

5/14/19

RE: Addendum #1 for IFB 19-01 Telford-Shroyer RAD Conversion

Prepared by: Greater Dayton Premier Management (GDPM)

This Addendum modifies and shall become a part of the original Request for Quote (RFQ) and is hereby made part of the Bidding Documents for the referenced project.

All bidders shall indicate in their Quote that this Addendum has been received and considered in their Quote.

The Addendum items are intended to supplement, clarify or correct parts of the IFB package. Items in the addendum shall take precedence over items corrected and shall be of equal value with items supplemented or clarified. Any questions in reference to this addendum must be directed, in writing, to:

Jonathan Schaaf RDA Group Architects 7945 Washington Woods Drive Dayton, Ohio 45459 937.610.3440 937.610.3441 Fax jrs@rda-group.com

Addendum #1

1. See attached documents.

Information added to gdpm.org on 5/4/19 This is Addendum #1

400 Wayne Avenue, Dayton, Ohio 45410

www.gdpm.org



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Addendum #1 Telford-Shroyer RAD Conversion IFB #19-01

May 13, 2019

Greater Dayton Premier Management 400 Wayne Ave. Dayton, Ohio 45410

This Addendum modifies and shall become a part of the original Contract Documents and is hereby made part of the Bidding Documents for the referenced project.

All bidders shall indicate in their bid/proposal that this Addendum has been received and considered in their bid proposal.

The Addendum items are intended to supplement, clarify or correct parts of the bid proposal package. Items in the addendum shall take precedence over items corrected and shall be of equal value with items supplemented or clarified. Any questions in reference to this addendum must be directed, in writing, to:

Jonathan Schaaf RDA Group Architects 7945 Washington Woods Drive Dayton, Ohio 45459 937.610.3440 937.610.3441 Fax jrs@rda-group.com

Addendum Items:

- RDA understands that some bidders may have had "font" issues when printing the documents. We believe we have determined and resolved the issue with several of the mechanical engineer's sheets [list below]. RDA has re-uploaded the entire drawing set to DropBox as well as a second file set that we believe contains only the sheets that were experiencing the "font" issue. There were no "changes" to the set, just a re-upload to address the font printing issue.
 - a. 514 Telford Sheet M1, M4
 - b. 520 Telford Sheet M1, M4
 - c. 526 Telford Sheet M1, M4
 - d. 532 Telford Sheet M1, M4
 - e. 1907 Shroyer Sheet M1, M6
 - f. 2018 Shroyer Sheet M1, M6

End of Addendum #1.

12x6
12"Ø
BDD
FD
\square

RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
ROUND DUCT
VOLUME DAMPER
BACK DRAFT DAMPER
FIRE DAMPER, 1 1/2 HOUR FIRE RATED
DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT
INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR
INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR
INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
· 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) · TAP-IN BRANCH, RECTANGULAR
45° ELBOW (SMOOTH OR 3 PIECE ELBOW) • TAP-IN BRANCH, RECTANGULAR • BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) TAP-IN BRANCH, RECTANGULAR BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) TAP-IN BRANCH, RECTANGULAR BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) TAP-IN BRANCH, RECTANGULAR BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL SUPPLY DUCT SECTION, RECTANGULAR
 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) TAP-IN BRANCH, RECTANGULAR BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL SUPPLY DUCT SECTION, RECTANGULAR RETURN DUCT SECTION, RECTANGULAR
 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) TAP-IN BRANCH, RECTANGULAR BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL SUPPLY DUCT SECTION, RECTANGULAR RETURN DUCT SECTION, RECTANGULAR EXHAUST DUCT SECTION, RECTANGULAR
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 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) TAP-IN BRANCH, RECTANGULAR BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL SUPPLY DUCT SECTION, RECTANGULAR RETURN DUCT SECTION, RECTANGULAR 90° ELBOW TURNED UP, RECTANGULAR 90° ELBOW TURNED DOWN, RECTANGULAR

- 90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR
- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR
- SUPPLY AIR DEVICE (ARROWS INDICATE THROW DIRECTIONS, NO THROWS INDICATE 4-WAY THROW.
- RETURN AIR DEVICE
- EXHAUST AIR DEVICE

PIPING LINETYPES

	- EXISTING PIPING TO REMAIN
	- EXISTING PIPING TO BE REMOVED
	- DOMESTIC COLD WATER PIPING
	- DOMESTIC HOT WATER PIPING
SS	- SANITARY DRAIN PIPING
	- SANITARY VENT PIPING

- STIC COLD WATER PIPING
- STIC HOT WATER PIPING
 - ARY DRAIN PIPING ARY VENT PIPING
 - GAS PIPING

MISCELLANEOUS SYMBOLS

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- CONNECT TO EXISTING - MISCELLANEOUS SYMBOLS

SINGLE LINE DUCTWORK SYMBOLS

		OLIVET LONDING HOTEO.	
12x6	- RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)	 THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPING SYSTEMS COMPLETE, UNLESS NOTED OTHERWISE. COMPLETE INSTALLATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PIPE AND FITTINGS, PIPE HANGERS AND ANCHORS, EQUIPMENT, FIXTURES, SPECIALTIES, ETC. THIS CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE 	1. L C E
8"Ø	- ROUND DUCT	GENERAL CONTRACTOR.	L
36x18Ø	- FLAT OVAL DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)	 THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF COORDINATION BY THIS CONTRACTOR. 	2. T F
	- FLEXIBLE ROUND DUCT	3. THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES, LOCATIONS, RELATIVE DIMENSIONS, ETC.	3. I N
<u>_</u>	- FLEXIBLE DUCT CONNECTION	AND REQUIREMENTS AND ADJUST ACCORDINGLY.	
	- VOLUME DAMPER	4. CONTRACTOR SHALL INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR: MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS	4. T
FSD	- FIRE DAMPER, 1 1/2 HOUR FIRE RATED	5 THIS CONTRACTOR SHALL CONCEAL ALL PIPES WITHIN WALLS OR CHASES WHENEVER PRACTICAL	C
	- SMOKE DAMPER	6. THIS CONTRACTOR SHALL MAINTAIN DIMENSIONED "AS-BUILT" DRAWINGS FOR ALL UNDERGROUND UTILITIES	5. II A
 	- DUCT TRANSITION	DURING CONSTRUCTION AND PROVIDE TO ENGINEER AT PROJECT COMPLETION.	T
R	- INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR	 CONTRACTOR SHALL INCLUDE ALL EXCAVATIONS AND BACK FILLING REQUIRED FOR UNDERGROUND PIPING. ALL BACK FILL SHALL BE FREE FROM ALL TRASH AND BUILDING MATERIALS. BACK FILL SHALL BE ENGINEERED FILL 95% COMPACTED IN 8" LAYERS. 	6. T E
	- INCLINED DROP WITH RESPECT TO AIR FLOW,	8. ALL WORK SHALL CONFORM TO ASSOCIATED SPECIFICATIONS.	7. I T
	- INCLINED RISE WITH RESPECT TO AIR FLOW ROUND OR	9. THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.	8. T S
	FLAT OVAL	10. THIS CONTRACTOR SHALL PROVIDE AND INSTALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO ALL	9. II
	- INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL	OBVIOUSLY NECESSARY LOCATIONS INCLUDING ALL VALVES, FITTINGS, HANGERS, BACKFLOW PREVENTERS, WATER HEATERS, ETC.	ב 10. TH
	- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)	 ALL WATER PIPING SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW. 	A
	- 45° ELBOW (SMOUTH OR 3 PIECE ELBOW)	A. ALL PIPING SHALL BE SUPPORTED WITH 3/8" ALL THREAD AND CLEVIS HANGERS AND IN ACCORDANCE WITH SECTION 308 OF THE OBC - PLUMBING CODE, LATEST EDITION. UNLESS NOTED OTHERWISE.	11. I F 12 F
	- RECTANGULAR TAP-IN BRANCH OR ROUND OR FLAT	B. THIS CONTRACTOR SHALL INSULATE ALL NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION INCLUDING FITTINGS.	C
	OVAL CONICAL TEE - INCLINED CONICAL TAKE-OFF, ROUND OR FLAT OVAL	C. THIS CONTRACTOR SHALL PROVIDE AND INSTALL SERVICE VALVES ON ALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO EACH FIXTURE. ALL VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS.	13. A
÷		D. ALL HOSE BIBBS SHALL BE MOUNTED AT 24" ABOVE GRADE, UNLESS NOTED OTHERWISE.	-
	- "Y" FITTING, ROUND OR FLAT OVAL	E. THE CONTRACTOR SHALL PROVIDE APPROPRIATE AIR CHAMBERS AT ALL EQUIPMENT WITH QUICK	E
	- 90° ELBOW TURNED UP, RECTANGULAR	F. ALL DOMESTIC WATER PIPING SHALL BE POLYETHYLENE OR APPROVED EQUAL.	C
	- 90° ELBOW TURNED DOWN, RECTANGULAR	G. ALL DOMESTIC WATER PIPE INSULATION SHALL BE 1" THICK WITH ALL SERVICE JACKET. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.28 BTUH-IN/SQ.FT-°F AT 100°F MEAN TEMPERATURE DIFFERENCE	C
	- 90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR	AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. PIPE INSULATION SHALL BE AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS	E
<u> </u>	- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR	SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.	F
	- END OF DUCT RUN - THERMOSTAT	12. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL SANITARY SEWER/ TRADE WASTE TO ALL NECESSARY LOCATIONS INCLUDING FLOOR DRAINS, CLEANOUTS, TRAPS, VENTS, ETC.	C
\bigcirc		 ALL SANITARY SEWER/ TRADE WASTE SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW. 	F
PIPING SYN	/IBOLS	A. ALL SANITARY SEWER/ TRADE WASTE PIPE SHALL BE INSTALLED WITH $\frac{1}{4}$ " PER FOOT MINIMUM SLOPE FOR LINES 2½" DIAMETER OR LESS, AND $\frac{1}{6}$ " PER FOOT MINIMUM SLOPE FOR LINES 3" OR GREATER, UNLESS NOTED OTHERWISE.	I.
	- VALVE	B. ALL EXPOSED TRAPS AND TRIM SHALL BE BRIGHT CHROME, UNLESS OTHERWISE NOTED. ALL PLUMBING	J
		FIXTURES SHALL BE WHITE, UNLESS OTHERWISE NOTED.	k
	- PLUG VALVE	C. VENTS SHALL BE LOOPED ABOVE CEILING AND/OR WITHIN ATTIC TO MINIMIZE ROOF PENETRATIONS.	14 /
× R	- SAFETY OR PRESSURE RELIEF, ANGLE VALVE	D. PVC NOT ACCEPTABLE FOR VENT PIPING IN CEILING PLENUM SPACES.	14. F
→ →	- PRESSURE REGULATING VALVE	PLENUMS.	15. A E
	- LATERAL Y	F. THIS CONTRACTOR SHALL REFERENCE ARCHITECTURAL SHEETS FOR PLUMBING FIXTURE LOCATIONS, MOUNTING HEIGHTS, ETC.	F
	- CAP	G. ALL SANITARY FLOOR DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS, UNLESS OTHERWISE NOTED.	A A
+7	- ELBOW, 90°	14. CONDENSATE DRAINS THAT SERVE HVAC EQUIPMENT SHALL BE SCHEDULE 40 PVC PIPING. CONDENSATE	16. <u>C</u>
O	- ELBOW, 90° TURNED UP	DRAINS SERVING STEAM EQUIPMENT SHALL BE STEEL.	F
	- ELBOW, 90° TURNED DOWN	15. ALL PIPING SHALL BE CONSTRUCTED AND INSTALLED AS DESCRIBED BELOW.	7 N
+×	- ELBOW, 45°	OF PARALLEL, ADJACENT PIPES, OTHER WORK, ETC. UNLESS NOTED OTHERWISE.	17. A
·'+'	- TEE	B. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH APPROPRIATE CLEARANCE FOR PASSAGES, HEADROOM, OPERATION OF DOORS OR WINDOWS, EQUIPMENT, LIGHTING OUTLETS, OR OWNER'S APPARATUS AND	E
		EQUIPMENT.	C
	- TEE, TURNED DOWN	C. INSTALL PIPING, VALVES, FITTINGS, ETC. ROUTED OVER MEANS OF EGRESS A MINIMUM OF 7'-6" CLEARANCE ABOVE FINISHED FLOOR.	Т
V		D. OFFSET PIPING AROUND COLUMNS, BEAMS, AND OTHER OBSTRUCTIONS AS REQUIRED.	18. A V
₩ <u></u>	- STRAINER	E. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE,	E
(M)	- METER		C B
(R)	- REGULATOR		ן 10 ד
C.O.	- CLEANOUT	DIRECT CONTACT WITH DIELECTRIC INSULATING MATERIAL. PIPE CONNECTIONS SHALL BE WITH A DIELECTRIC FLANGE OR UNION	ia. I E
F.D.		H. ALL RISERS SHALL HAVE A BALL VALVE FOR MANUAL VENTING AT HIGH POINTS IN THE SYSTEM	C
۷.۱.۳.		I. PIPE IDENTIFICATION SHALL COMPLY WITH ASME STANDARD A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' UNLESS NOTED OTHERWISE. COORDINATE WITH EXISTING AND VERIFY WITH	20. T E
<u>GENERAL</u> N	NOTES:	OWNER.	
I. FOR THE PURPOS	E OF THIS PROJECT THE MECHANICAL AND PLUMBING SCOPE OF WORK HAVE	J. PIPE MARKERS SHALL BE A PREFORMED ONE PIECE UV RESISTANT VINYL WITH EMBOSSED LETTERS AND FLOW ARROWS. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.	

BEEN CONSOLIDATED TO BE ON THE SAME SHEETS.

GENERAL PLUMBING NOTES

L. PIPE HANGERS AND SUPPORTS

a. USE ADJUSTABLE CLEVIS HANGERS, FOR INDIVIDUAL, STRAIGHT HORIZONTAL RUNS.

K. VALVES SHALL BE IDENTIFIED WITH 'SIZE, TYPE, AND DESCRIPTION OF OPERATION'.

b. USE RISER CLAMPS FOR VERTICAL PIPE RUNS.

c. USE PIPE ROLLERS AND GUIDES TO SUPPORT STEAM SUPPLY AND STEAM CONDENSATE LINES.

GENERAL MECHANICAL NOTES:

- JNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL PROVIDE AND INSTALL THE HVAC SYSTEMS AND EXHAUST SYSTEMS COMPLETE. THE INSTALLATION SHALL INCLUDE, BUT NOT LIMITED TO, ALL DUCTWORK AND FITTINGS, EQUIPMENT, DIFFUSERS, SMOKE DETECTORS, THERMOSTATS AND 24 VAC WIRING, ROOF AND/OR WALL PENETRATIONS, TESTING AND BALANCING, ETC. CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
- COMPLYING WITH ABOVE INTENT.
- COORDINATION.
- **BEGINNING WORK.**
- THE OWNER AND OSHA.
- SAME ACCORDING TO LOCAL REGULATIONS.

- APPLICABLE.

- SHALL BE SELF-SUPPORTING AND NOT REQUIRE CONNECTING EQUIPMENT FOR SUPPORT. MEET STATED REQUIREMENTS.
- SATISFY PROJECT REQUIREMENTS.
- EDGES.
- PLENUM BRANCHES.
- LARGEST DIMENSION.

- LIMITED A SHEET METAL ELBOW SHALL BE CONNECTED TO AIR DEVICE.
- GAGE.
- MANUFACTURED BY KNAUF OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- CONDITIONING EQUIPMENT TO DISABLE CONTINUED OPERATION.



THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES.

T IS INTENDED THAT WORK COVERED BY SPECIFICATIONS AND DRAWINGS INCLUDES EVERYTHING REQUISITE AND NECESSARY TO MAKE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS SPECIFICALLY NOTED. OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE CONTRACTOR FROM

THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF

IN GENERAL, THE DRAWINGS SHOW THE DESIRED DUCT ROUTING LOCATION PLUS FITTINGS AND CONNECTIONS. THE DUCT AND ASSOCIATED EQUIPMENT CAN BE LOWERED OR RAISED AS NECESSARY TO ACCOMMODATE MINOR FIELD CONDITIONS. THE CONTRACTOR SHALL NOTE ALL CHANGES ON DRAWINGS AND RETURN MARKED UP DRAWINGS TO THE OWNER.

THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY BEFORE

THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH SAFETY REQUIREMENTS IMPOSED BY

THE CONTRACTOR SHALL KEEP WORK AREA CLEAN, REMOVE ALL DEBRIS FROM THE OWNER'S PROPERTY, AND DISPOSE OF

INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS. CHANGES SHALL NOT BE MADE WITHOUT APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.

THE MECHANICAL CONTRACTOR SHALL PROVIDE FINAL HOOK-UP, PURGE AND LIGHTING OF ALL NATURAL GAS EQUIPMENT IF

ALL DUCT SHALL BE CONSTRUCTED AND INSTALLED MEETING THE REQUIREMENTS OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AND AS DESCRIBED BELOW.

ALL DUCT SHALL BE SHEET METAL AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA STANDARDS, LATEST EDITION. HANGERS SHALL BE PROVIDED A MAXIMUM OF EVERY 8'-0", AT ROOF PENETRATIONS AND AT ALL ELBOWS. ALL DUCT

ALIGN, ADJUST, AND LEVEL ALL DUCT FOR SATISFACTORY OPERATION. IF A SLOPE IS SPECIFIED, ALIGN AND ADJUST TO

REINFORCE ALL DUCTS TO PREVENT BREATHING, VIBRATING, BUCKLING, OR UNNECESSARY NOISE AS REQUIRED TO

ALL DUCT AND PLENUM SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. IT IS ACCEPTABLE TO CHANGE DUCT SIZES WHEN THE CROSS-SECTIONAL AREA IS MAINTAINED.

THE INTERIOR OF ALL DUCTS AND PLENUMS SHALL BE SMOOTH AND FREE OF OBSTRUCTIONS, BURRS, AND SHARP

ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES, INCLUDING DISCHARGE AND RETURN

G. ALL CONCENTRIC TRANSITIONS SHALL HAVE A MAXIMUM TOTAL ANGLE OF 45° CONVERGING AND 30° DIVERGING FOR

ALL SHEET METAL DUCT JOINTS SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.

ALL FLEXIBLE DUCT CONNECTIONS SHALL BE CAULKED AND SEALED AIR TIGHT USING A DRAW BAND. THE MAXIMUM LENGTH OF FLEXIBLE DUCT RUNS SHALL BE 6'-0". FLEXIBLE DUCT SHALL NOT HAVE MORE THAN AN AGGREGATE TOTAL OF 90° CHANGE IN DIRECTION, WITH A BEND NOT LESS THAN 1.5 DUCT DIAMETER CENTERLINE RADIUS.

ALL ROUND DUCT TAKE-OFFS SHALL HAVE SPIN-IN TYPE FITTINGS WITH BALANCING DAMPERS.

ALL AIR DEVICES SHALL BE CONNECTED WITH 3 DUCT DIAMETERS OF STRAIGHT DUCT. IN AREAS WHERE SPACE IS

ALL NEW SHEET METAL DUCT TO BE ASTM A526 PRIME GALVANIZED SHEET METAL (SHEET AND STRIP) OF THE PROPER

ALL INSIDE DUCT WITH EXTERNAL DUCT INSULATION SHALL BE 0.75 PCF DENSITY, 2" THICK WITH FSK FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.29 BTUH-IN/SQ. FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT WRAP AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.

OUTSIDE EXPOSED DUCT WITH INTERNALLY LINED DUCT INSULATION SHALL BE 1.5 PCF DENSITY, 2" THICK WITH MAT FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.25 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NPFA 255 AND UL 723. NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT LINER EM AS

ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 1" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.24 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 2" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.33 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

THE CONTRACTOR SHALL PROVIDE AND INSTALL A SECONDARY DRAIN PAN WITH FLOAT SWITCH FOR ALL AIR CONDITIONING EQUIPMENT TO BE INSTALLED ABOVE A SUSPENDED CEILING. THE SECONDARY DRAIN PAN SHALL BE GALVANIZED STEEL WITH SOLDERED CORNERS AND 2" MINIMUM COLLECTION DEPTH. THE FLOAT SWITCH SHALL BE WIRED WITH AIR

THE EQUIPMENT AND MATERIALS SPECIFIED ON THE DRAWINGS ESTABLISH THE MINIMUM STANDARDS AND BASIS FOR THE BID. ALTERNATE MANUFACTURERS AND METHODS MUST BE APPROVED PRIOR TO SUBMISSION OF BID.



