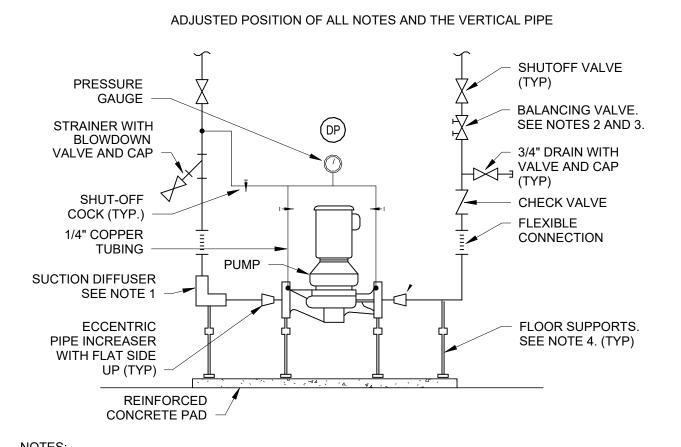
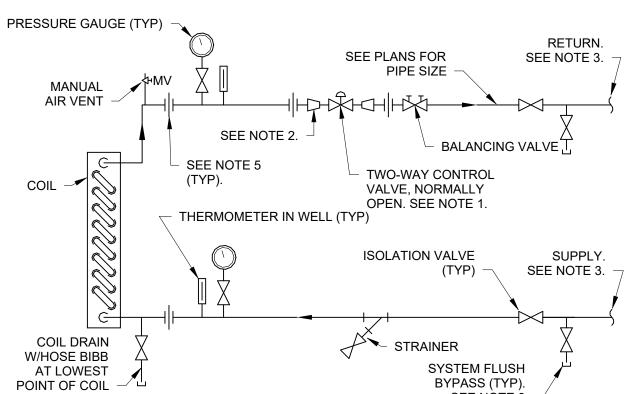


EXPANSION TANK AIR SEPARATOR PIPING DETAIL NTS



1. MAINTAIN MINIMUM 18" CLEARANCE IN FRONT OF SUCTION DIFFUSER FOR REMOVAL OF STRAINER. IF STRAINER IS PROVIDED WITH SUCTION DIFFUSER. 2. $\,$ INSTALL BALANCING VALVE WITH UNRESTRICTED UPSTREAM AND DOWNSTREAM PIPING LENGTHS IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS. 3. BALANCING VALVE SHALL BE LINE-SIZE AND VALVE SHALL REMAIN FULLY OPEN ON VARIABLE FLOW 4. SUPPORT PUMP, SUCTION DIFFUSER AND ELBOW FROM FLOOR. PROVIDE VIBRATION ISOLATION PER 5. CONTRACTOR HAS OPTION OF PROVIDING A TRIPLE DUTY VALVE IN THE PUMP DISCHARGE LINE IN LIEU OF THE CHECK AND BALANCE VALVES. SHUTOFF VALVE IS STILL REQUIRED EVEN IF TRIPLE DUTY VALVE IS USED.

10 FLOOR MOUNTED IN-LINE PUMP DETAIL NTS



- INSTALL CONTROL VALVE BETWEEN UNIONS OR FLANGES. PROVIDE CONCENTRIC REDUCERS BOTH SIDES OF CONTROL VALVE AS REQUIRED. WHEN TAPPED INTO TOP OF MAINS, AIR VENT REQUIRED. ARRANGEMENT SHOWN FOR FULL FLOW THROUGH COIL ON FAILURE. REPLACE UNION/FLANGE SET WITH FLEXIBLE PIPE CONNECTOR WHERE EQUIPMENT IS
- SUPPORTED OR SUSPENDED BY SPRING ISOLATORS. PROVIDE WIDE-OPEN BALANCING VALVE ON THE RETURN SIDE OF HYDRONIC PIPING FOR FLOW VERIFICATION ONLY, DO NOT BALANCE. PRE-ASSEMBLED HOSE KITS ARE ACCEPTABLE. ALL COMPONENTS SHALL BE INCLUDED AND ARRANGED AS SHOWN. ALL SIZES SHALL BE LINE SIZE EXCEPT CONTROL VALVE MAY BE REDUCED SIZE AS SELECTED BY MANUFACTURER. FLEXIBLE PIPE CONNECTORS SHALL NOT
- 8. PROVIDE MEANS TO BYPASS COIL CIRCUIT FOR FLUSHING. PROVIDE DEDICATED BYPASS VALVES, FLEXIBLE HOSE, OR PERMANENT BYPASS LINE WITH SHUTOFF VALVE. (5) 2-WAY HYDRONIC COIL PIPING DETAIL NTS

