SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

VAPOR INTRUSION ASSESSMENT WORK PLAN

Property:
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Report Date:
January 25, 2018

Prepared for:
Washington State Department of Ecology
Toxics Cleanup Program
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington

VAPOR INTRUSION ASSESSMENT WORK PLAN

Prepared for:

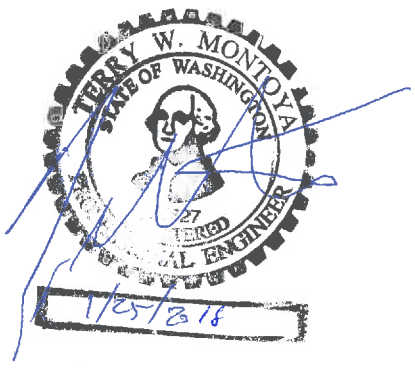
Washington State Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008

Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington 98109

Project No.: 0731-004

Prepared by:

Elizabeth Forbes, LG
Project Geologist



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January 25, 2018

SoundEarth Strategies

TABLE OF CONTENTS

FIGURES

TABLE OF CONTENTS (CONTINUED)

TABLES

APPENDICES

1.0 INTRODUCTION

On behalf of Touchstone SLU LLC and TB TS/RELP LLC (Touchstone), SoundEarth Strategies, Inc. (SoundEarth) has prepared this Vapor Intrusion Assessment Work Plan (Work Plan) to describe air quality sampling to be conducted at the Troy Laundry Property located at 307 Fairview Avenue North in Seattle, Washington (Property; see Figure 1). An interim action is currently in progress and being conducted under the authority of the First Amendment of Agreed Order No. DE 8996 between Touchstone and the Washington State Department of Ecology (Ecology).

An Interim Action Plan (IAP; SoundEarth 2013) was approved as a conceptual plan by Ecology on October 10, 2013. An Engineering Design Report (EDR; SoundEarth 2014) was prepared to include details necessary to implement the IAP. Ecology approved the EDR on March 4, 2014. The ongoing interim action is being conducted in accordance with the IAP and EDR.

The vapor intrusion assessment is being conducted in general accordance with Ecology and U.S. Environmental Protection Agency (EPA) guidance documents:

- Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, dated October 2009 and updated in February 2016
- Ecology's Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion (Implementation Memorandum #14), dated March 2016
- EPA's Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites, dated June 2015 (EPA 2015a)
- EPA's Office of Solid Waste and Emergency Response Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from the Subsurface Vapor Sources to Indoor Air, dated June 2015 (EPA 2015b)

1.1 PURPOSE

The objective of this Work Plan is to provide Ecology with the proposed air quality sampling locations, laboratory analytical methods, quality assurance/quality control procedures, and schedule for the proposed air quality sampling event. The purpose of this proposed air quality sampling event is to evaluate the potential vapor intrusion pathway at the Property and to assess whether the interim action goal for indoor air has been achieved. The goal for indoor air at the Property is for concentrations of chemicals of concern (COCs) to be below remediation levels at the point of compliance as presented in the IAP. The points of compliance for indoor will be the standard point of compliance per Washington Administrative Code 173-340-750(6), which is ambient air throughout the Property.

2.0 BACKGROUND

Previous environmental investigations completed on the Property confirmed the presence of chlorinated volatile organic compounds (CVOCs), including tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride in soil, as well as gasoline-, diesel-, and oil-range petroleum hydrocarbons (GRPH, DRPH, and ORPH, respectively) in soil. Soil vapor, and groundwater beneath the Property and portions of the Boren Avenue North, Thomas Street, and Terry Avenue rights-of-way (the Site) also contain CVOCs above applicable cleanup levels. Additional

background information and references are provided in the Draft Remedial Investigation Report (SoundEarth 2012a), Draft Feasibility Study (SoundEarth 2012b), and Draft Addendum—Supplemental Remedial Investigation Report (SoundEarth 2012c).

An interim action has been ongoing at the Property since 2014. Between July 2014 and February 2015, as part of the interim action, the Property was excavated from lot-line to lot-line. Once soil was excavated, soil samples were collected to document that soil exceeding remediation levels had been removed from the Property.

As part of the vapor intrusion evaluation, Ecology requested that SoundEarth evaluate soil analytical results from the final extents of the remedial excavation to determine if residual COCs remain beyond the limits of the engineered shoring wall. 178 soil samples were collected from the sidewalls and 20 soil samples were collected from the floor of the excavation.

- The analytical results from the floor of the excavation and the east and south sidewalls indicated that concentrations of COCs were below interim action remediation levels for soil, including samples collected from beneath the elevator pit locations.
- Of 13 soil samples collected from the north sidewall of the excavation, analytical results for all COCs were below laboratory reporting limits with the exception of a single sample at an approximate elevation of 32 feet North American Vertical Datum of 1988 (NAVD88), which contained concentrations of GRPH above the interim action remediation level (Table 1).
- Of 125 soil samples collected from the west sidewall of the excavation, 6 samples contained concentrations of PCE and TCE above interim action remediation levels, and 2 samples contained concentrations of GRPH above the interim action remediation levels. Soil analytical data is presented in Table 1.

Select sidewall soil analytical results are depicted on Figures 2 and 3.

Following excavation activities, monitoring wells were installed to replace the wells that were decommissioned during the excavation, and a groundwater injection system was installed. The purpose of the injection system is to accomplish the groundwater interim action goal using in situ treatment of contaminated groundwater by reductive dechlorination. In May 2015 and April 2016, SoundEarth completed injection events at the Property in general accordance with the EDR.

A quarterly groundwater monitoring program was initiated at the Site to evaluate the injection system progress and to provide additional data on the groundwater flow at the Site. Quarterly groundwater monitoring events have been conducted in May, August, and December 2015; March, July, and October 2016; and January and May/June 2017. Groundwater analytical data is presented in Table 2 and on Figure 4.

A detailed description of interim action work conducted between February 2014 and June 2015 is provided in the Interim Action Progress Report (SoundEarth 2015).

2.1 BUILDING DESCRIPTION

The Property has been redeveloped with two office towers: one 12-story tower (South Tower) and one 13-story tower (North Tower). The new structures include approximately 810,000 square feet of office space; 1,500 square feet of street level retail space, public open space between the two towers; and a

five-level underground parking garage to accommodate up to 1,120 vehicles, underlying and servicing both towers. The South Tower occupancy began September 13, 2016, and the North Tower occupancy began August 1, 2017.

The five-level parking garage is designed with 18-inch-thick concrete walls and a 5-inch-thick slab-on-grade foundation. Seven individual elevators extend to the bottom level (P5) of the underground parking garage, which is at an approximate elevation of 36 feet NAVD88 (Figure 4). Three elevator pits extend beneath the foundation slab. One elevator pit extends to an elevation of 29.9 feet NAVD88 and includes three elevator cars for the North Tower. The South Tower has an elevator pit and service pit. The service pit extends to an elevation of 29.3 feet NAVD88 and includes a single service elevator car. The South Tower elevator pit extends to an elevation of 29.9 feet NAVD88 and includes three elevator cars. A sump is located in the northeast corner of the elevator pit and extends to an elevation of 29.5 feet NAVD88. A mat slab is installed beneath the elevator pit area in the South Tower, as shown on Figures 5 and 6. The mat slab is approximately 3.5 feet thick.

The parking garage and overlying commercial buildings are designed to have separate heating, ventilating, and air conditioning (HVAC) systems operating independently of one another. The garage HVAC system is programmed to control the minimum and maximum air exchange design settings. The air intake and air source for the parking garage is located on ground level on the north side of the building. Two exhaust vents are located in the parking garage, one along the eastern wall and the other in the southwest portion of the parking garage. Both exhaust vents from the parking garage daylight on Level 3 of the building. The exhaust vent locations are depicted on Figures 5, and 7 through 11.

The exhaust fans run continuously. The exhaust fan speed is modulated to maintain carbon monoxide levels below 35 parts per million. The minimum total exhaust flow rate is 0.5 cubic feet per minute per square foot, in accordance with the Seattle Municipal Code. On the P4 and P5 parking levels, the supply fan starts and operates in conjunction with the exhaust fans. Based on the building airflow diagrams provided by McKinstry, the HVAC contractor, parking levels P1 through P3 operate with a slightly negative pressure to the outside pressure, while parking levels P4 and P5 maintain a neutral pressure. HVAC drawings are provided in Appendix A.

The parking garage air exchange system can be modified to increase the air exchange rate in the parking garage to mitigate potential vapor intrusion. The building, elevator lobby on each parking level, and elevator shafts are designed to maintain a positive pressure compared to the parking garage, which will prevent garage air from entering the occupied space of the buildings.

Based on the building airflow diagrams provided by McKinstry, the HVAC contractor, parking levels P1 through P3 operate with a slightly negative pressure to the outside pressure, while parking levels P4 and P5 maintain a neutral pressure. These pressure differentials are expected to be present at all times in the parking garage. HVAC drawings and flow diagrams are provided in Appendix A. The indoor air samples will be collected with the HVAC system operating under normal conditions.

2.2 TIER I ASSESSMENT

As discussed in the EDR, upon completion of the remedial excavation and the initial injection event, a vapor intrusion assessment was conducted in general accordance with the tiered approach presented in Ecology's draft *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. In addition, a vapor intrusion assessment of petroleum hydrocarbons was conducted in

general accordance with the EPA's *Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites* (EPA 2015a). A Tier I assessment was conducted by comparing existing groundwater conditions to the Method B groundwater screening levels protective of indoor air and comparing available soil gas data to the Method B soil gas screening level.

The Method B groundwater screening levels are based on an assumption of unrestricted building use. Analytical results from the past four quarterly groundwater events indicated that groundwater samples collected from six on-Property monitoring wells (MW18, MW19, MW22, MW23, MW24, and MW25) contain concentrations of one or more of PCE, TCE, cis-1,2-DCE, and vinyl chloride that exceed the Method B groundwater screening levels. The on-Property groundwater results compared to the Method B groundwater screening levels are shown on Figure 4.

Analytical results from the most recent groundwater monitoring event indicated that groundwater samples collected from seven monitoring wells (MW18, MW19, and MW21 through MW25) on the Property contained concentrations of DRPH and ORPH that exceed the Method B groundwater screening levels. However, historical groundwater data indicates concentrations of DRPH and ORPH in on-Property wells were below the Method B groundwater screening levels. The exceedances in the groundwater samples collected late 2016 and early 2017 are influenced by the injection of EOS in April and May 2016. In fact, laboratory reports note that for groundwater samples collected from monitoring wells installed on the Property, the chromatographic patterns for DRPH does not resemble the fuel standard.

