

**NOTES:**

1. ALL DIMENSIONS SHALL BE VERIFIED PER ACCEPTANCE INSPECTION PLAN IP-W-334-C1-1.
2. DELETED
3. INSTALL FAN PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
4. FITTINGS ON 4'X4' RECTANGULAR DUCT IN THE FAN DISCHARGE SECTIONS ARE AS FOLLOWS:
  - FITTING #1: RECTANGULAR TRANSITION ELBOW WITH SMOOTH CURVE ? RADIUS = 4'.
  - FITTING #2: 50' 48"X48" RECTANGULAR ELBOW WITH SMOOTH CURVE ? RADIUS = 4'.
  - FITTING #3: 90' 48"X48" MITERED ELBOW WITH TURNING VANES.
  - FITTING #4: 90' 48"X48" MITERED ELBOW WITH TURNING VANES. TURNING VANES SHALL BE SINGLE WIDTH, WITH 4 1/2" TURN RADIUS, AND 3 1/4" SPACING.
  - FITTING #5: AS SHOWN IN SECTION C AND DETAIL 4, DWG H-2-822765, SH-1.
5. VERIFY ALL DIMENSIONS WITH FIELD CONDITIONS TO ASCERTAIN THAT THERE IS NO INTERFERENCE WITH EQUIPMENT.
6. FOR SUPPORTS SEE DRAWING H-2-822766.
7. INSTALL THERMAL INSULATION AT THE Y-CONNECTION UP TO THE 52" DAMPER. USE SIMILAR MATERIAL AND THICKNESS.
8. DELETED
9. REMOVE COVER PLATE ON UNDERGROUND DUCT CONNECTION AND TIE IN FITTING #5 TO FLANGE TO REMAIN. REPLACE GASKET WITH NEW ONE. SEE DRAWING H-2-1430 FOR DETAIL OF THE EXISTING UNDERGROUND OUTLET DUCT COVER ASSEMBLY.
10. DUCTWORK SHALL BE GALVANIZED STEEL, 12 GAUGE MINIMUM.
11. MOUNT MOV'S AT AN ANGLE SO THAT HANDWHEELS ARE ACCESSIBLE FROM THE GROUND LEVEL WITH CENTER NOT EXCEEDING 7 FT. ABOVE GROUND LEVEL.
12. FOR FLANGES, SEE DETAIL 6, DRAWING H-2-822765, SH-1.
13. DELETED
14. PROVIDE 1/4" REINFORCING PLATE, 6" WIDE BY 48" ON ALL RECTANGULAR DUCTS, TO BE CENTERED ON SUPPORTS.
15. SEAL ALL DUCT FLANGES TO DAMPERS WITH NEOPRENE GASKET.

