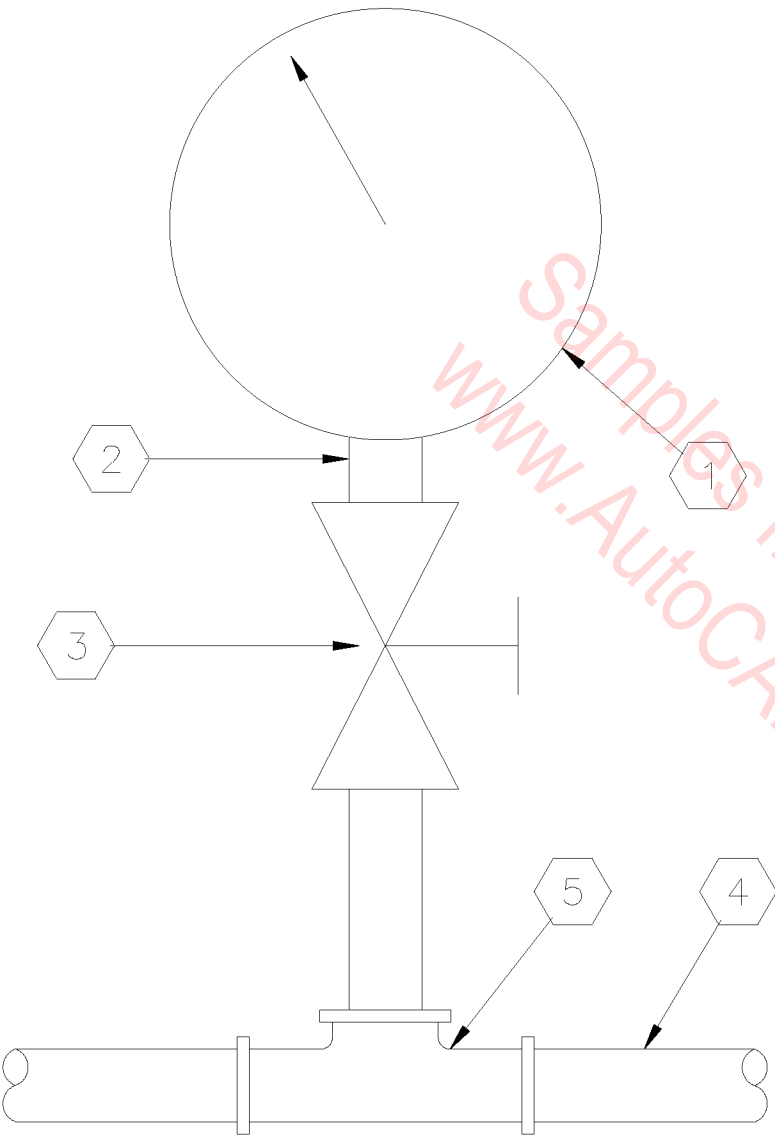


CONTROL AIR COMPRESSOR DETAIL



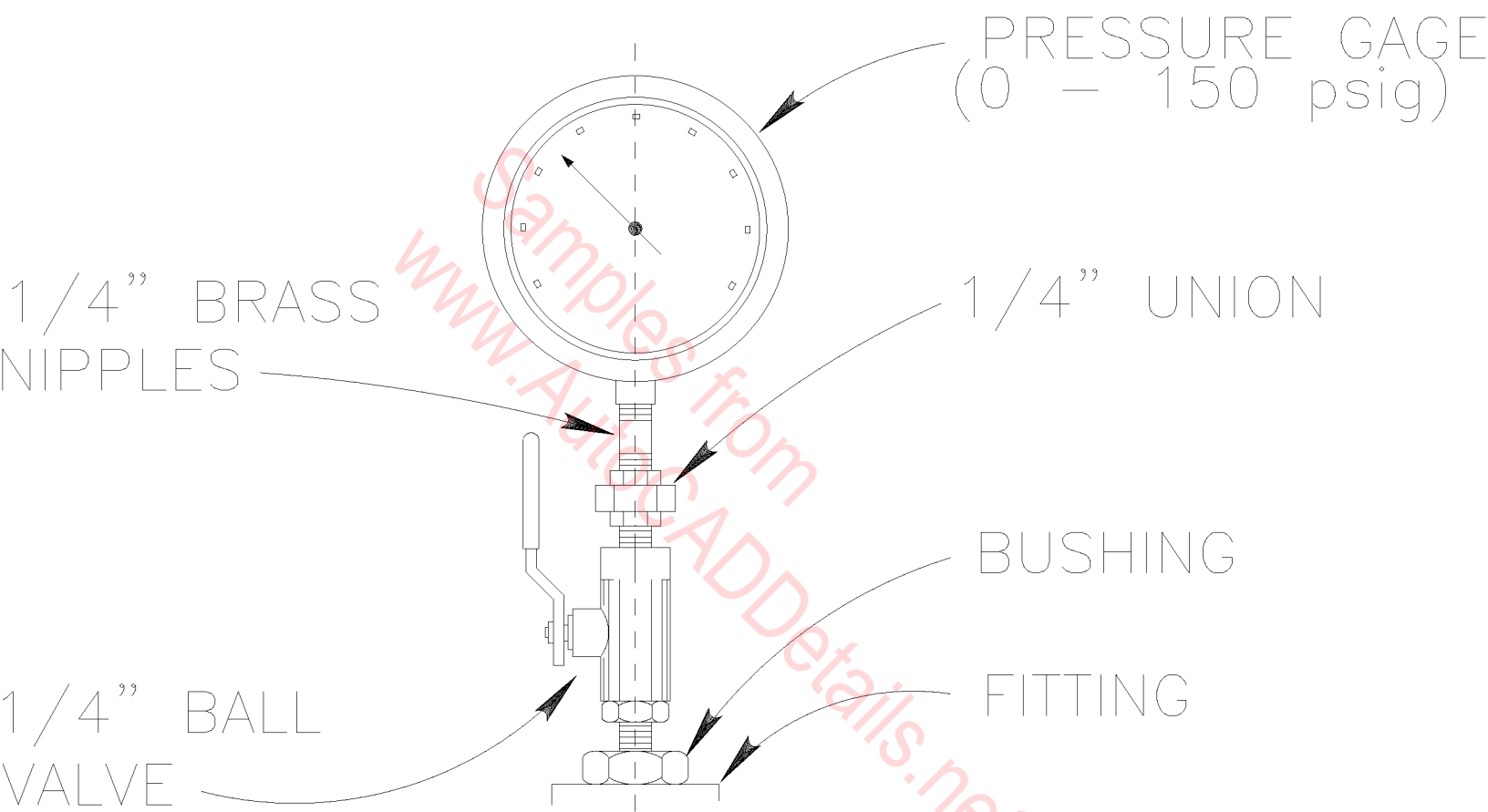
- 1 THERMOMETER – SEE SPECS FOR TYPE AND RANGE
- 2 BRASS THERMOMETER WELL
- 3 THREDOLET WELDED TO PIPE
- 4 DEPTH OF WELL ONE-THIRD OF PIPE DIAMETER
- 5 PIPE DIAMETER
- 6 PIPE INSULATION

THERMOMETER INSTALLATION IN INSULATED PIPE

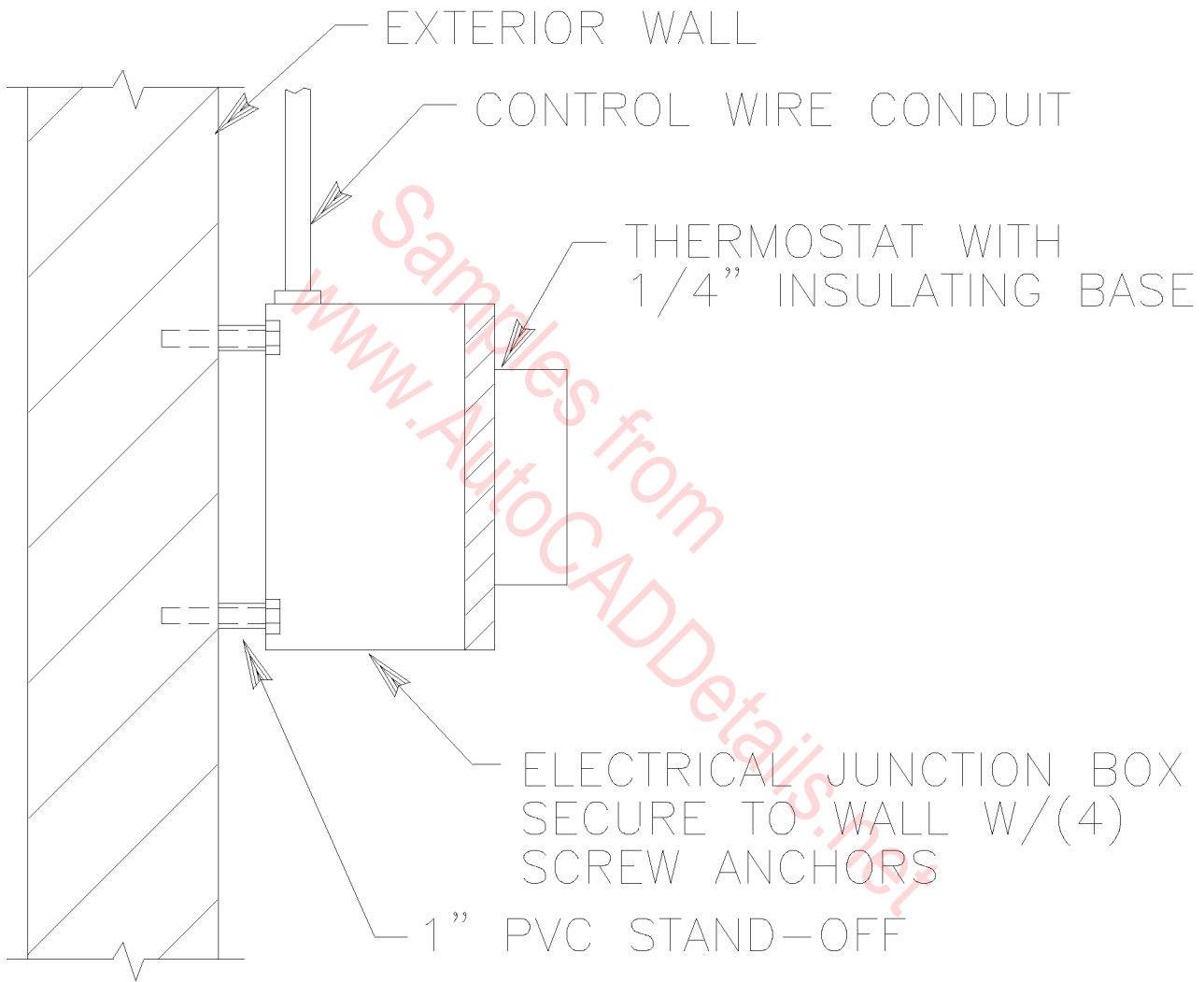


- 1 PRESSURE GAUGE
- 2 SNUBBER
- 3 GAUGE COCK
- 4 LINE WHERE PRESSURE IS TO BE MEASURED
- 5 TAPPING OR FITTING CONNECTION

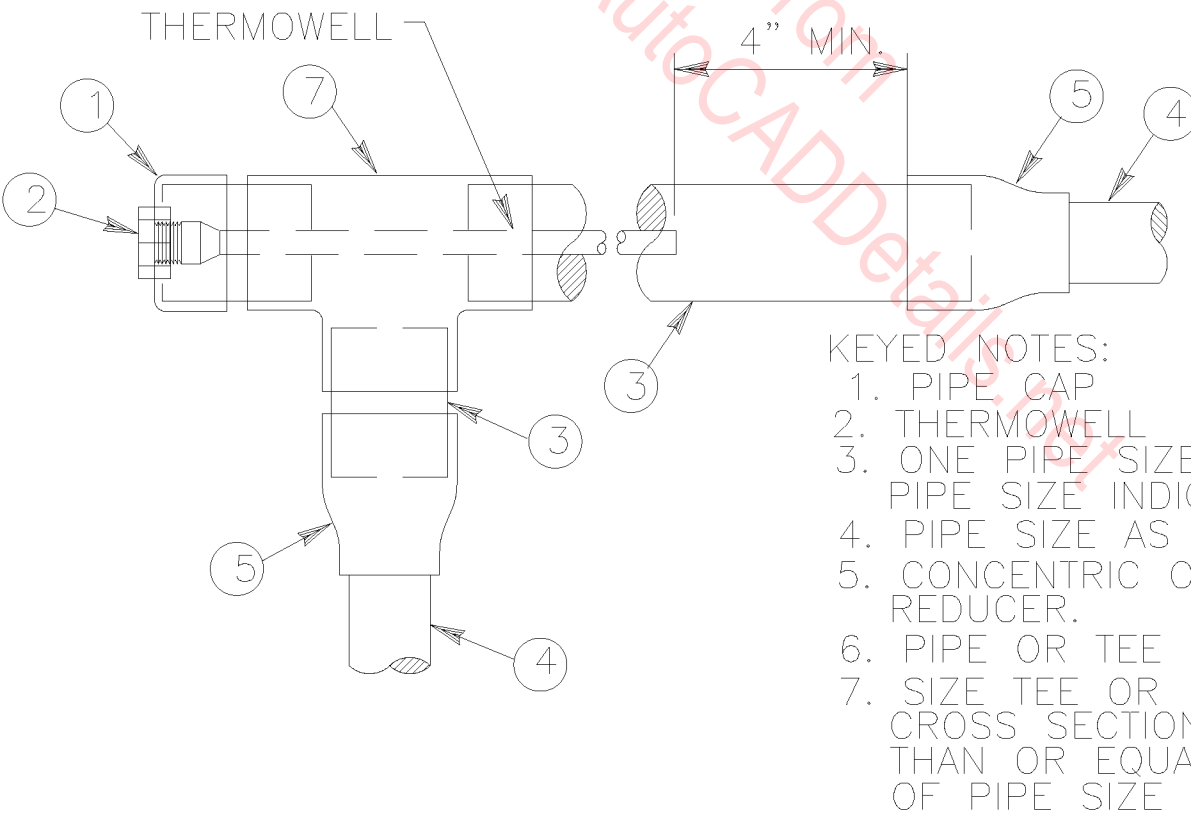
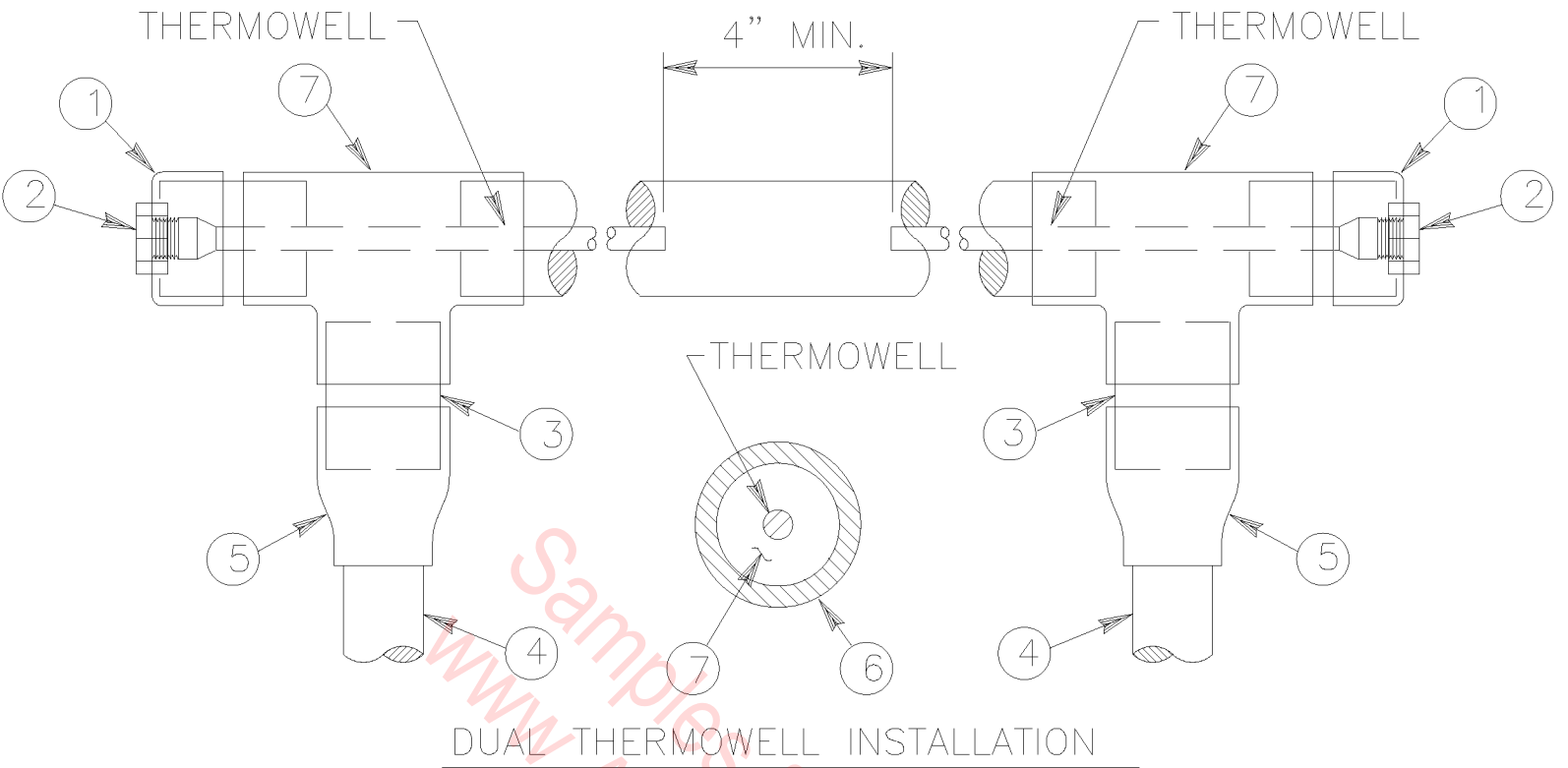
PRESSURE GAUGE INSTALLATION



PRESSURE GAGE



WALL MOUNTED THERMOSTAT



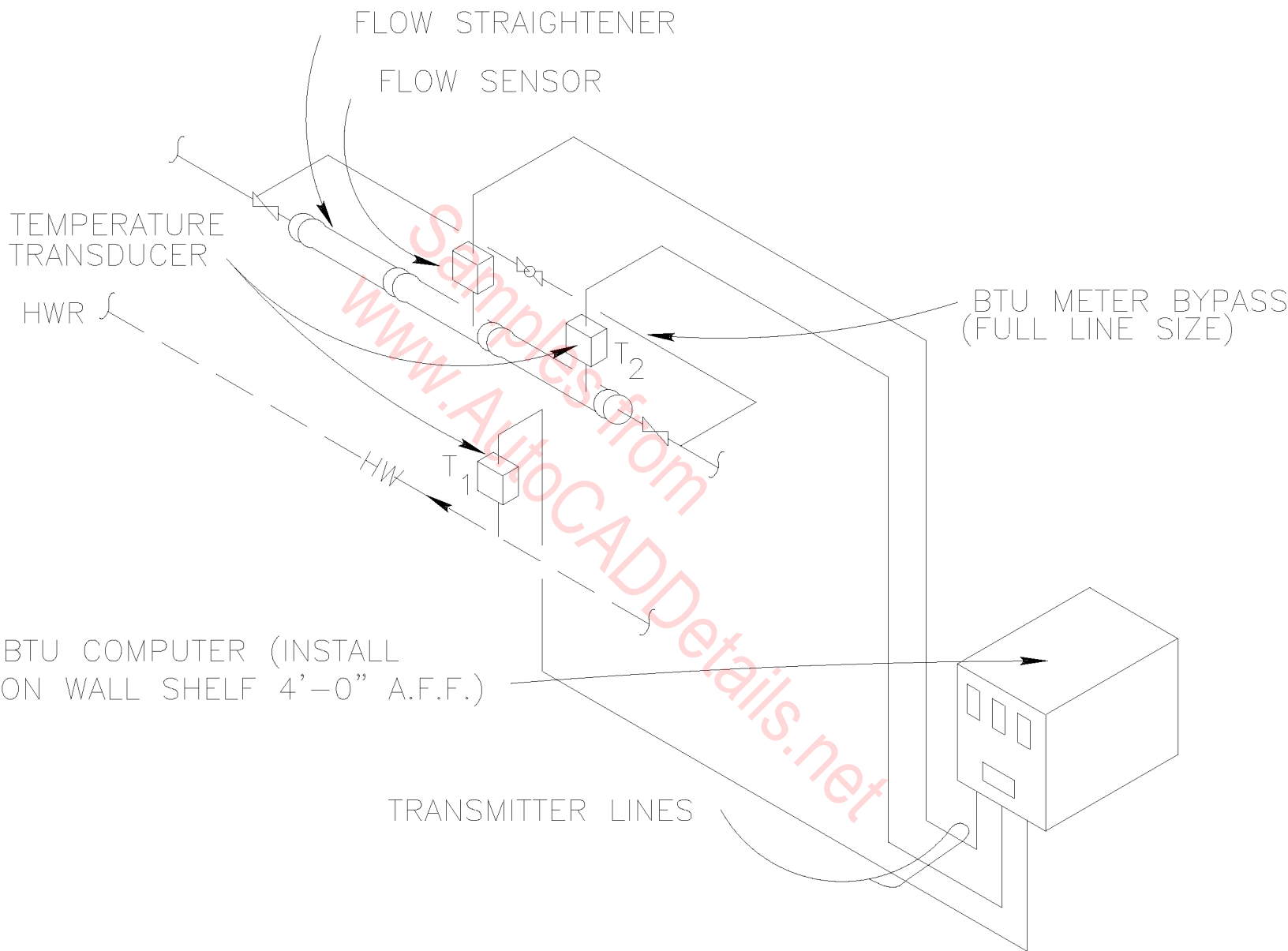
KEYED NOTES:

1. PIPE CAP
2. THERMOWELL
3. ONE PIPE SIZE LARGER THAN PIPE SIZE INDICATED ON PLANS.
4. PIPE SIZE AS INDICATED ON PLANS.
5. CONCENTRIC OR ECCENTRIC PIPE REDUCER.
6. PIPE OR TEE
7. SIZE TEE OR PIPE SO ANNULAR CROSS SECTION AREA IS GREATER THAN OR EQUAL TO CROSS SECTION OF PIPE SIZE INDICATED ON PLANS.

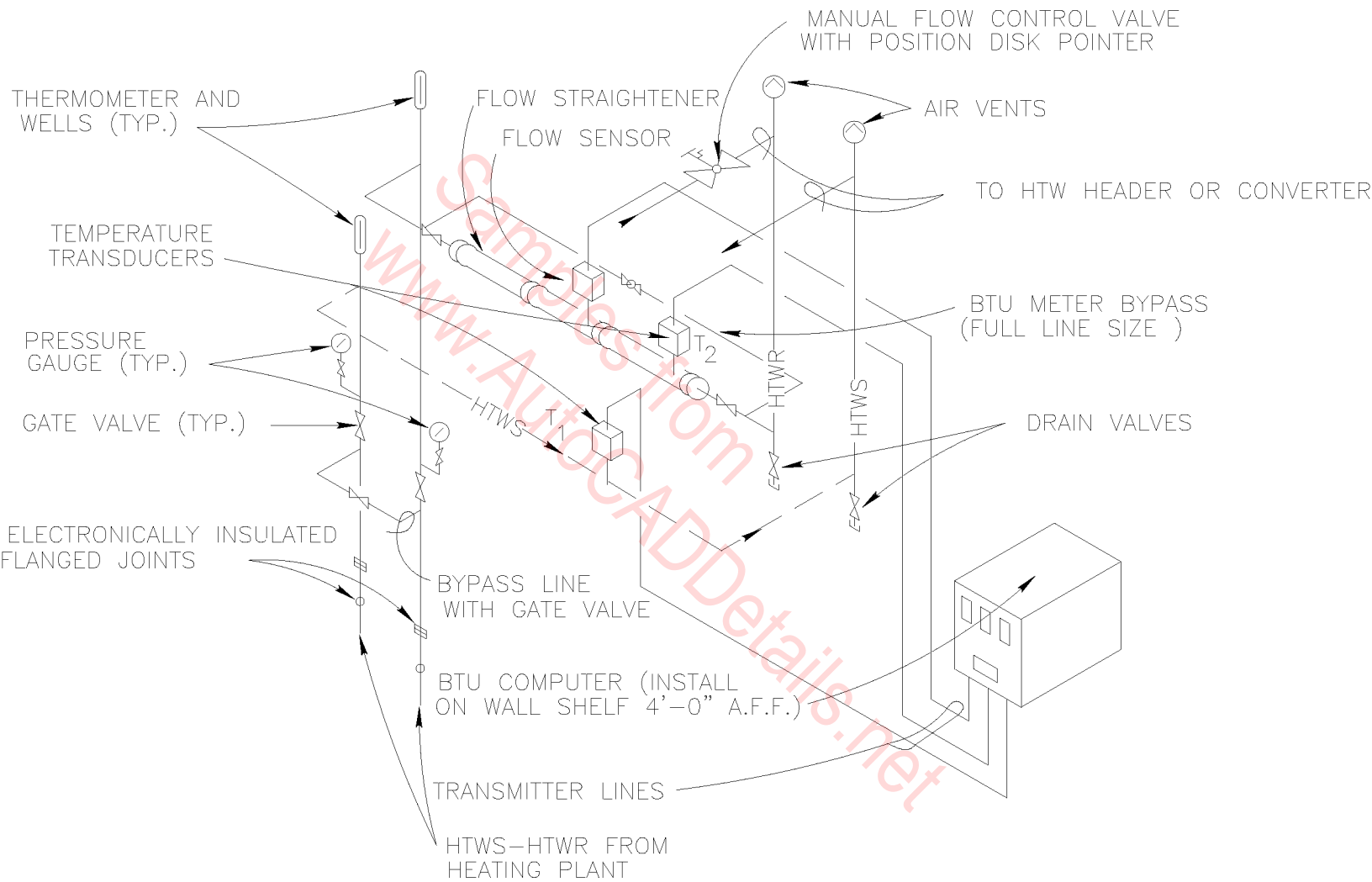
SINGLE THERMOWELL INSTALLATION

THERMOWELL INSTALLATION DETAIL

FOR SMALL PIPE

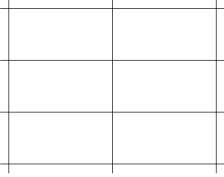
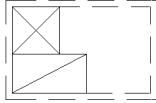



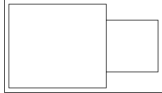












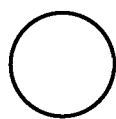
BTU MONITOR DETAIL



HTW ENTRANCE AND BTU MONITOR DETAIL

MECHANICAL LEGEND

	EXISTING 2 X 4 "TEE" GRID CEILING		EXISTING HVAC EQUIPMENT.
	2 X 2 SUSPENDED CEILING GRID		EVAP. COOLER
	24 X 24 SUPPLY REGISTER		HEAT PUMP
	24 X 24 RETURN REGISTER		
	12 X 12 SUPPLY REGISTER		
	12 X 12 RETURN REGISTER		
	8 X 8 SUPPLY REGISTER		
	"RUUD" 2 TON AIR HANDLER - #UBHAI4J00NUAA (W/ "RUUD" CONDENSING UNIT - #UPKA024J)		
	FLEX DUST - SUPPLY		
	FLEX DUST - RETURN		
	2' X 4' FLUORESCENT TROFFER		
	1' X 4' FLUORESCENT FIXTURE SURFACE MOUNTED		
	8' FLUOR. STRIP LIGHT		



MECHANICAL LEGEND

NOT TO SCALE

01C-5001

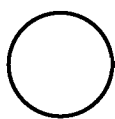
PLUMBING FIXTURES

	TOILETS	URINAL	LAVATORY	DRINKING FOUNTAINS
<u>WAREHOUSE</u>	4	-	4	1
<u>OFFICE</u>	4	-	2	-
<u>TOTAL REQ'D.</u>	8	-	6	1
<u>PROVIDED</u>	9	2	6	1

QUANTITIES PER APPENDIX "C" OF UPC

NOTE:

1. PROVIDE TRAP PRIMERS @ FLOOR DRAINS.
2. WATER CONNECTIONS @ URINALS TO BE 3/4", ALL OTHER CONNECTIONS TO BE 1/2"
3. DRAIN CONNECTIONS @ WATER CLOSETS TO BE 3", ALL OTHERS TO BE 1-1/2"



PLUMBING FIXTURES

NOT TO SCALE

01C-5002

HVAC/PLUMBING LEGEND

NOT ALL SYMBOLS LISTED BELOW ARE USED ON THIS SET OF DRAWINGS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	HEATING WATER SUPPLY		FIRE DAMPER
	HEATING WATER RETURN		MANUAL VOLUME DAMPER
	CHILLED WATER SUPPLY		MOTORIZED DAMPER
	CHILLED WATER RETURN		POINT OF CONNECTION (N TO E)
	120° HEATING WATER SUPPLY		PUMP
	120° HEATING WATER RETURN		STRAINER
	STEAM		THERMOSTIC STEAM TRAP
	CONDENSATE		F/T STEAM TRAP
	PUMPED CONDENSATE		INVERTED BUCKED STEAM TRAP
	REFRIGERANT LIQUID		DOMESTIC COLD WATER (CW)
	REFRIGERANT SUCTION		DOMESTIC HOT WATER (HW)
	REFRIGERANT HOT GAS		HOT WATER CIRCULATING (HWC)
	ROOF DRAIN LEADER		WASTE
	ROOF DRAIN LEADER - OVERFLOW		VENT
	DIRECTION OF FLOW		ROOF DRAIN
	PIPE CAP OR PLUG		NATURAL GAS
	PIPING UP		LP GAS
	PIPING DOWN		COMPRESSED AIR
	EXPANSION JOINT		HOSE BIBB / WALL HYDRANT
	FLEXIBLE CONNECTOR		BACKFLOW PREVENTER
	BALANCING VALVE		FUNNEL DRAIN
	2-WAY T.C. VALVE		FLOOR DRAIN
	3-WAY T.C. VALVE		FLOOR SINK
	SOLENOID VALVE		VENT THROUGH ROOF (VTR)
	PRESSURE REDUCING VALVE		WATER METER
	PLUG VALVE		GAS METER
	BALL VALVE	(E)	EXISTING
	PRESSURE/TEMPERATURE TAP	(N)	NEW
	SHUT-OFF VALVE	NIC	NOT IN CONTRACT
	CHECK VALVE	N.T.S.	NOT TO SCALE
	UNION	C.O.T.G.	CLEANOUT TO GRADE
	THERMOMETER	F.C.O.	FLOOR CLEANOUT
	PRESSURE GAUGE	R.D.	ROOF DRAIN
	PRESSURE RELIEF VALVE	R.D.O.	OVERFLOW ROOF DRAIN
	THERMOSTAT	A.F.F.	ABOVE FINISHED FLOOR
	HUMIDISTAT		

MECHANICAL EQUIPMENT LIST:

<p>BL-1, 2 HEATING WATER BOILER BURNHAM 809B 528 MBH INPUT (NATURAL GAS) 312.6 MBH OUTPUT (6,500 FT ELEV.) 10 AMP, 120 VOLT</p>	<p>FC-6 FAN COIL UNIT MAGCAIRE 36 BHX-3 W/ 36 HH-2 HEATING COIL 1310 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 32.2 MBH HEATING, 180°F E.W.T., 3.2 GPM 1/2 HP, 120 VOLT PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>
<p>CP-1, 2 BOILER CIRCULATING PUMP TACD #L 007 16 GPM, 5 FT. HD. 1/25 HP, 120 VOLT</p>	<p>FC-7 FAN COIL UNIT MAGCAIRE 60 BHX-3 W/ 60 HH-2 HEATING COIL 1990 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 45.1 MBH HEATING, 180°F E.W.T., 4.5 GPM 1 HP, 208 VOLT, 3 PHASE PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>
<p>CP-3, 4 SECONDARY HEATING WATER PUMP TACD 1619 62.5 GPM @ 45 FT. HD. 1-1/2 HP, 208/3/60</p>	<p>FC-8 FAN COIL UNIT MAGCAIRE 36 BHX-3 W/ 36 HH-2 HEATING COIL 1030 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 30.8 MBH HEATING, 180°F E.W.T., 3.1 GPM 1/2 HP, 120 VOLT PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>
<p>EA-1 ELEVATOR EQUIPMENT ROOM EXHAUST GRILLE METALAIRE CCS 12" X 12" FOR SURFACE MOUNTING</p>	<p>FC-9 FAN COIL UNIT MAGCAIRE 36 BHX-3 W/ 36 HH-2 HEATING COIL 1370 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 40.2 MBH HEATING, 180°F E.W.T., 4.0 GPM 1/2 HP, 120 VOLT PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>
<p>EA-2 BATHROOM EXHAUST GRILLE METALAIRE CCS5 12" X 12" FOR SURFACE MOUNTING</p>	<p>FC-10 FAN COIL UNIT MAGCAIRE 36 BHX-3 W/ 36 HH-2 HEATING COIL 920 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 32.1 MBH HEATING, 180°F E.W.T., 3.2 GPM 1/2 HP, 120 VOLT PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>
<p>EF-1 GARAGE EXHAUST ACME 8840 30,000 CFM 15 HP, 208 VOLT, 3 PHASE PROVIDE WITH MAGNETIC STARTER AND DISCONNECT</p>	<p>FR-1, 2 TRANE UPFLOW FURNACE MODEL TU080C9600 100,000 BTUH INPUT 54,200 BTUH OUTPUT AT 6,500 FT. ELEVATION 1400 CFM OUTPUT AT 0.5" E.S.P. (SEA LEVEL RATING) 1/2 HP BLOWER MOTOR, 120 VOLT PROVIDE COMPLETE WITH HIGH ALTITUDE SWITCH HEATING ONLY THERMOSTAT WITH FAN SWITCH</p>
<p>EF-2 RESTROOM EXHAUST ACME XD13665 IN-LINE EXHAUST FAN 800 CFM, 0.5" S.P. 1/4 HP, 120 VOLT PROVIDE COMPLETE WITH SPEED CONTROLLER</p>	<p>LV-1 OUTSIDE AIR LOUVER LOUVERS & DAMPERS MODEL EL-4-102-P SIZE AS SHOWN ON DRAWINGS</p>
<p>EF-3 ELEVATOR EQUIPMENT ROOM EXHAUST ACME V-400 400 CFM @ 0.25" S.P. PROVIDE WITH LINE VOLTAGE THERMOSTAT</p>	<p>RA-1 RETURN AIR GRILLE METALAIRE CCS 24" X 24" FOR GRID CEILING</p>
<p>EF-4 APARTMENT EXHAUST FAN/LIGHT BROAN 679 FAN/LIGHT 70 CFM @ 0.25" S.P. 200 WATTS, 120 VOLTS</p>	<p>RA-2 RETURN AIR GRILLE USAIRE MODEL 3500F 30" X 18" PROVIDE WITH 1" AIR FILTER</p>
<p>ET-1 EXPANSION TANK - PRIMARY HEATING WATER TACD CX84 10 GALLON ACCEPTANCE</p>	<p>SA-1 SIDEWALL SUPPLY AIR REGISTER USAIRE MODEL 1102M 14" X 6" PROVIDE COMPLETE WITH O.B.D.</p>
<p>CU-1 CABINET UNIT HEATER - MAIN LOBBY TRANE MODEL FFI-020 200 CFM 12.4 MBH, 1.0 GPM, 180 E.W.T. 1/30 HP BLOWER MOTOR, 120 VOLTS</p>	<p>SA-2 TOE SPACE SUPPLY GRILLE USAIRE MODEL 1320 12" X 3" PROVIDE COMPLETE WITH O.B.D.</p>
<p>FC-1, 1A FAN COIL UNIT MAGCAIRE 60 BHX-3 W/ 60 HH-2 HEATING COIL 2000 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 50.2 MBH HEATING, 180°F E.W.T., 5.0 GPM 1 HP, 208 VOLT, 3 PHASE PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>	<p>SA-3 SUPPLY AIR FLOOR REGISTER USAIRE MODEL 1510D 14" X 4" PROVIDE COMPLETE WITH O.B.D.</p>
<p>FC-2, 2A FAN COIL UNIT MAGCAIRE 60 BHX-3 W/ 60 HH-2 HEATING COIL 1950 CFM, 195 CFM OUTSIDE AIR, 0.5" E.S.P. 39.3 MBH HEATING, 180°F E.W.T., 3.9 GPM 1 HP, 208 VOLT, 3 PHASE PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>	<p>SA-4 SUPPLY AIR CEILING DIFFUSER METALAIRE SERIES 5000 24" X 24" PROVIDE WITH FRAME FOR GRID CEILING</p>
<p>FC-3, 3A FAN COIL UNIT MAGCAIRE 60 BHX-3 W/ 60 HH-2 HEATING COIL 2270 CFM, 230 CFM OUTSIDE AIR, 0.5" E.S.P. 52.0 MBH HEATING, 180°F E.W.T., 5.2 GPM 1 HP, 208 VOLT, 3 PHASE PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>	<p>SF-1 COMBUSTION AIR FAN ACME V-700 330 CFM @ 0.25" S.P. PROVIDE SOLID STATE SPEED CONTROLLER, SAIL SWITCH AND INTERLOCKS AS REQUIRED TO PROVE AIR FLOW PRIOR TO STARTING BOILER BURNERS.</p>
<p>FC-4 FAN COIL UNIT MAGCAIRE 60 BHX-3 W/ 60 HH-2 HEATING COIL 1990 CFM, 200 CFM OUTSIDE AIR, 0.5" E.S.P. 97.6 MBH HEATING, 180°F E.W.T., 9.8 GPM 1 HP, 208 VOLT, 3 PHASE PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>	<p>UH-1 BOILER ROOM UNIT HEATER TRANE MODEL 60S 27.4 MBH HEATING, 180°F E.W.T., 2.7 GPM 815 CFM 1/20 HP, 120 VOLT</p>
<p>FC-5 FAN COIL UNIT MAGCAIRE 36 BHX-3 W/ 36 HH-2 HEATING COIL 1130 CFM, 150 CFM OUTSIDE AIR, 0.5" E.S.P. 26.0 MBH HEATING, 180°F E.W.T., 2.6 GPM 1/4 HP, 120 VOLT PROVIDE UNIT COMPLETE WITH 3 ROW REFRIGERANT EVAPORATOR COIL.</p>	<p>RH-1 ELEVATOR EXHAUST GRILLE ACME EV2418 PROVIDE COMPLETE WITH WEIGHTED BACKDRAFT DAMPER</p>

PLUMBING EQUIPMENT LIST

- FD-1 FLOOR DRAIN
ZURN Z-415 WITH "TYPE B" FLAT STRAINER
CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE
MEMBRANE CLAMP AND ADJUSTABLE COLLAR, NICKEL BRONZE
STRAINER
- HB-1 EXTERIOR WALL HYDRANT
WOODFORD MODEL 65
ANTI-SIPHON, AUTOMATIC DRAINING, FREEZELESS, WITH LOOSE TEE KEY
ROUGH BRASS FINISH
- LV-1 LAVATORY
KOHLER K-2195
VITREOUS CHINA, SELF RIMMING, WITH OVERFLOW AND DRILLED
FOR 4" FAUCET CENTERS
PROVIDE COMPLETE WITH K-13328-5 LAVATORY FAUCET WITH
WRIST-BLADE HANDLES, GRID DRAIN STRAINER, 1-1/2" P-
TRAP, ANGLE SUPPLIES AND STOPS
- RD-1 ROOF DRAIN
ZURN Z-121
12" DIAMETER, DURA-COATED CAST IRON BODY WITH COMBINATION
MEMBRANE FLASHING CLAMP/GRAVEL GUARD AND LOW SILHOUETTE
CAST IRON DOME.
USE SAME DRAIN AS OVERFLOW DRAIN WITH 2" HIGH EXTERNAL
WATER DAM
- SK-1 LAUNDRY SERVICE SINK
KOHLER K-6757
ENAMELED CAST IRON, THREE HOLE FAUCET DRILLING ON 4"
CENTERS
PROVIDE COMPLETE WITH K-7761-2A FAUCET, K-6596 METAL
FRAME, 2" P-TRAP, ANGLE SUPPLIES AND STOPS
- UR-1 URINAL
KOHLER K-4972-T
VITREOUS CHINA, BLOWOUT DESIGN, ELONGATED RIM
PROVIDE COMPLETE WITH SLOAN 180-1 FLUSHOMETER
- WC-1 HANDICAPPED WATER CLOSET
KOHLER K-3527-EB
VITREOUS CHINA, 3.5 GALLON FLUSH, 18" HIGH ELONGATED BOWL
PROVIDE COMPLETE WITH K-4670-C SOLID PLASTIC SEAT WITH
OPEN FRONT AND CHECK HINGE, AND 3/8" ANGLE SUPPLY WITH
STOP
- WC-2 WATER CLOSET
KOHLER K-3520-EB
VITREOUS CHINA, 3.5 GALLON FLUSH, 14-1/4" HIGH ELONGATED
BOWL
PROVIDE COMPLETE WITH K-4670-C SOLID PLASTIC SEAT WITH
OPEN FRONT AND CHECK HINGE, AND 3/8" ANGLE SUPPLY WITH
STOP
- WH-1 INDIRECT FIRED WATER HEATER
AMTROL WH-7C
41 GALLON STORAGE
16.3 GPM HEATING WATER 180° EWT
197 GAL. PER HOUR @ 100° TEMPERATURE RISE.
- WH-2 ELECTRIC WATER HEATER
A.O. SMITH DSE-5
5 GALLON STORAGE
3KW, 208/3/60 12 GALLONS PER HOUR @ 100° TEMP. RISE.
- FD-2 FLOOR DRAIN
ZURN Z-675
13" EXTRA HEAVY DUTY DRAIN.



PLUMBING EQUIPMENT LIST

NOT TO SCALE

01C-5005

EQUIPMENT SCHEDULE – MECHANICAL EQUIPMENT

CONTROLLERS:
 COMB = COMBINATION STARTER/DISCONNECT:
 CON = CONTRACTOR
 MAG = MAGNETIC MOTOR STARTER
 MAN = MANUAL MOTOR STARTER
 NR = NONE REQUIRED
 FU = FUSESTAT
 WU = MOUNTED AND WIRED WITH EQUIPMENT

DISCONNECTS:
 30/20 = 30A FRAME/20A FUSE
 30/-- = 30A FRAME/NO FUSE
 MAN = MANUAL MOTOR STARTER
 NR = NONE REQUIRED
 PI = PLUG IN
 FU = FUSESTAT
 WU = MOUNTED AND WIRED WITH EQUIPMENT

DESIGNATION & RATINGS	BRANCH CIRCUIT			BREAKER	CONTROLLER	CONTROL DEVICE
DESCRIPTION	RACEWAY	PH & N	GROUND	FLA	DISCONNECT	FOOTNOTES
BL-1 10.0 A 120 V 1 PHASE HEATING BOILER	0.50 IN EMT	2 #12	---	20A 10.0 A	NR MAN	SWITCH
BL-2 10.0 A 120 V 1 PHASE HEATING BOILER	0.50 IN EMT	2 #12	---	20A 10.0 A	NR MAN	SWITCH
CH-1 5.0 A 120 V 1 PHASE CABINET HEATER	0.50 IN EMT	2 #12	---	20A 5.0 A	NR MAN	SWITCH
CP-1 .040 HP 120 V 1 PHASE CIRCULATION PUMP	0.50 IN EMT	2 #12	---	20A 1.8 A	NR MAN	SWITCH
CP-2 .040 HP 120 V 1 PHASE CIRCULATION PUMP	0.50 IN EMT	2 #12	---	20A 1.8 A	NR MAN	SWITCH
CP-3 1.50 HP 208 V 3 PHASE CIRCULATION PUMP	0.50 IN EMT	4 #12	---	20A 7.0 A	MAG 30/--	NONE REQUIRED
CP-4 1.50 HP 208 V 3 PHASE CIRCULATION PUMP	0.50 IN EMT	4 #12	---	20A 7.0 A	MAG 30/--	NONE REQUIRED
EF-1 15.0 HP 208 V 3 PHASE GABAGE EXHAUST FAN	1.25 IN EMT	4 #04	---	70A 56.8 A	MAG 100/--	NONE REQUIRED
EF-2 .250 HP 120 V 1 PHASE RESTROOM EXHAUST FAN	0.50 IN EMT	2 #12	---	20A 5.6 A	NR NR	SWITCH
EF-3 .050 HP 120 V 1 PHASE ELEVATOR EQUIPMENT RM EXHAUST	0.50 IN EMT	2 #12	---	20A 2.1 A	NR NR	THERMOSTAT
EF-4 70.0 W 120 V 1 PHASE APARTMENT EXHAUST FAN	0.50 IN EMT	2 #12	---	20A 0.6 A	NR NR	SWITCH
FC-1 1.00 HP 208 V 3 PHASE FAN COIL UNIT	0.50 IN EMT	4 #12	---	20A 4.9 A	WU 30/--	NONE REQUIRED -1-
FC-5 .250 HP 120 V 1 PHASE FAN COIL UNIT	0.50 IN EMT	2 #12	---	20A 5.6 A	WU 30/--	NONE REQUIRED
FC-6 .500 HP 120 V 1 PHASE FAN COIL UNIT	0.50 IN EMT	2 #12	---	20A 9.4 A	WU 30/--	NONE REQUIRED -2-
FR-1 .750 HP 120 V 1 PHASE UPFLOW FURNACE	0.50 IN EMT	2 #12	---	20A 13.2 A	NR MAN	THERMOSTAT
FR-2 .750 HP 120 V 1 PHASE UPFLOW FURNACE	0.50 IN EMT	2 #12	---	20A 13.2 A	NR MAN	THERMOSTAT
SF-1 .250 HP 120 V 1 PHASE COMBUSTION AIR FAN	0.50 IN EMT	2 #12	---	20A 5.6 A	MAG 30/--	OTHER - SEE FOOTNOTES -3-
UH-1 .050 HP 120 V 1 PHASE BOILER ROOM UNIT HEATER	0.50 IN EMT	2 #12	---	20A 2.1 A	NR MAN	SWITCH
FOOTNOTES: 1 UNITS FC-1A, FC-2, FC-3, FC-3A, FC-4, & FC-7 ARE SIMILAR TO UNIT FC-1. 2 UNITS FC-8, FC-9, & FC-10 ARE SIMILAR TO UNIT FC-6. 3 UNIT IS TO BE INTERLOCKED WITH BOILERS BL-1 AND BL-2.						

PLUMBING FIXTURE CONNECTION/MOUNTING HEIGHT SCHEDULE

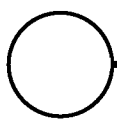
ITEM	DESCRIPTION	WASTE	VENT	HW	CW	HEIGHT A.F.F.
FD-1	FLOOR DRAIN	3"	2"	—	—	—
LV-2	LAVATORY (HANDICAP UNIT)	1-1/2"	1-1/2"	1/2"	1/2"	--
SK-1	COUNTERTOP SINGLE COMP. SINK	1-1/2"	1-1/2"	1/2"	1/2"	—
UR-1	URINAL	3"	2"	—	3/4"	22"
WC-1	WATER CLOSET – TANK TYPE	3"	2"	—	1"	15"
WC-2	WATER CLOSET – TANK TYPE (HANDICAP UNIT)	3"	2"	—	1"	18"
HB-1	EXTERIOR HOSE BIBB	—	—	—	3/4"	24"

PLUMBING FXTR. CONNECTION/
MOUNTING HEIGHT SCHEDULE

NOT TO SCALE

01C-5007

EQUIPMENT SCHEDULE	
MARK	DESCRIPTION
HP-1	EXISTING 3 TON, 1 ϕ , 29.7 FLA, 50 AMP CIRCUIT BREAKER
CD-1	2 X 2 LAY-INS, KREUGER 1400 SERIES.
CD-2	8" X 8" 4 WAY KREUGER 1100 SERIES.
EF-1	BROAN 673 1/20 HP, 70 CFM, 4" ϕ DISCHARGE TO ROOF TOP. 115 V - FLA 1.7 AMPS
EC-1	EXISTING ARVIN 6500 CFM, 120 V, 1 HP, 60Hz., 2 SPEED, 400 CFM @ 1/8" S.P. WITH PYRAMID DIFFUSER



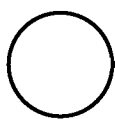
EQUIPMENT SCHEDULE

NOT TO SCALE

01C-5008

FLOW TEST SUMMARY

STATIC PSI	90
RESIDUAL PSI	80
PITOT PSI	60
ORIFICE DIAMETER	2-1/2"
COEFFICIENT OF DISCHARGE	.90
GPM	1300
DATE	12-21-95
LOCATION	[STREET] ST. AND [STREET] ST.
PERFORMED BY	CITY OF [CITY]



FLOW TEST SUMMARY

NOT TO SCALE

01C-5009

CALCULATION DESIGN INFORMATION

AREA _____ AREA #1 _____
OCCUPANCY _____ OFFICES _____
HAZARD _____ LIGHT HAZARD _____
DENSITY _____ .10 GPM PER SQ. FT. _____
AREA OF OPERATION _____ 1500 SQ. FT. _____
AREA PER HEAD _____ 225 SQ. FT. MAX. _____
HOSE WATER ALLOWANCE
INSIDE _____ 0 _____ OUTSIDE _____ 100 GPM

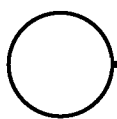
CALCULATION
DESIGN INFORMATION

NOT TO SCALE

01C-5010

FIXTURE LIST

HWC	HANDICAPPED WATER CLOSET – VITREOUS CHINA, ELONGATED, FLOOR MOUNTED, CLOSE-COUPLED TANK W/ WATER-SAVING TRIM SIPHON JET ACTION, WITH OPEN FRONT SEAT
WC	HANDICAPPED WATER CLOSET – VITREOUS CHINA, ELONGATED, FLOOR MOUNTED, CLOSE-COUPLED TANK W/ WATER-SAVING TRIM SIPHON JET ACTION, WITH OPEN FRONT SEAT
UR	URINAL VITREOUS CHINA, WALL MOUNTED, SIPHON JET ACTION, SENSOR OPERATED VALVE
LAV	LAVATORY VITREOUS CHINA, SELF RIMMING WITH FRONT OVERFLOW
EDF	ELECTRIC DRINKING FOUNTAIN 120V-1Ø-60Hz WHEELCHAIR ACCESSIBLE
---	WATER HEATER "POWERSTREAM" INSTANTANEOUS WATER HEATER, 208V



PLUMBING FIXTURE LIST

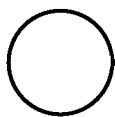
NOT TO SCALE

01C-5011

PLUMBING FIXTURE CONNECTION/ MOUNTING HEIGHT SCHEDULE

ITEM	DESCRIPTION	WASTE	VENT	HW	HEIGHT A.F.F.
FD-1	FLOOR DRAIN	3"	2"	---	---
LV-1	COUNTERTOP LAVATORY	1-1/2"	1-1/2"	1/2"	31"
LV-2	WALLMOUNT LAVATORY	1-1/2"	1-1/2"	1/2"	31"
SK-1	COUNTERTOP SINGLE COMP. SINK	1-1/2"	1-1/2"	1/2"	---
SK-2	COUNTERTOP DOUBLE COMP. SINK	1-1/2"	1-1/2"	1/2"	---
SK-3	COUNTERTOP SINGLE COMP. SINK	1-1/2"	1-1/2"	1/2"	---
WC-1	WATER CLOSET - TANK TYPE	3"	2"	---	15"
WC-2	WATER CLOSET - TANK TYPE	3"	2"	---	15"
WC-3	WATER CLOSET - TANK TYPE (HANDICAP UNIT)	3"	2"	---	18"
WB-1	WASHER WALL BOX W/ VALVES	2"	1-1/2"	1/2"	48"
	DISHWASHER	3/4"	AIR GAP	1/2"	---
	BATHTUB	2"	1-1/2"	1/2"	---
	SHOWER	2"	1-1/2"	1/2"	84"
	REFRIGERATOR ICEMAKER	---	---	---	---

PLUMBING FIXTURE CONNECTION/ MOUNTING HEIGHT SCHEDULE



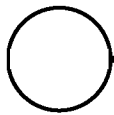
N.T.S.

01C-5012

PLUMBING FIXTURE CONNECTION/ MOUNTING HEIGHT SCHEDULE

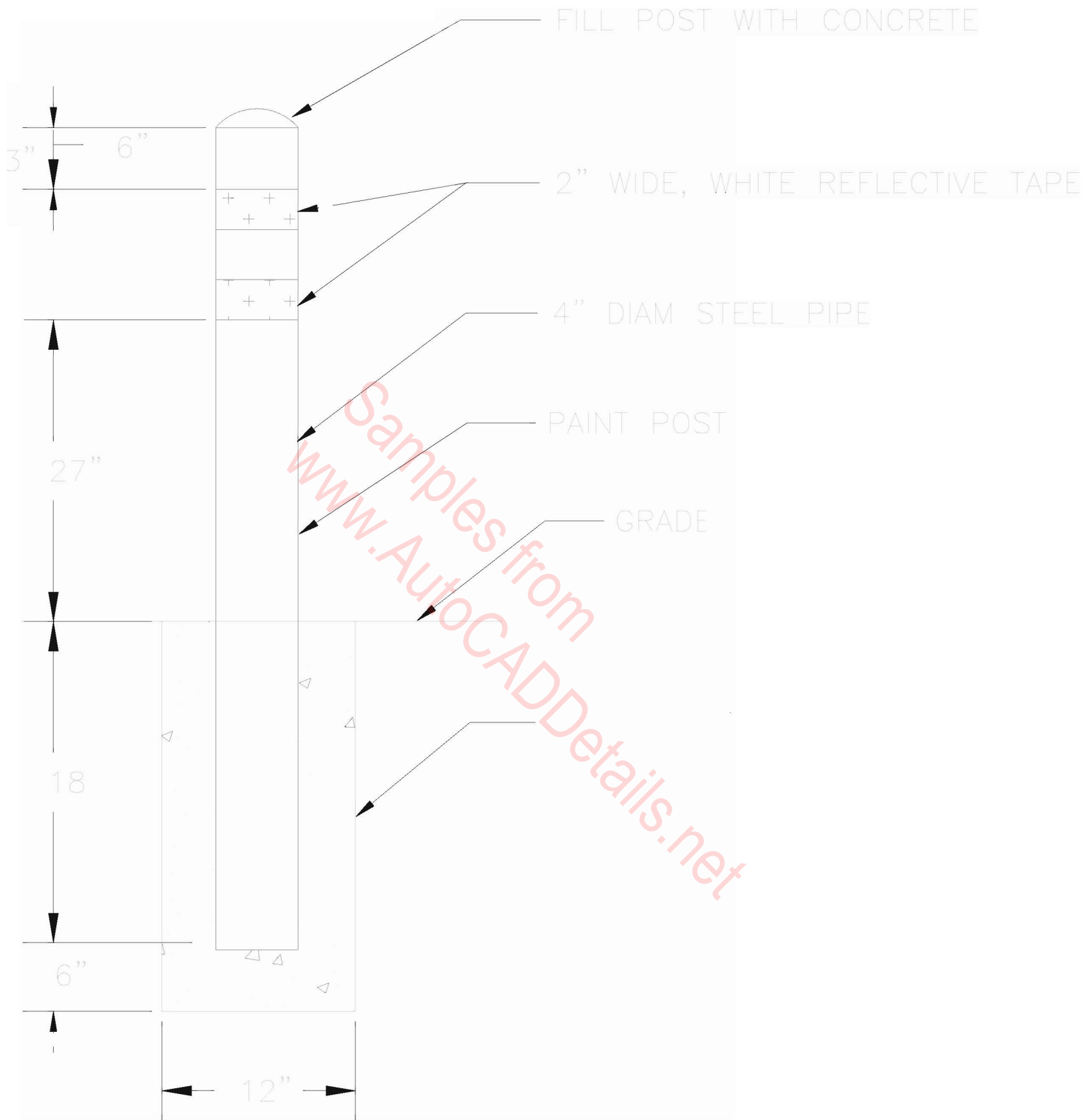
ITEM	DESCRIPTION	WASTE	VENT	HW	HEIGHT A.F.F.
FD-1	FLOOR DRAIN	3"	2"	---	---
LV-1	COUNTERTOP LAVATORY	1-1/2"	1-1/2"	1/2"	31"
LV-2	WALLMOUNT LAVATORY	1-1/2"	1-1/2"	1/2"	31"
SK-1	COUNTERTOP SINGLE COMP. SINK	1-1/2"	1-1/2"	1/2"	---
SK-2	COUNTERTOP DOUBLE COMP. SINK	1-1/2"	1-1/2"	1/2"	---
SK-3	COUNTERTOP SINGLE COMP. SINK	1-1/2"	1-1/2"	1/2"	---
WC-1	WATER CLOSET - TANK TYPE	3"	2"	---	15"
WC-2	WATER CLOSET - TANK TYPE	3"	2"	---	15"
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	BATHTUB	2"	1-1/2"	1/2"	---
	SHOWER	2"	1-1/2"	1/2"	84"
	REFRIGERATOR ICEMAKER	---	---	---	---

PLUMBING FIXTURE CONNECTION/ MOUNTING HEIGHT SCHEDULE

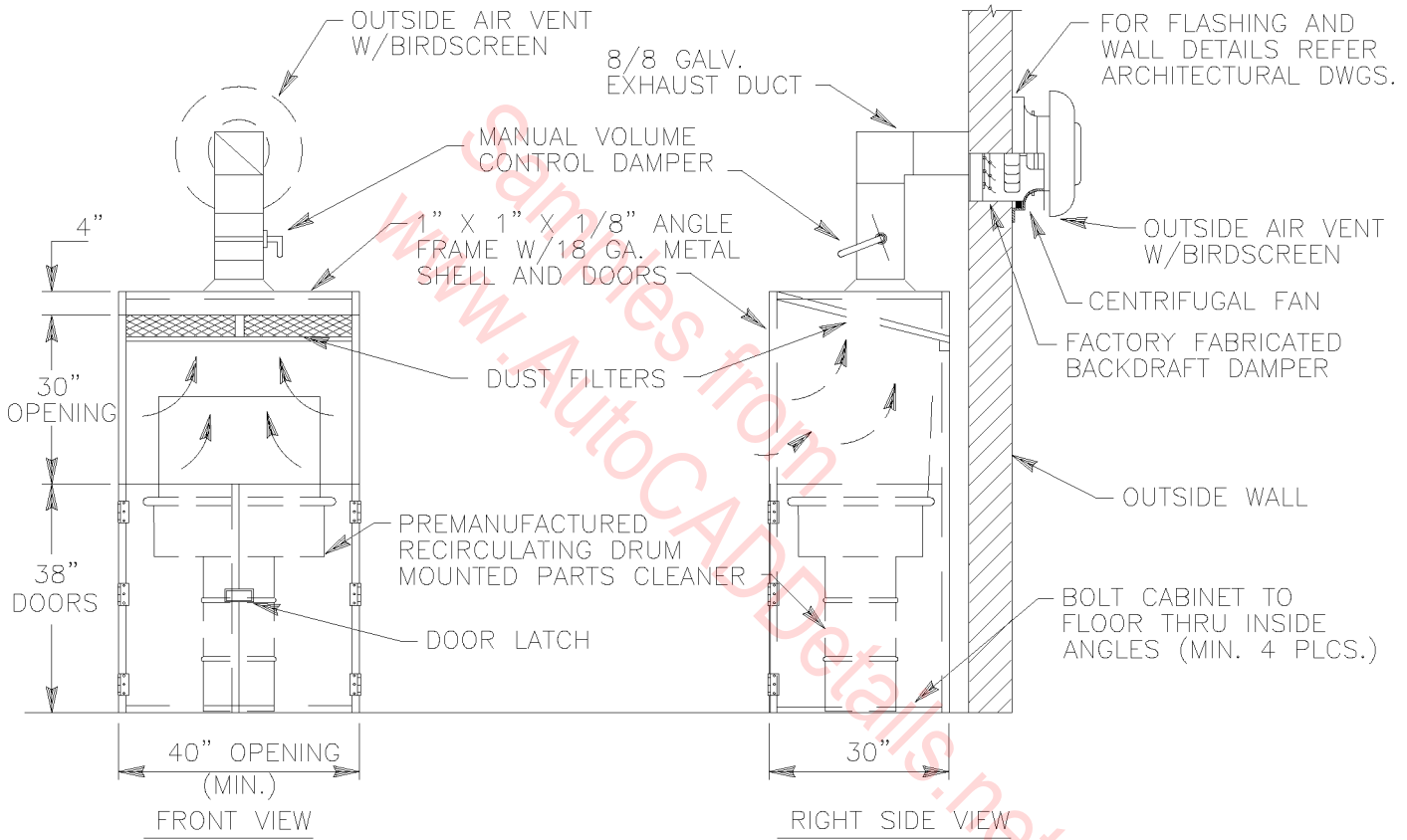


N.T.S.

01C-5012



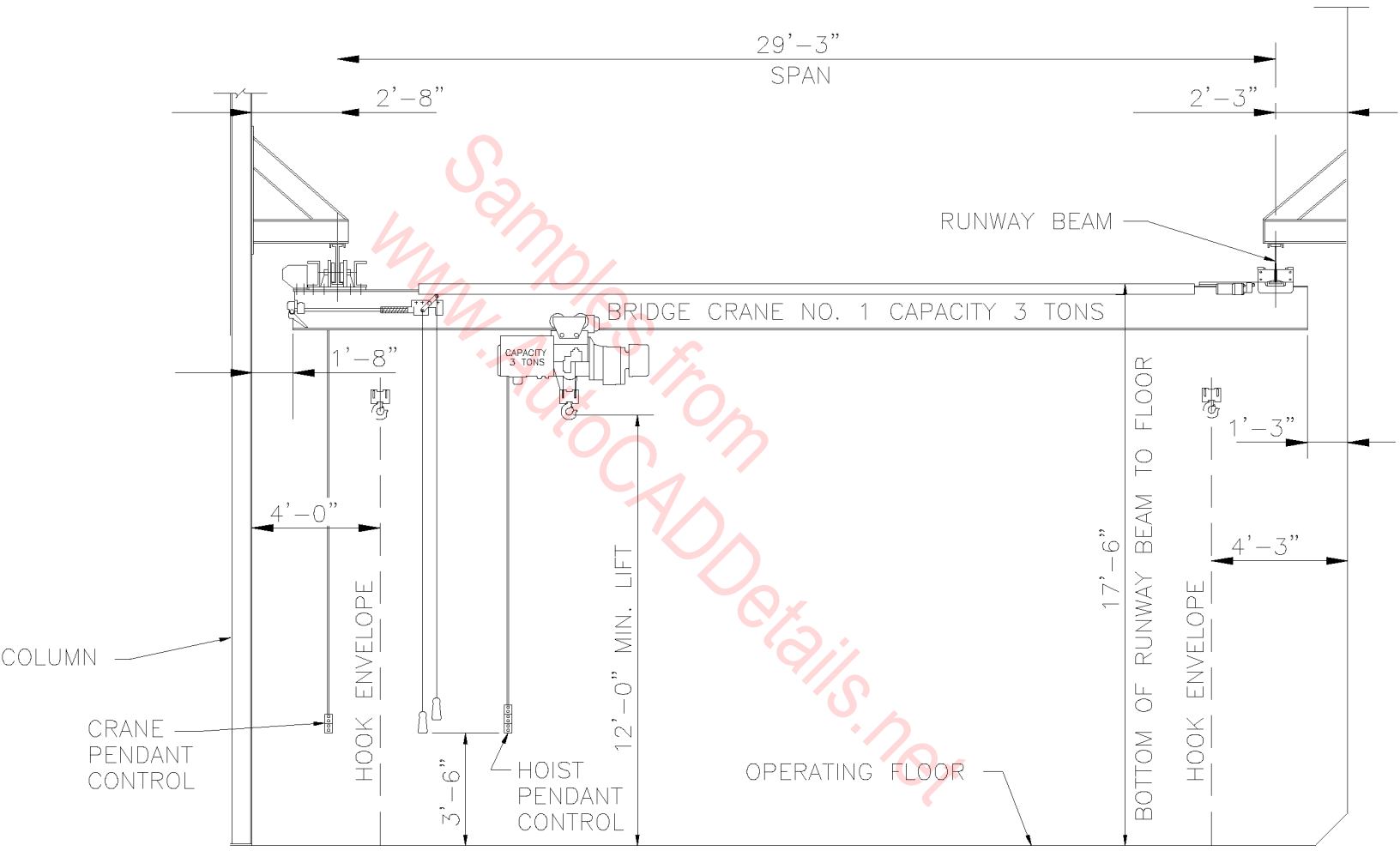
Samples from
www.AutoCADDetails.net



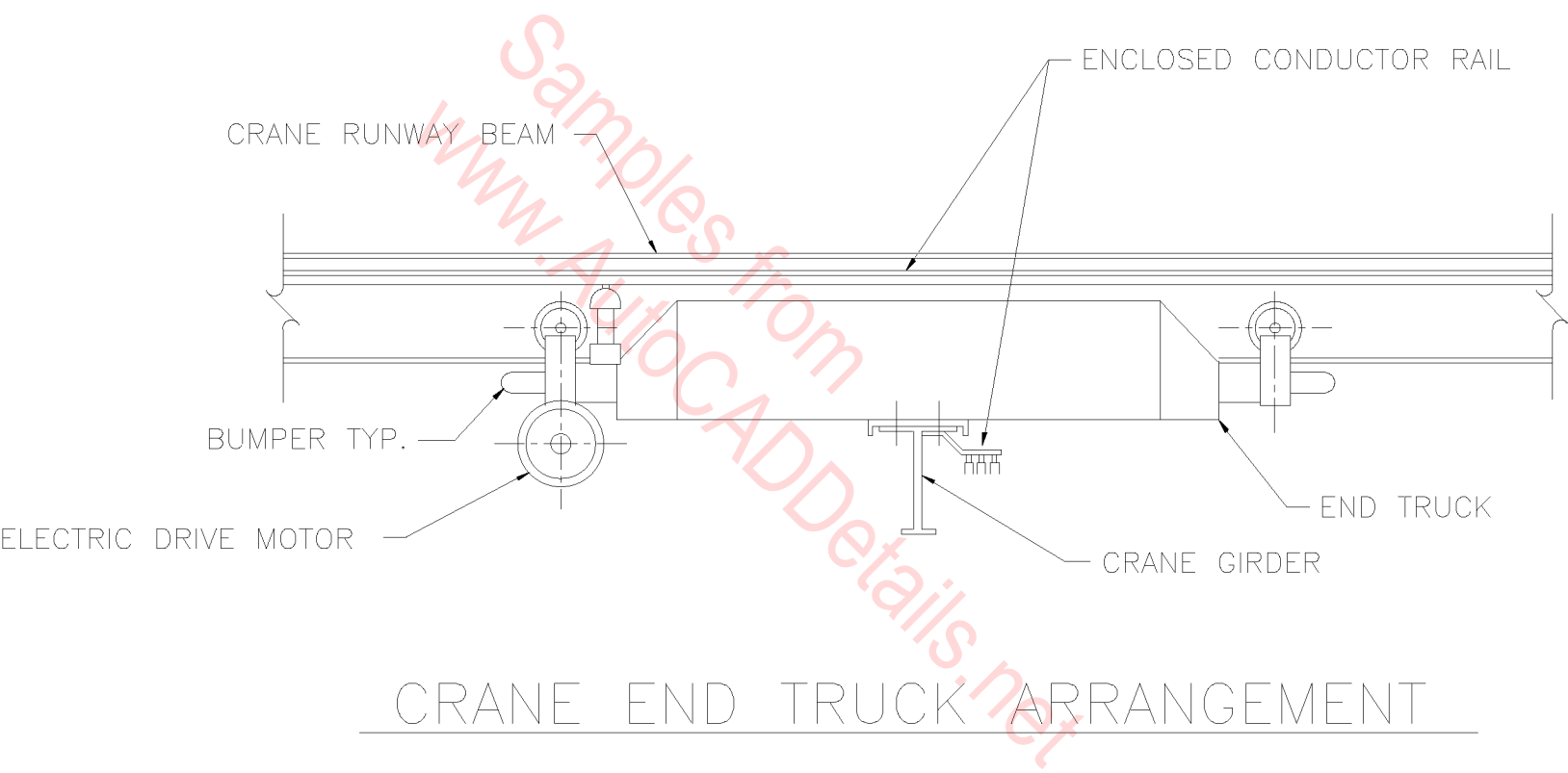
NOTE: SINGLE UNIT SHOWN. REFER TO M- FOR NUMBER AND LOCATION OF UNITS.

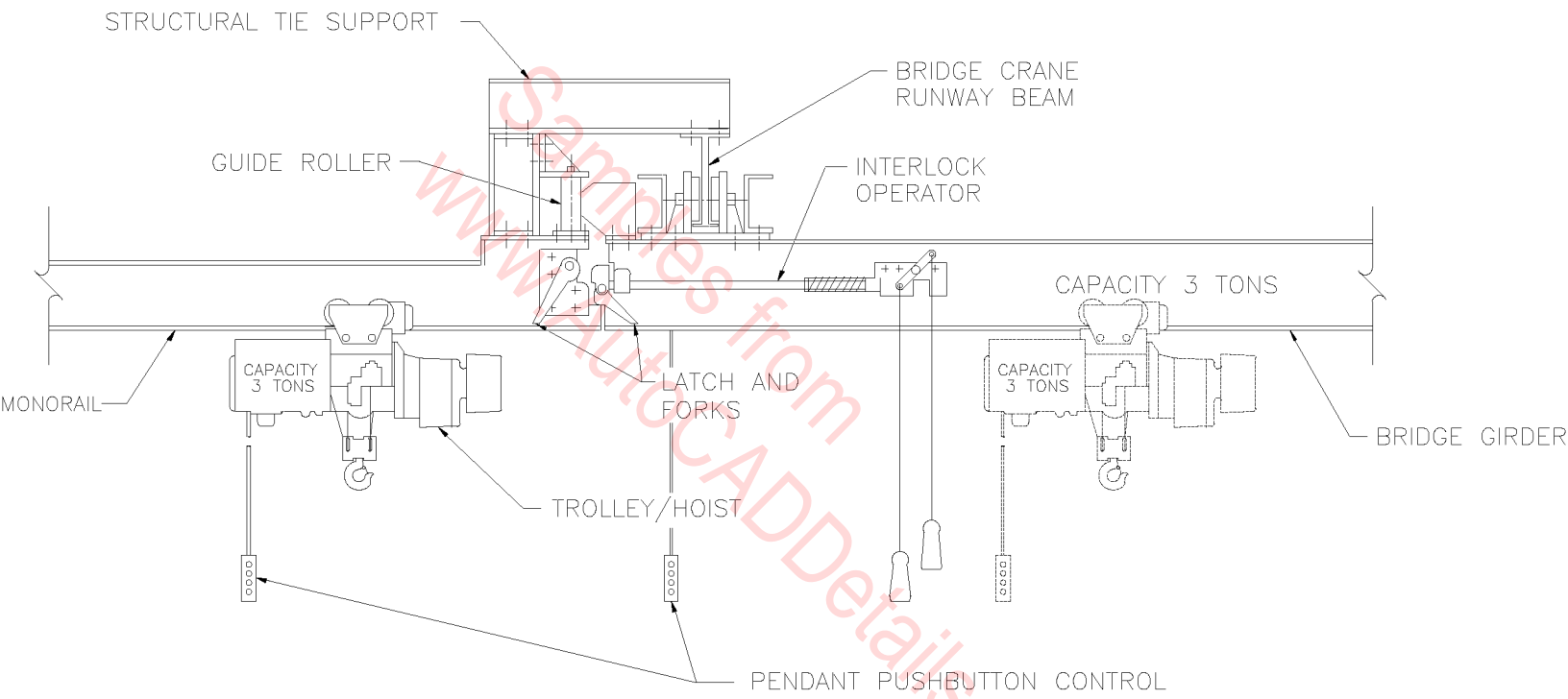
TYPICAL FREE STANDING PARTS WASHER CABINET DETAIL

N.T.S.

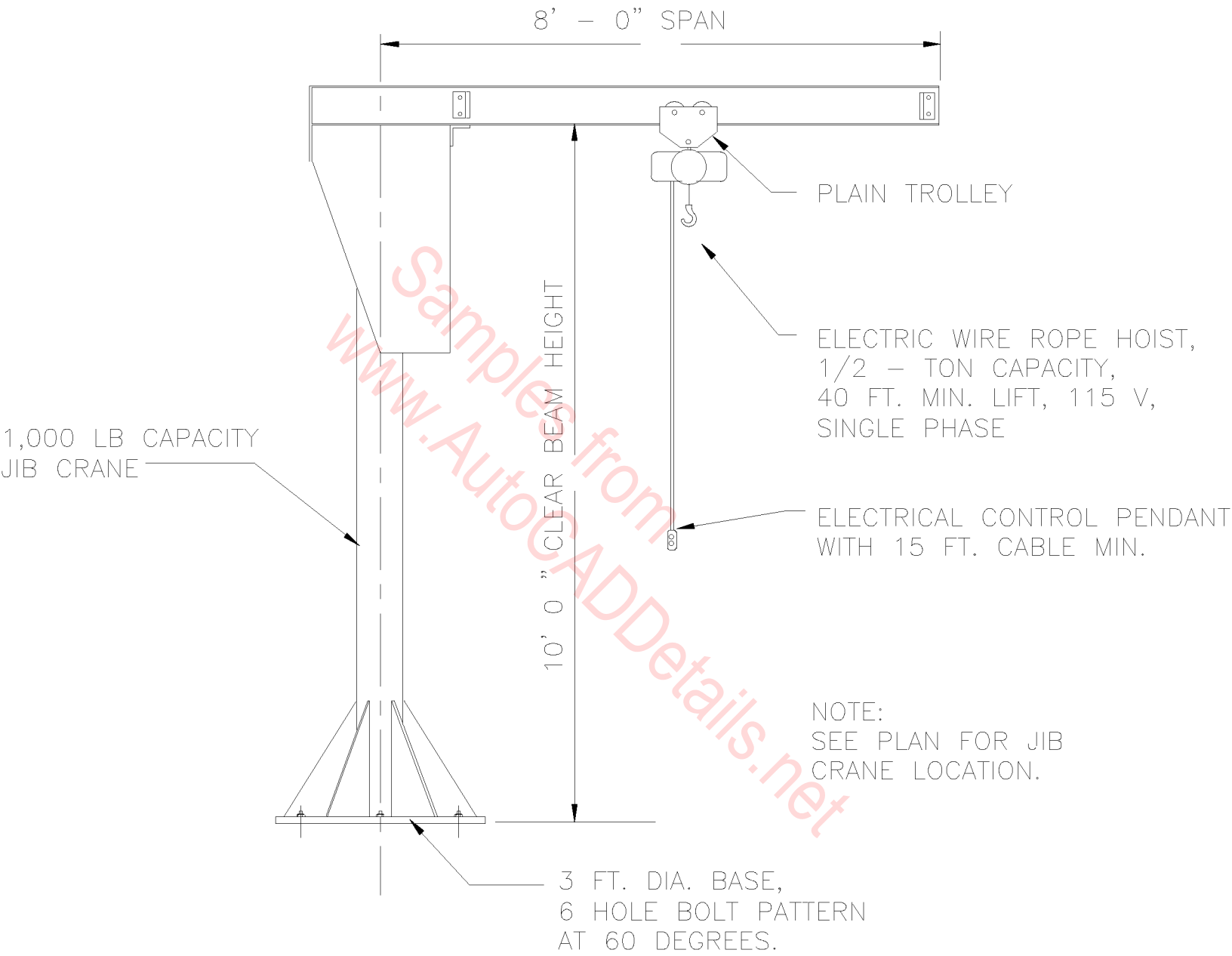


CRANE CLEARANCE DIAGRAM

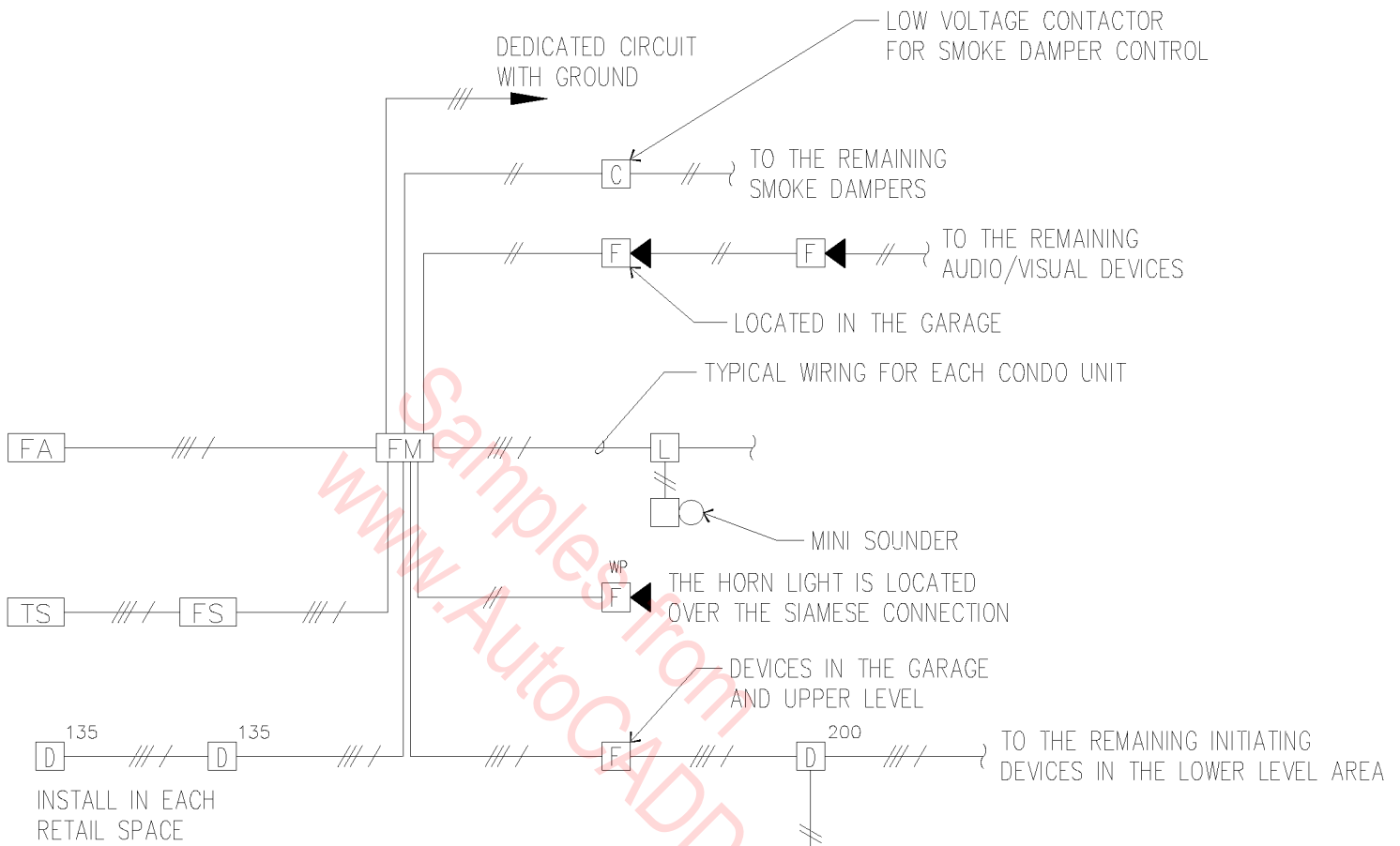




TRANSFER/INTERLOCK MECHANISM



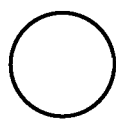
JIB CRANE DETAIL



NOTES:

1. EACH RESIDENTIAL UNIT IS TO BE A SEPARATE ZONE.
2. EACH RESIDENTIAL UNIT IS TO HAVE A COMBINATION DETECTOR AND MINI-SOUNDER LOCATED WITHIN EACH BEDROOM AND ADJACENT HALLWAY TIED TO THE CENTRAL SYSTEM.
3. ELEVATOR LOBBY DEVICES ARE TO HAVE AUXILIARY CONTACTS FOR ELEVATOR CAPTURE VERIFY WIRING REQUIREMENTS WITH THE ELEVATOR COMPANY PRIOR TO INSTALLING THE WIRE.
4. SEE THE MECHANICAL PLANS FOR THE EXACT NUMBER OF SMOKE DAMPERS THAT WILL BE REQUIRED.

R MOUNTED ABOVE THE DOOR



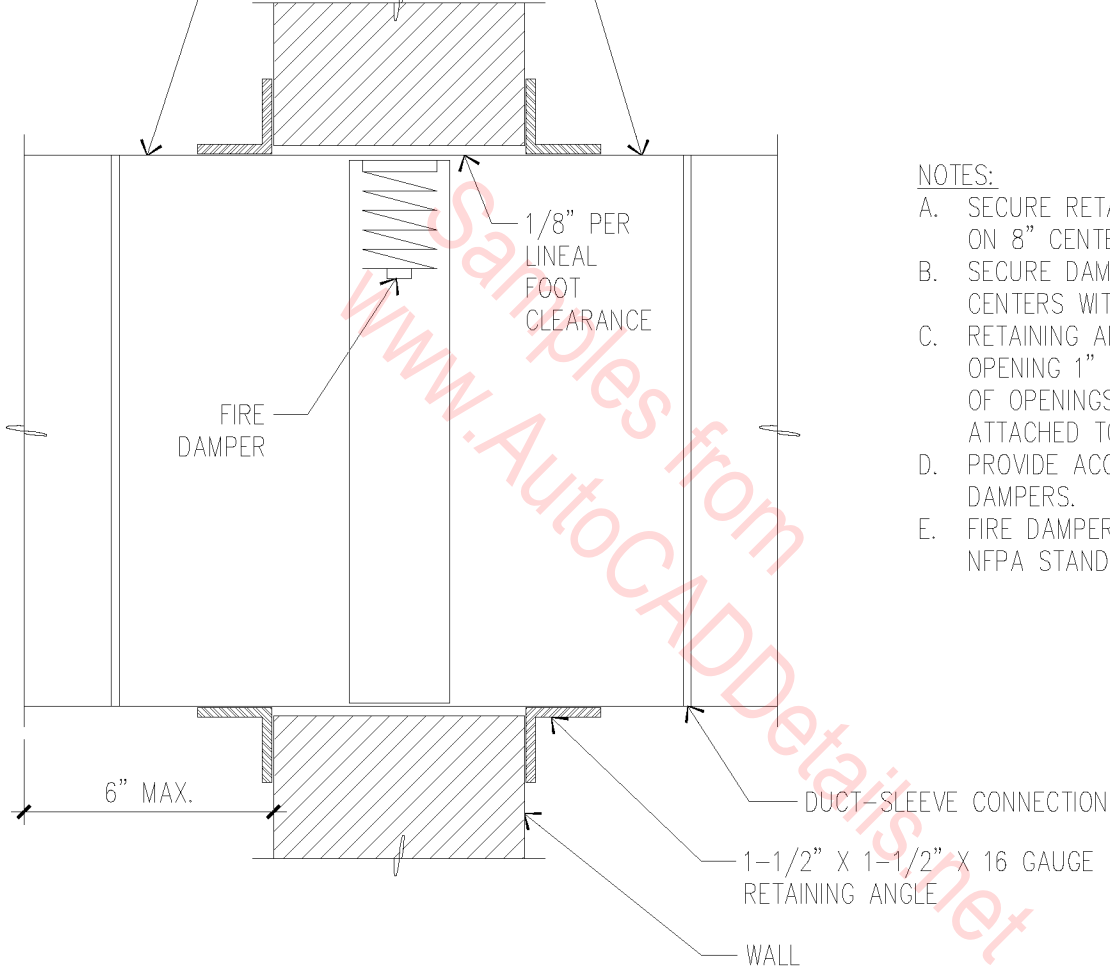
FIRE ALARM BLOCK DIAGRAM

N.T.S.

15A-2001

STEEL SLEEVE, 16 GAUGE MINIMUM

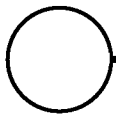
DUCT, SEE PLANS FOR SIZE



NOTES:

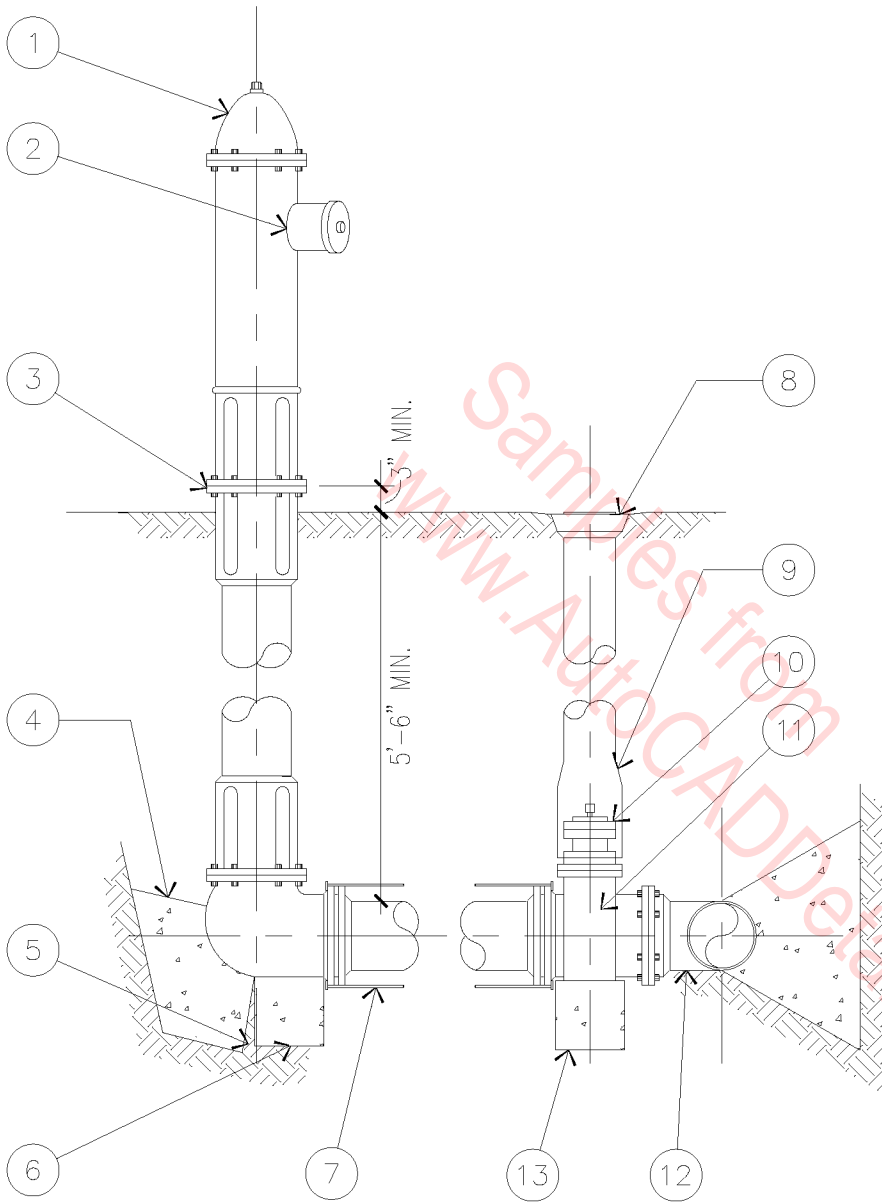
- A. SECURE RETAINING ANGLE TO SLEEVE ON 8" CENTERS WITH 1/4" NUTS AND BOLTS.
- B. SECURE DAMPER TO SLEEVE ON 8" CENTERS WITH 1/4" NUTS AND BOLTS
- C. RETAINING ANGLES MUST LAP STRUCTURAL OPENING 1" MINIMUM AND COVER CORNERS OF OPENINGS. ANGLES MUST NOT BE ATTACHED TO EACH OTHER AT CORNERS.
- D. PROVIDE ACCESS DOORS AT ALL FIRE DAMPERS.
- E. FIRE DAMPERS TO BE INSTALLED PER NFPA STANDARD 90A.

FIRE DAMPER INSTALLATION DETAIL



N.T.S.

15A-2002

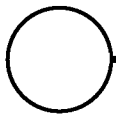


1. MUELLER CENTURION MODEL A-423 MOUNTAIN SPEC.
2. ORIENT PUMPER CONNECTION TOWARDS STREET UNLESS OTHERWISE SPECIFIED.
3. TRAFFIC FLANGE.
4. THRUST BLOCK.
5. 1/2 CU. YD. GRAVEL DRAIN MATERIAL.
6. SET HYDRANT ON 8" X 18" X 24" CONCRETE OR STONE SLAB.
7. PROVIDE A MINIMUM OF (3) 3/4" ϕ TIE RODS, ASPHALT COATED.
8. RECESS TOP OF VALVE BOX 1/8" TO 1/4" BELOW FINISH GRADE.
9. ADJUSTABLE VALVE BOX.
10. AUXILIARY GATE VALVE (NORMALLY OPEN).
11. 6" FL X MJ GATE VALVE.
12. MJ X MJ X FLANGED TEE.
13. SET VALVE ON 8" X 8" X 16" CONCRETE OR STONE SLAB.

NOTES:

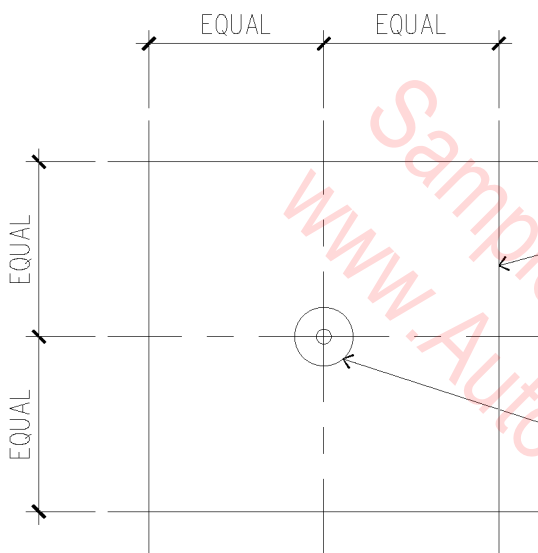
- A. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE HARNESSED MECHANICAL JOINTS OR FLANGED JOINTS.
- B. HYDRANT, VALVE, AND FITTINGS TO BE 250 P.S.I. RATED.
- C. POLYETHYLENE WRAP (WHEN REQUIRED) SHALL COVER ASSEMBLY FROM HYDRANT BASE TO WATER MAIN.
- D. ALL HYDRANT LEAD PIPING TO BE D.I.P.

FIRE HYDRANT ASSEMBLY INSTALLATION DETAIL



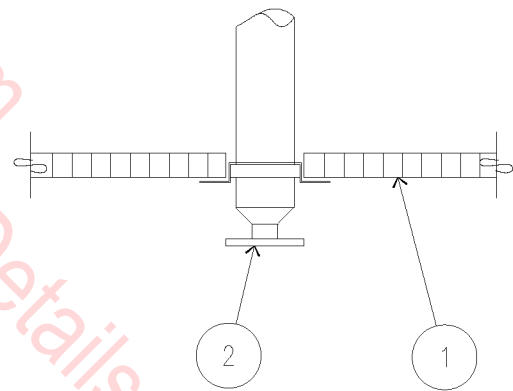
N.T.S.

15A-2003



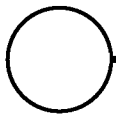
PLAN

1. 2'-0" X 2'-0" SCHEDULED ACOUSTICAL CEILING TILE.
2. SCHEDULED SPRINKLER HEAD.



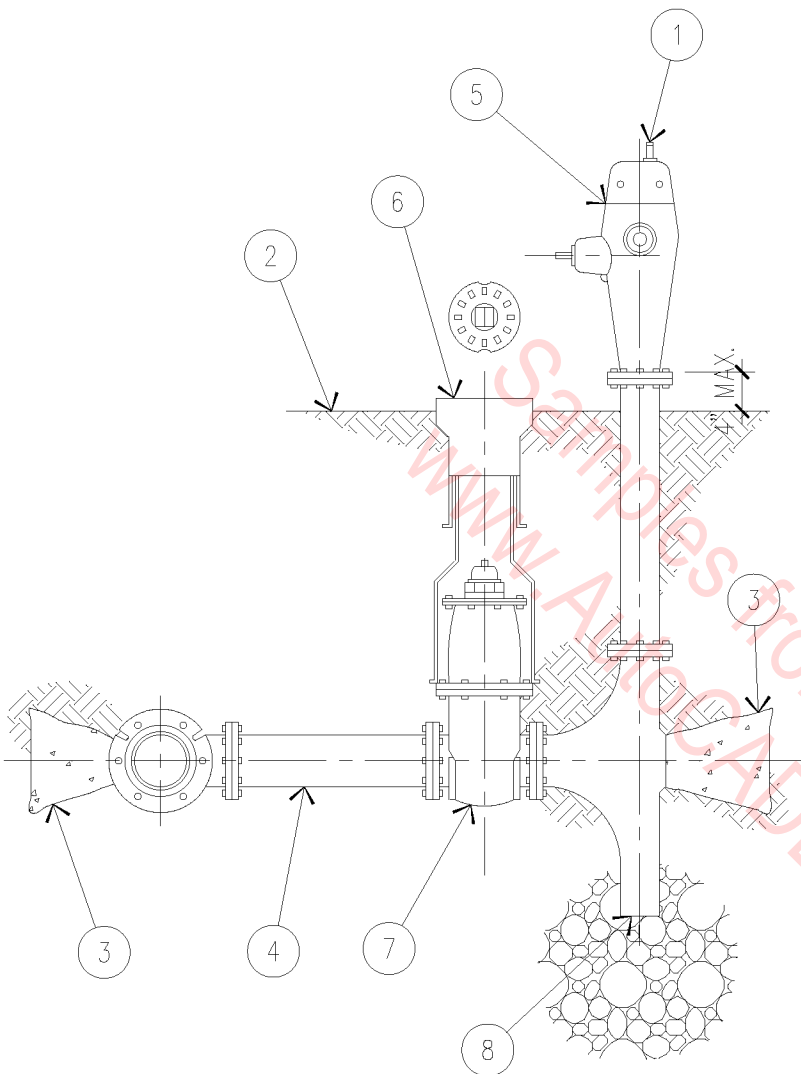
SECTION

FIRE SPRINKLER THROUGH ACOUSTIC TILE



NOT TO SCALE

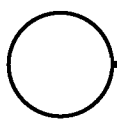
15A-2004



1. 1 1/2" PENTAGON OPERATING NUT (OPENS LEFT).
2. FINISH GRADE.
3. THRUST BLOCK.
4. STEEL SPOOL.
5. FIRE HYDRANT.
6. (2) PIECE CAST IRON VALVE BOX.
7. GATE VALVE WITH 2" X 2" OPERATING NUT (DOUBLE DISK RESILIENT WEDGE GATE VALVE TO MEET A.W.W.A. SPECIFICATIONS).
8. DRAIN HOLE.

NOTES:

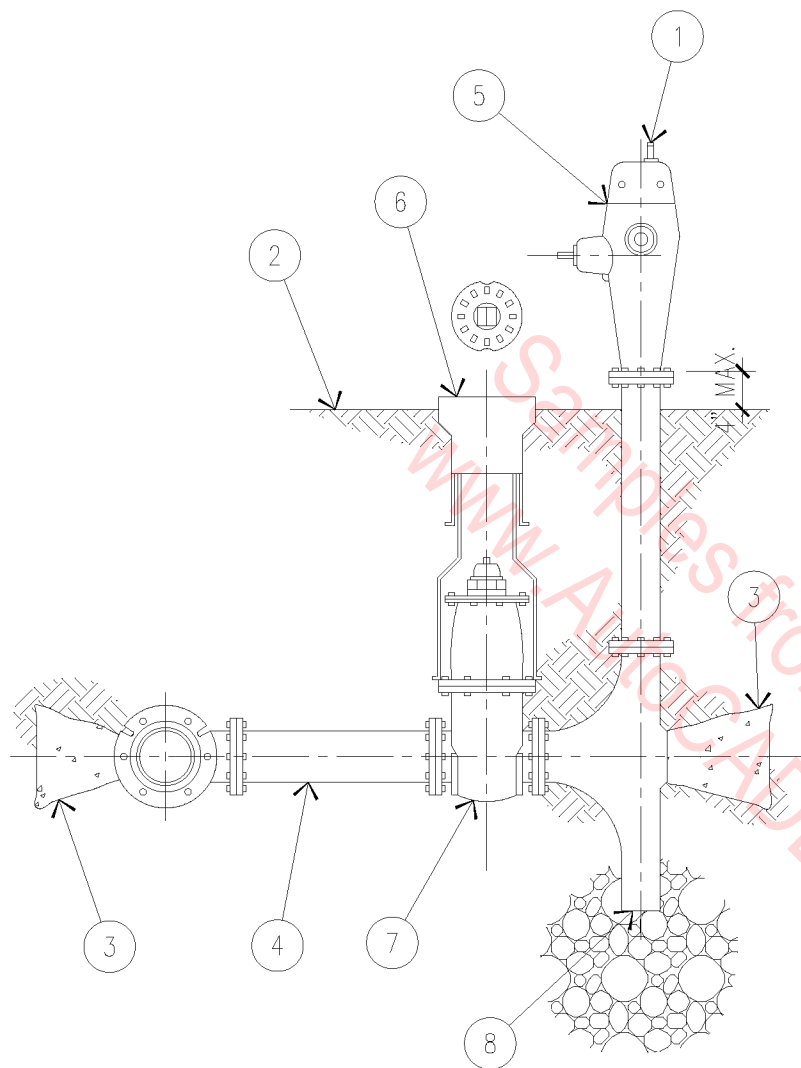
- A. ALL WORK MUST BE INSPECTED PRIOR TO BACKFILL.
- B. THRUST BLOCKS ARE REQUIRED WITH A MINIMUM OF FOUR (4) SQUARE FEET BEARING ON UNDISTURBED SOIL.
- C. DRAIN HOLES AT BASE OF HYDRANT TO REMAIN CLEAR WITH A MINIMUM OF ONE (1) CUBIC YARD OF CLEAN 2" MINUS GRAVEL PLACED AROUND THE HOLE TO FACILITATE DRAINAGE. TAR PAPER OR PLASTIC REQUIRED OVER GRAVEL TO MINIMIZE SILTING.
- D. THE 4 1/2" STEAMER NOZZLE TO FACE THE STREET OR PARKING LOT.
- E. FIRE HYDRANTS SHALL BE INSTALLED IN SUCH A MANNER THAT THE SIDEWALK FLANGE IS EVEN WITH OR LESS THAN 4" ABOVE GRADE.
- F. THE AUTHORITIES HAVING JURISDICTION SHALL BE NOTIFIED AS SOON AS A HYDRANT IS PLACED IN SERVICE.
- G. THE BURIED PORTION OF THE HYDRANT SHALL BE PAINTED WITH TWO (2) COATS OF C.A. 50 COAL TAR ENAMEL. THE HYDRANT BARREL AND CAPS SHALL BE PAINTED YELLOW WITH BAKELITE BASE PAINT AND TONGUE OIL THINNER. THE PAINT SHALL BE TROPICAL INDUSTRIAL ENAMEL WITH ONE (1) COAT OF A.C.B. PRIMER NO. 535-14 AND ONE (1) COAT OF LEMON YELLOW F-68Y2 SHERWIN-WILLIAMS OR EQUAL.
- H. ALL BOLTS BELOW GROUND SHALL BE COATED WITH POLY FM GREASE I AND WRAPPED WITH 8 MIL. POLYETHYLENE.
- I. ALL CONNECTIONS FROM MAIN SHALL BE FLANGED AND DRILLED TO AMERICAN STANDARD A.N.S.I. B16.1.
- J. HYDRANT SPOOL TO BE STEEL PIPE, SCHEDULE 40, AND TAPE WRAPPED.



FIRE HYDRANTS

N.T.S.

15A-2005



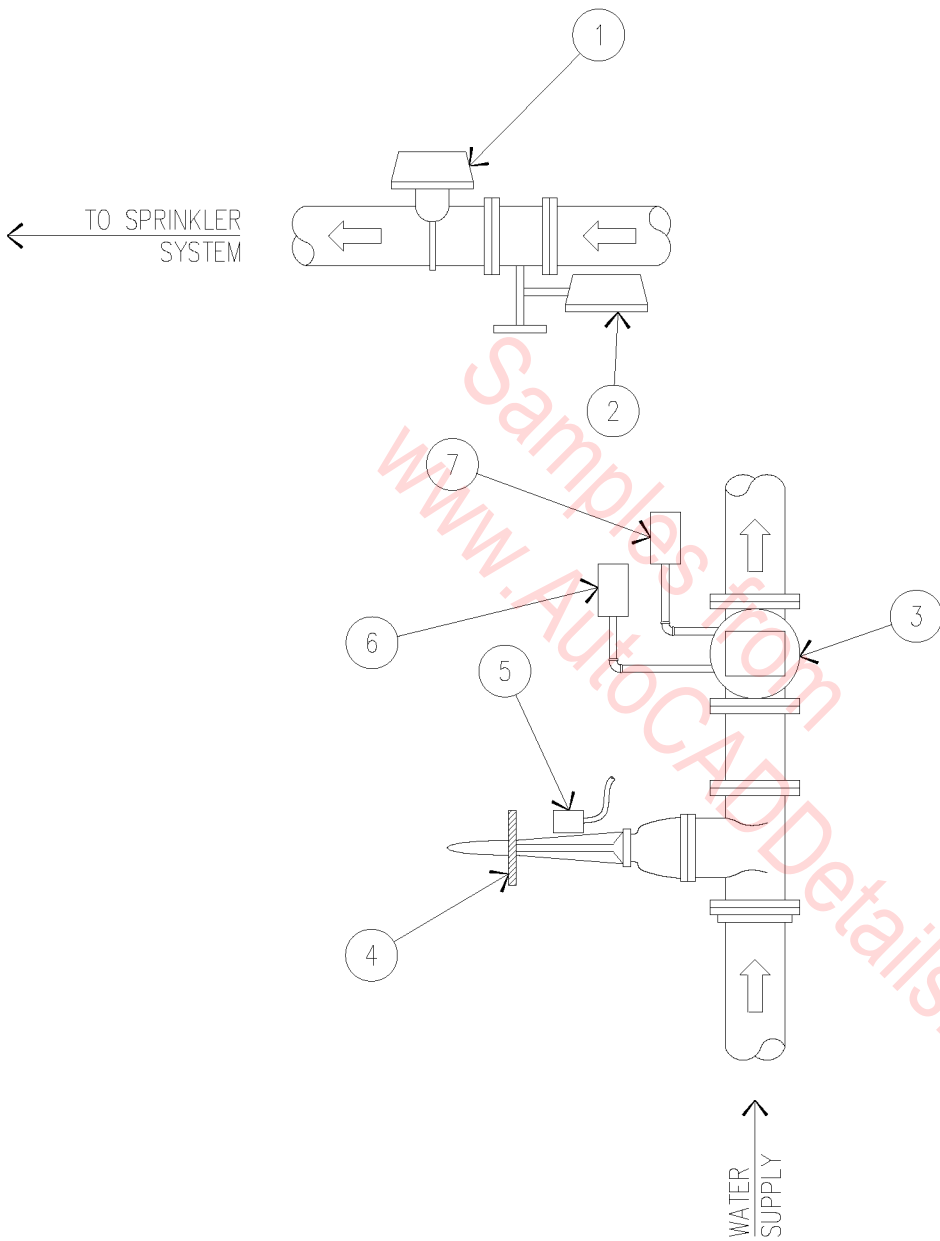
1. 1 1/2" PENTAGON OPERATING NUT (OPENS LEFT).
2. FINISH GRADE.
3. THRUST BLOCK.
4. STEEL SPOOL.
5. FIRE HYDRANT.
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8. DRAIN HOLE.

NOTES:

- A. ALL WORK MUST BE INSPECTED PRIOR TO BACKFILL.
- B. THRUST BLOCKS ARE REQUIRED WITH A MINIMUM OF FOUR (4) SQUARE FEET BEARING ON UNDISTURBED SOIL.
- C. DRAIN HOLES AT BASE OF HYDRANT TO REMAIN CLEAR WITH A MINIMUM OF ONE (1) CUBIC YARD OF CLEAN 2" MINUS GRAVEL PLACED AROUND THE HOLE TO FACILITATE DRAINAGE. TAR PAPER OR PLASTIC REQUIRED OVER GRAVEL TO MINIMIZE SILTING.
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- I. ALL CONNECTIONS FROM MAIN SHALL BE FLANGED AND DRILLED TO AMERICAN STANDARD A.N.S.I. B16.1.
- J. HYDRANT SPOOL TO BE STEEL PIPE, SCHEDULE 40, AND TAPE WRAPPED.

 FIRE HYDRANTS
N.T.S.

15A-2005

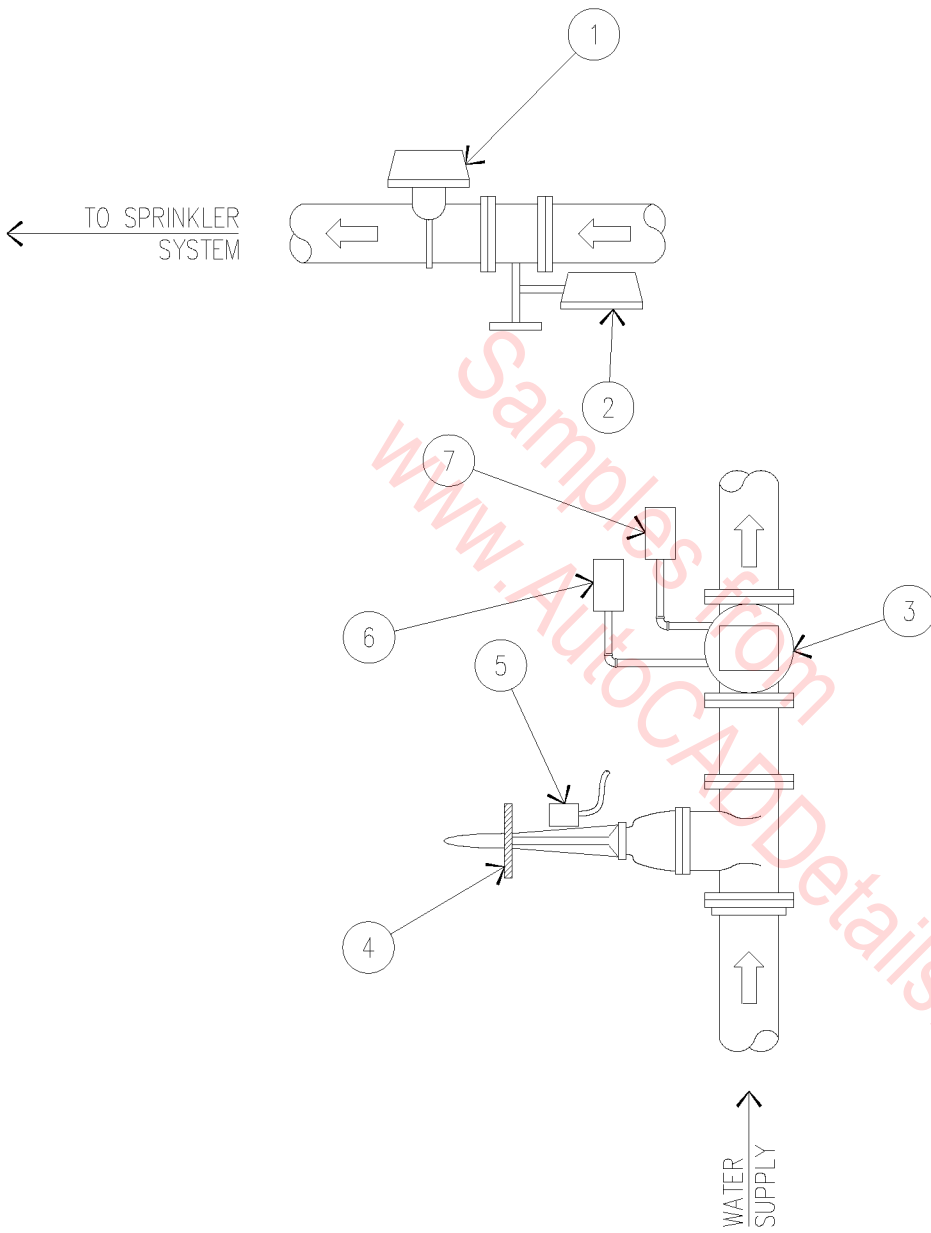


1. VALVE TYPE FLOW SWITCH FOR ZONE INDICATION.
2. ZONE VALVE TAMPER SUPERVISORY SWITCH.
3. ALARM CHECK VALVE.
4. HAND WHEEL.
5. VALVE TAMPER SUPERVISORY SWITCH.
6. PRESSURE TYPE WATER FLOW SWITCH.
7. SYSTEM LOW PRESSURE SUPERVISORY SWITCH.

SPRINKLER RISER DETAIL

N.T.S.

15A-2006

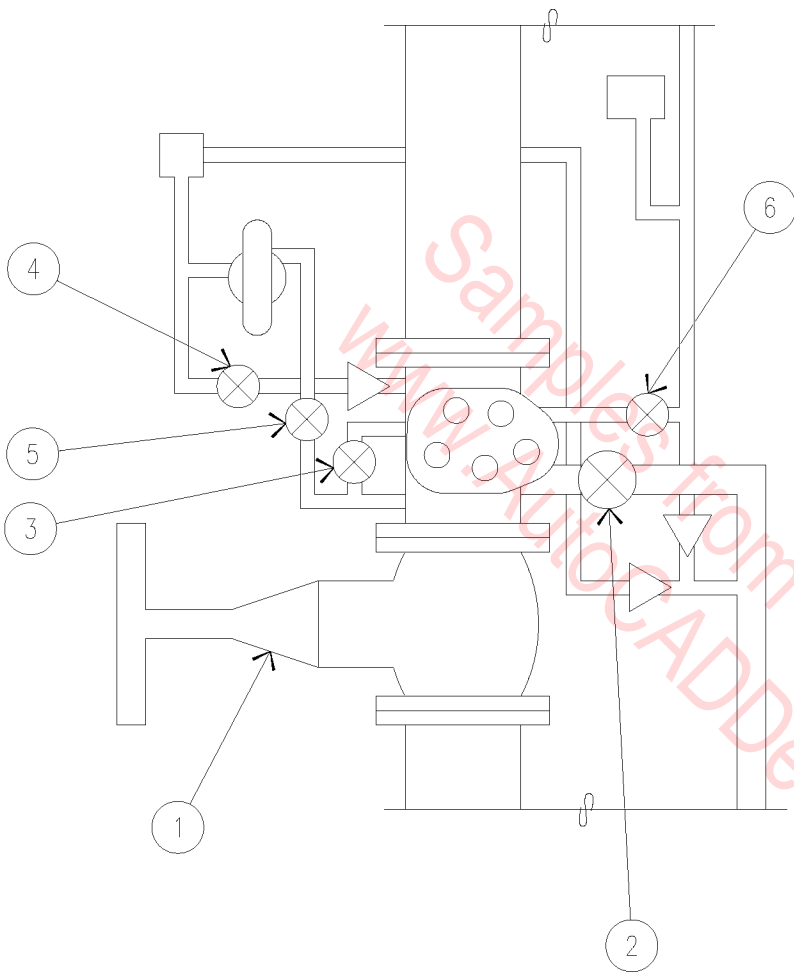


1. VALVE TYPE FLOW SWITCH FOR ZONE INDICATION.
2. ZONE VALVE TAMPER SUPERVISORY SWITCH.
3. ALARM CHECK VALVE.
4. HAND WHEEL.
5. VALVE TAMPER SUPERVISORY SWITCH.
6. PRESSURE TYPE WATER FLOW SWITCH.
7. SYSTEM LOW PRESSURE SUPERVISORY SWITCH.

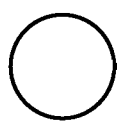
○ SPRINKLER RISER DETAIL

N.T.S.

15A-2006



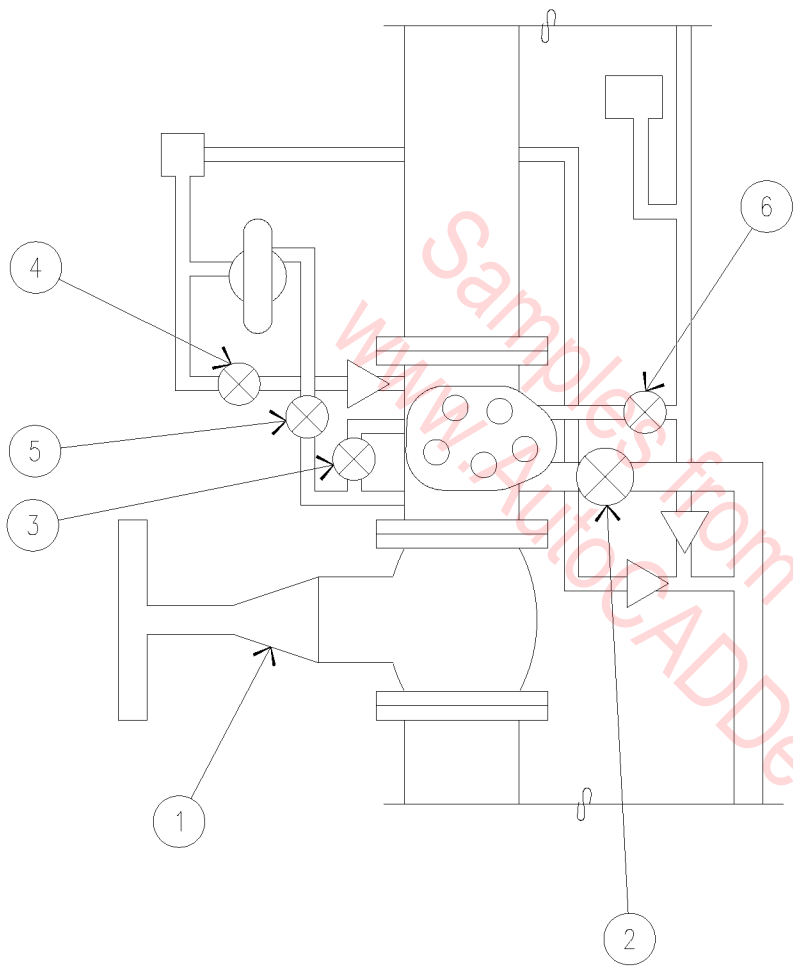
1. MAIN CONTROL VALVE – NORMALLY OPEN.
2. MAIN DRAIN VALVE – NORMALLY CLOSED.
3. WATER SUPPLY VALVE TO EXCESS PRESSURE PUMP – NORMALLY OPEN.
4. WATER DISCHARGE VALVE FROM EXCESS PRESSURE PUMP – NORMALLY OPEN.
5. ALARM TEST VALVE – NORMALLY CLOSED.
6. SHUT-OFF FOR ALARM TEST VALVE – NORMALLY OPEN.



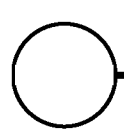
TYPICAL RISER LAYOUT

N.T.S.

15A-2007



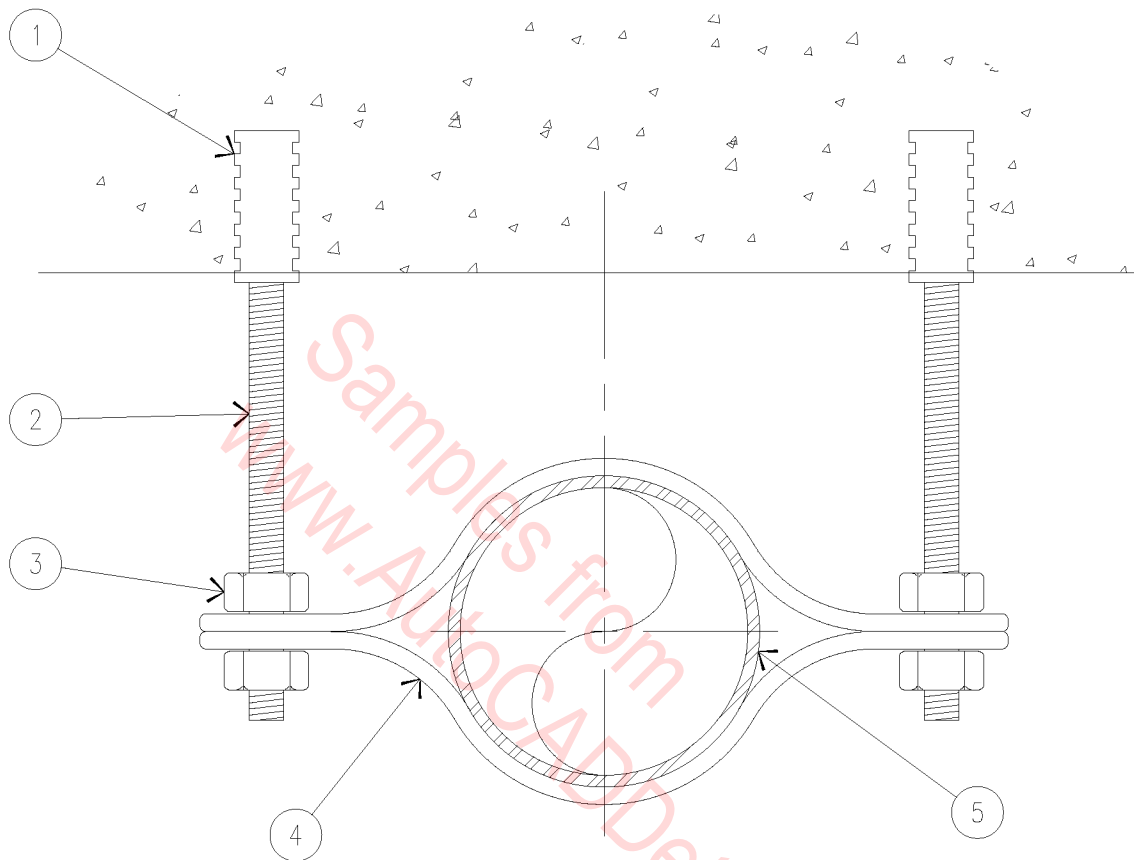
1. MAIN CONTROL VALVE – NORMALLY OPEN.
2. MAIN DRAIN VALVE – NORMALLY CLOSED.
3. WATER SUPPLY VALVE TO EXCESS PRESSURE PUMP – NORMALLY OPEN.
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6. SHUT-OFF FOR ALARM TEST VALVE – NORMALLY OPEN.



TYPICAL RISER LAYOUT

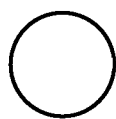
N.T.S.

15A-2007



1. CONCRETE ANCHOR.
2. THREADED ROD.
3. NUT.
4. RISER CLAMP HANGER.
5. PIPE.

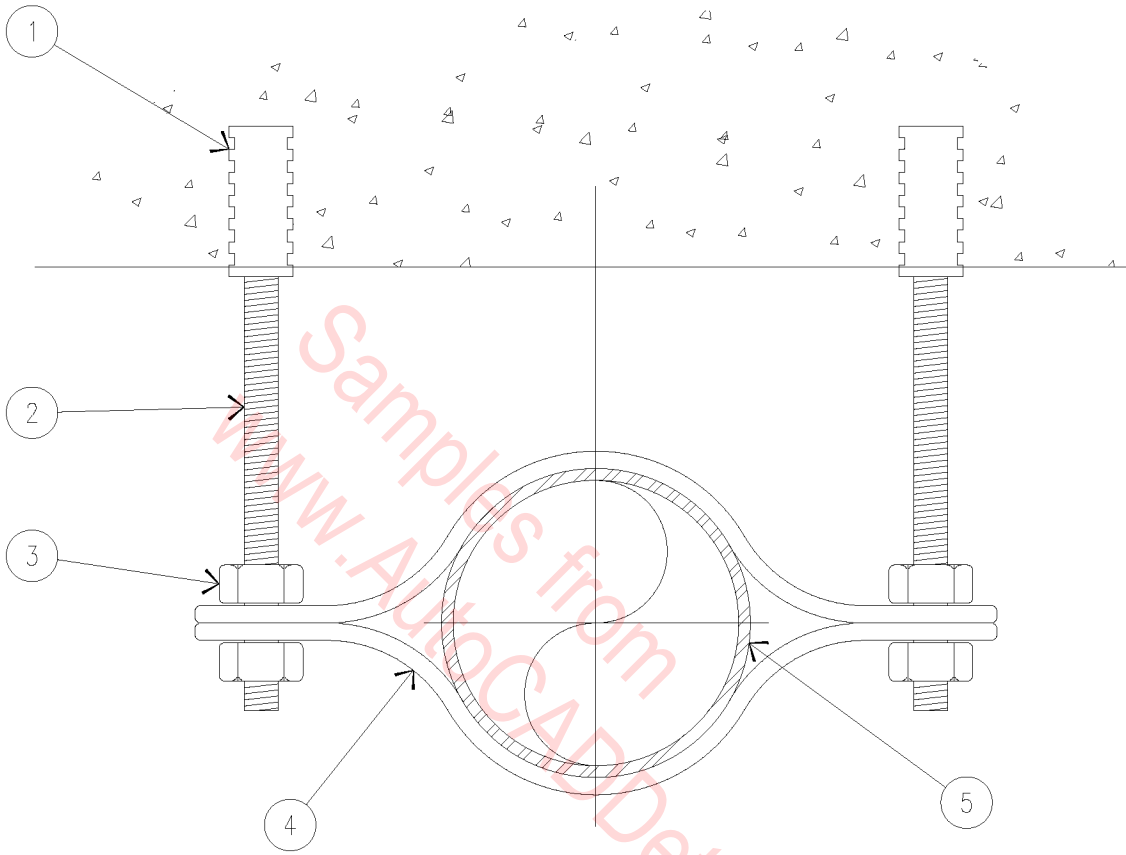
NOTE: SUPPORT PIPE AT ALL DIRECTION CHANGES.



PIPE SUPPORT DETAIL

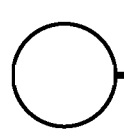
3" = 1'-0"

15A-2008



1. CONCRETE ANCHOR.
2. THREADED ROD.
3. NUT.
4. RISER CLAMP HANGER.
5. PIPE.

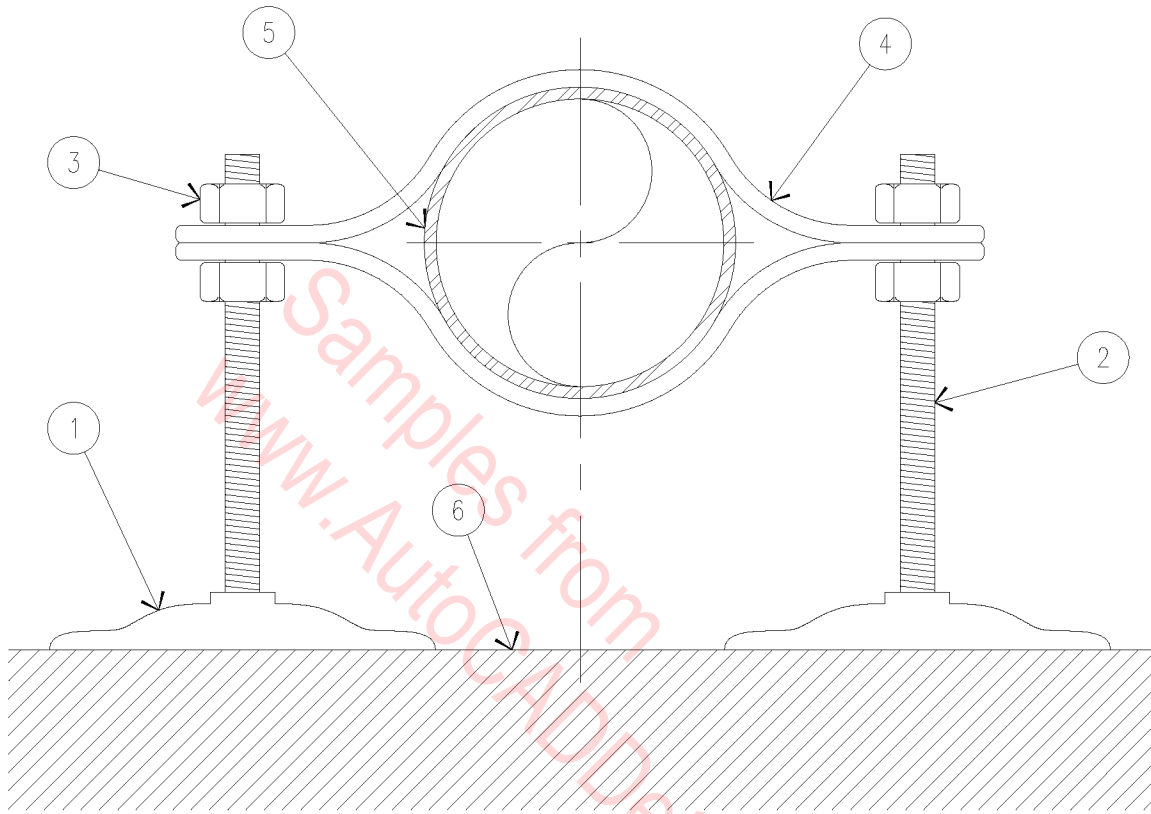
NOTE: SUPPORT PIPE AT ALL DIRECTION CHANGES.



PIPE SUPPORT DETAIL

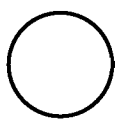
3" = 1'-0"

15A-2008



1. DECK PLATE.
2. THREADED ROD.
3. NUT.
4. RISER CLAMP HANGER.
5. PIPE.
6. ROOF - SEE SPECIFICATIONS.

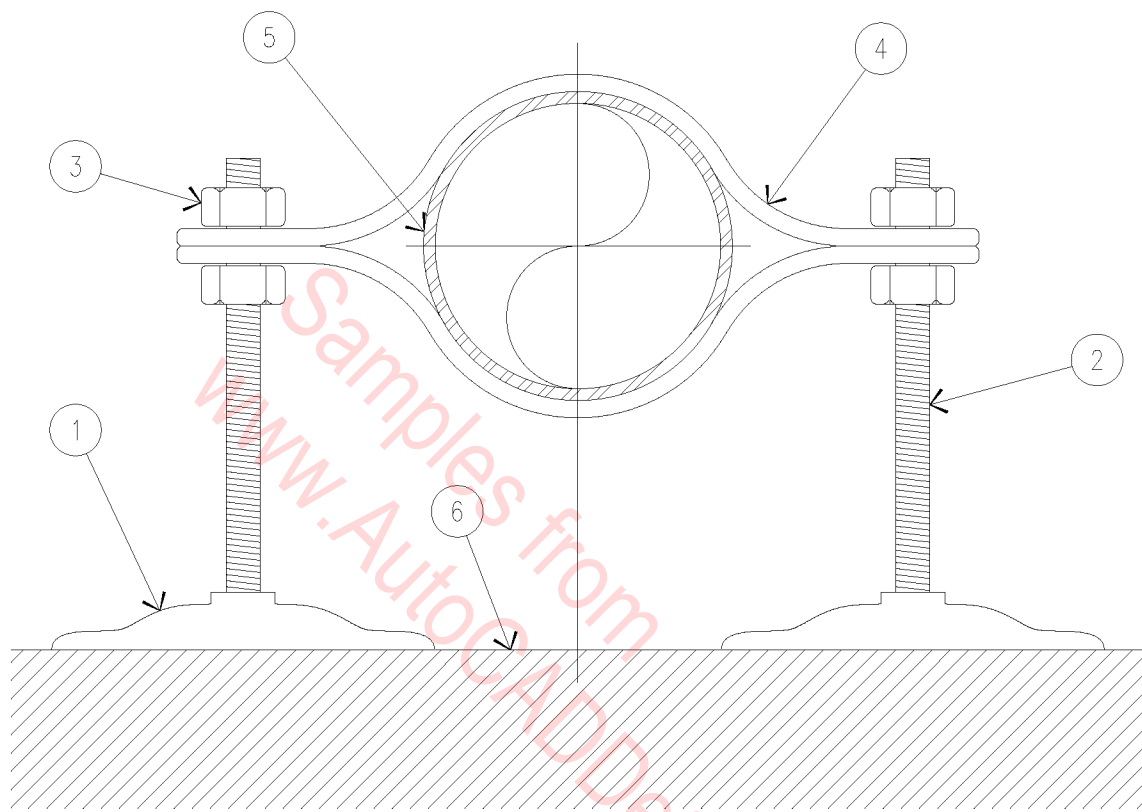
NOTE: SUPPORT PIPE AT ALL
DIRECTION CHANGES.



PIPE SUPPORT DETAIL

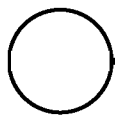
3" = 1'-0"

15A-2009



1. DECK PLATE.
2. THREADED ROD.
3. NUT.
4. RISER CLAMP HANGER.
5. PIPE.
6. ROOF - SEE SPECIFICATIONS.

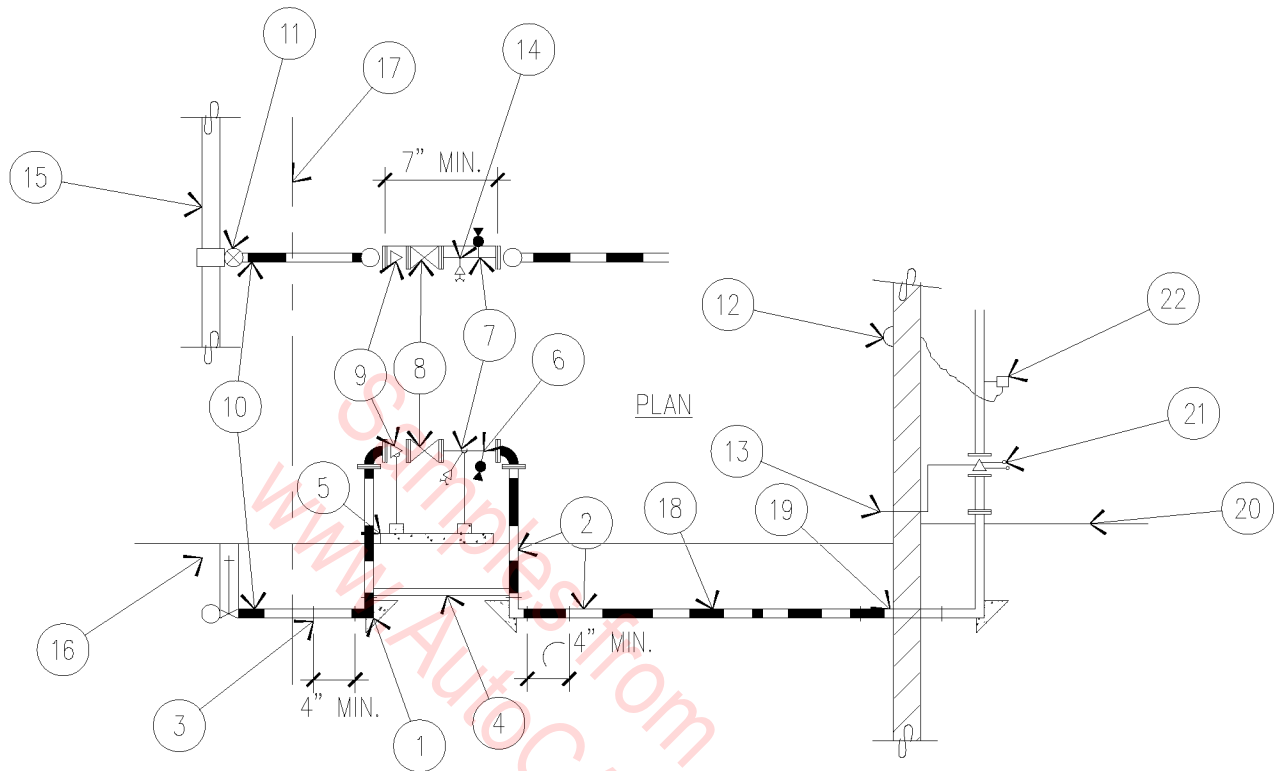
NOTE: SUPPORT PIPE AT ALL
DIRECTION CHANGES.



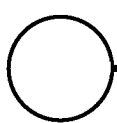
PIPE SUPPORT DETAIL

3" = 1'-0"

15A-2009



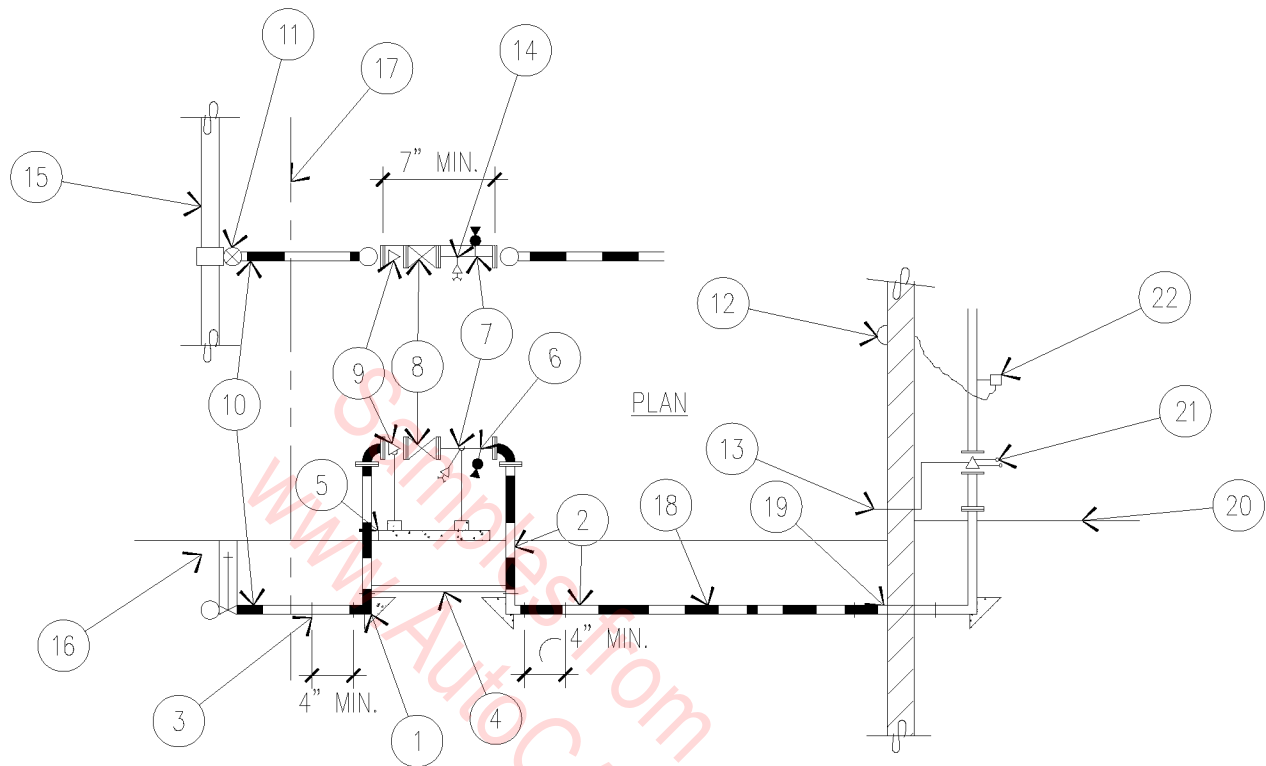
1. 90° ELBOW (FLANGED DIP 3" THROUGH 10" OR TYPE "K" COPPER THROUGH 2 1/2").
2. PIPE SPOOL (FLANGED DIP 3" THROUGH 10" OR TYPE "K" THROUGH 2 1/2").
3. FLANGED ADAPTER (WHEN REQUIRED).
4. 3" X 3" X 1/4" STEEL ANGLE (FOR 4" OR LARGER ASSEMBLY ONLY) BOLT TO FLANGE EACH END WITH ONE BOLT, COAT WITH COAL TAR EPOXY (16 MLS).
5. CONCRETE SUPPORT AND PAD (4" AND LARGER).
6. 1/2 BALL VALVE AND PLUG.
7. SPOOL PIECE WITH FDC.
8. OS&Y OR BUTTERFLY.
9. SWING CHECK.
10. "K" COPPER (2" - 2 1/2"), DIP (3" - 10").
11. 3" - 10" STAINLESS STEEL TAPPING SLEEVE AND VALVE.
12. ELECTRIC BELL.
13. 2" MAIN DRAIN.
14. 2 1/2 X 2 1/2 X 4 FDC AND CHECK VALVE (SINGLE 2 1/2 ON 2 1/2" OR SMALLER SYSTEM).
15. TOWN WATER MAIN.
16. ROAD BOX.
17. PROPERTY LINE.
18. "L" COPPER (2" - 2 1/2") PVC OR DIP (3" - 10").
19. DIP.
20. FINISHED FLOOR.
21. READY RISER, CHECK VALVE, PRESSURE GAUGES.
22. FLOW SWITCH.



FIRELINE

N.T.S.

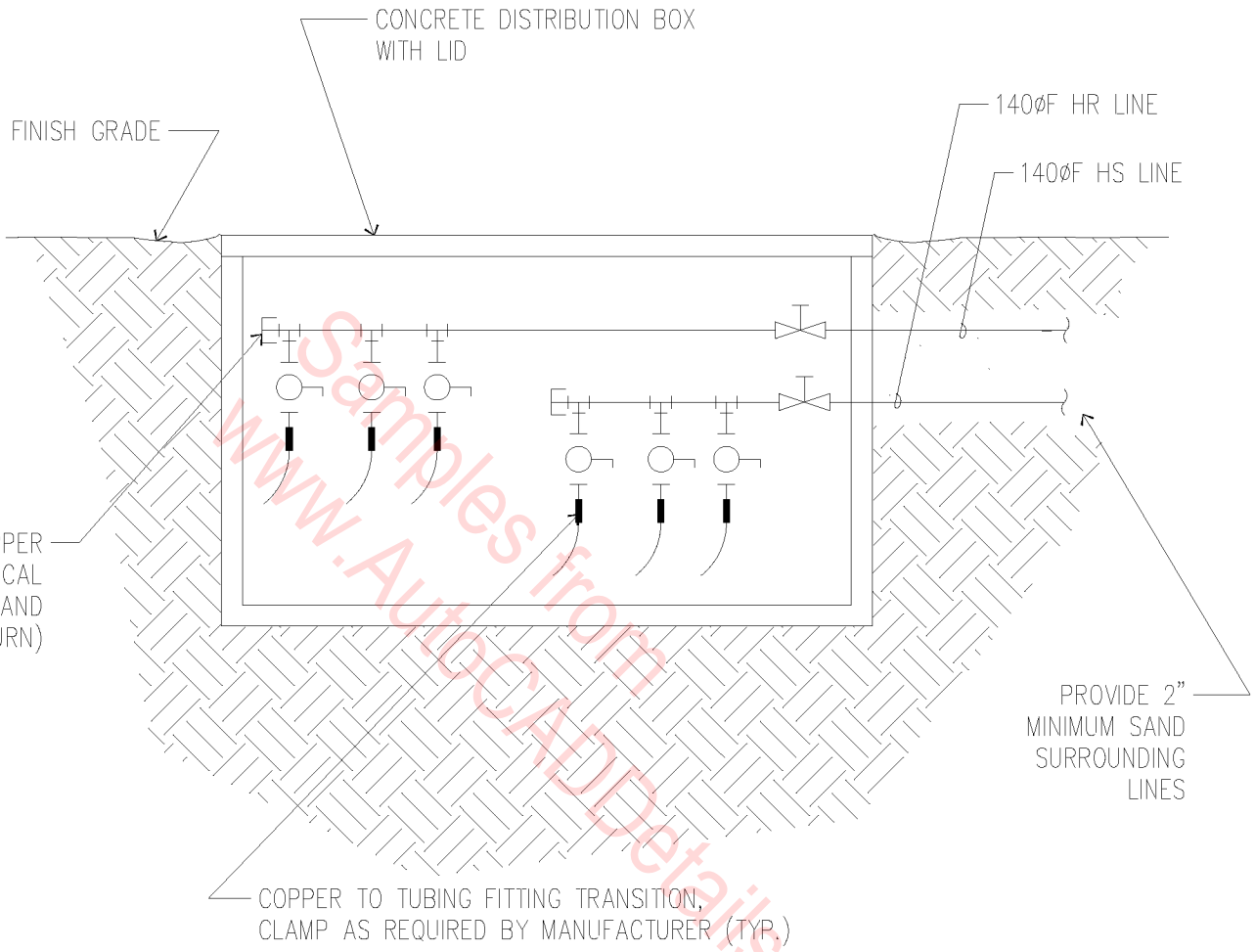
15A-2010



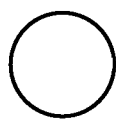
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4. 3" X 3" X 1/4" STEEL ANGLE (FOR 4" OR LARGER ASSEMBLY ONLY) BOLT TO FLANGE EACH END WITH ONE BOLT, COAT WITH COAL TAR EPOXY (16 MLS).
5. CONCRETE SUPPORT AND PAD (4" AND LARGER).
6. 1/2 BALL VALVE AND PLUG.
7. SPOOL PIECE WITH FDC.
8. OS&Y OR BUTTERFLY.
9. SWING CHECK.
10. "K" COPPER (2" - 2 1/2"), DIP (3" - 10").
11. 3" - 10" STAINLESS STEEL TAPPING SLEEVE AND VALVE.
12. ELECTRIC BELL.
13. 2" MAIN DRAIN.
14. 2 1/2 X 2 1/2 X 4 FDC AND CHECK VALVE (SINGLE 2 1/2 ON 2 1/2" OR SMALLER SYSTEM).
15. TOWN WATER MAIN.
16. ROAD BOX.
17. PROPERTY LINE.
18. "L" COPPER (2" - 2 1/2") PVC OR DIP (3" - 10").
19. DIP.
20. FINISHED FLOOR.
21. READY RISER, CHECK VALVE, PRESSURE GAUGES.
22. FLOW SWITCH.

 FIRELINE
N.T.S.

15A-2010



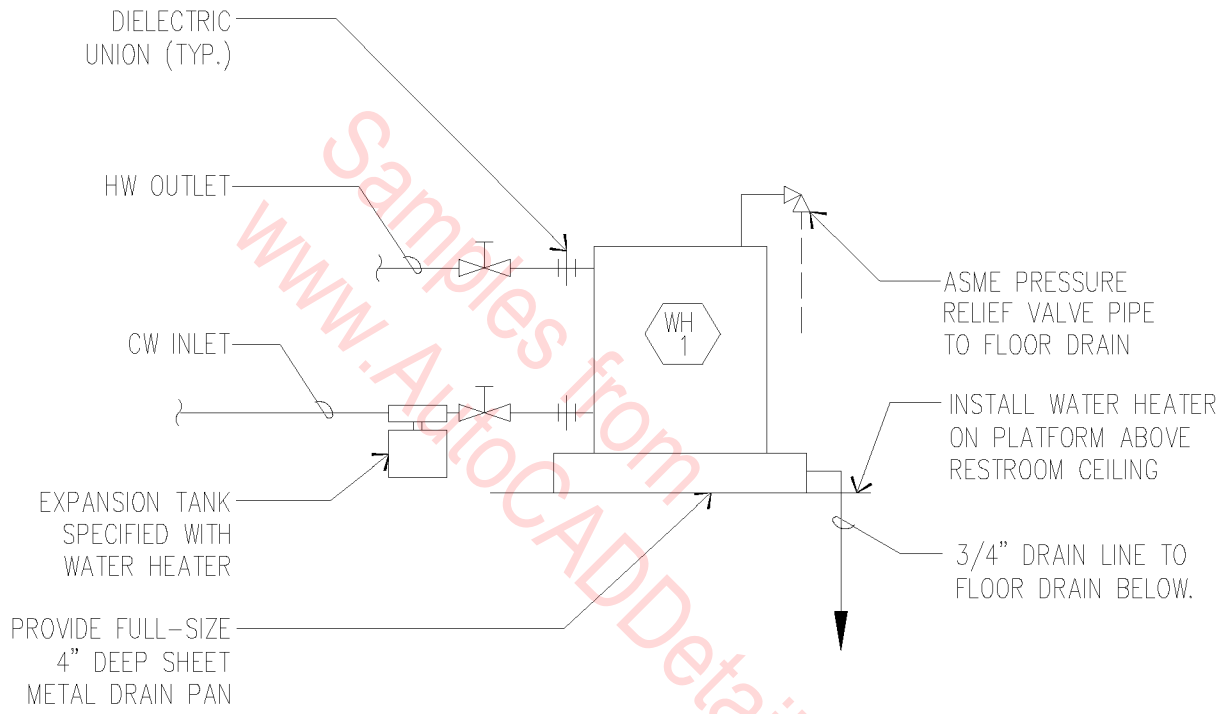
NOTE:
 SEE PLANS FOR NUMBER
 OF SNOWMELT LOOPS REQUIRED



DISTRIBUTION BOX DETAIL

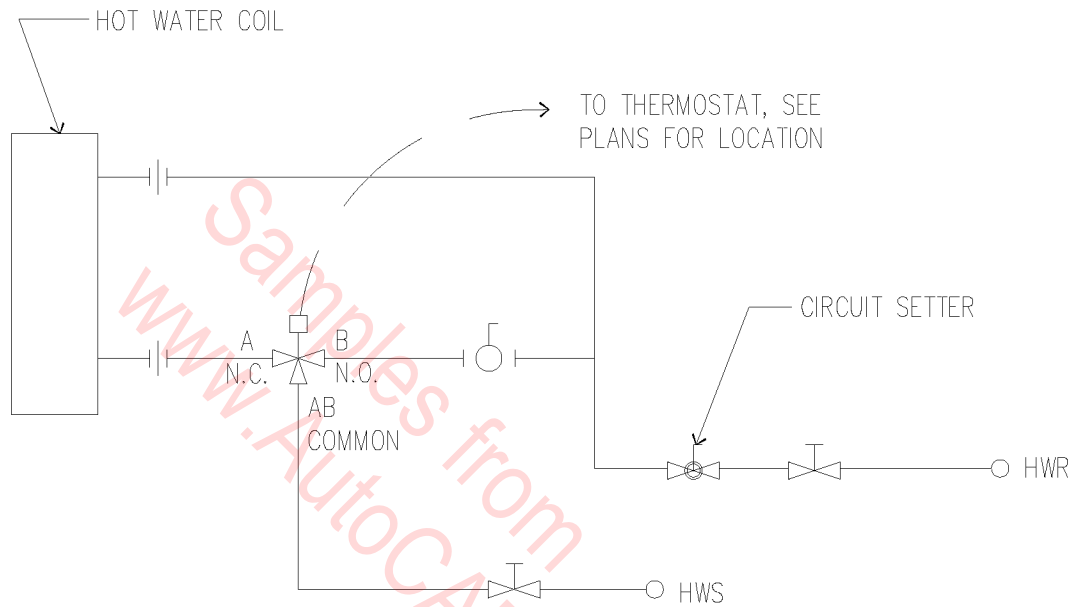
N.T.S.

15A-1001



○ WATER HEATER DETAIL
 N.T.S.

15A-1002

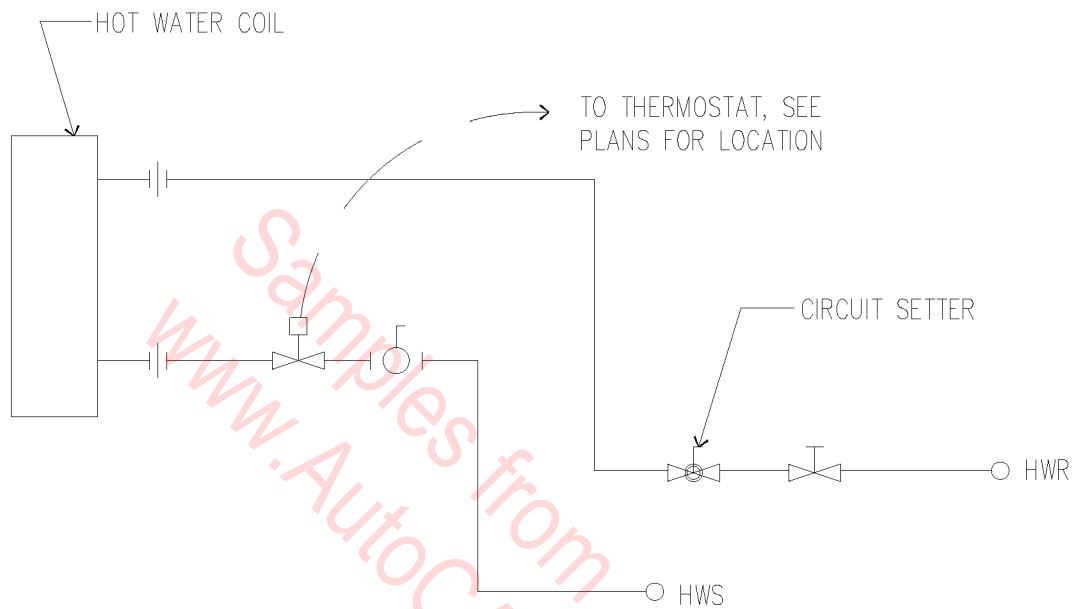


NOTE: TYPICAL FOR ALL FAN COIL UNITS

HOT WATER DIVERTING VALVE DETAIL

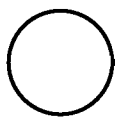
N.T.S.