1785 S. METRO PARKWAY CENTERVILLE, OH 45459 WWW.TRFTECH.US TRI-TECH PROJECT

937.306.1630 800.334.1630

#18404



Telford-Shroyer RAD Conversion	514 Telford Avenue 520 Telford Avenue 526 Telford Avenue	532 Telford Avenue 1907 Shroyer Avenue 2018 Shroyer Avenue	Kettering, Ohio	OHFA Project : 18-0218	Greater Dayton Premier Management
Print Re 10/08/1 10/23/1 11/27/1	2 cord 8 A 8 R 8 8 8 8	5-BL EVIE\ 0% S	JILT NS BET	SET ET	

NOTES AND LEGENDS

514 TELFORD AVE

Sheet Number

Project Number

APRIL 19, 2019

2018-177

Sheet Title

Date

GAS USAGE-TENANT							
	EXISTING	NEW					
FURNACE	60	60					
WATER HEATER	50	40					
TOTAL	110	100					
NOTES: 1.	GAS USAGE IS PER ME PER TENANT SPACE.	ETER, ONE METER					

GAS USAGE-HOUSE							
	EXISTING	NEW					
FURNACE	25	25					
WATER HEATER	40	40					
TOTAL	65	65					
NOTES: 1.	GAS METER SERVES L EQUIPMENT SEPARAT METERS.	AUNDRY E FROM TENANT					

		EXHAU	ST FA	N SCH	IEDUL	E		
MARK	MANUFACTURER	MODEL #	CFM	S.P. IN WATER	VOLTAGE	POWER (W)	SOUND (SONES)	NOTES
EF-1	BROAN	QTXE080FLT	50	0.25	120	23.3	0.3	2,3,4
NOTE	S: 1. PROVIDE V 2. PROVIDE V 3. EXHAUST 4. FURNISH V 10 MINUTE	WITH BROAN RADIA WITH BROAN PREMI FAN WITH INTEGRA VITH EXHAUST FAN AND 1 HOUR SETT	TION DAMPE UM RADIATI L LIGHT. TIMER SWI ⁻ INGS AT MIN	ER, MODEL # ON DAMPEF ICH, EATON IIMUM. INST	#RDM1. R, MODEL #F 9590AW OR ALLATION B	RDFQL. R EQUAL. TIN Y ELECTRIC	MER SWITCH CAL CONTRA	I TO HAVE CTOR.

PLUMBING FIX I URE SCHEDULE						
MARK	FIXTURE	WASTE	VENT	НОТ	COLD	DESCRIPTION
BA-1	TUB / SHOWER	3"	1-1/2"	1/2"	1/2"	EXISTING TUB AND SHOWER SURROUND TO REMAIN. PROVIDE MOEN COMMERCIAL SINGLE HANDLE POSI-TEMP FAUCET, MODEL #T8389EP15, WITH MOEN POSI-TEMP PRESSURE BALANCING VALVE, MODEL #8371HD. SET DISCHARGE TEMPERATURE TO 110°F MAX.
L-1	LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"	EXISTING LAVATORY TO REMAIN. PROVIDE PROFLO CHROME SINGLE HANDLE LAVATORY FAUCET WITH POP-UP DRAIN, MODEL #PFWSC4746SCP, 1.2 GPM, 4" CENTERSETS. PROVIDE WITH 0.5 GPM AERATOR INSERT, PART NUMBER PFX14320. PROVIDE CAST BRASS CHROME PLATED OPEN GRID PO PLUG, MODEL #155A. VERIFY FIT PRIOR TO ORDERING.
S-1	KITCHEN SINK	1-1/2"	1-1/4"	1/2"	1/2"	EXISTING SINK TO BE REINSTALLED. PROVIDE WITH PROFLO CHROME SINGLE HANDLE KITCHEN FAUCET, MODEL #PFXC3101CP, 1.5 GPM FLOW RATE, AND METAL LEVER HANDLE. PROVIDE WITH DEARBORN BRASS 12 LOCKING CUP SINK BASKET STRAINERS. VERIFY FIT PRIOR TO ORDERING.
SP-1	SUMP PIT SYSTEM	-	-	-	-	'BASEMENT WATCHDOG' MODEL #DFK961, ¹ / ₃ HP COMBINATION UNIT WITH EMERGENCY BACKUP SUMP PUMP SYSTEM. 3,100 GPH @ 10 FT HEAD PRIMARY PUMP, 1,000 GPH @ 10 FT HEAD BACKUP PUMP. PROVIDE 'BASEMENT WATCHDOG' "MAINTENANCE FREE AGM BATTERY" MODEL #BW27AGM AND BATTERY BOX. PROVIDE 18" DIAMETER SUMP PUMP BASIN WITH LID. COORDINATE DEPTH WITH FIELD CONDITIONS.
WC-1	FLOOR MOUNTED WATER CLOSET (ADA)	3"	1-1/2"	-	1/2"	AMERICAN STANDARD #2467.136 "CADET FLOWISE" TANK TYPE PRESSURE-ASSISTED TOILET, WHITE VITREOUS CHINA, FLOOR MOUNTED, 1.1 GAL. FLUSH, 16-1/2" HIGH BOWL RIM HEIGHT. PROVIDE WITH PROFLO SLOW CLOSE ELONGATED PLASTIC TOILET SEAT WITH EASY CLEAN, MODEL #PFTSEC2000.
WB-1	WASHING MACHINE BOX	2"	1-1/2"	1/2"	1/2"	WASHING MACHINE CONNECTION BOX WITH SINGLE LEVER VALVE AND HAMMER ARRESTERS. RIGHT HAND DRAIN OPTION. GUY GRAY MODEL #WB200HA OR EQUAL.
WH-2	WATER HEATER (GAS)	-	-	3/4"	3/4"	STATE PROLINE XE POWER DIRECT VENT, 40-GALLON COMMERCIAL-GRADE RESIDENTIAL GAS WATER HEATER, MODEL #GS6 40 YBPDS. 40,000 BTUH INPUT, 0.68 ENERGY FACTOR, 74 GALLON FIRST HOUR RATING, 45 GPH RECOVERY AT 90° RISE. 22" DIAMETER, 29-7/8" OVERALL DEPTH, 59" OVERALL HEIGHT. PROVIDE WITH DRAIN PAN AND NEW COMBUSTION AIR INTAKE PIPE. CONNECT TO EXISTING FLUE PIPE.



Telford-Shroyer RAD Conversion	514 Telford Avenue 520 Telford Avenue 526 Telford Avenue	532 Telford Avenue 1907 Shroyer Avenue 2018 Shroyer Avenue	Kettering, Ohio	OHFA Project : 18-0218	Greater Dayton Premier Management
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WWW.TRFTECH.US TRI-TECH PROJECT #18404

12x6
12"Ø
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RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
ROUND DUCT
VOLUME DAMPER
BACK DRAFT DAMPER
FIRE DAMPER, 1 1/2 HOUR FIRE RATED
DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT OVAL
INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR
INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR
INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
TAP-IN BRANCH, RECTANGULAR
BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
SUPPLY DUCT SECTION, RECTANGULAR
RETURN DUCT SECTION, RECTANGULAR
EXHAUST DUCT SECTION, RECTANGULAR
90° ELBOW TURNED UP, RECTANGULAR
90° ELBOW TURNED DOWN, RECTANGULAR
90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR

- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR
- SUPPLY AIR DEVICE (ARROWS INDICATE THROW DIRECTIONS, NO THROWS INDICATE 4-WAY THROW.
- RETURN AIR DEVICE
- EXHAUST AIR DEVICE

PIPING LINETYPES

	- EXIST
	- EXIST
	- DOME
	- DOME
SS	- SANIT
	- SANIT

- TING PIPING TO REMAIN
- TING PIPING TO BE REMOVED
- ESTIC COLD WATER PIPING ESTIC HOT WATER PIPING
- TARY DRAIN PIPING TARY VENT PIPING
- G - GAS PIPING

MISCELLANEOUS SYMBOLS

 \bigcirc

- CONNECT TO EXISTING - MISCELLANEOUS SYMBOLS

_____8"Ø - ROUND DUCT <u>36x18Ø</u> _____D_____ $-|(\mathbb{R}($ FLAT OVAL

(T)

SINGLE LINE DUCTWORK SYMBOLS 12x6

- RECTANGULAR DUCT (FIRST FIGURE IS FO SHOWN, SECOND FIGURE IS FOR SIDE NO
 - FLAT OVAL DUCT (FIRST FIGURE IS FOR S SECOND FIGURE IS FOR SIDE NOT SHOWN
 - FLEXIBLE ROUND DUCT
 - FLEXIBLE DUCT CONNECTION
 - VOLUME DAMPER
 - FIRE DAMPER, 1 1/2 HOUR FIRE RATED - COMBINATION FIRE/SMOKE DAMPER
 - SMOKE DAMPER
 - DUCT TRANSITION
 - INCLINED RISE WITH RESPECT TO AIR FLC RECTANGULAR
 - INCLINED DROP WITH RESPECT TO AIR FLO RECTANGULAR - INCLINED RISE WITH RESPECT TO AIR FLO
 - INCLINED DROP WITH RESPECT TO AIR FLO OR FLAT OVAL
 - 90° ELBOW (SMOOTH OR 5 PIECE ELBOW) 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)

 - DIVIDED FLOW FITTING, RECTANGULAR - RECTANGULAR TAP-IN BRANCH OR ROUN
 - OVAL CONICAL TEE - INCLINED CONICAL TAKE-OFF, ROUND OR
 - "Y" FITTING, ROUND OR FLAT OVAL
 - 90° ELBOW TURNED UP, RECTANGULAR
 - 90° ELBOW TURNED DOWN, RECTANGULA
 - 90° ELBOW TURNED UP, ROUND; FLAT OV/
 - 90° ELBOW TURNED DOWN, ROUND; FLAT
 - END OF DUCT RUN
 - THERMOSTAT

PIPING SYMBOLS

	- VALVE
Ţ	- CHECK VALVE
	- DOUBLE BACKFLOW PREVENTER
Ţ	- PLUG VALVE
	- SAFETY OR PRESSURE RELIEF, ANGLE VA
	- PRESSURE REGULATING VALVE
<u>_</u>	- LATERAL Y
	- CAP
	- ELBOW, 90°
O	- ELBOW, 90° TURNED UP
	- ELBOW, 90° TURNED DOWN
+×	- ELBOW, 45°
·	- TEE
	- TEE, TURNED UP
	- TEE, TURNED DOWN
D	- REDUCER
	- UNION
—— ·/	- STRAINER
M	- METER
	- REGULATOR
C.O.	- CLEANOUT
F.D.	- FLOOR DRAIN
V.T.R.	- VENT THROUGH ROOF

GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT THE MECHANICAL SCOPE OF WORK AND PLUMBING SCOPE OF WORK HAVE BEEN CONSOLIDATED TO BE ON THE SAME SHEETS.

GENERAL PLUMBING NOTES:

OR SIDE DT SHOWN)	1.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPING SYSTEMS COMPLETE, UNLESS NOTED OTHERWISE. COMPLETE INSTALLATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PIPE AND FITTINGS, PIPE HANGERS AND ANCHORS, EQUIPMENT, FIXTURES, SPECIALTIES, ETC. THIS CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.	1.	UNLE COMF DIFFU BALAI LINTE
IDE SHOWN, N)	2.	THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF COORDINATION BY THIS CONTRACTOR.	2.	THIS PERF
	3.	THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES, LOCATIONS, RELATIVE DIMENSIONS, ETC. PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND REQUIREMENTS AND ADJUST ACCORDINGLY.	3.	IT IS I NECE SPEC COMF
	4.	CONTRACTOR SHALL INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS.	4.	THIS CONF
	5.	THIS CONTRACTOR SHALL CONCEAL ALL PIPES WITHIN WALLS OR CHASES WHENEVER PRACTICAL.	F	COOF
	6.	THIS CONTRACTOR SHALL MAINTAIN DIMENSIONED "AS-BUILT" DRAWINGS FOR ALL UNDERGROUND UTILITIES DURING CONSTRUCTION AND PROVIDE TO ENGINEER AT PROJECT COMPLETION.	5.	AND / THE (
DW,	7.	CONTRACTOR SHALL INCLUDE ALL EXCAVATIONS AND BACK FILLING REQUIRED FOR UNDERGROUND PIPING. ALL BACK FILL SHALL BE FREE FROM ALL TRASH AND BUILDING MATERIALS. BACK FILL SHALL BE ENGINEERED FILL 95% COMPACTED IN 8" LAYERS.	6.	THE BEGIN
_OW,	8.	ALL WORK SHALL CONFORM TO ASSOCIATED SPECIFICATIONS.	7.	THE (
DW, ROUND OR	9.	THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.	8.	THE (SAME
.OW, ROUND	10.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO ALL OBVIOUSLY NECESSARY LOCATIONS INCLUDING ALL VALVES, FITTINGS, HANGERS, BACKFLOW PREVENTERS, WATER HEATERS, ETC.	9.	INSTA DRAV
	11.	ALL WATER PIPING SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.	10.	AND S
		A. ALL PIPING SHALL BE SUPPORTED WITH 3/8" ALL THREAD AND CLEVIS HANGERS AND IN ACCORDANCE WITH SECTION 308 OF THE OBC - PLUMBING CODE, LATEST EDITION. UNLESS NOTED OTHERWISE.	11.	APPL
ID OR FLAT		B. THIS CONTRACTOR SHALL INSULATE ALL NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION INCLUDING FITTINGS.	12.	ALL CONS
		C. THIS CONTRACTOR SHALL PROVIDE AND INSTALL SERVICE VALVES ON ALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO EACH FIXTURE. ALL VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS	13.	
		D. ALL HOSE BIBBS SHALL BE MOUNTED AT 24" ABOVE GRADE, UNLESS NOTED OTHERWISE.		S.
		E. THE CONTRACTOR SHALL PROVIDE APPROPRIATE AIR CHAMBERS AT ALL EQUIPMENT WITH QUICK		B. A N
		F. ALL DOMESTIC WATER PIPING SHALL BE POLYETHYLENE OR APPROVED EQUAL.		C. R S
٨R		G. ALL DOMESTIC WATER PIPE INSULATION SHALL BE 1" THICK WITH ALL SERVICE JACKET. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.28 BTUH-IN/SQ.FT-°F AT 100°F MEAN TEMPERATURE DIFFERENCE		D. A T
AL SIMILAR		AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. PIPE INSULATION SHALL BE AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS		E. T E
OVAL SIMILAR		SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.		F. A P
	12.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL SANITARY SEWER/ TRADE WASTE TO ALL NECESSARY LOCATIONS INCLUDING FLOOR DRAINS, CLEANOUTS, TRAPS, VENTS, ETC.		G. A
	13.	ALL SANITARY SEWER/ TRADE WASTE SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.		н. А
		A. ALL SANITARY SEWER/ TRADE WASTE PIPE SHALL BE INSTALLED WITH ¼" PER FOOT MINIMUM SLOPE FOR LINES 2½" DIAMETER OR LESS, AND ½" PER FOOT MINIMUM SLOPE FOR LINES 3" OR GREATER, UNLESS NOTED OTHERWISE.		I. A L C
		B. ALL EXPOSED TRAPS AND TRIM SHALL BE BRIGHT CHROME, UNLESS OTHERWISE NOTED. ALL PLUMBING FIXTURES SHALL BE WHITE, UNLESS OTHERWISE NOTED.		J. A
		C. VENTS SHALL BE LOOPED ABOVE CEILING AND/OR WITHIN ATTIC TO MINIMIZE ROOF PENETRATIONS.		L.
		D. PVC NOT ACCEPTABLE FOR VENT PIPING IN CEILING PLENUM SPACES.	14.	all n Gage
ALVE		E. PVC PIPE IS ACCEPTABLE FOR WASTE AND VENT PIPING. COORDINATE PIPE MATERIALS AND CEILING PLENUMS.	15.	ALL II BLAN
		F. THIS CONTRACTOR SHALL REFERENCE ARCHITECTURAL SHEETS FOR PLUMBING FIXTURE LOCATIONS, MOUNTING HEIGHTS, ETC.		FIRE SPRE APPR
		G. ALL SANITARY FLOOR DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS, UNLESS OTHERWISE NOTED.		ADHE
	14.	CONDENSATE DRAINS THAT SERVE HVAC EQUIPMENT SHALL BE SCHEDULE 40 PVC PIPING. CONDENSATE DRAINS SERVING STEAM EQUIPMENT SHALL BE STEEL.	16.	OUTS FACE DIFFE
	15.	ALL PIPING SHALL BE CONSTRUCTED AND INSTALLED AS DESCRIBED BELOW.		723, I MANU
		A. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH MINIMUM 4" CLEARANCE BETWEEN FINISHED COVERING OF PARALLEL, ADJACENT PIPES, OTHER WORK, ETC. UNLESS NOTED OTHERWISE.	17.	
		B. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH APPROPRIATE CLEARANCE FOR PASSAGES, HEADROOM, OPERATION OF DOORS OR WINDOWS, EQUIPMENT, LIGHTING OUTLETS, OR OWNER'S APPARATUS AND EQUIPMENT.		BLAN FILM, OF 0.
		C. INSTALL PIPING, VALVES, FITTINGS, ETC. ROUTED OVER MEANS OF EGRESS A MINIMUM OF 7'-6" CLEARANCE ABOVE FINISHED FLOOR.	10	THER
		D. OFFSET PIPING AROUND COLUMNS, BEAMS, AND OTHER OBSTRUCTIONS AS REQUIRED.	18.	ALL F WIRE BLAN
		E. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.		FILM, OF 0.
		F. GROOVED MECHANICAL COUPLINGS AND FASTENERS SHALL ONLY BE USED IN ACCESSIBLE LOCATIONS.		THER
		G. INSULATE ALL CONNECTIONS BETWEEN PIPE, FITTINGS, AND HANGERS OF DISSIMILAR METAL AGAINST DIRECT CONTACT WITH DIELECTRIC INSULATING MATERIAL. PIPE CONNECTIONS SHALL BE WITH A DIELECTRIC FLANGE OR UNION.	19.	THE C EQUIE WITH
		H. ALL RISERS SHALL HAVE A BALL VALVE FOR MANUAL VENTING AT HIGH POINTS IN THE SYSTEM.	20.	THE E
		 PIPE IDENTIFICATION SHALL COMPLY WITH ASME STANDARD A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' UNLESS NOTED OTHERWISE. COORDINATE WITH EXISTING AND VERIFY WITH OWNER. 		BID. /
		J. PIPE MARKERS SHALL BE A PREFORMED ONE PIECE UV RESISTANT VINYL WITH EMBOSSED LETTERS AND FLOW ARROWS. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.		
		K. VALVES SHALL BE IDENTIFIED WITH 'SIZE, TYPE, AND DESCRIPTION OF OPERATION'.		

- L. PIPE HANGERS AND SUPPORTS
- a. USE ADJUSTABLE CLEVIS HANGERS, FOR INDIVIDUAL, STRAIGHT HORIZONTAL RUNS.
- b. USE RISER CLAMPS FOR VERTICAL PIPE RUNS.
- c. USE PIPE ROLLERS AND GUIDES TO SUPPORT STEAM SUPPLY AND STEAM CONDENSATE LINES.

GENERAL MECHANICAL NOTES:

- SS NOTED OTHERWISE, THIS CONTRACTOR SHALL PROVIDE AND INSTALL THE HVAC SYSTEMS AND EXHAUST SYSTEMS IPLETE. THE INSTALLATION SHALL INCLUDE, BUT NOT LIMITED TO, ALL DUCTWORK AND FITTINGS, EQUIPMENT, USERS, SMOKE DETECTORS, THERMOSTATS AND 24 VAC WIRING, ROOF AND/OR WALL PENETRATIONS, TESTING AND NCING, ETC. CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, ELS, ETC.) WITH THE GENERAL CONTRACTOR.
- IPLYING WITH ABOVE INTENT.
- RDINATION.
- NNING WORK.
- OWNER AND OSHA.
- ACCORDING TO LOCAL REGULATIONS.

- LICABLE.

- SHALL BE SELF-SUPPORTING AND NOT REQUIRE CONNECTING EQUIPMENT FOR SUPPORT.
- MEET STATED REQUIREMENTS.
- ATISFY PROJECT REQUIREMENTS.
- EDGES.
- PLENUM BRANCHES.
- ARGEST DIMENSION.

- LIMITED A SHEET METAL ELBOW SHALL BE CONNECTED TO AIR DEVICE.

