**CITY OF PORTLAND, OREGON - BUREAU OF DEVELOPMENT SERVICES**

1900 SW Fourth Avenue, Suite 5000 • Portland, Oregon 97201 • www.portlandonline.com/bds • Fax 503-823-7425

# Facility Permit Plan Intake Form

**FOR INTAKE, STAFF USE ONLY**

Date Received 7/19/12

Building Registration #

Fixed Bid

Bin # F8

Building Permit #

Mechanical # 12-164250-FA

Plumbing Permit #

Electrical Permit #

Building/Mechanical Tom 1

Electrical John 3

Plumbing

Fire Jeff 2

Planning

BES

PDOT

Structural

Other

**APPLICANT: Complete all sections below that apply to the project. Please print legibly.**

Print Name Brad Manchester Sign Name Brad Manchester

Street Address 1339 SE Gideon St

City Portland State OR Zip Code 97202

Day Phone 503-239-4600 FAX 503-239-7038 email

**Plans / permits available for pick up at 1900 SW 4th Avenue, 2nd floor between 8:00 am to 5:00 pm**

Contact Name for plan/permit pick up Brad Manchester

Day Phone 503-239-4600 email

Project Building Name / # ADP Building

Project Address or Location 2525 SW 1st Ave 2nd Floor

Project Name and Description Envision TI

Total Project Value Project Reference #/Billing ID #

Building Contractor CCB #

MechanicalContractor American Heating CCB # 33135

Electrical Contractor CCB# License #

Plumbing Contractor CCB# License #

☐ **Building Permit**

No. of Stories

Const. Type

[Y] [N] Alarms Required

[Y] [N] Smoke Det. Req'd

[Y] [N] Sprinklers Req'd

[Y] [N] Struct. Eng / Calcs Submitted

☒ **Mechanical Permit**

Mechanical Valuation 67,653

Description HVAC modifications to TI space

☐ **Electrical Permit**

Please provide a completed standard electrical permit application form. You may mail or deliver it to 1900 SW 4th Avenue, Portland, Oregon 97201 or FAX to 503-823-7425.

☐ **Plumbing Permit**

Number of Fixtures

Back Flow Devices

Water Service (# of Feet)

Medical Gas

Other

# AMERICAN HEATING:
# WATER SOURCE HEAT PUMP
## ATTACHMENT @ CONCRETE OVER METAL DECK

STRUCTURAL CALCULATIONS

| | SHEETS |
|---|---|
| MECHANICAL UNIT CALCULATIONS | MA1-MA4 |
| SKETCHES | SK1 |

CURTIS D. GAGNER
STATE OF WASHINGTON
42073
REGISTERED
PROFESSIONAL ENGINEER
7/22/11

STRUCTURAL
REGISTERED PROFESSIONAL
ENGINEER
63354 PE
OREGON
FEB. 13, 2008
CURTIS D. GAGNER
EXPIRES: 6/30/13
6/24/11

June 24, 2011

CIDA PROJECT NUMBER: 100087.01

CIDA

15895 SW 72ND AVE, SUITE 200
PORTLAND, OREGON 97224
(503) 226-1285 ∃ fax (503) 226-1670
E-MAIL: info@cidainc.com

RECEIVED
JUL 26 2012
FACILITIES PER

COMMERCIAL INDUSTRIAL DESIGN ARCHITECTURE P.C. CIDA INC.

CIDA
TEL: (503) 226-1285
FAX: (503)226 1670



## MECHANICAL UNIT ATTACHMENT-LATERAL FORCES
## Water Source Heat Pump Hung below floor framing

$W_p := 400lb$ Weight of unit

$L := 56.75in$ Length

$w_m := 31.75in$ Width of unit

$h_m := 21 \cdot in$ Height of unit

## SEISMIC PARTS AND PORTIONS (Portland, OR 97229)

Mapped $S_s := 1.073$ site class= D

Adjusted Maximum

$S_{ms} := F_a \cdot S_s$ $F_a := 1.07$ $S_{ms} = 1.15$

Design

$S_{DS} := \frac{2}{3} \cdot S_{ms}$ $S_{DS} = 0.765$

USE $S_{DS} := 0.80$ CONSERVATIVE FOR PORTLAND METRO AND VANCOUVER WA AREAS

$h := 10$ $z := h \cdot 0.75$ Assumes maximum 4-story building with box under 4th floor

