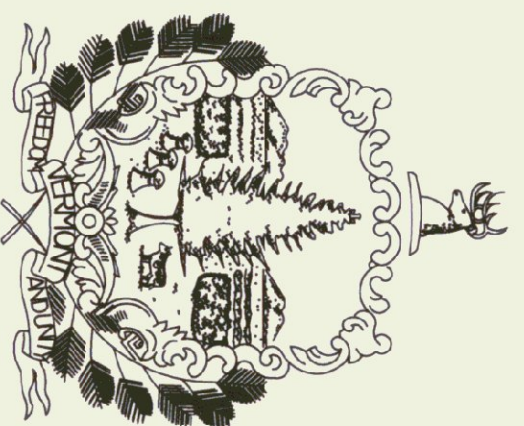


State of Vermont  
Department of Buildings & General Services  
**NEW RADIANT HEATING SYSTEM**  
LYNDON A.O.T. GARAGE  
Lyndon, Vermont

AGENCY OF ADMINISTRATION  
DEPT. OF BUILDINGS & GENERAL SERVICES  
2 GOVERNOR AIKEN AVENUE  
MONTPELIER, VERMONT 05633-5801  
THOMAS W. TORTI, COMMISSIONER



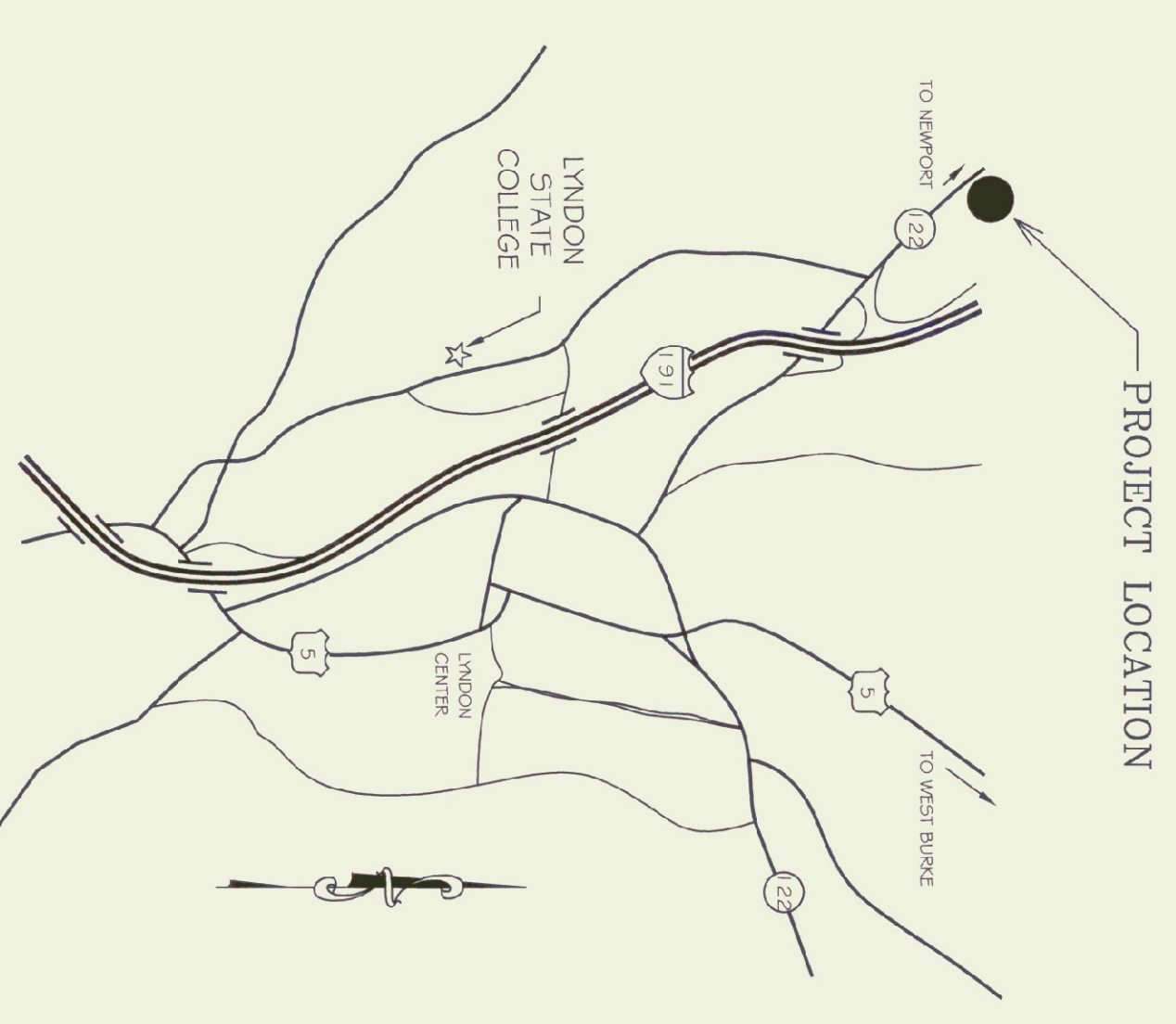
Howard Dean, M.D.  
Governor