- IUFACTURED BY KNAUF OR APPROVED EQUAL.
- RMAFLEX M-KE OR APPROVED EQUAL.
- RMAFLEX M-KE OR APPROVED EQUAL.

CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS. ALL WORK SHALL BE FORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES.

INTENDED THAT WORK COVERED BY SPECIFICATIONS AND DRAWINGS INCLUDES EVERYTHING REQUISITE AND ESSARY TO MAKE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS CIFICALLY NOTED. OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE CONTRACTOR FROM

CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND FLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF

ENERAL, THE DRAWINGS SHOW THE DESIRED DUCT ROUTING LOCATION PLUS FITTINGS AND CONNECTIONS. THE DUCT ASSOCIATED EQUIPMENT CAN BE LOWERED OR RAISED AS NECESSARY TO ACCOMMODATE MINOR FIELD CONDITIONS. CONTRACTOR SHALL NOTE ALL CHANGES ON DRAWINGS AND RETURN MARKED UP DRAWINGS TO THE OWNER.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY BEFORE

CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH SAFETY REQUIREMENTS IMPOSED BY

CONTRACTOR SHALL KEEP WORK AREA CLEAN, REMOVE ALL DEBRIS FROM THE OWNER'S PROPERTY, AND DISPOSE OF

ALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM VINGS MAY BE MADE TO ACCOMPLISH THIS. CHANGES SHALL NOT BE MADE WITHOUT APPROVAL OF THE OWNER.

ONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.

MECHANICAL CONTRACTOR SHALL PROVIDE FINAL HOOK-UP, PURGE AND LIGHTING OF ALL NATURAL GAS EQUIPMENT IF

DUCT SHALL BE CONSTRUCTED AND INSTALLED MEETING THE REQUIREMENTS OF THE SMACNA HVAC DUCT STRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AND AS DESCRIBED BELOW.

DUCT SHALL BE SHEET METAL AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA STANDARDS, LATEST EDITION. IANGERS SHALL BE PROVIDED A MAXIMUM OF EVERY 8'-0", AT ROOF PENETRATIONS AND AT ALL ELBOWS. ALL DUCT

ALIGN, ADJUST, AND LEVEL ALL DUCT FOR SATISFACTORY OPERATION. IF A SLOPE IS SPECIFIED, ALIGN AND ADJUST TO

REINFORCE ALL DUCTS TO PREVENT BREATHING, VIBRATING, BUCKLING, OR UNNECESSARY NOISE AS REQUIRED TO

ALL DUCT AND PLENUM SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. IT IS ACCEPTABLE TO CHANGE DUCT SIZES WHEN THE CROSS-SECTIONAL AREA IS MAINTAINED.

THE INTERIOR OF ALL DUCTS AND PLENUMS SHALL BE SMOOTH AND FREE OF OBSTRUCTIONS, BURRS, AND SHARP

ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES, INCLUDING DISCHARGE AND RETURN

ALL CONCENTRIC TRANSITIONS SHALL HAVE A MAXIMUM TOTAL ANGLE OF 45° CONVERGING AND 30° DIVERGING FOR

ALL SHEET METAL DUCT JOINTS SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.

ALL FLEXIBLE DUCT CONNECTIONS SHALL BE CAULKED AND SEALED AIR TIGHT USING A DRAW BAND. THE MAXIMUM ENGTH OF FLEXIBLE DUCT RUNS SHALL BE 6'-0". FLEXIBLE DUCT SHALL NOT HAVE MORE THAN AN AGGREGATE TOTAL OF 90° CHANGE IN DIRECTION, WITH A BEND NOT LESS THAN 1.5 DUCT DIAMETER CENTERLINE RADIUS.

ALL ROUND DUCT TAKE-OFFS SHALL HAVE SPIN-IN TYPE FITTINGS WITH BALANCING DAMPERS.

ALL AIR DEVICES SHALL BE CONNECTED WITH 3 DUCT DIAMETERS OF STRAIGHT DUCT. IN AREAS WHERE SPACE IS

NEW SHEET METAL DUCT TO BE ASTM A526 PRIME GALVANIZED SHEET METAL (SHEET AND STRIP) OF THE PROPER

NSIDE DUCT WITH EXTERNAL DUCT INSULATION SHALL BE 0.75 PCF DENSITY, 2" THICK WITH FSK FACE. THE INSULATING NKET SHALL HAVE A "U" VALUE OF 0.29 BTUH-IN/SQ. FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME EAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT WRAP AS MANUFACTURED BY KNAUF OR ROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE RED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.

SIDE EXPOSED DUCT WITH INTERNALLY LINED DUCT INSULATION SHALL BE 1.5 PCF DENSITY, 2" THICK WITH MAT THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.25 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE ERENCE AND COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NPFA 255 AND UL NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT LINER EM AS

FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 1" THICK FIBERGLAS INSULATING IKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE .24 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA LETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 2" THICK FIBERGLAS INSULATING IKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE 0.33 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA LETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

CONTRACTOR SHALL PROVIDE AND INSTALL A SECONDARY DRAIN PAN WITH FLOAT SWITCH FOR ALL AIR CONDITIONING PMENT TO BE INSTALLED ABOVE A SUSPENDED CEILING. THE SECONDARY DRAIN PAN SHALL BE GALVANIZED STEEL SOLDERED CORNERS AND 2" MINIMUM COLLECTION DEPTH. THE FLOAT SWITCH SHALL BE WIRED WITH AIR DITIONING EQUIPMENT TO DISABLE CONTINUED OPERATION.

EQUIPMENT AND MATERIALS SPECIFIED ON THE DRAWINGS ESTABLISH THE MINIMUM STANDARDS AND BASIS FOR THE ALTERNATE MANUFACTURERS AND METHODS MUST BE APPROVED PRIOR TO SUBMISSION OF BID.



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Moderate Rehabilitation of Moderate Rehabilitation of Telford-Shroyer RAD Conversion 514 Telford Avenue 520 Telford Avenue 526 Telford Avenue 532 Telford Avenue 1907 Shroyer Avenue 2018 Shroyer Avenue 600FA Project : 18-0218 OHFA Project : 18-0218
Print Record 10/08/18 AS-BUILT SET 10/23/18 REVIEW SET 11/27/18 80% SET 04/19/19 BID SET
Project Number 2018-177 Date APRIL 19, 2019 Sheet Title NOTES AND LEGENDS

GAS USAGE-TENANT						
	EXISTING NEW					
FURNACE	60	60				
WATER HEATER	50	40				
TOTAL	110	100				
NOTES: 1.	GAS USAGE IS PER ME PER TENANT SPACE.	ETER, ONE METER				

GAS USAGE-HOUSE						
	EXISTING	NEW				
FURNACE	25	25				
WATER HEATER	40	40				
TOTAL	65	65				
NOTES: 1.	GAS METER SERVES L EQUIPMENT SEPARAT METERS.	AUNDRY E FROM TENANT				

EXHAUST FAN SCHEDULE								
MARK	MANUFACTURER	MODEL #	CFM	S.P. IN WATER	VOLTAGE	POWER (W)	SOUND (SONES)	NOTES
EF-1	BROAN	QTXE080FLT	50	0.25	120	23.3	0.3	2,3,4
 NOTES: 1. PROVIDE WITH BROAN RADIATION DAMPER, MODEL #RDM1. 2. PROVIDE WITH BROAN PREMIUM RADIATION DAMPER, MODEL #RDFQL. 3. EXHAUST FAN WITH INTEGRAL LIGHT. 4. FURNISH WITH EXHAUST FAN TIMER SWITCH, EATON 9590AW OR EQUAL. TIMER SWITCH TO HAVE 10 MINUTE AND 1 HOUR SETTINGS AT MINIMUM. INSTALLATION BY ELECTRICAL CONTRACTOR. 								

PLUMBING FIXTURE SCHEDULE								
MARK	FIXTURE	WASTE	VENT	НОТ	COLD	DESCRIPTION		
BA-1	TUB / SHOWER	3"	1-1/2"	1/2"	1/2"	EXISTING TUB AND SHOWER SURROUND TO REMAIN. PROVIDE MOEN COMMERCIAL SINGLE HANDLE POSI-TEMP FAUCET, MODEL #T8389EP15, WITH MOEN POSI-TEMP PRESSURE BALANCING VALVE, MODEL #8371HD. SET DISCHARGE TEMPERATURE TO 110°F MAX.		
L-1	LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"	EXISTING LAVATORY TO REMAIN. PROVIDE PROFLO CHROME SINGLE HANDLE LAVATORY FAUCET WITH POP-UP DRAIN, MODEL #PFWSC4746SCP, 1.2 GPM, 4" CENTERSETS. PROVIDE WITH 0.5 GPM AERATOR INSERT, PART NUMBER PFX14320. PROVIDE CAST BRASS CHROME PLATED OPEN GRID PO PLUG, MODEL #155A. VERIFY FIT PRIOR TO ORDERING.		
S-1	KITCHEN SINK	1-1/2"	1-1/4"	1/2"	1/2"	EXISTING SINK TO BE REINSTALLED. PROVIDE WITH PROFLO CHROME SINGLE HANDLE KITCHEN FAUCET, MODEL #PFXC3101CP, 1.5 GPM FLOW RATE, AND METAL LEVER HANDLE. PROVIDE WITH DEARBORN BRASS 12 LOCKING CUP SINK BASKET STRAINERS. VERIFY FIT PRIOR TO ORDERING.		
SP-1	SUMP PIT SYSTEM	-	-	-	-	'BASEMENT WATCHDOG' MODEL #DFK961, ¹ / ₃ HP COMBINATION UNIT WITH EMERGENCY BACKUP SUMP PUMP SYSTEM. 3,100 GPH @ 10 FT HEAD PRIMARY PUMP, 1,000 GPH @ 10 FT HEAD BACKUP PUMP. PROVIDE 'BASEMENT WATCHDOG' "MAINTENANCE FREE AGM BATTERY" MODEL #BW27AGM AND BATTERY BOX. PROVIDE 18" DIAMETER SUMP PUMP BASIN WITH LID. COORDINATE DEPTH WITH FIELD CONDITIONS.		
WC-1	FLOOR MOUNTED WATER CLOSET (ADA)	3"	1-1/2"	-	1/2"	AMERICAN STANDARD #2467.136 "CADET FLOWISE" TANK TYPE PRESSURE-ASSISTED TOILET, WHITE VITREOUS CHINA, FLOOR MOUNTED, 1.1 GAL. FLUSH, 16-1/2" HIGH BOWL RIM HEIGHT. PROVIDE WITH PROFLO SLOW CLOSE ELONGATED PLASTIC TOILET SEAT WITH EASY CLEAN, MODEL #PFTSEC2000.		
WB-1	WASHING MACHINE BOX	2"	1-1/2"	1/2"	1/2"	WASHING MACHINE CONNECTION BOX WITH SINGLE LEVER VALVE AND HAMMER ARRESTERS. RIGHT HAND DRAIN OPTION. GUY GRAY MODEL #WB200HA OR EQUAL.		
WH-2	WATER HEATER (GAS)	-	-	3/4"	3/4"	STATE PROLINE XE POWER DIRECT VENT, 40-GALLON COMMERCIAL-GRADE RESIDENTIAL GAS WATER HEATER, MODEL #GS6 40 YBPDS. 40,000 BTUH INPUT, 0.68 ENERGY FACTOR, 74 GALLON FIRST HOUR RATING, 45 GPH RECOVERY AT 90° RISE. 22" DIAMETER, 29-7/8" OVERALL DEPTH, 59" OVERALL HEIGHT. PROVIDE WITH DRAIN PAN AND NEW COMBUSTION AIR INTAKE PIPE. CONNECT TO EXISTING FLUE PIPE.		







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RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
ROUND DUCT
VOLUME DAMPER
BACK DRAFT DAMPER
FIRE DAMPER, 1 1/2 HOUR FIRE RATED
DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT OVAL
INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR
INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR
INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OF FLAT OVAL
INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
TAP-IN BRANCH, RECTANGULAR
BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
SUPPLY DUCT SECTION, RECTANGULAR
RETURN DUCT SECTION, RECTANGULAR
EXHAUST DUCT SECTION, RECTANGULAR
90° ELBOW TURNED UP, RECTANGULAR
90° ELBOW TURNED DOWN, RECTANGULAR
90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR

- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR
- SUPPLY AIR DEVICE (ARROWS INDICATE THROW DIRECTIONS, NO THROWS INDICATE 4-WAY THROW.
- RETURN AIR DEVICE
- EXHAUST AIR DEVICE

PIPING LINETYPES

	- EXISTING PIPING TO REMAIN
	- EXISTING PIPING TO BE REMO
	- DOMESTIC COLD WATER PIPI
	- DOMESTIC HOT WATER PIPIN
SS	- SANITARY DRAIN PIPING
	- SANITARY VENT PIPING

- TING PIPING TO BE REMOVED
- ESTIC COLD WATER PIPING
- ESTIC HOT WATER PIPING
- TARY VENT PIPING

- GAS PIPING

MISCELLANEOUS SYMBOLS

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- CONNECT TO EXISTING - MISCELLANEOUS SYMBOLS

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SINGLE LINE DUCTWORK SYMBOLS

- RECTANGULAR DUCT (FIRST FIGURE IS FO SHOWN, SECOND FIGURE IS FOR SIDE NOT ROUND DUCT
- FLAT OVAL DUCT (FIRST FIGURE IS FOR SI SECOND FIGURE IS FOR SIDE NOT SHOWN
- FLEXIBLE ROUND DUCT
- FLEXIBLE DUCT CONNECTION
- VOLUME DAMPER
- FIRE DAMPER, 1 1/2 HOUR FIRE RATED COMBINATION FIRE/SMOKE DAMPER
- SMOKE DAMPER
- DUCT TRANSITION
- INCLINED RISE WITH RESPECT TO AIR FLOW RECTANGULAR
- INCLINED DROP WITH RESPECT TO AIR FLO RECTANGULAR INCLINED RISE WITH RESPECT TO AIR FLOW
- FLAT OVAL INCLINED DROP WITH RESPECT TO AIR FLO OR FLAT OVAL
- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW) 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
- DIVIDED FLOW FITTING, RECTANGULAR RECTANGULAR TAP-IN BRANCH OR ROUND
- OVAL CONICAL TEE INCLINED CONICAL TAKE-OFF, ROUND OR
- "Y" FITTING, ROUND OR FLAT OVAL
- 90° ELBOW TURNED UP, RECTANGULAR
- 90° ELBOW TURNED DOWN, RECTANGULAF
- 90° ELBOW TURNED UP, ROUND; FLAT OVA
- 90° ELBOW TURNED DOWN, ROUND: FLAT
- END OF DUCT RUN
- THERMOSTAT

PIPING SYMBOLS

$\longrightarrow \bigtriangledown$	- VALVE
$\neg \neg$	- CHECK VALVE
	- DOUBLE BACKFLOW PREVENTER
Ţ	- PLUG VALVE
P	- SAFETY OR PRESSURE RELIEF, ANGLE VAL
	- PRESSURE REGULATING VALVE
	- LATERAL Y
	- CAP
	- ELBOW, 90°
O	- ELBOW, 90° TURNED UP
Э	- ELBOW, 90° TURNED DOWN
+×	- ELBOW, 45°
·····	- TEE
	- TEE, TURNED UP
	- TEE, TURNED DOWN
D	- REDUCER
	- UNION
	- STRAINER
M	- METER
	- REGULATOR
C.O.	- CLEANOUT
F.D.	- FLOOR DRAIN
V.T.R.	- VENT THROUGH ROOF

GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT THE MECHANICAL SCOPE OF WORK AND PLUMBING SCOPE OF WORK HAVE BEEN CONSOLIDATED TO BE ON THE SAME SHEETS.

GENERAL PLUMBING NOTES:

<u> </u>	OLIVET LOMBING NOTES.	
DR SIDE T SHOWN)	 THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPING SYSTEMS COMPLETE, UNLESS NOTED OTHERWISE. COMPLETE INSTALLATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PIPE AND FITTINGS, PIPE HANGERS AND ANCHORS, EQUIPMENT, FIXTURES, SPECIALTIES, ETC. THIS CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR. 	1.
DE SHOWN, N)	2. THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF COORDINATION BY THIS CONTRACTOR.	2.
	3. THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES, LOCATIONS, RELATIVE DIMENSIONS, ETC. PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND REQUIREMENTS AND ADJUST ACCORDINGLY.	3.
	4. CONTRACTOR SHALL INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS.	4.
	5. THIS CONTRACTOR SHALL CONCEAL ALL PIPES WITHIN WALLS OR CHASES WHENEVER PRACTICAL.	
	6. THIS CONTRACTOR SHALL MAINTAIN DIMENSIONED "AS-BUILT" DRAWINGS FOR ALL UNDERGROUND UTILITIES DURING CONSTRUCTION AND PROVIDE TO ENGINEER AT PROJECT COMPLETION.	5.
)W,	 CONTRACTOR SHALL INCLUDE ALL EXCAVATIONS AND BACK FILLING REQUIRED FOR UNDERGROUND PIPING. ALL BACK FILL SHALL BE FREE FROM ALL TRASH AND BUILDING MATERIALS. BACK FILL SHALL BE ENGINEERED FILL 95% COMPACTED IN 8" LAYERS. 	6.
OW,	8. ALL WORK SHALL CONFORM TO ASSOCIATED SPECIFICATIONS.	7.
W, ROUND OR	9. THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.	8.
OW, ROUND	 THIS CONTRACTOR SHALL PROVIDE AND INSTALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO ALL OBVIOUSLY NECESSARY LOCATIONS INCLUDING ALL VALVES, FITTINGS, HANGERS, BACKFLOW PREVENTERS, WATER HEATERS, ETC. 	9.
	11. ALL WATER PIPING SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.	10. 1
	A. ALL PIPING SHALL BE SUPPORTED WITH 3/8" ALL THREAD AND CLEVIS HANGERS AND IN ACCORDANCE WITH SECTION 308 OF THE OBC - PLUMBING CODE, LATEST EDITION. UNLESS NOTED OTHERWISE.	11.
D OR FLAT	B. THIS CONTRACTOR SHALL INSULATE ALL NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION INCLUDING FITTINGS.	12.
FLAT OVAL	C. THIS CONTRACTOR SHALL PROVIDE AND INSTALL SERVICE VALVES ON ALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO EACH FIXTURE. ALL VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS.	10.
	D. ALL HOSE BIBBS SHALL BE MOUNTED AT 24" ABOVE GRADE, UNLESS NOTED OTHERWISE.	
	E. THE CONTRACTOR SHALL PROVIDE APPROPRIATE AIR CHAMBERS AT ALL EQUIPMENT WITH QUICK CLOSING VALVES.	
	F. ALL DOMESTIC WATER PIPING SHALL BE POLYETHYLENE OR APPROVED EQUAL.	
	G. ALL DOMESTIC WATER PIPE INSULATION SHALL BE 1" THICK WITH ALL SERVICE JACKET. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.28 BTUH-IN/SQ.FT-°F AT 100°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM	
OVAL SIMILAR	E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. PIPE INSULATION SHALL BE AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE	
	12. THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL SANITARY SEWER/ TRADE WASTE TO ALL NECESSARY LOCATIONS INCLUDING FLOOR DRAINS, CLEANOUTS, TRAPS, VENTS, ETC.	
	13. ALL SANITARY SEWER/ TRADE WASTE SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC -	
	PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW. A. ALL SANITARY SEWER/ TRADE WASTE PIPE SHALL BE INSTALLED WITH ¼" PER FOOT MINIMUM SLOPE	
	B. ALL EXPOSED TRAPS AND TRIM SHALL BE BRIGHT CHROME. UNLESS OTHERWISE NOTED. ALL PLUMBING	
	FIXTURES SHALL BE UNDER ABOVE CEILING AND/OR WITHIN ATTIC TO MINIMIZE ROOF PENETRATIONS	
	D. PVC NOT ACCEPTABLE FOR VENT PIPING IN CEILING PLENUM SPACES.	14.
LVE	 E. PVC PIPE IS ACCEPTABLE FOR WASTE AND VENT PIPING. COORDINATE PIPE MATERIALS AND CEILING PLENUMS. 	15.
	F. THIS CONTRACTOR SHALL REFERENCE ARCHITECTURAL SHEETS FOR PLUMBING FIXTURE LOCATIONS, MOUNTING HEIGHTS, ETC.	
	G. ALL SANITARY FLOOR DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS, UNLESS OTHERWISE NOTED.	
	14. CONDENSATE DRAINS THAT SERVE HVAC EQUIPMENT SHALL BE SCHEDULE 40 PVC PIPING. CONDENSATE DRAINS SERVING STEAM EQUIPMENT SHALL BE STEEL.	16.
	15. ALL PIPING SHALL BE CONSTRUCTED AND INSTALLED AS DESCRIBED BELOW.	
	A. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH MINIMUM 4" CLEARANCE BETWEEN FINISHED COVERING OF PARALLEL, ADJACENT PIPES, OTHER WORK, ETC. UNLESS NOTED OTHERWISE.	17.
	B. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH APPROPRIATE CLEARANCE FOR PASSAGES, HEADROOM, OPERATION OF DOORS OR WINDOWS, EQUIPMENT, LIGHTING OUTLETS, OR OWNER'S APPARATUS AND EQUIPMENT.	
	C. INSTALL PIPING, VALVES, FITTINGS, ETC. ROUTED OVER MEANS OF EGRESS A MINIMUM OF 7'-6" CLEARANCE ABOVE FINISHED FLOOR.	
	D. OFFSET PIPING AROUND COLUMNS, BEAMS, AND OTHER OBSTRUCTIONS AS REQUIRED.	18.
	E. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.	
	F. GROOVED MECHANICAL COUPLINGS AND FASTENERS SHALL ONLY BE USED IN ACCESSIBLE LOCATIONS.	
	G. INSULATE ALL CONNECTIONS BETWEEN PIPE, FITTINGS, AND HANGERS OF DISSIMILAR METAL AGAINST DIRECT CONTACT WITH DIELECTRIC INSULATING MATERIAL. PIPE CONNECTIONS SHALL BE WITH A DIELECTRIC FLANGE OR UNION.	19.
	H. ALL RISERS SHALL HAVE A BALL VALVE FOR MANUAL VENTING AT HIGH POINTS IN THE SYSTEM.	20
	 PIPE IDENTIFICATION SHALL COMPLY WITH ASME STANDARD A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' UNLESS NOTED OTHERWISE. COORDINATE WITH EXISTING AND VERIFY WITH OWNER. 	20.
	J. PIPE MARKERS SHALL BE A PREFORMED ONE PIECE UV RESISTANT VINYL WITH EMBOSSED LETTERS AND FLOW ARROWS. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.	
	K. VALVES SHALL BE IDENTIFIED WITH 'SIZE, TYPE, AND DESCRIPTION OF OPERATION'.	