$I_p := 1.0$

$a_p := 1.0$ $R_p := 2.5$ Values for wet side HVAC per table 13.6-1 ASCE 7-05

$Fp := \frac{0.4 \cdot a_p \cdot S_{DS} \cdot I_p}{R_p} \cdot \left(1 + 2 \cdot \frac{z}{h}\right) \cdot W_p$ $Fp = 128\,lb$ $0.7 \cdot Fp = 89.6\,lb$ Total seismic

$F_{pmin} := 0.3 \cdot S_{DS} \cdot I_p \cdot W_p$ $F_{pmin} = 96\,lb$ $0.7 \cdot F_{pmin} = 67.2\,lb$ Total seismic

$0.2 \cdot S_{DS} \cdot W_p = 64\,lb$

## VERTICAL ATTACHMENT OF HEAT PUMP TO UNDERSIDE OF CONCRETE OVER METAL DECK

$P_{corner} := \frac{W_p}{4}$ $\quad P_{corner} = 100\ lb$ Vertical load to corner support from dead load

$M_{ot} := Fp \cdot \frac{h_m}{2}$

$P_{seis} := \frac{M_{ot}}{w_m \cdot 2}$ $\quad P_{seis} = 21.17\ lb$ Vertical load to corner support from seismic overturning

ASD loads for attachment to unit 1.0dD+0.7E, 0.6D-0.7E

$P_1 := P_{corner} + 0.7\left(\frac{0.2S_{DS} \cdot W_p}{4} + P_{seis}\right)$ $\quad P_1 = 126.02\ lb$ Maximum vertical load

$P_2 := 0.6 \cdot P_{corner} - 0.7 \cdot \left(\frac{0.2 \cdot S_{DS} \cdot W_p}{4} + P_{seis}\right)$ $\quad P_2 = 33.98\ lb$ Minimum vertical load > 0 no compression in vertical support

### 3/8" Rods each corner

LRFD loads for attachment to concrete 1.2D+1.0E, 0.9D-1.0E

$P_{1ult} := \left[1.2 \cdot P_{corner} + 1.0 \cdot \left(\frac{0.2 \cdot S_{DS} \cdot W_p}{4} + P_{seis}\right)\right] \cdot 1.3$ $\quad P_{1ult} = 204.31\ lb$ Maximum vertical load

$P_{2ult} := \left[0.9 \cdot P_{corner} - 1.0 \cdot \left(\frac{0.2 \cdot S_{DS} \cdot W_p}{4} + P_{seis}\right)\right] \cdot 1.3$ $\quad P_{2ult} = 68.69\ lb$ Minimum vertical load > 0 no compression in vertical support

Note: loads increased by 1.3 per ASCE 7-05 section 13.4.2a

Try 3/8"x 1 1/2" embed Simpson Titen HD anchor at support

$N_{pn} := 580lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 2240lb$ steel strength in shear (conc. on metal deck-cracked)

$U := \frac{P_{1ult}}{0.75 \cdot 0.65 \cdot N_{pn}}$ $\quad U = 0.72$ <1.0 OK use 3/8"dia Simpson Titen HD anchor w/ 1 1/2" min embed at each support--install per ESR 2713

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FAX: (503)226 1670





## LATERAL BRACING OF WATER SOURCE HEAT PUMP

Box is braced by splay wires at 45degrees vertical and horizontal each corner (4) total.

$T_{wire} := \frac{Fp}{2} \cdot \sqrt{2} \cdot \sqrt{2}$ $\quad T_{wire} = 128\ lb$

LRFD for attachment to concrete

$T_{ult} := T_{wire} \cdot 1.3$ $\quad T_{ult} = 166.4\ lb$ $\quad$ 1.0E load increased by 1.3 per ASCE 7-05 section 13.4.2a

$V_{ert} := \frac{T_{ult}}{\sqrt{2}}$ $\quad V_{ert} = 117.66\ lb$ $\quad$ Vertical component of wire force

$H_{oriz} := \frac{T_{ult}}{\sqrt{2}}$ $\quad H_{oriz} = 117.66\ lb$ $\quad$ horizontal component of wire force

