

MECHANICAL SPECIFICATION

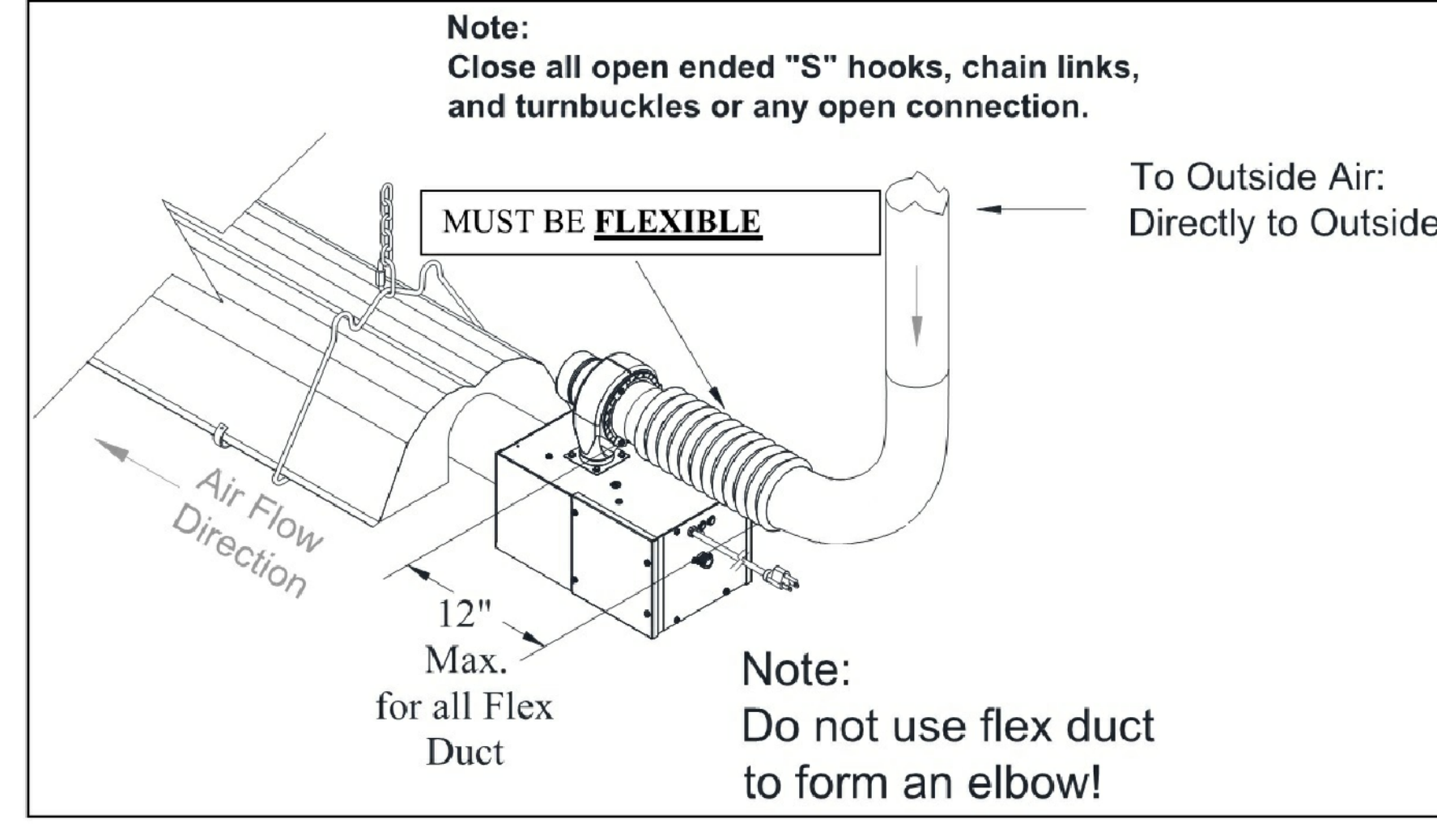
- GENERAL
 - CONTRACTOR TO VISIT JOBSITE DURING TENDER. DRAWINGS INDICATE APPROXIMATE LOCATION OF EXISTING MECHANICAL EQUIPMENT AND SERVICES. VERIFY EXACT LOCATIONS OF EXISTING MECHANICAL EQUIPMENT AND SERVICES AND ALLOW FOR NECESSARY RELOCATING OR NOTED SERVICES (OR RECONNECTION TO EXISTING SERVICES) TO SUIT NEW CONSTRUCTION.
 - ALL WORK SHALL CONFORM TO MANITOBA BUILDING CODE AND LOCAL ORDINANCES. APPLY FOR, OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
 - INSTALLATION OF WORK SHALL BE SCHEDULED SO AS NOT TO ENDOANGER OR DISTURB THE CITY OR USERS OF THE BUILDING. SHUTDOWN OF EXISTING BUILDING SYSTEMS SHALL BE COORDINATED WITH THE CITY REPRESENTATIVE.
 - MECHANICAL CONTRACTOR SHALL PERFORM COORDINATION OF MECHANICAL DIVISION INSTALLATION WITH ALL RELATED CONTRACTORS. VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT AND SERVICES PRIOR TO PROCEEDING WITH WORK.
 - ALL INTERIOR SPACE POWER HAMMERS, DRILLING AND OTHER "NOISY" WORK SHALL BE COORDINATED WITH THE CITY PRIOR TO BEGINNING.
 - TENDER SHALL BE BASED ON THE USE OF SPECIFIED EQUIPMENT. UNLESS ACCEPTANCE FOR THE USE OF EQUAL MANUFACTURERS IS IN ACCORDANCE WITH B7 AND OBTAINED FROM THE CONTRACT ADMINISTRATOR PRIOR TO BID SUBMISSION, ALTERNATE MANUFACTURERS MAY BE QUOTED AS AN INCREASE OR DECREASE AMOUNT TO THE BID SUBMISSION, WITHOUT PRIOR ACCEPTANCE OF THE CONTRACT ADMINISTRATOR.
 - SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT TO CONTRACT ADMINISTRATOR. FOR SHOP DRAWINGS SUBMITTED ELECTRONICALLY, INCLUDE CONTRACT ADMINISTRATOR PROJECT NAME AND NUMBER IN SUBJECT LINE OF EMAIL TO CONTRACTADMIN@SMSNG.COM. ALLOW 10 BUSINESS DAYS FOR THE REVIEW AND PROCESSING OF SHOP DRAWINGS.
 - REQUEST FOR INTERPRETATION (RFI):
 - FOR RFIS SUBMITTED ELECTRONICALLY, INCLUDE CONTRACT ADMINISTRATOR PROJECT NAME AND NUMBER IN THE SUBJECT LINE OF EMAIL TO CONTRACTADMIN@SMSNG.COM
 - CONTENT OF THE RFI: INCLUDE A DETAILED DESCRIPTION OF THE ITEM NEEDING INTERPRETATION AND PROPOSED SOLUTION.
 - ALLOW 10 BUSINESS DAYS FOR THE REVIEW AND PROCESSING OF RFIS.
 - LESS THAN ONE YEAR GUARANTEE (FROM PROJECT SUBSTANTIAL COMPLETION) FOR ALL EQUIPMENT AND WORKMANSHIP.
 - ALL CONNECTIONS TO EXISTING BUILDING MECHANICAL SERVICES SHALL BE COORDINATED WITH THE CITY REPRESENTATIVE.
 - ALL NECESSARY CUTTING AND PATCHING SHALL BE PERFORMED BY COMPETENT CONTRACTOR EMPLOYED BY MECHANICAL CONTRACTOR TO SATISFACTION OF THE CITY REPRESENTATIVE.
 - ALL DUCTWORK AND PIPING TO BE INSTALLED STRAIGHT, PARALLEL TO THE BUILDING WALLS.
 - WHERE PIPES OR DUCTS GO THROUGH AN EXTERIOR ROOF OR WALL, THEY SHOULD BE ROOFED-IN, FLASHED AND WATERPROOFED. ALLOW FOR EXPANSION AND CONTRACTION OF PIPE.
 - PIPE HANGERS SHALL BE ANVIL FIG. 86 FOR STEEL PIPE AND FIG. C755 FOR COPPER PIPE. ALL WITH FIG. 140 THREADED ROD ATTACHED TO FIG. 117 EXPANSION CASE SET IN HOLES DRILLED IN CONCRETE, OR ATTACHED TO FIG. 225 OR 227 CLAMP ATTACHED TO JOISTS OR BEAMS.
 - WHERE PIPES OR HOLES AND/OR OPENINGS IN EXISTING STRUCTURE, CONTRACTOR SHALL RETAIN SERVICES OF NATIONAL TESTING LABORATORIES LIMITED TO LOCATE AND MARK ALL STRUCTURAL REINFORCING STEEL LOCATED AREA WHERE CUTTING OR DRILLING IS PROPOSED. AT THE SAME TIME REINFORCING STEEL BE CUT WITHOUT PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER QUALIFIED AND LICENSED TO PRACTICE IN PROVINCE OF MANITOBA. NO HOLES OR OPENINGS WILL BE PERMITTED WITHIN AREA OF STRUCTURAL DROP PANELS LOCATED AT COLUMNS.
 - FURNISH TO THE CITY THREE (3) COMPLETE SETS OF MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT REQUIRING MAINTENANCE. REVIEW INSTRUCTIONS WITH THE CITY REPRESENTATIVE TO ENSURE A THOROUGH UNDERSTANDING OF THE SYSTEM'S OPERATION.
 - PROVIDE A MARK-UP OF THE CONTRACT DRAWINGS FOR RECORD "RECORD DRAWINGS" REVISIED AS TO SHOW ANY CHANGES THAT ORIGINALLY SHOWN. RECORD DRAWINGS TO BE KEPT ON SITE AND UPDATED WEEKLY. CONTRACT ADMINISTRATOR WILL REVIEW PROGRESS DURING SITE OBSERVATIONS.
 - AT COMPLETION OF PROJECT PROVIDE RECORD DRAWINGS IN AUTOCAD 2013 FORMAT. COMPLETE WITH DESK PAD FOR BY MECHANICAL CONTRACTOR.
 - ALL EXTERIOR MATERIAL IN CEILING SPACE UNRELATED TO NEW AND REVISED WORK SHOWN, INCLUDING PIPING, CONTROL TUBING, DUCTWORK, ETC. SHALL BE REMOVED.
 - PROVIDE FIRESTOPPING FOR ALL OPENINGS IN FIRE SEPARATIONS FOR PASSAGE OF PIPES, DUCTS, ETC. TO MAINTAIN INTEGRITY OF FIRE SEPARATIONS AS PER MANUFACTURER'S PRINTED RECOMMENDATIONS.
 - ALL WIRING FOR EQUIPMENT SPECIFIED HEREIN SHALL BE BY THE ELECTRICAL SUBCONTRACTOR, UNLESS OTHERWISE NOTED.
 - MECHANICAL CONTRACTOR SHALL REVIEW ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTION WITH ELECTRICAL SUBCONTRACTOR AND DIVISION 26 DRAWINGS PRIOR TO ORDERING EQUIPMENT. ENSURE PROPER ELECTRICAL CHARACTERISTICS ARE DETERMINED FOR ALL AFFECTED AND RELATED WORK.