On-Property groundwater elevations during the most recent sampling event (May/June 2017) ranged from 9.98 to 14.93 feet NAVD88. The basement slab is located at approximately 35 feet NAVD88. Based on the EPA's 2015a guidance, a vertical separation distance between the lowest slab elevation and groundwater of 15 feet is sufficient to protect vapor intrusion from a petroleum source with light nonaqueous-phase liquid (LNAPL). While EPA petroleum guidance is not directly applicable to sites with a mixture of petroleum and CVOCs, there is a vertical separation of 24 feet between the dissolved petroleum sources and the parking garage slab. That separation, combined with the influence from the EOS injections and the lack of LNAPL, establishes that the petroleum hydrocarbons in groundwater are not considered a pathway for vapor intrusion on the Property.

2.2.1 Data Gaps

Elevated groundwater concentrations of one or more of PCE, TCE, cis-1,2-DCE, and vinyl chloride that exceed the Method B groundwater screening levels are present on the Property. Based on the data, the groundwater-to-indoor air pathway is considered complete and additional assessment needs to be conducted.

Concentrations of TCE and PCE in soil exceeding the applicable remediation levels are present along the western sidewall of the Property. The samples with exceedances are located immediately behind the building sidewalls. The soil concentrations of TCE and PCE in the sidewall samples represent a data gap in the Tier I evaluation.

Concentrations of GRPH exceeding the remediation level are present along the northern and western sidewalls. Sidewall soil sample results are depicted on Figures 2 and 3. The petroleum hydrocarbon exceedances in soil are within the 6 lateral feet of the parking garage. The petroleum contamination in soil is considered a data gap.

The Tier II indoor air sampling event will address the possible groundwater-to-indoor air pathway and address the data gaps associated with soil exceedances on the Property.

3.0 PROPOSED SCOPE OF WORK

The proposed scope of work for the Tier II assessment includes conducting a building survey and collecting air quality samples. The scope of work will be conducted in general accordance with Ecology's draft *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*.

The South Tower and associated elevator shaft extending down to parking level P5 were constructed adjacent to the west sidewall, where residual soil contamination remains in an area with the highest groundwater concentrations exceeding the Method B screening levels. Therefore, the Tier II assessment will be conducted primarily within the South Tower footprint.

3.1 BUILDING SURVEY

Prior to collecting air quality samples, SoundEarth will complete a building survey of the South Tower and parking garage to evaluate the potential volatile organic compound sources or materials that may contribute to background indoor air contamination. Due to the size of the building, the building survey will focus on anticipated areas of sample collection, mainly the parking garage levels. SoundEarth will complete a Building Survey Form (Appendix B) documenting the findings of the building survey. Previously available information about the building, building materials, and HVAC systems will be noted and confirmed during the survey. Select building plans and HVAC designs are included in Appendix A.

3.2 INDOOR AIR SAMPLING

The building was designed to ensure that the elevator shafts do not act as a conduit for vapor intrusion from the parking garage to the occupied building. Specifically, the HVAC systems for the South Tower and North Tower are designed to have elevator lobbies at a positive pressure relative to the elevator shaft to mitigate any garage exhaust (or other vapors) from entering occupied space (Appendix A).

Indoor air sample locations have been selected to address the potential of vapor intrusion from the groundwater exceedances beneath the building and soil concentrations in the building sidewalls.

Nineteen indoor air samples (IA01 through IA19) will be collected during the sampling event (Table 3). The proposed indoor air sample locations are shown on Figures 7 through 11 and are described below:

- Seven indoor air samples will be collected on the bottom level of the parking garage (Level P5). The samples will be collected:
  - IA01, along the north wall of P5, adjacent to soil sample A18NSW.
  - IA02, the northern portion of P5, within the northern stairway.
  - IA03, along the west sidewall, adjacent to soil sample P1WSW and monitoring well MW19.
  - IA04, along the west sidewall, adjacent to soil sample V1SWS and monitoring well MW25.
  - IA05, located next to the elevator shaft (within the shaft, if possible), in the vicinity of MW24. The sample will be collected during the weekday to simulate normal elevator function.
  - IA06, located in the elevator lobby, to assess intrusion to upper levels of the building.

- IA07, located in the northwestern portion of P5, in the vicinity of monitoring well MW26.

- Three indoor air samples (IA08 through IA10) will be collected from parking level P4 along the western portion of the parking level (Figure 8).
- Three indoor samples (IA11 through IA13) will be collected from parking level P3. Two samples will be collected along the western wall. One sample (IA13) will be collected from the eastern portion of the parking level as an ambient background sample (Figure 9).
- Three indoor air samples (IA14 through IA16) will be collected from parking level P2 along the western portion of the parking level (Figure 10).
- Four indoor air samples (IA17 through IA20) will be collected from parking level P1 along the western portion of the parking level and the northern stairway (Figure 11).
- One outdoor air sample (OA01) will be collected from the exterior of the building. The sample will be collected by the HVAC intake along the northern side of the building at sidewalk level (Figure 11).

Eurofins Air Toxics, Inc. (Eurofins) of Folsom, California, will provide 6-liter, individually certified SUMMA canisters for the air samples. The SUMMA canisters for indoor air samples will be fitted with individually certified flow controllers calibrated by the laboratory for an approximate 24-hour sample collection. The SUMMA canisters will be placed at a height of approximately 6 feet to approximate a potential worker's breathing level. Indoor air sample IA05 will be collected within the elevator shaft using either a SUMMA canister.

The indoor air sampling event will occur on a weekend for all samples except sample IA05, which will be collected during normal weekday business hours. For the weekend sampling event, the parking garage will be closed for sampling to minimize car exhaust interference. On Saturday prior to sampling, the garage air exchange rate will be increased to change over the air prior to sampling on Sunday. Facilities managers will simulate garage exhaust and air exchanges typical for weekday operations. The sampling will occur in the winter season, when there is a large temperature differential or during a falling barometric head to simulate worst-case scenario for the vapor intrusion pathway.

Each indoor air sample will be fitted with a particulate filter to minimize interference associated with particulate matter from the active parking garage.

3.3 AMBIENT AIR SAMPLING

Two outdoor ambient air samples will be collected during the sampling event. One ambient air sample will be located adjacent to the HVAC air intake, to assess the potential supply air CVOC contribution to the indoor air; and the second ambient air sample will be collected on street level to establish an outdoor background level. Eurofins will provide 6-liter, individually certified SUMMA canisters for the outdoor air samples. The SUMMA canisters for the ambient air samples will be fitted with an individually certified flow controller calibrated by the laboratory for an approximate 24-hour sample collection.

3.4 SAMPLE IDENTIFICATION

Each sample will be labeled with a prefix and two digit numbers indicating its type, along with the date of sample collection. For example, sample identification IA02-20161101 would identify the second

indoor air sample collected on November 1, 2016. SoundEarth personnel will document each sample in field notes and on a site plan.

3.5 LABORATORY ANALYSIS AND RESULTS

Air samples will be submitted to Eurofins, under standard chain-of-custody protocols, for laboratory analysis. The chain-of-custody form will include unique sample identifications, dates and times of sample collection, and initial and final vacuum readings for each SUMMA canister. The air samples will be analyzed for CVOCs (PCE, TCE, cis-1,2-DCE, trans-1,2-dichloroethene, and vinyl chloride) and/or air-phase petroleum hydrocarbons by EPA Method TO-15. The specific analysis for each sample is listed in Table 3.

Indoor air concentrations for the COCs will be compared to MTCA Method B indoor air cleanup levels as presented in the Ecology's Cleanup Level and Risk Assessment (CLARC) database (Ecology 2018) and calculated Modified MTCA Method B commercial cleanup levels. The Modified Method B screening levels are calculated based on conservative exposure for workers in the parking garage. For the COCs MTCA Method B cleanup levels and Modified Method B screening levels for indoor air are presented in Table 4.The full calculations for the modified cleanup levels are provided in Appendix C.

There is a potential for air phase petroleum hydrocarbon from edible oil substrate (EOS) injected into the groundwater beneath the Property in 2015 and 2016 to show a false positive for APH analysis by EPA Method TO-15. To address this issue, SoundEarth will instruct the laboratory to perform a bench test with EOS to collect a head space vapor sample and analyzes the sample APH fractions by EPA Method TO-15. This information will aid in qualitatively evaluating if EOS is impacting the APH results. In addition, during the sample results analysis, SoundEarth will research whether there is an indicator compound in car emissions to aid in the differentiation of APH contributed from car exhaust. In an attempt to limit the impact from car exhaust on analytical results, the garage will be purged for 1 to 2 days prior to sampling to eliminate car exhaust.

4.0 SCHEDULE

SoundEarth will collect the indoor air soil vapor samples over a 24 hour period. The indoor air sampling event will occur on a weekend for all samples except sample IA05, which will be collected during normal weekday business hours. Analytical results will be available from the laboratory with 10 to 20 days from the date the samples are received by the laboratory. Within 90 days of receiving analytical results from the laboratory, SoundEarth will prepare and submit a draft report to Ecology detailing the findings the from the vapor intrusion assessment at the Property.

5.0 QUALITY ASSURANCE PLAN

Quality assurance and quality control procedures for the interim action are described in the Quality Assurance Project Plan (Appendix D).

6.0 LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and

information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report are derived, in part, from data gathered by others, and from conditions evaluated when services were performed, and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We do not warrant and are not responsible for the accuracy or validity of work performed by others, nor from the impacts of changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the use of segregated portions of this report.