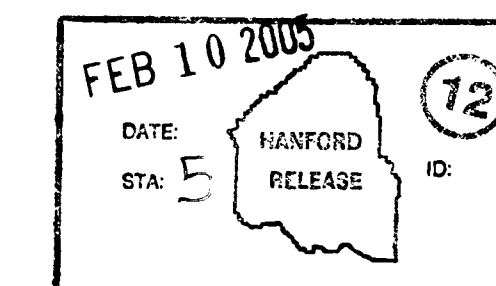
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION OF DUCTWORK AND INSTALLATION OF THE EXHAUST FAN # 4.
17. THE CONTRACTOR SHALL ASSURE THAT THE CENTER LINE OF THE 56-INCH DIAMETER DUCT ALIGNS WITH THE CENTERLINE OF EXHAUST FAN # 4 INLET. GROUT OR SHIM THE FAN BASE AS REQUIRED TO ACHIEVE ALIGNMENT.
18. GROUT SHALL BE NON-SHRINK GROUT, MASTERFLOW#928 BY MASTER BUILDERS OR ENGINEER APPROVED EQUAL.
19. THE EXHAUST FAN # 4 SHALL BE RATED AT 36000 CFM AT 12"WG. THE FAN WILL BE TOP ANGULAR UP BLAST DISCHARGE (TAUD), COUNTER CLOCKWISE (CCW 45) ROTATION. THE FAN SHALL BE FURNISHED WITH A 100 HP MOTOR, OUTLET DISCHARGE DAMPER, AND BOTH INLET AND OUTLET FLEXIBLE CONNECTION. THE FAN WILL BE CONTROLLED BY A VARIABLE FREQUENCY DRIVE (VFD)
20. ABANDON IN-PLACE EXISTING FLOW MEASURING DEVICE LOCATED IN THE EXISTING 56-INCH DIAMETER DUCT. DISCONNECT AND CAP EXISTING INSTRUMENT LINES, SEAL AIR AND WEATHER TIGHT.
21. THE FLANGE CONNECTIONS TO THE AIRFLOW MONITORS SHALL BE LEFT BLANK. BOLT PATTERNS SHALL BE TEMPLATED FROM DUCT FLANGES DURING FIELD INSTALLATION.
22. ALL DUCTWORK SHALL BE FABRICATED TO DRAWINGS H-2-822764 AND H-2-822765, ASME N509, ASME AG-1, AND SMACNA INDUSTRIAL ROUND AND RECTANGULAR DUCT CONSTRUCTION STANDARDS. ALL DUCTWORK SHALL BE WELDED CONSTRUCTION. ALL SHEET METAL SEAMS SHALL BE SEAL WELDED.
23. 56-INCH ROUND DUCTWORK SHALL BE 12 GAUGE CARBON STEEL ASTM A569 OR BETTER (REF NCR-04-TPLANT-018, VI-50370). PRESSURE RATING (-)15"WG, CLASS 1.
24. DISCHARGE DUCTWORK FROM EXHAUST FAN #4 SHALL BE 16 GAUGE ASTM A569 OR BETTER (REF NCR-04-TPLANT-018, VI 50370). PRESSURE RATING (+)4"WG, CLASS 1.
25. REMOVE AND REPLACE SUPPORT MEMBERS TO FACILITATE THE INSTALLATION OF THE NEW 56-INCH DIAMETER DUCT. SEE DRAWING H-2-822766 DETAIL 28 AND 29 FOR SUPPORTS.
26. FLANGE GASKETING SHALL BE FULL FLANGE FACE WIDTH WITH INTERLOCKING NOTCHED CORNERS. GASKET MATERIAL SHALL BE 1/4" THICK, ASTM D1056 GRADE SCE-45 CELLULAR NEOPRENE 30-40 DUROMETER, SHORE A, SOLID NEOPRENE.
27. BOLTING SHALL BE CARBON STEEL, HEAVY HEX BOLTS PER ASTM A307 GRADE A WITH HEAVY HEX NUTS PER ASTM A563 GRADE A. GRADE 2 BOLTS ARE EQUIVALENT TO A307, GRADE 5 BOLTS ARE EQUIVALENT TO A449 AND GRADE 2 NUTS ARE EQUIVALENT TO A563.
28. RECTANGULAR DUCTWORK, 56" DIAMETER DUCT AND REINFORCEMENT SHALL BE PAINTED WITH ONE COAT PRIMER ZINC CHROMATE FS TT-P-654A (ALKYD TYPE) AND TWO COATS OF EXTERIOR LIGHT GRAY ENAMEL FS-TT-E-489G CLASS A.
29. DO NO PAINTING OF DUCTWORK IF IT IS RAINING OR MOISTURE FROM ANY OTHER SOURCE IS EXPECTED BEFORE APPLIED PAINTS CAN DRY OR ATTAIN PROPER CURE WITHOUT DAMAGE.
30. ALLOW SURFACES WETTED BY RAIN OR OTHER MOISTURE SOURCE TO DRY AND TO ATTAIN REQUIRED TEMPERATURES AND CONDITIONS SPECIFIED BEFORE PROCEEDING WITH WORK OR CONTINUATION OF PREVIOUSLY STARTED WORK. UNLESS OTHERWISE RECOMMENDED BY THE PAINT MANUFACTURER, APPLY COATINGS ONLY WHEN AMBIENT AND SURFACE TEMPERATURES ARE BETWEEN 45° F AND 95° F. DO NOT APPLY FINISH IN AREAS WHERE DUST IS BEING GENERATED.
31. FILL THE VOID IN THE TEST FIXTURE FROM THE WIRE CLOTH TO THE OUTSIDE END OF THE FIXTURE WITH AIRGUARD STREAMLINE SYNTHETIC FILTER MEDIA TYPE ST-200, BLENDED DENIER FIBERS, INITIAL RESISTANCE AT 300FPM OF .20"WG, AVERAGE ARRESTANCE OF 90%, 2" THICK X 48" WIDE X 45' ROLL. FILL VOID AS FIELD DIRECTED FOR TESTING OF SYSTEM.