 - WHERE MECHANICAL SERVICES ARE CONCEALED WITHIN WALLS, FLOORS OR CEILINGS AND CANNOT BE VISIBLY IDENTIFIED, PROVIDE ELECTRIC SCANNING DEVICES OR OTHER APPROVED MEANS TO LOCATE AND IDENTIFY CONCEALED SERVICES PRIOR TO WORK START. MAKE GOOD ANY DAMAGE TO EXISTING MECHANICAL SERVICES AT NO COST TO THE CONTRACT.
- PLUMBING
 - PROVIDE LABOUR, MATERIAL, EQUIPMENT AND SERVICES NECESSARY FOR AND INCIDENTAL TO SUPPLY AND INSTALLATION OF SYSTEMS SHOWN ON DRAWINGS. GENERALLY THIS SHALL INCLUDE:
 - NATURAL GAS PIPING SYSTEMS.
 - NATURAL GAS PIPING
 - ALL WORK SHALL COMPLY WITH CANADIAN NATIONAL STANDARD OF CANADA, NATURAL GAS AND PROPANE INSTALLATION CODE 948. (LATEST REVISION, COMPLETE WITH MANITOBA OFFICE OF THE FIRE COMMISSION GAS NOTICES, AND SHALL BE PERFORMED BY FULLY QUALIFIED GAS FITTERS AND/OR WELDERS LICENSED TO PRACTICE IN PROVINCE OF MANITOBA.
 - ALL PIPING AND FITTINGS TO BE MANUFACTURED IN EITHER CANADA OR THE USA.
 - NATURAL GAS PIPING
 - PIPE SHALL BE SCHEDULE 40 BLACK STEEL PIPE EQUAL TO ASTM A-53 GRADE B.
 - FITTINGS
 - UP TO 2" NPS:
 - SCREWED FITTINGS - 150 PSI STANDARD BLACK MALLEABLE IRON BANDED.
 - SOCKET WELD FITTINGS - 2500 PSI FORGED STEEL.
 - UNIONS - 100 PSI BRASS TO IRON SEAT.
 - CLEANING AND FLUSHING
 - ON SYSTEM INSTALLATION COMPLETION, FLUSH OUT PIPING SYSTEM TO REMOVE ANY FOREIGN MATERIAL IN PIPING.
 - TESTING
 - PRESSURE TEST ALL PIPING SYSTEMS AS FOLLOWS:
 - NATURAL GAS SYSTEMS - IN ACCORDANCE WITH LOCAL REGULATIONS.
 - EQUIPMENT
 - NATURAL GAS PIP
 - DIRECT-OPERATED, SPRING LOADED.
 - 20 PSI TO 7.14" W.C.
 - FISHER CAS-90 SERIES.
 - GAS-FIRED RADIANT HEATERS
 - SUPPLY AND INSTALL SUPERIOR RADIANT SRP U SERIES INFRARED RADIANT HEATERS.
 - CONSTRUCT AND CERTIFY GAS FIRED RADIANT HEATERS IN ACCORDANCE WITH LATEST EDITION 293.6 "GAS-FIRED INFRARED HEATERS" INCLUDING ALL CURRENT SUPPLEMENTS.
 - INSTALL SYSTEM IN ACCORDANCE WITH C223.1 FUEL GAS CODE.
 - EQUIPMENT
 - REFLECTOR DESIGN: REFLECTOR SHALL BE 10-DEGREE REFLECTOR DESIGN REFLECTING VIRTUALLY 100% OF THE INFRARED ENERGY OUT AND AWAY FROM THE EMITTER TUBES. REFLECTOR SHALL BE DEEP DISH, 10% EFFICIENT, MILL-FINISHED ALUMINUM, ASTM 1100, .024 INCH THICKNESS ALUMINUM SHEET METAL WITH TWO REFLECTOR SUPPORT BRACKETS FOR EACH 10 FEET SECTION. REFLECTOR SECTION SHALL INCORPORATE A WELDED, 11 GAUGE STEEL, 4-BOLT FLANGE TO ORIENT THE BURNER TO THE TUBE AS DESIGNED.
 - COUPLINGS: SHALL BE 16 GAUGE ALUMINIZED STEEL, MINIMUM 12 INCHES IN LENGTH AND BE OF HEAVY DUTY DESIGN INCORPORATING TWO 1/2 INCH WIDE DRAW BANDS.
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 - REFLECTOR EXTENSION SHIELDS: WHEN CALLED FOR IN THE CONTRACT DOCUMENTS, REFLECTOR EXTENSIONS SHALL BE THE SAME MATERIAL AS REFLECTORS, ARRANGED FOR FIXED CONNECTION TO COVER REFLECTOR UP AND INCORPORATE RIGID SUPPORT TO PROVIDE 100 PERCENT CUTOFF OF DIRECT RADIATION FROM TUBING AT ANGLES GREATER THAN 30 DEGREES FROM VERTICAL.
 - REFLECTOR END CAPS: SHALL BE FITTED TO THE END OF EACH REFLECTOR RUN TO REDUCE CONVECTIVE HEAT LOSS, AND SHALL BE STANDARD EQUIPMENT.
 - HANGERS: HEAVY DUTY, MINIMUM 1/2 INCH, CHROME PLATED, WIRE-FORMED HANGERS SHALL BE INCLUDED AS STANDARD. STAINLESS STEEL HANGERS SHALL BE AN APPROVED ALTERNATE. HANGERS SHALL ALLOW FOR THE REFLECTOR UP TO 45 DEGREES FROM HORIZONTAL CENTERLINE OF THE HEAT EXCHANGER.
 - BURNER: SHALL BE A POSITIVE PRESSURE BURNER SYSTEM WHERE EXHAUST GASES AND OTHER PRODUCTS OF COMBUSTION ARE NOT ROUTED THROUGH THE BLOWERS. THE BURNER SHALL OPERATE AT A MINIMUM GAS INLET PRESSURE OF 5.0 INCHES W.C. (NATURAL GAS) OR 11.5 INCHES W.C. (PROPANE) AND DRAW NO MORE THAN 1 AMP AT 120VAC 60HZ.