7.0 REFERENCES

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FIGURES

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TROY LAUNDRY PROPERTY
307 FAIRVIEW AVENUE NORTH
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0731-004

FIGURE 1
PROPERTY LOCATION MAP

6/9/2015

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\FIGURE 1\0731-004-04_FIG 1_F.DWG

1/11/2018

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\20172017 VAPOR INTRUSION REPORT\0731-004_FIG2.DWG

NORTH
A

SOUTH
A'

FORMER BOREN INVESTMENT COMPANY WAREHOUSE

FORMER FUR VAULT

FORMER TROY LAUNDRY BUILDING

PROPERTY BOUNDARY

PROPERTY BOUNDARY

ELEVATION IN FEET (NAVD88)

100'
90'
80'
70'
60'
50'
40'
30'
20'

P1 FLOOR
P2 FLOOR
P3 FLOOR
P4 FLOOR
P5 FLOOR

A1NWSW
F1WSW
H1WSW
I1WSW
J1WSW
N1WSW
O1WSW
P1WSW
S1WSW
U1WSW
V1WSW
Y1WSW
Z1WSW
AA1WSW
CC1WSW
DD1WSW
EE1WSW
II1WSW
JJ1SWSW

IA03 IA04 IA08 IA09 IA10 IA11 IA12 IA13 IA14 IA15 IA16 IA17 IA18 IA19

<0.025 <0.02 <2
6.1
21
0.097
100
0.11
22
0.035
0.028
0.030
0.044
0.037
0.043
0.023
0.038
0.036
0.029
0.027
0.056
0.051
0.025
1.7
0.031
2,400
0.13

LEGEND

Y1WSW — VERTICAL GRID LINE IDENTIFICATION

SOIL SAMPLE

0.056 PCE
<0.02 TCE
<2 GRPH

PROPOSED INDOOR AIR SAMPLING LOCATIONS

CONCENTRATION IN SOIL (MILLIGRAMS PER KILOGRAM)

CONCENTRATION BELOW INTERIM ACTION REMEDIATION LEVELS

CONCENTRATION ABOVE INTERIM ACTION REMEDIATION LEVELS

RED — DENOTES CONCENTRATION ABOVE INTERIM ACTION REMEDIATION LEVELS

PCE — TETRACHLOROETHENE

TCE — TRICHLOROETHENE

GRPH — GASOLINE-RANGE PETROLEUM HYDROCARBONS

< — RESULT BELOW LABORATORY REPORTING LIMIT

NOTE:

1. ELEVATIONS ARE PRESENTED AS FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
2. TOP ELEVATION OF VERTICAL GRID LINES BASED ON ADJOINING SIDEWALK GRADE
3. SOIL SAMPLE ELEVATIONS SURVEYED BY LEASE CRUTCHER LEWIS

VERTICAL SCALE IN FEET: 0, 5, 10

HORIZONTAL SCALE IN FEET: 0, 15, 30

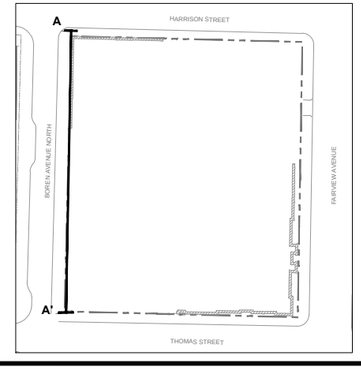

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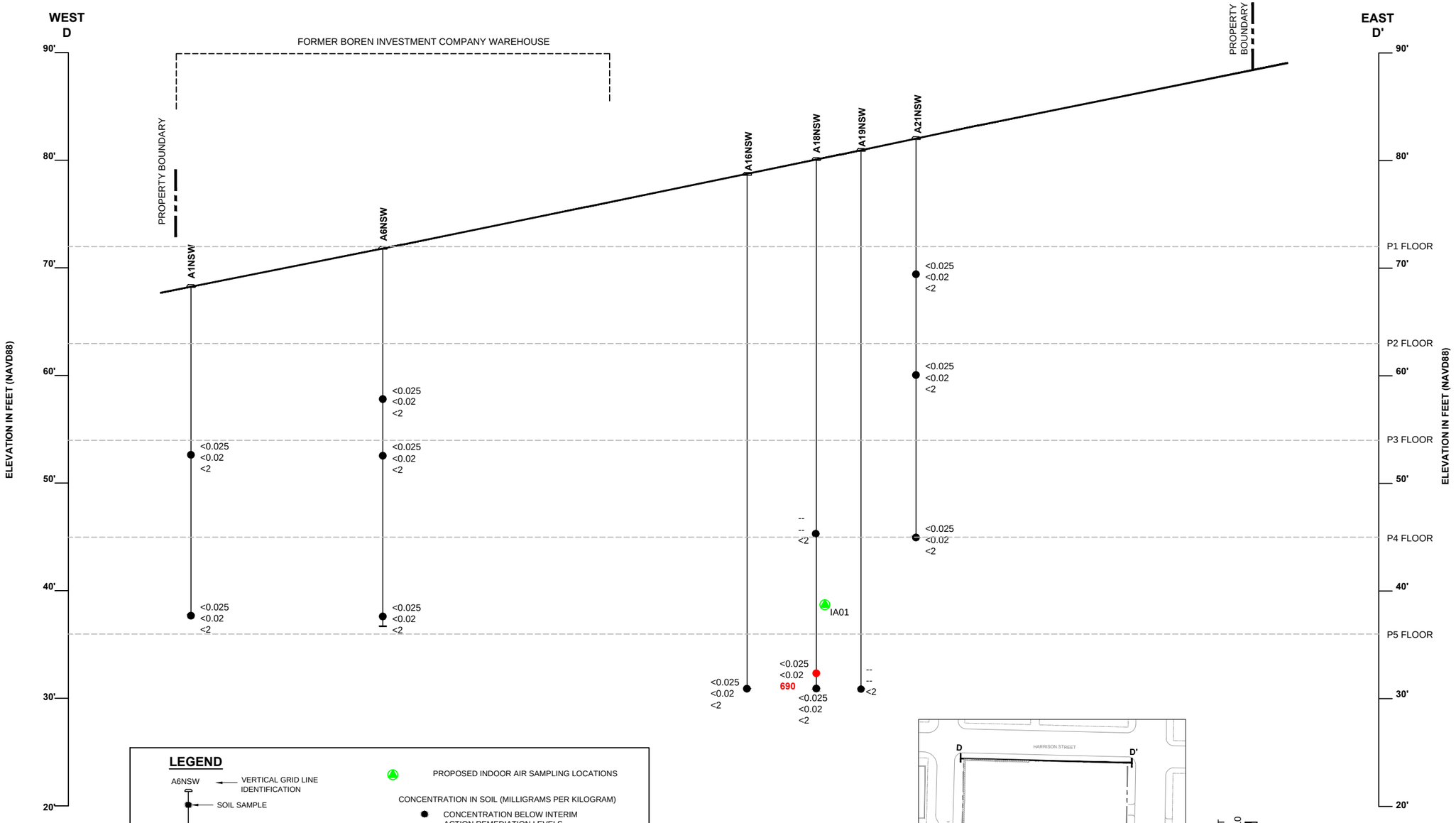
FIGURE 2
CROSS SECTION A - A'
SOIL ANALYTICAL RESULTS
WEST SIDEWALL SAMPLES

1/11/2018



LEGEND

A6NSW — VERTICAL GRID LINE IDENTIFICATION

SOIL SAMPLE

<0.025 PCE
<0.02 TCE
690 GRPH

PROPOSED INDOOR AIR SAMPLING LOCATIONS

CONCENTRATION IN SOIL (MILLIGRAMS PER KILOGRAM)

CONCENTRATION BELOW INTERIM ACTION REMEDIATION LEVELS

CONCENTRATION ABOVE INTERIM ACTION REMEDIATION LEVELS

RED — DENOTES CONCENTRATION ABOVE INTERIM ACTION REMEDIATION LEVELS

PCE — TETRACHLOROETHENE

TCE — TRICHLOROETHENE

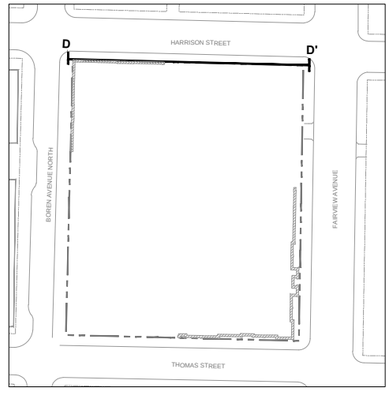
GRPH — GASOLINE-RANGE PETROLEUM HYDROCARBONS

-- — NOT ANALYZED

< — RESULT BELOW LABORATORY REPORTING LIMIT

NOTE:

1. ELEVATIONS ARE PRESENTED AS FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
2. TOP ELEVATION OF VERTICAL GRID LINES BASED ON ADJOINING SIDEWALK GRADE
3. SOIL SAMPLE ELEVATIONS SURVEYED BY LEASE CRUTCHER LEWIS



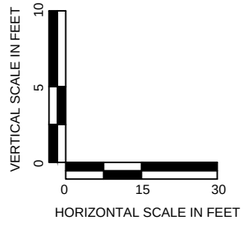


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FIGURE 3
CROSS SECTION D - D'
SOIL ANALYTICAL RESULTS
NORTH SIDEWALL SAMPLES

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG3.DWG

1/11/2018

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MONITORING WELL
- INJECTION WELL
- EXHAUST VENT

DCE	DICHLOROETHENE
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
NE	NOT ESTABLISHED
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
<	NOT DETECTED AT A CONCENTRATION EXCEEDING LABORATORY REPORTING LIMIT
RED	DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD B GROUNDWATER SCREENING LEVELS FOR THE PROTECTION OF INDOOR AIR

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW26	07/12/16	<1	12	<1	<1	<0.2
	10/18/16	<1	12	<1	<1	<0.2
	01/24/17	<1	13	<1	<1	<0.2
	05/31/17	<1	7.9	<1	<1	<0.2
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW18	03/08/16	<1	44	8.1	<1	<0.2
	07/14/16	<1	3.3	1.7	<1	<0.2
	01/26/17	<1	7.7	14	<1	0.25
	06/01/17	<1	3.3	14	<1	0.31
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW19	03/08/16	<1	52	26	<1	<0.2
	07/13/16	<1	4.6	10	<1	<0.2
	01/25/17	<1	5.5	3.9	<1	0.30
	06/01/17	<1	5.7	3.5	<1	0.44
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW25	03/08/16	25	50	12	<1	<0.2
	07/13/16	6.1	4.8	23	<1	0.70
	01/25/17	<1	1.2	15	<1	0.31
	06/01/17	<1	1.3	15	<1	0.41
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW23	03/08/16	4.1	14	95	<1	0.6
	07/14/16	<1	1.6	14	<1	2.20
	01/26/17	<1	2.9	41	<1	1.4
	06/01/17	<1	2.7	23	<1	0.74
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW17	03/08/16	<1	<1	<1	<1	<0.2
	07/14/16	<1	1.20	<1	<1	<0.2
	01/26/17	<1	1.90	<1	<1	<0.2
	06/01/17	<1	2.50	<1	<1	<0.2
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW20	03/09/16	<1	<1	<1	<1	<0.2
	07/15/16	<1	<1	<1	<1	<0.2
	01/25/17	<1	<1	4.1	<1	<0.2
	06/01/17	<1	<1	1.2	<1	<0.2
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW24	03/09/16	11	23	45	<1	<0.2
	07/15/16	<1	1.7	12	<1	<0.2
	01/25/17	<1	3.5	20	<1	0.81
	06/01/17	1.1	4.8	35	<1	1.0
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW21	03/09/16	5.3	1.4	7.9	<1	<0.2
	07/13/16	<1	<1	1.2	<1	<0.2
	01/26/17	<1	<1	2.4	<1	<0.2
	06/01/17	<1	<1	2.4	<1	<0.2
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
MW22	03/08/16	28	4.5	52	<1	0.3
	07/13/16	<1	<1	5.5	<1	<0.2
	01/26/17	<1	<1	8.5	<1	0.51
	06/01/17	<1	<1	10	<1	1.5
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
IW91	03/09/16	<1	<1	<1	<1	<0.2
	07/14/16	<1	<1	<1	<1	<0.2
	01/26/17	<1	<1	<1	<1	<0.2
	06/01/17	<1	<1	<1	<1	<0.2
Ground Screening Levels for Indoor Air		23	1.6	NE	NE	0.35