15A-1003



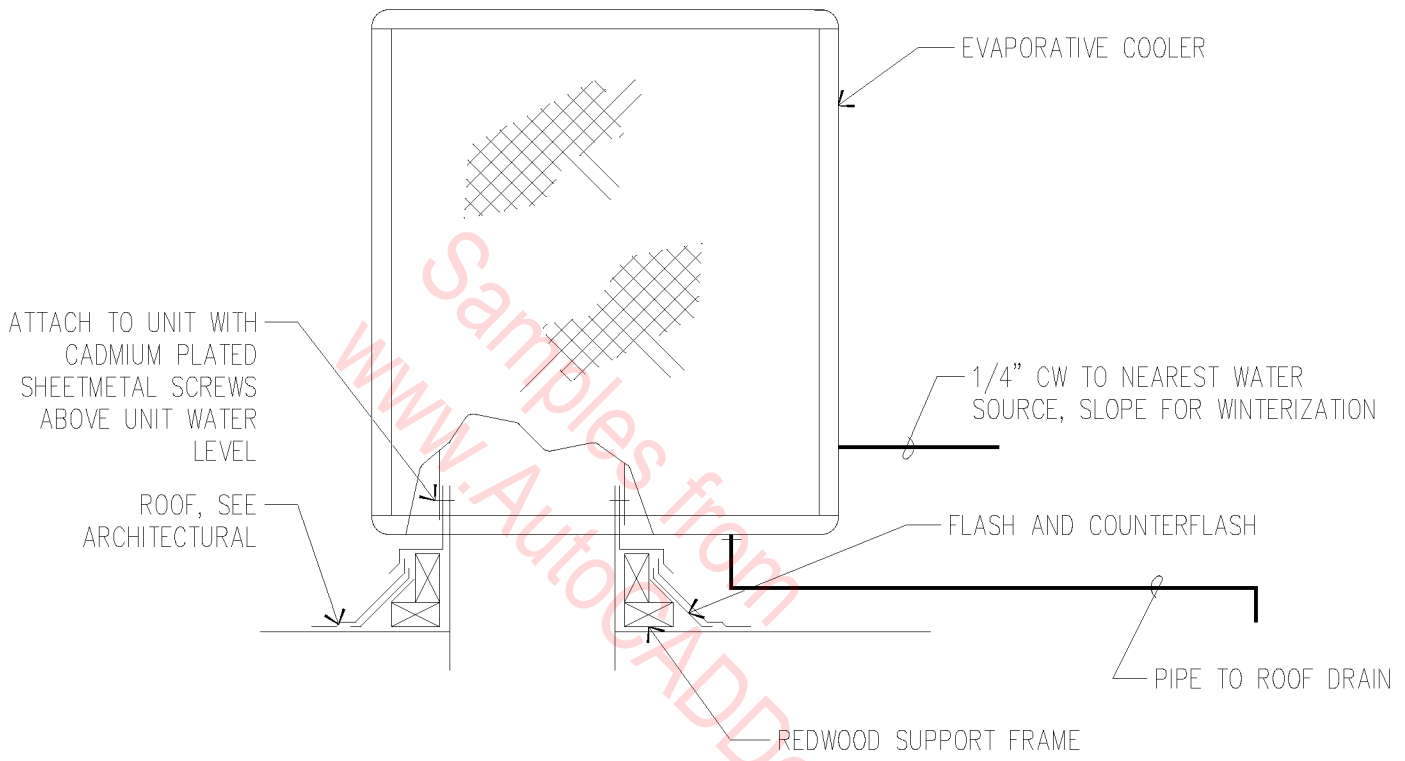
NOTE: TYPICAL FOR ALL CABINET UNIT HEATERS.

HOT WATER HEATING VALVE DETAIL

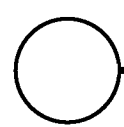


N.T.S.

15A-1004



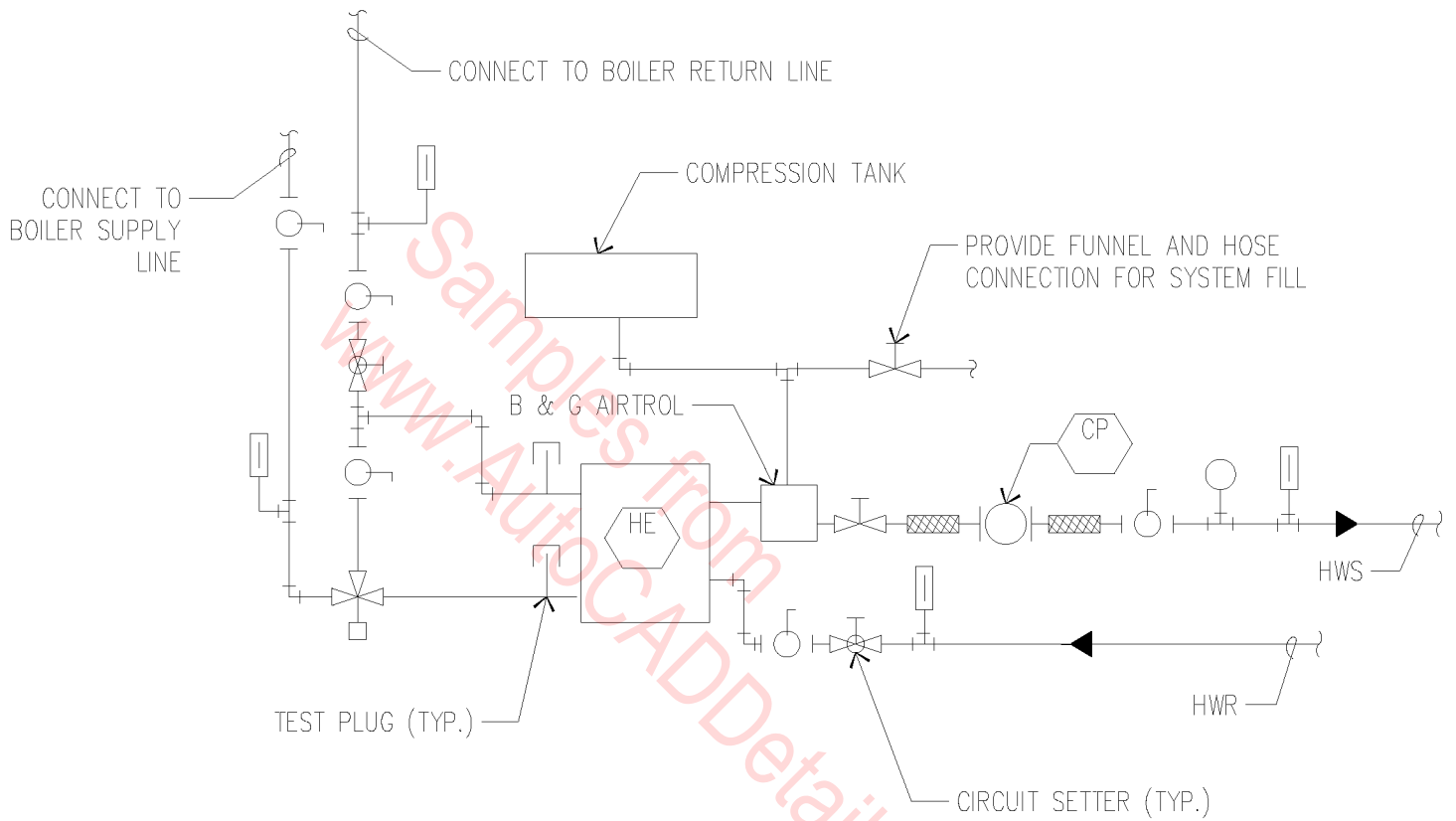
NOTE: SEAL ALL JOINTS WATERTIGHT WITH G.E. SILICONE SEAL.



EVAPORATIVE COOLER

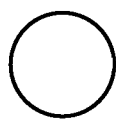
N.T.S.

15A-1005



NOTES:

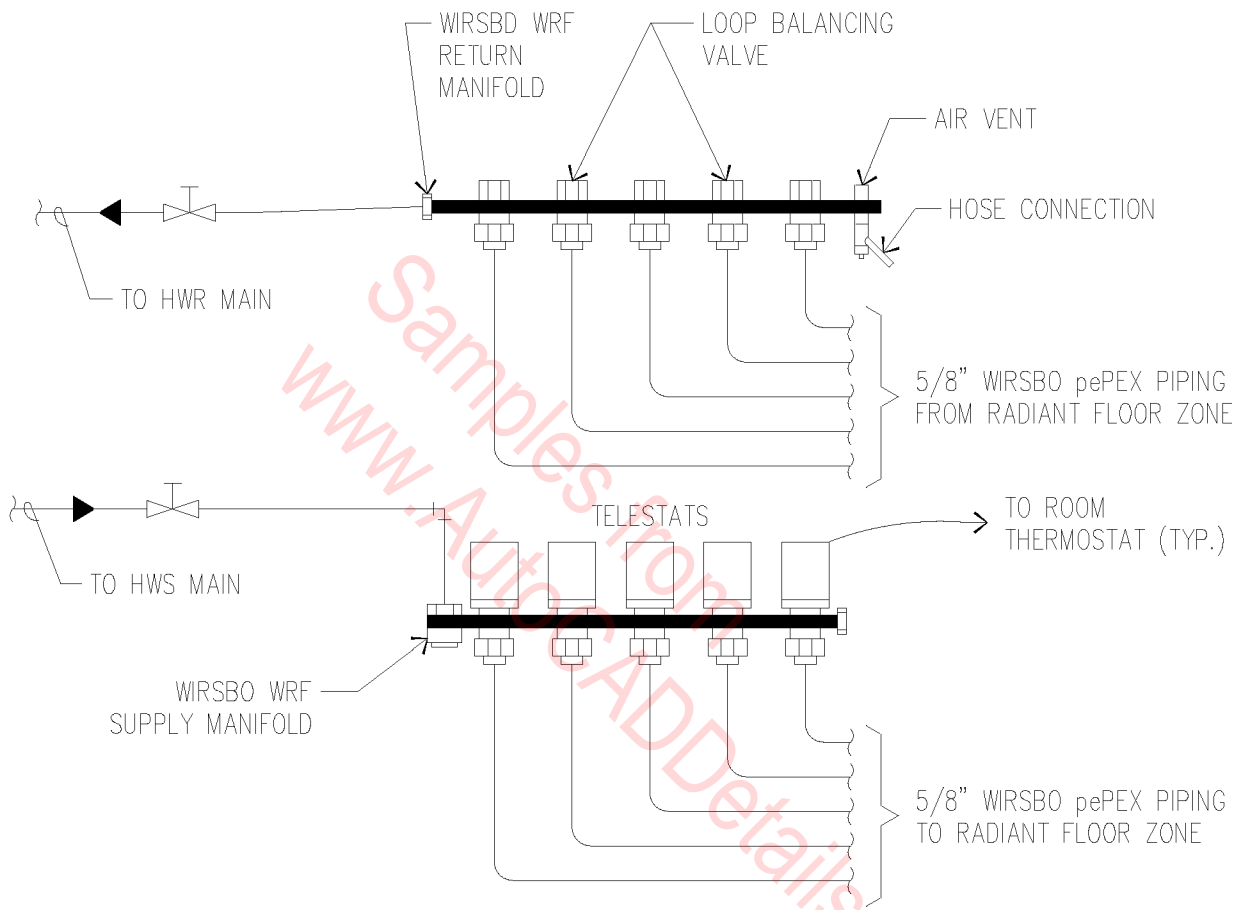
- A. SUPPORT PUMP AND HEAT EXCHANGER FROM WALL OR CEILING.
- B. ISOLATE PUMP FOR VIBRATION.



HEAT EXCHANGER PIPING

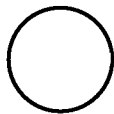
N.T.S.

15A-1006



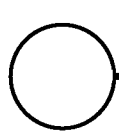
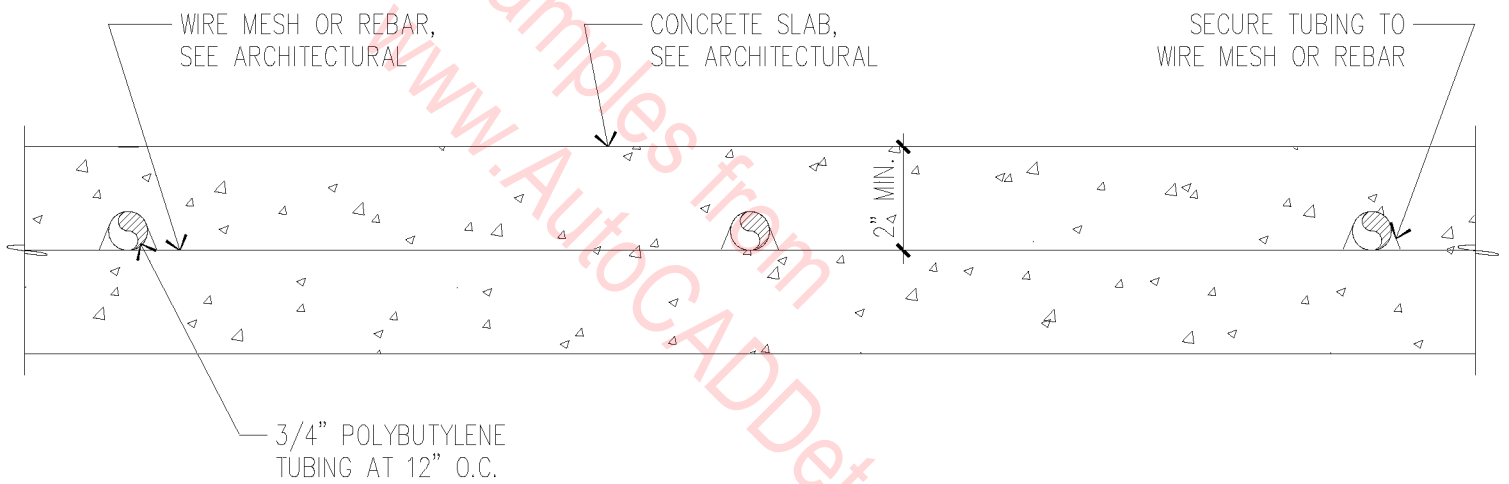
NOTE: SEE DRAWINGS FOR NUMBER OF LOOPS OF PIPING PER ZONE MANIFOLD AND GPM PER MANIFOLD.

RADIANT SLAB MANIFOLD PIPING



N.T.S.

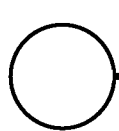
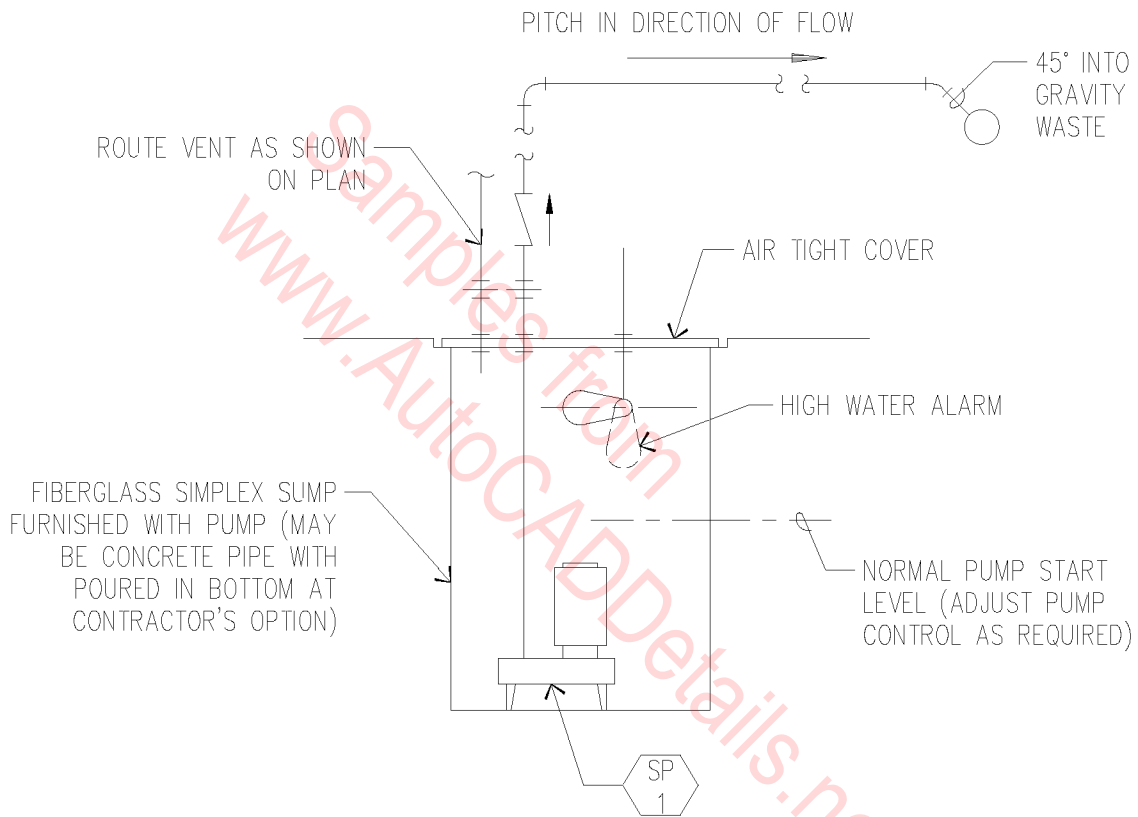
15A-1007



RADIANT SLAB PIPING

3" = 1'-0"

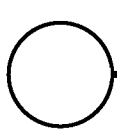
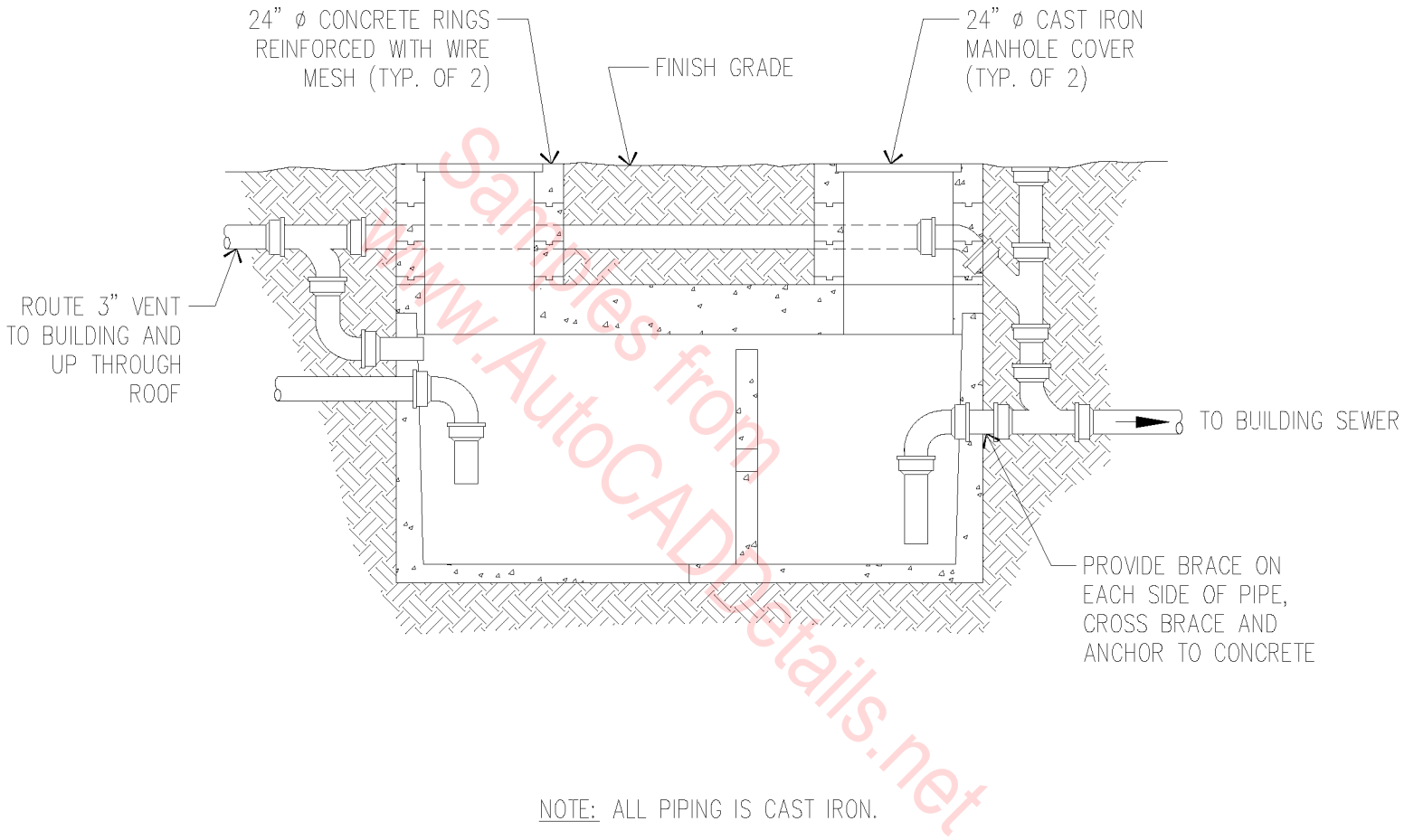
15A-1008



SUMP PUMP DETAIL

N.T.S.

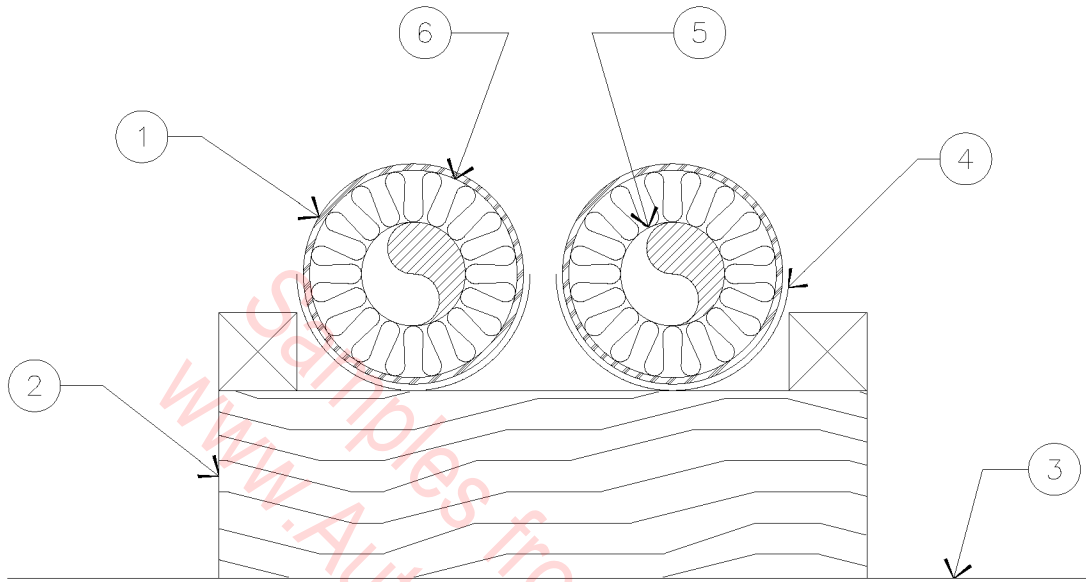
15A-1009



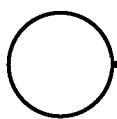
EXTERIOR GREASE TRAP

N.T.S.

15A-1010



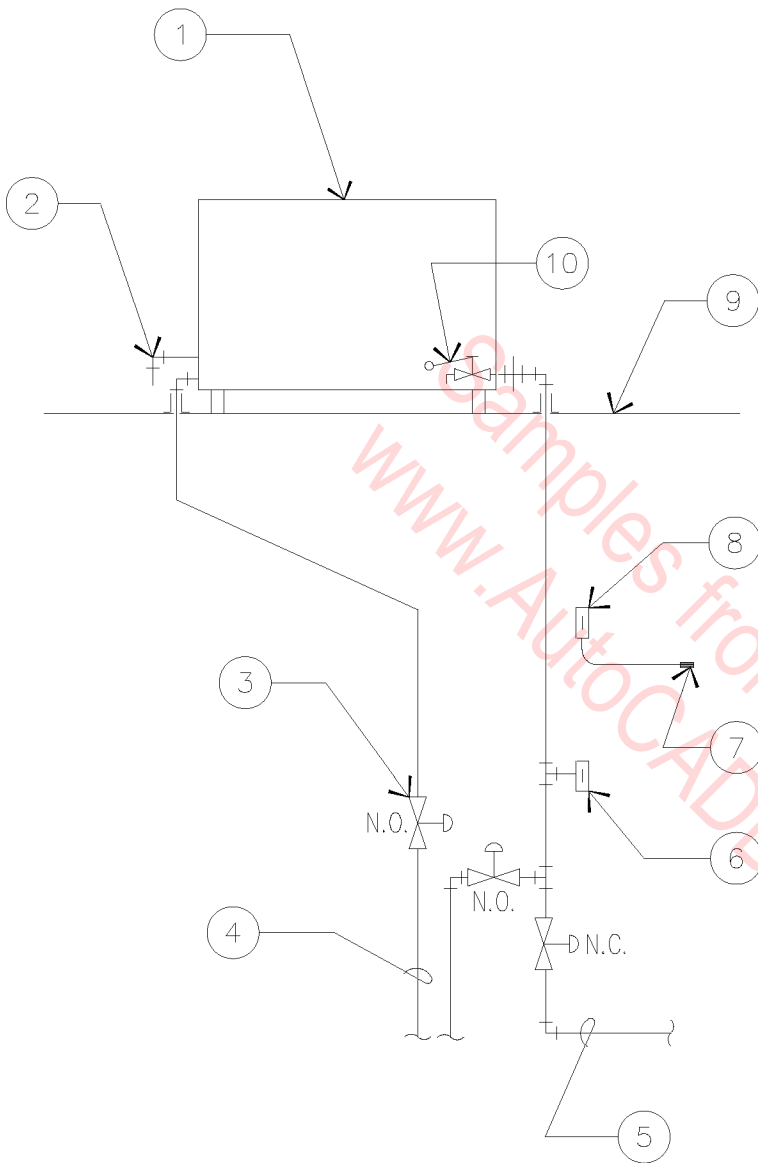
1. ALUMINUM ALL WEATHER JACKET.
2. 4 X 4 REDWOOD BLOCK.
3. ROOF.
4. PVC SADDLE, 2'-0" LONG.
5. PIPING.
6. 1" FIBERGLASS INSULATION.



PIPES ON ROOF

3" = 1'-0"

15A-1011

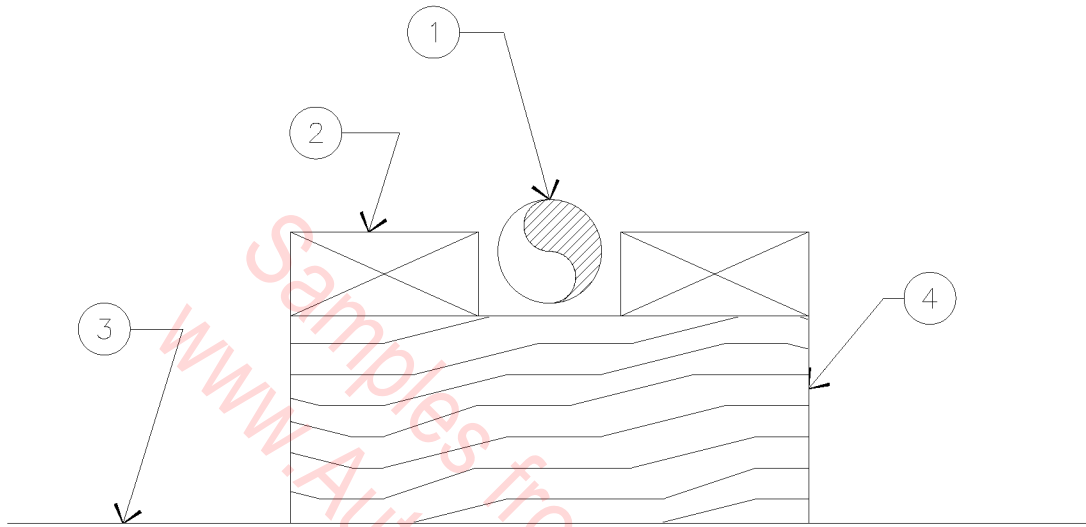


1. EVAPORATIVE COOLER.
2. OVERFLOW DRAIN.
3. MOUNT (3) SOLENOID VALVES 4'-0" A.F.F., SEE PLANS FOR LOCATIONS.
4. 3/4" DRAIN LINE, PIPE TO FLOOR DRAIN.
5. 1/2" COLD WATER SUPPLY LINE.
6. PRESSURE SWITCH SET TO BREAK POWER ON PRESSURE FALL BELOW 20 PSI.
7. OUTSIDE AIR THERMOSTAT AT DRAIN DOWN STATION.
8. LOW LIMIT SET TO CYCLE VALVES TO NORMAL POSITION WHEN OUTSIDE AIR TEMPERATURE FALLS BELOW 35°F, INSTALL SENSOR IN OUTSIDE AIR.
9. ROOF.
10. ADJUST FLOAT PER MANUFACTURER'S INSTRUCTIONS.

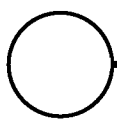
EVAPORATIVE COOLER PIPING

N.T.S.

15A-1012



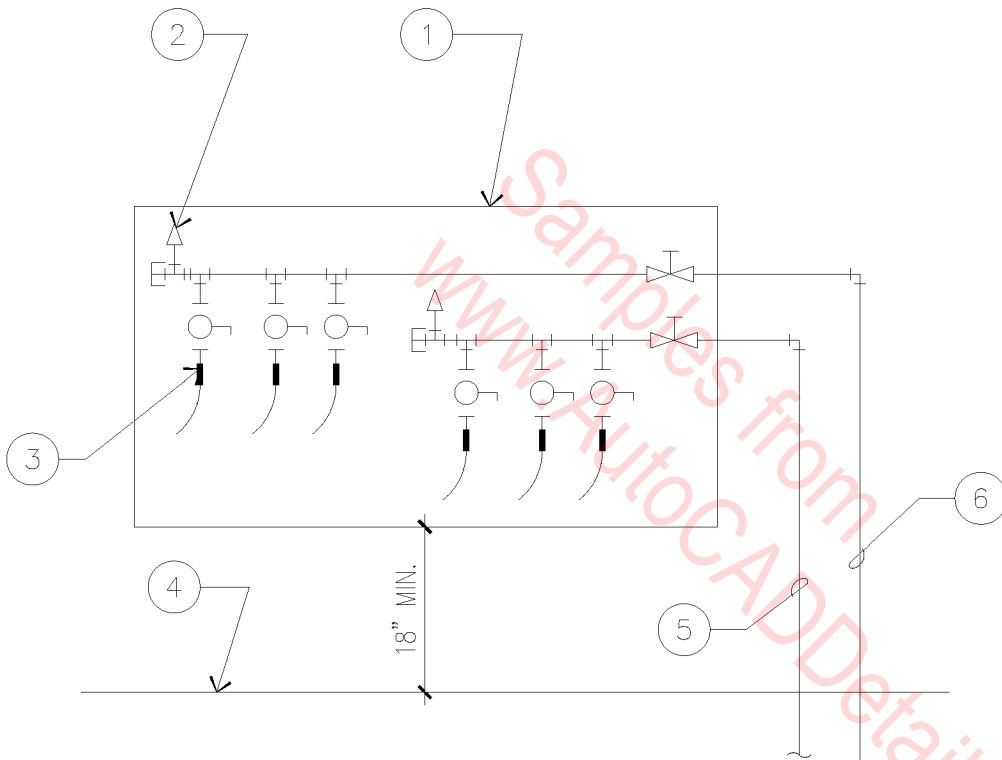
1. GAS PIPE.
2. 2 X 4 REDWOOD BLOCK, 8'-0"
ON CENTER.
3. ROOF.
4. 4" X 4" X 10" REDWOOD BLOCK,
6'-0" ON CENTER.



GAS PIPE ON ROOF

3" = 1'-0"

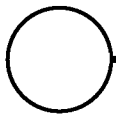
15A-1013



1. MECHANICAL CONTRACTOR TO PROVIDE 36" X 36" MANIFOLD BOX WITH LOCKING COVER.
2. AIR VENT, TYPICAL.
3. COPPER TUBING TO FITTING TRANSITION CLAMP AS BY MANUFACTURER OF TUBING, TYPICAL.
4. DECK OR FLOOR.
5. HOT WATER RETURN LINE, IN WALL.
6. HOT WATER SOURCE LINE, IN WALL.

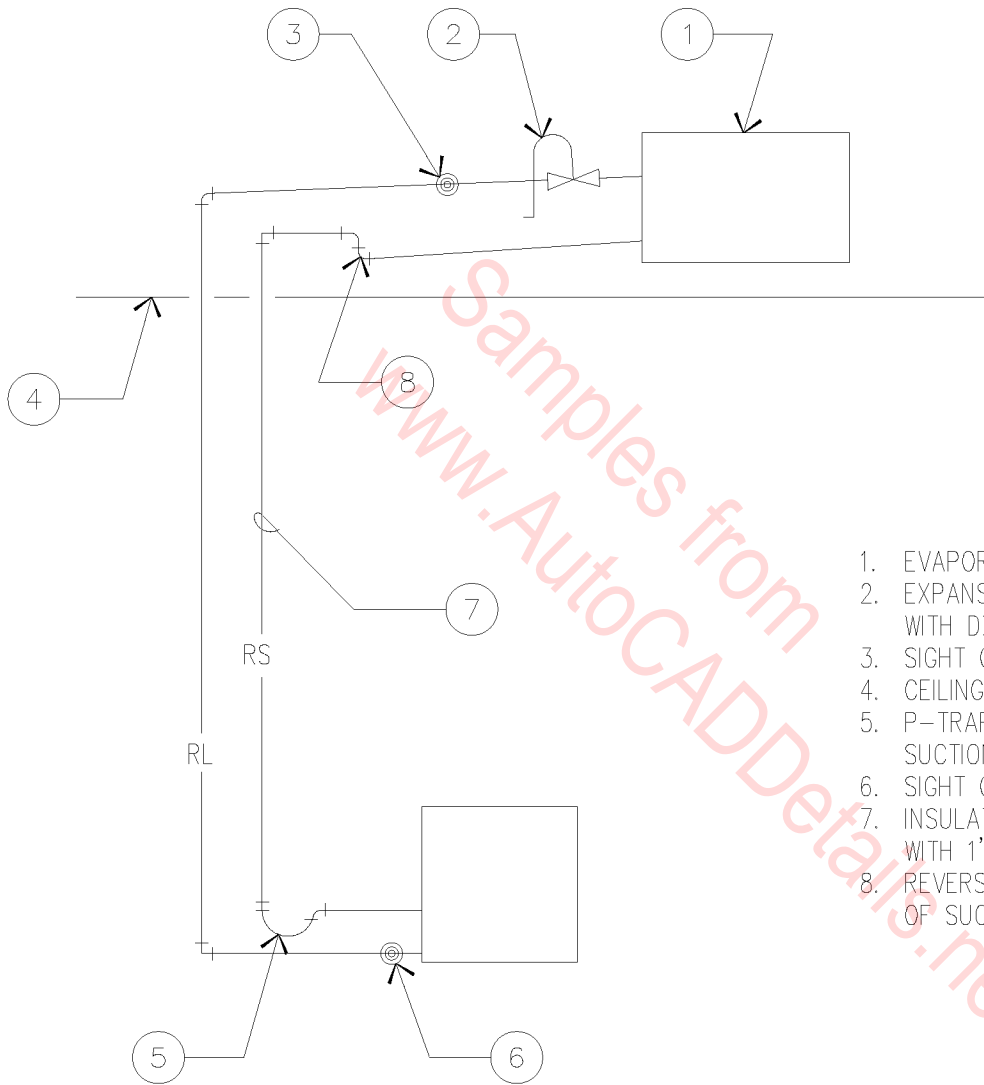
NOTE: SEE PLANS FOR NUMBER OF LOOPS REQUIRED.

WALL DISTRIBUTION BOX

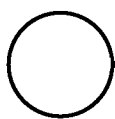


N.T.S.

15A-1014



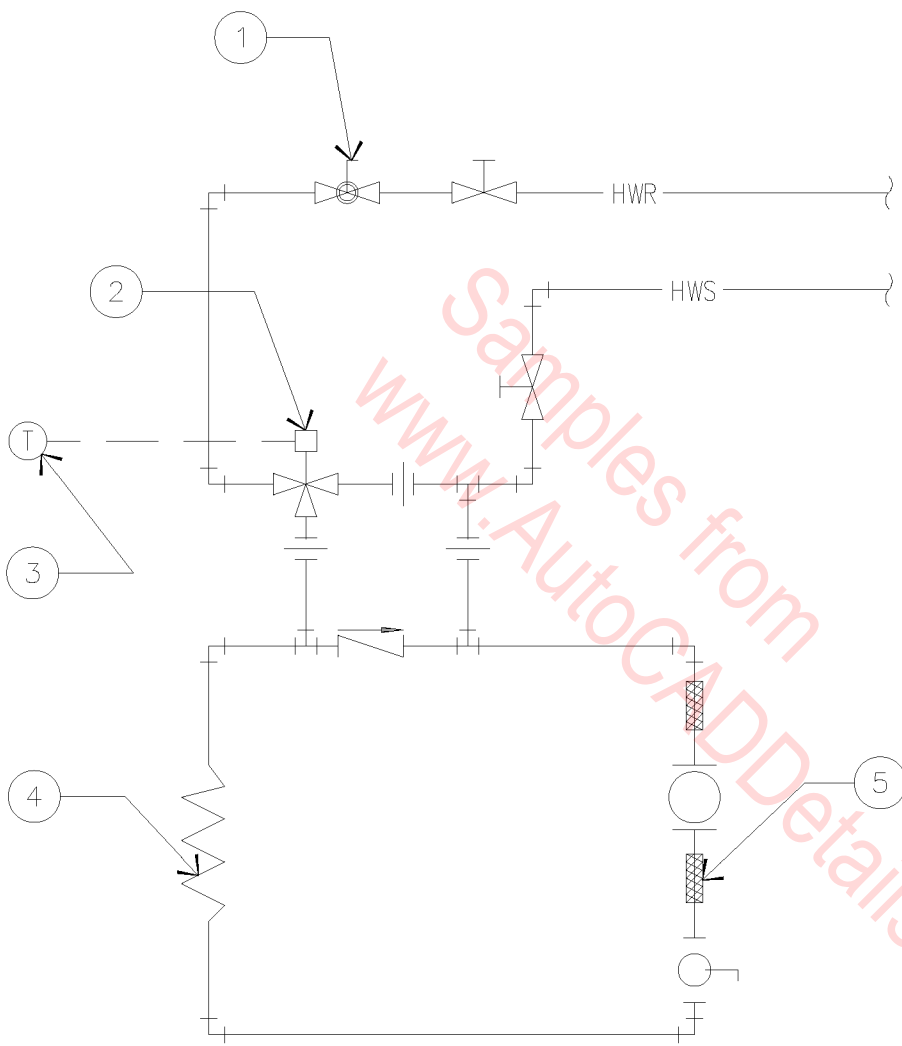
1. EVAPORATOR COIL.
2. EXPANSION VALVE SUPPLIED WITH DX COIL.
3. SIGHT GLASS.
4. CEILING.
5. P-TRAP AT BOTTOM OF SUCTION RISER.
6. SIGHT GLASS.
7. INSULATE SUCTION LINE WITH 1" THICK INSULATION.
8. REVERSE TRAP AT TOP OF SUCTION RISER.



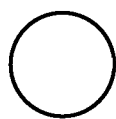
REFRIGERATION PIPING

N.T.S.

15A-1015



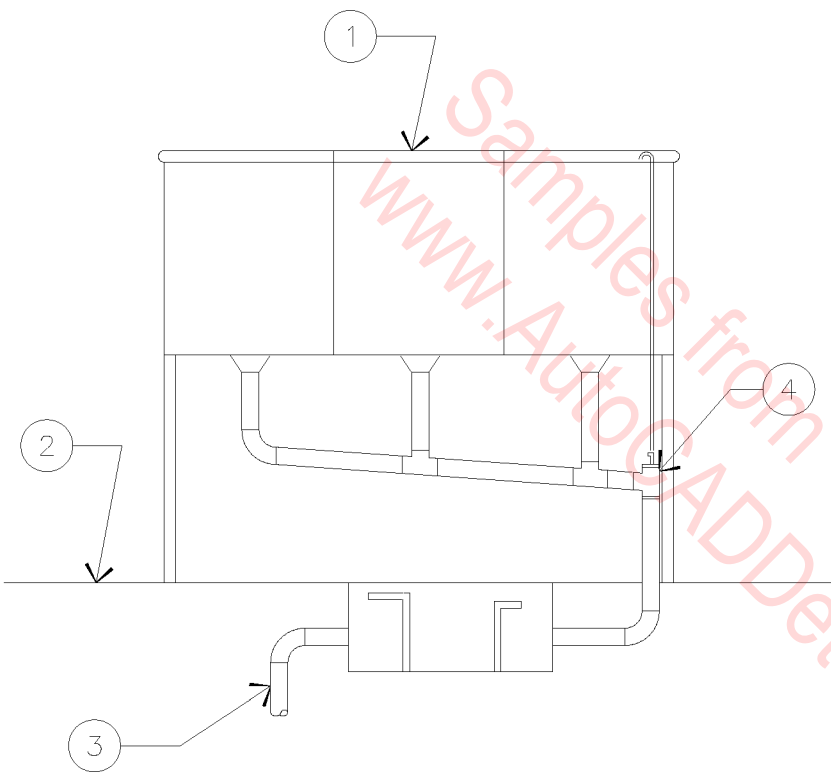
1. CIRCUIT SETTER.
2. CONTROL VALVE.
3. ROOM THERMOSTAT.
4. COIL.
5. VIBRATION ISOLATOR,
TYPICAL.



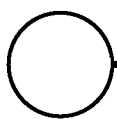
COIL PIPING DETAIL

N.T.S.

15A-1016



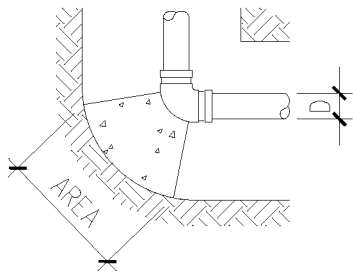
1. THREE COMPARTMENT SINK.
2. FLOOR.
3. TIE TO WASTE AND VENT SYSTEM, SEE PLANS FOR REQUIRED SIZE.
4. FLOW CONTROL FITTING.



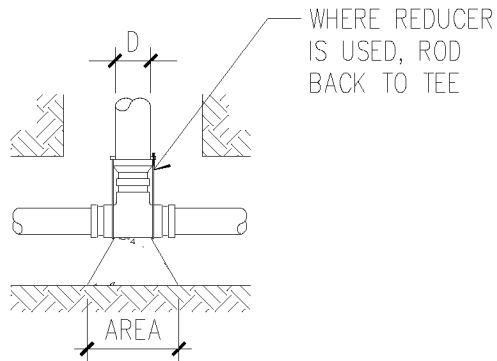
GREASE TRAP DETAIL

N.T.S.

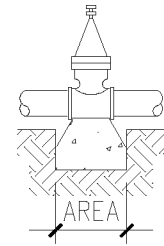
15A-1017



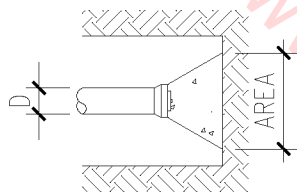
BENDS AND ELBOWS



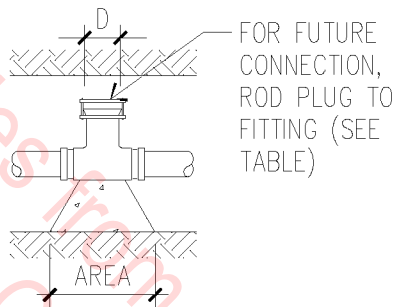
TEE



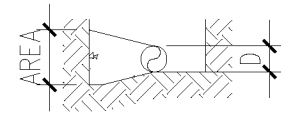
GATE VALVE



DEAD END LINE



PLUGGED TEE FOR FUTURE CONNECTION



TYPICAL SECTION THROUGH THRUST BLOCK

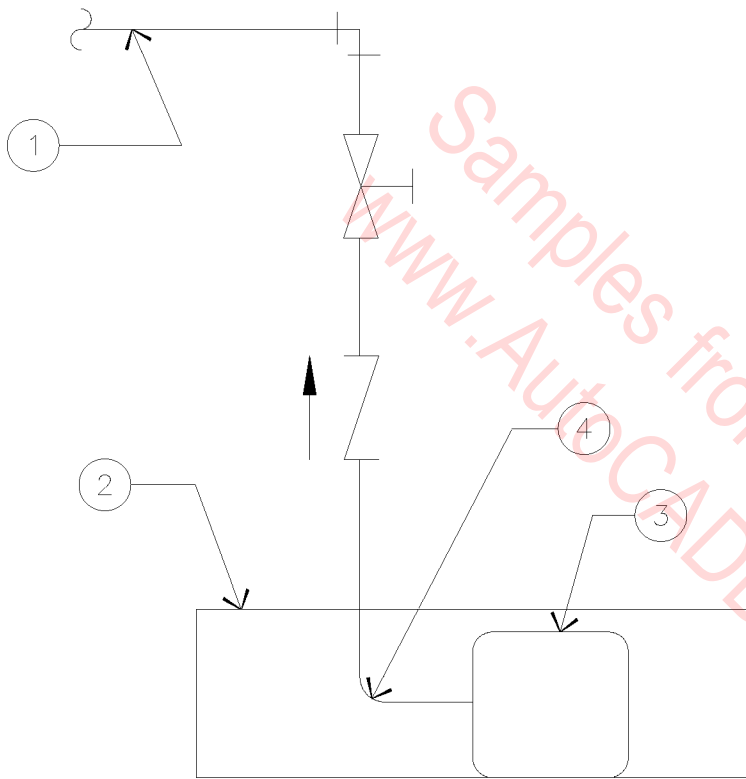
MAXIMUM THRUST BLOCK BEARING AREAS IN SQUARE FEET					
PIPE SIZE	90° BEND	45° BEND	22.5° BEND	TEE PLUG	GATE VALVES
12"	16.0	8.7	4.4	11.3	7.3
10"	11.1	6.0	3.1	7.8	4.5
8"	7.1	3.9	2.0	6.0	2.4
6"	4.0	2.2	2.0	2.8	0.7
4"	2.0	2.0	2.0	2.0	0.5
3"	2.0	2.0	2.0	2.0	0.5

- NOTES:
- PROVIDE BOND BREAKER AT ALL FITTINGS.
 - ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. WHERE THIS IS NOT POSSIBLE, TIE ROD SHALL BE USED. SOIL BEARING PRESSURE IS ASSUMED TO BE 3,000 P.S.F.
 - WHERE SOIL BEARING VARIES, REQUIRED BLOCK AREA MAY BE MODIFIED ACCORDINGLY.
 - IN NO CASE SHALL BEARING AREA BE LESS THAN 2.0 FT. SQ.
 - STANDARD TEST PRESSURE IS CONSIDERED AT 200 P.S.I.
 - CONCRETE STRENGTH TO BE 3,000 P.S.I., 28 DAY TEST.
 - MINIMUM WEIGHT OF THRUST BLOCKS SHALL BE 1,000 LBS.

THRUST BLOCKS FOR WATER MAIN

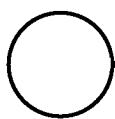
N.T.S.

15A-1018



1. 3/8" HARD COPPER DRAIN, ROUTE TO SANITARY SEWER, PROVIDE 1" AIR GAP.
2. 12" X 12" X 4" DEEP 24 GAUGE SHEET METAL PAN, SOLDER WATERTIGHT.
3. CONDENSATE PUMP WITH AUTOMATIC START AT 1" WATER DEPTH.
4. PROVIDE FLEXIBLE NEOPRENE CONNECTOR AT PUMP.

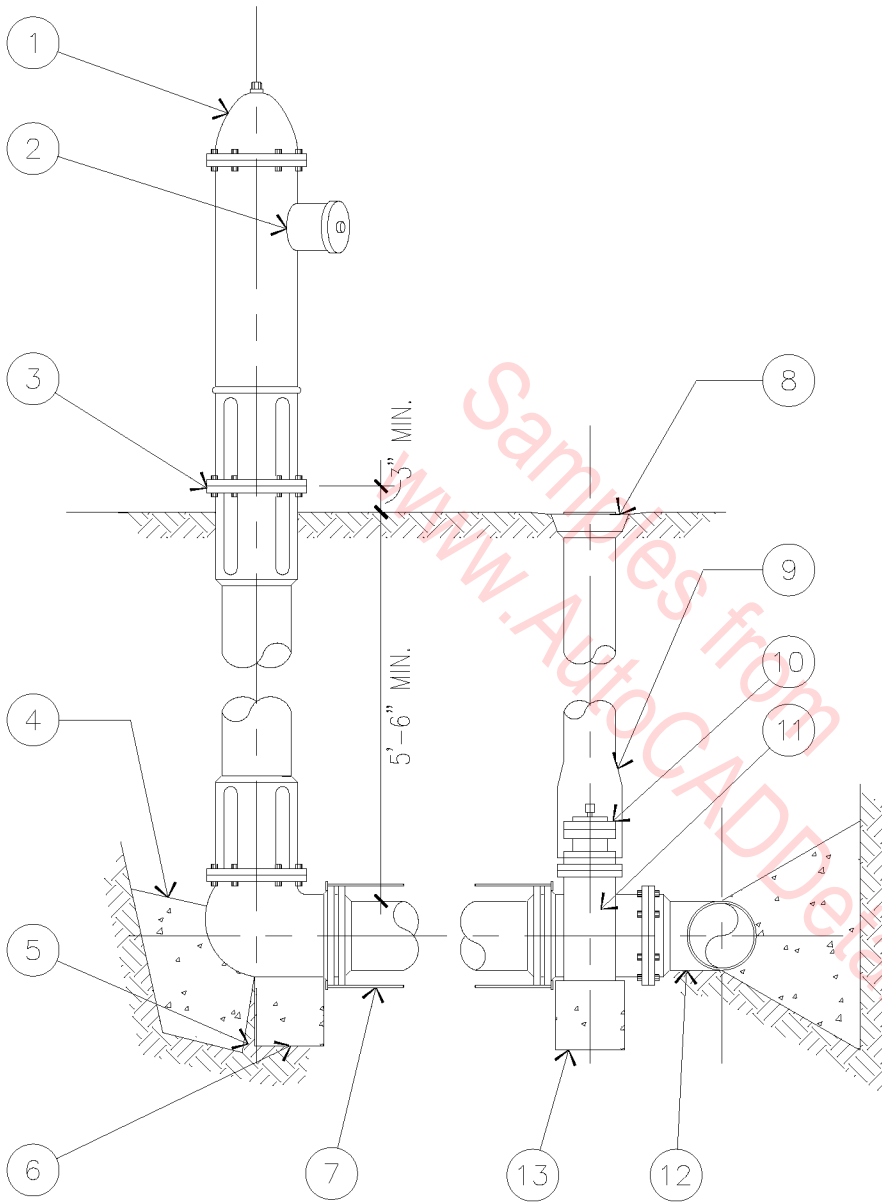
NOTE: COAT INTERIOR AND EXTERIOR OF PAN WITH PRIME COAT AND TWO FINAL COATS OF POLYAMIDE EPOXY PAINT.



CONDENSATE PUMP DETAIL

N.T.S.

15A-1019

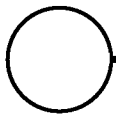


1. MUELLER CENTURION MODEL A-423 MOUNTAIN SPEC.
2. ORIENT PUMPER CONNECTION TOWARDS STREET UNLESS OTHERWISE SPECIFIED.
3. TRAFFIC FLANGE.
4. THRUST BLOCK.
5. 1/2 CU. YD. GRAVEL DRAIN MATERIAL.
6. SET HYDRANT ON 8" X 18" X 24" CONCRETE OR STONE SLAB.
7. PROVIDE A MINIMUM OF (3) 3/4" ϕ TIE RODS, ASPHALT COATED.
8. RECESS TOP OF VALVE BOX 1/8" TO 1/4" BELOW FINISH GRADE.
9. ADJUSTABLE VALVE BOX.
10. AUXILIARY GATE VALVE (NORMALLY OPEN).
11. 6" FL X MJ GATE VALVE.
12. MJ X MJ X FLANGED TEE.
13. SET VALVE ON 8" X 8" X 16" CONCRETE OR STONE SLAB.

NOTES:

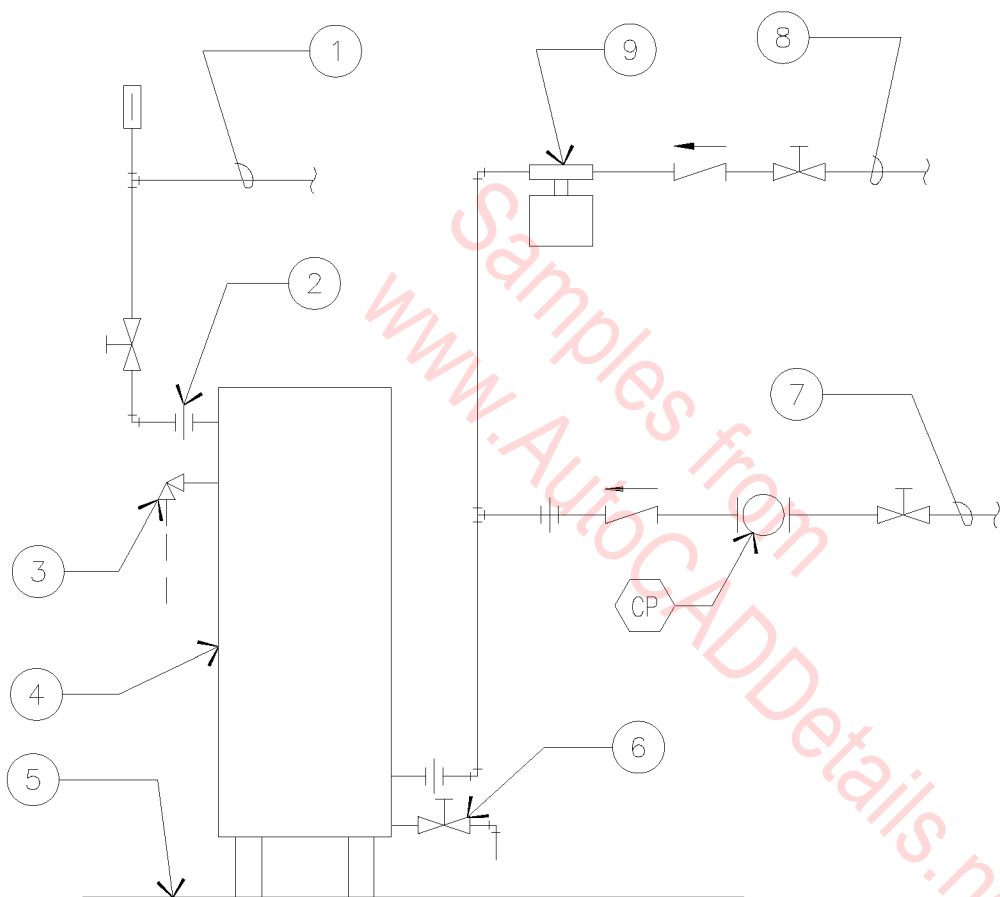
- A. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE HARNESSED MECHANICAL JOINTS OR FLANGED JOINTS.
- B. HYDRANT, VALVE, AND FITTINGS TO BE 250 P.S.I. RATED.
- C. POLYETHYLENE WRAP (WHEN REQUIRED) SHALL COVER ASSEMBLY FROM HYDRANT BASE TO WATER MAIN.
- D. ALL HYDRANT LEAD PIPING TO BE D.I.P.

FIRE HYDRANT ASSEMBLY INSTALLATION DETAIL

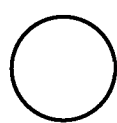


N.T.S.

15A-1020



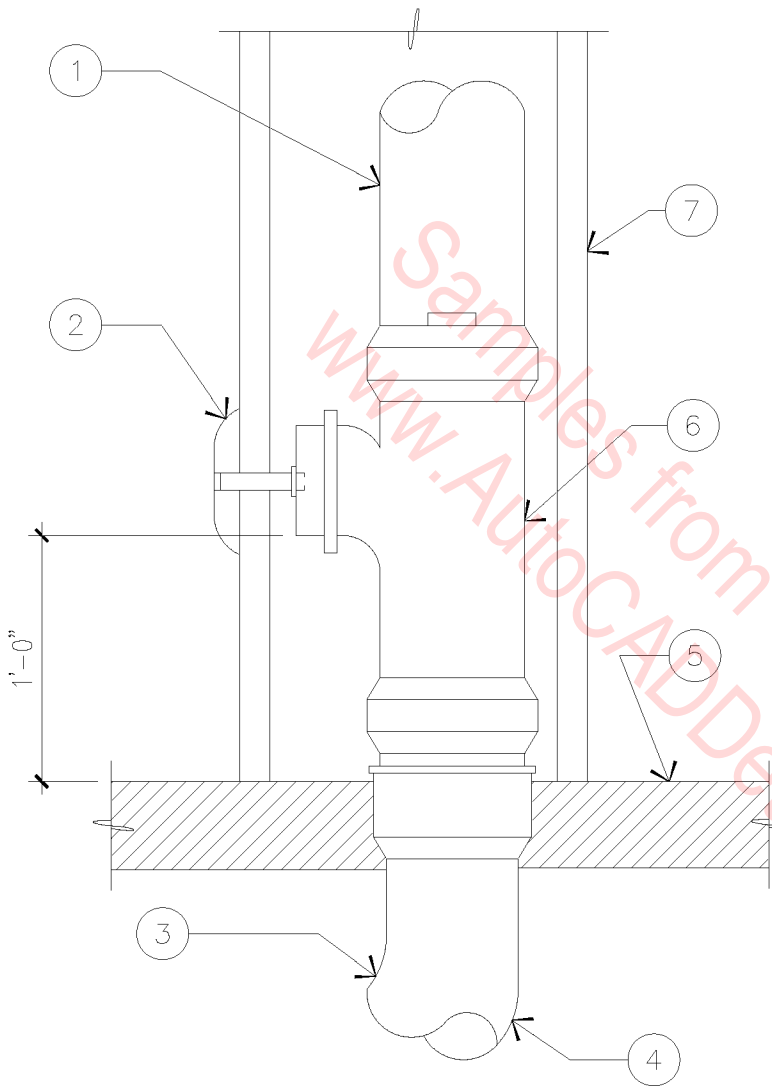
1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
4. WATER HEATER.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.
7. 3/4" HOT WATER CIRCULATION LINE.
8. COLD WATER INLET.
9. EXPANSION TANK, SPECIFIED WITH WATER HEATER.



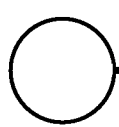
WATER HEATER DETAIL

N.T.S.

15A-1021



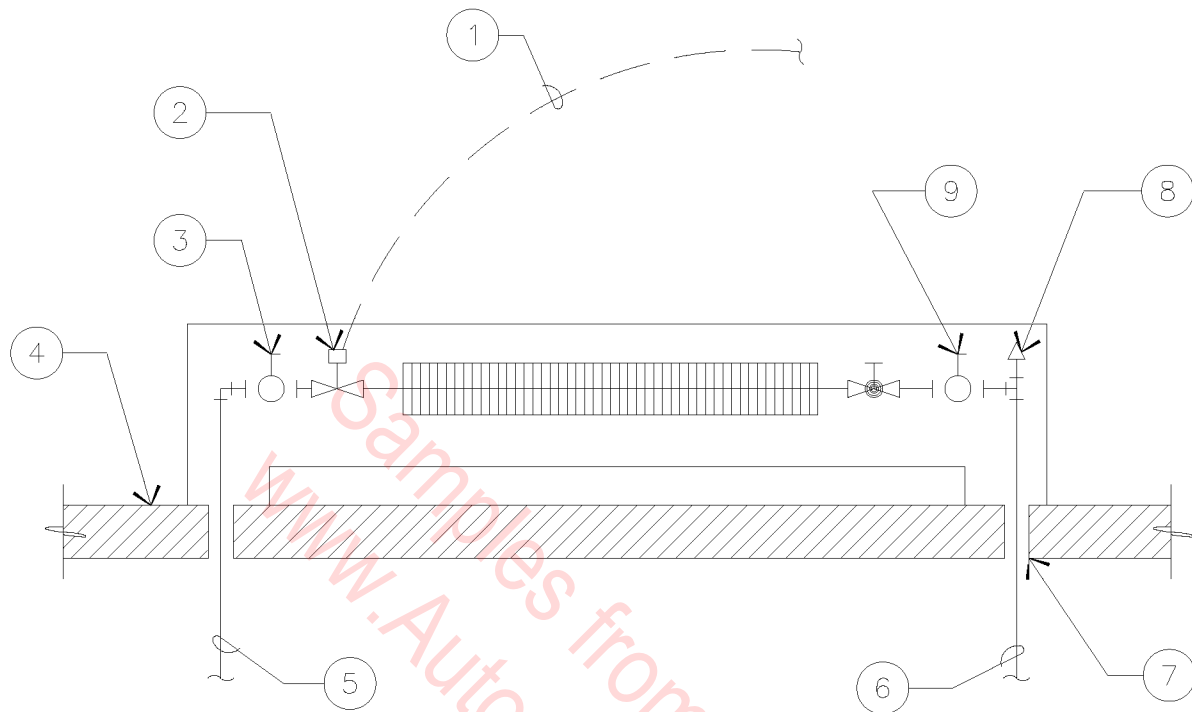
1. MAY EXTEND AS A WASTE OR VENT.
2. WALLCOVER AND SCREW.
3. 1/8" CAST IRON BEND.
4. BALANCE OR PIPING SAME AS CLEANOUT TO GRADE.
5. FLOOR.
6. PLUGGED TEE WITH CLEANOUT.
7. WALL.



WALL CLEANOUT

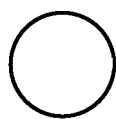
N.T.S.

15A-1022



1. TO ROOM THERMOSTAT, SEE PLAN FOR LOCATION.
2. CONTROL VALVE TO BE INSTALLED IN FIRST SECTION OF BASEBOARD IN EACH ZONE.
3. BALL VALVE, TYPICAL.
4. FLOOR.
5. HOT WATER SOURCE LINE.
6. HOT WATER RETURN LINE.
7. PROVIDE FLOOR SLEEVES.
8. MANUAL AIR VENT.
9. CIRCUIT SETTER TO BE INSTALLED IN LAST SECTION OF BASEBOARD IN EACH ZONE.

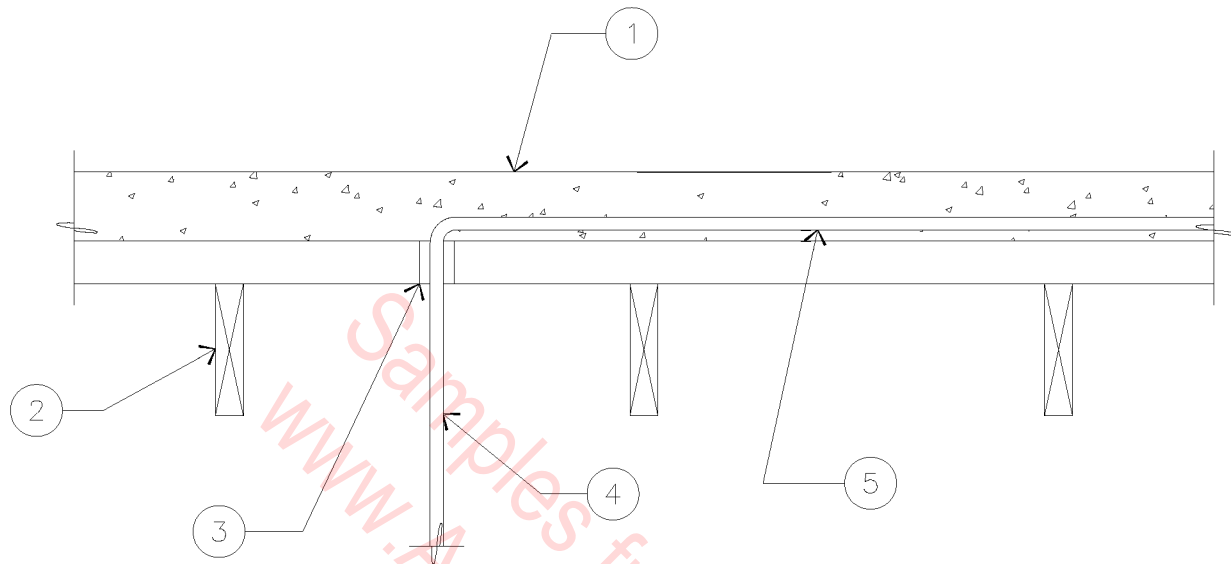
NOTE: PROVIDE ACCESS DOORS FOR ALL VALVES.



BASEBOARD PIPING

N.T.S.

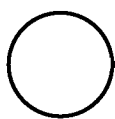
15A-1023



1. CONCRETE SLAB.
2. FLOOR JOIST.
3. PROVIDE FLOOR SLEEVE.
4. ROUTE 3/4" HOT WATER SOURCE AND RETURN LINES TO AND FROM MANIFOLD ASSEMBLY.
5. 5/8" WIRSBO pePEX SECURED TO SUBFLOOR.

NOTES:

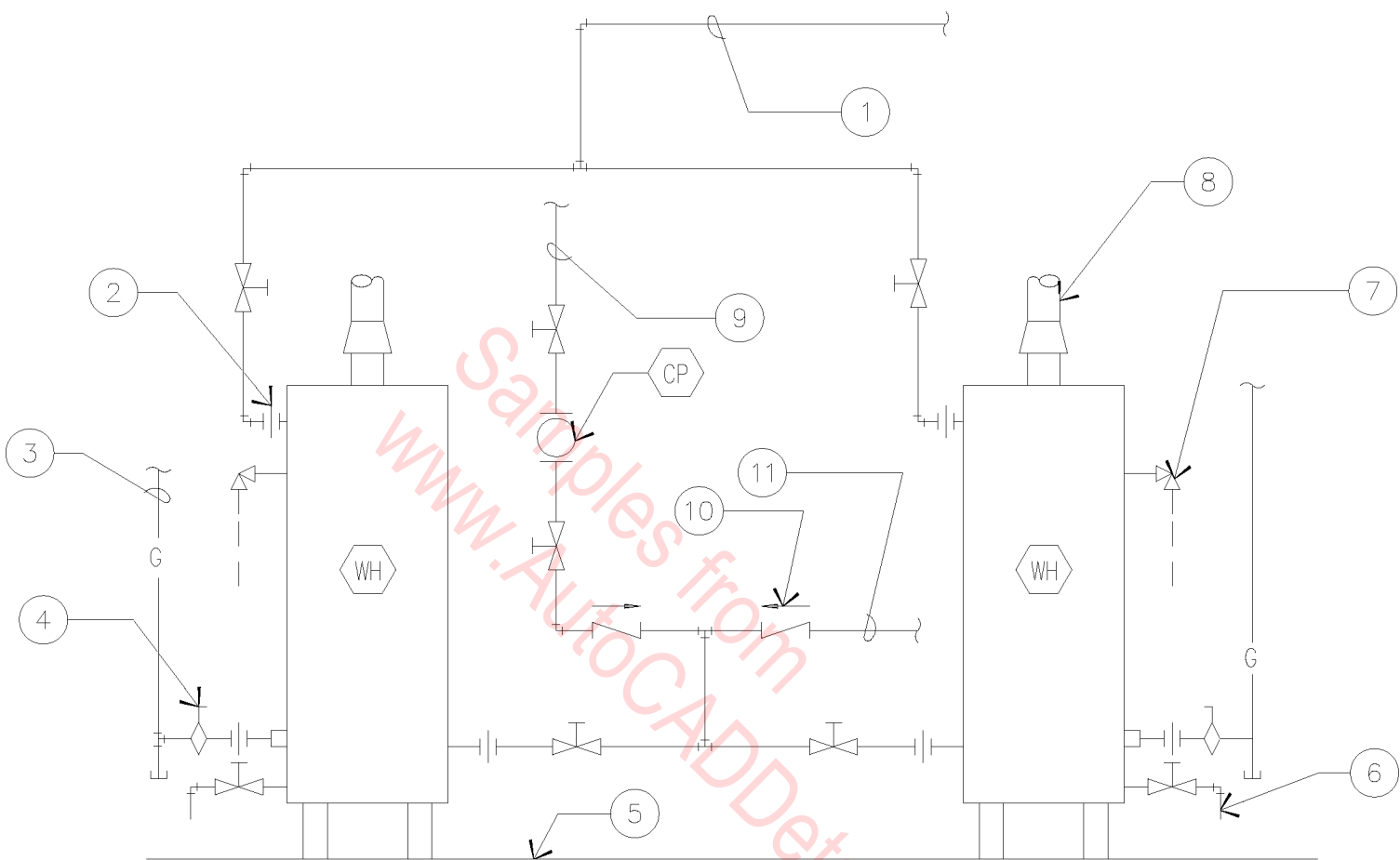
- A. ENTIRE RADIANT SLAB SYSTEM SHALL BE PRESSURIZED TO 75 PSI WITH AIR DURING POURING OF CONCRETE. NO PIPING JOINTS ARE PERMITTED IN THE SLAB. LINES SHALL REMAIN PRESSURIZED UNTIL SYSTEM IS CONNECTED TO BOILER AND FINAL FILL ACCOMPLISHED.
- B. ALL PIPING IN RADIANT SLAB SYSTEM SHOWN ON PLANS IS WIRSBO pePEX CROSSLINKED POLYETHYLENE TUBING. TUBING TO BE NOMINAL 5/8" INSIDE DIAMETER AND RATED FOR 180° SERVICE AT 100 PSI.
- C. TIE PIPING TO SUBFLOOR WITH PLASTIC COATED TIE WIRE. TIE SPACING SHALL NOT EXCEED 12" ON CENTER. TOP OF PIPE SHALL BE NOT LESS THAN 2" BELOW TOP OF SLAB. ALL PIPING IN SLAB IS AT 8" ON CENTER.



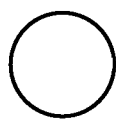
RADIANT SLAB PIPING

1" = 1'-0"

15A-1024



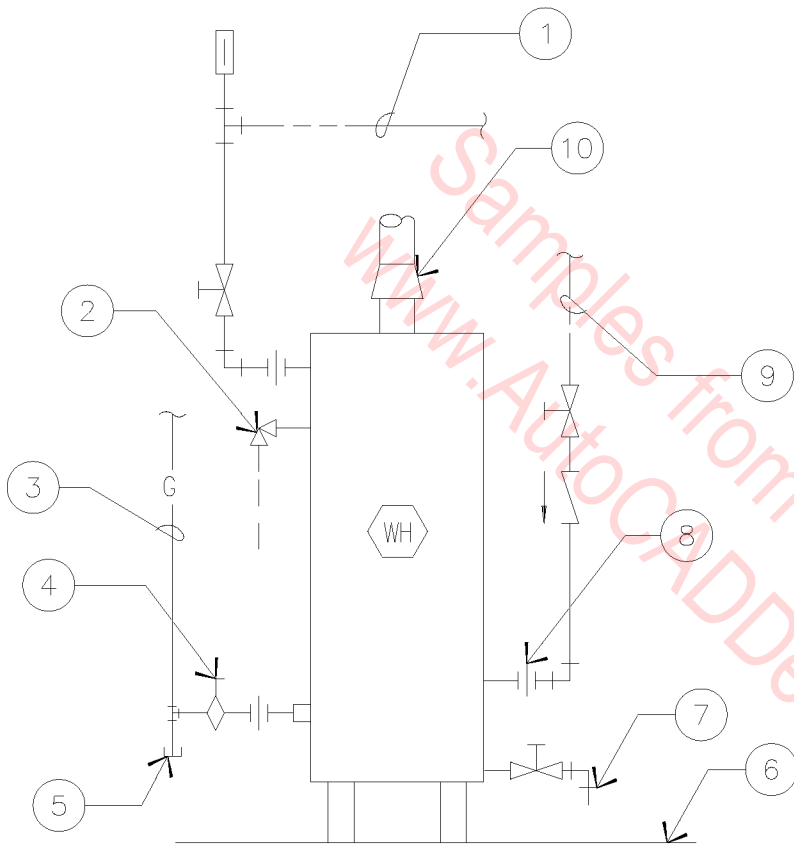
- | | |
|---|---|
| <ol style="list-style-type: none"> 1. HOT WATER OUTLET. 2. DIELECTRIC UNION, TYPICAL. 3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL. 4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL. 5. FLOOR. 6. DRAIN VALVE, PIPE TO 6" A.F.F. | <ol style="list-style-type: none"> 7. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F. 8. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL. 9. 3/4" HOT WATER CIRCULATION LINE. 10. DRILL 1/8" HOLE IN FLAPPER. |
|---|---|



WATER HEATER DETAIL

N.T.S.

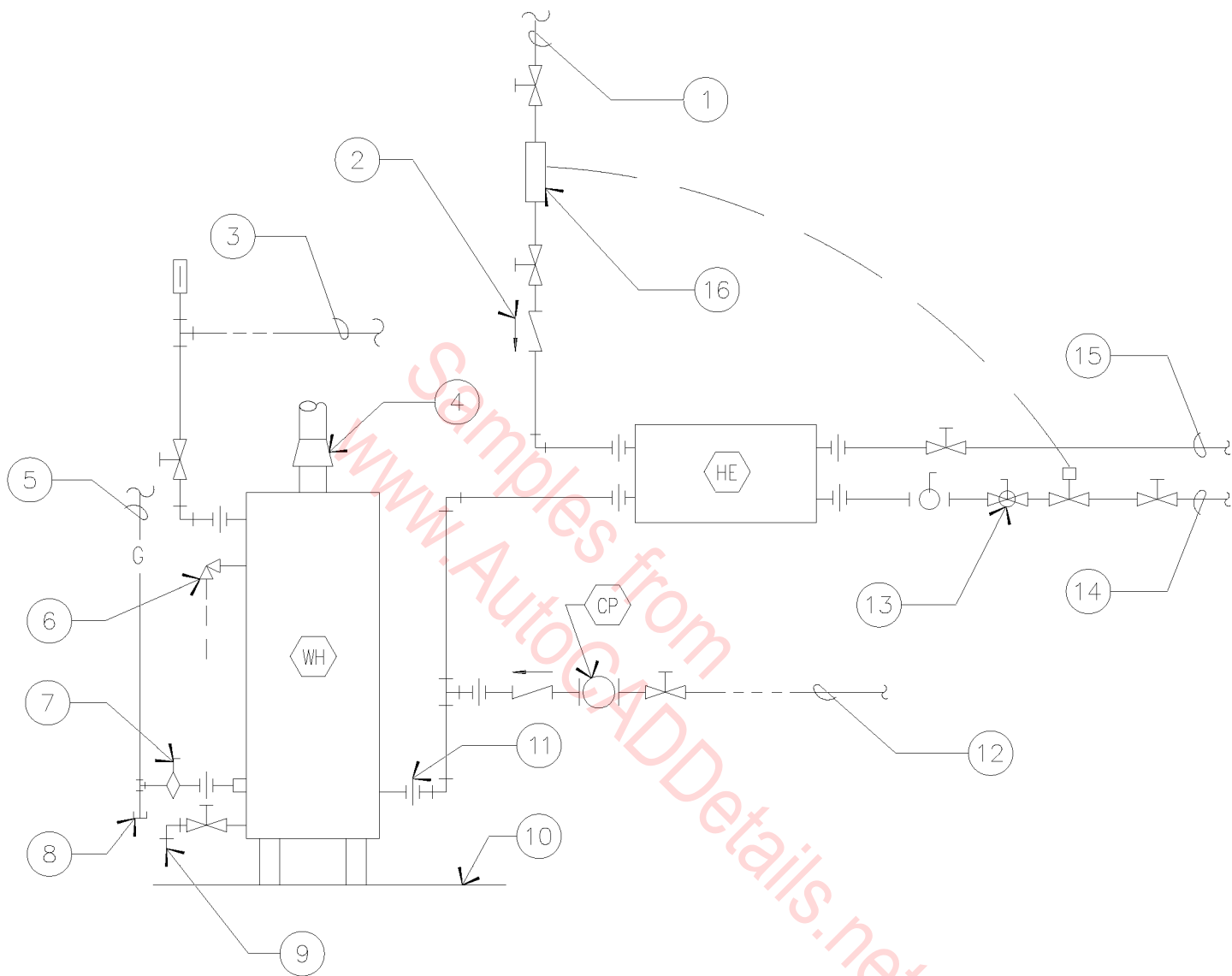
15A-1025



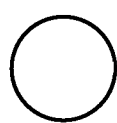
1. HOT WATER OUTLET.
2. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. DIRT LEG.
6. FLOOR.
7. DRAIN VALVE, PIPE TO 6" A.F.F.
8. DIELECTRIC UNION, TYPICAL.
9. COLD WATER INLET.
10. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.


WATER HEATER DETAIL
 N.T.S.

15A-1026



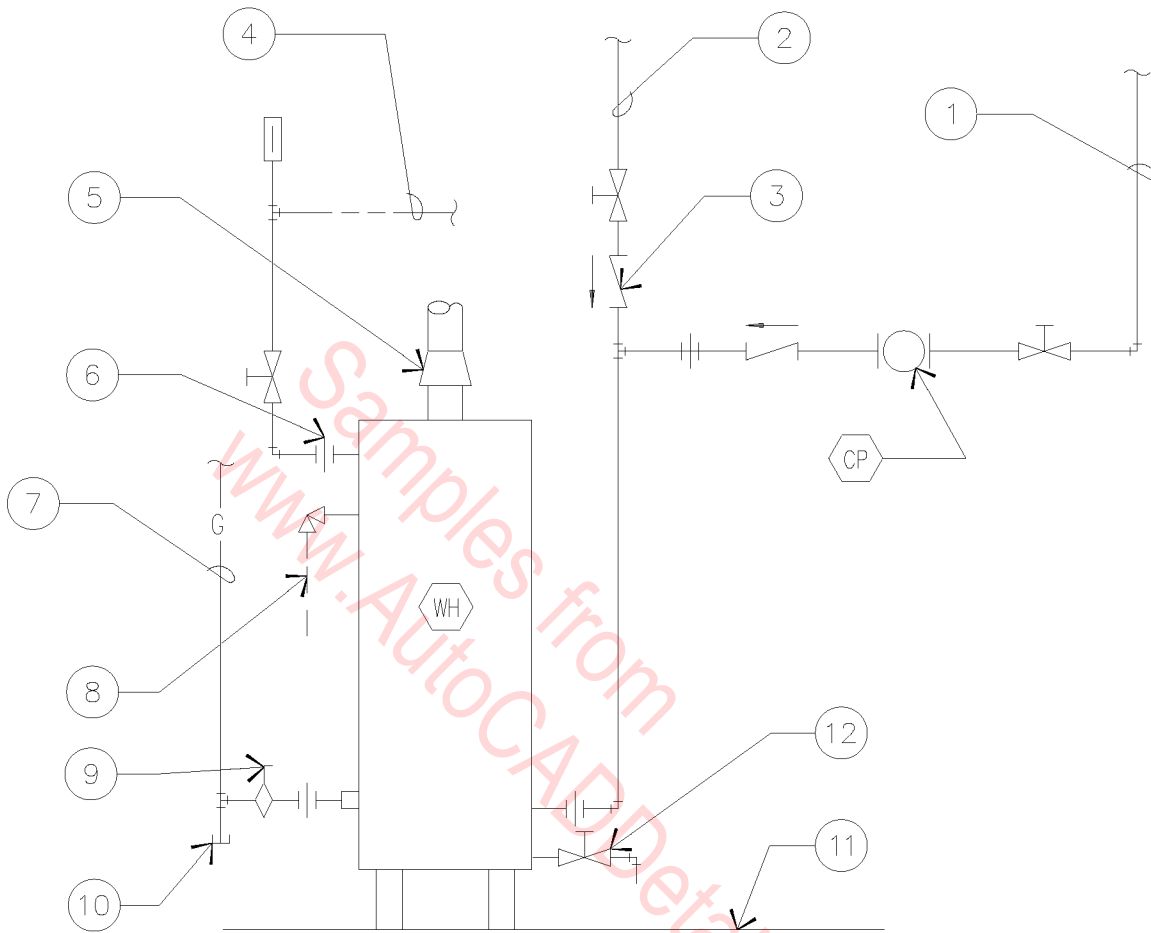
- | | | |
|--|---|---|
| 1. COLD WATER INLET. | 6. ASME PRESSURE RELIEF VALVE,
PIPE TO 6" A.F.F. | 11. DIELECTRIC UNION, TYPICAL. |
| 2. DRILL 1/8" HOLE IN FLAPPER. | 7. PROVIDE FULL LINE-SIZE
LUBRICATED PLUG COCK. | 12. 3/4" HOT WATER CIRCULATION
LINE. |
| 3. HOT WATER OUTLET. | 8. DIRT LEG. | 13. B & G CIRCUIT SETTER. |
| 4. FLUE, SEE PLAN FOR REQUIRED
SIZE. | 9. DRAIN VALVE, PIPE TO 6" A.F.F. | 14. HOT WATER SOURCE LINE. |
| 5. GAS LINE, SEE PLANS FOR
REQUIRED SIZE. | 10. FLOOR. | 15. HOT WATER RETURN LINE. |
| | | 16. FLOW SWITCH. |



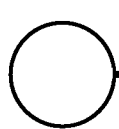
WATER HEATER DETAIL

N.T.S.

15A-1027



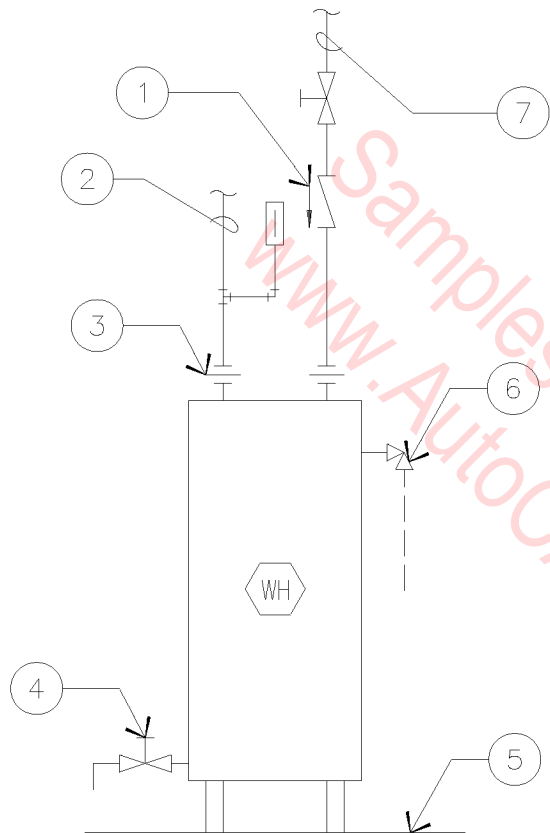
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 3/4" HOT WATER CIRCULATION LINE. 2. COLD WATER INLET. 3. DRILL 1/8" HOLE IN FLAPPER. 4. HOT WATER OUTLET. 5. FLUE, SEE PLAN FOR REQUIRED SIZE. 6. DIELECTRIC UNION, TYPICAL. | <ol style="list-style-type: none"> 7. GAS LINE, SEE PLANS FOR REQUIRED SIZE. 8. ASME PRESSURE RELIEF VALVE, PIPE TO 6" A.F.F. 9. PROVIDE FULL LINE-SIZE LUBRICATED PLUG COCK. 10. DIRT LEG. 11. FLOOR. 12. DRAIN VALVE, PIPE TO 8" A.F.F. |
|--|---|



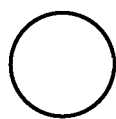
WATER HEATER DETAIL

N.T.S.

15A-1028



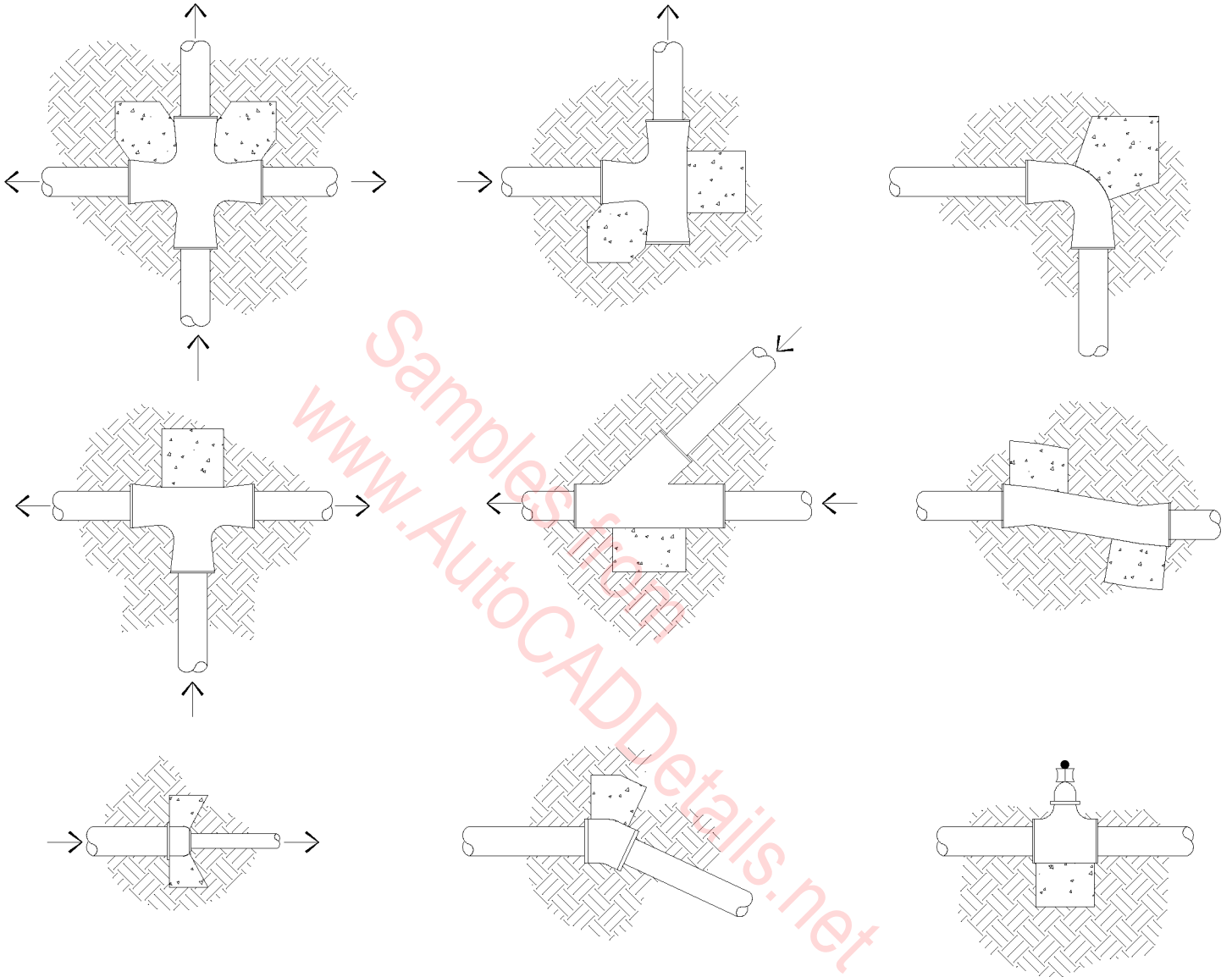
1. DRILL 1/8" HOLE IN FLAPPER.
2. HOT WATER OUTLET.
3. DIELECTRIC UNION, TYPICAL.
4. DRAIN VALVE, PIPE TO 6" A.F.F.
5. FLOOR.
6. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
7. COLD WATER INLET.



WATER HEATER DETAIL

N.T.S.

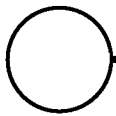
15A-1029



NOTES

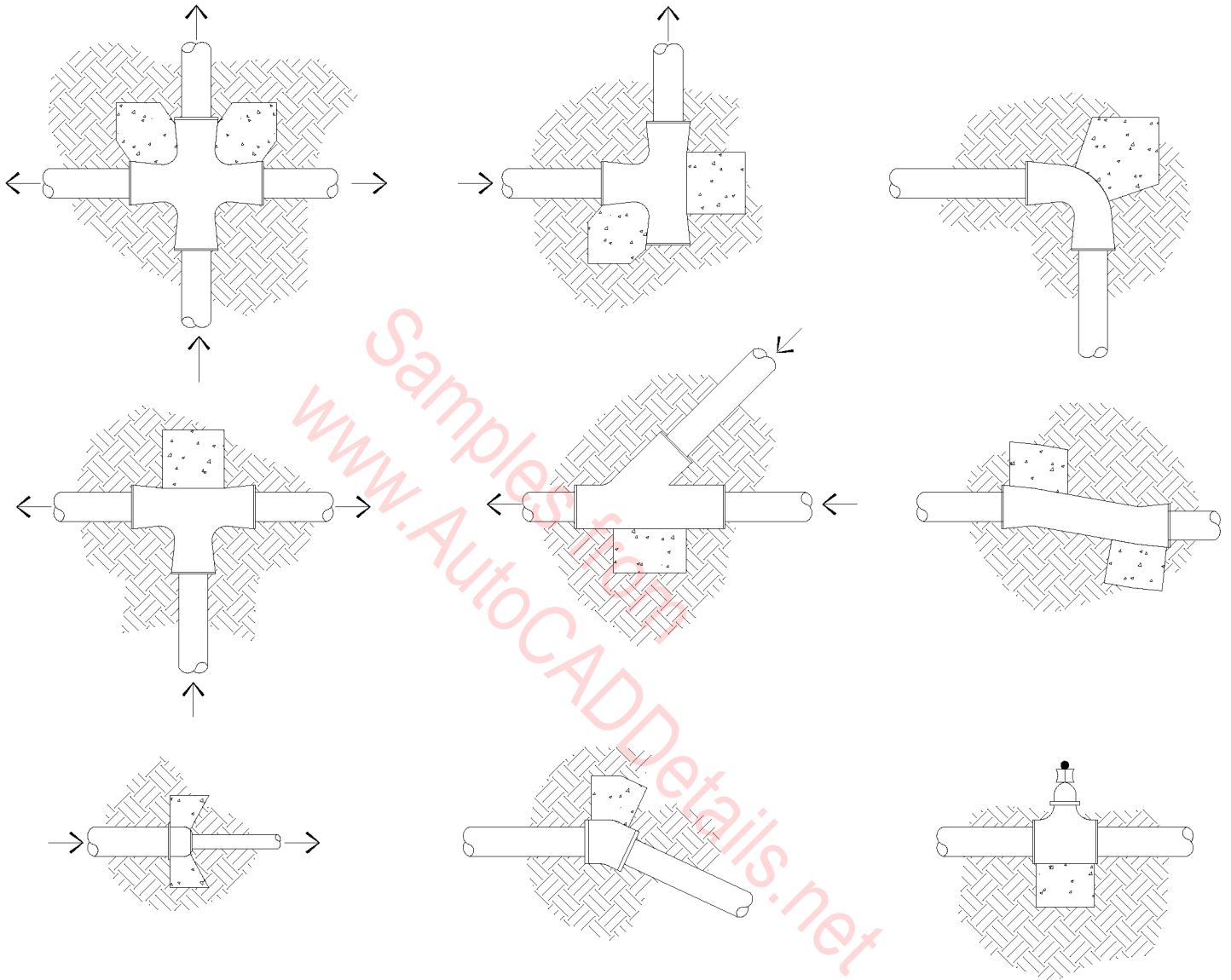
- A. ALL THRUST BLOCKS SHOWN ARE CAST IN PLACE CONCRETE.
- B. ARROWS INDICATE DIRECTION OF FLOW.

THRUST BLOCK LOCATIONS



N.T.S.

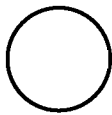
15A-1030



NOTES

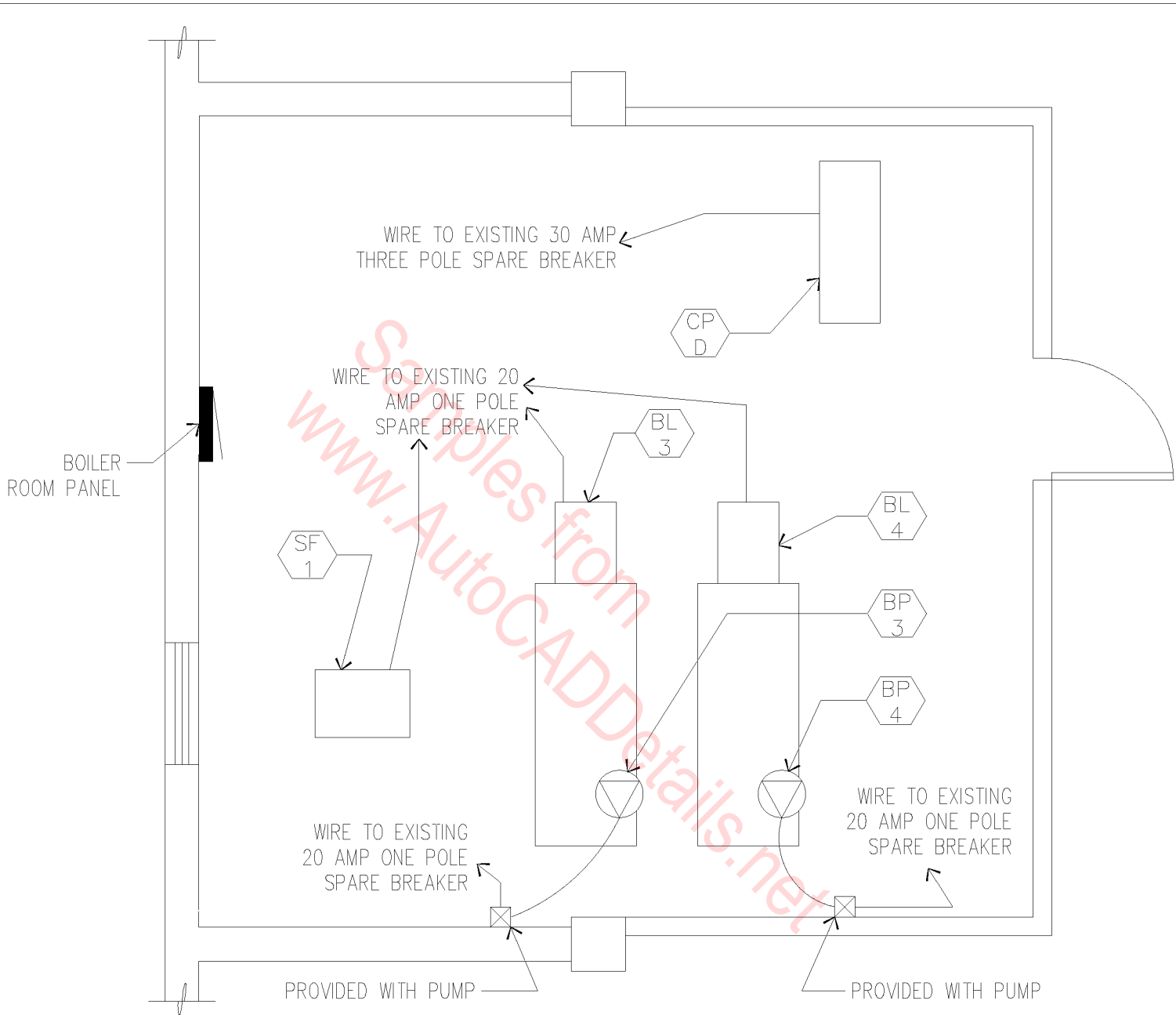
- A. ALL THRUST BLOCKS SHOWN ARE CAST IN PLACE CONCRETE.
- B. ARROWS INDICATE DIRECTION OF FLOW.

THRUST BLOCK LOCATIONS

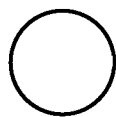


N.T.S.

15A-1030



BOILER ROOM PARTIAL PLAN



1/4" = 1'-0"

15A-9001

3" HS/HR RE: PARKING LEVEL PLAN
THIS SHEET FOR CONTINUATION

EXTEND 2-1/2" GAS LINE TO EXISTING
GAS SERVICE TO BOILERS AND MAKE
NEW CONNECTION

CP
D
CP
E (FUTURE)

EXTEND 3" HS/HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE CROSS CONNECTION PIPING

20" X 20"
INSTALL SHEET
METAL PLENUM
BEHIND (E)
OUTSIDE AIR
LOUVER -
MAKE SF-1
COMBUSTION
AIR DUCT
CONNECTION
TO PLENUM

EXTEND 4" HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE HR CONNECTION

FUTURE BOILER LOCATION

4" ϕ
(E) BLIND FLANGE FOR
FUTURE CONNECTION (TYP.)

MAKE CONNECTION TO (E) 3"
FLANGE (TYP. OF 4)

MAKE 14" ϕ CONNECTION TO EXISTING 20" ϕ 'T'
FITTING AND EXTEND 14" ϕ POSITIVE PRESSURE
VENT AS SHOWN, MAKE (2) 10" ϕ CONNECTIONS
FROM NEW BOILERS

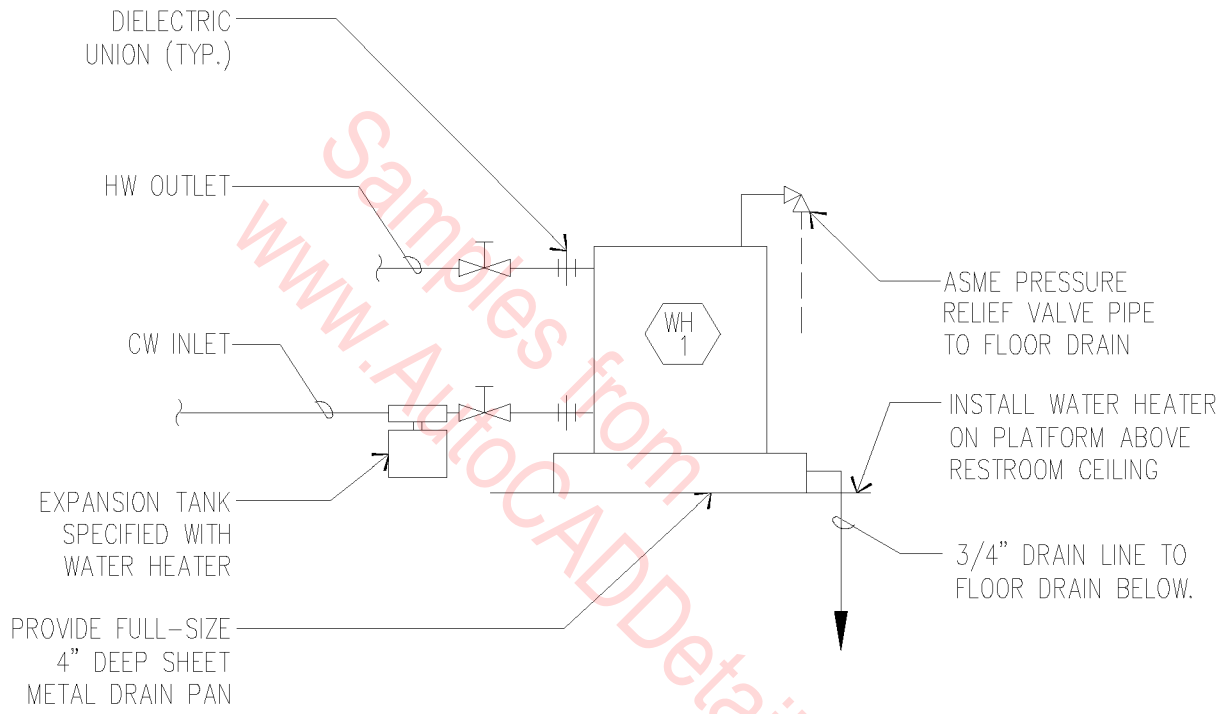
BL 3
BP 3
BL 4
BP 4

- NOTES: 1. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND PIPING SHOWN AS DASHED IS EXISTING TO REMAIN.
2. HOLD ALL NEW PIPING AS HIGH AS POSSIBLE IN SPACE.
3. EXTEND (E) GAS SERVICE AS REQUIRED TO PROVIDE NEW 2" GAS SERVICE TO EACH NEW BOILER.

BOILER ROOM PARTIAL PLAN

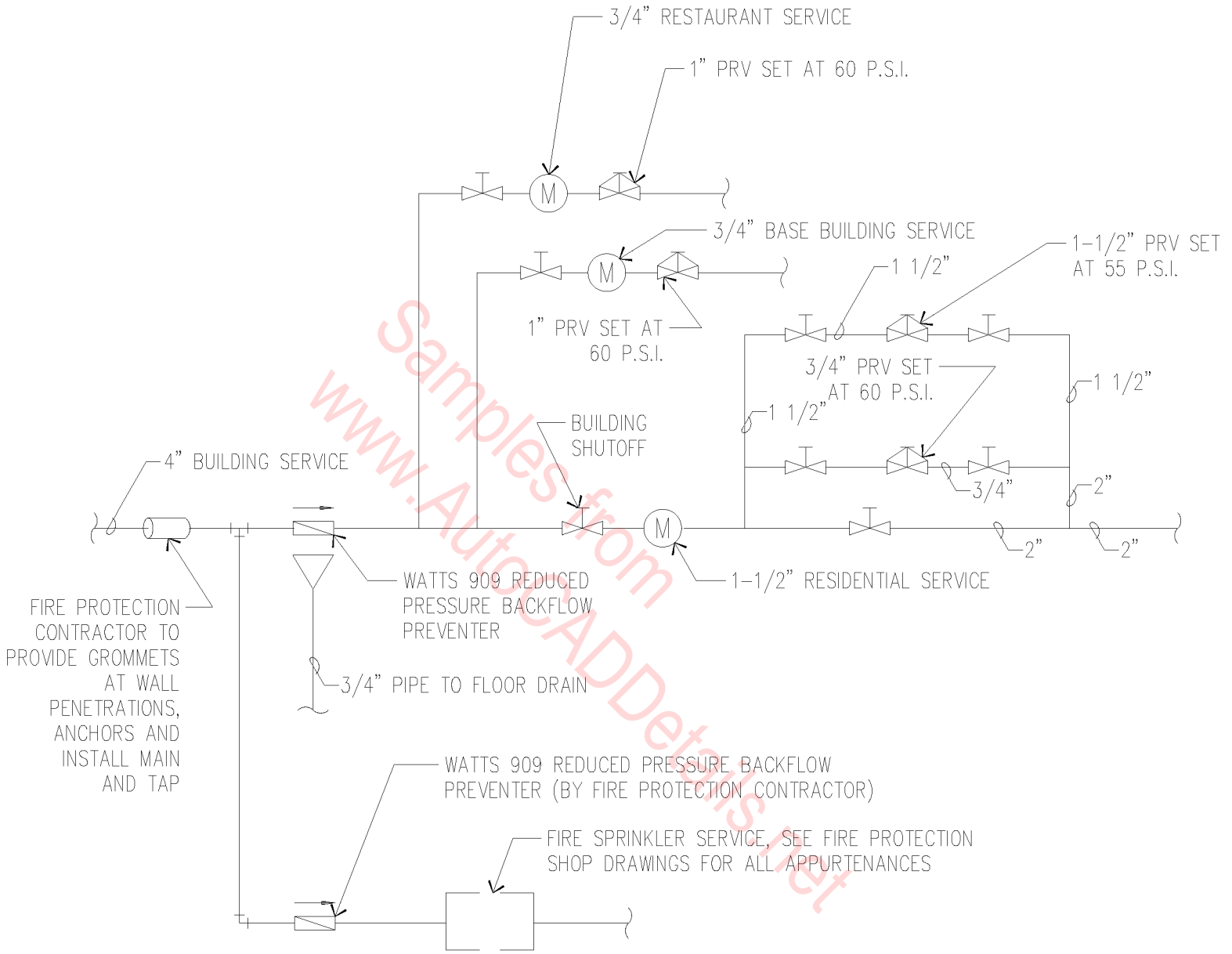
1/4" = 1'-0"

15A-9002



○
WATER HEATER DETAIL
 N.T.S.

15A-9003

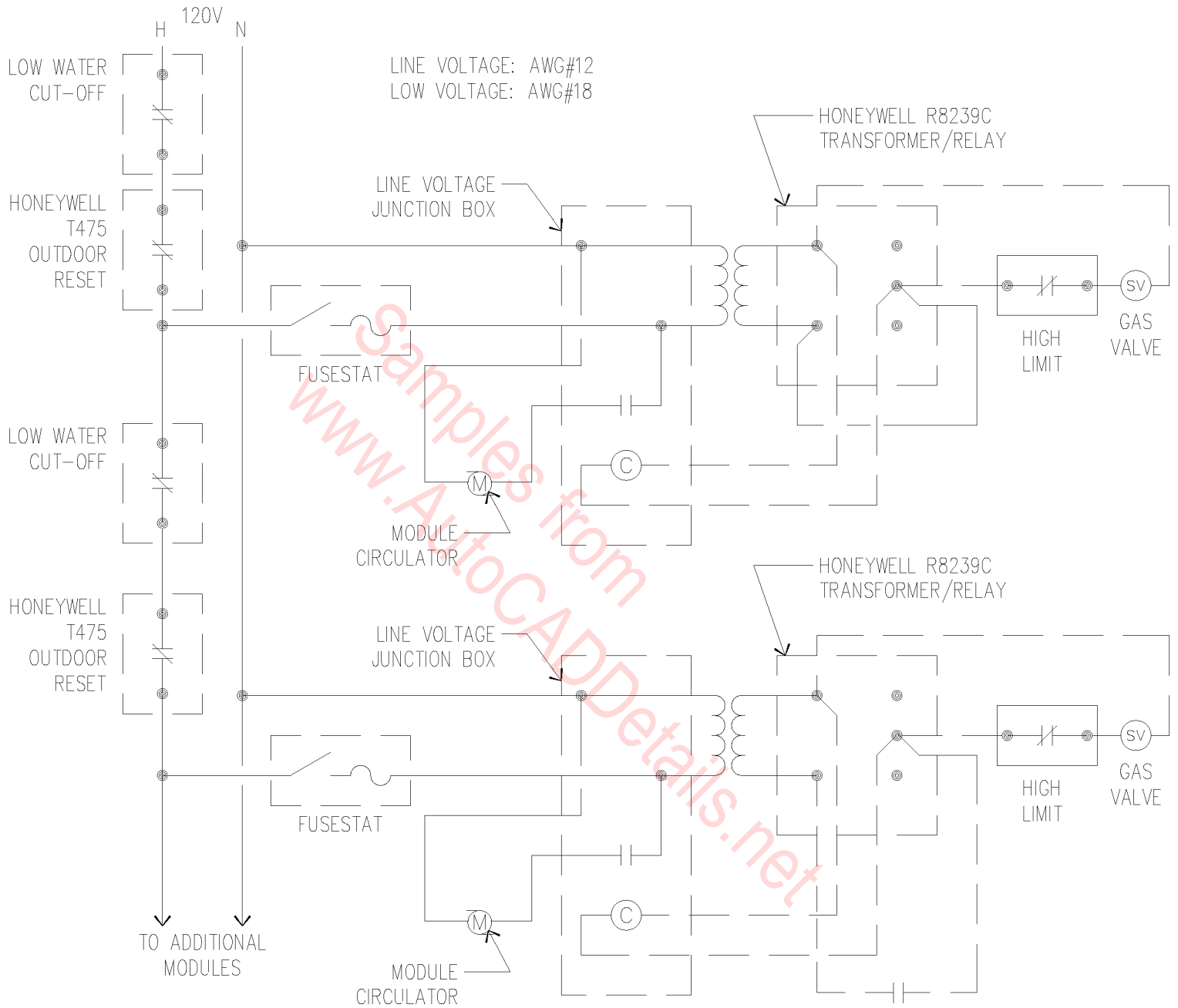


NOTE: INSTALL WATER METER AND VALVES AS REQUIRED BY WATER DISTRICT.

PRESSURE REDUCING STATION DETAIL

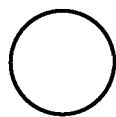
N.T.S.

15A-9004



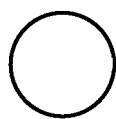
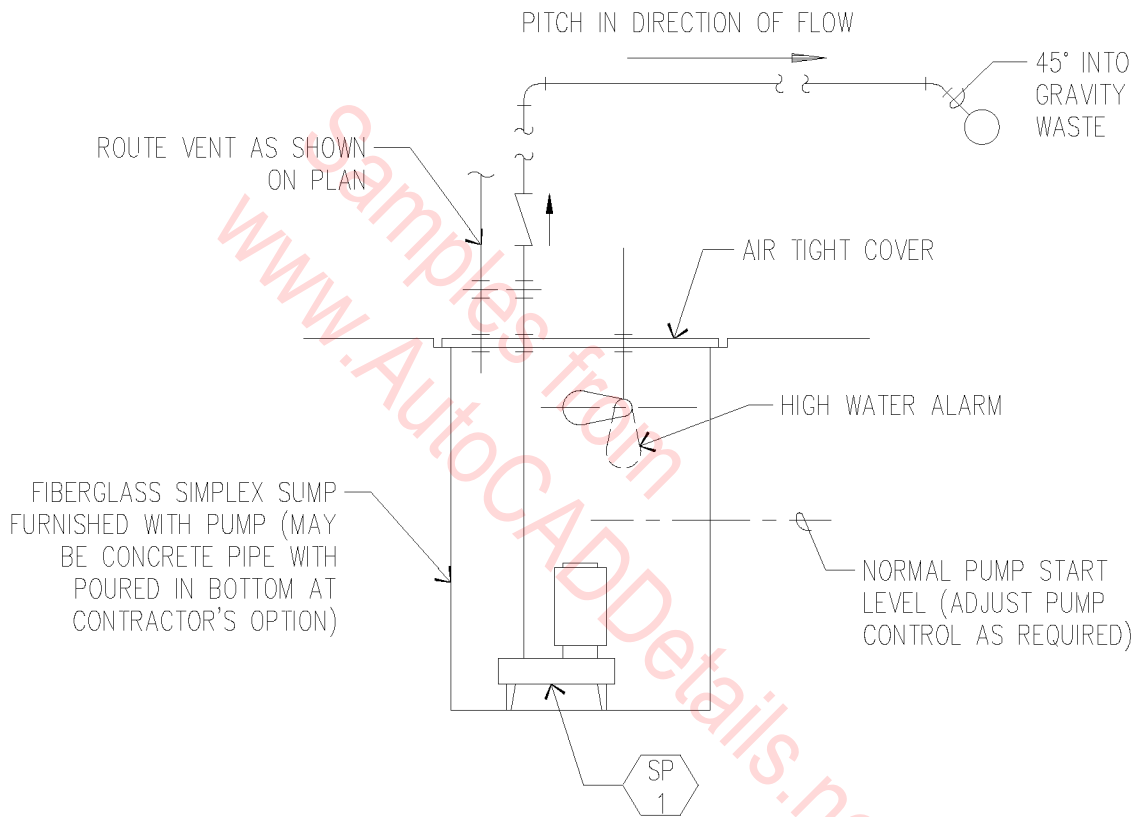
BOILER CONTROL WIRING DIAGRAM

HONEYWELL T6031A AIR STAT



N.T.S.

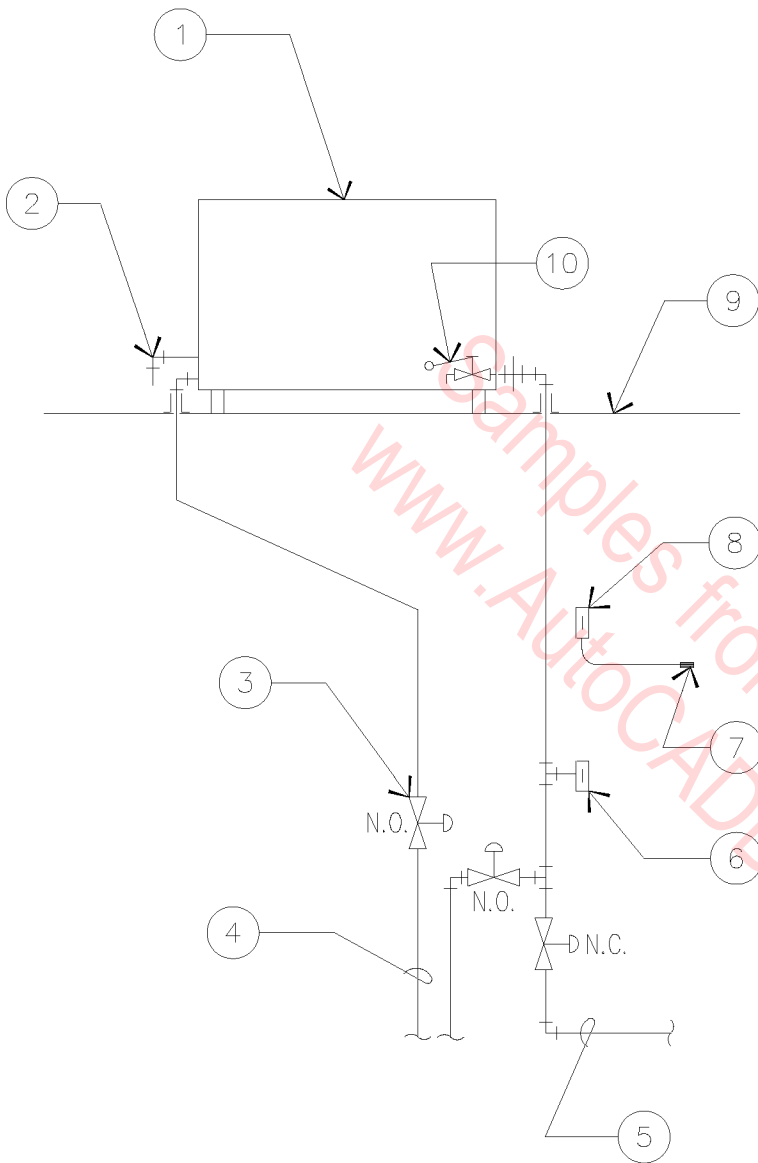
15A-9005



SUMP PUMP DETAIL

N.T.S.

15A-9006

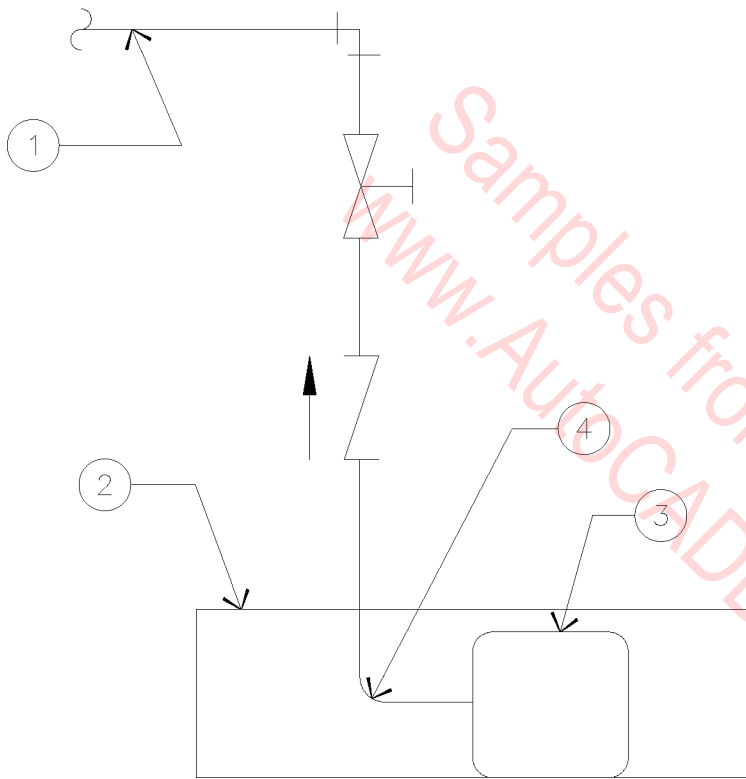


1. EVAPORATIVE COOLER.
2. OVERFLOW DRAIN.
3. MOUNT (3) SOLENOID VALVES 4'-0" A.F.F., SEE PLANS FOR LOCATIONS.
4. 3/4" DRAIN LINE, PIPE TO FLOOR DRAIN.
5. 1/2" COLD WATER SUPPLY LINE.
6. PRESSURE SWITCH SET TO BREAK POWER ON PRESSURE FALL BELOW 20 PSI.
7. OUTSIDE AIR THERMOSTAT AT DRAIN DOWN STATION.
8. LOW LIMIT SET TO CYCLE VALVES TO NORMAL POSITION WHEN OUTSIDE AIR TEMPERATURE FALLS BELOW 35°F, INSTALL SENSOR IN OUTSIDE AIR.
9. ROOF.
10. ADJUST FLOAT PER MANUFACTURER'S INSTRUCTIONS.

EVAPORATIVE COOLER PIPING

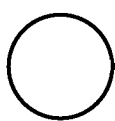
N.T.S.

15A-9007



1. 3/8" HARD COPPER DRAIN, ROUTE TO SANITARY SEWER, PROVIDE 1" AIR GAP.
2. 12" X 12" X 4" DEEP 24 GAUGE SHEET METAL PAN, SOLDER WATERTIGHT.
3. CONDENSATE PUMP WITH AUTOMATIC START AT 1" WATER DEPTH.
4. PROVIDE FLEXIBLE NEOPRENE CONNECTOR AT PUMP.

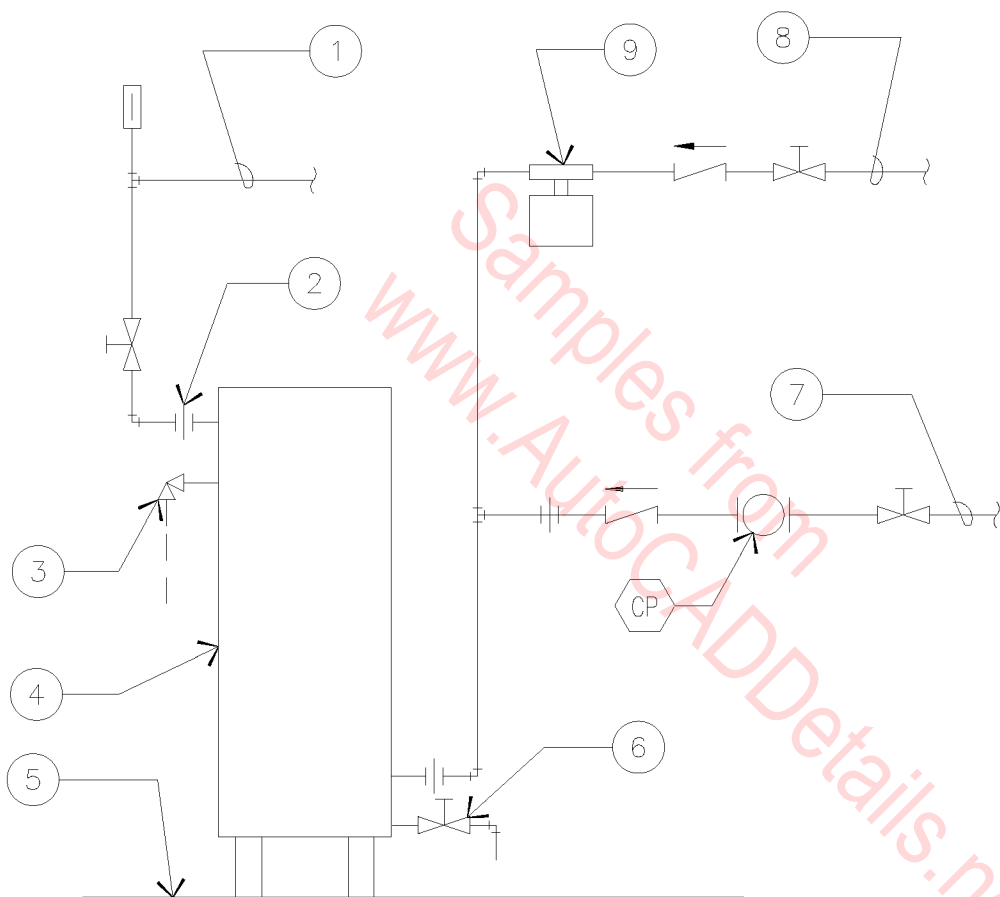
NOTE: COAT INTERIOR AND EXTERIOR OF PAN WITH PRIME COAT AND TWO FINAL COATS OF POLYAMIDE EPOXY PAINT.



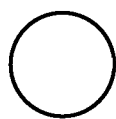
CONDENSATE PUMP DETAIL

N.T.S.

15A-9008



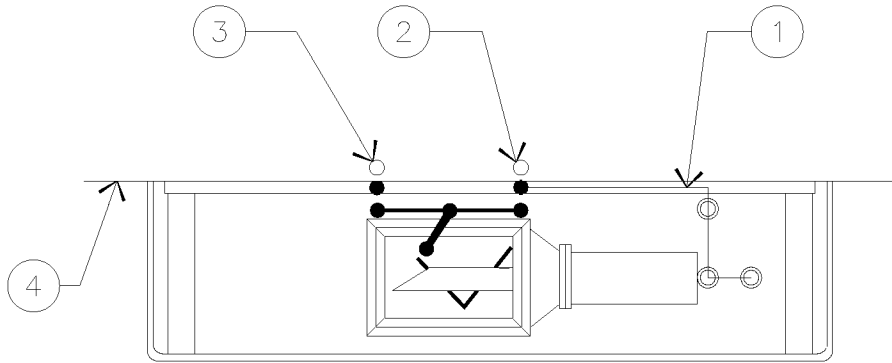
1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
4. WATER HEATER.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.
7. 3/4" HOT WATER CIRCULATION LINE.
8. COLD WATER INLET.
9. EXPANSION TANK, SPECIFIED WITH WATER HEATER.



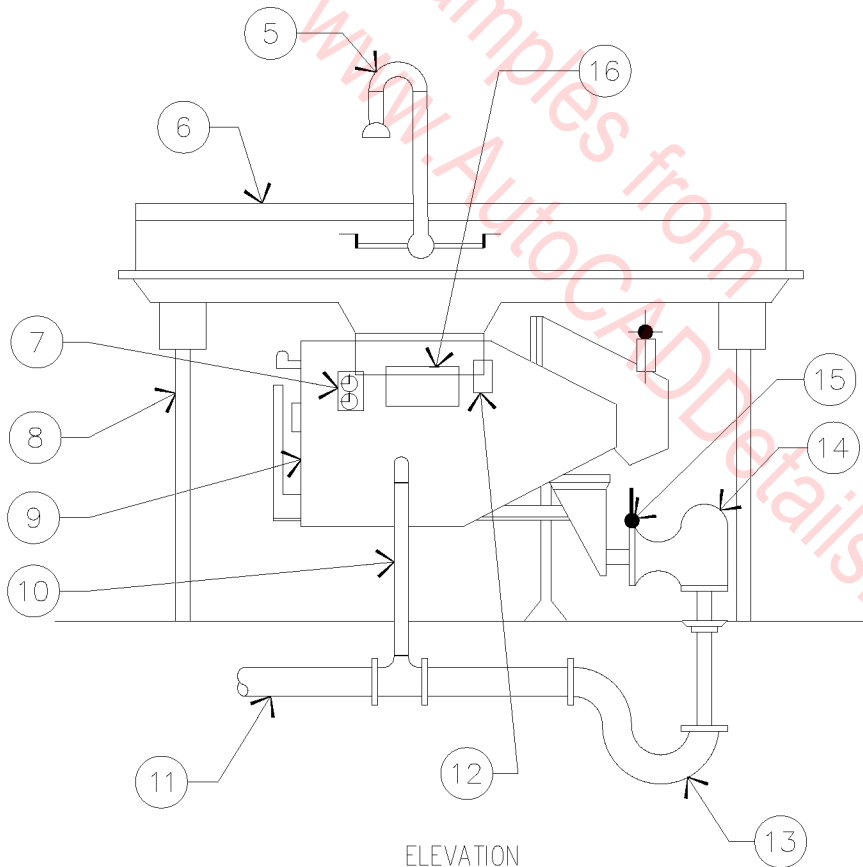
WATER HEATER DETAIL

N.T.S.

15A-9009



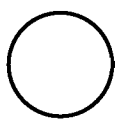
PLAN



ELEVATION

1. EXTEND 1/2" COLD WATER LINE WITH GATE VALVE.
2. 3/4" COLD WATER LINE DROP IN WALL, BRANCH BELOW TOP OF FIXTURE, CONNECT FIXTURE STOP.
3. 1/2" HOT WATER LINE DROP IN WALL, CONNECT WITH FIXTURE STOP.
4. WALL.
5. PRE-RINSE UNIT.
6. 16 GAUGE STAINLESS STEEL.
7. START/STOP PUSH BUTTON.
8. 1-3/8" OUTSIDE DIAMETER STAINLESS STEEL LEG WITH STAINLESS STEEL ENCLOSED GUSSETS.
9. NEOPRENE SKIRT.
10. 2" VENT UP IN WALL.
11. 4" CAST IRON SANITARY SEWER.
12. ELECTRICAL JUNCTION BOX.
13. 4" CAST IRON TRAP.
14. CLEANOUT PLUG.
15. 1/2" DIELECTRIC UNION FOR WATER INLET CONNECTION.
16. MAIN STARTER.

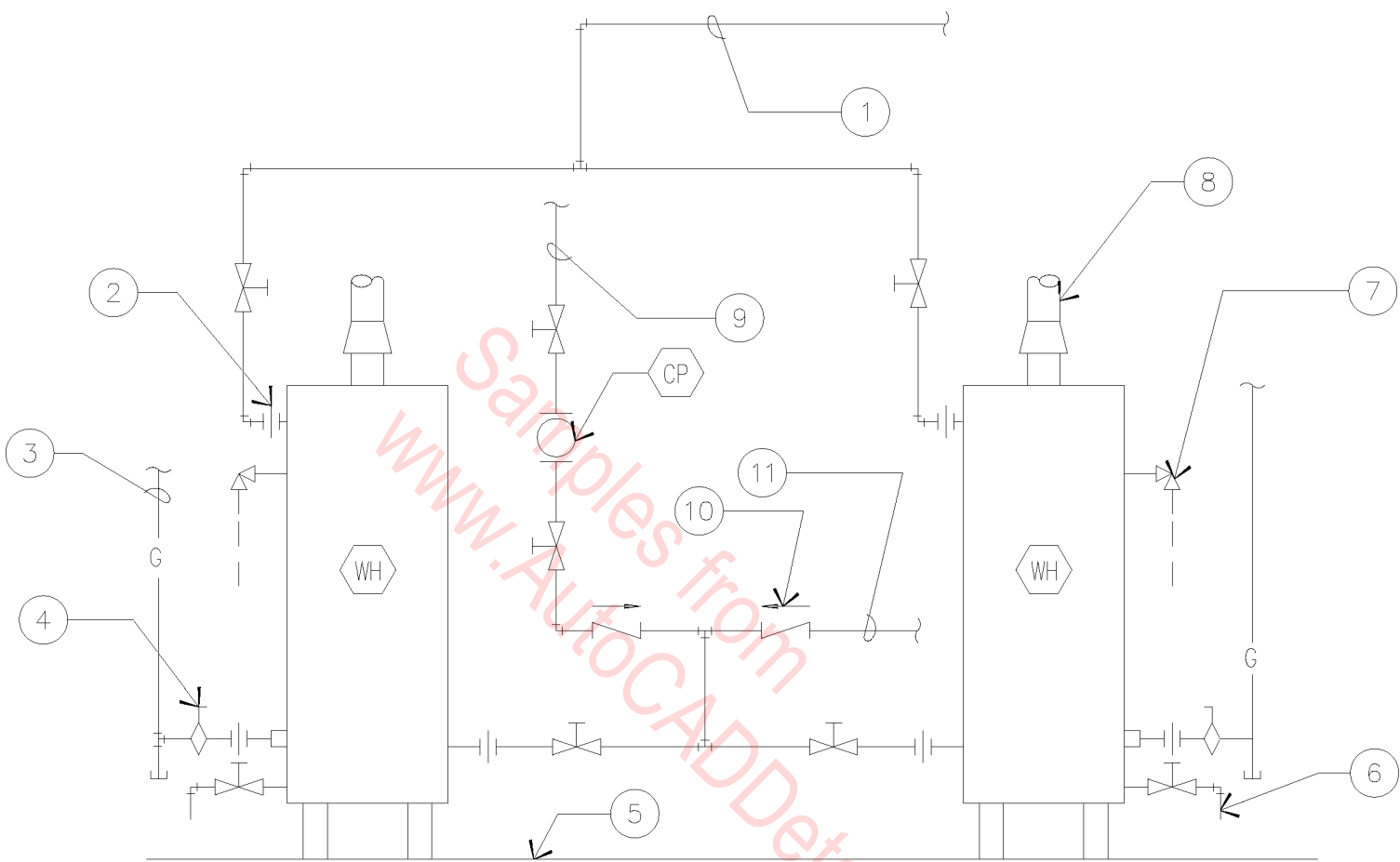
NOTE: FIXTURE FURNISHED BY OWNER. ROUGH-IN AND FINAL CONNECTION BY MECHANICAL AND ELECTRICAL CONTRACTORS.



GARBAGE DISPOSER

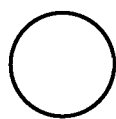
N.T.S.

15A-9010



1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.

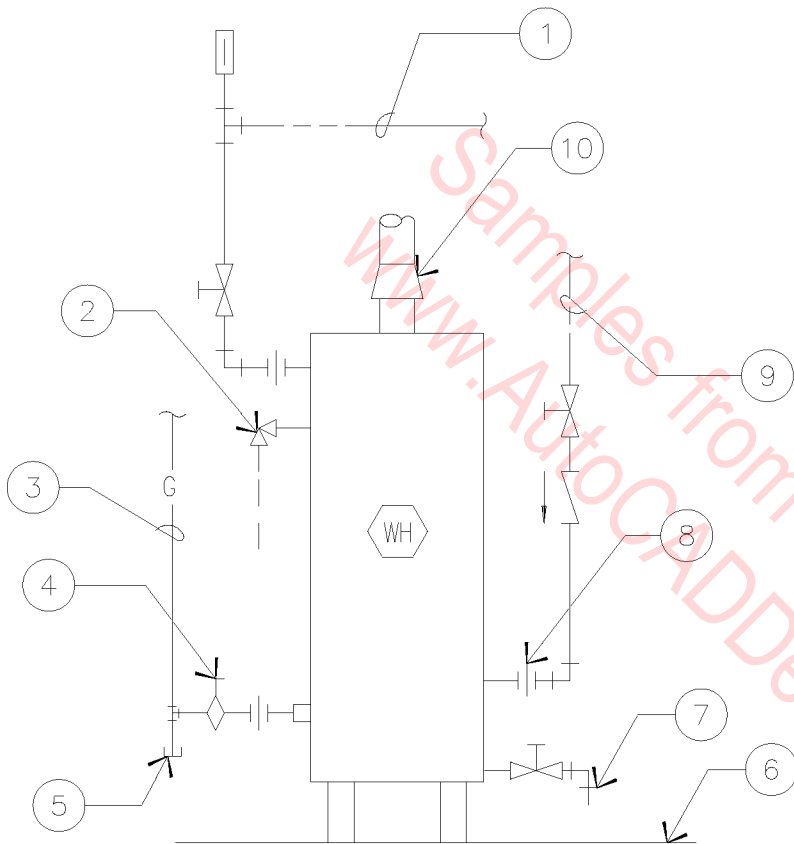
7. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
8. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
9. 3/4" HOT WATER CIRCULATION LINE.
10. DRILL 1/8" HOLE IN FLAPPER.



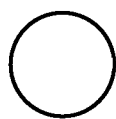
WATER HEATER DETAIL

N.T.S.

15A-9011



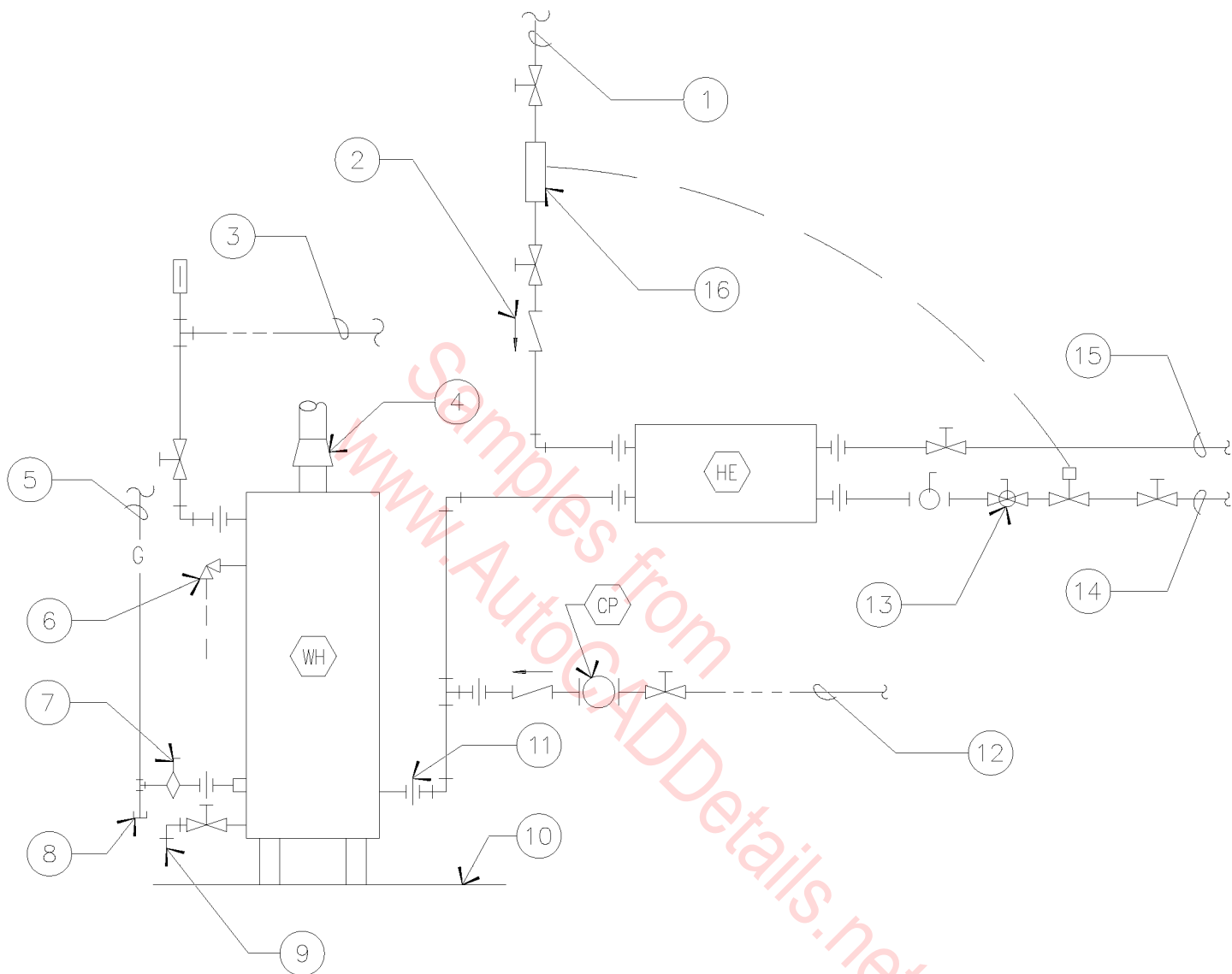
1. HOT WATER OUTLET.
2. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. DIRT LEG.
6. FLOOR.
7. DRAIN VALVE, PIPE TO 6" A.F.F.
8. DIELECTRIC UNION, TYPICAL.
9. COLD WATER INLET.
10. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.



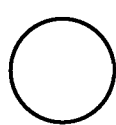
WATER HEATER DETAIL

N.T.S.

15A-9012



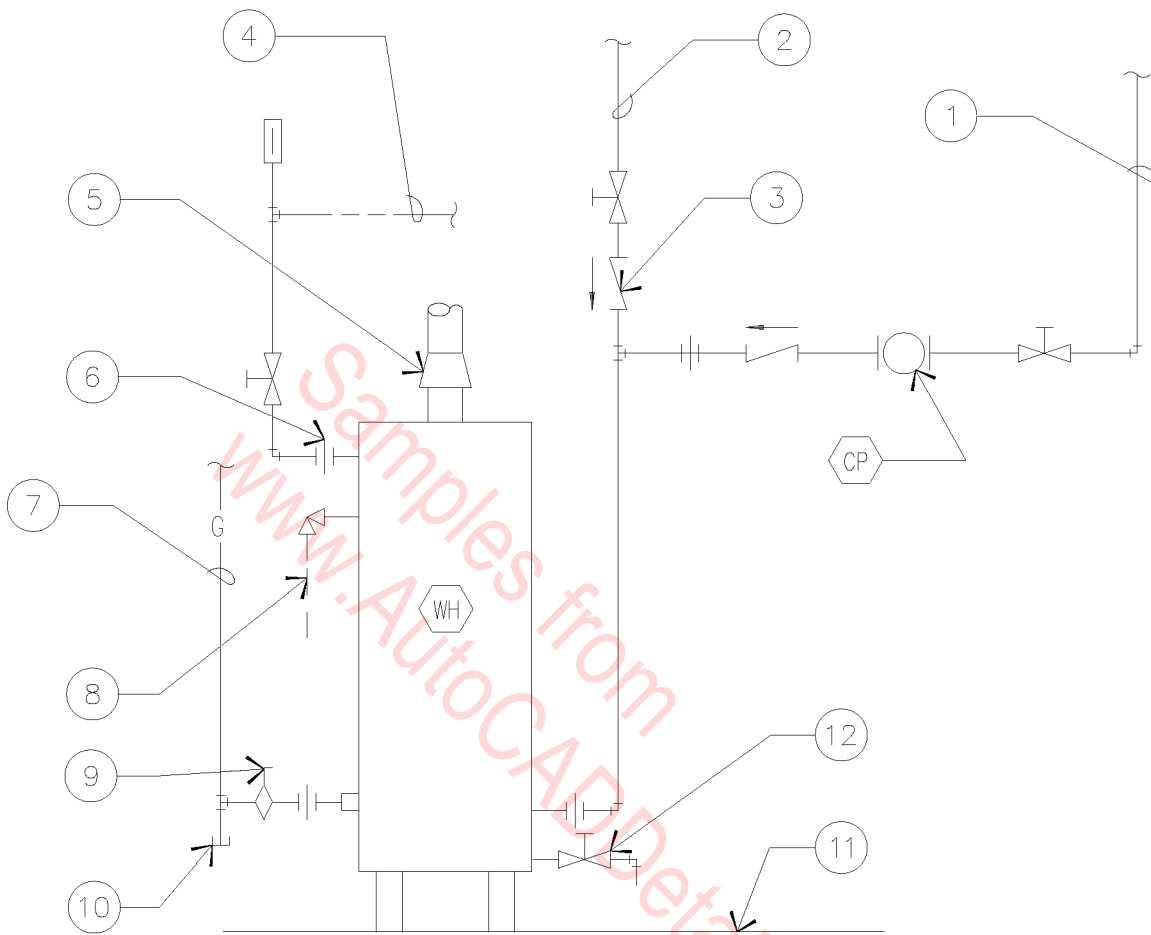
- | | | |
|--|---|---|
| 1. COLD WATER INLET. | 6. ASME PRESSURE RELIEF VALVE,
PIPE TO 6" A.F.F. | 11. DIELECTRIC UNION, TYPICAL. |
| 2. DRILL 1/8" HOLE IN FLAPPER. | 7. PROVIDE FULL LINE-SIZE
LUBRICATED PLUG COCK. | 12. 3/4" HOT WATER CIRCULATION
LINE. |
| 3. HOT WATER OUTLET. | 8. DIRT LEG. | 13. B & G CIRCUIT SETTER. |
| 4. FLUE, SEE PLAN FOR REQUIRED
SIZE. | 9. DRAIN VALVE, PIPE TO 6" A.F.F. | 14. HOT WATER SOURCE LINE. |
| 5. GAS LINE, SEE PLANS FOR
REQUIRED SIZE. | 10. FLOOR. | 15. HOT WATER RETURN LINE. |
| | | 16. FLOW SWITCH. |



WATER HEATER DETAIL

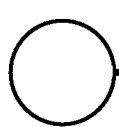
N.T.S.

15A-9013



1. 3/4" HOT WATER CIRCULATION LINE.
2. COLD WATER INLET.
3. DRILL 1/8" HOLE IN FLAPPER.
4. HOT WATER OUTLET.
5. FLUE, SEE PLAN FOR REQUIRED SIZE.
6. DIELECTRIC UNION, TYPICAL.

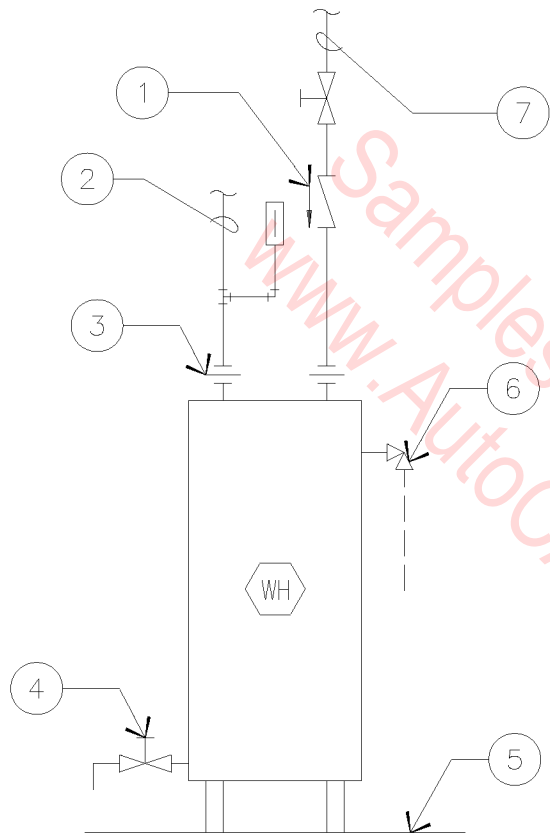
7. GAS LINE, SEE PLANS FOR REQUIRED SIZE.
8. ASME PRESSURE RELIEF VALVE, PIPE TO 6" A.F.F.
9. PROVIDE FULL LINE-SIZE LUBRICATED PLUG COCK.
10. DIRT LEG.
11. FLOOR.
12. DRAIN VALVE, PIPE TO 8" A.F.F.



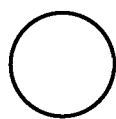
WATER HEATER DETAIL

N.T.S.

15A-9014



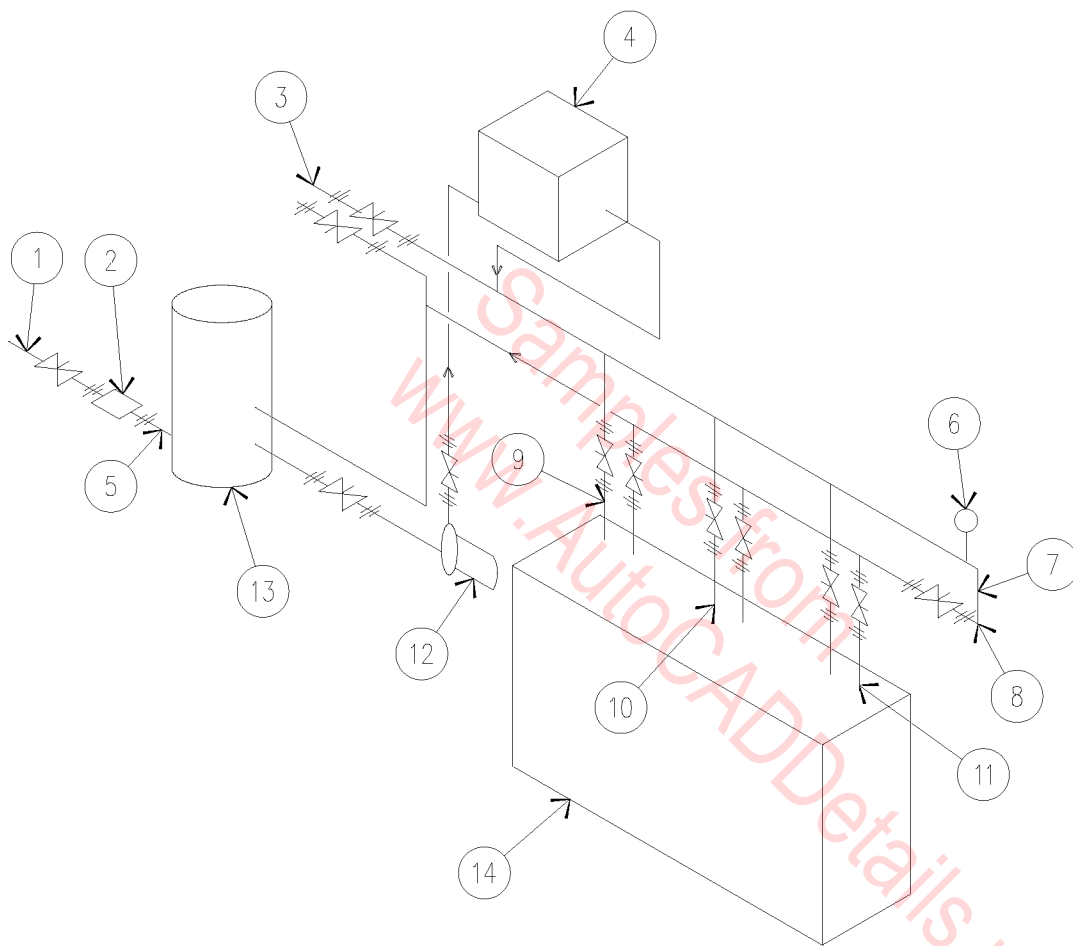
1. DRILL 1/8" HOLE IN FLAPPER.
2. HOT WATER OUTLET.
3. DIELECTRIC UNION, TYPICAL.
4. DRAIN VALVE, PIPE TO 6" A.F.F.
5. FLOOR.
6. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
7. COLD WATER INLET.



WATER HEATER DETAIL

N.T.S.

15A-9015



1. 3/4" WATER SUPPLY.
2. WATTS 909D BACK-FLOW PREVENTER.
3. 1/2" ϕ LINE TO AIR COMPRESSOR AFTER COOLER.
4. CHILLER.
5. 1/2" ϕ LINE.
6. PRESSURE GAUGE.
7. BY-PASS.
8. UNIONS, TYPICAL.
9. REFRIGERANT CONDENSER, 3/4" ϕ .
10. SOLVENT COOLING, 3/4" ϕ .
11. STILL CONDENSER, 3/4" ϕ .
12. WATER PUMP.
13. WATER TANK.
14. DRY-CLEAN MACHINE.

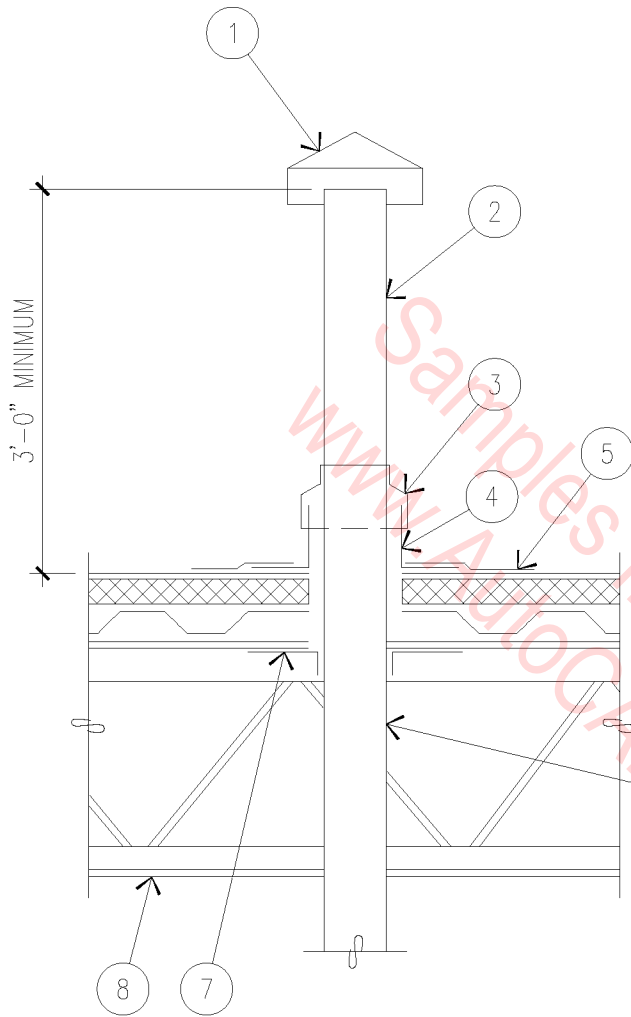
NOTES:

- A. ALL PIPING TO BE 1 1/4" ϕ (UNLESS NOTED OTHERWISE) GALVANIZED SCHEDULE 40.
- B. CHILLED WATER PIPING TO BE INSULATED WITH 1/2" ARMOFLEX INSULATION.
- C. CONNECTION FROM PIPING TO DRY-CLEAN MACHINE TO BE POLYBRAID HOSE.

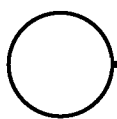
CHILLED WATER PIPING DIAGRAM

NOT TO SCALE

15A-9016



1. PREFABRICATED METAL CAP.
2. 10" ϕ UL LABEL TYPE 'B' METAL BOILER STACK PIPE THROUGH ROOF.
3. METAL COUNTERFLASHING PIPE COLLAR.
4. 12" ϕ METAL FLASHING COLLAR, PROVIDE PROPER STACK CLEARANCE.
5. ROOF PENETRATION, FLASHING, AND ROOFING TO BE DONE BY LANDLORD'S ROOFER.
6. ALL PIPE SECTIONS TO BE FASTENED WITH 3/4" SHEET METAL SCREWS.
7. FIRESTOP AT CEILING WITH MANUFACTURER'S METAL PLATE COLLAR - SEE MANUFACTURER'S SPECIFICATIONS.
8. EXISTING ROOF STRUCTURE.