 - BURNER HEAD SHALL BE CHROME PLATED STEEL.
 - BURNER OPERATION CONTROLS SHALL BE FACTORY ASSEMBLED, PIPED, AND WIRED. GAS AND ELECTRIC CONTROLS SHALL BE SEPARATED FROM THE COMBUSTION AIR STREAM.
 - BURNER SAFETY CONTROLS:
 - GAS CONTROL VALVE SHALL BE A PROPORTIONAL, REGULATED, REDUNDANT 2/3VAC ELECTRIC GAS VALVE, INCORPORATING A PRESSURE REGULATOR AND MANUAL SHUTOFF ALL IN ONE BODY.
 - CONTROL PANEL INTERLOCK: BURNER SHALL BE SERVICEABLE WHILE SYSTEM IS RUNNING WITH NO REQUIREMENTS FOR SAFETY INTERLOCK.
 - INTERNAL AIR PRESSURE SWITCHES SHALL PROVIDE FOR AIR PROVING AND SHALL MONITOR ADEQUATE INLET AIR AND FLOW VOLUME.
 - INDICATOR LIGHTS: BURNER ON AND RUN INDICATOR LIGHTS SHALL BE STANDARD EQUIPMENT.
 - BURNER IGNITION SYSTEM: SHALL BE DIRECT SPARK (DS) WITH GAS IGNITION AND FLAME PROVING TAKING PLACE WITHIN THE MAIN BURNER CUP FOR RELIABILITY. IGNITERS THAT TRAVERSE THE GAS STREAM ADD TURBULENCE TO THE BURNER FLAME AND SHALL NOT BE ALLOWED. DSI IGNITION CONTROL SHALL:
 - PROVIDE F-3 TRIALS FOR IGNITION BEFORE LOCKOUT.
 - RECYCLE AGAIN IN ONE HOUR AFTER LOCKOUT, WITH 3 SUBSEQUENT TRIALS FOR IGNITION.
 - PROVIDED A LIGHTED DIAGNOSTIC DISPLAY CAPABILITY.
 - PROVIDE OPENLY ACCESSIBLE SENSE CURRENT MEASUREMENT CONTACTS WITHIN THE HOUSING.
 - PROVIDE A STANDARD BLOWER POST PURGE FUNCTION WHEN CALLED FOR IN THE CONTRACT DOCUMENTS.
 - ACCEPT 24V THERMOSTAT WIRING
 - FOR MODEL LUX, THE IGNITION CONTROL SHALL BE POTTED TO SEAL AGAINST MOISTURE AND CONTAMINATION.
 - AIR BLOWER MOTOR SHALL BE PERMANENT SPLIT CAPACITOR (PSC) TYPE, TOTALLY ENCLOSED REQUIRING NO OILING AND SHALL BE EQUIPPED WITH A THERMAL OVERLOAD SWITCH ELECTRICAL SUPPLY: 120V, 60HZ, 3PH, 3.3A.
 - SECURE BURNER FASTENING: HANGER SHALL BE INCORPORATED CHROME PLATED FASTENING MEANS TO SECURE BURNER AND PREVENT ROTATION ABOUT THE CENTERLINE AND OF THE HEAT EXCHANGER OVER TIME.
 - COMBUSTION AIR CONNECTION: DUCT CONNECTION TO BURNER FOR COMBUSTION AIR TO BE DRAWN DIRECTLY FROM OUTSIDE OR INSIDE SHALL BE PROVIDED AS FACTORY STANDARD.

- HEATERS SHALL BE FACTORY DESIGNED AND APPROVED TO OPERATE ON EITHER NATURAL GAS (NG) OR LIQUID PROPANE GAS (LPG) AS CALLED FOR IN THE CONTRACT DOCUMENTS.
- PRODUCTS:
 - CW INTENSITY SINGLE STAGE INFRARED TUBE HEATERS: HEAVY DUTY INDUSTRIAL COMMERCIAL INFRARED HEATER FEATURING THE BEST OVERALL PERFORMANCE IN THE INDUSTRY. FINISH OPTIONS ARE CASING, POLYURETHANE, OR CONDUIT. CONTRACT DOCUMENTS WITHIN THE RANGE OF 40 MBH TO 220 MBH, 100% EFFICIENT REFLECTOR TUBING SHALL BE AS CALLED FOR IN THE CONTRACT DOCUMENTS. DETERMINED BY INDEPENDENT LAB TESTING TO ENH162 STANDARD, Baffles REQUIRED AS PER MANUFACTURER'S INSTRUCTIONS.
 - PROVIDER SHALL BE RESPONSIBLE FOR THE DESIGN OF MODEL UA (SEALED BLOWER DESIGN), MODEL UX (ENCLOSED BURNER DESIGN), OR MODEL UR (ENCLOSED BURNER DESIGN) WITH MINIMUM 50% RADIANT FACTOR AS DETERMINED BY INDEPENDENT LAB TESTING TO ENH162 STANDARD, Baffles REQUIRED AS PER MANUFACTURER'S INSTRUCTIONS.
- INPUT RATE SHALL BE AS CALLED FOR IN THE CONTRACT DOCUMENTS WITHIN THE RANGE OF 40,000 TO 220,000 BTU/H.
- TUBE LENGTH SHALL BE AS CALLED FOR ON THE CONTRACT DOCUMENTS WITHIN THE RANGE OF 10 FEET (3048 MM) TO 70 FEET (21336 MM), REFERS TO DRAWING SCHEMATIC.
- RECOMMENDED RANGE OF MINIMUM HANGING HEIGHTS SHALL BE 10 FEET TO 20 FEET (3048 TO 6096 MM) AS CALLED FOR IN THE CONTRACT DOCUMENTS.