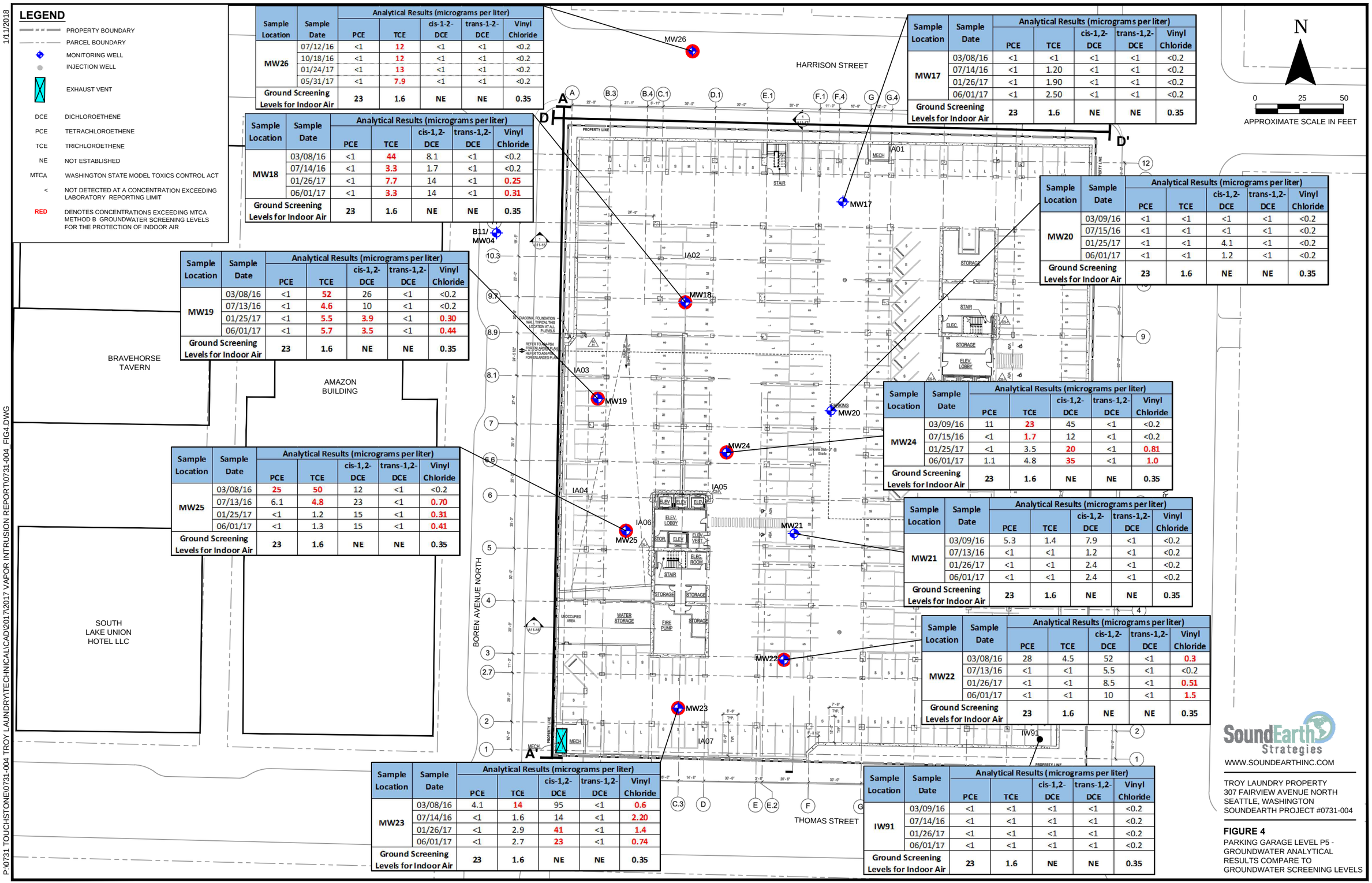

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FIGURE 4
PARKING GARAGE LEVEL P5 - GROUNDWATER ANALYTICAL RESULTS COMPARE TO GROUNDWATER SCREENING LEVELS

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG4.DWG

1/11/2018

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG5.DWG

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MONITORING WELL
- INJECTION WELL

N

0 25 50

APPROXIMATE SCALE IN FEET

MW26

HARRISON STREET

BRAVEHORSE TAVERN

AMAZON BUILDING

SOUTH LAKE UNION HOTEL LLC

BOREN AVENUE NORTH

FAIRVIEW AVENUE

THOMAS STREET

MW17

MW18

MW19

MW20

MW21

MW22

MW23

MW24

MW25

B11/ MW04

IW91

ELEVATOR PITS

SERVICE ELEVATOR

LOCATION OF MAT SLAB

MECHANICAL ROOM

EXHAUST VENT TO 3RD FLOOR

EXHAUST VENT TO 3RD FLOOR

MECHANICAL ROOM

STAIR

STORAGE

ELEC.

ELEV. LOBBY

ELEV

ELEV. VEST.

ELEC. ROOM

UNOCCUPIED AREA

WATER STORAGE

FIRE PUMP

MECH

PROPERTY LINE

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FIGURE 5
P5 BUILDING SPECIFICATIONS

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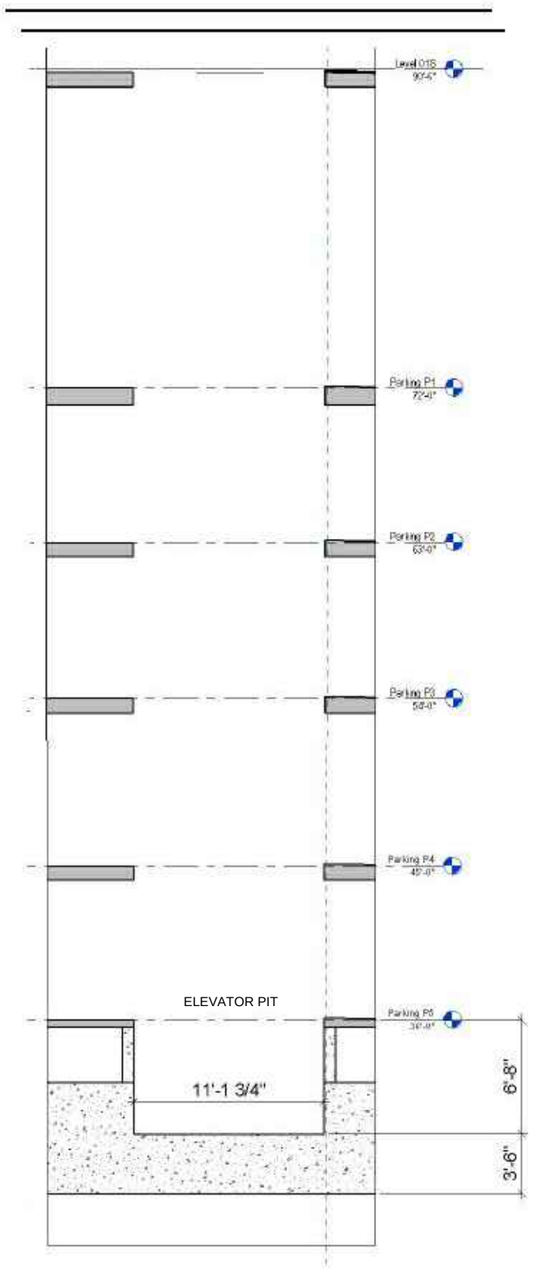
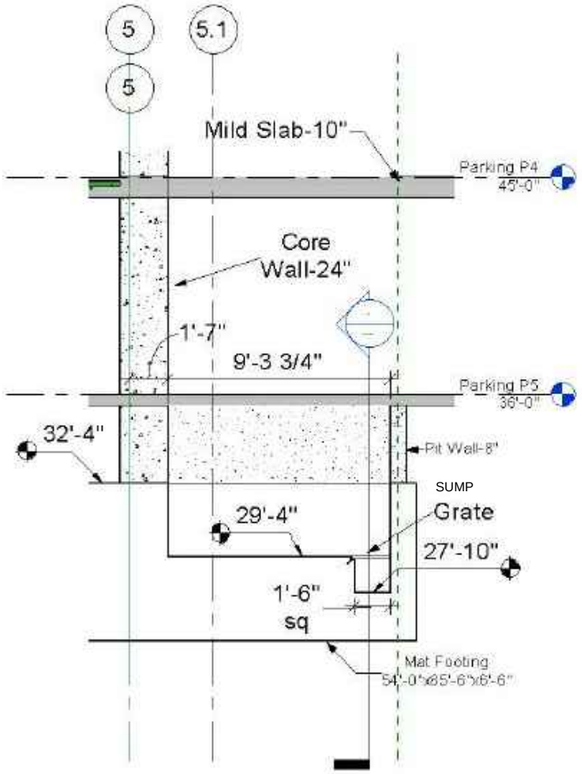
P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG6.DWG

SLAB CROSS-SECTIONAL VIEWS





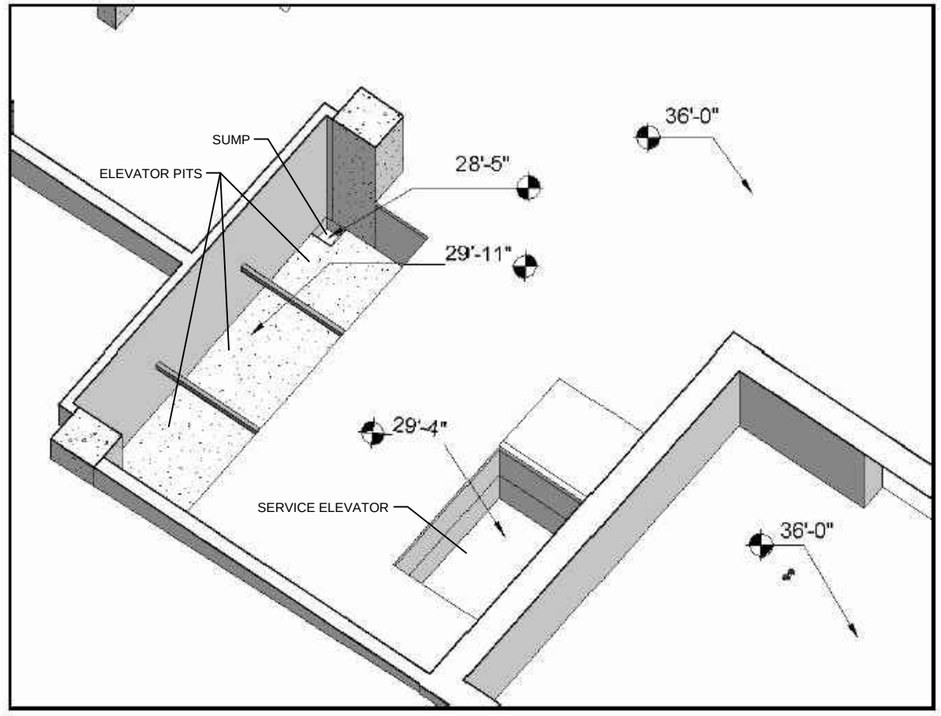


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FIGURE 6
ELEVATOR PIT AND SUMP DETAIL