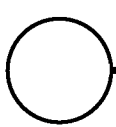
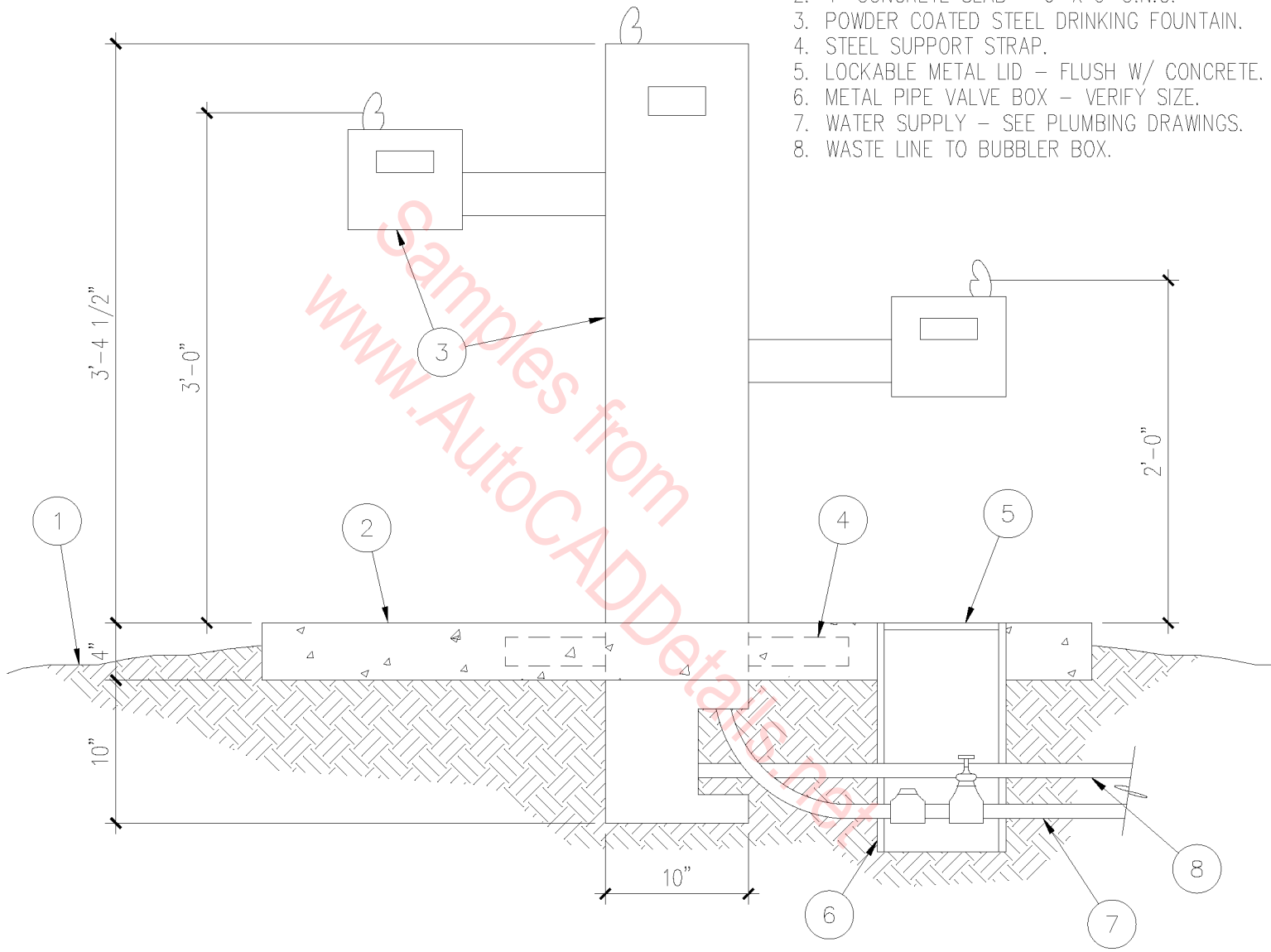


BOILER STACK

NOT TO SCALE

15A-9017

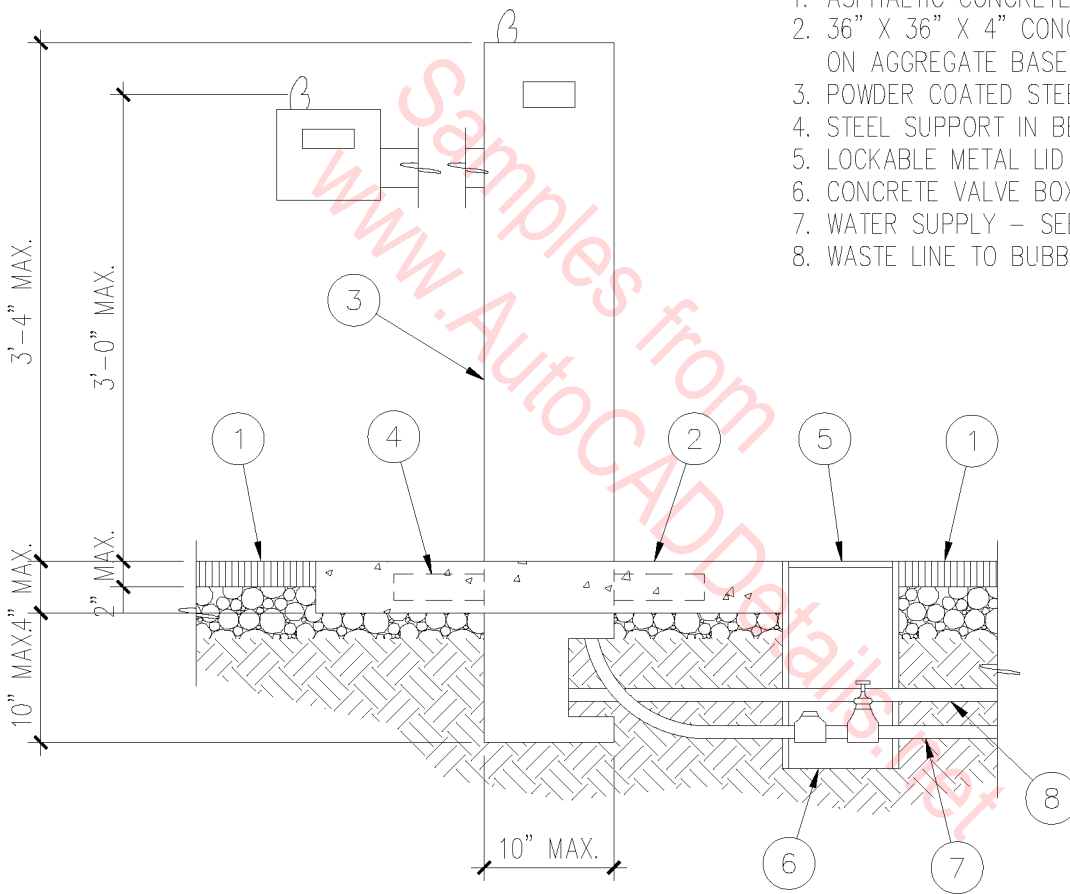
1. FINISHED GRADE - WHERE OCCURS.
2. 4" CONCRETE SLAB - 6' X 6' U.N.O.
3. POWDER COATED STEEL DRINKING FOUNTAIN.
4. STEEL SUPPORT STRAP.
5. LOCKABLE METAL LID - FLUSH W/ CONCRETE.
6. METAL PIPE VALVE BOX - VERIFY SIZE.
7. WATER SUPPLY - SEE PLUMBING DRAWINGS.
8. WASTE LINE TO BUBBLER BOX.



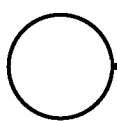
DRINKING FOUNTAINS

1" = 1'-0"

15A-8001



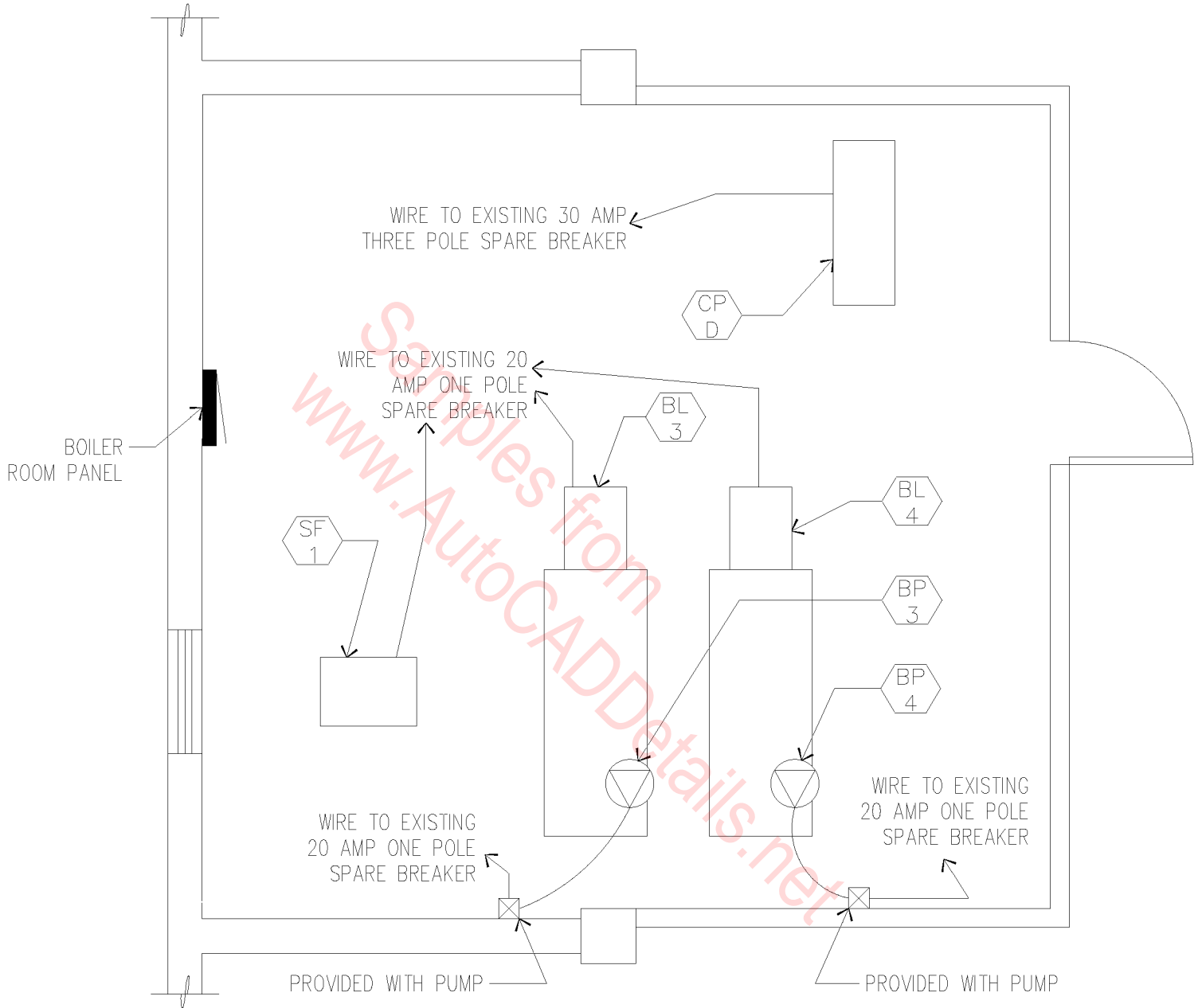
1. ASPHALTIC CONCRETE.
2. 36" X 36" X 4" CONCRETE SLAB ON AGGREGATE BASE COURSE.
3. POWDER COATED STEEL DRINKING FOUNTAIN.
4. STEEL SUPPORT IN BED.
5. LOCKABLE METAL LID – FLUSH WITH PAVEMENT.
6. CONCRETE VALVE BOX – VERIFY SIZE.
7. WATER SUPPLY – SEE PLUMBING.
8. WASTE LINE TO BUBBLER BOX.



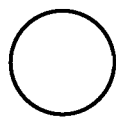
DRINKING FOUNTAINS

3/4" = 1'-0"

15A-8002



BOILER ROOM PARTIAL PLAN



1/4" = 1'-0"

15A-8003

3" HS/HR RE: PARKING LEVEL PLAN
THIS SHEET FOR CONTINUATION

EXTEND 2-1/2" GAS LINE TO EXISTING
GAS SERVICE TO BOILERS AND MAKE
NEW CONNECTION

CP
D
CP
E (FUTURE)

EXTEND 3" HS/HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE CROSS CONNECTION PIPING

20" X 20"
INSTALL SHEET
METAL PLENUM
BEHIND (E)
OUTSIDE AIR
LOUVER -
MAKE SF-1
COMBUSTION
AIR DUCT
CONNECTION
TO PLENUM

EXTEND 4" HR PIPING AND
INSTALL BLIND FLANGE FOR
FUTURE HR CONNECTION

FUTURE BOILER LOCATION

4" ϕ
(E) BLIND FLANGE FOR
FUTURE CONNECTION (TYP.)

MAKE CONNECTION TO (E) 3"
FLANGE (TYP. OF 4)

MAKE 14" ϕ CONNECTION TO EXISTING 20" ϕ 'T'
FITTING AND EXTEND 14" ϕ POSITIVE PRESSURE
VENT AS SHOWN, MAKE (2) 10" ϕ CONNECTIONS
FROM NEW BOILERS

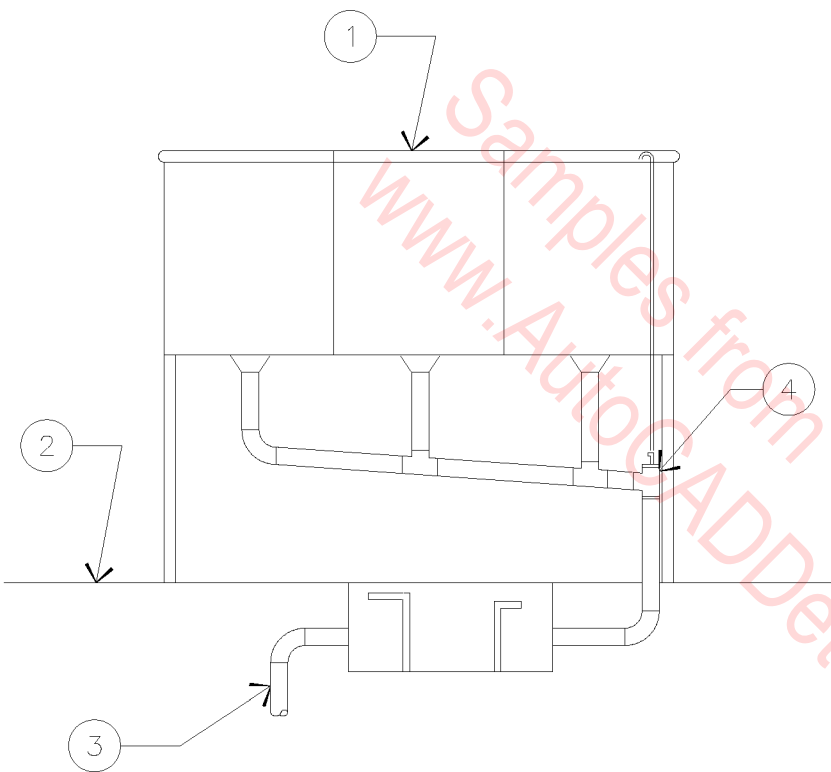
BL 3
BP 3
BL 4
BP 4

- NOTES: 1. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND PIPING SHOWN AS DASHED IS EXISTING TO REMAIN.
2. HOLD ALL NEW PIPING AS HIGH AS POSSIBLE IN SPACE.
3. EXTEND (E) GAS SERVICE AS REQUIRED TO PROVIDE NEW 2" GAS SERVICE TO EACH NEW BOILER.

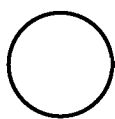
BOILER ROOM PARTIAL PLAN

1/4" = 1'-0"

15A-8004



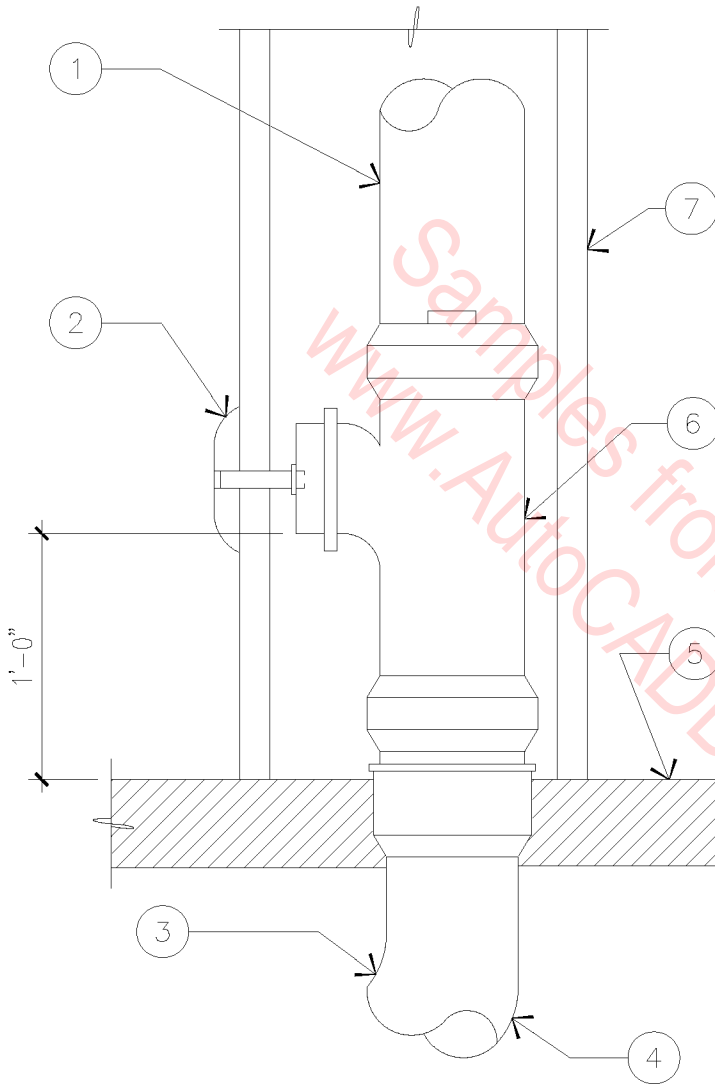
1. THREE COMPARTMENT SINK.
2. FLOOR.
3. TIE TO WASTE AND VENT SYSTEM, SEE PLANS FOR REQUIRED SIZE.
4. FLOW CONTROL FITTING.



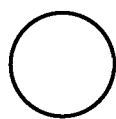
GREASE TRAP DETAIL

N.T.S.

15A-8005



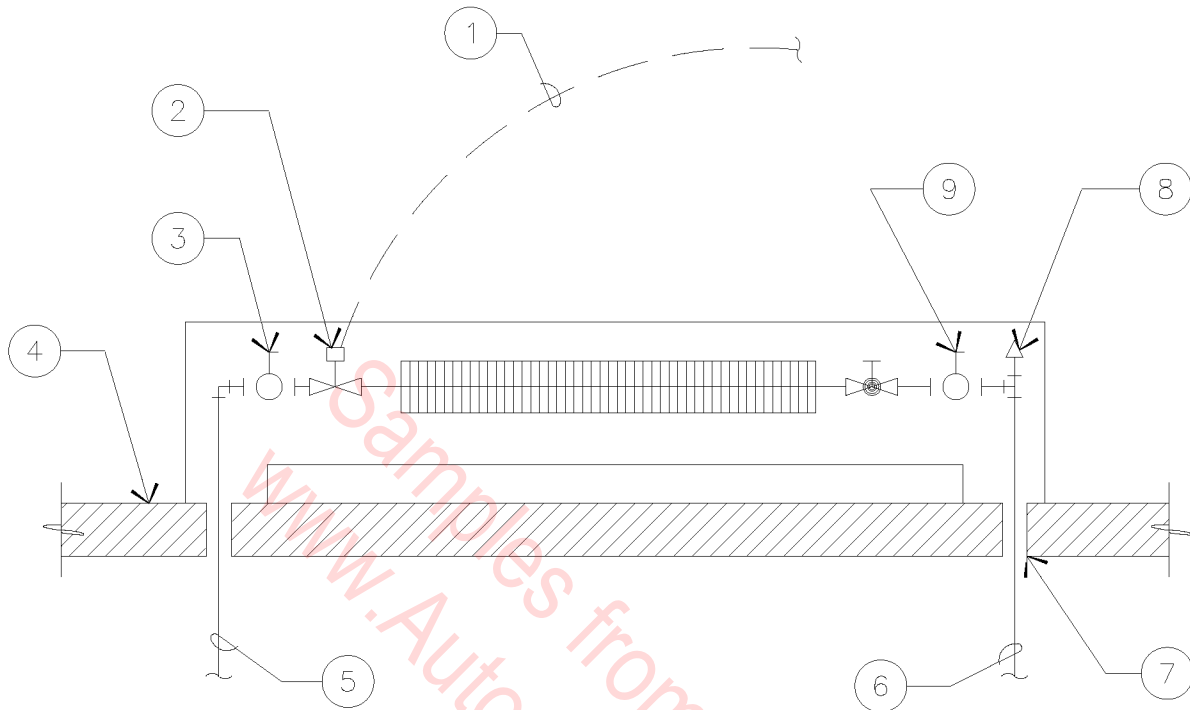
1. MAY EXTEND AS A WASTE OR VENT.
2. WALLCOVER AND SCREW.
3. 1/8" CAST IRON BEND.
4. BALANCE OR PIPING SAME AS CLEANOUT TO GRADE.
5. FLOOR.
6. PLUGGED TEE WITH CLEANOUT.
7. WALL.



WALL CLEANOUT

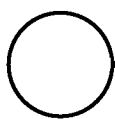
N.T.S.

15A-8006



1. TO ROOM THERMOSTAT, SEE PLAN FOR LOCATION.
2. CONTROL VALVE TO BE INSTALLED IN FIRST SECTION OF BASEBOARD IN EACH ZONE.
3. BALL VALVE, TYPICAL.
4. FLOOR.
5. HOT WATER SOURCE LINE.
6. HOT WATER RETURN LINE.
7. PROVIDE FLOOR SLEEVES.
8. MANUAL AIR VENT.
9. CIRCUIT SETTER TO BE INSTALLED IN LAST SECTION OF BASEBOARD IN EACH ZONE.

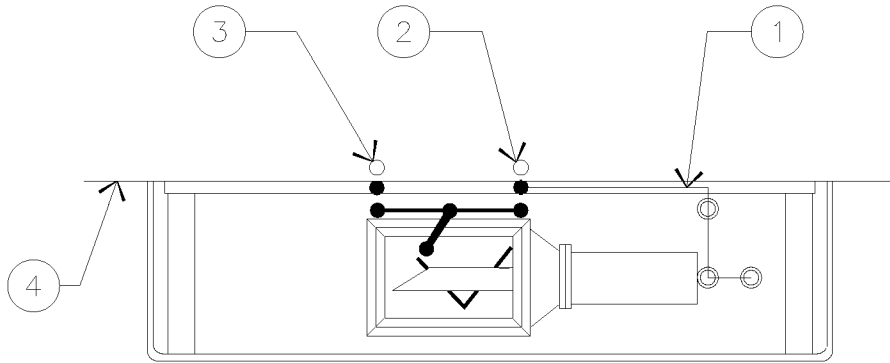
NOTE: PROVIDE ACCESS DOORS FOR ALL VALVES.



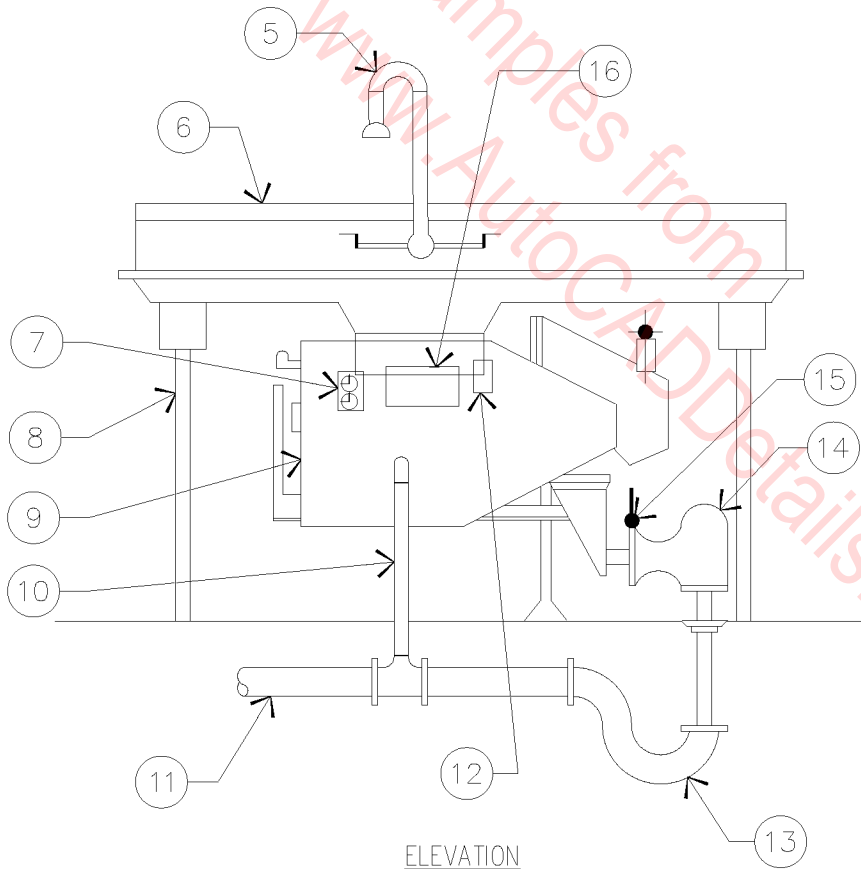
BASEBOARD PIPING

N.T.S.

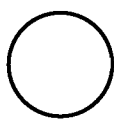
15A-8007



1. EXTEND 1/2" COLD WATER LINE WITH GATE VALVE.
2. 3/4" COLD WATER LINE DROP IN WALL, BRANCH BELOW TOP OF FIXTURE, CONNECT FIXTURE STOP.
3. 1/2" HOT WATER LINE DROP IN WALL, CONNECT WITH FIXTURE STOP.
4. WALL.
5. PRE-RINSE UNIT.
6. 16 GAUGE STAINLESS STEEL.
7. START/STOP PUSH BUTTON.
8. 1-3/8" OUTSIDE DIAMETER STAINLESS STEEL LEG WITH STAINLESS STEEL ENCLOSED GUSSETS.
9. NEOPRENE SKIRT.
10. 2" VENT UP IN WALL.
11. 4" CAST IRON SANITARY SEWER.
12. ELECTRICAL JUNCTION BOX.
13. 4" CAST IRON TRAP.
14. CLEANOUT PLUG.
15. 1/2" DIELECTRIC UNION FOR WATER INLET CONNECTION.
16. MAIN STARTER.



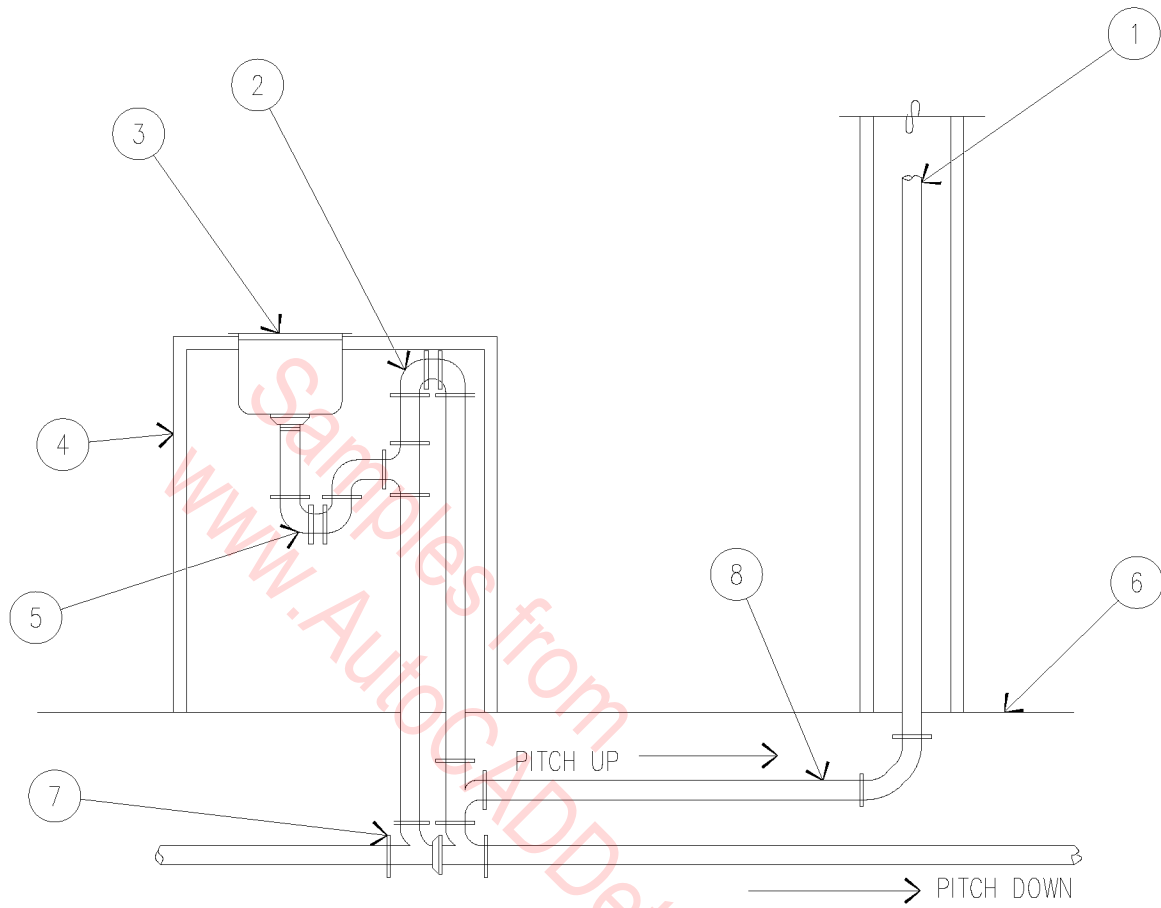
NOTE: FIXTURE FURNISHED BY OWNER. ROUGH-IN AND FINAL CONNECTION BY MECHANICAL AND ELECTRICAL CONTRACTORS.



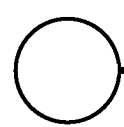
GARBAGE DISPOSER

N.T.S.

15A-8008



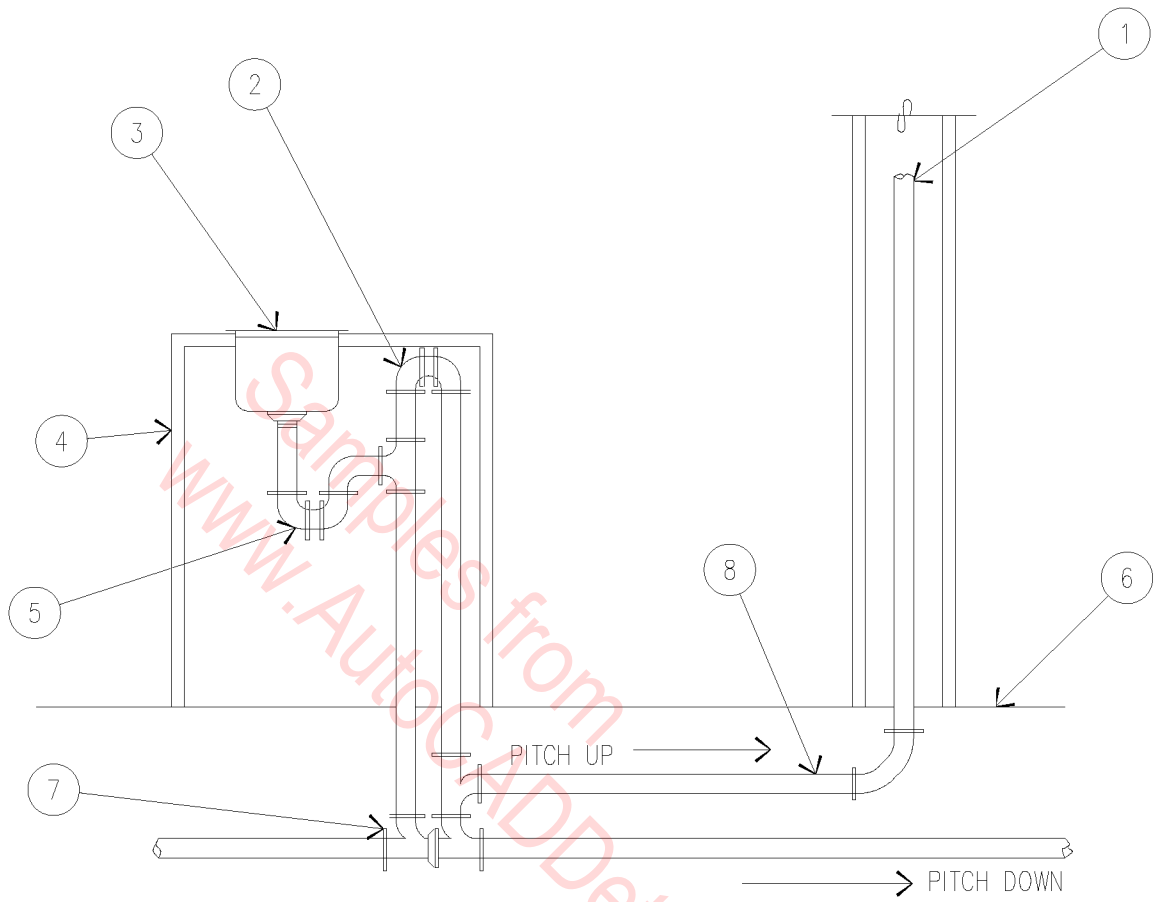
1. VENT THROUGH ROOF.
2. RETURN BEND, ELEVATE TO HIGHEST POINT POSSIBLE.
3. SINK.
4. ISLAND CABINET.
5. P-TRAP.
6. FLOOR LINE.
7. LONG SWEEP FITTING (TYPICAL).
8. FOOT VENT.



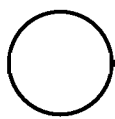
ISLAND SINK

N.T.S

15A-8009



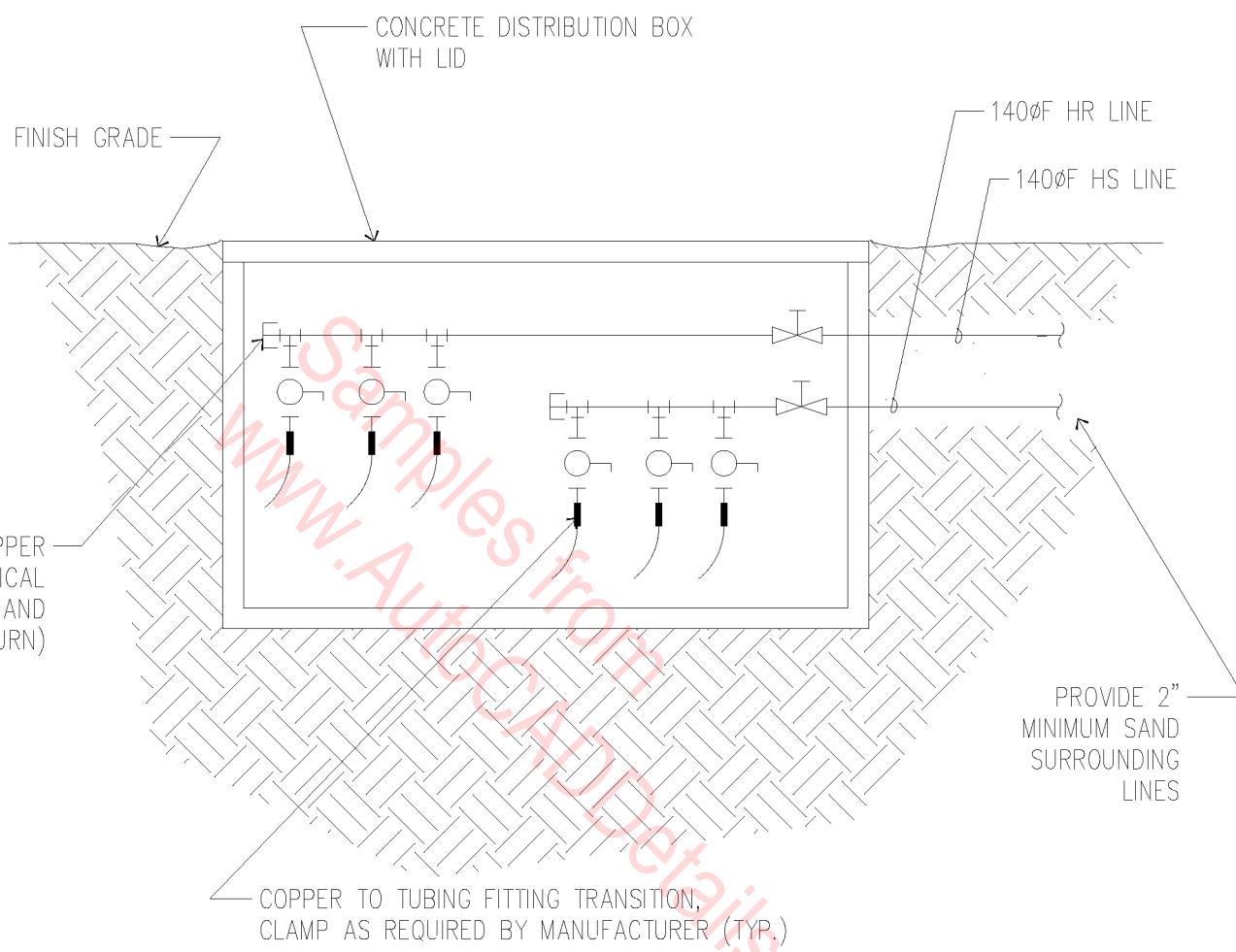
1. VENT THROUGH ROOF.
2. RETURN BEND, ELEVATE TO HIGHEST POINT POSSIBLE.
3. SINK.
4. ISLAND CABINET.
5. P-TRAP.
6. FLOOR LINE.
7. LONG SWEEP FITTING (TYPICAL).
8. FOOT VENT.



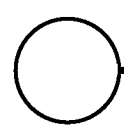
ISLAND SINK

N.T.S

15A-8009



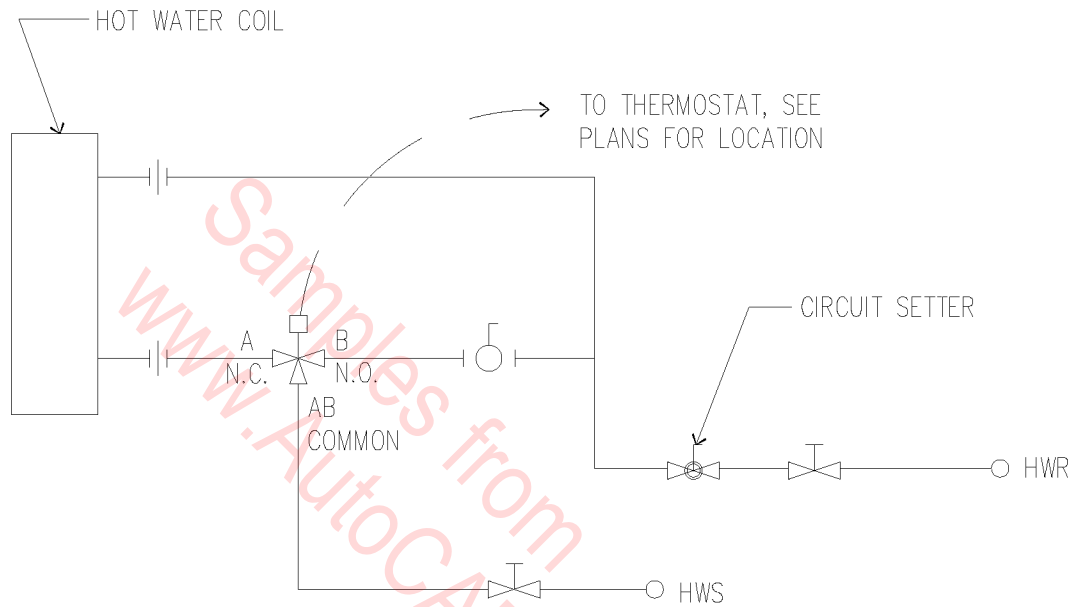
NOTE:
 SEE PLANS FOR NUMBER
 OF SNOWMELT LOOPS REQUIRED



DISTRIBUTION BOX DETAIL

N.T.S.

15A-4001

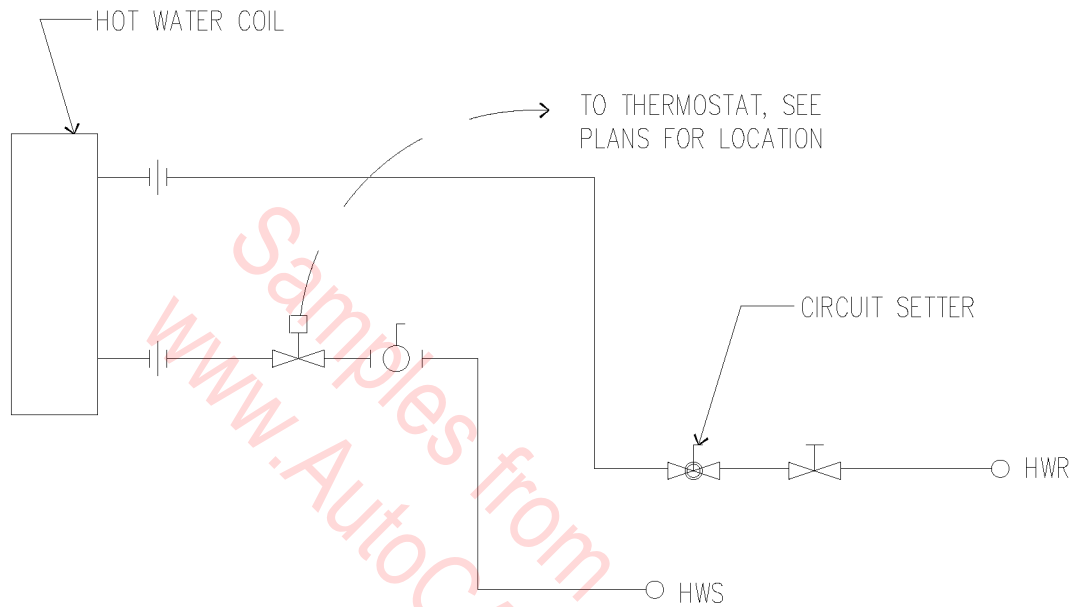


NOTE: TYPICAL FOR ALL FAN COIL UNITS

HOT WATER DIVERTING VALVE DETAIL

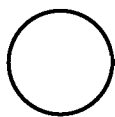
N.T.S.

15A-4002



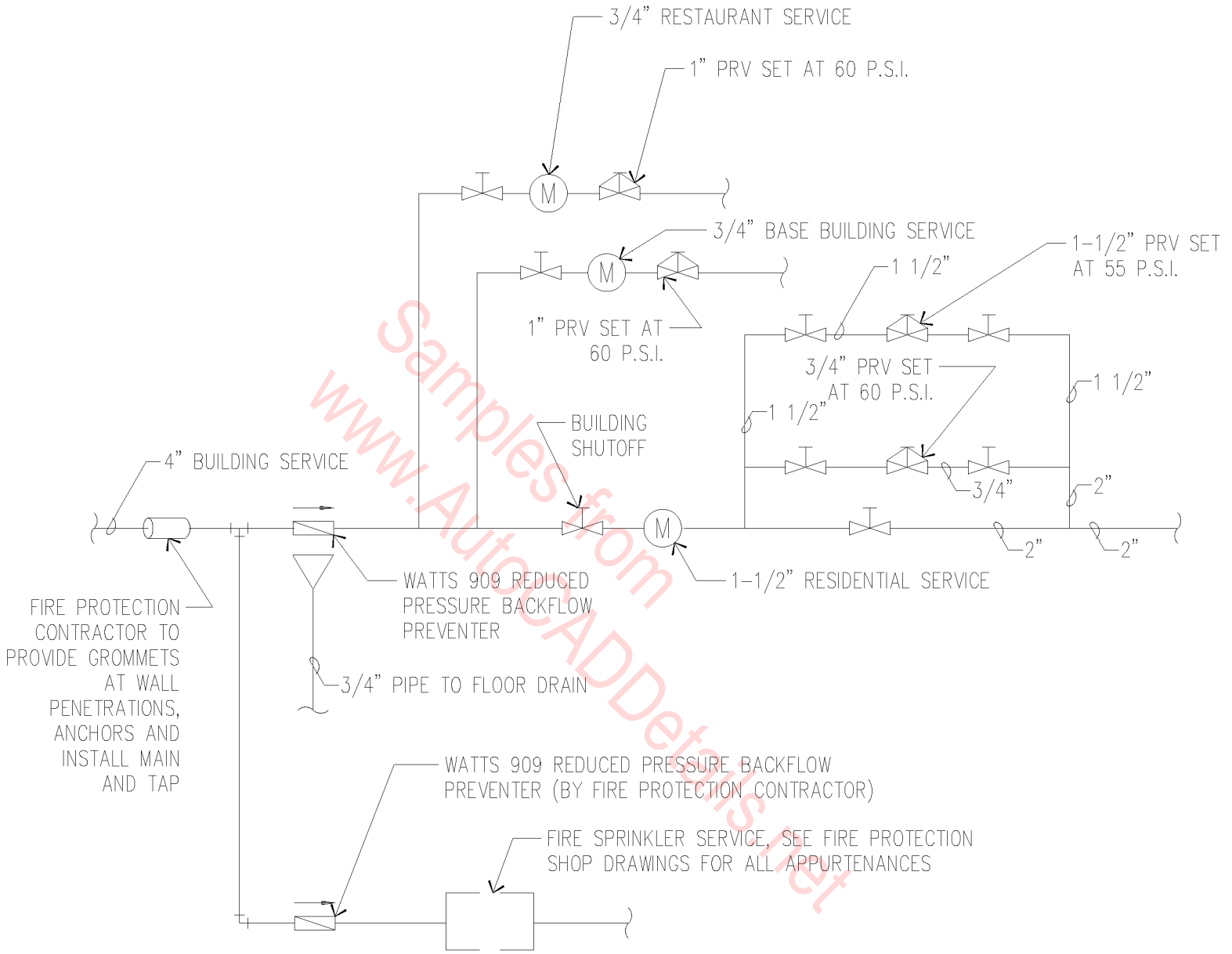
NOTE: TYPICAL FOR ALL CABINET UNIT HEATERS.

HOT WATER HEATING VALVE DETAIL



N.T.S.

15A-4003

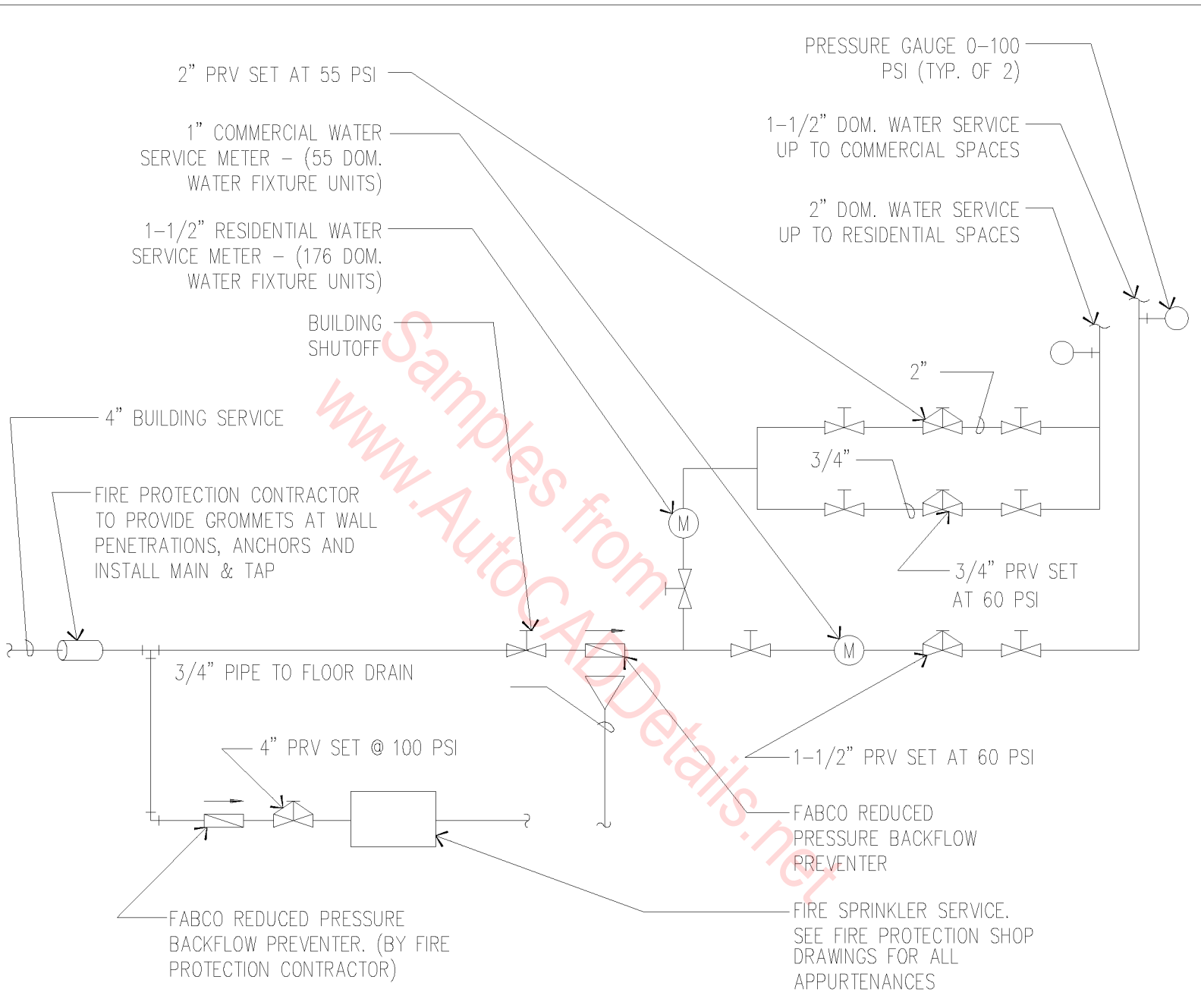


NOTE: INSTALL WATER METER AND VALVES AS REQUIRED BY WATER DISTRICT.

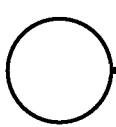
PRESSURE REDUCING STATION DETAIL

N.T.S.

15A-4004



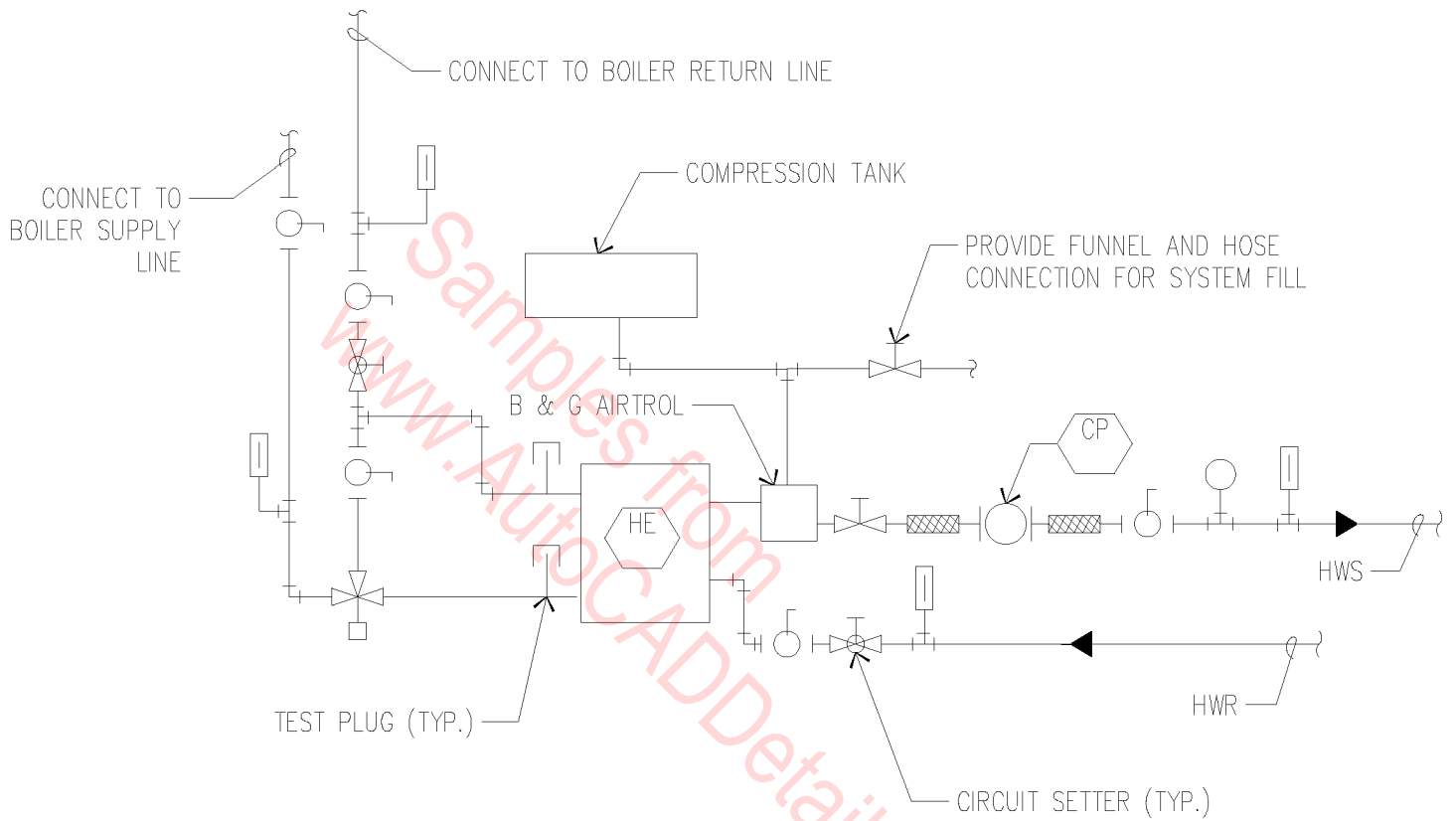
NOTE: INSTALL WATER METER & VALVES AS REQUIRED BY WATER DISTRICT.



WATER SVC. ENTRY DTL.

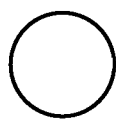
N.T.S.

15A-4005



NOTES:

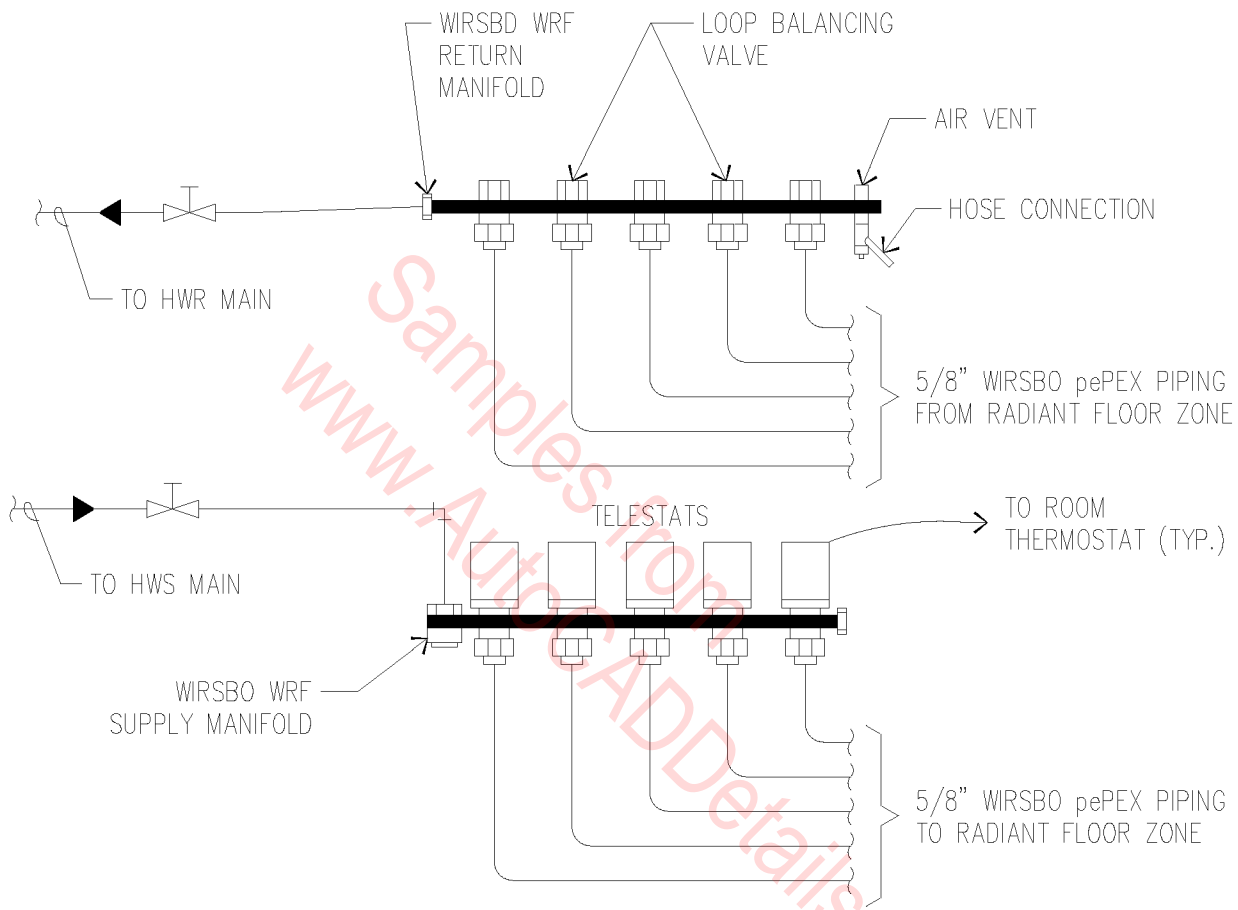
- A. SUPPORT PUMP AND HEAT EXCHANGER FROM WALL OR CEILING.
- B. ISOLATE PUMP FOR VIBRATION.



HEAT EXCHANGER PIPING

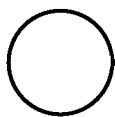
N.T.S.

15A-4006



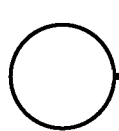
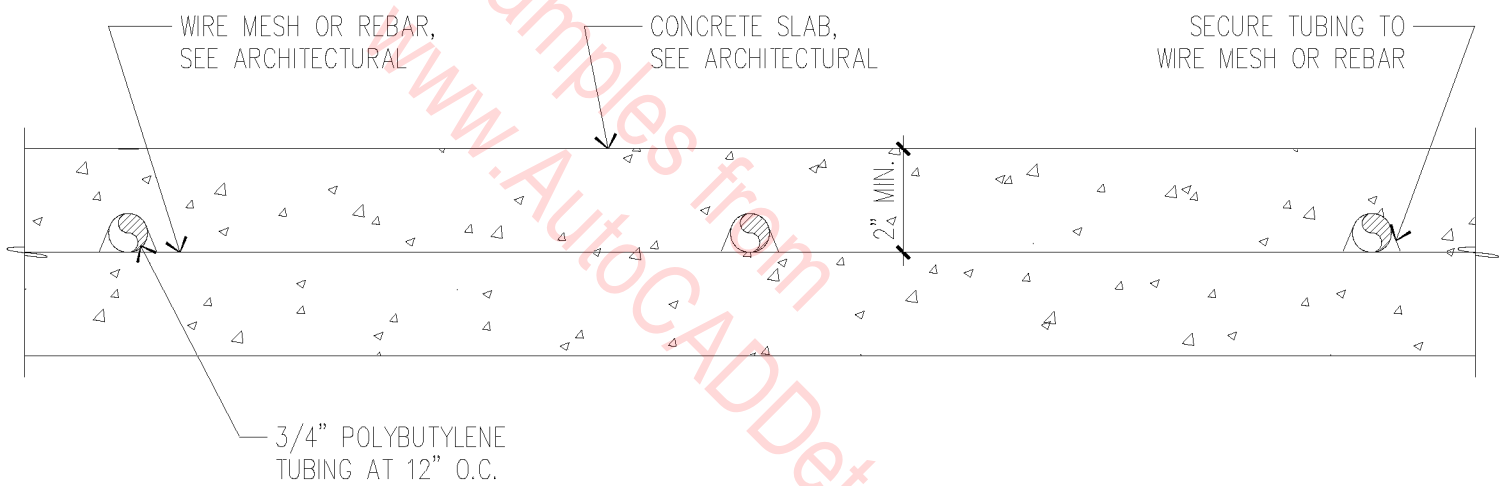
NOTE: SEE DRAWINGS FOR NUMBER OF LOOPS OF PIPING PER ZONE MANIFOLD AND GPM PER MANIFOLD.

RADIANT SLAB MANIFOLD PIPING



N.T.S.

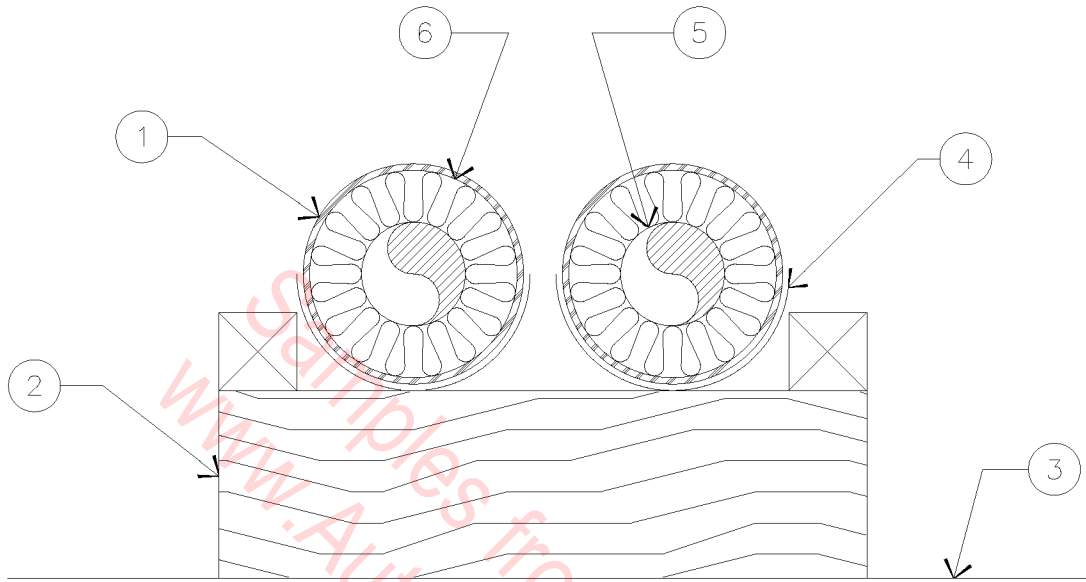
15A-4007



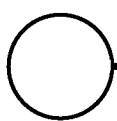
RADIANT SLAB PIPING

3" = 1'-0"

15A-4008



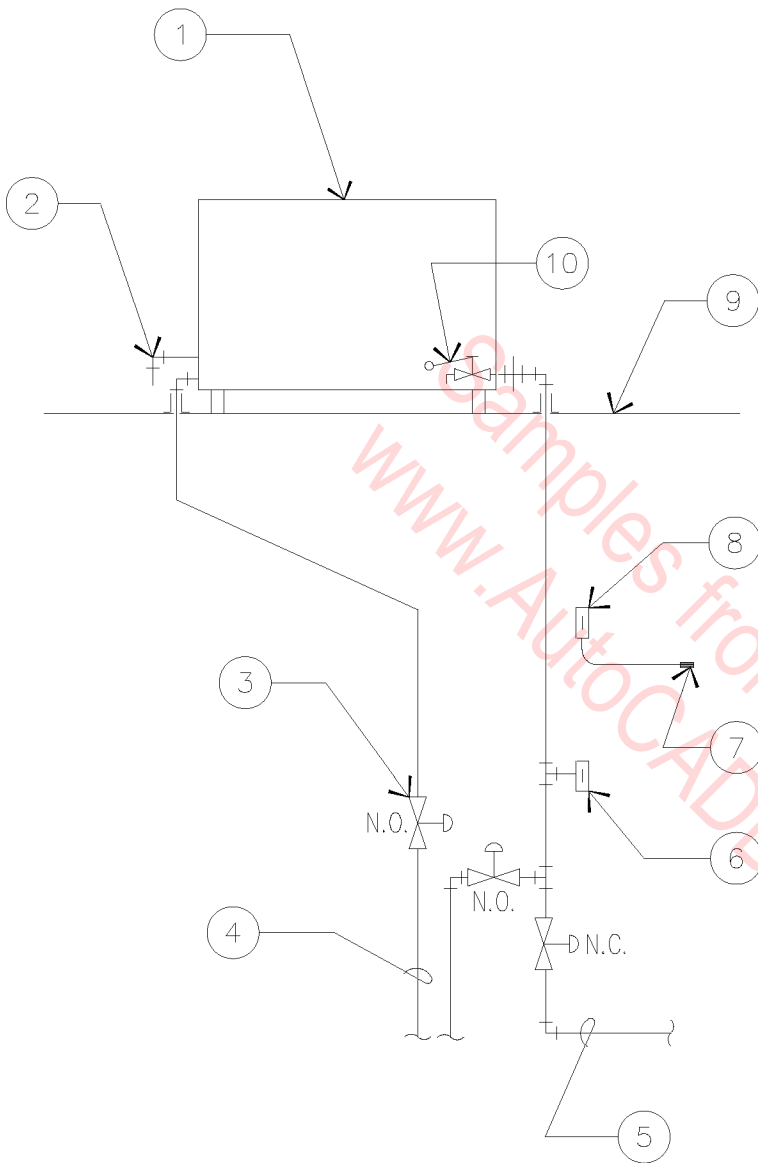
1. ALUMINUM ALL WEATHER JACKET.
2. 4 X 4 REDWOOD BLOCK.
3. ROOF.
4. PVC SADDLE, 2'-0" LONG.
5. PIPING.
6. 1" FIBERGLASS INSULATION.



PIPES ON ROOF

3" = 1'-0"

15A-4009

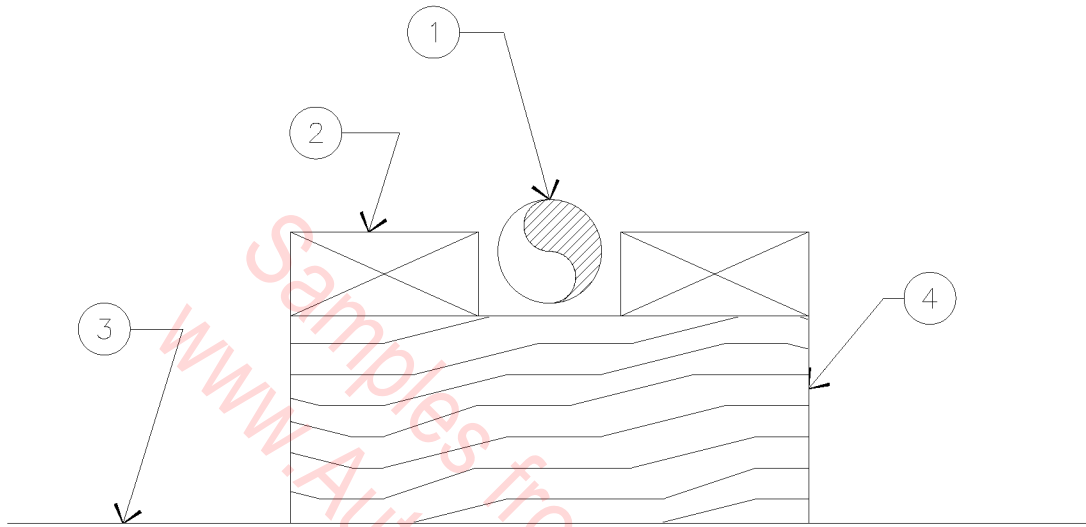


1. EVAPORATIVE COOLER.
2. OVERFLOW DRAIN.
3. MOUNT (3) SOLENOID VALVES 4'-0" A.F.F., SEE PLANS FOR LOCATIONS.
4. 3/4" DRAIN LINE, PIPE TO FLOOR DRAIN.
5. 1/2" COLD WATER SUPPLY LINE.
6. PRESSURE SWITCH SET TO BREAK POWER ON PRESSURE FALL BELOW 20 PSI.
7. OUTSIDE AIR THERMOSTAT AT DRAIN DOWN STATION.
8. LOW LIMIT SET TO CYCLE VALVES TO NORMAL POSITION WHEN OUTSIDE AIR TEMPERATURE FALLS BELOW 35°F, INSTALL SENSOR IN OUTSIDE AIR.
9. ROOF.
10. ADJUST FLOAT PER MANUFACTURER'S INSTRUCTIONS.

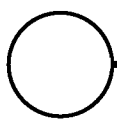
EVAPORATIVE COOLER PIPING

N.T.S.

15A-4010



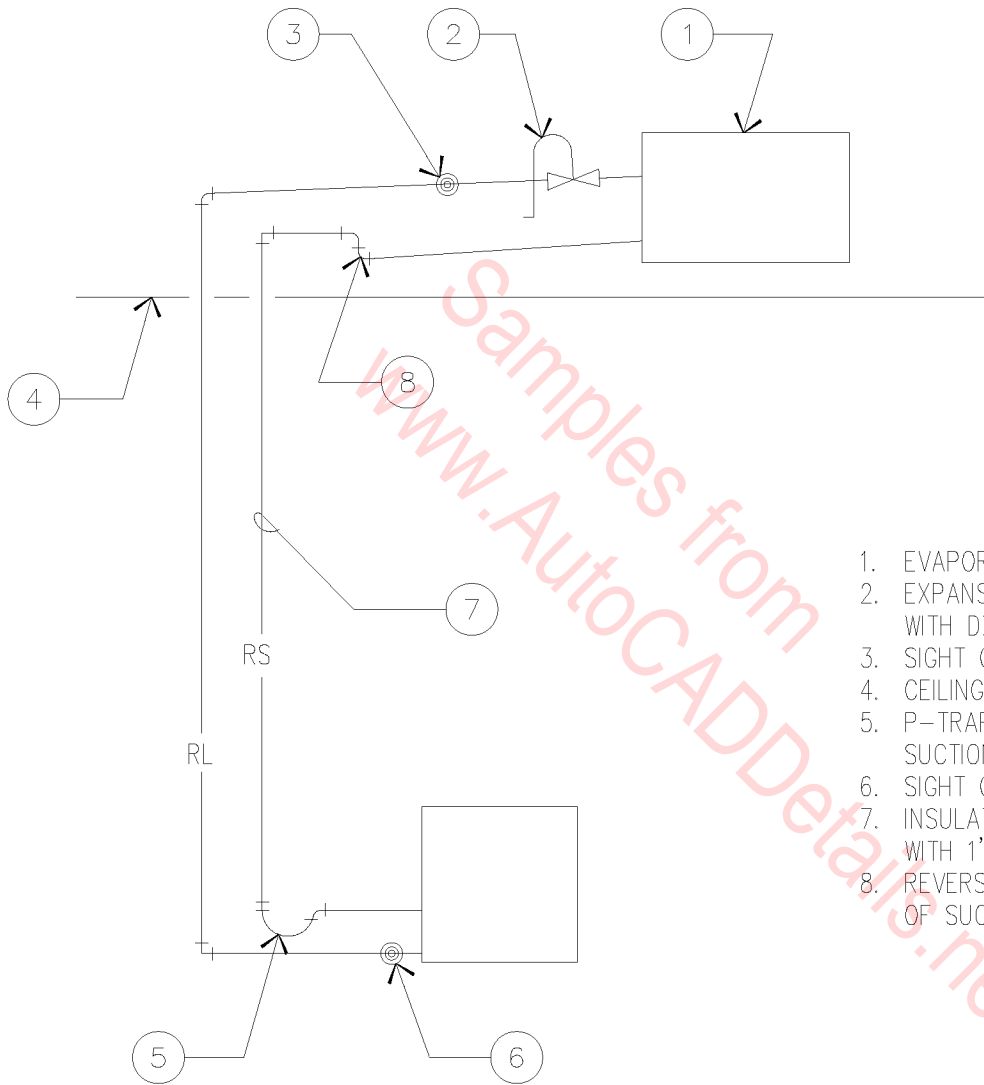
1. GAS PIPE.
2. 2 X 4 REDWOOD BLOCK, 8'-0"
ON CENTER.
3. ROOF.
4. 4" X 4" X 10" REDWOOD BLOCK,
6'-0" ON CENTER.



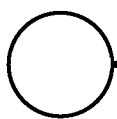
GAS PIPE ON ROOF

3" = 1'-0"

15A-4011



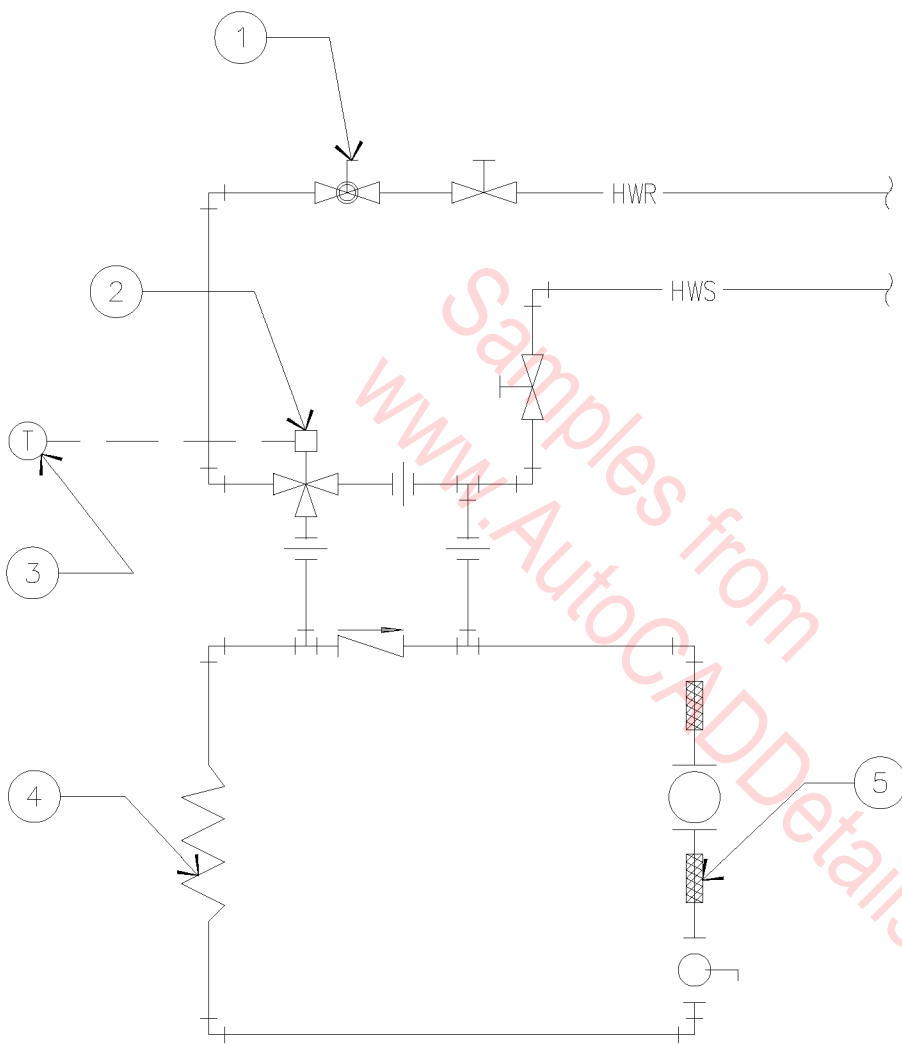
1. EVAPORATOR COIL.
2. EXPANSION VALVE SUPPLIED WITH DX COIL.
3. SIGHT GLASS.
4. CEILING.
5. P-TRAP AT BOTTOM OF SUCTION RISER.
6. SIGHT GLASS.
7. INSULATE SUCTION LINE WITH 1" THICK INSULATION.
8. REVERSE TRAP AT TOP OF SUCTION RISER.



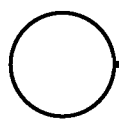
REFRIGERATION PIPING

N.T.S.

15A-4012



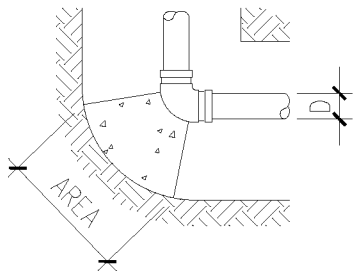
1. CIRCUIT SETTER.
2. CONTROL VALVE.
3. ROOM THERMOSTAT.
4. COIL.
5. VIBRATION ISOLATOR,
TYPICAL.



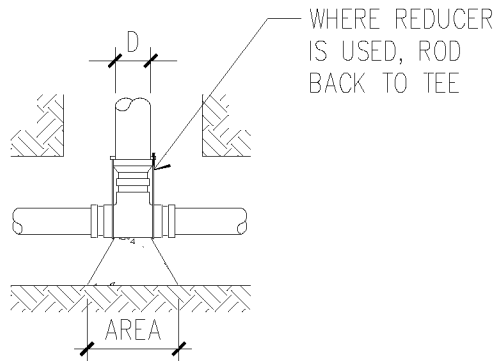
COIL PIPING DETAIL

N.T.S.

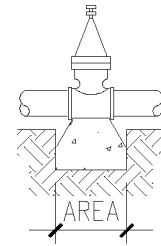
15A-4013



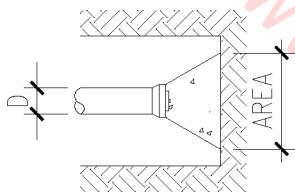
BENDS AND ELBOWS



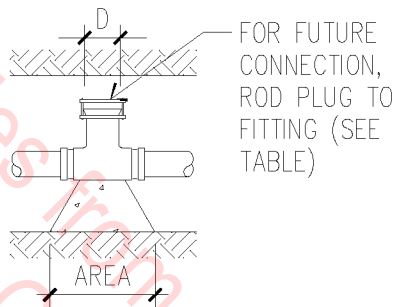
TEE



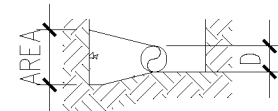
GATE VALVE



DEAD END LINE



PLUGGED TEE FOR FUTURE CONNECTION



TYPICAL SECTION THROUGH THRUST BLOCK

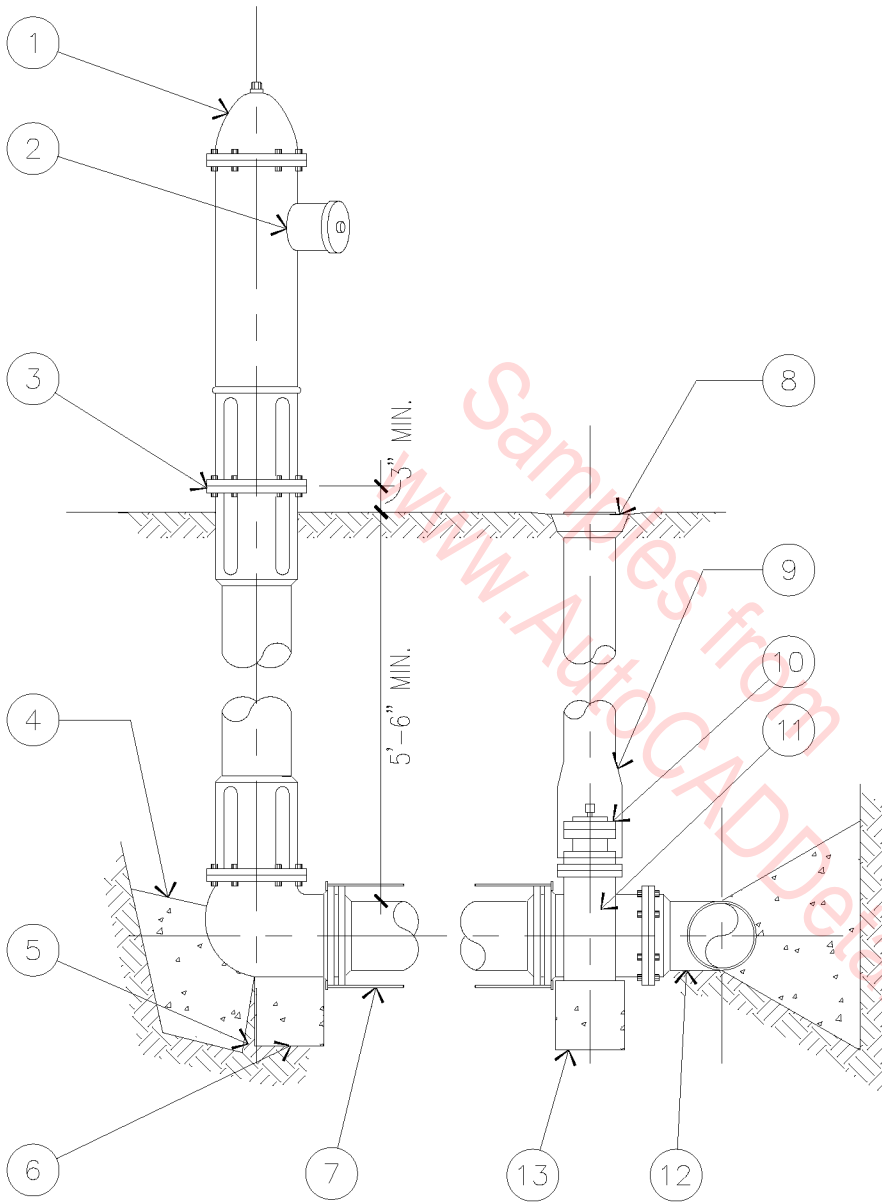
MAXIMUM THRUST BLOCK BEARING AREAS IN SQUARE FEET					
PIPE SIZE	90° BEND	45° BEND	22.5° BEND	TEE PLUG	GATE VALVES
12"	16.0	8.7	4.4	11.3	7.3
10"	11.1	6.0	3.1	7.8	4.5
8"	7.1	3.9	2.0	6.0	2.4
6"	4.0	2.2	2.0	2.8	0.7
4"	2.0	2.0	2.0	2.0	0.5
3"	2.0	2.0	2.0	2.0	0.5

- NOTES:
- PROVIDE BOND BREAKER AT ALL FITTINGS.
 - ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. WHERE THIS IS NOT POSSIBLE, TIE ROD SHALL BE USED. SOIL BEARING PRESSURE IS ASSUMED TO BE 3,000 P.S.F.
 - WHERE SOIL BEARING VARIES, REQUIRED BLOCK AREA MAY BE MODIFIED ACCORDINGLY.
 - IN NO CASE SHALL BEARING AREA BE LESS THAN 2.0 FT. SQ.
 - STANDARD TEST PRESSURE IS CONSIDERED AT 200 P.S.I.
 - CONCRETE STRENGTH TO BE 3,000 P.S.I., 28 DAY TEST.
 - MINIMUM WEIGHT OF THRUST BLOCKS SHALL BE 1,000 LBS.

THRUST BLOCKS FOR WATER MAIN

N.T.S.

15A-4014

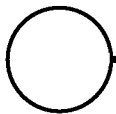


1. MUELLER CENTURION MODEL A-423 MOUNTAIN SPEC.
2. ORIENT PUMPER CONNECTION TOWARDS STREET UNLESS OTHERWISE SPECIFIED.
3. TRAFFIC FLANGE.
4. THRUST BLOCK.
5. 1/2 CU. YD. GRAVEL DRAIN MATERIAL.
6. SET HYDRANT ON 8" X 18" X 24" CONCRETE OR STONE SLAB.
7. PROVIDE A MINIMUM OF (3) 3/4" ϕ TIE RODS, ASPHALT COATED.
8. RECESS TOP OF VALVE BOX 1/8" TO 1/4" BELOW FINISH GRADE.
9. ADJUSTABLE VALVE BOX.
10. AUXILIARY GATE VALVE (NORMALLY OPEN).
11. 6" FL X MJ GATE VALVE.
12. MJ X MJ X FLANGED TEE.
13. SET VALVE ON 8" X 8" X 16" CONCRETE OR STONE SLAB.

NOTES:

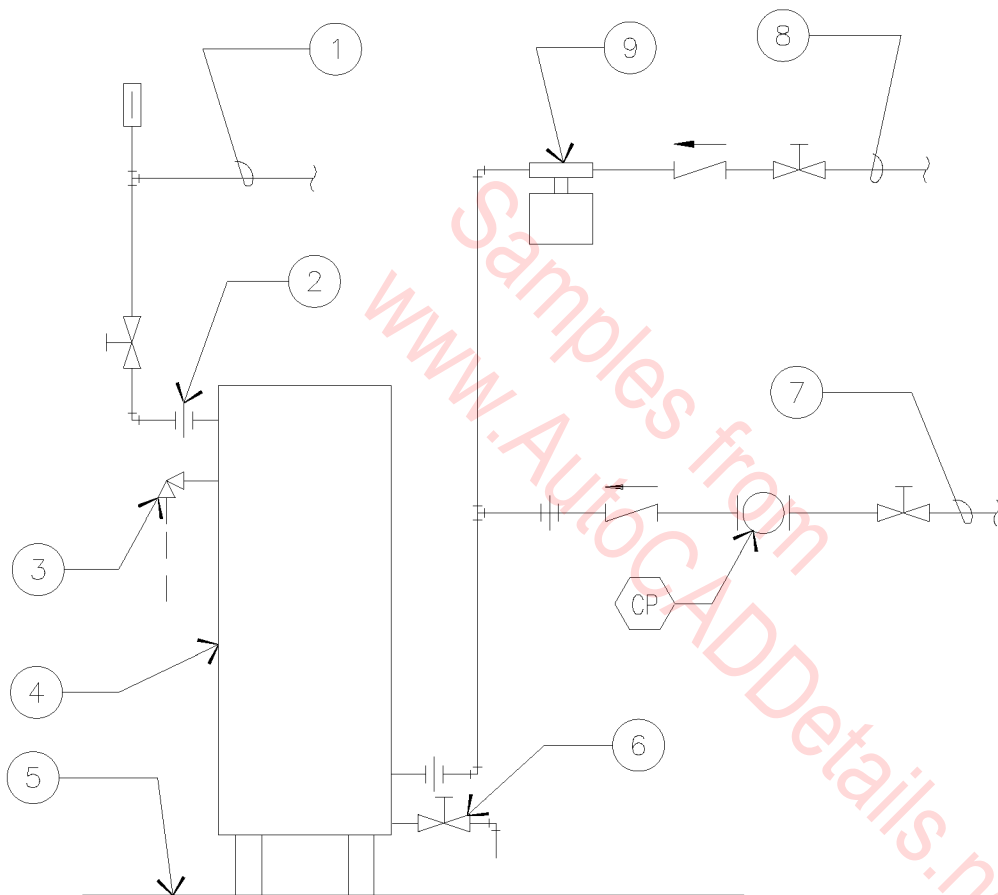
- A. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE HARNESSSED MECHANICAL JOINTS OR FLANGED JOINTS.
- B. HYDRANT, VALVE, AND FITTINGS TO BE 250 P.S.I. RATED.
- C. POLYETHYLENE WRAP (WHEN REQUIRED) SHALL COVER ASSEMBLY FROM HYDRANT BASE TO WATER MAIN.
- D. ALL HYDRANT LEAD PIPING TO BE D.I.P.

FIRE HYDRANT ASSEMBLY INSTALLATION DETAIL

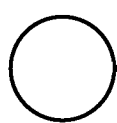


N.T.S.

15A-4015



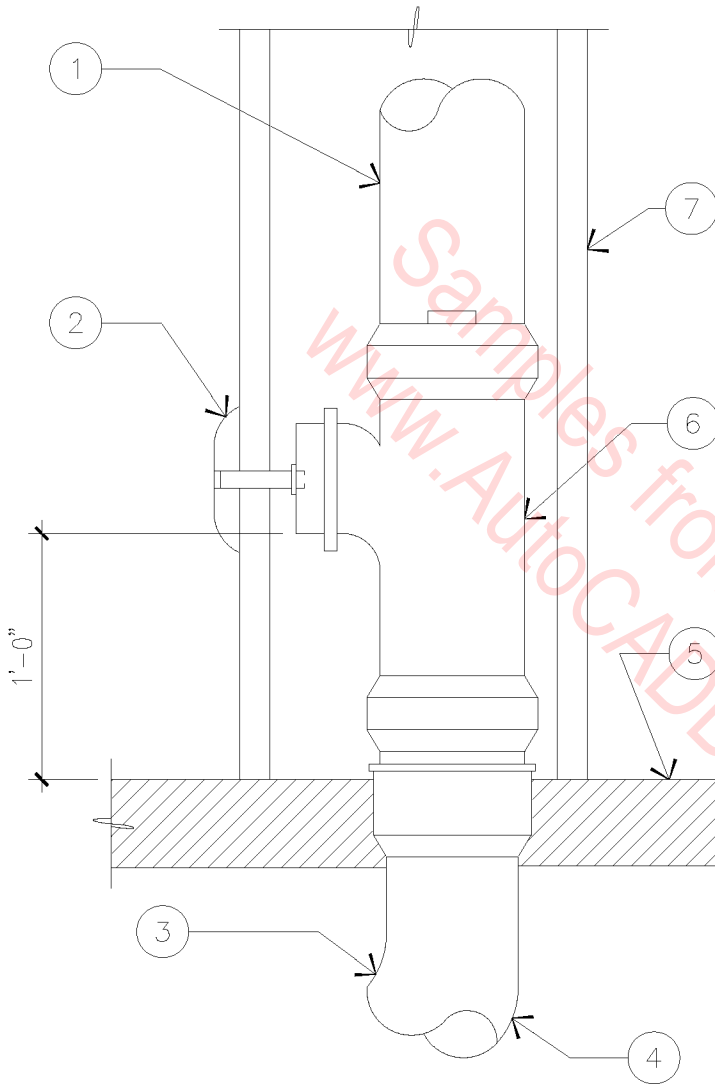
1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
4. WATER HEATER.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.
7. 3/4" HOT WATER CIRCULATION LINE.
8. COLD WATER INLET.
9. EXPANSION TANK, SPECIFIED WITH WATER HEATER.



WATER HEATER DETAIL

N.T.S.

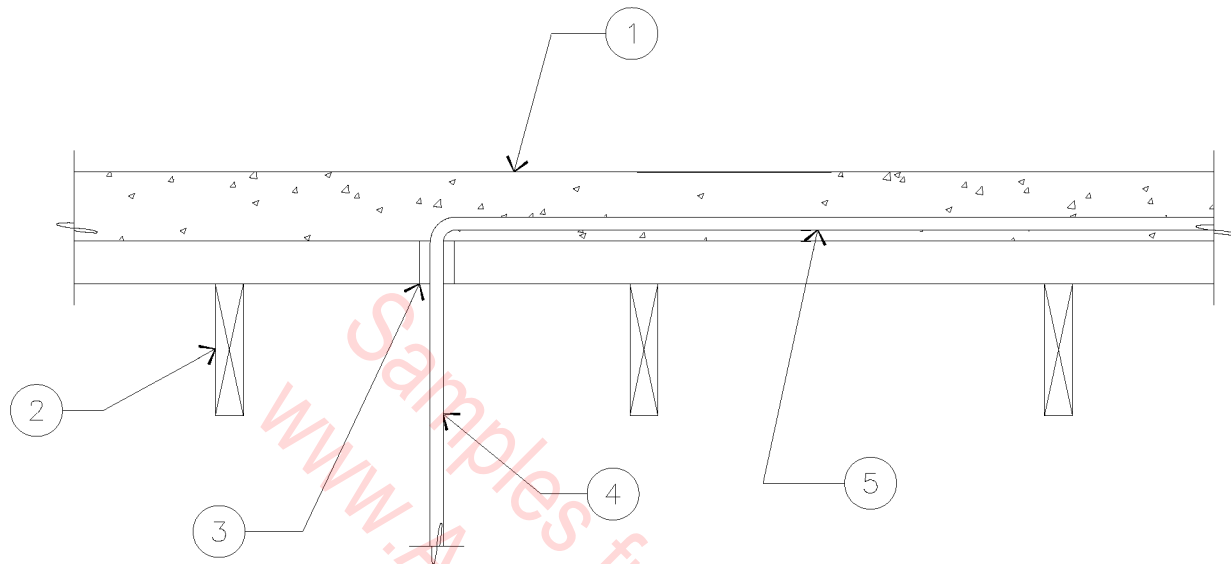
15A-4016



1. MAY EXTEND AS A WASTE OR VENT.
2. WALLCOVER AND SCREW.
3. 1/8" CAST IRON BEND.
4. BALANCE OR PIPING SAME AS CLEANOUT TO GRADE.
5. FLOOR.
6. PLUGGED TEE WITH CLEANOUT.
7. WALL.


WALL CLEANOUT
 N.T.S.

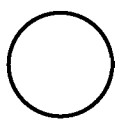
15A-4017



1. CONCRETE SLAB.
2. FLOOR JOIST.
3. PROVIDE FLOOR SLEEVE.
4. ROUTE 3/4" HOT WATER SOURCE AND RETURN LINES TO AND FROM MANIFOLD ASSEMBLY.
5. 5/8" WIRSBO pePEX SECURED TO SUBFLOOR.

NOTES:

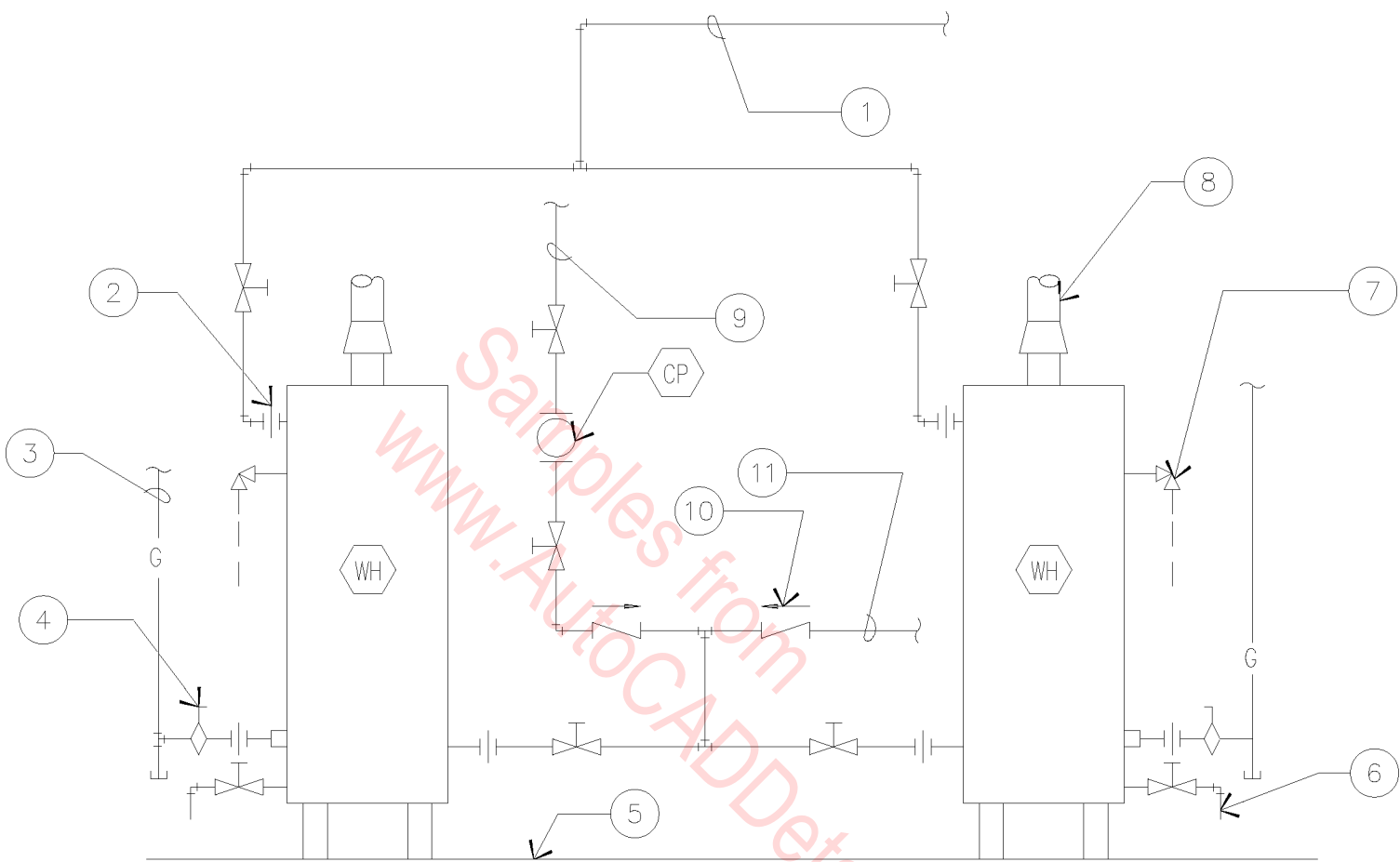
- A. ENTIRE RADIANT SLAB SYSTEM SHALL BE PRESSURIZED TO 75 PSI WITH AIR DURING POURING OF CONCRETE. NO PIPING JOINTS ARE PERMITTED IN THE SLAB. LINES SHALL REMAIN PRESSURIZED UNTIL SYSTEM IS CONNECTED TO BOILER AND FINAL FILL ACCOMPLISHED.
- B. ALL PIPING IN RADIANT SLAB SYSTEM SHOWN ON PLANS IS WIRSBO pePEX CROSSLINKED POLYETHYLENE TUBING. TUBING TO BE NOMINAL 5/8" INSIDE DIAMETER AND RATED FOR 180° SERVICE AT 100 PSI.
- C. TIE PIPING TO SUBFLOOR WITH PLASTIC COATED TIE WIRE. TIE SPACING SHALL NOT EXCEED 12" ON CENTER. TOP OF PIPE SHALL BE NOT LESS THAN 2" BELOW TOP OF SLAB. ALL PIPING IN SLAB IS AT 8" ON CENTER.



RADIANT SLAB PIPING

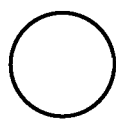
1" = 1'-0"

15A-4018



1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.

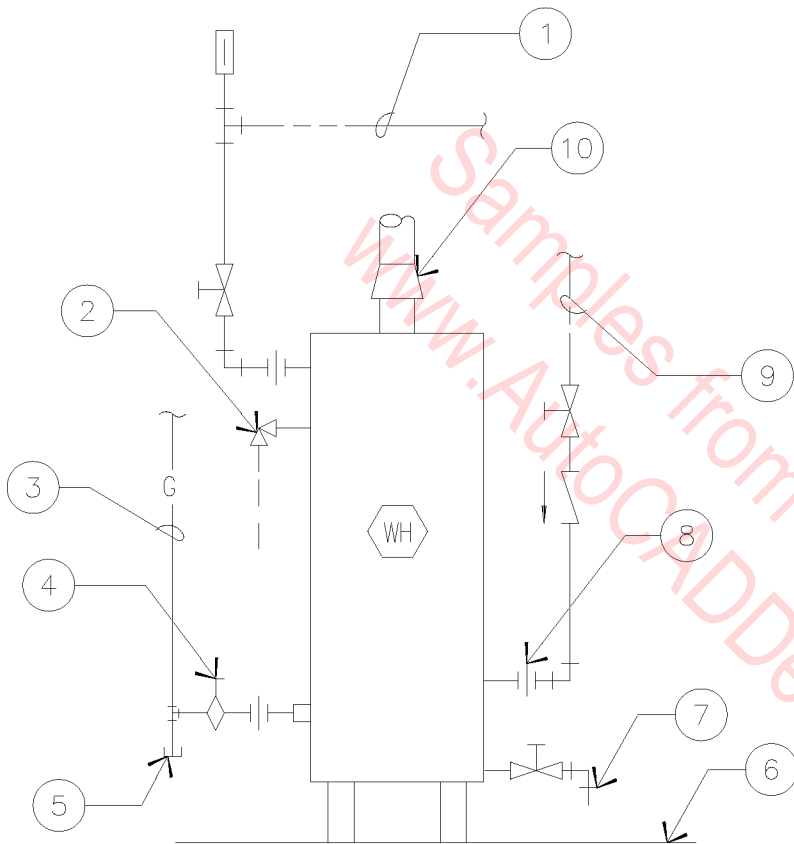
7. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
8. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
9. 3/4" HOT WATER CIRCULATION LINE.
10. DRILL 1/8" HOLE IN FLAPPER.



WATER HEATER DETAIL

N.T.S.

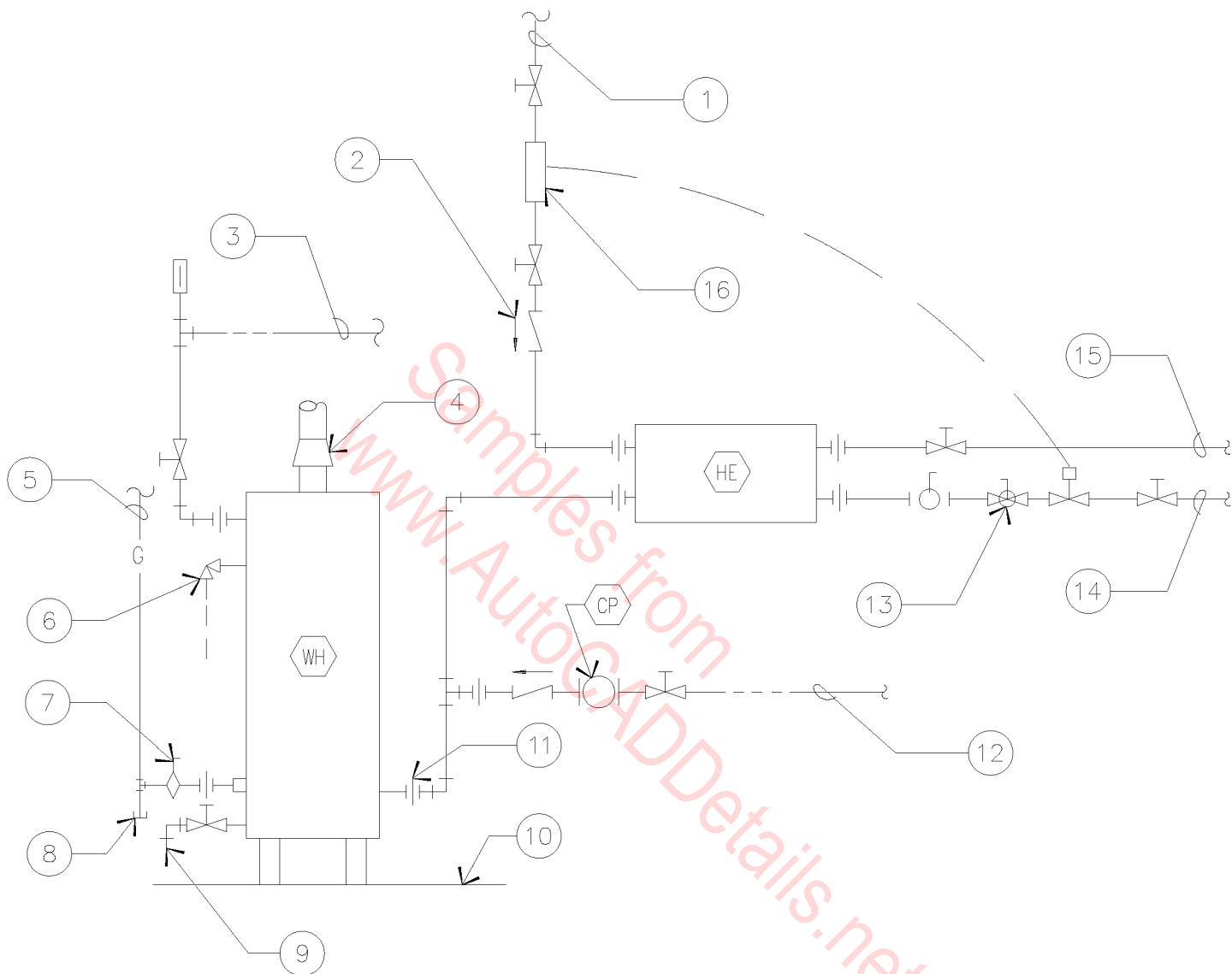
15A-4019



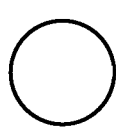
1. HOT WATER OUTLET.
2. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. DIRT LEG.
6. FLOOR.
7. DRAIN VALVE, PIPE TO 6" A.F.F.
8. DIELECTRIC UNION, TYPICAL.
9. COLD WATER INLET.
10. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.

○
WATER HEATER DETAIL
 N.T.S.

15A-4020



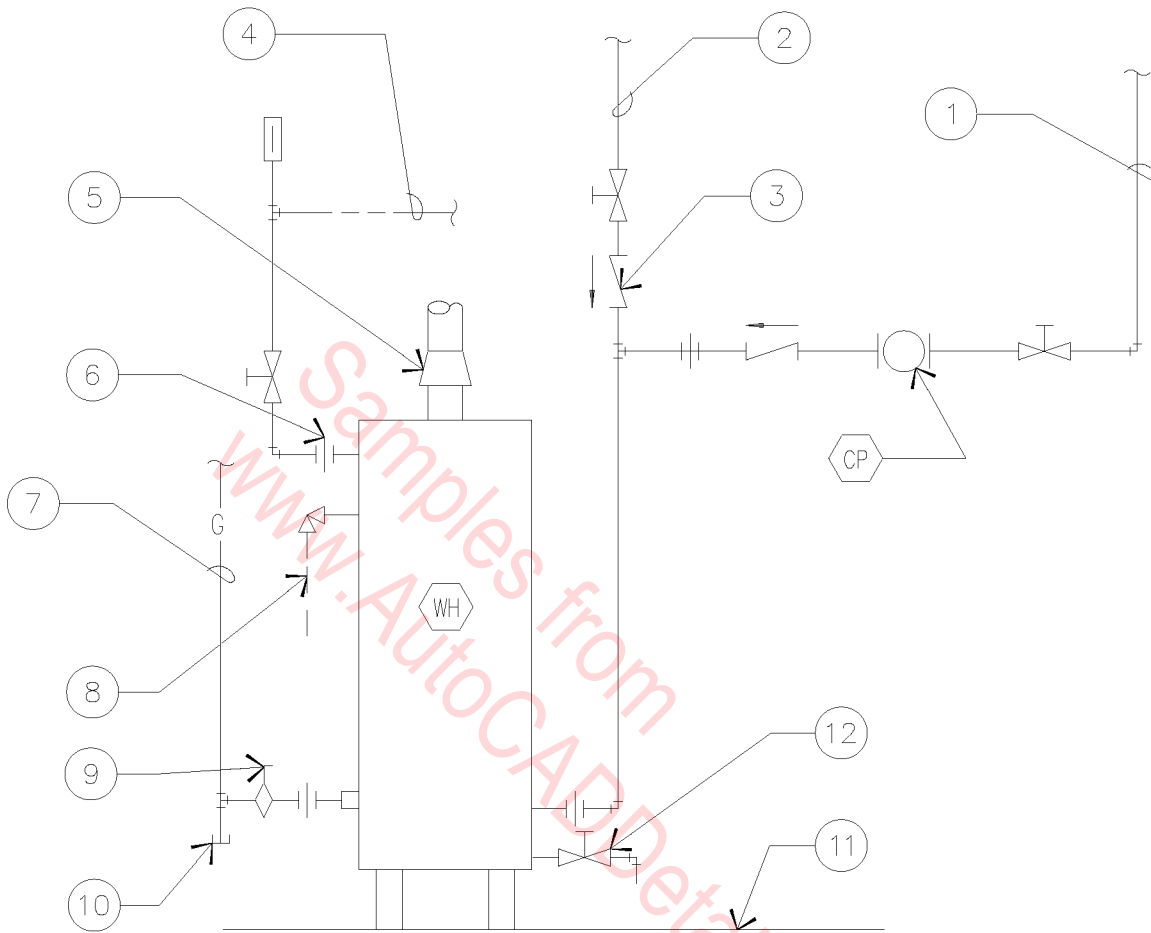
- | | | |
|--|---|---|
| 1. COLD WATER INLET. | 6. ASME PRESSURE RELIEF VALVE,
PIPE TO 6" A.F.F. | 11. DIELECTRIC UNION, TYPICAL. |
| 2. DRILL 1/8" HOLE IN FLAPPER. | 7. PROVIDE FULL LINE-SIZE
LUBRICATED PLUG COCK. | 12. 3/4" HOT WATER CIRCULATION
LINE. |
| 3. HOT WATER OUTLET. | 8. DIRT LEG. | 13. B & G CIRCUIT SETTER. |
| 4. FLUE, SEE PLAN FOR REQUIRED
SIZE. | 9. DRAIN VALVE, PIPE TO 6" A.F.F. | 14. HOT WATER SOURCE LINE. |
| 5. GAS LINE, SEE PLANS FOR
REQUIRED SIZE. | 10. FLOOR. | 15. HOT WATER RETURN LINE. |
| | | 16. FLOW SWITCH. |



WATER HEATER DETAIL

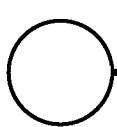
N.T.S.

15A-4021



1. 3/4" HOT WATER CIRCULATION LINE.
2. COLD WATER INLET.
3. DRILL 1/8" HOLE IN FLAPPER.
4. HOT WATER OUTLET.
5. FLUE, SEE PLAN FOR REQUIRED SIZE.
6. DIELECTRIC UNION, TYPICAL.

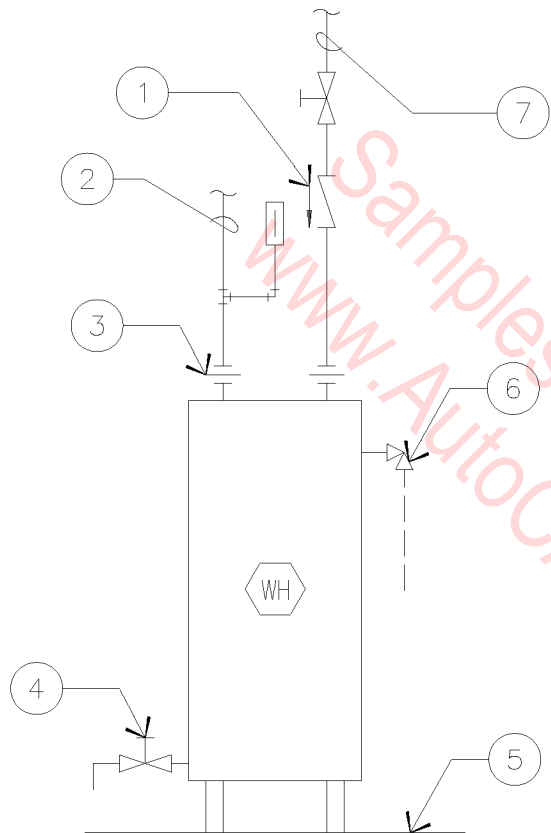
7. GAS LINE, SEE PLANS FOR REQUIRED SIZE.
8. ASME PRESSURE RELIEF VALVE, PIPE TO 6" A.F.F.
9. PROVIDE FULL LINE-SIZE LUBRICATED PLUG COCK.
10. DIRT LEG.
11. FLOOR.
12. DRAIN VALVE, PIPE TO 8" A.F.F.



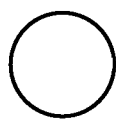
WATER HEATER DETAIL

N.T.S.

15A-4022



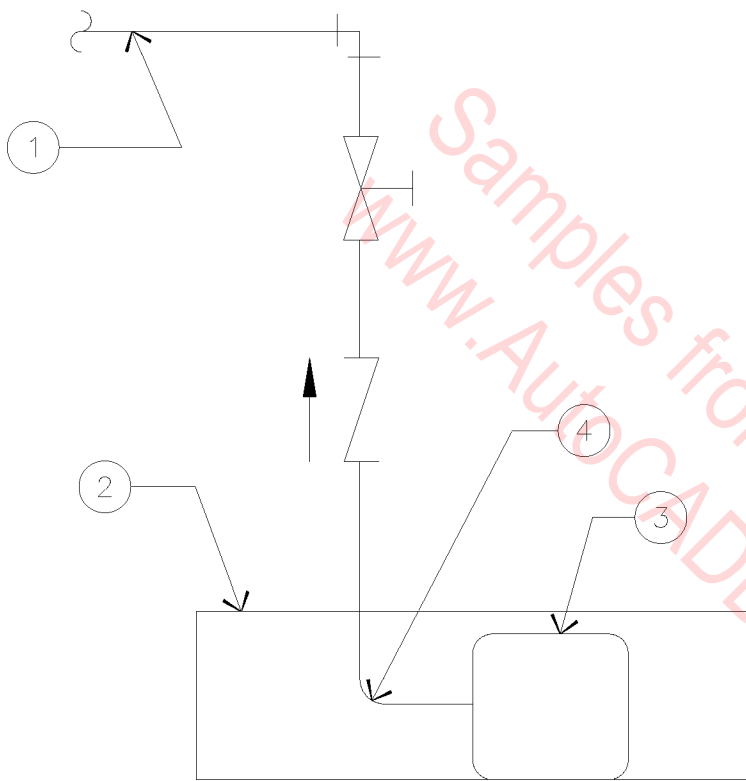
1. DRILL 1/8" HOLE IN FLAPPER.
2. HOT WATER OUTLET.
3. DIELECTRIC UNION, TYPICAL.
4. DRAIN VALVE, PIPE TO 6" A.F.F.
5. FLOOR.
6. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
7. COLD WATER INLET.



WATER HEATER DETAIL

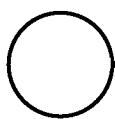
N.T.S.

15A-4023



1. 3/8" HARD COPPER DRAIN, ROUTE TO SANITARY SEWER, PROVIDE 1" AIR GAP.
2. 12" X 12" X 4" DEEP 24 GAUGE SHEET METAL PAN, SOLDER WATERTIGHT.
3. CONDENSATE PUMP WITH AUTOMATIC START AT 1" WATER DEPTH.
4. PROVIDE FLEXIBLE NEOPRENE CONNECTOR AT PUMP.

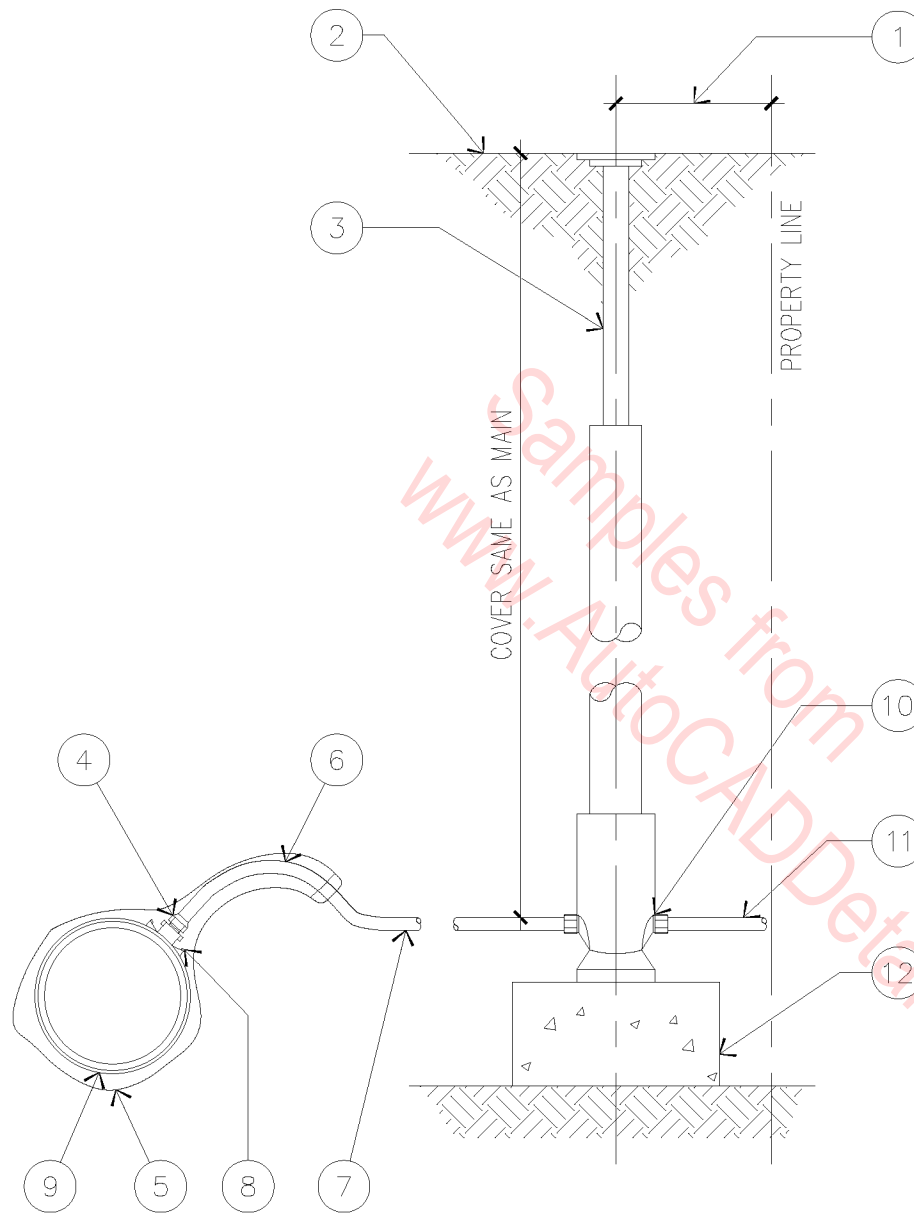
NOTE: COAT INTERIOR AND EXTERIOR OF PAN WITH PRIME COAT AND TWO FINAL COATS OF POLYAMIDE EPOXY PAINT.



CONDENSATE PUMP DETAIL

N.T.S.

15A-4024



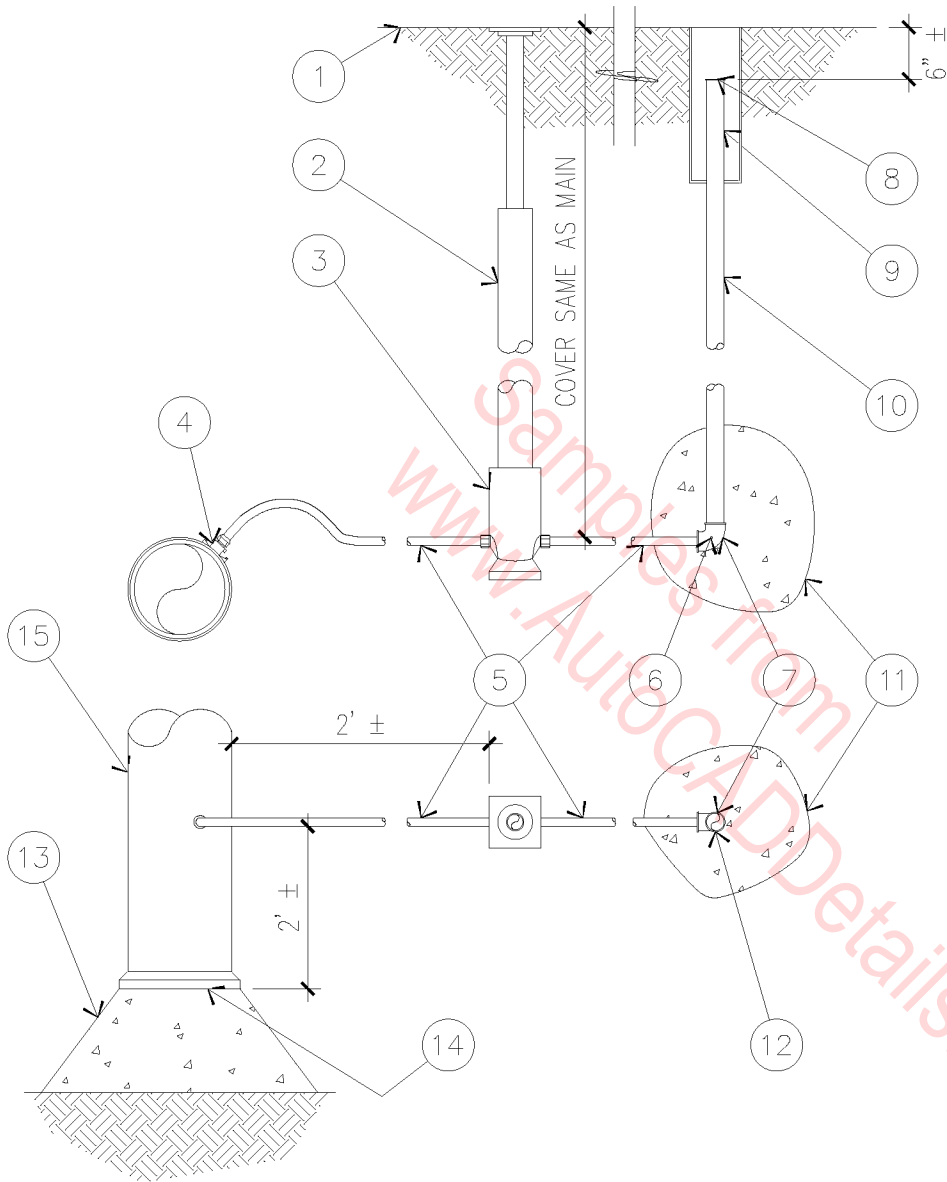
1. LOCATE NEW CURB BOX 12" ON STREET SIDE OF PROPERTY LINE EXCEPT WHERE SIDEWALK IS ON PROPERTY LINE. THEN LOCATE CURB STOP 12" BEHIND BACK OF WALK.
2. FINISH GRADE ELEVATION. ALL DISTURBED LANDSCAPED AREAS SHALL BE SODDED, OR REPLACED IN KIND.
3. CURB STOP ADJUSTABLE BOX ARCH PATTERN WITH FOOTPIECE.
4. CORPORATION STOP.
5. 8 MIL. POLYETHYLENE WRAP. INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
6. PROVIDE GOOSENECK FOR EXPANSION AND CONTRACTION.
7. TYPE 'K' COPPER TUBING, CONTINUOUS.
8. ALL BRASS STRAP AND SADDLE.
9. WATER MAIN.
10. CURB STOP WITH FLARE CONNECTION ON STREET SIDE.
11. SERVICE LINE EXTENSION TO HOUSE OR EXTENSION METER AND VAULT, METER INSTALLATION BY OTHERS. USE DIELECTRIC UNION IF GALVANIZED IRON PIPE.
12. SET CURB STOP ON MASONRY SUPPORT.

WATER SERVICE CONNECTION DETAIL

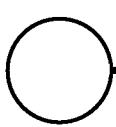
NOT TO SCALE

15A-4025

Samples from
www.AutocADDetails.net



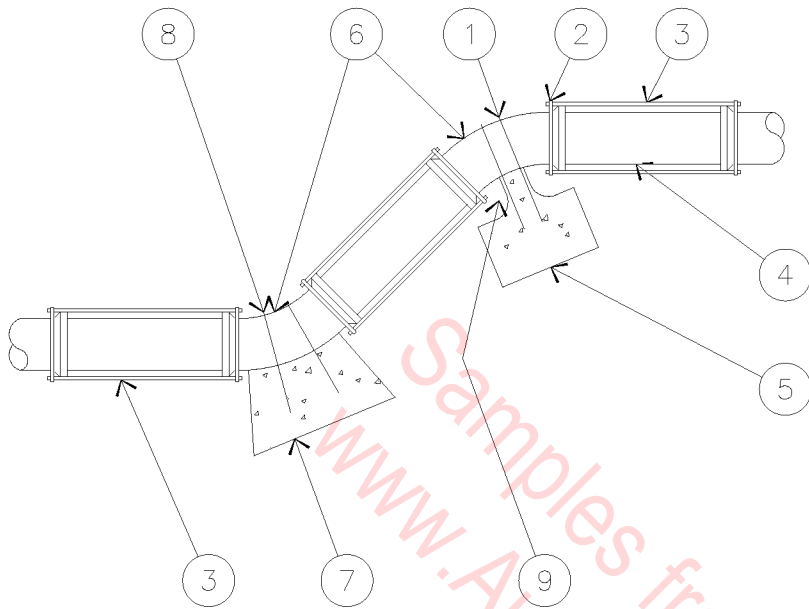
1. FINISH GRADE.
2. COMPLETE BOX AND ASSEMBLY ARCH PATTERN WITH FOOT PIECE.
3. 1" CURB STOP.
4. 1" CORPORATION STOP.
5. 1" COPPER PIPE.
6. 2- 1/4" Ø DRILL HOLES.
7. 90° BEND, NON-METALLIC INSULATED COUPLING.
8. GALVANIZED CAP.
9. 2" GALVANIZED COUPLING.
10. 2" GALVANIZED PIPE.
11. 2 CU. YD. OF GRAVEL.
12. EXTEND TO END OF CUL-DE-SAC.
13. THRUST BLOCK.
14. PLUG.
15. 12" PIPE AND SMALLER.



BLOWOFF DETAIL

NOT TO SCALE

15A-4026



1. MINIMUM 2- #6 REBARS, ASPHALT COATED.
2. STRAPS.
3. TIE RODS WHERE APPLIES, MINIMUM 2 REQUIRED.
4. ONE PIPE LENGTH (MINIMUM).
5. ANCHOR BLOCK (THRUST UPWARD, SEE TABLE FOR SIZE) EXTEND BLOCK INTO SIDES OF TRENCH.
6. 45° BEND.
7. THRUST BLOCK (SEE CHART FOR BEARING AREAS).
8. TIE DOWN RODS, MINIMUM 2- #6.
9. CLEARANCE AT HUB.

NOTES:

- A. USE CONCRETE THRUST BLOCKS AND ANCHOR BLOCK FOR PLASTIC PIPE (NO TIE RODS).
- B. FOR CAST IRON PIPE, USE EITHER TIE RODS OR CONCRETE BLOCKS.
- C. ANCHOR BLOCK WEIGHTS AND TIE ROD SIZE AND LENGTH BASED ON 200 P.S.I. PRESSURE AND 4'-6" OF COVER. WHERE WORKING PRESSURE EXCEEDS ABOVE, ANCHORS TO BE SPECIAL CONSTRUCTION.
- D. MEGA-LUG MAY BE USED PER MANUFACTURER'S REQUIREMENTS IN PLACE OF TIE RODS UPON APPROVAL OF ENGINEER.

MINIMUM WEIGHT OF ANCHOR BLOCK			
PIPE SIZE	90° BEND	45° BEND	22.5° BEND
2"	150#	150#	150#
3"	900#	450#	150#
4"	1590#	900#	450#
6"	6040#	2360#	680#
8"	12,280#	5740#	1960#

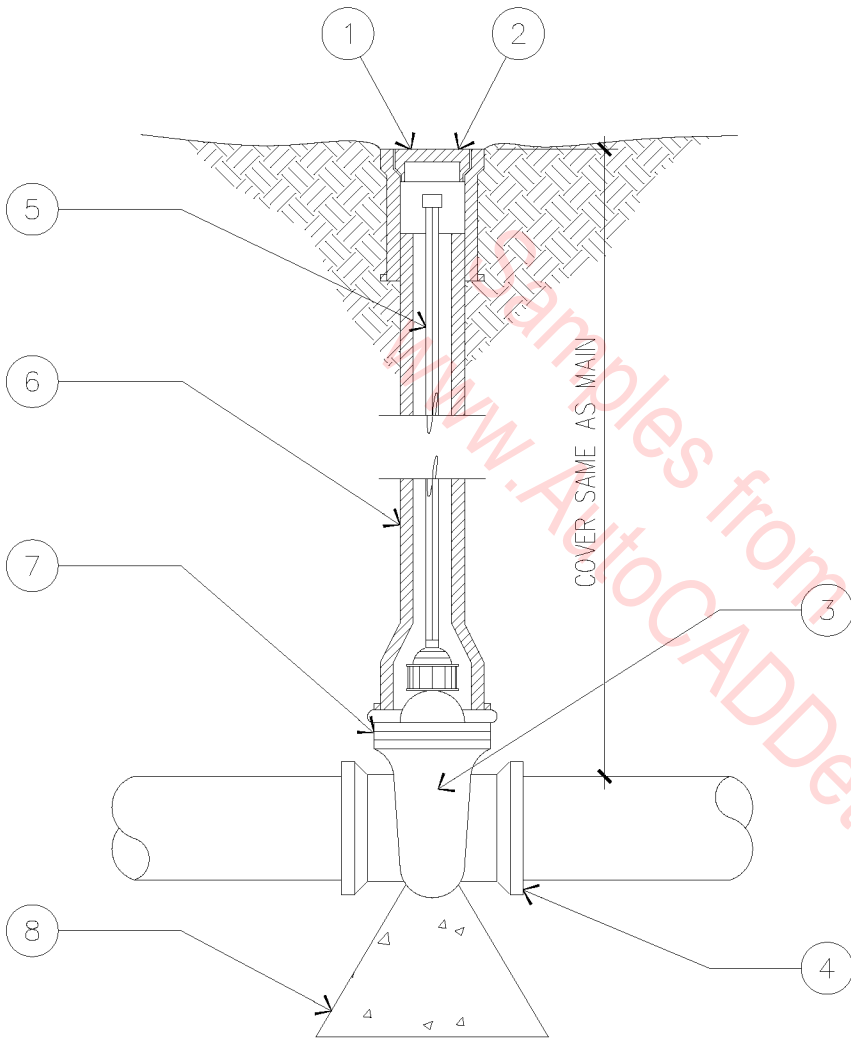
MINIMUM WEIGHT OF ANCHOR BLOCK			
PIPE SIZE	BEND	ROD DIA.	MIN. LENGTH OF ROD*
4"	90°	3/4"	22'
	45°	3/4"	7'
	22.5°	3/4"	2'
6"	90°	3/4"	35'
	45°	3/4"	10'
	22.5°	3/4"	3'
8"	90°	1"	48'
	45°	3/4"	14'
	22.5°	3/4"	4'
12"	90°	1-1/4"	78'
	45°	3/4"	22'
	22.5°	3/4"	6'

* ACTUAL LENGTH OF ROD TO BE SUCH THAT STRAP CAN BE PLACED BEYOND FIRST COLLAR OR HUB AT OR BEYOND THE MINIMUM LENGTH SHOWN.

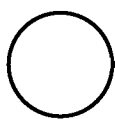
VERTICAL BEND ANCHOR DETAIL

NOT TO SCALE

15A-4027



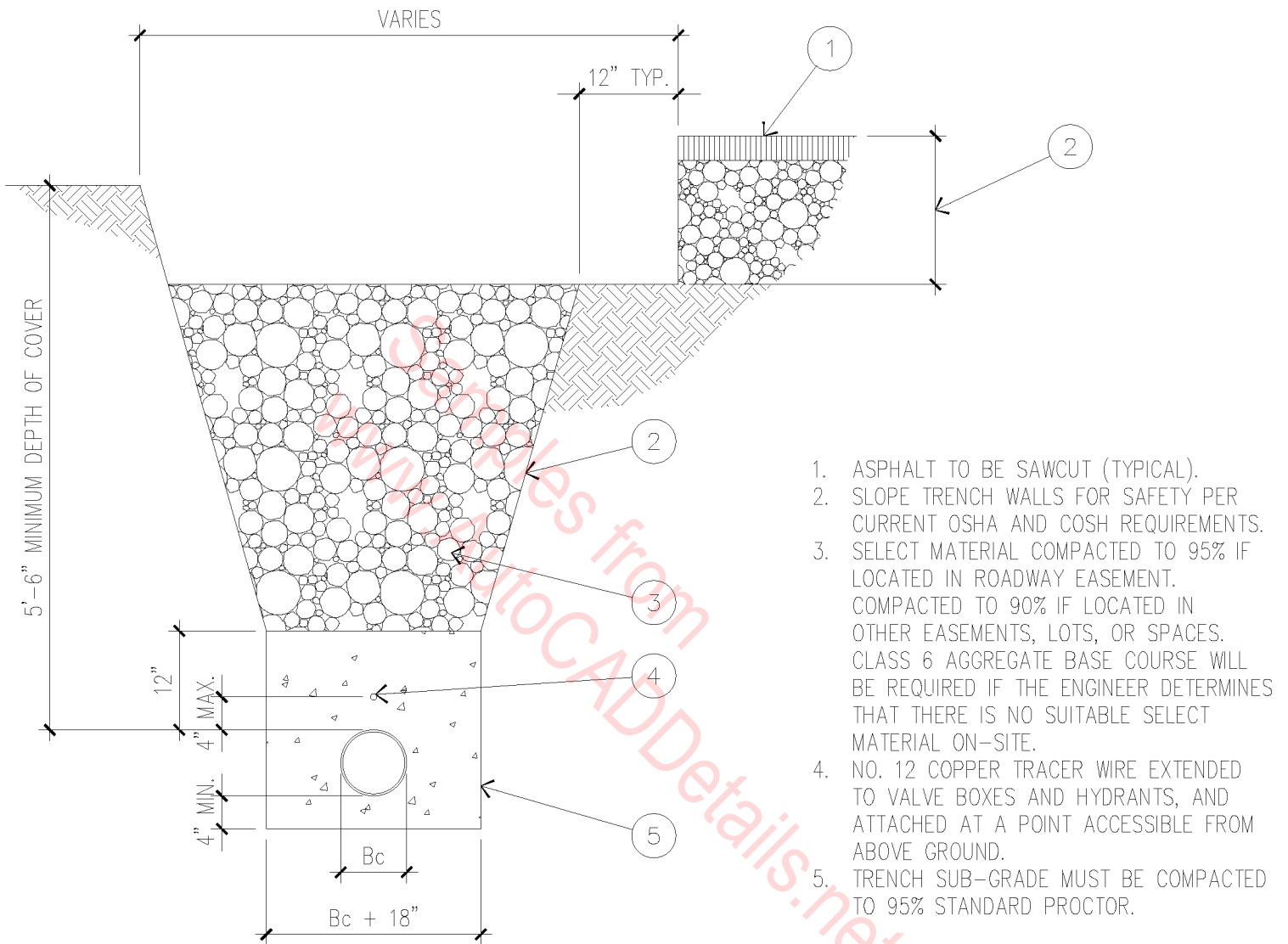
1. WORD "WATER" ON COVER.
2. RECESS TOP OF VALVE BOX 1/8" TO 1/4" BELOW FINISH GRADE.
3. GATE VALVE CLASS 250.
4. MAIN LINE GATE VALVES TO HAVE JOINTS SAME AS WATER MAIN OR AS SPECIFIED FOR MAIN LINE FITTINGS.
5. PROVIDE 5'-0" STEM IF CALLED FOR IN THE SPECIFICATIONS.
6. ADJUSTABLE C.I. VALVE BOX, 5" BARREL.
7. 2" COMPRESSION MATERIAL TO PREVENT ROADWAY SHOCK FROM BEING TRANSMITTED TO VALVE.
8. SEE THRUST BLOCK DETAIL.



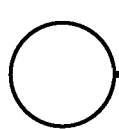
GATE VALVE DETAIL

NOT TO SCALE

15A-4028



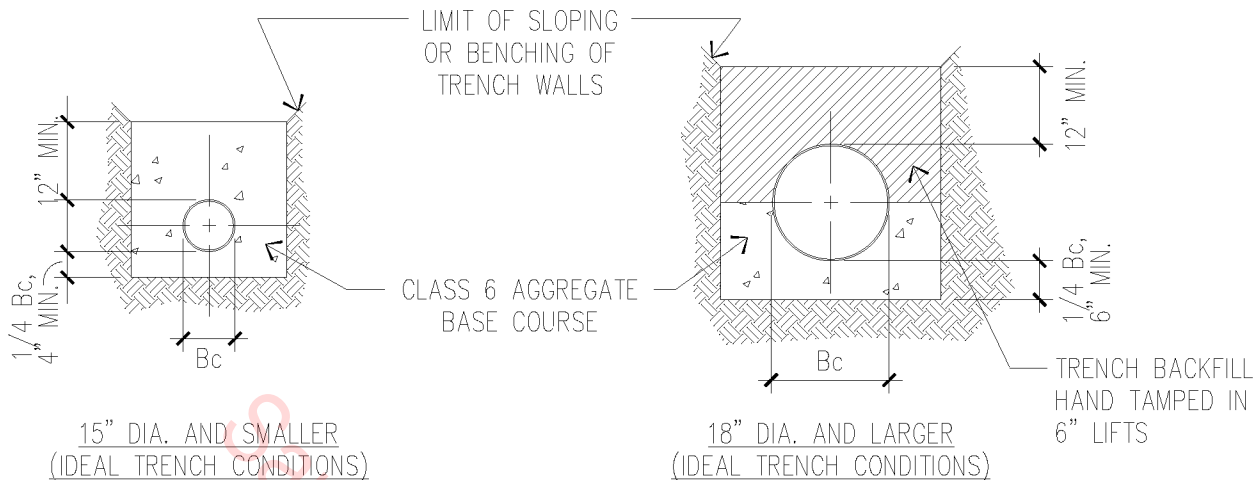
- NOTES:
- A. PAVEMENT REPLACEMENT SHALL MEET EXISTING THICKNESSES AND KIND WITH THE FOLLOWING MINIMUMS: ASPHALT SURFACING = 3" MIN., AGGREGATE BASE COURSE = 15" MINIMUM.
 - B. IF WATER MAIN IS NOT UNDER ROAD SURFACE, REPLACE TOP ONE FOOT OF TRENCH WITH TOPSOIL AND REVEGETATE.



TRENCH CROSS SECTION

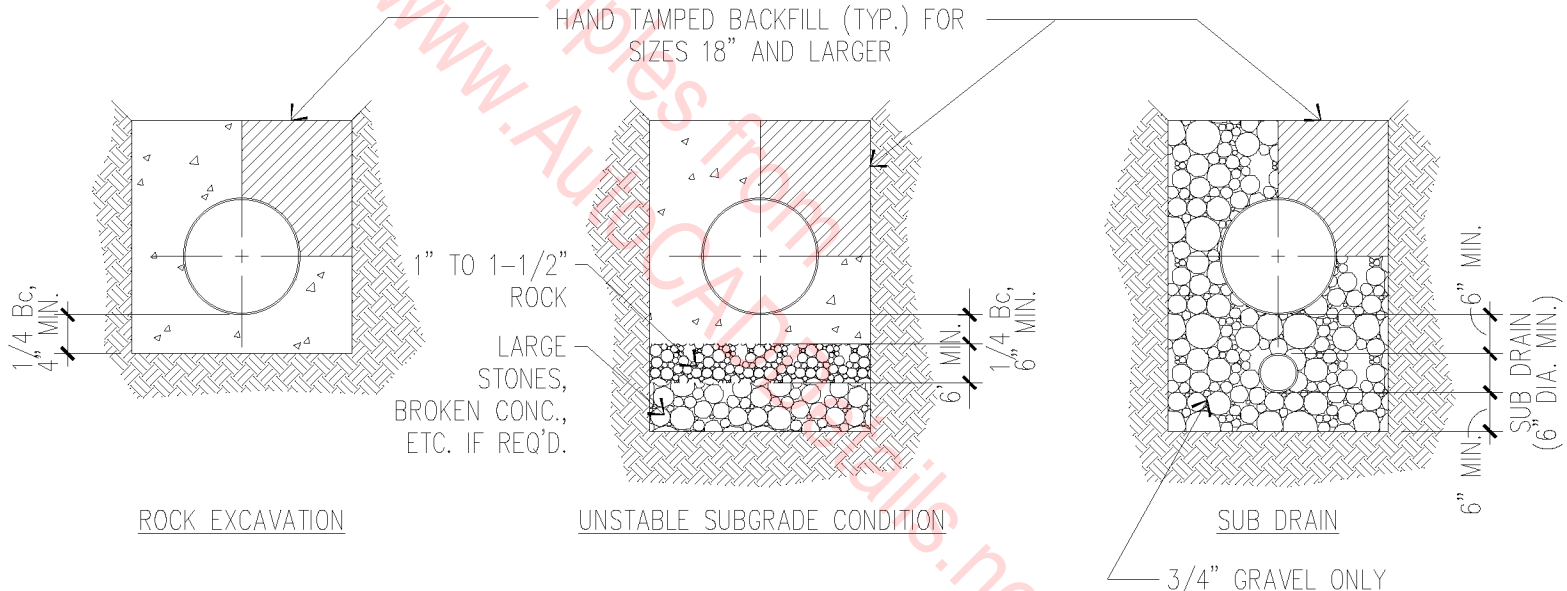
NOT TO SCALE

15A-4029



15" DIA. AND SMALLER
(IDEAL TRENCH CONDITIONS)

18" DIA. AND LARGER
(IDEAL TRENCH CONDITIONS)



ROCK EXCAVATION

UNSTABLE SUBGRADE CONDITION

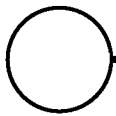
SUB DRAIN

3/4" GRAVEL ONLY

NOMINAL DIAMETER	MAXIMUM TRENCH WIDTH AT A POINT 12" ABOVE PIPE
33" AND SMALLER	$B = Bc + 16"$
36" AND LARGER	$B = Bc + 30"$

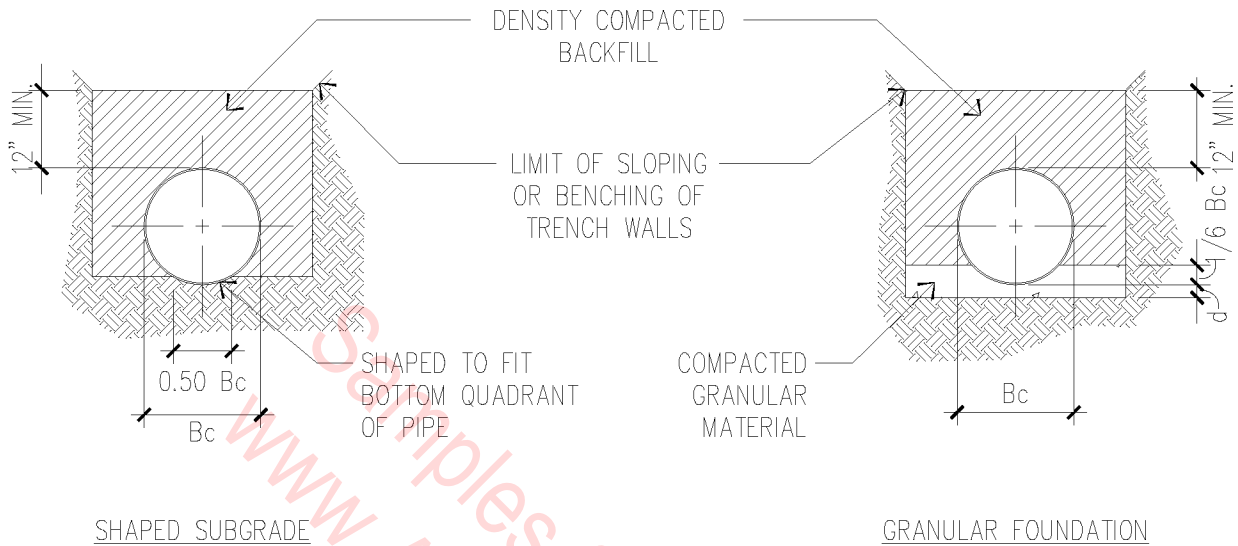
NOTE: BELL HOLES SHALL BE EXCAVATED AT ALL BELL AND SPIGOT JOINTS.

CLASS 'B' BEDDING REQMTS. WATER OR SEWER MAIN



NOT TO SCALE

15A-4030



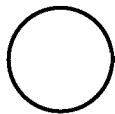
NOMINAL DIAMETER	MAXIMUM TRENCH WIDTH AT A POINT 12" ABOVE PIPE
33" AND SMALLER	$B = B_c + 16"$
36" AND LARGER	$B = B_c + 30"$

NOMINAL DIAMETER	MINIMUM d
18" AND SMALLER	2"
21" TO 36"	3"
42" AND LARGER	4"

NOTES:

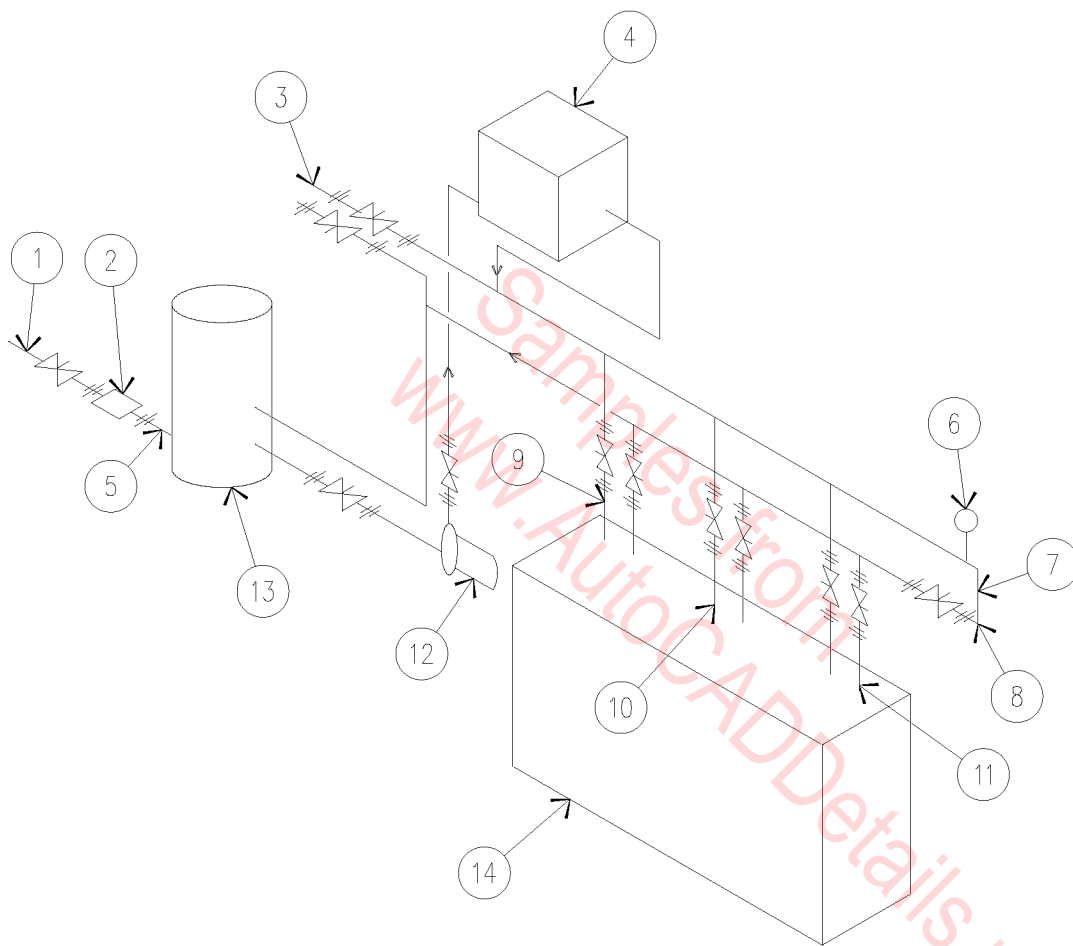
- A. BELL HOLES SHALL BE EXCAVATED AT ALL BELL AND SPIGOT JOINTS.
- B. CLASS 'C' BEDDING MAY ONLY BE USED UPON APPROVAL OF CHIEF ENGINEER OR THE ENGINEER'S APPOINTED REPRESENTATIVE.

CLASS 'C' BEDDING RQMTS.
WATER OR SEWER MAIN



NOT TO SCALE

15A-4031



1. 3/4" WATER SUPPLY.
2. WATTS 909D BACK-FLOW PREVENTER.
3. 1/2" ϕ LINE TO AIR COMPRESSOR AFTER COOLER.
4. CHILLER.
5. 1/2" ϕ LINE.
6. PRESSURE GAUGE.
7. BY-PASS.
8. UNIONS, TYPICAL.
9. REFRIGERANT CONDENSER, 3/4" ϕ .
10. SOLVENT COOLING, 3/4" ϕ .
11. STILL CONDENSER, 3/4" ϕ .
12. WATER PUMP.
13. WATER TANK.
14. DRY-CLEAN MACHINE.

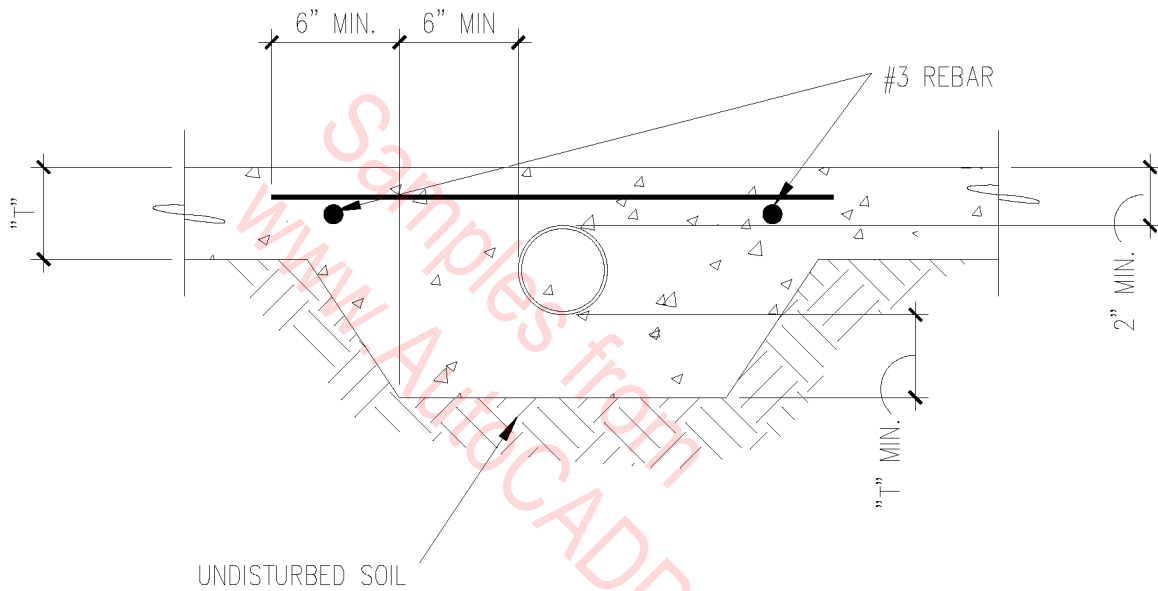
NOTES:

- A. ALL PIPING TO BE 1 1/4" ϕ (UNLESS NOTED OTHERWISE) GALVANIZED SCHEDULE 40.
- B. CHILLED WATER PIPING TO BE INSULATED WITH 1/2" ARMOFLEX INSULATION.
- C. CONNECTION FROM PIPING TO DRY-CLEAN MACHINE TO BE POLYBRAID HOSE.