- BURNER OPERATION:
 - OTHER LOW INTENSITY RADIANT HEATERS OF EQUAL OR GREATER THERMAL EFFICIENCY AND WITH THE SAME OR LOWER BURNER FIRING RATE CAPACITY, AND WITH THE RADIANT DISTRIBUTION PATTERN SHOWN ON DRAWING MAY BE ACCEPTABLE PROVIDED THEY MEET THE INTENT OF THESE SPECIFICATIONS AND PRIOR APPROVAL IN WRITING IS OBTAINED FROM THE CONTRACT ADMINISTRATOR AT LEAST TWENTY (20) DAYS BEFORE THE BID DATE. IF SUCH SYSTEMS ARE APPROVED, THE CONTRACTOR ASSUMES RESPONSIBILITY FOR THE DESIGN, PERFORMANCE AND EXPENSE OF SAME. THE REDESIGNED SYSTEM, GAS PIPING, AND ELECTRIC WIRING SHALL BE DONE BY A REGISTERED MECHANICAL CONTRACT ADMINISTRATOR. SHOP DRAWINGS OF THE ENTIRE NEW SYSTEM SHALL BE PROVIDED BY THIS CONTRACTOR. THE CONTRACTOR SHOULD STATE THE AMOUNT TO BE CREDITED TO THE CITY OF WINNIPEG DUE TO THIS SUBSTITUTION.
 - WHERE APPROVED SUBSTITUTES ARE USED, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR AND RISK OF ANY DAMAGE TO THE HEAT EXCHANGERS. THIS RESPONSIBILITY EXTENDS TO COVER ALL EXTRA WORK AS NECESSITATED BY OTHER TRADES AS A RESULT OF THE SUBSTITUTIONS.
 - THE CONTRACTOR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE ANY MATERIAL OR EQUIPMENT WHICH DOES NOT MEET THE SPECIFICATIONS OF THE DRAWINGS OR WHICH DOES NOT ALLOWING FOR THE FIELD WORK SHALL BE COMPLETED IMMEDIATELY WITHOUT COST OR INCONVENIENCE TO THE CITY OF WINNIPEG.
- FIELD QUALITY CONTROL:
 - START-UP, START-UP, TEST, AND ADJUST GAS FIRED, RADIANT HEATERS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND LOCAL REGULATIONS AND UTILITY COMPANY'S REQUIREMENTS. CHECK AND CALIBRATE CONTROLS, ADJUST BURNERS IF APPLICABLE ACCORDING TO MANUFACTURER'S INSTRUCTIONS FOR MAXIMUM EFFICIENCY.
 - PROVIDE AT LEAST 7 DAYS NOTICE.
 - TRAINING: PROVIDE SERVICES OF MANUFACTURER'S TECHNICAL REPRESENTATIVE TO INSTRUCT OPERATING PERSONNEL IN OPERATION AND MAINTENANCE OF GAS FIRED RADIANT HEATER SYSTEMS TO MECHANICAL CONTRACTOR.
 - SCHEDULE INSTRUCTION WITH OPERATING BUILDING THE CITY OF WINNIPEG.
- WARRANTY
 - PROVIDE WRITTEN WARRANTY BY MANUFACTURER, AGREEING TO REPAIR/REPLACE WITHIN WARRANTY PERIOD, COMPONENTS OF GAS FIRED RADIANT SYSTEMS FURNISHED BY MANUFACTURER, WHICH ARE DEFECTIVE IN EITHER MATERIAL OR WORKMANSHIP.
 - MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR HANDLING, INSTALLING, INSPECTING, AND MAINTAINING UNITS HAVE BEEN ADHERED TO DURING WARRANTY PERIODS FOLLOWS:
 - WARRANTY PERIOD: 3 YEAR WARRANTY ON ALL COMPONENTS.
 - WARRANTY PERIOD: 5 YEAR WARRANTY ON HOT ROLLED HEAT EXCHANGER WITHOUT POST PURGE FEATURE.
 - WARRANTY PERIOD: 7 YEAR WARRANTY ON HOT ROLLED HEAT EXCHANGER WITH POST PURGE FEATURE AND ALUMINIZED OR STAINLESS STEEL HEAT EXCHANGER WITH POST PURGE FEATURE.
 - REFER TO RADIANT HEATER SCHEDULE.
 - APPROVED MANUFACTURER: SUPERIOR RADIANT.