4 3-WAY HYDRONIC COIL PIPING DETAIL NTS

DISCHARGE

EXHAUST FAN PROVIDE VIBRATION **ISOLATORS BETWEEN** CURB AND BASE SECURE BASE TO CURB TRANSITION DUCT TO CONNECT TO FAN CURB SEE NOTES 3 AND 4 EXTEND DUCTWORK OVER TOP OF CURB AND SEE NOTE 2 SECURE TO WOOD NAILER SECURE CURB TO ROOF ROOF DECK AND WITH METHOD **INSULATION PER** CONSISTENT WITH ARCHITECTURAL DWGS ROOF CONSTRUCTION ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.

IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE

4. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL. HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

PIPE STOP (TYP)

SECURE PIPE SUPPORT

STRUCTURAL

8 MULTIPLE PIPE FLOOR SUPPORT DETAIL NTS

PLATFORM

THREADED STEEL ROD WITH NUT

AND WASHER BOTH SIDES (TYP.)

MULTIPLE PIPE TRAPEZE HANGER DETAIL NTS

26 GA. STAINLESS STEEL

CAULK ALL AROUND

1" RIGID INSULATION

PREFABRICATED

COVER, SLOPE TO DRAIN

TO SUPPORT STAND (TYP)

ROLLER CHAIR SUPPORT (TYP)

- REFER TO SPECIFICATIONS FOR REQUIREMENTS AND

PIPE SADDLE, HIGH DENSITY

INSULATION INSERT, AND

INSULATION SHIELD. (TYP)

ROLLER CHAIR SUPPORT (TYP)

STEEL SUPPORT STAND,

STRUCTURAL ENGINEER

COORDINATE WITH

ARCHITECT AND/OR

- SECURE ROD TO

■ STEEL TURNBUCKLE

REFER TO SPECIFICATIONS FOR REQUIREMENTS AND

INSULATION, VAPOR BARRIER, PIPE SADDLE, HIGH DENSITY INSULATION INSERT. AND

MANUAL AIR VENT

UNION (TYP)

APPLICATION OF PIPE

INSULATION SHIELD. (TYP)

 ackslash Channel Support

PIPE STOP (TYP)

FUNNEL WITH

CHEMICAL

ISOLATION VALVE

(TYPICAL)