AUGUST 2002

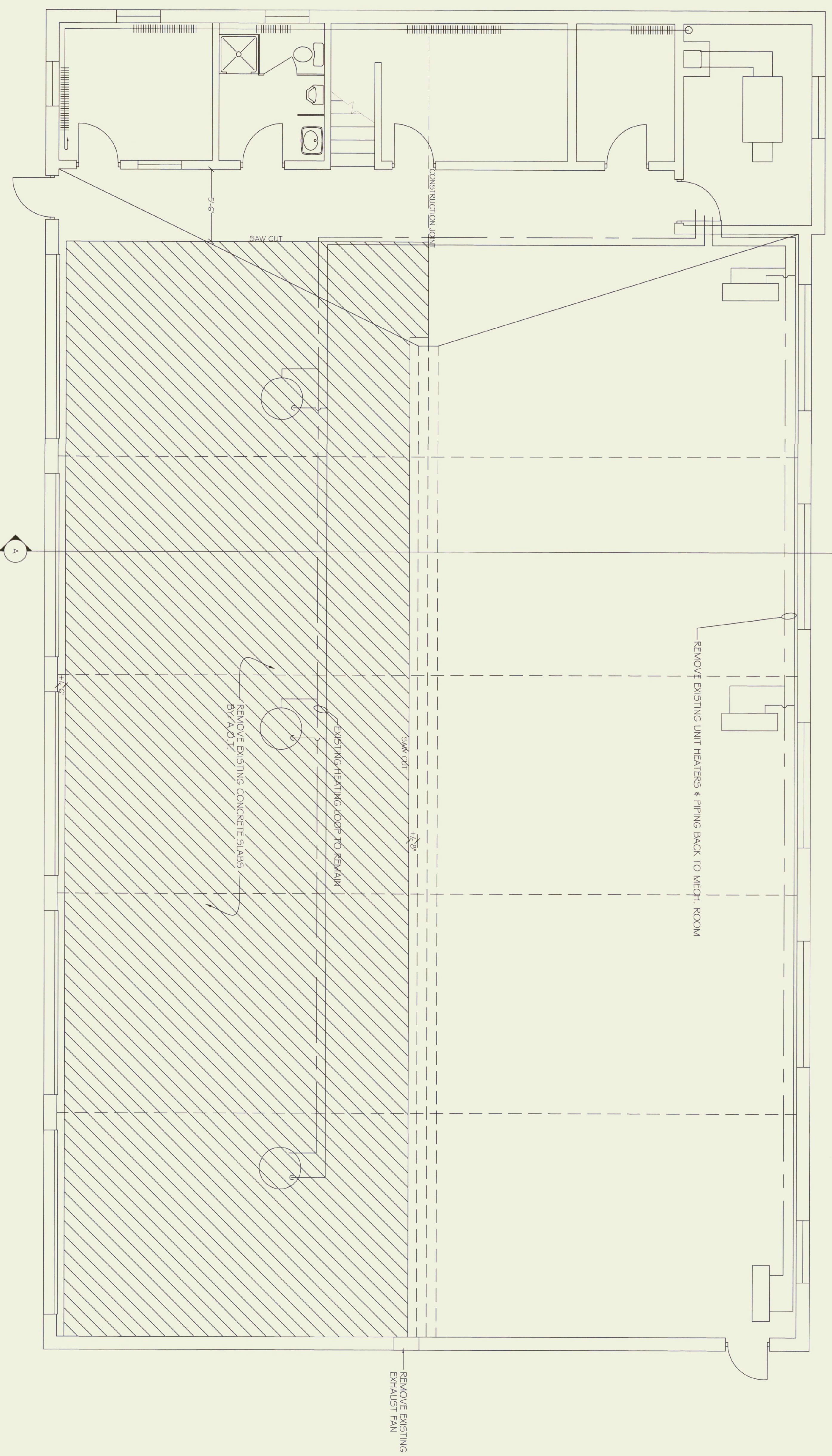
INDEX OF SHEETS

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| X-1  | DEMO FLOOR & HEAT PLAN |
| AM-1 | NEW FLOOR & HEAT PLAN  |
| D-1  | SECTIONS               |
| D-2  | DETAILS                |

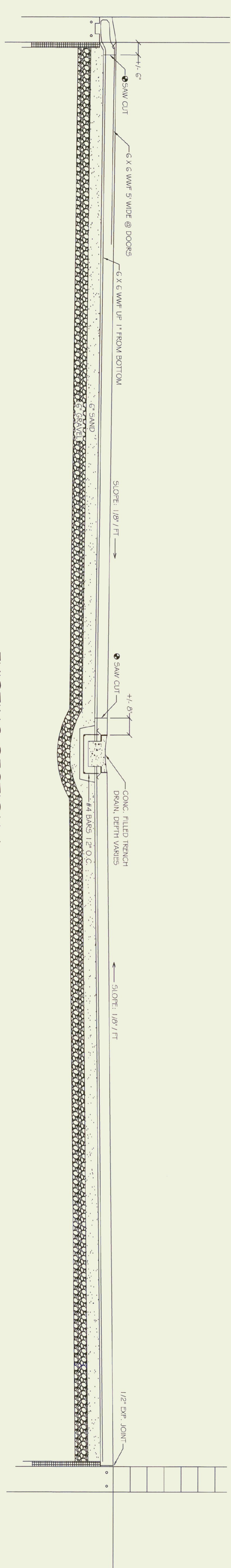
AGENCY OF TRANSPORTATION  
NATIONAL LIFE BUILDING  
MONTPELIER, VERMONT 05602  
BRIAN SEARLES, SECRETARY