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P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\20172017 VAPOR INTRUSION REPORT\0731-004_FIG7.DWG

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- MONITORING WELL
- INJECTION WELL
- SIDEWALL SAMPLE WITH EXCEEDANCE IN SOIL
- PROPOSED INDOOR AIR SAMPLING LOCATION
- EXHAUST VENT

DCE	DICHLOROETHENE
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
NE	NOT ESTABLISHED
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
<	NOT DETECTED AT A CONCENTRATION EXCEEDING LABORATORY REPORTING LIMIT
RED	DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD B GROUNDWATER SCREENING LEVELS

N

0 25 50

APPROXIMATE SCALE IN FEET

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW26	01/24/17	<1	13	<1	<1	<0.2
	05/31/17	<1	7.9	<1	<1	<0.2
	09/21/17	<1	7.1	<1	<1	<0.2

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW17	01/26/17	<1	1.9	<1	<1	<0.2
	06/01/17	<1	2.5	<1	<1	<0.2
	09/23/17	<1	2.1	1.2	<1	<0.2

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW18	01/26/17	<1	7.7	14	<1	0.25
	06/01/17	<1	3.3	14	<1	0.31
	09/23/17	<1	<1	22	<1	0.38

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW20	01/25/17	<1	<1	4.1	<1	<0.2
	06/01/17	<1	<1	1.2	<1	<0.2
	09/24/17	<1	<1	9.5	<1	<0.2

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW19	01/25/17	<1	5.5	3.9	<1	0.30
	06/01/17	<1	5.7	3.5	<1	0.44
	09/23/17	<1	1.7	3.4	<1	0.97

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW25	01/25/17	1.0	3.6	44	<1	0.89
	06/01/17	<1	1.2	15	<1	0.31
	09/23/17	<1	<1	15	<1	0.40

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW24	01/25/17	<1	3.5	20	<1	0.81
	06/01/17	1.1	4.8	35	<1	1.0
	09/24/17	<1	1.8	33	<1	0.4

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW21	01/26/17	<1	<1	2.4	<1	<0.2
	06/01/17	<1	<1	2.4	<1	<0.2
	09/23/17	<1	<1	3.7	<1	<0.2

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW22	01/26/17	<1	<1	8.5	<1	0.51
	06/01/17	<1	<1	10	<1	1.5
	09/23/17	<1	<1	18	<1	1.4

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
MW23	01/26/17	<1	2.9	41	<1	1.4
	06/01/17	<1	2.7	23	<1	0.74
	09/23/17	<1	1.7	16	<1	0.50

Sample Location	Sample Date	Analytical Results (micrograms per liter) PCE	TCE	cis-1-2-DCE	trans-1-2-DCE	Vinyl Chloride
IW91	01/26/17	<1	<1	<1	<1	<0.2
	06/01/17	<1	<1	<1	<1	<0.2
	09/23/17	<1	<1	<1	<1	<0.2

MW26 HARRISON STREET A18NSW IA01 IA07 IA02 MW17 MW18 B11/MW04 IA03 MW19 P1WSW S1WSW V1WSW IA04 IA05 IA06 MW25 Z1WSW AA1WSW MW24 MW20 MW21 MW22 MW23 IW91 BRAVEHORSE TAVERN AMAZON BUILDING SOUTH LAKE UNION HOTEL LLC BOREN AVENUE NORTH FAIRVIEW AVENUE THOMAS STREET PROPERTY LINE STORAGE STAIR ELEC. ELEV. LOBBY ELEV MECH STOR. ELEC. ROOM WATER STORAGE FIRE PUMP UNOCCUPIED AREA PARKING

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FIGURE 7

PARKING GARAGE LEVEL P5 - GROUNDWATER ANALYTICAL RESULTS AND PROPOSED INDOOR AIR SAMPLING LOCATIONS

1/23/2018

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICALICAD\2017\2017 VAPOR INTRUSION REPOR\0731-004_FIG8.DWG

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SIDEWALL SOIL SAMPLE
- PROPOSED INDOOR AIR SAMPLING LOCATION
- EXHAUST VENT

HARRISON STREET

BRAVEHORSE TAVERN

AMAZON BUILDING

SOUTH LAKE UNION HOTEL LLC

BOREN AVENUE NORTH

FAIRVIEW AVENUE

THOMAS STREET

IA08

IA09

IA10

P1WSW

S1WSW

V1WSW

Z1WSW

AA1WSW

N

0 25 50

APPROXIMATE SCALE IN FEET

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FIGURE 8
PARKING GARAGE LEVEL P4 - PROPOSED INDOOR AIR SAMPLING LOCATIONS

1/11/2018

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG9.DWG

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SIDEWALL SOIL SAMPLE
- PROPOSED INDOOR AIR SAMPLING LOCATION
- EXHAUST VENT

N

0 25 50

APPROXIMATE SCALE IN FEET

HARRISON STREET

BRAVEHORSE TAVERN

AMAZON BUILDING

SOUTH LAKE UNION HOTEL LLC

BOREN AVENUE NORTH

FAIRVIEW AVENUE

THOMAS STREET

P1WSW

S1WSW

V1WSW

Z1WSW

AA1WSW

IA11

IA12

IA13

PROPERTY LINE

MECH

STAIR

STORAGE

ELEC.

STOR

ELEV. CONTROL

ELEVATOR LOBBY

ELEV

PARKING

ELEV. LOBBY

ELEV. VEST.

ELEC. ROOM

RAMP DOWN 4.62%

REFER TO A04-P3N FOR ENLARGED PLAN

REFER TO A04-P3S FOR ENLARGED PLAN

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FIGURE 9
PARKING GARAGE LEVEL P3 - PROPOSED INDOOR AIR SAMPLING LOCATIONS

1/23/2018

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG10.DWG

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SIDEWALL SOIL SAMPLE
- PROPOSED INDOOR AIR SAMPLING LOCATION
- EXHAUST VENT

HARRISON STREET

BRAVEHORSE TAVERN

AMAZON BUILDING

SOUTH LAKE UNION HOTEL LLC

BOREN AVENUE NORTH

FAIRVIEW AVENUE

THOMAS STREET

P1WSW

S1WSW

V1WSW

Z1WSW

AA1WSW

IA14

IA15

IA16

PROPERTY LINE

STAIR

MECH

FUTURE ELEVATOR

STORAGE

ELEC.

ELEV. PIT

STOR

ELEV. LOBBY

ELEV

PARKING

OPEN TO BELOW

ELEV. CONTROL

ELEV. VEST.

ELEC. ROOM

TSER SOUTH

DOOR DOWN TO LOWER LEVEL

REFER TO A04-P2N FOR ENLARGED PLAN

REFER TO A04-P2S FOR ENLARGED PLAN

N

0 25 50

APPROXIMATE SCALE IN FEET

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FIGURE 10
PARKING GARAGE LEVEL P2 - PROPOSED INDOOR AIR SAMPLING LOCATIONS

1/23/2018

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\2017\2017 VAPOR INTRUSION REPORT\0731-004_FIG11.DWG

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SIDEWALL SOIL SAMPLE
- PROPOSED INDOOR AIR SAMPLING LOCATION
- PROPOSED OUTDOOR AIR SAMPLING LOCATION
- EXHAUST VENT

N

0 25 50

APPROXIMATE SCALE IN FEET

HARRISON STREET

OA01

IA20

IA17

P1WSW

S1WSW

IA18

V1WSW

Z1WSW

AA1WSW

IA19

EXHAUST AIR SHAFT

BRAVEHORSE TAVERN

AMAZON BUILDING

SOUTH LAKE UNION HOTEL LLC

BOREN AVENUE NORTH

FAIRVIEW AVENUE

THOMAS STREET

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FIGURE 11
PARKING GARAGE LEVEL P1 - PROPOSED INDOOR AIR SAMPLING LOCATIONS

TABLES

Table 1
Soil Analytical Results
Detectable Concentrations
Redevelopment Excavation Area Sidewall Samples
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Soil Management Grid	Sample Identification	Approximate Elevation (feet NAVD88)	Date Sampled	Analytical Results (mg/kg)											
				PCE[1]	TCE[1]	cis-1,2-DCE[1]	Trans-1,2-DCE[1]	Vinyl Chloride[1]	DRPH[2]	ORPH[2]	GRPH[3]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Total Xylenes[1]
West Sidewall															
F1	F1WSW-68	68	08/11/14	<0.025	<0.02	<0.05	<0.05	<0.05	64	<250	6.1	<0.03	<0.05	<0.05	<0.2
H1	H1WSW-68	68	08/11/14	<0.025	<0.02	<0.05	<0.05	<0.05	170	<250	21	<0.03	<0.05	<0.05	<0.2
P1	P1WSW-24.5	24.5	12/05/14	**1.7**	**0.031**	<0.05	<0.05	<0.05	2,000[x]	<250	**2,400**	<0.03	<0.05	0.075	<0.2
S1	S1WSW-33	33	11/24/14	0.029	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	S1WSW-23	23	12/05/14	**0.13**	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
U1	U1WSW-48	48	10/27/14	0.027	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	U1WSW-43	43	11/19/14	0.038	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	U1WSW-38	38	11/21/14	0.030	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
V1	V1WSW-69	69	09/23/14	<0.025	<0.02	<0.05	<0.05	<0.05	<50	<250	**100**	<0.03	<0.05	<0.05	<0.2
	V1WSW-64	64	09/25/14	0.025	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	V1WSW-49	49	10/27/14	**0.056**	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	V1WSW-44	44	11/19/14	<0.025	**0.051**	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
Y1	Y1WSW-50	50	10/27/14	0.037	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Y1WSW-45	45	11/19/14	<0.025	0.023	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Y1WSW-35	35	11/24/14	0.038	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Y1WSW-30	30	12/01/14	0.035	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
Z1	Z1WSW-80	80	09/08/14	**0.097**	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Z1WSW-45	45	11/18/14	0.043	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Z1WSW-40	40	11/20/14	0.028	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Z1WSW-35	35	11/24/14	0.036	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Z1WSW-30	30	12/01/14	0.029	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	Z1WSW-25	25	12/04/14	0.043	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
AA1	AA1WSW-71	71	09/23/14	**0.11**	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	AA1WSW-51	51	10/27/14	0.030	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	AA1WSW-46	46	11/18/14	0.044	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	AA1WSW-36	36	11/24/14	0.028	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	AA1WSW-31	31	12/01/14	0.027	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
	AA1WSW-26	26	12/09/14	0.027	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
CC1	CC1WSW-53	53	10/27/14	0.028	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
DD1	DD1WSW-76	76	09/24/14	0.035	<0.02	<0.05	<0.05	<0.05	<50	<250	<2	<0.03	<0.05	<0.05	<0.2
North Sidewall															
A18	A18NSW-32	32	11/10/14	<0.025	<0.02	<0.05	<0.05	<0.05	330[x]	<250	**690**	<0.03	<0.05	<0.05	<0.2
Remediation Level or MTCA Cleanup Level				**0.05**[4]	**0.03**[4]	**160**[5]	**1,600**[5]	**0.67**[6]	**2,000**[4]	**2,000**[4]	**100/30**[4][7]	**0.03**[4]	**7**[4]	**6**[4]	**9**[4]