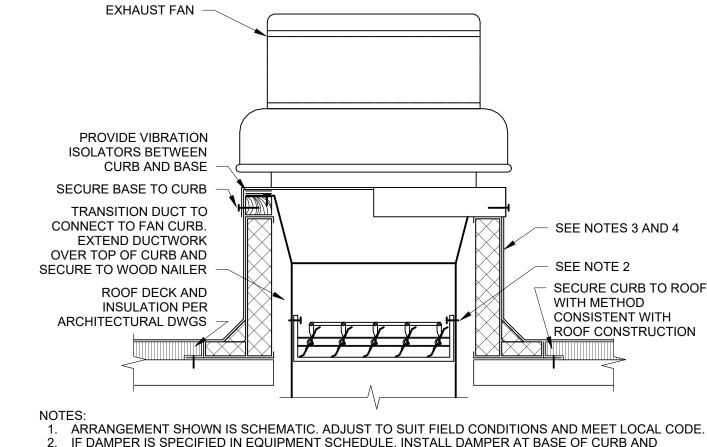
STRUCTURE IN AN

APPROVED MANNER

APPLICATION OF PIPE INSULATION, VAPOR BARRIER

ROOF MOUNTED UPBLAST FAN DETAIL NTS

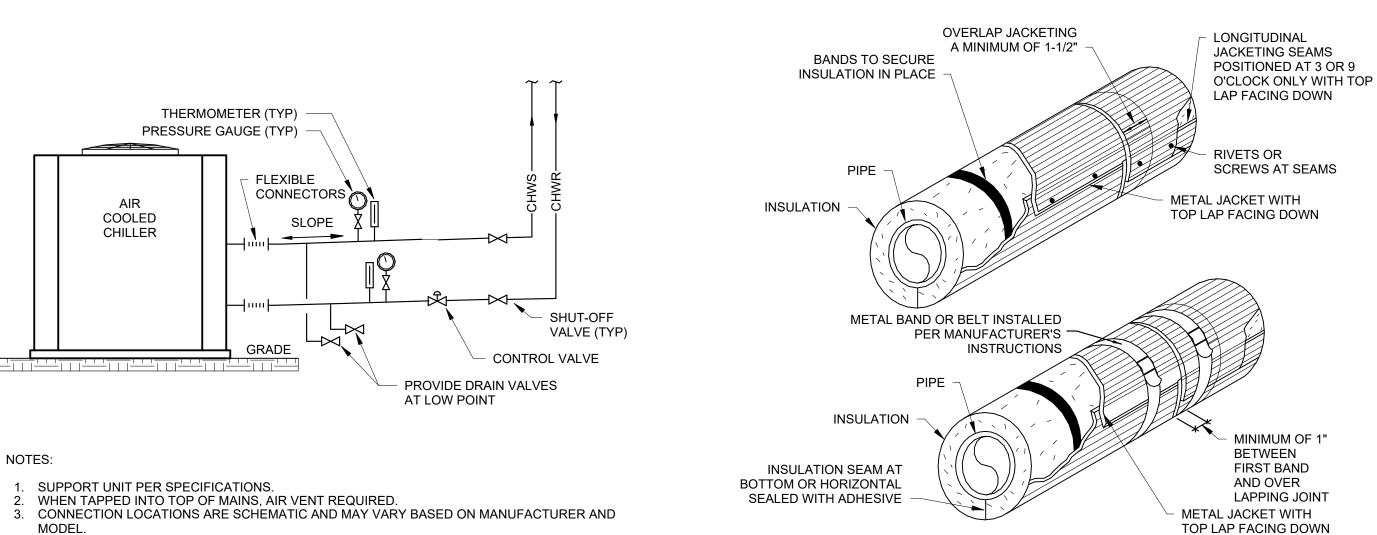
AIR-COOLED CHILLER PIPING DETAIL NTS



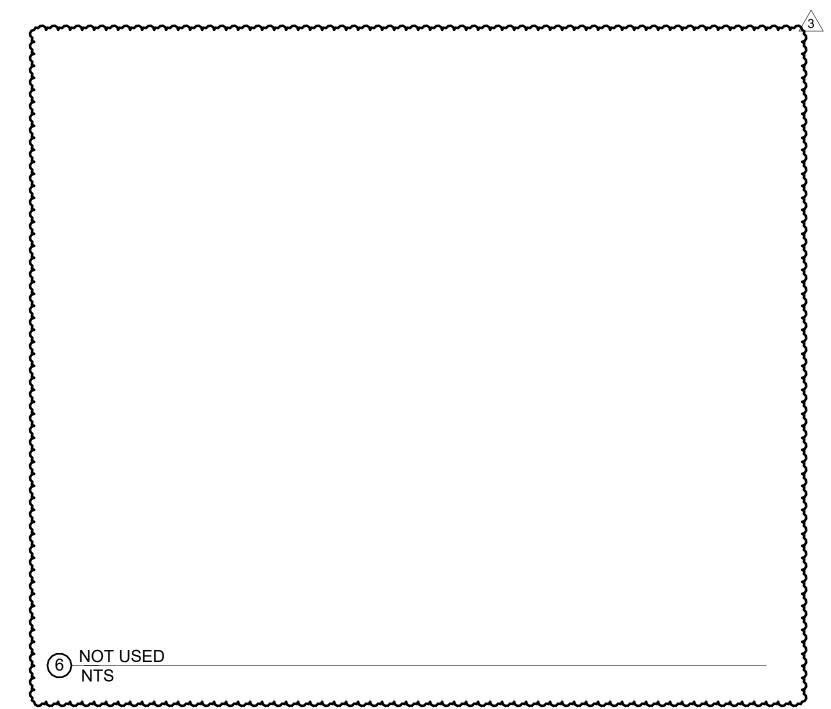
ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE. 2. IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR

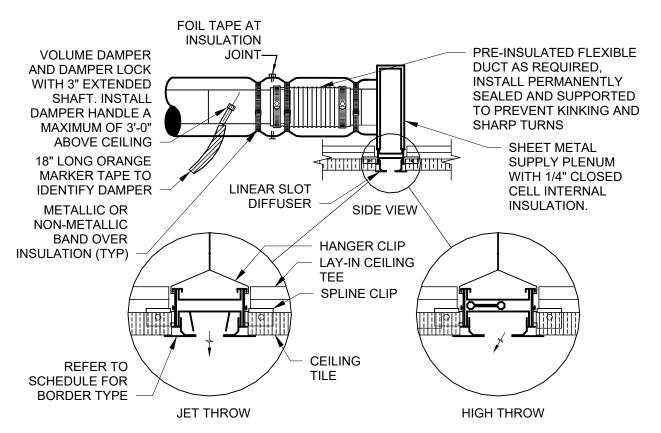
4. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL. HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

ROOF MOUNTED DOWNBLAST FAN DETAIL NTS



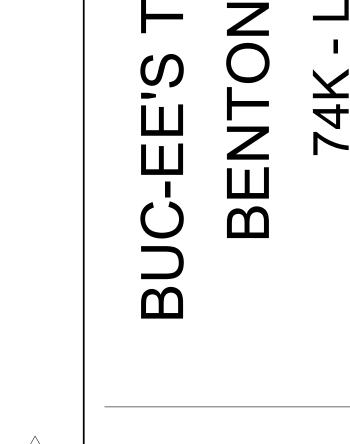
EXTERIOR PIPING WITH FIELD APPLIED METAL JACKET OVER INSULATION DETAIL NTS





1. EXTEND HARD METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 5'-0". PROVIDE RIGID 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE DUCT WITHIN 5'-0" LENGTH 2. COORDINATE EXACT LENGTH AND LOCATION OF SLOT DIFFUSER WITH ARCHITECT'S REFLECTED CEILING PLAN. 3. REFER TO DIFFUSER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR EACH SCHEDULED

1 LINEAR SLOT DIFFUSER IN LAY-IN CEILING DETAIL NTS



LAWRENCE S. LEVINSON, A.I.A.

Houston, TX 77007

Buc-ee's Benton, LLC

Saline County, AR

TEL: (979) 230-2920

0

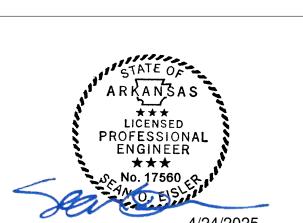
7800 Washington Ave., Suite 600

main: 713.600.3600 www.laarc.com 8345 LENEXA DRIVE, SUITE 300

LENEXA, KS 66214 **TEL** 913.742.5000 **FAX** 913.742.5001 WWW.HENDERSONENGINEERS.COM AR. CORPORATE NO: 484

EXPIRES 12/31/2025

ISSUE/REVISION LOG No. DESCRIPTION DATE 04/23/2025 3 Revision 3 - Owner Changes



ISSUED FOR REVIEW: 05/14/2024 ISSUED FOR BID: 05/14/2024 **ISSUED FOR PERMIT:** 05/14/2024 Copyright 2024 Lawrence S. Levinson, AIA., Warning: This document is protected by U.S.