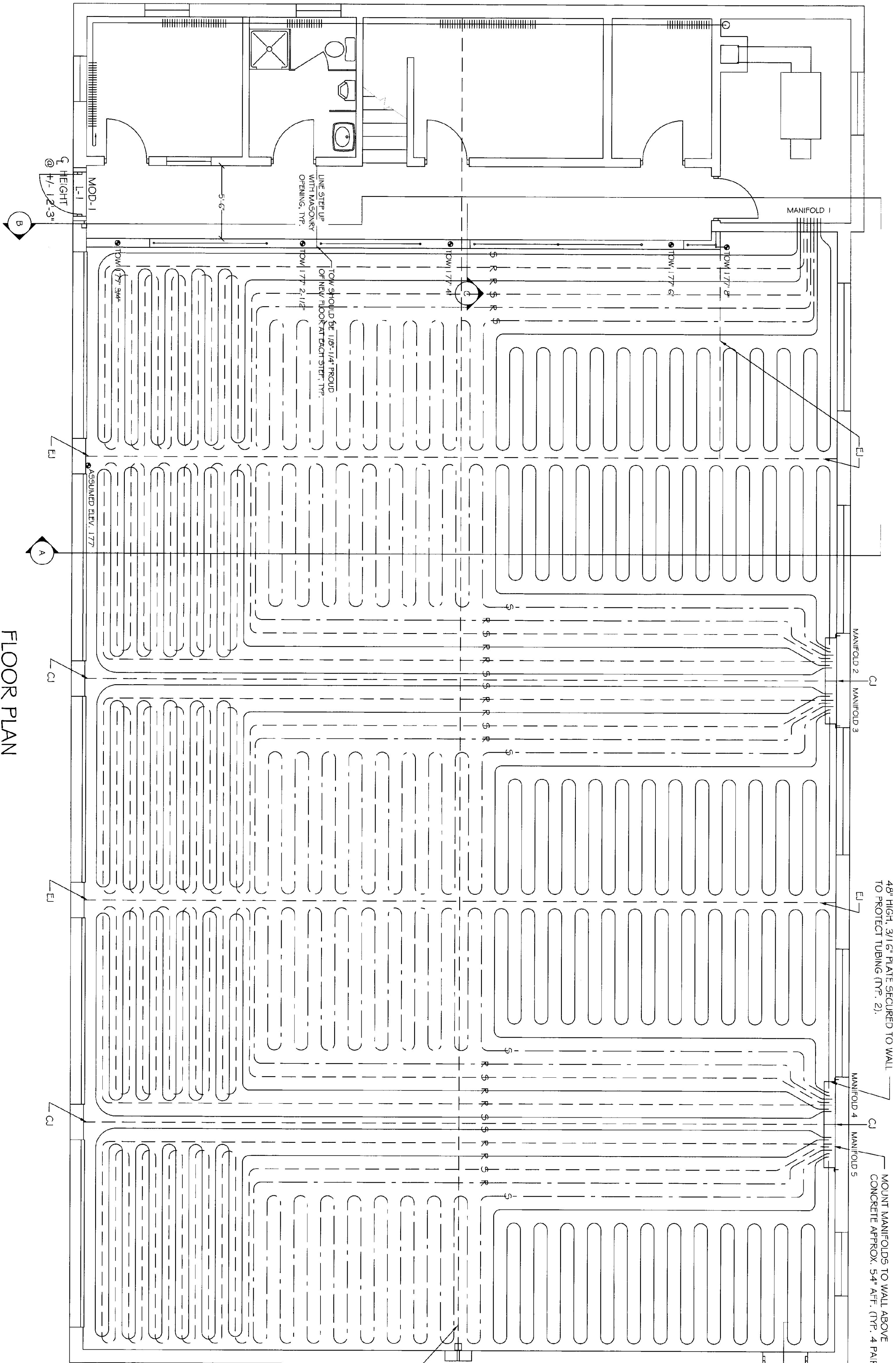
PROJECT LOCATION



**DEMO PLAN**  
SCALE: 1/4" = 1'-0"

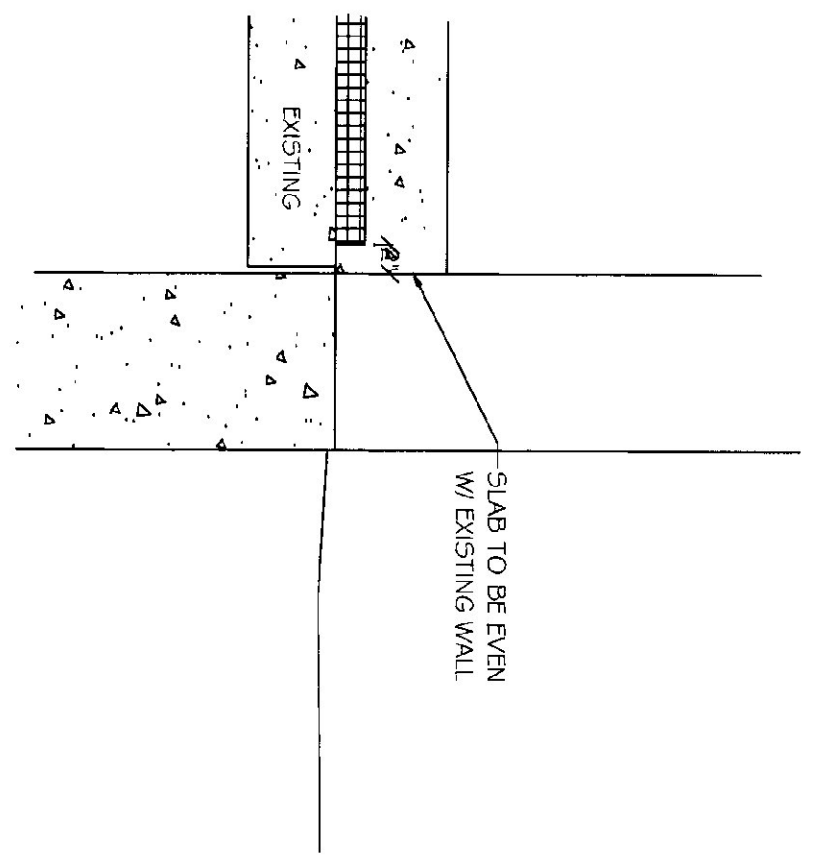


**EXISTING SECTION A**  
SCALE: 1/2" = 1'-0"



48" HIGH, 3/16" PLATE SECURED TO WALL TO PROTECT TUBING (TYP. 2).

MOUNT MANIFOLDS TO WALL ABOVE CONCRETE APPROX. 54" AFT. (TYP. 4 PAIR).



SECTION @ DOOR  
D N.T.S.