NOTES:

Red denotes concentration exceeds remediation level.

[1]Analyzed by EPA Method 8260C or 8021B.

[2]Analyzed by NWTPH Method NWTPH-Dx.

[3]Analyzed by NWTPH Method NWTPH-Gx.

[4]Proposed Remediation Levels for Soil, Engineering Design Report, dated February 13, 2014, prepared by SoundEarth, or MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of WAC 173-340-900, revised November 2007.

[5]MTCA Cleanup Regulation, Chapter 173-340 of WAC, CLARC, Soil, Method B, Non-Carcinogen, Standard Formula Value, CLARC Website <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>.

[6]MTCA Cleanup Regulation, Chapter 173-340 of WAC, CLARC, Soil, Method B, Carcinogen, Standard Formula Value, CLARC Website <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>.

[7]100 mg/kg when benzene is not present and 30 mg/kg when benzene is present.

Laboratory Note:

[x]The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

< = analytical result does not exceed laboratory reporting limit

CLARC = cleanup levels and risk calculations

DCE = dichloroethene

DRPH = diesel-range petroleum hydrocarbons

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

mg/kg = milligrams per kilogram

MTCA = Washington State Model Toxics Control Act

NAVD88 = North American Vertical Datum of 1988

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbons

PCE = tetrachloroethene

TCE = trichloroethene

WAC = Washington Administrative Code

Table 2
Groundwater Analytical Results
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Sample Location	Sample Identification	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Analytical Results (µg/L)											
						PCE[1]	TCE[1]	cis-1-2-DCE[1]	trans-1-2-DCE[1]	Vinyl Chloride[1]	DRPH[2]	ORPH[2]	GRPH[3]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Total Xylenes[1]
MW17	MW17-20150506	05/06/15	SoundEarth	25.26	10.46	<1	2.2	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20150804	08/07/15	SoundEarth	24.82	10.9	<1	1.5	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20151207	12/07/15	SoundEarth	25.49	10.23	<1	1.5	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20160308	03/08/16	SoundEarth	24.98	10.74	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20160714	07/14/16	SoundEarth	24.61	11.11	<1	1.2	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20161020	10/20/16	SoundEarth	23.14	12.58	<1	2.1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20170126	01/26/17	SoundEarth	20.84	14.88	<1	1.9	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW17-20170601	06/01/17	SoundEarth	22.75	12.97	<1	2.5	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
MW18	MW18-20150506	05/06/15	SoundEarth	24.92	10.42	<1	46	5.2	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW18-20150803	08/03/15	SoundEarth	24.49	10.85	<1	51	4.6	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW18-20151208	12/08/15	SoundEarth	25.21	10.13	<1	51	9.9	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW18-20160308	03/08/16	SoundEarth	24.64	10.7	<1	44	8.1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW18-20160714	07/14/16	SoundEarth	24.23	11.11	<1	3.3	1.7	<1	<0.2	31,000[x]	5,100[x]	<100	<0.35	<1	<1	<3
	MW18-20161020	10/20/16	SoundEarth	22.81	12.53	<1	6.5	4.0	<1	<0.2	61,000[x, ip]	<8,400[x, ip]	1,100[x]	<0.35	<1	<1	<3
	MW18-20170126	01/26/17	SoundEarth	20.98	14.36	<1	7.7	14	<1	0.25	22,000[x, ip]	3,500[x, ip]	840	<0.35	<1	<1	<3
	MW18-20170601	06/01/17	SoundEarth	22.49	12.85	<1	3.3	14	<1	0.31	22,000[x, ip]	3,500[x, ip]	470	<0.35	<1	<1	<3
MW19	MW19-20150507	05/07/15	SoundEarth	27.24	10.45	<1	69	15	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW19-20150803	08/03/15	SoundEarth	26.82	10.87	<1	61	20	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW19-20151207	12/07/15	SoundEarth	27.51	10.18	<1	65	23	<1	<0.2	85[x]	<250	<100	<0.35	<1	<1	<3
	MW19-20160308	03/08/16	SoundEarth	26.97	10.72	<1	52	26	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW19-20160713	07/13/16	SoundEarth	26.57	11.12	<1	4.6	10	<1	<0.2	21,000[x]	4,100[x]	<100	<0.35	<1	<1	<3
	MW19-20161021	10/21/16	SoundEarth	25.12	12.57	<1	10	4.4	<1	0.40	18,000[x, ip]	2,300[x, ip]	<100	<0.35	<1	<1	<3
	MW19-20170125	01/25/17	SoundEarth	22.97	14.72	<1	5.5	3.9	<1	0.30	29,000[x]	4,400[x]	210[x]	<0.35	<1	<1	<3
	MW19-20170601	06/01/17	SoundEarth	24.74	12.95	<1	5.7	3.5	<1	0.44	31,000[x, ip]	3,400[x, ip]	180	<0.35	<1	<1	<3
MW20	MW20-20150506	05/06/15	SoundEarth	25.24	10.39	<1	<1	1.5	<1	<0.2	120[x]	<250	<100	<0.35	<1	<1	<3
	MW20-20150803	08/03/15	SoundEarth	24.44	11.19	<1	<1	1.2	<1	<0.2	140[x]	<250	<100	<0.35	<1	<1	<3
	MW20-20151207	12/07/15	SoundEarth	25.5	10.13	<1	<1	<1	<1	<0.2	84[x]	<250	<100	<0.35	<1	<1	<3
	MW20-20160309	03/09/16	SoundEarth	24.94	10.69	<1	<1	<1	<1	<0.2	130[x]	<300	<100	<0.35	<1	<1	<3
	MW20-20160715	07/15/16	SoundEarth	24.62	11.01	<1	<1	<1	<1	<0.2	150[x]	<250	<100	<0.35	<1	<1	<3
	MW20-20161020	10/20/16	SoundEarth	23.13	12.5	<1	<1	<1	<1	<0.2	110[x]	<250	<100	<0.35	<1	<1	<3
	MW20-20170125	01/25/17	SoundEarth	21.32	14.31	<1	<1	4.1	<1	<0.2	64[x]	<250	<100	<0.35	<1	<1	<3
	MW20-20170601	06/01/17	SoundEarth	22.7	12.93	<1	<1	1.2	<1	<0.2	94[x]	<250	<100	<0.35	<1	<1	<3
MW21	MW21-20150506	05/06/15	SoundEarth	25.21	10.37	5.1	1.6	7.2	<1	<0.2	160[x]	<250	<100	<0.35	<1	<1	<3
	MW21-20150804	08/04/15	SoundEarth	24.82	10.76	4.9	1.4	4.5	<1	<0.2	150[x]	<250	<100	<0.35	<1	<1	<3
	MW21-20151208	12/08/15	SoundEarth	25.49	10.09	7.3	2	6.7	<1	<0.2	110[x]	<250	<100	<0.35	<1	<1	<3
	MW21-20160309	03/09/16	SoundEarth	24.9	10.68	5.3	1.4	7.9	<1	<0.2	120[x]	<250	<100	<0.35	<1	<1	<3
	MW21-20160713	07/13/16	SoundEarth	24.56	11.02	<1	<1	1.2	<1	<0.2	12,000[x]	2,700[x]	<100	<0.35	<1	<1	<3
	MW21-20161020	10/20/16	SoundEarth	23.00	12.58	<1	<1	1.7	<1	<0.2	77,000[x, ip]	8,600[x, ip]	<100	<0.35	<1	<1	<3
	MW21-20170126	01/26/17	SoundEarth	21.54	14.04	<1	<1	2.4	<1	<0.2	16,000[x, ip]	10,000[x, ip]	<100	<0.35	<1	<1	<3
	MW21-20170601	06/01/17	SoundEarth	23.37	12.21	<1	<1	2.4	<1	<0.2	48,000[x, ip]	18,000[x, ip]	130	<0.35	<1	<1	<3
MTCA Cleanup Level						**5[4]**	**5[4]**	**16[5]**	**160[5]**	**0.2[4]**	**500[4]**	**500[4]**	**1,000/800[4](6)**	**5[4]**	**1,000[4]**	**700[4]**	**1,000[4]**
Method B Groundwater Screening Level[7]						**23**	**1.6**	**NE**	**NE**	**0.35**	**NE**	**NE**	**NE**	**2.4**	**1,100**	**2,780**	**NE**