Try 3/8"x 1 1/2" embed Simpson Titen HD anchor at each wire

$N_{pn} := 580lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 2240lb$ steel strength in shear (conc. on metal deck-cracked)

$U := \frac{V_{ert}}{0.75 \cdot 0.65 \cdot N_{pn}} + \frac{H_{oriz}}{0.75 \cdot 0.60 \cdot V_{st}}$ $\quad U = 0.53$ $\quad$ <1.2 OK use 3/8"dia Simpson Titen HD anchor w/ 1 1/2" min embed at each wire--install per ESR 2713

Alternate anchors:

1/2" dia Simpson Strongbolt w/ 2 3/4"embed ESR 1771

$N_{pn} := 1335lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 4405lb$ steel strength in shear (conc. on metal deck-cracked)

3/8" dia Powers Snake+ w/ 1 5/8"embed ESR 2272

$N_{pn} := 1075lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 770lb$ steel strength in shear (conc. on metal deck-cracked)

3/8" dia Powers Stud+ SD1 w/ 2 3/8"embed ESR2818

$N_{pn} := 1375lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 2120lb$ steel strength in shear (conc. on metal deck-cracked)

3/8" dia Powers Wedge Bolt+ w/ 2 1/8"embed ESR2526

$N_{pn} := 1425lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 1640lb$ steel strength in shear (conc. on metal deck-cracked)

3/8"x 1 1/2" embed Simpson Titen HD Rod Hangers ESR 2713 (THD37212RH)

$N_{pn} := 580lb$ Pullout resistance (conc. on metal deck-cracked)

$V_{st} := 2240lb$ steel strength in shear (conc. on metal deck-cracked)

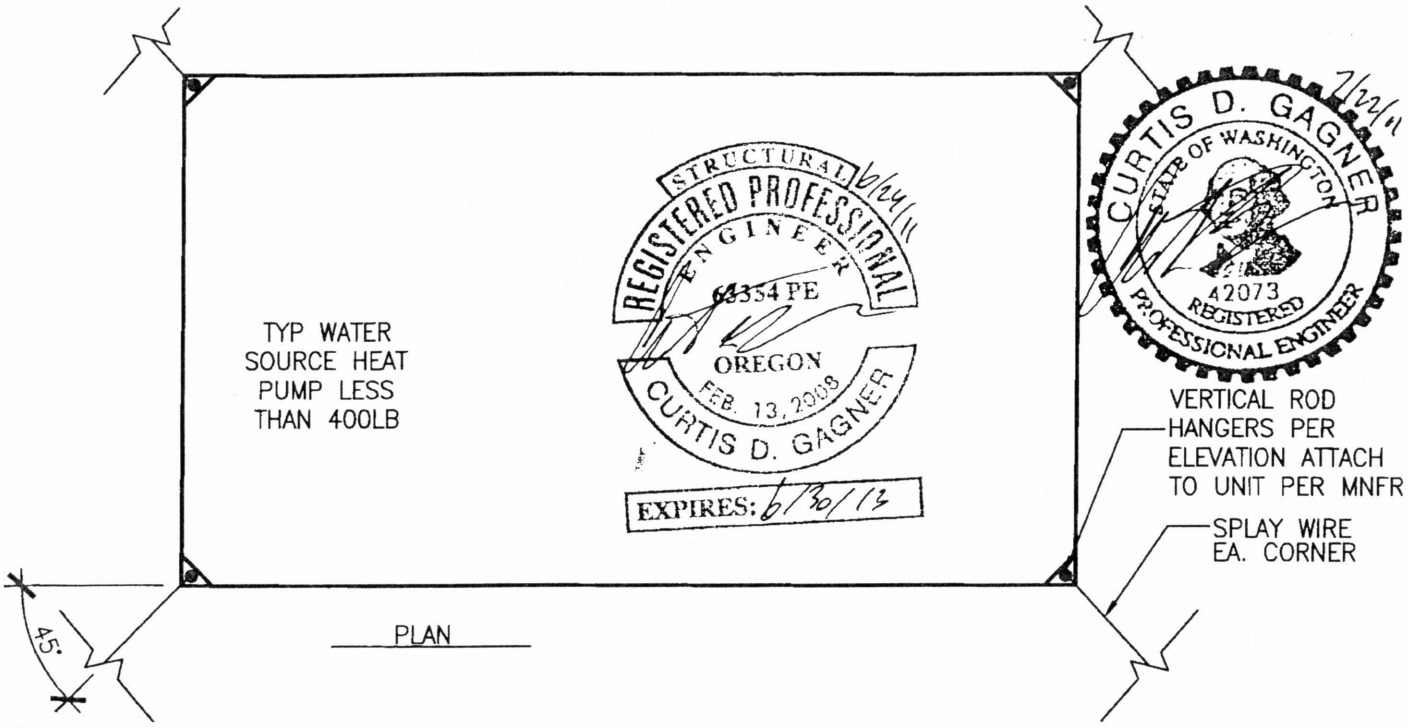
Simpson Blue Banger Cast in place Inserts for conc. over metal deck