- L. PIPE HANGERS AND SUPPORTS
- a. USE ADJUSTABLE CLEVIS HANGERS, FOR INDIVIDUAL, STRAIGHT HORIZONTAL RUNS.
- b. USE RISER CLAMPS FOR VERTICAL PIPE RUNS.
- c. USE PIPE ROLLERS AND GUIDES TO SUPPORT STEAM SUPPLY AND STEAM CONDENSATE LINES.

GENERAL MECHANICAL NOTES:

- UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL PROVIDE AND INSTALL THE HVAC SYSTEMS AND EXHAUST SYSTEMS COMPLETE. THE INSTALLATION SHALL INCLUDE, BUT NOT LIMITED TO, ALL DUCTWORK AND FITTINGS, EQUIPMENT, DIFFUSERS, SMOKE DETECTORS, THERMOSTATS AND 24 VAC WIRING, ROOF AND/OR WALL PENETRATIONS, TESTING AND BALANCING, ETC. CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
- COMPLYING WITH ABOVE INTENT.
- COORDINATION.
- **BEGINNING WORK.**
- THE OWNER AND OSHA.
- SAME ACCORDING TO LOCAL REGULATIONS.

- APPLICABLE.

- SHALL BE SELF-SUPPORTING AND NOT REQUIRE CONNECTING EQUIPMENT FOR SUPPORT. MEET STATED REQUIREMENTS.
- SATISFY PROJECT REQUIREMENTS.
- EDGES.
- PLENUM BRANCHES.
- LARGEST DIMENSION.

- LIMITED A SHEET METAL ELBOW SHALL BE CONNECTED TO AIR DEVICE.
- GAGE
- MANUFACTURED BY KNAUF OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- CONDITIONING EQUIPMENT TO DISABLE CONTINUED OPERATION.



THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES.

IT IS INTENDED THAT WORK COVERED BY SPECIFICATIONS AND DRAWINGS INCLUDES EVERYTHING REQUISITE AND NECESSARY TO MAKE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS SPECIFICALLY NOTED. OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE CONTRACTOR FROM

THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF

IN GENERAL, THE DRAWINGS SHOW THE DESIRED DUCT ROUTING LOCATION PLUS FITTINGS AND CONNECTIONS. THE DUCT AND ASSOCIATED EQUIPMENT CAN BE LOWERED OR RAISED AS NECESSARY TO ACCOMMODATE MINOR FIELD CONDITIONS. THE CONTRACTOR SHALL NOTE ALL CHANGES ON DRAWINGS AND RETURN MARKED UP DRAWINGS TO THE OWNER.

THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY BEFORE

THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH SAFETY REQUIREMENTS IMPOSED BY

THE CONTRACTOR SHALL KEEP WORK AREA CLEAN, REMOVE ALL DEBRIS FROM THE OWNER'S PROPERTY, AND DISPOSE OF

INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS. CHANGES SHALL NOT BE MADE WITHOUT APPROVAL OF THE OWNER.

THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.

THE MECHANICAL CONTRACTOR SHALL PROVIDE FINAL HOOK-UP, PURGE AND LIGHTING OF ALL NATURAL GAS EQUIPMENT IF

ALL DUCT SHALL BE CONSTRUCTED AND INSTALLED MEETING THE REQUIREMENTS OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AND AS DESCRIBED BELOW.

ALL DUCT SHALL BE SHEET METAL AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA STANDARDS, LATEST EDITION. A. HANGERS SHALL BE PROVIDED A MAXIMUM OF EVERY 8'-0", AT ROOF PENETRATIONS AND AT ALL ELBOWS. ALL DUCT

B. ALIGN, ADJUST, AND LEVEL ALL DUCT FOR SATISFACTORY OPERATION. IF A SLOPE IS SPECIFIED, ALIGN AND ADJUST TO

C. REINFORCE ALL DUCTS TO PREVENT BREATHING, VIBRATING, BUCKLING, OR UNNECESSARY NOISE AS REQUIRED TO

D. ALL DUCT AND PLENUM SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. IT IS ACCEPTABLE TO CHANGE DUCT SIZES WHEN THE CROSS-SECTIONAL AREA IS MAINTAINED.

E. THE INTERIOR OF ALL DUCTS AND PLENUMS SHALL BE SMOOTH AND FREE OF OBSTRUCTIONS, BURRS, AND SHARP

F. ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES, INCLUDING DISCHARGE AND RETURN

G. ALL CONCENTRIC TRANSITIONS SHALL HAVE A MAXIMUM TOTAL ANGLE OF 45° CONVERGING AND 30° DIVERGING FOR

H. ALL SHEET METAL DUCT JOINTS SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.

I. ALL FLEXIBLE DUCT CONNECTIONS SHALL BE CAULKED AND SEALED AIR TIGHT USING A DRAW BAND. THE MAXIMUM LENGTH OF FLEXIBLE DUCT RUNS SHALL BE 6'-0". FLEXIBLE DUCT SHALL NOT HAVE MORE THAN AN AGGREGATE TOTAL OF 90° CHANGE IN DIRECTION, WITH A BEND NOT LESS THAN 1.5 DUCT DIAMETER CENTERLINE RADIUS.

J. ALL ROUND DUCT TAKE-OFFS SHALL HAVE SPIN-IN TYPE FITTINGS WITH BALANCING DAMPERS.

K. ALL AIR DEVICES SHALL BE CONNECTED WITH 3 DUCT DIAMETERS OF STRAIGHT DUCT. IN AREAS WHERE SPACE IS

ALL NEW SHEET METAL DUCT TO BE ASTM A526 PRIME GALVANIZED SHEET METAL (SHEET AND STRIP) OF THE PROPER

ALL INSIDE DUCT WITH EXTERNAL DUCT INSULATION SHALL BE 0.75 PCF DENSITY, 2" THICK WITH FSK FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.29 BTUH-IN/SQ. FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT WRAP AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.

OUTSIDE EXPOSED DUCT WITH INTERNALLY LINED DUCT INSULATION SHALL BE 1.5 PCF DENSITY, 2" THICK WITH MAT FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.25 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NPFA 255 AND UL 723. NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT LINER EM AS

ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 1" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.24 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 2" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.33 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

THE CONTRACTOR SHALL PROVIDE AND INSTALL A SECONDARY DRAIN PAN WITH FLOAT SWITCH FOR ALL AIR CONDITIONING EQUIPMENT TO BE INSTALLED ABOVE A SUSPENDED CEILING. THE SECONDARY DRAIN PAN SHALL BE GALVANIZED STEEL WITH SOLDERED CORNERS AND 2" MINIMUM COLLECTION DEPTH. THE FLOAT SWITCH SHALL BE WIRED WITH AIR

THE EQUIPMENT AND MATERIALS SPECIFIED ON THE DRAWINGS ESTABLISH THE MINIMUM STANDARDS AND BASIS FOR THE BID. ALTERNATE MANUFACTURERS AND METHODS MUST BE APPROVED PRIOR TO SUBMISSION OF BID.



1785 S. METRO PARKWAY CENTERVILLE, OH 45459 WWW.TRFTECH.US TRI-TECH PROJECT

937.306.1630 800.334.1630

#18404



2018-177

Date

APRIL 19, 2019

Sheet Title

NOTES AND LEGENDS

Sheet Number

526 TELFORD AVE

GAS USAGE-TENANT EXISTING NEW FURNACE 60 60 WATER HEATER 50 40 TOTAL 110 100 **NOTES:** 1. GAS USAGE IS PER METER, ONE METER PER TENANT SPACE.

GAS	USAGE-	HOUSE

	EXISTING	NEW
FURNACE	25	25
WATER HEATER	40	40
TOTAL	65	65
NOTES: 1.	GAS METER SERVES L EQUIPMENT SEPARAT METERS.	AUNDRY E FROM TENANT

PLUMBING FIXTURE SCHEDULE									
MARK	FIXTURE	WASTE	VENT	HOT	COLD	DESCRIPTION			
BA-1	TUB / SHOWER	3"	1-1/2"	1/2"	1/2"	EXISTING TUB AND SHOWER SURROUND TO REMAIN. PROVIDE MOEN COMMERCIAL SINGLE HANDLE POSI-TEMP FAUCET, MODEL #T8389EP15, WITH MOEN POSI-TEMP PRESSURE BALANCING VALVE, MODEL #8371HD. SET DISCHARGE TEMPERATURE TO 110°F MAX.			
L-1	LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"	EXISTING LAVATORY TO REMAIN. PROVIDE PROFLO CHROME SINGLE HANDLE LAVATORY FAUCET WITH POP-UP DRAIN, MODEL #PFWSC4746SCP, 1.2 GPM, 4" CENTERSETS. PROVIDE WITH 0.5 GPM AERATOR INSERT, PART NUMBER PFX14320. PROVIDE CAST BRASS CHROME PLATED OPEN GRID PO PLUG, MODEL #155A. VERIFY FIT PRIOR TO ORDERING.			
S-1	KITCHEN SINK	1-1/2"	1-1/4"	1/2"	1/2"	EXISTING SINK TO BE REINSTALLED. PROVIDE WITH PROFLO CHROME SINGLE HANDLE KITCHEN FAUCET, MODEL #PFXC3101CP, 1.5 GPM FLOW RATE, AND METAL LEVER HANDLE. PROVIDE WITH DEARBORN BRASS 12 LOCKING CUP SINK BASKET STRAINERS. VERIFY FIT PRIOR TO ORDERING.			
SP-1	SUMP PIT SYSTEM	-	-	-	-	'BASEMENT WATCHDOG' MODEL #DFK961, ¹ / ₃ HP COMBINATION UNIT WITH EMERGENCY BACKUP SUMP PUMP SYSTEM. 3,100 GPH @ 10 FT HEAD PRIMARY PUMP, 1,000 GPH @ 10 FT HEAD BACKUP PUMP. PROVIDE 'BASEMENT WATCHDOG' "MAINTENANCE FREE AGM BATTERY" MODEL #BW27AGM AND BATTERY BOX. PROVIDE 18" DIAMETER SUMP PUMP BASIN WITH LID. COORDINATE DEPTH WITH FIELD CONDITIONS.			
WC-1	FLOOR MOUNTED WATER CLOSET (ADA)	3"	1-1/2"	-	1/2"	AMERICAN STANDARD #2467.136 "CADET FLOWISE" TANK TYPE PRESSURE-ASSISTED TOILET, WHITE VITREOUS CHINA, FLOOR MOUNTED, 1.1 GAL. FLUSH, 16-1/2" HIGH BOWL RIM HEIGHT. PROVIDE WITH PROFLO SLOW CLOSE ELONGATED PLASTIC TOILET SEAT WITH EASY CLEAN, MODEL #PFTSEC2000.			
WB-1	WASHING MACHINE BOX	2"	1-1/2"	1/2"	1/2"	WASHING MACHINE CONNECTION BOX WITH SINGLE LEVER VALVE AND HAMMER ARRESTERS. RIGHT HAND DRAIN OPTION. GUY GRAY MODEL #WB200HA OR EQUAL.			
WH-2	WATER HEATER (GAS)	-	-	3/4"	3/4"	STATE PROLINE XE POWER DIRECT VENT, 40-GALLON COMMERCIAL-GRADE RESIDENTIAL GAS WATER HEATER, MODEL #GS6 40 YBPDS. 40,000 BTUH INPUT, 0.68 ENERGY FACTOR, 74 GALLON FIRST HOUR RATING, 45 GPH RECOVERY AT 90° RISE. 22" DIAMETER, 29-7/8" OVERALL DEPTH, 59" OVERALL HEIGHT. PROVIDE WITH DRAIN PAN AND NEW COMBUSTION AIR INTAKE PIPE. CONNECT TO EXISTING FLUE PIPE.			

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER	MODEL #	CFM	S.P. IN WATER	VOLTAGE	POWER (W)	SOUND (SONES)	NOTES
EF-1	BROAN	QTXE080FLT	50	0.25	120	23.3	0.3	2,3,4

NOTES: 1. PROVIDE WITH BROAN RADIATION DAMPER, MODEL #RDM1.

2. PROVIDE WITH BROAN PREMIUM RADIATION DAMPER, MODEL #RDFQL. 3. EXHAUST FAN WITH INTEGRAL LIGHT.

4. FURNISH WITH EXHAUST FAN TIMER SWITCH, EATON 9590AW OR EQUAL. TIMER SWITCH TO HAVE 10 MINUTE AND 1 HOUR SETTINGS AT MINIMUM. INSTALLATION BY ELECTRICAL CONTRACTOR.





Print Record

04/19/19 BID SET

10/08/18 AS-BUILT SET 10/23/18 REVIEW SET 11/27/18 80% SET

Project Number 2018-177

Date

APRIL 19, 2019

Sheet Title SCHEDULES

Sheet Number

526 TELFORD AVE



12x6	-
12"Ø	-
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BDD	
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- RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
- ROUND DUCT
- VOLUME DAMPER
- BACK DRAFT DAMPER
- FIRE DAMPER, 1 1/2 HOUR FIRE RATED
- DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
- DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
- DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT OVAL
- INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR
- INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR
- INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
- INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
- 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
- TAP-IN BRANCH, RECTANGULAR
- BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
- BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
- BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
- SUPPLY DUCT SECTION, RECTANGULAR
- RETURN DUCT SECTION, RECTANGULAR
- EXHAUST DUCT SECTION, RECTANGULAR
- 90° ELBOW TURNED UP, RECTANGULAR
- 90° ELBOW TURNED DOWN, RECTANGULAR
- 90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR

- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR
- SUPPLY AIR DEVICE (ARROWS INDICATE THROW DIRECTIONS, NO THROWS INDICATE 4-WAY THROW.
- **RETURN AIR DEVICE**
- EXHAUST AIR DEVICE

PIPING LINETYPES

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-	—	—	—	—	—	—	—	—	-

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- EXISTING PIPING TO REMAIN EXISTING PIPING TO BE REMOVED
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- SANITARY DRAIN PIPING
- SANITARY VENT PIPING - GAS PIPING

MISCELLANEOUS SYMBOLS

 $\mathbf{+}$

- CONNECT TO EXISTING MISCELLANEOUS SYMBOLS

SINGLE LINE DUCTWORK SYMBOLS

12x6	- RECTANGULAR DUCT (FIRST FIGURE IS FO
8"Ø	STIUWIN, SECUND FIGURE IS FOR SIDE NOT
	- ROUND DUCT
<u> </u>	- FLAT OVAL DUCT (FIRST FIGURE IS FOR SIL SECOND FIGURE IS FOR SIDE NOT SHOWN
	- FLEXIBLE ROUND DUCT
	- FLEXIBLE DUCT CONNECTION
F	- VOLUME DAMPER
FD	- FIRE DAMPER, 1 1/2 HOUR FIRE RATED
FSD	- COMBINATION FIRE/SMOKE DAMPER
	- SMOKE DAMPER
D	- DUCT TRANSITION
R	- INCLINED RISE WITH RESPECT TO AIR FLOW RECTANGULAR
D	- INCLINED DROP WITH RESPECT TO AIR FLC RECTANGULAR
	- INCLINED RISE WITH RESPECT TO AIR FLOW
	- INCLINED DROP WITH RESPECT TO AIR FLO OR FLAT OVAL
	- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
	- 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
DF	- DIVIDED FLOW FITTING, RECTANGULAR
	- RECTANGULAR TAP-IN BRANCH OR ROUND OVAL CONICAL TEE
	- INCLINED CONICAL TAKE-OFF, ROUND OR F
	- "Y" FITTING, ROUND OR FLAT OVAL
X	- 90° ELBOW TURNED UP, RECTANGULAR
	- 90° ELBOW TURNED DOWN, RECTANGULAF
———————————————————————————————————————	- 90° ELBOW TURNED UP, ROUND; FLAT OVA
<u> </u>	- 90° ELBOW TURNED DOWN, ROUND; FLAT (
	- END OF DUCT RUN
(T)	- THERMOSTAT

PIPING SYMBOLS

	- VALVE
	- CHECK VALVE
	- DOUBLE BACKFLOW PREVENTER
Ţ	- PLUG VALVE
2	- SAFETY OR PRESSURE RELIEF, ANGLE
	- PRESSURE REGULATING VALVE
	- LATERAL Y
	- CAP
	- ELBOW, 90°
O	- ELBOW, 90° TURNED UP
Ə	- ELBOW, 90° TURNED DOWN
+×	- ELBOW, 45°
, [*]	- TEE
	- TEE, TURNED UP
	- TEE, TURNED DOWN
D	- REDUCER
	- UNION
	- STRAINER
(M)	- METER
(R)	- REGULATOR
C.O.	- CLEANOUT
F.D.	- FLOOR DRAIN
V.T.R.	- VENT THROUGH ROOF

GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT THE MECHANICAL SCOPE OF WORK AND PLUMBING SCOPE OF WORK HAVE BEEN CONSOLIDATED TO BE ON THE SAME SHEETS.