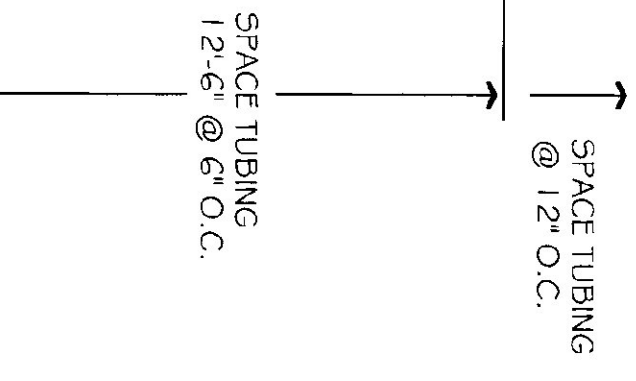
| MANIFOLD # | LOCATION    | RADIANT LOOP # | AREA SERVED | TUBE SIZE | TUBE LENGTH (IN FLOOR) | GPM  | ΔP    | WATER TEMP. | FLOOR TEMP. (SURFACE) | BTU/GF |
|------------|-------------|----------------|-------------|-----------|------------------------|------|-------|-------------|-----------------------|--------|
| 1          | BOILER ROOM | 1              | GARAGE      | 5/8"      | 265                    | 1.97 | 11.93 | 100         | 83.6                  | 43.8   |
| 1          | BOILER ROOM | 2              | GARAGE      | 5/8"      | 265                    | 1.97 | 11.93 | 100         | 83.6                  | 43.8   |
| 1          | BOILER ROOM | 3              | GARAGE      | 5/8"      | 266                    | 1.97 | 11.93 | 100         | 83.6                  | 43.8   |
| 1          | BOILER ROOM | 4              | GARAGE      | 5/8"      | 258                    | 1.91 | 11.04 | 100         | 83.6                  | 43.8   |
| 2          | BAV 2       | 5              | GARAGE      | 5/8"      | 274                    | 2.04 | 13.10 | 100         | 83.6                  | 43.8   |
| 2          | BAV 2       | 6              | GARAGE      | 5/8"      | 276                    | 2.06 | 13.40 | 100         | 83.6                  | 43.8   |
| 2          | BAV 2       | 7              | GARAGE      | 5/8"      | 272                    | 2.02 | 12.80 | 100         | 83.6                  | 43.8   |
| 2          | BAV 2       | 8              | GARAGE      | 5/8"      | 275                    | 2.05 | 13.25 | 100         | 83.6                  | 43.8   |
| 3          | BAV 3       | 9              | GARAGE      | 5/8"      | 275                    | 2.05 | 13.25 | 100         | 83.6                  | 43.8   |
| 3          | BAV 3       | 10             | GARAGE      | 5/8"      | 272                    | 2.02 | 12.80 | 100         | 83.6                  | 43.8   |

| MANIFOLD # | LOCATION | RADIANT LOOP # | AREA SERVED | TUBE SIZE | TUBE LENGTH (IN FLOOR) | GPM  | ΔP    | WATER TEMP. | FLOOR TEMP. (SURFACE) | BTU/GF |
|------------|----------|----------------|-------------|-----------|------------------------|------|-------|-------------|-----------------------|--------|
| 3          | BAV 3    | 11             | GARAGE      | 5/8"      | 276                    | 2.06 | 13.40 | 100         | 83.6                  | 43.8   |
| 3          | BAV 3    | 12             | GARAGE      | 5/8"      | 274                    | 2.04 | 13.10 | 100         | 83.6                  | 43.8   |
| 4          | BAV 4    | 13             | GARAGE      | 5/8"      | 274                    | 2.04 | 13.10 | 100         | 83.6                  | 43.8   |
| 4          | BAV 4    | 14             | GARAGE      | 5/8"      | 276                    | 2.06 | 13.40 | 100         | 83.6                  | 43.8   |
| 4          | BAV 4    | 15             | GARAGE      | 5/8"      | 272                    | 2.02 | 12.80 | 100         | 83.6                  | 43.8   |
| 4          | BAV 4    | 16             | GARAGE      | 5/8"      | 275                    | 2.05 | 13.25 | 100         | 83.6                  | 43.8   |
| 5          | BAV 5    | 17             | GARAGE      | 5/8"      | 279                    | 2.07 | 13.77 | 100         | 83.6                  | 43.8   |
| 5          | BAV 5    | 18             | GARAGE      | 5/8"      | 276                    | 2.06 | 13.40 | 100         | 83.6                  | 43.8   |
| 5          | BAV 5    | 19             | GARAGE      | 5/8"      | 281                    | 2.09 | 14.06 | 100         | 83.6                  | 43.8   |
| 5          | BAV 5    | 20             | GARAGE      | 5/8"      | 282                    | 2.10 | 14.24 | 100         | 83.6                  | 43.8   |

FLOOR PLAN  
SCALE: 1/4" = 1'-0"

NOTES:

1. ALL TUBING TO BE 6" FROM EXT. WALL, # SPACED 12" O.C. UNL.
2. TUBING BENDS TO BE RADIUS.
3. DEVIATION FROM LAYOUT SHALL BE FROM TUBING MANUFACTURERS AUTHORIZED REPRESENTATIVE.
4. TUBING INSTALLATION SHALL BE BY MANUFACTURERS AUTHORIZED REPRESENTATIVE.
5. SLAB CONSTRUCTION JOINT / EXPANSION JOINT PATTERN REQUIRES AN ALTERNATING AREA (CHECKER BOARD) POURING SEQUENCE FOR GARAGE FLOOR.



| SCALE:    | AS NOTED    |
|-----------|-------------|
| DATE:     | AUGUST 2002 |
| DRAWN BY: | N. HERSEY   |
| APPR. BY: | TEICH       |

| REVISIONS |
|-----------|
|           |

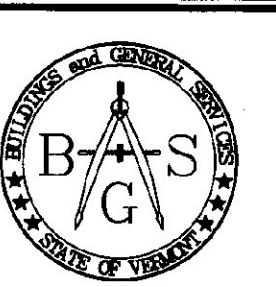
LYNDON A.O.T. GARAGE  
NEW HEAT & FLOOR PLAN  
RADIANT HEATING SYSTEM