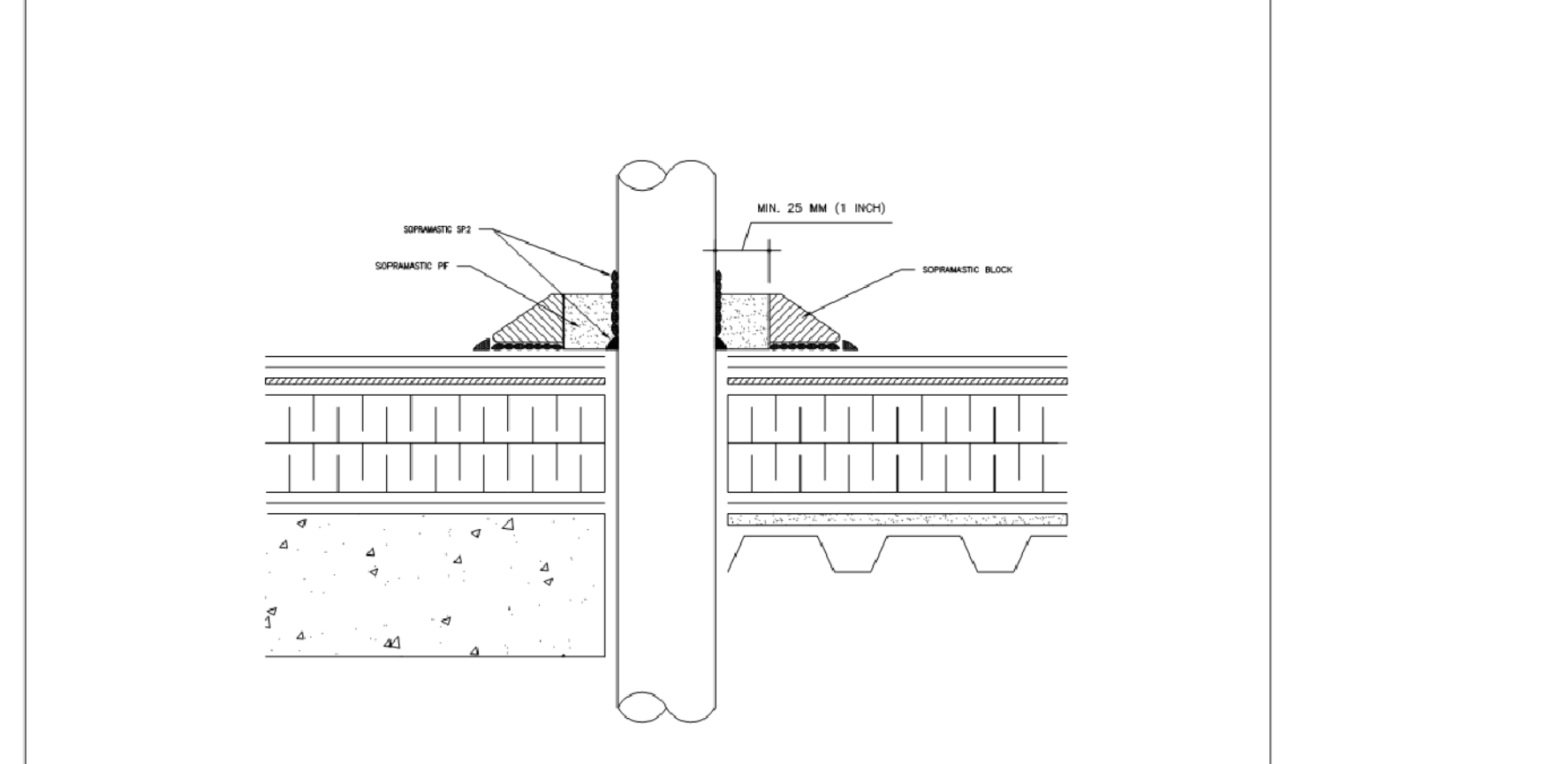
RAPID ROLLING DOOR SPECIFICATION (RRD-X)

- GENERAL
 - DESIGN IS BASED ON THE INDUSTRIAL DOORS INC. MODEL HDC. CONTRACTOR IS RESPONSIBLE FOR ALL STRUCTURAL AND ELECTRICAL REQUIREMENTS IF AN ALTERNATIVE MANUFACTURER IS SELECTED THAT REQUIRES DIFFERENT PROVISIONS THAN SPECIFIED.
- RAPID ROLLING DOOR
 - GENERAL
 - INDUSTRIAL DOORS INC. MODEL HDC, CUSTOM FABRICATED TO SUIT: RRD-1 TO RRD-4 SHALL BE 10'W X 12' H AND RRD-5 SHALL BE 20'W X 14' H CONTRACTOR TO SITE VERIFY DOOR SIZE).
 - INDUSTRIAL DOORS INC. MODEL HDC, RRD-2, RRD-3, RRD-4 AND RRD-5.
 - UNIT TO MEET FLAME AND SMOKE SPREAD REQUIREMENTS OF MANITOBA BUILDING CODE.
 - ROLLING DOOR CURTAIN AND ASSEMBLY, IN THE DOWN POSITION, TO WITHSTAND WINDLOADS OF 18 MPH (32 PSF).
 - ROLLING DOOR TO PROVIDE A NEAR AIRTIGHT SEAL, AND KNOCK-AWAY FEATURE FOR EASY ACCESS TO CURTAIN UNDER EXTREME WINDLOAD CONDITIONS. CONTINUOUS SBR ROLLING DOOR SBR CURTAIN FOR SERVICE TEMPERATURE RANGE OF 40°F TO +180°F (-40°C TO 80°C).
 - DIRECT CONNECT INERTIA BRAKE MOUNTED DIRECTLY ON THE DRIVE BARREL SHAFT OF ALL DOOR SIZES.
 - CURTAIN
 - TWO (2) LAYERS OF STYRENE BUTADIENE RUBBER (SBR) EACH 3 MM (1/8") THICK, 70 DURAMETER; SANDWICHED WITH UP TO 150% POLYESTER COORD CENTRE MATERIAL PROVIDES NORMAL RESILIENCY AND FLEXIBILITY AT TEMPERATURES RANGING FROM 40°F TO +180°F (-40°C TO 80°C).
 - COMPLETE WITH MOLDED NEWGEN6 CURTAIN LOCKS™ THAT ARE MECHANICALLY ATTACHED TO THE VERTICAL EDGES OF THE CURTAIN MATERIAL. THIS RETENTION SYSTEM MAINTAINS AND HOLDS THE CURTAIN IN GUIDES UNDER EXTREME WINDLOAD CONDITIONS. CONTINUOUS SBR WINDLOCK OR MOLDED-IN PLACE TEFLON WINDLOCK DESIGNS WILL NOT BE ACCEPTED.
 - STANDARD COLOR: TO MATCH EXISTING.