Table 2
Groundwater Analytical Results
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Sample Location	Sample Identification	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Analytical Results (µg/L)											
						PCE[1]	TCE[1]	cis-1-2-DCE[1]	trans-1-2-DCE[1]	Vinyl Chloride[1]	DRPH[2]	ORPH[2]	GRPH[3]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Total Xylenes[1]
MW22	MW22-20150506	05/06/15	SoundEarth	25.14	10.33	11	2.2	27	<1	<0.2	97[x]	<250	<100	<0.35	<1	<1	<3
	MW22-20150804	08/04/15	SoundEarth	24.75	10.72	17	3.0	34	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW22-20151208	12/08/15	SoundEarth	25.41	10.06	19	3.7	42	<1	<0.2	69[x]	<300	<100	<0.35	<1	<1	<3
	MW22-20160308	03/08/16	SoundEarth	24.86	10.61	28	4.5	52	<1	0.3	110[x]	<250	<100	<0.35	<1	<1	<3
	MW22-20160713	07/13/16	SoundEarth	24.52	10.95	<1	<1	5.5	<1	<0.2	8,000[x]	2,100[x]	140	<0.35	<1	<1	<3
	MW22-20161020	10/20/16	SoundEarth	23.05	12.42	<1	<1	6.7	<1	0.65	29,000[x, ip]	7,500[x, ip]	130	<0.35	<1	<1	<3
	MW22-20170126	01/26/17	SoundEarth	21.68	13.79	<1	<1	8.5	<1	0.51	13,000[x, ip]	13,000[x, ip]	730	<0.35	<1	<1	<3
	MW22-20170601	06/01/17	SoundEarth	23.45	12.02	<1	<1	10	<1	1.5	59,000[x]	8,700[x]	660	<0.35	<1	<1	<3
MW23	MW23-20150507	05/07/15	SoundEarth	25.08	10.35	6.1	18	13	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW23-20150804	08/04/15	SoundEarth	24.72	10.71	6.1	24	20	<1	0.20	520[x]	<250	<100	<0.35	<1	<1	<3
	MW23-20151208	12/08/15	SoundEarth	25.34	10.09	3.8	16	120	<1	0.57	190[x]	<300	<100	<0.35	<1	<1	<3
	MW23-20160308	03/08/16	SoundEarth	24.77	10.66	4.1	14	95	<1	0.64	410[x]	<250	<100	<0.35	<1	<1	<3
	MW23-20160714	07/14/16	SoundEarth	24.54	10.89	<1	1.6	14	<1	2.20	26,000[x]	1,500[x]	190	<0.35	<1	<1	<3
	MW23-20161020	10/20/16	SoundEarth	22.98	12.45	<1	2.1	9.9	<1	0.48	80,000[x, ip]	<5,000[ip]	350	<0.35	<1	<1	<3
	MW23-20170126	01/26/17	SoundEarth	21.06	14.37	<1	2.9	41	<1	1.4	14,000[x, ip]	5,600[x, ip]	240	<0.35	<1	<1	<3
	MW23-20170601	06/01/17	SoundEarth	22.41	13.02	<1	2.7	23	<1	0.74	140,000[x, ip]	4,000[x, ip]	210	<0.35	<1	<1	<3
MW24	MW24-20150506	05/06/15	SoundEarth	24.47	10.41	2.5	31	72	<1	0.26	93[x]	<250	<100	<0.35	<1	<1	<3
	MW24-20150804	08/04/15	SoundEarth	24.06	10.82	5.5	28	75	<1	<0.2	94[x]	<250	<100	<0.35	<1	<1	<3
	MW24-20151208	12/08/15	SoundEarth	24.72	10.16	11	28	54	<1	<0.2	240[x]	<250	<100	<0.35	<1	<1	<3
	MW24-20160309	03/09/16	SoundEarth	24.12	10.76	11	23	45	<1	<0.2	130[x]	<250	<100	<0.35	<1	<1	<3
	MW24-20160715	07/15/16	SoundEarth	23.76	11.12	<1	1.7	12	<1	<0.2	13,000[x]	1,400[x]	<100	<0.35	<1	<1	<3
	MW98-20160715 (DUP)		SoundEarth	--	--	<1	1.8	12	<1	<0.2	11,000[x]	1,900[x]	<100	<0.35	<1	<1	<3
	MW24-20161020	10/20/16	SoundEarth	22.19	12.69	<1	2.7	12	<1	0.26	3,200[x,ip]	1,900[x,ip]	<100	<0.35	<1	<1	<3
	MW24-20170125	01/25/17	SoundEarth	19.95	14.93	<1	3.5	20	<1	0.81	12,000[x]	2,000[x]	<100	<0.35	<1	<1	<3
	MW24-20170601	06/01/17	SoundEarth	23.24	11.64	1.1	4.8	35	<1	1.0	510,000[x, ip]	27,000[x, ip]	<100	<0.35	<1	<1	<3
MW25	MW25-20150507	05/07/15	SoundEarth	30.85	10.53	<1	68	5.2	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW25-20150805	08/05/15	SoundEarth	30.6	10.78	3.0	75	7.9	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW25-20151209	12/09/15	SoundEarth	31.3	10.08	11	71	8.4	<1	<0.2	86[x]	<250	<100	<0.35	<1	<1	<3
	MW99-20151209 (DUP)		SoundEarth	--	--	11	72	8.3	<1	<0.2	100[x]	<300	<100	<0.35	<1	<1	<3
	MW25-20160308	03/08/16	SoundEarth	30.71	10.67	24	50	12	<1	<0.2	190[x]	<250	<100	<0.35	<1	<1	<3
	MW99-20160308(DUP)		SoundEarth	--	--	25	50	12	<1	<0.2	160[x]	<250	<100	<0.35	<1	<1	<3
	MW25-20160713	07/13/16	SoundEarth	30.44	10.94	6.1	4.8	23	<1	0.70	43,000[x]	5,000[x]	110	<0.35	<1	<1	<3
	MW25-20161019	10/19/16	SoundEarth	28.95	12.43	1.8	5.1	15	<1	0.96	26,000[x]	1,500[x]	160	--	--	--	--
	MW99-20161019 (DUP)			--	--	1.7	5.0	16	<1	1.0	29,000[x]	1,600[x]	160	--	--	--	--
	MW25-20170125	01/25/17	SoundEarth	27.07	14.31	1.0	3.6	44	<1	0.89	8,200[x]	340[x]	120[x]	<0.35	<1	<1	<3
	MW99-20170125 (DUP)			--	--	1.1	3.7	44	<1	0.92	6,900[x]	350[x]	150[x]	<0.35	<1	<1	<3
	MW25-20170601	06/01/17	SoundEarth	28.24	13.14	<1	1.2	15	<1	0.31	50,000[x, ip]	<1,000[ip]	370	<0.35	<1	<1	<3
	MW99-20170601 (DUP)			--	--	<1	1.3	15	<1	0.41	46,000[x, ip]	<1,000[ip]	410	<0.35	<1	<1	<3
IW91	IW91-20150506	05/06/15	SoundEarth	25.56	10.26	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	IW91-20150804	08/04/15	SoundEarth	25.19	10.63	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	IW91-20151208	12/08/15	SoundEarth	25.84	9.98	<1	<1	<1	<1	<0.2	<60	<300	<100	<0.35	<1	<1	<3
	IW91-20160309	03/09/16	SoundEarth	25.24	10.58	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	IW91-20160714	07/14/16	SoundEarth	24.9	10.92	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	IW91-20161020	10/20/16	SoundEarth	23.41	12.41	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	IW91-20170126	01/26/17	SoundEarth	21.61	14.21	<1	<1	<1	<1	<0.2	200[x]	<300	<100	<0.35	<1	<1	<3
	IW91-20170601	06/01/17	SoundEarth	22.79	13.03	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
MTCA Cleanup Level						**5[4]**	**5[4]**	**16[5]**	**160[5]**	**0.2[4]**	**500[4]**	**500[4]**	**1,000/800[4][6]**	**5[4]**	**1,000[4]**	**700[4]**	**1,000[4]**
Method B Groundwater Screening Level[7]						**23**	**1.6**	**NE**	**NE**	**0.35**	**NE**	**NE**	**NE**	**2.4**	**1,100**	**2,780**	**NE**

Table 2
Groundwater Analytical Results
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Sample Location	Sample Identification	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Analytical Results (µg/L)											
						PCE[1]	TCE[1]	cis-1-2-DCE[1]	trans-1-2-DCE[1]	Vinyl Chloride[1]	DRPH[2]	ORPH[2]	GRPH[3]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Total Xylenes[1]
Boren Avenue North																	
MW04	MW04-20110527	05/27/11	SoundEarth	52.22	18.47	<1	15	<1	<1	<0.2	<50	<250	<100	<1	1.3	<1	<3
	MW04-20111012	10/12/11	SoundEarth	52.82	17.87	<1	15	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW04-20130909	09/09/13	SoundEarth	57.25	13.44	<1	22	15	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW04-20150508	05/08/15	SoundEarth	58.22	12.60	1.4	13	4.2	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW04-20150806	08/06/15	SoundEarth	56.87	13.95	<1	6.9	1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW04-20151209	12/09/15	SoundEarth	58.82	12.00	<1	9.2	<1	<1	<0.2	<60	<300	<100	<0.35	<1	<1	<3
	MW04-20160308	03/08/16	SoundEarth	59.25	11.57	<1	9.6	1.1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW04-20160713	07/13/16	SoundEarth	58.49	12.33	1.0	8.9	1.3	<1	<0.2	<56	<280	<100	<0.35	<1	<1	<3
	MW04-20161019	10/19/16	SoundEarth	57.02	13.80	<1	5.5	<1	<1	<0.2	<50	<250	<100	--	--	--	--
	MW04-20170124	01/24/17	SoundEarth	54.06	16.76	<1	9.4	<1	<1	<0.2	150[x]	<250	<100	<0.35	<1	<1	<3
	MW04-20170531	05/31/17	SoundEarth	55.59	15.23	<1	9.3	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
MW05	MW05-20110527	05/27/11	SoundEarth	67.40	16.64	39	16	1.8	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW05-20111012	10/12/11	SoundEarth	67.91	16.13	29	14	1.5	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW05-20130910	09/10/13	SoundEarth	69.72	14.32	21	13	1.9	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	DECOMMISSIONED 2015																
MW07	MW07-20110531	05/31/11	SoundEarth	56.33	18.22	1.4	12	2.3	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW07-20111012	10/12/11	SoundEarth	56.87	17.68	2.2	11	1.8	<1	<0.2	240[x]	<250	<100	<1	<1	<1	<3
	MW07-20130909	09/09/13	SoundEarth	60.95	13.60	1.5	33	5.4	<1	<0.2	120[x]	<250	<100	<1	<1	<1	<3
	MW07-20150508	05/08/15	SoundEarth	62.69	11.99	2.5	15	4.8	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW07-20150805	08/05/15	SoundEarth	61.67	13.01	1.8	12	3.2	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW07-20151209	12/09/15	SoundEarth	63.19	11.49	2.3	14	4.1	<1	<0.2	<60	<300	<100	<0.35	<1	<1	<3
	MW07-20160308	03/08/16	SoundEarth	63.22	11.46	2.6	13	3.8	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW07-20160713	07/13/16	SoundEarth	62.82	11.86	3.0	18	5.7	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW07-20161019	10/19/16	SoundEarth	61.26	13.42	3.5	13	2.3	<1	<0.2	76[x]	<250	<100	--	--	--	--
	MW07-20170124	01/24/17	SoundEarth	58.41	16.27	4.8	8.1	<1	<1	<0.2	120[x]	<250	<100	<0.35	<1	<1	<3
	MW07-20170531	05/31/17	SoundEarth	59.90	14.78	4.7	8.6	<1	<1	<0.2	54[x]	<250	<100	<0.35	<1	<1	<3
MW13	MW13-20111020	10/20/11	SoundEarth	74.69	15.97	5.1	1.2	<1	<1	<0.2	150[x]	<250	<100	<1	<1	<1	<3
	MW13-20130910	09/10/13	SoundEarth	76.23	14.43	11	1.4	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW13-20150511	05/11/15	SoundEarth	INACCESSIBLE		4.6	1.7	<1	<1	<0.2	<70	<350	<100	<0.35	<1	<1	<3
	MW13-20150805	08/05/15	SoundEarth	80.07	10.79	5.4	2.3	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW13-20151215	12/15/15	SoundEarth	80.73	10.13	5.6	1.6	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW13-20160307	03/07/16	SoundEarth	80.07	10.79	6.6	1.6	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW13-20160712	07/12/16	SoundEarth	80.03	10.83	6.5	1.6	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW13-20161019	10/19/16	SoundEarth	78.16	12.70	10	2.2	<1	<1	<0.2	<50	<250	<100	--	--	--	--
	MW13-20170124	01/24/17	SoundEarth	75.56	15.30	6.4	1.0	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW13-20170531	05/31/17	SoundEarth	77.40	13.46	10	1.5	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
MW27	MW27-20151210	12/10/15	SoundEarth	73.86	9.96	<1	21	2.5	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW27-20160307	03/07/16	SoundEarth	73.23	10.59	<1	21	3.8	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW27-20160713	07/13/16	SoundEarth	73.01	10.81	<1	18	4.5	<1	<0.2	<52	<260	<100	<0.35	<1	<1	<3
	MW27-20161019	10/19/16	SoundEarth	71.38	12.44	<1	23	4.8	<1	<0.2	<50	<250	<100	--	--	--	--
	MW27-20170124	01/24/17	SoundEarth	69.57	14.25	<1	33	13	<1	<0.2	<60	<300	<100	<0.35	<1	<1	<3
	MW27-20170531	05/31/17	SoundEarth	70.89	12.93	<1	18	5.5	<1	<0.2	<60	<300	<100	<0.35	<1	<1	<3
MTCA Cleanup Level						**5[4]**	**5[4]**	**16[5]**	**160[5]**	**0.2[4]**	**500[4]**	**500[4]**	**1,000/800[4][6]**	**5[4]**	**1,000[4]**	**700[4]**	**1,000[4]**
Method B Groundwater Screening Level[7]						**23**	**1.6**	**NE**	**NE**	**0.35**	**NE**	**NE**	**NE**	**2.4**	**1,100**	**2,780**	**NE**

