\\Macmiller.local\mmfs\Jobs\7325\7921 SHBTC BLDG C- Replace HP-1000\Engineering (HVAC And Plumbing)\DWG\Shts\73257921TM0_01.dwg

## AIR HANDLING UNIT SCHEDULE

| UNIT INFO | | | | | | | FAN SECTIONS | | | COOLING | | | | | | | HEATING | | | | | | | | | | | | UNIT DETAILS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNIT NO. | | EFFICIENCY | | REFRIGERANT | | | SUPPLY AIR | | | NOM | TOTAL | SENS | EAT | EAT | LAT | LAT | TOTAL | EAT | LAT | HEAT PUMP | | | ELECTRIC RESIST. | | | | | | UNIT ELEC | | | DIMS (IN) | OPER WT | |
| | MFR. & MODEL NO. | EER | COP | TYPE | # CKTS | CHARGE | CFM | ESP | TSP | TON | MBH | MBH | °F DB | °F WB | °F DB | °F WB | MBH | DB | DB | MBH | EAT | LAT | KW | STAGES | V/PH/HZ | MCA | MOCP | FILTERS | V/PH/HZ | MCA | MOCP | L x W x H | LBS | NOTES |
| (E)HP-1 | WFD240B40C | 9.8 | 3.1 | R-22 | 2 | 22 / 21 | 8000 | 1.5 | - | 20 | 233 | - | - | - | - | - | - | - | - | - | - | - | 36 | 2 | 460/3/60 | - | - | - | 460/3/60 | - | - | 122 x 85 x 54 | 2410 | DEMO, 1 |
| HP-1 | WSK240A4S0N | 9.5 | 3.2 | R-454B | 1 | 38 | 8020 | 1.87 | 1.63 | 20 | 241 | 216 | 78 | 63 | 55 | 53 | 123 | 70 | 84 | 157 | 70 | 91 | 36 | 4 | 460/3/60 | 109 | 110 | - | 460/3/60 | 109 | 110 | 124 x 88 x 66 | 2188 | NEW, 1-12 |

NOTES:
1. '-' INFORMATION IS UNAVAILABLE.
2. POWER WIRING AND DISCONNECT BY EC.
3. PROVIDE WITH 100% ECONOMIZER CAPABILITY, RETURN AIR SMOKE DETECTOR, AND DOWNFLOW CONFIGURATION.
4. CONNECT TO EXISTING CONTROLS.
5. INTERNAL ELECTRIC HEATER OPERATES FROM SINGLE POINT POWER CONNECTION.
6. UNIT IEER IS 12.5 AND CODE COMPLIANT WITH ASHRAE 90.1.
7. UNIT TO HAVE MULTISTAGE COOLING IN COMPLIANCE WITH WSEC C403.5.1
8. UNIT TO HAVE FAN CONTROL IN COMPLIANCE WITH WSEC C403.8.5.1
9. MINIMUM MERV 13 FILTER.
10. MATCH OUTSIDE AIR CFM TO THAT OF THE EXISTING UNIT. PRE DEMO TAB MAY BE REQUIRED.
11. EQUIPMENT CONTAINING R-454B REFRIGERANT SHALL INCLUDE REFRIGERANT LEAK DETECTION AND MITIGATION INCLUDING:
-ACTIVE SAFETY SHOUTVALVES THAT CLOSE TO REDUCE RELEASEABLE REFRIGERANT CHARGE.
-CONTROLS TO ENERGIXZE AIR CIRCULATION FAN(S) PER THA MANUFACTURER'S INSTRUCTIONS.
-CONTROLS TO DE-ENERGIZE POTENTIAL IGNITION SOURCES.
12. FIELD VERIFY IF CURB ADAPTER IS REQUIRED.

## PIPING GENERAL NOTES

**PIPING MATERIAL SCHEDULE**

| PIPING | SIZE | MATERIAL | JOINT |
|---|---|---|---|
| INDIRECT DRAIN | 1/2" - 2-1/2" | COPPER TYPE L | LEAD FREE SOLDER |

- ALL PIPING INSULATION AND COVERINGS SHALL HAVE AN ASTM FLAME SPREAD RATING OF 25 OR LESS AND AN ASTM SMOKE DEVELOPED RATING OF 50 OR LESS.
- ELASTOMERIC INSULATIONS SHALL BE CLOSED CELL.
- ELASTOMERIC INSULATIONS WHICH MEET THESE RATINGS MAY BE USED AS A SUBSTITUTE FOR FIBERGLASS.
- PROVIDE A VAPOR BARRIER COVERING ON ALL CHILLED WATER PIPING AND COIL CONDENSATE PIPING INSULATION.
- PROVIDE A COVERING FOR ALL FIBERGLASS INSULATION WITHIN THE BUILDING.
- PROVIDE A VINYL JACKET FOR ALL INSULATION EXPOSED TO SIGHT WITHIN THE BUILDING EXCEPT MECHANICAL ROOMS.
- PROVIDE REMOVABLE LACED INSULATION PAD OVER ALL CONTROL VALVES, WHERE NOT LOCATED WITHIN A MECHANICAL ROOM.
- PROVIDE ALUMINUM JACKET ON ALL INSULATED PIPING OUTSIDE BUILDING.
- AT PIPE HANGERS PROVIDE RIGID INSULATION BETWEEN PIPE AND HANGER.

1. THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET WHICH MAY BE REQUIRED. THE MECHANICAL CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
2. MATERIALS, METHODS, AND INSTALLATION SHALL COMPLY WITH THE PROVISIONS OF THE 2021 INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL ENERGY CODE (IEC) AND UNIFORM PLUMBING CODE (UPC) AS AMENDED BY THE STATE OF WASHINGTON AND LOCAL AUTHORITIES.
3. ALL PIPE SIZES NOTED ON DRAWINGS ARE MINIMUMS.
4. SLOPE ALL INDIRECT DRAINS AT 2% UNLESS OTHERWISE NOTED ON DRAWINGS. OBTAIN APPROVAL FROM THE CODE AUTHORITY BEFORE INSTALLING PIPING AT LESS THAN 2% (EVEN IF LESSER SLOPE IS INDICATED ON DRAWINGS).
5. HANGERS AND SUPPORTS FOR PIPING SHALL BE IN ACCORDANCE WITH THE 2021 IMC AND IBC AS AMENDED BY THE STATE OF WASHINGTON AND LOCAL AUTHORITIES.
6. PIPING PENETRATIONS OF FIRE RATED WALLS OR FLOORS SHALL BE SLEEVED AND FIRE STOPPED WITH LISTED MATERIALS SO AS TO MAINTAIN THE INTEGRITY AND RATING OF THE FLOOR OR WALL.
7. PROVIDE CHROME PLATE ESCUTCHEON PLATES AT ALL EXPOSED WALL AND CEILING PENETRATIONS.
8. PROVIDE SHUT-OFF VALVES AT ALL EQUIPMENT CONNECTIONS.
9. PROVIDE UNION, GROOVED OR FLANGED CONNECTION AT EQUIPMENT FOR FUTURE REMOVAL AND SERVICING.
10. FOR CONDENSATE PIPING PROVIDE TRAPS WITH A MINIMUM SEAL 2" GREATER THAN THE FAN OPERATING STATIC PRESSURE AT ALL COOLING COIL CONNECTIONS.
11. PROVIDE MINIMUM 1" AIR BREAK FOR ALL CONDENSATE PIPE TERMINATIONS AT DRAINS.
12. PROVIDE DIELECTRIC CONNECTIONS BETWEEN DISSIMILAR METALS.
13. HEAT TRACING OF PIPING, WHERE INDICATED, SHALL BE PROVIDED AND INSTALLED BY THE MECHANICAL CONTRACTOR. COORDINATE ELECTRICAL SUPPLY FOR HEAT TRACE WITH ELECTRICAL CONTRACTOR.
14. TRENCHING, BACKFILLING AND COMPACTING FOR UNDERGROUND PIPING SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR UNLESS STATED OTHERWISE IN CONTRACT DOCUMENTS.

## MECHANICAL GENERAL ABBREVIATIONS

| ABBV | FULL NAME | ABBV | FULL NAME | ABBV | FULL NAME |
|---|---|---|---|---|---|
| AC | AIR CONDITIONING UNIT | EWT | ENTERING WATER TEMPERATURE | NOM | NOMINAL |
| AFF | ABOVE FINISHED FLOOR | FCU | FAN COIL UNIT | NTS | NOT TO SCALE |
| AHU | AIR HANDLING UNIT | FD | FIRE DAMPER | OBD | OPPOSED BLADE DAMPER |
| AL | ALUMINUM | FLA | FULL LOAD AMPS | OD | OUTSIDE DIMENSION |
| BAS | BUILDING AUTOMATION SYSTEM | FOB | FLAT ON BOTTOM | POC | POINT OF CONNECTION |
| BDD | BACK DRAFT DAMPER | FOT | FLAT ON TOP | PRV | PRESSURE REDUCING VALVE |
| BI | BLACK IRON | FSD | FIRE SMOKE DAMPER | PVC | POLYVINYL CHLORIDE |
| BOD | BOTTOM OF DUCT | GALV | GALVANIZED | REQ'D | REQUIRED |
| BOTT | BOTTOM | GC | GENERAL CONTRACTOR | RPBA | REDUCED PRESSURE BACKFLOW ASSY |
| BTU | BRITISH THERMAL UNITS | GENX | GENERATOR EXHAUST | RTU | ROOFTOP UNIT |
| BTUH | BRITISH THERMAL UNITS PER HOUR | GLVNL | GALVANNEAL | SA | SUPPLY AIR |
| CAT1 | CATEGORY ONE VENT | GPM | GALLONS PER MINUTE | SD | SMOKE DAMPER |
| CAT4 | CATEGORY FOUR VENT | GREASE | GREASE DUCT | SL | SOUND LINED |
| CFM | CUBIC FEET PER MINUTE | GWB | GYPSUM WALL BOARD | SM | SHEET METAL |
| CPVC | CPVC MATERIAL | HP | HORSE POWER, HEAT PUMP | SP | STATIC PRESSURE |
| DB | DUCTBOARD | HVAC | HEATING, VENTILATION AND AIR COND. | SS | STAINLESS STEEL |
| DDC | DIRECT DIGITAL CONTROLS | HX | HEAT EXCHANGER | SUSP | SUSPENDED |
| DEMO | DEMOLISH | ID | INSIDE DIMENSION | T | THERMOSTAT |
| DP | DIFFERENTIAL PRESSURE | LAT | LEAVING AIR TEMPERATURE | TOD | TOP OF DUCT |
| DPM | DIFFERENTIAL PRESSURE MONITOR | LBS | POUNDS | TV | TURNING VANES |
| DIFF | DIFFUSER | LWT | LEAVING WATER TEMPERATURE | TYP | TYPICAL |
| DMPR | DAMPER | MAT | MIXED AIR TEMPERATURE | UNO | UNLESS NOTED OTHERWISE |
| DN | DOWN | MBH | ONE THOUSAND BTUH | VAV | VARIABLE AIR VOLUME |
| E | EXISTING | MCA | MINIMUM CIRCUIT AMPACITY | VD | VOLUME DAMPER |
| EAT | ENTERING AIR TEMPERATURE | MD | MOTORIZED DAMPER | VFD | VARIABLE FREQUENCY DRIVE |
| EC | EGGCRATE | MIN | MINIMUM | W | DUCT INSULATION WRAP |
| EER | ENERGY EFFICIENCY RATIO | M-M | MACDONALD-MILLER | W/ | WITH |
| EF | EXHAUST FAN | NC | NORMALLY CLOSED | WELD | WELDED |
| ELEV | ELEVATION | NIC | NOT IN CONTRACT | Ø | VOLTAGE PHASE & DUCT DIAMETER |
| ESP | EXTERNAL STATIC PRESSURE | NO | NORMALLY OPEN | | |