CHILLED WATER PIPING DIAGRAM

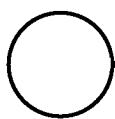
NOT TO SCALE

15A-4032



NOTE:

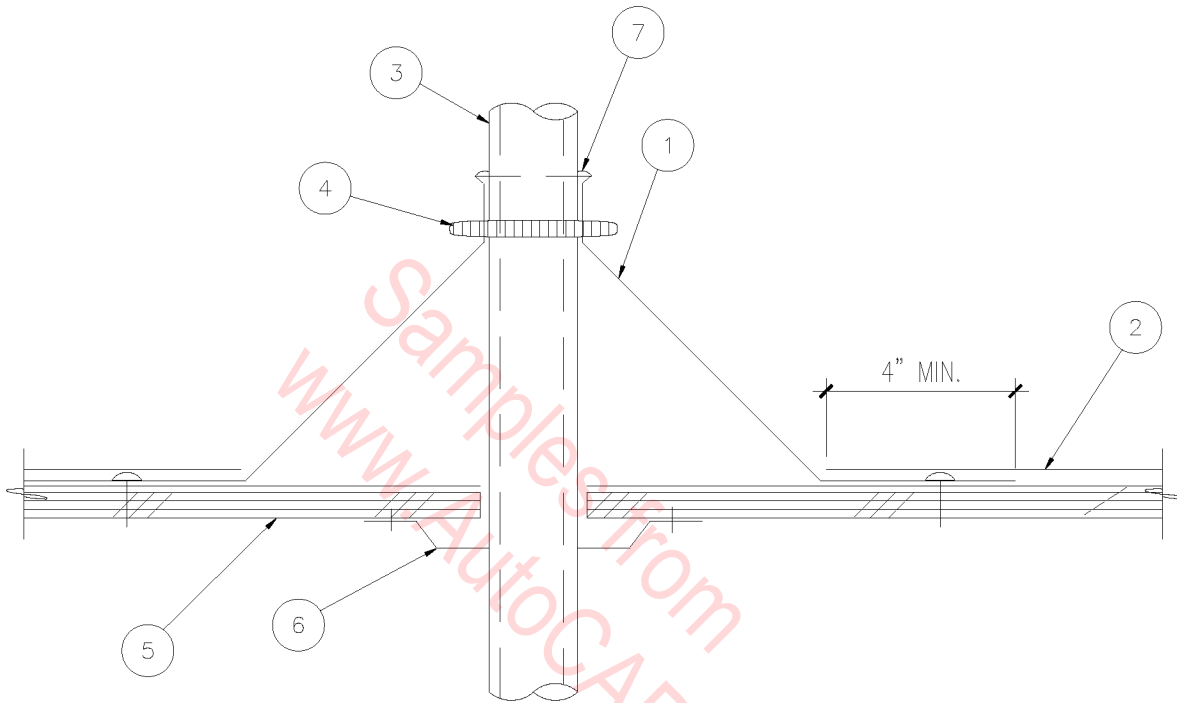
THIS DETAIL APPLIES ONLY IF SPECIFICALLY
 REQUIRED IN SLAB. DO NOT NORMALLY EMBED
 PIPES IN SLAB.



PIPE IN SLAB

N.T.S.

15A-6001

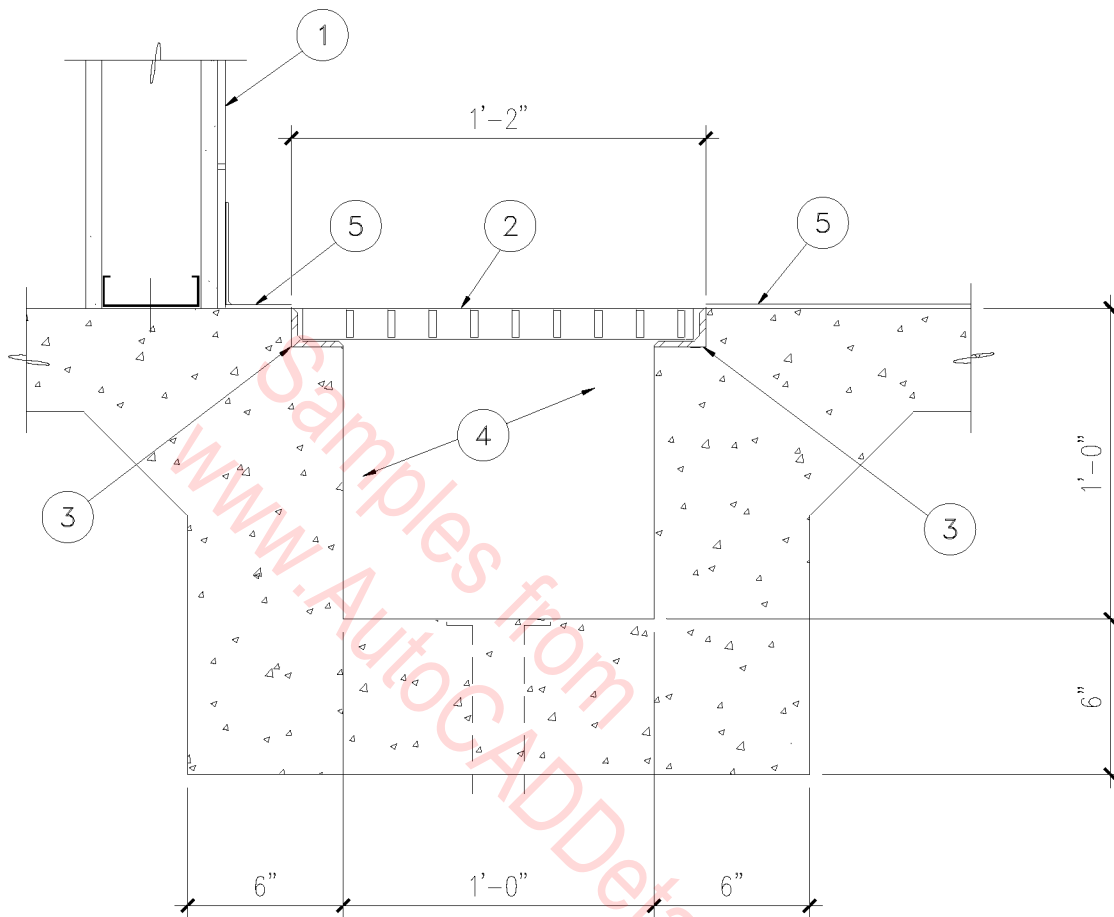


- | | |
|---|--|
| 1. 24 GA SHEET METAL CONE
W/ BASE PLATE. | 4. PIPE CONE CONNECTION.
SECURE WITH STAINLESS
STEEL HOSE CLAMP. |
| 2. MODIFIED BITUMEN REINFORCED
COMPOSITE SHEET ROOFING
LAP & SEAL ALL AROUND
BASE OF CONE. | 5. ROOF STRUCTURE. |
| 3. PIPE OR CONDUIT. | 6. DECK CLAMP. |
| | 7. SEALANT ALL AROUND. |

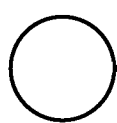
PIPE THRU ROOF

1" = 1'-0"

15A-6002



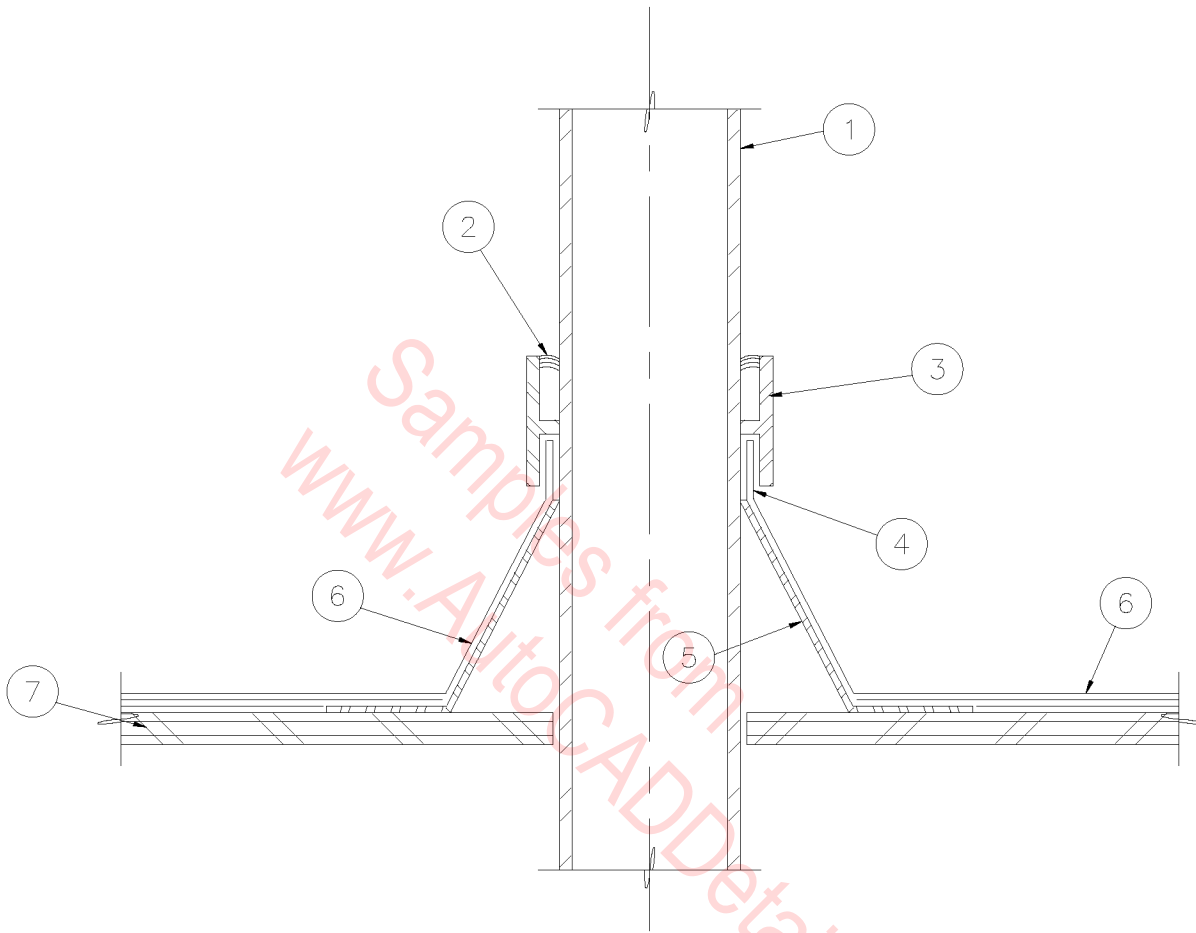
1. CERAMIC TILE.
2. 3/4" THICK STEEL TRENCH GRATE.
3. STRUCTURAL STEEL ANGLE FRAME.
4. CONCRETE TRENCH.
5. FINISH FLOOR.



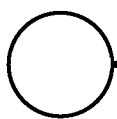
FLOOR TRENCH

1 1/2" = 1'-0"

15A-6003



1. PIPE OR CONDUIT.
2. SEALANT.
3. COUNTERFLASHING SLEEVE.
4. WATERPROOF COMPOUND.
5. STEEL REINFORCED BOOT.
6. MODIFIED BITUMEN REINFORCED
COMPOSITE SHEET ROOFING
FLASHING SYSTEM.
7. PLYWOOD DECK.

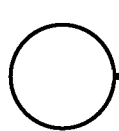
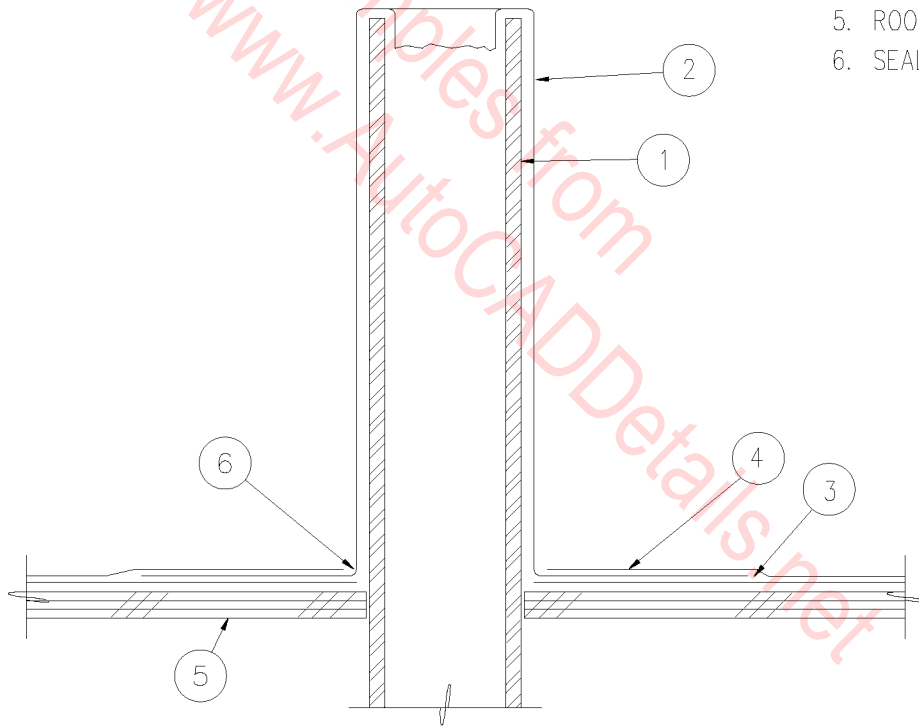


PIPE/CONDUIT FLASHING

3" = 1'-0"

15A-6004

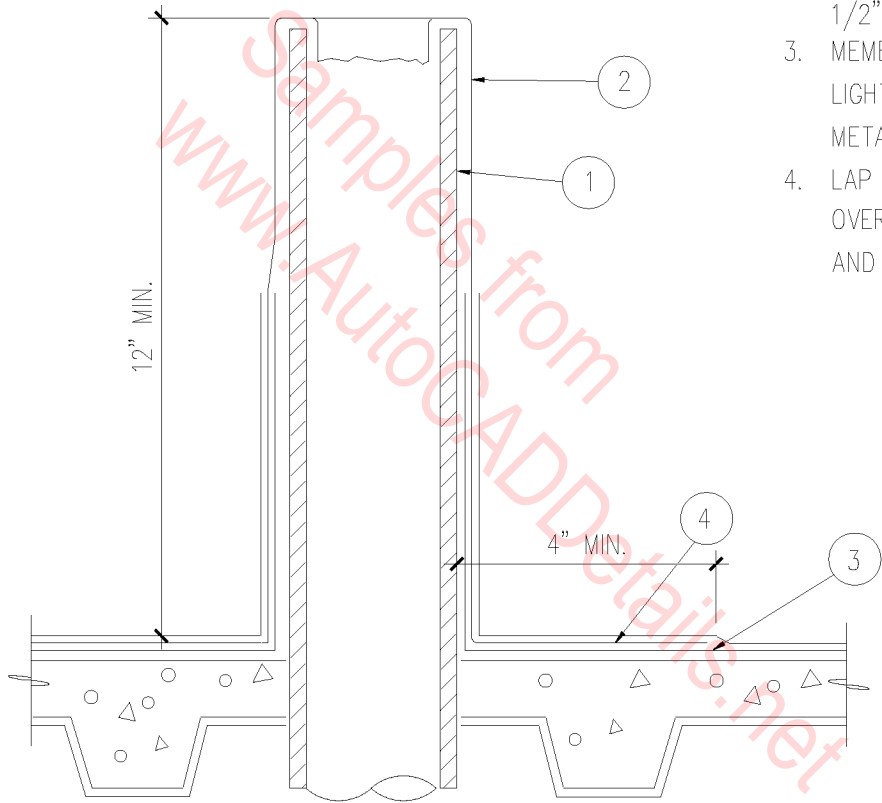
1. PLUMBING VENT PIPE.
2. 3.5# LEAD FLASHING SLEEVE WITH SQ. BASE PLATE. ROLL OVER INTO VENT PIPE 1/2" DEEP.
3. MODIFIED BITUMEN REINFORCED SHEET ROOFING ON PLYWOOD DECK.
4. LAP SHEET ROOFING OVER LEAD BASE PLATE.
5. ROOF DECK.
6. SEALANT ALL AROUND.



VENT PIPE THRU ROOF

1" = 1'-0"

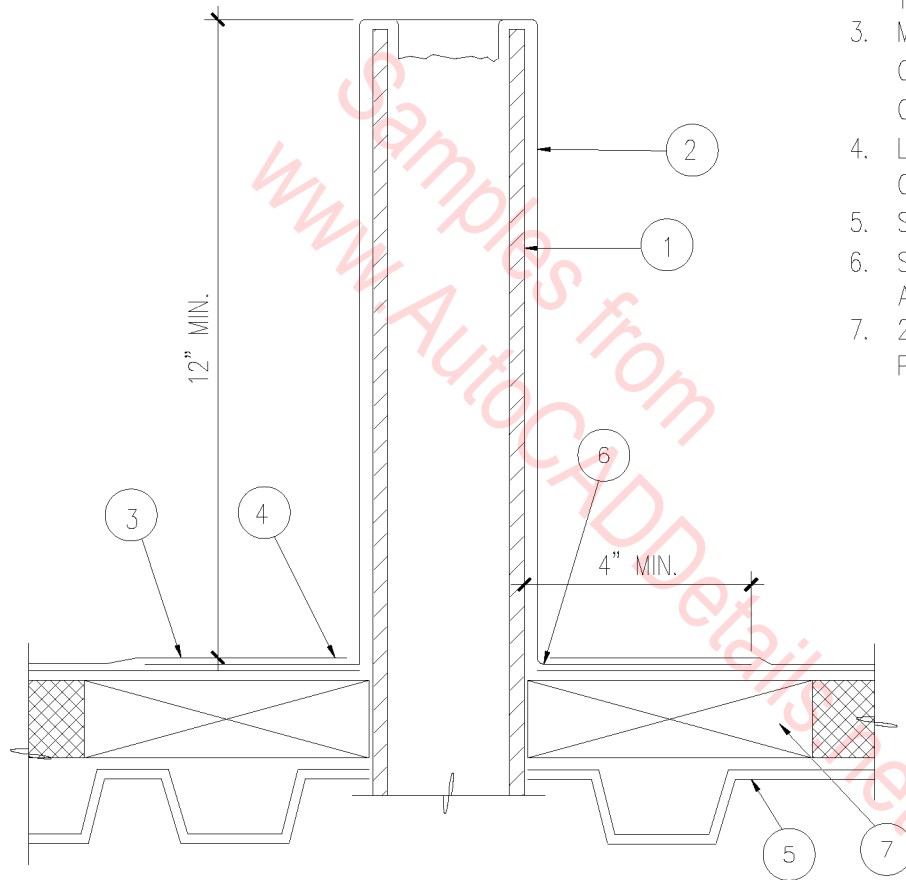
15A-6005



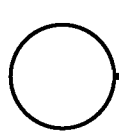
1. PLUMBING VENT PIPE.
2. 3.5# LEAD FLASHING SLEEVE WITH SQ. BASE PLATE. ROLL OVER INTO VENT PIPE 1/2" DEEP (MIN).
3. MEMBRANE ROOFING OVER LIGHTWEIGHT FILL OVER METAL DECK.
4. LAP IN ROOF MEMBRANE OVER LEAD BASE PLATE AND SEAL.

○ VENT THRU ROOF
 3" = 1'-0"

15A-6006



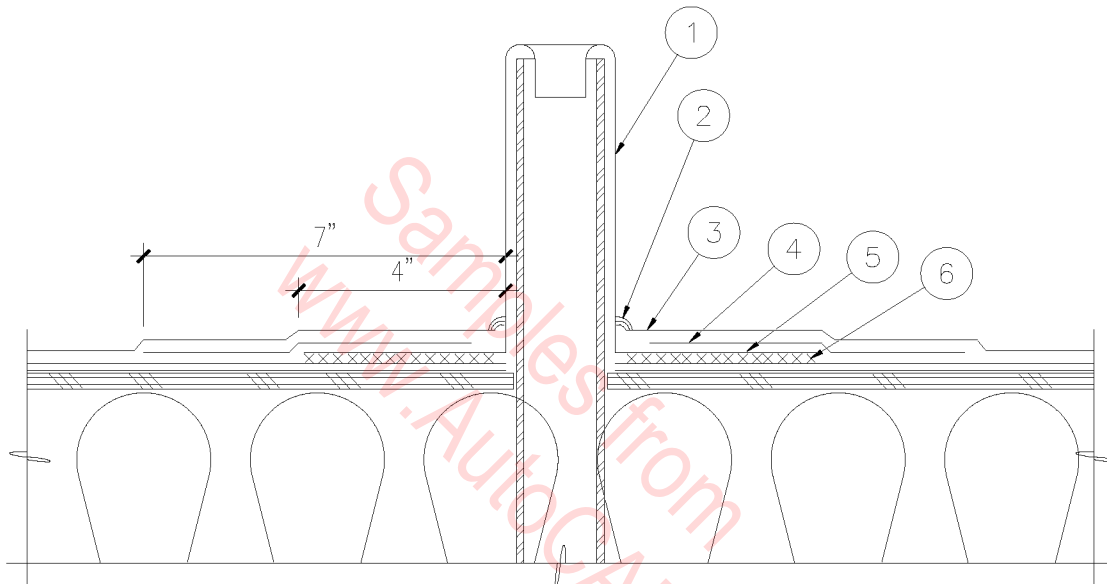
1. PLUMBING VENT PIPE.
2. 3.5# LEAD FLASHING SLEEVE WITH SQ. BASE PLATE. ROLL OVER INTO VENT PIPE 1/2" DEEP.
3. MODIFIED BITUMEN REINFORCED COMPOSITE SHEET ROOFING ON RIGID INSULATION.
4. LAP SHEET ROOFING OVER LEAD BASE PLATE.
5. STRUCTURAL METAL DECK.
6. SEALANT ALL AROUND.
7. 2 x 6 NAILER AT PERIMETER.



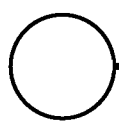
VENT PIPE THROUGH ROOF

3" = 1'-0"

15A-6007



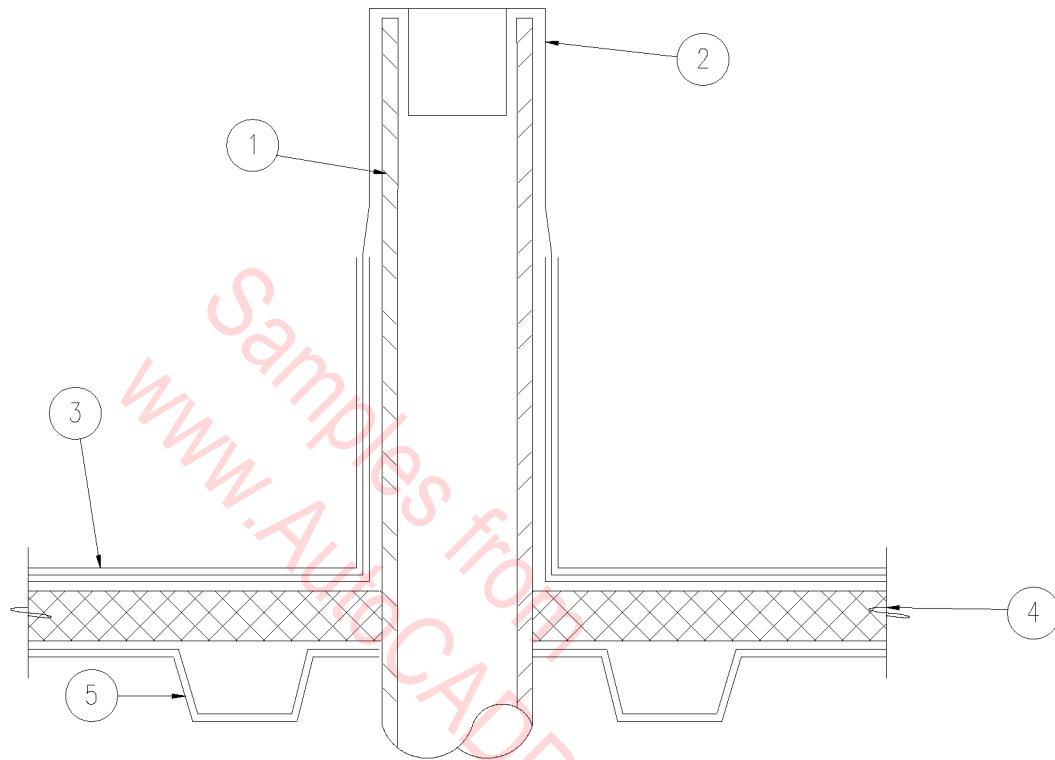
1. LEAD FLASHING – ROLL 1" INTO PIPE.
2. SEALANT.
3. MODIFIED BITUMEN CAP SHEET.
4. MODIFIED BITUMEN STRIPPING PLY.
5. LEAD FLANGE – PRIME AND SET IN MASTIC.
6. MODIFIED BITUMEN BASE PLY.



VENT STACK

SCALE: 3" = 1'-0"

15A-6008



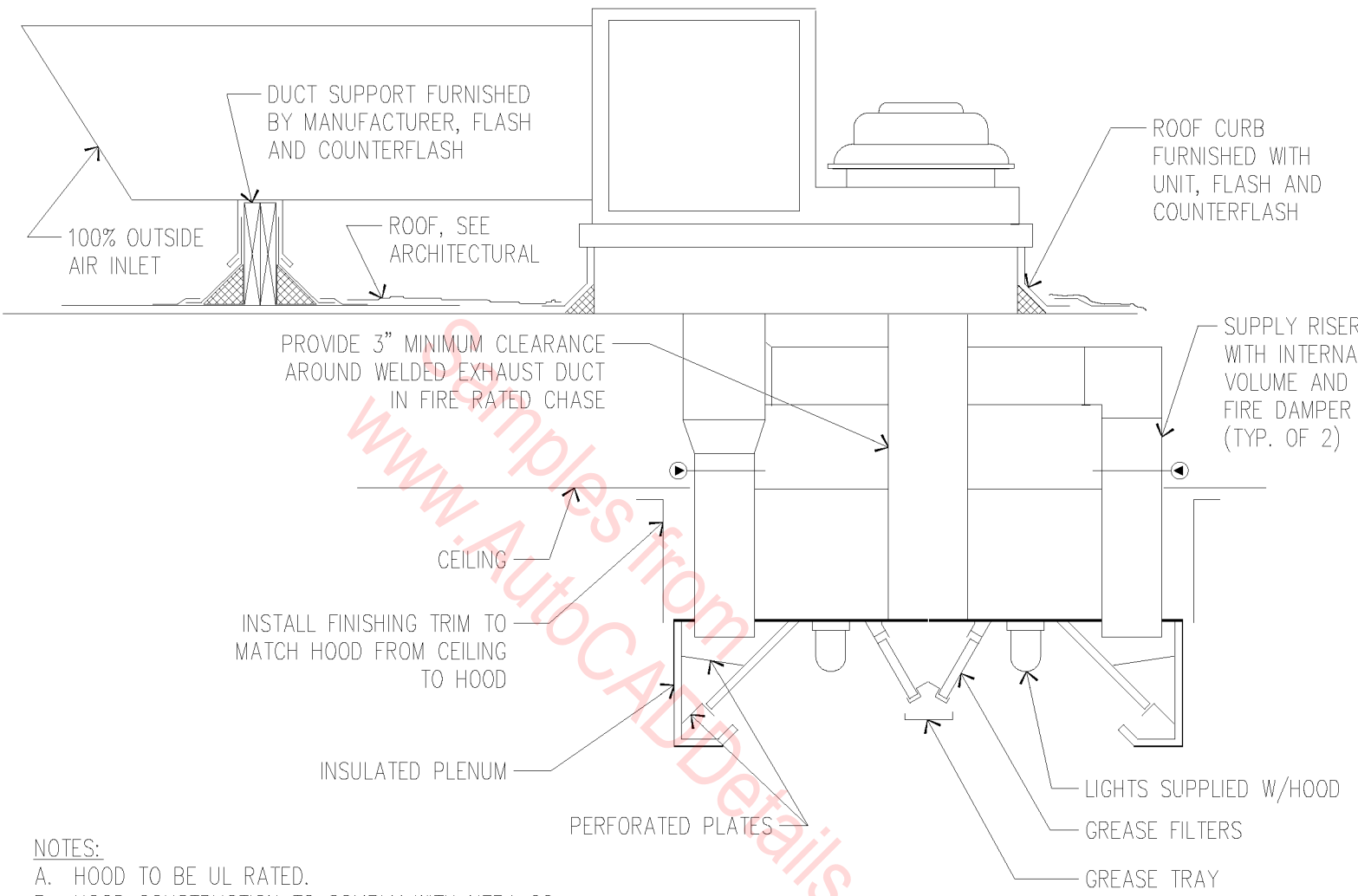
1. PLUMBING VENT.
2. LEAD FLASHING.
3. MODIFIED BITUMEN REINFORCED COMPOSITE SHEET.
4. RIGID INSULATION.
5. METAL DECK.

○
1
2
3
4
5

VENT FLASHING

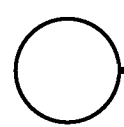
3" = 1'-0"

15A-6009



NOTES:

- A. HOOD TO BE UL RATED.
- B. HOOD CONSTRUCTION TO COMPLY WITH NFPA 96.
EXHAUST DUCT TO BE 16 GA. STEEL WELD ASSEMBLY PER LOCAL BUILDING DEPARTMENT.
- C. AS A SUBCONTRACTOR TO THE MECHANICAL CONTRACTOR, A FIRE PROTECTION CONTRACTOR SHOULD PIPE HOODS, SUPPLY AND INSTALL PULL STATION, CHEMICAL BOTTLES AND ALL APPURTENANCES TO MEET LOCAL AND NFPA CODES. CONTRACTOR SHALL ALSO PROVIDE GAS SOLENOID VALVE TO BE INSTALLED BY MECHANICAL CONTRACTOR AND MICROSWITCH FOR CONNECTION BY ELECTRICAL CONTRACTOR.



KITCHEN HOOD & FAN

N.T.S.

15A-6010

ROOF CURB
FURNISHED WITH
UNIT, FLASH AND
COUNTERFLASH

DUCT SUPPORT FURNISHED
WITH UNIT, FLASH AND
COUNTERFLASH

ROOF, SEE
ARCHITECTURAL

100% OUTSIDE
AIR INLET

PROVIDE 3" MINIMUM
CLEARANCE AROUND
WELDED EXHAUST DUCT
IN FIRE RATED CHASE

SUPPLY DUCT, SEE
PLAN FOR SIZE

EXHAUST DUCT, SEE
PLAN FOR SIZE

LISTED FIRE DAMPER
IN SUPPLY DUCT
COLLAR

CEILING

18"

48"

REMOVABLE AIR
DIFFUSER

INSTALL FINISHING
TRIM TO MATCH
HOOD FROM HOOD
TO CEILING

24"

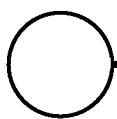
INSULATED PLENUM

LIGHTS TO BE SUPPLIED
WITH HOOD

REMOVABLE GREASE TRAY CUP

NOTES:

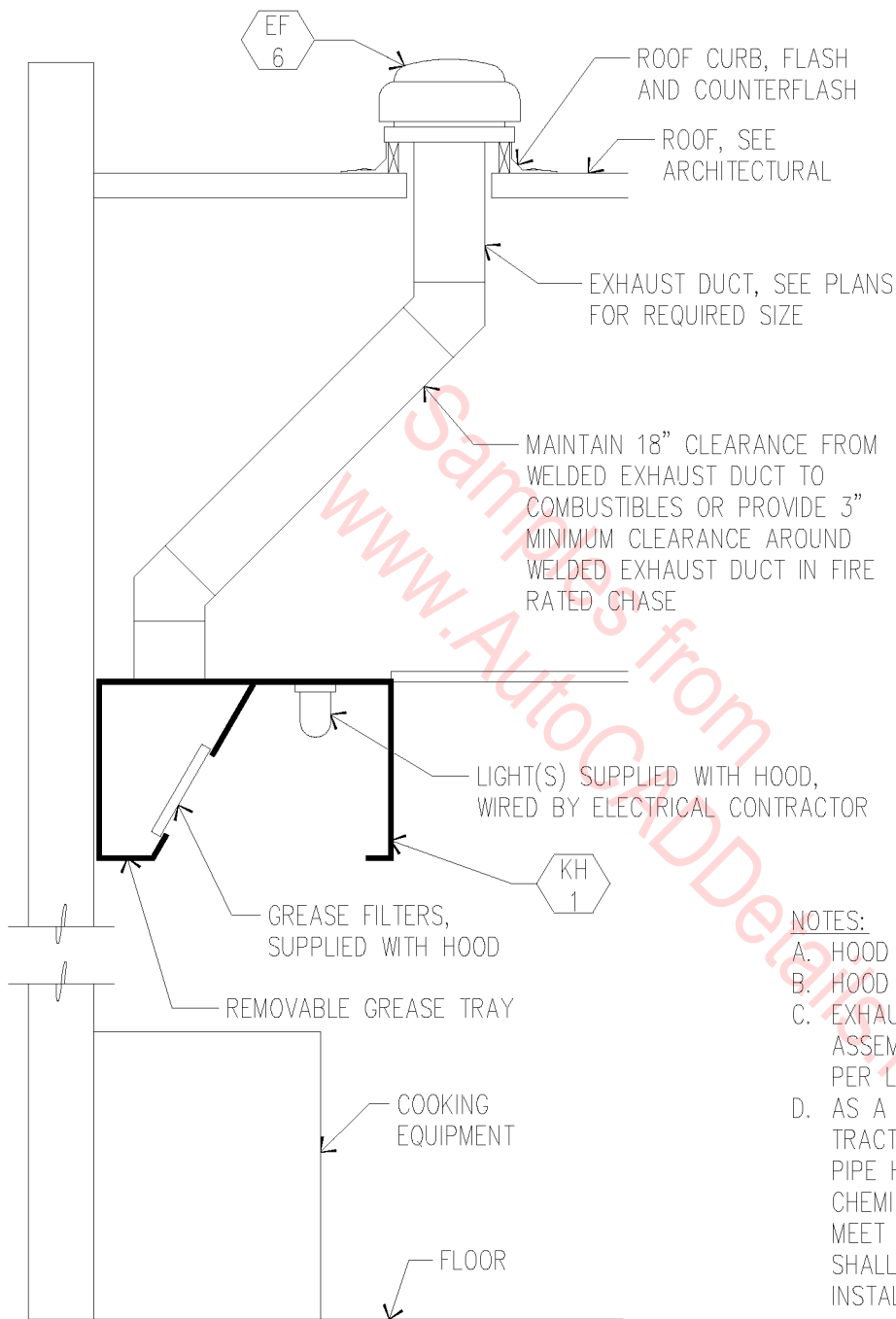
- A. HOOD TO BE UL RATED.
- B. HOOD CONSTRUCTION TO COMPLY WITH NFPA 96.
- C. HOOD TO BE FABRICATED AND INSTALLED PER CHAPTER 20 OF THE 1988 UMC.
- E. SEAL ALL JOINTS WITH G.E. SILICONE SEAL.



KITCHEN HOOD & FAN

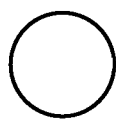
N.T.S.

15A-6011



NOTES:

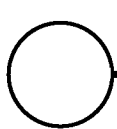
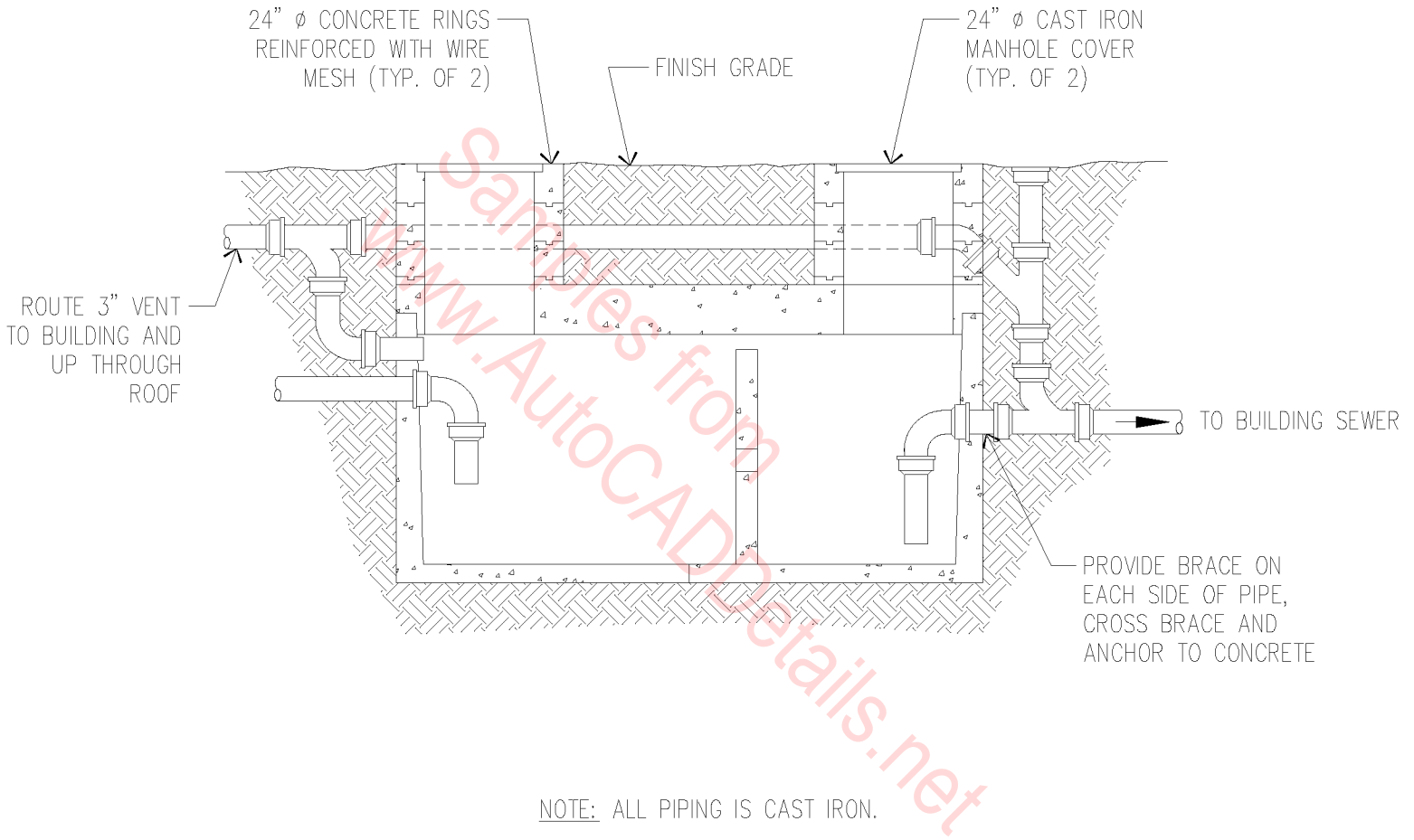
- A. HOOD TO BE UL RATED.
- B. HOOD CONSTRUCTION TO COMPLY WITH NFPA 96.
- C. EXHAUST DUCT TO BE 16 GAUGE STEEL WELD ASSEMBLY OR GASKET/BOLTED FLANGE ASSEMBLY PER LOCAL BUILDING DEPARTMENT.
- D. AS A SUBCONTRACTOR TO THE MECHANICAL CONTRACTOR, A FIRE PROTECTION CONTRACTOR SHALL PIPE HOODS, SUPPLY AND INSTALL PULL STATION, CHEMICAL BOTTLES, AND ALL APPURTENANCES TO MEET LOCAL AND NFPA CODES. CONTRACTOR SHALL ALSO PROVIDE SOLENOID VALVE TO BE INSTALLED BY MECHANICAL CONTRACTOR.



KITCHEN HOOD DETAIL

N.T.S.

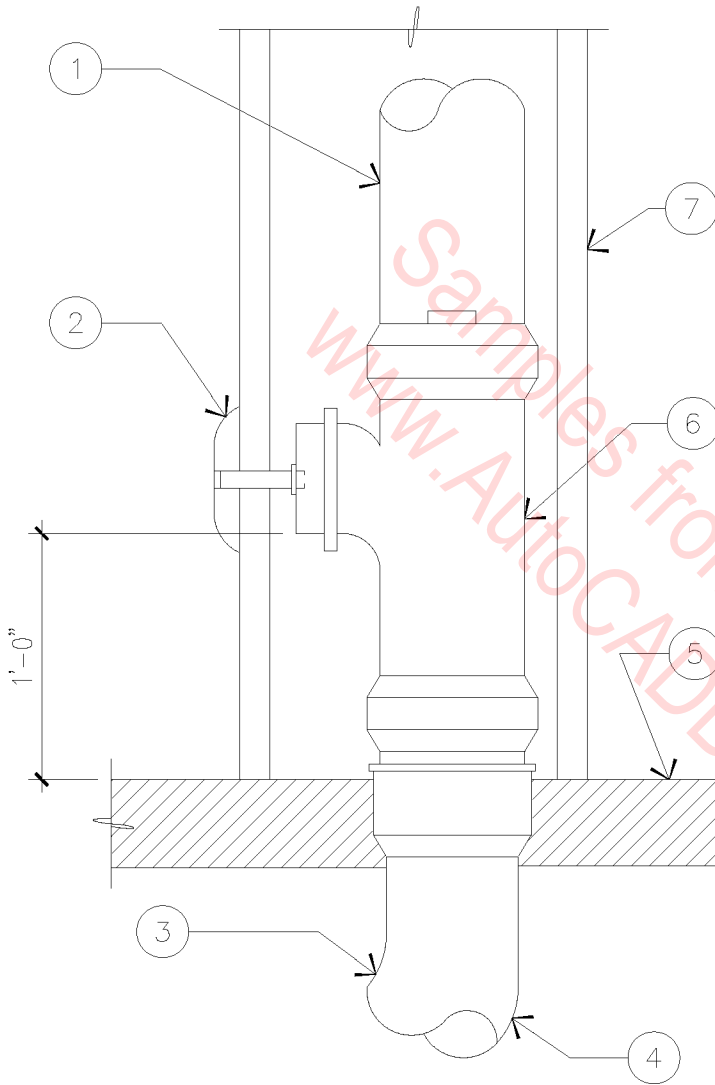
15A-6012



EXTERIOR GREASE TRAP

N.T.S.

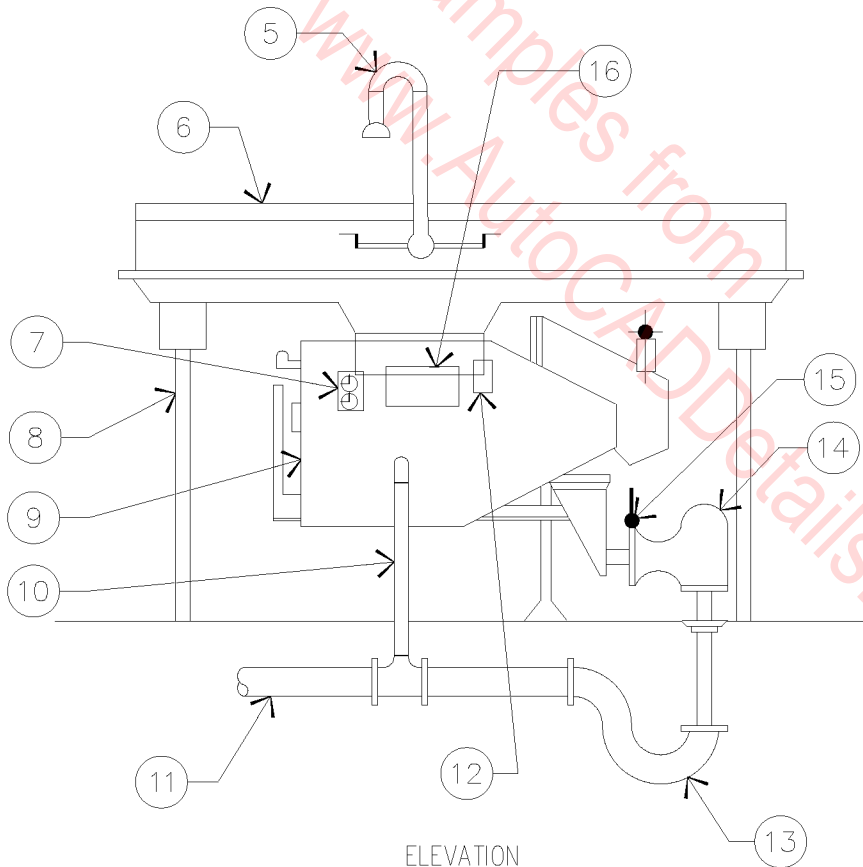
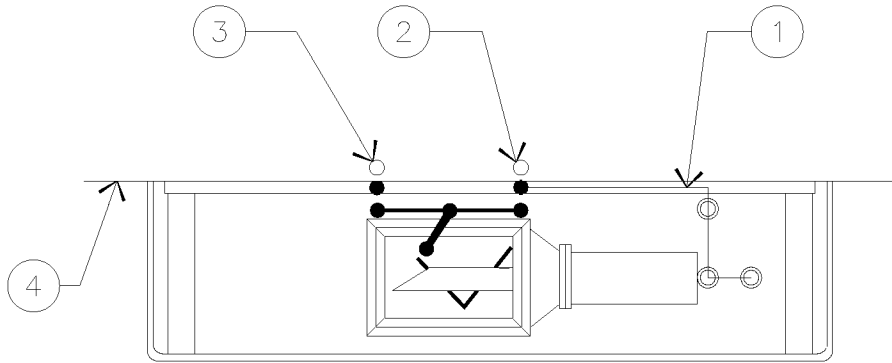
15A-6013



1. MAY EXTEND AS A WASTE OR VENT.
2. WALLCOVER AND SCREW.
3. 1/8" CAST IRON BEND.
4. BALANCE OR PIPING SAME AS CLEANOUT TO GRADE.
5. FLOOR.
6. PLUGGED TEE WITH CLEANOUT.
7. WALL.

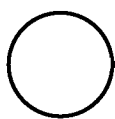

WALL CLEANOUT
 N.T.S.

15A-6014



1. EXTEND 1/2" COLD WATER LINE WITH GATE VALVE.
2. 3/4" COLD WATER LINE DROP IN WALL, BRANCH BELOW TOP OF FIXTURE, CONNECT FIXTURE STOP.
3. 1/2" HOT WATER LINE DROP IN WALL, CONNECT WITH FIXTURE STOP.
4. WALL.
5. PRE-RINSE UNIT.
6. 16 GAUGE STAINLESS STEEL.
7. START/STOP PUSH BUTTON.
8. 1-3/8" OUTSIDE DIAMETER STAINLESS STEEL LEG WITH STAINLESS STEEL ENCLOSED GUSSETS.
9. NEOPRENE SKIRT.
10. 2" VENT UP IN WALL.
11. 4" CAST IRON SANITARY SEWER.
12. ELECTRICAL JUNCTION BOX.
13. 4" CAST IRON TRAP.
14. CLEANOUT PLUG.
15. 1/2" DIELECTRIC UNION FOR WATER INLET CONNECTION.
16. MAIN STARTER.

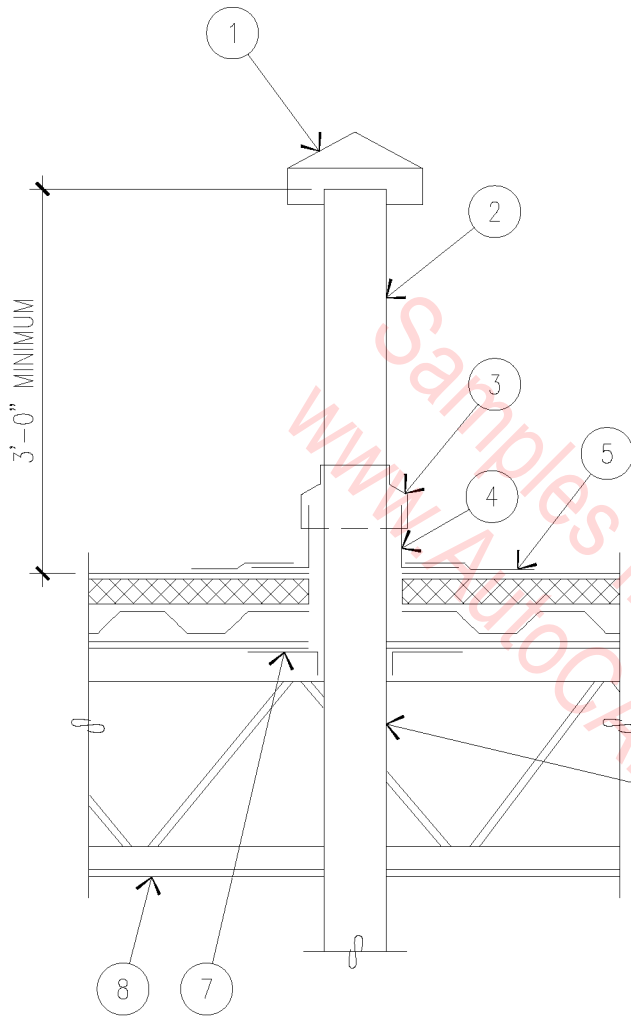
NOTE: FIXTURE FURNISHED BY OWNER. ROUGH-IN AND FINAL CONNECTION BY MECHANICAL AND ELECTRICAL CONTRACTORS.



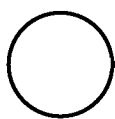
GARBAGE DISPOSER

N.T.S.

15A-6015



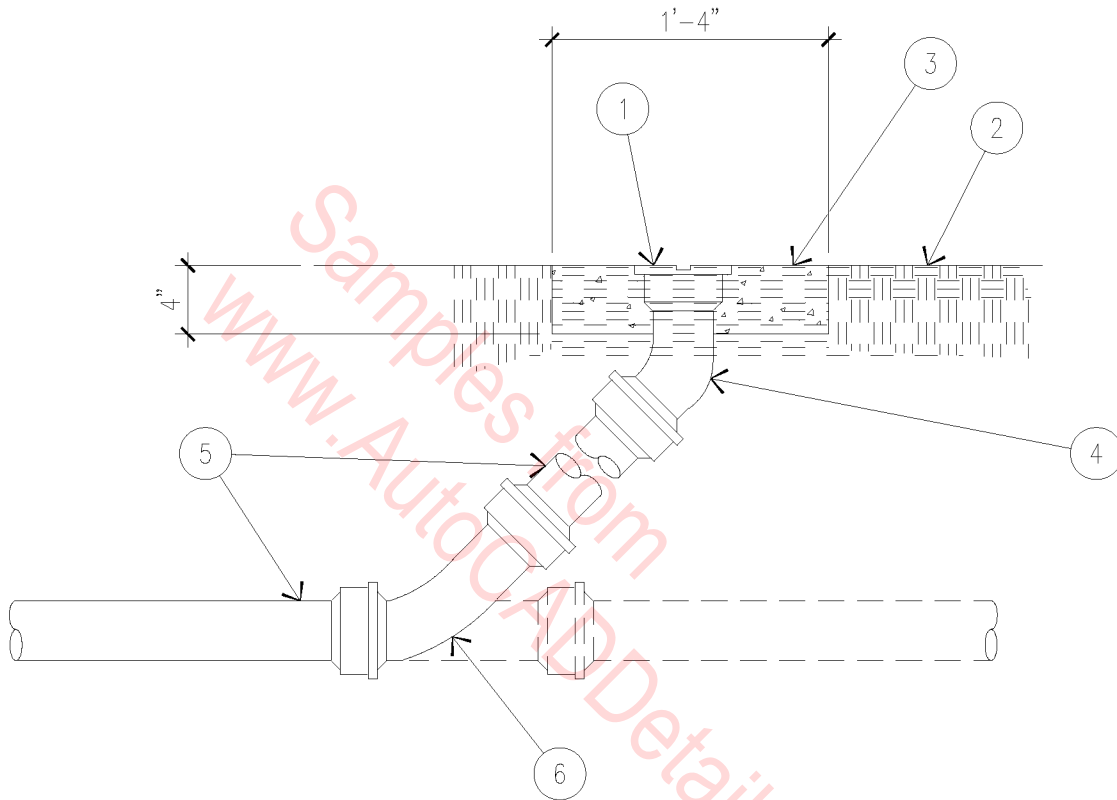
1. PREFABRICATED METAL CAP.
2. 10" ϕ UL LABEL TYPE 'B' METAL BOILER STACK PIPE THROUGH ROOF.
3. METAL COUNTERFLASHING PIPE COLLAR.
4. 12" ϕ METAL FLASHING COLLAR, PROVIDE PROPER STACK CLEARANCE.
5. ROOF PENETRATION, FLASHING, AND ROOFING TO BE DONE BY LANDLORD'S ROOFER.
6. ALL PIPE SECTIONS TO BE FASTENED WITH 3/4" SHEET METAL SCREWS.
7. FIRESTOP AT CEILING WITH MANUFACTURER'S METAL PLATE COLLAR - SEE MANUFACTURER'S SPECIFICATIONS.
8. EXISTING ROOF STRUCTURE.



BOILER STACK

NOT TO SCALE

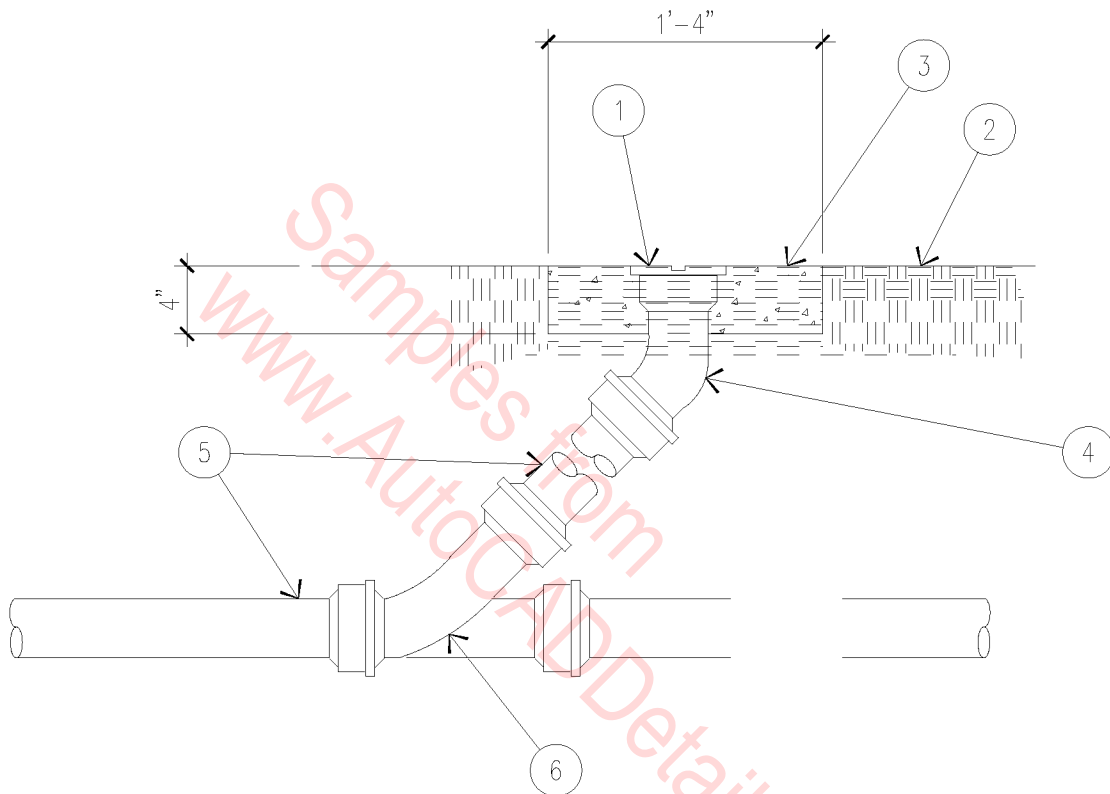
15A-6016



1. BRASS CLEAN OUT PLUG WITH COUNTER SUNK HEAD.
2. FINISHED GRADE.
3. 16" SQUARE CONCRETE PAD TROWEL SMOOTH AND EDGE.
4. 1/8 CAST IRON BEND.
5. CAST IRON WASTE LINE. LENGTH AS REQUIRED.
6. 1/8 BEND IF CLEAN OUT OCCURS AT END OF LINE.

 CLEAN OUT
 1" = 1'-0"

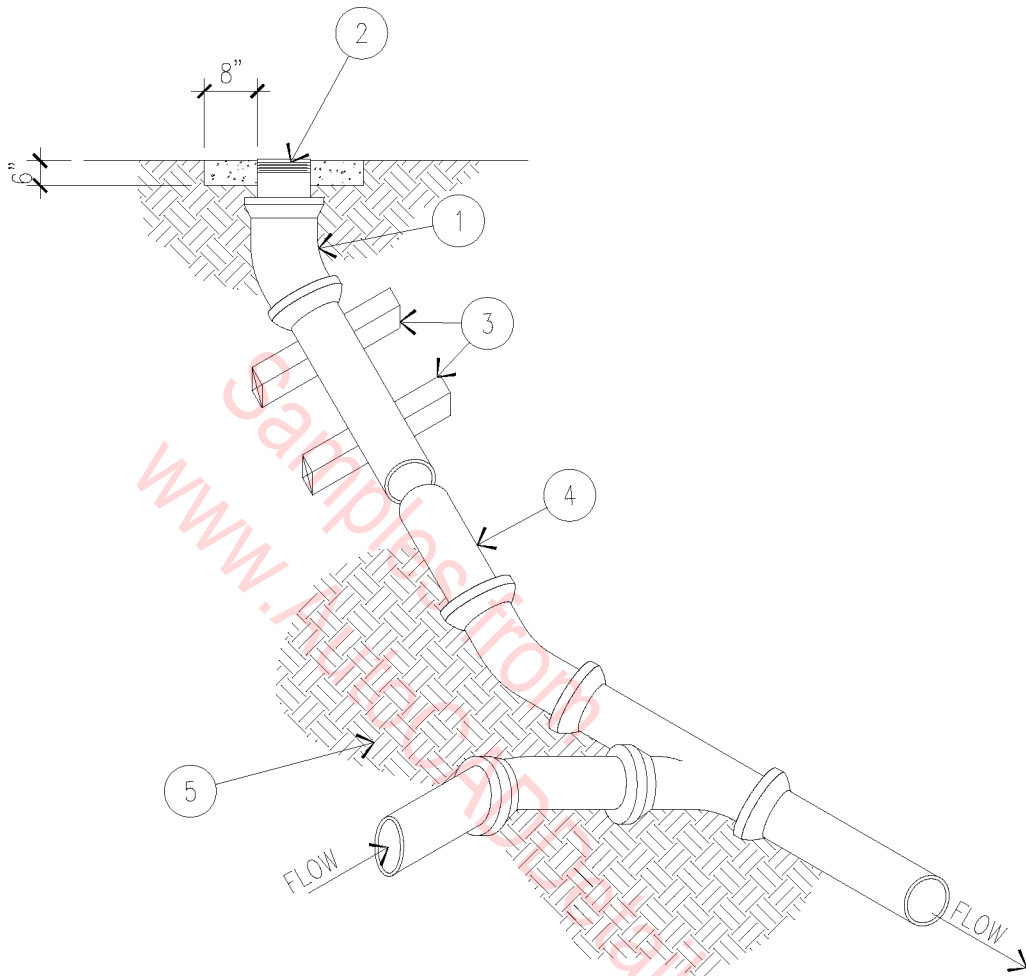
15A-6017



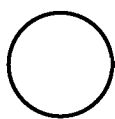
1. BRASS CLEAN OUT PLUG WITH COUNTER SUNK HEAD.
2. FINISHED GRADE.
3. 16" SQUARE CONCRETE PAD TROWEL SMOOTH AND EDGE.
4. 1/8 CAST IRON BEND.
5. CAST IRON WASTE LINE. LENGTH AS REQUIRED.
6. 1/8 BEND IF CLEAN OUT OCCURS AT END OF LINE.


CLEAN OUT
 1" = 1'-0"

15A-6017



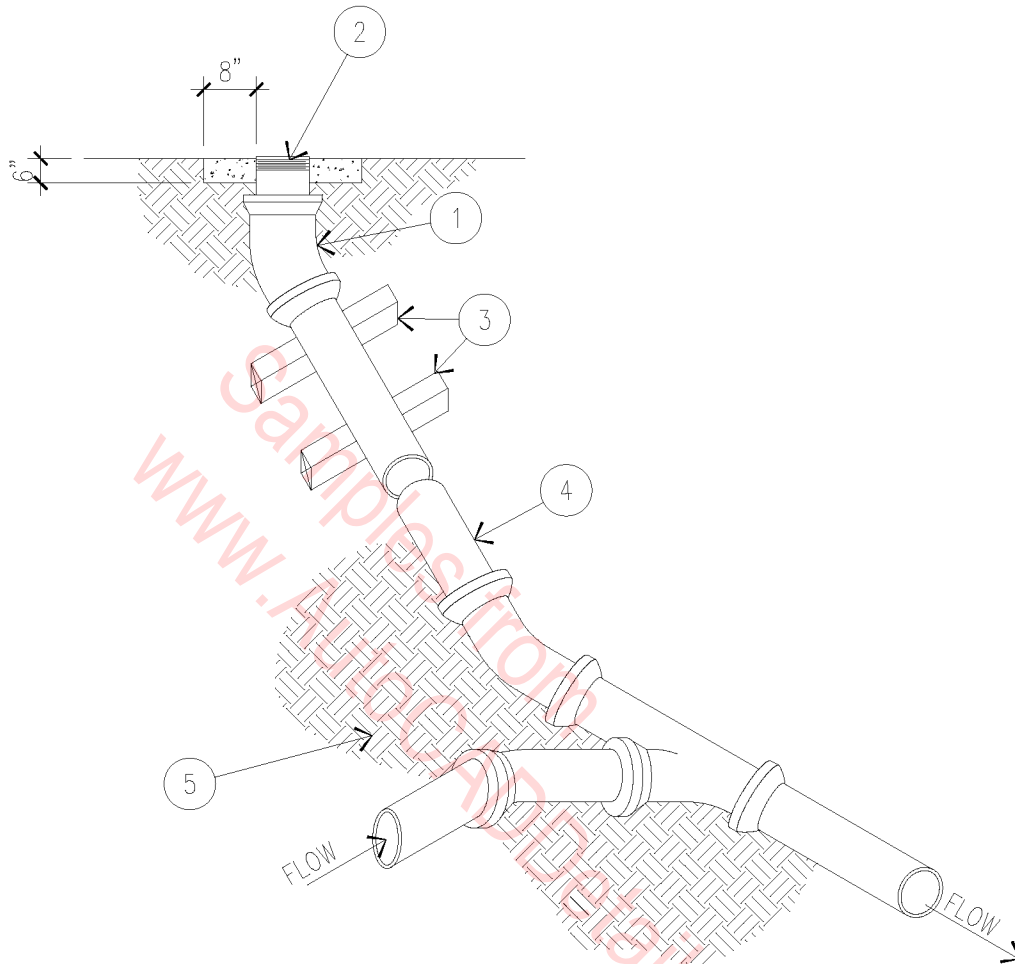
- | | |
|---|---|
| 1. TYLER 1/8 BEND. | 3. 4" X 4" BRACES (2 MINIMUM). |
| 2. TYLER CLEAN OUT WITH COUNTER-SUNK HEAD 2-116F WITH TYPE F PLUG OR EQUAL. | 4. CAST IRON SOIL PIPE CLEAN OUT WITH PLUG. |
| | 5. UNDISTURBED SOLID TRENCH BOTTOM. |



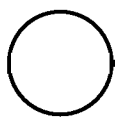
SEWER CLEANOUT

N.T.S.

15A-6018



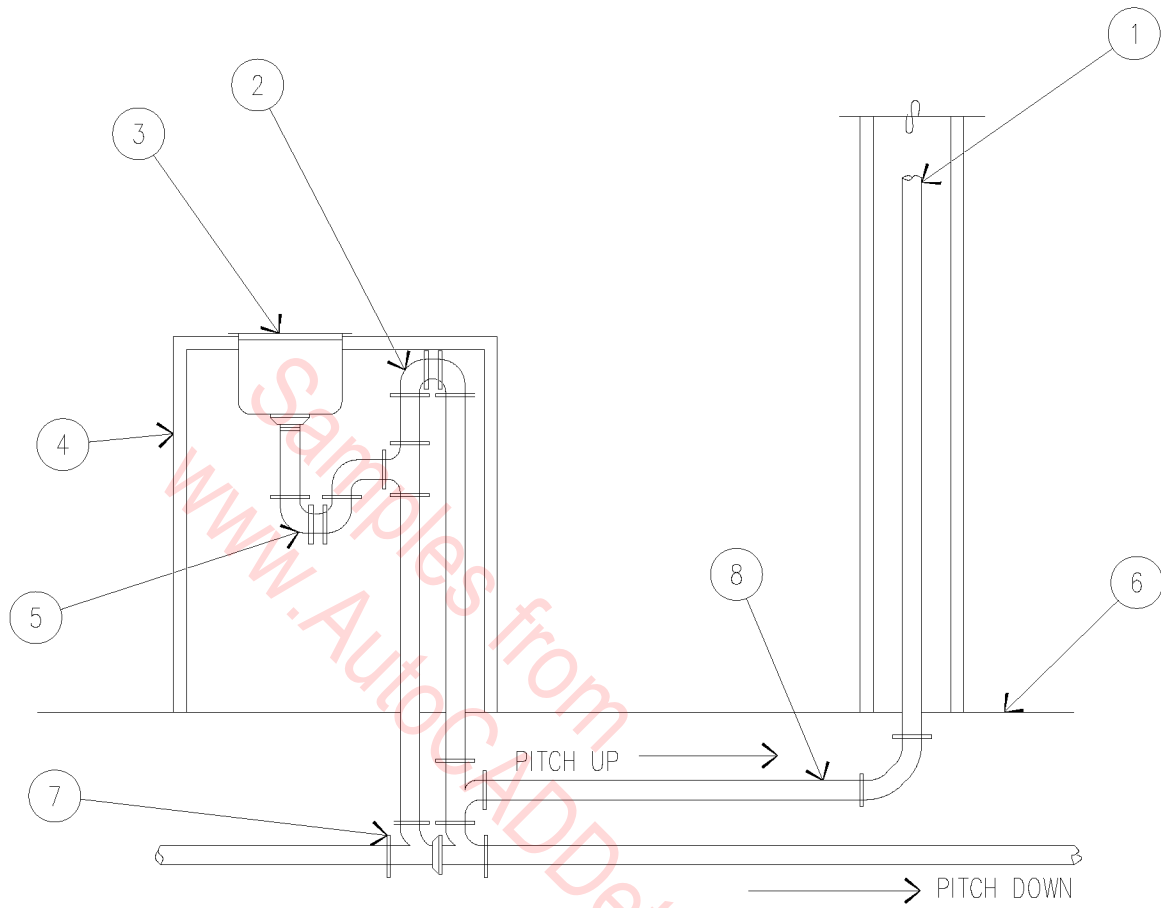
- | | |
|---|---|
| 1. TYLER 1/8 BEND. | 3. 4" X 4" BRACES (2 MINIMUM). |
| 2. TYLER CLEAN OUT WITH COUNTER-SUNK HEAD 2-116F WITH TYPE F PLUG OR EQUAL. | 4. CAST IRON SOIL PIPE CLEAN OUT WITH PLUG. |
| | 5. UNDISTURBED SOLID TRENCH BOTTOM. |



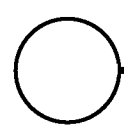
SEWER CLEANOUT

N.T.S.

15A-6018



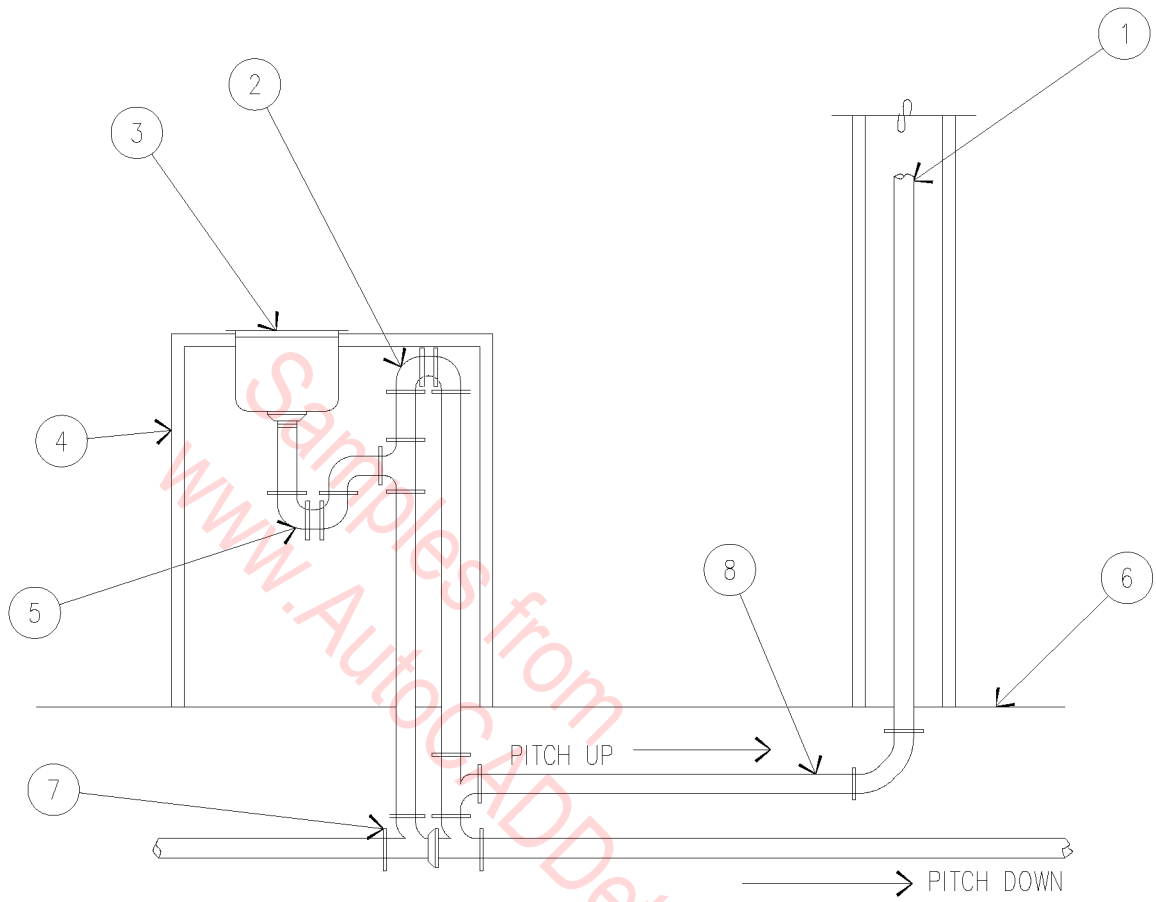
1. VENT THROUGH ROOF.
2. RETURN BEND, ELEVATE TO HIGHEST POINT POSSIBLE.
3. SINK.
4. ISLAND CABINET.
5. P-TRAP.
6. FLOOR LINE.
7. LONG SWEEP FITTING (TYPICAL).
8. FOOT VENT.



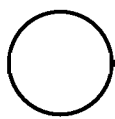
ISLAND SINK

N.T.S

15A-6019



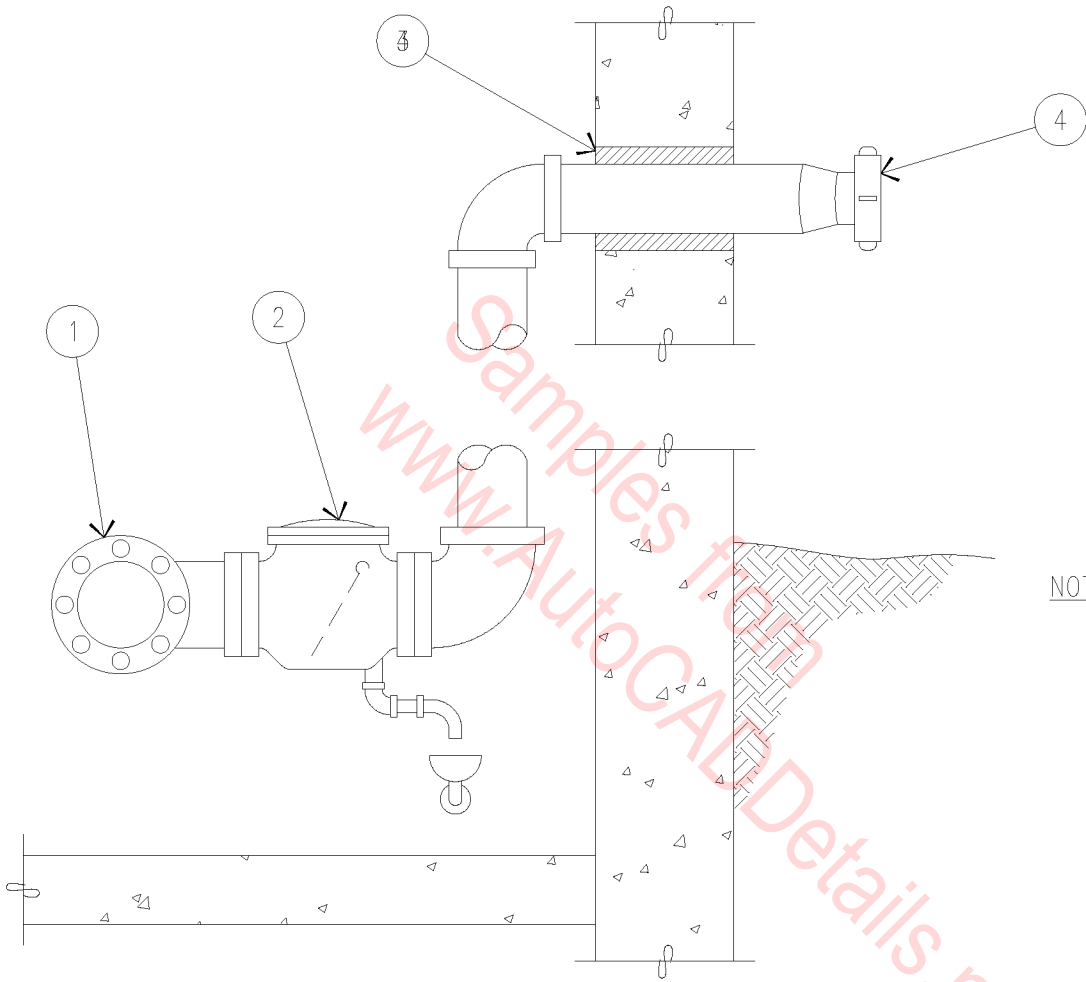
1. VENT THROUGH ROOF.
2. RETURN BEND, ELEVATE TO HIGHEST POINT POSSIBLE.
3. SINK.
4. ISLAND CABINET.
5. P-TRAP.
6. FLOOR LINE.
7. LONG SWEEP FITTING (TYPICAL).
8. FOOT VENT.



ISLAND SINK

N.T.S

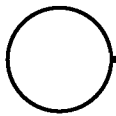
15A-6019



1. HEADER IN VALVE ROOM.
2. CHECK VALVE.
3. 1" - 3" WATERPROOF MASTIC.
4. FIRE DEPARTMENT CONNECTION.

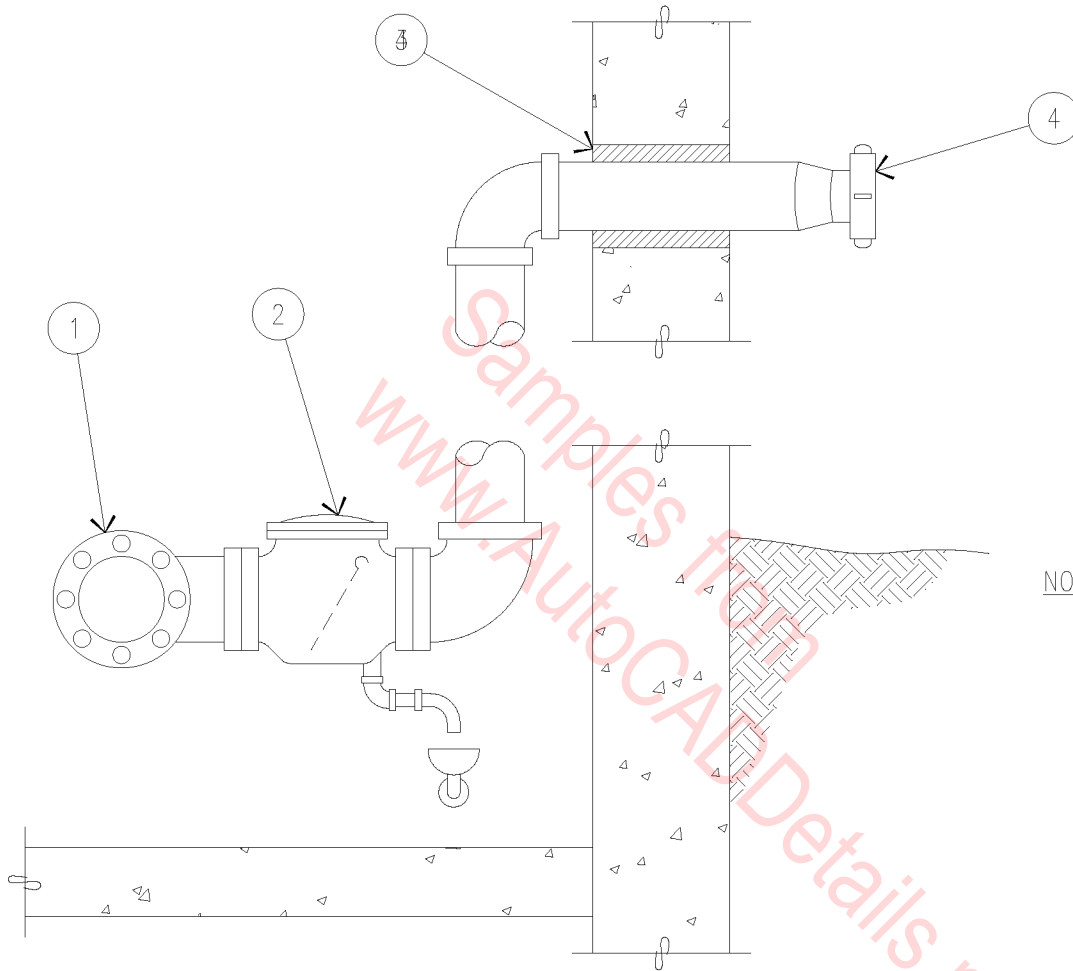
NOTE: REFER TO N.F.P.A. PAMPHLET 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL WET STANDPIPE CONNECTION



N.T.S.

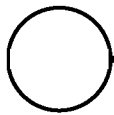
15A-3001



1. HEADER IN VALVE ROOM.
2. CHECK VALVE.
3. 1" - 3" WATERPROOF MASTIC.
4. FIRE DEPARTMENT CONNECTION.

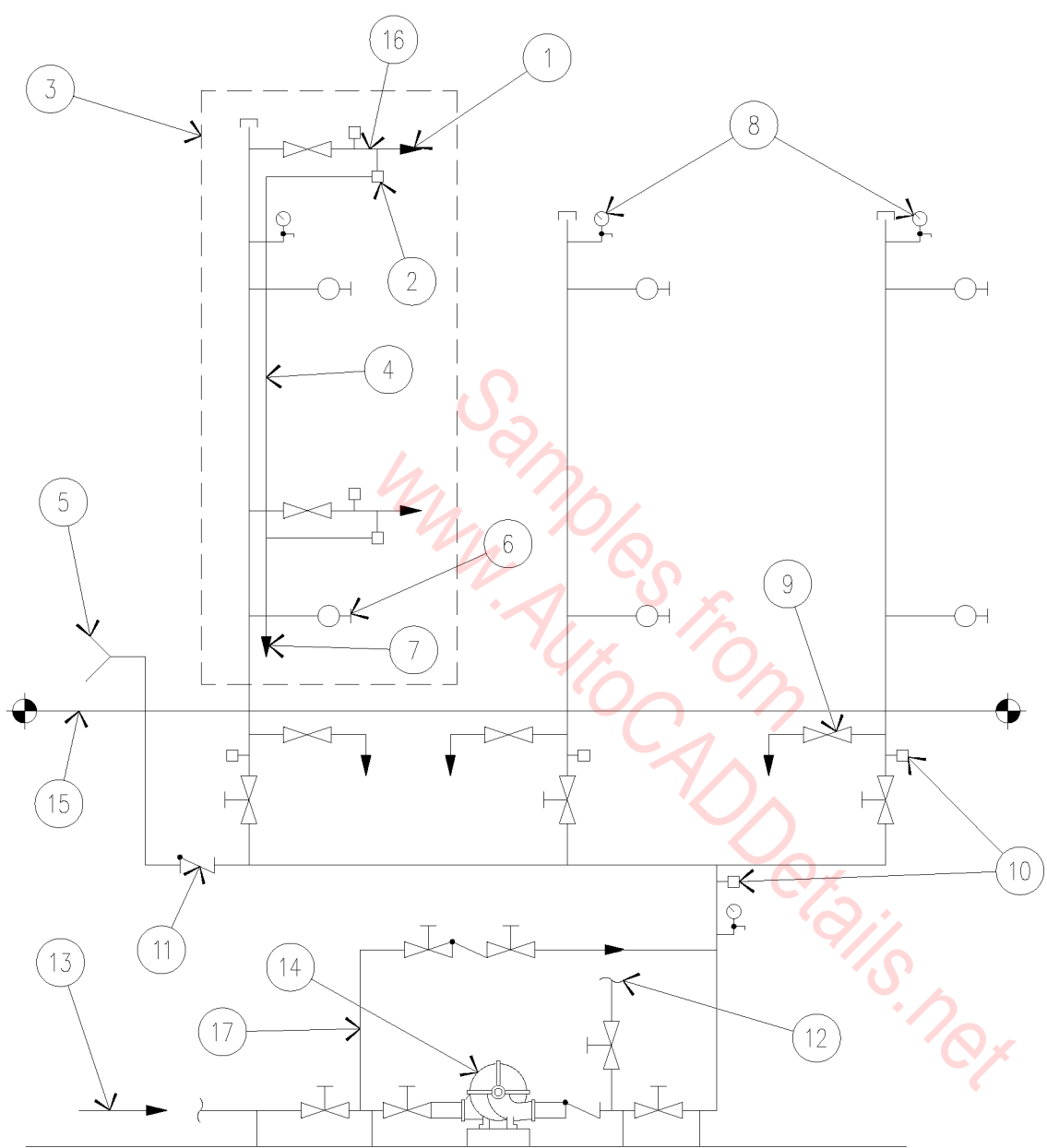
NOTE: REFER TO N.F.P.A. PAMPHLET 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL WET STANDPIPE CONNECTION



N.T.S.

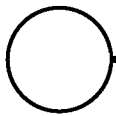
15A-3001



1. TO SPRINKLER SYSTEM.
2. TEST AND DRAIN.
3. TYPICAL COMBINED SYSTEM.
4. DRAIN RISER.
5. FIRE DEPARTMENT CONNECTION.
6. FIRE HOSE VALVE.
7. TO DRAIN.
8. PRESSURE GAUGE.
9. DRAIN VALVE.
10. WATERFLOW SWITCH (WHERE REQUIRED).
11. CHECK VALVE WITH BALL DRIP.
12. TO TEST HEADER.
13. FROM WATER SUPPLY.
14. FIRE PUMP.
15. GRADE LEVEL.
16. SPRINKLER FLOOR ASSEMBLY IN ACCORDANCE WITH N.F.P.A. 13, "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS."
17. BYPASS IN ACCORDANCE WITH N.F.P.A. 20, "STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."

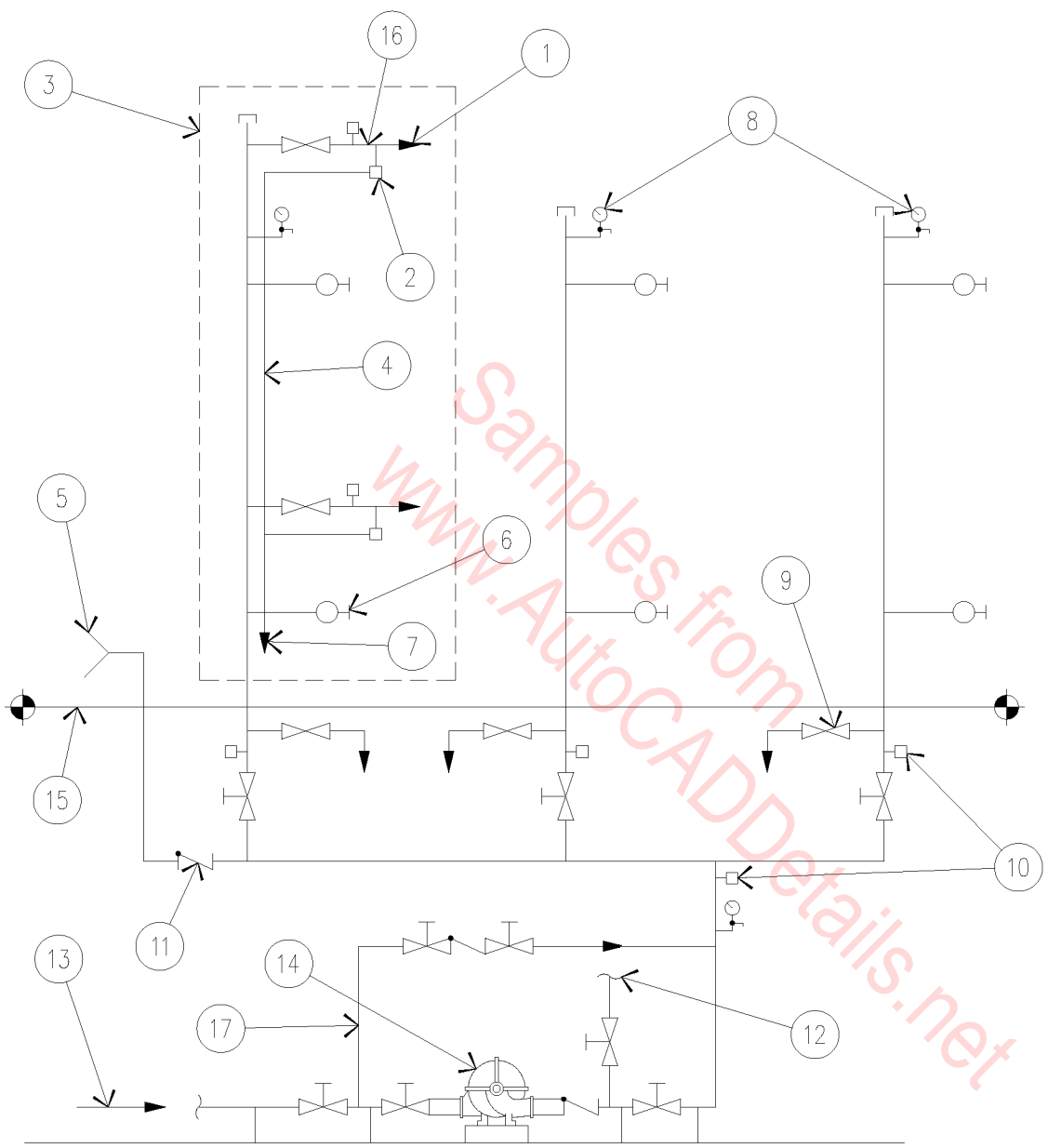
NOTE: REFER TO N.F.P.A. 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL SINGLE-ZONE STANDPIPE SYSTEM



N.T.S.

15A-3002



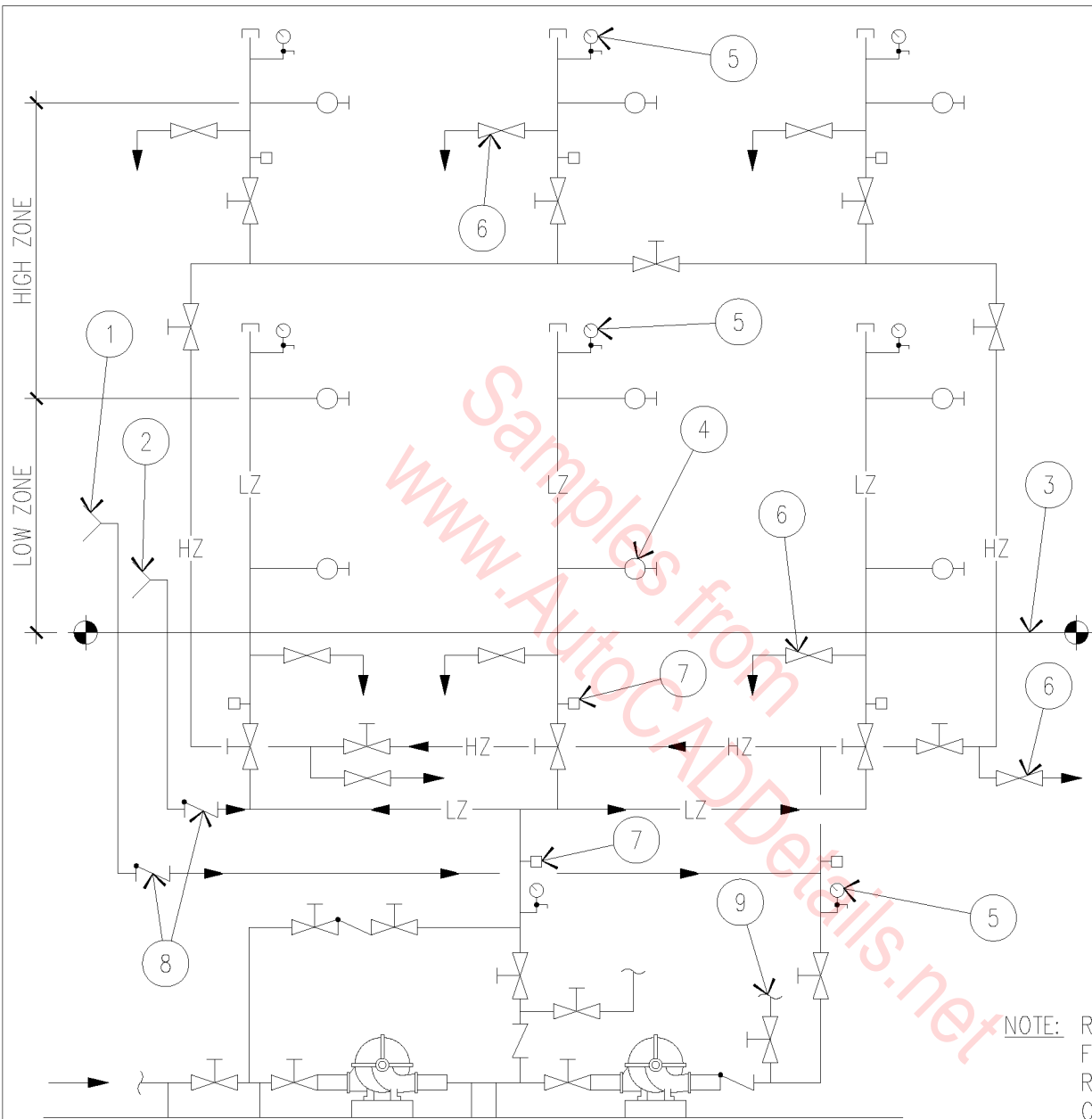
1. TO SPRINKLER SYSTEM.
2. TEST AND DRAIN.
3. TYPICAL COMBINED SYSTEM.
4. DRAIN RISER.
5. FIRE DEPARTMENT CONNECTION.
6. FIRE HOSE VALVE.
7. TO DRAIN.
8. PRESSURE GAUGE.
9. DRAIN VALVE.
10. WATERFLOW SWITCH (WHERE REQUIRED).
11. CHECK VALVE WITH BALL DRIP.
12. TO TEST HEADER.
13. FROM WATER SUPPLY.
14. FIRE PUMP.
15. GRADE LEVEL.
16. SPRINKLER FLOOR ASSEMBLY IN ACCORDANCE WITH N.F.P.A. 13, "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS."
17. BYPASS IN ACCORDANCE WITH N.F.P.A. 20, "STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."

NOTE: REFER TO N.F.P.A. 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL SINGLE-ZONE STANDPIPE SYSTEM

○ N.T.S.

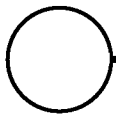
15A-3002



1. FIRE DEPARTMENT CONNECTION - HIGH ZONE.
2. FIRE DEPARTMENT CONNECTION - LOW ZONE.
3. GRADE LEVEL.
4. FIRE HOSE VALVE.
5. PRESSURE GAUGE.
6. DRAIN VALVE.
7. WATERFLOW SWITCH (WHERE REQUIRED).
8. CHECK VALVE WITH BALL DRIP.
9. TO TEST HEADER.
10. FROM WATER SUPPLY.
11. FIRE PUMP - HIGH ZONE.
12. FIRE PUMP - LOW ZONE.
13. HIGH ZONE PUMP CAN BE ARRANGED TO TAKE SUCTION DIRECTLY FROM THE SOURCE OF SUPPLY.
14. BYPASS IN ACCORDANCE WITH N.F.P.A. 20, "STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."

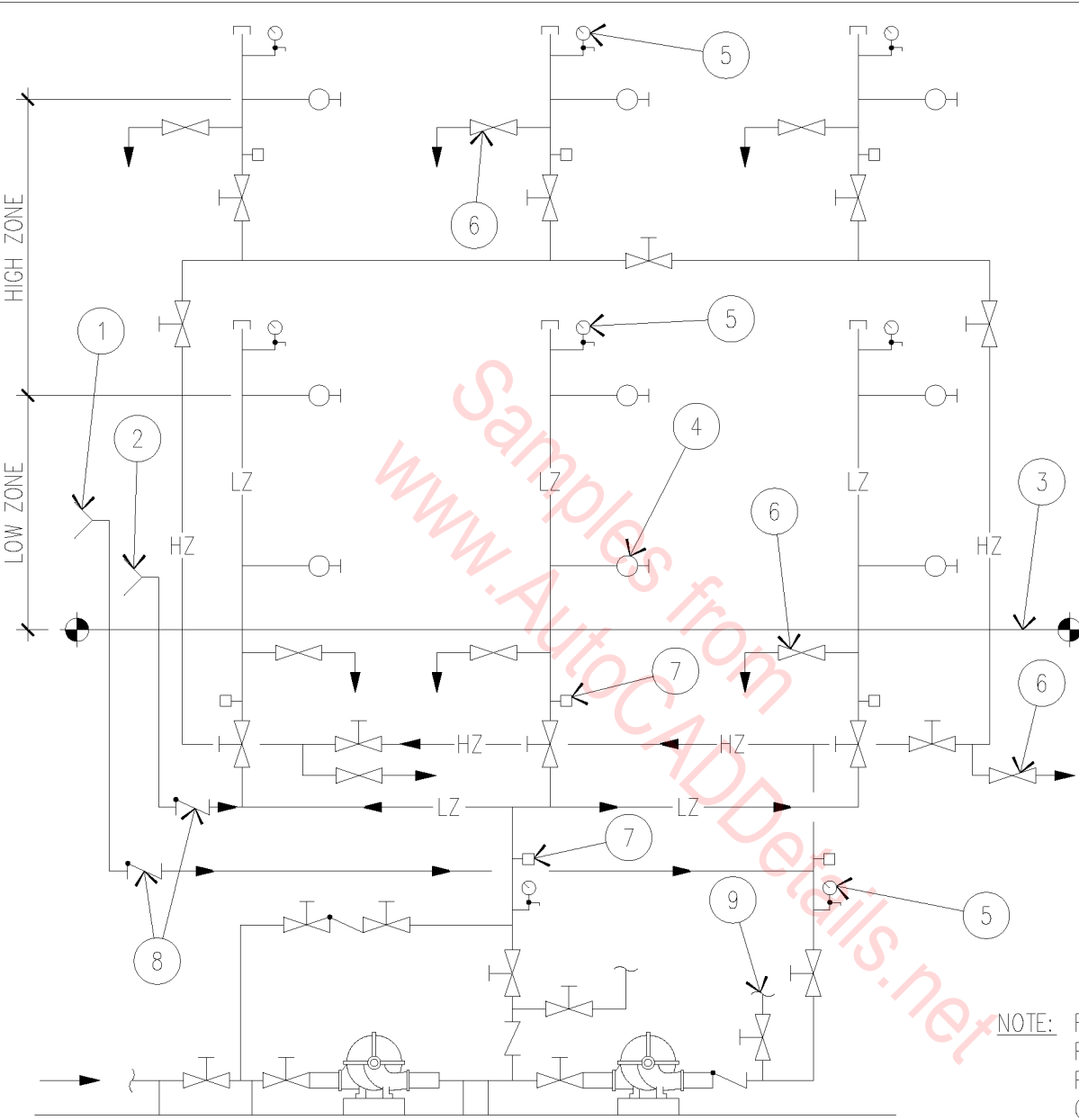
NOTE: REFER TO N.F.P.A. 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL TWO-ZONE STANDPIPE SYSTEM



N.T.S.

15A-3003



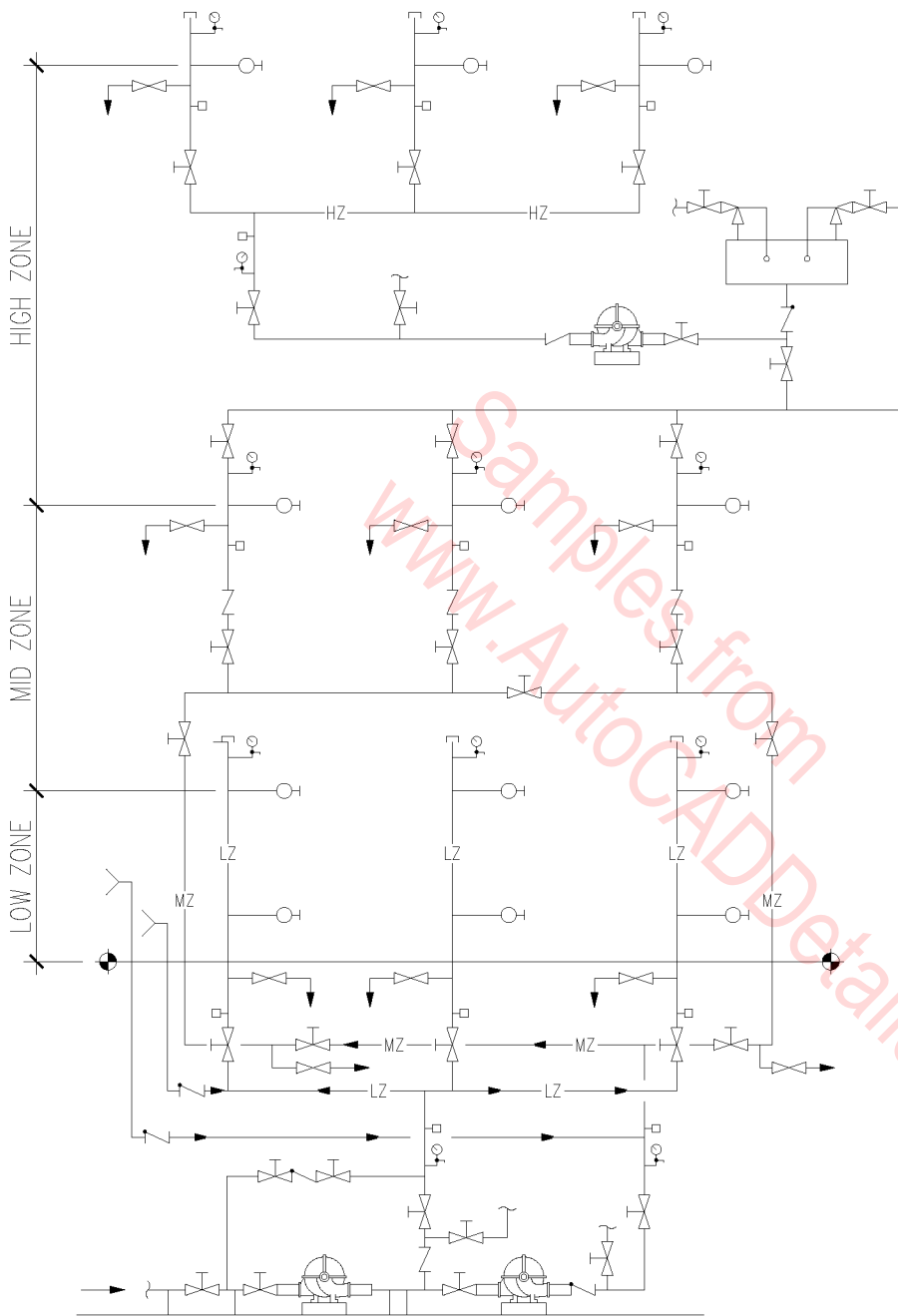
1. FIRE DEPARTMENT CONNECTION - HIGH ZONE.
2. FIRE DEPARTMENT CONNECTION - LOW ZONE.
3. GRADE LEVEL.
4. FIRE HOSE VALVE.
5. PRESSURE GAUGE.
6. DRAIN VALVE.
7. WATERFLOW SWITCH (WHERE REQUIRED).
8. CHECK VALVE WITH BALL DRIP.
9. TO TEST HEADER.
10. FROM WATER SUPPLY.
11. FIRE PUMP - HIGH ZONE.
12. FIRE PUMP - LOW ZONE.
13. HIGH ZONE PUMP CAN BE ARRANGED TO TAKE SUCTION DIRECTLY FROM THE SOURCE OF SUPPLY.
14. BYPASS IN ACCORDANCE WITH N.F.P.A. 20, "STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."

NOTE: REFER TO N.F.P.A. 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL TWO-ZONE STANDPIPE SYSTEM

N.T.S.

15A-3003



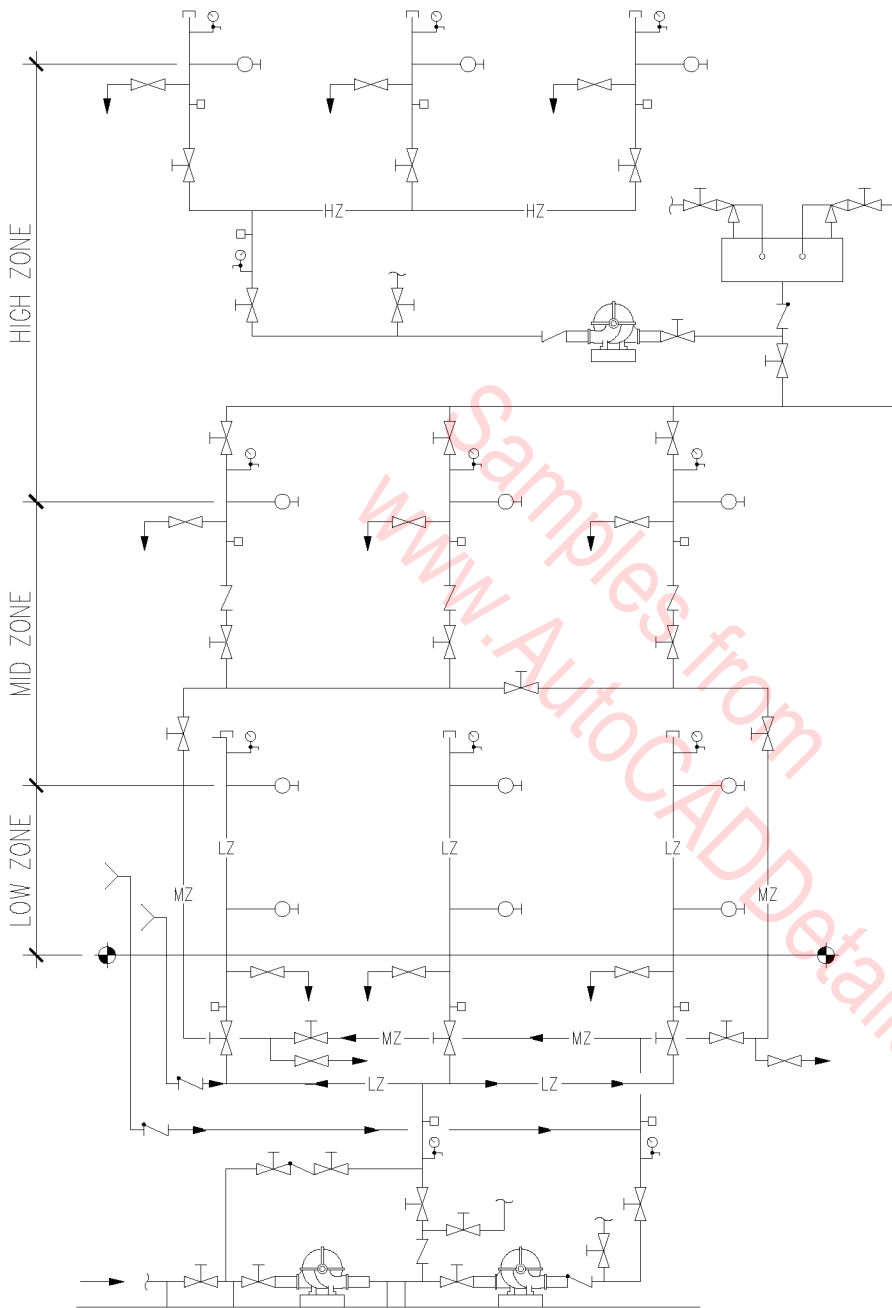
1. FIRE DEPARTMENT CONNECTION – MID ZONE AND TANK FILL.
2. FIRE DEPARTMENT CONNECTION – LOW ZONE.
3. GRADE LEVEL.
4. FIRE HOSE VALVE.
5. PRESSURE GAUGE.
6. DRAIN VALVE.
7. WATERFLOW SWITCH (WHERE REQUIRED).
8. CHECK VALVE WITH BALL DRIP.
9. TO TEST HEADER.
10. FROM WATER SUPPLY.
11. FIRE PUMP – HIGH ZONE.
12. FIRE PUMP – MID ZONE.
13. FIRE PUMP – LOW ZONE.
14. DOMESTIC WATER MAKEUP.
15. STORAGE TANK.
16. FLOAT VALVE.
17. BYPASS IN ACCORDANCE WITH N.F.P.A. 20, "STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."

NOTE: REFER TO N.F.P.A. 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

TYPICAL MULTIZONE STANDPIPE SYSTEM

N.T.S.

15A-3004



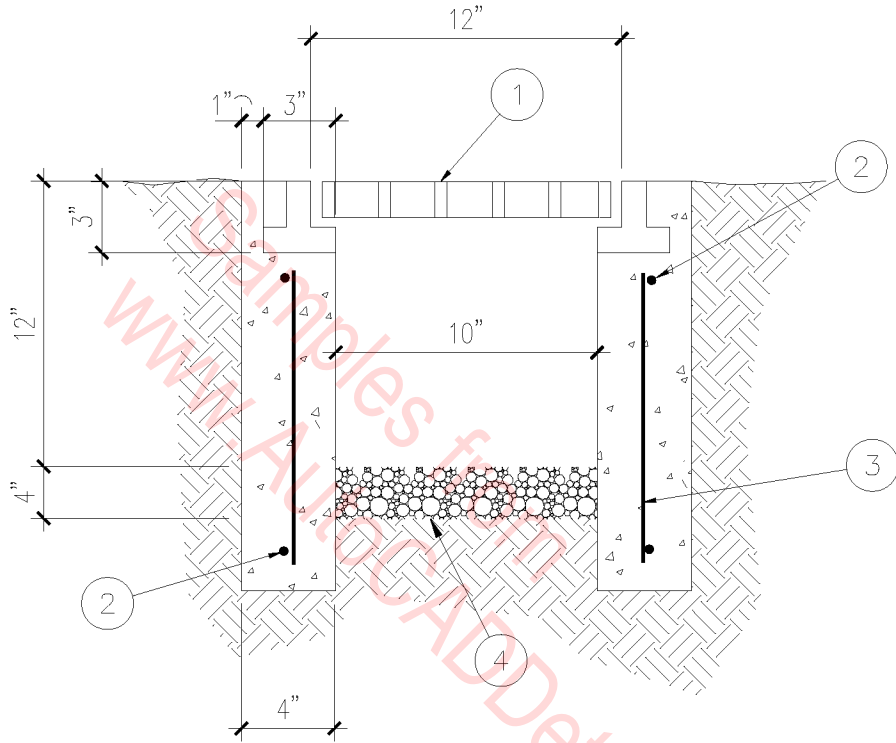
1. FIRE DEPARTMENT CONNECTION – MID ZONE AND TANK FILL.
2. FIRE DEPARTMENT CONNECTION – LOW ZONE.
3. GRADE LEVEL.
4. FIRE HOSE VALVE.
5. PRESSURE GAUGE.
6. DRAIN VALVE.
7. WATERFLOW SWITCH (WHERE REQUIRED).
8. CHECK VALVE WITH BALL DRIP.
9. TO TEST HEADER.
10. FROM WATER SUPPLY.
11. FIRE PUMP – HIGH ZONE.
12. FIRE PUMP – MID ZONE.
13. FIRE PUMP – LOW ZONE.
14. DOMESTIC WATER MAKEUP.
15. STORAGE TANK.
16. FLOAT VALVE.
17. BYPASS IN ACCORDANCE WITH N.F.P.A. 20, "STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS."

NOTE: REFER TO N.F.P.A. 14 FOR MORE INFORMATION REGARDING INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.

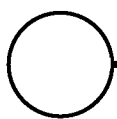
TYPICAL MULTIZONE STANDPIPE SYSTEM

N.T.S.

15A-3004



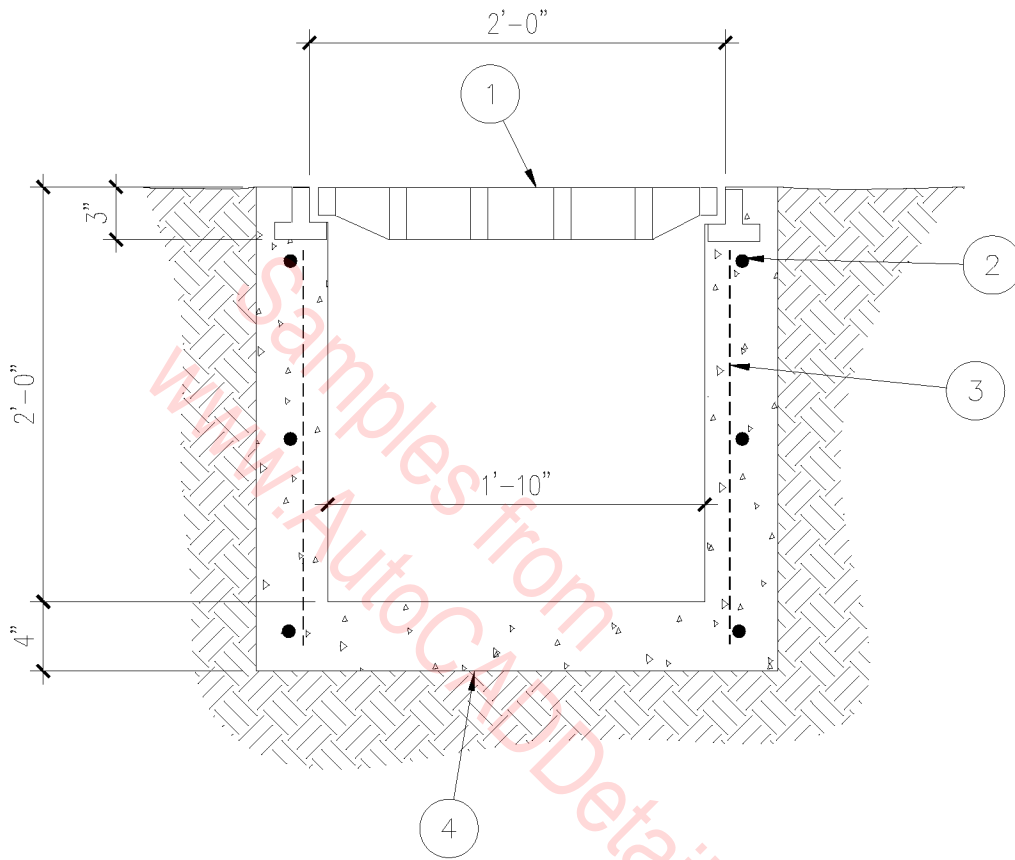
1. GRATING AND FRAME.
2. #4 REBAR ALL AROUND.
3. #4 REBAR AT EACH CORNER.
4. DRAINAGE FILL.



OPEN TRENCH DRAIN

1 1/2" = 1'-0"

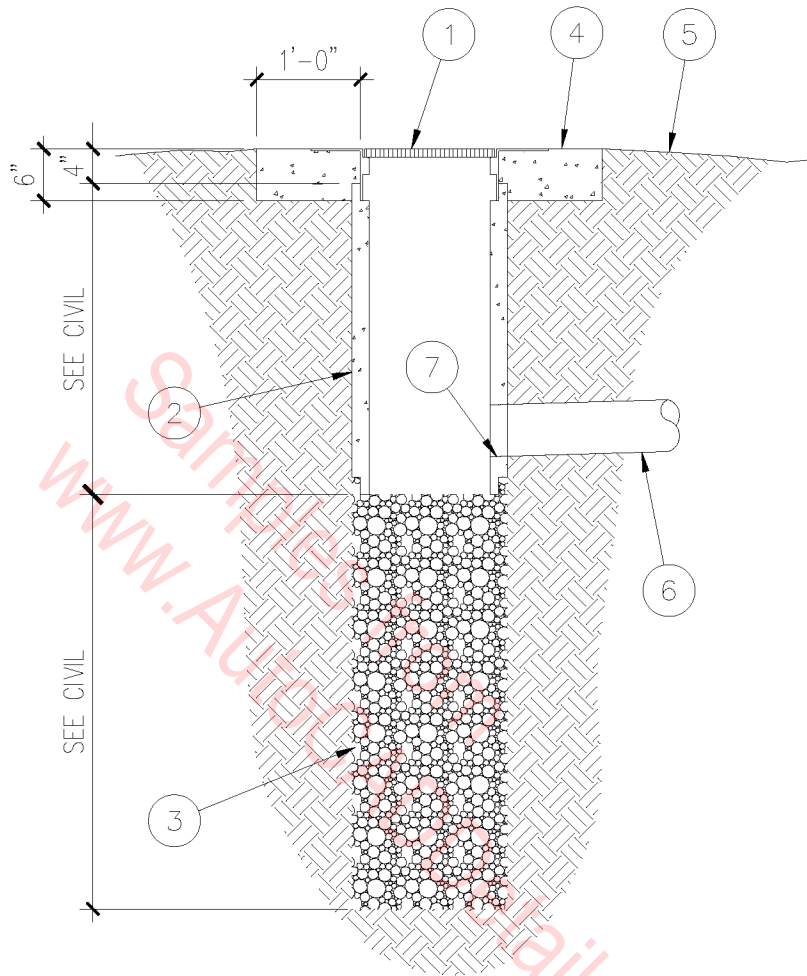
15A-7002



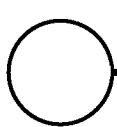
1. GRATING AND FRAME.
2. #4 REBAR AT 12" EACH WAY.
3. #4 REBAR AT EACH CORNER.
4. CONCRETE.

○ CATCH BASIN
 1" = 1'-0"

15A-7004



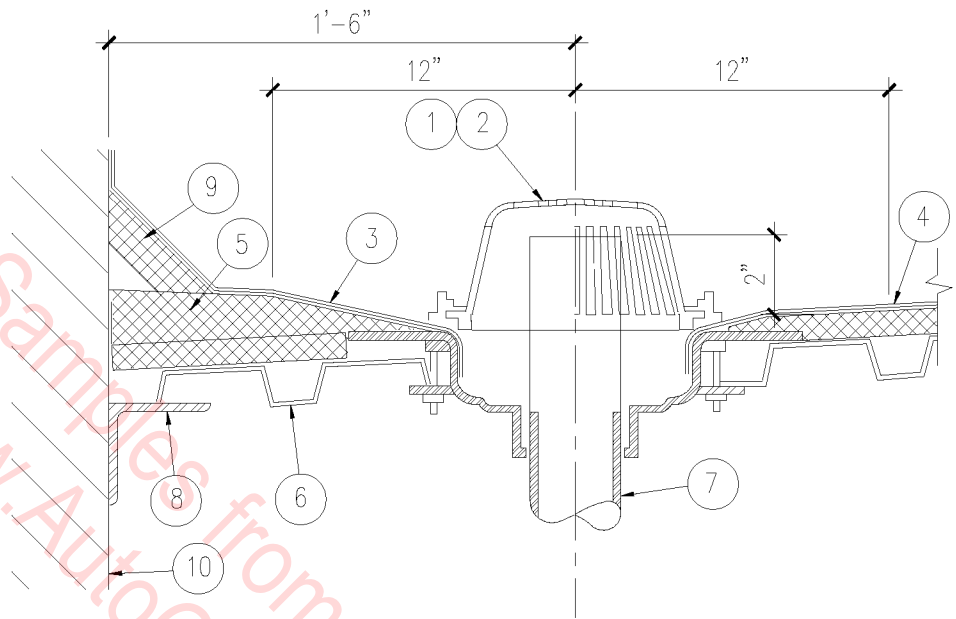
- | | |
|---|--|
| 1. "NEENAH" #R-5901-D OPEN GRATE AND FRAME. | 5. FINISH GRADE. |
| 2. 18" DIAMETER CONCRETE PIPE. | 6. ROOF DRAIN - SEE PLUMBING AND CIVIL. CONDENSATION DRAIN - SEE MECHANICAL. STORM DRAIN - SEE CIVIL, SITE PLAN. |
| 3. 18" DIAMETER DRYWELL WITH 1 1/2" TO 3" GRAVEL. | 7. GROUT IN PLACE. |
| 4. 12" WIDE X 6" DEEP CONCRETE RING. | |



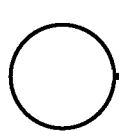
DRY WELL

1/2" = 1'-0"

15A-7005



1. ROOF DRAIN WITH DOUBLE DECK CLAMP.
2. OVERFLOW DRAIN WITH DOUBLE DECK CLAMP AND 2" HIGH STANDPIPE.
3. LEAD FLASHING 24" SQUARE.
4. MODIFIED BITUMEN REINFORCED SHEET ROOFING ON RIGID INSULATION.
5. RIGID INSULATION CRICKETS WHERE REQUIRED, SEE ROOF PLAN, MIN 1/4"/LF AT CRICKET VALLEY.
6. METAL DECK.
7. ROOF DRAIN PIPE.
8. STEEL ANGLE LEDGER.
9. 4" CANT STRIP.
10. FACE OF MASONRY WALL.

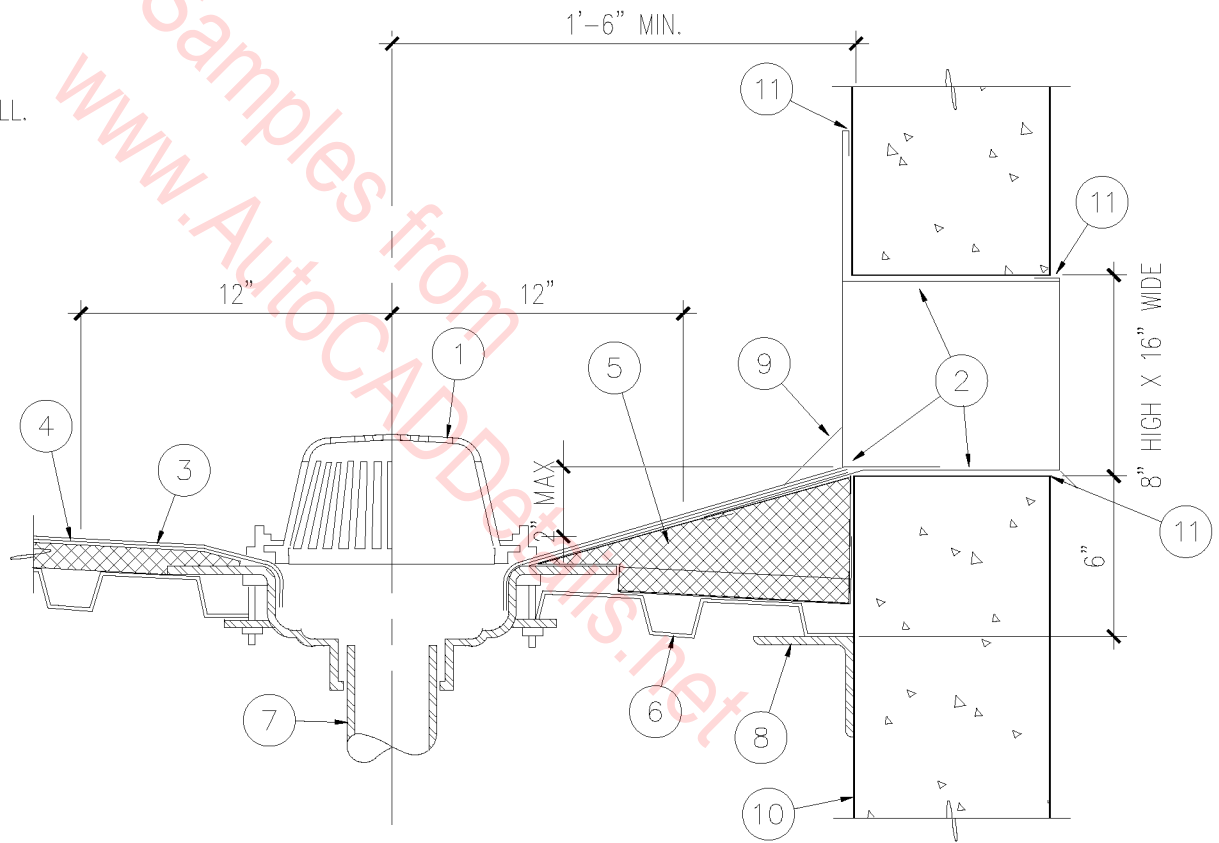


ROOF & OVERFLOW DRAIN

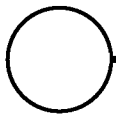
1 1/2" = 1'-0"

15A-7006

1. ROOF DRAIN WITH DOUBLE DECK CLAMP.
2. 20 GA. OVERFLOW SCUPPER AT PARAPET WALL, 2" MAX. ABOVE ROOF DRAIN INVERT.
3. LEAD FLASHING 24" SQUARE.
4. MODIFIED BITUMEN REINFORCED SHEET ROOFING ON RIGID INSULATION.
5. RIGID INSULATION CRICKETS WHERE REQUIRED, SEE ROOF PLAN, MIN. 1/4" / LF AT CRICKET VALLEY.
6. METAL DECK.
7. ROOF DRAIN PIPE.
8. STEEL ANGLE LEDGER.
9. 4" CANT.
10. FACE OF CONCRETE WALL.
11. SEALANT.



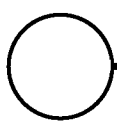
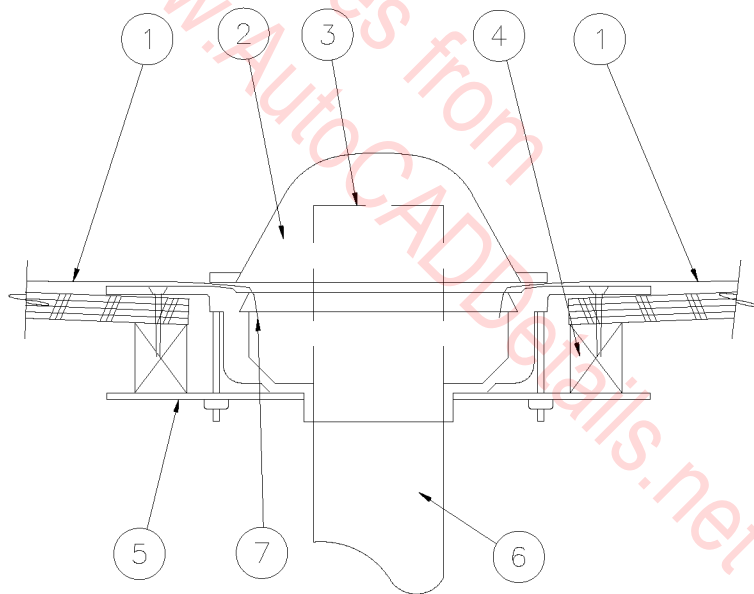
ROOF DRAIN AND OVERFLOW SCUPPER



1 1/2" = 1'-0"

15A-7007

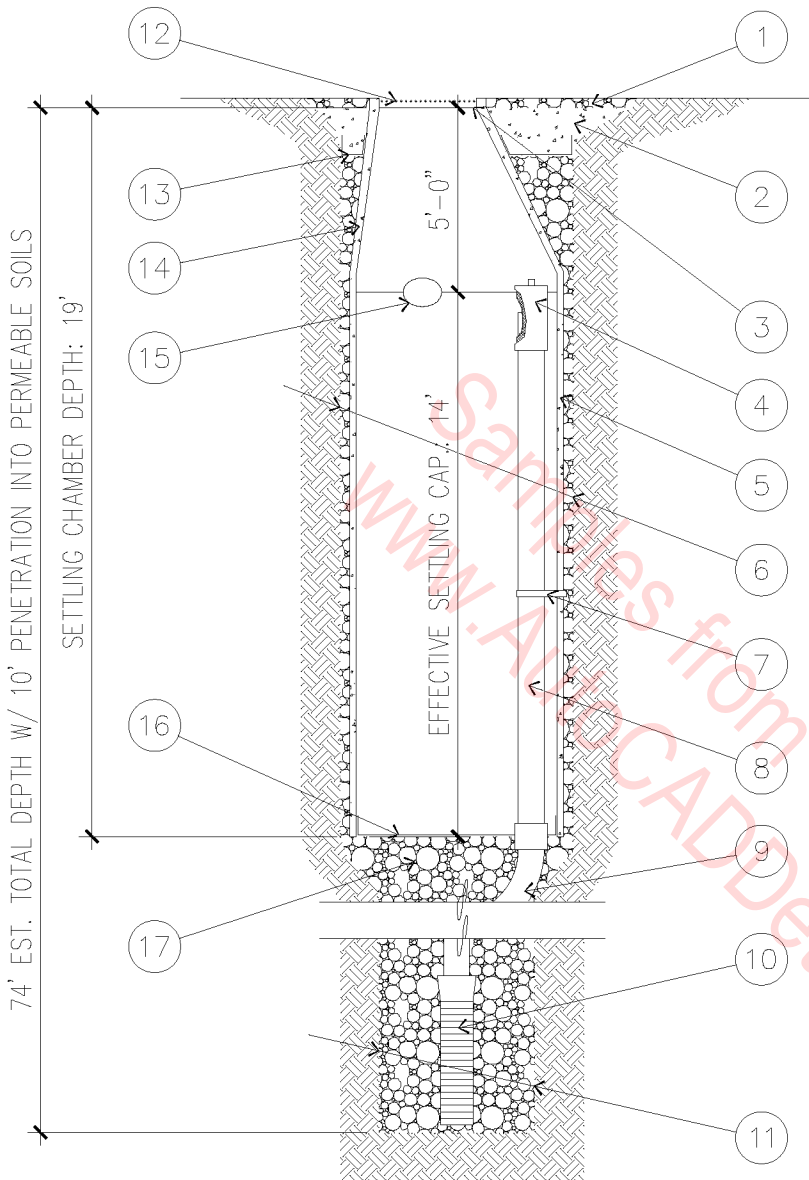
1. MODIFIED BITUMEN COMPOSITE SHEET ROOFING SYSTEM.
2. ROOF DRAIN.
3. OVERFLOW PIPE AS OCCURS.
4. WOOD BLOCKING.
5. UNDERDECK CLAMP.
6. ROOF DRAINAGE PIPING.
7. RUN ROOFING INTO BODY OF DRAIN.



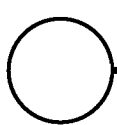
ROOF DRAIN

3" = 1'-0"

15A-7008



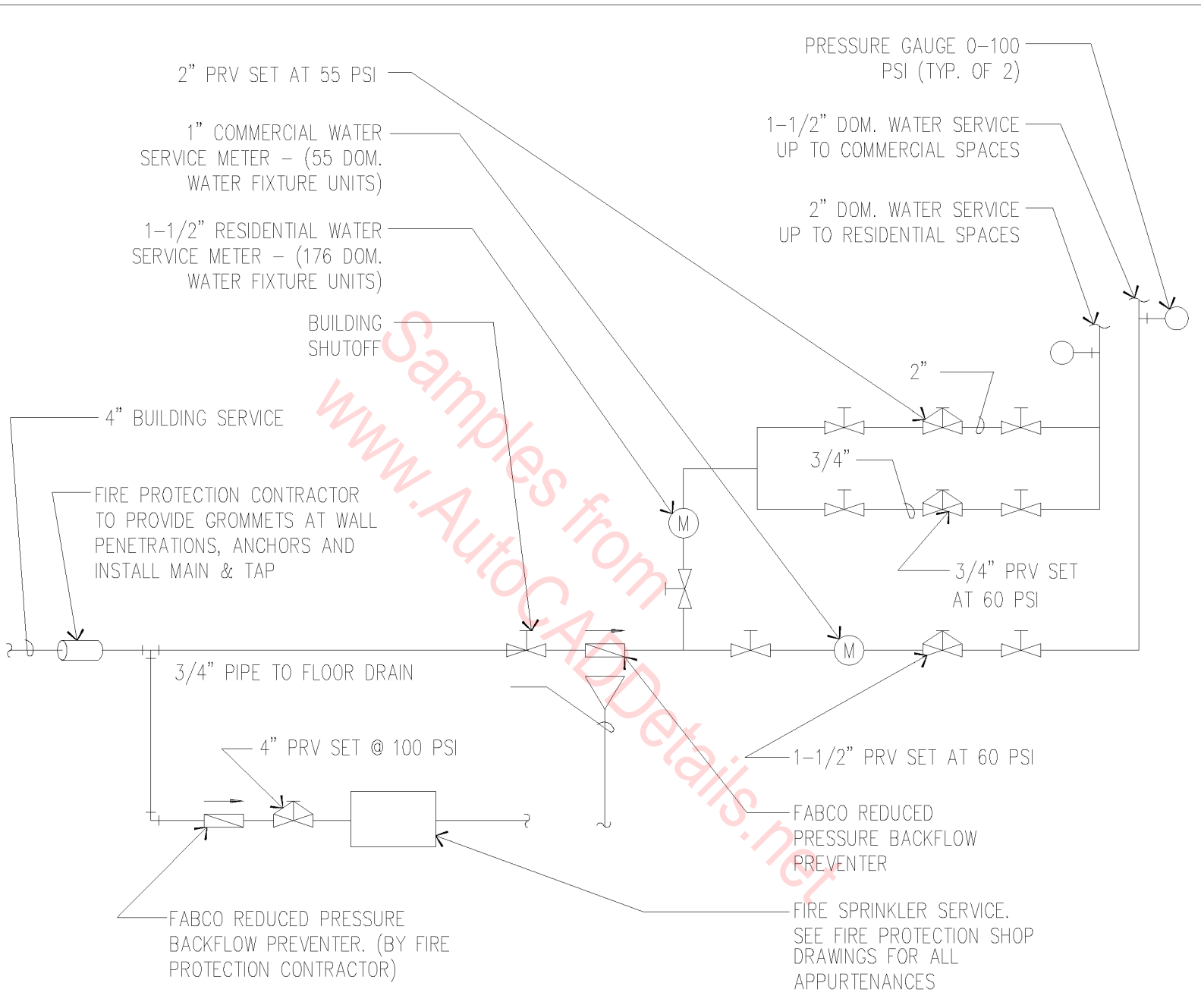
1. 1" TO 3" ROCK.
2. COMPACTED BASE MATERIAL.
3. FABRIC SEAL.
4. DEBRIS SHIELD.
5. PRECAST LINER.
6. MIN. 6' Ø DRILLED SHAFT.
7. SUPPORT BRACKET.
8. OVERFLOW PIPE.
9. 8" DIAMETER DRAIN PIPE.
10. DRAINAGE SCREEN.
11. MIN 4' Ø DRILLED SHAFT.
12. C.I. RING AND 30" GRATE
£ 2130-BOLT DOWN.
13. MOISTURE MEMBRANE MIN.
18" BELOW RIM.
14. MODIFIED MANHOLE CONE.
15. ABSORBENT.
16. DRAINAGE FABRIC.
17. 3/8" TO 1-1/2" WASHED ROCK.



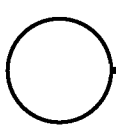
DRYWELL

3/16" = 1'-0"

15A-7009



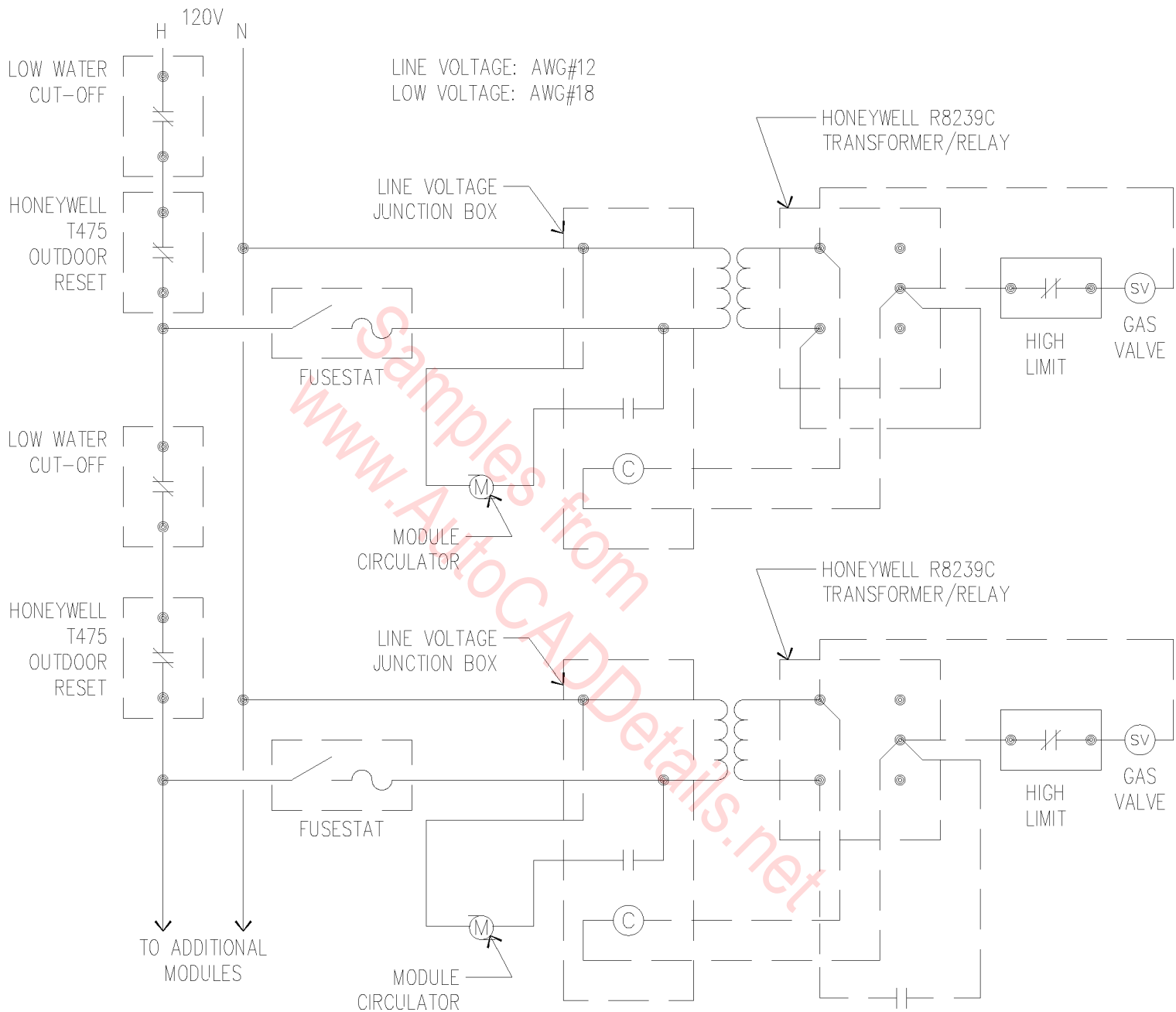
NOTE: INSTALL WATER METER & VALVES AS REQUIRED BY WATER DISTRICT.



WATER SVC. ENTRY DTL.

N.T.S.

15A-5001

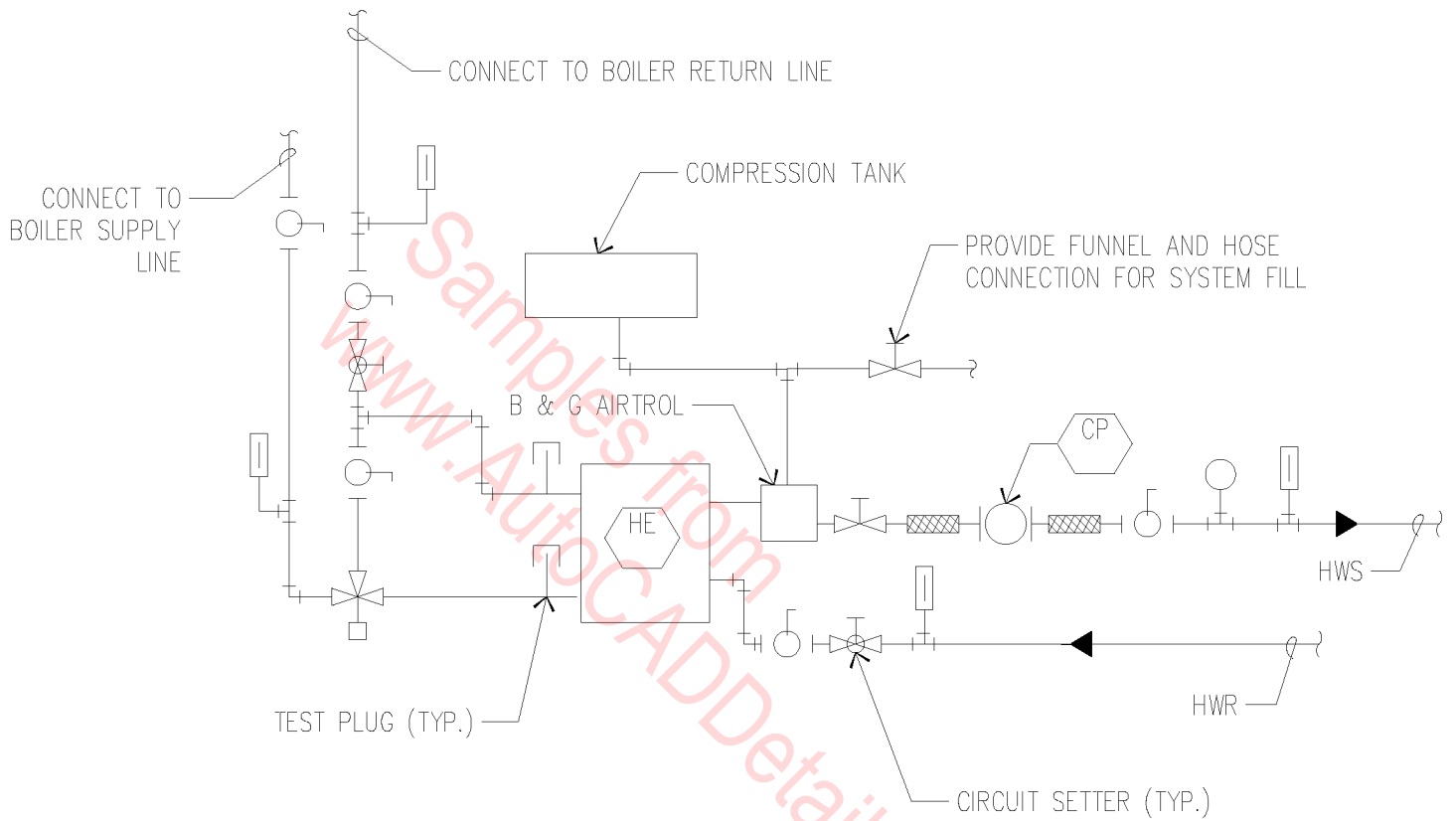


BOILER CONTROL WIRING DIAGRAM

N.T.S.

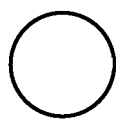
HONEYWELL T6031A AIR STAT

15A-5002



NOTES:

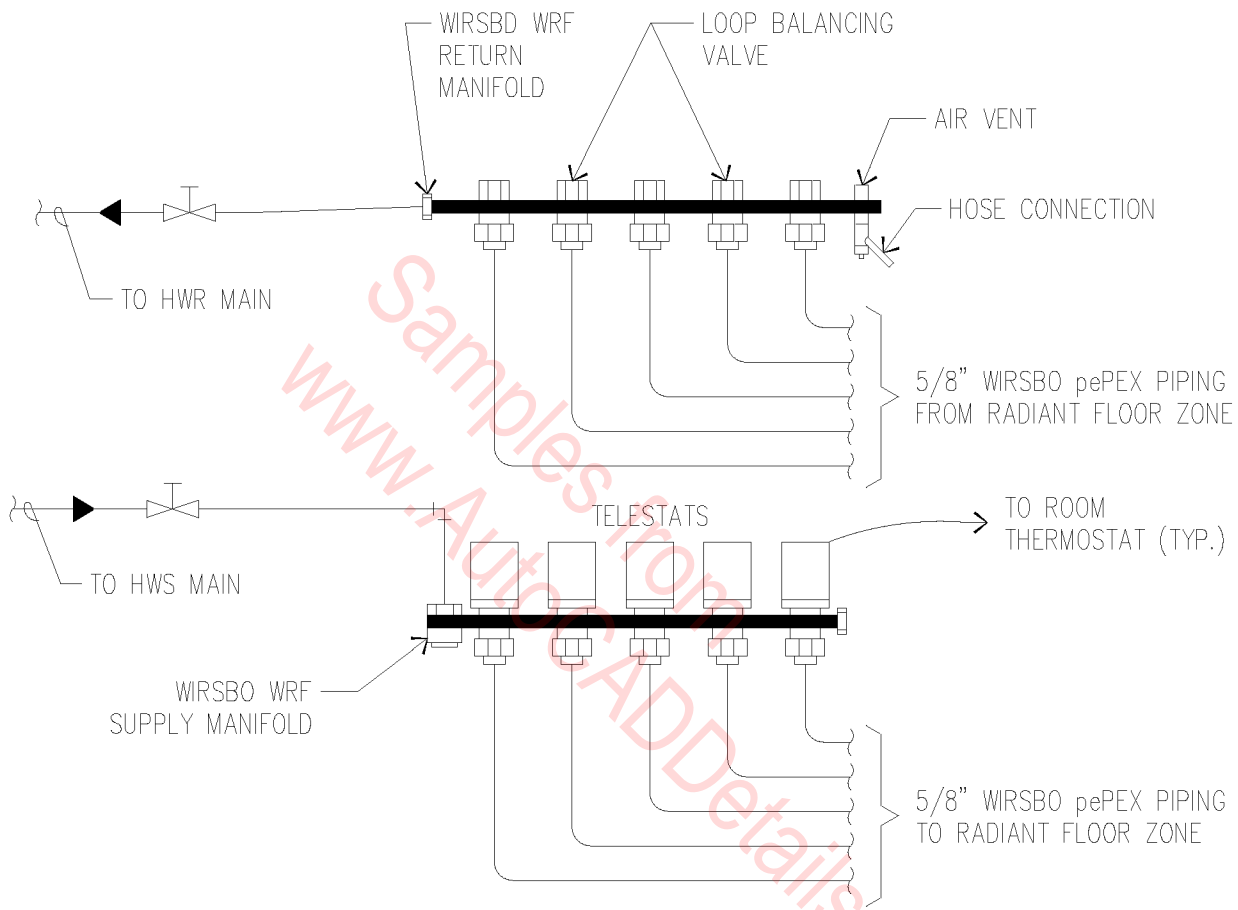
- A. SUPPORT PUMP AND HEAT EXCHANGER FROM WALL OR CEILING.
- B. ISOLATE PUMP FOR VIBRATION.



HEAT EXCHANGER PIPING

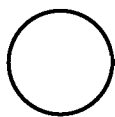
N.T.S.

15A-5003



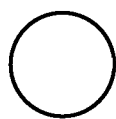
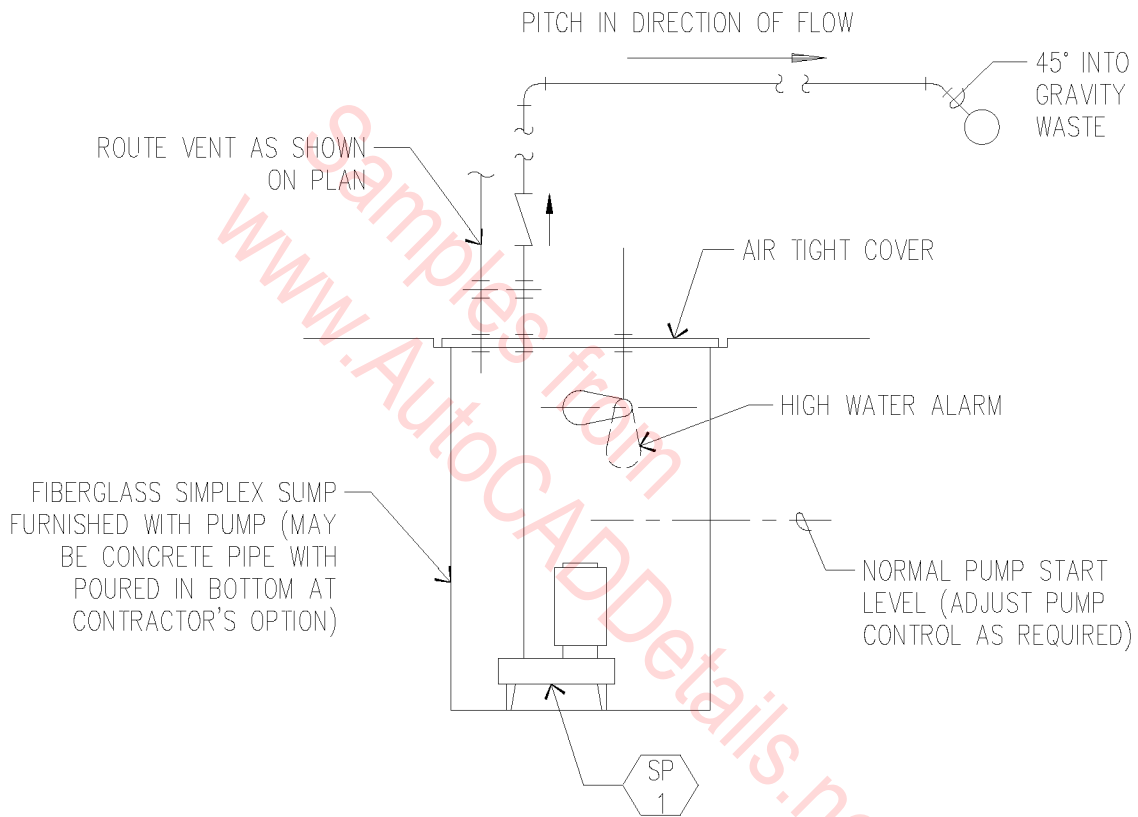
NOTE: SEE DRAWINGS FOR NUMBER OF LOOPS OF PIPING PER ZONE MANIFOLD AND GPM PER MANIFOLD.

RADIANT SLAB MANIFOLD PIPING



N.T.S.

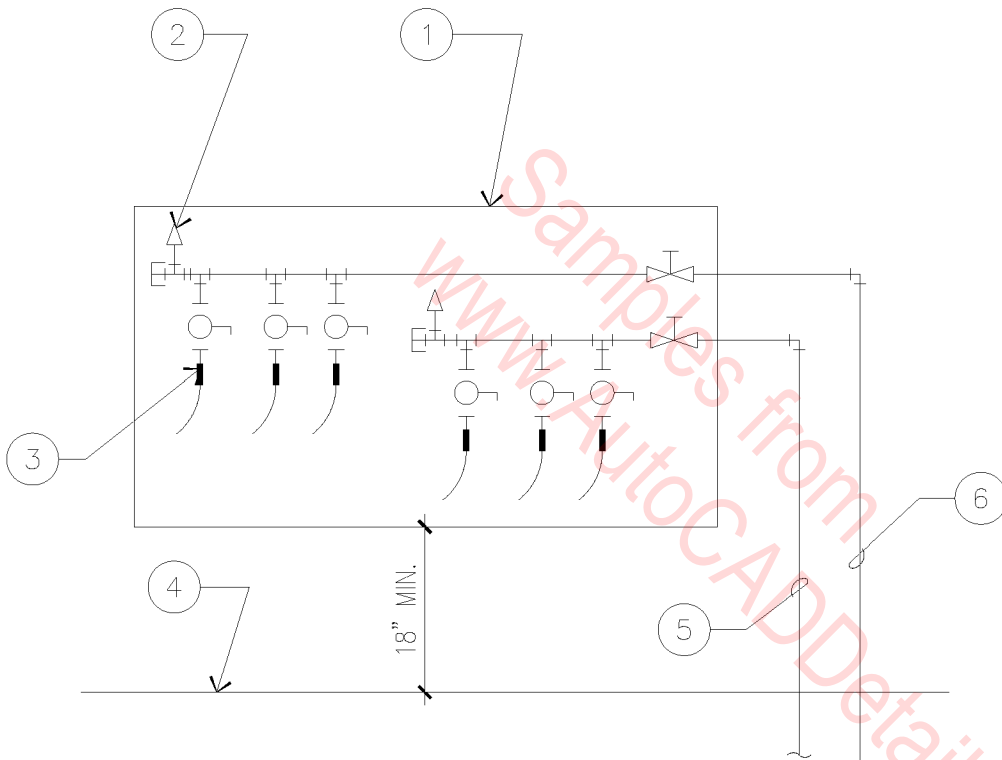
15A-5004



SUMP PUMP DETAIL

N.T.S.