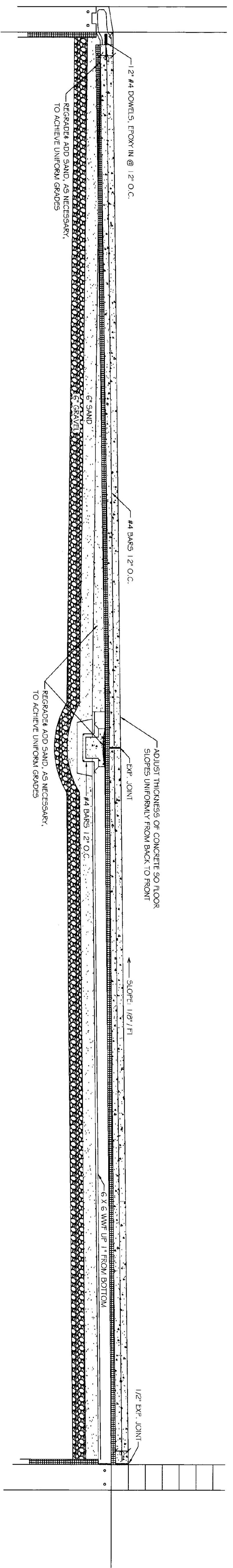
LYNDON,

VERMONT

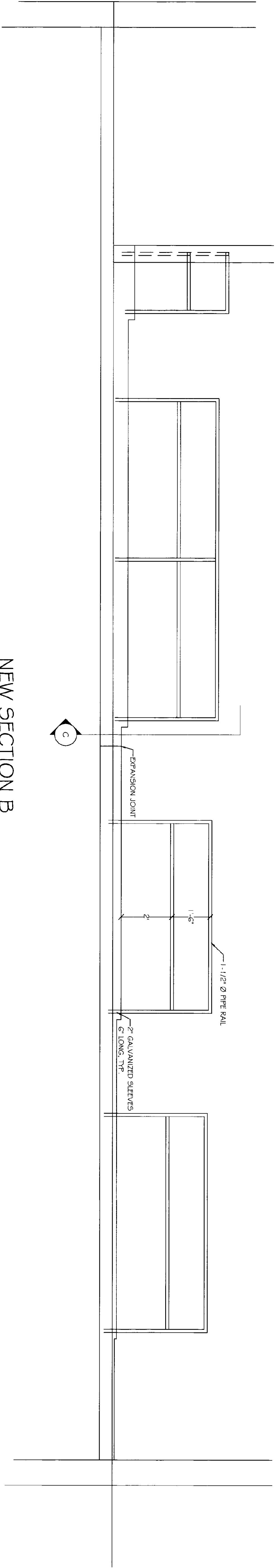


STATE OF VERMONT  
Department of Buildings  
and General Services  
Agency of Administration  
Montpelier, Vermont

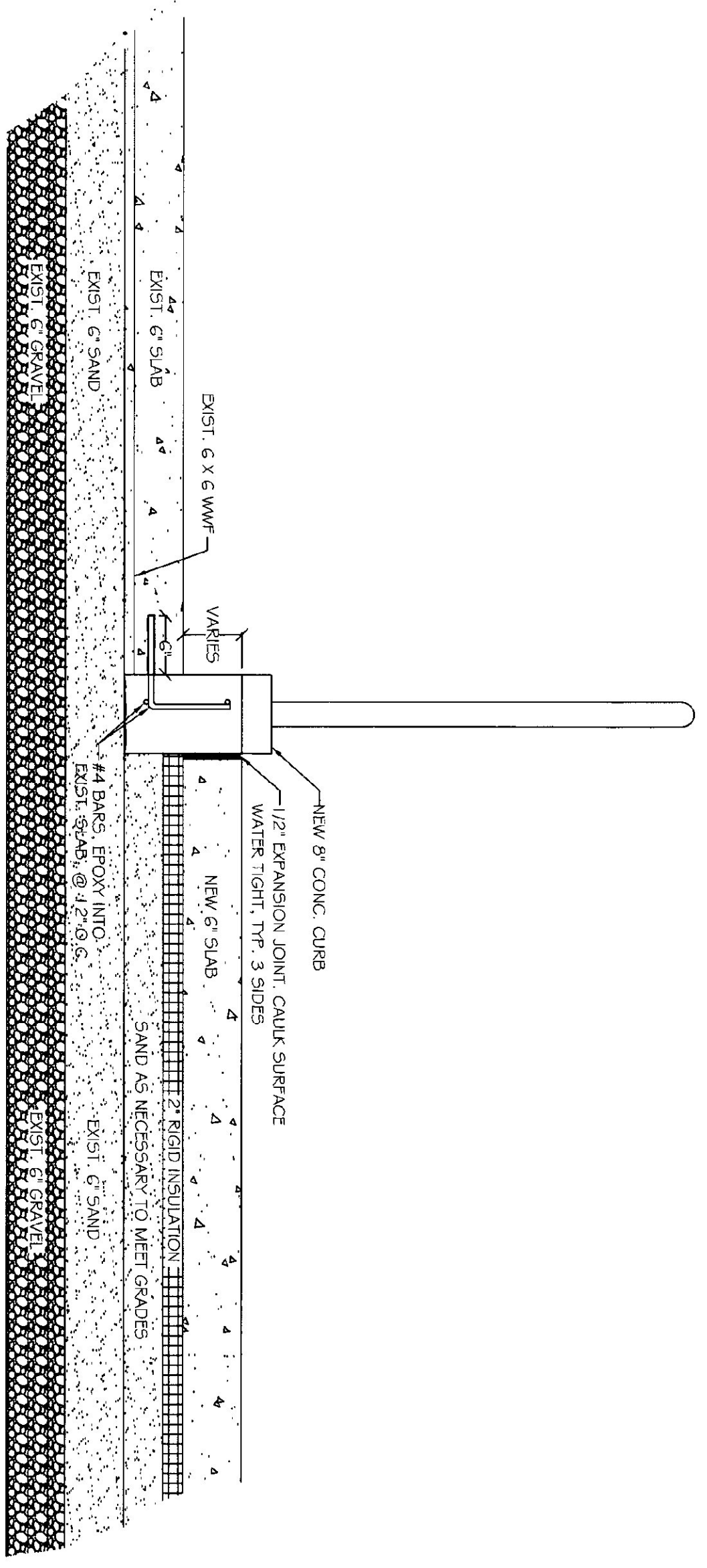




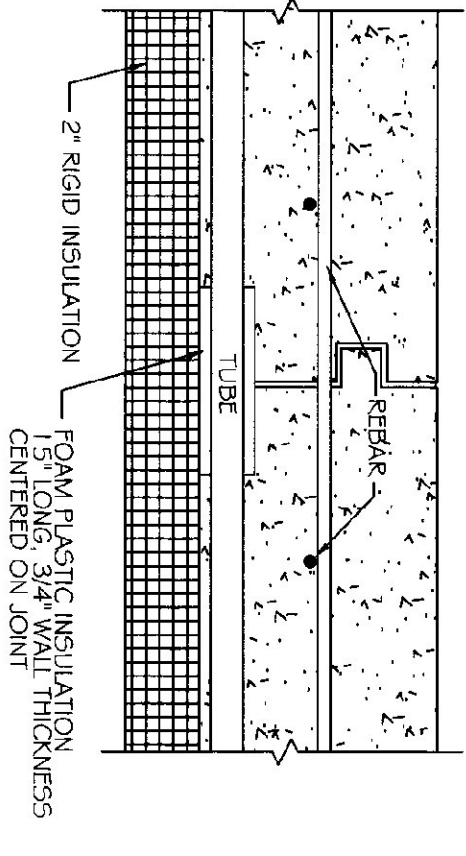
**NEW SECTION A**  
SCALE: 1/2" = 1'-0"