$T_{ult} := 3210lb$ $T_{allow} := 800lb$

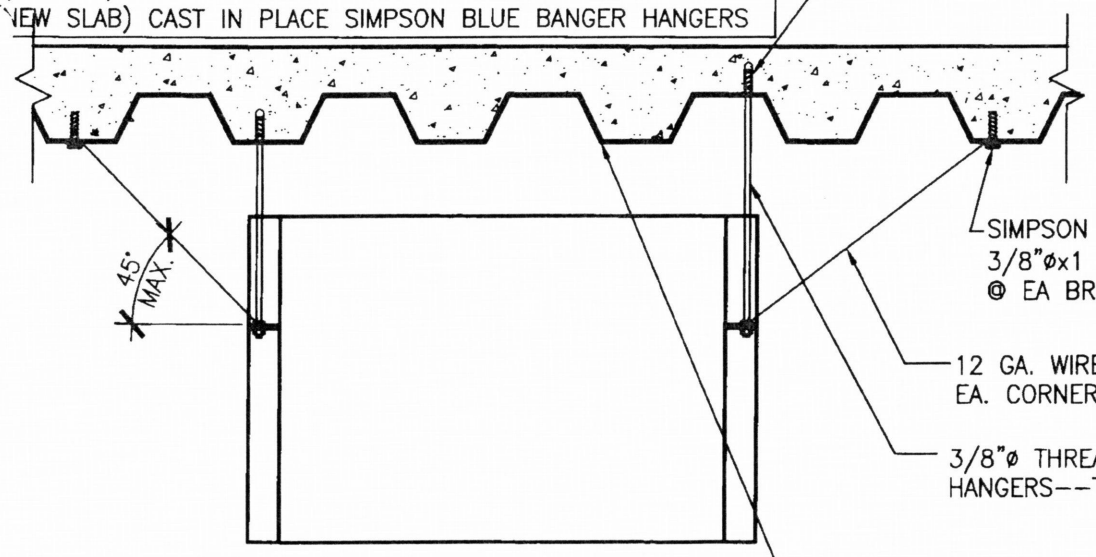
$V_{ult} := 2790lb$ $V_{allow} := 700lb$

$U := \frac{P_{1ult}}{T_{allow}}$ $U = 0.26$ <1.0 OK use Simpson Blue Banger Inserts at each support rod

$U := \frac{V_{ert}}{T_{allow}} + \frac{H_{oriz}}{V_{allow}}$ $U = 0.32$ <1.2 OK use Simpson Blue Banger Inserts at each splay wire




ALTERNATE CONCRETE ANCHORS: (EXISTING SLAB)
3/8"x2 1/8" POWERS WEDGEBOLT PER ESR 2526
3/8"x2 1/2" POWERS POWER STUD+ SD1 PER ESR 2818
1/2"x2 3/4" SIMPSON STRONGBOLT PER ESR 1771
3/8"x 1 5/8" EMBED POWERS SNAKE+ PER ESR 2272
3/8"x1 1/2" EMBED SIMPSON TITEN HD PER ESR 2713
3/8"x2 1/2" SIMPSON TITEN HD ROD HANGER PER ESR 2713
(NEW SLAB) CAST IN PLACE SIMPSON BLUE BANGER HANGERS




1 / SK

# WATER SOURCE HEAT PUMP

1" = 1'-0"

**AMERICAN HEATING**
**STANDARD DETAIL**

**WATER SOURCE HEAT PUMP ATTCHMNT - SK1**

06.24.11
CDG

1" = 1'-0"