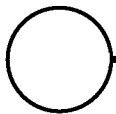
15A-5005



1. MECHANICAL CONTRACTOR TO PROVIDE 36" X 36" MANIFOLD BOX WITH LOCKING COVER.
2. AIR VENT, TYPICAL.
3. COPPER TUBING TO FITTING TRANSITION CLAMP AS BY MANUFACTURER OF TUBING, TYPICAL.
4. DECK OR FLOOR.
5. HOT WATER RETURN LINE, IN WALL.
6. HOT WATER SOURCE LINE, IN WALL.

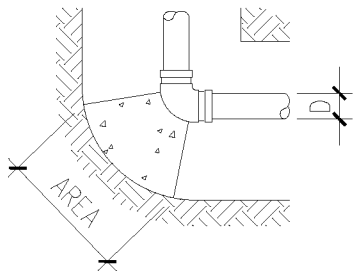
NOTE: SEE PLANS FOR NUMBER OF LOOPS REQUIRED.

WALL DISTRIBUTION BOX

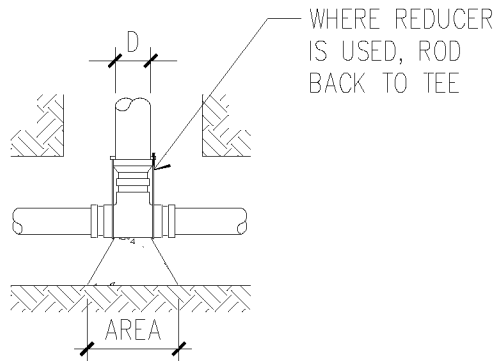


N.T.S.

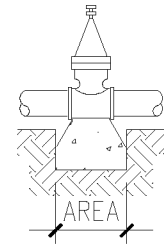
15A-5006



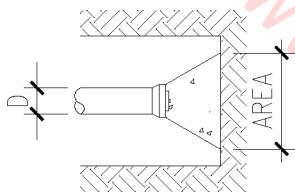
BENDS AND ELBOWS



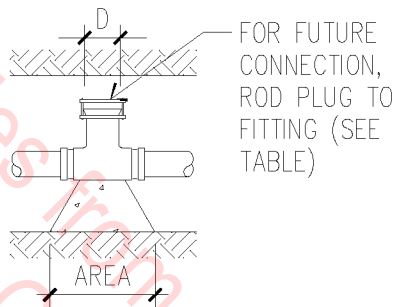
TEE



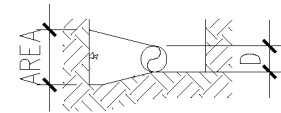
GATE VALVE



DEAD END LINE



PLUGGED TEE FOR FUTURE CONNECTION



TYPICAL SECTION THROUGH THRUST BLOCK

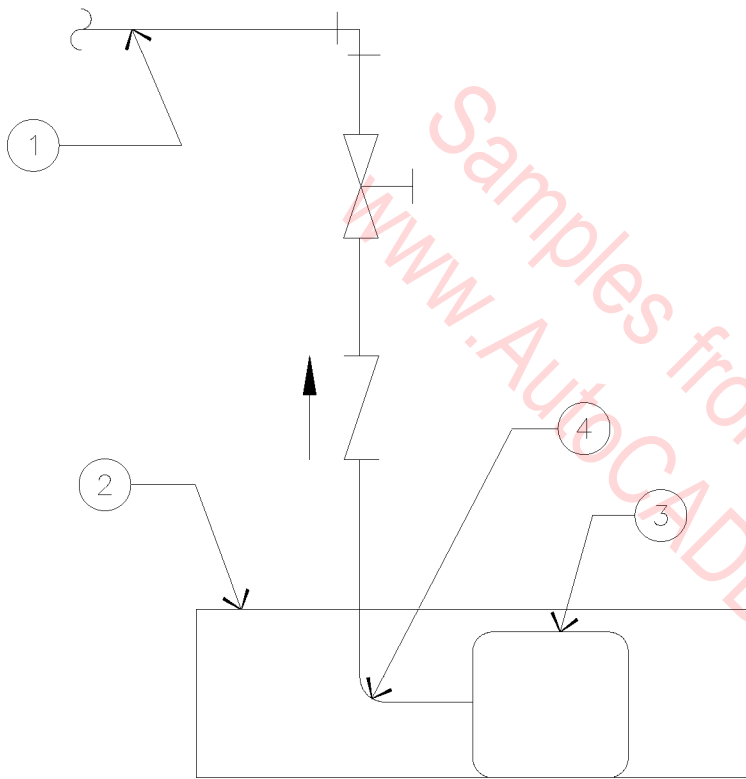
MAXIMUM THRUST BLOCK BEARING AREAS IN SQUARE FEET					
PIPE SIZE	90° BEND	45° BEND	22.5° BEND	TEE PLUG	GATE VALVES
12"	16.0	8.7	4.4	11.3	7.3
10"	11.1	6.0	3.1	7.8	4.5
8"	7.1	3.9	2.0	6.0	2.4
6"	4.0	2.2	2.0	2.8	0.7
4"	2.0	2.0	2.0	2.0	0.5
3"	2.0	2.0	2.0	2.0	0.5

- NOTES:
- PROVIDE BOND BREAKER AT ALL FITTINGS.
 - ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. WHERE THIS IS NOT POSSIBLE, TIE ROD SHALL BE USED. SOIL BEARING PRESSURE IS ASSUMED TO BE 3,000 P.S.F.
 - WHERE SOIL BEARING VARIES, REQUIRED BLOCK AREA MAY BE MODIFIED ACCORDINGLY.
 - IN NO CASE SHALL BEARING AREA BE LESS THAN 2.0 FT. SQ.
 - STANDARD TEST PRESSURE IS CONSIDERED AT 200 P.S.I.
 - CONCRETE STRENGTH TO BE 3,000 P.S.I., 28 DAY TEST.
 - MINIMUM WEIGHT OF THRUST BLOCKS SHALL BE 1,000 LBS.

THRUST BLOCKS FOR WATER MAIN

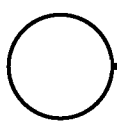
N.T.S.

15A-5007



1. 3/8" HARD COPPER DRAIN, ROUTE TO SANITARY SEWER, PROVIDE 1" AIR GAP.
2. 12" X 12" X 4" DEEP 24 GAUGE SHEET METAL PAN, SOLDER WATERTIGHT.
3. CONDENSATE PUMP WITH AUTOMATIC START AT 1" WATER DEPTH.
4. PROVIDE FLEXIBLE NEOPRENE CONNECTOR AT PUMP.

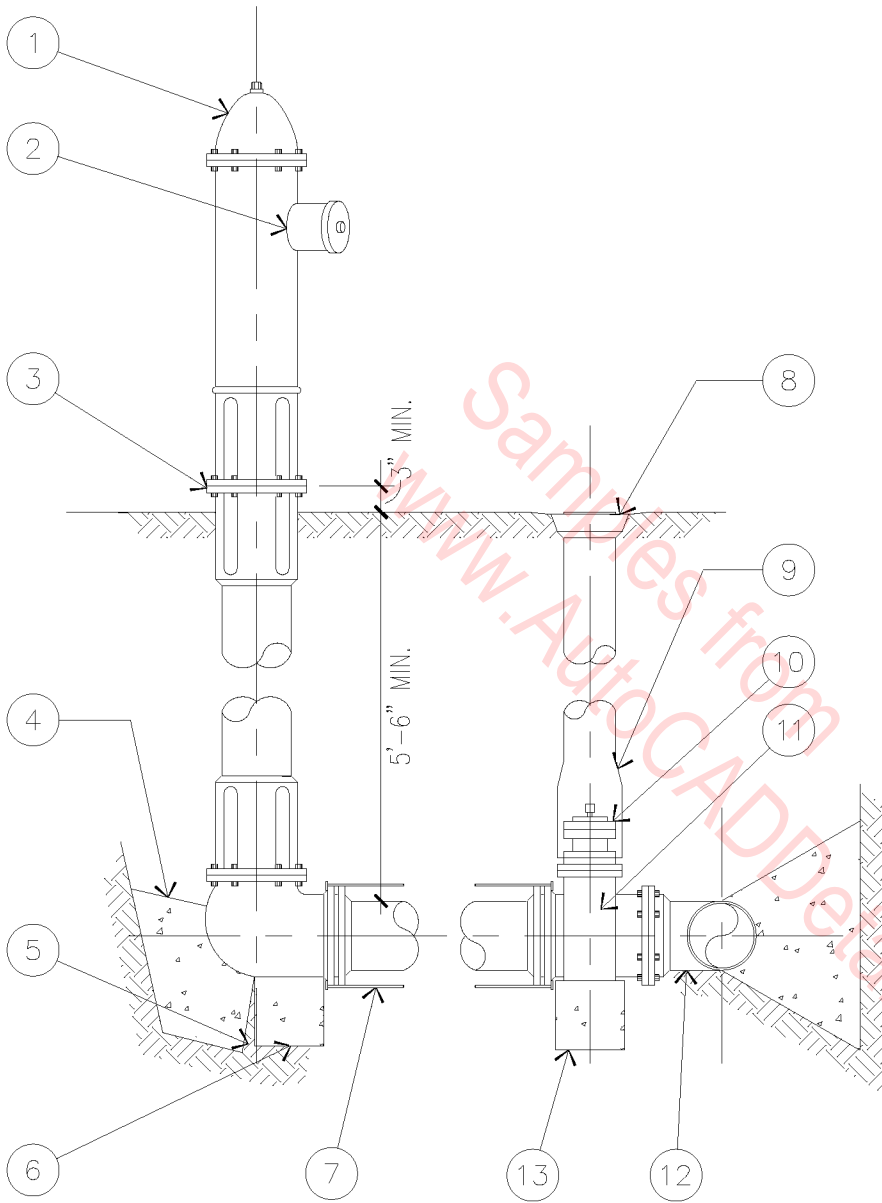
NOTE: COAT INTERIOR AND EXTERIOR OF PAN WITH PRIME COAT AND TWO FINAL COATS OF POLYAMIDE EPOXY PAINT.



CONDENSATE PUMP DETAIL

N.T.S.

15A-5008

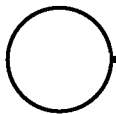


1. MUELLER CENTURION MODEL A-423 MOUNTAIN SPEC.
2. ORIENT PUMPER CONNECTION TOWARDS STREET UNLESS OTHERWISE SPECIFIED.
3. TRAFFIC FLANGE.
4. THRUST BLOCK.
5. 1/2 CU. YD. GRAVEL DRAIN MATERIAL.
6. SET HYDRANT ON 8" X 18" X 24" CONCRETE OR STONE SLAB.
7. PROVIDE A MINIMUM OF (3) 3/4" ϕ TIE RODS, ASPHALT COATED.
8. RECESS TOP OF VALVE BOX 1/8" TO 1/4" BELOW FINISH GRADE.
9. ADJUSTABLE VALVE BOX.
10. AUXILIARY GATE VALVE (NORMALLY OPEN).
11. 6" FL X MJ GATE VALVE.
12. MJ X MJ X FLANGED TEE.
13. SET VALVE ON 8" X 8" X 16" CONCRETE OR STONE SLAB.

NOTES:

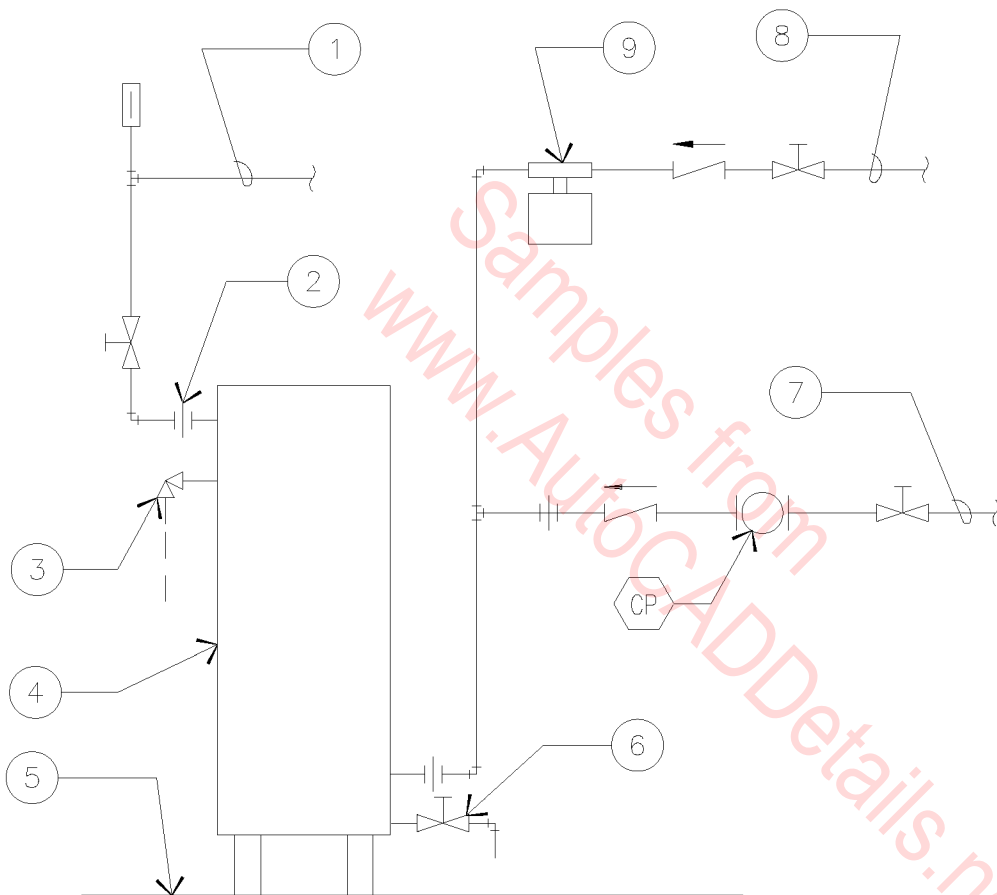
- A. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE HARNESSED MECHANICAL JOINTS OR FLANGED JOINTS.
- B. HYDRANT, VALVE, AND FITTINGS TO BE 250 P.S.I. RATED.
- C. POLYETHYLENE WRAP (WHEN REQUIRED) SHALL COVER ASSEMBLY FROM HYDRANT BASE TO WATER MAIN.
- D. ALL HYDRANT LEAD PIPING TO BE D.I.P.

FIRE HYDRANT ASSEMBLY INSTALLATION DETAIL

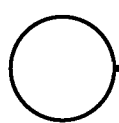


N.T.S.

15A-5009



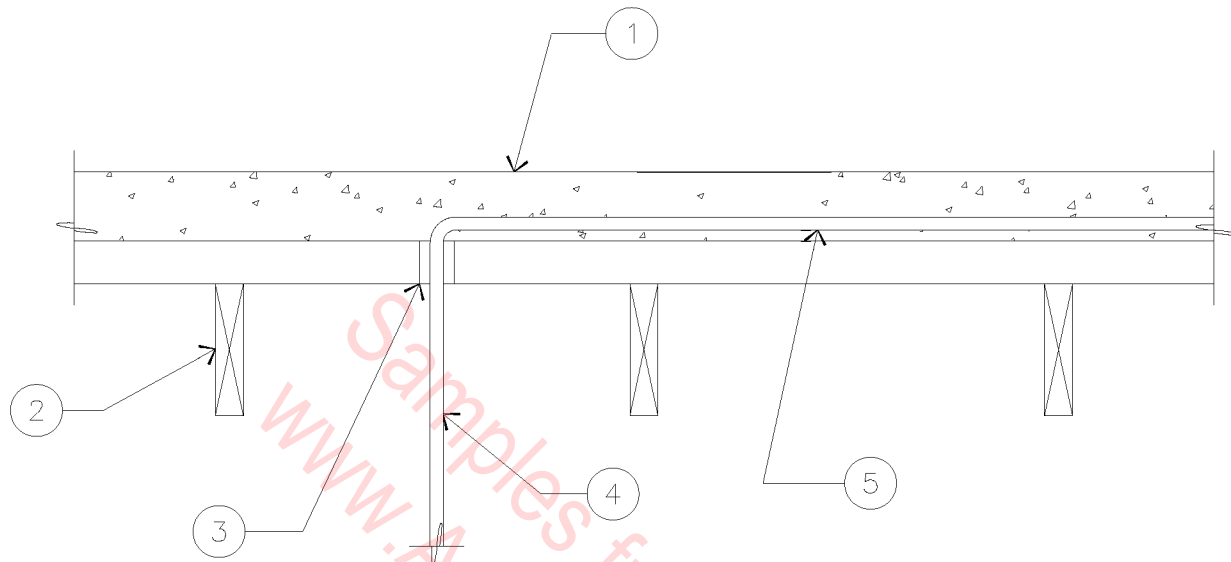
1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
4. WATER HEATER.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.
7. 3/4" HOT WATER CIRCULATION LINE.
8. COLD WATER INLET.
9. EXPANSION TANK, SPECIFIED WITH WATER HEATER.



WATER HEATER DETAIL

N.T.S.

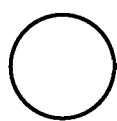
15A-5010



1. CONCRETE SLAB.
2. FLOOR JOIST.
3. PROVIDE FLOOR SLEEVE.
4. ROUTE 3/4" HOT WATER SOURCE AND RETURN LINES TO AND FROM MANIFOLD ASSEMBLY.
5. 5/8" WIRSBO pePEX SECURED TO SUBFLOOR.

NOTES:

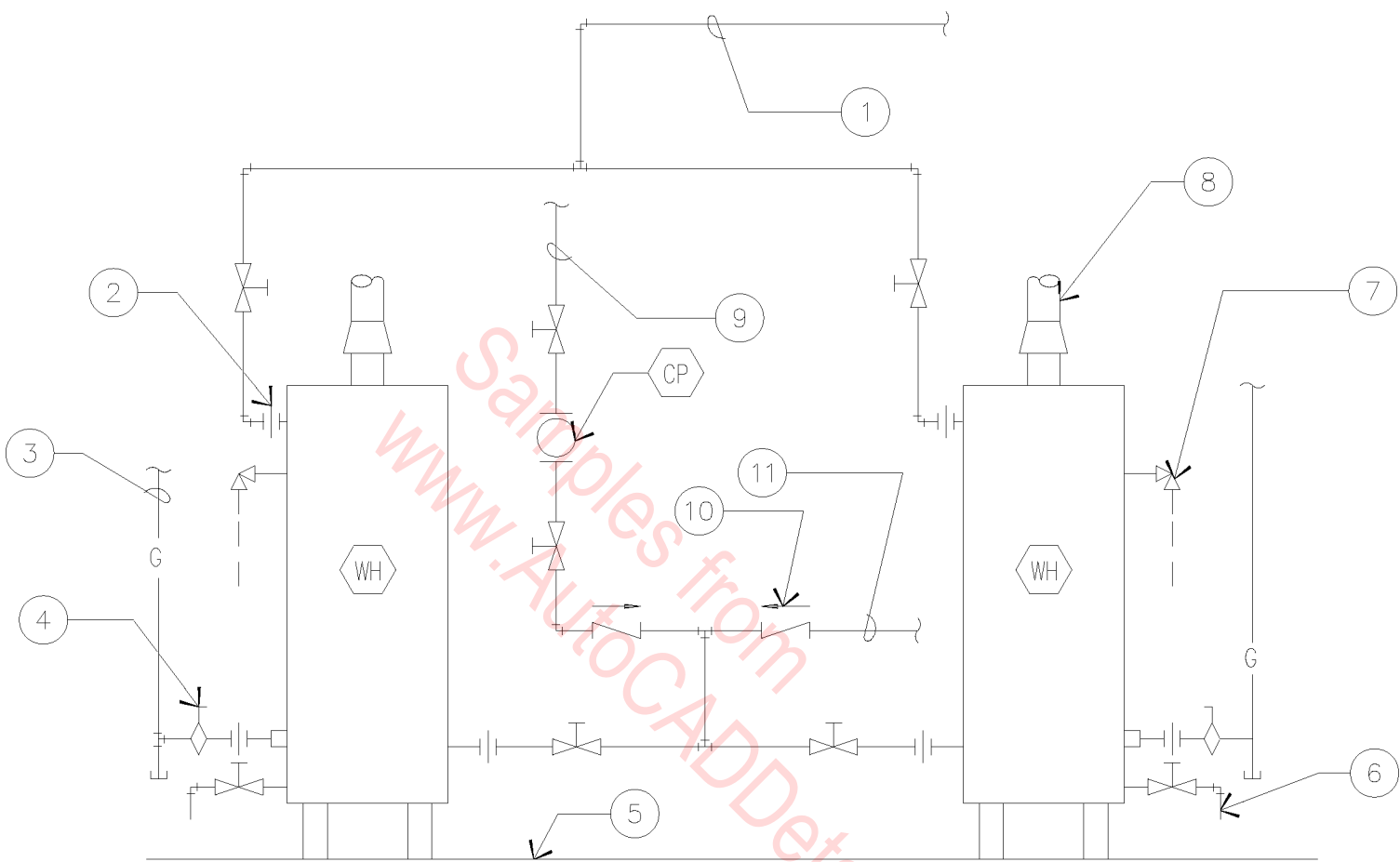
- A. ENTIRE RADIANT SLAB SYSTEM SHALL BE PRESSURIZED TO 75 PSI WITH AIR DURING POURING OF CONCRETE. NO PIPING JOINTS ARE PERMITTED IN THE SLAB. LINES SHALL REMAIN PRESSURIZED UNTIL SYSTEM IS CONNECTED TO BOILER AND FINAL FILL ACCOMPLISHED.
- B. ALL PIPING IN RADIANT SLAB SYSTEM SHOWN ON PLANS IS WIRSBO pePEX CROSSLINKED POLYETHYLENE TUBING. TUBING TO BE NOMINAL 5/8" INSIDE DIAMETER AND RATED FOR 180° SERVICE AT 100 PSI.
- C. TIE PIPING TO SUBFLOOR WITH PLASTIC COATED TIE WIRE. TIE SPACING SHALL NOT EXCEED 12" ON CENTER. TOP OF PIPE SHALL BE NOT LESS THAN 2" BELOW TOP OF SLAB. ALL PIPING IN SLAB IS AT 8" ON CENTER.



RADIANT SLAB PIPING

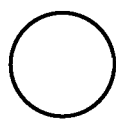
1" = 1'-0"

15A-5011



1. HOT WATER OUTLET.
2. DIELECTRIC UNION, TYPICAL.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. FLOOR.
6. DRAIN VALVE, PIPE TO 6" A.F.F.

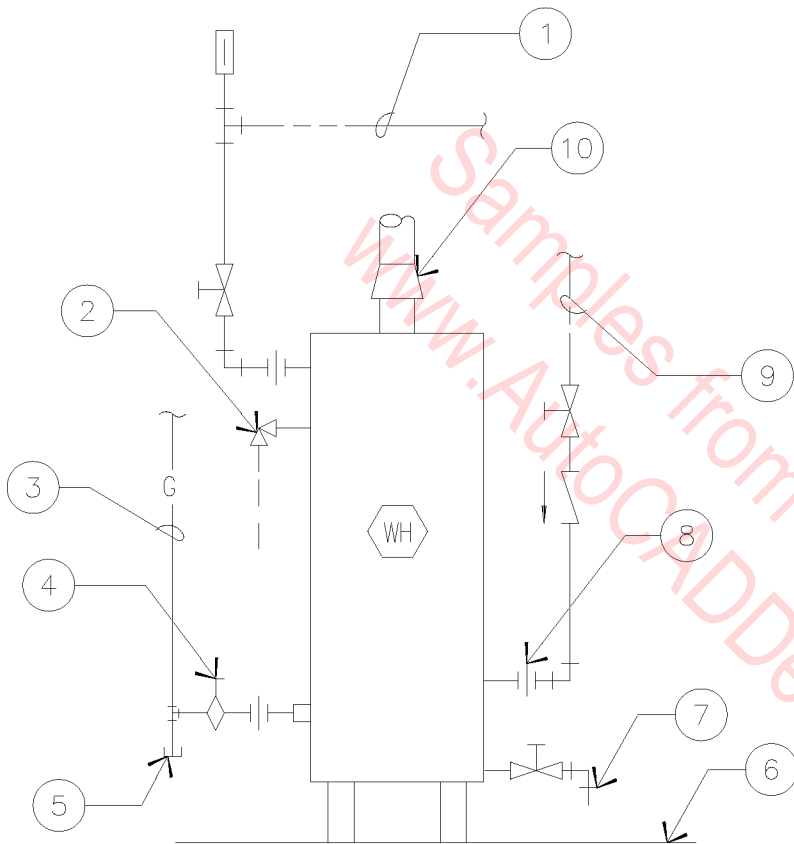
7. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
8. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
9. 3/4" HOT WATER CIRCULATION LINE.
10. DRILL 1/8" HOLE IN FLAPPER.



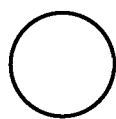
WATER HEATER DETAIL

N.T.S.

15A-5012



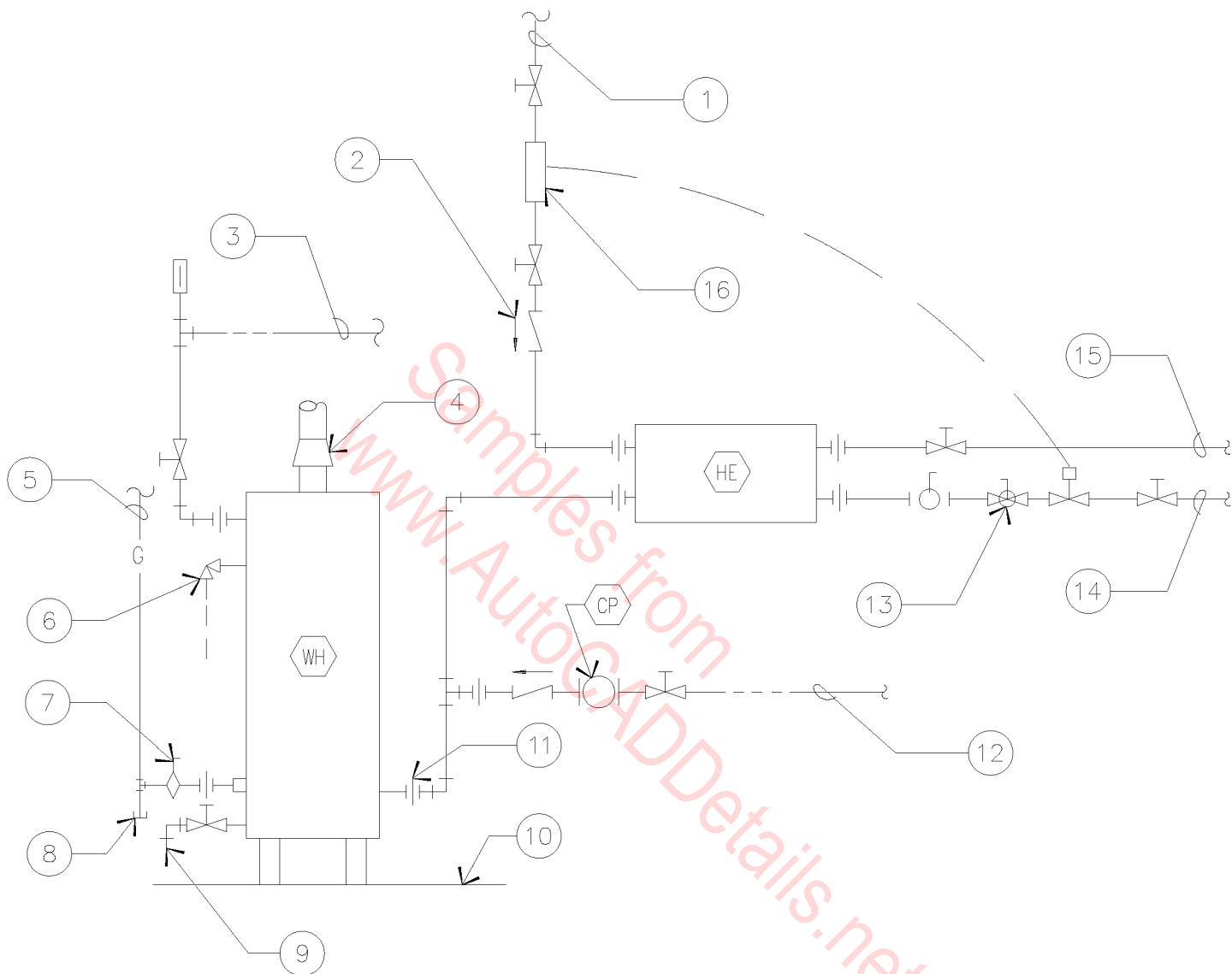
1. HOT WATER OUTLET.
2. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
3. GAS LINE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.
4. PROVIDE FULL LINE-SIZE LUBRICATED GAS COCK, TYPICAL.
5. DIRT LEG.
6. FLOOR.
7. DRAIN VALVE, PIPE TO 6" A.F.F.
8. DIELECTRIC UNION, TYPICAL.
9. COLD WATER INLET.
10. FLUE, SEE PLAN FOR REQUIRED SIZE, TYPICAL.



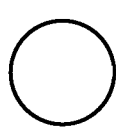
WATER HEATER DETAIL

N.T.S.

15A-5013



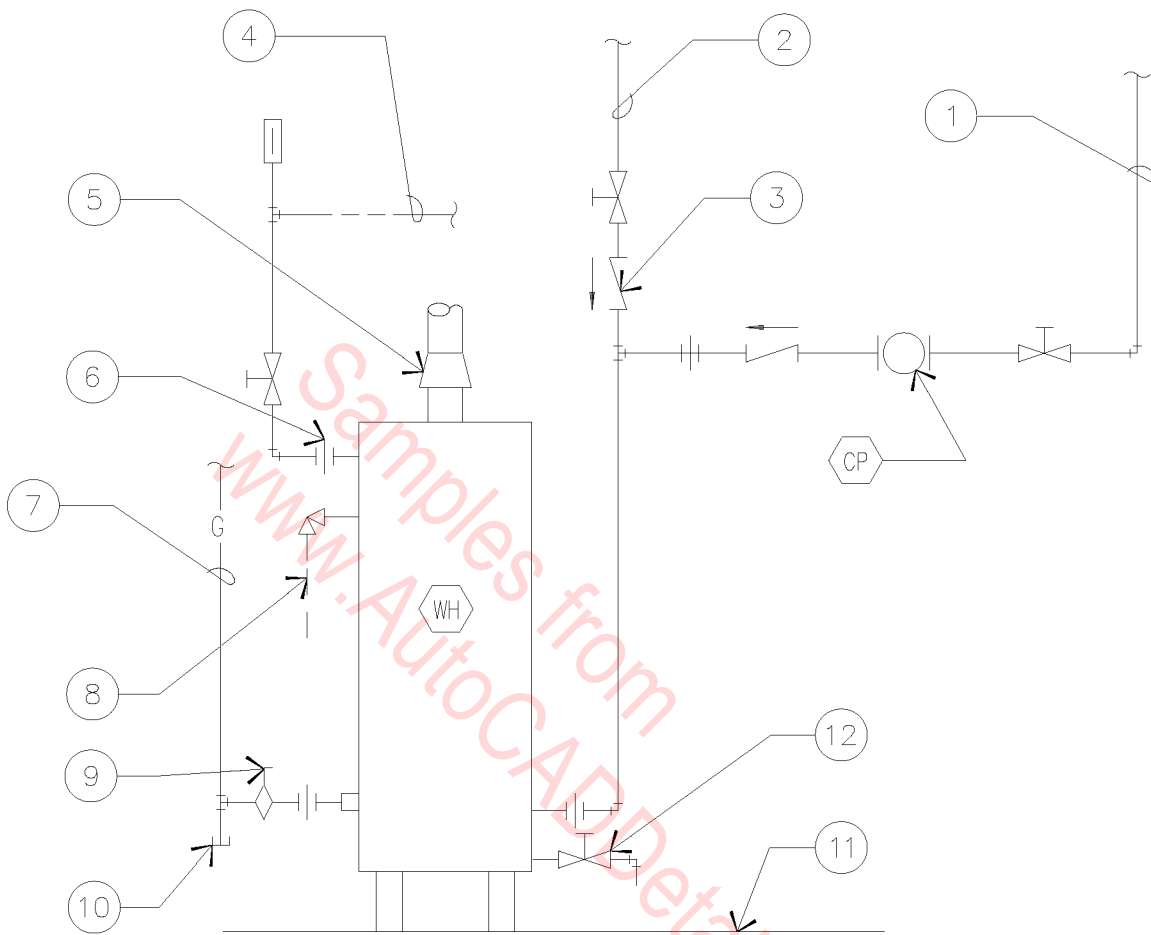
- | | | |
|--|---|---|
| 1. COLD WATER INLET. | 6. ASME PRESSURE RELIEF VALVE,
PIPE TO 6" A.F.F. | 11. DIELECTRIC UNION, TYPICAL. |
| 2. DRILL 1/8" HOLE IN FLAPPER. | 7. PROVIDE FULL LINE-SIZE
LUBRICATED PLUG COCK. | 12. 3/4" HOT WATER CIRCULATION
LINE. |
| 3. HOT WATER OUTLET. | 8. DIRT LEG. | 13. B & G CIRCUIT SETTER. |
| 4. FLUE, SEE PLAN FOR REQUIRED
SIZE. | 9. DRAIN VALVE, PIPE TO 6" A.F.F. | 14. HOT WATER SOURCE LINE. |
| 5. GAS LINE, SEE PLANS FOR
REQUIRED SIZE. | 10. FLOOR. | 15. HOT WATER RETURN LINE. |
| | | 16. FLOW SWITCH. |



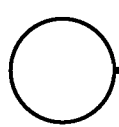
WATER HEATER DETAIL

N.T.S.

15A-5014



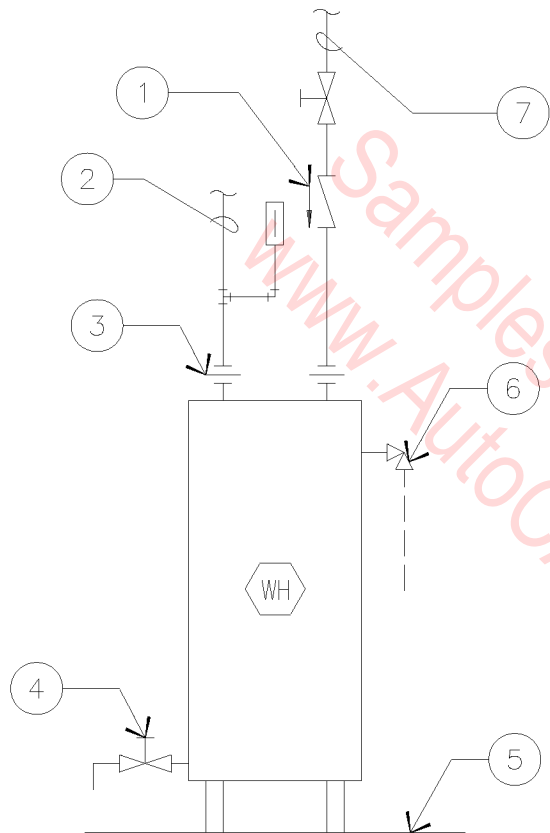
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 3/4" HOT WATER CIRCULATION LINE. 2. COLD WATER INLET. 3. DRILL 1/8" HOLE IN FLAPPER. 4. HOT WATER OUTLET. 5. FLUE, SEE PLAN FOR REQUIRED SIZE. 6. DIELECTRIC UNION, TYPICAL. | <ol style="list-style-type: none"> 7. GAS LINE, SEE PLANS FOR REQUIRED SIZE. 8. ASME PRESSURE RELIEF VALVE, PIPE TO 6" A.F.F. 9. PROVIDE FULL LINE-SIZE LUBRICATED PLUG COCK. 10. DIRT LEG. 11. FLOOR. 12. DRAIN VALVE, PIPE TO 8" A.F.F. |
|--|---|



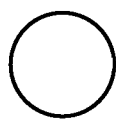
WATER HEATER DETAIL

N.T.S.

15A-5015



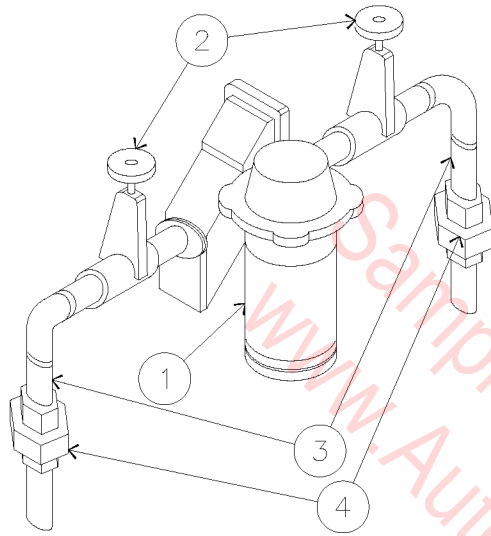
1. DRILL 1/8" HOLE IN FLAPPER.
2. HOT WATER OUTLET.
3. DIELECTRIC UNION, TYPICAL.
4. DRAIN VALVE, PIPE TO 6" A.F.F.
5. FLOOR.
6. ASME PRESSURE RELIEF VALVE, PIPE FULL SIZE TO 6" A.F.F.
7. COLD WATER INLET.



WATER HEATER DETAIL

N.T.S.

15A-5016



1. APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION DEVICE.
2. 1/4" TURN BALL VALVE.
3. ABOVE GROUND TYPE "K" HARD COPPER (3/4" THRU 2 1/2").
4. BRASS OR COPPER UNIONS.

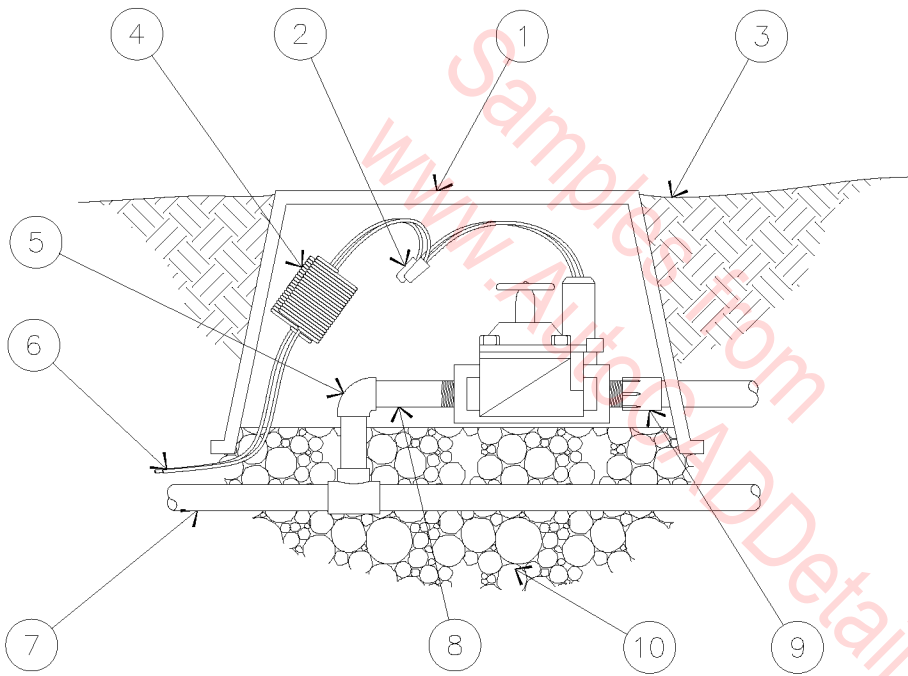
GENERAL NOTES

- A. DBL. CONNECTOR CHECK VALVE SHALL BE REQUIRED ON SYSTEMS WHERE POTENTIAL UNAUTHORIZED WATER USE EXISTS.
- B. CONTACT TOWN WATER DEPT. FOR APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- C. ASSEMBLY SHALL BE APPRV'D. BY U.S.C. FOUNDATION FOR CROSS & HYDRAULIC RESEARCH.
- D. FOUR TEST COCKS SHALL BE INSTALLED PER U.S.C. TEST COCKS SHALL BE FITTED W/ BRASS PLUGS.
- E. ABOVE GROUND INSTALLATIONS SHALL BE PROTECTED BY GUARD POST (SEE T.O.G. DET. #83B).
- F. TEST COCKS (4 REQ'D) (BRASS PLUGS REQ'D).
- G. DEVICE SHALL BE INSTALLED LEVEL.
- H. DEVICE SHALL NOT BE INSTALLED IN FLOOD PLANE.
- I. DEVICE SHALL NOT BE INSTALLED ANY CLOSER THAN 18" FROM WALL OR OTHER OBSTRUCTION.
- J. HEIGHT REQUIREMENTS FOR DEVICE 12" MIN. TO 30" MAX.
- K. DEVICE SHALL BE TESTED PRIOR TO BEING ACCEPTED.
- L. ACCEPTED.
- M. COPPER FITTINGS SHALL BE CONNECTED WITH SOLDER JOINTS.
- N. CONCRETE SUPPORT PAD SHALL BE MIN. 12" WIDE BY LENGTH OF PRESSURE ASSEMBLY.
- O. FINISHED GRADE UNDERNEATH BACKFLOW PREVENTION DEVICE SHALL BE 95 % COMPACTION. DETECTOR CHECK VALVE ASSEMBLY SHALL CONTAIN A BYPASS 5/8" X 3/4" TOWN APPRV'D. 3/4" DOUBLE CHECK VALVE.
- Q. STRUCTURE TO BE PAINTED.

BACKFLOW PREVENTION DETAIL

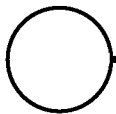
N.T.S.

15A-5017



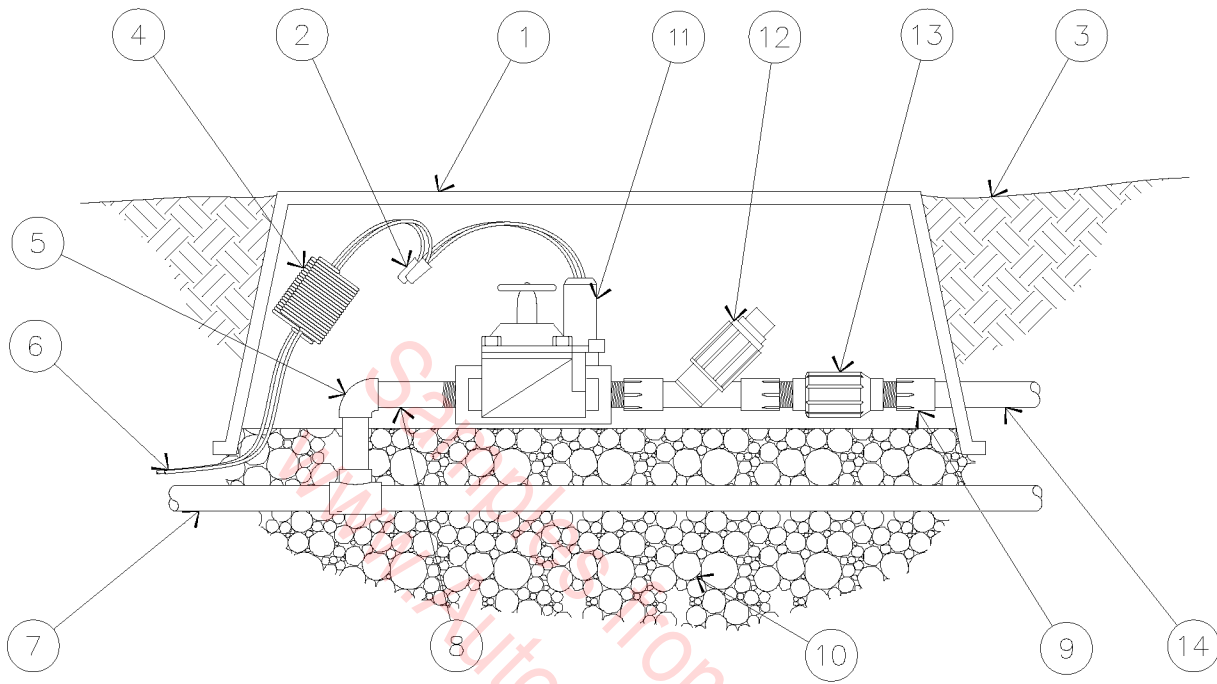
1. VALVE BOX WITH LID.
2. PENTITE WIRE CONNECTION.
3. FINISH GRADE.
4. EXPANSION COIL.
5. SCHEDULE 40 PVC 90° ELL.
6. UF UL 14 GA. WIRE TO CONTROLLER.
7. PVC MAIN.
8. SCHEDULE 30 PVC TOE NIPPLE.
9. SCHEDULE 40 PVC MALE ADAPTER.
10. PEA GRAVEL SUMP, MIN. 12" DEEP.

AUTOMATIC CONTROL VALVE



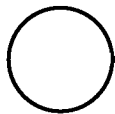
1-1/2" = 1'-0"

15A-5018



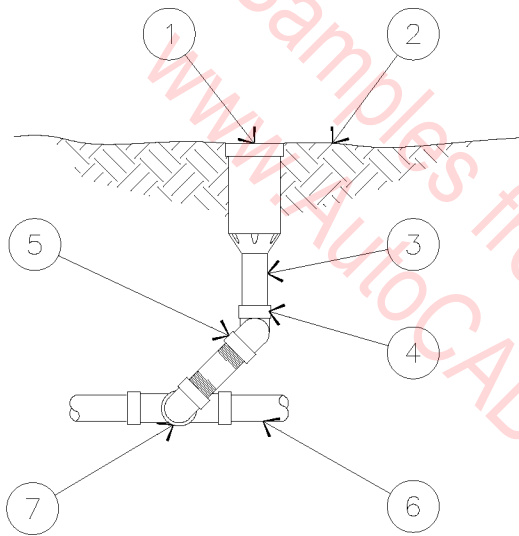
1. VALVE BOX WITH LID.
2. PENTITE WIRE CONNECTION.
3. FINISH GRADE.
4. EXPANSION COIL.
5. SCHEDULE 40 PVC 90° ELL.
6. UF UL 14 GA. WIRE TO CONTROLLER.
7. PVC MAIN.
8. SCHEDULE 30 PVC TOE NIPPLE.
9. SCHEDULE 40 PVC MALE ADAPTER.
10. PEA GRAVEL SUMP, MIN. 12" DEEP.
11. AUTOMATIC CONTROL VALVE PER LEGEND.
12. Y FILTER PER LEGEND.
13. PRESET PRESSURE REGULATOR.
14. CL 200 LATERAL.

EMITTER CONTROL ASSEMBLY



1-1/2" = 1'-0"

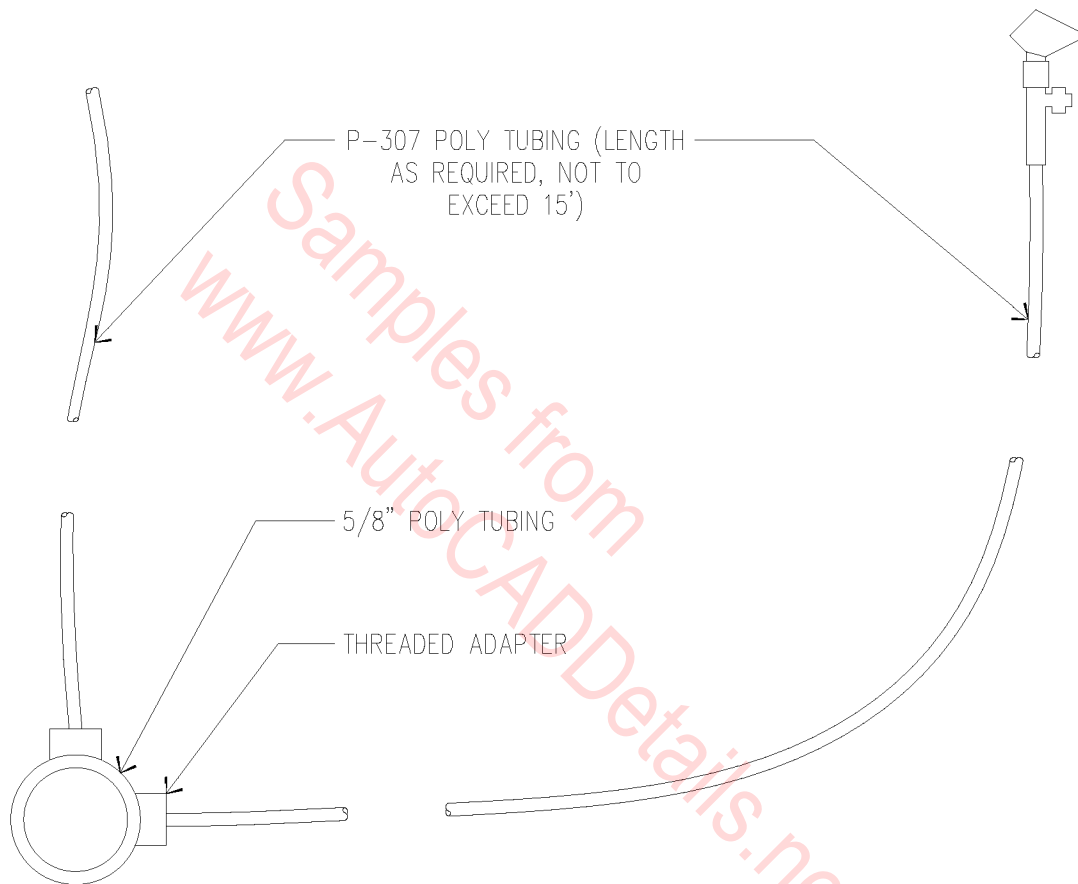
15A-5019



1. 570 POP-UP SPRINKLER HEAD.
2. FINISH GRADE.
3. THREADED NIPPLE.
4. SCHEDULE 80 PVC ELL.
5. SCHEDULE 80 PVC STREET ELLS
INSTALL TO NIPPLE WITH
DOWNWARD THRUST IN RISER.
TEFLON TAPE ON ALL
THREADED CONNECTIONS.
6. PVC LATERAL PIPE.
7. ELL OR TEE.

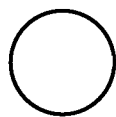

 570 POP-UP HEAD
 1-1/2" = 1'-0"

15A-5020



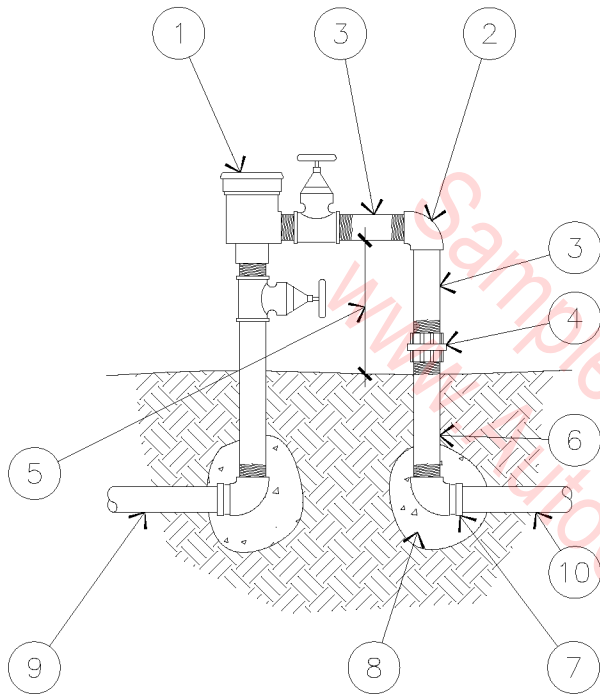
Samples from
www.AutoCADDetails.net

EMITTER
OFF 5/8" POLY TUBING



FULL SCALE

15A-5021

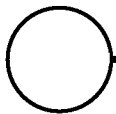


1. PRESSURE BACKFLOW PREVENTER.
2. GALVANIZED ELL.
3. GALVANIZED NIPPLE, 6" (TYP. OF 2).
4. UNION.
5. BOTTOM OF NIPPLE TO BE 6" HIGHER THAN TOP OF HIGHEST HEAD OF SYSTEM.
6. GALVANIZED NIPPLE (LENGTH AS REQUIRED).
7. PVC WITH SXT MALE ADAPTER (TYP. OF 2).
8. CONCRETE THRUST BLOCK.
9. SCHEDULE 60 FROM METER.
10. CLASS 200 TO ELEC. VALVE.

NOTES:

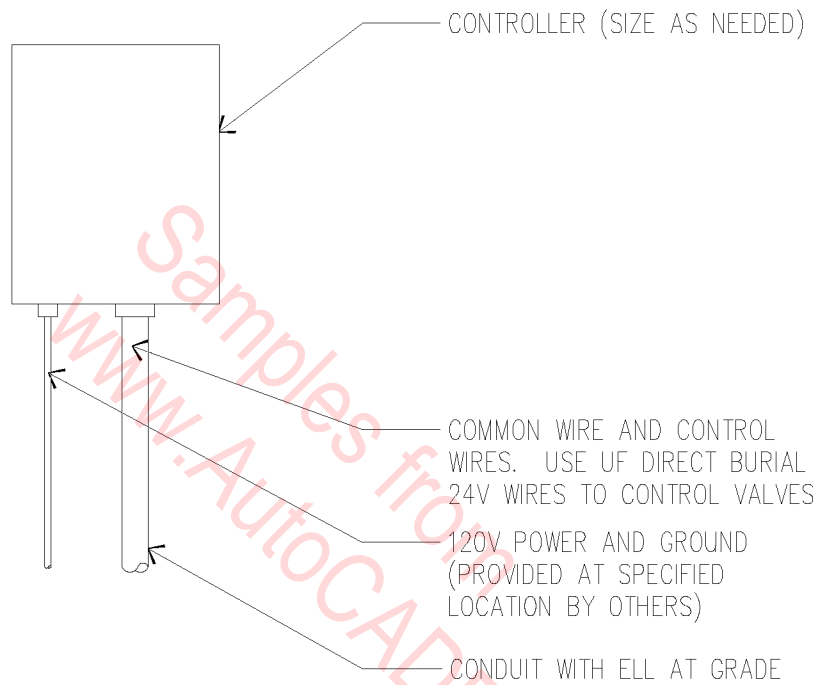
- A. INSTALL BACKFLOW PREVENTER 12" ABOVE HIGHEST DOWNSTREAM PIPE OUTLET.
- B. FOR CORROSION PROTECTION, WRAP CLASS 200 BELOW FINISH GRADE.

PRESSURE BACKFLOW PREVENTER



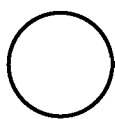
1-1/2" = 1'-0"

15A-5022



NOTES:

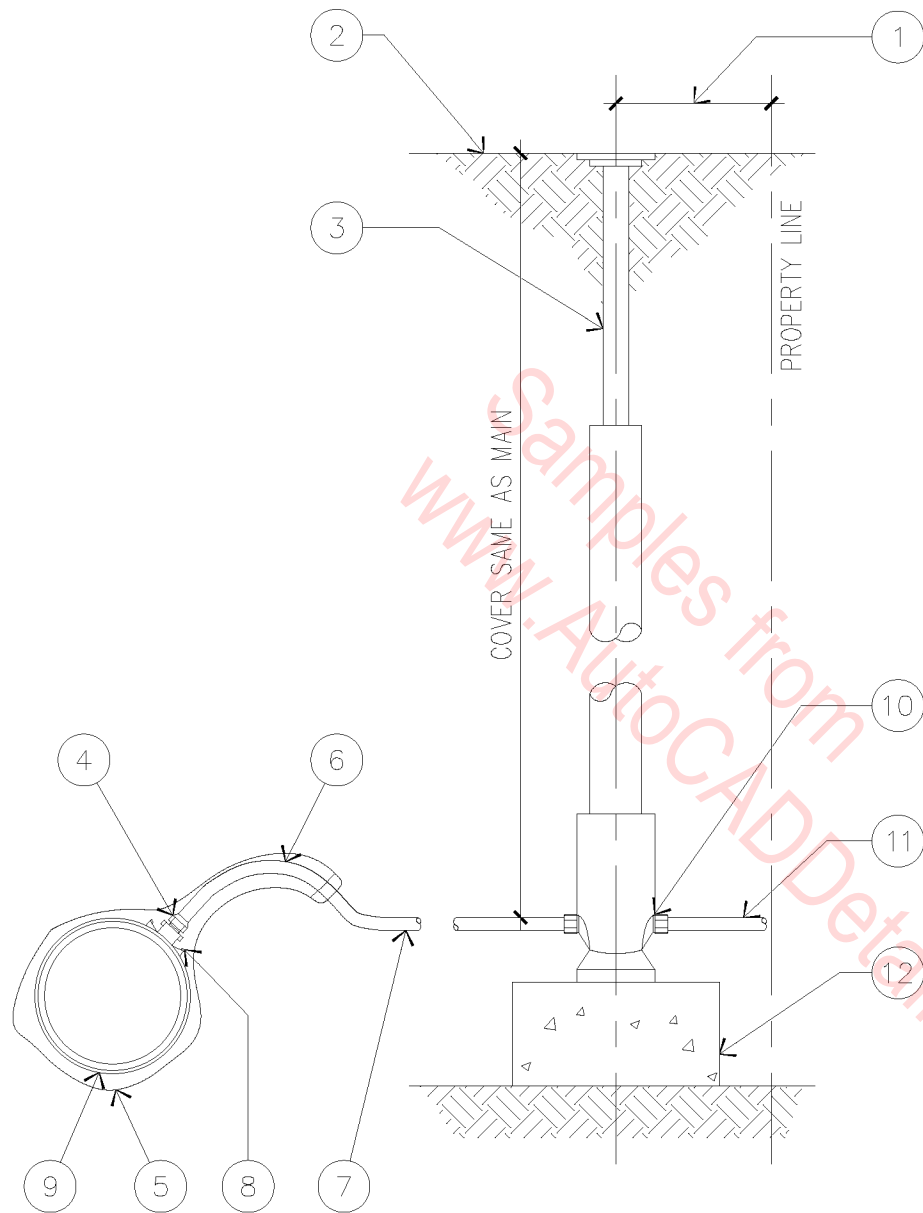
- A. SEE MANUAL FOR CONTROLLER MOUNTING INSTRUCTIONS.
- B. ALL WIRING TO BE INSTALLED AS PER LOCAL CODES.
- C. BURY WIRE WITH MAIN LINE WHEN POSSIBLE, 18" DEPTH MIN., TWIST TIE AT 10'-0" O.C.



IRRIGATION CONTROLLER

N.T.S.

15A-5023

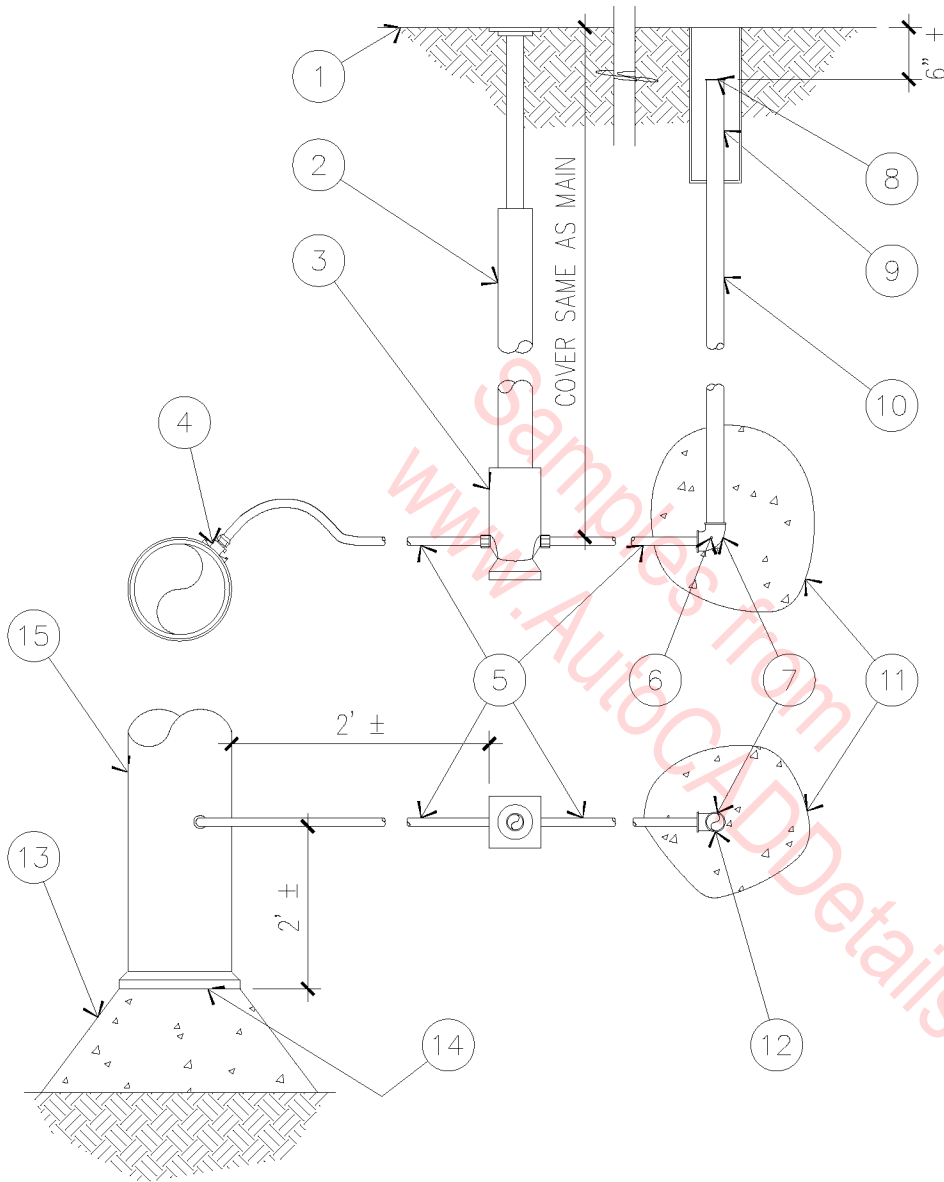


1. LOCATE NEW CURB BOX 12" ON STREET SIDE OF PROPERTY LINE EXCEPT WHERE SIDEWALK IS ON PROPERTY LINE. THEN LOCATE CURB STOP 12" BEHIND BACK OF WALK.
2. FINISH GRADE ELEVATION. ALL DISTURBED LANDSCAPED AREAS SHALL BE SODDED, OR REPLACED IN KIND.
3. CURB STOP ADJUSTABLE BOX ARCH PATTERN WITH FOOTPIECE.
4. CORPORATION STOP.
5. 8 MIL. POLYETHYLENE WRAP. INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
6. PROVIDE GOOSENECK FOR EXPANSION AND CONTRACTION.
7. TYPE 'K' COPPER TUBING, CONTINUOUS.
8. ALL BRASS STRAP AND SADDLE.
9. WATER MAIN.
10. CURB STOP WITH FLARE CONNECTION ON STREET SIDE.
11. SERVICE LINE EXTENSION TO HOUSE OR EXTENSION METER AND VAULT, METER INSTALLATION BY OTHERS. USE DIELECTRIC UNION IF GALVANIZED IRON PIPE.
12. SET CURB STOP ON MASONRY SUPPORT.

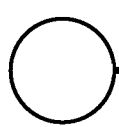
WATER SERVICE CONNECTION DETAIL

NOT TO SCALE

15A-5024



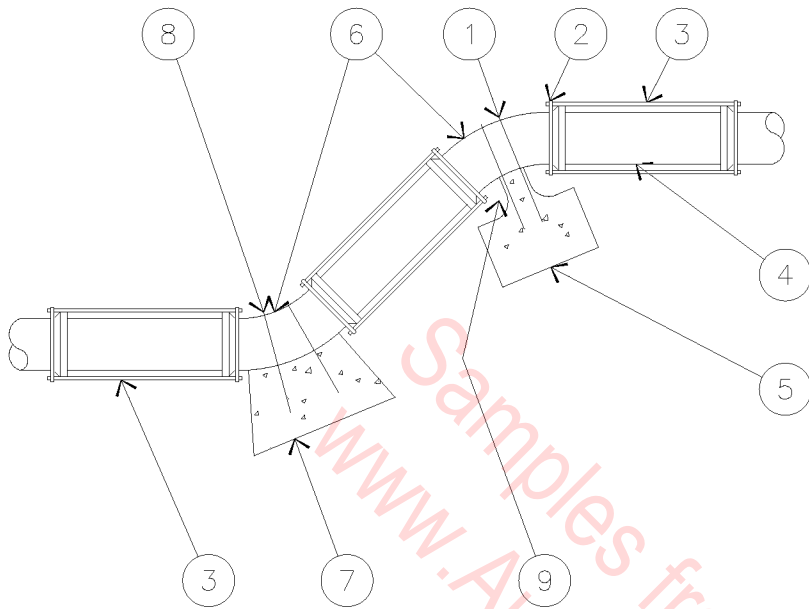
1. FINISH GRADE.
2. COMPLETE BOX AND ASSEMBLY ARCH PATTERN WITH FOOT PIECE.
3. 1" CURB STOP.
4. 1" CORPORATION STOP.
5. 1" COPPER PIPE.
6. 2- 1/4" Ø DRILL HOLES.
7. 90° BEND, NON-METALLIC INSULATED COUPLING.
8. GALVANIZED CAP.
9. 2" GALVANIZED COUPLING.
10. 2" GALVANIZED PIPE.
11. 2 CU. YD. OF GRAVEL.
12. EXTEND TO END OF CUL-DE-SAC.
13. THRUST BLOCK.
14. PLUG.
15. 12" PIPE AND SMALLER.



BLOWOFF DETAIL

NOT TO SCALE

15A-5025



1. MINIMUM 2- #6 REBARS, ASPHALT COATED.
2. STRAPS.
3. TIE RODS WHERE APPLIES, MINIMUM 2 REQUIRED.
4. ONE PIPE LENGTH (MINIMUM).
5. ANCHOR BLOCK (THRUST UPWARD, SEE TABLE FOR SIZE) EXTEND BLOCK INTO SIDES OF TRENCH.
6. 45° BEND.
7. THRUST BLOCK (SEE CHART FOR BEARING AREAS).
8. TIE DOWN RODS, MINIMUM 2- #6.
9. CLEARANCE AT HUB.

NOTES:

- A. USE CONCRETE THRUST BLOCKS AND ANCHOR BLOCK FOR PLASTIC PIPE (NO TIE RODS).
- B. FOR CAST IRON PIPE, USE EITHER TIE RODS OR CONCRETE BLOCKS.
- C. ANCHOR BLOCK WEIGHTS AND TIE ROD SIZE AND LENGTH BASED ON 200 P.S.I. PRESSURE AND 4'-6" OF COVER. WHERE WORKING PRESSURE EXCEEDS ABOVE, ANCHORS TO BE SPECIAL CONSTRUCTION.
- D. MEGA-LUG MAY BE USED PER MANUFACTURER'S REQUIREMENTS IN PLACE OF TIE RODS UPON APPROVAL OF ENGINEER.

MINIMUM WEIGHT OF ANCHOR BLOCK			
PIPE SIZE	90° BEND	45° BEND	22.5° BEND
2"	150#	150#	150#
3"	900#	450#	150#
4"	1590#	900#	450#
6"	6040#	2360#	680#
8"	12,280#	5740#	1960#

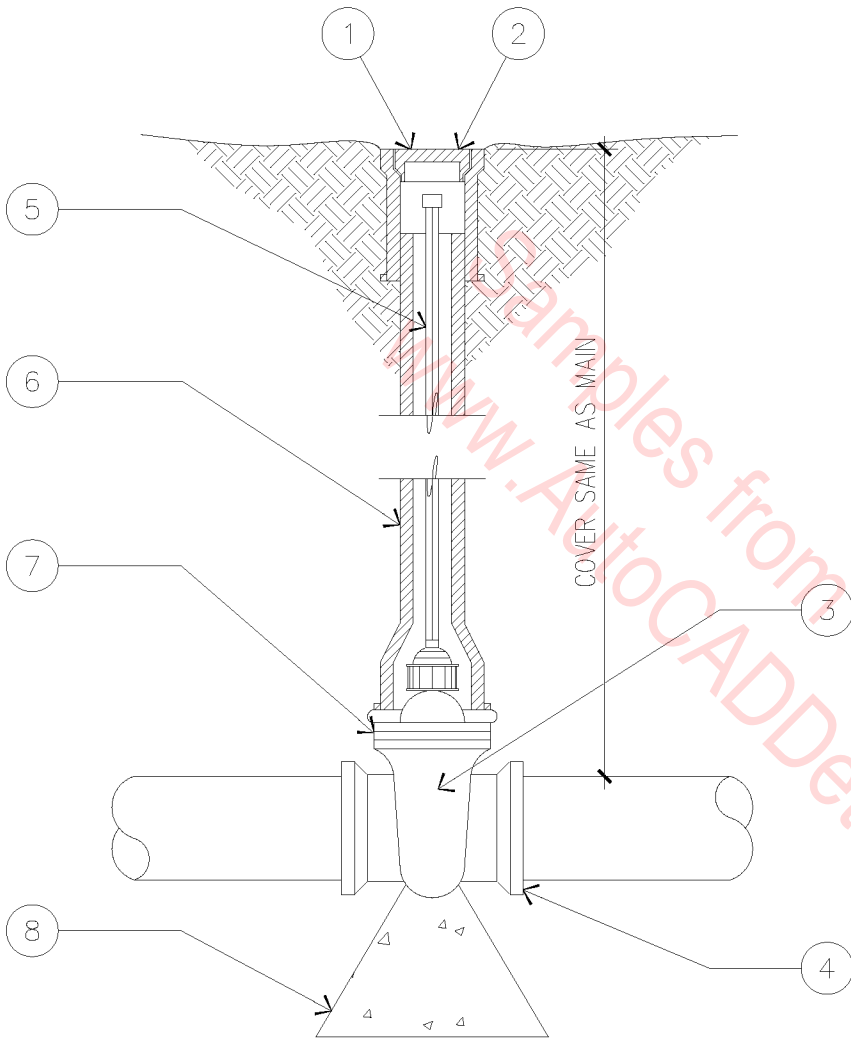
MINIMUM WEIGHT OF ANCHOR BLOCK			
PIPE SIZE	BEND	ROD DIA.	MIN. LENGTH OF ROD*
4"	90°	3/4"	22'
	45°	3/4"	7'
	22.5°	3/4"	2'
6"	90°	3/4"	35'
	45°	3/4"	10'
	22.5°	3/4"	3'
8"	90°	1"	48'
	45°	3/4"	14'
	22.5°	3/4"	4'
12"	90°	1-1/4"	78'
	45°	3/4"	22'
	22.5°	3/4"	6'

* ACTUAL LENGTH OF ROD TO BE SUCH THAT STRAP CAN BE PLACED BEYOND FIRST COLLAR OR HUB AT OR BEYOND THE MINIMUM LENGTH SHOWN.

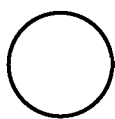
VERTICAL BEND ANCHOR DETAIL

NOT TO SCALE

15A-5026



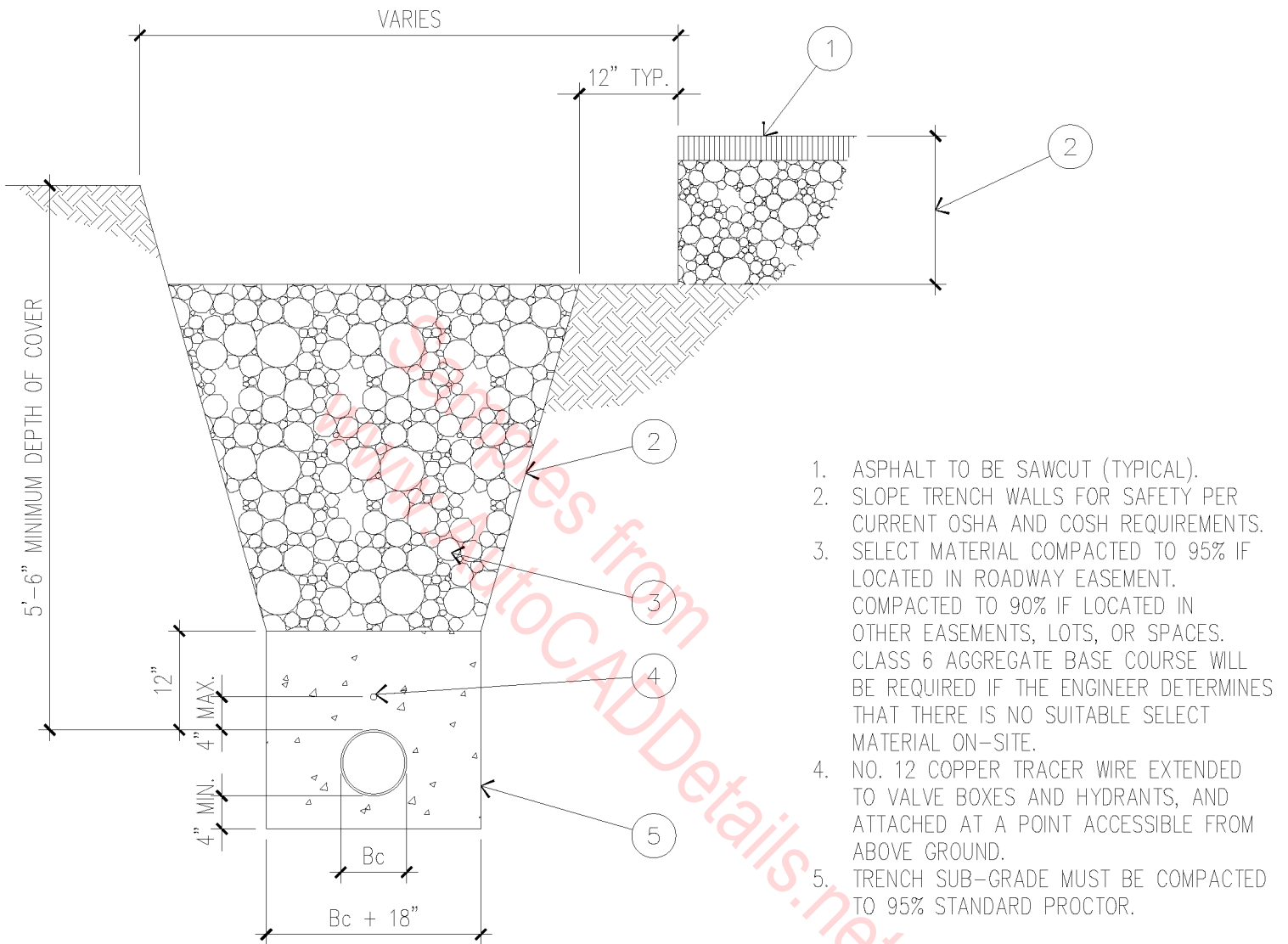
1. WORD "WATER" ON COVER.
2. RECESS TOP OF VALVE BOX 1/8" TO 1/4" BELOW FINISH GRADE.
3. GATE VALVE CLASS 250.
4. MAIN LINE GATE VALVES TO HAVE JOINTS SAME AS WATER MAIN OR AS SPECIFIED FOR MAIN LINE FITTINGS.
5. PROVIDE 5'-0" STEM IF CALLED FOR IN THE SPECIFICATIONS.
6. ADJUSTABLE C.I. VALVE BOX, 5" BARREL.
7. 2" COMPRESSION MATERIAL TO PREVENT ROADWAY SHOCK FROM BEING TRANSMITTED TO VALVE.
8. SEE THRUST BLOCK DETAIL.



GATE VALVE DETAIL

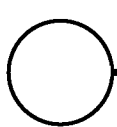
NOT TO SCALE

15A-5027



1. ASPHALT TO BE SAWCUT (TYPICAL).
2. SLOPE TRENCH WALLS FOR SAFETY PER CURRENT OSHA AND COSH REQUIREMENTS.
3. SELECT MATERIAL COMPACTED TO 95% IF LOCATED IN ROADWAY EASEMENT. COMPACTED TO 90% IF LOCATED IN OTHER EASEMENTS, LOTS, OR SPACES. CLASS 6 AGGREGATE BASE COURSE WILL BE REQUIRED IF THE ENGINEER DETERMINES THAT THERE IS NO SUITABLE SELECT MATERIAL ON-SITE.
4. NO. 12 COPPER TRACER WIRE EXTENDED TO VALVE BOXES AND HYDRANTS, AND ATTACHED AT A POINT ACCESSIBLE FROM ABOVE GROUND.
5. TRENCH SUB-GRADE MUST BE COMPACTED TO 95% STANDARD PROCTOR.

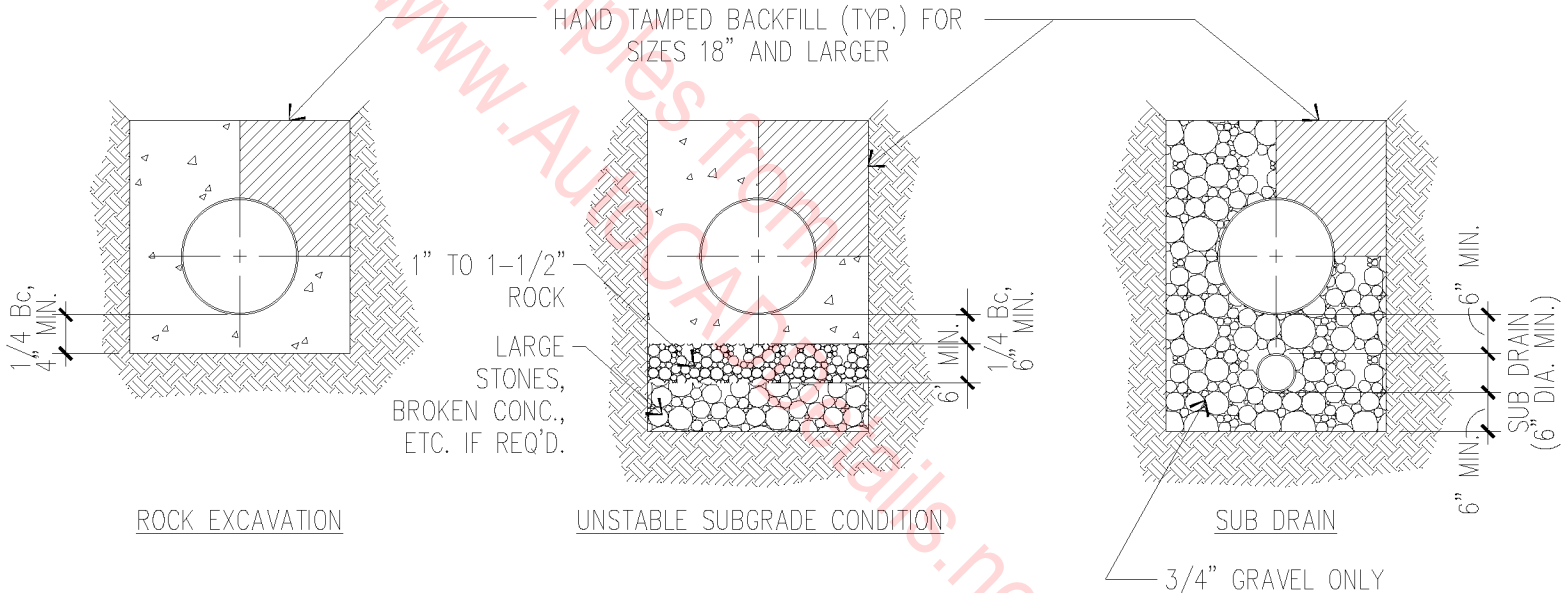
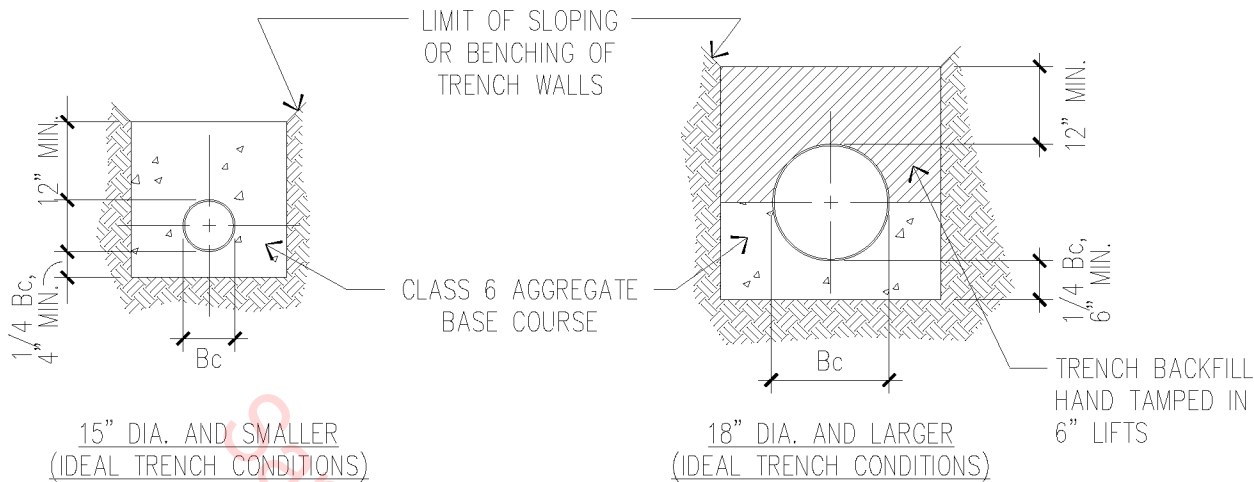
- NOTES:
- A. PAVEMENT REPLACEMENT SHALL MEET EXISTING THICKNESSES AND KIND WITH THE FOLLOWING MINIMUMS: ASPHALT SURFACING = 3" MIN., AGGREGATE BASE COURSE = 15" MINIMUM.
 - B. IF WATER MAIN IS NOT UNDER ROAD SURFACE, REPLACE TOP ONE FOOT OF TRENCH WITH TOPSOIL AND REVEGETATE.



TRENCH CROSS SECTION

NOT TO SCALE

15A-5028



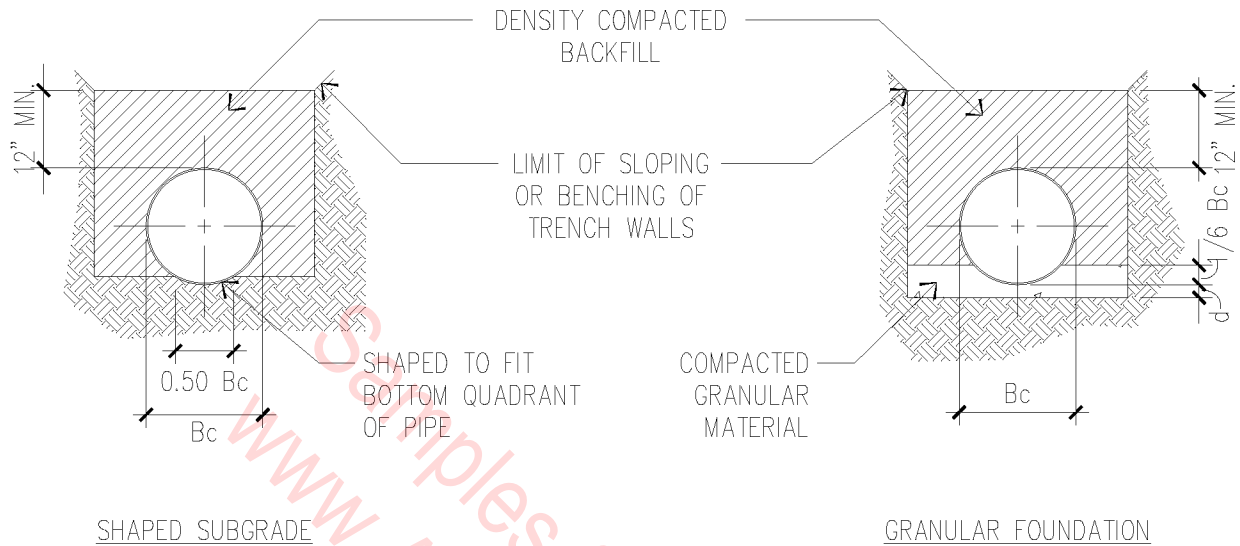
NOMINAL DIAMETER	MAXIMUM TRENCH WIDTH AT A POINT 12" ABOVE PIPE
33" AND SMALLER	$B = B_c + 16"$
36" AND LARGER	$B = B_c + 30"$

NOTE: BELL HOLES SHALL BE EXCAVATED AT ALL BELL AND SPIGOT JOINTS.

CLASS 'B' BEDDING REQMTS.
 WATER OR SEWER MAIN

NOT TO SCALE

15A-5029



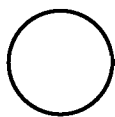
NOMINAL DIAMETER	MAXIMUM TRENCH WIDTH AT A POINT 12" ABOVE PIPE
33" AND SMALLER	$B = B_c + 16"$
36" AND LARGER	$B = B_c + 30"$

NOMINAL DIAMETER	MINIMUM d
18" AND SMALLER	2"
21" TO 36"	3"
42" AND LARGER	4"

NOTES:

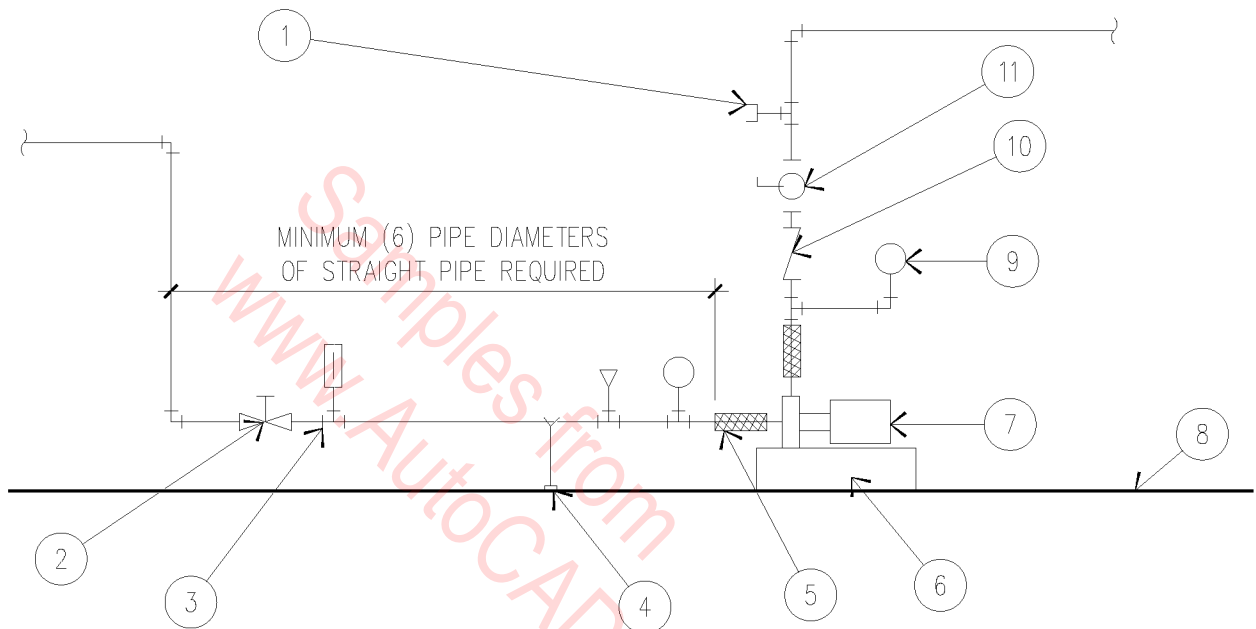
- BELL HOLES SHALL BE EXCAVATED AT ALL BELL AND SPIGOT JOINTS.
- CLASS 'C' BEDDING MAY ONLY BE USED UPON APPROVAL OF CHIEF ENGINEER OR THE ENGINEER'S APPOINTED REPRESENTATIVE.

CLASS 'C' BEDDING RQMTS.
WATER OR SEWER MAIN

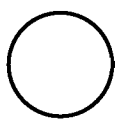


NOT TO SCALE

15A-5030



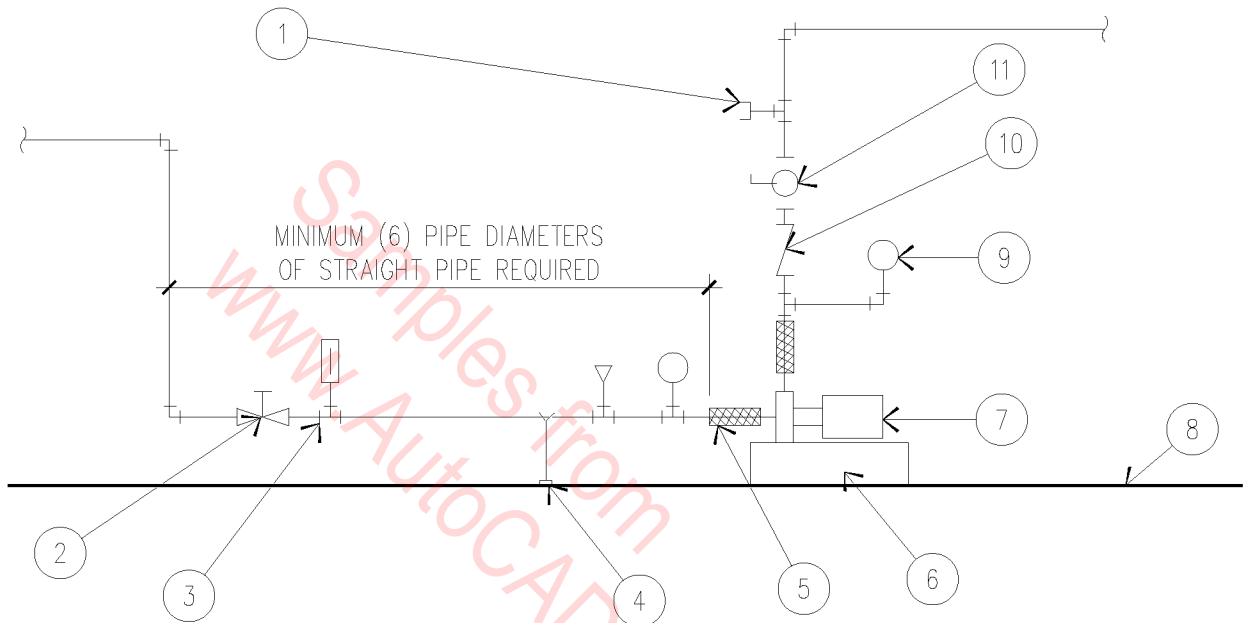
- | | |
|----------------------------------|------------------------------|
| 1. TEST PLUG (TYPICAL). | 7. CP. |
| 2. GATE VALVE. | 8. FLOOR. |
| 3. THERMOMETER. | 9. PRESSURE GAUGE (TYPICAL). |
| 4. ADJUSTABLE PIPE SUPPORT. | 10. CHECK VALVE. |
| 5. VIBRATION ISOLATOR (TYPICAL). | 11. BALL VALVE. |
| 6. 4" HIGH CONCRETE PAD. | |



BASE MOUNTED PUMP

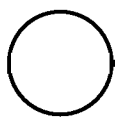
N.T.S.

15A-5031



1. TEST PLUG (TYPICAL).
2. GATE VALVE.
3. THERMOMETER.
4. ADJUSTABLE PIPE SUPPORT.
5. VIBRATION ISOLATOR (TYPICAL).
6. 4" HIGH CONCRETE PAD.

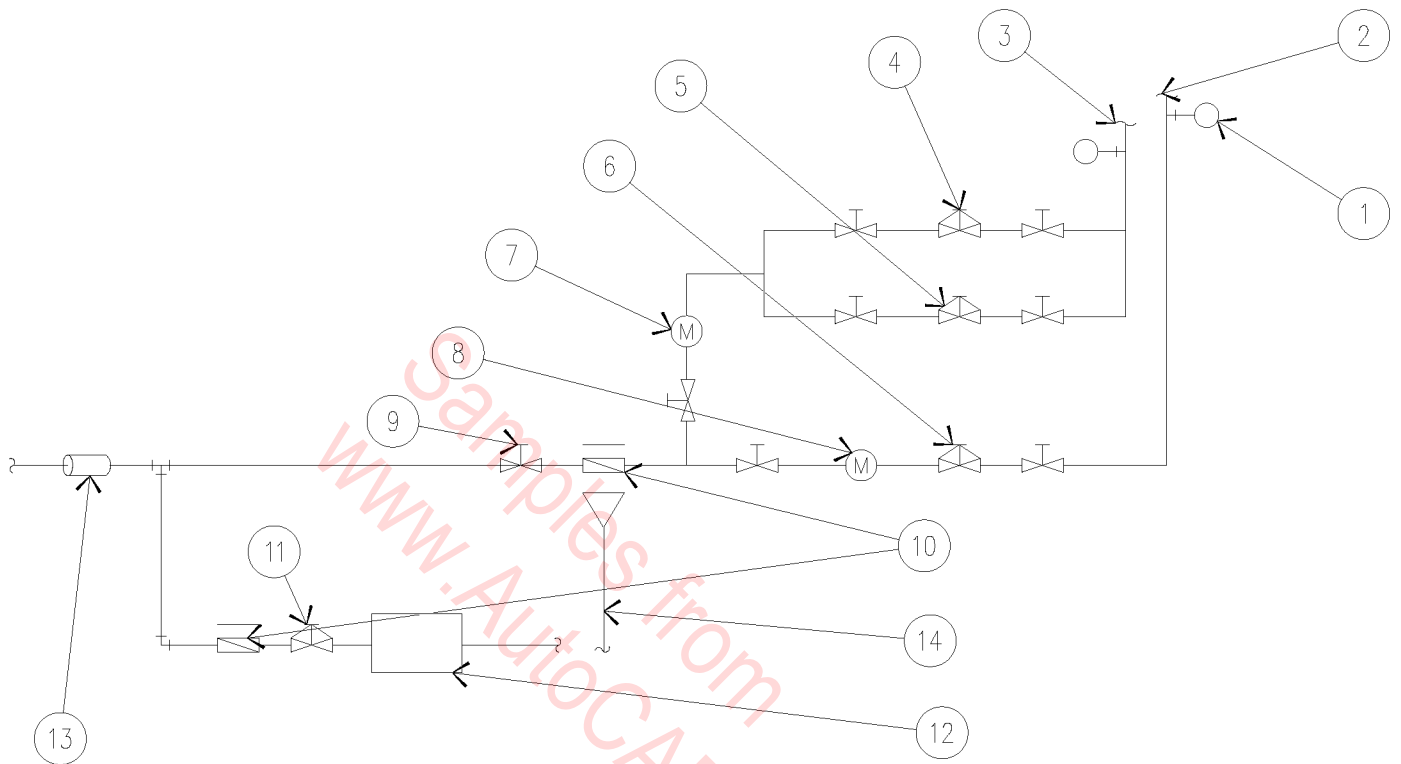
7. CP.
8. FLOOR.
9. PRESSURE GAUGE (TYPICAL).
10. CHECK VALVE.
11. BALL VALVE.



BASE MOUNTED PUMP

N.T.S.

15A-5031



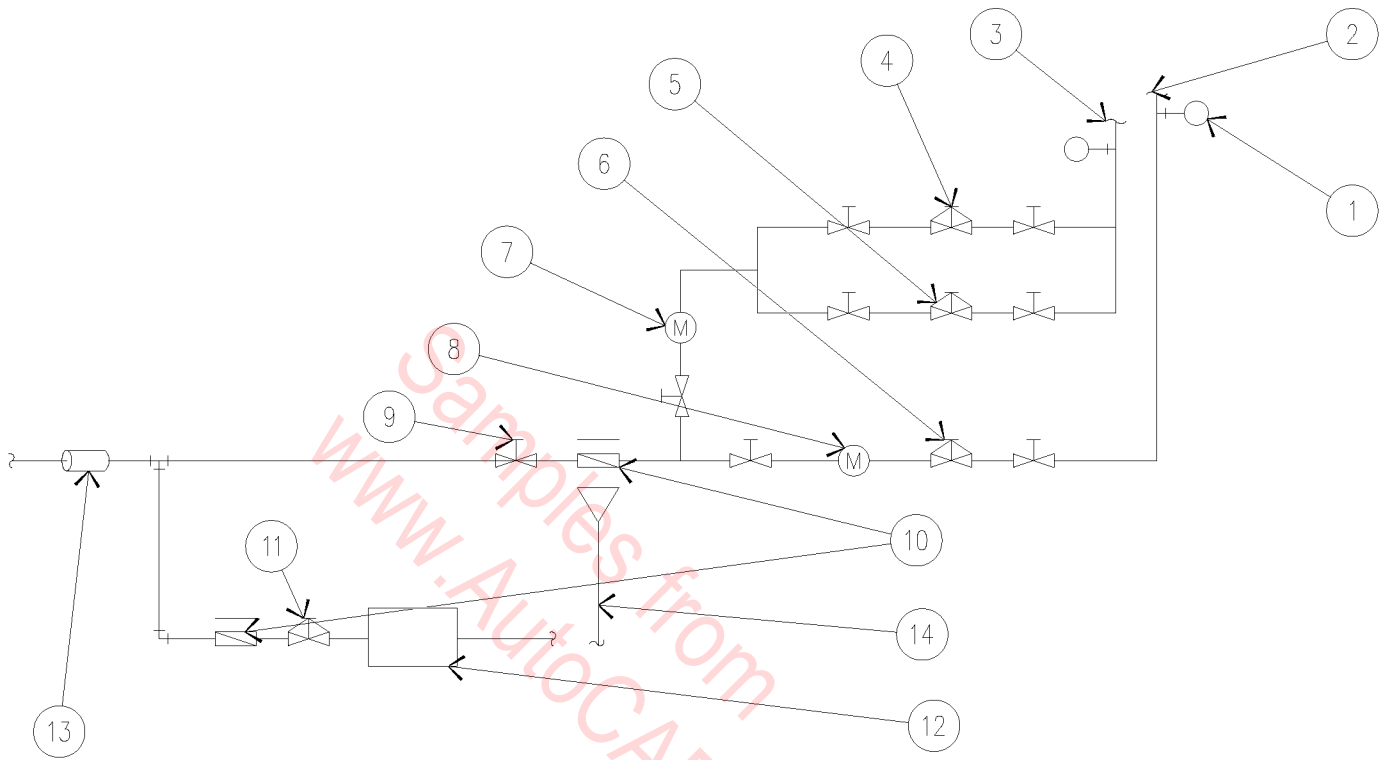
- | | |
|---|--|
| <ol style="list-style-type: none"> 1. PRESSURE GAUGE 0-100 PSI (TYPICAL OF 2). 2. 1 1/2" DOMESTIC WATER SERVICE TO COMMERCIAL SPACES. 3. 2" DOM. WATER SERVICE TO RESIDENTIAL SPACES. 4. 1 1/2" PRV SET @ 55 PSI. 5. 3/4" PRV SET @ 60 PSI. 6. 1 1/2" PRV SET @ 60 PSI. 7. 2" RESIDENTIAL WATER SERVICE METER (64 GPM EST. MAXIMUM FLOW RATE). | <ol style="list-style-type: none"> 8. 1" COMMERCIAL WATER SERVICE METER (36 GPM EST. MAXIMUM FLOW RATE). 9. BUILDING SHUTOFF. 10. REDUCED PRESSURE BACK FLOW PREVENTER. 11. 4" PRV SET @ 100 PSI. 12. FIRE SPRINKLER SERVICE. 13. FIRE PROTECTION CONTRACTOR TO PROVIDE GROMMETS @ WALL PENETRATIONS, ANCHORS & INSTALL MAIN & TAP. 14. 3/4" PIPE TO FLOOR DRAIN. |
|---|--|

NOTE: INSTALL WATER METER AND VALVES AS REQUIRED BY WATER DISTRICT.

○ WATER SERVICE ENTRY

N.T.S.

15A-5032



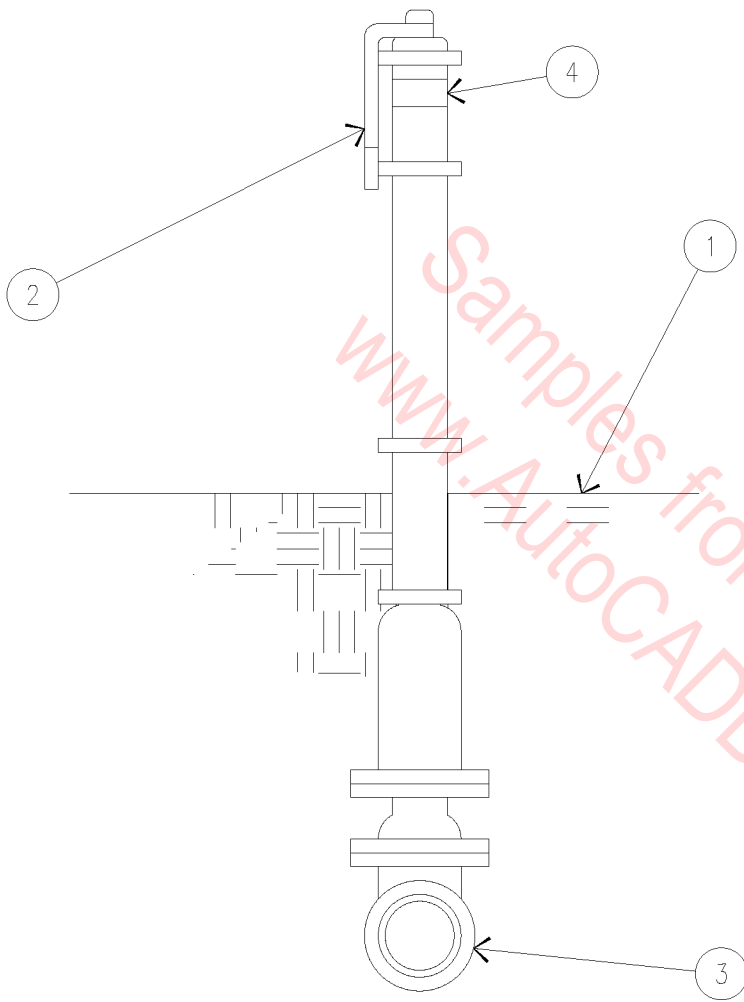
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|---|--|
| <ol style="list-style-type: none"> 1. PRESSURE GAUGE 0-100 PSI (TYPICAL OF 2). 2. 1 1/2" DOMESTIC WATER SERVICE TO COMMERCIAL SPACES. 3. 2" DOM. WATER SERVICE TO RESIDENTIAL SPACES. 4. 1 1/2" PRV SET @ 55 PSI. 5. 3/4" PRV SET @ 60 PSI. 6. 1 1/2" PRV SET @ 60 PSI. 7. 2" RESIDENTIAL WATER SERVICE METER (64 GPM EST. MAXIMUM FLOW RATE). | <ol style="list-style-type: none"> 8. 1" COMMERCIAL WATER SERVICE METER (36 GPM EST. MAXIMUM FLOW RATE). 9. BUILDING SHUTOFF. 10. REDUCED PRESSURE BACK FLOW PREVENTER. 11. 4" PRV SET @ 100 PSI. 12. FIRE SPRINKLER SERVICE. 13. FIRE PROTECTION CONTRACTOR TO PROVIDE GROMMETS @ WALL PENETRATIONS, ANCHORS & INSTALL MAIN & TAP. 14. 3/4" PIPE TO FLOOR DRAIN. |
|---|--|

NOTE: INSTALL WATER METER AND VALVES AS REQUIRED BY WATER DISTRICT.

WATER SERVICE ENTRY

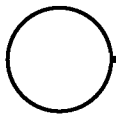
N.T.S.

15A-5032



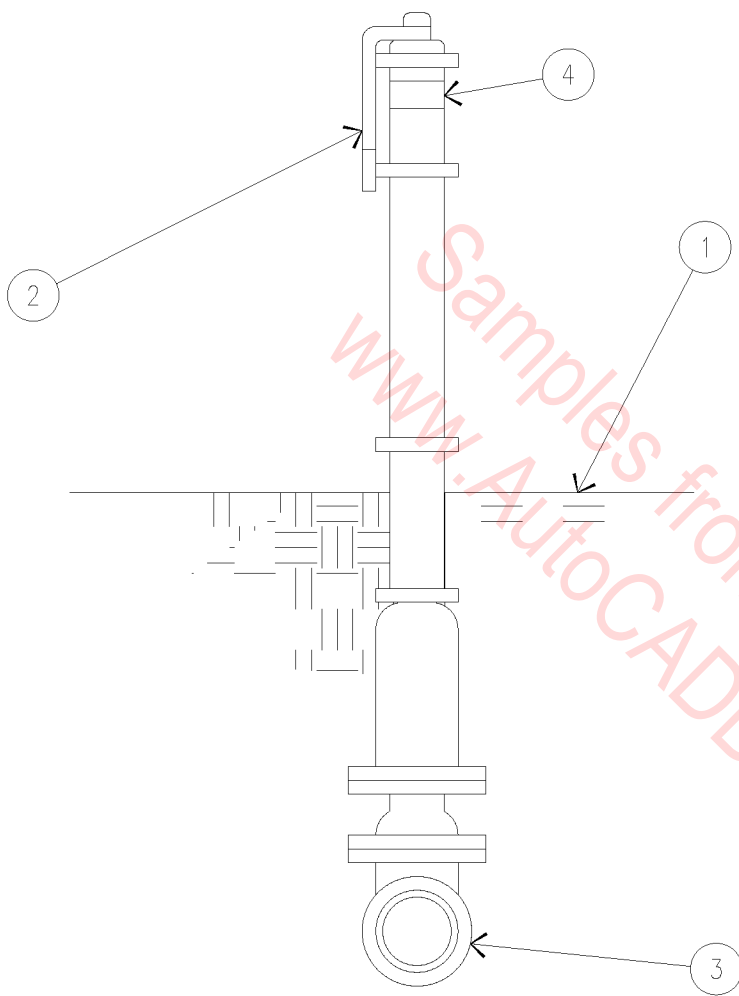
1. FINISH GRADE.
2. OPERATING WRENCH, PADLOCK, AND LOCKING STAPLE.
3. WATER LINE.
4. OPEN.

GATE VALVE WITH INDICATOR POST



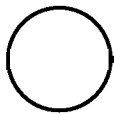
N.T.S.

15A-5033



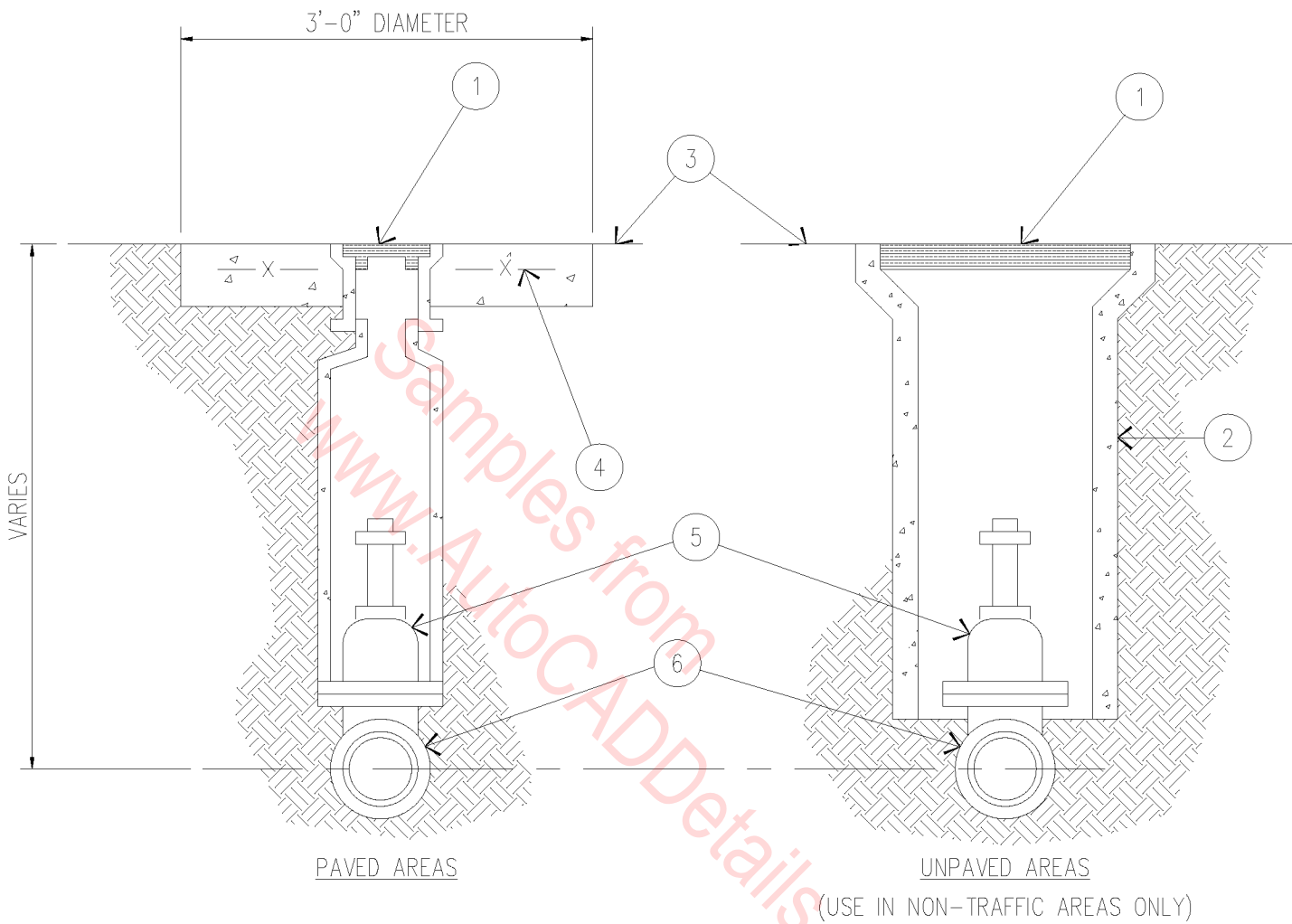
1. FINISH GRADE.
2. OPERATING WRENCH, PADLOCK, AND LOCKING STAPLE.
3. WATER LINE.
4. OPEN.

GATE VALVE WITH INDICATOR POST



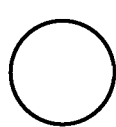
N.T.S.

15A-5033



- 1. WORD "WATER" CAST IN COVER.
- 2. CONCRETE PIPE.
- 3. FINISH GRADE.
- 4. 6" X 6" WELDED WIRE FABRIC (W2.9 X W2.9).

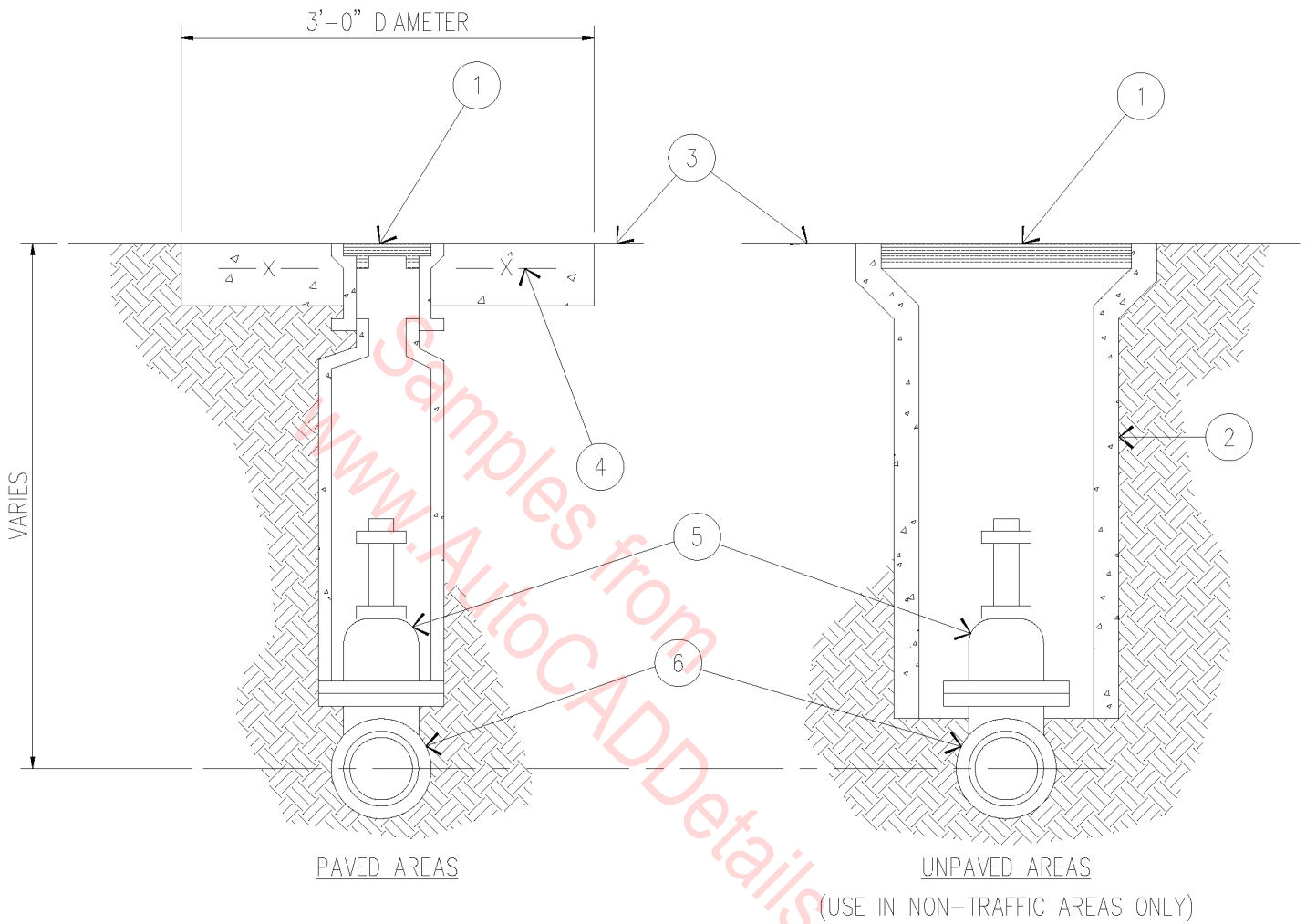
- 5. GATE VALVE.
- 6. WATER LINE.



VALVE BOX

N.T.S.

15A-5034

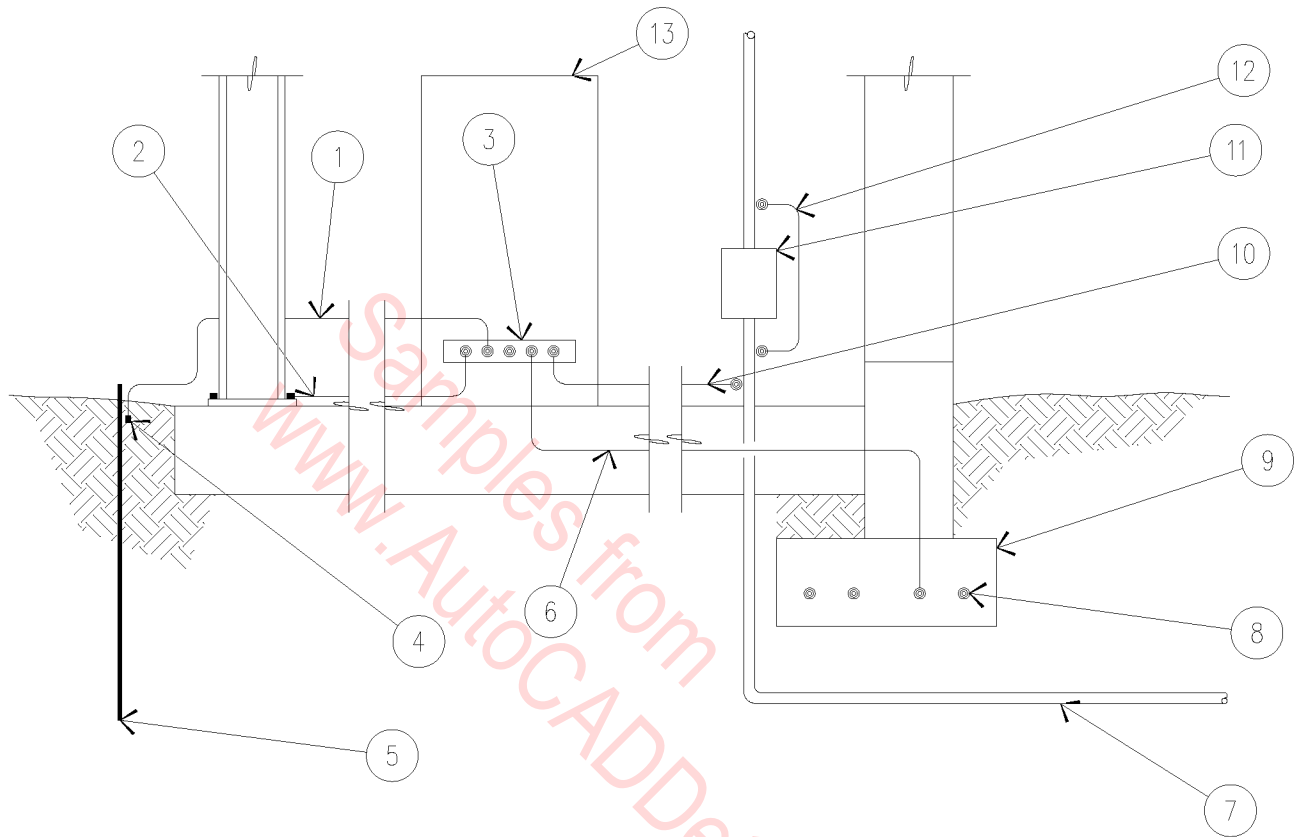


- 1. WORD "WATER" CAST IN COVER.
- 2. CONCRETE PIPE.
- 3. FINISH GRADE.
- 4. 6" X 6" WELDED WIRE FABRIC (W2.9 X W2.9).

- 5. GATE VALVE.
- 6. WATER LINE.

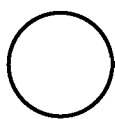

VALVE BOX
 N.T.S.

15A-5034



- | | |
|--|---|
| 1. GROUND ROD GROUNDING ELECTRODE CONDUCTOR. | 8. REBAR 20'-0" MINIMUM LENGTH. |
| 2. STEEL GROUNDING ELECTRODE CONDUCTOR. | 9. THERMITE WELD WITH ASPHALTUM COATING. |
| 3. NEUTRAL BUS. | 10. WATER SERVICE GROUNDING ELECTRODE CONDUCTORS. |
| 4. BOLTED CONNECTION. | 11. WATER METER. |
| 5. 10'-0" X 5/8" COPPER CLAD GROUND ROD. | 12. BONDING JUMPER BOLTED CONNECTIONS. |
| 6. REINFORCING STEEL GROUNDING ELECTRODE CONDUCTOR BARE. | 13. SERVICE ENTRANCE EQUIPMENT. |
| 7. METALLIC WATER MAIN 10'-0" MINIMUM LENGTH. | |

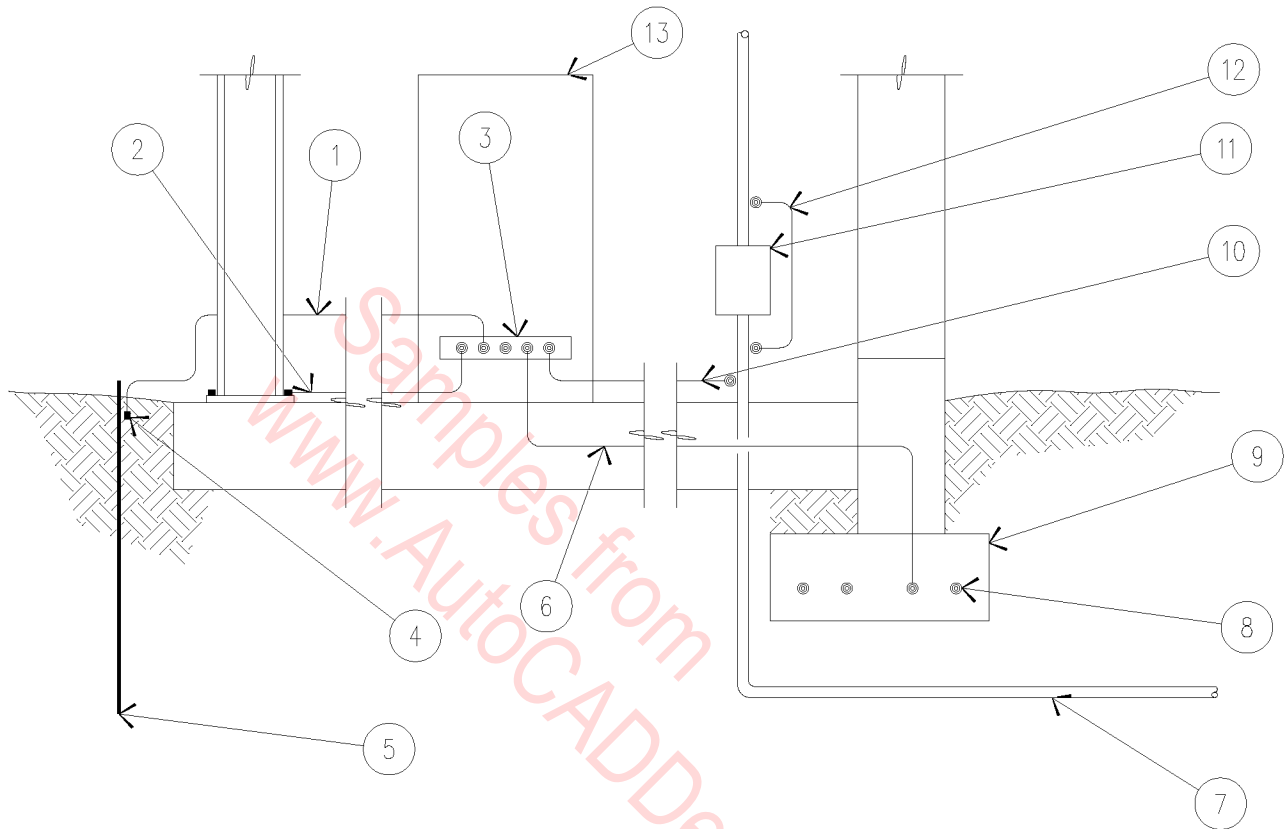
NOTES: SEE ONE LINE DIAGRAM FOR REQUIRED GROUNDS AND GROUNDING ELECTRODE SIZES. GROUNDING ELECTRODE CONDUCTORS SHALL BE UNSPLICED INSULATED COPPER UNLESS OTHERWISE NOTED.



SERVICE GROUNDING

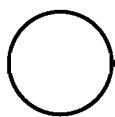
N.T.S.

15A-5035



- | | |
|--|---|
| 1. GROUND ROD GROUNDING ELECTRODE CONDUCTOR. | 8. REBAR 20'-0" MINIMUM LENGTH. |
| 2. STEEL GROUNDING ELECTRODE CONDUCTOR. | 9. THERMITE WELD WITH ASPHALTUM COATING. |
| 3. NEUTRAL BUS. | 10. WATER SERVICE GROUNDING ELECTRODE CONDUCTORS. |
| 4. BOLTED CONNECTION. | 11. WATER METER. |
| 5. 10'-0" X 5/8" COPPER CLAD GROUND ROD. | 12. BONDING JUMPER BOLTED CONNECTIONS. |
| 6. REINFORCING STEEL GROUNDING ELECTRODE CONDUCTOR BARE. | 13. SERVICE ENTRANCE EQUIPMENT. |
| 7. METALLIC WATER MAIN 10'-0" MINIMUM LENGTH. | |

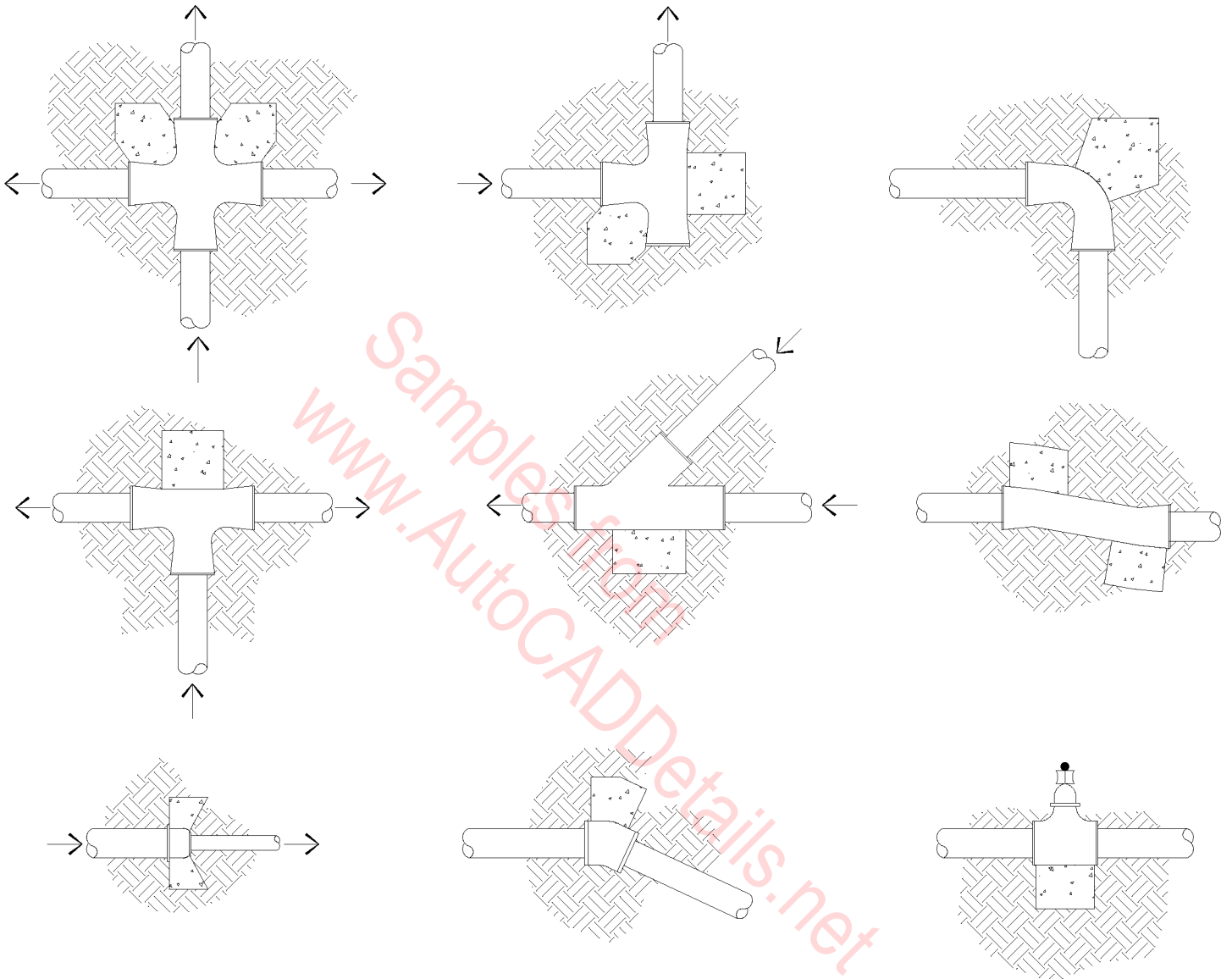
NOTES: SEE ONE LINE DIAGRAM FOR REQUIRED GROUNDS AND GROUNDING ELECTRODE SIZES. GROUNDING ELECTRODE CONDUCTORS SHALL BE UNSPLICED INSULATED COPPER UNLESS OTHERWISE NOTED.



SERVICE GROUNDING

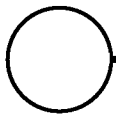
N.T.S.

15A-5035



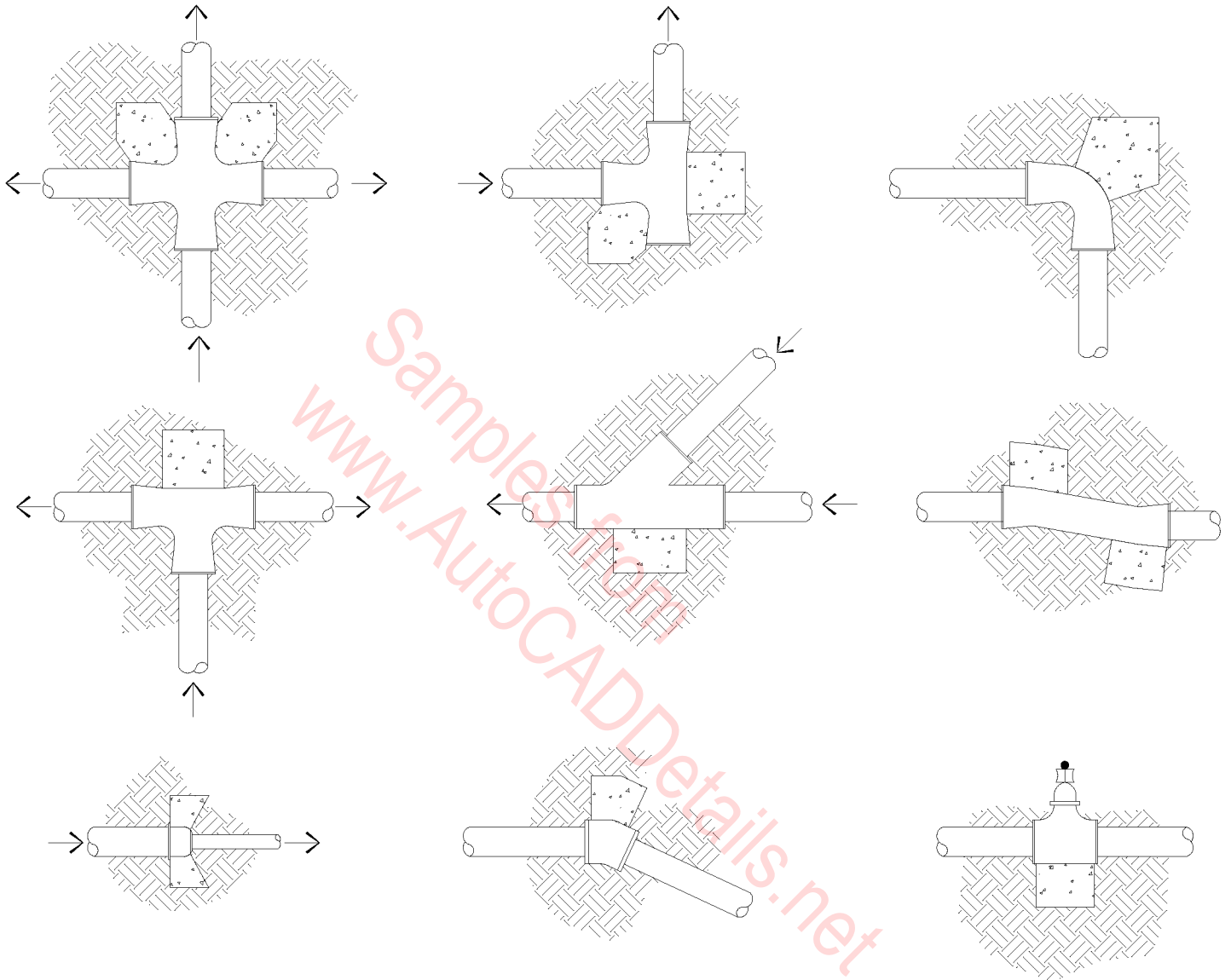
NOTES
 A. ALL THRUST BLOCKS SHOWN ARE CAST IN PLACE CONCRETE.
 B. ARROWS INDICATE DIRECTION OF FLOW.

THRUST BLOCK LOCATIONS



N.T.S.

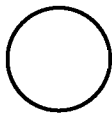
15A-5036



NOTES

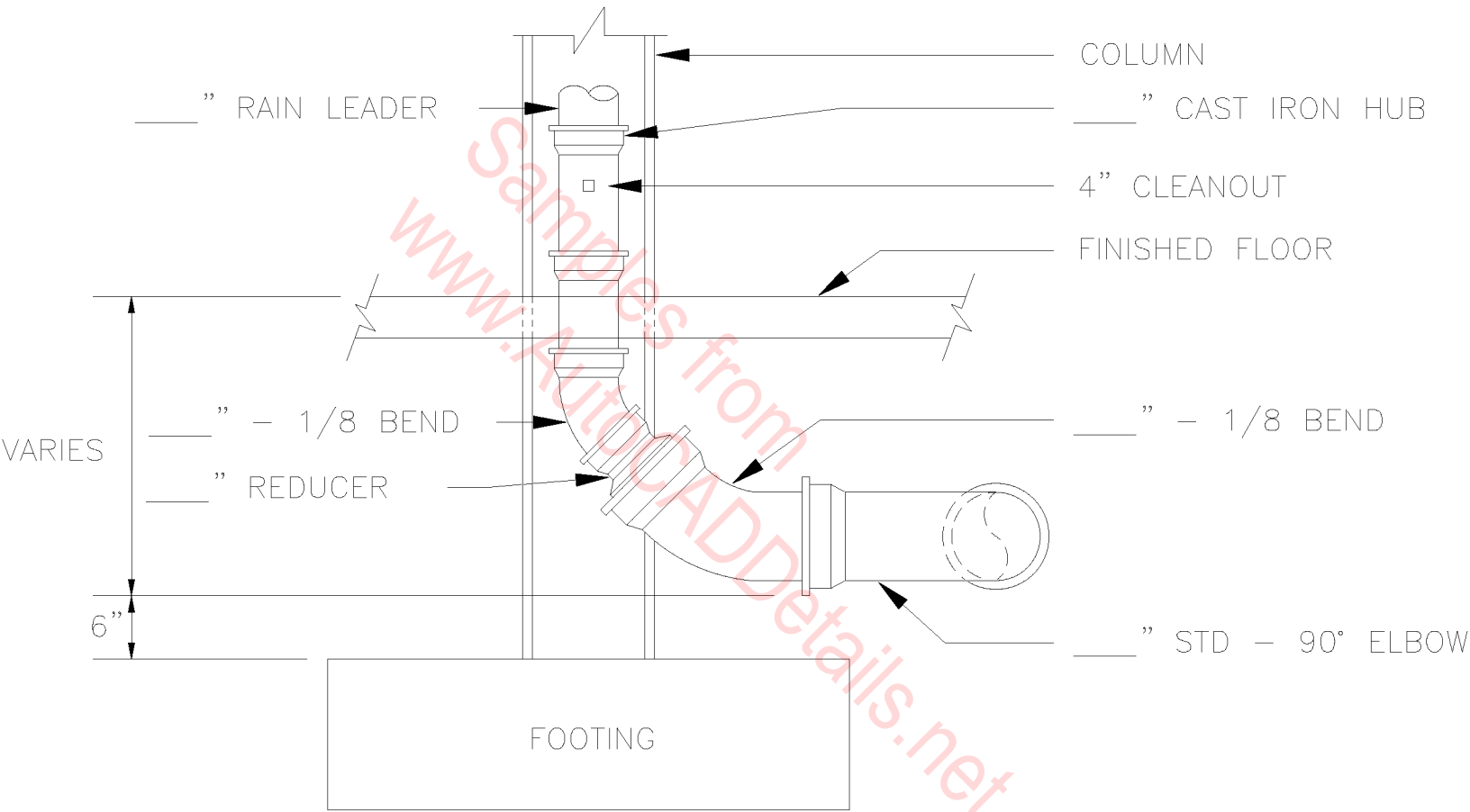
- A. ALL THRUST BLOCKS SHOWN ARE CAST IN PLACE CONCRETE.
- B. ARROWS INDICATE DIRECTION OF FLOW.

THRUST BLOCK LOCATIONS

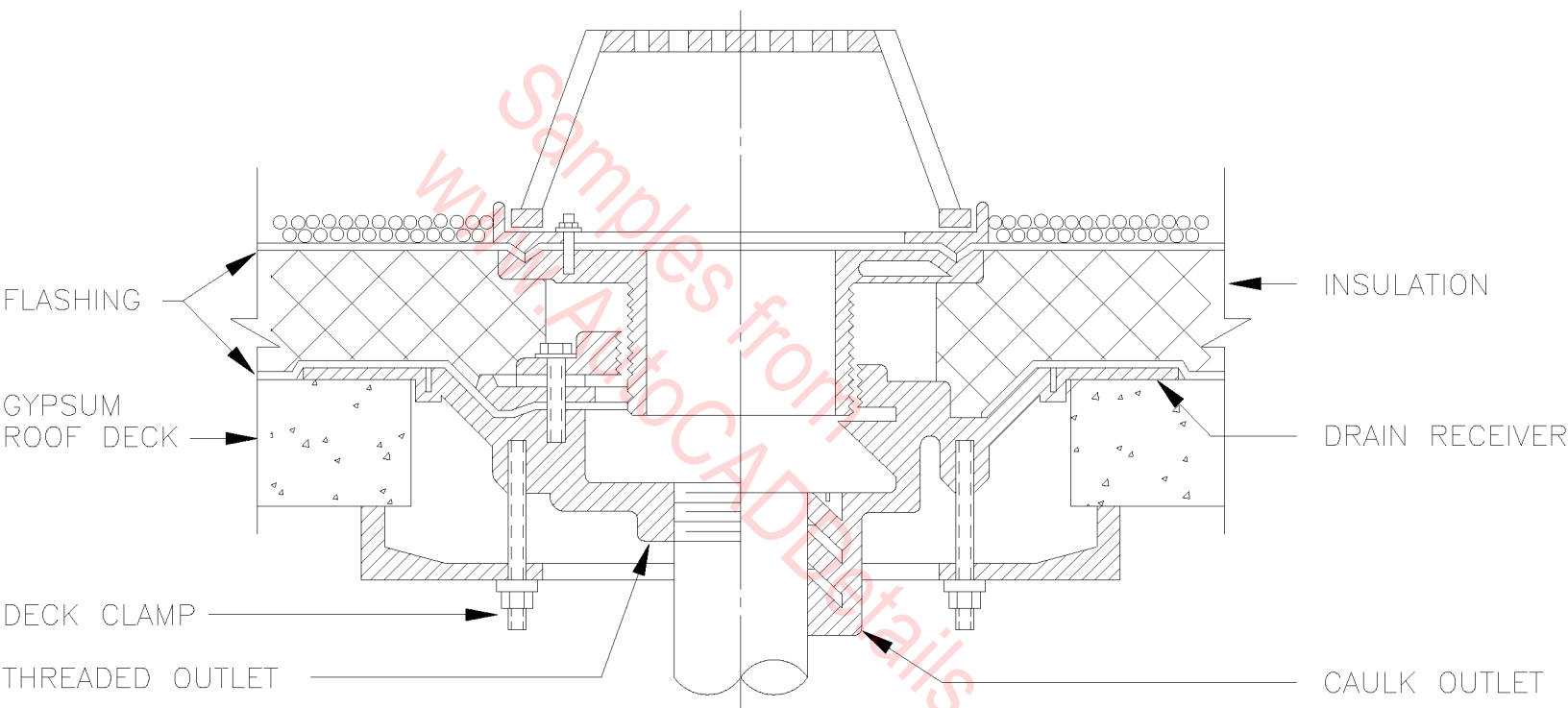


N.T.S.

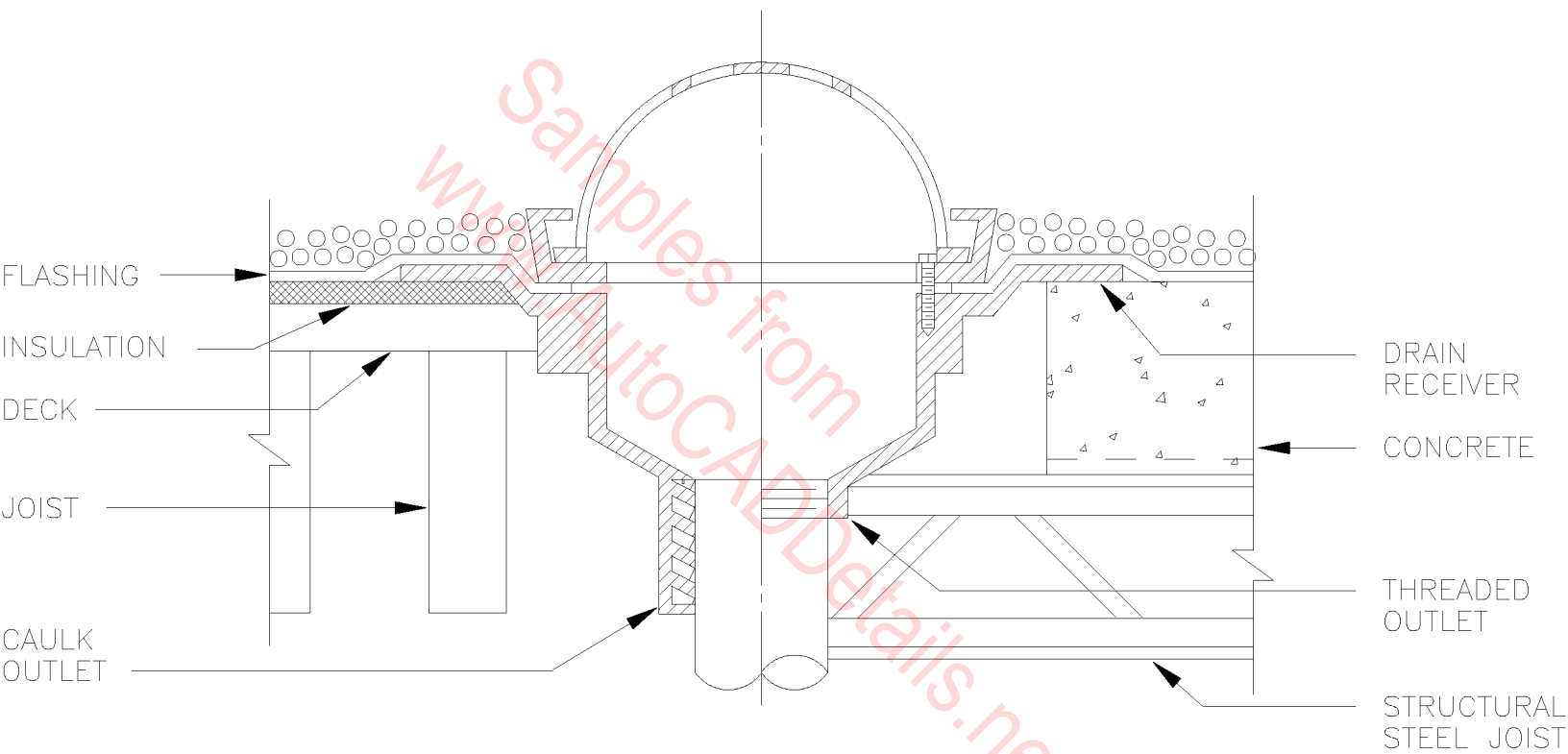
15A-5036



RAIN LEADER DROP

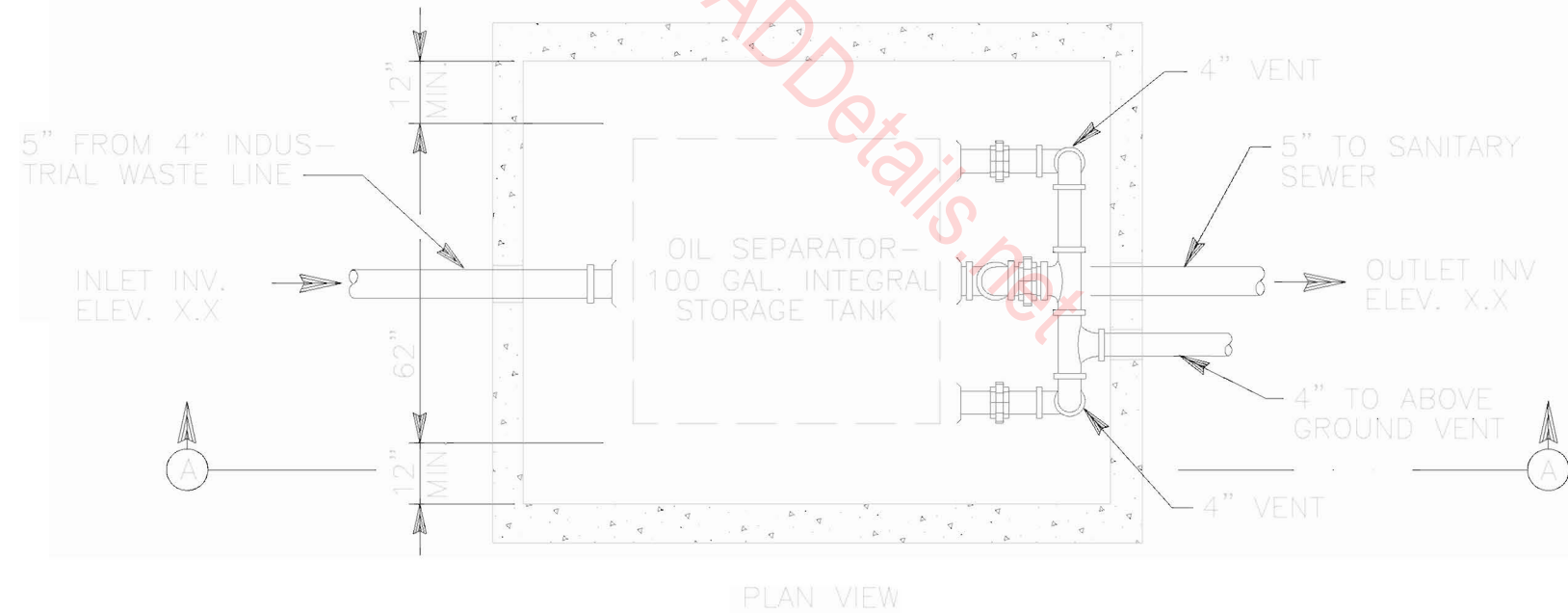
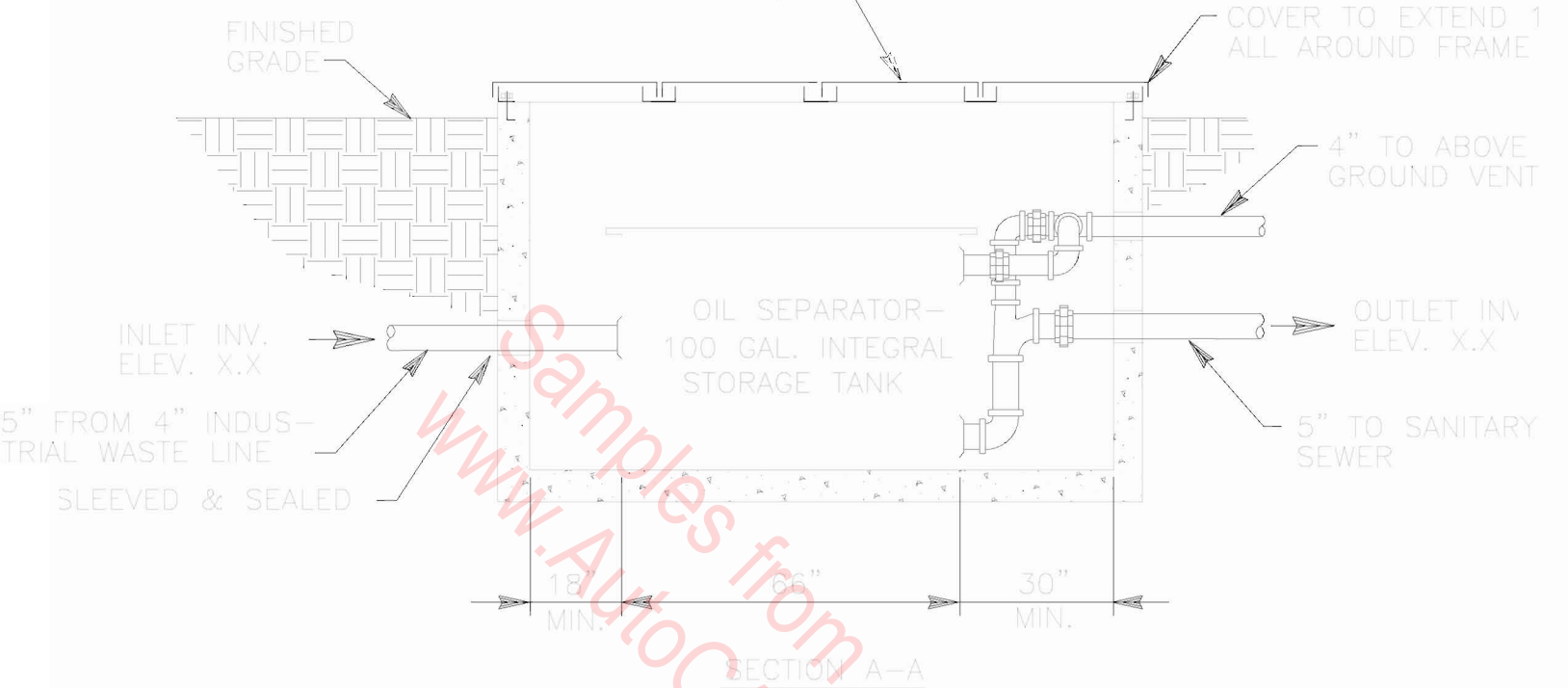


LARGE SUMP ROOF DRAIN



MEDIUM SUMP ROOF DRAIN

1/4" CHECKER PLATE—
LIFT OFF COVERS (SEE
STRUCTURES FOR DETAILS)



INSIDE PIT DIM.
3'-6" x 3'-6"

CRAWL SPACE PIT
(REFER STRUCTURAL)

REDUCING FITTING
(PVC TO STEEL)

SUMP PUMP SP-1

2" PVC DISCHARGE
(REFER CIVIL FOR
CONTINUATION)

WATER TIGHT SEAL AS
SHOWN ON MEMBRANE
WATERPROOF FLOOR
PENETRATION, TYPE I

- CRAWL SPACE

PLAN VIEW

COVER (REFER STRUCTURAL)

CRAWL SPACE PIT
(REFER STRUCTURAL)

REDUCING FITTING
(PVC TO STEEL)

1-1/2" GALV. STEEL

2" PVC DISCHARGE
(REFER CIVIL FOR
CONTINUATION)

WATER TIGHT SEAL AS
SHOWN ON MEMBRANE
WATERPROOF FLOOR
PENETRATION, TYPE I

CRAWL SPACE

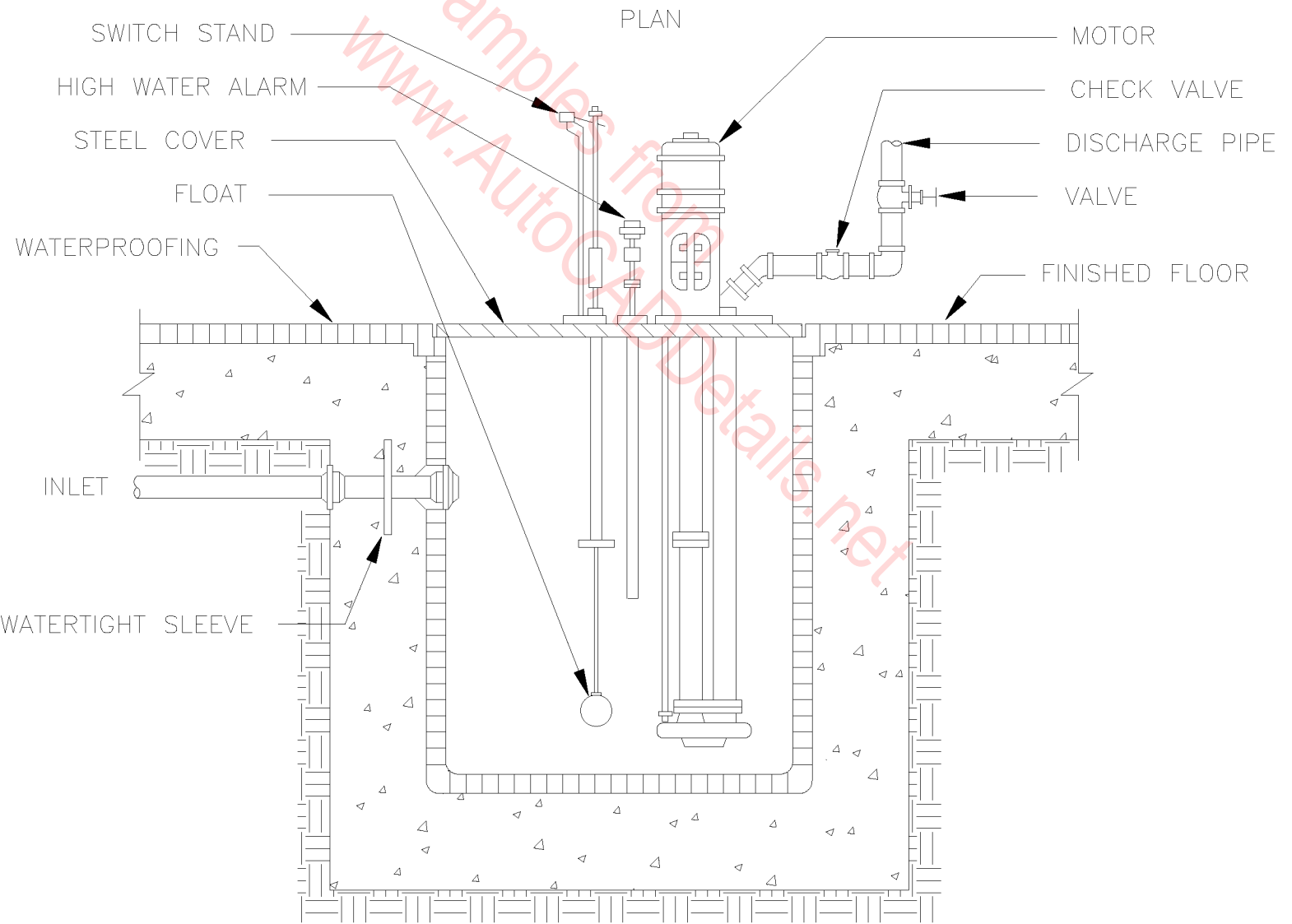
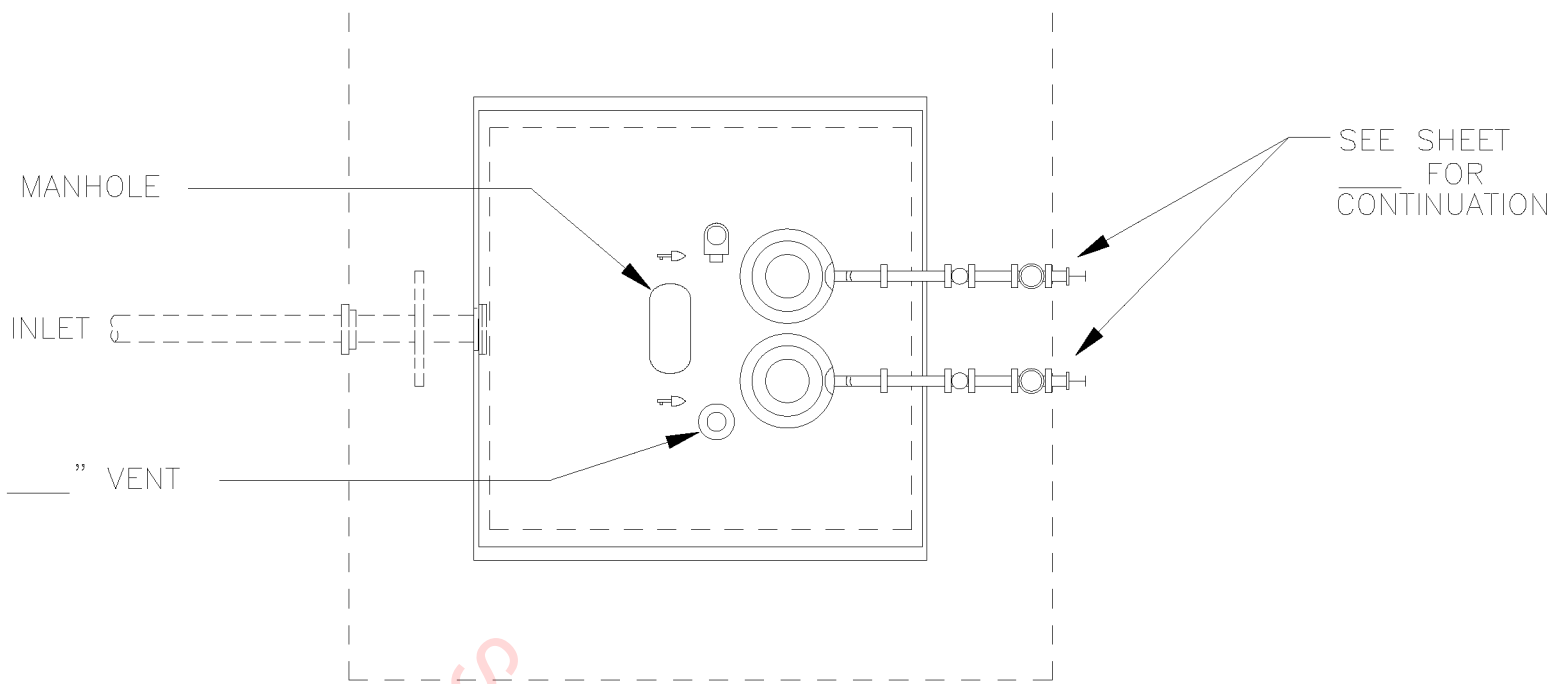
SECTION VIEW

NOTES:

1. PUMP SHALL BE SUBMERSIBLE SUMP/EFFLUENT TYPE, 25 GPM, 20 FT. HEAD, 1/2 HP, 115V, 10.4 AMPS 1,725 RPM, 1-1/2" NPT DISCHARGE.
2. SUPPORT PUMP PIPING AS REQUIRED.