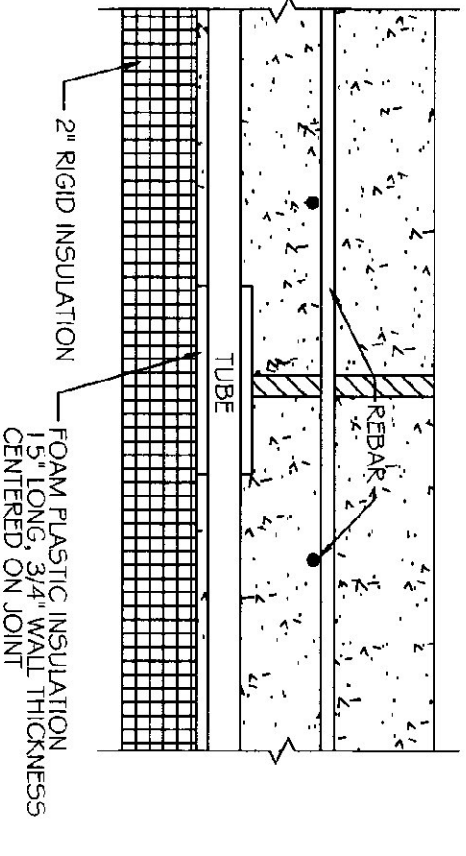
**NEW SECTION B**  
SCALE: 1/2" = 1'-0"



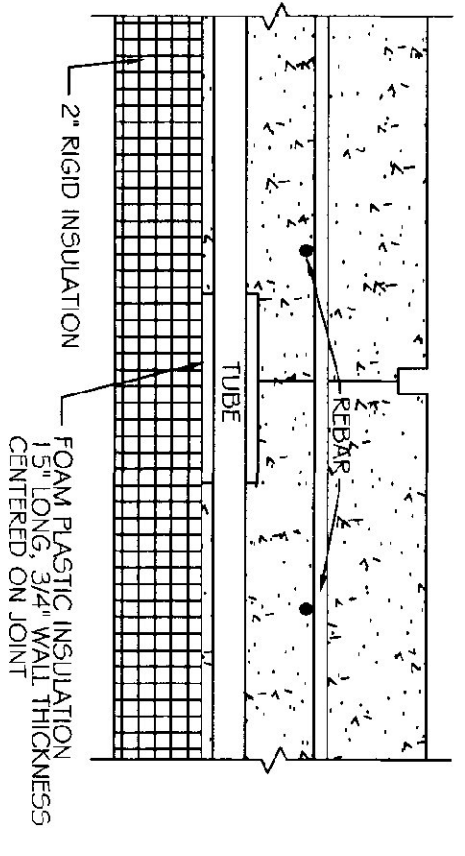
**NEW SECTION C**  
SCALE: 1" = 1'-0"



**CONSTRUCTION JOINT**  
NOT TO SCALE



**EXPANSION JOINT**  
NOT TO SCALE



**SAW CUT JOINT**  
NOT TO SCALE

NOTE:  
CONTRACTOR TO TAKE SPECIAL CARE  
WHEN CUTTING JOINT NOT TO DAMAGE  
TUBING.

**LEGEND**

|  |   |
|--|---|
|  | BALL VALVE, FULL PORTED, 5.5:1 BALL     |
|  | BALL VALVE WHOSE THREADS & BRASS CAP    |
|  | STRAINER & BALL VALVE BLOW DOWN         |
|  | MAKING VALVE SET @ 95°F                 |
|  | TACO 5003-C1                            |
|  | PRESSURE RELIEF VALVE, PIPE TO G.A.F.F. |
|  | THERMOSTAT, MOUNT @ 54" A.F.F.          |
|  | THERMOMETER                             |
|  | CIRCULATOR                              |
|  | PRESSURE GAUGE                          |
|  | TOUR-ANDERSON STAND BALANCING VALVE     |
|  | CHECK VALVE                             |
|  | CONNECTION BETWEEN DIST. & NEW          |

**SEQUENCE OF CONTROLS**

- EXISTING BOILER CONTROLS, CIRCULATOR P-2 & P-3 TO REMAIN AS IS.
- WHEN OUTDOOR AIR FALLS BELOW 60° (ADJ):
  - CIRCULATORS P-1 AND P-5 ARE STARTED.
  - CIRCULATOR P-4 IS ENDED.
- CIRCULATOR P-4 TO BE CONTROLLED BY A WISSCO PLOWK CONTROLLER. CONTROLLER TO SENSE OUTSIDE AIR TEMPERATURE, GARAGE TEMPERATURE, & LOOP TEMPERATURE AND MODULATE INJECTOR. CIRCULATOR P-4 TO MAINTAIN CALCULATED LOOP SUPPLY SETPOINT. SETPOINT OFFSET ON RATIO TO BE ADJUSTABLE AT CONTROLLER. SETPOINT TO BE RISE ON OUTDOOR AIR TEMPERATURE BASED ON THE FOLLOWING SCHEDULE:
 

|                   |          |
|-------------------|----------|
| OUTSIDE AIR TEMP. | SETPOINT |
| -20°F             | 40°F     |
| -40°F             | 57°F     |
| 77°F              | 77°F     |
- FAN F-1 TO BE CONTROLLED BY A SPING WOUND TIMER SWITCH. MAXIMUM 15 MINUTES.
- MOD-1 TO OPEN WHENEVER FAN F-1 OPERATES AND CLOSES WHEN F-1 STOPS.