CIDA 15895 SW 72ND AVE. SUITE 200 PORTLAND, OREGON 97224 TEL: (503) 226-1285 FAX: (503) 226-1670
ARCHITECTURE • ENGINEERING • PLANNING • INTERIORS

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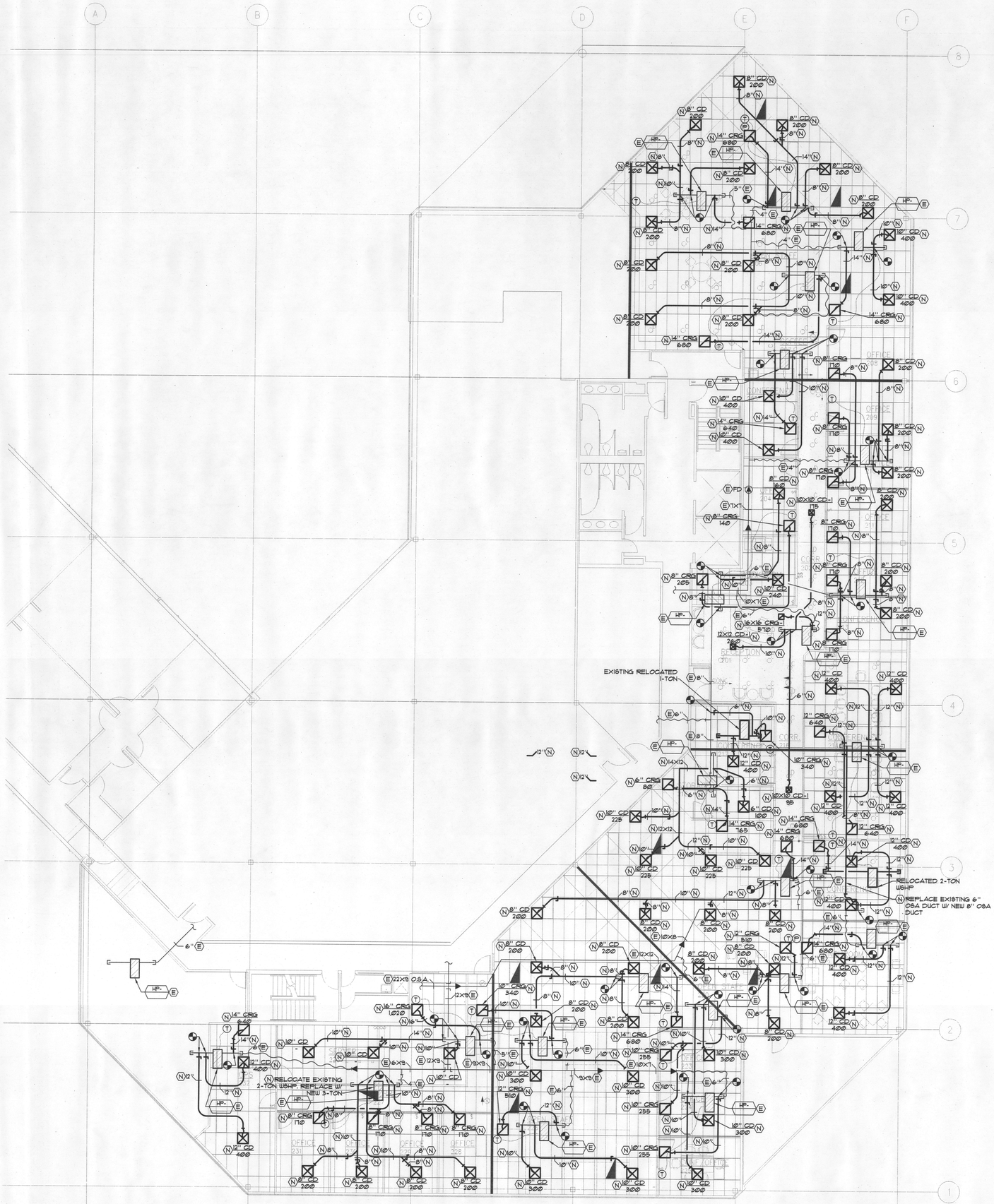
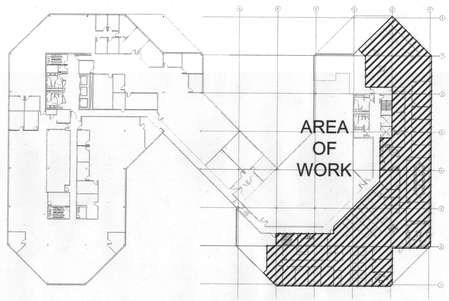