 - GUIDES
 - SIDE CURTAIN RETENTION: NEWGEN6 GUIDES SHALL BE ONE-PIECE EXTRUDED ALUMINUM TO FORM A SLOT OF SUFFICIENT DEPTH TO ALLOW THE NEWGEN6 CURTAIN LOCK™ TO MOVE FREELY IN THE GUIDES AT ALL TIMES. ALUMINUM MEMBERS ARE TO BE OF SUFFICIENT THICKNESS AND RIGIDITY TO MAINTAIN THE NEWGEN6 CURTAIN LOCK™ WITHIN THE GUIDES AT PRESSURES UP TO 0.98 KPA (20 PSF), WHILE ENABLING THE NEWGEN6 CURTAIN LOCK™ TO RELEASE DURING IMPACTS THAT GENERATE PRESSURES BEYOND 0.98 KPA (20 PSF), BOLTED OR SPRING-LOADED GUIDES ARE NOT ACCEPTABLE.
 - SIDE FRAME: MOUNTING STEEL ANGLE IS PROVIDED FOR INSTALLATION DIRECTLY ONTO CONCRETE OR STEEL DOOR FRAMING. ADDITIONAL CUSTOMIZATION OF DOOR FRAME IS NOT REQUIRED.
 - BOTTOM BAR
 - BOTTOM BAR SHALL EXTEND THE FULL WIDTH OF THE CURTAIN, SUFFICIENT TO MAINTAIN THE BOTTOM EDGE OF THE CURTAIN PARALLEL TO THE DOOR THRESHOLD AT ALL TIMES. THE BOTTOM BAR SHALL BE CONSTRUCTED OF TWO STEEL ANGLES BOLTED TOGETHER AND SHALL HAVE A KNOCK-AWAY SECTION TO REDUCE RISK OF DAMAGE DURING ACCIDENTAL IMPACTS AND PROVIDE EASY ACCESS TO STRAINING, ALLOWING FOR SPRING RE-ASSEMBLY.
 - ROLL-UP SYSTEM
 - CURTAIN SHALL BE ROLLED ON A BARREL OF SUFFICIENT SIZE TO CARRY THE DOOR LOAD WITH A DEFLECTION OF NOT MORE THAN 2.5 MM (0.1") PER FOOT OF OPENING WIDTH. BOTH THE DRIVE BARREL SHAFTS ARE TO BE CONSTRUCTED OF MINIMUM 38MM (1 1/2") C1018 COLD ROLLED STEEL SHAFTS.
 - DOOR SHALL BE DESIGNED TO OPERATE SAFELY WITHOUT THE USE OF A COUNTERBALANCE SYSTEM. A DIRECT CONNECT INERTIA BRAKE SHALL BE MOUNTED DIRECTLY ON THE DRIVE BARREL SHAFT OF ALL DOOR SIZES. ENGAGEMENT OF THE INERTIA BRAKE SHALL DISABLE THE MECHANICAL CONTROL CIRCUIT. A CHAIN-HOIST INERTIA BRAKE IS NOT ACCEPTABLE.
 - THE IDLER BARREL SHALL BE CONSTRUCTED OF 102MM (4") O.D. ROUND H.S.S. STRUCTURAL TUBING WITH A MINIMUM WALL THICKNESS OF 3.0MM (1/8") AND SUPPORTED BY 32MM (1 1/4") C1018 COLD ROLLED STEEL SHAFTS AT EITHER END. IDLER MUST BE GUIDE MOUNTED NOT END BRACKET MOUNTED FOR PROPER TRACKING OF CURTAIN INTO NEWGEN6 GUIDES.
 - END BRACKETS ARE CONSTRUCTED OF 10MM (3/8") HOT ROLLED STEEL. PLATE MOUNTED HEAVY-DUTY SELF-ALIGNING BEARINGS WITH CURTAIN HOUSINGS TO SUPPORT THE DRIVE BARREL. BEARINGS SHALL BE LOAD-RATED AT 2540 KG (5600 LBS). TOP AND BOTTOM WITH G336 18% LBS/STY.
 - WELDED TRUSS SHALL BRACE ENDPLATES TOGETHER AT THE TOP AND BOTTOM WITH C3 X 3 CHANNEL AND 2" X 1/4" FLATBAR DIAGONAL BRACE.
 - REVERSING EDGE
 - EQUIP DOOR WITH REVERSING SENSING EDGE TO STOP AND REVERSE DOOR TO MANUFACTURER'S STANDARD. A 1/8" THICK EPDM RUBBER LOOP SHALL WRAP THE REVERSING EDGE. BOTH THE REVERSING EDGE AND RUBBER LOOP MUST BE REPLACEABLE WITHOUT REMOVING THE BOTTOM BAR FROM THE CURTAIN.
 - ACCESSORIES
 - NEW TRAFFIC LIGHTS AS NOTED ON DRAWINGS.
 - LOOP DETECTOR AS NOTED ON DRAWINGS.
 - PROGRAMMING FOR SEQUENCE OF OPERATION.
 - GUIDE MOUNTED WINDOW.
 - INTERIOR MOUNT ON EXTERIOR WALL.
 - NEEMA EXTERIOR WALL PHOTOEYES FOR DOOR CLOSING.
 - WINDOWS ON RRD-3 AND RRD-4 (MINIMUM HEIGHT OF 24" AROUND ENTIRE WIDTH OF DOOR).
 - CONSTRUCTION
 - DOORS: CONSTRUCTED OF STEEL, ALUMINUM AND SBR RUBBER/WOOD CURTAIN.
 - STRUCTURAL ELEMENTS: ASSEMBLED BY WELDING OR BY MECHANICAL FASTENERS.
 - OPERATION OF DOOR
 - DOORS SHALL BE EQUIPPED FOR OPERATION BY:
 - MANUAL CHAIN HOIST
 - MANUAL CHAIN HOIST
 - DOORS SHALL BE OPERATED PER GROUND LOAD OPENS AND PHOTO EYE CLOSERS.
 - RRD-5 SHALL BE SUITABLE FOR TRAFFIC ON BOTH WAYS.