**EQUIPMENT SCHEDULE**

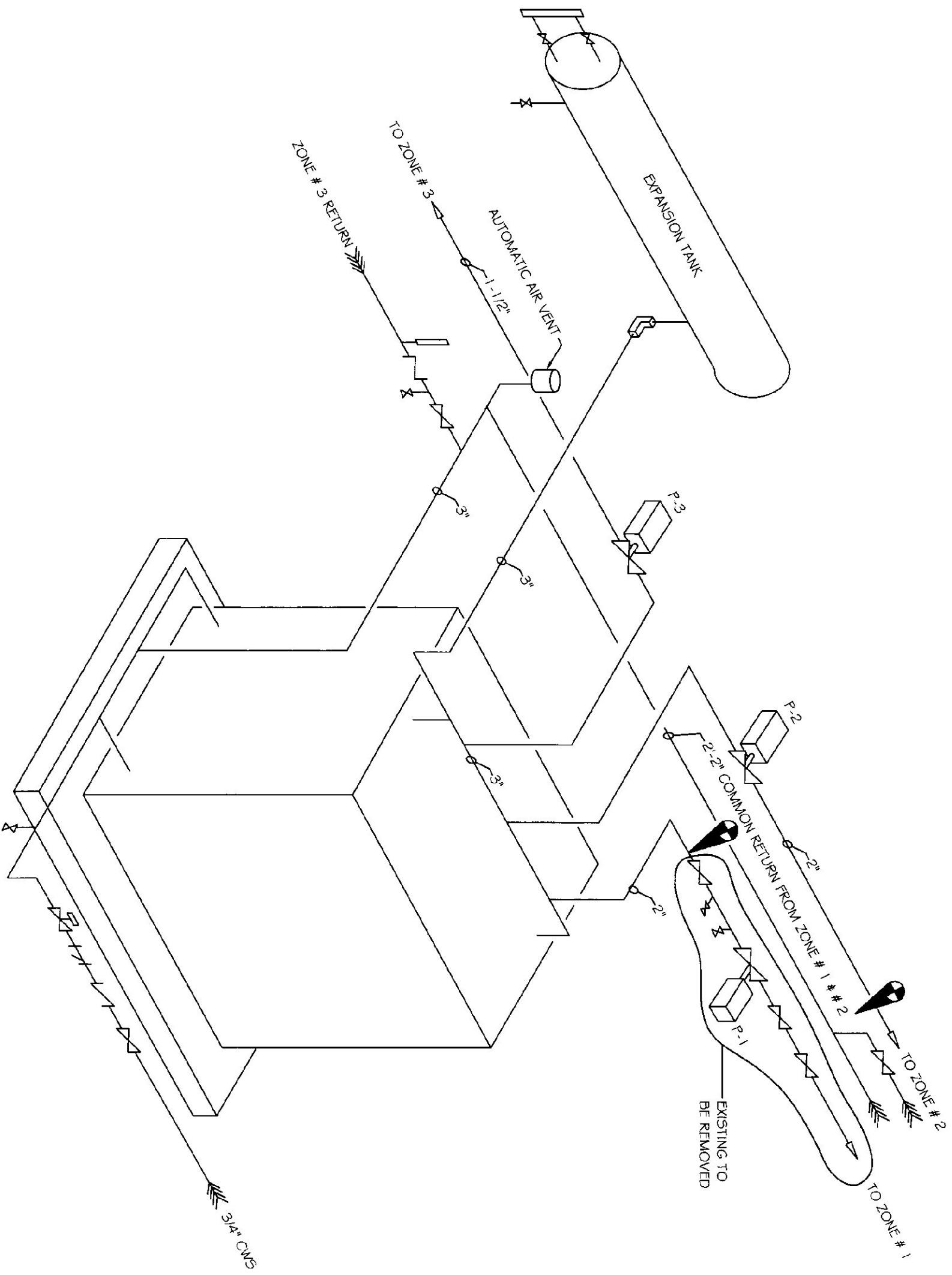
| PLAN SYMBOL | DESCRIPTION   | MANUF. & MODEL     | CHARACTERISTICS | ELECTRIC VOLTAGE/PH | NOTES  |
|-------------|---------------|--------------------|-----------------|---------------------|--|
| L-1         | RELIEF LOUVER | VENT PRODUCTS 2750 | 36" x 36"       |                     |  |
| MCO-1       | RELIEF DAMPER | VENT PRODUCTS 5703 | 36" x 36"       | 120V/60             | BEHIND DIRECT COUPLED ACTUATOR STRING WOUND N.C. |

**CIRCULATOR SCHEDULE**

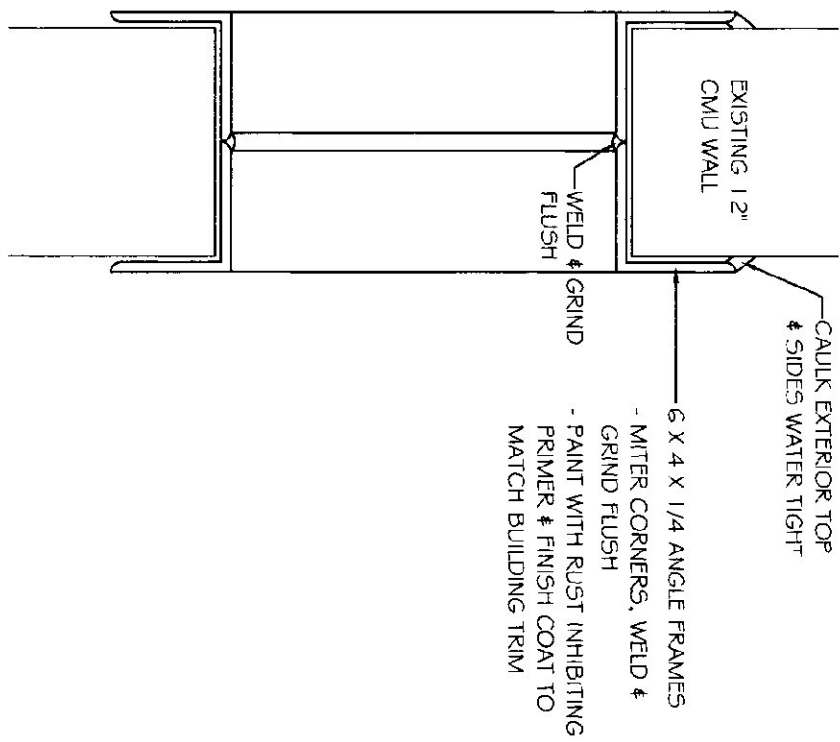
| PLAN SYMBOL | SYSTEM            | MANUF. & MODEL    | G.P.M. | FEET HEAD | H.P. | ELECTRICAL    | R.P.M. | NOTES    |
|-------------|-------------------|-------------------|--------|-----------|------|---------------|--------|----------|
| P-1         | MAIN              | TACO 0010         | 17     | 7.0       | 1/15 | 120V/60 1.2 A | 3250   |          |
| P-2         | GARAGE ZONE       | B & G 60-2AAA     | 50     | 25        | 3/4  | 120V/60       | 1725   | EXISTING |
| P-3         | OFFICE / BATHROOM | B & G 60-1 1/2AAA | 25     | 25        | 1/2  | 120V/60       | 1725   | EXISTING |
| P-4         | GARAGE INJECTION  | TACO 005          | 5.8    | 7.0       | 3/4  | 120V/60 5.3 A | 3250   |          |
| P-5         | GARAGE SLAB       | TACO 1615         | 40.7   | 25        | 1/95 | 120V/60       | 1750   |          |