## HVAC SYSTEM ABBREVIATIONS

| ABBV | FULL NAME | ABBV | FULL NAME | ABBV | FULL NAME |
|---|---|---|---|---|---|
| COMB-GALV | COMBUSTION AIR | EA AL | EXHAUST ALUMINUM | OA | OUTSIDE AIR |
| SA | SUPPLY AIR LP | EA SS | EXHAUST SS 304 | OA-KOOL | OUTSIDE AIR KOOLDUCT |
| SA-KOOL | SUPPLY AIR LP KOOLDUCT | EA AL WELD | EXHAUST ALUMINUM WELDED | RLF | RELIEF AIR |
| SA AL | SUPPLY AIR LP ALUMINUM | EA GALV WELD | EXHAUST GALV WELDED | RA | RETURN AIR |
| SA SS | SUPPLY AIR LP SS 304 2B | EA GLVNL WELD | EXHAUST GALVANNEAL WELDED | DB | DUCTBOARD |
| SA AL WELD | SUPPLY AIR LP ALUMINUM WELDED | EA SS WELD | EXHAUST SS 304 WELDED | FLU-CAT1 | FLUE VENT - CATEGORY 1 |
| SA GALV WELD | SUPPLY AIR MP GALV WELDED | EA BI GREASE | EXHAUST GREASE BLACK IRON WELD | FLU-CAT4 | FLUE VENT - CATEGORY 4 |
| SA GLVNL WELD | SUPPLY AIR MP GALVANNEAL WELD | EA GALV GREASE | EXHAUST GREASE GALV WELDED | FLU-CPVC | FLUE VENT - CPVC MATERIAL |
| SA SS WELD | WELDED SUPPLY AIR LP SS 304 2B | EA GALV SS GREASE | EXHAUST GREASE SS 304 WELDED | FLU-SS | FLUE VENT - SHOP BUILT SS 304 |
| EA | EXHAUST AIR | MUA | MAKE-UP AIR | FLU-GALV | FLUE VENT - SHOP BUILT GALV |

## PIPING SYMBOL LEGEND

| SYMBOL | DESCRIPTION | ABBV | SYMBOL | DESCRIPTION | ABBV |
|---|---|---|---|---|---|
| | VALVE TWO-WAY CONTROL | 2WAY | | SENSOR | SNSR |
| | VALVE THREE-WAY CONTROL | 3WAY | | TEMPERATURE INDICATOR | THERM |
| | VALVE AUTOMATIC FLOW CONTROL | AF | | METER BTU | BTU MTR |
| | VALVE BALANCING | BALV | | SUB-METER WATER FLOW | MTR |
| | VALVE BALANCING AUTOMATIC | ABALV | | PRESSURE / TEMPERATURE PORT | P&T |
| | VALVE BALL - FULL PORTED | BV | | SENSOR PRESSURE DIFFERENTIAL | DP |
| | VALVE BALL - W/ 3/4" HOSE ADAPTOR | BV W/ HA | | STRAINER | STRN |
| | VALVE BUTTERFLY | BFV | | SUCTION DIFFUSER | SUC DIFF |
| | VALVE BUTTERFLY - W/ MEMORY STOP | BFVM | | UNION | UNION |
| | VALVE CHECK | CV | | HOSE BIBB | HB |
| | VALVE CIRCUIT SETTER | CS | | PIPE BREAK - PIG TAIL | |
| | VALVE GAS COCK | GC | | POINT OF CONNECTION | P.O.C. |
| | VALVE GATE | GV | | CONCENTRIC REDUCER | CR |
| | VALVE GLOBE | GLV | | ECCENTRIC REDUCER | ER |
| | VALVE PRESSURE REDUCING | PRV | 6" CHWS | PIPE - SIZE & ABBREVIATION | |
| | VALVE PRESSURE RELIEF | RV | 6" CHWS-W | PIPE - SIZE & ABBREVIATION WITH INSULATION | |
| | VALVE SOLENOID | SV | | THERMAL EXPANSION DEVICE | EXP |
| | AUTOMATIC AIR VENT | AV | | FLEXIBLE CONNECTION | |
| | MANUAL AIR VENT | MAV | | FLEX PIPE | |
| | WATER HAMMER ARRESTOR | WHA | | PIPE - HEAT TRACE | |
| | BACKFLOW PREVENTER | BFP | | PUMP | |
| | REDUCED PRESS. BACKFLOW PREVENTER | RPBP | | AIR SEPARATOR | AIR SEP |
| | BULB WELL | BW | | CHEMICAL POT FEEDER | CPOT |
| | FLOW DIRECTION ARROW | | | HEAT EXCHANGER | HTX |
| | PRESSURE INDICATOR | PRESS | | EXPANSION TANK | ET |