 - MANUAL OPERATION
 - EMERGENCY MANUAL CHAIN HOIST SHALL BE PROVIDED TO ALLOW MANUAL DOOR OPERATION.
 - CHAIN HOIST SHALL BE OF SUFFICIENT CAPACITY TO OPERATE A DOOR AT A MAXIMUM FULL REQUIREMENT OF 9114 KG (20 TO 30 LBS). THE STATIC LOAD ON THE HAND CHAIN TO HOLD THE DOOR IN ANY POSITION MUST NOT EXCEED 5 KG (11 LBS).
 - ELECTRICAL OPERATION
 - ELECTRIC DOOR OPERATORS SHALL BE CSAUL APPROVED, MODEL HG, HIGH RPM, HEAVY-DUTY GEARHEAD TYPE CW PRE-WIRED, NUMBER CODED CONTROL CABINET AS REQUIRED, TO MANUFACTURER'S STANDARD. PANEL ENCLASURE SHALL BE NEMA-4 RATING.
 - MOTOR TO BE TEJFC, HIGH-STARTING TORQUE, FLANGE & FOOT MOUNT, HOIST-TYPE, OPERATING THROUGH A PARALLEL HELICAL GEAR REDUCER MECHANISM. THE GEAR REDUCER IS MOUNTED ON A HEAVY-DUTY BASE OF 5/16" STEEL.
 - MOTOR AND BRACKETING TO BE OF CAPACITY TO OPEN DOOR AT SPEED OF 16" PER SECOND AND CLOSE DOOR AT SPEED OF 17" PER SECOND, RATED FOR 30% 3PH.
 - OPERATOR SHALL BE EQUIPPED WITH ROTARY SCREW-TYPE LIMIT SWITCHES TO CONTROL OPEN AND CLOSE DOOR OPERATIONS AS WELL AS AN ELECTRO-MECHANICAL BRAKE SYSTEM TO STOP AND HOLD DOOR IN ANY POSITION TO MANUFACTURER'S STANDARDS.
 - OPERATOR SHALL BE EQUIPPED WITH BUILT-IN MANUAL EMERGENCY CHAIN HOIST. BUILT-IN ELECTRICAL INTERLOCK SHALL PREVENT MOTOR OPERATION DURING USE OF MANUAL CHAIN HOIST.
 - CONTROL PANEL:
 - PANEL ENCLOSURE SHALL BE NEMA-4 WATER PROOF AND WIRING SHALL BE COMPLETED BY MANUFACTURER AND SHALL BE LISTED. DRIVE SYSTEM SHALL BE CONTROLLED BY PROGRAMMABLE LOGIC CONTROLLER (PLC) OR INVERTER DRIVE FOR SOFT START AND SOFT STOP DOOR OPERATION. MOTOR CONTROL BY A REVERSING CONTACTOR IS NOT ACCEPTABLE. OPTIONAL CUSTOM DESIGNED CONTROL SYSTEM AND/OR COMPONENTS ARE AVAILABLE.
 - CONTROL PANEL SHALL HAVE ADJUSTABLE CLOSING TIMER, THREE PUSH BUTTONS FOR OPEN, CLOSE AND STOP FUNCTIONS AND A CYCLE COUNTER.

Gas Fired Radiant Heaters						
NO.	LOCATION	MANUFACTURER	MODEL	LENGTH (Feet)	INPUT (MBH)	OPTIONS
H 53	Service Bay	Superior Radiant	UA	40 ft long U shape, 20 ft on each tube	150	c/w lower radiant shield for coverage distance on tube. Provide remote black bulb sensor and thermostat. Mount sensor per manufacturer's requirements.
H 54	Service Bay	Superior Radiant	UA	40 ft long	150	c/w lower radiant shield for coverage distance on tube. Provide remote black bulb sensor and thermostat. Mount sensor per manufacturer's requirements.
H 55	Service Bay	Superior Radiant	UA	40 ft long	150	c/w lower radiant shield for coverage distance on tube. Provide remote black bulb sensor and thermostat. Mount sensor per manufacturer's requirements.
H 56	Service Bay	Superior Radiant	UA	60 ft long	150	c/w lower radiant shield for coverage distance on tube. Provide remote black bulb sensor and thermostat. Mount sensor per manufacturer's requirements.
H 57	Service Bay	Superior Radiant	UA	40 ft long U shape, 20 ft on each tube	150	c/w lower radiant shield for coverage distance on tube. Provide remote black bulb sensor and thermostat. Mount sensor per manufacturer's requirements.
H 58	Service Bay	Superior Radiant	UA	40 ft long U shape, 20 ft on each tube	150	c/w lower radiant shield for coverage distance on tube. Provide remote black bulb sensor and thermostat. Mount sensor per manufacturer's requirements.



1 COMBUSTION AIR DUCT INSTALLATION
SCALE: N.T.S.



2 ROOF DETAIL
SCALE: N.T.S.

5			
4			
3			
2			
1			
0	ISSUED FOR CONSTRUCTION	JH	16/04/19
NO.	Description	BY	DD/MM/YY

ENGINEERS
GEO-TECHNICALS
MANITOBA
Certificate of Authorization
SMS Engineering Ltd.
No. 166

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Winnipeg Transit

Project Title
**CITY OF WINNIPEG FORT ROUGE
TRANSIT BASE - RAPID ROLL DOORS
AND RADIANT HEATERS REPLACEMENT**

Winnipeg	Manitoba	
MECHANICAL SPECIFICATION, SCHEDULE AND DETAILS		
Drawn By	Checked By	Approved By
AS SHOWN	XZ	JH
Scale	Date	Project No.
AS SHOWN	APRIL 2019	19-028-01
Revision Number	Drawing Number	Sheet Order
0	M3.1	3 OF 3