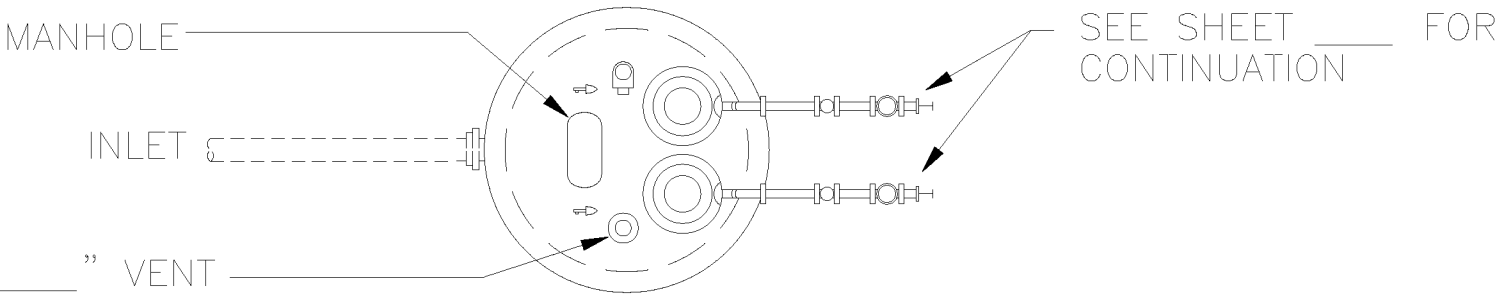
TYPICAL SUMP PUMP DETAIL

N.T.S.

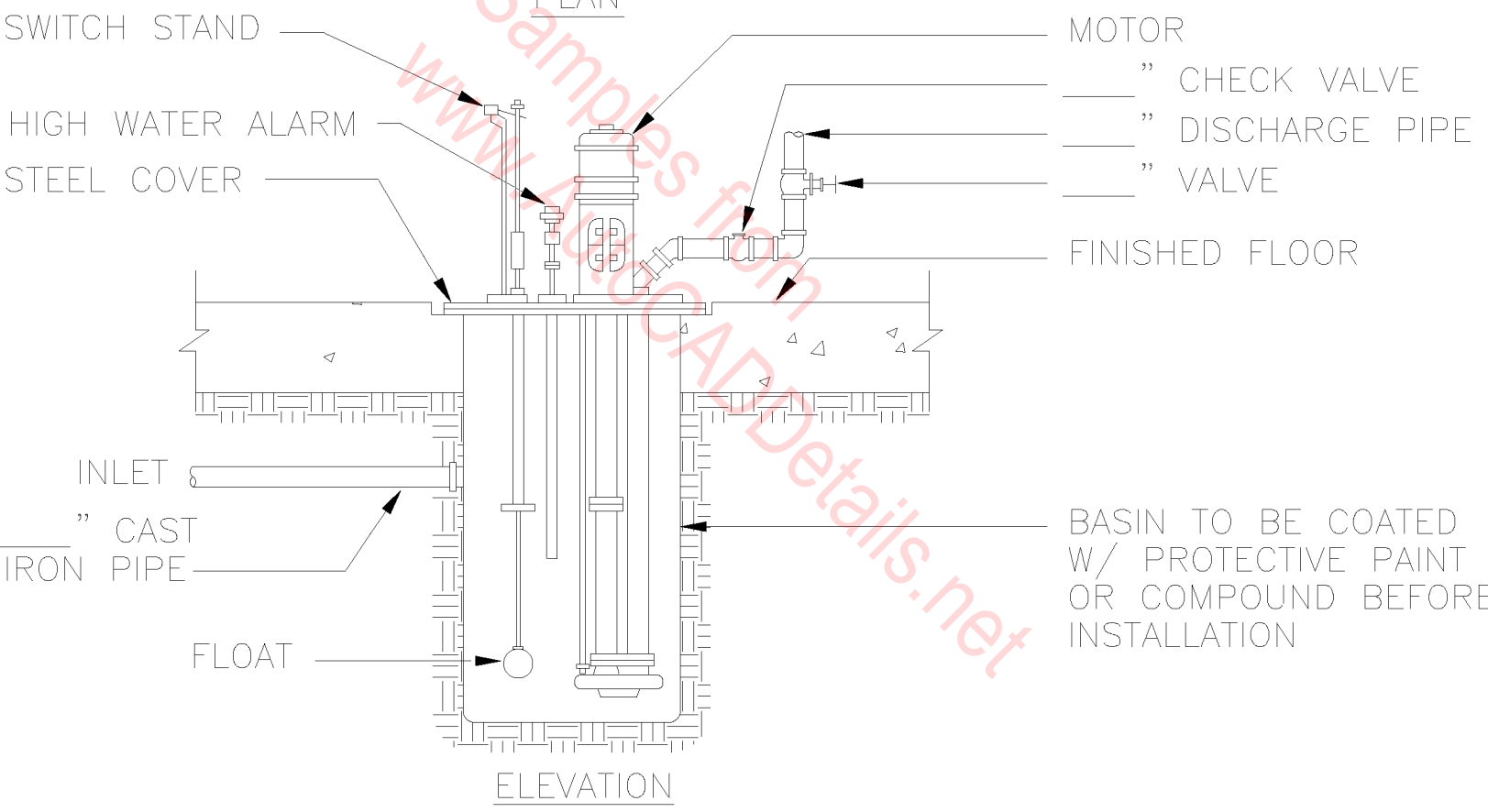


SUMP PUMP AND SUMP PIT

N.T.S.

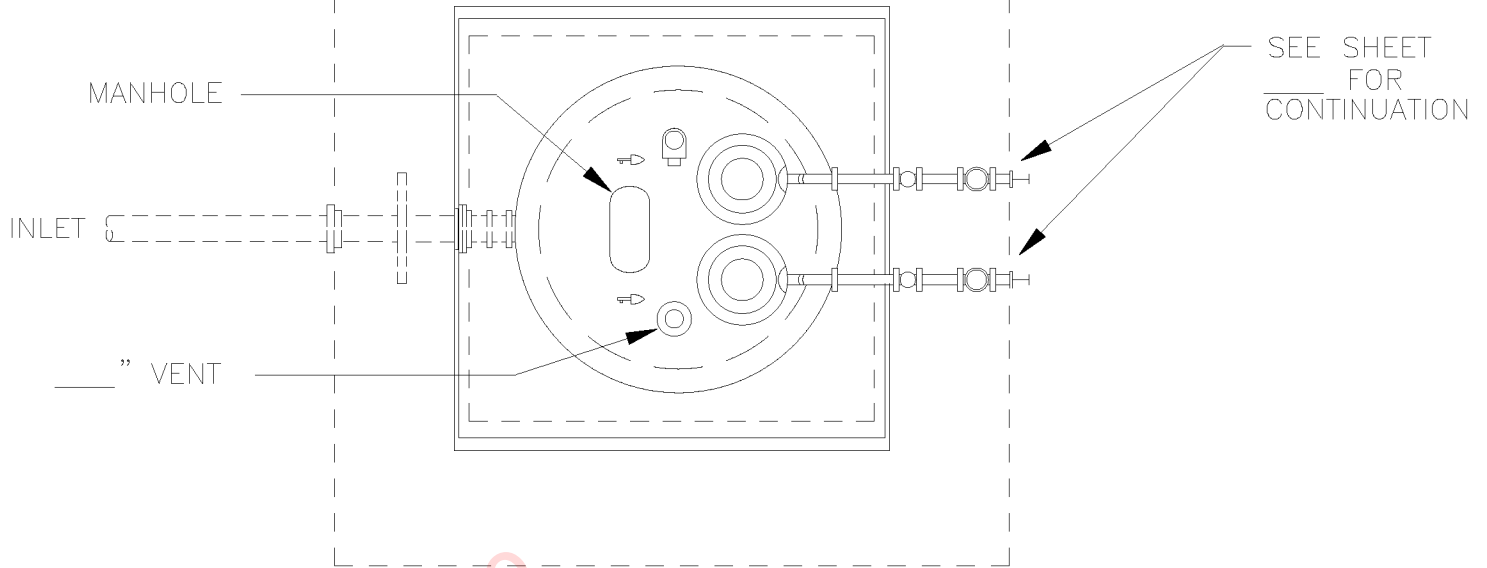


PLAN

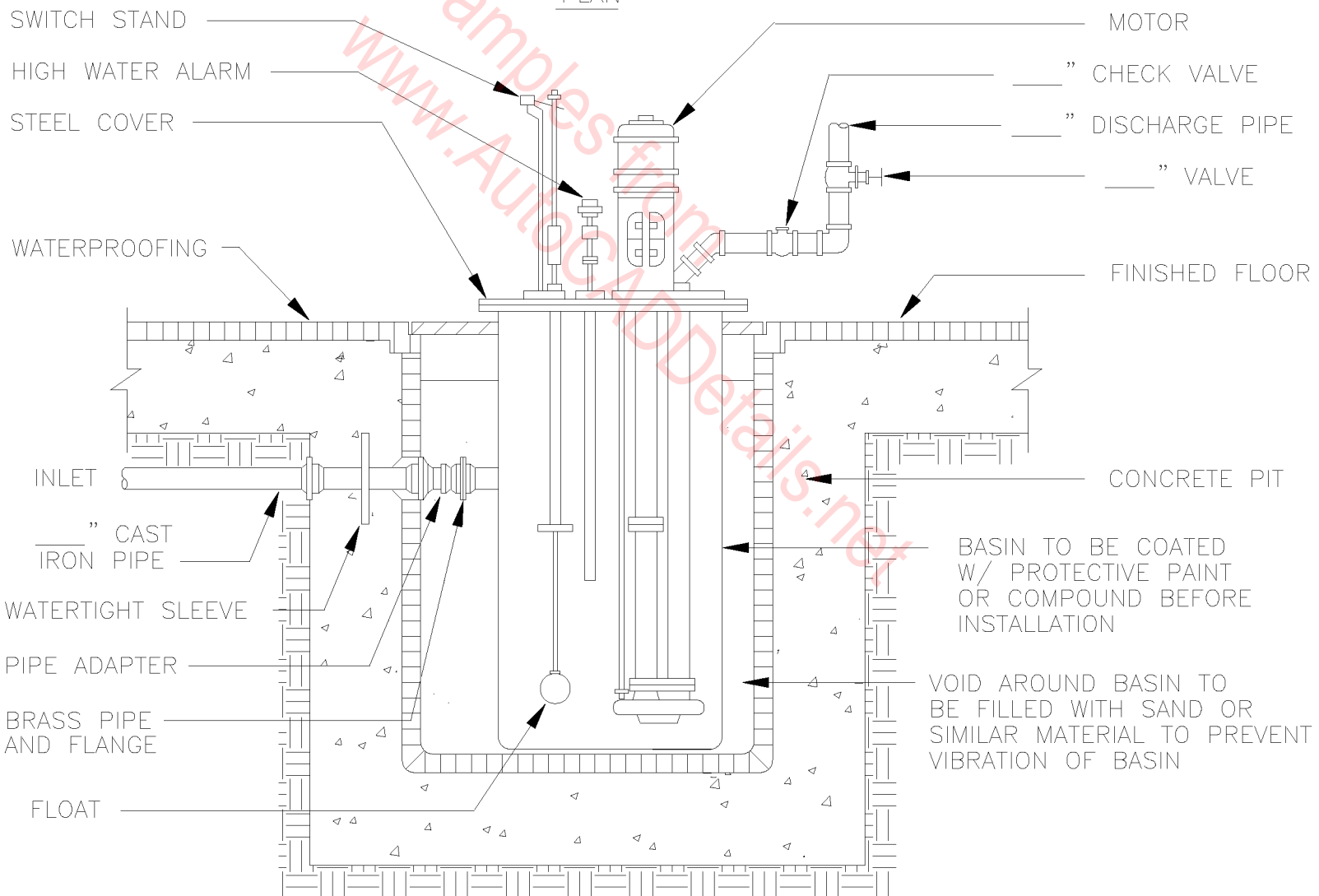


SUMP BASIN

N.T.S.



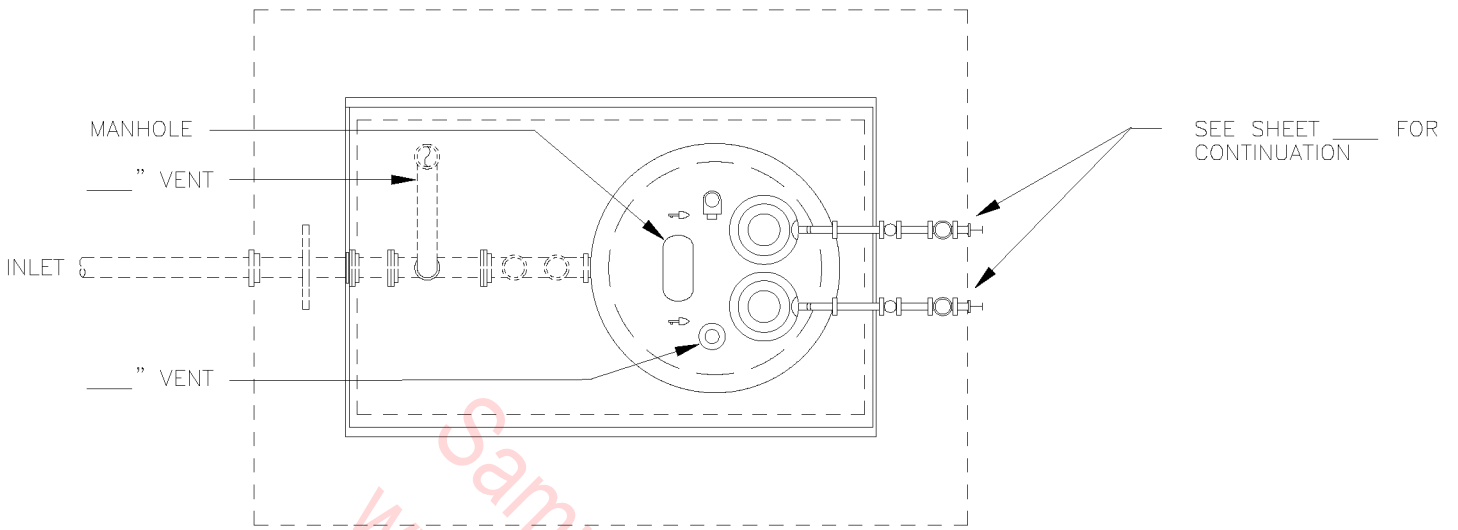
PLAN



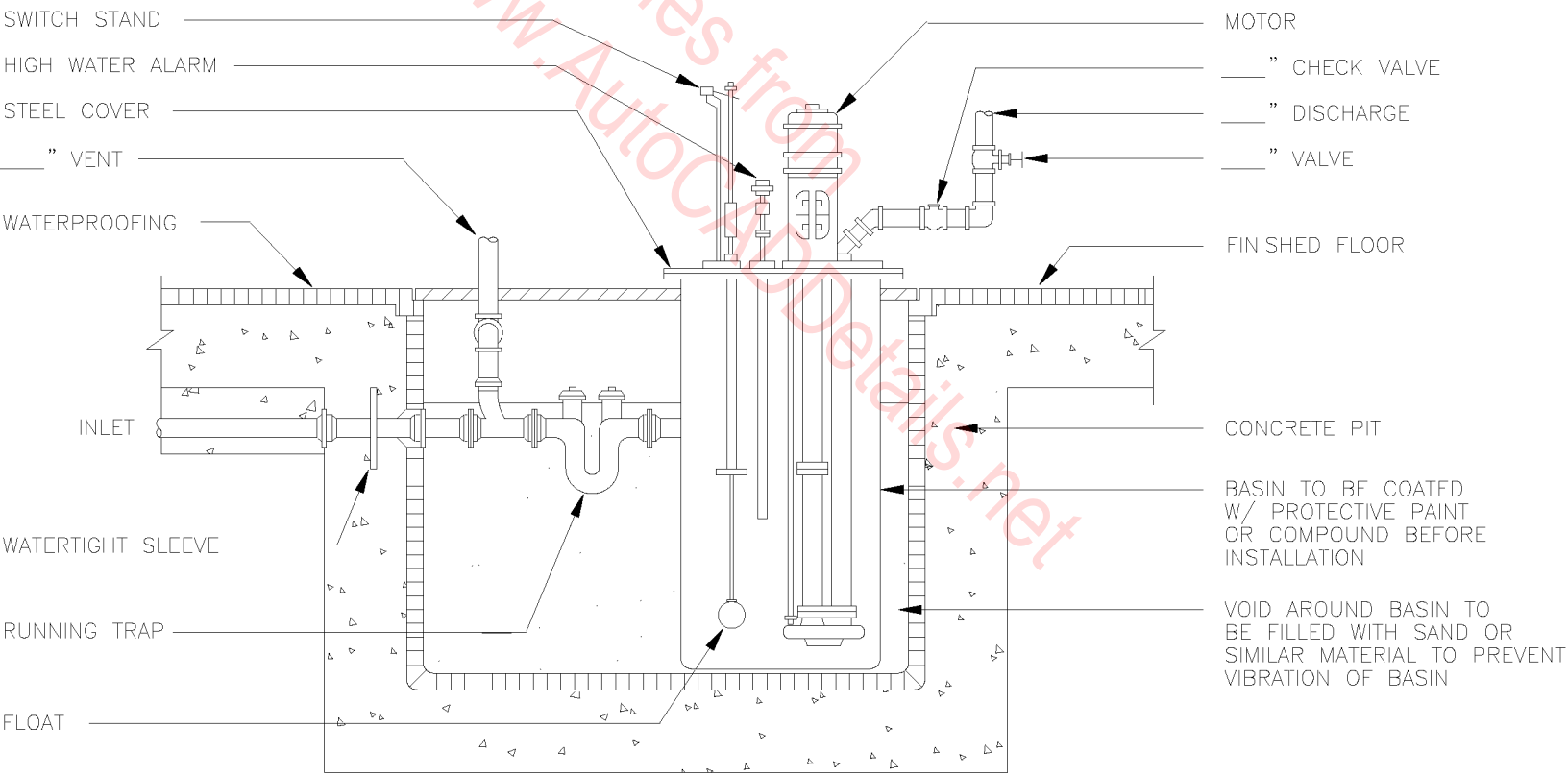
ELEVATION

SUMP BASIN INSTALLED IN CONCRETE PIT

N.T.S.



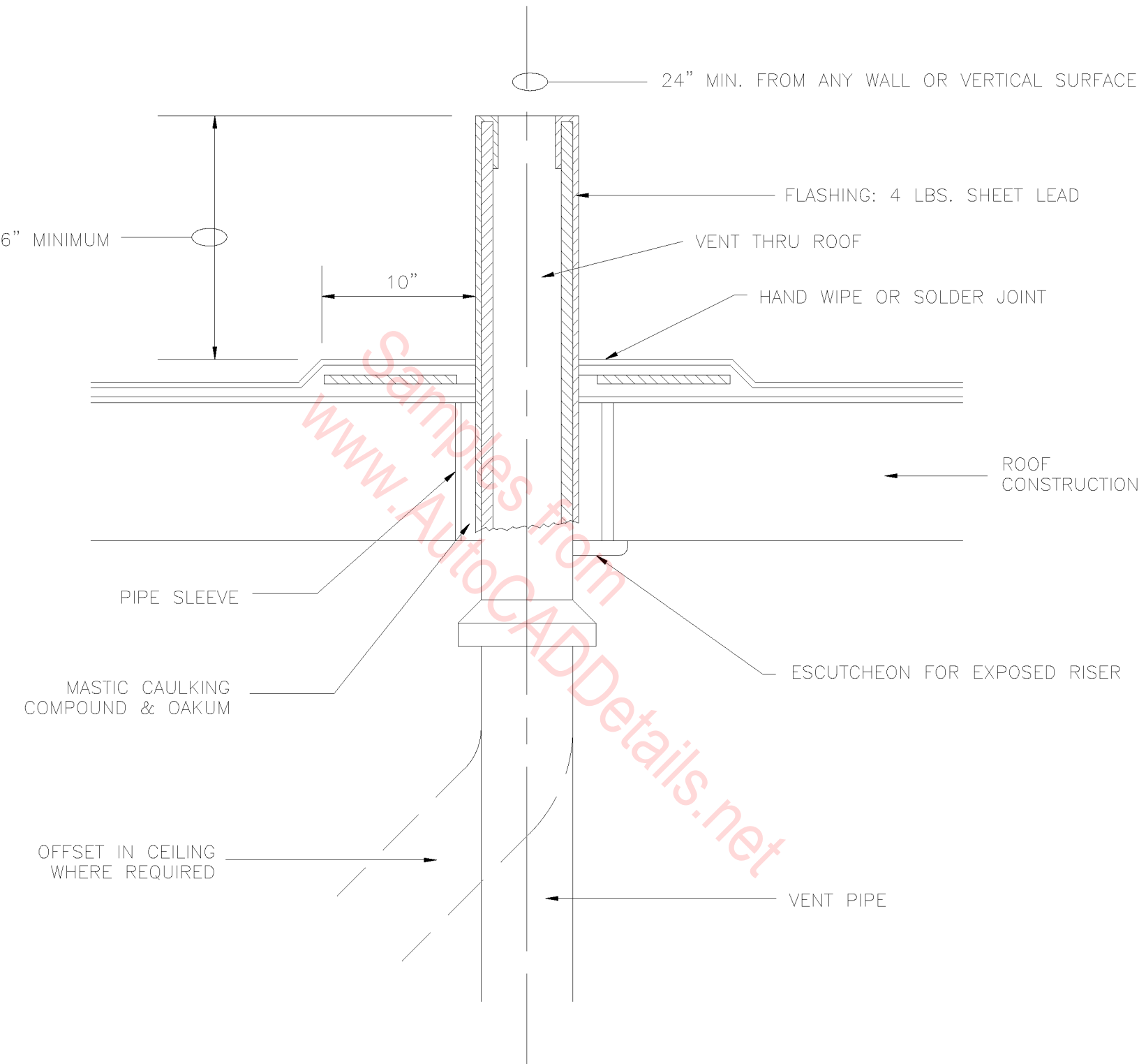
PLAN



ELEVATION

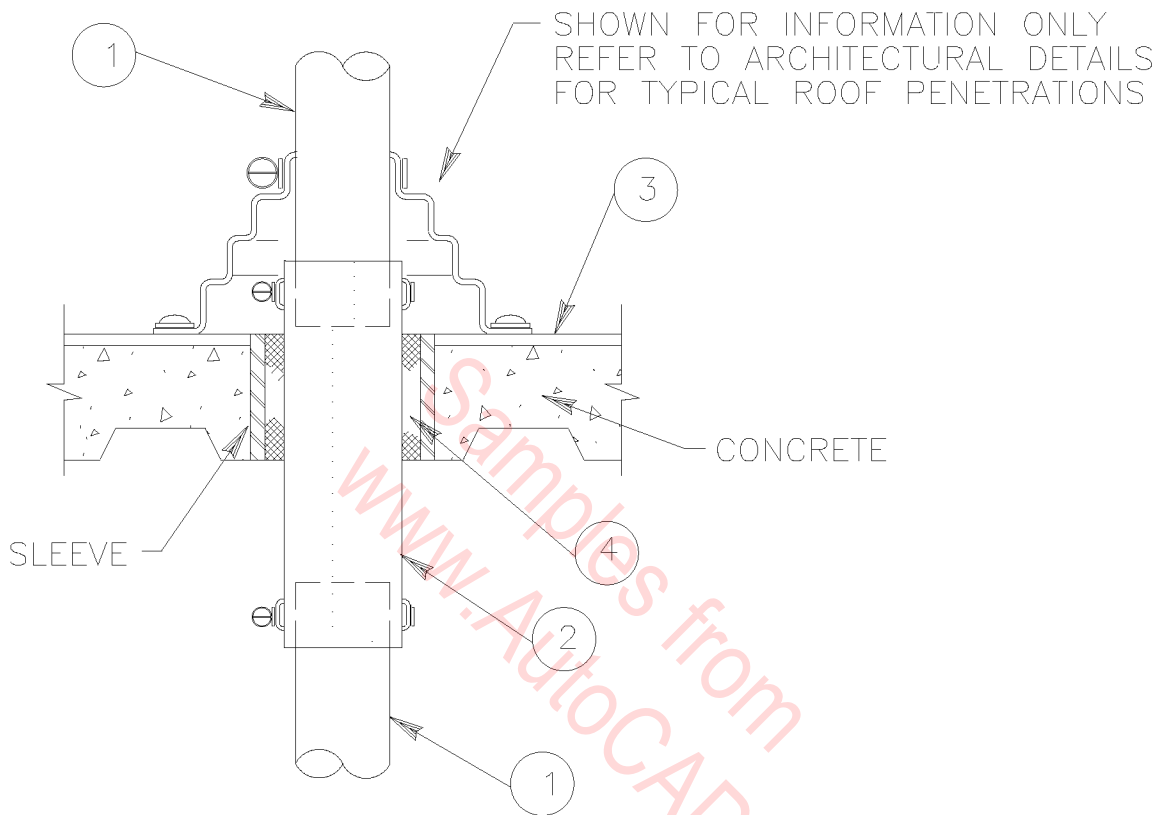
SEWAGE INJECTOR BASIN AND PIT

N.T.S.



VENT THRU ROOF DETAIL

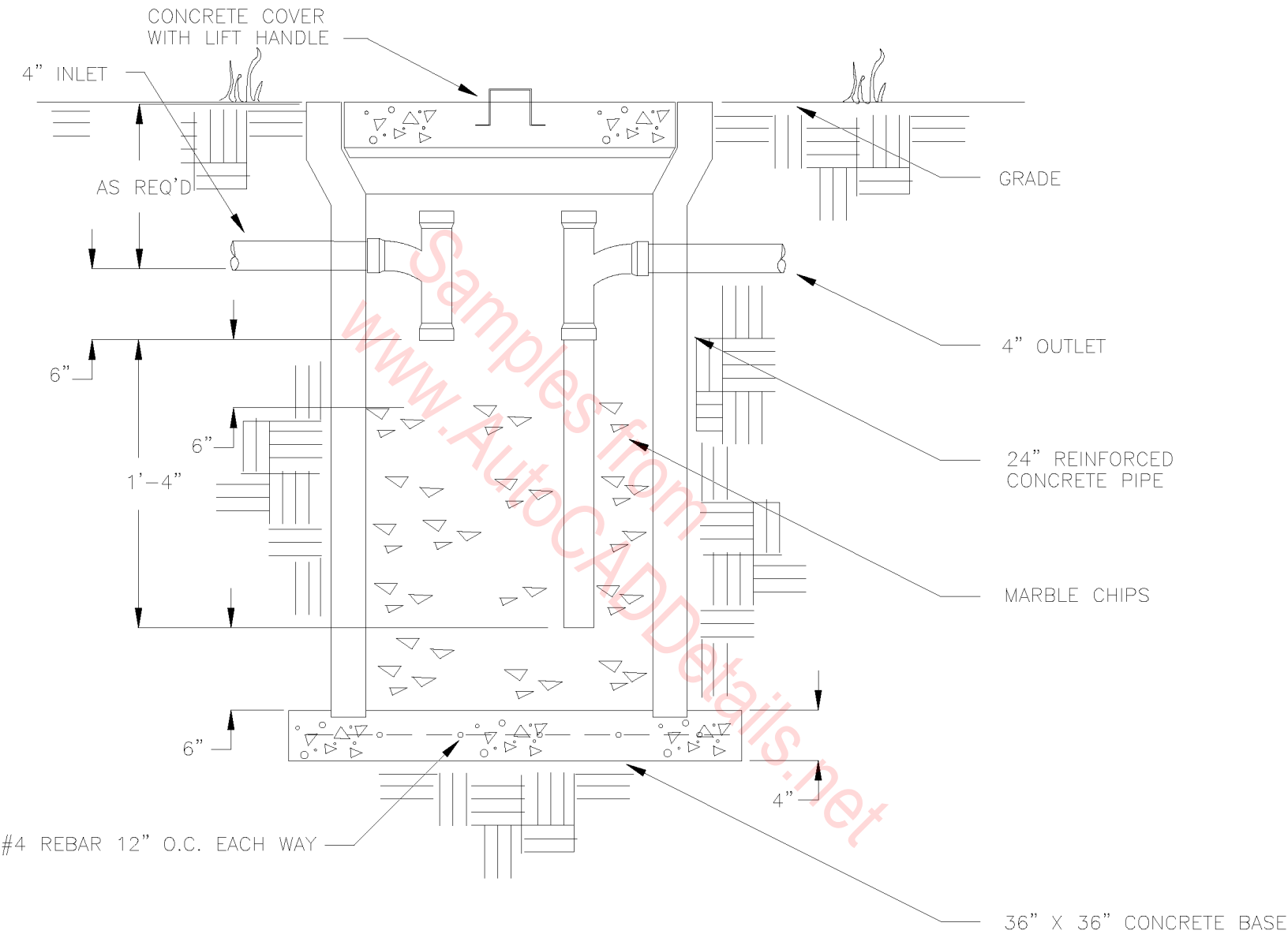
N.T.S.



- ① WASTE OR VENT LINE.
- ② FLEXIBLE POLYMER PIPE COUPLER CLAMPED TO ① USING STAINLESS STEEL "IDEAL" CLAMPS.
- ③ COMMUNICATION CENTER ROOM FLOOR OR ROOF ABOVE COMMUNICATION CENTER.
- ④ SEAL GAS TIGHT W/ FLEXIBLE SEALANT AROUND ② AT ROOM BOUNDARY SURFACES.

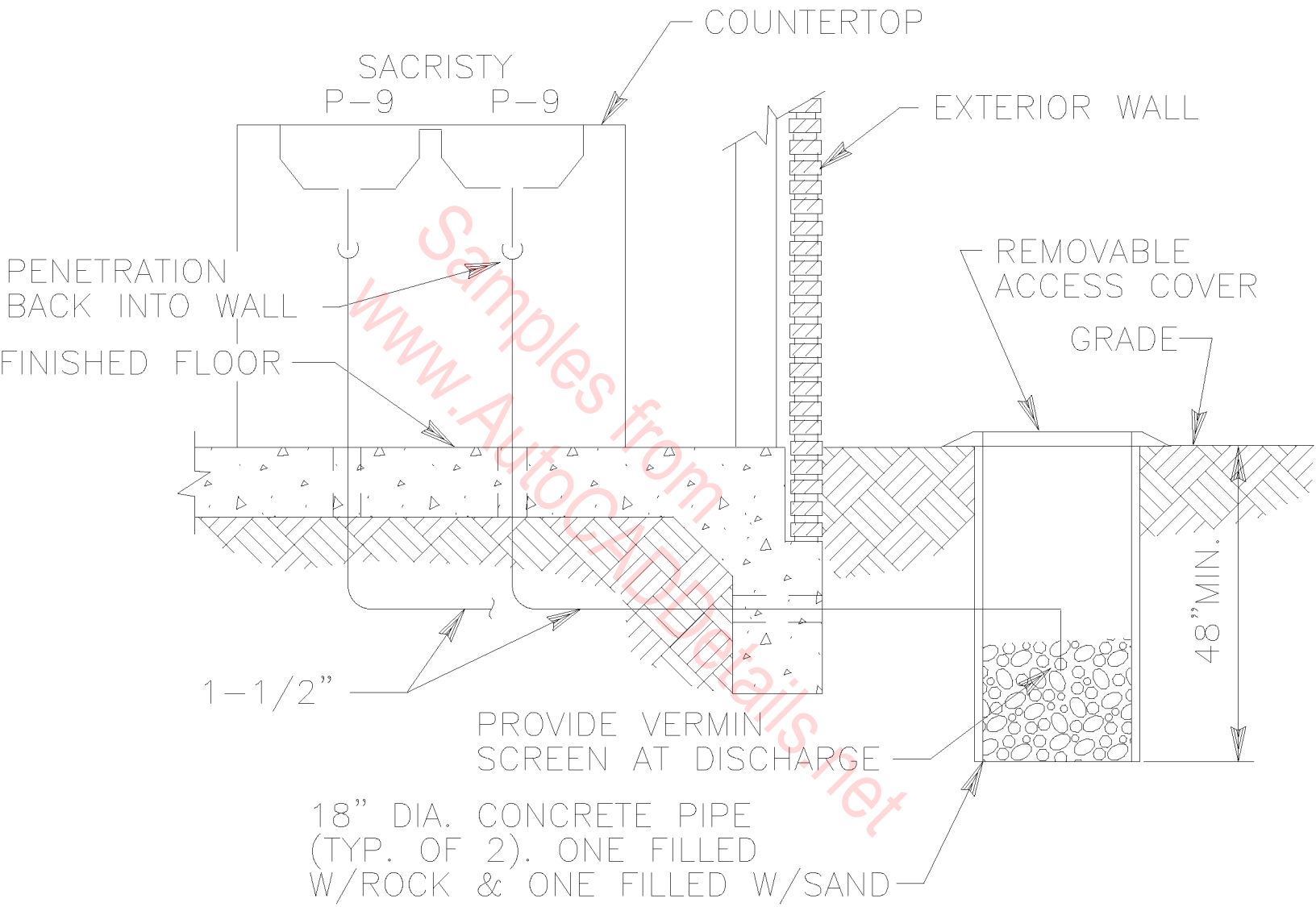
DETAIL FOR SANITARY WASTE OR VENT LINES PENETRATING COMMUNICATION CENTER

N.T.S.



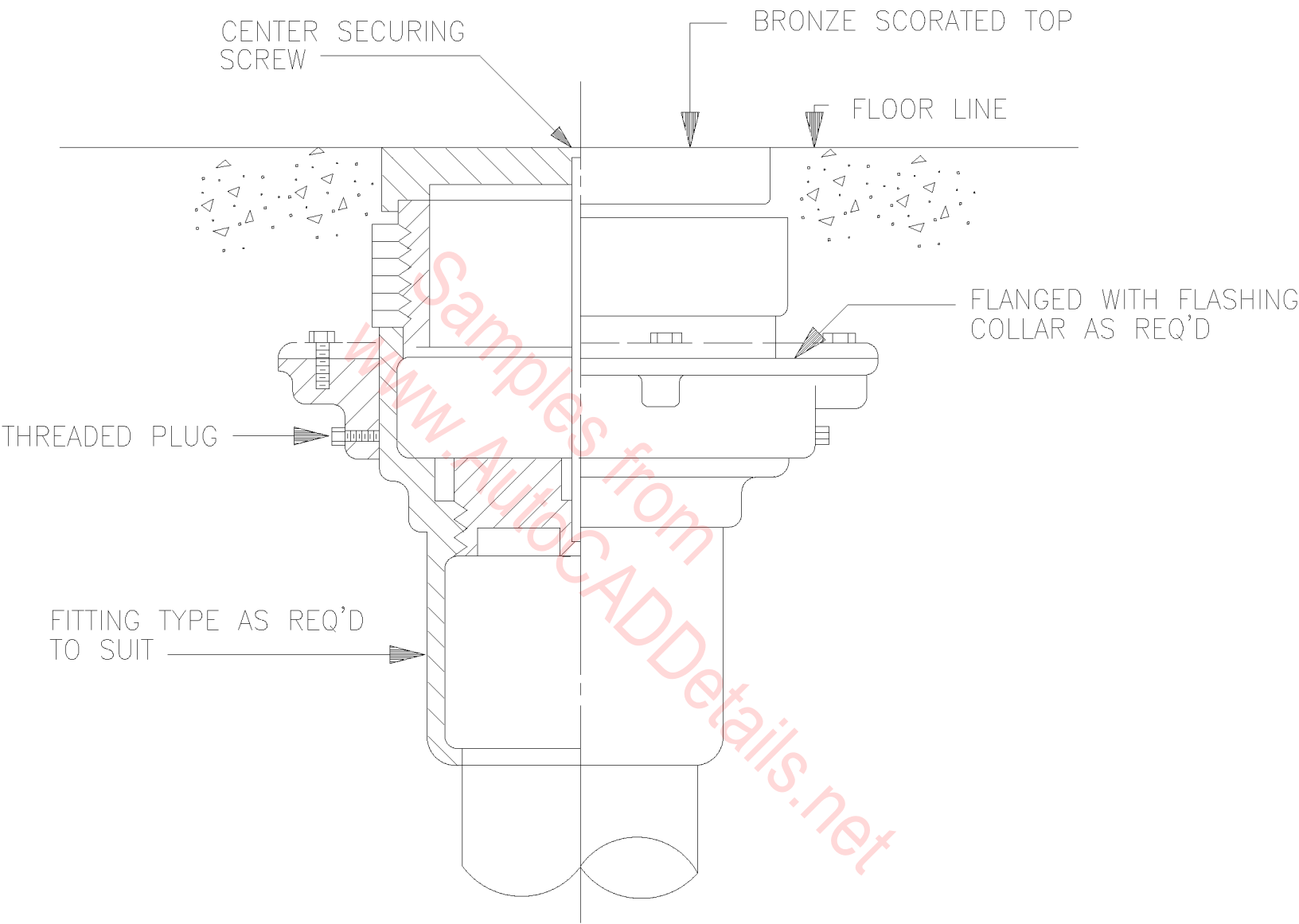
DILUTION/NEUTRALIZATION BASIN DETAIL

N.T.S.



DRY SUMP DETAIL

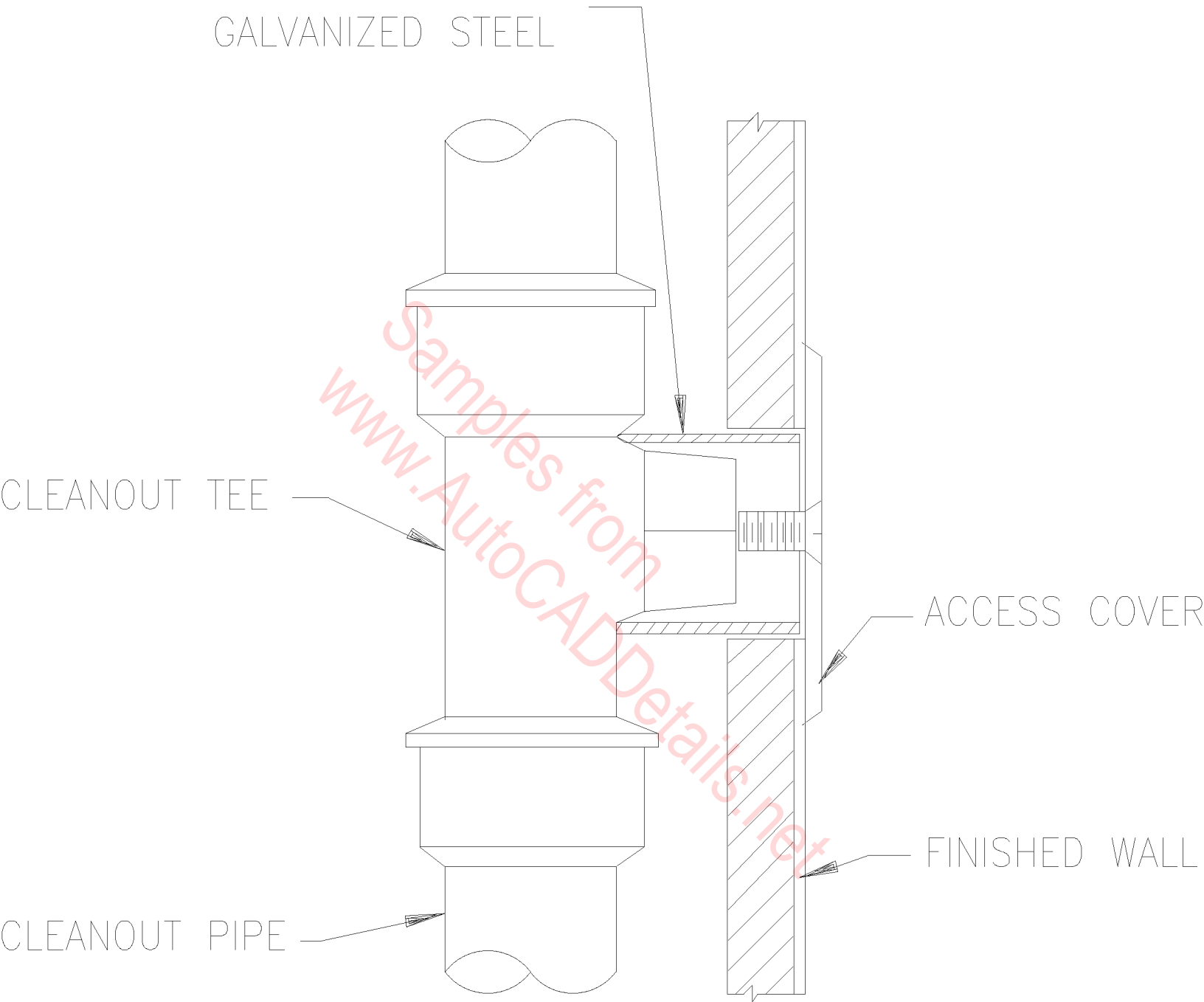
N.T.S.



FLOOR CLEANOUT

N.T.S.

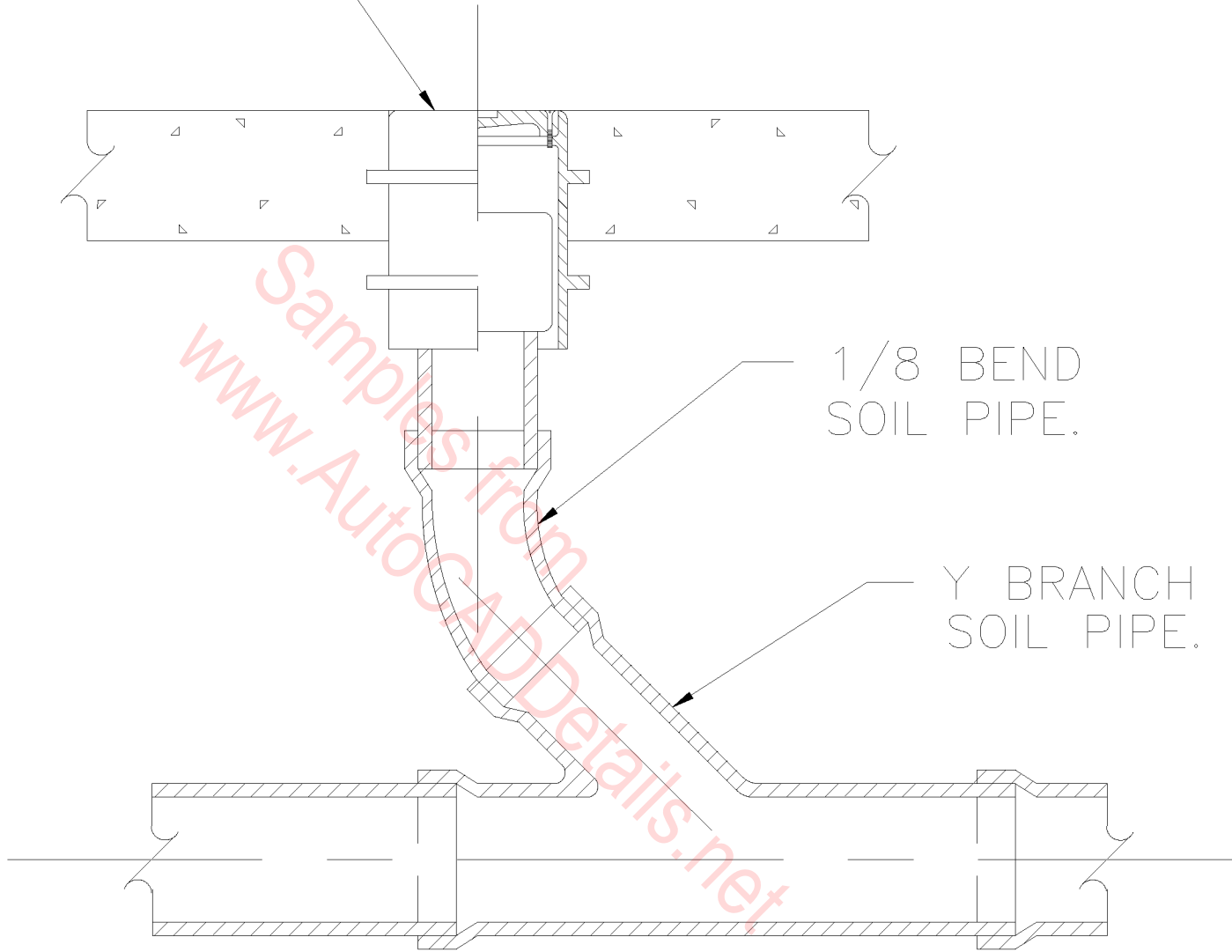
18 GAUGE ROUND
GALVANIZED STEEL



WALL CLEANOUT DETAIL

N.T.S.

ROUND FLANGED
CLEANOUT HOUSING

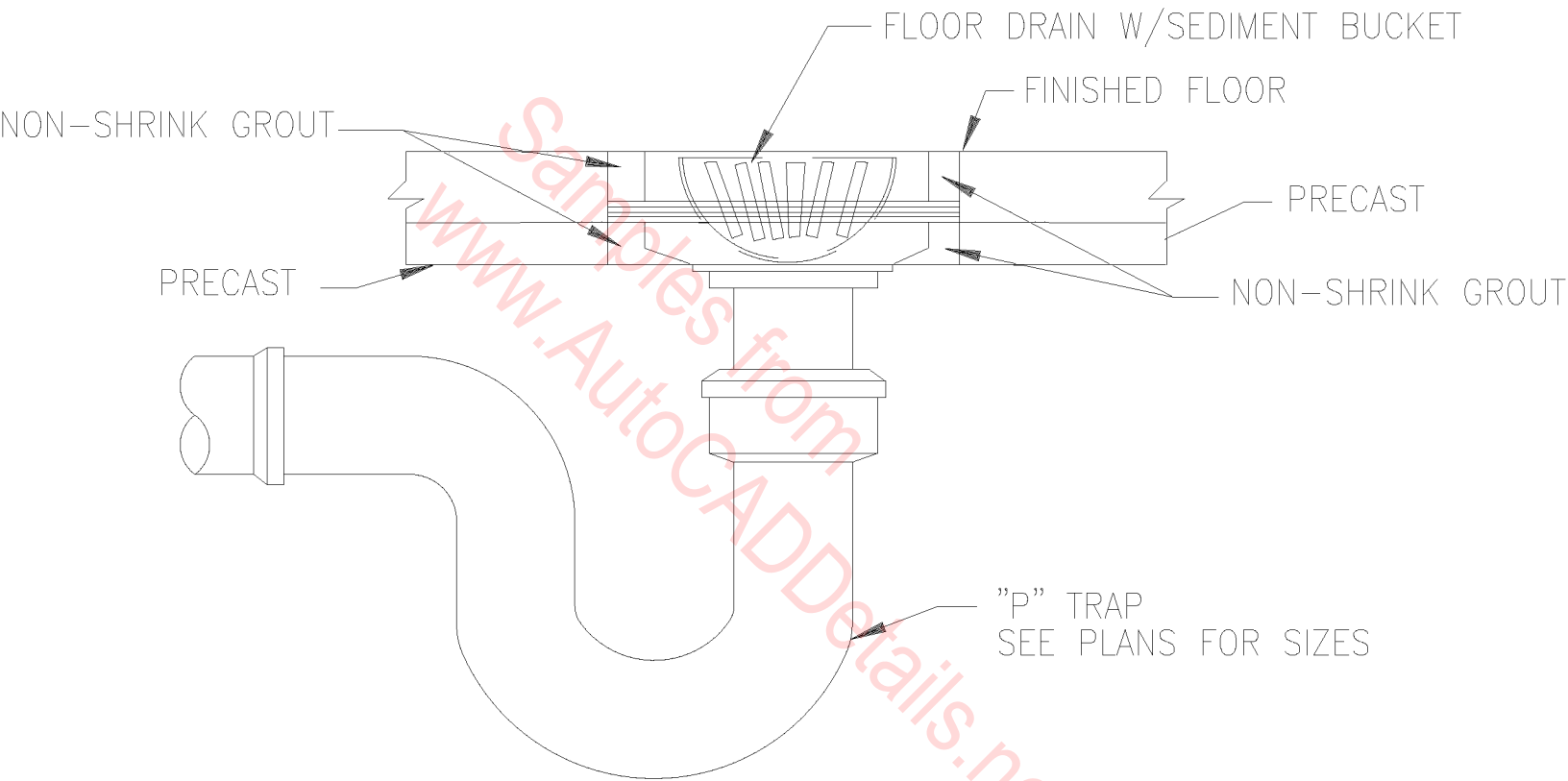


1/8 BEND
SOIL PIPE.

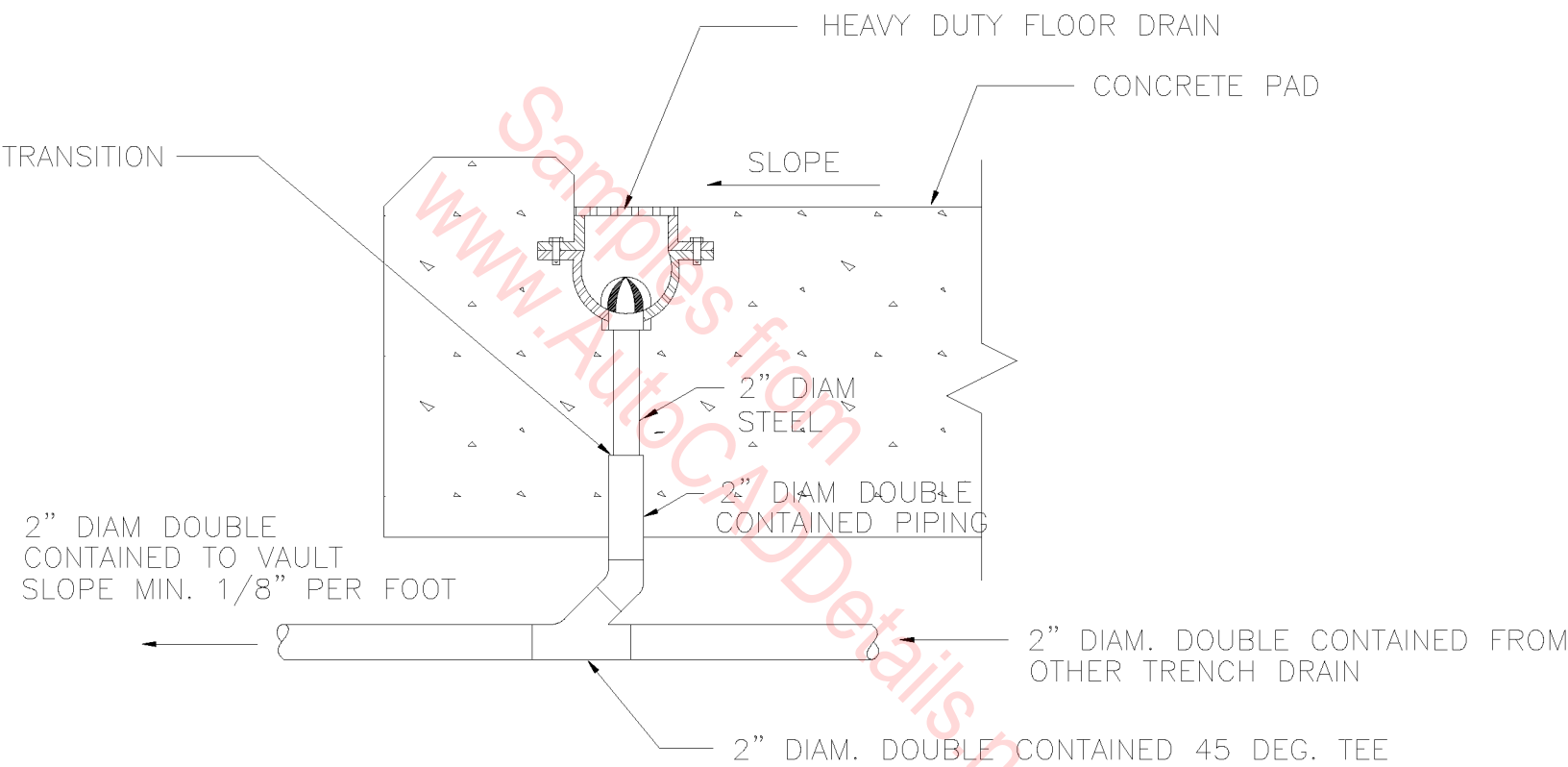
Y BRANCH
SOIL PIPE.

SANITARY CLEANOUT
FLOOR SLAB DETAIL

N.T.S.

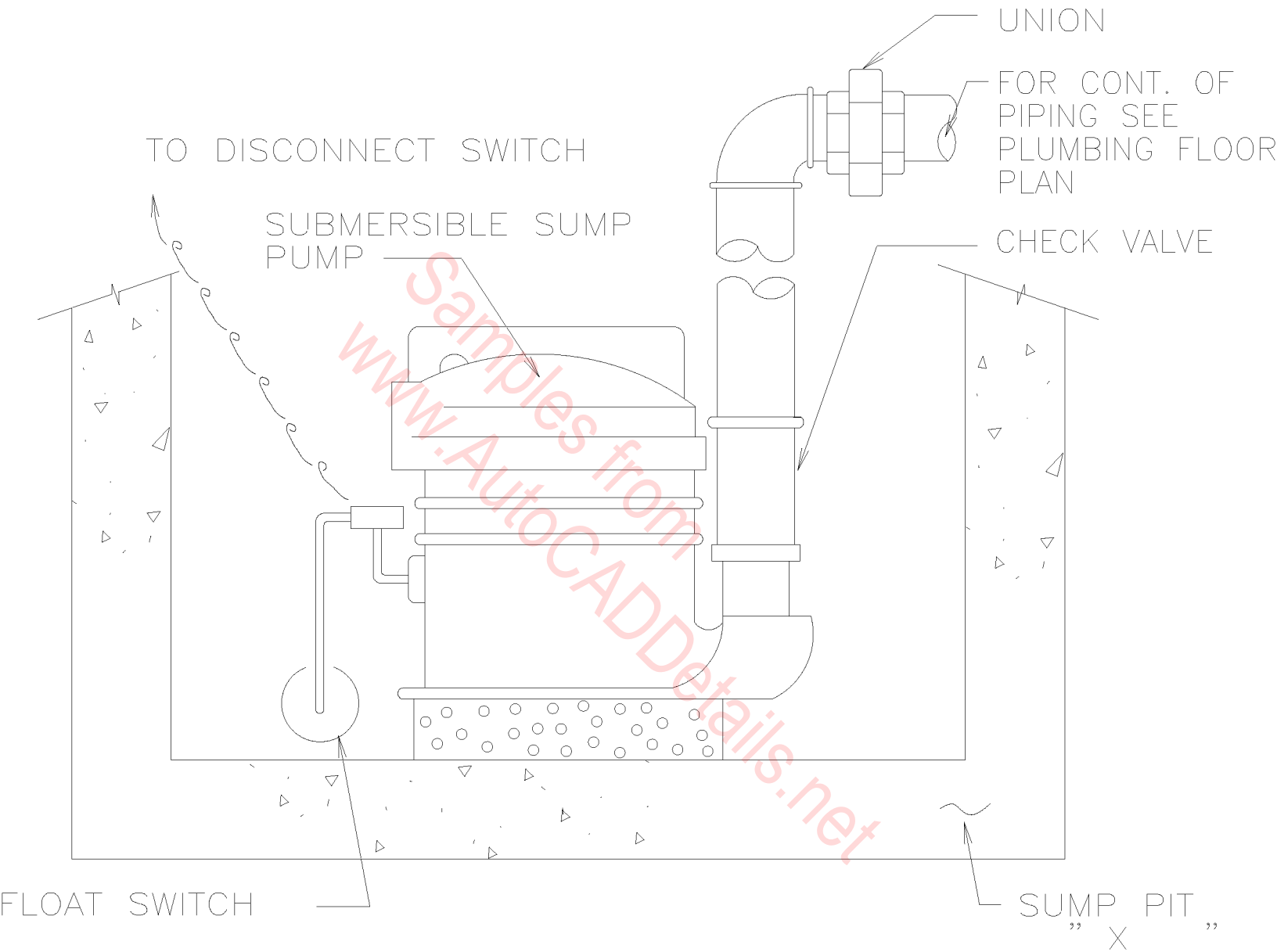


FLOOR DRAIN DETAIL
N.T.S.



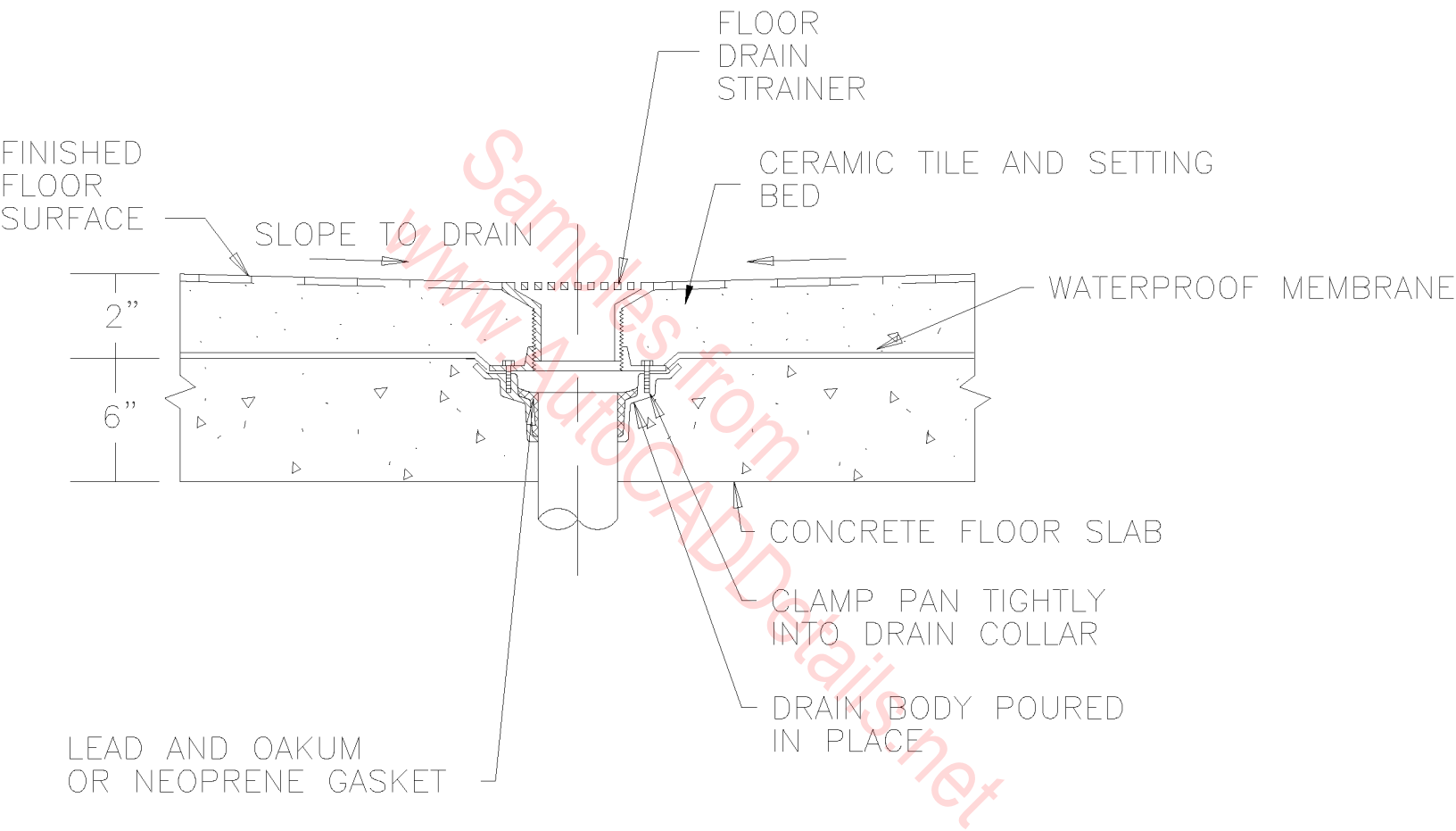
TYPICAL DOUBLE WALL DRAIN SECTION

N.T.S.



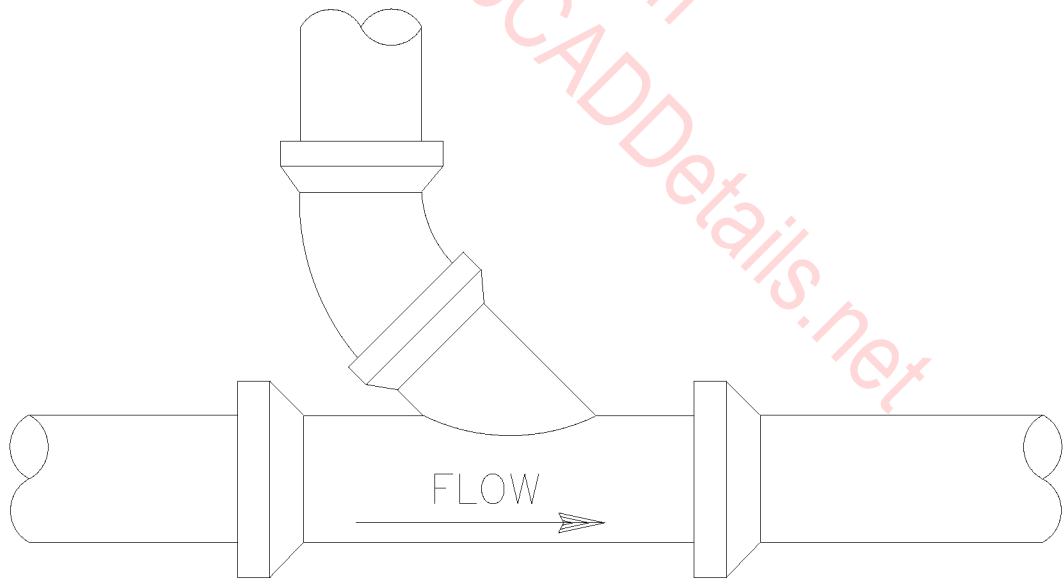
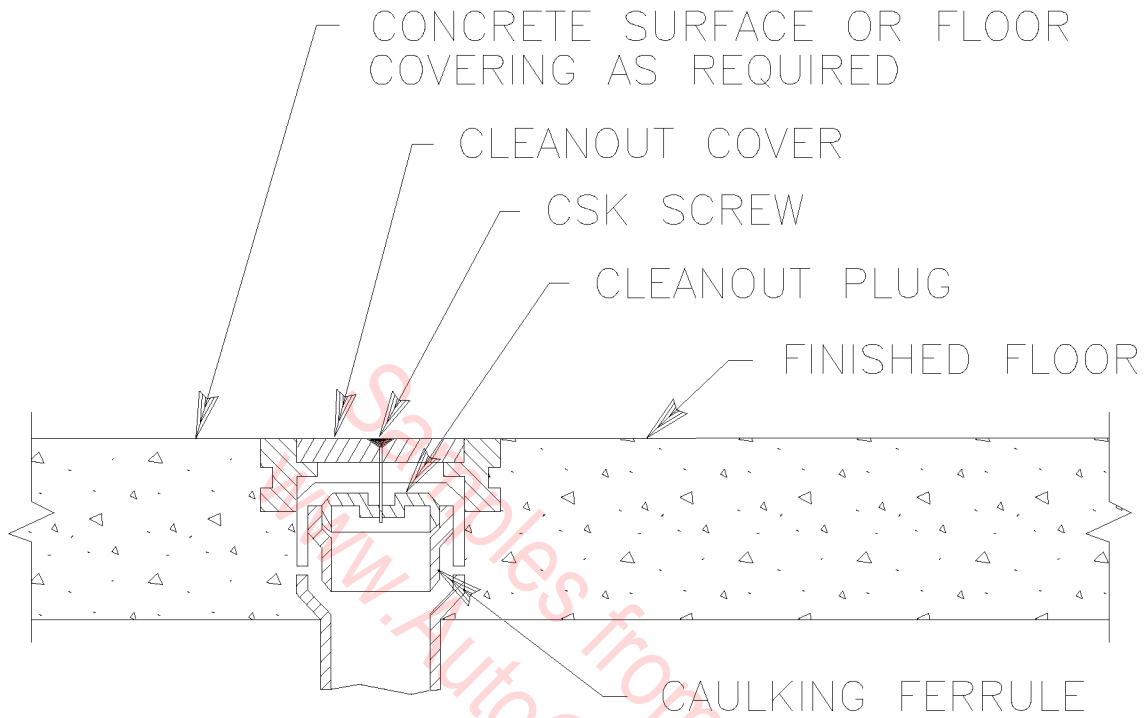
SUMP PUMP DETAIL

N.T.S.



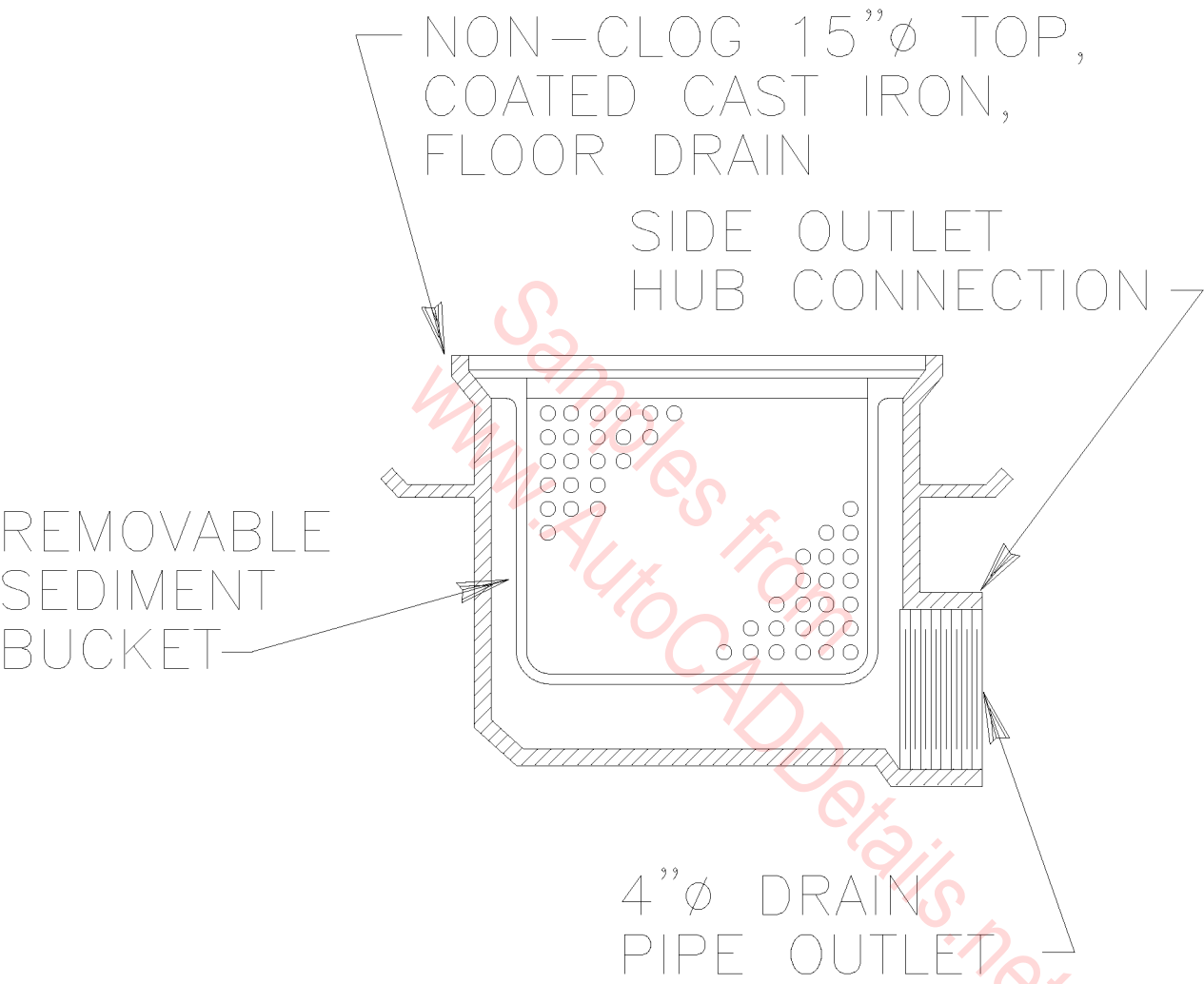
FLOOR DRAIN IN OPEN AREA

N.T.S.



FLOOR CLEANOUT—FINISHED ROOMS

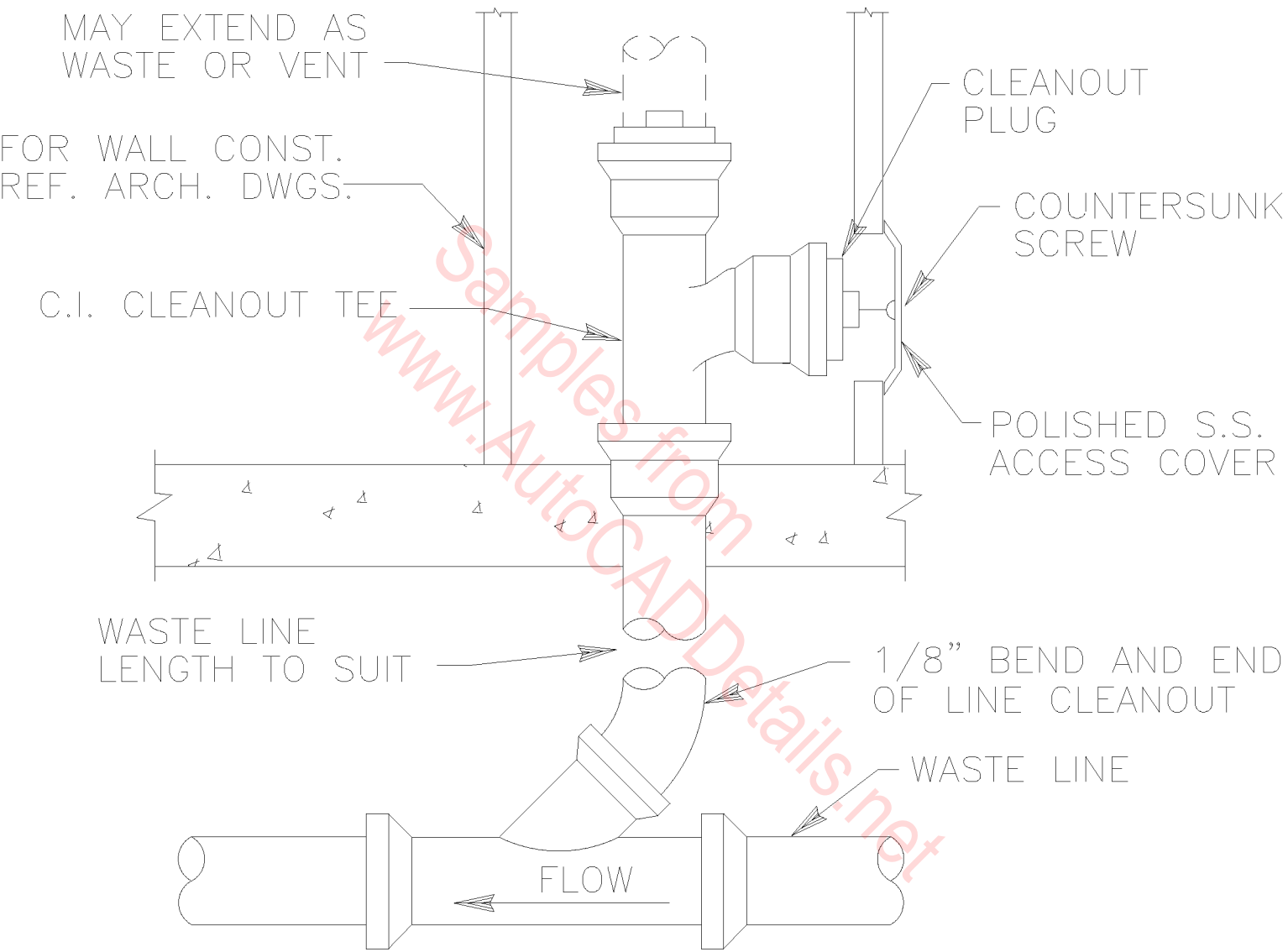
N.T.S.



NON-CLOG FLOOR DRAIN

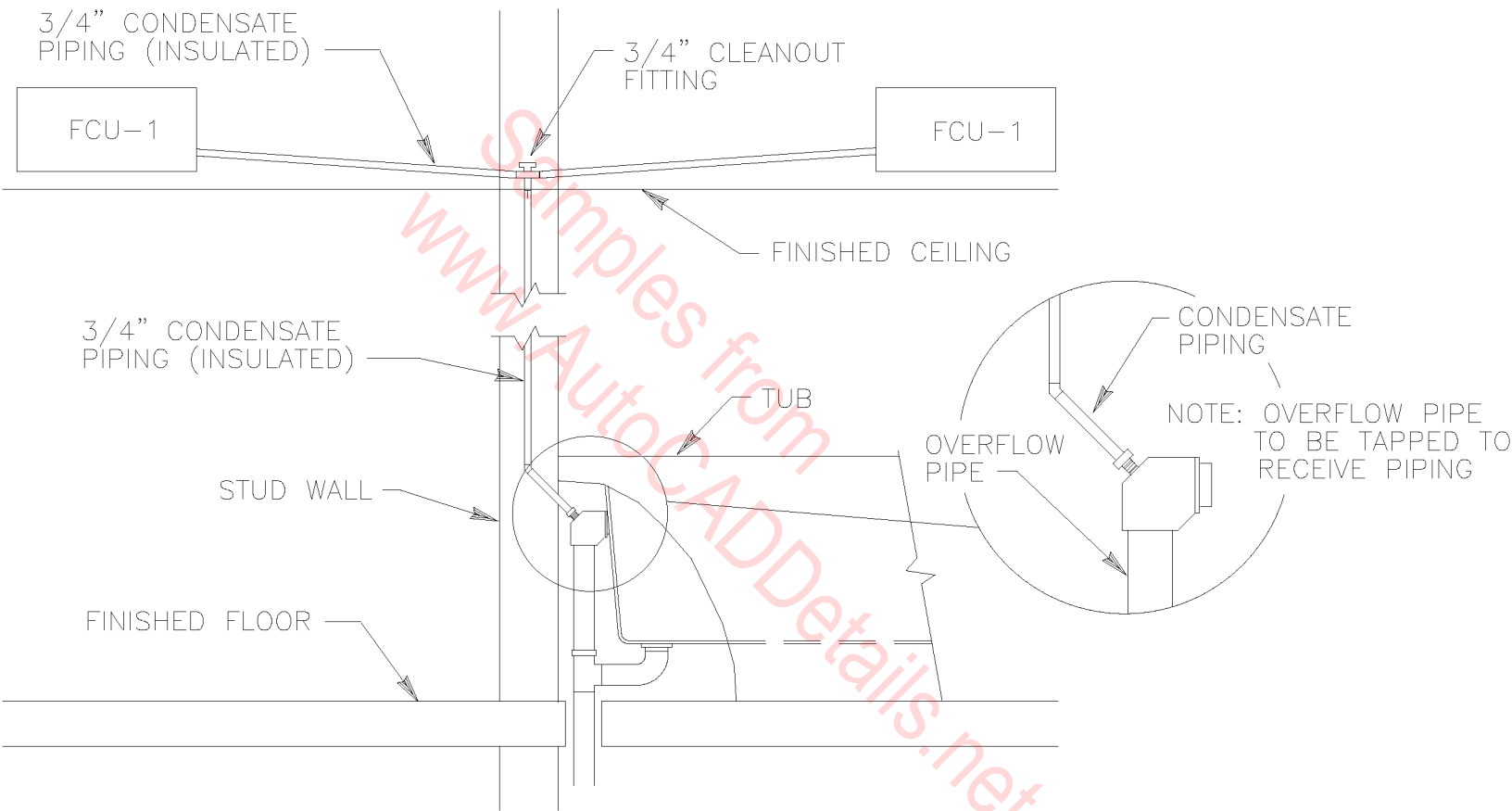
W/ SEDIMENT BUCKET

N.T.S.



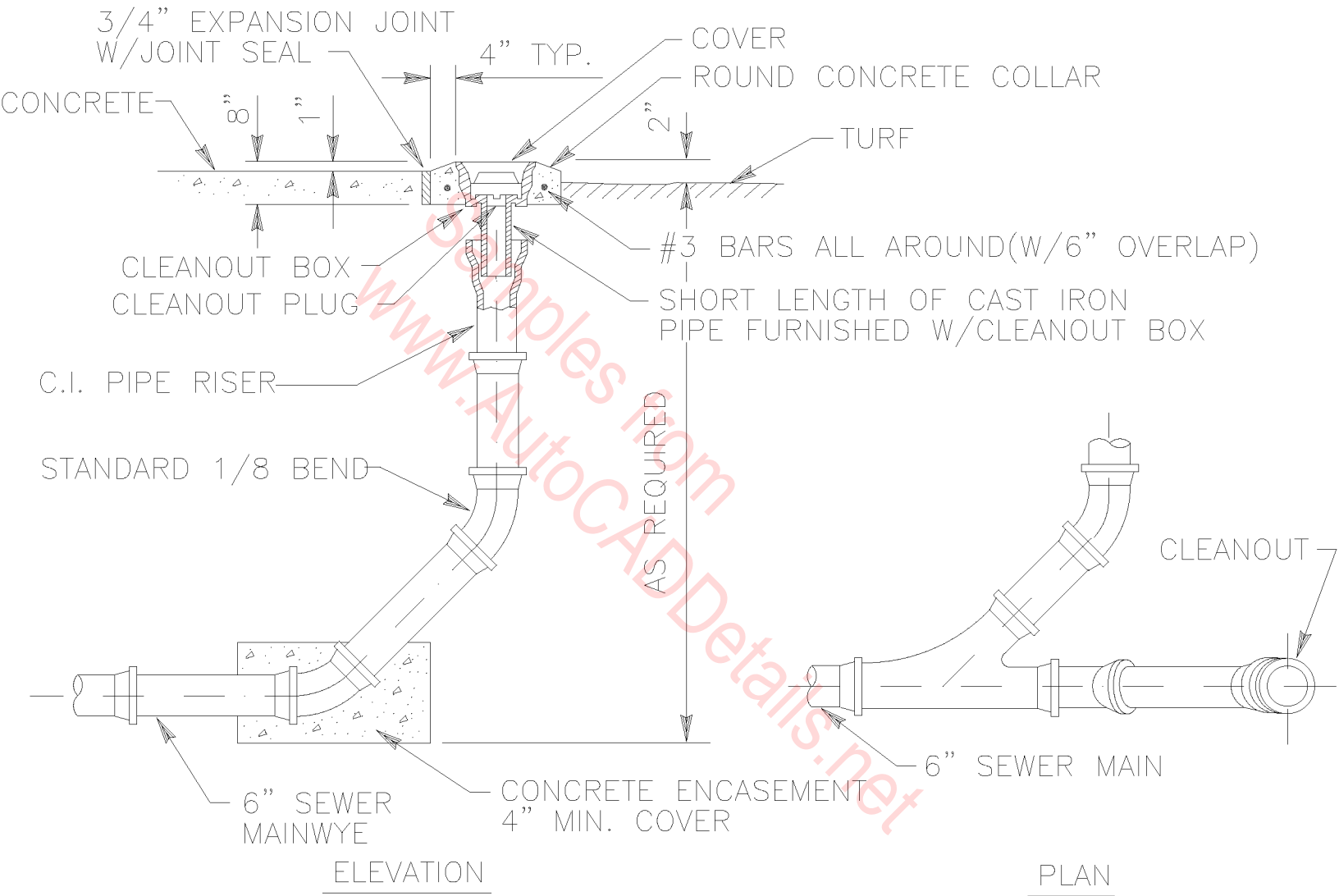
WALL CLEANOUT—FINISHED ROOMS

N.T.S.



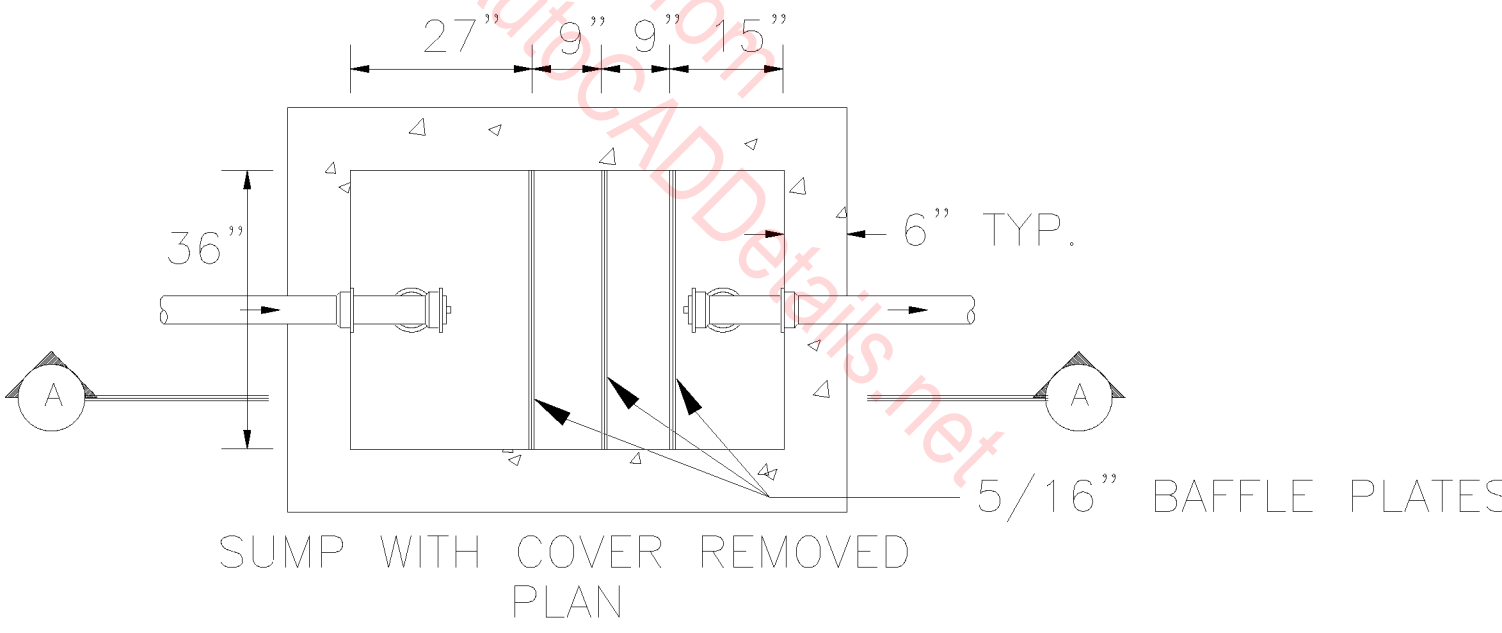
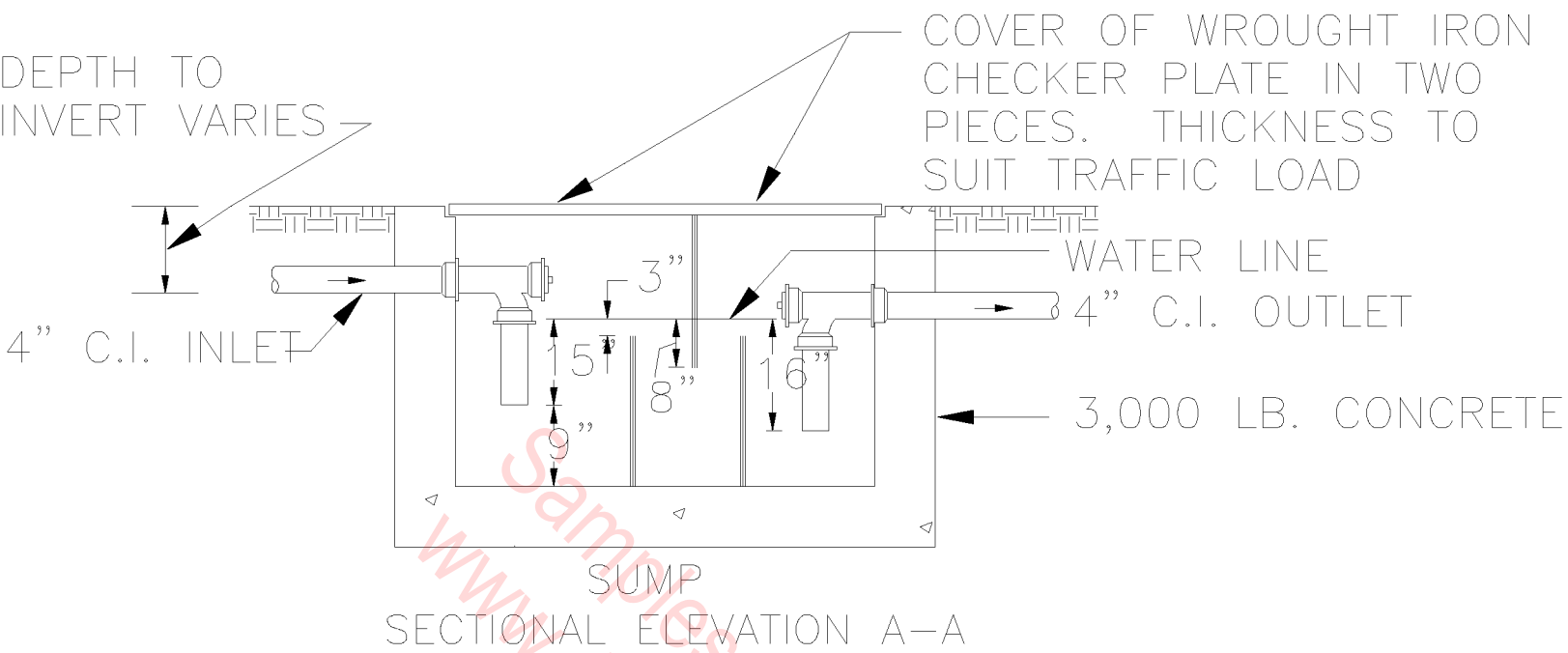
TYPICAL TUB AND CONDENSATE DRAIN DETAIL

N.T.S.



TYPICAL EXTERIOR CLEANOUT DETAIL

N.T.S.



TYPICAL CUSTOM-MADE
GREASE INTERCEPTOR

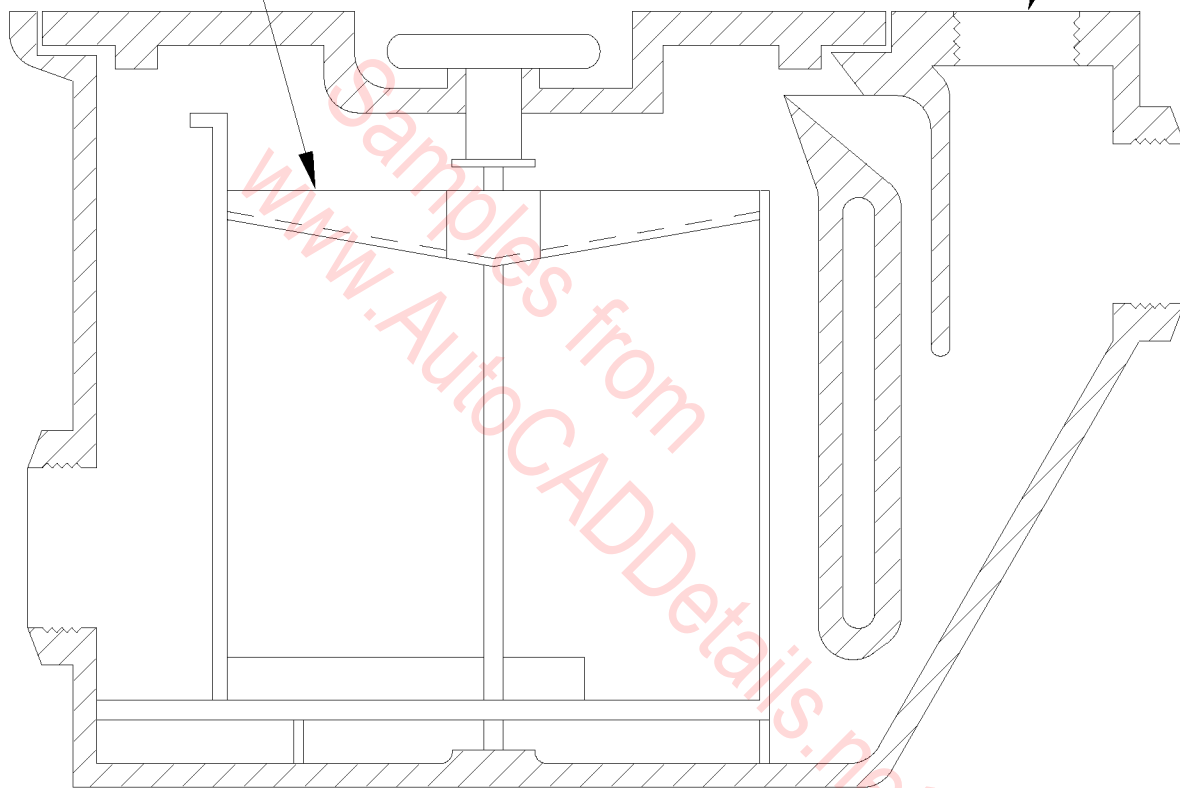
N.T.S.

SKIMMING TRAY
WITH SIDE NOZZLE
OUTSIDE UNIT

CLEANOUT

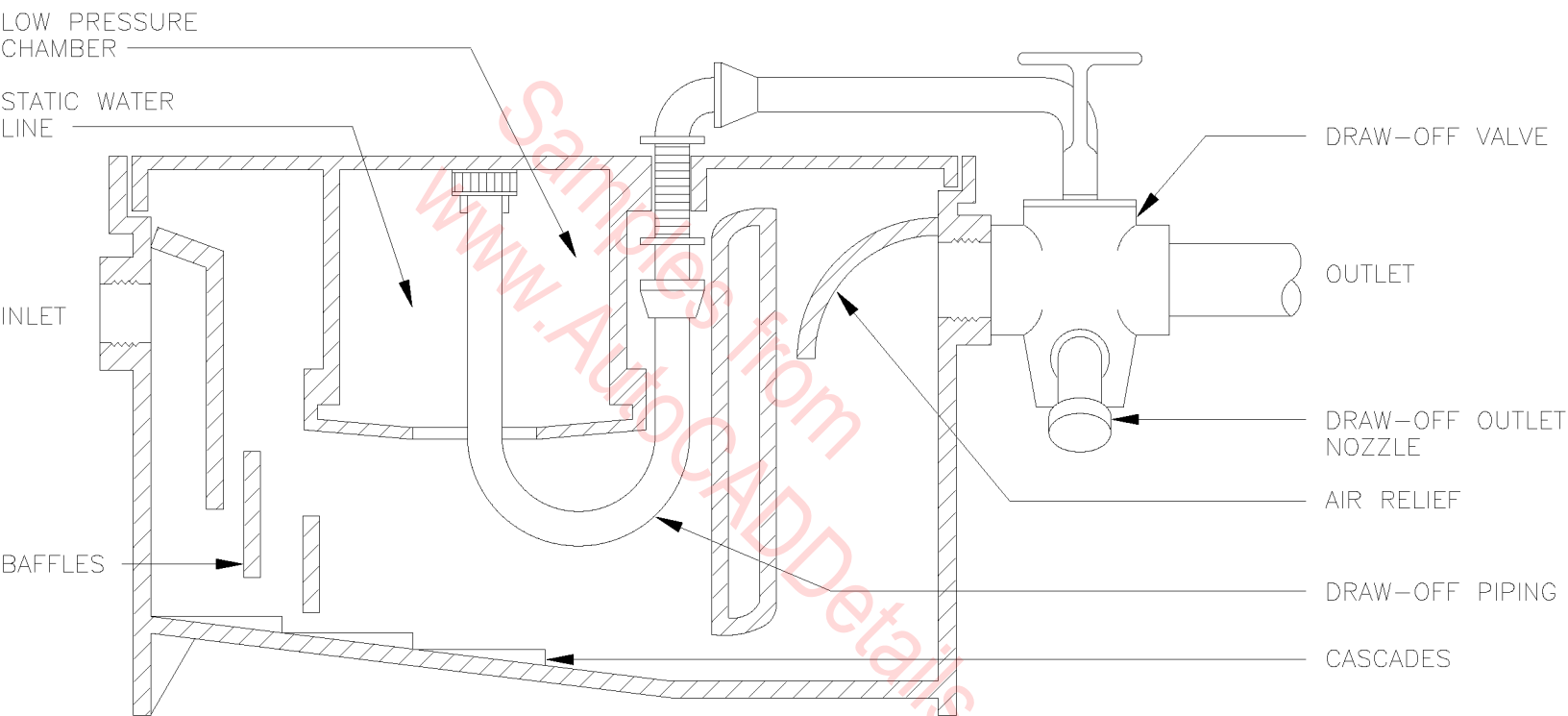
HIGH OUTLET

LOW INLET

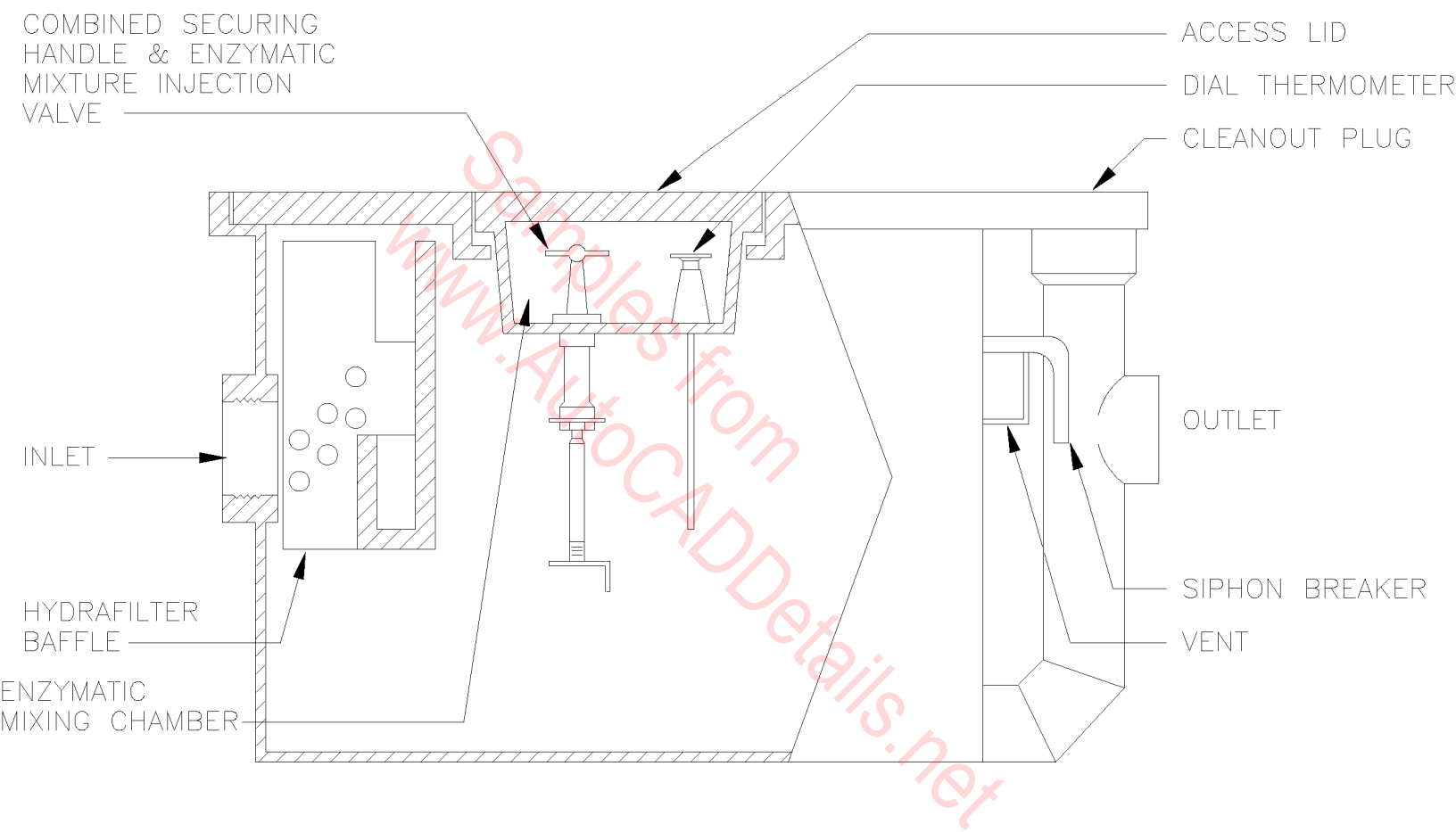


TYPICAL SEMI-AUTOMATIC
GREASE INTERCEPTOR

N.T.S.

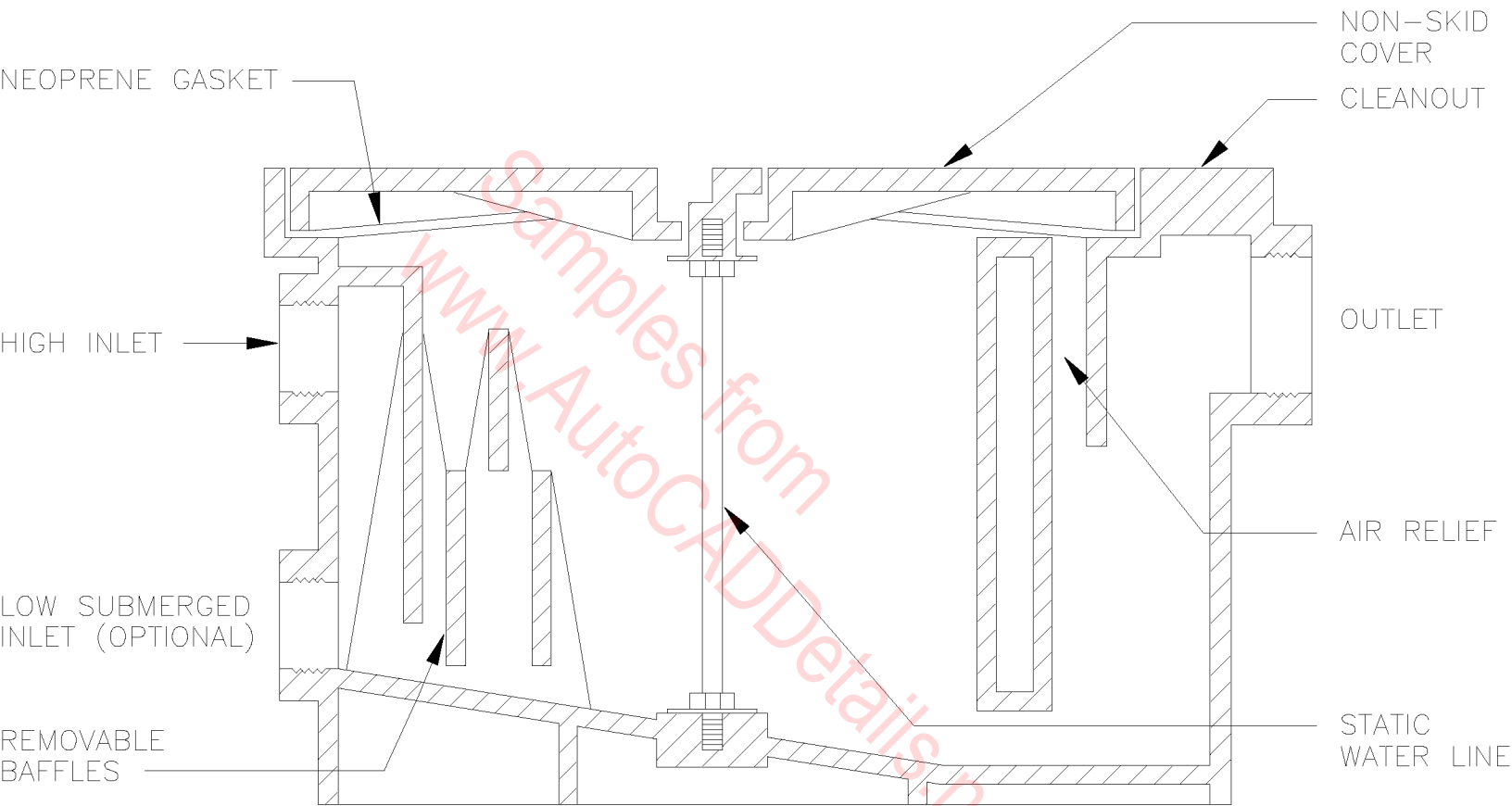


TYPICAL SEMI-AUTOMATIC
GREASE INTERCEPTOR
 N.T.S.



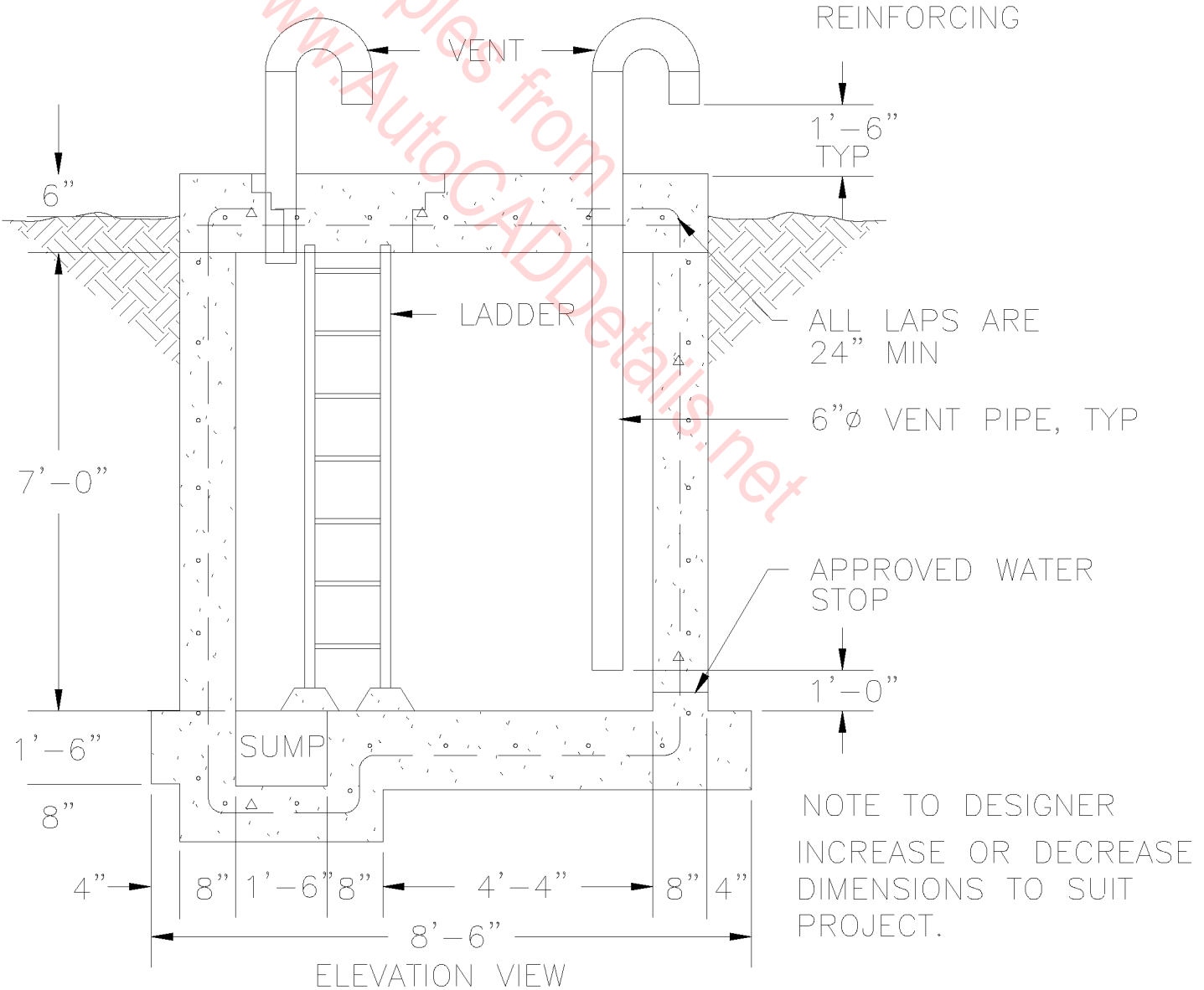
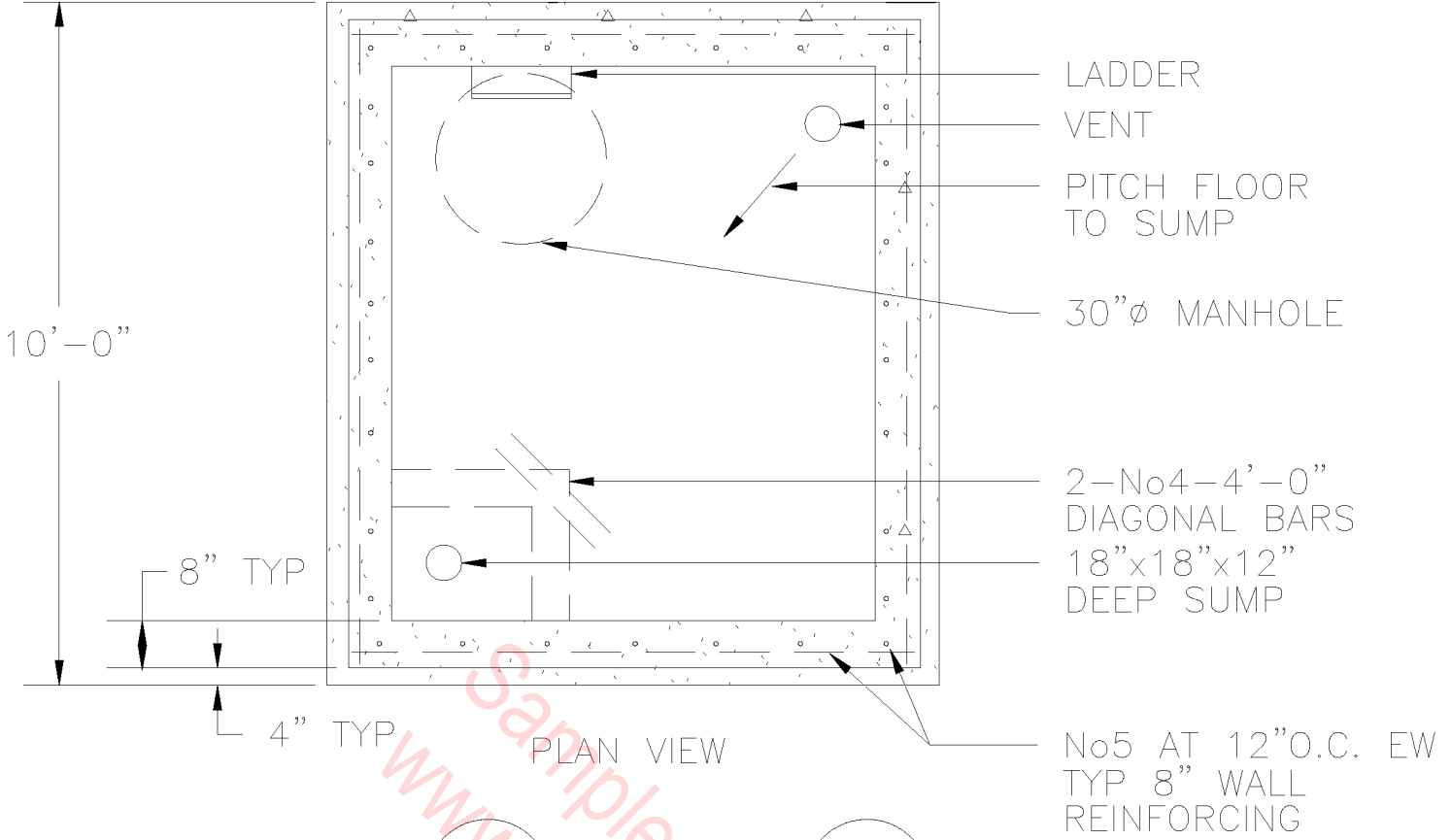
TYPICAL ENZYMATIC GREASE INTERCEPTOR

N.T.S.

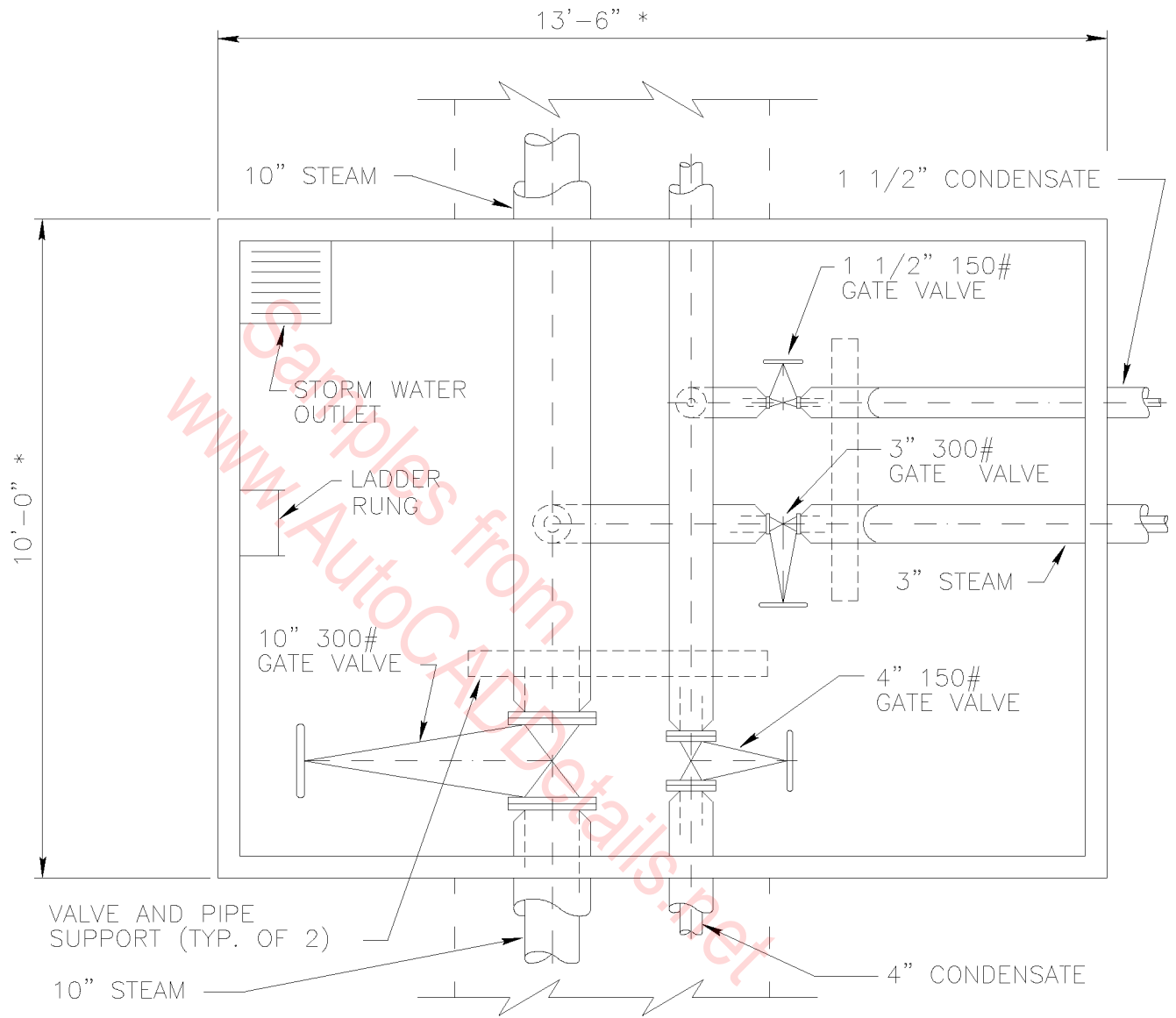


TYPICAL MANUALLY-OPERATED
GREASE INTERCEPTOR

N.T.S.



STEAM MANHOLE DETAIL



PLAN

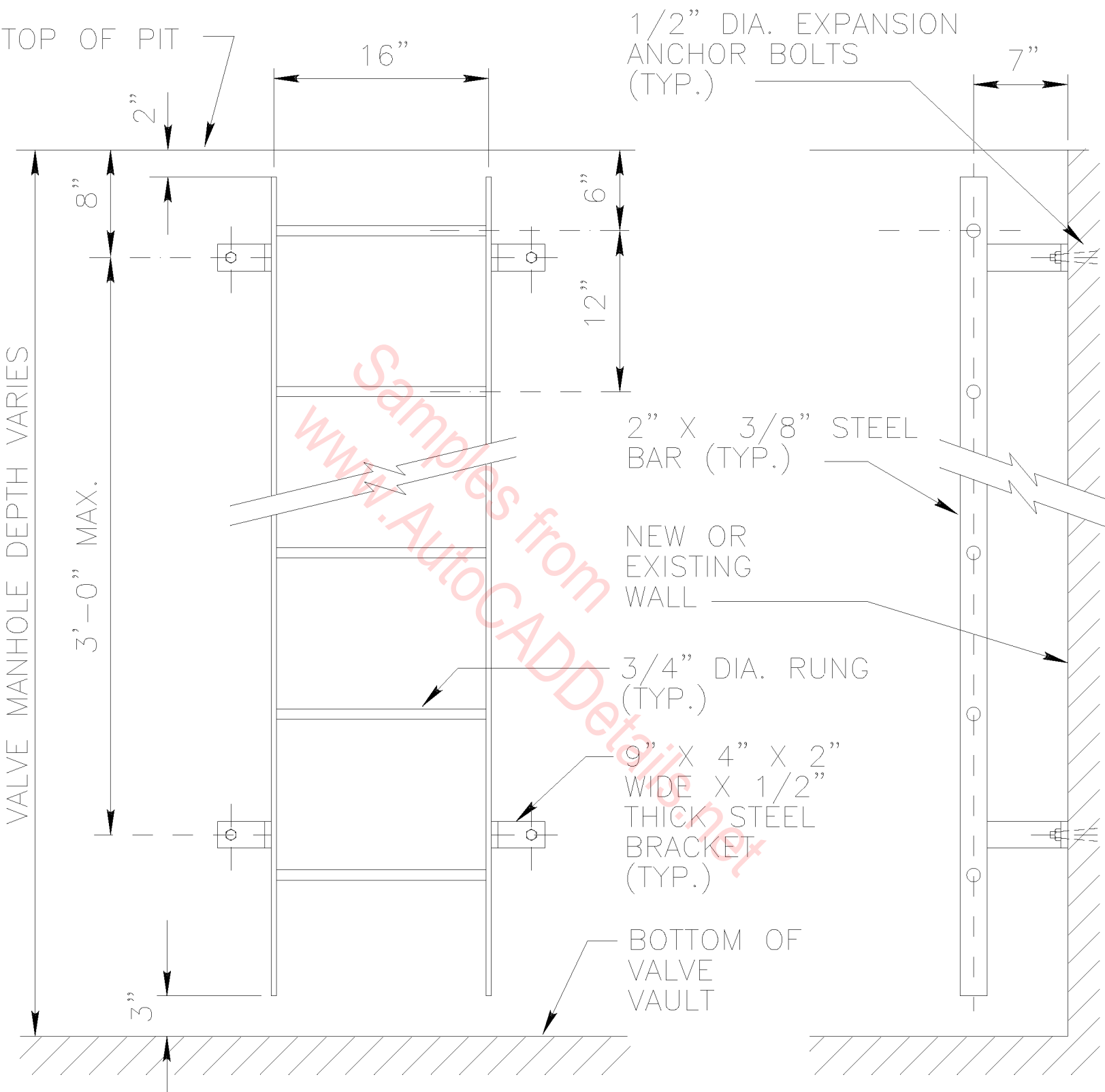
*NOTE TO THE DESIGNER:

DIMENSIONS OF VALVE
MANHOLES DETERMINED
ON A CASE BY CASE BASIS

NOTE: DRIP LEG TRAP STATION IS NOT
SHOWN ON THE PLAN VIEW.

VALVE MANHOLE

SCALE: 1/2" = 1' - 0"

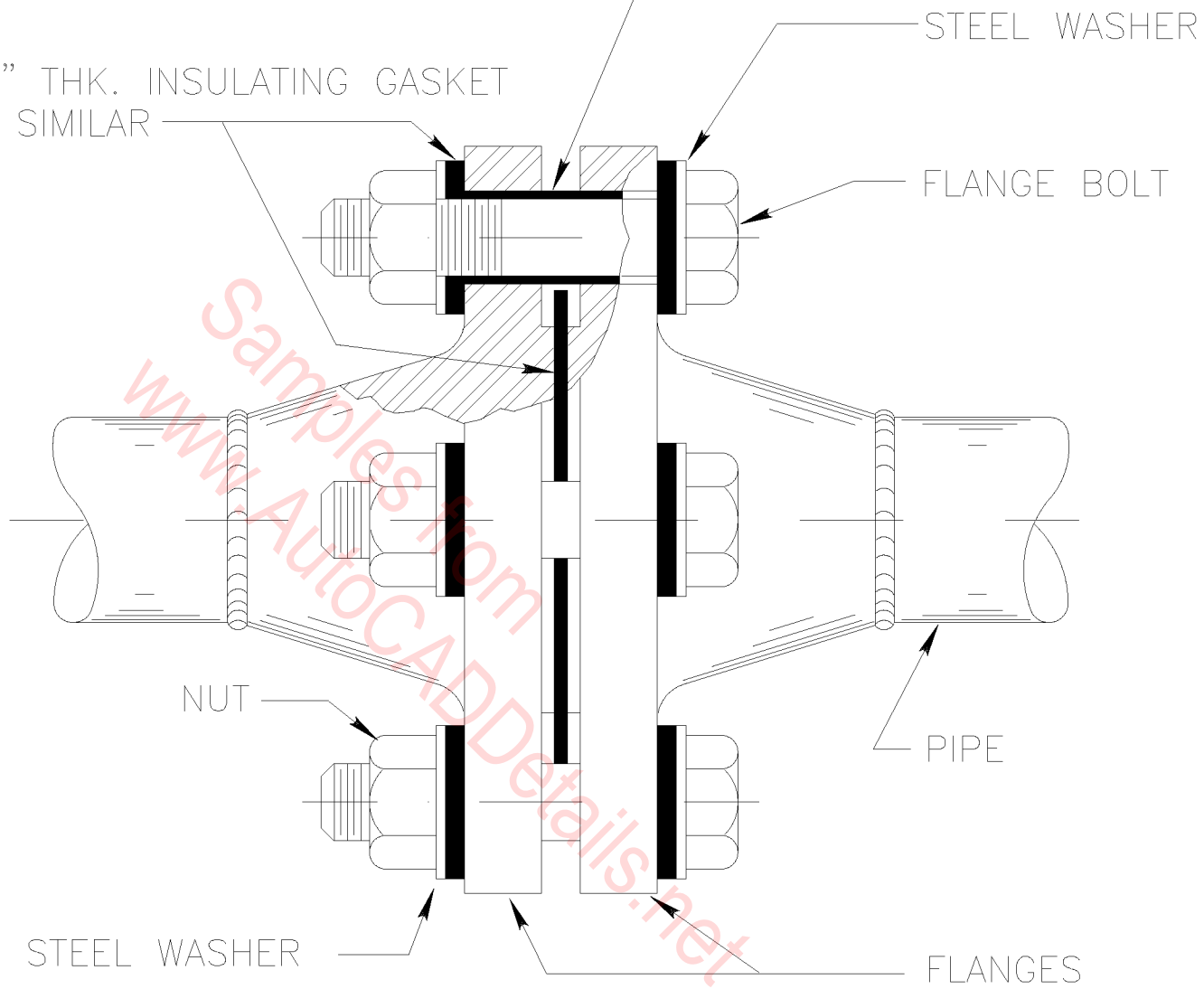


ACCESS LADDER

SCALE: 1" = 1' - 0"

INSULATING BOLT SLEEVE
1/16" MIN. WALL THICKNESS

1/8" THK. INSULATING GASKET
SET SIMILAR

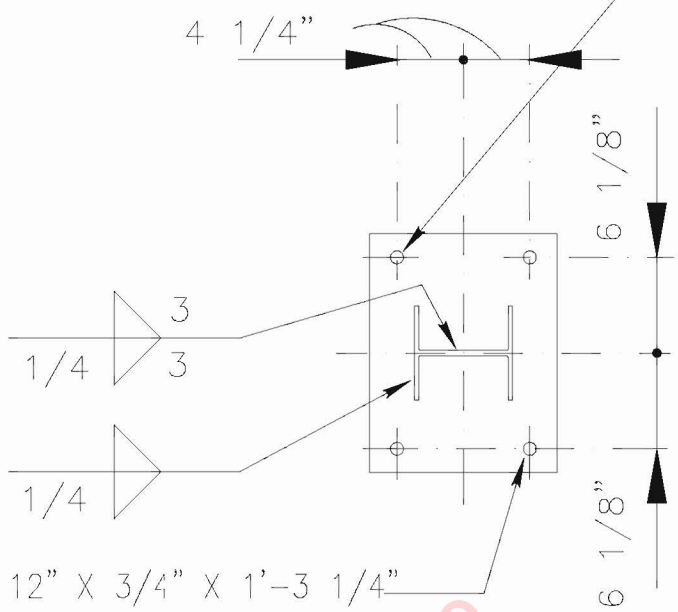


ISOLATION FLANGE

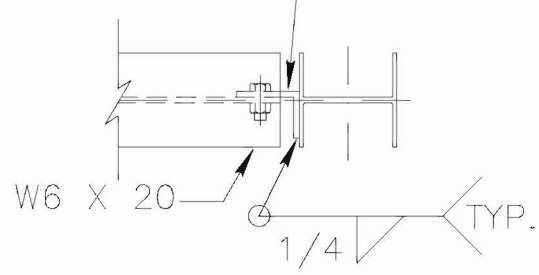
NOTE:

CONTRACTOR SHALL COMPLY WITH THE ISOLATION FLANGE MANUFACTURER'S RECOMMENDATIONS FOR BOLT TORQUES AND BOLTING PATTERN. CONTRACTOR SHALL ALSO RECHECK BOLT TORQUES 72 HOURS AFTER SYSTEM STARTUP.

DRILL THRU 13/16" DIA. 4 PLACES,
FOR 3/4" DIA. CONCRETE EXPANSION
ANCHORS, 8 1/2" LONG WITH 2"
THREAD LENGTH



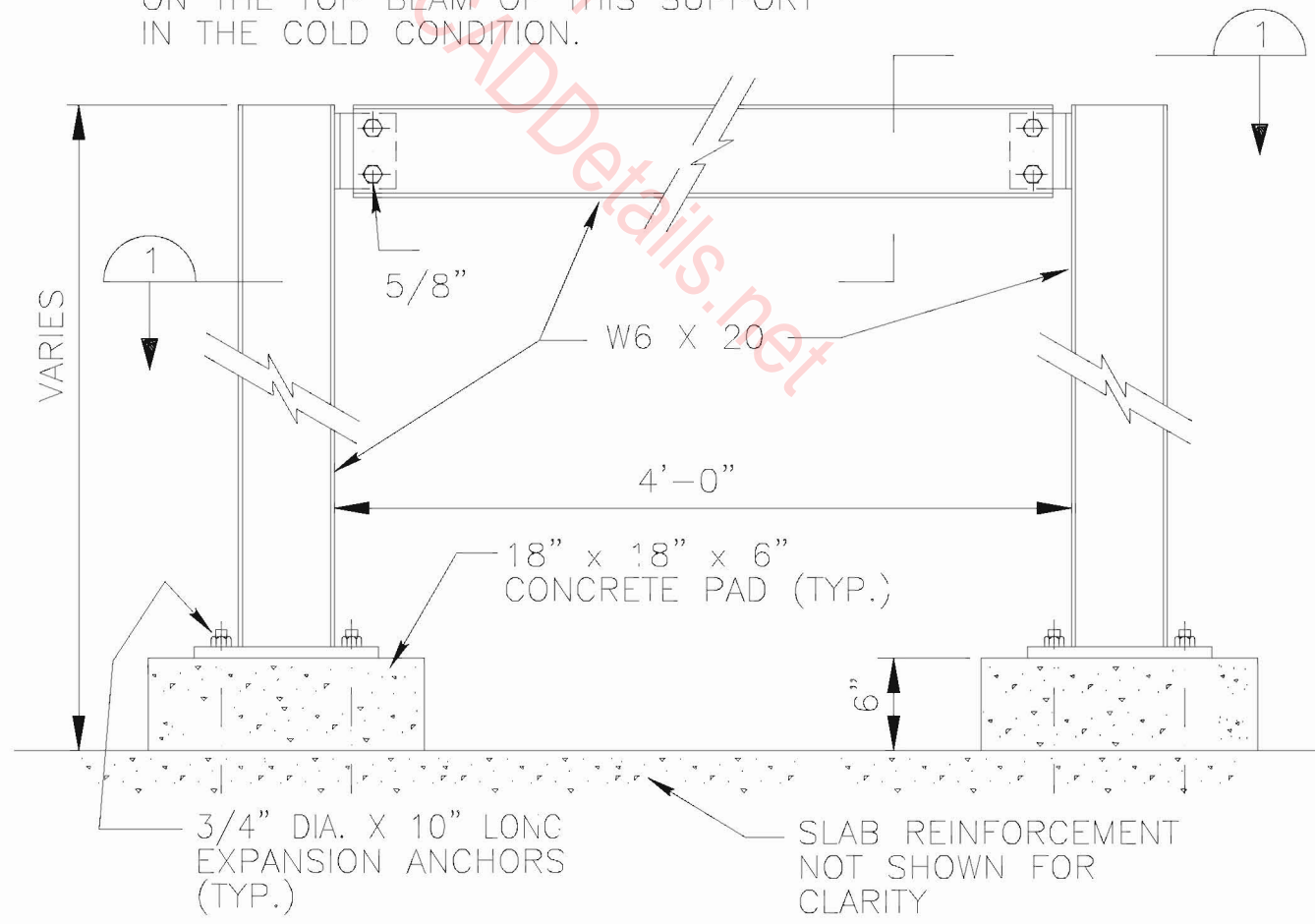
ANGLE
4" X 3" X 3/8" X 4 1/2"



SECTION 1

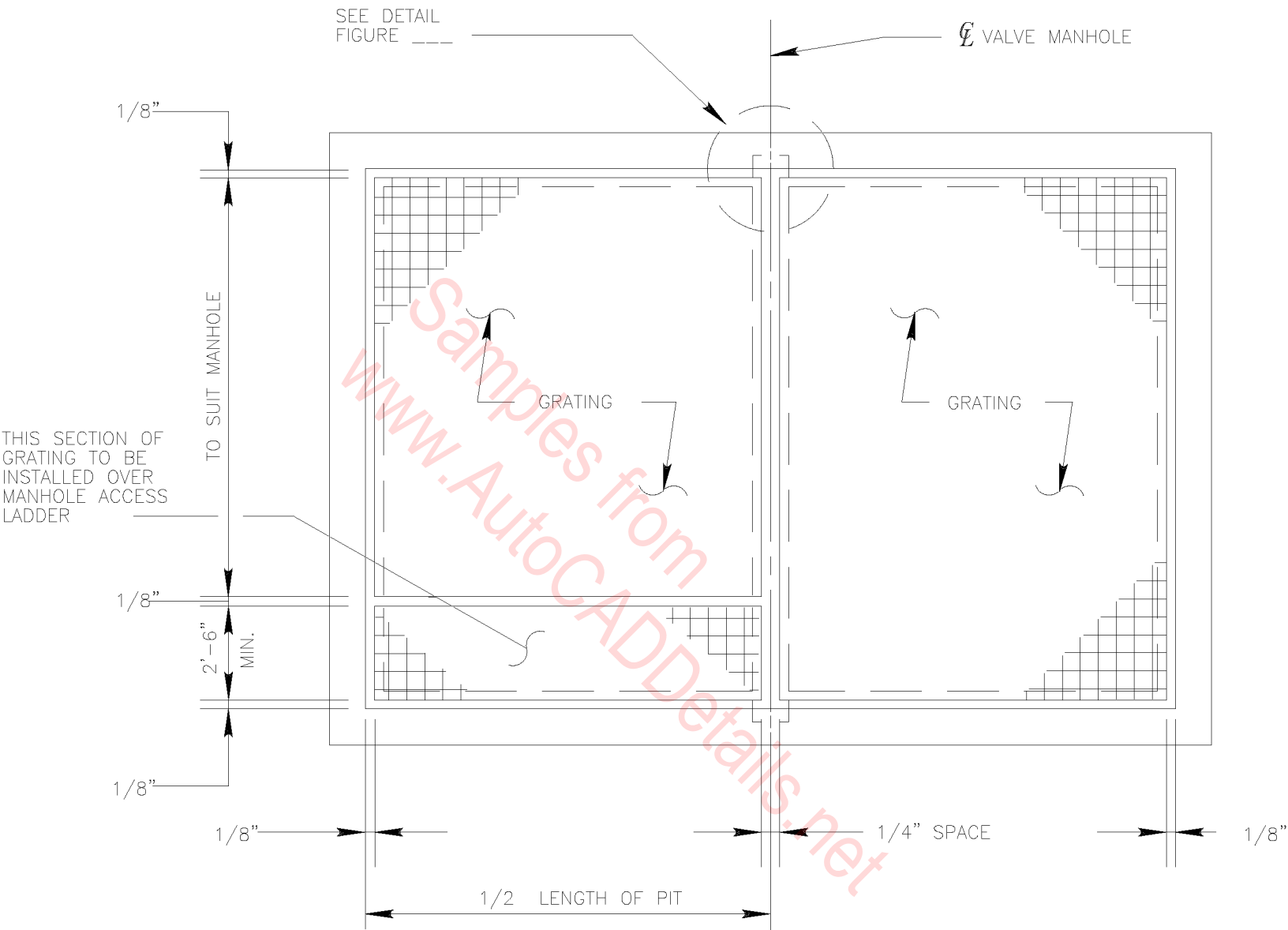
NOTES:

1. PIPING SHALL REST ON THIS PIPE SUPPORT BY MEANS OF A FREE PIPE SHOE (SUPPORT). PIPE SHOES SHALL BE CENTERED ON THE TOP BEAM OF THIS SUPPORT IN THE COLD CONDITION.



VALVE AND PIPE SUPPORT

SCALE: 1" = 1' - 0"



OPEN GRATING COVER PLAN

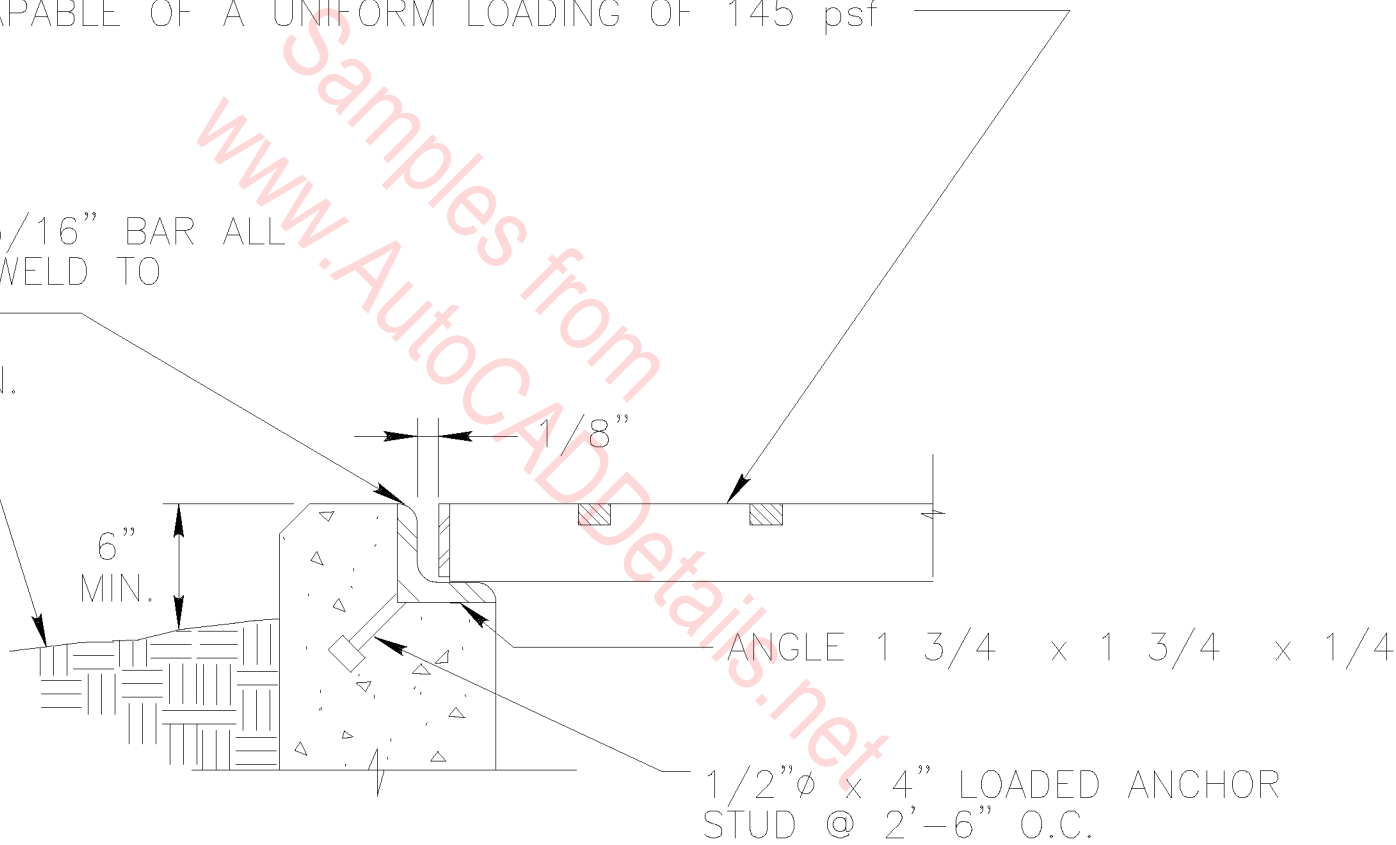
NOTE TO DESIGNER:

GRATES SHOWN FOR LOADINGS UP TO 150 psf.
LOADINGS GREATER THAN THESE MUST BE DESIGNED FOR ON A CASE BY CASE BASIS.

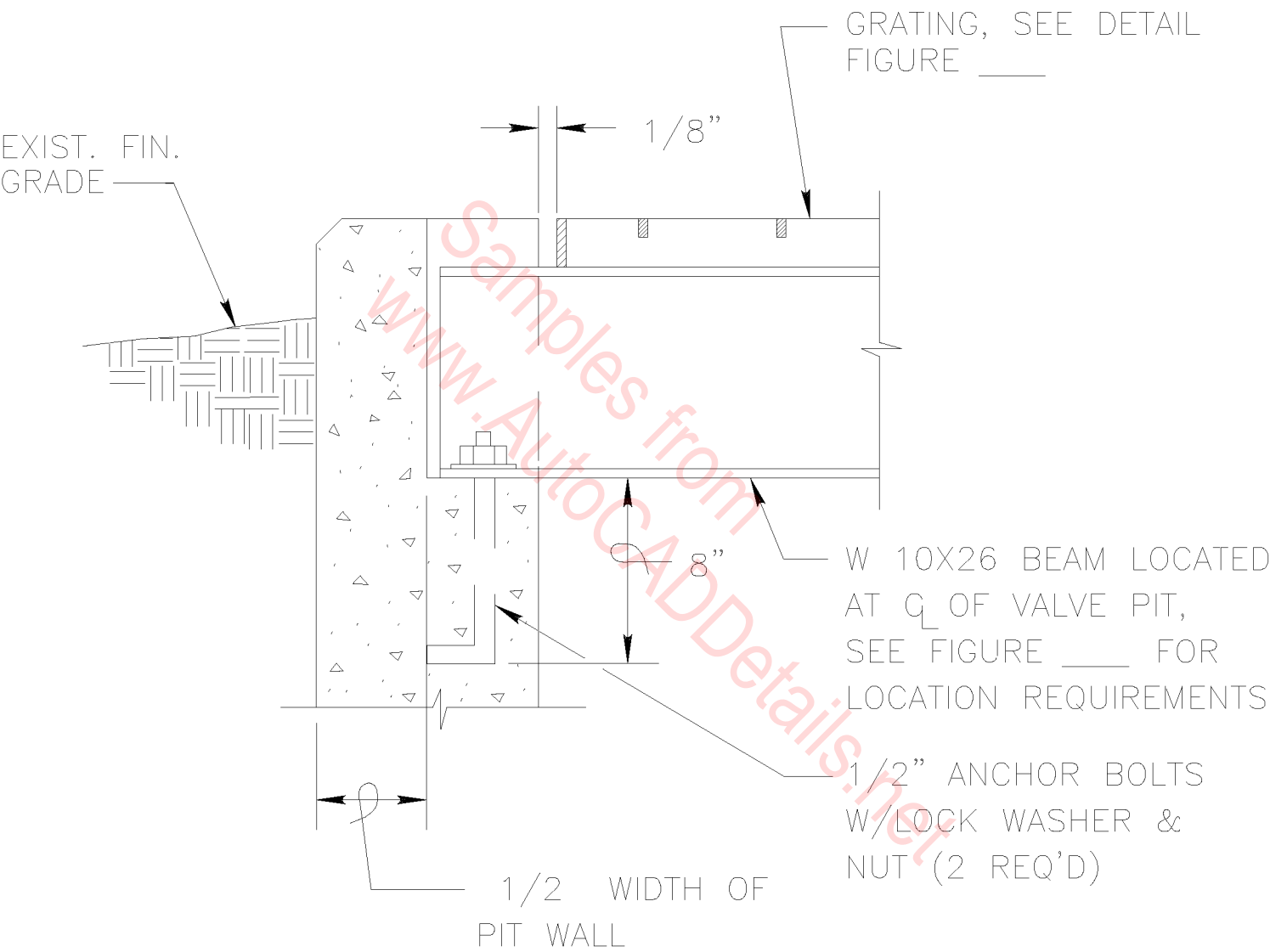
GRATING SHALL BE GALVANIZED AND CONFORM TO FEDERAL SPECIFICATION RR-G-661. GRATING OVER MANHOLE, EXCEPT LADDER ACCESS PORTION, TO BE W-19-4 (1x 3/16) GRATING, CAPABLE OF A UNIFORM LOADING OF 145 psf

5/8" X 5/16" BAR ALL AROUND WELD TO ANGLE

EXIST. FIN. GRADE



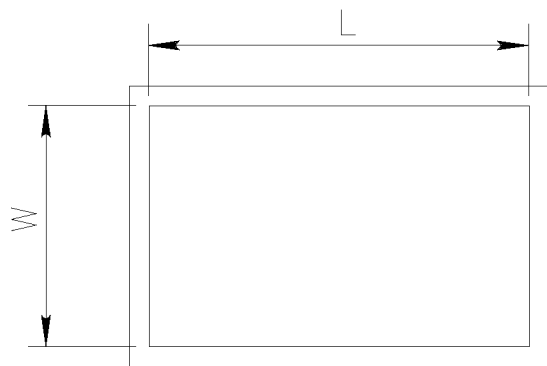
ANGLE SUPPORT FOR GRATING



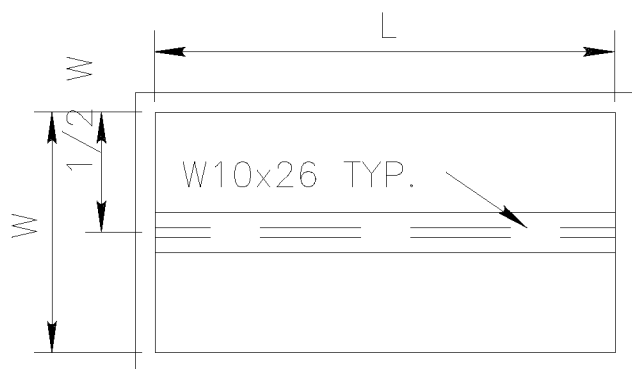
STRUCTURAL SUPPORT FOR GRATING

GRATING SUPPORT STEEL			
VALVE M.H.PLAN	W-WIDTH (FT.)	L-LENGTH (FT.)	REMARKS
A	4 OR LESS	AS REQ'D	NO MEMBER REQ'D
B	GREATER THAN 4 NOT TO EXCEED 12	AS REQ'D NOT TO EXCEED 12	ONE MEMBER REQ'D
C	GREATER THAN 12 NOT TO EXCEED 16	GREATER THAN 12 NOT TO EXCEED 16	THREE MEMBERS REQ'D

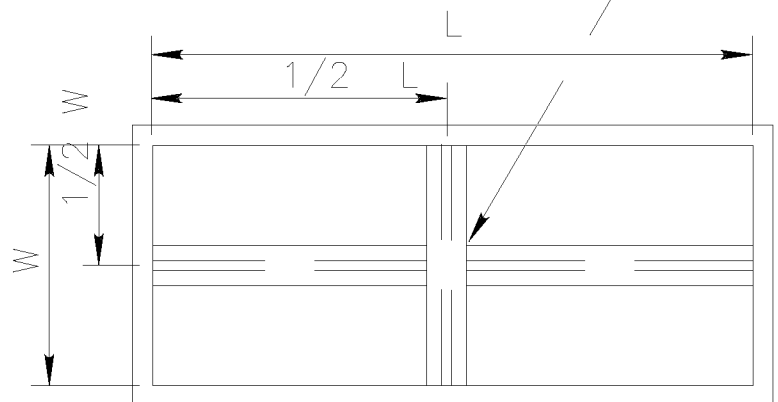
- NOTE:
- FOR VALVE MANHOLE WITH DIMENSIONS L & W GREATER THAN 16 FEET REQUIRES STEEL MEMBERS AND GRATING TO BE DESIGNED FOR UNIFORM LOADING OF 145 psf.
 - INTERSECTION OF STEEL MEMBERS MUST BE DESIGNED FOR LOADING AND DIMENSIONS INDICATED.