GENERAL PLUMBING NOTES:

DR SIDE T SHOWN)	1.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPING SYSTEMS COMPLETE, UNLESS NOTED OTHERWISE. COMPLETE INSTALLATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PIPE AND FITTINGS, PIPE HANGERS AND ANCHORS, EQUIPMENT, FIXTURES, SPECIALTIES, ETC. THIS CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
IDE SHOWN, N)	2.	THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF COORDINATION BY THIS CONTRACTOR.
	3.	THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES, LOCATIONS, RELATIVE DIMENSIONS, ETC. PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND REQUIREMENTS AND ADJUST ACCORDINGLY.
	4.	CONTRACTOR SHALL INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS.
	5.	THIS CONTRACTOR SHALL CONCEAL ALL PIPES WITHIN WALLS OR CHASES WHENEVER PRACTICAL.
	6.	THIS CONTRACTOR SHALL MAINTAIN DIMENSIONED "AS-BUILT" DRAWINGS FOR ALL UNDERGROUND UTILITIES DURING CONSTRUCTION AND PROVIDE TO ENGINEER AT PROJECT COMPLETION.
DW,	7.	CONTRACTOR SHALL INCLUDE ALL EXCAVATIONS AND BACK FILLING REQUIRED FOR UNDERGROUND PIPING. ALL BACK FILL SHALL BE FREE FROM ALL TRASH AND BUILDING MATERIALS. BACK FILL SHALL BE ENGINEERED FILL 95% COMPACTED IN 8" LAYERS.
OW,	8.	ALL WORK SHALL CONFORM TO ASSOCIATED SPECIFICATIONS.
W. ROUND OR	9.	THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.
OW, ROUND	10.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO ALL OBVIOUSLY NECESSARY LOCATIONS INCLUDING ALL VALVES, FITTINGS, HANGERS, BACKFLOW PREVENTERS, WATER HEATERS, ETC.
	11.	ALL WATER PIPING SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.
		A. ALL PIPING SHALL BE SUPPORTED WITH 3/8" ALL THREAD AND CLEVIS HANGERS AND IN ACCORDANCE WITH SECTION 308 OF THE OBC - PLUMBING CODE, LATEST EDITION. UNLESS NOTED OTHERWISE.
D OR FLAT		B. THIS CONTRACTOR SHALL INSULATE ALL NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION INCLUDING FITTINGS.
FLAT OVAL		C. THIS CONTRACTOR SHALL PROVIDE AND INSTALL SERVICE VALVES ON ALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO EACH FIXTURE. ALL VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS.
		D. ALL HOSE BIBBS SHALL BE MOUNTED AT 24" ABOVE GRADE, UNLESS NOTED OTHERWISE.
		E. THE CONTRACTOR SHALL PROVIDE APPROPRIATE AIR CHAMBERS AT ALL EQUIPMENT WITH QUICK
		CLOSING VALVES.
R		G. ALL DOMESTIC WATER PIPE INSULATION SHALL BE 1" THICK WITH ALL SERVICE JACKET. THE INSULATING
AL SIMILAR		BLANKET SHALL HAVE A "U" VALUE OF 0.28 BTUH-IN/SQ.FT-°F AT 100°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. PIPE INSULATION SHALL BE AS MANUFACTURED BY KNALE OR APPROVED FOLIAL ALL INSULATION JOINTS
OVAL SIMILAR		SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.
	12.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL SANITARY SEWER/ TRADE WASTE TO ALL NECESSARY LOCATIONS INCLUDING FLOOR DRAINS, CLEANOUTS, TRAPS, VENTS, ETC.
	13.	ALL SANITARY SEWER/ TRADE WASTE SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.
		A. ALL SANITARY SEWER/ TRADE WASTE PIPE SHALL BE INSTALLED WITH ¼" PER FOOT MINIMUM SLOPE FOR LINES 2½" DIAMETER OR LESS, AND ½" PER FOOT MINIMUM SLOPE FOR LINES 3" OR GREATER, UNLESS NOTED OTHERWISE.
		B. ALL EXPOSED TRAPS AND TRIM SHALL BE BRIGHT CHROME, UNLESS OTHERWISE NOTED. ALL PLUMBING FIXTURES SHALL BE WHITE, UNLESS OTHERWISE NOTED.
		C. VENTS SHALL BE LOOPED ABOVE CEILING AND/OR WITHIN ATTIC TO MINIMIZE ROOF PENETRATIONS.
		D. PVC NOT ACCEPTABLE FOR VENT PIPING IN CEILING PLENUM SPACES.
LVE		E. PVC PIPE IS ACCEPTABLE FOR WASTE AND VENT PIPING. COORDINATE PIPE MATERIALS AND CEILING PLENUMS.
		F. THIS CONTRACTOR SHALL REFERENCE ARCHITECTURAL SHEETS FOR PLUMBING FIXTURE LOCATIONS, MOUNTING HEIGHTS, ETC.
		G. ALL SANITARY FLOOR DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS, UNLESS OTHERWISE NOTED.
	14.	CONDENSATE DRAINS THAT SERVE HVAC EQUIPMENT SHALL BE SCHEDULE 40 PVC PIPING. CONDENSATE DRAINS SERVING STEAM EQUIPMENT SHALL BE STEEL.
	15.	ALL PIPING SHALL BE CONSTRUCTED AND INSTALLED AS DESCRIBED BELOW.
		A. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH MINIMUM 4" CLEARANCE BETWEEN FINISHED COVERING OF PARALLEL, ADJACENT PIPES, OTHER WORK, ETC. UNLESS NOTED OTHERWISE.
		B. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH APPROPRIATE CLEARANCE FOR PASSAGES, HEADROOM, OPERATION OF DOORS OR WINDOWS, EQUIPMENT, LIGHTING OUTLETS, OR OWNER'S APPARATUS AND EQUIPMENT.
		C. INSTALL PIPING, VALVES, FITTINGS, ETC. ROUTED OVER MEANS OF EGRESS A MINIMUM OF 7'-6" CLEARANCE ABOVE FINISHED FLOOR.
		D. OFFSET PIPING AROUND COLUMNS, BEAMS, AND OTHER OBSTRUCTIONS AS REQUIRED.
		E. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
		F. GROOVED MECHANICAL COUPLINGS AND FASTENERS SHALL ONLY BE USED IN ACCESSIBLE LOCATIONS.
		G. INSULATE ALL CONNECTIONS BETWEEN PIPE, FITTINGS, AND HANGERS OF DISSIMILAR METAL AGAINST DIRECT CONTACT WITH DIELECTRIC INSULATING MATERIAL. PIPE CONNECTIONS SHALL BE WITH A DIELECTRIC FLANGE OR UNION.
		H. ALL RISERS SHALL HAVE A BALL VALVE FOR MANUAL VENTING AT HIGH POINTS IN THE SYSTEM.
		I. PIPE IDENTIFICATION SHALL COMPLY WITH ASME STANDARD A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' UNLESS NOTED OTHERWISE. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.
		J. PIPE MARKERS SHALL BE A PREFORMED ONE PIECE UV RESISTANT VINYL WITH EMBOSSED LETTERS AND FLOW ARROWS. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.
		K. VALVES SHALL BE IDENTIFIED WITH 'SIZE, TYPE, AND DESCRIPTION OF OPERATION'.

- L. PIPE HANGERS AND SUPPORTS
- a. USE ADJUSTABLE CLEVIS HANGERS, FOR INDIVIDUAL, STRAIGHT HORIZONTAL RUNS.
- b. USE RISER CLAMPS FOR VERTICAL PIPE RUNS.
- c. USE PIPE ROLLERS AND GUIDES TO SUPPORT STEAM SUPPLY AND STEAM CONDENSATE LINES.

GENERAL MECHANICAL NOTES:

- LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
- COMPLYING WITH ABOVE INTENT.
- COORDINATION.
- **BEGINNING WORK.**
- THE OWNER AND OSHA.
- SAME ACCORDING TO LOCAL REGULATIONS.

- APPLICABLE.

- SHALL BE SELF-SUPPORTING AND NOT REQUIRE CONNECTING EQUIPMENT FOR SUPPORT. MEET STATED REQUIREMENTS.
- SATISFY PROJECT REQUIREMENTS.
- EDGES.
- PLENUM BRANCHES.
- LARGEST DIMENSION.

- GAGE.
- MANUFACTURED BY KNAUF OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.



1. UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL PROVIDE AND INSTALL THE HVAC SYSTEMS AND EXHAUST SYSTEMS COMPLETE. THE INSTALLATION SHALL INCLUDE. BUT NOT LIMITED TO. ALL DUCTWORK AND FITTINGS. EQUIPMENT. DIFFUSERS, SMOKE DETECTORS, THERMOSTATS AND 24 VAC WIRING, ROOF AND/OR WALL PENETRATIONS, TESTING AND BALANCING, ETC. CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES,

2. THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES.

3. IT IS INTENDED THAT WORK COVERED BY SPECIFICATIONS AND DRAWINGS INCLUDES EVERYTHING REQUISITE AND NECESSARY TO MAKE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS SPECIFICALLY NOTED. OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE CONTRACTOR FROM

4. THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF

5. IN GENERAL, THE DRAWINGS SHOW THE DESIRED DUCT ROUTING LOCATION PLUS FITTINGS AND CONNECTIONS. THE DUCT AND ASSOCIATED EQUIPMENT CAN BE LOWERED OR RAISED AS NECESSARY TO ACCOMMODATE MINOR FIELD CONDITIONS. THE CONTRACTOR SHALL NOTE ALL CHANGES ON DRAWINGS AND RETURN MARKED UP DRAWINGS TO THE OWNER.

6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY BEFORE

7. THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH SAFETY REQUIREMENTS IMPOSED BY

8. THE CONTRACTOR SHALL KEEP WORK AREA CLEAN, REMOVE ALL DEBRIS FROM THE OWNER'S PROPERTY, AND DISPOSE OF

9. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS. CHANGES SHALL NOT BE MADE WITHOUT APPROVAL OF THE OWNER.

10. THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.

11. THE MECHANICAL CONTRACTOR SHALL PROVIDE FINAL HOOK-UP, PURGE AND LIGHTING OF ALL NATURAL GAS EQUIPMENT IF

12. ALL DUCT SHALL BE CONSTRUCTED AND INSTALLED MEETING THE REQUIREMENTS OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AND AS DESCRIBED BELOW.

13. ALL DUCT SHALL BE SHEET METAL AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA STANDARDS, LATEST EDITION. A. HANGERS SHALL BE PROVIDED A MAXIMUM OF EVERY 8'-0", AT ROOF PENETRATIONS AND AT ALL ELBOWS. ALL DUCT

B. ALIGN, ADJUST, AND LEVEL ALL DUCT FOR SATISFACTORY OPERATION. IF A SLOPE IS SPECIFIED, ALIGN AND ADJUST TO

C. REINFORCE ALL DUCTS TO PREVENT BREATHING, VIBRATING, BUCKLING, OR UNNECESSARY NOISE AS REQUIRED TO

D. ALL DUCT AND PLENUM SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. IT IS ACCEPTABLE TO CHANGE DUCT SIZES WHEN THE CROSS-SECTIONAL AREA IS MAINTAINED.

E. THE INTERIOR OF ALL DUCTS AND PLENUMS SHALL BE SMOOTH AND FREE OF OBSTRUCTIONS, BURRS, AND SHARP

F. ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES, INCLUDING DISCHARGE AND RETURN

G. ALL CONCENTRIC TRANSITIONS SHALL HAVE A MAXIMUM TOTAL ANGLE OF 45° CONVERGING AND 30° DIVERGING FOR

H. ALL SHEET METAL DUCT JOINTS SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.

I. ALL FLEXIBLE DUCT CONNECTIONS SHALL BE CAULKED AND SEALED AIR TIGHT USING A DRAW BAND. THE MAXIMUM LENGTH OF FLEXIBLE DUCT RUNS SHALL BE 6'-0". FLEXIBLE DUCT SHALL NOT HAVE MORE THAN AN AGGREGATE TOTAL OF 90° CHANGE IN DIRECTION, WITH A BEND NOT LESS THAN 1.5 DUCT DIAMETER CENTERLINE RADIUS.

J. ALL ROUND DUCT TAKE-OFFS SHALL HAVE SPIN-IN TYPE FITTINGS WITH BALANCING DAMPERS.

K. ALL AIR DEVICES SHALL BE CONNECTED WITH 3 DUCT DIAMETERS OF STRAIGHT DUCT. IN AREAS WHERE SPACE IS LIMITED A SHEET METAL ELBOW SHALL BE CONNECTED TO AIR DEVICE.

14. ALL NEW SHEET METAL DUCT TO BE ASTM A526 PRIME GALVANIZED SHEET METAL (SHEET AND STRIP) OF THE PROPER

15. ALL INSIDE DUCT WITH EXTERNAL DUCT INSULATION SHALL BE 0.75 PCF DENSITY, 2" THICK WITH FSK FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.29 BTUH-IN/SQ. FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT WRAP AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.

16. OUTSIDE EXPOSED DUCT WITH INTERNALLY LINED DUCT INSULATION SHALL BE 1.5 PCF DENSITY, 2" THICK WITH MAT FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.25 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NPFA 255 AND UL 723. NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT LINER EM AS

17. ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 1" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.24 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

18. ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 2" THICK FIBERGLAS INSULATING BLANKET. AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.33 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

19. THE CONTRACTOR SHALL PROVIDE AND INSTALL A SECONDARY DRAIN PAN WITH FLOAT SWITCH FOR ALL AIR CONDITIONING EQUIPMENT TO BE INSTALLED ABOVE A SUSPENDED CEILING. THE SECONDARY DRAIN PAN SHALL BE GALVANIZED STEEL WITH SOLDERED CORNERS AND 2" MINIMUM COLLECTION DEPTH. THE FLOAT SWITCH SHALL BE WIRED WITH AIR CONDITIONING EQUIPMENT TO DISABLE CONTINUED OPERATION.

20. THE EQUIPMENT AND MATERIALS SPECIFIED ON THE DRAWINGS ESTABLISH THE MINIMUM STANDARDS AND BASIS FOR THE BID. ALTERNATE MANUFACTURERS AND METHODS MUST BE APPROVED PRIOR TO SUBMISSION OF BID.



937.306.1630 800.334.1630

TRI-TECH PROJECT #18404



RAD CONVERSION	d Avenue 526 Telford Avenue	sr Avenue 2018 Shroyer Avenue	д, Оhio	: 18-0218	mer Management
Telford-Shroyer	514 Telford Avenue 520 Telfor	532 Telford Avenue 1907 Shroye	Kettering	OHFA Project	Greater Dayton Pre
Print Re 0/08/1 0/23/1 1/27/1 04/19/1	8 A 8 R 8 8 9 B	5-BL EVIEV 0% S ID SI	JILT NS BET ET	SET ET	-
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APRIL 19, 2019

Sheet Title

Date

NOTES AND LEGENDS

Sheet Number

532 TELFORD AVE

		ELECTRI	C BAS	EBOA	rd He	EAT		
MARK	MANUFACTURER	MODEL #	VOLTS	РН	WATTS	AMPS	LENGTH (IN)	NOTES
EB-1	CADET	4F1000W	240	1	1,000	-	48	1
EB-2	CADET	3F750W	240	1	750	-	36	1
EB-3	CADET	2F350W	240	1	350	-	24	1
-	-	-	-	-	-	-	-	-
NOTE	S: 1. PROVIDE V RESTRICT	WITH WALL MOUNTE HEATING SETTING	ED THERMO FROM BEIN	STAT. COOF G SET ABOV	RDINATE PO /E COOLING	WER WITH I	ELECTRICAL	

MARK MANUFACTURER MODEL # CFM S.P. IN VOLTAGE POWER SOUND (SONES) NOTES			EXHAU	ST FA	N SCF	IEDUL	E		
EF-2 BROAN AE50 50 0.25 120 26.9 0.8 1,4 NOTES: 1. PROVIDE WITH BROAN RADIATION DAMPER, MODEL #RDM1. Image: Comparison of the second sec	MARK	MANUFACTURER	MODEL #	CFM	S.P. IN WATER	VOLTAGE	POWER (W)	SOUND (SONES)	NOTES
EF-2 BROAN AE50 50 0.25 120 26.9 0.8 1,4 NOTES: 1 PROVIDE WITH BROAN RADIATION DAMPER, MODEL #RDM1. Image: Comparison of the second seco									
NOTES: 1. PROVIDE WITH BROAN RADIATION DAMPER, MODEL #RDM1. 2. PROVIDE WITH BROAN PREMIUM RADIATION DAMPER, MODEL #RDFQL. 3. EXHAUST FAN WITH INTEGRAL LIGHT. 4. FURNISH WITH EXHAUST FAN TIMER SWITCH, EATON 9590AW OR EQUAL. TIMER SWITCH TO HAVE	EF-2	BROAN	AE50	50	0.25	120	26.9	0.8	1,4
NOTES: 1. PROVIDE WITH BROAN RADIATION DAMPER, MODEL #RDM1. 2. PROVIDE WITH BROAN PREMIUM RADIATION DAMPER, MODEL #RDFQL. 3. EXHAUST FAN WITH INTEGRAL LIGHT. 4. FURNISH WITH EXHAUST FAN TIMER SWITCH, EATON 9590AW OR EQUAL. TIMER SWITCH TO HAVE									
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10 MINUTE AND 1 HOUR SETTINGS AT MINIMUM. INSTALLATION BY ELECTRICAL CONTRACTOR.	NOTE	S: 1. PROVIDE V 2. PROVIDE V 3. EXHAUST 4. FURNISH V 10 MINUTE	WITH BROAN RADIA WITH BROAN PREMI FAN WITH INTEGRA WITH EXHAUST FAN AND 1 HOUR SETT	TION DAMPI UM RADIATI L LIGHT. TIMER SWI INGS AT MIN	ER, MODEL ; ON DAMPER TCH, EATON NIMUM. INST	#RDM1. R, MODEL #F I 9590AW OF ALLATION B	RDFQL. R EQUAL. TIN Y ELECTRIC	MER SWITCH CAL CONTRA	I TO HAVE CTOR.

												SPL	LIT S	YSTEN	ΛΗV	AC L	JNIT	SCHE	EDUL	E																			
				INDO	OR UI	TIN																						(OUT	DOO	R UN	١T							
				AIR	LOW	1		CEPTABLE CAP	ACITIES		MARY HEATI	NG PERFORM	ANCE	ELI	ECTRICA	L	AIR	FILTER								COOL	ING CAPA	CITY		HEAT	ING CAPA	ACITY			ELECTRICA	۰L			
							COOLI	NG	HEATING	G TYPE					UNIT	-																	(COMPRES	SOR				
MAR	K MANUFACTURER	MODEL # (FURNACE)	MODEL # (COIL)	SUPPLY AIR (CFM) U	(.9 AIR (CFM) (CFM)	DE NOMINA (MBH)	SENSIBLE (MBH)	ENTERING AIR TEMP DB(°F)/WB(°	G OUTPUT . (MBH) F)	ELECTRIC COIL HEAT PUMP H.P. PRIMARY HOT WATER NATURAL GAS	INPUT/ OUTPUT (MBH) [KW]	S TUR DOW RATI 40 #	N AFUE /N IO	MOTOR HP VOLTAGE	PHASE	MCA MOCP	QTY MERV #	SIZE L x W x T	UNIT WEIGH (LBS)	NOTES	s	MARK	MANUFACTI	JRER	MODEL	NOMINAL (MBH)	AMBIEN TEMP. (°F)	IT SEER	EER	NOMINAL (MBH)	- AMBIEN TEMP (°F)	NT COP	HSPF	VOLTAGE	RLA VOLTAGE	PHASE MCA	UU WEI (LI) WO CD	INIT IGHT BS)	NOTES
FC-1.1	¢ CARRIER	-	40MAQB09B3	380		9.0	-	-	-		/8.0	1 -	-	- 240	0 1 0.	.2 -		- x - x -	20	1,2,3,4	4									23.0	47	3.9							
FC-1.2	CARRIER	-	40MAQB09B3	380		9.0	-	-	-		/8.0	1 -	-	- 240	0 1 0.	.2 -		- x - x -	20	1,2,3,4	4	HP-1	CARRIE	२ ३८।	MGRQ24C:	3 24.0	95	23.0	12.5	23.0	5	2.1	10.0 1	240 1	- 240	1 25	30 1	150	1
FC-1.3	¢ CARRIER	-	40MAQB09B3	380		9.0	-	-	-		/8.0	1 -	-	- 240	0 1 0.	.2 -		- x - x -	20	1,2,3,4	4									17.6	-14	-							
NO	TES: 1. CARRIER AS NECES PROVIDE 2. UNIT IS P 3. MARK '#' I 4. PROVIDE RESISTAN	UNITS MAY BE SU SSARY. PROVIDE (PROGRAMMABLE DWERED BY OUTE DENOTES THE APA 7-DAY PROGRAMI	UBSTITUTED WITH EC CONDENSATE PUMF THERMOSTAT. DOOR UNIT. ARTMENT NUMBER I MABLE THERMOSTA	QUIVALENT BR AS NECESSA N WHICH THE T WITH SECON	YANT UNIT RY WHERE UNIT. 'H' DI ID STAGE '	S OR APPRO ACCESS TO ENOTES "HO 'EMERGENC'	DVED EQUAL A DRAIN IS I USE" USE. Y" HEAT CAP	ABILITY. THE F	PHYSICAL SF VAILABLE. CC	PACE REQUIREME DORDINATE POWE	NTS WITH E	XISTING CONE MENTS WITH E	DITIONS. V ELECTRIC MP. THE S	ERIFY FLOV			2 PROVIE END OF	DE ANCILL MAJOR C	ARY EQUI ONSTRUC	JIPMENT CTION.		NOTE	S: 1. UNI MOL POV	TS MAY BE JNTING BA /ER REQU	E SUBSTITU ASE AS NEC JIREMENTS	TED WITH E ESSARY PE AND LOCA	EQUIVALE ER FIELD (_ DISCON	NT BYANT CONDITIO NECT.	T UNITS ON TUNITS ON TUNITS	OR APPRO ORDINATE	OVED EQU WITH ELE	JAL. PROV ECTRICAL	/IDE WITH FOR						

NOTE: HVAC EQUIPMENT HAS BEEN SIZED IN ACCORDANCE WITH ASHRAE HANDBOOKS UTILIZING HAP SOFTWARE.