32. ALL DUCT WORK SHALL BE CLEANED. PROVIDE NECESSARY EQUIPMENT TO CLEAN THE INSIDE OF THE DUCTWORK FROM ALL DEBRIS. AFTER THE DEBRIS HAS BEEN REMOVED, VACUUM THE INSIDE OF THE DUCTWORK TO REMOVE SMALL RUBBISH AND DUST PARTICLES.
33. ALL EXHAUST AND DISCHARGE DUCTWORK SHALL BE LEAK TESTED TO HNF-9333 REQUIREMENTS. THE LEAK TEST SHALL BE PERFORMED PRIOR TO ANY INSTALLATION OF INSULATION ON THE 56-INCH EXHAUST DUCT.
34. WELDING OF DUCTWORK AND DUCTWORK SUPPORTS SHALL COMPLY WITH THE REQUIREMENTS OF AWS D1.1, AWS D1.3, AWS D9.1, ASME CODE, SECTION IX AND ASME AG-1 ARTICLE AA-6300.
35. INSPECTION AND TESTING OF WELDS SHALL COMPLY WITH ASME AG-1, ARTICLE AA-6330.
36. CUT INSTRUMENT TUBING USING METHODS WHICH RESULT IN CLEAN, STRAIGHT CUTS.
37. AFTER CUTTING AND BEFORE ASSEMBLY, REMOVE BURRS FROM TUBING.
38. BEND TUBING USING METHODS AND EQUIPMENT WHICH PRODUCE BENDS FREE OF WRINKLES, BULGES, OR KINKS.
39. KEEP INSTRUMENT TUBING SYSTEM CLEAN. ONCE FABRICATION HAS STARTED, PLUG OR CAP ENDS OF TUBING WHEN INSTALLATION IS NOT IN PROGRESS. CAP ENDS IF WORK IS NOT TO BE PERFORMED ON TUBING ASSEMBLIES WITHIN 4 HOURS OR, IF DUE TO ENVIRONMENTAL CONDITIONS, WHERE DEBRIS OR WATER CAN ENTER TUBING, LEAVE ENDS OF TUBING CAPPED UNTIL INSTALLATION HAS BEEN COMPLETED.
40. PRIOR TO BLOWING OUT THE INSTRUMENT LINES, VERIFY THAT THE END OF THE TUBING IS OPEN TO THE ATMOSPHERE AND NO KNOWN BLOCKAGE EXISTS IN THE LINE CREATING PRESSURE BUILD UP.
41. BLOW INSTRUMENT LINES WITH DRY, OIL FREE AIR OR NITROGEN AT 20 TO 30 PSIG UNTIL DISCHARGE AIR HAS NO VISIBLE PARTICULATE MATTER FOR 5 MINUTES MINIMUM. TEST DISCHARGE AIR FOR CLEANLINESS BY BLOWING THROUGH CLEAN WHITE CLOTH OVER THE END OF THE INSTRUMENT LINE UNTIL CLOTH SHOWS NO SIGN OR VISIBLE TRACE OF DIRT, OIL, OR MOISTURE.
42. INSTALL NECESSARY TEMPORARY RESTRAINING DEVICES, IF REQUIRED, BEFORE APPLYING TEST PRESSURE TO PREVENT DISTORTION OR DISPLACEMENT OF INSTRUMENT PIPING.
43. AFTER TUBING HAS BEEN BLOWN DRY, CHECK FOR TIGHTNESS. TIGHTNESS SHALL BE 1-1/4 TURN FROM HAND TIGHT. CHECK ON ALL TUBING JOINTS.
44. FIELD ROUTE AND SUPPORT INSTRUMENT TUBING IN APPROXIMATE LOCATION SHOWN. ROUTING SHALL TAKE FULL ADVANTAGE OF EXISTING STRUCTURES FOR THE SUPPORTING ELEMENTS. CARE SHALL BE TAKEN TO INSURE THAT THE TUBING WILL NOT BLOCK ANY OTHER EQUIPMENT WHERE ACCESS OR REMOVAL IS REQUIRED. SUPPORT TUBING AT A MAXIMUM SPACING OF 3'-0" INTERVALS USING 1-5/8" SQUARE STRUCTURAL METAL FRAMING CHANNEL (SMFC) UNISTRUT P1000, B-LINE B22, HILTI HS-158-12 OR EQUIVALENT AND TUBING CLAMPS. ATTACH SUPPORTING ELEMENTS TO EXISTING STRUCTURES USING STANDARD HARDWARE AS SUPPLIED BY THE FRAMING CHANNEL MANUFACTURER. WHERE HARDWARE USAGE IS NOT FEASIBLE THE FRAMING CHANNEL MAY BE WELDED TO THE STRUCTURES USING 1/8" (MAXIMUM) FILLET WELDS, 2 SIDES MINIMUM.
45. ANCHOR BOLTS FOR NEW EXHAUST FAN # 4 SHALL BE 5/8" DIAMETER, STAINLESS STEEL HILTI KWIK-BOLT II. ANCHORS SHALL BE SUPPLIED WITH NUTS AND WASHERS. INSTALLATION SHALL BE PER MANUFACTURER'S INSTRUCTIONS AND FFS CONSTRUCTION PRACTICES. SPECIAL INSPECTION IS REQUIRED FOR ALL ANCHOR BOLTS PER ICBO-ER-4627.
46. CARE SHALL BE TAKEN WHEN REMOVING EXISTING INSULATION FROM ROUND DUCT TO PROVIDE A CLEAN CUT WHERE EXISTING INSULATION IS TO REMAIN. ANY REMAINING INSULATION THAT IS DAMAGED SHALL BE CLEANED UP AND REPAIRED.