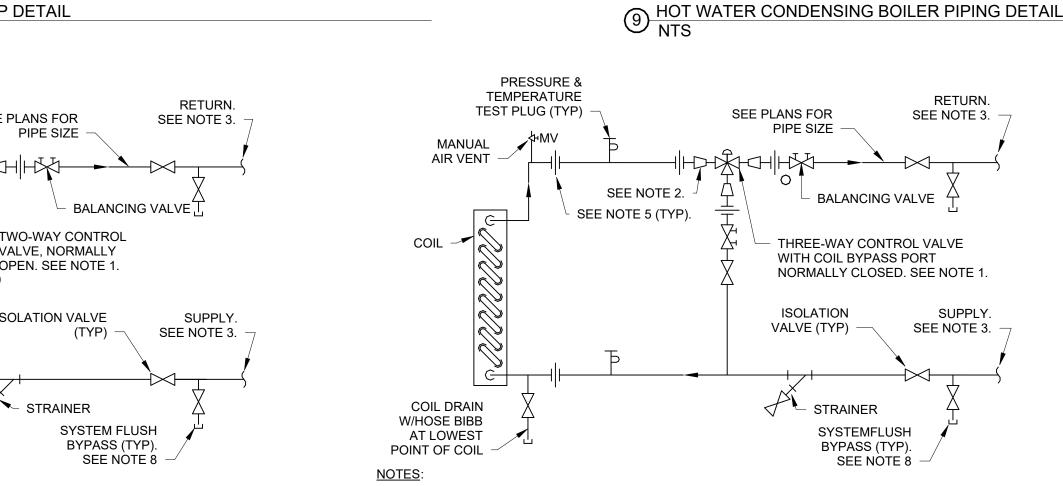
Copyright Law Under Section 102 of the U.S. Copyright and the Architectural Works Copyright Protection Act of 1990. Unauthorized reproduction and distribution of this document or any portion of it, other than for use of this particular project, is prohibited and may result in severe civil and criminal penalties, and will prosecuted to maximum extent possible under the law.

M5.01

MECHANICAL DETAILS

2024-107.000 LSL PROJECT NUMBER:

BENTON, ARKANSAS



BYPASS (TYP). SEE NOTE 8 INSTALL CONTROL VALVE BETWEEN UNIONS OR FLANGES. PROVIDE CONCENTRIC REDUCERS BOTH SIDES OF CONTROL VALVE AS REQUIRED. WHEN TAPPED INTO TOP OF MAINS, AIR VENT REQUIRED. ARRANGEMENT SHOWN FOR FULL FLOW THROUGH COIL ON FAILURE. REPLACE UNION/FLANGE SET WITH FLEXIBLE PIPE CONNECTOR WHERE EQUIPMENT IS SUPPORTED OR

HOSE, OR PERMANENT BYPASS LINE WITH SHUTOFF VALVE.

SUSPENDED BY SPRING ISOLATORS. PROVIDE WIDE-OPEN BALANCING VALVE ON THE RETURN SIDE OF HYDRONIC PIPING FOR FLOW VERIFICATION ONLY. DO NOT BALANCE. PRE-ASSEMBLED HOSE KITS ARE ACCEPTABLE. ALL COMPONENTS SHALL BE INCLUDED AND ARRANGED AS SHOWN. ALL SIZES SHALL BE LINE SIZE EXCEPT CONTROL VALVE MAY BE REDUCED SIZE AS SELECTED BY MANUFACTURER. FLEXIBLE PIPE CONNECTORS SHALL NOT EXCEED 24 INCHES.

PROVIDE

ALUMINUM JACKET

OVER INSULATION

EXPOSED TO

SEAL OPENING

WEATHER

POT FEEDER **INSULATED CURE** WEATHERTIGHT WITH TREATED PROVIDE FLASHING WOOD NAILER BETWEEN CURB AND **ROOFING** ROOF IN A MANNER TO MAINTAIN ROOF INSULATION WARRANTY_ [[] 3/4" **ROOF DECK** - ROOF OPENING

SHUT-OFF VALUE (TYP) TO DRAIN TO PUMP SUCTION

3 PIPE ROOF PENETRATION ENCLOSURE DETAIL NTS

SEE NOTE 3. STRAINER SYSTEMFLUSH

UL LISTED GREASE

NEMA 3R DISCONNECT

ATTACHED TO SUB-BASE TRANSITION DUCT TO FAN CONNECTION SIZE TRANSITION IN CURB

EXTENSION TO MAINTAIN

REQURIED CLEARANCE.