		P	LUM	BINC	G FIX	TURE SCHEDULE
MARK	FIXTURE	WASTE	VENT	НОТ	COLD	DESCRIPTION
BA-1	TUB / SHOWER	3"	1-1/2"	1/2"	1/2"	AKER KDTS 3060 MODEL #142006, 60" X 30" X 78" FOUR-PIECE GEL-COATED FIBERGLASS TUB-SHOWER. PROVIDE WITH MOEN COMMERCIAL SINGLE HANDLE POSI-TEMP FAUCET, MODEL #T8389EP15, WITH MOEN POSI-TEMP PRESSURE BALANCING VALVE, MODEL #8371HD. SET DISCHARGE TEMPERATURE TO 110°F MAX. COORDINATE WITH GENERAL CONTRACTOR FOR INSTALLATION OF BASE. LEFT HAND AND RIGHT HAND DRAIN VARIES PER UNIT. FIELD VERIFY PRIOR TO ORDERING.
L-1	LAVATORY (ADA)	1-1/4"	1-1/4"	1/2"	1/2"	LAVATORY WITH INTEGRAL BOWL BY OTHERS. PROVIDE PROFLO CHROME SINGLE HANDLE LAVATORY FAUCET WITH POP-UP DRAIN, MODEL #PFWSC4746SCP, 1.2 GPM, 4" CENTERSET INSTALLATION. PROVIDE WITH 0.5 GPM AERATOR INSERT, PART NUMBER PFX14320. PROVIDE CAST BRASS CHROME PLATED OPEN GRID PO PLUG, MODEL #155A.
S-1	KITCHEN SINK	1-1/2"	1-1/4"	1/2"	1/2"	EXISTING SINK TO BE REINSTALLED. PROVIDE PROFLO CHROME SINGLE HANDLE KITCHEN FAUCET, MODEL #PFXC3101CP, 1.5 GPM FLOW RATE, AND METAL LEVER HANDLE. PROVIDE WITH DEARBORN BRASS 12 LOCKING CUP SINK BASKET STRAINERS.
SP-1	SUMP PIT SYSTEM	-	-	-	-	'BASEMENT WATCHDOG' MODEL #DFK961, ¹ / ₃ HP COMBINATION UNIT WITH EMERGENCY BACKUP SUMP PUMP SYSTEM. 3,100 GPH @ 10 FT HEAD PRIMARY PUMP, 1,000 GPH @ 10 FT HEAD BACKUP PUMP. PROVIDE 'BASEMENT WATCHDOG' "MAINTENANCE FREE AGM BATTERY" MODEL #BW27AGM AND BATTERY BOX. PROVIDE 18" DIAMETER SUMP PUMP BASIN WITH LID. COORDINATE DEPTH WITH FIELD CONDITIONS.
WC-1	FLOOR MOUNTED WATER CLOSET (ADA)	3"	1-1/2"	-	1/2"	AMERICAN STANDARD #2467.136 "CADET FLOWISE" TANK TYPE PRESSURE-ASSISTED TOILET, WHITE VITREOUS CHINA, FLOOR MOUNTED, 1.1 GAL. FLUSH, 16-1/2" HIGH BOWL RIM HEIGHT. PROVIDE WITH PROFLO SLOW CLOSE ELONGATED PLASTIC TOILET SEAT WITH EASY CLEAN, MODEL #PFTSEC2000.
WB-1	WASHING MACHINE BOX	2"	1-1/2"	1/2"	1/2"	WASHING MACHINE CONNECTION BOX WITH SINGLE LEVER VALVE AND HAMMER ARRESTERS. RIGHT HAND DRAIN OPTION. GUY GRAY MODEL #WB200HA OR EQUAL.
WH-3	TANKLESS WATER HEATER (GAS)	-	-	3/4"	3/4"	RHEEM PRESTIGE SERIES CONDENSING TANKLESS WATER HEATER WITH BUILT-IN RECIRCULATION PUMP OPERATED BY TIMER, MODEL #RTGH-RH11DV. 199,000 BTUH INPUT, 0.94 UNIFORM ENERGY FACTOR, 11.0 GALLON PER MINUTE FLOW RAT AT 35° RISE. PROVIDE WITH CONDENSATE NEUTRALIZER, SERVICE VALVES, AND PRESSURE RELIEF VALVES.

		
GAS	USAGE	
	EXISTING	NEW
BOILER	140	-
WATER HEATER	76	-
TANKLESS WATER HEATER	-	199
DRYER	25	25
TOTAL	241	224
NOTES: 1. DUE GAS N	METER SERVES TH	HE BUILDING.

SPLIT SYSTEM HVAC UNIT SCHEDULE	

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UT	Y	ΤY	ΡE	MOUNTIN	١G		FIN	IS⊦	ł			MIS	SC.		
				HEIGH	Г					۶					
INTAKE	RELIEF	STATIONARY	ADJUSTABLE	FINISH FLOOR TO BOTTOM	CEILING	CLEAR LACQUER	COLOR BY ARCH.	PRIMER	MILL	CONTROL DAMPER	BIRDSCREEN	ALUUM. CONST.	BLANK OFF		NOTES
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Sheet Number 532 TELFORD AVE

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- RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
- ROUND DUCT
- VOLUME DAMPER
- BACK DRAFT DAMPER
- FIRE DAMPER, 1 1/2 HOUR FIRE RATED
- DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
- DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
- DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT OVAL
- INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR
- INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR
- INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
- INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
- 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
- TAP-IN BRANCH, RECTANGULAR
- BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
- BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
- BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
- SUPPLY DUCT SECTION, RECTANGULAR
- RETURN DUCT SECTION, RECTANGULAR
- EXHAUST DUCT SECTION, RECTANGULAR
- 90° ELBOW TURNED UP, RECTANGULAR
- 90° ELBOW TURNED DOWN, RECTANGULAR
- 90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR

- AR
- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR
- SUPPLY AIR DEVICE (ARROWS INDICATE THROW DIRECTIONS, NO THROWS INDICATE 4-WAY THROW.
- **RETURN AIR DEVICE**
- EXHAUST AIR DEVICE

PIPING LINETYPES

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- EXISTING PIPING TO REMAIN - EXISTING PIPING TO BE REMOVED
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- SANITARY DRAIN PIPING
 - SANITARY VENT PIPING - GAS PIPING

MISCELLANEOUS SYMBOLS

 \bigcirc

- CONNECT TO EXISTING MISCELLANEOUS SYMBOLS

SINGLE LINE DUCTWORK SYMBOLS

12x6	- RECTANGULAR DUCT (FIRST FIGURE IS FO SHOWN, SECOND FIGURE IS FOR SIDE NOT
8"Ø	- ROUND DUCT
36x18Ø	- FLAT OVAL DUCT (FIRST FIGURE IS FOR SIL SECOND FIGURE IS FOR SIDE NOT SHOWN
	- FLEXIBLE ROUND DUCT
	- FLEXIBLE DUCT CONNECTION
	- VOLUME DAMPER
FD	- FIRE DAMPER, 1 1/2 HOUR FIRE RATED
FSD	- COMBINATION FIRE/SMOKE DAMPER
SD	- SMOKE DAMPER
D	- DUCT TRANSITION
R ►	- INCLINED RISE WITH RESPECT TO AIR FLOW RECTANGULAR
D	- INCLINED DROP WITH RESPECT TO AIR FLC RECTANGULAR
	- INCLINED RISE WITH RESPECT TO AIR FLOW
	- INCLINED DROP WITH RESPECT TO AIR FLC OR FLAT OVAL
	- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
	- 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
DF	- DIVIDED FLOW FITTING, RECTANGULAR
	- RECTANGULAR TAP-IN BRANCH OR ROUND OVAL CONICAL TEE
	- INCLINED CONICAL TAKE-OFF, ROUND OR F
	- "Y" FITTING, ROUND OR FLAT OVAL
X	- 90° ELBOW TURNED UP, RECTANGULAR
	- 90° ELBOW TURNED DOWN, RECTANGULAF
———————————————————————————————————————	- 90° ELBOW TURNED UP, ROUND; FLAT OVA
<u> </u>	- 90° ELBOW TURNED DOWN, ROUND; FLAT (
	- END OF DUCT RUN
T	- THERMOSTAT

PIPING SYMBOLS

\longrightarrow	- VALVE
$\neg \neg$	- CHECK VALVE
	- DOUBLE BACKFLOW PREVENTER
Ţ	- PLUG VALVE
₽	- SAFETY OR PRESSURE RELIEF, ANGLE
k	- PRESSURE REGULATING VALVE
	- LATERAL Y
	- CAP
	- ELBOW, 90°
O	- ELBOW, 90° TURNED UP
Ə	- ELBOW, 90° TURNED DOWN
+×	- ELBOW, 45°
·····	- TEE
	- TEE, TURNED UP
	- TEE, TURNED DOWN
D	- REDUCER
	- UNION
	- STRAINER
M	- METER
	- REGULATOR
C.O.	- CLEANOUT
F.D.	- FLOOR DRAIN
V.T.R.	- VENT THROUGH ROOF

GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT THE MECHANICAL SCOPE OF WORK AND PLUMBING SCOPE OF WORK HAVE BEEN CONSOLIDATED TO BE ON THE SAME SHEETS.

GENERAL PLUMBING NOTES:

DR SIDE T SHOWN)	1.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPING SYSTEMS COMPLETE, UNLESS NOTED OTHERWISE. COMPLETE INSTALLATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PIPE AND FITTINGS, PIPE HANGERS AND ANCHORS, EQUIPMENT, FIXTURES, SPECIALTIES, ETC. THIS CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
IDE SHOWN, Ŋ	2.	THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF COORDINATION BY THIS CONTRACTOR.
	3.	THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES, LOCATIONS, RELATIVE DIMENSIONS, ETC. PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND REQUIREMENTS AND ADJUST ACCORDINGLY.
	4.	CONTRACTOR SHALL INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS.
	5.	THIS CONTRACTOR SHALL CONCEAL ALL PIPES WITHIN WALLS OR CHASES WHENEVER PRACTICAL.
	6.	THIS CONTRACTOR SHALL MAINTAIN DIMENSIONED "AS-BUILT" DRAWINGS FOR ALL UNDERGROUND UTILITIES DURING CONSTRUCTION AND PROVIDE TO ENGINEER AT PROJECT COMPLETION.
DW,	7.	CONTRACTOR SHALL INCLUDE ALL EXCAVATIONS AND BACK FILLING REQUIRED FOR UNDERGROUND PIPING. ALL BACK FILL SHALL BE FREE FROM ALL TRASH AND BUILDING MATERIALS. BACK FILL SHALL BE ENGINEERED FILL 95% COMPACTED IN 8" LAYERS.
OW,	8.	ALL WORK SHALL CONFORM TO ASSOCIATED SPECIFICATIONS.
W, ROUND OR	9.	THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.
OW, ROUND	10.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO ALL OBVIOUSLY NECESSARY LOCATIONS INCLUDING ALL VALVES, FITTINGS, HANGERS, BACKFLOW PREVENTERS, WATER HEATERS, ETC.
	11.	ALL WATER PIPING SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.
		A. ALL PIPING SHALL BE SUPPORTED WITH 3/8" ALL THREAD AND CLEVIS HANGERS AND IN ACCORDANCE WITH SECTION 308 OF THE OBC - PLUMBING CODE, LATEST EDITION. UNLESS NOTED OTHERWISE.
D OR FLAT		B. THIS CONTRACTOR SHALL INSULATE ALL NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION INCLUDING FITTINGS.
FLAT OVAL		C. THIS CONTRACTOR SHALL PROVIDE AND INSTALL SERVICE VALVES ON ALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO EACH FIXTURE. ALL VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS.
		D. ALL HOSE BIBBS SHALL BE MOUNTED AT 24" ABOVE GRADE, UNLESS NOTED OTHERWISE.
		E. THE CONTRACTOR SHALL PROVIDE APPROPRIATE AIR CHAMBERS AT ALL EQUIPMENT WITH QUICK CLOSING VALVES.
		F. ALL DOMESTIC WATER PIPING SHALL BE POLYETHYLENE OR APPROVED EQUAL.
R		G. ALL DOMESTIC WATER PIPE INSULATION SHALL BE 1" THICK WITH ALL SERVICE JACKET. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.28 BTUH-IN/SQ.FT-°F AT 100°F MEAN TEMPERATURE DIFFERENCE
AL SIMILAR		AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. PIPE INSULATION SHALL BE AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS
OVAL SIMILAR		ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.
	12.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL SANITARY SEWER/ TRADE WASTE TO ALL NECESSARY LOCATIONS INCLUDING FLOOR DRAINS, CLEANOUTS, TRAPS, VENTS, ETC.
	13.	ALL SANITARY SEWER/ TRADE WASTE SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.
		A. ALL SANITARY SEWER/ TRADE WASTE PIPE SHALL BE INSTALLED WITH ¼" PER FOOT MINIMUM SLOPE FOR LINES 2½" DIAMETER OR LESS, AND ½" PER FOOT MINIMUM SLOPE FOR LINES 3" OR GREATER, UNLESS NOTED OTHERWISE.
		B. ALL EXPOSED TRAPS AND TRIM SHALL BE BRIGHT CHROME, UNLESS OTHERWISE NOTED. ALL PLUMBING FIXTURES SHALL BE WHITE, UNLESS OTHERWISE NOTED.
		C. VENTS SHALL BE LOOPED ABOVE CEILING AND/OR WITHIN ATTIC TO MINIMIZE ROOF PENETRATIONS.
		D. PVC NOT ACCEPTABLE FOR VENT PIPING IN CEILING PLENUM SPACES.
LVE		E. PVC PIPE IS ACCEPTABLE FOR WASTE AND VENT PIPING. COORDINATE PIPE MATERIALS AND CEILING PLENUMS.
		F. THIS CONTRACTOR SHALL REFERENCE ARCHITECTURAL SHEETS FOR PLUMBING FIXTURE LOCATIONS, MOUNTING HEIGHTS, ETC.
		G. ALL SANITARY FLOOR DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS, UNLESS OTHERWISE NOTED.
	14.	CONDENSATE DRAINS THAT SERVE HVAC EQUIPMENT SHALL BE SCHEDULE 40 PVC PIPING. CONDENSATE DRAINS SERVING STEAM EQUIPMENT SHALL BE STEEL.
	15.	ALL PIPING SHALL BE CONSTRUCTED AND INSTALLED AS DESCRIBED BELOW.
		A. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH MINIMUM 4" CLEARANCE BETWEEN FINISHED COVERING OF PARALLEL, ADJACENT PIPES, OTHER WORK, ETC. UNLESS NOTED OTHERWISE.
		B. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH APPROPRIATE CLEARANCE FOR PASSAGES, HEADROOM, OPERATION OF DOORS OR WINDOWS, EQUIPMENT, LIGHTING OUTLETS, OR OWNER'S APPARATUS AND EQUIPMENT.
		C. INSTALL PIPING, VALVES, FITTINGS, ETC. ROUTED OVER MEANS OF EGRESS A MINIMUM OF 7'-6" CLEARANCE ABOVE FINISHED FLOOR.
		D. OFFSET PIPING AROUND COLUMNS, BEAMS, AND OTHER OBSTRUCTIONS AS REQUIRED.
		E. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
		F. GROOVED MECHANICAL COUPLINGS AND FASTENERS SHALL ONLY BE USED IN ACCESSIBLE LOCATIONS.
		G. INSULATE ALL CONNECTIONS BETWEEN PIPE, FITTINGS, AND HANGERS OF DISSIMILAR METAL AGAINST DIRECT CONTACT WITH DIELECTRIC INSULATING MATERIAL. PIPE CONNECTIONS SHALL BE WITH A DIELECTRIC FLANGE OR UNION.
		H. ALL RISERS SHALL HAVE A BALL VALVE FOR MANUAL VENTING AT HIGH POINTS IN THE SYSTEM.
		I. PIPE IDENTIFICATION SHALL COMPLY WITH ASME STANDARD A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' UNLESS NOTED OTHERWISE. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.
		J. PIPE MARKERS SHALL BE A PREFORMED ONE PIECE UV RESISTANT VINYL WITH EMBOSSED LETTERS AND FLOW ARROWS. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.
		K. VALVES SHALL BE IDENTIFIED WITH 'SIZE, TYPE, AND DESCRIPTION OF OPERATION'.

- L. PIPE HANGERS AND SUPPORTS
- a. USE ADJUSTABLE CLEVIS HANGERS, FOR INDIVIDUAL, STRAIGHT HORIZONTAL RUNS.
- b. USE RISER CLAMPS FOR VERTICAL PIPE RUNS.
- c. USE PIPE ROLLERS AND GUIDES TO SUPPORT STEAM SUPPLY AND STEAM CONDENSATE LINES.

GENERAL MECHANICAL NOTES:

- LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
- COMPLYING WITH ABOVE INTENT.
- COORDINATION.
- **BEGINNING WORK.**
- THE OWNER AND OSHA.
- SAME ACCORDING TO LOCAL REGULATIONS.

- APPLICABLE.

- SHALL BE SELF-SUPPORTING AND NOT REQUIRE CONNECTING EQUIPMENT FOR SUPPORT. MEET STATED REQUIREMENTS.
- SATISFY PROJECT REQUIREMENTS.
- EDGES.
- PLENUM BRANCHES.
- LARGEST DIMENSION.

- GAGE.
- MANUFACTURED BY KNAUF OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.

1. UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL PROVIDE AND INSTALL THE HVAC SYSTEMS AND EXHAUST SYSTEMS COMPLETE. THE INSTALLATION SHALL INCLUDE, BUT NOT LIMITED TO, ALL DUCTWORK AND FITTINGS, EQUIPMENT, DIFFUSERS, SMOKE DETECTORS, THERMOSTATS AND 24 VAC WIRING, ROOF AND/OR WALL PENETRATIONS, TESTING AND BALANCING, ETC. CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES,

2. THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES.

3. IT IS INTENDED THAT WORK COVERED BY SPECIFICATIONS AND DRAWINGS INCLUDES EVERYTHING REQUISITE AND NECESSARY TO MAKE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS SPECIFICALLY NOTED. OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE CONTRACTOR FROM

4. THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF

5. IN GENERAL, THE DRAWINGS SHOW THE DESIRED DUCT ROUTING LOCATION PLUS FITTINGS AND CONNECTIONS. THE DUCT AND ASSOCIATED EQUIPMENT CAN BE LOWERED OR RAISED AS NECESSARY TO ACCOMMODATE MINOR FIELD CONDITIONS. THE CONTRACTOR SHALL NOTE ALL CHANGES ON DRAWINGS AND RETURN MARKED UP DRAWINGS TO THE OWNER.

6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY BEFORE

7. THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH SAFETY REQUIREMENTS IMPOSED BY

8. THE CONTRACTOR SHALL KEEP WORK AREA CLEAN, REMOVE ALL DEBRIS FROM THE OWNER'S PROPERTY, AND DISPOSE OF

9. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR; MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS. CHANGES SHALL NOT BE MADE WITHOUT APPROVAL OF THE OWNER.

10. THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.

11. THE MECHANICAL CONTRACTOR SHALL PROVIDE FINAL HOOK-UP, PURGE AND LIGHTING OF ALL NATURAL GAS EQUIPMENT IF

12. ALL DUCT SHALL BE CONSTRUCTED AND INSTALLED MEETING THE REQUIREMENTS OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AND AS DESCRIBED BELOW.

13. ALL DUCT SHALL BE SHEET METAL AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA STANDARDS, LATEST EDITION. A. HANGERS SHALL BE PROVIDED A MAXIMUM OF EVERY 8'-0", AT ROOF PENETRATIONS AND AT ALL ELBOWS. ALL DUCT

B. ALIGN, ADJUST, AND LEVEL ALL DUCT FOR SATISFACTORY OPERATION. IF A SLOPE IS SPECIFIED, ALIGN AND ADJUST TO

C. REINFORCE ALL DUCTS TO PREVENT BREATHING, VIBRATING, BUCKLING, OR UNNECESSARY NOISE AS REQUIRED TO

D. ALL DUCT AND PLENUM SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. IT IS ACCEPTABLE TO CHANGE DUCT SIZES WHEN THE CROSS-SECTIONAL AREA IS MAINTAINED.