PROJECT W-334 NOTES      PROJECT W-533 NOTES,  
FAN #4 INSTALLATION

THE FOLLOWING DOCUMENTS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL. SEE APPROVAL AND VENDOR DATA LISTS, ITEMS INDICATED BY AN "X" SHALL BE SUBMITTED.

- A. FABRICATION DRAWINGS OF DUCTWORK FOR REVIEW AND APPROVAL PRIOR TO FABRICATON AND INSTALLATION.
- B. BEFORE WELDING, SUBMIT WELDING PROCEDURES FOR OFFSITE FABRICATION.
- C. NEW EXHAUST FAN #4 (FURNISHED BY OTHERS)
- D. 60" X 40" AIR FLOW MONITOR (FURNISHED BY OTHERS)
- E. TEMPERATURE ELEMENTS FOR 60" X 40" AIR FLOW MONITOR. (FURNISHED BY OTHERS)
- F. MULTIVARIABLE MASS FLOW TRANSMITTERS. (FURNISHED BY OTHERS)
- G. STAINLESS STEEL TUBING, FITTINGS AND VALVES FOR BOTH AIR FLOW MONITORS. (FURNISHED BY OTHERS)
- H. EXPANSION ANCHOR BOLT INSPECTION REPORT SHALL BE INCLUDED IN CWP.
- I. VARIABLE FREQUENCY DRIVE (FURNISHED BY OTHERS).



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|--|--|---------------|----------------|--------------------|
| DESIGNED CD RHODEN                       |  | DATE 06-21-99 | SAFETY CLASS 3 | USE AS-BUILT       |
| DRAWN ENHDT NGUYEN                       |  | DATE 06-27-99 | EDIT 610064    |                    |
| CHECKED W HODGES                         |  | DATE 06-27-99 |                |                    |
| SAFETY SEE DR/AT FORM                    |  |               |                |                    |
| ENVIR SEE DR/AT FORM                     |  |               |                |                    |
| QUAL ENG/SEE DR/AT FORM                  |  |               |                |                    |
| LEAD ENGR E J RENKEY                     |  | DATE 06-29-99 |                |                    |
| PROJECT W-334, 291-T VENTILATION UPGRADE |  | SIZE F 29 1/4 | INDEX NO. 0101 | DWG NO. H-2-822764 |
| APPROVED FOR SUBMITTAL                   |  | DATE 06-30-99 | SCALE NONE     | JOB NO. W-334      |
| BY JOHN T BELCHER                        |  |               |                | SHEET 1 OF 3       |
| FOR WHC                                  |  |               |                |                    |

| NO. | REV. | DESCRIPTION  | REV. BY | DATE | APP'D FOR | DATE |
|-----|------|--|---------|------|-----------|------|
| 1   |      | INCORPORATED HMF-FMP-01-8665-RO, HMF-FMP-01-8665-ROC & HMF-FMP-01-8665-ROE | W       |      |           |      |
| 2   |      |  |         |      |           |      |

| NUMBER    | TITLE                                      | NUMBER     | TITLE                           |
|-----------|--|------------|---------------------------------|
| H-2-77519 | T-PLANT MAIN STACK HVAC AND PIPING DETAILS | H-2-822766 | HVAC EQUIPMENT AND DUCT SUPPORT |
| H-2-1430  | EXHAUST AIR SAND FILTER OUTLET DUCT COVER  | H-2-822765 | HVAC DETAILS                    |
| H-2-77518 | HVAC AND PIPING PLAN AND SECTIONS          | H-2-822763 | SITE PLAN                       |
| H-2-77515 | PLAN AND DETAILS                           |            |                                 |