## PIPING SYSTEM ABBREVIATIONS

| ABBV | FULL NAME | ABBV | FULL NAME | ABBV | FULL NAME |
|---|---|---|---|---|---|
| C | CONDENSATE INDIRECT DRAIN | GLWR | GLYCOL WATER RETURN | NGV | NATURAL GAS VENT |
| CA | AIR COMPRESSED | GLWS | GLYCOL WATER SUPPLY | PA | AIR PNEUMATIC |
| CDWR | CONDENSER WATER RETURN | HHWR | HEATING HOT WATER RETURN | PC | CONDENSATE PUMPED |
| CDWS | CONDENSER WATER SUPPLY | HHWS | HEATING HOT WATER SUPPLY | PCHR | CHILLED WATER (PROCESS) RETURN |
| CHRV | CHILLER RELIEF VENT | HPC | STEAM CONDENSATE HIGH PRESS | PCHS | CHILLED WATER (PROCESS) SUPPLY |
| CHWR | CHILLED WATER RETURN | HPS | STEAM HIGH PRESS | RGAS | REFRIGERANT HOT GAS |
| CHWS | CHILLED WATER SUPPLY | HRR | HEAT RECOVERY RETURN | RLIQ | REFRIGERANT LIQUID |
| CLN STM | STEAM CLEAN | HRS | HEAT RECOVERY SUPPLY | RSUC | REFRIGERANT SUCTION |
| CLR | CLOSED LOOP WATER RETURN | LPC | STEAM CONDENSATE LOW PRESS | SCHR | CHILLED WATER (SECONDARY) RETURN |
| CLS | CLOSED LOOP WATER SUPPLY | LPG | LIQUID PROPANE | SCHS | CHILLED WATER (SECONDARY) SUPPLY |
| COMB-PVC | AIR COMBUSTION PVC | LPS | STEAM LOW PRESS | SCV | STEAM CONDENSATE VENT |
| CRYV | CRYO VENT | LTCR | CHILLED WATER (LOW TEMP) RETURN | SPC | STEAM CONDENSATE PUMPED |
| DTWS | DUAL TEMP WATER SUPPLY | LTCS | CHILLED WATER (LOW TEMP) SUPPLY | SV | STEAM VENT |
| DTWR | DUAL TEMP WATER RETURN | MPC | STEAM CONDENSATE MEDIUM PRESS | VAC | VACUUM |
| FOC | FUEL OIL SECONDARY CONTAINMENT | MPS | STEAM MEDIUM PRESS | VAC-E | VACUUM EXHAUST |
| FOF | FUEL OIL FILL | MUW | MAKE-UP WATER | VRFG | VRF HOT GAS |
| FOR | FUEL OIL RETURN | NG-CONDUIT | NATURAL GAS CONDUIT | VRFL | VRF HIGH PRESS LIQUID |
| FOS | FUEL OIL SUPPLY | NG-H | NATURAL GAS HIGH PRESS | VRFS | VRF LOW PRESS SUCTION |
| FOV | FUEL OIL VENTS | NG-L | NATURAL GAS LOW PRESS | | |
| GENX | GENERATOR EXHAUST | NG-M | NATURAL GAS MEDIUM PRESS | | |

## HVAC GENERAL NOTES - 2021 WSEC

1. THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET WHICH MAY BE REQUIRED. THE HVAC CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
2. MATERIALS, METHODS, AND INSTALLATION SHALL COMPLY WITH THE PROVISIONS OF THE 2021 EDITIONS OF THE INTERNATIONAL MECHANICAL CODE, INTERNATIONAL BUILDING CODE, INTERNATIONAL FIRE CODE 2021 WSEC, AND LOCAL CODES AND ORDINANCES.
3. ALL DUCT SIZE ANNOTATIONS REPRESENT ACTUAL OUTSIDE DIMENSIONS OF THE SHEET METAL (UNO). IF APPLICABLE, INTERIOR INSULATION WILL NEED TO BE ACOUNTED FOR WHEN DETERMINING ACTUAL DUCT FREE AREA. SEE DUCTWORK INSULATION SCHEDULE FOR ADDITIONAL SPACE REQUIRED FOR EXTERIOR (WRAP) INSULATION.
4. DUCT CONSTRUCTION AND HANGING SHALL COMPLY WITH CHAPTER 6 OF THE 2021 IMC AND WITH CURRENT SMACNA STANDARDS. EARTHQUAKE BRACE ALL DUCTS 28" DIA AND LARGER WHICH ARE SUSPENDED MORE THAN 12" BELOW STRUCTURAL SYSTEM.
5. JOINTS OF MEDIUM AND HIGH VELOCITY DUCT SYSTEMS SHALL BE SEALED WITH GASKETS OR LISTED MASTIC TYPE DUCT SEALANT.
6. DUCTS SHALL BE INSULATED AS INDICATED ON PLANS, PER 2021 WASHINGTON STATE ENERGY CODE, COMMERCIAL PROVISIONS. SEE DUCTWORK INSULATION SCHEDULE.