E. THE INTERIOR OF ALL DUCTS AND PLENUMS SHALL BE SMOOTH AND FREE OF OBSTRUCTIONS, BURRS, AND SHARP

F. ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES, INCLUDING DISCHARGE AND RETURN

G. ALL CONCENTRIC TRANSITIONS SHALL HAVE A MAXIMUM TOTAL ANGLE OF 45° CONVERGING AND 30° DIVERGING FOR

H. ALL SHEET METAL DUCT JOINTS SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.

I. ALL FLEXIBLE DUCT CONNECTIONS SHALL BE CAULKED AND SEALED AIR TIGHT USING A DRAW BAND. THE MAXIMUM LENGTH OF FLEXIBLE DUCT RUNS SHALL BE 6'-0". FLEXIBLE DUCT SHALL NOT HAVE MORE THAN AN AGGREGATE TOTAL OF 90° CHANGE IN DIRECTION, WITH A BEND NOT LESS THAN 1.5 DUCT DIAMETER CENTERLINE RADIUS.

J. ALL ROUND DUCT TAKE-OFFS SHALL HAVE SPIN-IN TYPE FITTINGS WITH BALANCING DAMPERS.

K. ALL AIR DEVICES SHALL BE CONNECTED WITH 3 DUCT DIAMETERS OF STRAIGHT DUCT. IN AREAS WHERE SPACE IS LIMITED A SHEET METAL ELBOW SHALL BE CONNECTED TO AIR DEVICE.

14. ALL NEW SHEET METAL DUCT TO BE ASTM A526 PRIME GALVANIZED SHEET METAL (SHEET AND STRIP) OF THE PROPER

15. ALL INSIDE DUCT WITH EXTERNAL DUCT INSULATION SHALL BE 0.75 PCF DENSITY, 2" THICK WITH FSK FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.29 BTUH-IN/SQ. FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT WRAP AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.

16. OUTSIDE EXPOSED DUCT WITH INTERNALLY LINED DUCT INSULATION SHALL BE 1.5 PCF DENSITY, 2" THICK WITH MAT FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.25 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NPFA 255 AND UL 723. NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT LINER EM AS

17. ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 1" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.24 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

18. ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 2" THICK FIBERGLAS INSULATING BLANKET. AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.33 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

19. THE CONTRACTOR SHALL PROVIDE AND INSTALL A SECONDARY DRAIN PAN WITH FLOAT SWITCH FOR ALL AIR CONDITIONING EQUIPMENT TO BE INSTALLED ABOVE A SUSPENDED CEILING. THE SECONDARY DRAIN PAN SHALL BE GALVANIZED STEEL WITH SOLDERED CORNERS AND 2" MINIMUM COLLECTION DEPTH. THE FLOAT SWITCH SHALL BE WIRED WITH AIR CONDITIONING EQUIPMENT TO DISABLE CONTINUED OPERATION.

20. THE EQUIPMENT AND MATERIALS SPECIFIED ON THE DRAWINGS ESTABLISH THE MINIMUM STANDARDS AND BASIS FOR THE BID. ALTERNATE MANUFACTURERS AND METHODS MUST BE APPROVED PRIOR TO SUBMISSION OF BID.

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TRI-TECH PROJECT #18404

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Project Number 2018-177 Date APRIL 19, 2019 Sheet Title NOTES AND LEGEND						
Sheet Number 1907 SHROYER AVE.						

MARK MANUFACTUR EF-1 BROAN NOTES: 1. PROVI 2. PROVIE

	EXHAUST FAN SCHEDULE						
RER	MODEL #	CFM	S.P. IN WATER	VOLTAGE	POWER (W)	SOUND (SONES)	NOTES
	QTXE080FLT	50	0.25	120	23.3	0.3	2,3,4
IDE V IDE V	DE WITH BROAN RADIATION DAMPER, MODEL #RDM1. DE WITH BROAN PREMIUM RADIATION DAMPER, MODEL #RDFOL.						

	PLUMBING FIXTURE SCHEDULE							
MARK	FIXTURE	WASTE	VENT	HOT	COLD	DESCRIPTION		
L-1	LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"	EXISTING LAVATORY TO REMAIN. PROVIDE PROFLO CHROME SINGLE HANDLE LAVATORY FAUCET WITH POP-UP DRAIN, MODEL #PFWSC4746SCP, 1.2 GPM, 4" CENTERSETS. PROVIDE WITH 0.5 GPM AERATOR INSERT, PART NUMBER PFX14320. PROVIDE CAST BRASS CHROME PLATED OPEN GRID PO PLUG, MODEL #155A. VERIFY FIT PRIOR TO ORDERING.		
S-1	DOUBLE BOWL SINK	1-1/2"	1-1/4"	1/2"	1/2"	PROFLO DOUBLE BOWL STAINLESS STEEL SINK, MODEL #PFSR332263. EACH BOWL SIZE IS 14" WIDE BY 15-3/4" FRONT TO BACK BY 6-1/8" DEEP, 33" X 22" OVERALL, WITH (3) HOLES AT 4" CENTERS FOR FAUCET MOUNTING. PROVIDE WITH PROFLO CHROME SINGLE HANDLE KITCHEN FAUCET, MODEL #PFXC3101CP, 1.5 GPM FLOW RATE, AND METAL LEVER HANDLE. PROVIDE WITH DEARBORN BRASS 12 LOCKING CUP SINK BASKET STRAINERS.		
SH-1	ADA SHOWER	3"	1-1/2"	1/2"	1/2"	STERLING MODEL #60270125 63" ADA SHOWER WITH SEAT AND GRAB BARS. PROVIDE WITH MOEN COMMERCIAL SINGLE HANDLE CHROME PLATED HAND-HELD FAUCET, MODEL #T8389EP15, WITH 30" SLIDE BAR AND 69" METAL HOSE, WITH MOEN POSI-TEMP PRESSURE BALANCING VALVE, MODEL #88346. SET DISCHARGE TEMPERATURE TO 110°F MAX. COORDINATE WITH GENERAL CONTRACTOR FOR INSTALLATION OF BASE. FIELD VERIFY PRIOR TO ORDERING.		
WC-1	FLOOR MOUNTED WATER CLOSET (ADA)	3"	1-1/2"	-	1/2"	AMERICAN STANDARD #2467.136 "CADET FLOWISE" TANK TYPE PRESSURE-ASSISTED TOILET, WHITE VITREOUS CHINA, FLOOR MOUNTED, 1.1 GAL. FLUSH, 16-1/2" HIGH BOWL RIM HEIGHT. PROVIDE WITH PROFLO SLOW CLOSE ELONGATED PLASTIC TOILET SEAT WITH EASY CLEAN, MODEL #PFTSEC2000.		

3. EXHAUST FAN WITH INTEGRAL LIGHT. 4. FURNISH WITH EXHAUST FAN TIMER SWITCH, EATON 9590AW OR EQUAL. TIMER SWITCH TO HAVE

10 MINUTE AND 1 HOUR SETTINGS AT MINIMUM. INSTALLATION BY ELECTRICAL CONTRACTOR.

TRI-TECH PROJECT #18404

12x6	- F S
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- RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)
- ROUND DUCT
- VOLUME DAMPER
- BACK DRAFT DAMPER
- FIRE DAMPER, 1 1/2 HOUR FIRE RATED
- DUCT TRANSITION, ROUND OR FLAT OVAL TO RECTANGULAR
- DUCT TRANSITION, RECTANGULAR TO ROUND OR FLAT OVAL
- DUCT TRANSITION, RECTANGULAR, ROUND, OR FLAT OVAL
- INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR
- INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR
- INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
- INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL
- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)
- 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)
- TAP-IN BRANCH, RECTANGULAR
- BRANCH DUCT, CONICAL LATERAL FITTING, ROUND OR FLAT OVAL
- BRANCH DUCT, CONICAL TEE FITTING, ROUND OR FLAT OVAL
- BRANCH DUCT, "Y" FITTING, ROUND OR FLAT OVAL
- SUPPLY DUCT SECTION, RECTANGULAR
- RETURN DUCT SECTION, RECTANGULAR
- EXHAUST DUCT SECTION, RECTANGULAR
- 90° ELBOW TURNED UP, RECTANGULAR
- 90° ELBOW TURNED DOWN, RECTANGULAR

- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR
- SUPPLY AIR DEVICE (ARROWS INDICATE THROW DIRECTIONS, NO THROWS INDICATE 4-WAY THROW.
- **RETURN AIR DEVICE**
- EXHAUST AIR DEVICE

PIPING LINETYPES

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- EXISTING PIPING TO REMAIN - EXISTING PIPING TO BE REMOVED
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- SANITARY DRAIN PIPING
- SANITARY VENT PIPING
- GAS PIPING

- CONDENSATE DRAIN PIPING

MISCELLANEOUS SYMBOLS

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- CONNECT TO EXISTING - MISCELLANEOUS SYMBOLS

- SINGLE LINE DUCTWORK SYMBOLS
- SHOWN, SECOND FIGURE IS FOR SIDE NOT - ROUND DUCT <u>36x18Ø</u> - FLAT OVAL DUCT (FIRST FIGURE IS FOR S SECOND FIGURE IS FOR SIDE NOT SHOWN - FLEXIBLE ROUND DUCT - FLEXIBLE DUCT CONNECTION - VOLUME DAMPER - FIRE DAMPER, 1 1/2 HOUR FIRE RATED - COMBINATION FIRE/SMOKE DAMPER - SMOKE DAMPER - DUCT TRANSITION - INCLINED RISE WITH RESPECT TO AIR FLO RECTANGULAR - INCLINED DROP WITH RESPECT TO AIR FLO RECTANGULAR - INCLINED RISE WITH RESPECT TO AIR FLO FLAT OVAL - INCLINED DROP WITH RESPECT TO AIR FLO OR FLAT OVAL - 90° ELBOW (SMOOTH OR 5 PIECE ELBOW) 45° ELBOW (SMOOTH OR 3 PIECE ELBOW) - DIVIDED FLOW FITTING, RECTANGULAR RECTANGULAR TAP-IN BRANCH OR ROUND OVAL CONICAL TEE - INCLINED CONICAL TAKE-OFF, ROUND OR - "Y" FITTING, ROUND OR FLAT OVAL - 90° ELBOW TURNED UP, RECTANGULAR - 90° ELBOW TURNED DOWN, RECTANGULA - 90° ELBOW TURNED UP, ROUND; FLAT OV/ - 90° ELBOW TURNED DOWN, ROUND; FLAT - END OF DUCT RUN (T)- THERMOSTAT

PIPING SYM	IBOLS
	- VALVE
$\neg \neg \neg \neg$	- CHECK VALVE
	- DOUBLE BACKFLOW PREVENTER
₹	- PLUG VALVE
₽	- SAFETY OR PRESSURE RELIEF, ANGLE VA
	- PRESSURE REGULATING VALVE
<u>/</u>	- LATERAL Y
]	- CAP
+7	- ELBOW, 90°
O	- ELBOW, 90° TURNED UP
Э	- ELBOW, 90° TURNED DOWN
+×	- ELBOW, 45°
······	- TEE
	- TEE, TURNED UP
	- TEE, TURNED DOWN
D	- REDUCER
	- UNION
	- STRAINER
M	- METER
	- REGULATOR
C.O.	- CLEANOUT
F.D.	- FLOOR DRAIN
V.T.R.	- VENT THROUGH ROOF

GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT THE MECHANICAL SCOPE OF WORK AND PLUMBING SCOPE OF WORK HAVE BEEN CONSOLIDATED TO BE ON THE SAME SHEETS.

GENERAL PLUMBING NOTES:

12x6 8"Ø	 RECTANGULAR DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN) ROUND DUCT 	1.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL PIPING SYSTEMS COMPLETE, UNLESS NOTED OTHERWISE. COMPLETE INSTALLATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL PIPE AND FITTINGS, PIPE HANGERS AND ANCHORS, EQUIPMENT, FIXTURES, SPECIALTIES, ETC. THIS CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES, LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
36x18Ø	- FLAT OVAL DUCT (FIRST FIGURE IS FOR SIDE SHOWN, SECOND FIGURE IS FOR SIDE NOT SHOWN)	2.	THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF COORDINATION BY THIS CONTRACTOR.
	- FLEXIBLE ROUND DUCT - FLEXIBLE DUCT CONNECTION	3.	THIS CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES, LOCATIONS, RELATIVE DIMENSIONS, ETC. PIPING AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY, CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND REQUIREMENTS AND ADJUST ACCORDINGLY.
 ┌ FD		4.	CONTRACTOR SHALL INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR: MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS.
FSD	- FIRE DAMPER, 1 1/2 HOUR FIRE RATED	5.	THIS CONTRACTOR SHALL CONCEAL ALL PIPES WITHIN WALLS OR CHASES WHENEVER PRACTICAL.
	- SMOKE DAMPER	6.	THIS CONTRACTOR SHALL MAINTAIN DIMENSIONED "AS-BUILT" DRAWINGS FOR ALL UNDERGROUND UTILITIES
D	- DUCT TRANSITION	7.	CONTRACTOR SHALL INCLUDE ALL EXCAVATIONS AND BACK FILLING REQUIRED FOR UNDERGROUND
	- INCLINED RISE WITH RESPECT TO AIR FLOW, RECTANGULAR		PIPING. ALL BACK FILL SHALL BE FREE FROM ALL TRASH AND BUILDING MATERIALS. BACK FILL SHALL BE ENGINEERED FILL 95% COMPACTED IN 8" LAYERS.
	- INCLINED DROP WITH RESPECT TO AIR FLOW, RECTANGULAR	8. 0	ALL WORK SHALL CONFORM TO ASSOCIATED SPECIFICATIONS.
	- INCLINED RISE WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL	9.	THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.
	- INCLINED DROP WITH RESPECT TO AIR FLOW, ROUND OR FLAT OVAL	10.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO ALL OBVIOUSLY NECESSARY LOCATIONS INCLUDING ALL VALVES, FITTINGS, HANGERS, BACKFLOW PREVENTERS, WATER HEATERS, ETC.
	- 90° ELBOW (SMOOTH OR 5 PIECE ELBOW)	11.	ALL WATER PIPING SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC - PLUMBING CODE, LATEST EDITION, AND AS DESCRIBED BELOW.
	- 45° ELBOW (SMOOTH OR 3 PIECE ELBOW)		A. ALL PIPING SHALL BE SUPPORTED WITH 3/8" ALL THREAD AND CLEVIS HANGERS AND IN ACCORDANCE
DF	- DIVIDED FLOW FITTING, RECTANGULAR		WITH SECTION 308 OF THE OBC - PLUMBING CODE, LATEST EDITION. UNLESS NOTED OTHERWISE.
	- RECTANGULAR TAP-IN BRANCH OR ROUND OR FLAT OVAL CONICAL TEE		B. THIS CONTRACTOR SHALL INSULATE ALL NEW DOMESTIC HOT AND COLD WATER DISTRIBUTION INCLUDING FITTINGS.
	- INCLINED CONICAL TAKE-OFF, ROUND OR FLAT OVAL		C. THIS CONTRACTOR SHALL PROVIDE AND INSTALL SERVICE VALVES ON ALL DOMESTIC HOT AND COLD WATER DISTRIBUTION TO EACH FIXTURE. ALL VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS.
¥			D. ALL HOSE BIBBS SHALL BE MOUNTED AT 24" ABOVE GRADE, UNLESS NOTED OTHERWISE.
			E. THE CONTRACTOR SHALL PROVIDE APPROPRIATE AIR CHAMBERS AT ALL EQUIPMENT WITH QUICK CLOSING VALVES.
	- 90° ELBOW TURNED UP, RECTANGULAR		F. ALL DOMESTIC WATER PIPING SHALL BE POLYETHYLENE OR APPROVED EQUAL.
	- 90° ELBOW TURNED DOWN, RECTANGULAR		G. ALL DOMESTIC WATER PIPE INSULATION SHALL BE 1" THICK WITH ALL SERVICE JACKET. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.28 BTUH-IN/SQ.FT-°F AT 100°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM
()	- 90° ELBOW TURNED UP, ROUND; FLAT OVAL SIMILAR		E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. PIPE INSULATION SHALL BE AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS
	- 90° ELBOW TURNED DOWN, ROUND; FLAT OVAL SIMILAR		SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.
	- END OF DUCT RUN	12.	THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL SANITARY SEWER/ TRADE WASTE TO ALL NECESSARY LOCATIONS INCLUDING FLOOR DRAINS, CLEANOUTS, TRAPS, VENTS, ETC.
(T)	- THERMOSTAT	13.	ALL SANITARY SEWER/ TRADE WASTE SHALL BE INSTALLED MEETING THE REQUIREMENTS OF OBC -
	MBOLS		A. ALL SANITARY SEWER/ TRADE WASTE PIPE SHALL BE INSTALLED WITH ¼" PER FOOT MINIMUM SLOPE FOR LINES 2½" DIAMETER OR LESS, AND ½" PER FOOT MINIMUM SLOPE FOR LINES 3" OR GREATER, UNITED NOTED OT LEDWIDE
	- VALVE		UNLESS NOTED OTHERWISE.
	- CHECK VALVE		FIXTURES SHALL BE WHITE, UNLESS OTHERWISE NOTED.
///			C. VENTS SHALL BE LOOPED ABOVE CEILING AND/OR WITHIN ATTIC TO MINIMIZE ROOF PENETRATIONS.
 ₽	- SAFETY OR PRESSURE RELIEF, ANGLE VALVE		 D. PVC NOT ACCEPTABLE FOR VENT PIPING IN CEILING PLENUM SPACES. E. PVC PIPE IS ACCEPTABLE FOR WASTE AND VENT PIPING. COORDINATE PIPE MATERIALS AND CEILING.
₽ -►	- PRESSURE REGULATING VALVE		PLENUMS.
	- LATERAL Y		F. THIS CONTRACTOR SHALL REFERENCE ARCHITECTURAL SHEETS FOR PLUMBING FIXTURE LOCATIONS, MOUNTING HEIGHTS, ETC.
	- CAP		G. ALL SANITARY FLOOR DRAINS SHALL HAVE TRAP PRIMER CONNECTIONS, UNLESS OTHERWISE NOTED.
¹ 7		14.	CONDENSATE DRAINS THAT SERVE HVAC EQUIPMENT SHALL BE SCHEDULE 40 PVC PIPING. CONDENSATE DRAINS SERVING STEAM EQUIPMENT SHALL BE STEEL.
0	- ELBOW, 90° TURNED DOWN	15.	ALL PIPING SHALL BE CONSTRUCTED AND INSTALLED AS DESCRIBED BELOW.
+×	- ELBOW, 45°		A. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH MINIMUM 4" CLEARANCE BETWEEN FINISHED COVERING OF PARALLEL, ADJACENT PIPES, OTHER WORK, ETC, UNLESS NOTED OTHERWISE.
-+++	- TEE		B. INSTALL PIPING, VALVES, FITTINGS, ETC. WITH APPROPRIATE CLEARANCE FOR PASSAGES, HEADROOM,
-+O+	- TEE, TURNED UP		OPERATION OF DOORS OR WINDOWS, EQUIPMENT, LIGHTING OUTLETS, OR OWNER'S APPARATUS AND EQUIPMENT.
	- TEE, TURNED DOWN		C. INSTALL PIPING, VALVES, FITTINGS, ETC. ROUTED OVER MEANS OF EGRESS A MINIMUM OF 7'-6" CLEARANCE ABOVE FINISHED FLOOR.
D			D. OFFSET PIPING AROUND COLUMNS, BEAMS, AND OTHER OBSTRUCTIONS AS REQUIRED.
	- STRAINER		E. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE,
- <u>M</u>	- METER		F. GROOVED MECHANICAL COUPLINGS AND FASTENERS SHALL ONLY BE USED IN ACCESSIBLE LOCATIONS
	- REGULATOR		G. INSULATE ALL CONNECTIONS BETWEEN PIPE, FITTINGS, AND HANGERS OF DISSIMILAR METAL AGAINST
C.O.	- CLEANOUT		DIRECT CONTACT WITH DIELECTRIC INSULATING MATERIAL. PIPE CONNECTIONS SHALL BE WITH A DIELECTRIC FLANGE OR UNION.
V.T.R.	- VENT THROUGH ROOF		H. ALL RISERS SHALL HAVE A BALL VALVE FOR MANUAL VENTING AT HIGH POINTS IN THE SYSTEM.
	NOTES		I. PIPE IDENTIFICATION SHALL COMPLY WITH ASME STANDARD A13.1 'SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS' UNLESS NOTED OTHERWISE. COORDINATE WITH EXISTING AND VERIFY WITH OWNER.
	SE OF THIS PROJECT THE MECHANICAI		J. PIPE MARKERS SHALL BE A PREFORMED ONE PIECE UV RESISTANT VINYL WITH EMBOSSED LETTERS AND FLOW ARROWS. COORDINATE WITH EXISTING AND VERIFY WITH OWNER
OPE OF WORK	AND PLUMBING SCOPE OF WORK HAVE ATED TO BE ON THE SAME SHEETS.		K. VALVES SHALL BE IDENTIFIED WITH 'SIZE, TYPE, AND DESCRIPTION OF OPERATION'.