1 M200 PARTIAL SECOND FLOOR PLAN - HVAC
SCALE: 1/8" = 1'-0"




2 M200 KEY PLAN
SCALE: NONE

## LEGEND

| | |
|---|---|
| CD | CEILING DIFFUSER - T-BAR |
| CD-1 | CEILING DIFFUSER - SURFACE MOUNT |
| CRG | CEILING RETURN GRILLE - T-BAR |
| CRG-1 | CEILING RETURN GRILLE - SURFACE MOUNT |
| CEG | CEILING EXHAUST GRILLE - T-BAR |
| CEG-1 | CEILING EXHAUST GRILLE - SURFACE MOUNT |
| CTG | CEILING TRANSFER GRILLE - T-BAR |
| CTG-1 | CEILING TRANSFER GRILLE - SURFACE MOUNT |
| SWT | SIDE WALL TRANSFER GRILLE |
| SWS | SIDE WALL SUPPLY |
| SWR | SIDE WALL RETURN |
| SWE | SIDE WALL EXHAUST |
| SD | SLOT DIFFUSER - T-BAR |
| SD-1 | SLOT DIFFUSER - SURFACE MOUNT |
| FSG | FLOOR SUPPLY GRILLE |
| FRG | FLOOR RETURN GRILLE |
| TOD | TOP OF DUCT |
| BOD | BOTTOM OF DUCT |
| S/A | SUPPLY AIR |
| R/A | RETURN AIR |
| E/A | EXHAUST AIR |
| VTR | VENT THROUGH ROOF |
| TJS | THROUGH JOIST SPACE |
| A.F.F. | ABOVE FINISHED FLOOR |
| B.F.C. | BELOW FINISHED CEILING |
| | SUPPLY DUCT/DIFFUSER GRILLE |
| | RETURN DUCT/DIFFUSER GRILLE |
| | EXHAUST DUCT/DIFFUSER GRILLE |
| SIZE / CFM | DIFFUSER & GRILLE CALL OUT |
| CALL OUT / DETAIL | EQUIPMENT CALL OUT |
| | CONNECT TO EXISTING |
| | SMOKE DETECTOR |
| SD | SMOKE DAMPER |
| MD | MOTORIZED DAMPER |
| E | EXISTING TO REMAIN |
| R | RELOCATE |
| X | REMOVE |
| N | NEW |
| | FIRE DAMPER - FD |
| | FIRE SMOKE DAMPER - FSD |
| | VOLUME CONTROL DAMPER - VD |
| S | SENSOR |
| T | THERMOSTAT |
| G | GAS PIPING |
| | DUCT WITH LINER |
| | DUCT WITH LINER |
| | NEW LINE TYPE - TYPICAL |
| | EXISTING LINE TYPE - TYPICAL |
| | DEMO LINE TYPE - TYPICAL |
| RB | RETURN AIR BALANCE TAG |
| SB | SUPPLY AIR BALANCE TAG |
| EBB | EXHAUST AIR BALANCE TAG |

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INITIALS:

| DRAWING REVISION NOTES | DATE |
|---|---|
| | |

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# PARTIAL SECOND FLOOR PLAN - HVAC

ADP - EVISION T.I.
2525 SW 1ST AVENUE - 2ND FLOOR
PORTLAND, OREGON
97201

American Heating, Inc.
1339 S.E. GIDEON STREET
PORTLAND, OREGON 97202-2418
TELEPHONE (503) 239-4800 FAX (503) 239-7038

City of Portland
AUG 10 2012
12-164250-FA
Permit Number

| | |
|---|---|
| JOB START DATE: | 7/2/2012 |
| DESIGNED BY: | D. HAMMETT |
| JOB SETUP BY: | J. DAVENPORT |
| JOB NO. | E12xxx |
| SHT. NO. | M200 |
| SHEETS IN SET | 8 OF 1 |

12-164250-FA

PRELIMINARY