**FAN SCHEDULE**

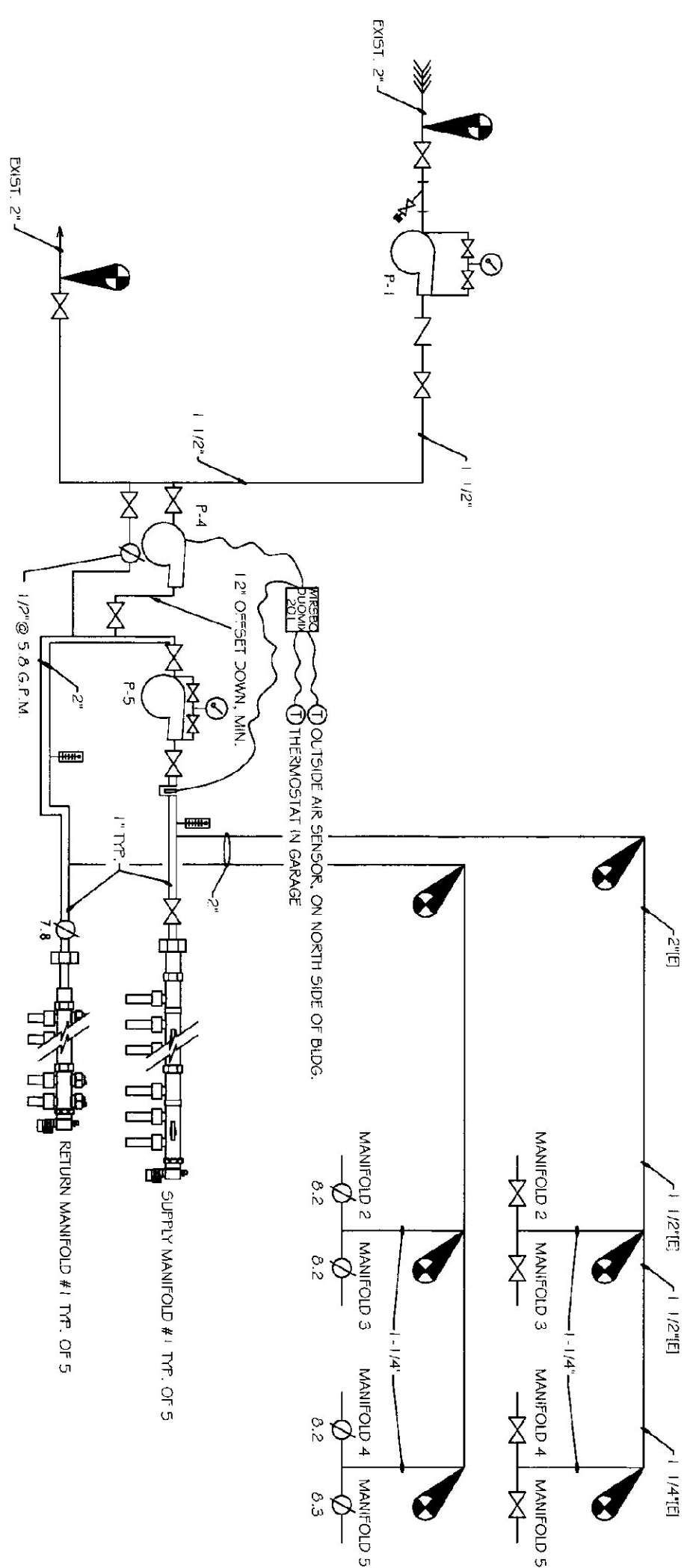
| PLAN SYMBOL | SYSTEM      | MANUF. MODEL & TYPE   | C.F.M. | S.P. IN. | SONES | FAN RPM | HP. | ELECTRICAL | NOTES                      |
|-------------|-------------|-----------------------|--------|----------|-------|---------|-----|------------|----------------------------|
| F-1         | GARAGE VENT | GREENHECK 3505-1120-4 | 3000   | 1.25     | 11.8  | 764     | 1/4 | 120V/60    | WEATHER HOOD, SCREEN & BUD |



**EXISTING BOILER DETAIL**  
NOT TO SCALE



**FRAMING DETAIL FOR NEW OPENINGS FOR LOUVERS / FAN**  
NOT TO SCALE



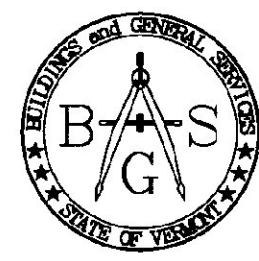
**HYDRONIC PIPING SCHEMATIC**  
NOT TO SCALE

LYNDON A.O.T. GARAGE  
RADIANT DETAILS  
RADIANT HEATING SYSTEM

VERMONT



STATE OF VERMONT  
Department of Buildings  
and General Services  
Agency of Administration  
Montpelier, Vermont



SCALE: AS NOTED  
DATE: AUGUST 2002  
DRAWN BY: N. HERSEY  
APPR. BY: TEIGH

REVISIONS