- L. PIPE HANGERS AND SUPPORTS
- a. USE ADJUSTABLE CLEVIS HANGERS, FOR INDIVIDUAL, STRAIGHT HORIZONTAL RUNS.
- b. USE RISER CLAMPS FOR VERTICAL PIPE RUNS.
- c. USE PIPE ROLLERS AND GUIDES TO SUPPORT STEAM SUPPLY AND STEAM CONDENSATE LINES.

GENERAL MECHANICAL NOTES:

- LINTELS, ETC.) WITH THE GENERAL CONTRACTOR.
- COMPLYING WITH ABOVE INTENT.
- COORDINATION.
- **BEGINNING WORK.**
- THE OWNER AND OSHA.
- SAME ACCORDING TO LOCAL REGULATIONS.

- APPLICABLE.

- MEET STATED REQUIREMENTS.
- SATISFY PROJECT REQUIREMENTS.
- EDGES.
- PLENUM BRANCHES.
- LARGEST DIMENSION.

- GAGE.
- MANUFACTURED BY KNAUF OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.
- THERMAFLEX M-KE OR APPROVED EQUAL.

1. UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL PROVIDE AND INSTALL THE HVAC SYSTEMS AND EXHAUST SYSTEMS COMPLETE. THE INSTALLATION SHALL INCLUDE, BUT NOT LIMITED TO, ALL DUCTWORK AND FITTINGS, EQUIPMENT, DIFFUSERS, SMOKE DETECTORS, THERMOSTATS AND 24 VAC WIRING, ROOF AND/OR WALL PENETRATIONS, TESTING AND BALANCING, ETC. CONTRACTOR SHALL COORDINATE PROVISIONS FOR PENETRATIONS IN BLOCK WALLS (I.E. SLEEVES,

2. THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES.

3. IT IS INTENDED THAT WORK COVERED BY SPECIFICATIONS AND DRAWINGS INCLUDES EVERYTHING REQUISITE AND NECESSARY TO MAKE VARIOUS SYSTEMS COMPLETE AND OPERATIVE, IRRESPECTIVE OF WHETHER OR NOT EVERY ITEM IS SPECIFICALLY NOTED. OMISSION OF DIRECT REFERENCE TO ANY ESSENTIAL ITEM SHALL NOT EXCUSE CONTRACTOR FROM

4. THIS CONTRACTOR SHALL CONSULT THE ARCHITECTURAL AND ELECTRICAL DRAWINGS TO AVOID INTERFERENCES AND CONFLICTS WITH OTHER TRADES. THIS CONTRACTOR WILL BE EXPECTED TO COVER ALL REWORK COSTS DUE TO LACK OF

5. IN GENERAL, THE DRAWINGS SHOW THE DESIRED DUCT ROUTING LOCATION PLUS FITTINGS AND CONNECTIONS. THE DUCT AND ASSOCIATED EQUIPMENT CAN BE LOWERED OR RAISED AS NECESSARY TO ACCOMMODATE MINOR FIELD CONDITIONS. THE CONTRACTOR SHALL NOTE ALL CHANGES ON DRAWINGS AND RETURN MARKED UP DRAWINGS TO THE OWNER.

6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY BEFORE

7. THE CONTRACTOR SHALL CONDUCT ALL OPERATIONS IN STRICT ACCORDANCE WITH SAFETY REQUIREMENTS IMPOSED BY

8. THE CONTRACTOR SHALL KEEP WORK AREA CLEAN, REMOVE ALL DEBRIS FROM THE OWNER'S PROPERTY, AND DISPOSE OF

9. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE, AND REPAIR: MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS. CHANGES SHALL NOT BE MADE WITHOUT APPROVAL OF THE OWNER.

10. THE CONTRACTOR SHALL DEMONSTRATE OPERATION OF ALL SYSTEMS AND EQUIPMENT TO THE OWNER. THE OPERATING AND SERVICE MANUALS FOR ALL EQUIPMENT SHALL BE FURNISHED TO THE OWNER.

11. THE MECHANICAL CONTRACTOR SHALL PROVIDE FINAL HOOK-UP, PURGE AND LIGHTING OF ALL NATURAL GAS EQUIPMENT IF

12. ALL DUCT SHALL BE CONSTRUCTED AND INSTALLED MEETING THE REQUIREMENTS OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION, AND AS DESCRIBED BELOW.

13. ALL DUCT SHALL BE SHEET METAL AND INSTALLED IN STRICT ACCORDANCE WITH SMACNA STANDARDS, LATEST EDITION. A. HANGERS SHALL BE PROVIDED A MAXIMUM OF EVERY 8'-0", AT ROOF PENETRATIONS AND AT ALL ELBOWS. ALL DUCT SHALL BE SELF-SUPPORTING AND NOT REQUIRE CONNECTING EQUIPMENT FOR SUPPORT.

B. ALIGN, ADJUST, AND LEVEL ALL DUCT FOR SATISFACTORY OPERATION. IF A SLOPE IS SPECIFIED, ALIGN AND ADJUST TO

C. REINFORCE ALL DUCTS TO PREVENT BREATHING, VIBRATING, BUCKLING, OR UNNECESSARY NOISE AS REQUIRED TO

D. ALL DUCT AND PLENUM SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. IT IS ACCEPTABLE TO CHANGE DUCT SIZES WHEN THE CROSS-SECTIONAL AREA IS MAINTAINED.

E. THE INTERIOR OF ALL DUCTS AND PLENUMS SHALL BE SMOOTH AND FREE OF OBSTRUCTIONS, BURRS, AND SHARP

F. ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS TURNING VANES, INCLUDING DISCHARGE AND RETURN

G. ALL CONCENTRIC TRANSITIONS SHALL HAVE A MAXIMUM TOTAL ANGLE OF 45° CONVERGING AND 30° DIVERGING FOR

H. ALL SHEET METAL DUCT JOINTS SHALL BE SEALED WITH AN APPROVED DUCT SEALANT.

I. ALL FLEXIBLE DUCT CONNECTIONS SHALL BE CAULKED AND SEALED AIR TIGHT USING A DRAW BAND. THE MAXIMUM LENGTH OF FLEXIBLE DUCT RUNS SHALL BE 6'-0". FLEXIBLE DUCT SHALL NOT HAVE MORE THAN AN AGGREGATE TOTAL OF 90° CHANGE IN DIRECTION, WITH A BEND NOT LESS THAN 1.5 DUCT DIAMETER CENTERLINE RADIUS.

J. ALL ROUND DUCT TAKE-OFFS SHALL HAVE SPIN-IN TYPE FITTINGS WITH BALANCING DAMPERS.

K. ALL AIR DEVICES SHALL BE CONNECTED WITH 3 DUCT DIAMETERS OF STRAIGHT DUCT. IN AREAS WHERE SPACE IS LIMITED A SHEET METAL ELBOW SHALL BE CONNECTED TO AIR DEVICE.

14. ALL NEW SHEET METAL DUCT TO BE ASTM A526 PRIME GALVANIZED SHEET METAL (SHEET AND STRIP) OF THE PROPER

15. ALL INSIDE DUCT WITH EXTERNAL DUCT INSULATION SHALL BE 0.75 PCF DENSITY, 2" THICK WITH FSK FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.29 BTUH-IN/SQ. FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND A COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT WRAP AS MANUFACTURED BY KNAUF OR APPROVED EQUAL. ALL INSULATION JOINTS SHALL BE TIGHTLY BUTTED AND COVERED WITH 4" WIDE X .0025" FOIL TAPE ADHERED WITH LAP SEAL ADHESIVE TO PROVIDE A COMPLETE VAPOR BARRIER ENVELOPE.

16. OUTSIDE EXPOSED DUCT WITH INTERNALLY LINED DUCT INSULATION SHALL BE 1.5 PCF DENSITY, 2" THICK WITH MAT FACE. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.25 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE AND COMPOSITE FIRE AND SMOKE HAZARD RATING, AS TESTED BY PROCEDURE ASTM E-84, NPFA 255 AND UL 723. NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50. DUCT INSULATION SHALL BE DUCT LINER EM AS

17. ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 1" THICK FIBERGLAS INSULATING BLANKET, AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.24 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

18. ALL FLEXIBLE DUCT SHALL BE A FACTORY PRE-INSULATED DUCT COMPOSED OF A CORROSION RESISTANT REINFORCING WIRE HELIX PERMANENTLY BONDED TO A BLACK CPE CORE, COVERED WITH A 2" THICK FIBERGLAS INSULATING BLANKET. AND SHEATHED WITH AN OUTER MOISTURE BARRIER OF A BI-DIRECTIONAL REINFORCED METALIZED POLYESTER FILM, LAMINATED TO GLASS MESH, ELASTOMER BACK-COATED. THE INSULATING BLANKET SHALL HAVE A "U" VALUE OF 0.33 BTUH-IN/SQ.FT-°F AT 75°F MEAN TEMPERATURE DIFFERENCE. THE DUCT SHALL COMPLY WITH THE LATEST NFPA BULLETIN 90A AND SHALL BE LISTED AS A CLASS 1 AIR DUCT MATERIAL, UL STANDARD 181. THE FLEXIBLE DUCT SHALL BE

19. THE CONTRACTOR SHALL PROVIDE AND INSTALL A SECONDARY DRAIN PAN WITH FLOAT SWITCH FOR ALL AIR CONDITIONING EQUIPMENT TO BE INSTALLED ABOVE A SUSPENDED CEILING. THE SECONDARY DRAIN PAN SHALL BE GALVANIZED STEEL WITH SOLDERED CORNERS AND 2" MINIMUM COLLECTION DEPTH. THE FLOAT SWITCH SHALL BE WIRED WITH AIR CONDITIONING EQUIPMENT TO DISABLE CONTINUED OPERATION.

20. THE EQUIPMENT AND MATERIALS SPECIFIED ON THE DRAWINGS ESTABLISH THE MINIMUM STANDARDS AND BASIS FOR THE BID. ALTERNATE MANUFACTURERS AND METHODS MUST BE APPROVED PRIOR TO SUBMISSION OF BID.

C \vdash Print Record 10/08/18 AS-BUILT SET 10/23/18 REVIEW SET 11/27/18 80% SET 04/19/19 BID SET

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Project Number

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Date

APRIL 19, 2019

Sheet Title

NOTES AND LEGEND

Sheet Number

M

2018 SHROYER AVE.

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TRI-TECH PROJECT #18404

GAS	USAGE - TE	NANT		MARK	MANUFACTUREF
	EXISTING	NEVV		EF-1	BROAN
FURNACE	66	-			
WATER HEATER	38	40			
TOTAL	104	40			
NOTES: 1.	ONE GAS METER PER THERE ARE FOUR ME BUILDING.		NOTE	S: 1. PROVIDE 2. PROVIDE 3. EXHAUS 4. FURNISH 10 MINUT	

				IND	001	R UN	IT																			
						4	AIRFLOW		MINIMUM ACCEPTABLE CAPACITIES				UNIT PRIMARY HEATING PERFORMANCE						ELECTRICAL				AIF	FILTER		
								COOLIN	1G	HEATING	TYP	E							UNIT	IT						
MARK	MANUFACTURER	MODEL # (FURNACE)	MODEL # (COIL)	SUPPLY AIR (CFM)	EXTERNAL S.P. (INCHES W.G.)	OUTSIDE AIR (CFM)	NOMINAL (MBH)	SENSIBLE (MBH)	ENTERING AIR TEMP. DB(°F)/WB(°F)	OUTPUT (MBH)	ELECTRIC COIL HEAT PUMP H.P. PRIMARY	NATURAL GAS STEAM	INPUT/ OUTPUT (MBH) [KW]	# OF STAGES	TURN DOWN RATIO	AFUE	MOTOR HP	VOLTAGE	PHASE	MCA	MOCP	QTY MERV #	SIZE L x W x T	UNIT WEIGHT (LBS)	NOTES	
FC-1.1#	CARRIER	-	40MAQB09B3	380	-	-	9.0	-	-	-			/8.0	1	-	-	-	240	1 0	.2	-		- x - x -	20	1,2,3	
FC-1.2#	CARRIER	-	40MAQB09B3	380	-	-	9.0	-	-	-	•		/8.0	1	-	-	-	240	1 0	.2	-		- x - x -	20	1,2,3	
NOTI	ES: 1. CARRIER UNECESSAF PROVIDE F 2. UNIT IS PO 3. MARK '#' D	JNITS MAY BE SUB RY. PROVIDE COND PROGRAMMABLE T WERED BY OUTDO ENOTES THE APAR	STITUTED WITH EQ DENSATE PUMP AS HERMOSTAT. DOR UNIT. RTMENT NUMBER IN	UIVALENT NECESSAI	BRYAI RY WH	NT UNITS ERE ACCE	OR APPRO ESS TO A D	VED EQUAL. RAIN IS NOT	COORDINATE PH READILY AVAILA	IYSICAL SPA BLE. COORD	CE REQUIF		IS WITH EX	ISTINC TS WIT	G CONDITI	ONS. VE	ERIFY	FLOW	DIREC	TION /	AND F		DE ANCILLA AJOR CONS	RY EQUIP	MENT AS	

4. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH SECOND STAGE "EMERGENCY" HEAT CAPABILITY. THE FIRST STAGE OF HEATING SHALL CONTROL THE HEAT PUMP. THE SECOND STAGE OF HEATING SHALL CONTROL THE ELECTRIC RESISTANCE BASE-BOARD IN THE SAME ROOM AS THE HEAT PUMP. PROVIDE HEAT PUMP WITH 24 VOLT INTERFACE MODULE AS NECESSARY. DO NOT LOCK OUT THE HEAT PUMP OR THE ELECTRIC HEAT.

MARK	MANUFACTURER	MODEL #	VOLTS	PH	WATTS	AMPS	LENGTH (IN)	NOTES				
EB-1	CADET	4F1000W	240	1	1,000	-	48	1				
EB-2	CADET	3F750W	240	1	750	-	36	1				
EB-3	CADET	2F350W	240	1	350	-	24	1				
-	-	-	-	-	-	-	-	-				
NOTES: 1. PROVIDE WITH WALL MOUNTED THERMOSTAT. COORDINATE POWER WITH ELECTRICAL. RESTRICT HEATING SETTING FROM BEING SET ABOVE COOLING SETTING.												

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	WASTE	VENT	НОТ	COLD	DESCRIPTION
BA-1	TUB / SHOWER	3"	1-1/2"	1/2"	1/2"	MOEN COMMERCIAL SINGLE HANDLE POSI-TEMP FAUCET, MODEL #T8389EP15, WITH MOEN POSI-TEMP PRESSURE BALANCING VALVE, MODEL #8371HD. SET DISCHARGE TEMPERATURE TO 110°F MAX. COORDINATE WITH GENERAL CONTRACTOR FOR INSTALLATION OF BASE. LEFT HAND AND RIGHT HAND DRAIN VARIES PER UNIT. FIELD VERIFY PRIOR TO ORDERING.
L-1	LAVATORY (ADA)	1-1/4"	1-1/4"	1/2"	1/2"	LAVATORY WITH INTEGRAL BOWL BY OTHERS. PROVIDE PROFLO CHROME SINGLE HANDLE LAVATORY FAUCET WITH POP-UP DRAIN, MODEL #PFWSC4746SCP, 1.2 GPM, 4" CENTERSET INSTALLATION. PROVIDE WITH 0.5 GPM AERATOR INSERT, PART NUMBER PFX14320. PROVIDE CAST BRASS CHROME PLATED OPEN GRID PO PLUG, MODEL #155A.
S-1	KITCHEN SINK	1-1/2"	1-1/4"	1/2"	1/2"	PROFLO DOUBLE BOWL STAINLESS STEEL SINK, MODEL #PFSR332263. EACH BOWL SIZE IS 14" WIDE BY 15-3/4" FRONT TO BACK BY 6-1/8" DEEP, 33" X 22" OVERALL, WITH (3) HOLES AT 4" CENTERS FOR FAUCET MOUNTING. PROVIDE WITH PROFLO CHROME SINGLE HANDLE KITCHEN FAUCET, MODEL #PFXC3101CP, 1.5 GPM FLOW RATE, AND METAL LEVER HANDLE. PROVIDE WITH DEARBORN BRASS 12 LOCKING CUP SINK BASKET STRAINERS.
S-2	LAUNDRY SINK	1-1/2"	1-1/4"	1/2"	1/2"	EXISTING SINK TO REMAIN. PROVIDE PROFLO TWO HANDLE LAUNDRY FAUCET, MODEL #PF244A, 2.4 GPM FLOW RATE, AND METAL LEVER HANDLE.
WC-1	FLOOR MOUNTED WATER CLOSET (ADA)	3"	1-1/2"	-	1/2"	AMERICAN STANDARD CADET PRO RIGHT HEIGHT ELONGATED TOILET, MODEL #215AA.104, WHITE VITREOUS CHINA, FLOOR MOUNTED, 1.28 GAL. FLUSH, 16-1/2" HIGH BOWL RIM HEIGHT. PROVIDE WITH PROFLO SLOW CLOSE ELONGATED PLASTIC TOILET SEAT WITH EASY CLEAN, MODEL #PFTSEC2000.
WH-2	WATER HEATER (GAS)	-	-	3/4"	3/4"	STATE PROLINE XE POWER DIRECT VENT, 40-GALLON COMMERCIAL-GRADE RESIDENTIAL GAS WATER HEATER, MODEL #GS6 40 YBPDS. 40,000 BTUH INPUT, 0.68 ENERGY FACTOR, 74 GALLON FIRST HOUR RATING, 45 GPH RECOVERY AT 90° RISE. 22" DIAMETER, 29-7/8" OVERALL DEPTH, 59" OVERALL HEIGHT. PROVIDE WITH DRAIN PAN AND NEW COMBUSTION AIR INTAKE PIPE. CONNECT TO EXISTING FLUE PIPE.

					OL	ITDO	DOR U	INIT												
			COOLING CAPACITY				HEATING CAPACITY						E	LECT	RICA	L				
											С	OMPR	ESS	SOR						
MARK	MANUFACTURER	MODEL	Nominal (MBH)	AMBIENT TEMP. (°F)	SEER	EER	NOMINAL (MBH)	AMBIENT TEMP. (°F)	СОР	HSPF	QTY	VOLTAGE	PHASE	RLA	VOLTAGE	PHASE	MCA	MOCP	UNIT WEIGHT (LBS)	NOTES
							23.0	47	3.9											
HP-1	CARRIER	38MGRQ24C3	24.0	95	23.0	12.5	23.0	5	2.1	10.0	1	240	1	-	240	1	25	30	150	1
							17.6	-14	-											
NOTES: 1. UNITS MAY BE SUBSTITUTED WITH EQUIVALENT BYANT UNITS OR APPROVED EQUAL. PROVIDE WITH MOUNTING BASE AS NECESSARY PER FIELD CONDITIONS. COORDINATE WITH ELECTRICAL FOR POWER REQUIREMENTS AND LOCAL DISCONNECT.																				

EXHAUST FAN SCHEDULE S.P. IN WATER VOLTAGE POWER SOUND (W) (SONES) MODEL # CFM NOTES QTXE080FLT

50 0.25 120 23.3 0.3 2,3,4

E WITH BROAN RADIATION DAMPER, MODEL #RDM1. E WITH BROAN PREMIUM RADIATION DAMPER, MODEL #RDFQL.

ST FAN WITH INTEGRAL LIGHT. H WITH EXHAUST FAN TIMER SWITCH, EATON 9590AW OR EQUAL. TIMER SWITCH TO HAVE JTE AND 1 HOUR SETTINGS AT MINIMUM. INSTALLATION BY ELECTRICAL CONTRACTOR.

SPLIT SYSTEM HVAC UNIT SCHEDULE

ELECTRIC BASEBOARD HEAT

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