GASKET BETWEEN CURB

PROVIDE NEOPRENE

EXTENSION TO ROOF

GREASE EXHAUST

CLEARANCE WRAP

AND BASE

SECURE CURB

DUCT WITH 0"

UPBLAST GREASE EXHAUST FAN DETAIL NTS

ROLLER HANGER WITH

CLEVIS HANGER

13 PIPE HANGERS DETAILS NTS

AIR INLET FROM

MAIN GAS LINE

GAS TRAIN VENT

PROVIDED BY BOILER

NOTES:

MANUFACTURER

OUTDOORS

GAS TRAIN

PILOT LINE

CONCRETE PAD

MANUFACTURER'S REQUIREMENTS AND LOCAL CODE.

VARY BASED ON BOILER MANUFACTURER AND MODEL.

OPERATING AND SAFETY DEVICES REQUIRED BY LOCAL CODE.

RELIEF LINE TO FLOOR DRAIN FULL SIZE OF RELIEF VALVE OUTLET.

SEE NOTE 3.

SINGLE SUPPORT

THREADED EYE ROD

■ STEEL TURNBUCKLE (TYP)

THREADED STEEL ROD (TYP) REFER TO

HIGH DENSITY

SPECIFICATIONS FOR

REQUIREMENTS AND

APPLICATION OF PIPE

INSULATION, VAPOR

INSULATION SHIELD.

BARRIER, PIPE SADDLE,

INSULATION INSERT, AND

PIPE ROLLER HANGER (TYP)

ROLLER HANGER WITH

ADJUSTABLE BAND HANGER

CONDENSING BOILER

CONDENSATE DRAIN

PIPE PER BOILER

MFR. DIRECTIONS

BURNER

1. ROUTE VENTS FROM GAS TRAIN DEVICE(S) TO OUTDOORS IN ACCORDANCE WITH

2. FUEL TRAINS SHALL BE PROVIDED BY BOILER MANUFACTURER AND SHALL INCLUDE ALL

EXHAUST VENT/FLUE: SLOPE HORIZONTAL RUNS BACK TOWARD BOILER PER MANUFACTURER'S

CONNECTION LOCATIONS SHOWN IN DETAIL ARE REPRESENTED SCHEMATICALLY AND MAY

RELIEF VALVE. PIPE

TO FLOOR DRAIN.

DOUBLE SUPPORT

1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL

PROVIDE CURB EXTENSION MADE FROM NON-COMBUSTIBLE MATERIAL OF HEIGHT REQUIRED

PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS

REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH

COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL. REFER TO ARCHITECTURAL

TO MOUNT FAN BASE A MINIMUM 18 INCHES ABOVE COMBUSTIBLE CURB MATERIAL AND

DISCHARGE GREASE OUTLET A MINIMUM OF 40 INCHES ABOVE ROOF SURFACE OR ANY

METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF

HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND

SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER

LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.

ADJACENT BUILDING STRUCTURE WITHIN 10 FEET OF OUTLET, WHICHEVER IS HIGHER.

EXHASUT FAN

FAN BASE HINGE

GREASE DRAIN

NON-VENTED CURB

EXTENSION (NOTE 2)

IF VENTED CURB IS

PROVIDED, BLANK

OFF VENTS WITH

SHEET METAL

ROOF DECK AND

INSULATION PER

SWING JOINT

THE ADJUSTABLE

ONLY BE USED ON PIPING LESS THAN

OR EQUAL TO 2

INCHES NOMINAL

SHUT-OFF VALVE (TYP)

THERMOMETER (TYP)

CONNECT EXHAUST

VENT PER BOILER

REQUIREMENTS.

MANUFACTURER'S

- PROVIDE

DEVICE

CONDENSATE

FLOOR DRAIN

NEUTRALIZATION

ROUTE TO OUTDOORS.

SYSTEM DRAIN

PRESSURE GAUGE (TYP)

BAND HANGER MAY

SEE NOTE 3

ARCH DWGS

AND TRAP

8. PROVIDE MEANS TO BYPASS COIL CIRCUIT FOR FLUSHING. PROVIDE DEDICATED BYPASS VALVES, FLEXIBLE

1. FOR MULTIPLE PIPES, PROVIDE ONE ENCLOSURE, WHERE FEASIBLE.

NOTES:

BORDER TYPE 4. REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.