PLAN A



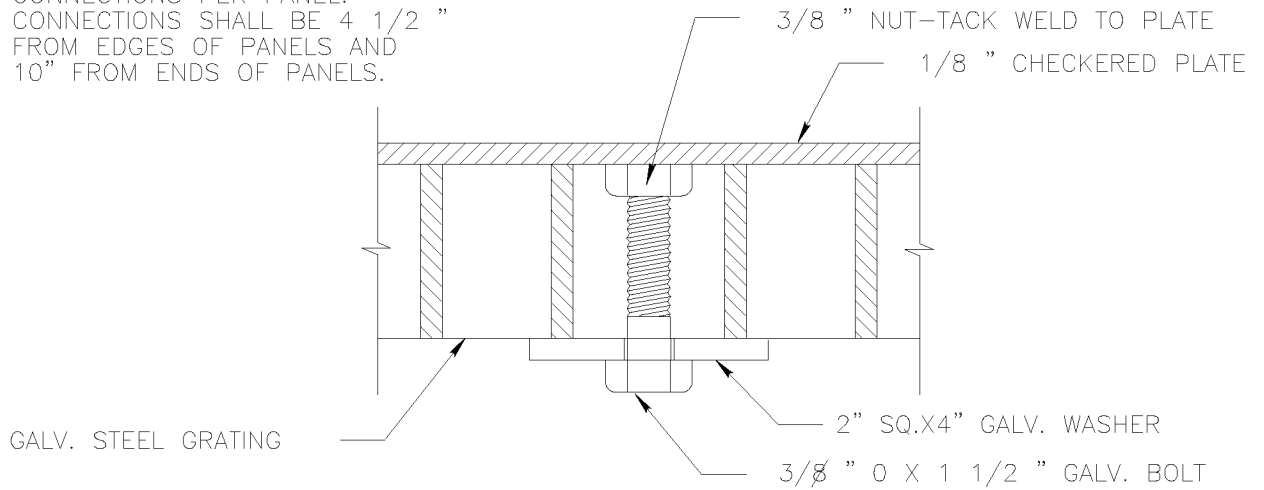
PLAN B



PLAN C

GRATING SUPPORT STEEL LOCATIONS

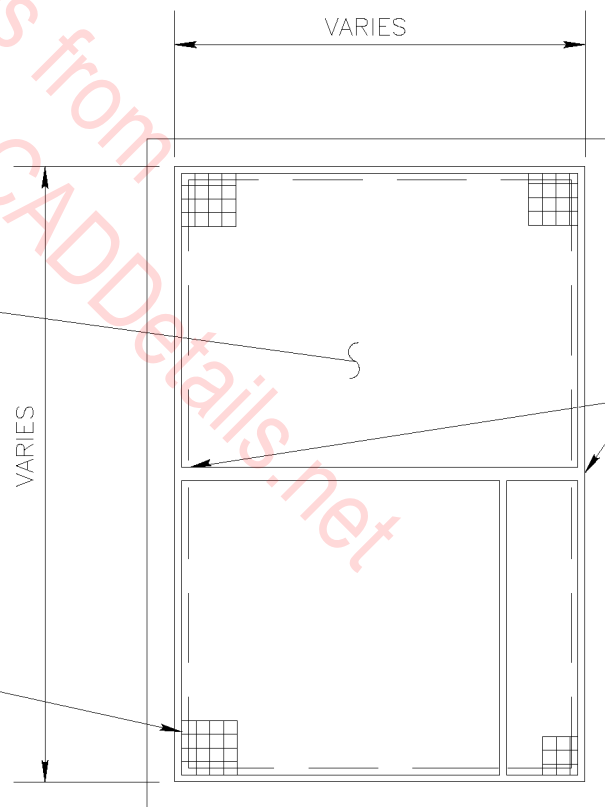
NOTE: PROVIDE A MINIMUM OF 4 CONNECTIONS PER PANEL. CONNECTIONS SHALL BE 4 1/2 " FROM EDGES OF PANELS AND 10" FROM ENDS OF PANELS.



CONNECTION FOR ATTACHING CHECKERED PLATE TO GRATING

5/16 " ALUMINUM CHECKERED PLATE IN CONFORMANCE WITH ANSI H35.1. PLATE WILL BE SAME DIMENSION AS GRATING SECTION IT COVERS

CHECKERED PLATES SHALL BE PROVIDED WITH 12"X12" VENTILATION OPENINGS AT CORNERS (TYP.)

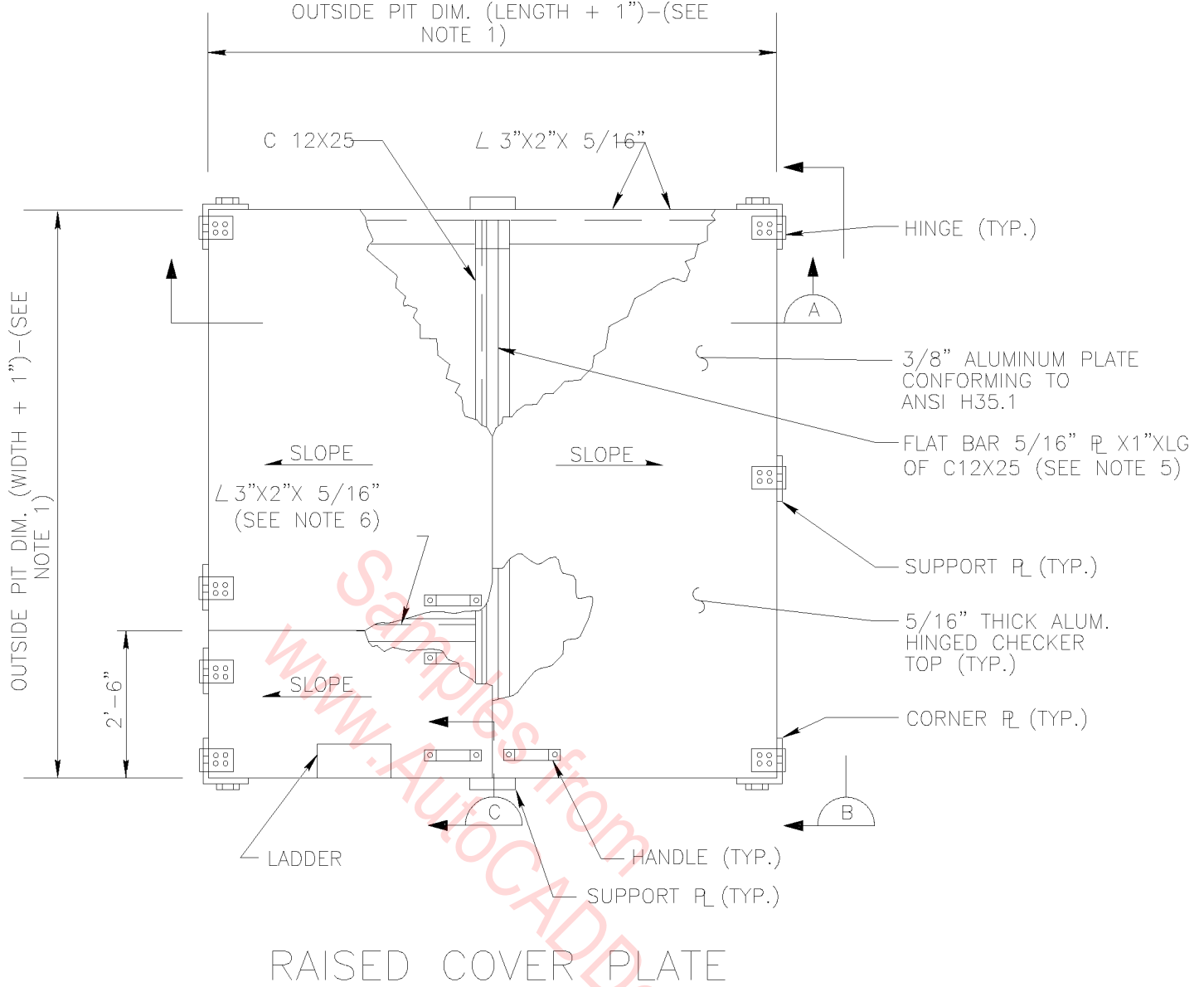


OPEN GRATE COVER W/CHECKER PLATE

CHECKER PLATE COVER DETAILS

NOTE: SPACING BETWEEN PANELS AND BETWEEN PANELS AND ANGLES SHALL BE 1/4 "

DESIGNER NOTE: CHECKERED PLATE TO BE USED TO COVER GRATING IN COLD CLIMATES AND AREAS WHERE TRASH ACCUMULATION IS A CONCERN.

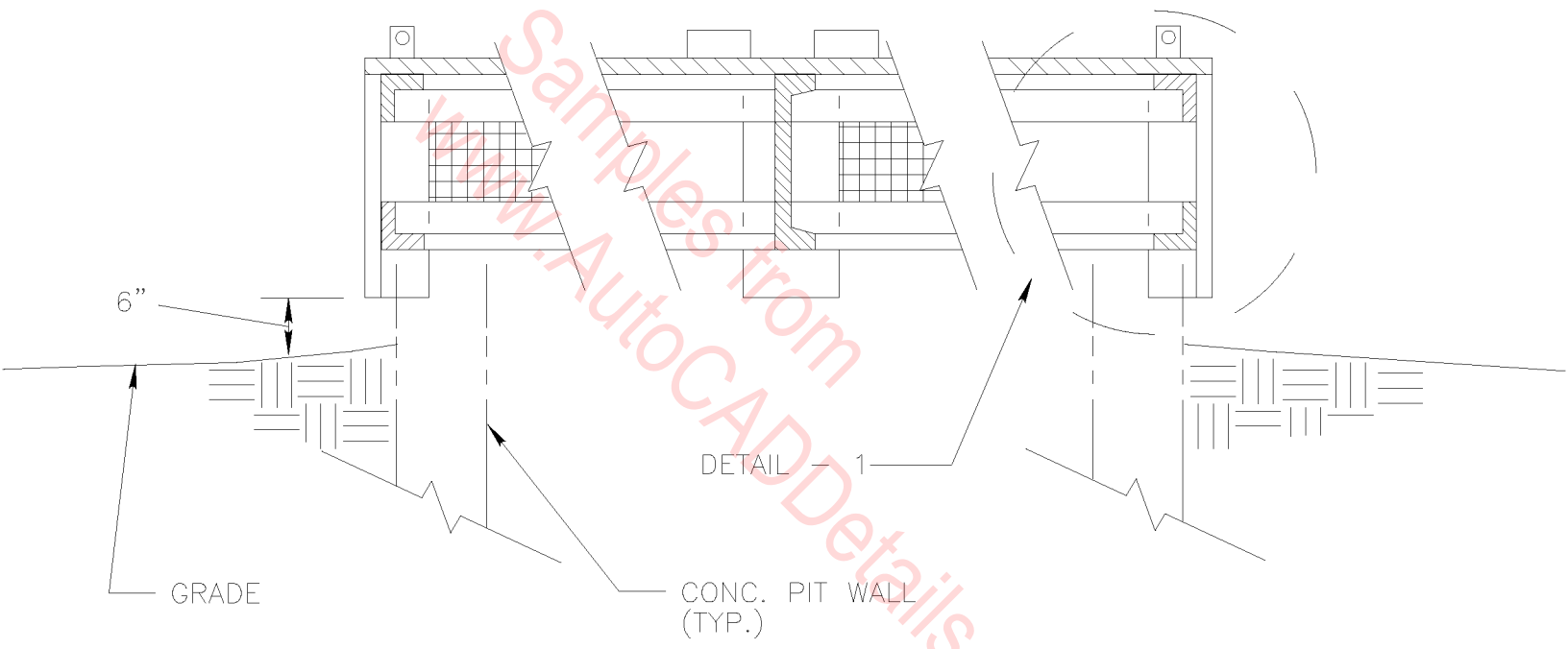


NOTE TO DESIGNER:

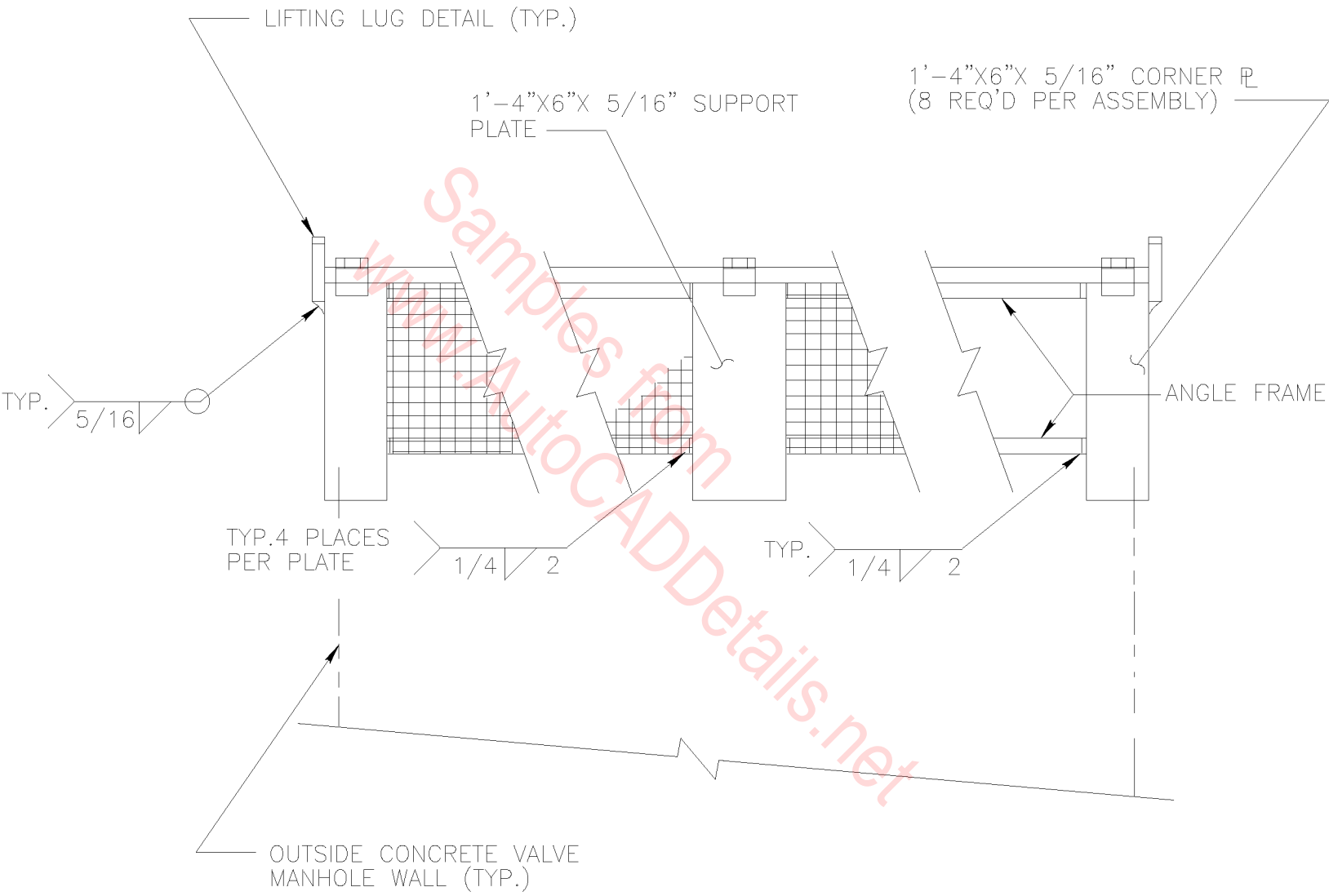
PLATE COVER SHOWN IS DESIGNED FOR LOADINGS UP TO 40 psf WHEN SPACING BETWEEN SIDWALL AND CENTER SUPPORTS IS LESS THAN 3'6". LOADINGS OR SPACINGS GREATER THAN THESE MUST BE DESIGNED FOR ON A CASE BY CASE BASIS.

GENERAL NOTES: (FOR RAISED COVER PLATE)

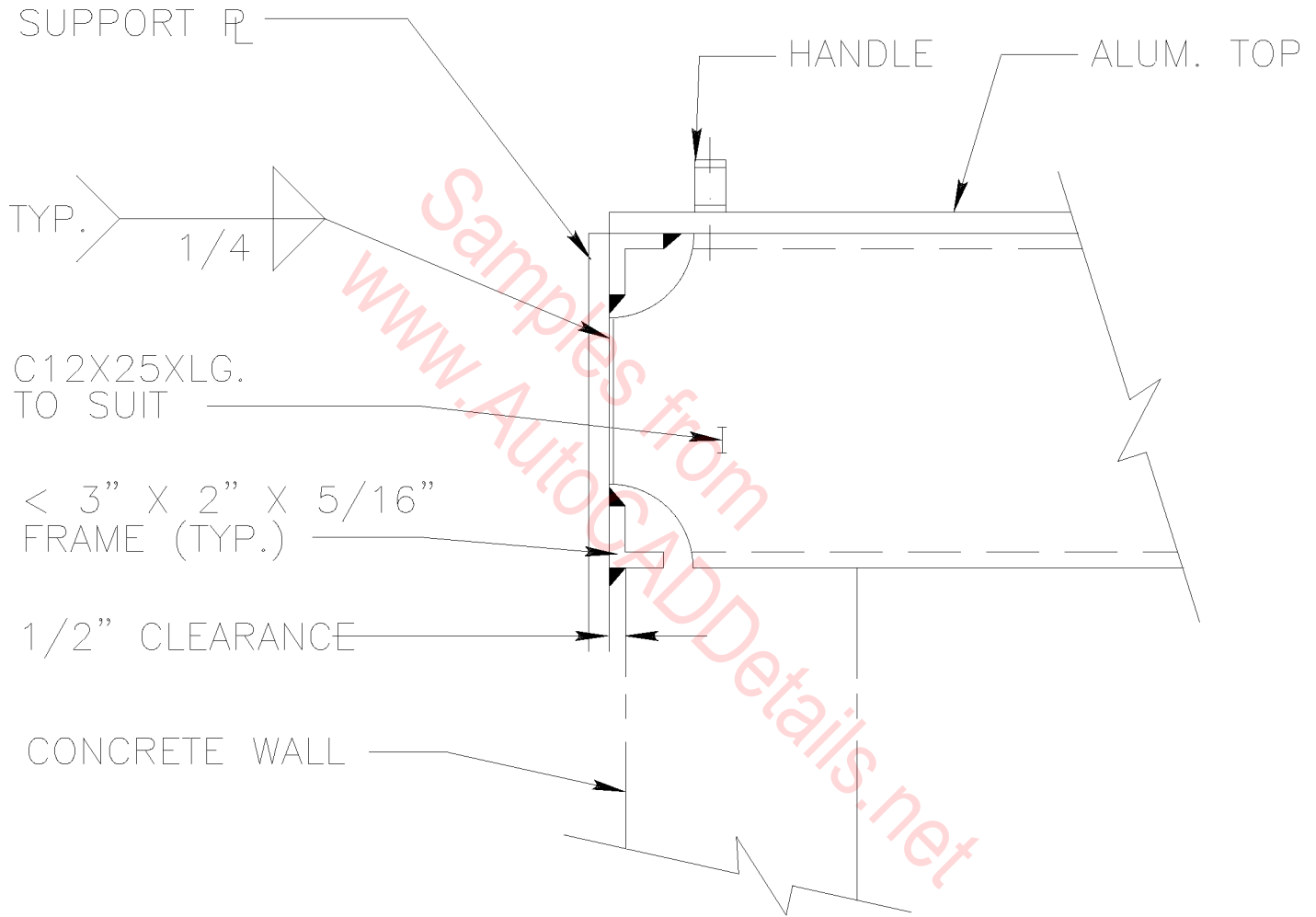
1. FIELD VERIFY OUTSIDE DIMENSIONS OF NEW MANHOLE BEFORE CONSTRUCTING MANHOLE COVER ASSEMBLY. ADD 1" TO OUTSIDE MANHOLE DIMENSIONS (TO ALLOW FOR CLEARANCE) TO DETERMINE INSIDE ASSEMBLY DIMENSIONS.
2. EACH SUPPORT PLATE SHALL BE LOCATED HALFWAY BETWEEN CORNER PLATES AT 3 SIDES OF MANHOLE. 2 SUPPORT PLATES SHALL BE LOCATED BETWEEN 2 SPLIT ALUM. CHECKER TOP AT ONE SIDE OF MANHOLE.
3. SUPPORT CHANNELS SHALL BE C12X25XLG, TO EQUAL WIDTH OR LENGTH DIM. PLUS 1" TO SUIT INSIDE ASSEMBLY DIM. THE CHANNEL SHALL REST ON THE CONCRETE MANHOLE TOP AND THE ALUM. TOP SHALL REST ON THE FLAT BAR PLATE.
4. CHANNEL SUPPORT, CORNER PLATES, SUPPORT PLATES, ANGLE FRAME HARDWARE CLOTH, AND LIFTING LUGS SHALL BE HOT-DIPPED GALVANIZED BEFORE INSTALLATION ON VALVE MANHOLES.
5. FLAT BAR 5/16" THK. WELDED TO TOP OF C12X25 TO MAKE ALUM. CHECKER TOP SLIGHTLY SLOPED AS INDICATED. LOCATE >FLAT BAR TO MATCH > CHANNEL BEFORE WELDING.
6. ANGLE 3"X2"X 5/16" WELDED TO C12X25 8< 3"X2"X5/16" AT EACH END LENGTH SHALL EQUAL HALF OF LENGTH OR WIDTH OF VALVE MANHOLE.



RAISED COVER PLATE: SECTION A-A

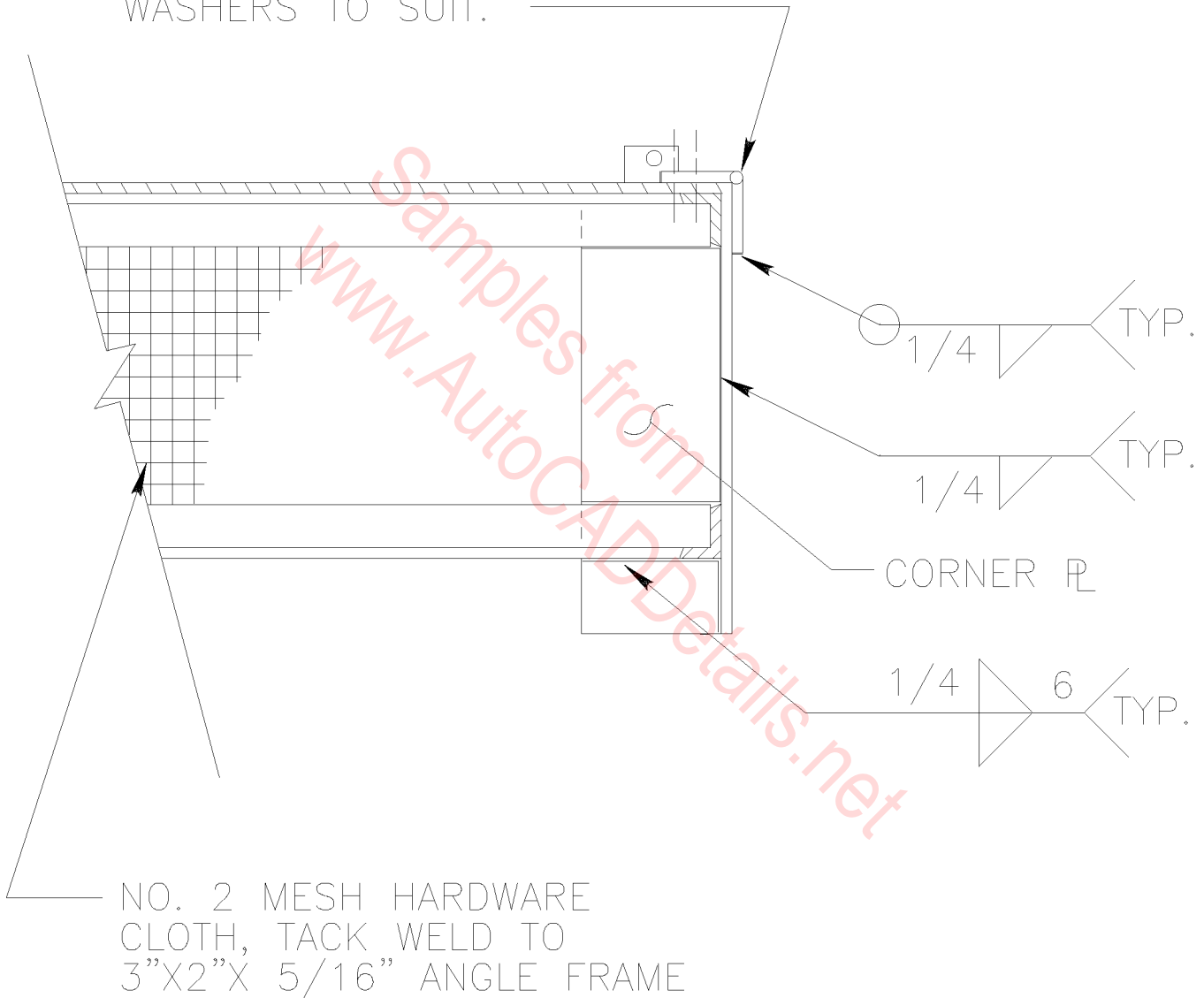


RAISED COVER PLATE: SECTION B-B



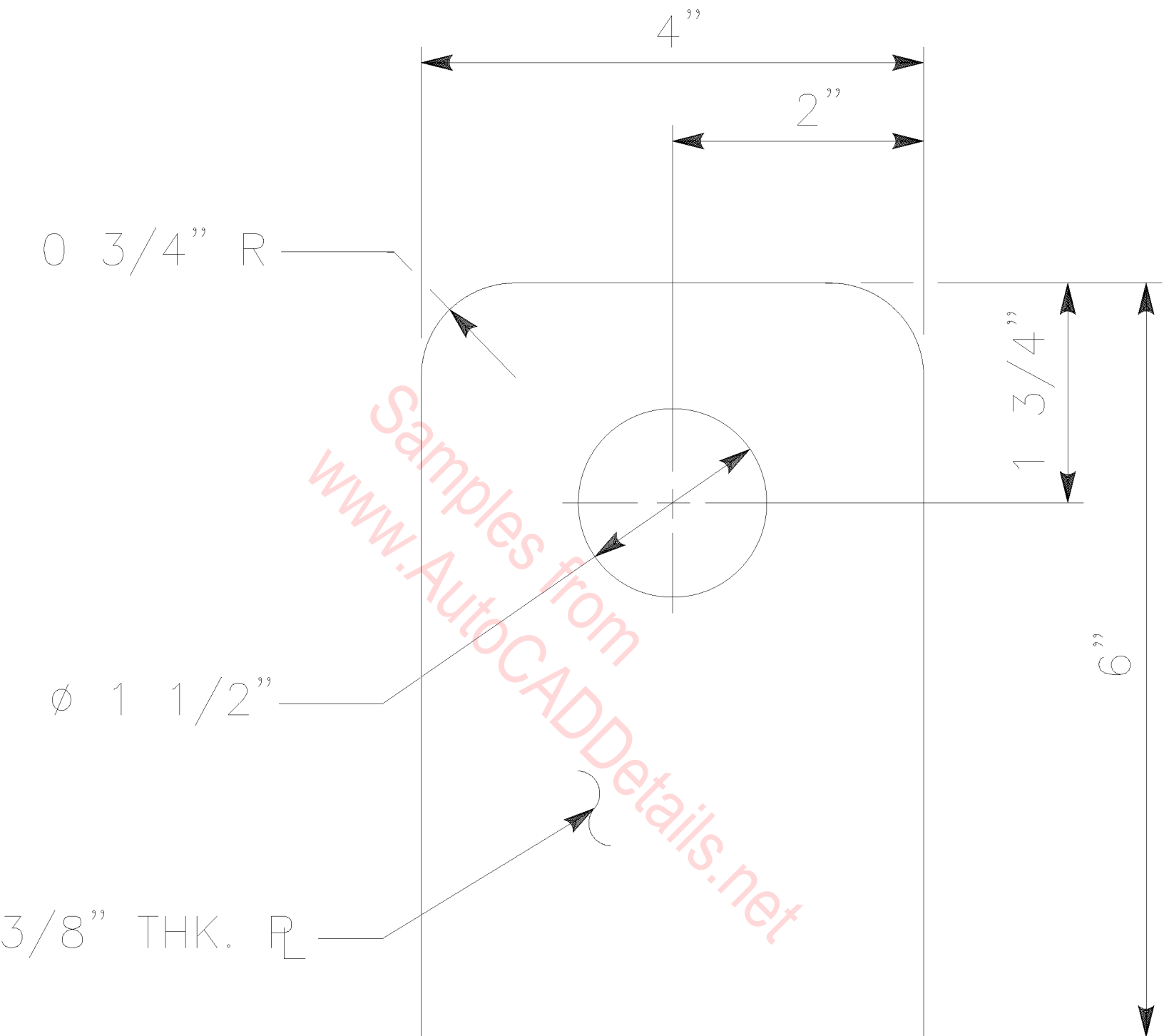
RAISED COVER PLATE: SECTION C-C

3" S.S. HINGE, WELD TO CORNER
PL 8, BOLT TO ALUM. TOP WITH
S.S. BOLTS, HEX NUTS AND
WASHERS TO SUIT.



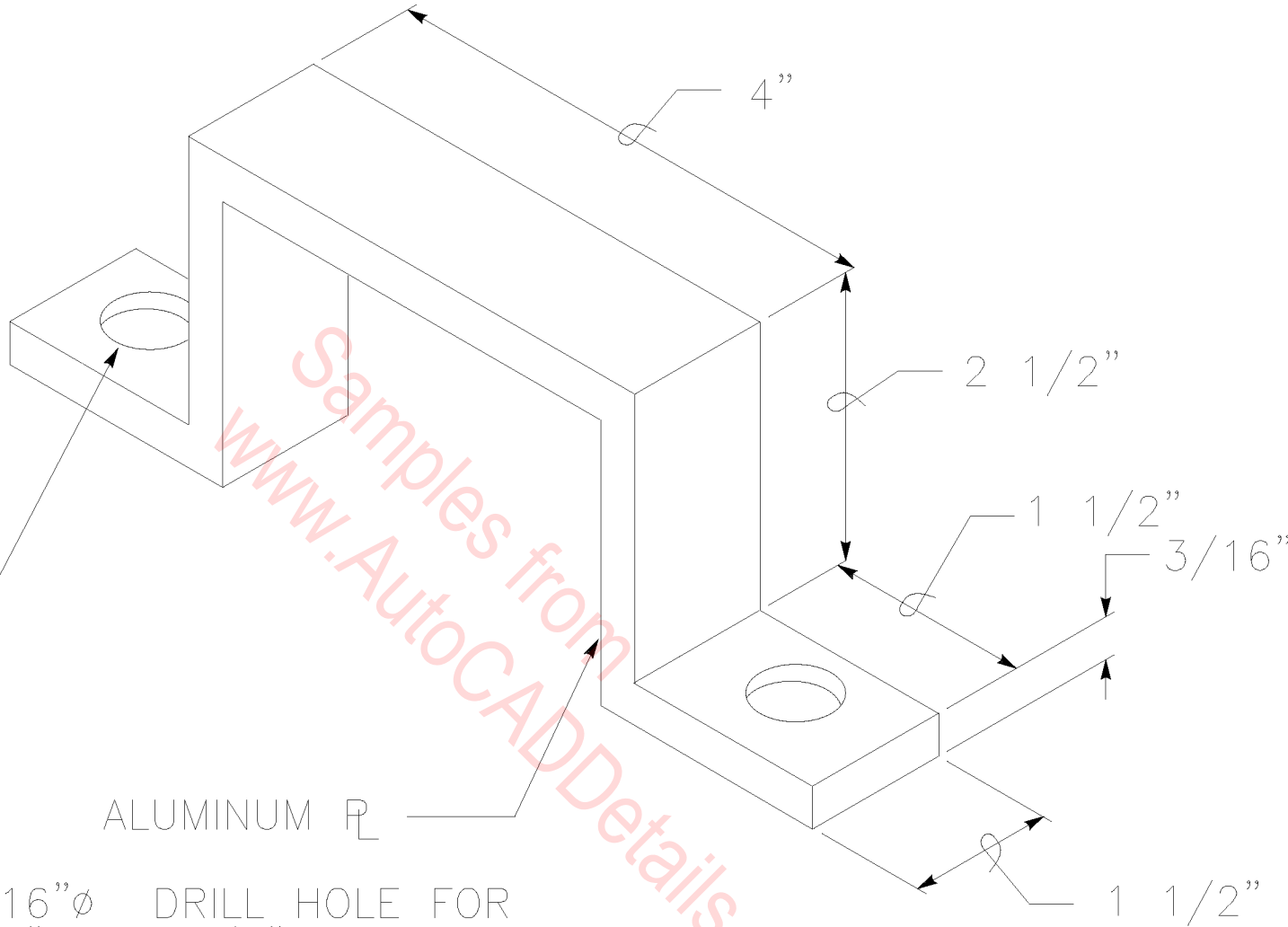
NO. 2 MESH HARDWARE
CLOTH, TACK WELD TO
3"X2"X 5/16" ANGLE FRAME

RAISED COVER PLATE: DETAIL — 1



NOTE: 4 LUGS REQ'D PER ASSEMBLY

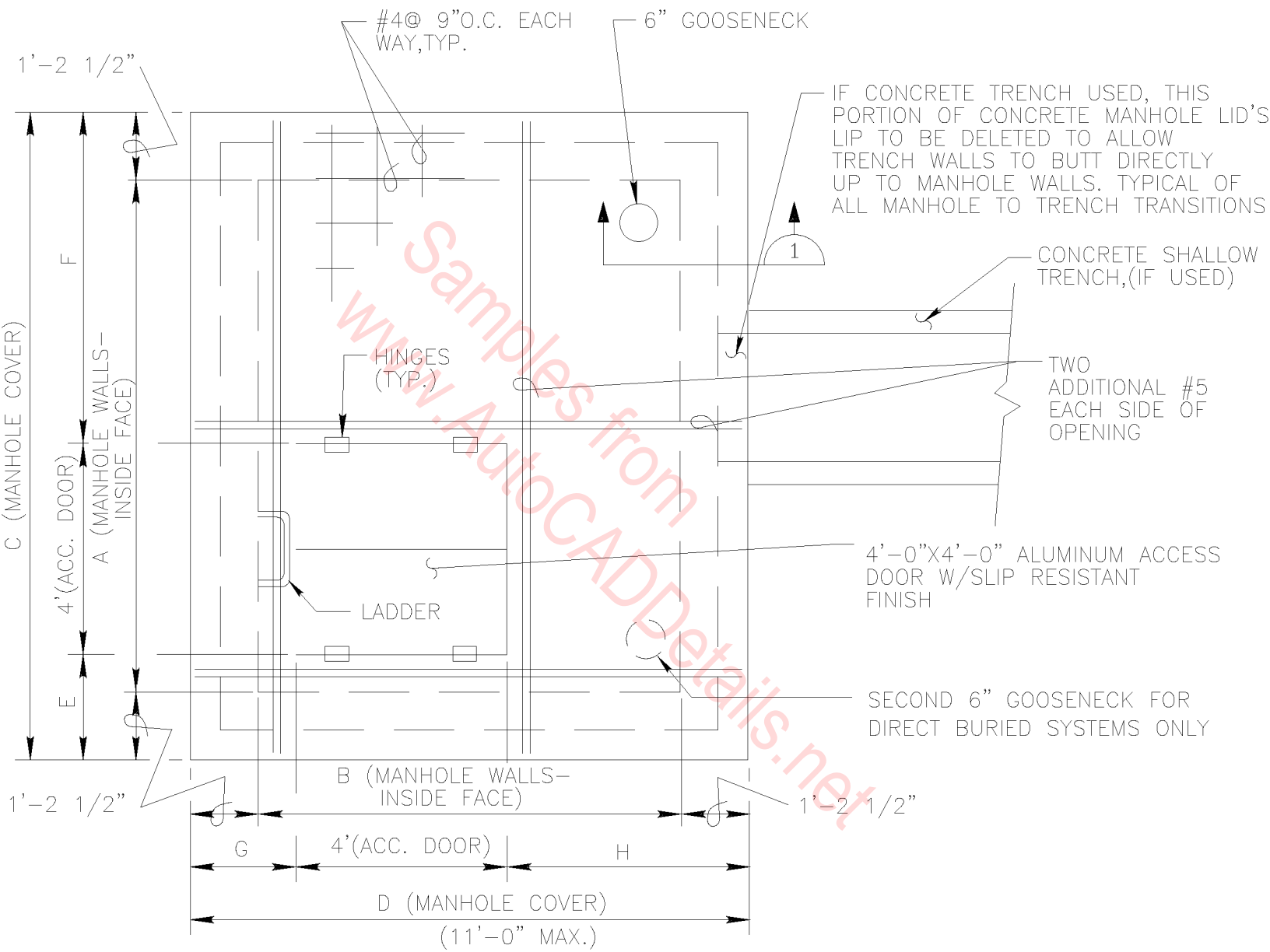
LIFTING LUG



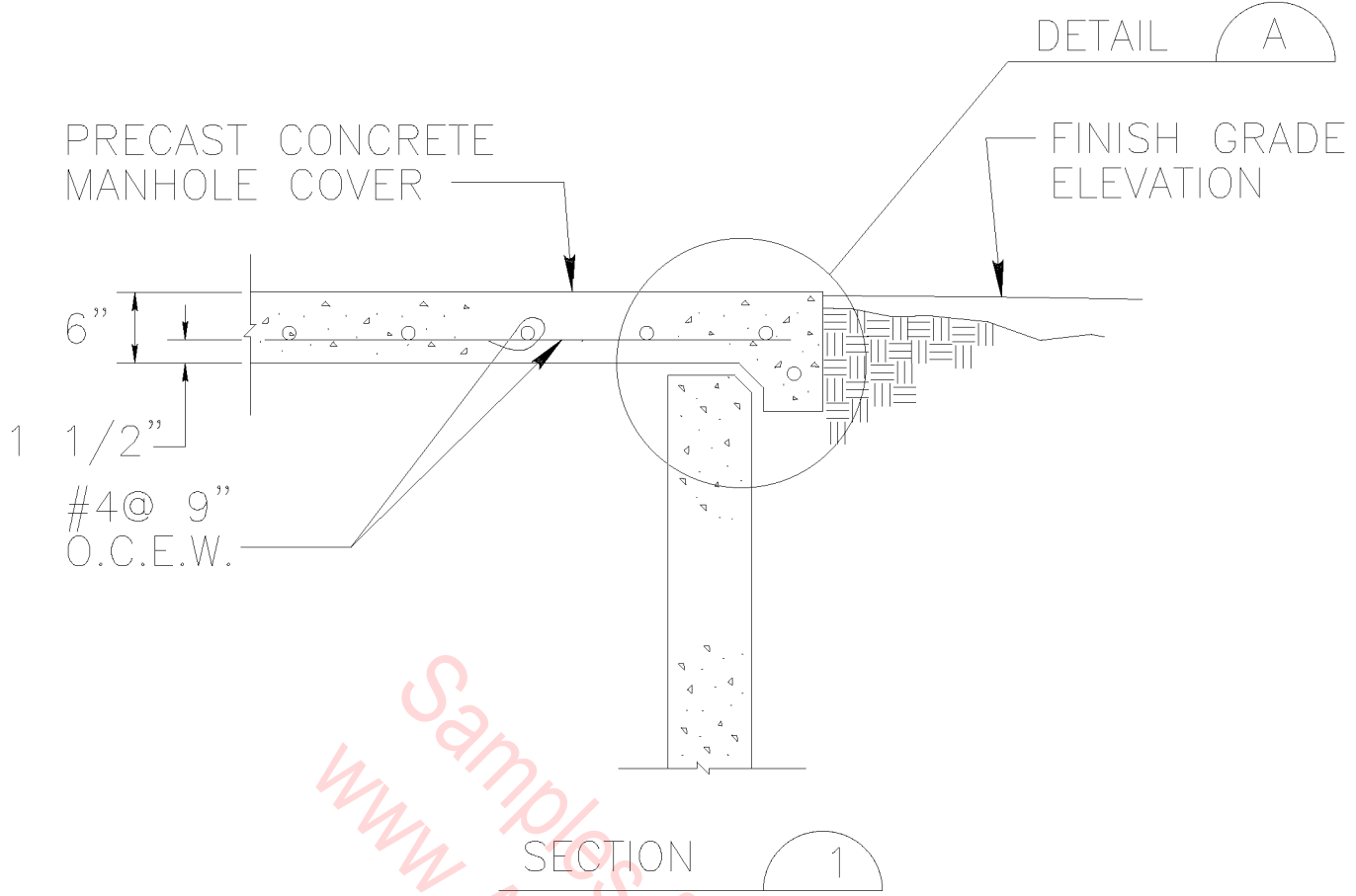
9/16"Ø DRILL HOLE FOR
 1/2" X 1 1/2" SQ. HD. BOLT,
 HEX NUT & LOCK WASHER
 (STAINLESS STEEL)-(TYP.)

NOTE: 2 HANDLES REQ'D, PER HINGED TOP,
 MIN. 6 PER PIT COVER ASSEMBLY.

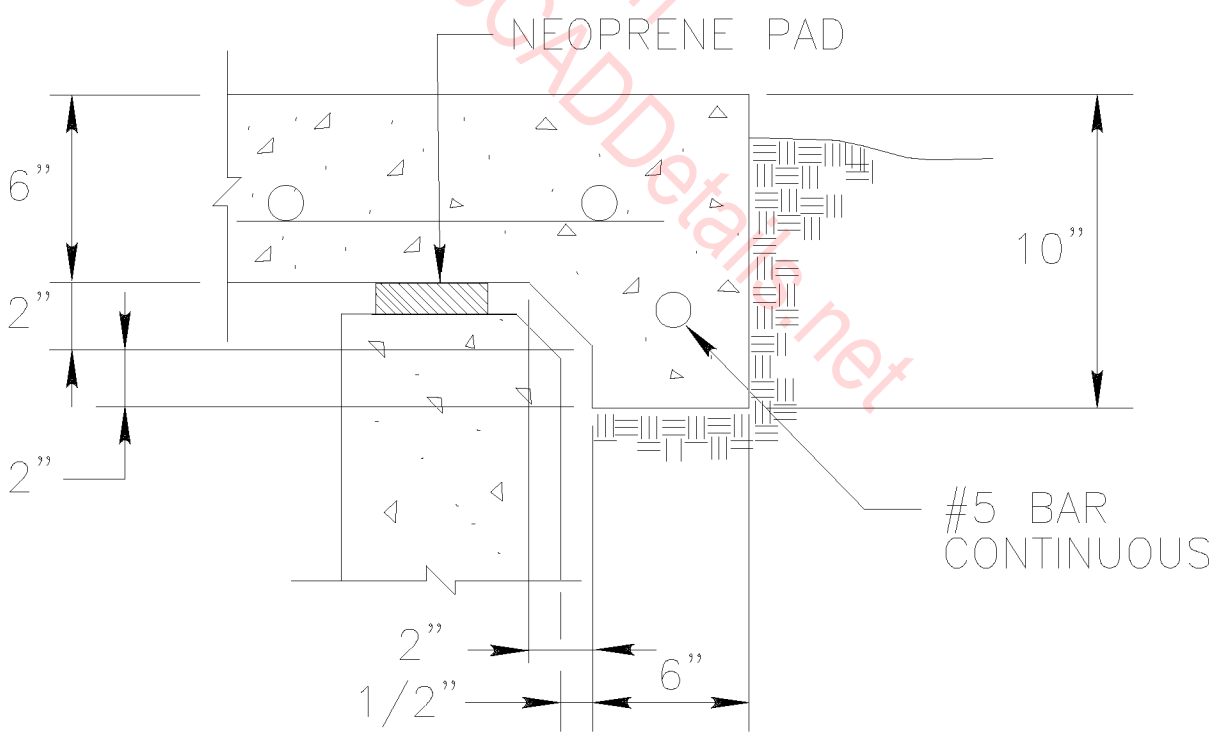
HANDLE



CONCRETE COVER PLAN

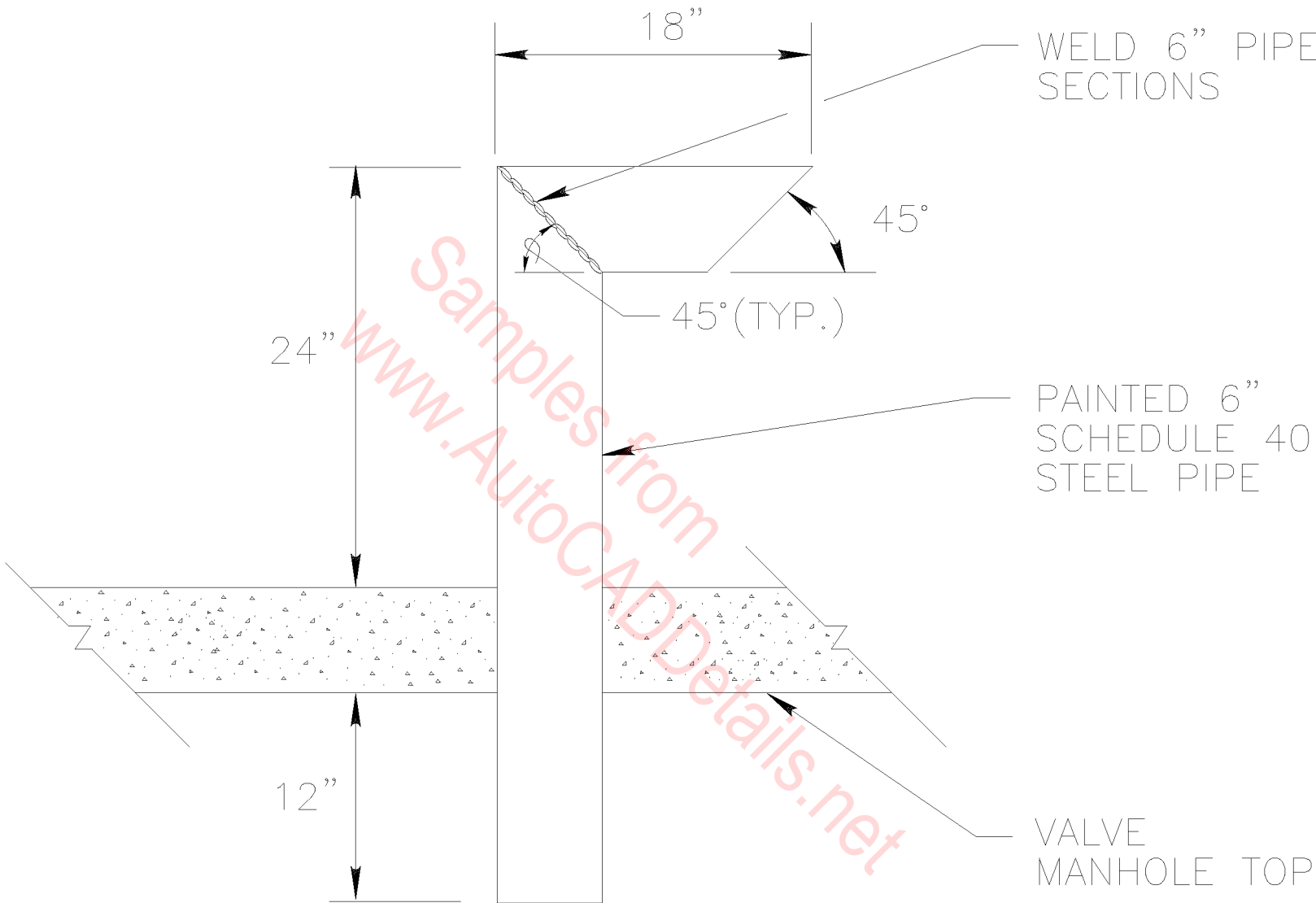


N.T.S.



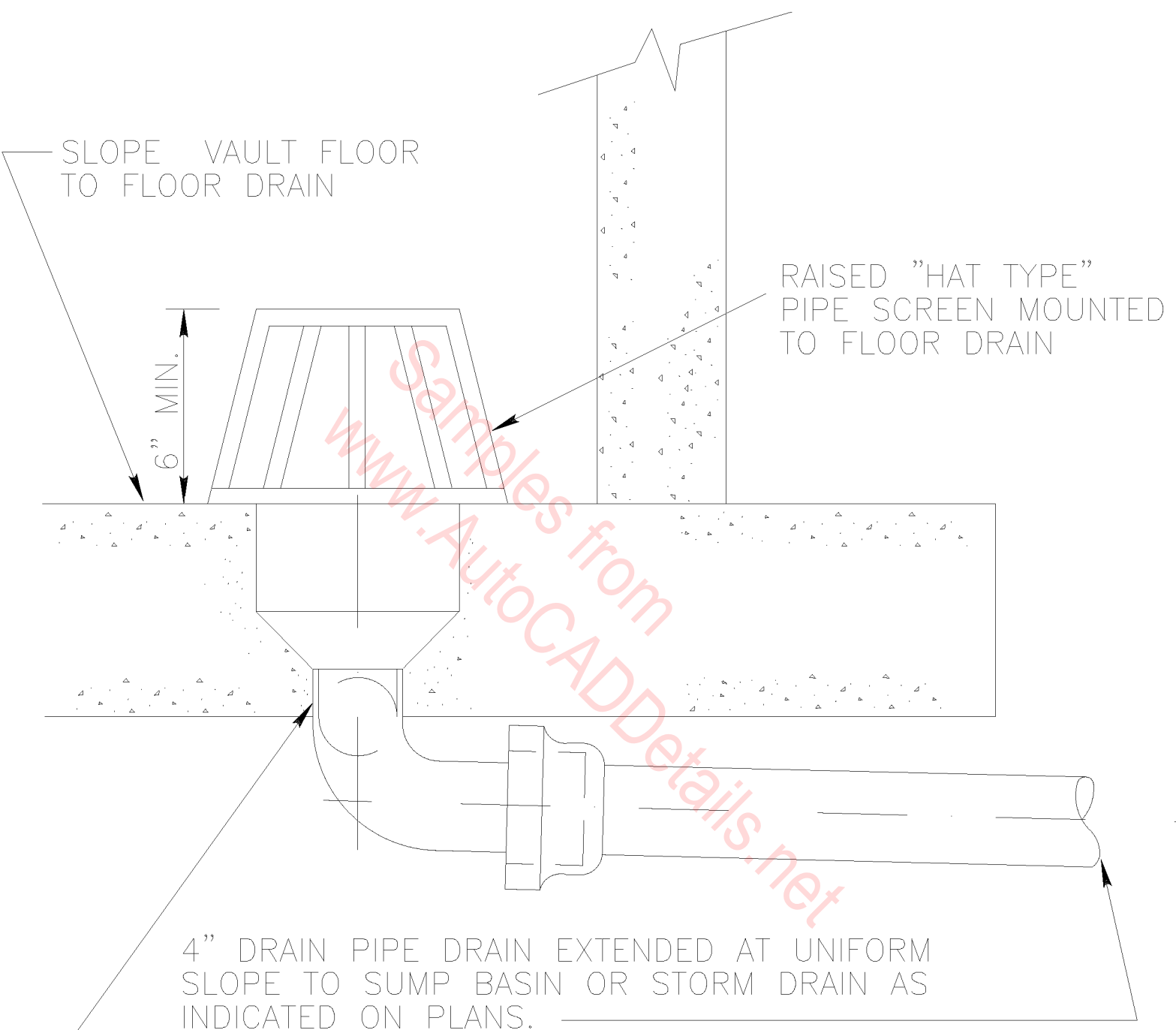
N.T.S.

CONCRETE COVER DETAILS



TYPICAL GOOSENECK DETAIL

SCALE: 1" = 1' - 0"

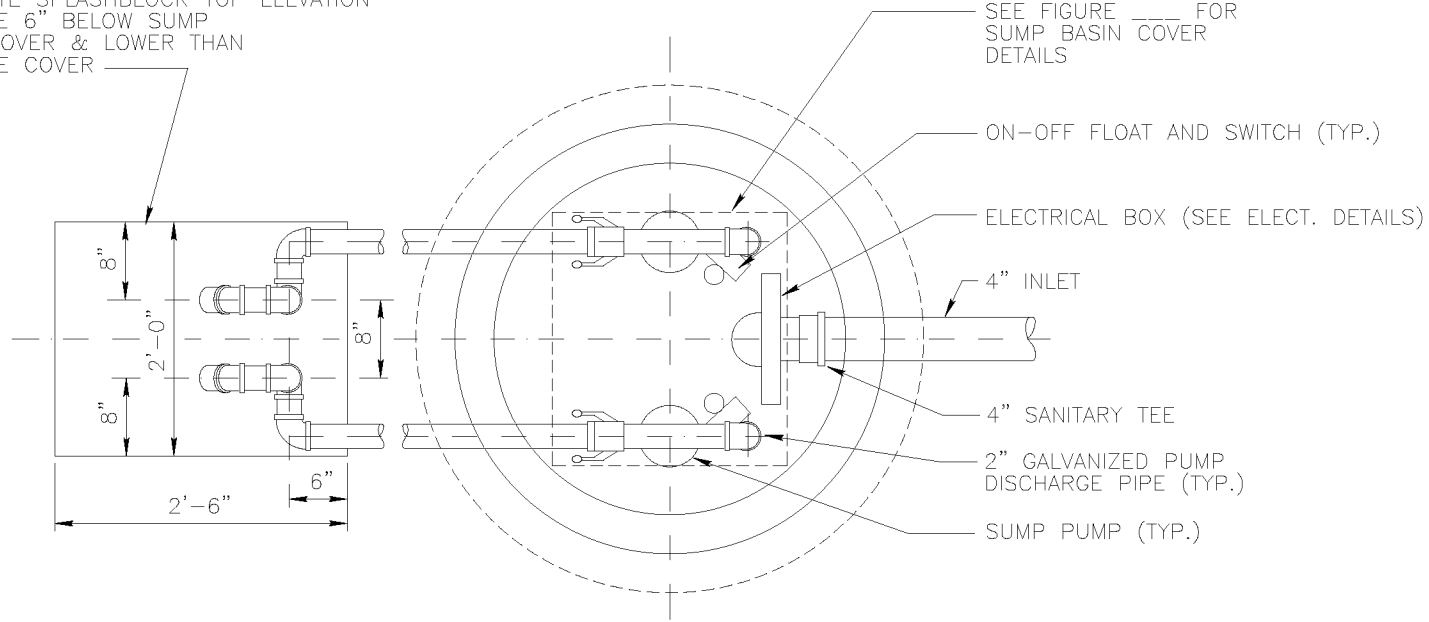


CAST IRON FLOOR DRAIN WITH METALLIC SPHERE OR FLAPPER TYPE BACKWATER VALVE.

VALVE MANHOLE FLOOR DRAIN

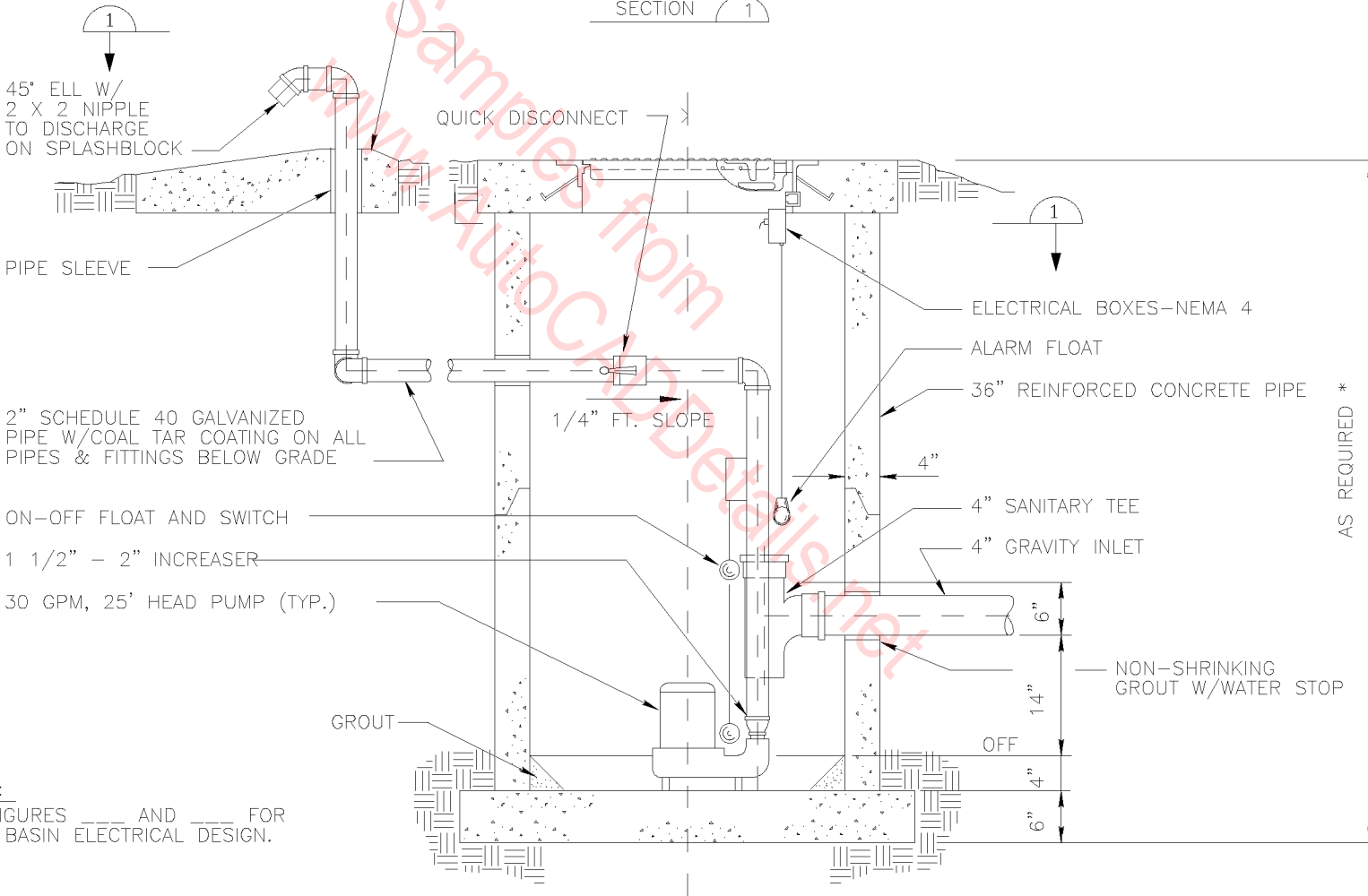
CONCRETE SPLASHBLOCK TOP ELEVATION
MUST BE 6" BELOW SUMP
BASIN COVER & LOWER THAN
MANHOLE COVER

SEE FIGURE ____ FOR
SUMP BASIN COVER
DETAILS



SPLASHBLOCK TO BE INSTALLED
3" MIN. BELOW BASIN TOP

SECTION 1



45° ELL W/
2 X 2 NIPPLE
TO DISCHARGE
ON SPLASHBLOCK

PIPE SLEEVE

2" SCHEDULE 40 GALVANIZED
PIPE W/COAL TAR COATING ON ALL
PIPES & FITTINGS BELOW GRADE

ON-OFF FLOAT AND SWITCH

1 1/2" - 2" INCREASER

30 GPM, 25' HEAD PUMP (TYP.)

GROUT

QUICK DISCONNECT

1/4" FT. SLOPE

ELECTRICAL BOXES-NEMA 4

ALARM FLOAT

36" REINFORCED CONCRETE PIPE

4" SANITARY TEE

4" GRAVITY INLET

NON-SHRINKING
GROUT W/WATER STOP

AS REQUIRED *

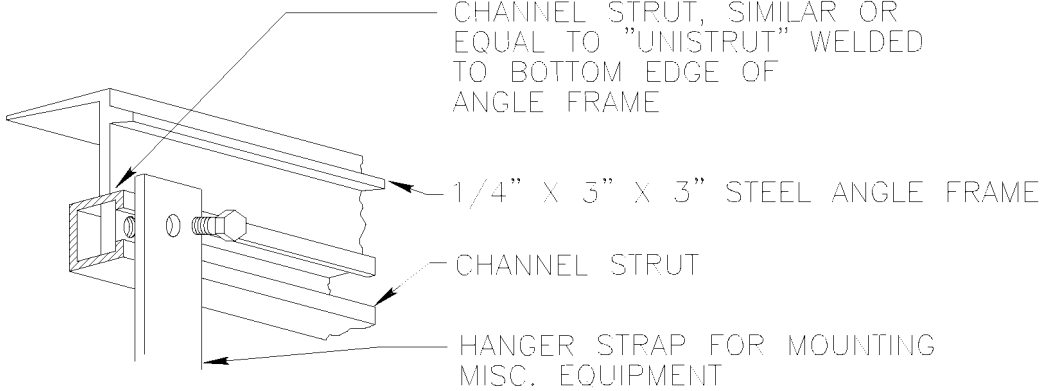
ELEVATION

SUMP BASIN WITH DISCHARGE TO GRADE

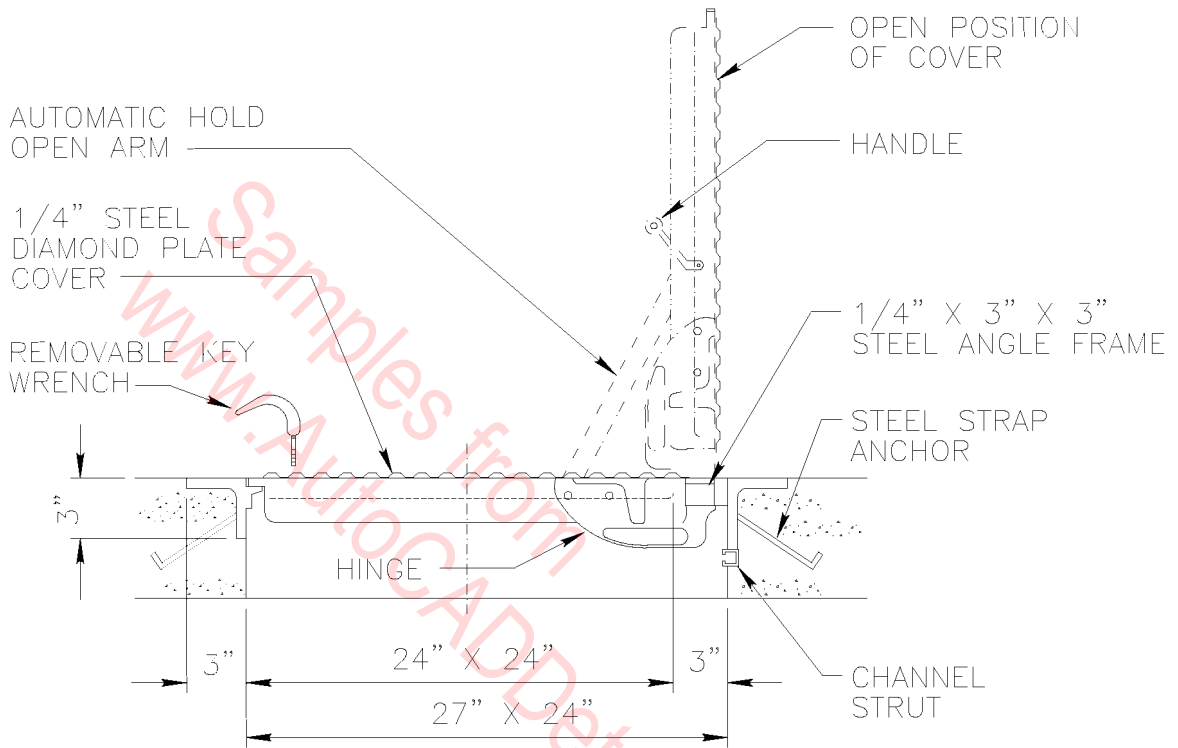
SCALE: 1" = 1' - 0"

NOTES:
SEE FIGURES ____ AND ____ FOR
SUMP BASIN ELECTRICAL DESIGN.

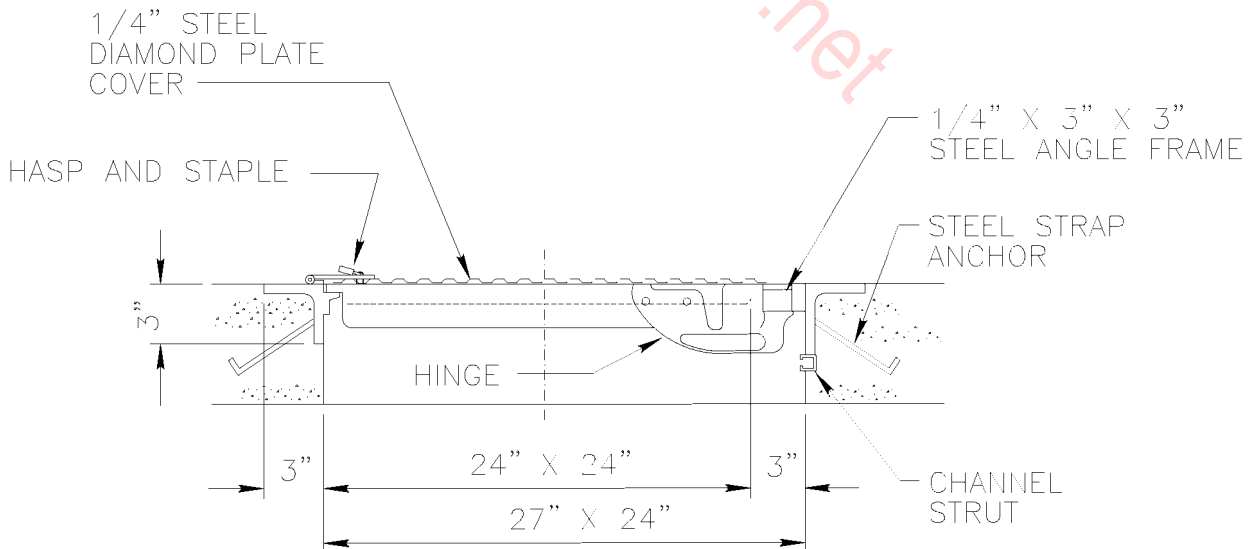
NOTE TO DESIGNER:
DEPTH DEPENDANT ON MAINTAINING 1/8" / FT. SLOPE
FROM VAULT MANHOLE OUTLET TO THE SUMP BASIN.
DEPTH WILL BE A MINIMUM OF 4' OR A MINIMUM OF 1'
DEEPER THAN DESIGN FROST DEPTH, WHICHEVER
IS GREATER.



CHANNEL STRUT



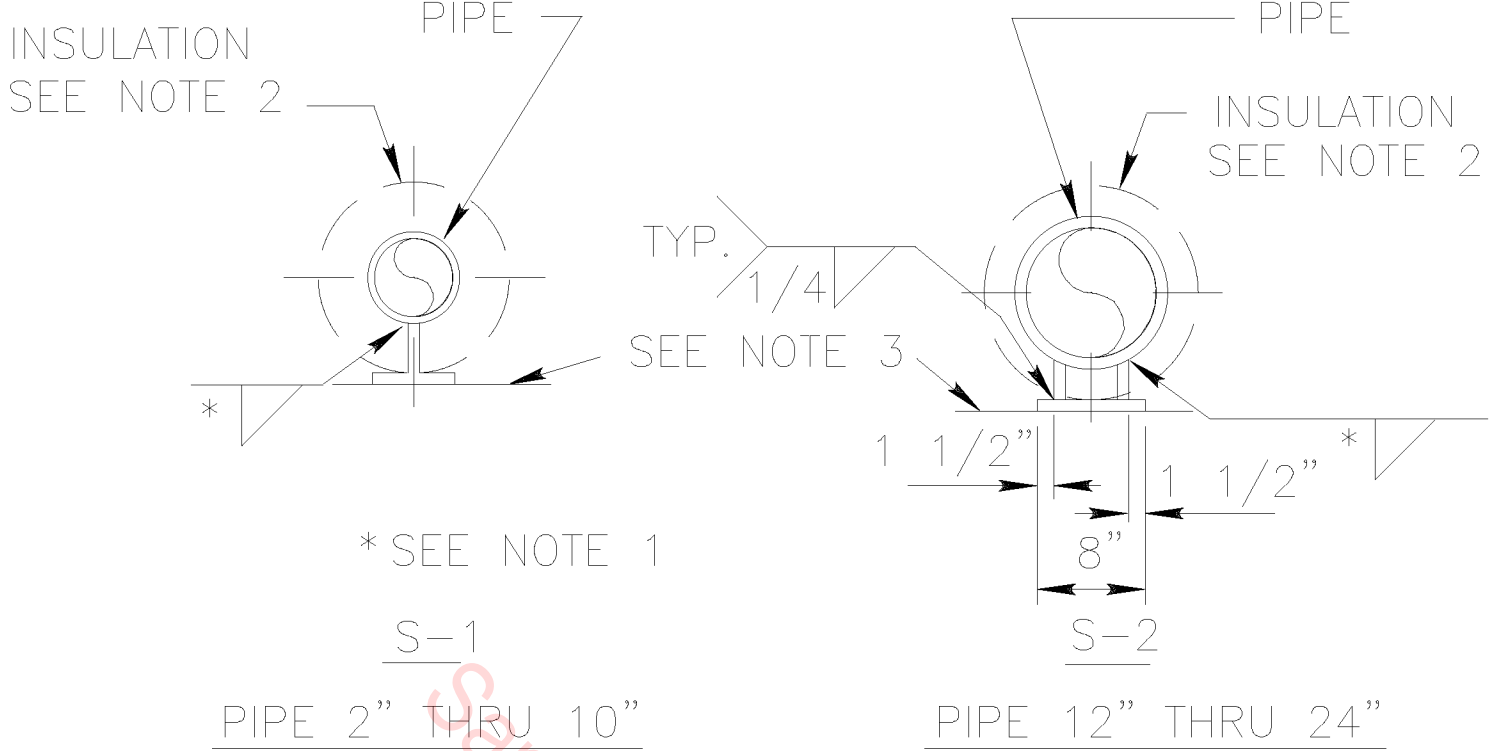
STANDARD LOCKING COVER



OPTIONAL LOCKING COVER

SUMP BASIN COVER

SCALE: 1 1/2" = 1' - 0"

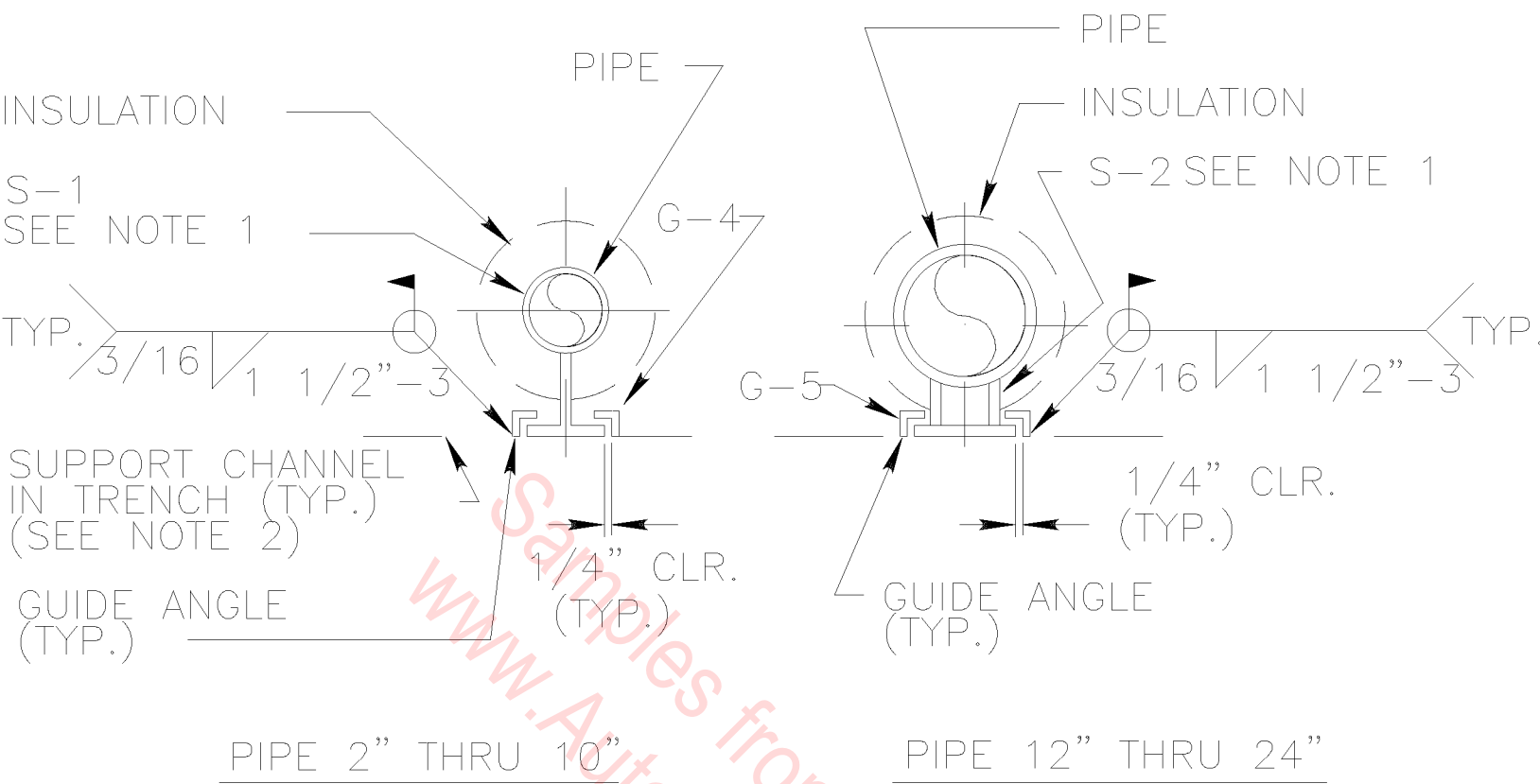


HEAT INSULATED PIPING (100°F - 750°F)			
SHOES FOR CARBON STEEL PIPE			
TYPE	MATERIAL		
	STEEL	ASTM	SIZE
S-1	CARBON	A-36	ST 6 X 15.9 X 16" LONG
S-2	CARBON	A-36	1 PLATE 8" X 16" X 1/4" THK. (HORIZ.)
			2 PLATES 6" X 16" X 1/4" THK. (VERT.)

NOTES:

1. WELD THICKNESS SHALL BE SAME AS PIPE SHOE OR PIPE WALL THICKNESS, WHICHEVER IS THINNEST.
2. WHERE INSULATION IS GREATER THAN SHOE HEIGHT, CUT AWAY INSULATION PARTIALLY WHERE IT INTERFERES WITH PIPE SHOES AND SUPPORTS.
3. SEE TABLE ___ FOR CHANNEL SUPPORT SCHEDULE.

FREE PIPE SUPPORT

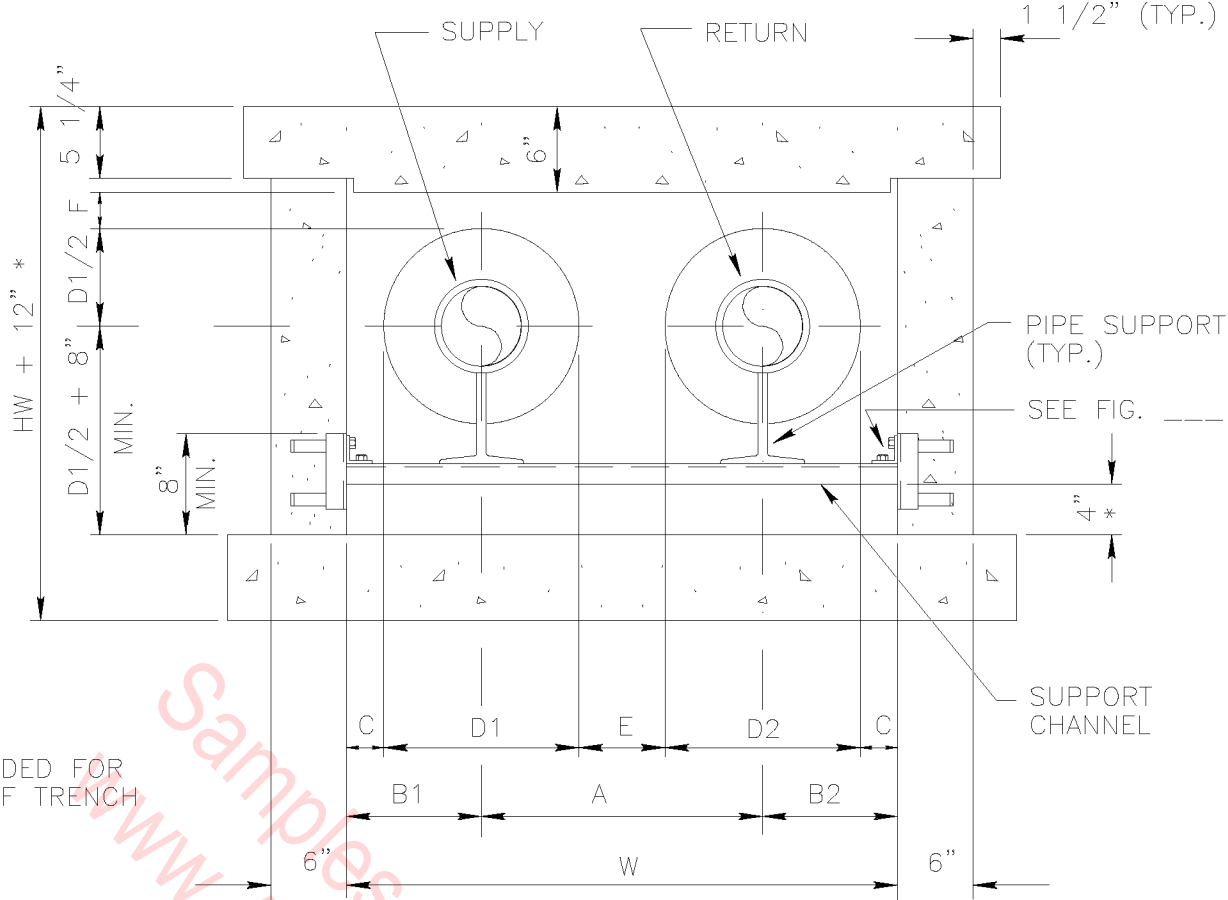


HEAT INSULATED PIPING			
GUIDES FOR PIPE SHOE			
TYPE	MATERIAL		
	STEEL	ASTM	SIZE
G-4	CARBON	A-36	1" X 1" X 3/16" ANGLE 16" LONG
G-5	CARBON	A-36	1" X 1" X 3/16" ANGLE 16" LONG

NOTE:

1. SEE TABLE ___ FOR CHANNEL SUPPORT SCHEDULE.

GUIDED PIPE SUPPORT



* 4" CLEARANCE PROVIDED FOR PROPER DRAINAGE OF TRENCH SYSTEM.

NOTES:

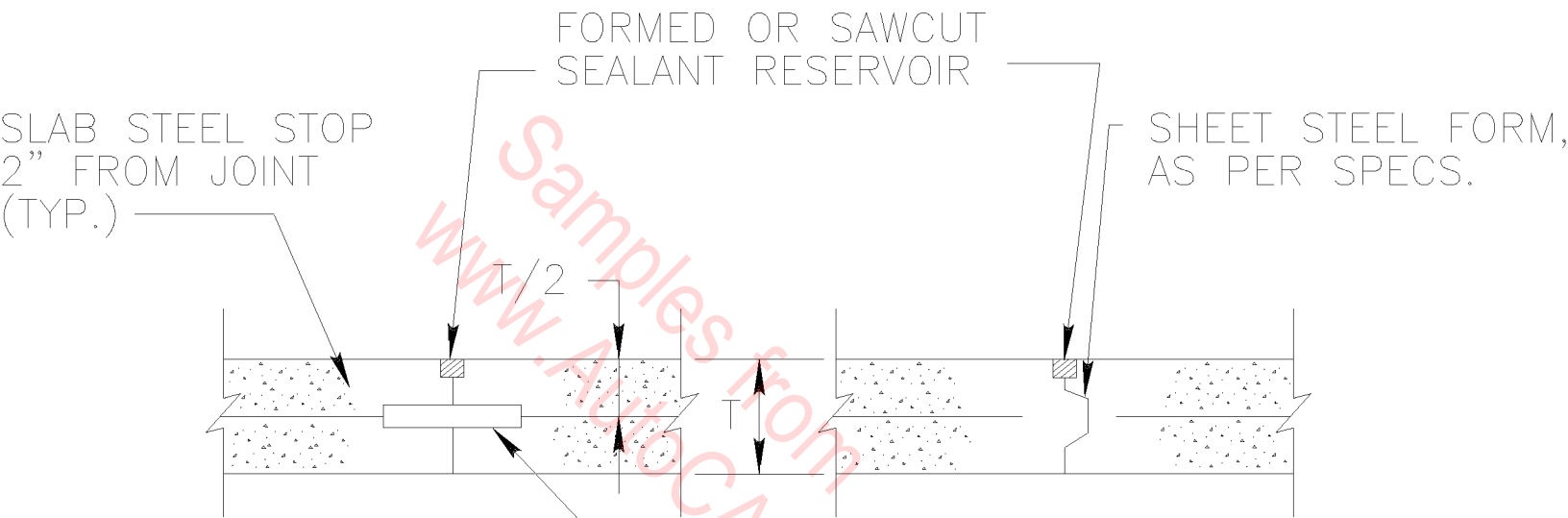
1. DIMENSION "HW" SHALL BE INCREASED AS NECESSARY TO ACCOMODATE THE MINIMUM TRENCH BOTTOM SLOPE OF 1" PER 20 FEET.

TRENCH DIMENSION SCHEDULE											
STANDARD TRENCH SIZE	PIPE SIZES (INCHES)	A	B ₁	B ₂	C*	D ₁	D ₂	E*	F MIN.	H _W MIN.	W
					6"			6"			
					6"			6"			
					6"			6"			
					6"			6"			

NOTES:

1. CLEARANCES BASED ON THE THICKEST INSULATION. IF LESS INSULATION(LOWER "K") IS PROVIDED, DIMENSIONS C, D, E AND F WILL BE DIFFERENT THAN SCHEDULED. HOWEVER, OVERALL TRENCH DIMENSIONS SHALL REMAIN THE SAME. C* & E* DIMENSIONS MUST BE MAINTAINED THROUGHOUT ALL STRAIGHT SECTIONS OF TRENCH TO ALLOW PROPER CLEARANCES FOR EXPANSION.

TYPICAL TRENCH & COVER DIMENSIONS
SECTION THRU TRENCH



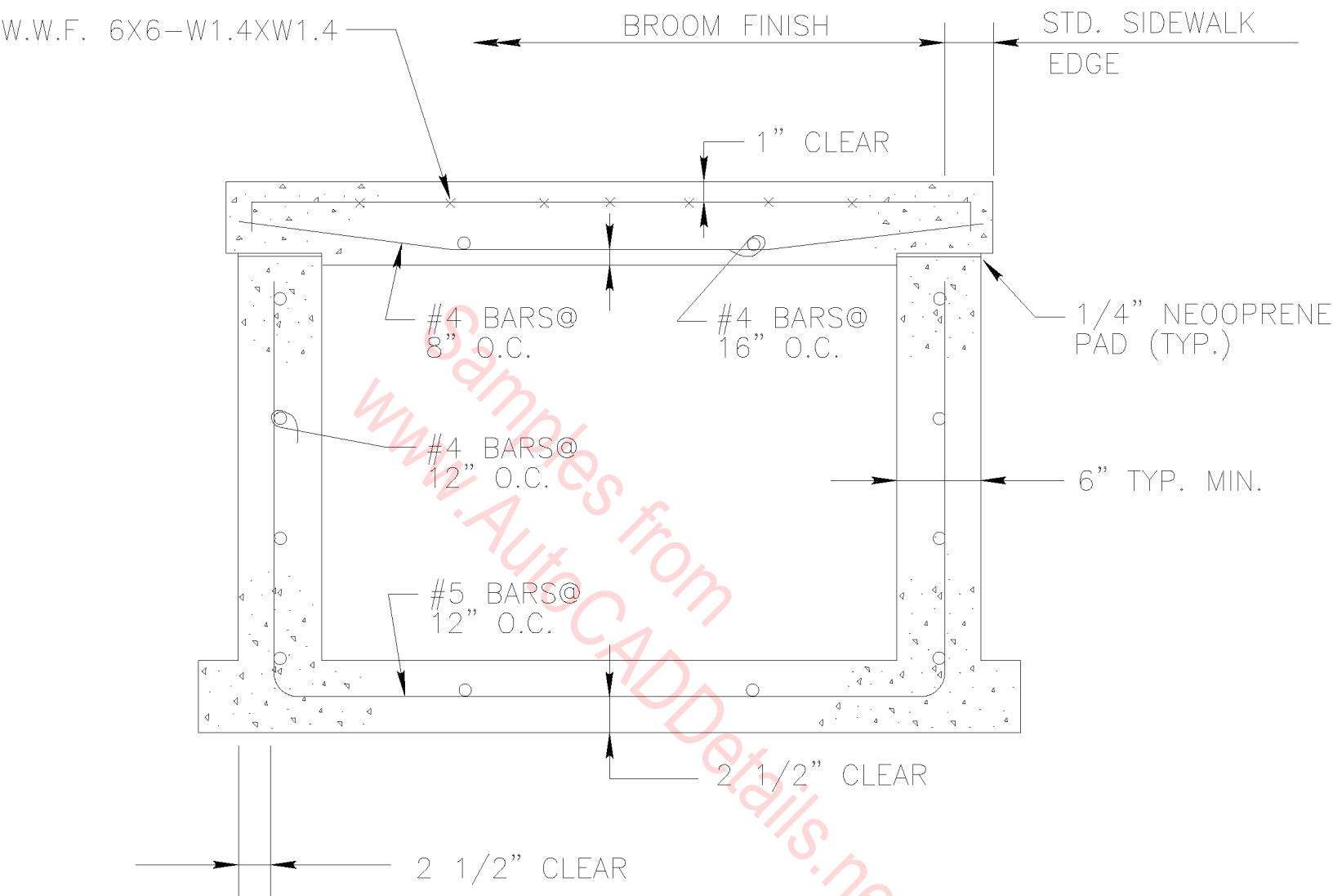
SMOOTH DOWELS— 3/4"φ X16"
 LONG @ 12" O.C., PAINTED
 & OILED PER SPECS.

(RETAINED IN PLACE
 SHEET STEEL FORM)

DOWELED

KEYED

CONSTRUCTION JOINT

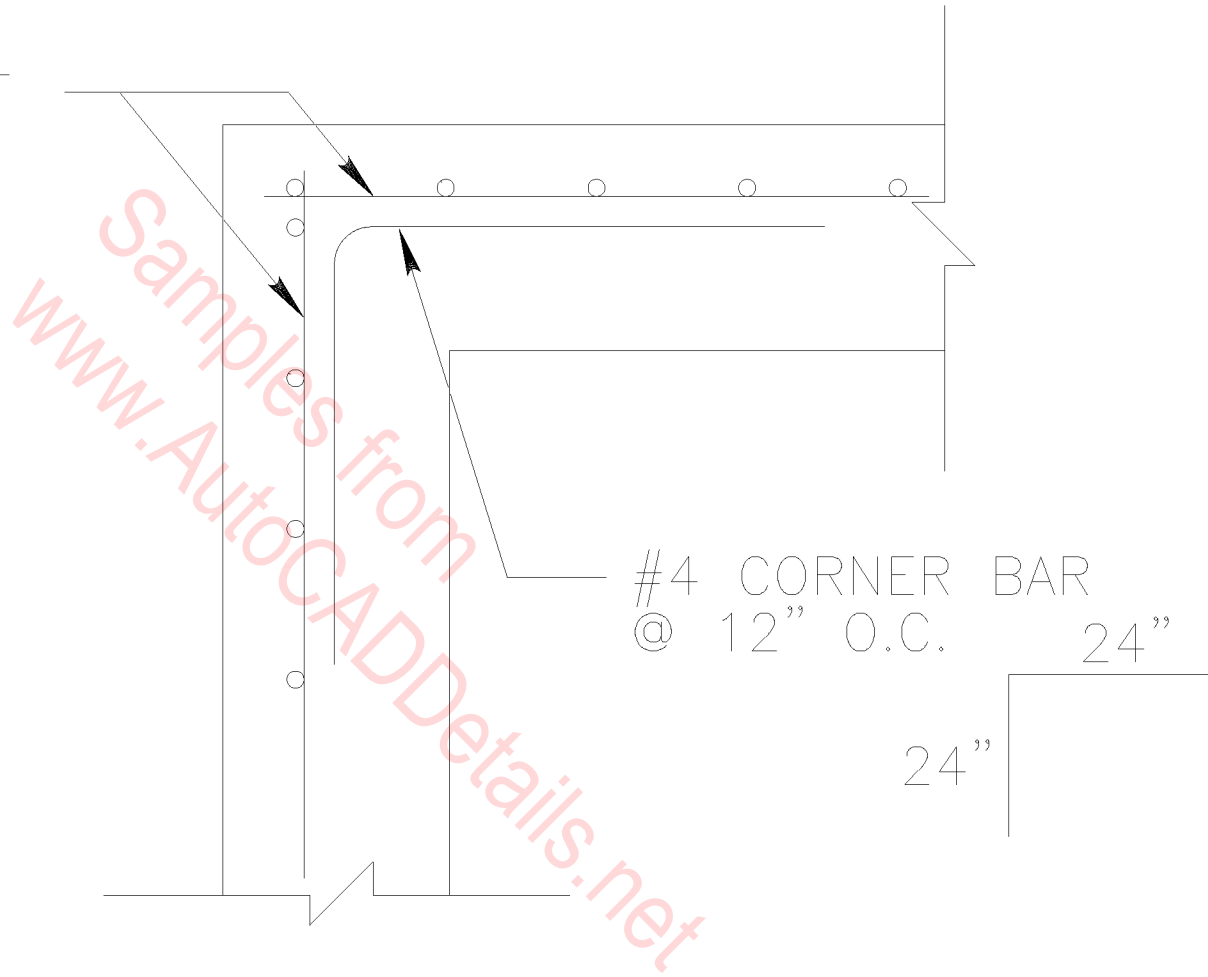


TRENCH & COVER REINFORCING

NOTE TO THE DESIGNER:

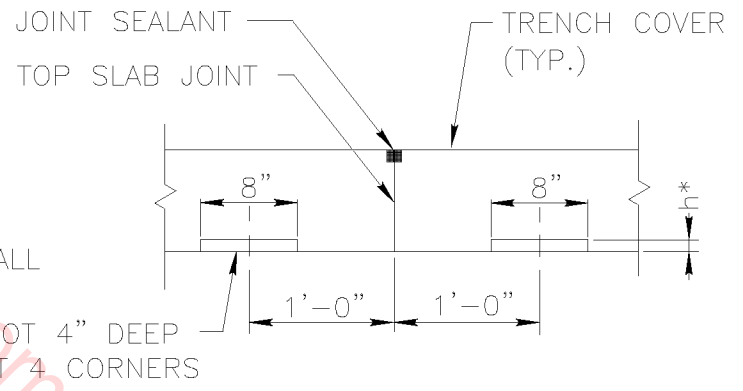
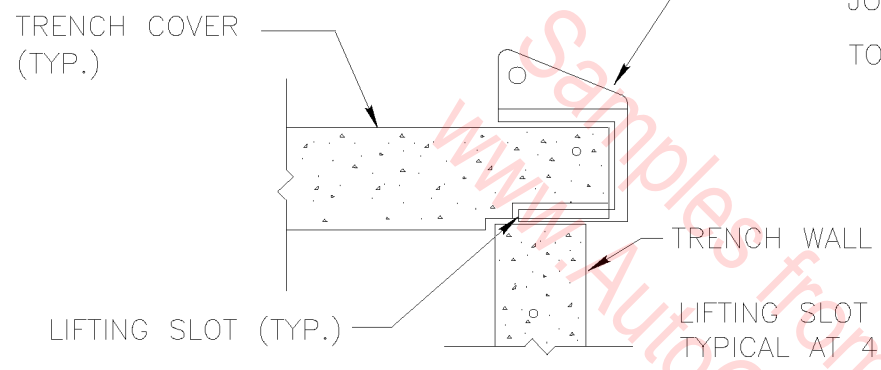
TRENCH REINFORCEMENT AND CONCRETE THICKNESS SHALL BE DETERMINED BY A STRUCTURAL ENGINEER BASED ON SITE SPECIFIC LOADS AND SOIL PROPERTIES. REINFORCEMENT SHOWN IS THE MINIMUM REQUIRED.

#4@12" O.C.
HORIZ. WALL
REINFORCEMENT



TYPICAL TRENCH WALL
CORNER REINFORCING

STEEL LIFTING DEVICE W/ SLING BY CONTRACTOR. DELIVER 1 SET OF 4 TO GOVERNMENT AT END OF CONTRACT.



* DESIGN HEIGHT "h" OF SLOT TO ACCOMMODATE SUBMITTED LIFTING DEVICE.

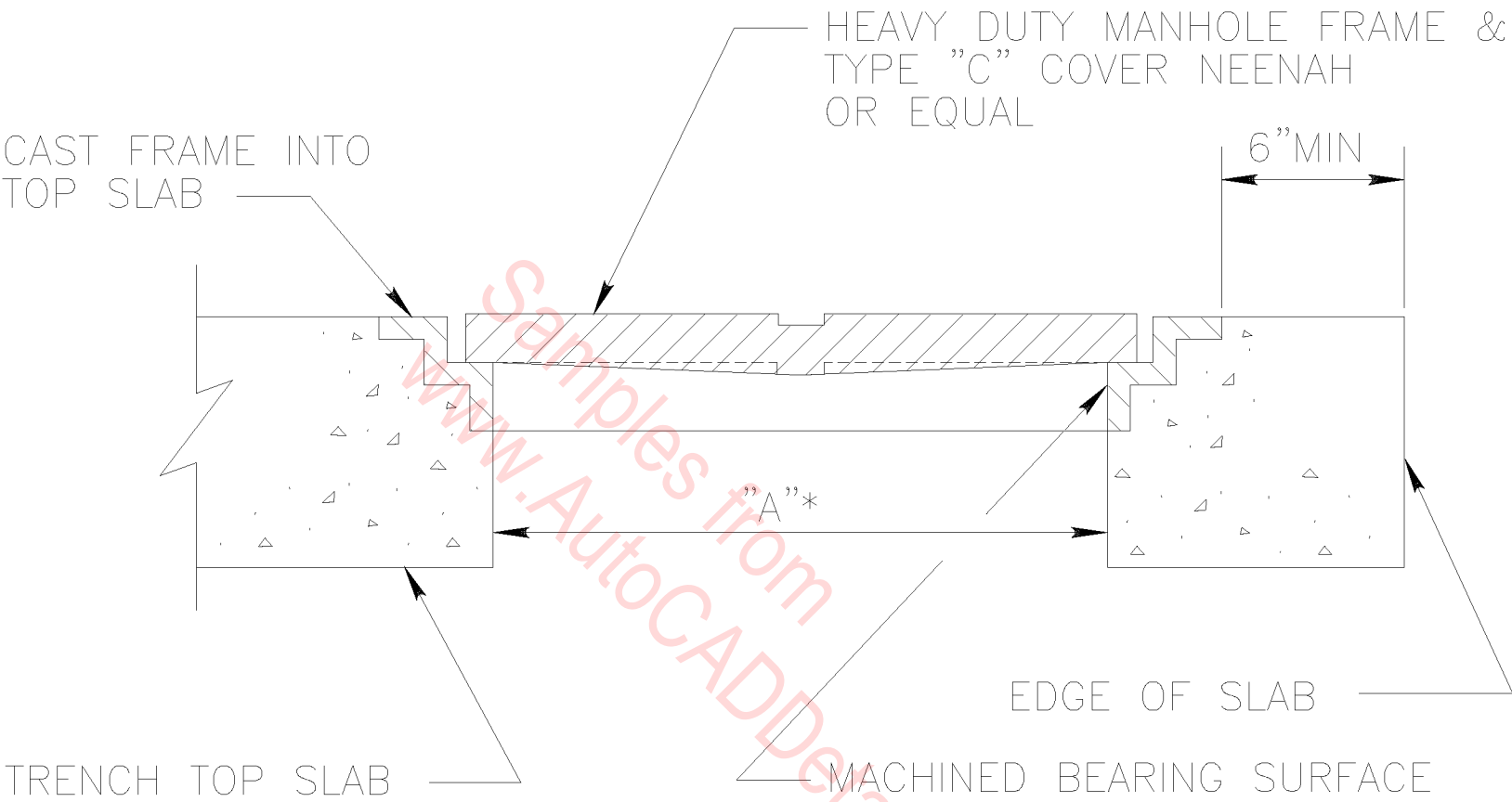
SECTION

SIDE VIEW

NOTES:

1. DESIGN OF LIFTING DEVICE SHALL SATISFY ACI SHEAR REQUIREMENTS ALONG LIFTING SLOTS.
2. CONTRACTOR SHALL DISTRIBUTE LOAD EQUALLY BETWEEN THE FOUR LIFTING DEVICES BY USING A STRONGBACK OR APPROVED EQUAL.

LIFTING DEVICE



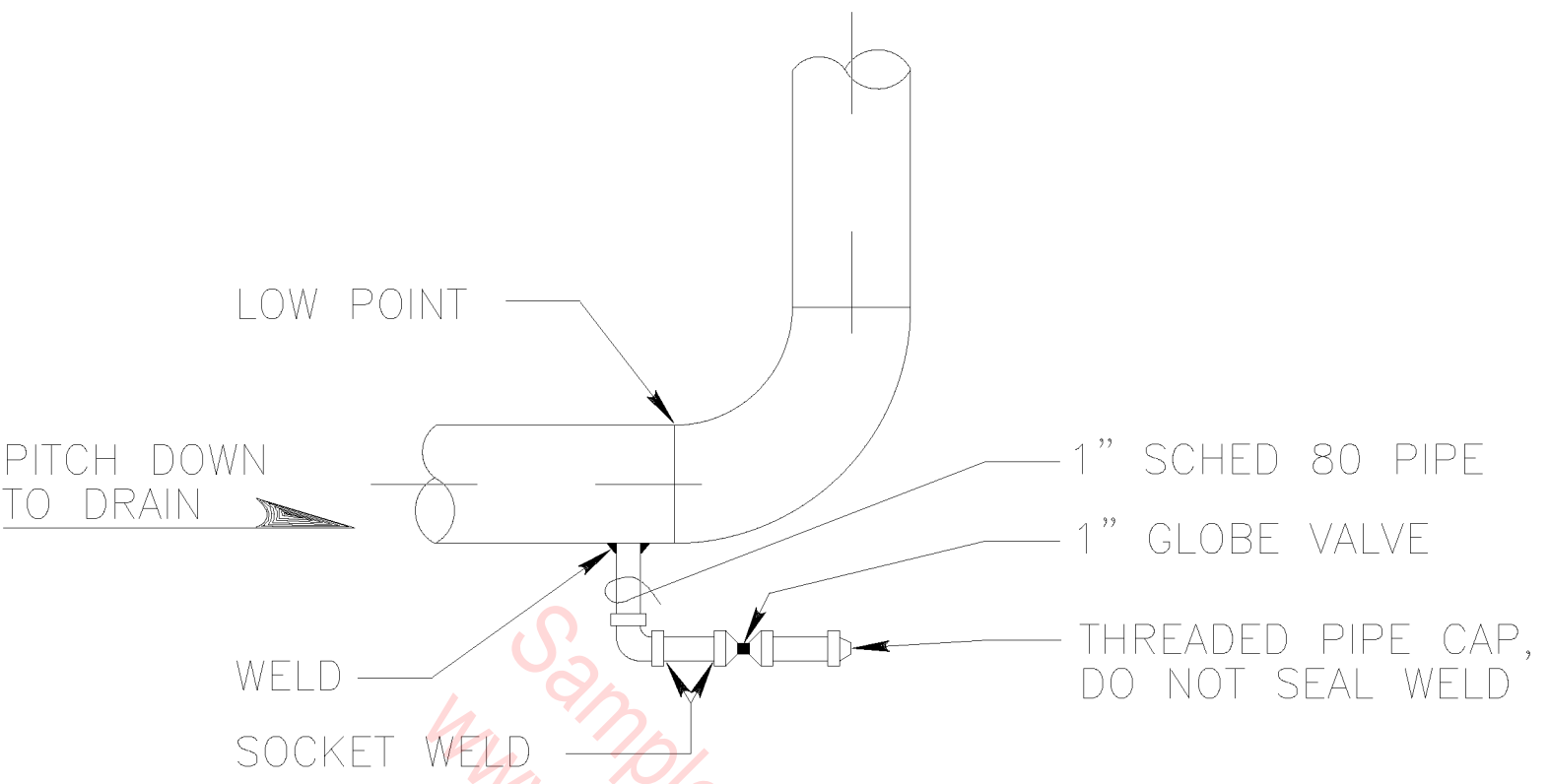
DIMENSION "A"

24 INCHES FOR VENT ACCESS

12 INCHES FOR INSPECTION PORT

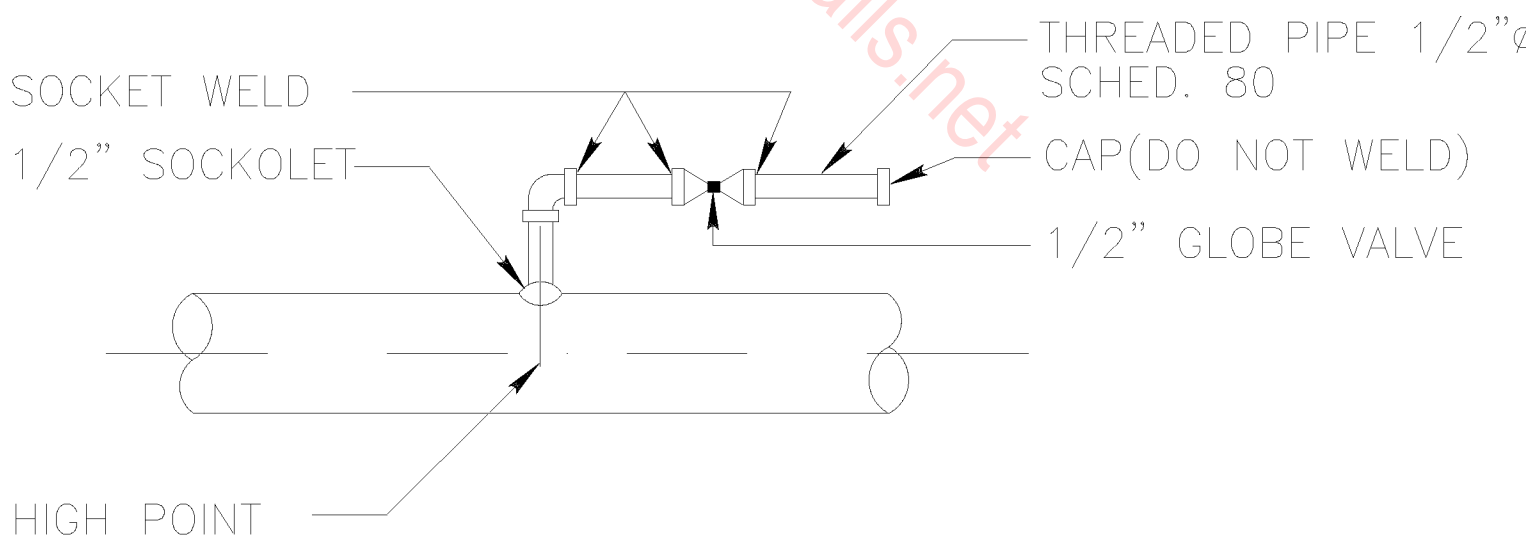
* CENTER MANHOLE ON TRENCH TOP

ACCESS COVER



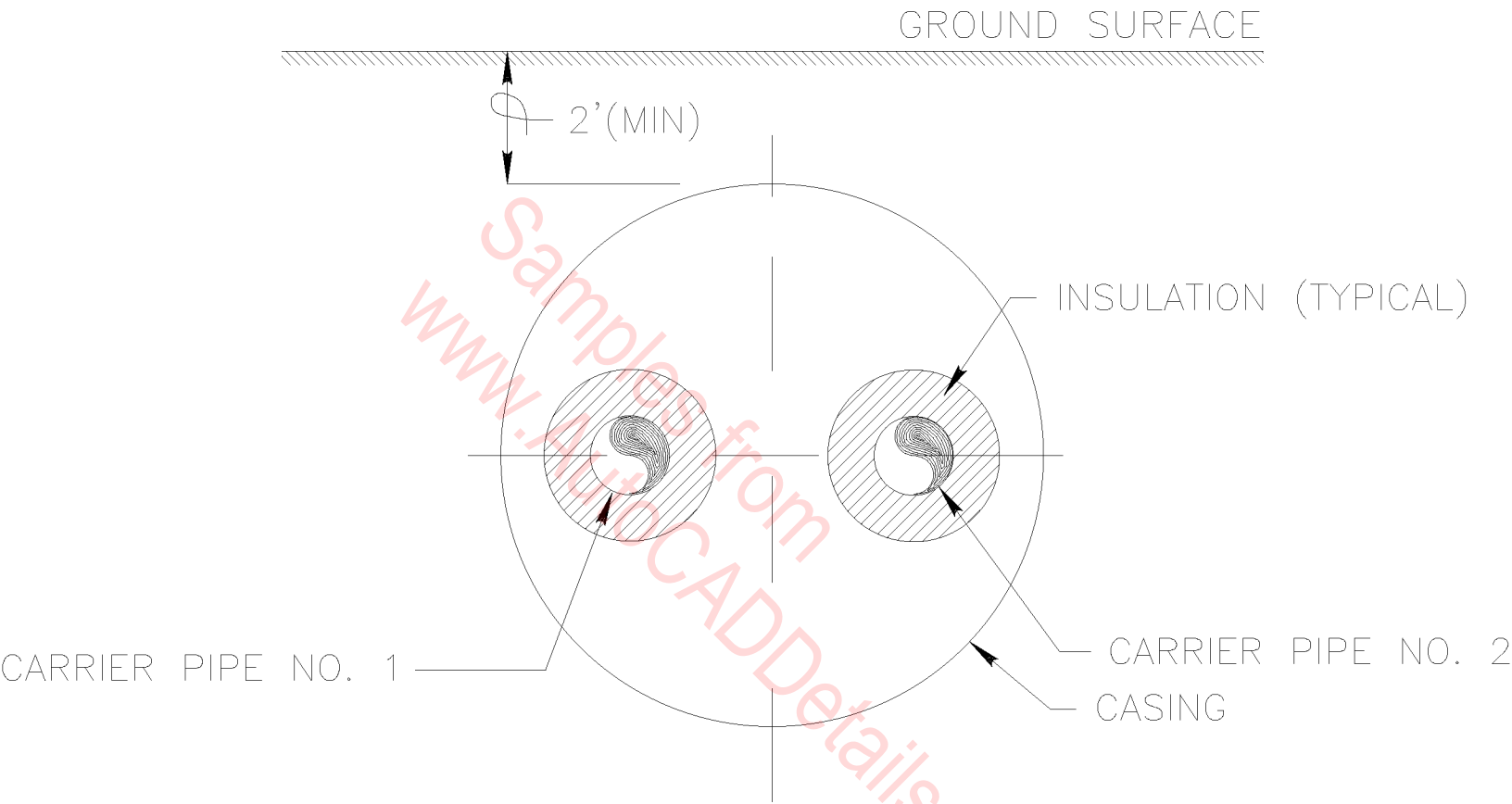
NOTE:
 LOW POINTS IN ALL PIPING TO
 BE DRAINED.

DRAIN



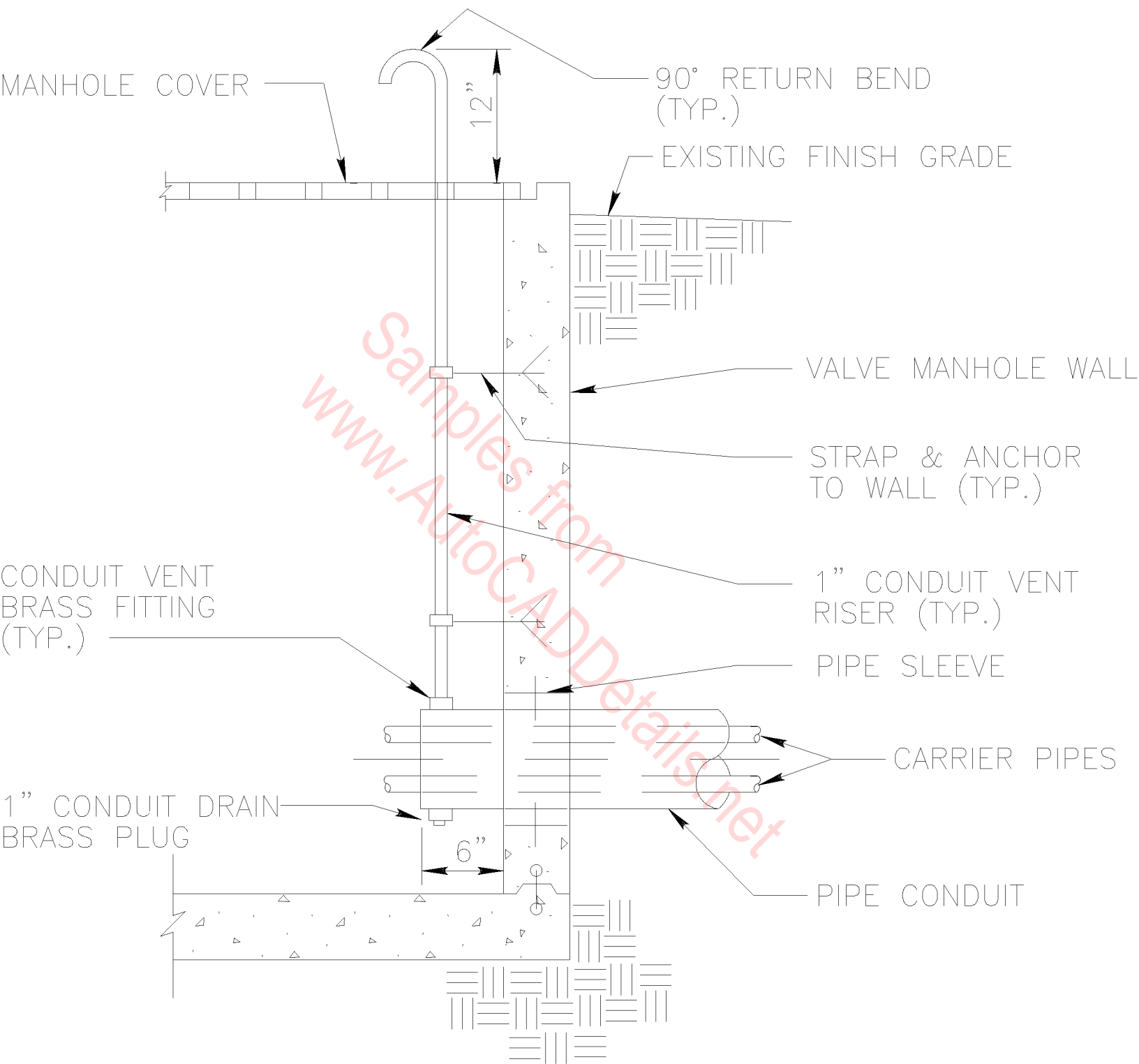
VENT

VENT AND DRAIN DETAILS

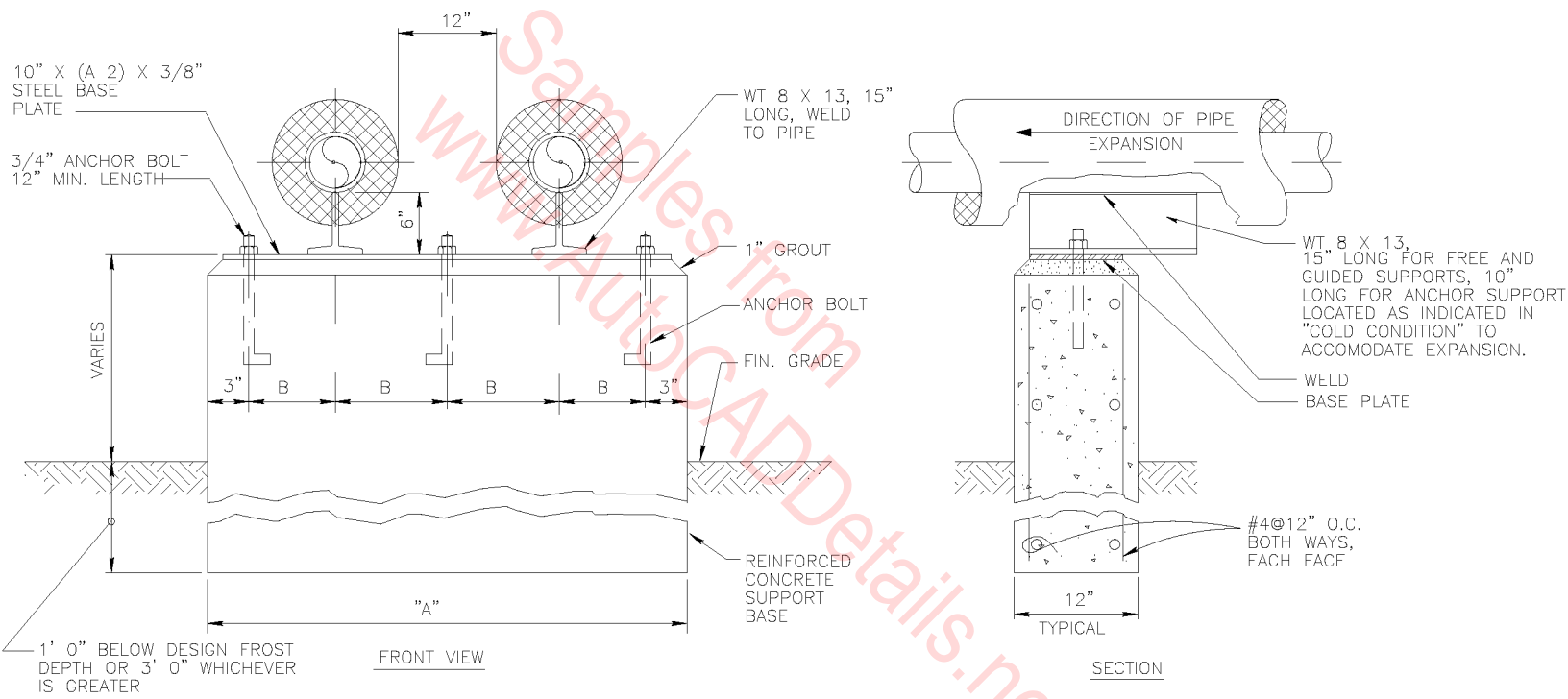


NOTE: A STEAM LINE AND A CONDENSATE LINE ARE NOT TO BE INSTALLED IN THE SAME CASING.

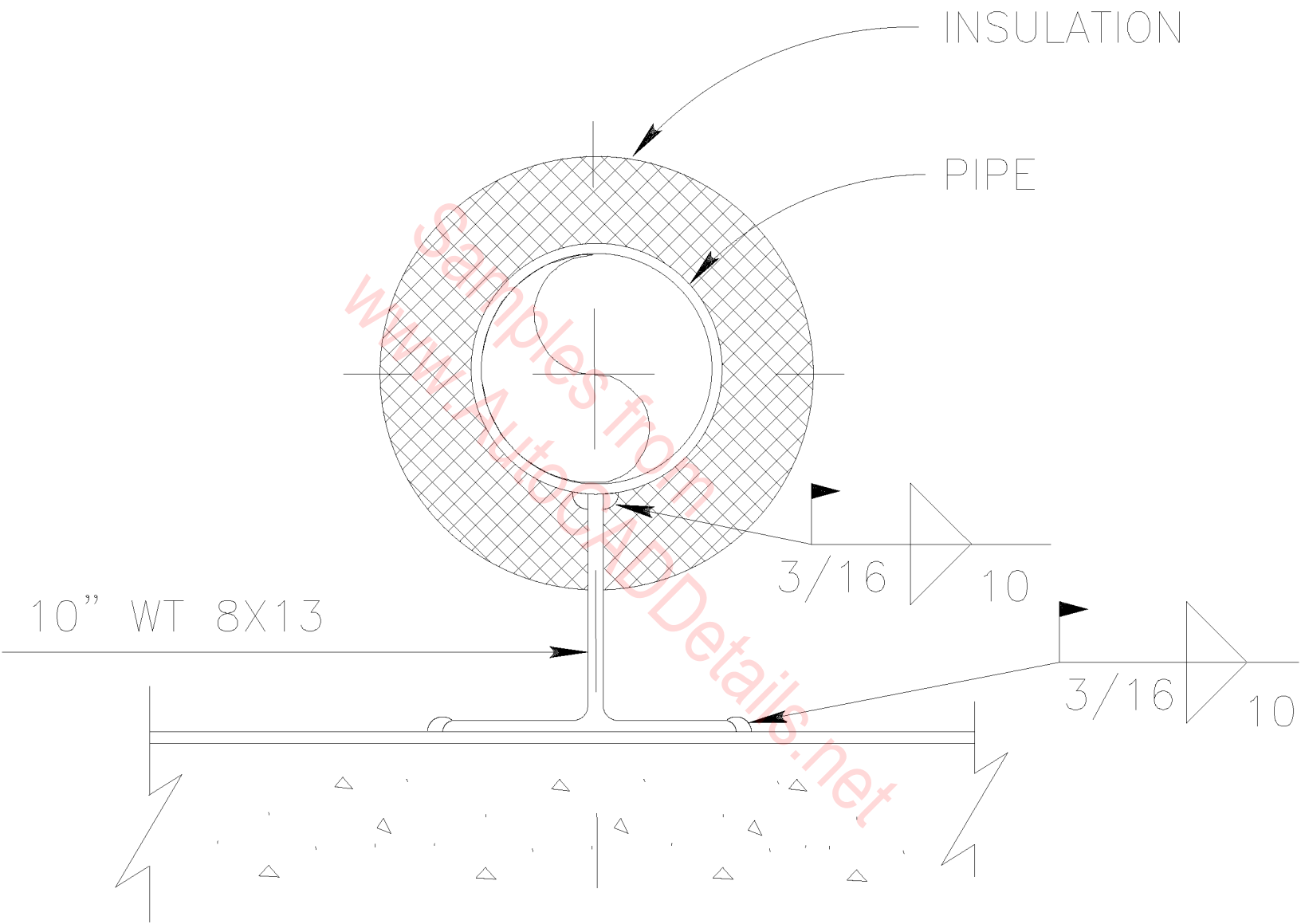
SINGLE CONDUIT SYSTEM



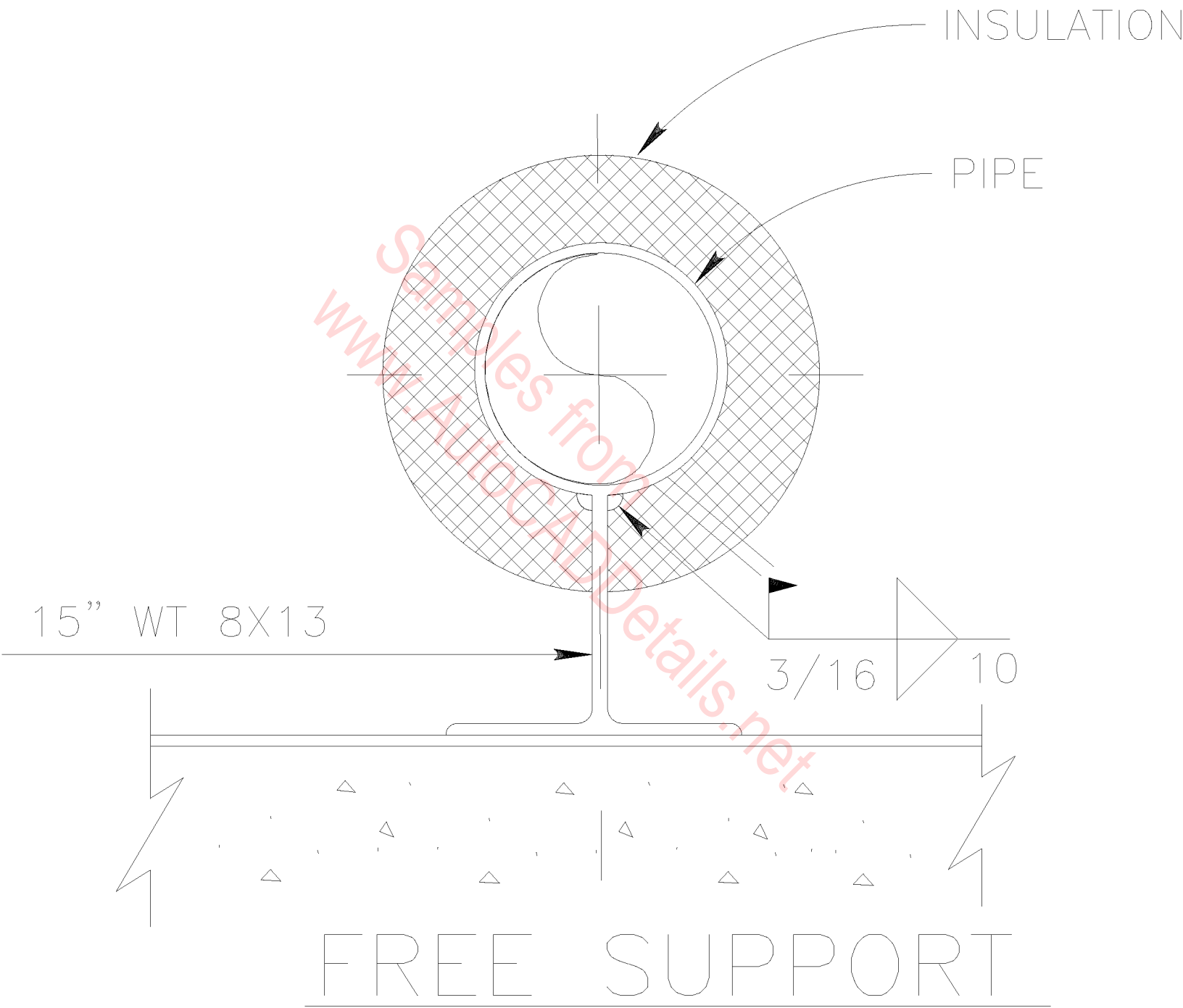
CONDUIT, VENT, AND DRAIN

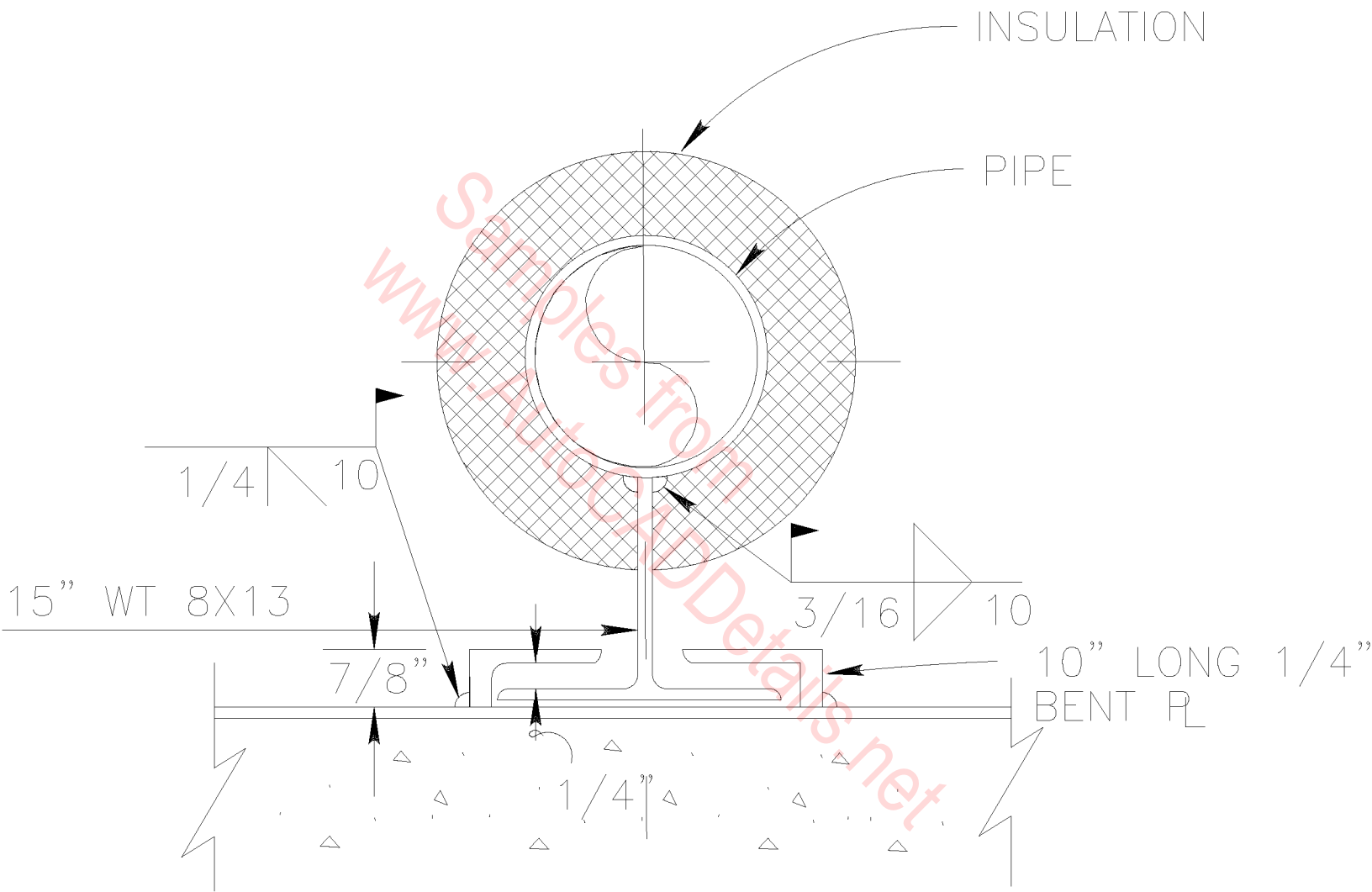


LOW PROFILE PIPE SUPPORT

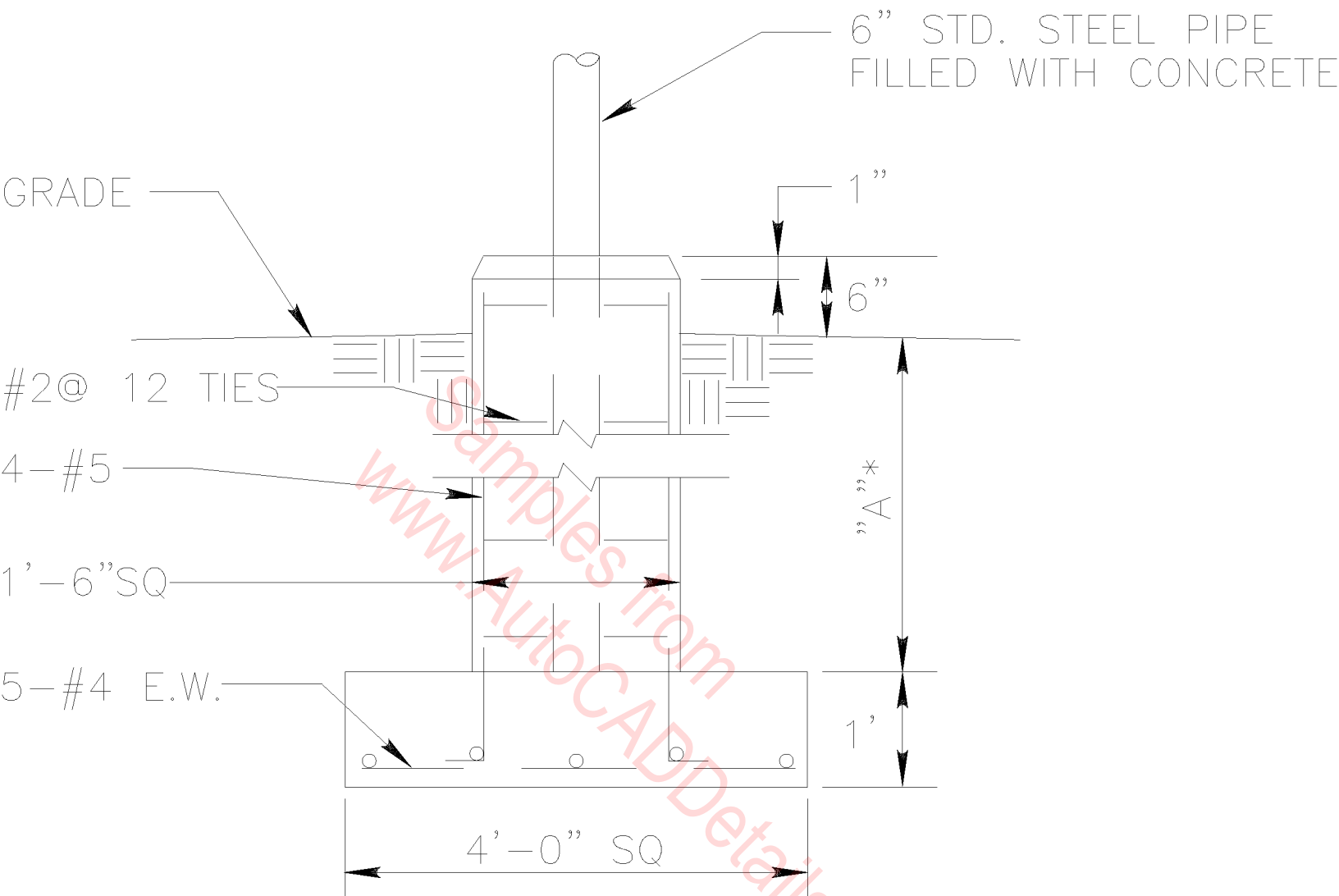


ANCHOR SUPPORT





GUIDED SUPPORT

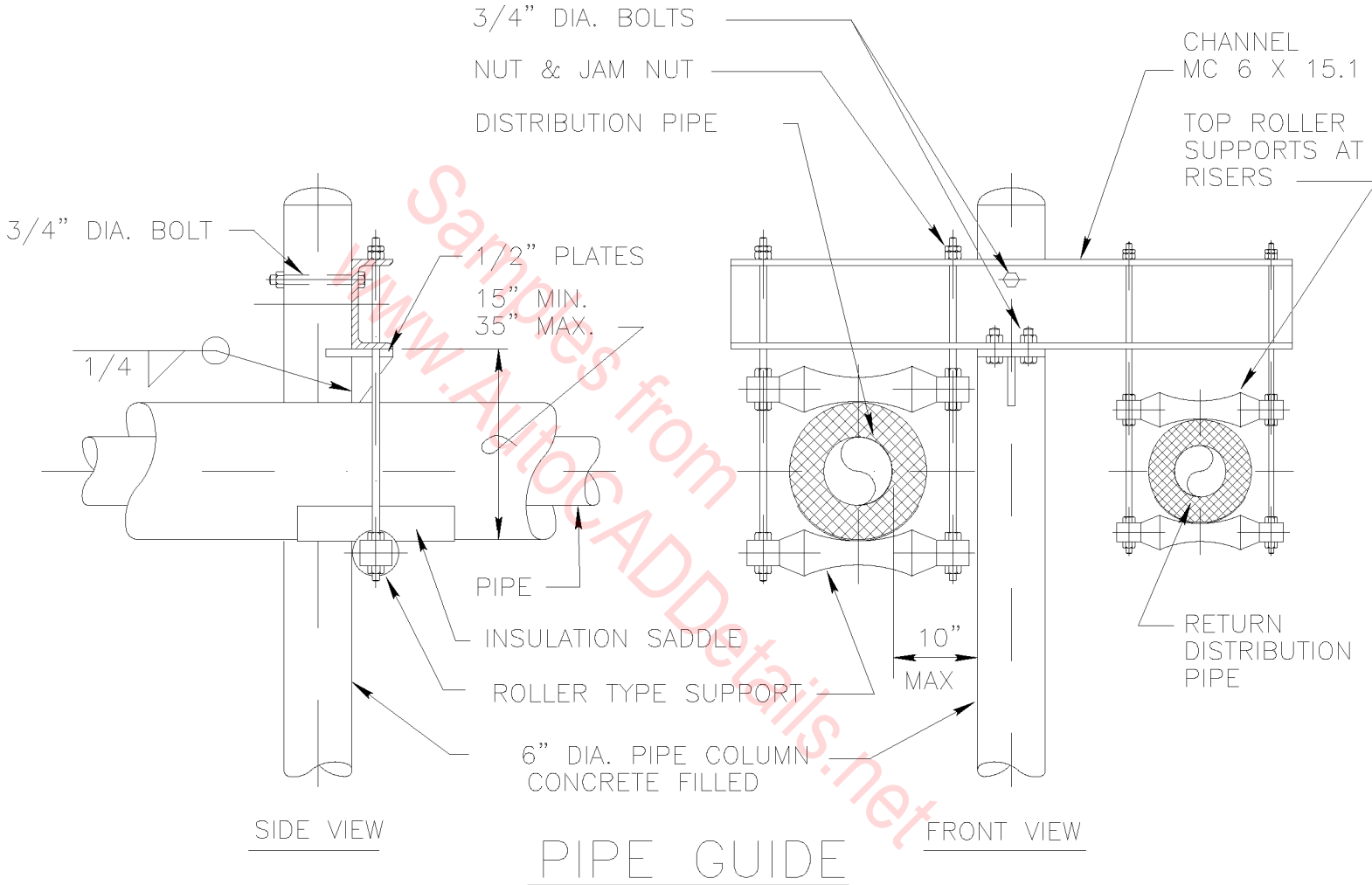


HIGH PROFILE BASE

NOTES TO THE DESIGNER:

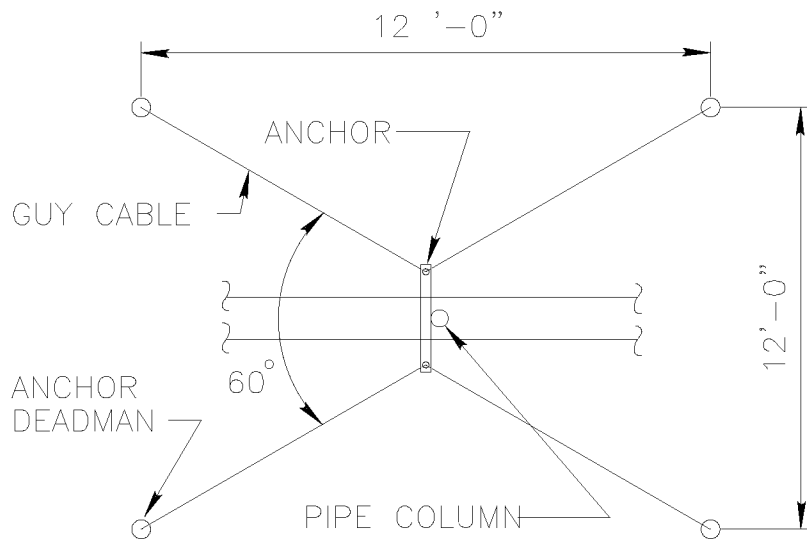
* "A" IS THE DESIGN FROST DEPTH,
SEE TM 5-809-1 FOR FROST DEPTH

1. SITE SPECIFIC DESIGN REQ'D BASED ON
LOADS AND SOIL CONDITIONS.

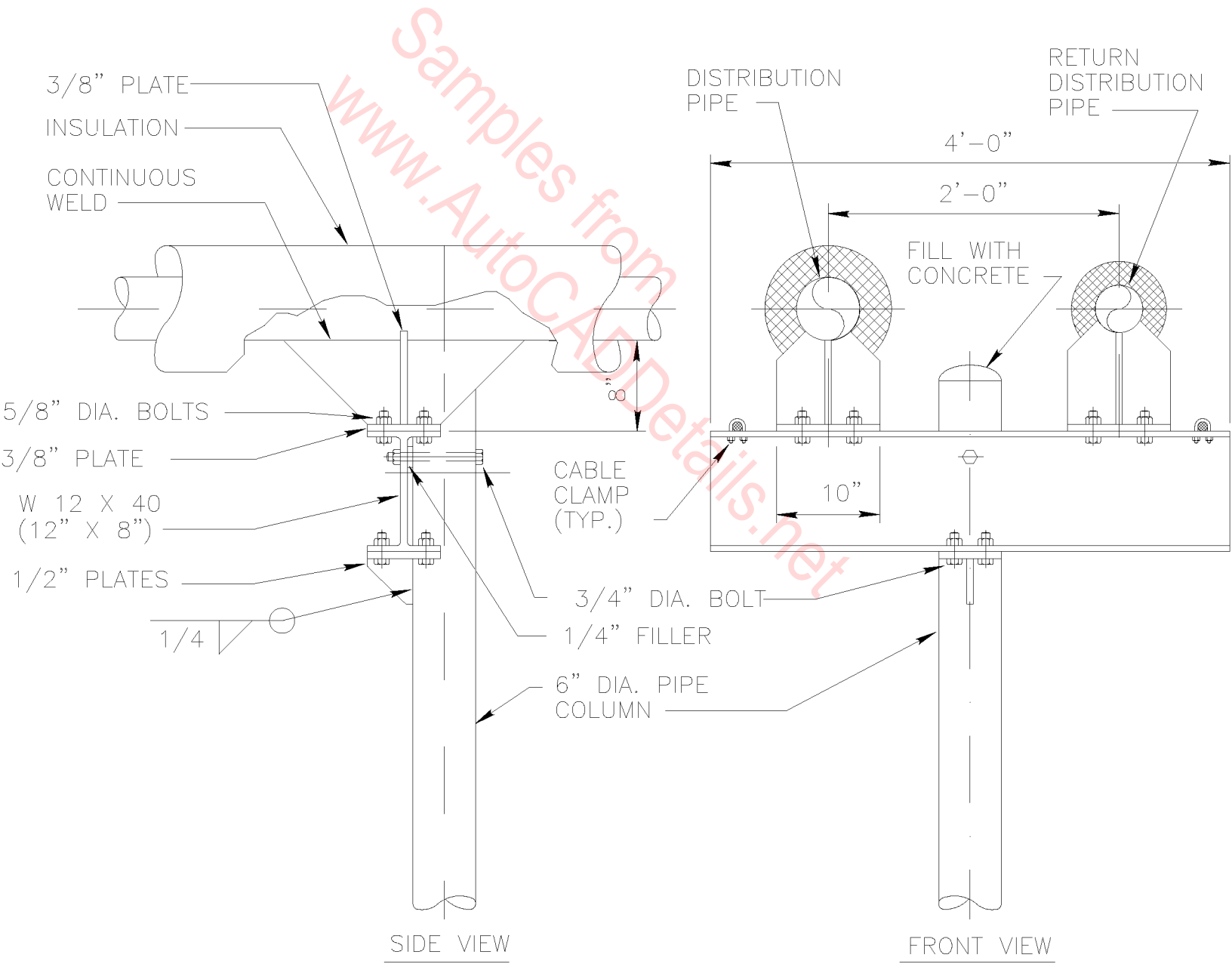


NOTE TO THE DESIGNER:

PIPE SUPPORT SHALL BE REDESIGNED IF PIPE LARGER THAN 10" J IS USED.



PLAN - PIPE ANCHOR



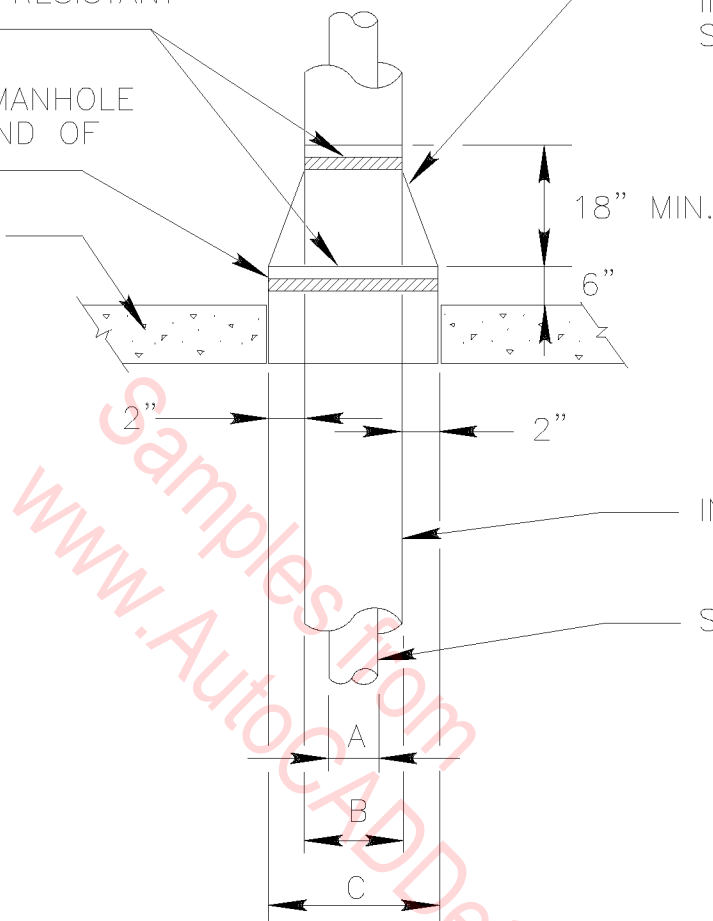
HIGH PROFILE PIPE ANCHOR

STAINLESS STEEL BAND (TYPE 201
STAINLESS STEEL, 1/2" WIDE, 0.030"
THICK) WITH CORROSION RESISTANT
BUCKLES

SLEEVE GROUTED INTO MANHOLE
TOP (BEVEL EXPOSED END OF
SLEEVE)

CONCRETE VAULT TOP

TRANSITION BOOT CLAMPED TO
INSULATION JACKET ABOVE &
SLEEVE BELOW (SEE NOTES)

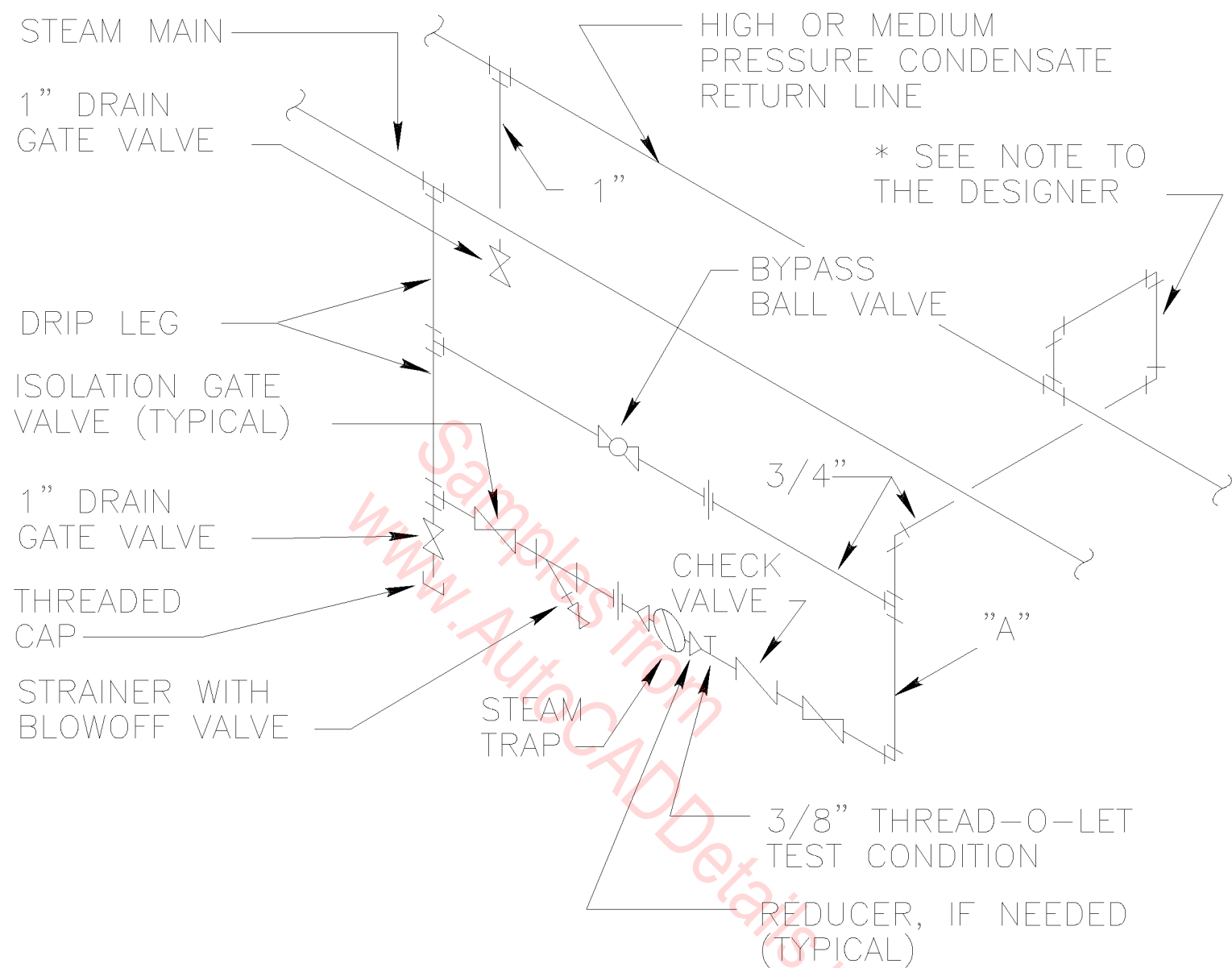


A=OUTSIDE PIPE DIA.
B=OUTSIDE INSUL.&JACKET DIA.*
C=MIN. SLEEVE INSIDE DIA.=B+4
* SEE SPEC. FOR INSULATION THICKNESS

NOTES:

1. TRANSITION BOOT (LINER) SHALL BE:
 - 25 MIL THICKNESS (MIN)
 - E.P.D.M. TYPE MEMBRANE
 - COMPATIBLE AT HIGH (220° F) AND LOW (-40° F) TEMPERATURES
 - RESISTANT TO ULTRAVIOLET LIGHT DEGRADATION
2. LINER SEAM SHALL PROVIDE 2" MINIMUM OF OVERLAP.
USE SOLVENT CEMENT AS APPROVED BY LINER MANUFACTURER.