   - ACOUSTICAL SOUND LINING, WHERE INDICATED, SHALL BE 1" 1.5 LB/CU FT FIBERGLASS DUCT LINING COATED TO PREVENT FIBER EROSION AT VELOCITIES UP TO 6000 FPM.
7. FLEX DUCTS SHALL CONSIST OF A REINFORCED VAPOR BARRIER, 1 1/2" FIBERGLASS INSULATION, AND NON-PERFORATED INTERIOR LINER WITH WIRE HELIX. DUCT SHALL BE A UL 181 LISTED CLASS 1 AIR DUCT. FLEX DUCTS SHALL ONLY BE USED WHERE SHOWN AND SHALL NOT EXCEED 12' IN LENGTH UNLESS NOTED OTHERWISE.
8. PROVIDE EARTHQUAKE RESTRAINT FOR HVAC EQUIPMENT IN ACCORDANCE WITH SECTION 1613 OF THE 2021 IBC.
9. PROVIDE FIRE DAMPERS, SMOKE DAMPERS AND FIRE/SMOKE DAMPERS WHERE INDICATED ON PLANS AND AS REQUIRED BY SECTION 717.5 OF THE 2021 IBC AND SECTION 607.5 OF THE 2021 IMC. PROVIDE CEILING FIRE DAMPERS WHERE INDICATED ON PLANS AND AS REQUIRED BY SECTION 717.6 OF THE 2021 IBC AND SECTION 607.6 OF THE 2021 IMC. INSTALL FIRE DAMPERS SMOKE DAMPERS AND FIRE/SMOKE DAMPERS IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS, THE TERMS OF THEIR LISTING, AND THE REQUIREMENTS OF THE CODE.
10. PIPING PENETRATIONS OF FIRE RATED WALLS OR FLOORS SHALL BE SLEEVED AND FIRE STOPPED WITH LISTED MATERIALS SO AS TO MAINTAIN THE INTEGRITY AND RATING OF THE FLOOR OR WALL.
11. PROVIDE RETURN DUCT SMOKE DETECTOR AUTOMATIC SHUT DOWN OF ALL NEW HEATING, COOLING, OR VENTILATION EQUIPMENT MOVING IN EXCESS OF 2000 CFM IN ACCORDANCE WITH SECTION 606 OF THE 2021 IMC. POWER AND INTERLOCK WIRING WITH THE BUILDING FIRE ALARM SYSTEM IS BY THE ELECTRICAL CONTRACTOR. BAS TO MONITOR FIRE ALARM CONTROL PANEL AND SHUT DOWN ALL FAN TERMINAL UNITS DURING ANY BUILDING FIRE ALARM EVENT, IN ACCORDANCE WITH 2021 IMC 606.2.2.
12. HVAC EQUIPMENT, VALVES AND DAMPERS SHALL BE LOCATED IN EASILY ACCESSIBLE LOCATIONS. UNLESS SHOWN ON ARCHITECTURAL DRAWINGS, REQUIRED ACCESS PANELS SHALL BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR. MINIMUM ACCESS DOOR SIZE FOR VALVES AND DAMPERS TO BE 18" X 18".
13. HEAT TRACING OF PIPING, WHERE INDICATED, SHALL BE PROVIDED AND INSTALLED BY THE HVAC CONTRACTOR. THE HVAC CONTRACTOR IS TO COORDINATE THE HEAT TRACE POWER WIRING WITH ELECTRICAL CONTRACTOR.
14. MOTORS STARTERS NOT LISTED AS BEING PROVIDED IN THE HVAC EQUIPMENT SCHEDULES ARE TO BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
15. WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION TO BE PROVIDED TO THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM, INCLUDING SIZES, AND THE TERMINAL AIR AND WATER DESIGN FLOW RATES.
16. OPERATING AND MAINTENANCE MANUALS TO BE PROVIDED TO THE BUILDING OWNER THAT INCLUDE: SUBMITTAL DATA, NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY, HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION AND A COMPLETE OPERATIONAL NARRATIVE FOR EACH SYSTEM.
17. A COMPLETE REPORT OF TEST PROCEDURES AND RESULTS SHALL BE PREPARED AND FILED WITH THE OWNER.
18. SHAFT WALLS CONSTRUCTED TO SUPPORT AIR MOVEMENT FOR RETURN AIR SYSTEMS AND STAIR & ELEVATOR PRESSSURIZATION SYSTEMS SHALL BE CONSTRUCTED TO THE FOLLOWING STANDARDS:
    A. SHAFTS (RATED FOR MAXIMIUM 2" WC) SHALL BE CONSTRUCTED TO WITHSTAND 15 PSF LOADING WITH A DEFLECTION OF L/360 (UNO).
    B. SHAFTS SHALL BE SEALED SUBSTANTIALLY AIR-TIGHT USING THE CRITERIA FROM THE 2021 INTERNATIONAL BUILDING CODE:
        1. SECTION 715.8 FIRE RESISTANT JOINT SYSTEMS IN SMOKE BARRIERS: LEAKAGE SHALL NOT EXCEED 5 CFM PER LINEAR FOOT OF JOINT AT 0.3" WC.
        2. SECTION 909.5 SMOKE BARRIER CONSTRUCTION FOR INTERIOR EXIT STAIRWAYS AND EXIT PASSAGEWAYS: MAXIMUM ALLOWABLE LEAKAGE AREA PER SHAFT SHALL NOT EXCEED (0.00035 SF/SF)
    C. STAIR AND ELEVATOR PRESSURIZATION SHAFTS SHALL BE PRESSURE TESTED DURING COMMISIONING. GENERAL CONTRACTOR SHALL MAKE MODIFCATIONS TO INSTALLATION UNTIL SHAFT IS IN COMPLIANCE.
19. DAMPERS USED FOR OUTDOOR AIR INTAKE, EXHAUST, OR RELIEF SHALL HAVE THE FOLLOWING MAXIMUM LEAKAGE RATES AT 1" W.G. (PER AMCA STANDARD 500D): MOTORIZED DAMPERS: 4 CFM/S.F. GRAVITY DAMPERS: 20 CFM/S.F. (40 CFM/S.F. FOR DAMPERS SMALLER THAN 24" IN EITHER DIMENSION) PER 2021 WSEC C403.7.8.3.
20. OUTSIDE AIR INTAKE, EXHAUST, AND RELIEF DAMPERS SERVING CONDITIONED SPACES MUST BE MOTORIZED (FAIL CLOSED) PER 2021 WSEC SECTION C403.7.8. EXCEPT AS ALLOWED BY WSEC.
21. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABELED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723, EXCEPT AS NOTED IN SECTION 602.2.1 OF THE 2021 IMC.
22. ALL MECHANICAL WORK SHOWN ON DRAWINGS INTENDED TO BE INSTALLED SOLELY BY MACDONALD -MILLER FACILITY SOLUTIONS. MACDONALD-MILLER FACILITY SOLUTIONS SHALL NOT BE HELD ACCOUNTABLE FOR ANY DESIGN OR CONSTRUCTION DEFICIENCIES IF WORK IS PERFORMED BY AN OUTSIDE PARTY.

## SCOPE OF WORK

**OVERVIEW**
THE SHBTC BUILDING REQUIRES THE REPLACEMENT OF (1) 20-TON HEAT PUMP, REUSING THE EXISTING CURB FROM THE CURRENT UNIT.
**DEMOLITION**
DEMO THE EXISTING HEAT PUMP, DISCONNECTING THE EXISTING DUCTING FROM THE UNDERSIDE OF THE UNIT.
**NEW**
RECONNECT DUCTING AND PROVIDE NEW HEAT PUMP ON TO THE EXISTING CURB.

## CONTACT LIST

| TITLE | NAME | COMPANY | PHONE NUMBER | EMAIL |
|---|---|---|---|---|
| DESIGN ENGINEER | QUINCY BUSCHBACH | MACDONALD MILLER | 503-205-8859 | QUICNY.BUSCHBACH@MACMILLER.COM |
| ENGINEER OF RECORD | GEORGE GRAHAM | MACDONALD MILLER | 206-768-4288 | GEORGE.GRAHAM@MACMILLER.COM |
| LEAD ACCOUNT EXECUTIVE | MARCUS LEE | MACDONALD MILLER | 206-768-4154 | MARCUS.LEE@MACMILLER.COM |
| SHEET METAL SUPERINTENDENT | TIM FELTON | MACDONALD MILLER | 206-396-9641 | TIM.FELTON@MACMILLER.COM |
| LINE VOLTAGE ELECTRICAL SUPERINTENDENT | JIM FULLWILER | MACDONALD MILLER | 206-565-4528 | JIM.FULLWILER@MACMILLER.COM |

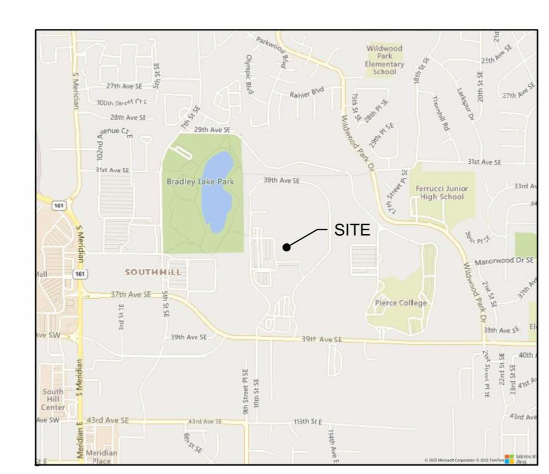
Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.

Full sized legible color plans are required to be provided by the permitee on site for inspection.

City of Puyallup Building REVIEWED FOR COMPLIANCE
BSnowden
10/13/2025
8:01:11 AM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic




VICINITY MAP
NO SCALE

PRMH20251340

MacDonald-Miller
FACILITY SOLUTIONS
17930 Intl. Blvd. Suite 120, SeaTac, WA 98188
Phone: 206-763-9400 www.macmiller.com

STAMP

MICHAEL STUART HUGHES
STATE OF WASHINGTON
20105775
REGISTERED PROFESSIONAL ENGINEER
09/26/2025

| ISSUANCE | ISSUANCE DESCRIPTION | DATE |
|---|---|---|
| 1 | CD / PERMIT SET | 09-18-25 |

SHBTC BLDG C REPLACE HP-1
SOUTH HILL BUSINESS & TECHNOLOGY CENTER
1015 39TH AVE SE
PUYALLUP, WA 98374

SCHEDULES
HVAC

ISSUED FOR PERMIT

ENGINEER: Q BUSCHBACH
CHECKED BY: G GRAHAM
CAD: M HAGBERG
DRAWING NUMBER: 73257921-00
SHEET NUMBER: TM0.01

SPACE FOR OFFICIAL AHJ USE ONLY

Friday, September 26, 2025 12:36:36 PM

9/26/2025 12:36:36 PM

PRMH20251340

MacDonald-Miller
FACILITY SOLUTIONS
17930 Intl. Blvd., Suite 120, SeaTac, WA 98188
Phone: 206-763-9400 www.macmiller.com

STAMP

MICHAEL STUART HAGBERG
STATE OF WASHINGTON
20105775
REGISTERED
PROFESSIONAL ENGINEER

09/26/2025

| ISSUANCE | ISSUANCE DESCRIPTION | DATE |
|---|---|---|
| 1 | CD / PERMIT SET | 09-18-25 |

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

| | |
|---|---|
| Building | Planning |
| Engineering | Public Works |
| Fire | Traffic |