VALVE MANHOLE TOP PENETRATION

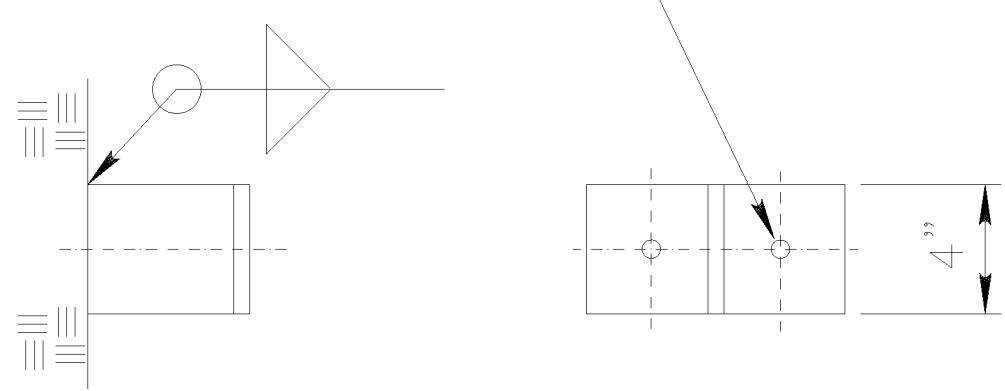


TRAP STATION LAYOUT ISOMETRIC

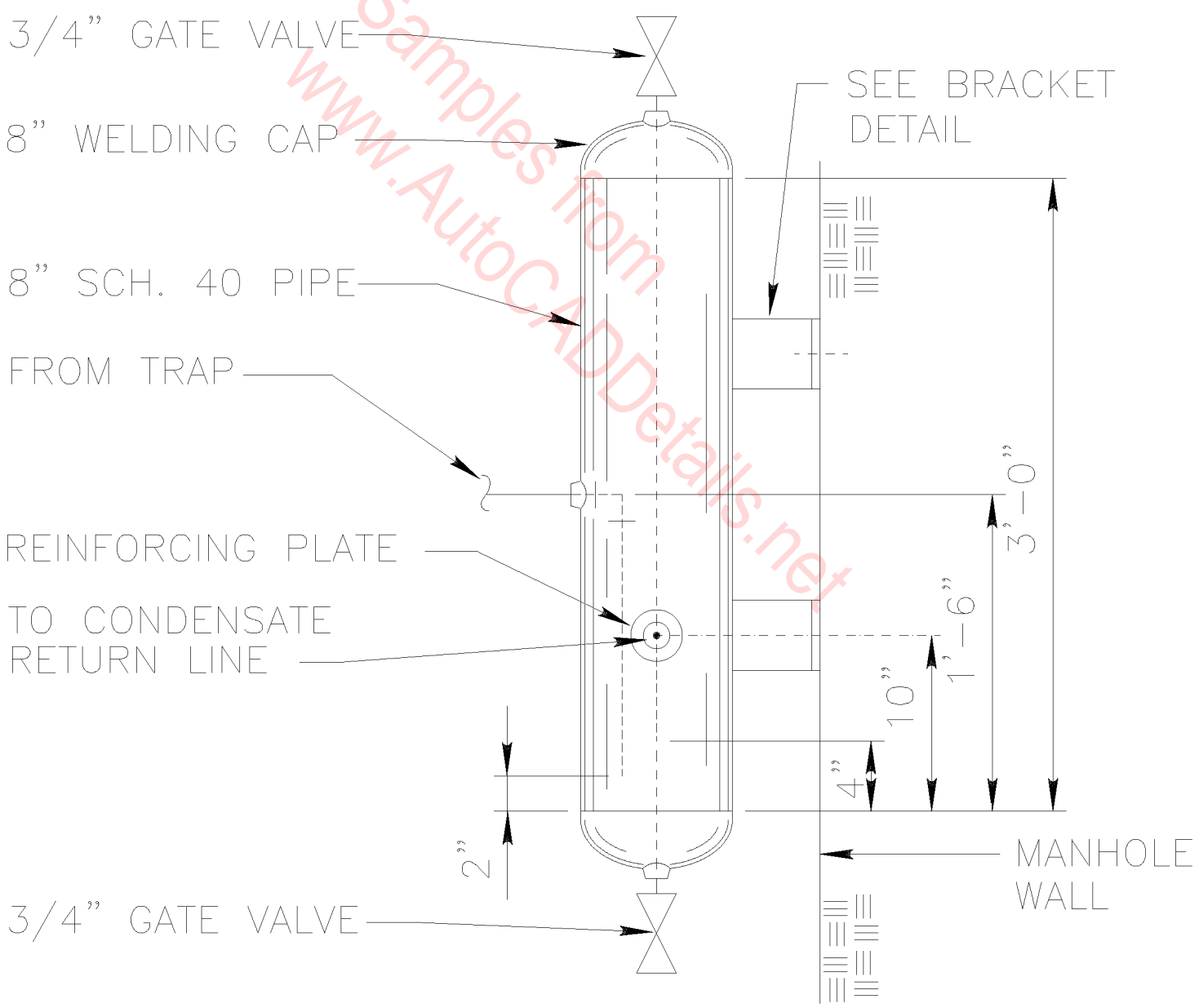
NOTE TO THE DESIGNER:

* HIGH PRESSURE CONDENSATE DISCHARGE FROM THE TRAP WILL NOT BE DIRECTLY ROUTED TO A GRAVITY OR LOW PRESSURE CONDENSATE SYSTEM. IN THIS INSTANCE, A 3/4" LINE WILL BE ROUTED TO AN ACCUMULATOR BEFORE BEING ROUTED TO A CONDENSATE PUMP.

INSTALL 1/2" ANCHOR BOLTS, 2 REQUIRED

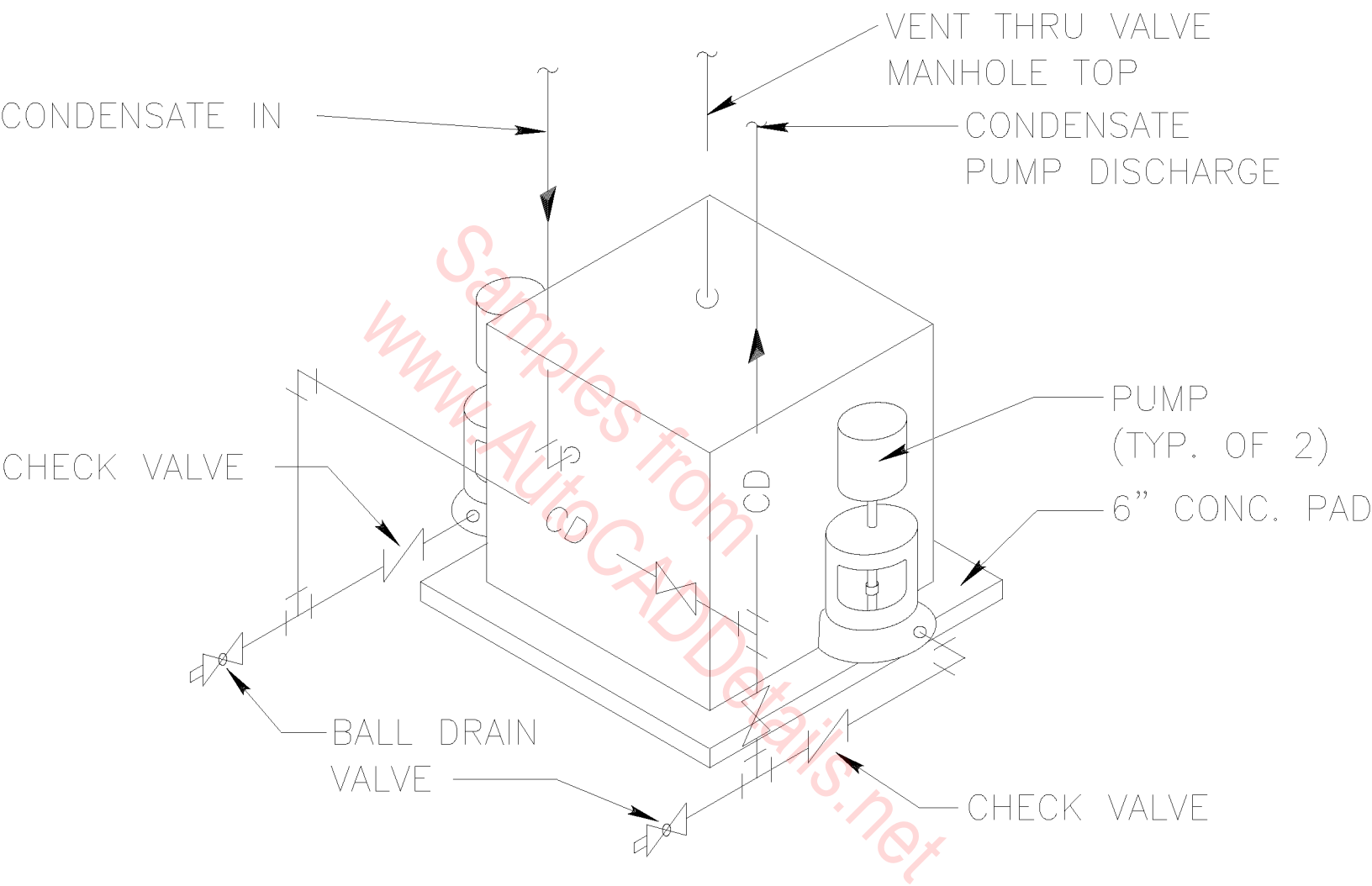


BRACKET
N.T.S.



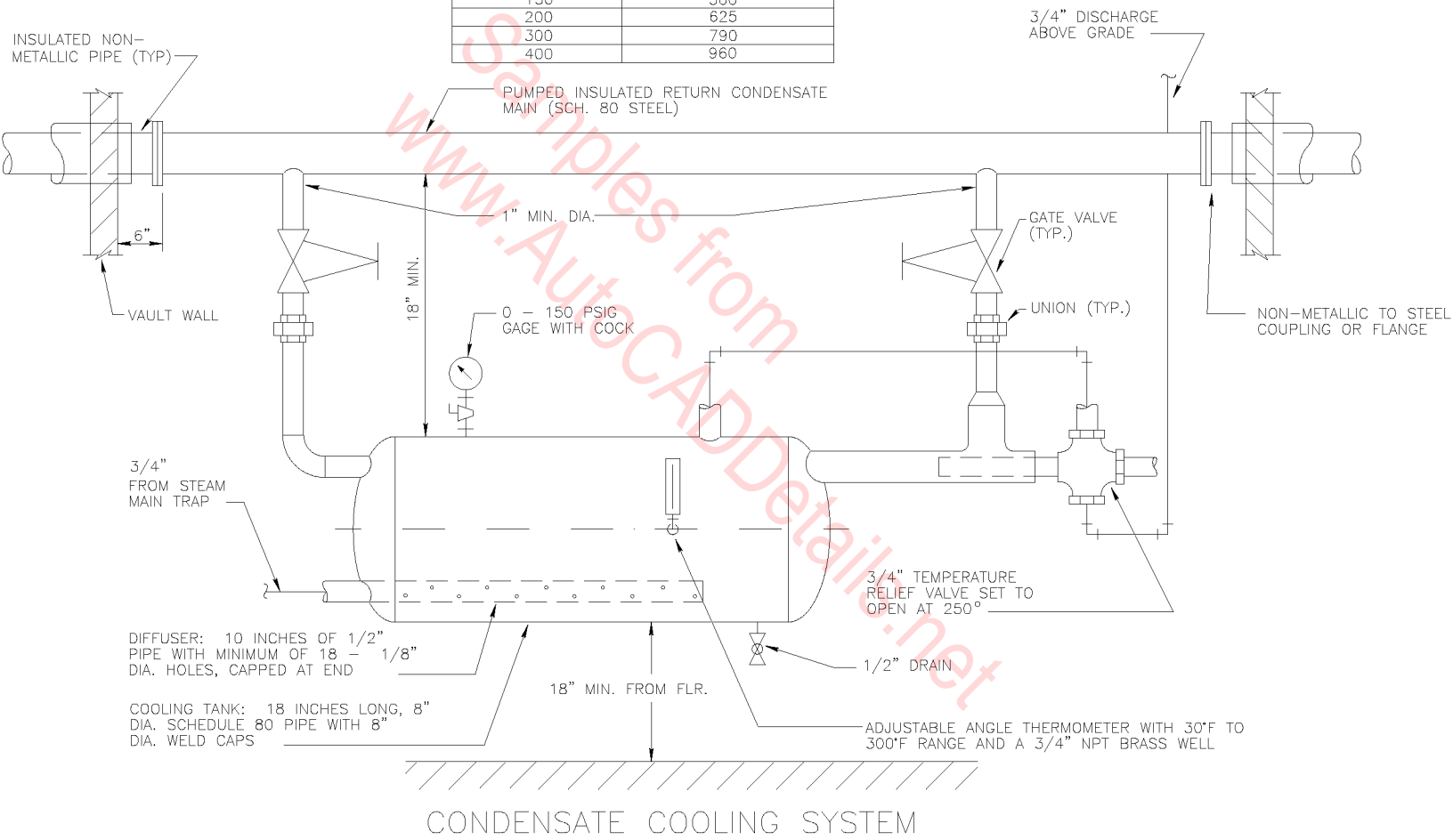
ACCUMULATOR

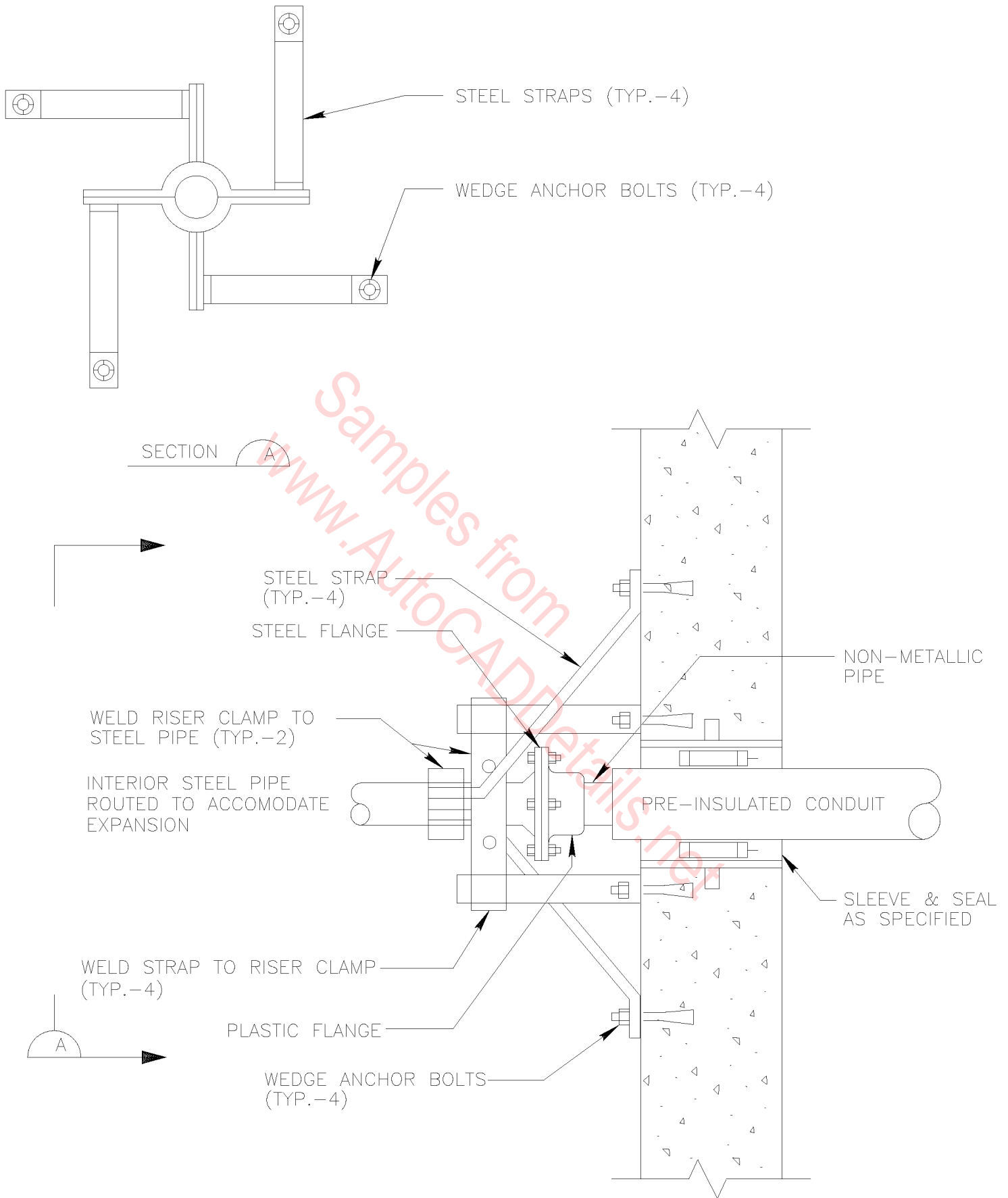
SCALE: 1" = 1' - 0"



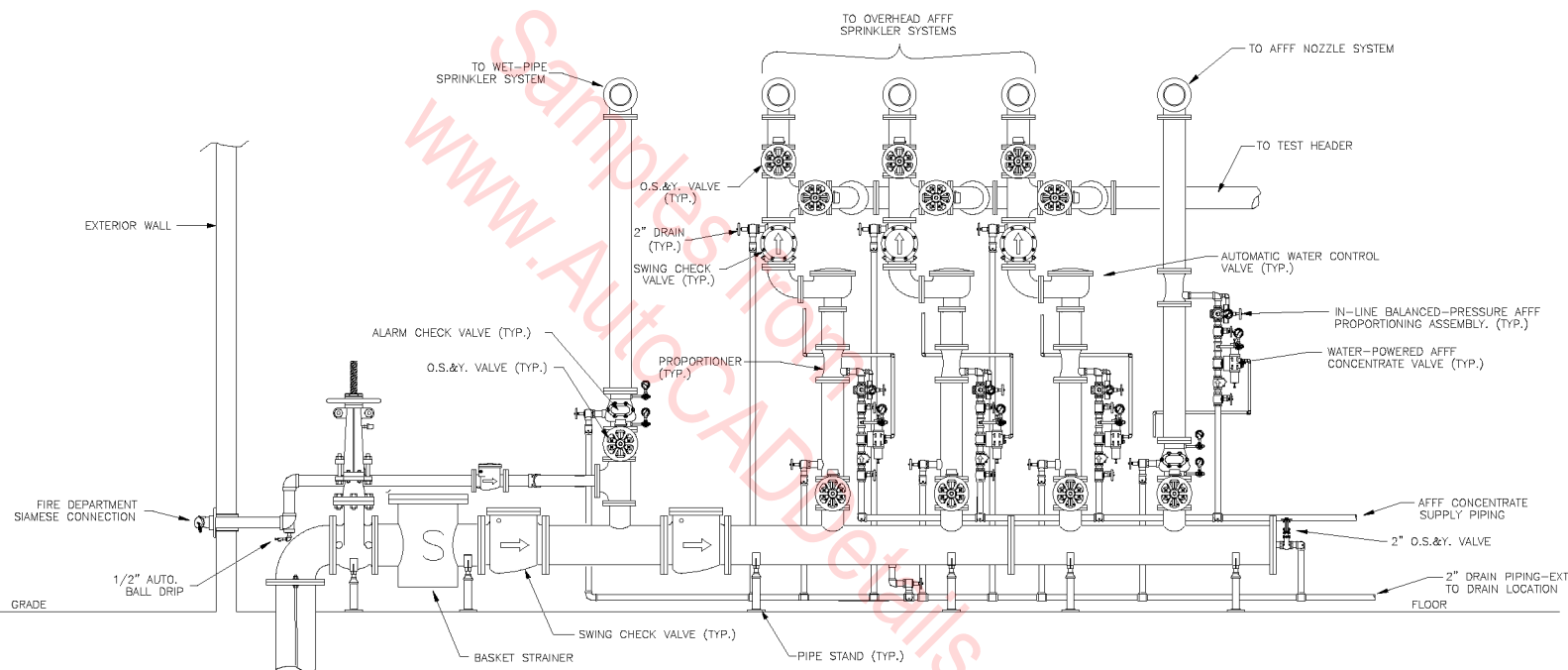
DUPLEX CONDENSATE PUMP SET CONNECTION DETAIL

STEAM TRAP CAPACITY LIMITATIONS	
SYSTEM PRESSURE (PSIG)	MAXIMUM TRAP CAPACITY (LBS./HR.)
50	250
100	380
150	500
200	625
300	790
400	960



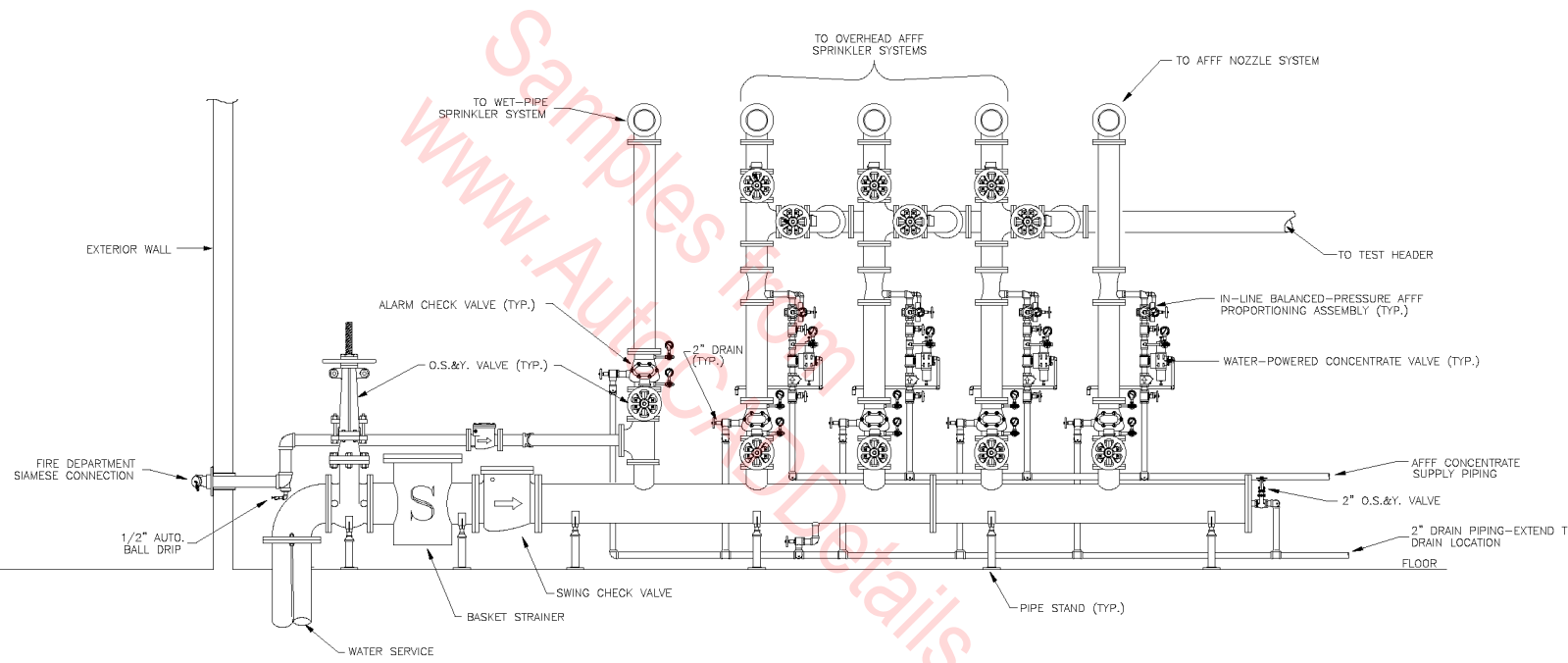


WALL ANCHOR FOR NON-METALLIC PIPING SYSTEMS



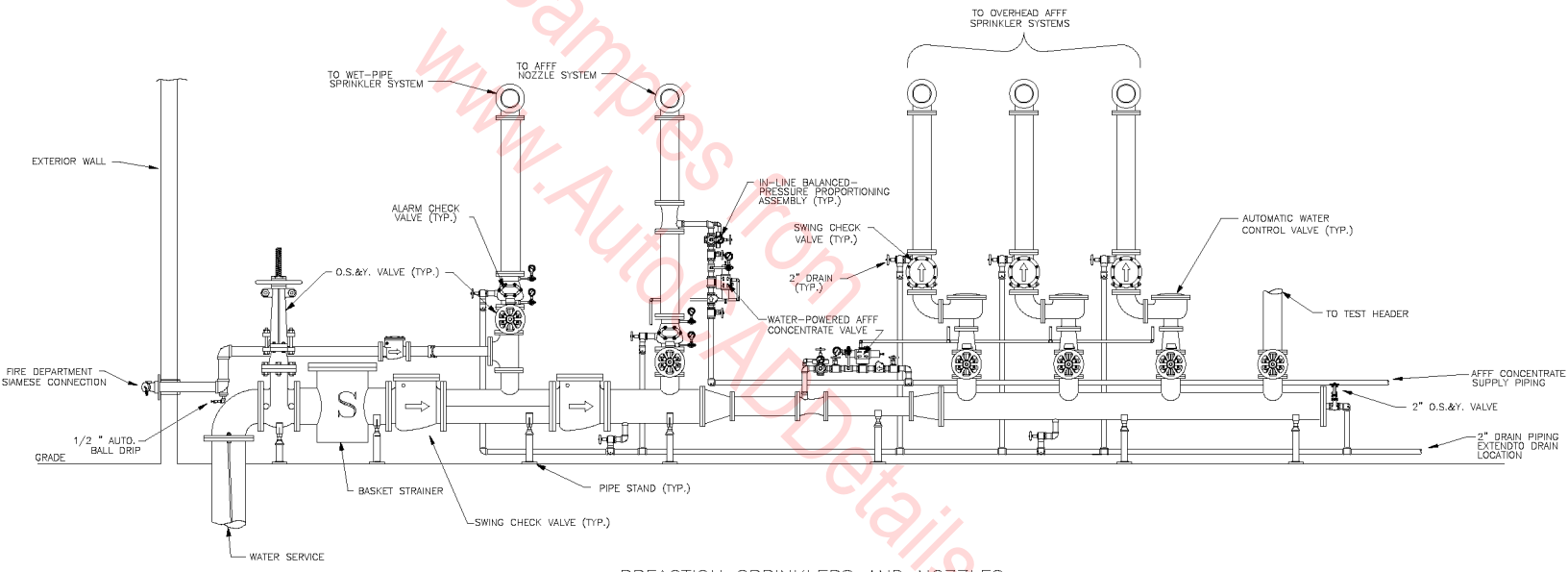
PREACTION SPRINKLER AND NOZZLES
 (Separate ILBP proportioners)

N.T.S.



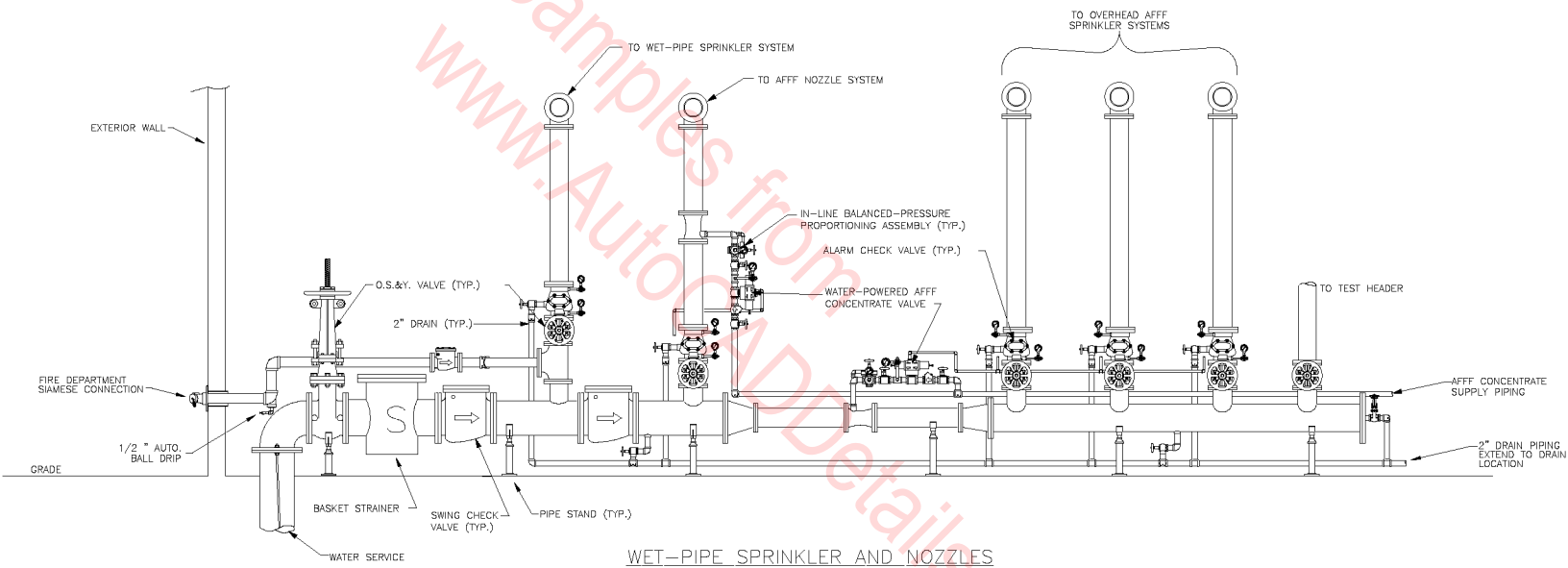
WET-PIPE SPRINKLER AND NOZZLES
 (Separate ILBP proportioners)

N.T.S.



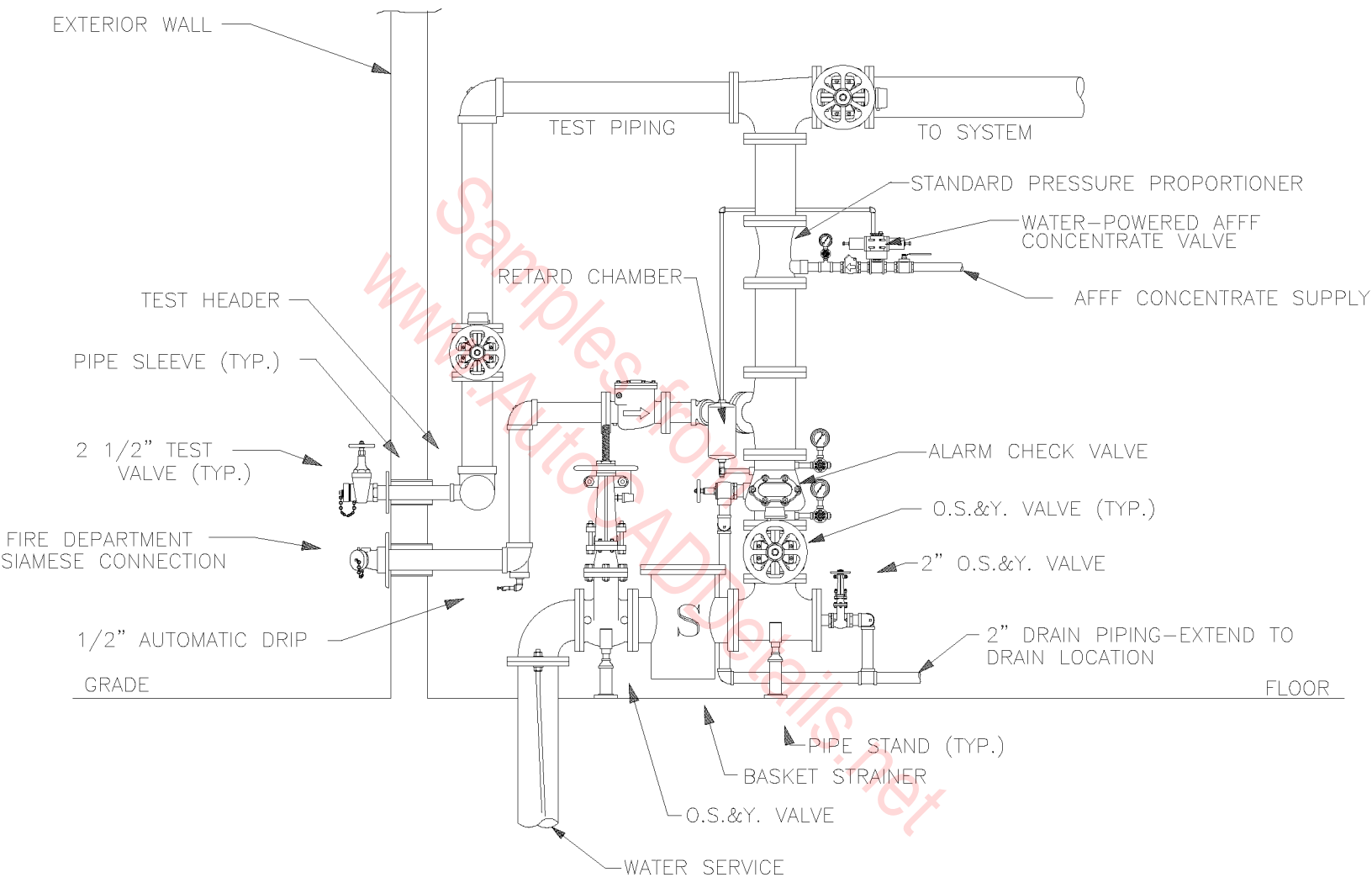
PREACTION SPRINKLERS AND NOZZLES
 (Common ILBP proportioner)

N.T.S.



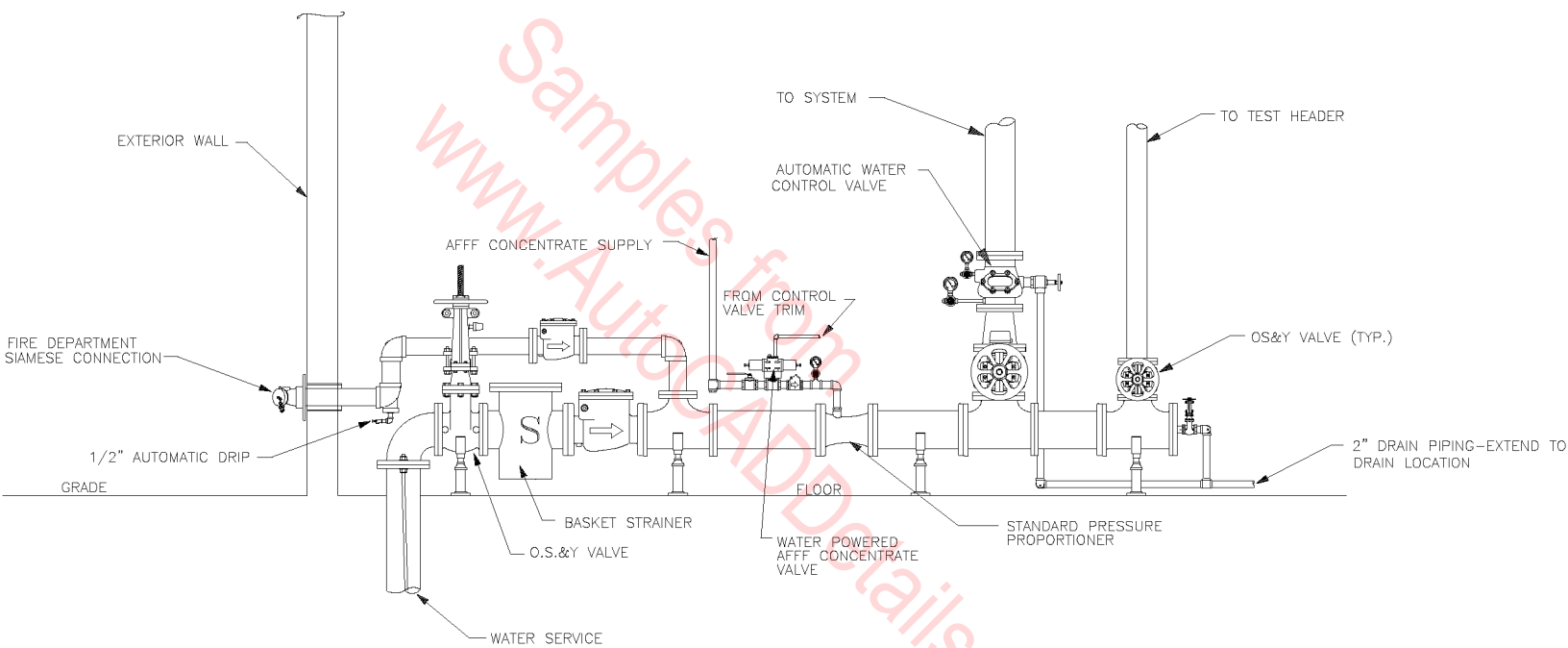
WET-PIPE SPRINKLER AND NOZZLES
(Common ILBP proportioner)

N.T.S.



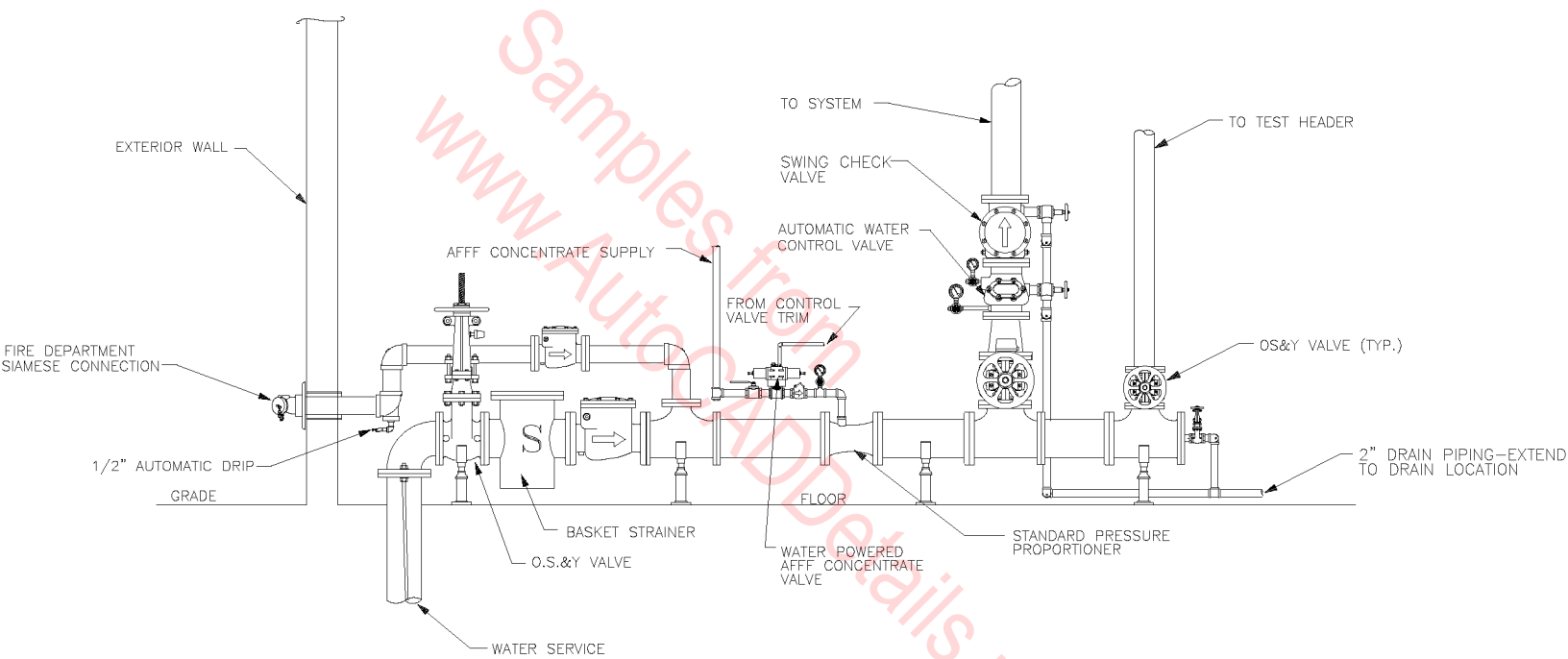
SINGLE WET-PIPE AFFF SPRINKLER RISER

N.T.S.



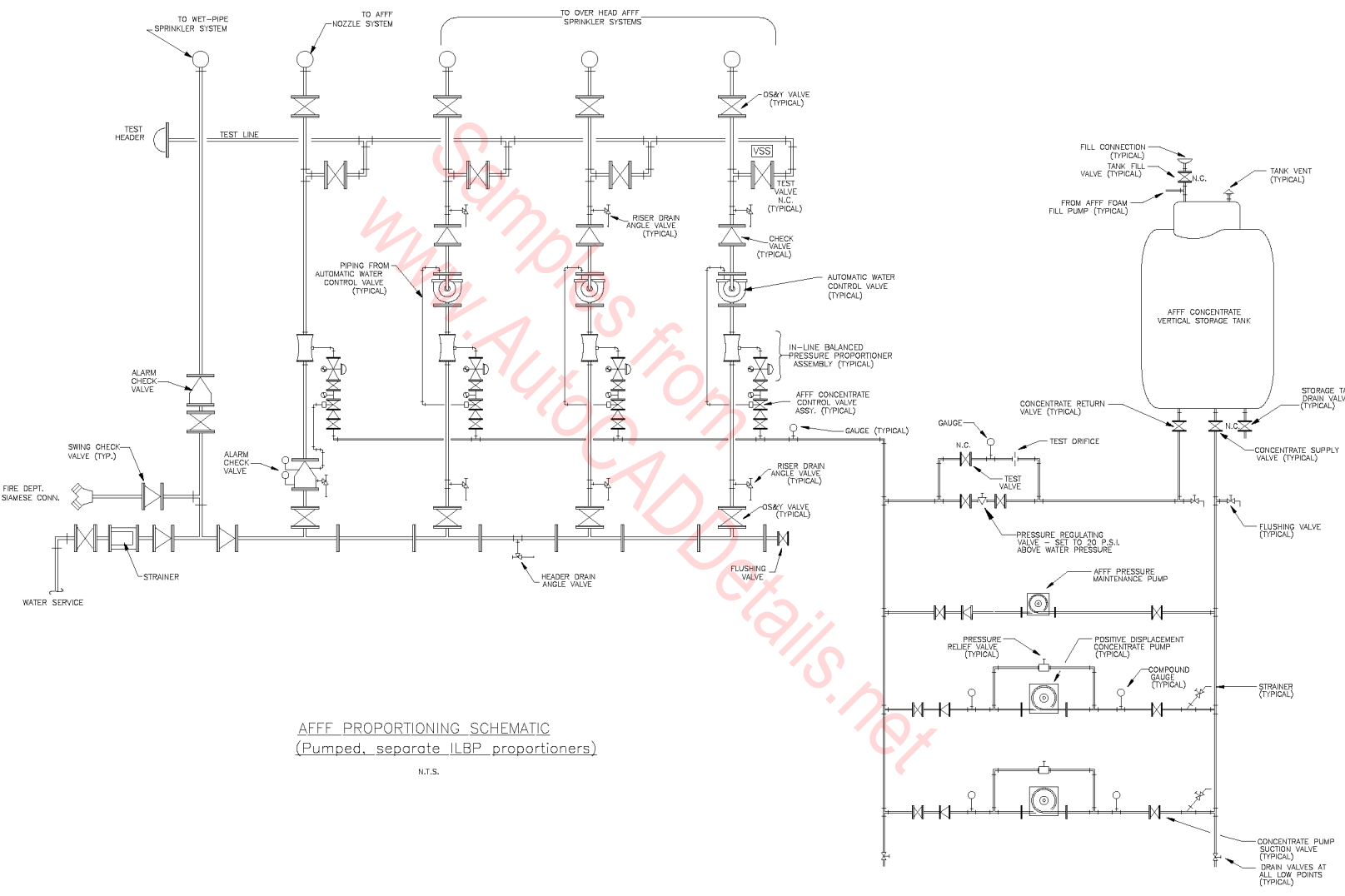
SINGLE DELUGE AFPP SPRINKLER RISER

N.T.S.



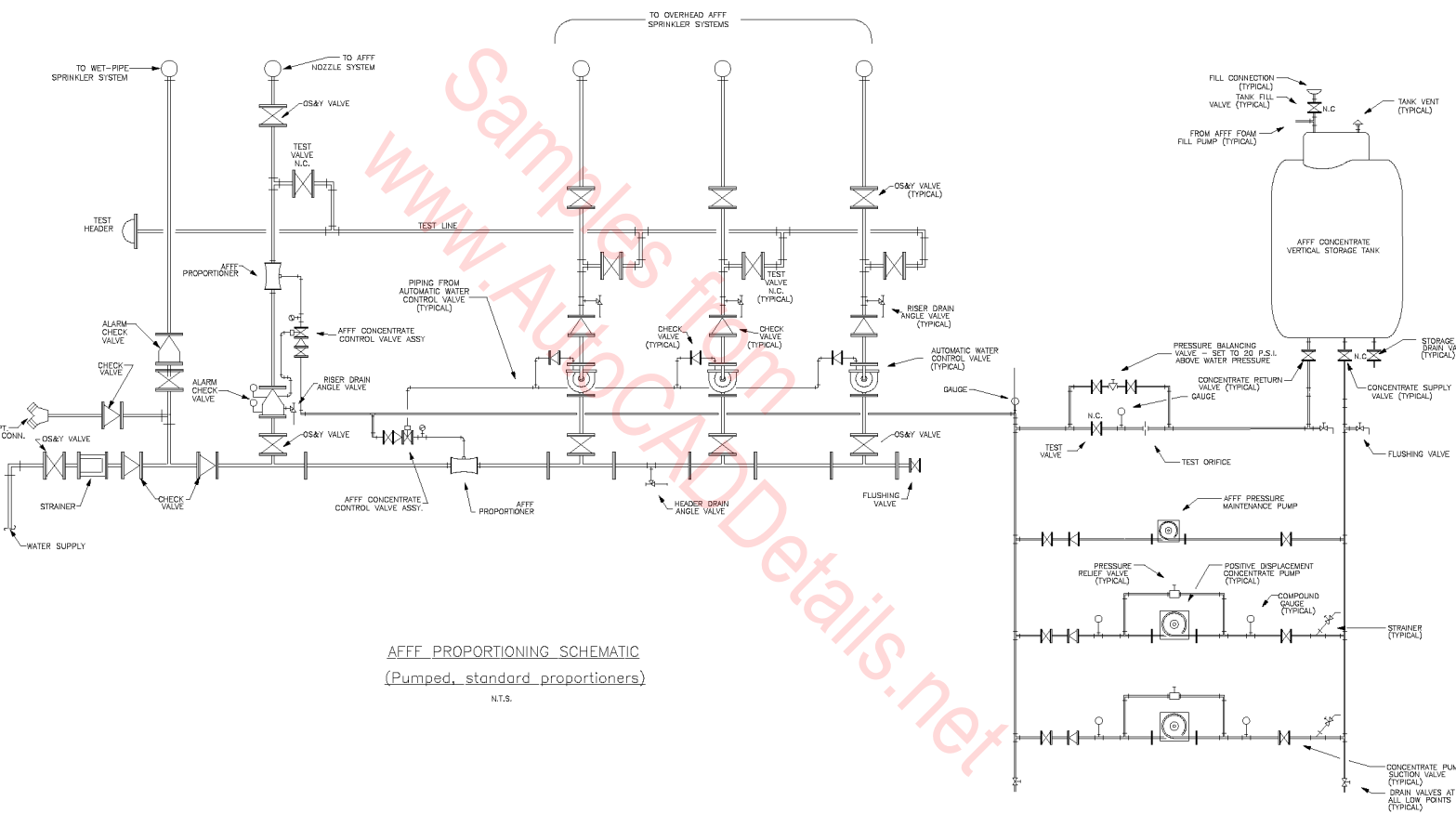
SINGLE PREACTION AFFF SPRINKLER RISER

N.T.S.



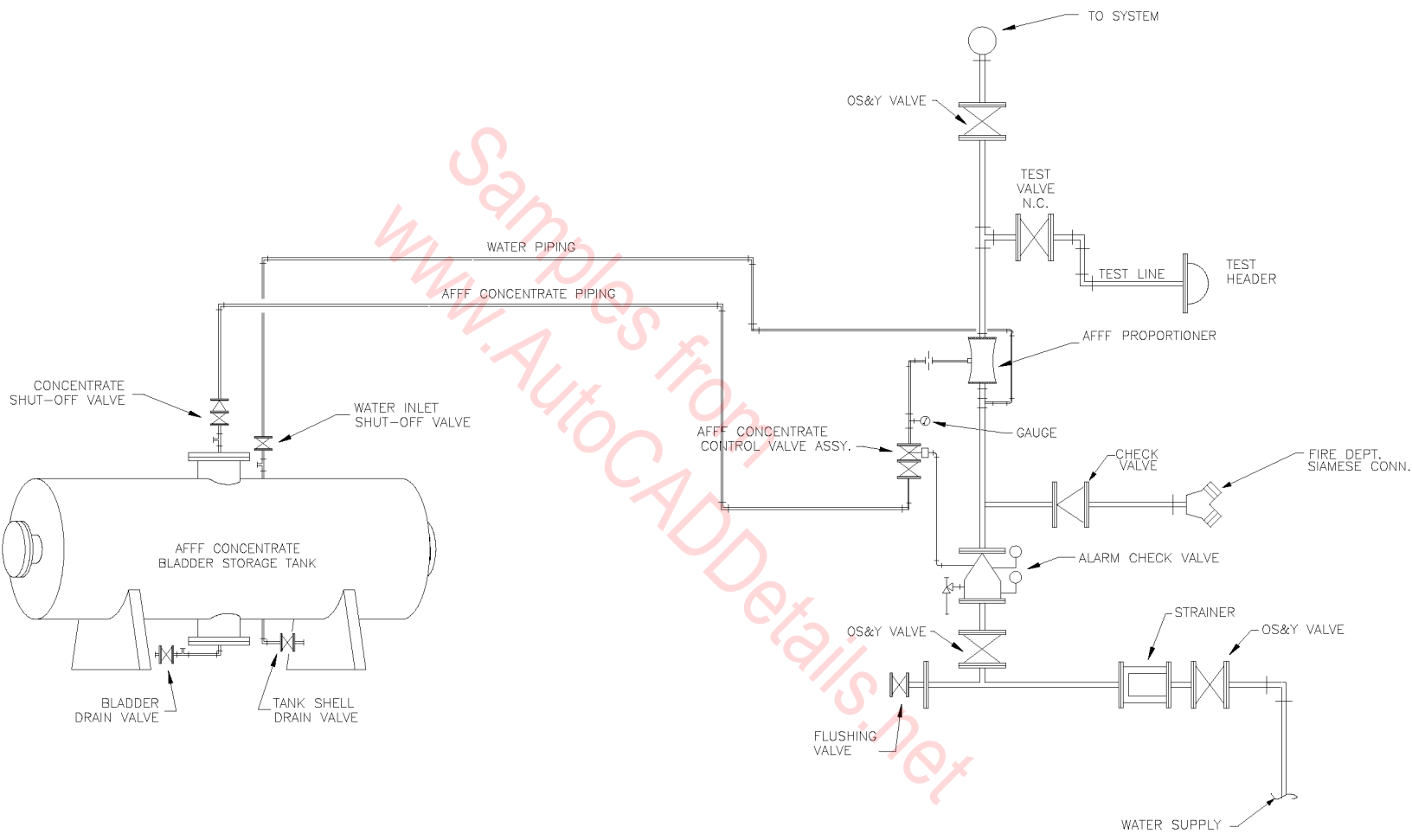
AFFF PROPORTIONING SCHEMATIC
(Pumped, separate ILBP proportioners)

N.T.S.



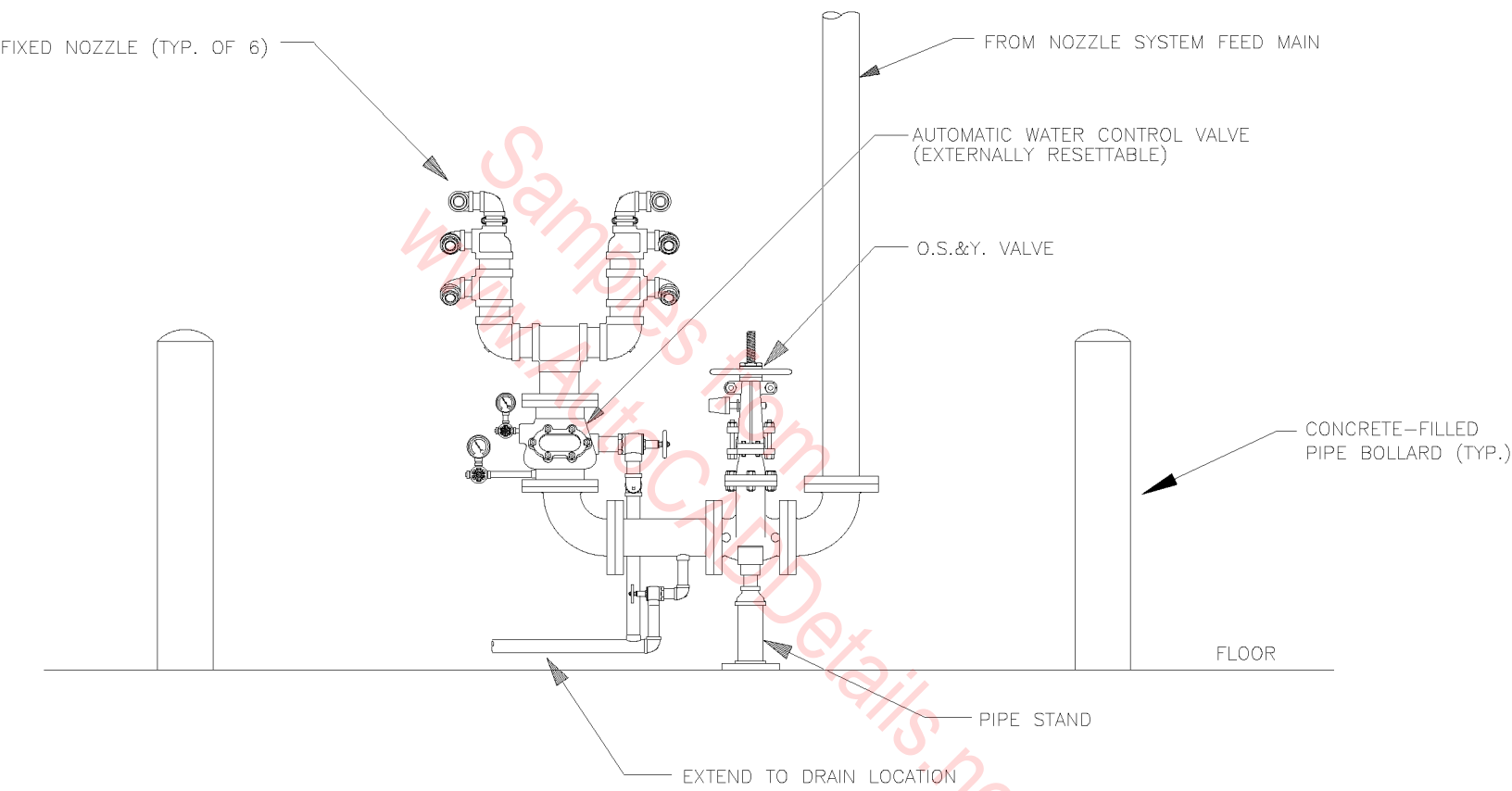
AFFF PROPORTIONING SCHEMATIC
(Pumped, standard proportioners)
N.T.S.

www.AutocADDetails.net



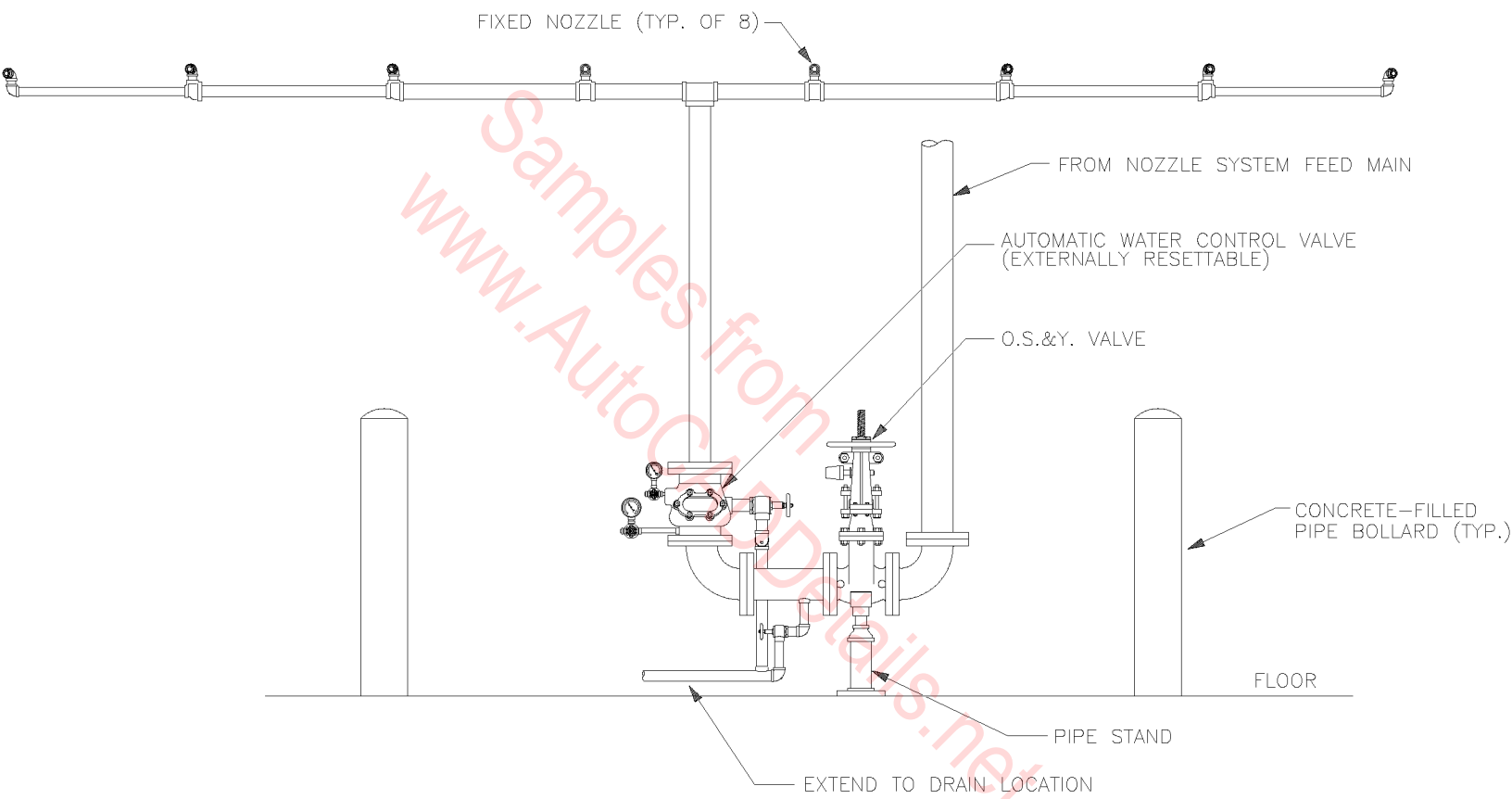
AFFF PROPORTIONING SCHEMATIC
 (Bladder tank, standard proportioners)

N.T.S.



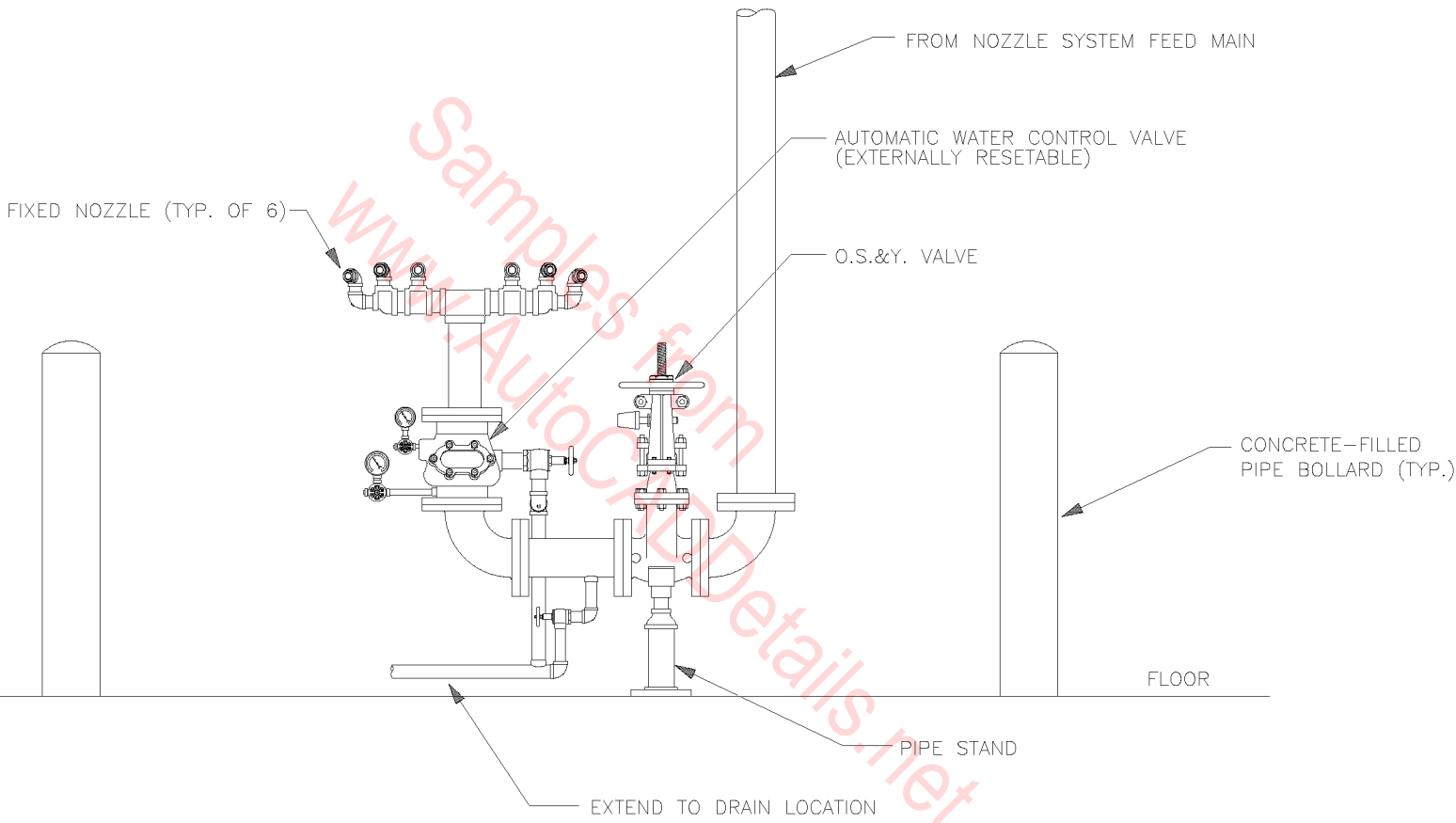
FIXED NOZZLES, TREE CONFIGURATION

N.T.S.



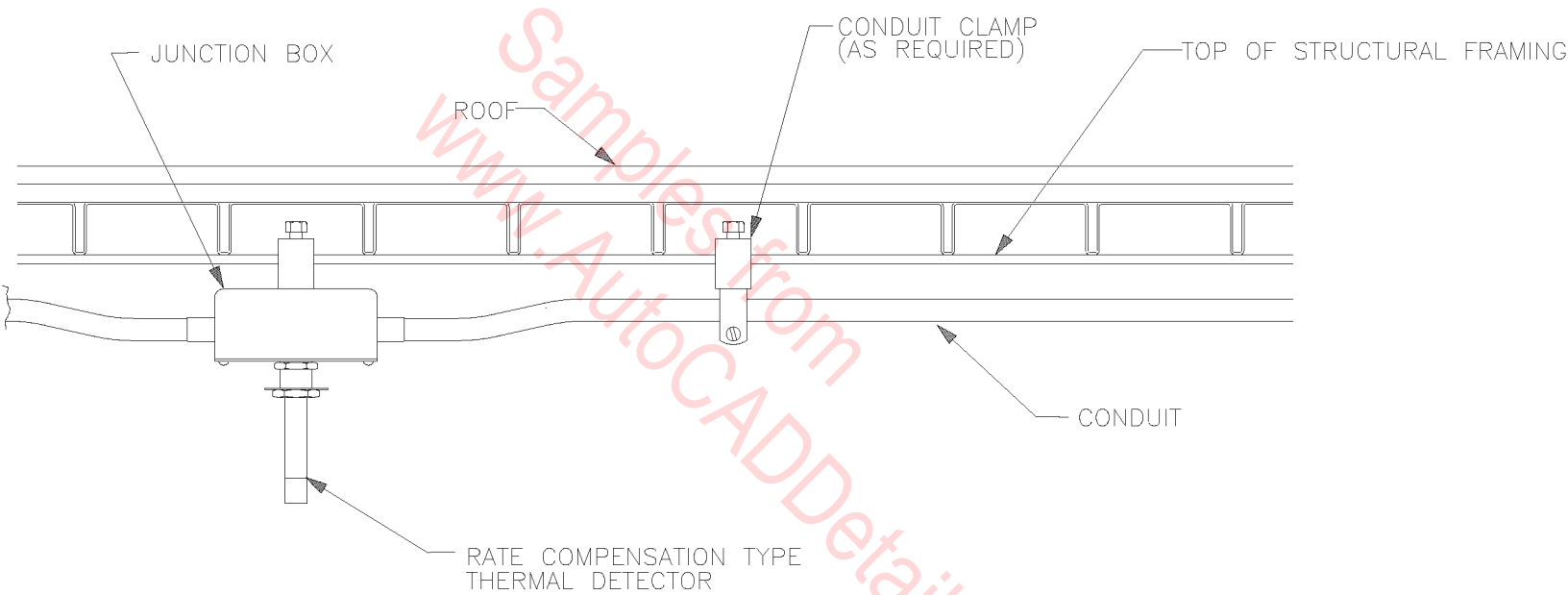
FIXED NOZZLES, LINEAR CONFIGURATION (high)

N.T.S.



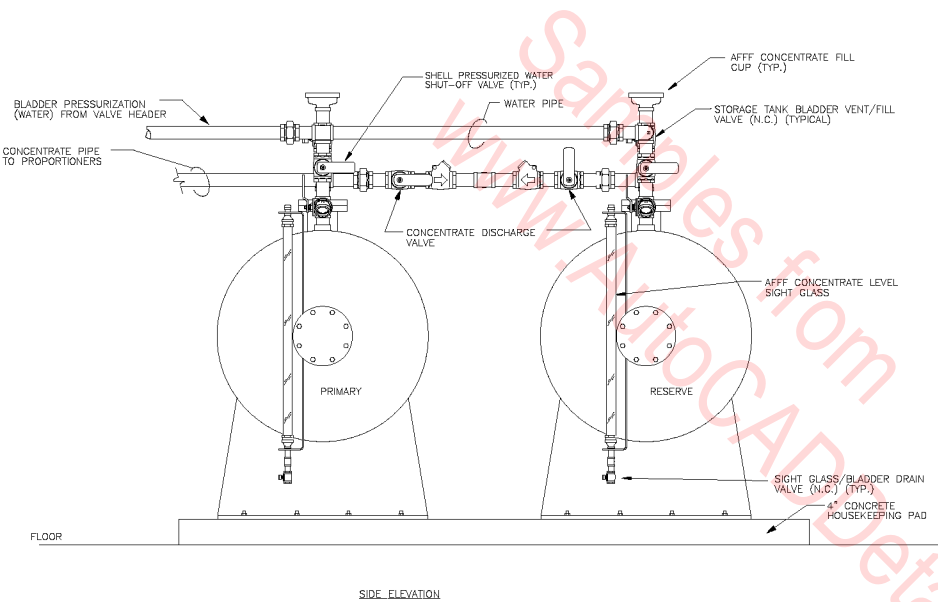
FIXED NOZZLES, LINEAR CONFIGURATION (low)

N.T.S.

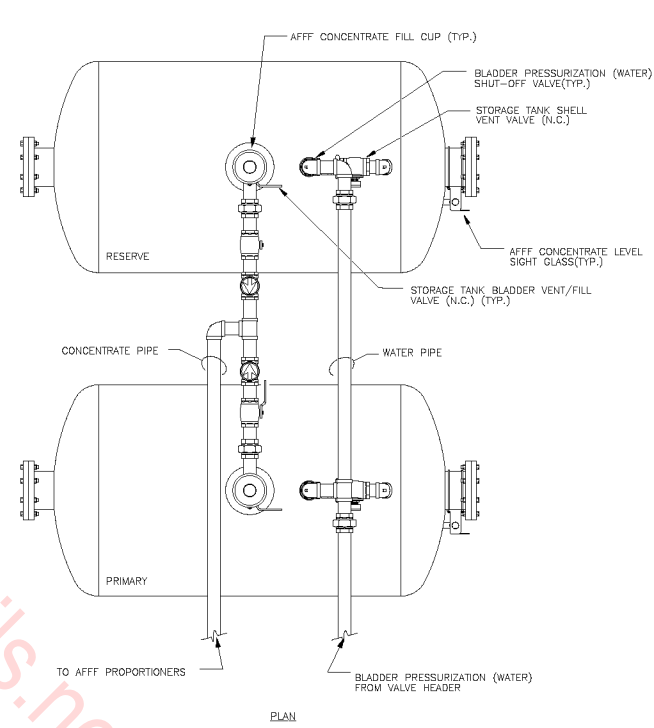


THERMAL DETECTOR MOUNTING DETAIL

N.T.S.



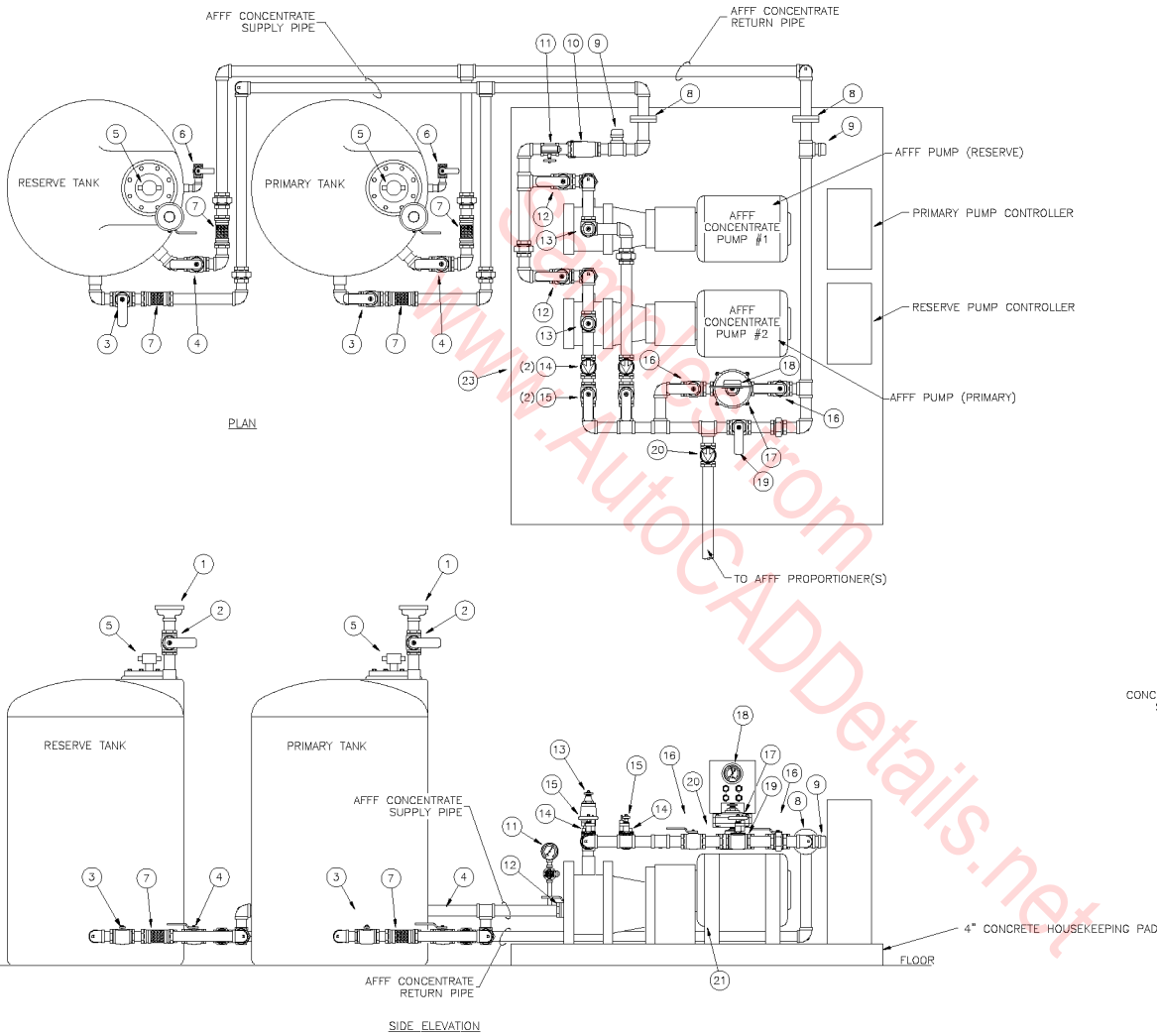
SIDE ELEVATION



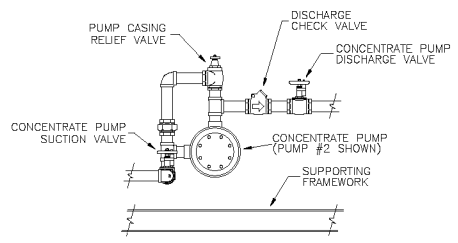
PLAN

DUAL BLADDER TANK CONFIGURATION

N.T.S.



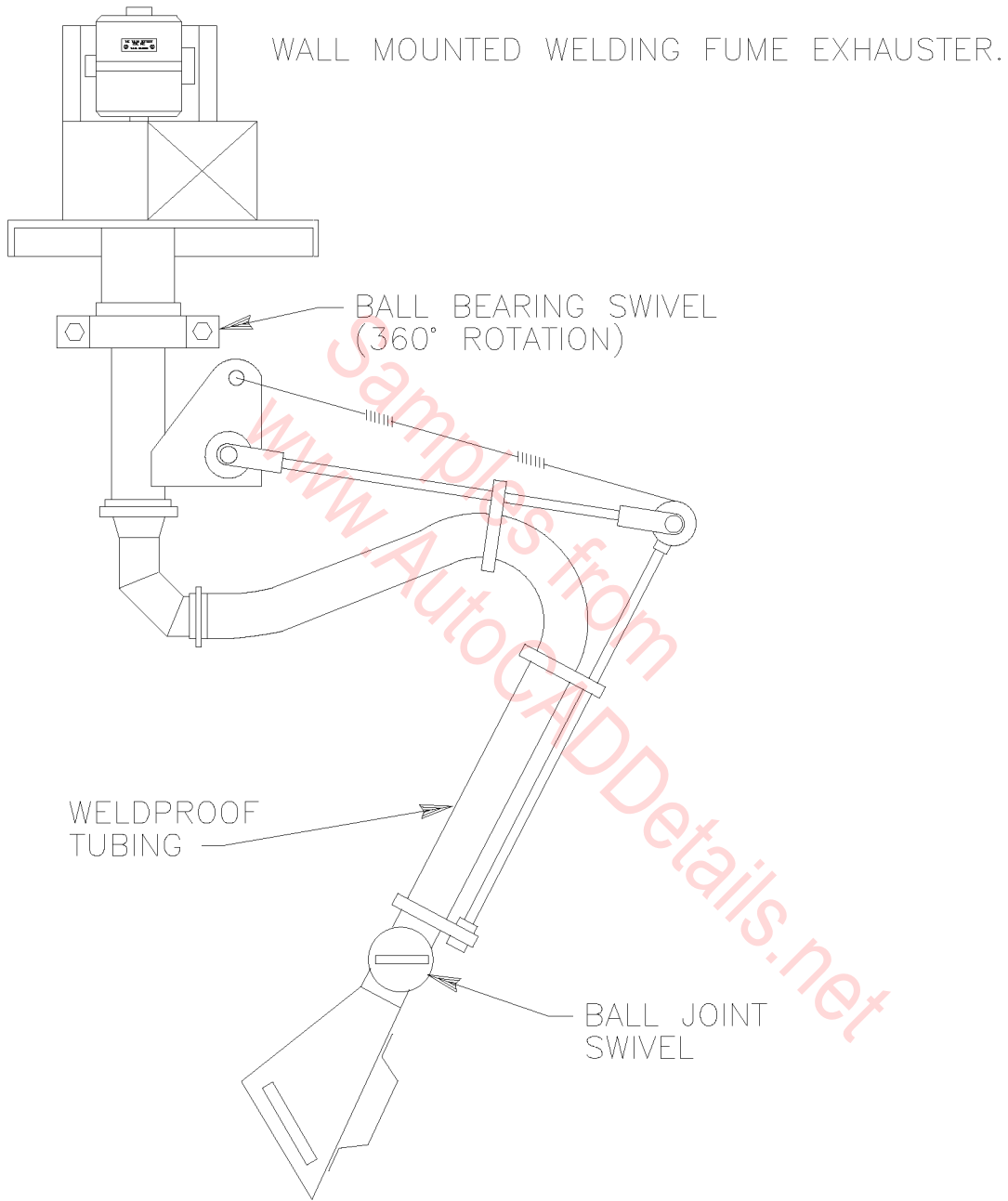
NO.	DESCRIPTION
1.	AFFF CONCENTRATE FILL CUP (TYP.)
2.	STORAGE TANK FILL VALVE (N.C.)
3.	STORAGE TANK SUPPLY SHUT-OFF VALVE
4.	STORAGE TANK RETURN SHUT-OFF VALVE
5.	STORAGE TANK VENT
6.	STORAGE TANK DRAIN VALVE (N.C.)
7.	FLEXIBLE CONNECTION (TYP.)
8.	COMPANION FLANGES
9.	CAPPED FLUSHING CONNECTION
10.	Y-TYPE STRAINER
11.	COMPOUND SUCTION GAUGE w/ 3-WAY VALVE
12.	AFFF CONCENTRATE PUMP SUCTION SHUT-OFF VALVE
13.	AFFF CONCENTRATE PUMP CASING RELIEF VALVE
14.	AFFF CONCENTRATE PUMP DISCHARGE CHECK VALVE
15.	AFFF CONCENTRATE PUMP DISCHARGE SHUT-OFF VALVE
16.	DIAPHRAGM BALANCING VALVE ISOLATION VALVE
17.	AUTOMATIC DIAPHRAGM BALANCING VALVE
18.	DUPLIX PRESSURE GAUGE (FOAM-WATER)
19.	MANUAL BYPASS BALANCING VALVE (N.C.)
20.	AFFF CONCENTRATE SUPPLY CHECK VALVE



END VIEW OF AFFF CONCENTRATE PUMP SHOWING ARRANGEMENT OF PIPING TO PUMP CASING RELIEF VALVE

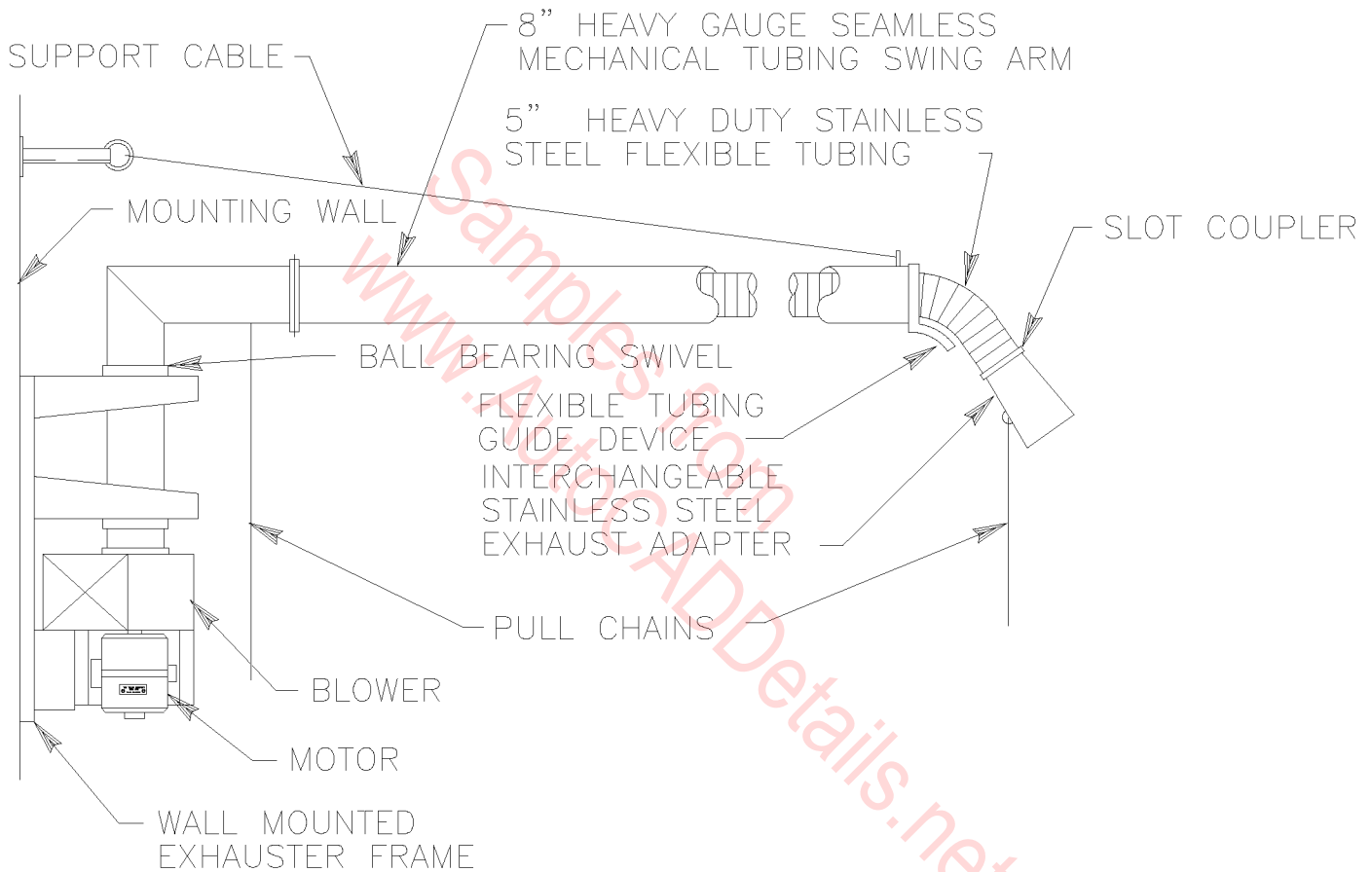
AFFF PUMPING SYSTEM CONFIGURATION

N.T.S.



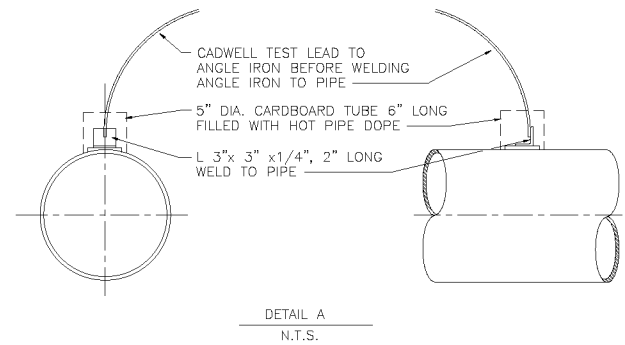
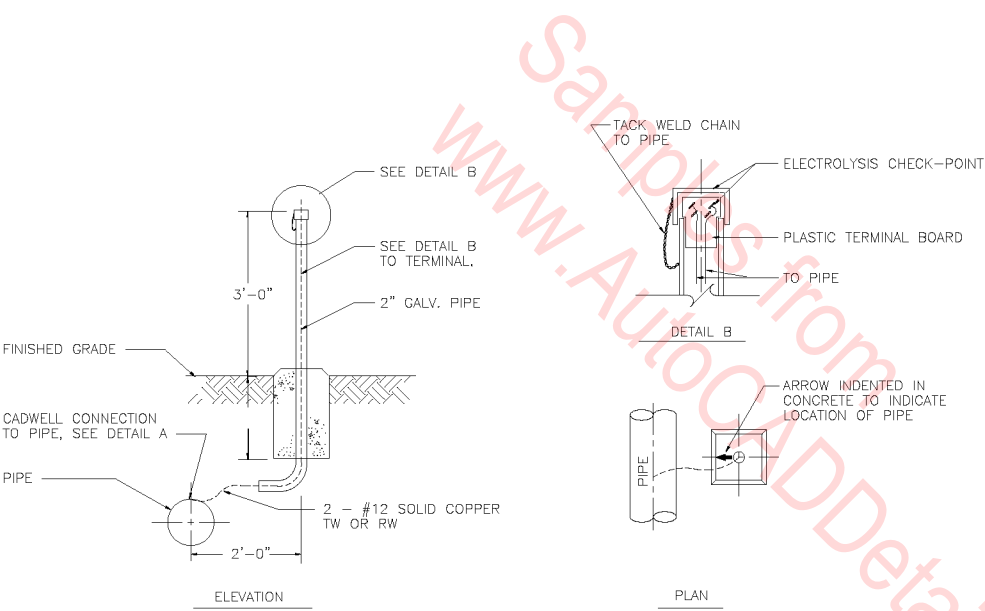
TYPICAL WELDING FUME EXHAUSTER DETAIL

N.T.S.



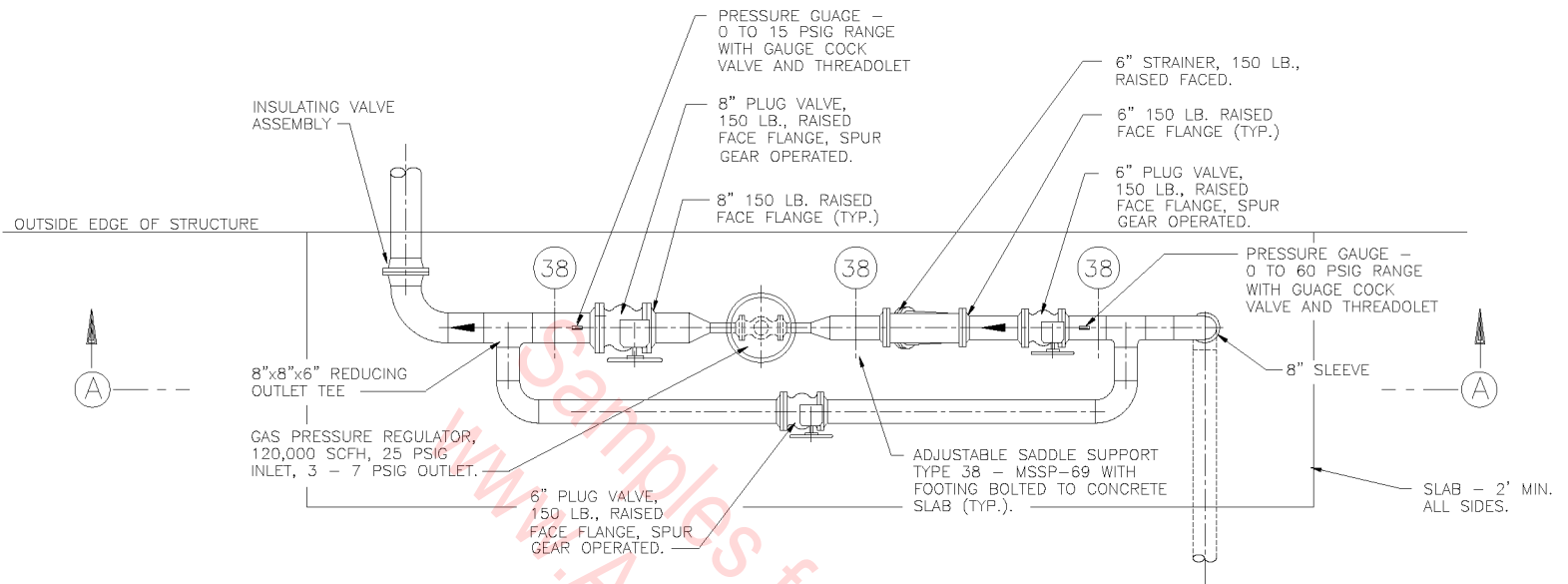
SWING-ARM FUME EXHAUST SYSTEM DETAIL

(DISAPPEARING TYPE)
 N.T.S.



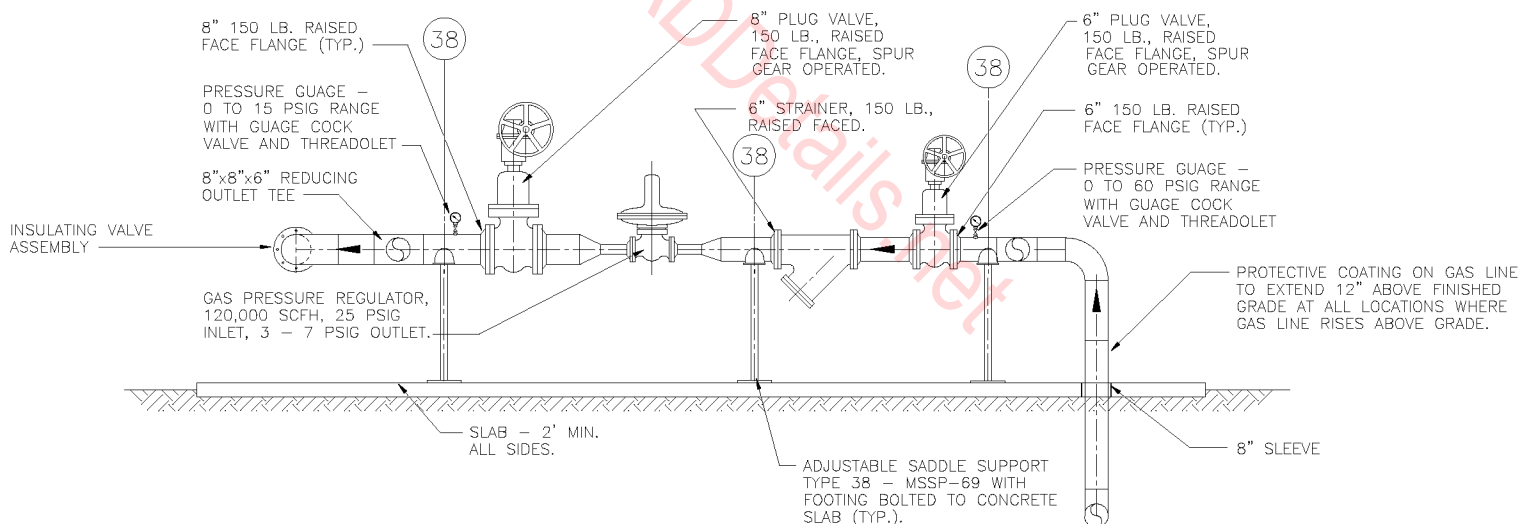
CORROSION CONTROL TEST STATION

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

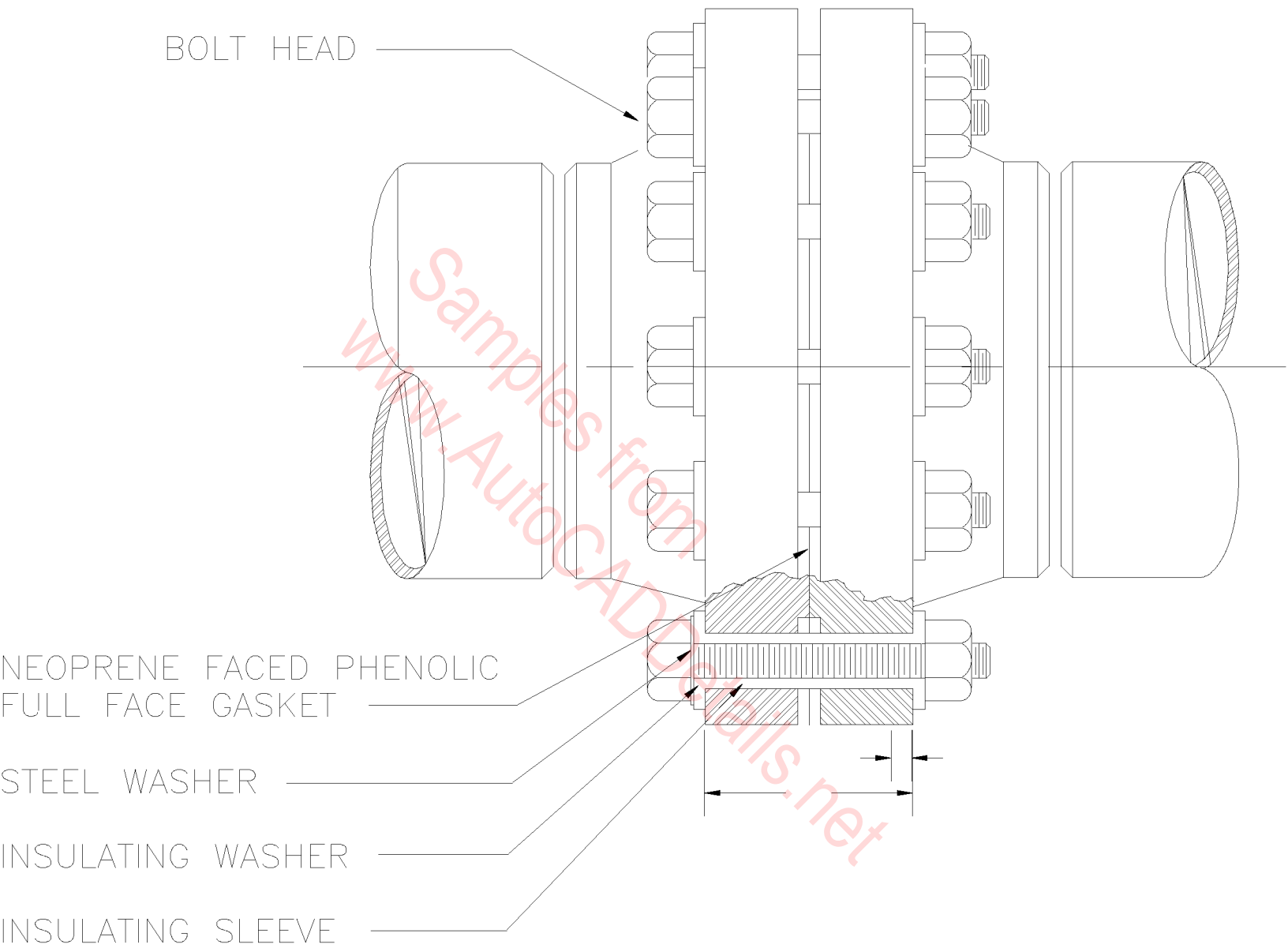


PLAN - PRESSURE REGULATION STATION

SCALE: 1/2" = 1' - 0"

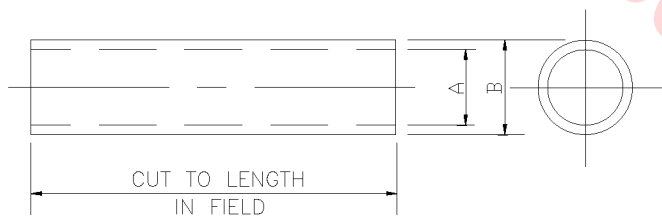
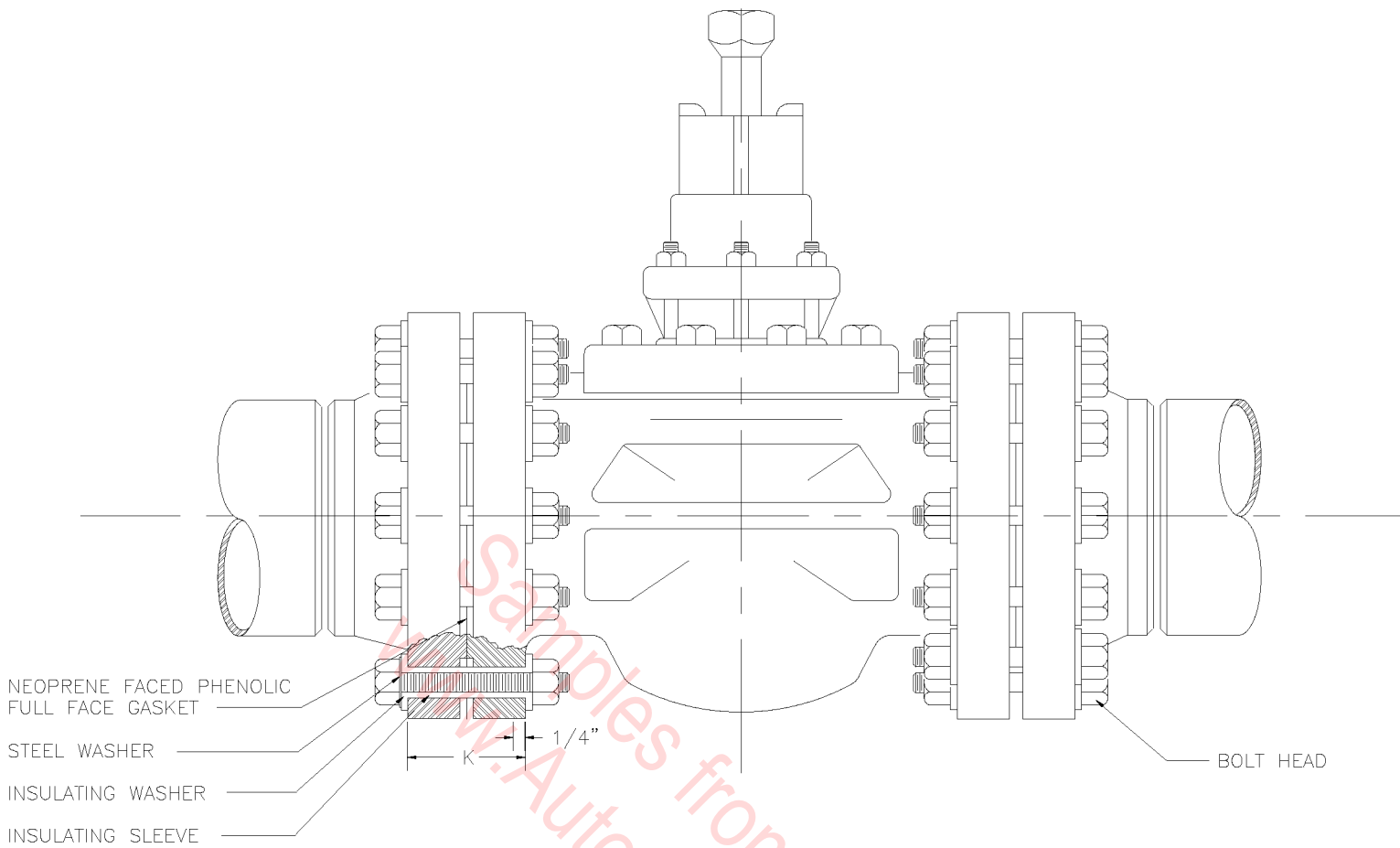


SCALE: 1/2" = 1' - 0"

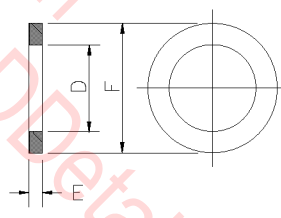


INSULATING FLANGE ASSEMBLY

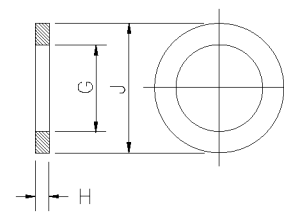
N.T.S.



INSULATING SLEEVE



INSULATING WASHER



STEEL WASHER

NOTES:

- 1) CUT SLEEVE LENGTH 1/8" SHORTER THAN DIMENSION "K".
- 2) INSULATING SLEEVES SHALL BE MYLAR OR EQUAL, AND MAY BE CUT FROM 3 FT. LENGTH IN FIELD.
- 3) INSULATING WASHERS MAY BE PHENOLIC.
- 4) COAT AND WRAP ASSEMBLY.
- 5) WHERE INSULATING JOINTS ARE SHOWN AT LOCATIONS OTHER THAN VALVES, CONSTRUCTION SHALL BE IN ACCORDANCE WITH FLANGE DETAIL OF TYPICAL INSULATING VALVE ASSEMBLY.

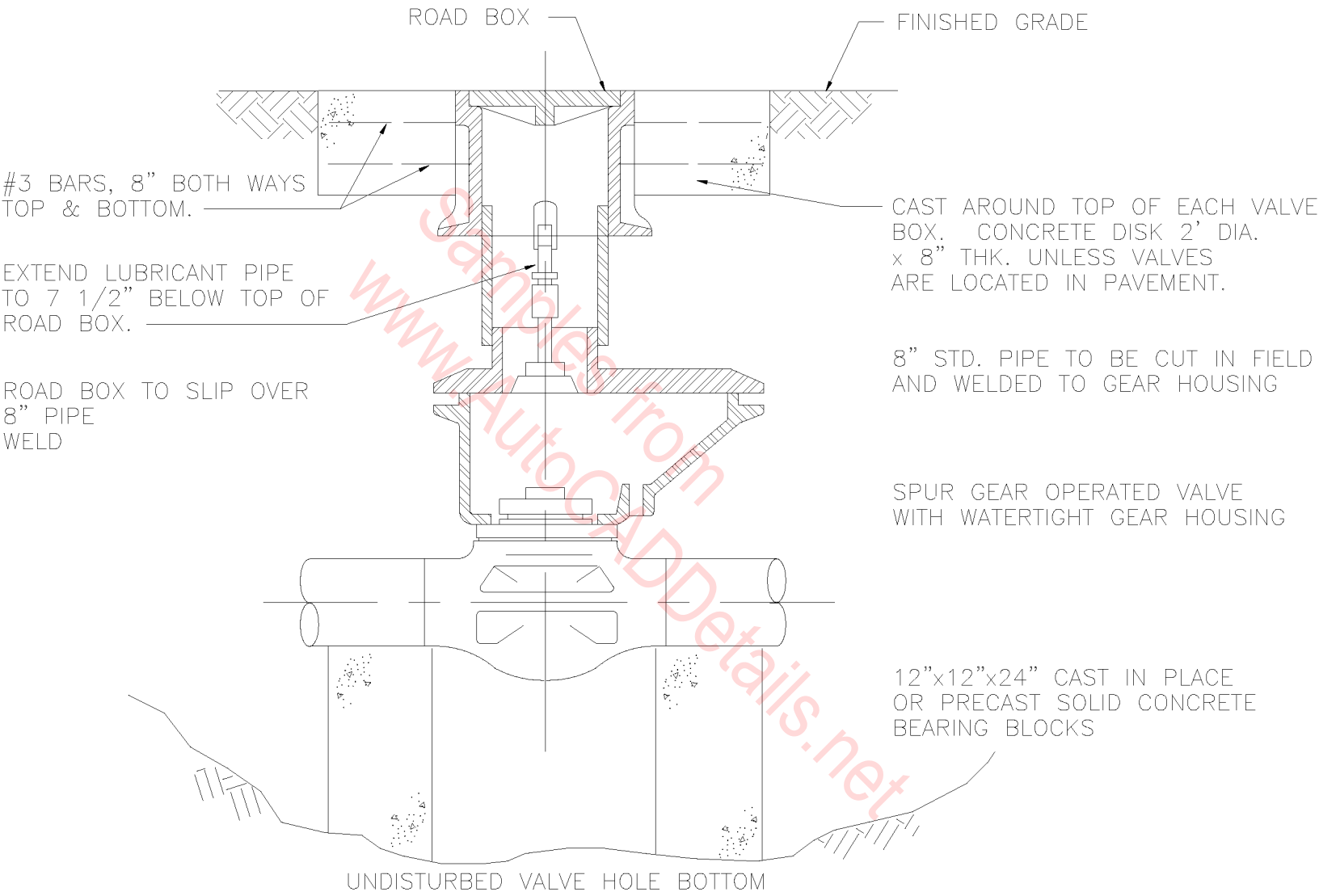
DIA. OF BOLT HOLES	DIA. BOLTS	SLEEVES		WASHERS		* STEEL WASHERS MEDIUM WEIGHTS			
		A	B	**D	F	G	J	H	
								MAX.	MIN.
5/8	1/2	17/32	19/32	19/32	1 1/4	1/2	9/16	1 1/4	.132 .086
3/4	5/8	21/32	23/32	23/32	1 1/2	5/8	11/16	1 1/2	.160 .108
7/8	3/4	25/32	27/32	27/32	1 3/4	3/4	13/16	1 3/4	.177 .122
1	7/8	29/32	31/32	31/32	2	7/8	15/16	2	.192 .136

* 1949 S.A.E. HANDBOOK

TOLERANCE +1/64
-0

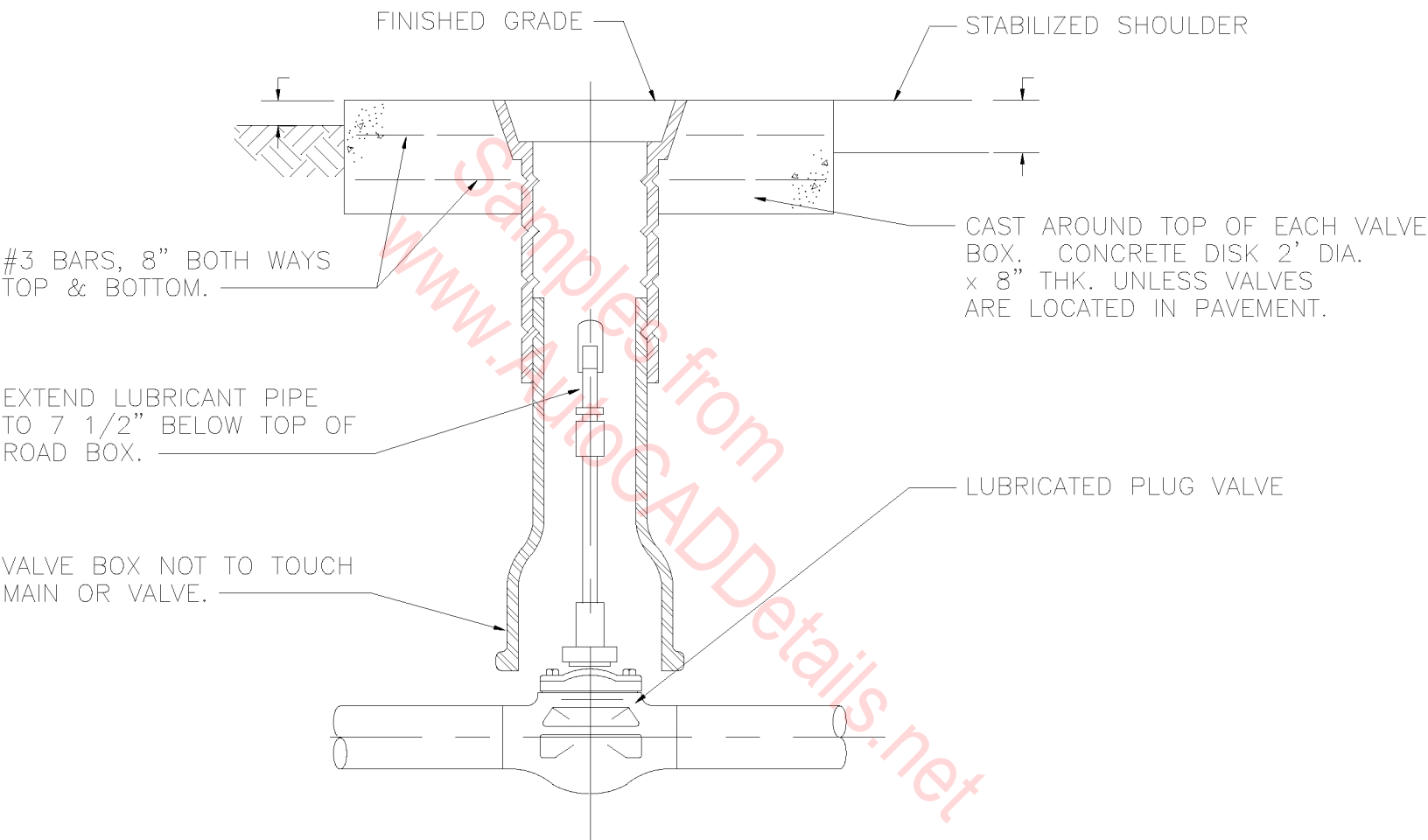
TYPICAL INSULATING VALVE ASSEMBLY

N.T.S.



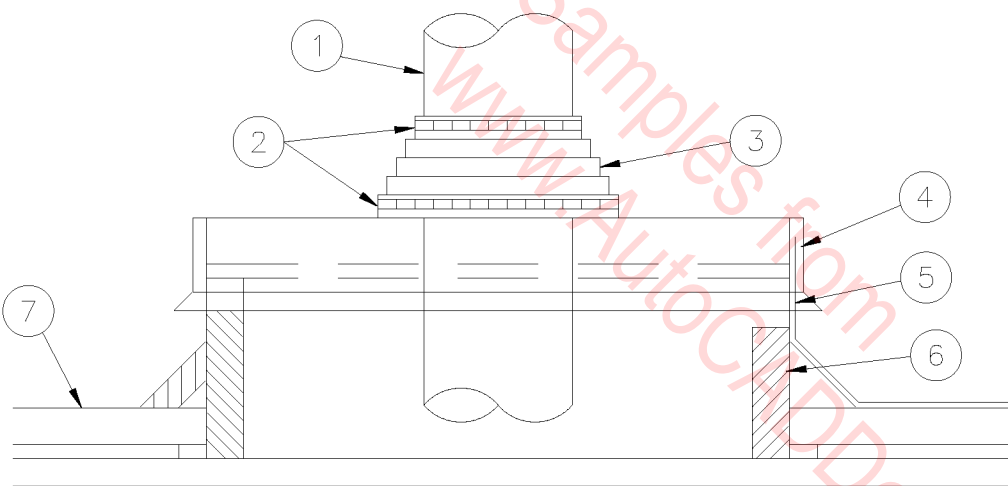
VALVE DETAIL — 6" AND LARGER

N.T.S.



DETAIL - 1" THRU 4" VALVES

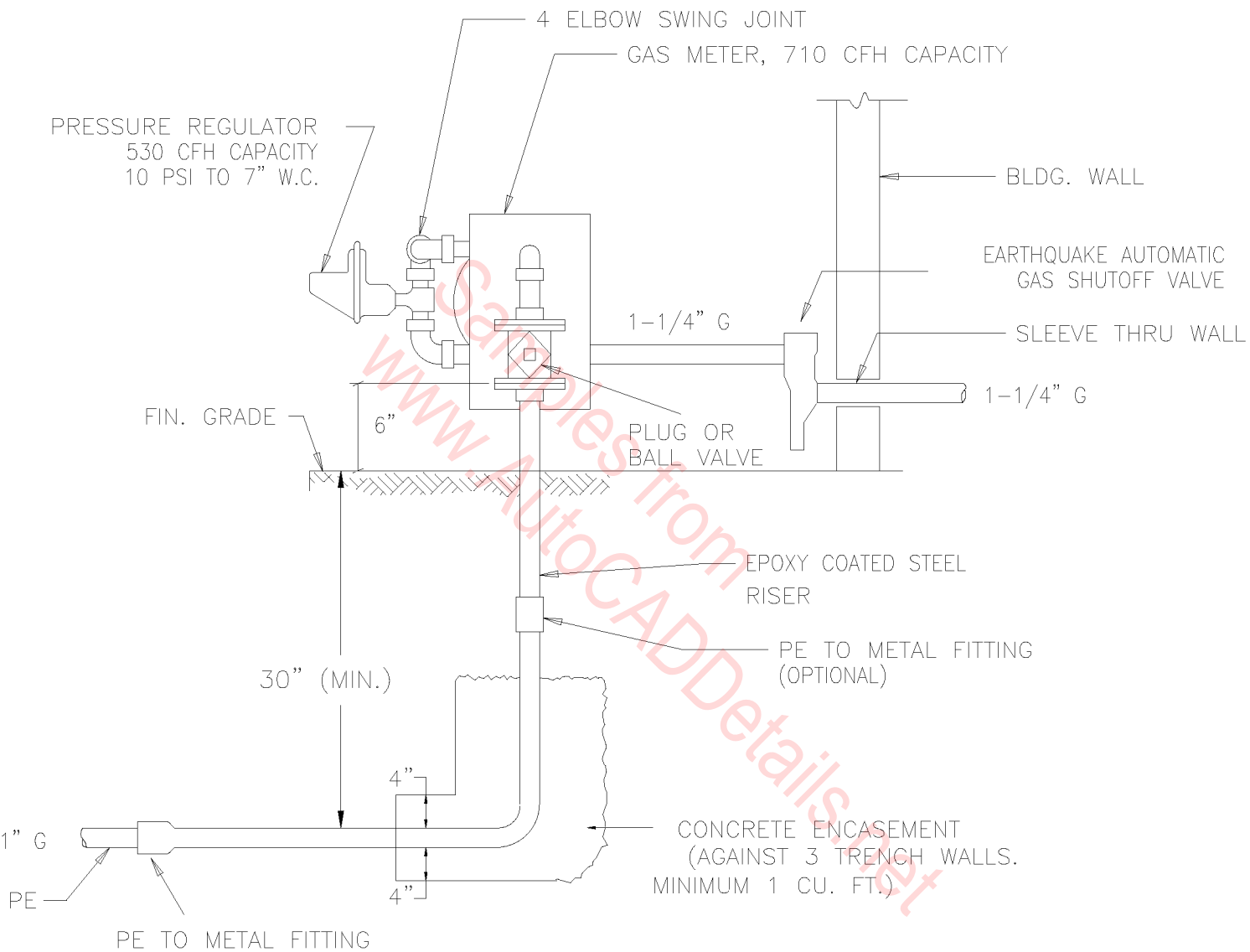
N.T.S.



- ① GAS LINE THRU ROOF
- ② STAINLESS STEEL DRAWBANDS
- ③ RUBBER BOOT
- ④ ABS COVER
- ⑤ ROOF FLASHING
- ⑥ PREFABRICATED ROOF CURB
- ⑦ ROOF LINE

ROOF CURB FOR GAS LINE PENETRATION

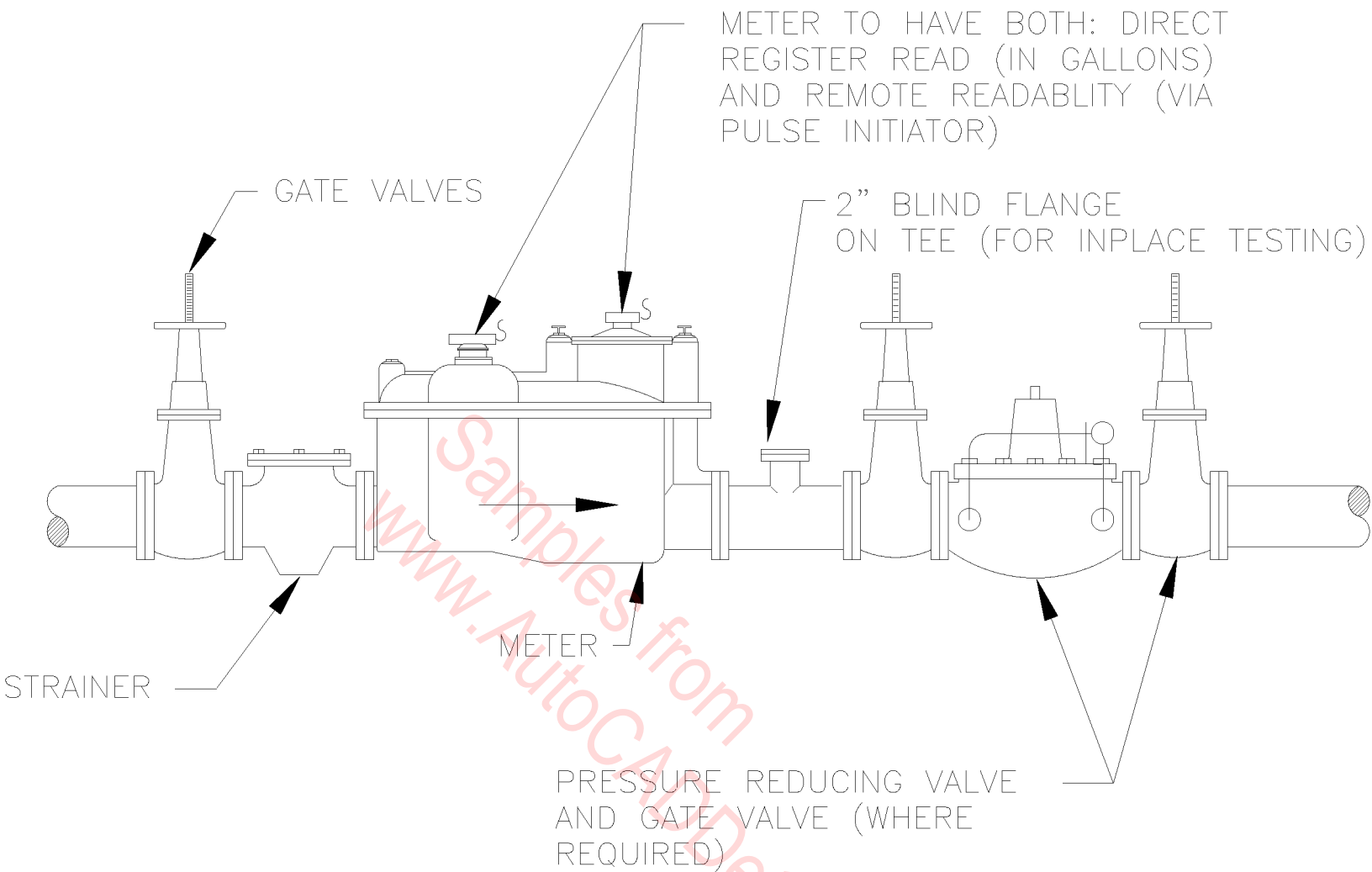
N.T.S.



GAS METER & REGULATOR CONNECTION

N.T.S.

NOTE: EARTHQUAKE AUTOMATIC GAS SHUTOFF VALVES ARE OPTIONAL AND ARE NOT REQUIRED FOR NONESSENTIAL FACILITIES LOCATED WITHIN SEISMIC ZONES 1 OR 2.



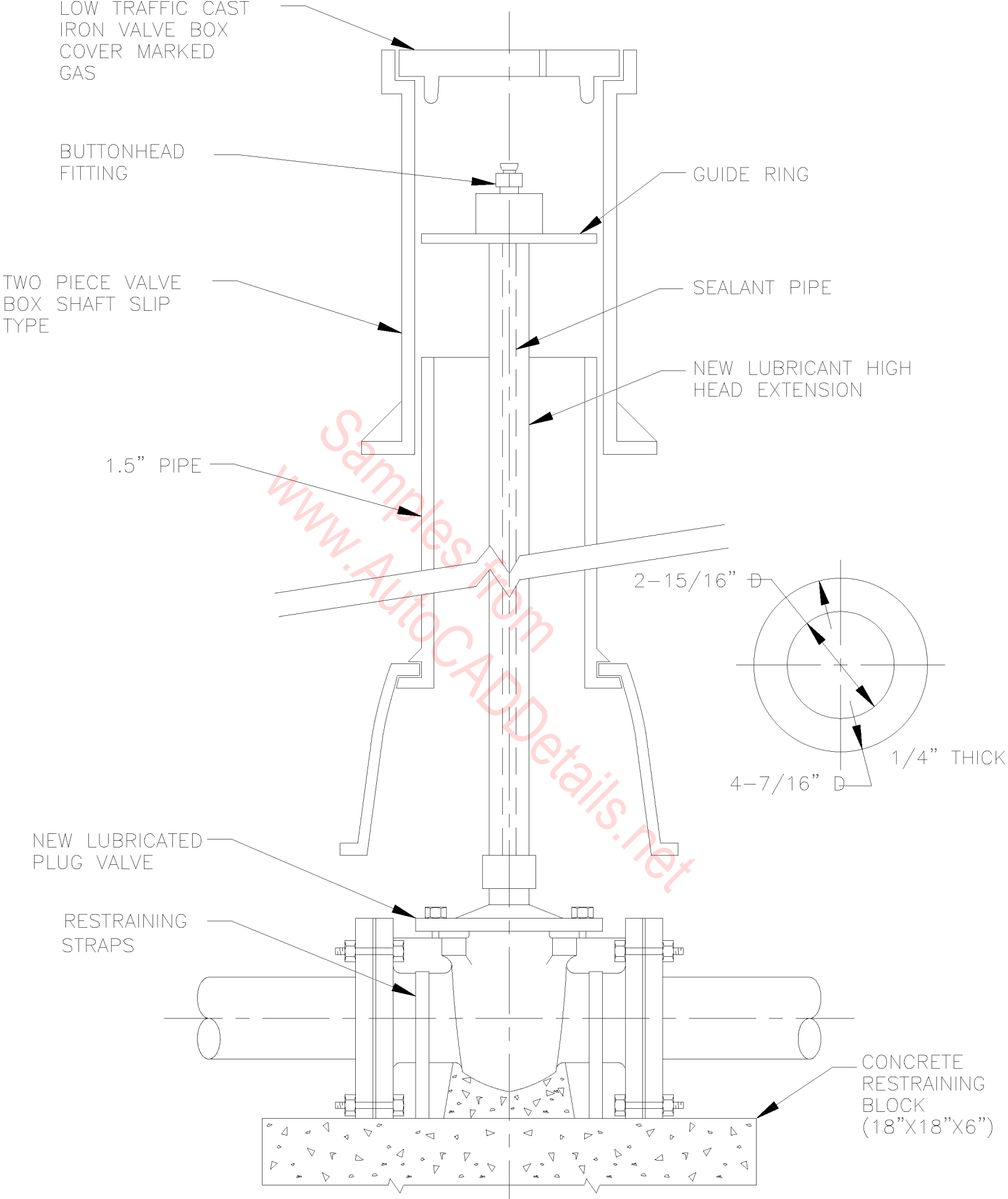
NOTES:

1. PROVIDE A "DRESSER-TYPE" COUPLING ON METER ASSEMBLY INSTALLATIONS IN VAULTS TO ALLOW FOR EASY REMOVAL OF FLANGED COMPONENTS.
2. METERING ASSEMBLY TO BE PROPERLY INSTALLED AND ADEQUATELY SUPPORTED TO ALLOW FOR EASY MAINTENANCE, REPAIR AND REPLACEMENT.

METER CONFIGURATION

2" TO 6" COMPOUND METER

N.T.S.



GAS VALVE AND VALVE BOX

N.T.S.

CHROME PLATED BRASS
CONSTRUCTION SINGLE
OUTLET PANEL FLANGE

GROUND KEY VALVE
HOSE COCK

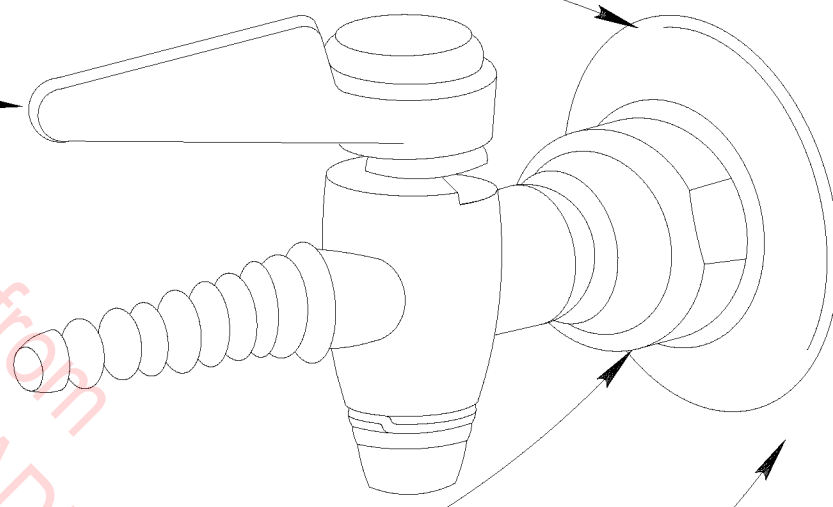
3/8" I.P.S. TANK NIPPLE
LOCKNUT WASHER

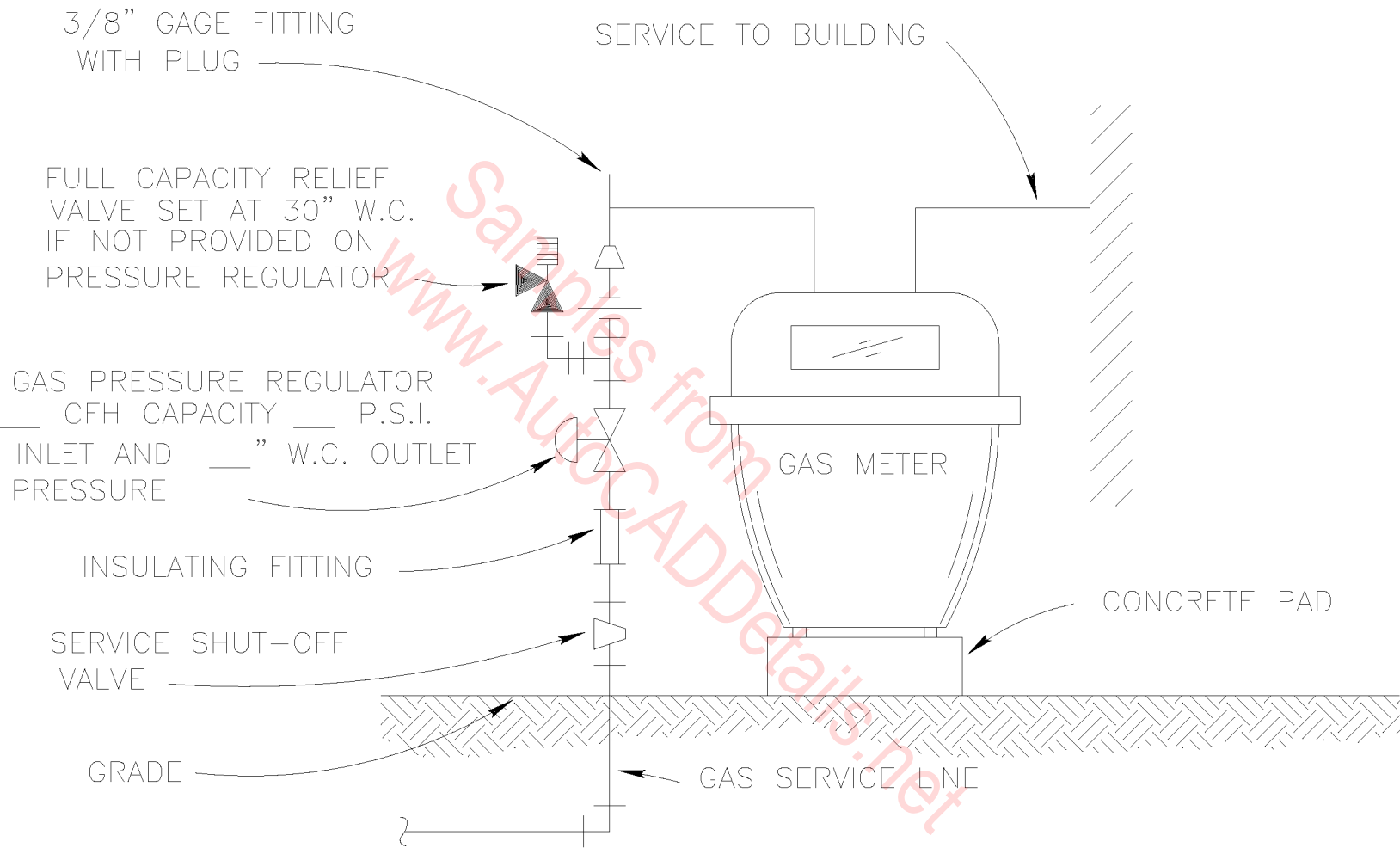
PANEL OR CURB MOUNTED

Samples from
www.AutoCADDetails.net

NATURAL GAS SPIGOT DETAIL

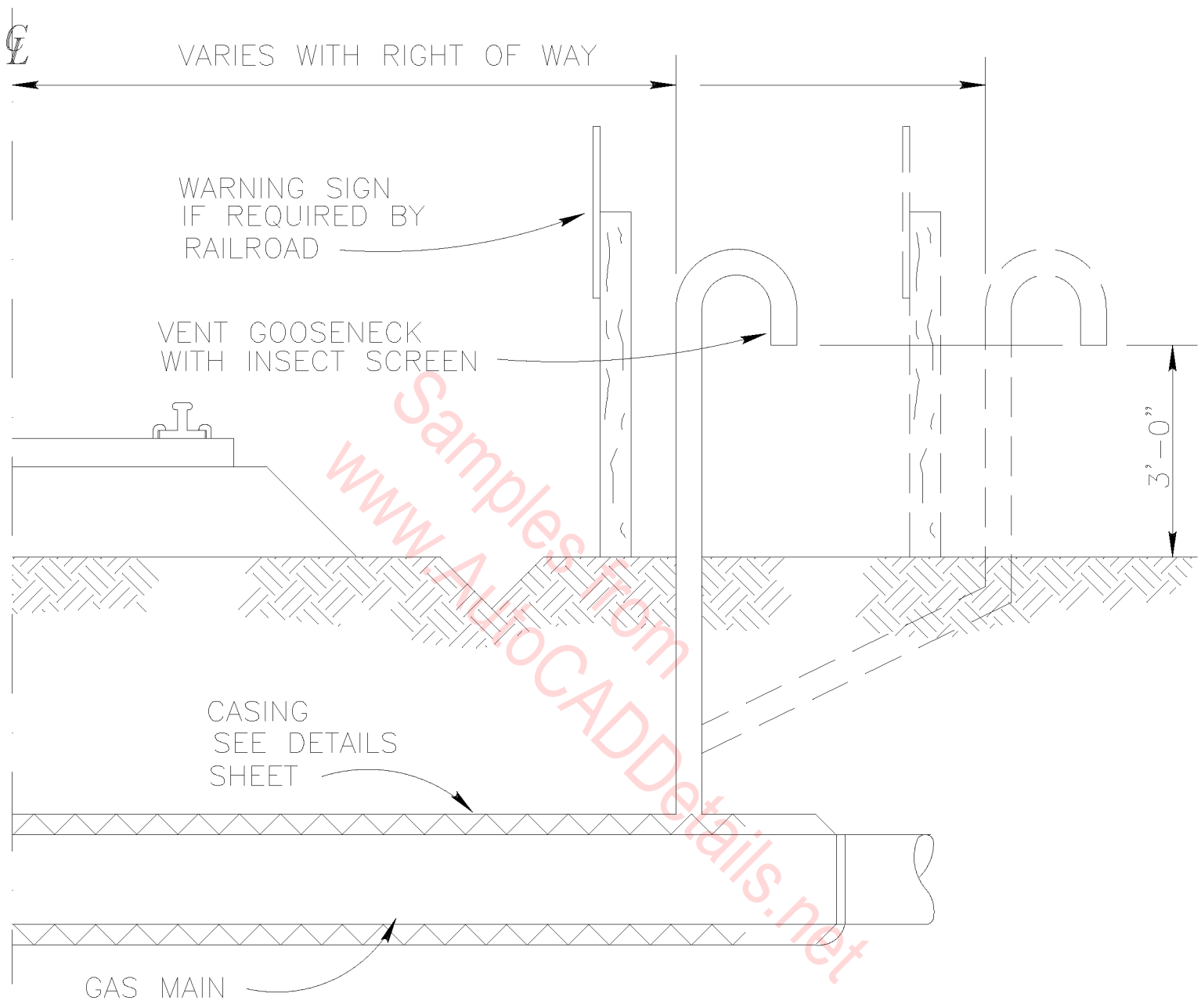
N.T.S.





METERED GAS SERVICE ENTRANCE

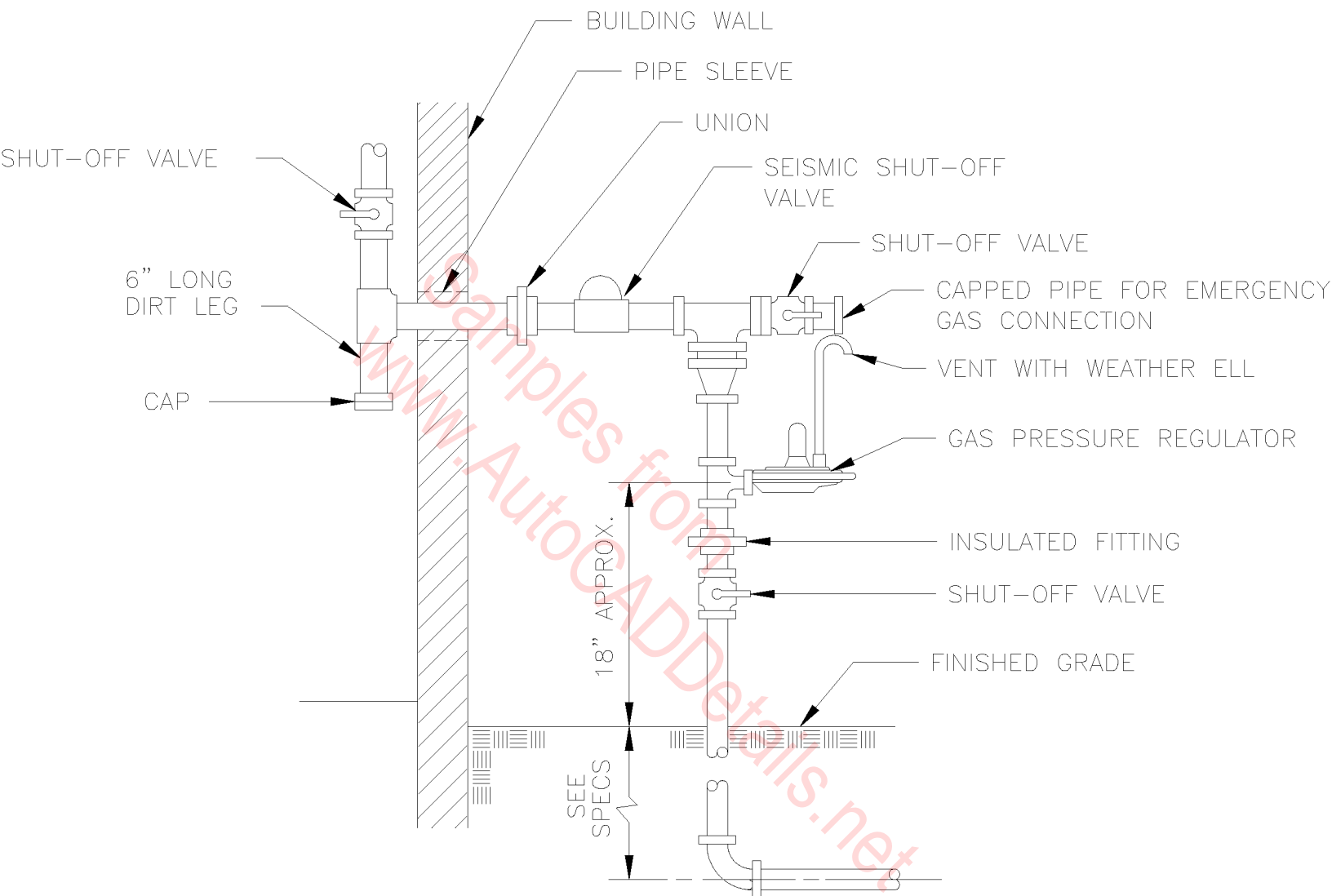
N. T. S.



- NOTES:
1. CASING SHALL BE AT LEAST 4" (NOMINAL) GREATER THAN CARRIER SIZE.
 2. CASING SHALL BE BURIED A MINIMUM OF 3 FEET.
 3. VENT IS OPTIONAL ON CROSSINGS. COORDINATE WITH LOCAL AUTHORITIES.

GAS LINE RAILROAD CROSSING DETAIL

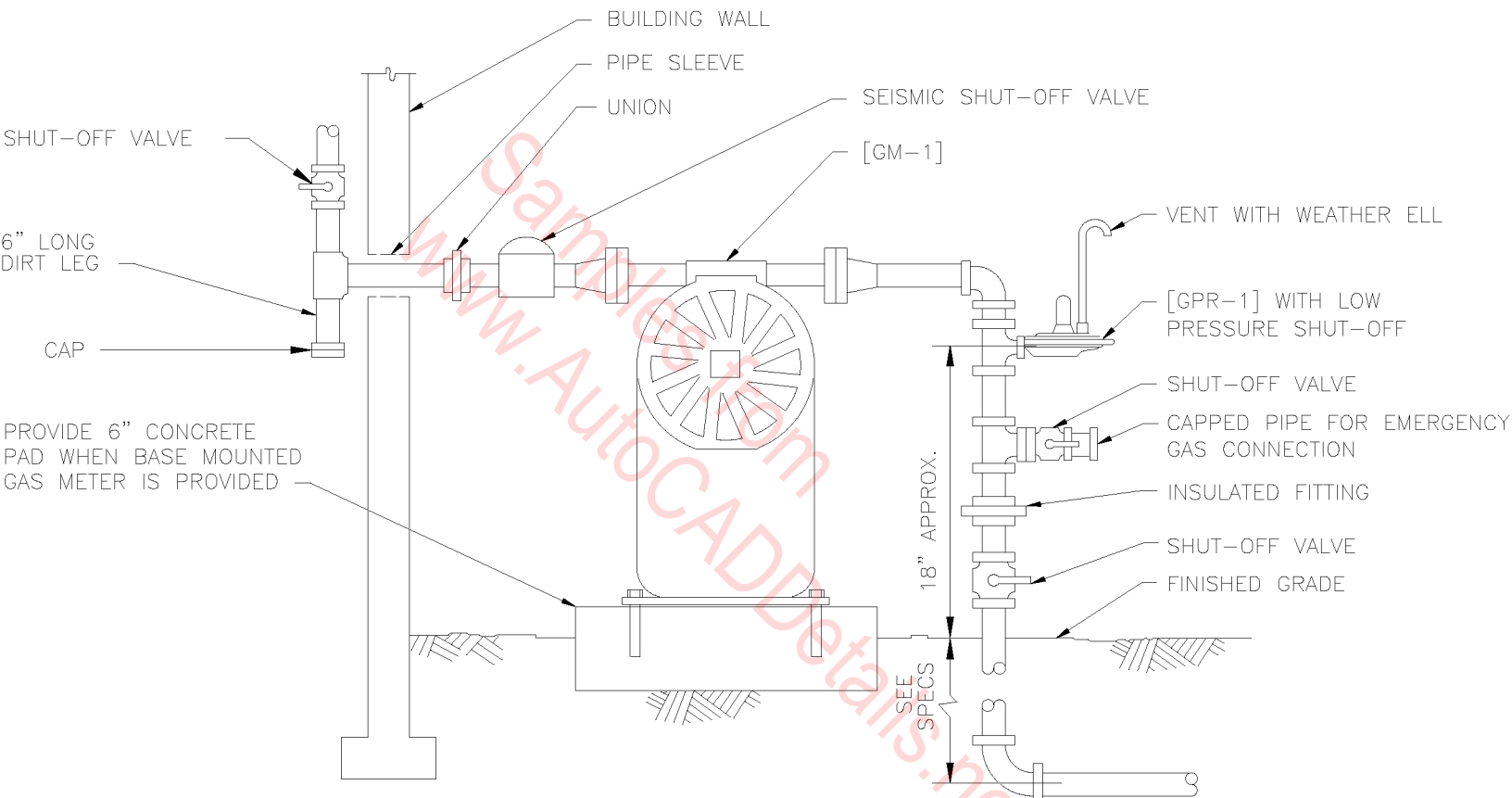
N.T.S.



GAS PRESSURE REGULATOR

N.T.S.

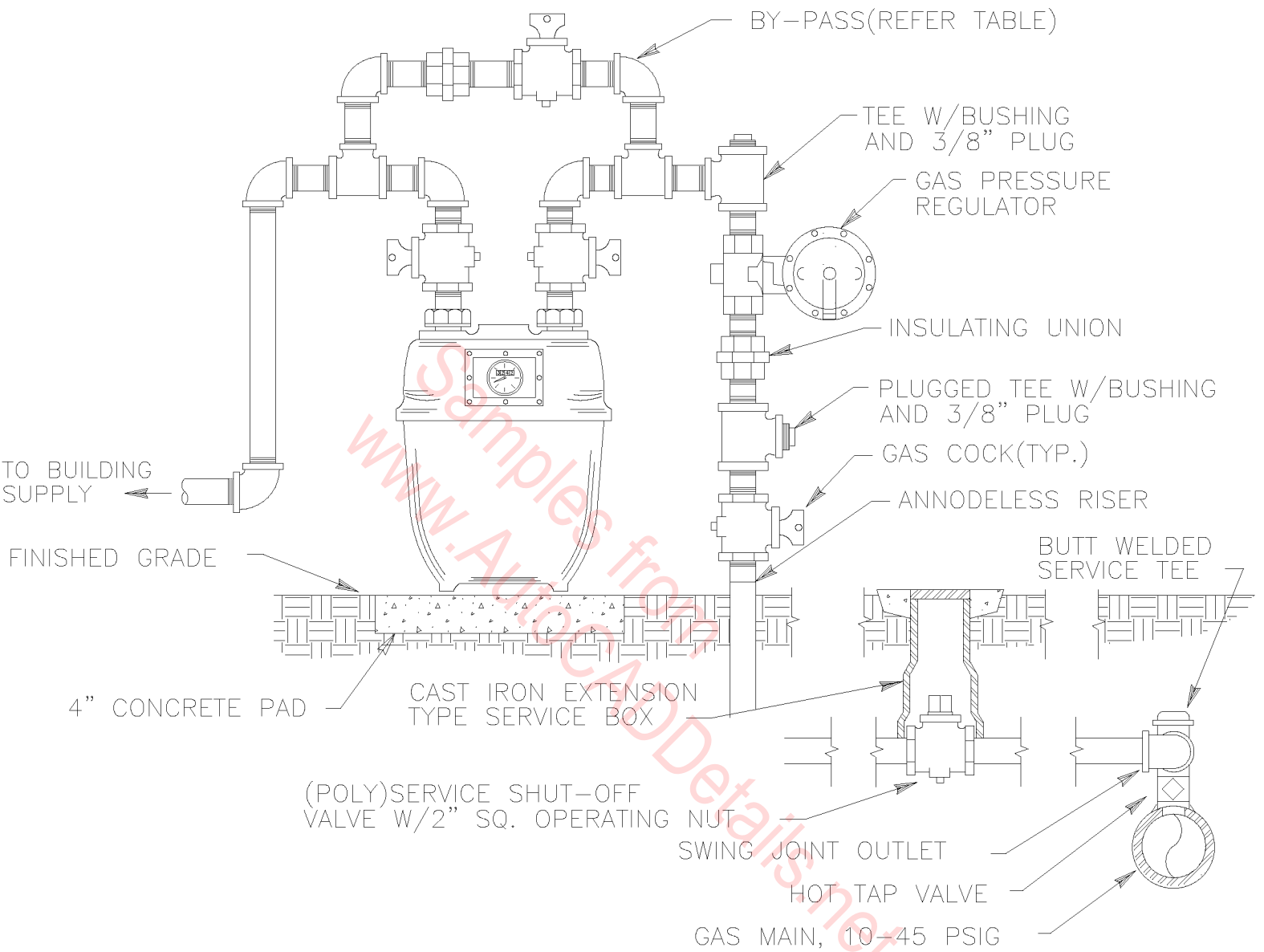
NOTE: SEISMIC SHUT-OFF VALVES ARE OPTIONAL AND ARE NOT REQUIRED FOR NONESSENTIAL FACILITIES LOCATED WITHIN SEISMIC ZONES 1 OR 2.



GAS METER & REGULATOR DETAIL

N.T.S.

NOTE: SEISMIC SHUT-OFF VALVES ARE OPTIONAL AND ARE NOT REQUIRED FOR NONESSENTIAL FACILITIES LOCATED WITHIN SEISMIC ZONES 1 OR 2.

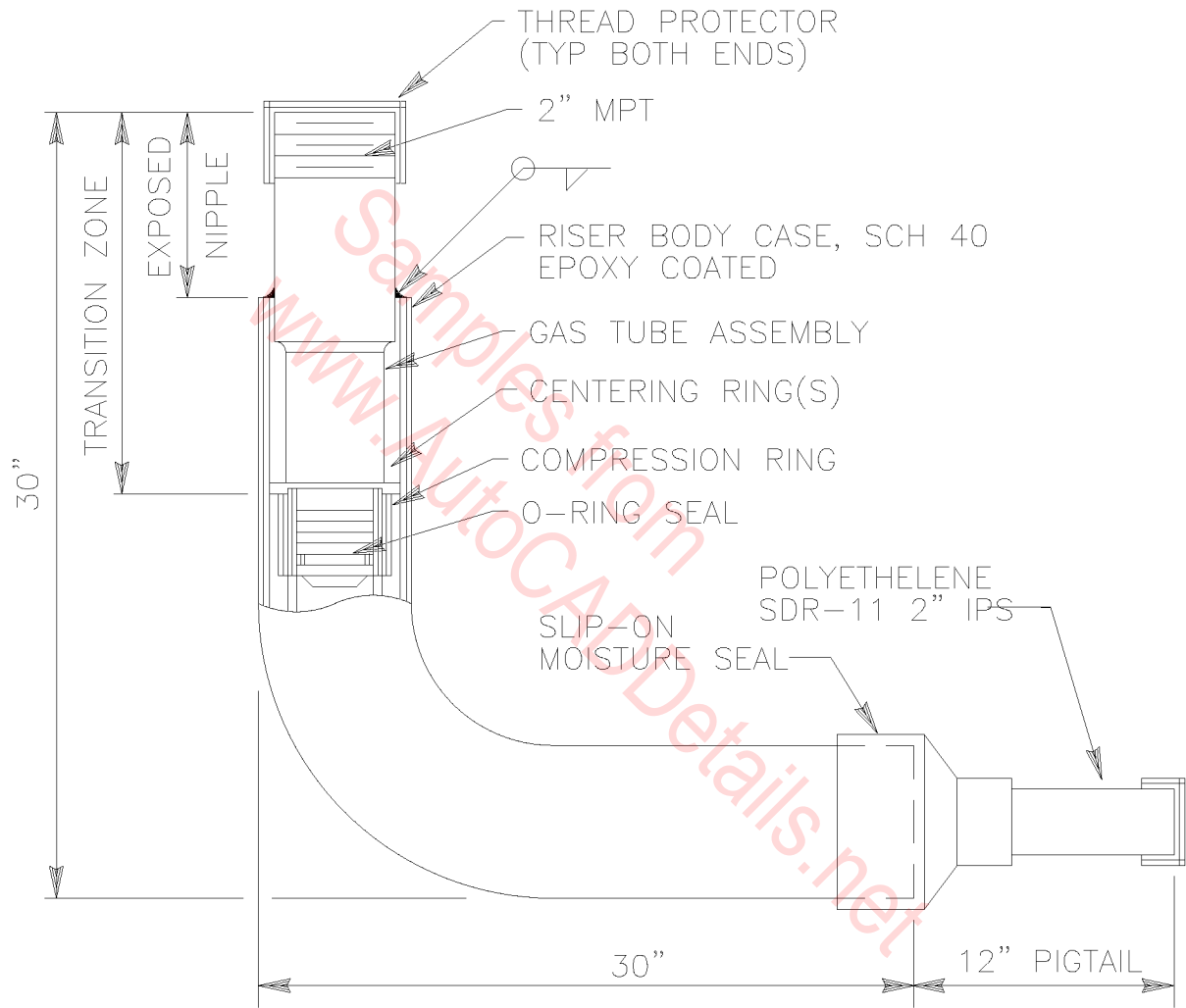


GAS METER DATA BY BUILDING			
BLDG.	BY-PASS LINE SIZE	STD. CU. FT./HR.	REG. CAP. (CFH)
DORMITORY BUILDINGS	3"	3,900	4,485
ADMINISTRATION BUILDING	3"	5,495	6,295

NOTE: LINE SIZES AS CALLED FOR ON SITE PLAN

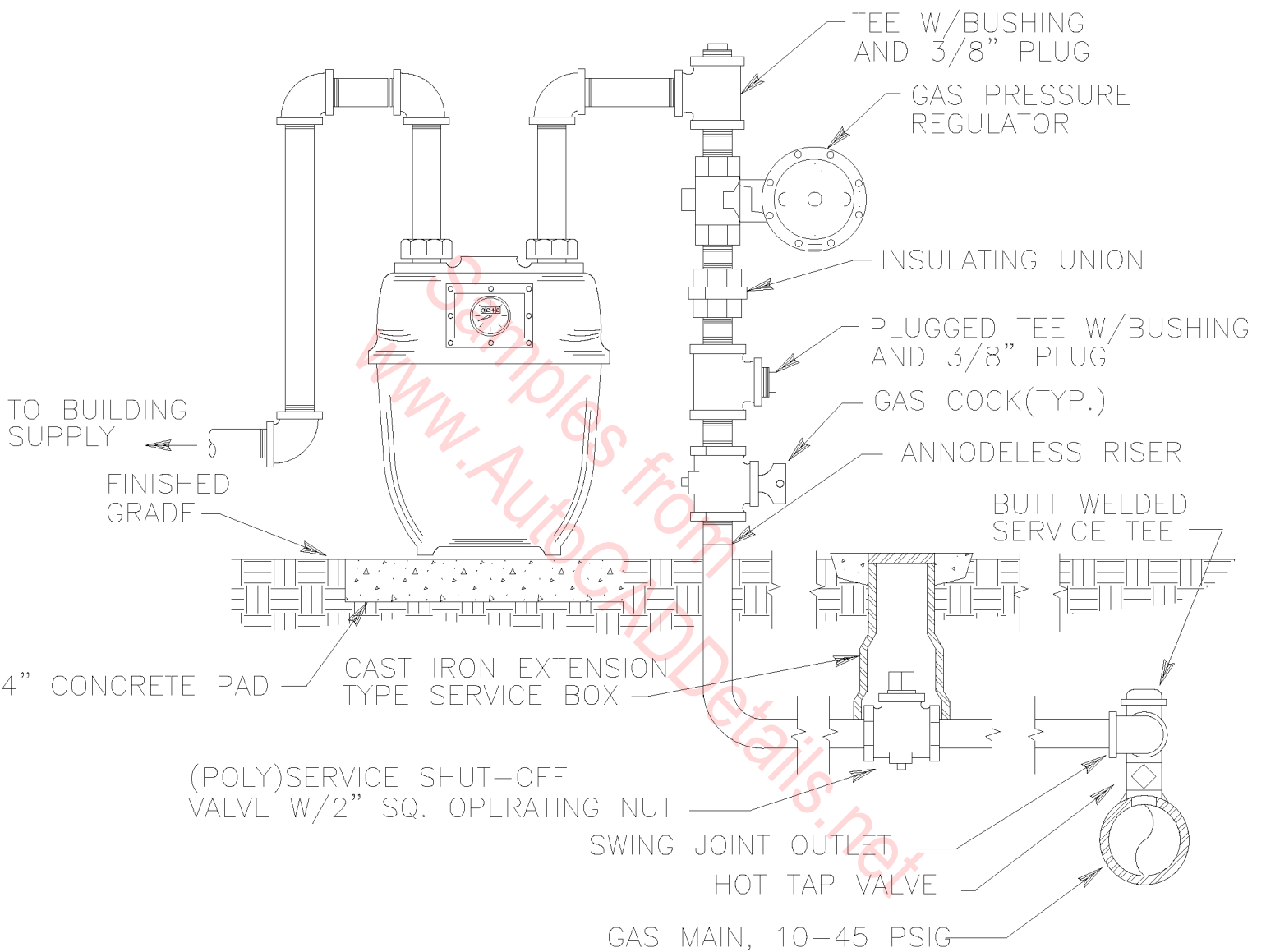
TYPICAL GAS SERVICE (W/BY-PASS) DETAIL

N.T.S.



TYPICAL ANODELESS GAS METER RISER DETAIL

N.T.S.



NOTE: LINE SIZES AS CALLED FOR ON SITE PLAN

TYPICAL GAS SERVICE CONNECTION DETAIL

N.T.S.