# SHBTC BLDG C REPLACE HP-1
## SOUTH HILL BUSINESS & TECHNOLOGY CENTER

10115 39TH AVE SE
PUYALLUP, WA 98374

SITE PLAN

ISSUED FOR PERMIT

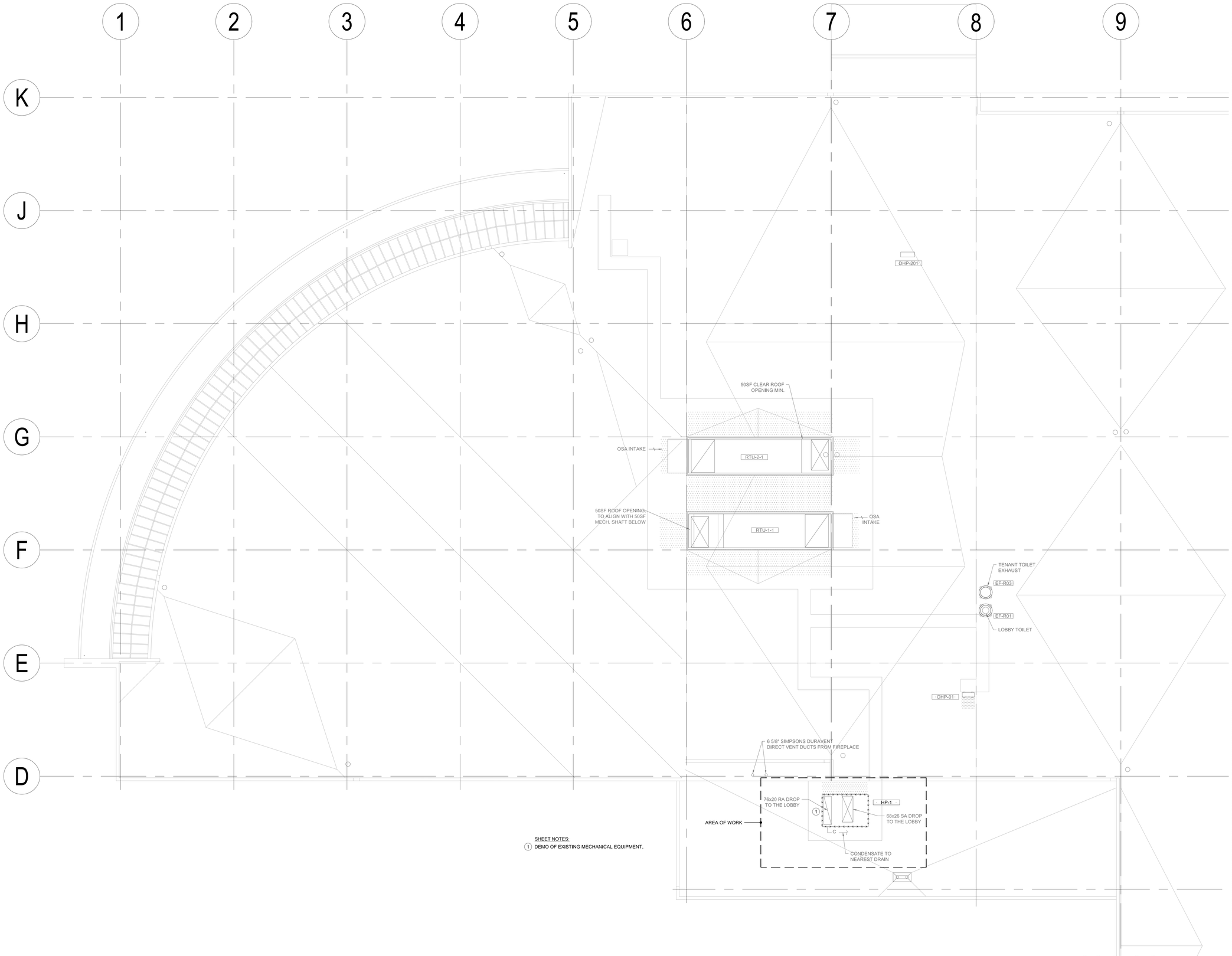
ENGINEER: Q BUSCHBACH
CHECKED BY: G GRAHAM
CAD: M HAGBERG
DRAWING NUMBER: 73257921-00
SHEET NUMBER:

TM0.01S

\\Macmiller.local\mmfs\Jobs\73257921 SHBTC BLDG C - Replace HP-1\000\Engineering\HVAC And Plumbing\DWG\Shbtc73257921TM0_01.dwg

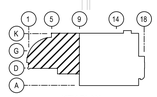
Friday, September 26, 2025 12:36:43 PM

9/26/2025 12:36:49 PM

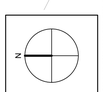



SHEET NOTES:

1 DEMO OF EXISTING MECHANICAL EQUIPMENT.




KEY PLAN

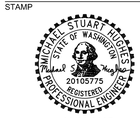



1/8" = 1'-0"

PRMH20251340

MacDonald-Miller
FACILITY SOLUTIONS
17930 Intl. Blvd. Suite 120, SeaTac, WA 98188
Phone: 206-763-9400 www.macmiller.com

STAMP




09/26/2025

| ISSUANCE | ISSUANCE DESCRIPTION | DATE |
|---|---|---|
| 1 | CD / PERMIT SET | 09-18-25 |

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

| | |
|---|---|
| Building | Planning |
| Engineering | Public Works |
| Fire | Traffic |

# SHBTC BLDG C REPLACE HP-1
# SOUTH HILL BUSINESS & TECHNOLOGY CENTER

10115 39TH AVE SE
PUYALLUP, WA 98374

## ROOF PARTIAL DEMO PLAN
## HVAC

ISSUED FOR PERMIT

ENGINEER:
Q BUSCHBACH

CHECKED BY:
G GRAHAM

CAD:
M HAGBERG

DRAWING NUMBER:
73257921-00

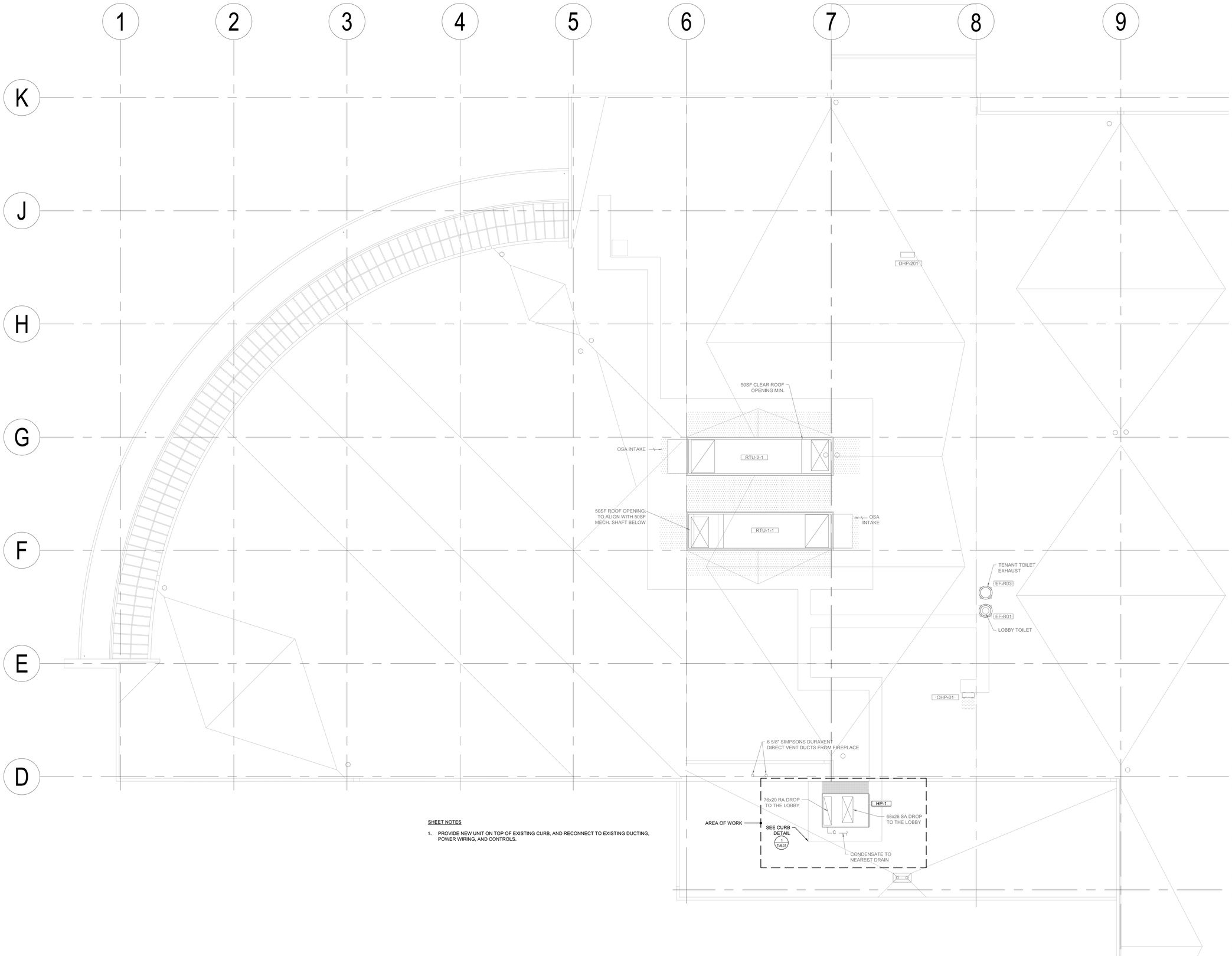
SHEET NUMBER:

DM2.03

\\Macmiller.local\mmfs\data\73257921 SHBTC BLDG C - Replace HP-1\00\Engineering\HVAC And Plumbing\DWG\Bldg C\73257921TM2_03.dwg

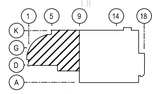
Friday, September 26, 2025 12:36:38 PM

9/26/2025 12:36:38 PM

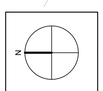



SHEET NOTES

1. PROVIDE NEW UNIT ON TOP OF EXISTING CURB, AND RECONNECT TO EXISTING DUCTING, POWER WIRING, AND CONTROLS.




KEY PLAN

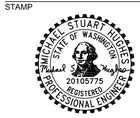



1/8" = 1'-0"

PRMH20251340

MacDonald-Miller
FACILITY SOLUTIONS
17930 Intl. Blvd. Suite 120, SeaTac, WA 98188
Phone: 206-763-9400 www.macmiller.com

STAMP




09/26/2025

| ISSUANCE | ISSUANCE DESCRIPTION | DATE |
|---|---|---|
| 1 | CD / PERMIT SET | 09-18-25 |

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

| | |
|---|---|
| Building | Planning |
| Engineering | Public Works |
| Fire | Traffic |

# SHBTC BLDG C REPLACE HP-1
# SOUTH HILL BUSINESS & TECHNOLOGY CENTER

1015 39TH AVE SE
PUYALLUP, WA 98374

## ROOF PARTIAL PLAN
## HVAC

ISSUED FOR PERMIT

ENGINEER:
Q BUSCHBACH

CHECKED BY:
G GRAHAM

CAD:
M HAGBERG

DRAWING NUMBER:
73257921-00

SHEET NUMBER:
TM2.03

\\Macmiller.local\mmfs\data\73257921 SHBTC BLDG C - Replace HP-1\00\Engineering\HVAC And Plumbing\DWG\Bldg C\73257921TM2_03.dwg
Friday, September 26, 2025 12:26:44 PM
9/26/2025 12:36:44 PM

NOTE:
ROOF OPENING AND TEMPORARY WEATHER COVER OF ROOF OPENING BY G.C.

* 14" IS MINIMUM STANDARD. FOR ABOVE DECK INSULATION APPLICATIONS MAINTAIN 8" DISTANCE FROM UNIT GASKET TO TOP OF FINISHED ROOF.

1 / TM6.01

## ROOFTOP AC UNIT CURB DETAIL
## ( UNITS 5 TO 25 TON )

N.T.S.

PRMH20251340

MacDonald-Miller
FACILITY SOLUTIONS
17930 Intl Blvd, Suite 120, SeaTac, WA 98188
Phone: 206-763-9400 www.macmiller.com

STAMP

09/26/2025

| ISSUANCE | ISSUANCE DESCRIPTION | DATE |
|---|---|---|
| 1 | CD / PERMIT SET | 09-18-25 |

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

| | |
|---|---|
| Building | Planning |
| Engineering | Public Works |
| Fire | Traffic |

SHBTC BLDG C REPLACE HP-1
SOUTH HILL BUSINESS & TECHNOLOGY CENTER
1015 39TH AVE SE
PUYALLUP, WA 98374

DETAILS
HVAC

ISSUED FOR PERMIT

ENGINEER: Q BUSCHBACH
CHECKED BY: G GRAHAM
CAD: M HAGBERG
DRAWING NUMBER: 73257921-00
SHEET NUMBER: TM6.01

\\Macmiller.local\mmfs\data\73257921 SHBTC BLDG C - Replace HP-1\006\Engineering\HVAC And Plumbing\DWG\006-73257921TM6_01.dwg
Friday, September 26, 2025 12:36:36 PM
9/26/2025 12:36:36 PM