Table 2
Groundwater Analytical Results
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Sample Location	Sample Identification	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet NAVD88)	Analytical Results (µg/L)											
						PCE[1]	TCE[1]	cis-1-2-DCE[1]	trans-1-2-DCE[1]	Vinyl Chloride[1]	DRPH[2]	ORPH[2]	GRPH[3]	Benzene[1]	Toluene[1]	Ethylbenzene[1]	Total Xylenes[1]
Thomas Street																	
MW14	MW14-20111020	10/20/11	SoundEarth	88.81	15.59	<1	<1	<1	<1	<0.2	160[x]	<250	<100	<1	<1	<1	<3
	MW14-20130911	09/11/13	SoundEarth	89.99	14.41	<1	<1	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	DECOMMISSIONED 2013																
MW16	MW16-20121211	12/11/12	SoundEarth	83.47	15.55	16	**12**	220	<1	**0.69**	420[x]	<250	640	<0.35	<1	<1	1.1
	MW16-20130911	09/11/13	SoundEarth	84.59	14.43	6.4	**5.0**	610	<1	**1.9**	170[x]	<250	110	<1	<1	<1	<3
	MW16-20150508	05/08/15	SoundEarth	88.87	10.31	7.5	**7.6**	640	<1	**2.8**	150[x]	<250	<100	<0.35	<1	<1	<3
	MW16-20150805	08/05/15	SoundEarth	88.53	10.65	7.8	**7.3**	550	<1	**2.4**	210[x]	<250	<100	<0.35	<1	<1	<3
	MW16-20151210	12/10/15	SoundEarth	89.15	10.03	5.3	**4.5**	510	<1	**3.8**	420[x]	<250	110	<0.35	<1	<1	<3
	MW16-20160308	03/08/16	SoundEarth	88.54	10.64	3.7	**2.0**	190	<1	**1.3**	410[x]	<250	140	<0.35	<1	<1	<3
	MW16-20160712	07/12/16	SoundEarth	88.41	10.77	<1	<1	160	<1	**2.0**	**510**[x]	<250	130	<0.35	<1	<1	<3
	MW16-20161019	10/19/16	SoundEarth	86.74	12.44	5.0	**5.4**	**170**	<1	**1.2**	310[x]	<250	<100	--	--	--	--
	MW16-20170125	01/25/17	SoundEarth	84.71	14.47	**6.4**	**6.8**	**220**	<1	**0.98**	140[x]	<250	<100	<0.35	<1	<1	<3
	MW15-20170531	05/31/17	SoundEarth	86.04	13.14	<1	**7.9**	<1	<1	<0.2	**740**[x]	<250	140	<0.35	<1	<1	<3
Harrison Street																	
MW01	MW01-20110525	05/25/11	SoundEarth	50.59	18.09	<1	<1	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW01-20111011	10/11/11	SoundEarth	51.03	17.65	<1	<1	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW01-20130910	09/10/13	SoundEarth	54.35	14.33	<1	1.4	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW01-20150806	08/06/15	SoundEarth	INACCESSIBLE		<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW01-20160308	03/08/16	SoundEarth	57.69	11.13	<1	<1	<1	<1	<0.2	<65	<330	<100	<0.35	<1	<1	<3
	MW01-20160712	07/12/16	SoundEarth	57.42	11.23	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW01-20161018	10/18/16	SoundEarth	55.65	13.00	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW01-20170124	01/24/17	SoundEarth	52.27	16.38	<1	<1	<1	<1	<0.2	<25	<125	<100	<0.35	<1	<1	<3
	MW01-20170531	05/31/17	SoundEarth	54.69	13.96	<1	<1	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
MW02	MW02-20110525	05/25/11	SoundEarth	54.84	16.08	<1	**5.2**	<1	<1	<0.2	100[x]	<250	<100	<1	<1	<1	<3
	MW02-20111011	10/11/11	SoundEarth	55.08	15.84	<1	**3.0**	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	MW02-20130911	09/11/13	SoundEarth	56.48	14.44	<1	**3.6**	<1	<1	<0.2	<50	<250	<100	<1	<1	<1	<3
	DECOMMISSIONED 2015																
MW26	MW26-20151210	12/10/15	SoundEarth	60.42	10.15	<1	**11**	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW26-20160307	03/07/16	SoundEarth	59.82	10.75	<1	**10**	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW26-20160712	07/12/16	SoundEarth	59.52	11.05	<1	**12**	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
	MW26-20161018	10/18/16	SoundEarth	58.1	12.47	<1	**12**	<1	<1	<0.2	59[x]	<250	<100	<0.35	<1	<1	<3
	MW26-20170124	01/24/17	SoundEarth	56.1	14.47	<1	**13**	<1	<1	<0.2	<60	<300	<100	<0.35	<1	<1	<3
	MW26-20170531	05/31/17	SoundEarth	57.79	12.78	<1	**7.9**	<1	<1	<0.2	<50	<250	<100	<0.35	<1	<1	<3
MTCA Cleanup Level						**5[4]**	**5[4]**	**16[5]**	**160[5]**	**0.2[4]**	**500[4]**	**500[4]**	**1,000/800[4][6]**	**5[4]**	**1,000[4]**	**700[4]**	**1,000[4]**
Method B Groundwater Screening Level[7]						**23**	**1.6**	**NE**	**NE**	**0.35**	**NE**	**NE**	**NE**	**2.4**	**1,100**	**2,780**	**NE**

NOTES:

Red denotes concentrations exceeding the MTCA Method B Groundwater Screening Level.

[1]Analyzed by EPA Method 8260C, 8021B, or 8240.

[2]Analyzed by Method NWTPH-Dx.

[3]Analyzed by EPA Method 418.1 or Method NWTPH-Gx.

[4]MTCA Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of WAC, revised November 2007.

[5]MTCA Cleanup Regulation, Chapter 173-340 of WAC, CLARC, Groundwater, Method B, Non-Carcinogen, Standard Formula Value, CLARC Website <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>.

[6]1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

[7]MTCA Method B Cancer, Table B-1 of the Guidance for Evaluative Soil Vapor Intrusion in Washington State: Investigation and Remedial Action.

Laboratory Notes:

[b]Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

[x]The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

-- = not analyzed, measured, or calculated

< = not detected at a concentration exceeding laboratory reporting limit

µg/L = micrograms per liter

CLARC = Cleanup Levels and Risk Calculations

DCE = dichloroethene

DRPH = diesel-range petroleum hydrocarbons

DUP = duplicate

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

NAVD88 = North American Vertical Datum of 1988

NE = not established

NWTPH = Northwest Total Petroleum Hydrocarbons

ORPH = heavy oil-range petroleum hydrocarbons

PCE = tetrachloroethene

SoundEarth = SoundEarth Strategies, Inc.

TCE = trichloroethene

TOC = top of casing

WAC = Washington Administrative Code

Table 3
Indoor Air Sample Locations and Analyses
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Sample ID	Building Floor Location	Sample Location	Indoor Air Analysis
IA01	Parking Level P5	North wall	APH[(1)]
IA02	Parking Level P5	Interior Stairway—North area	APH and CVOCs[(2)]
IA03	Parking Level P5	West wall	APH and CVOCs
IA04	Parking Level P5	West wall	CVOCs
IA05	Parking Level P5	Elevator Shaft	CVOCs
IA06	Parking Level P5	Elevator Lobby	CVOCs
IA07	Parking Level P5	North wall	CVOCs
IA08	Parking Level P4	West Wall	APH and CVOCs
IA09	Parking Level P4	West wall	CVOCs
IA10	Parking Level P4	South wall	CVOCs
IA11	Parking Level P3	West wall	APH and CVOCs
IA12	Parking Level P3	West wall	CVOCs
IA13	Parking Level P3	East wall	APH
IA14	Parking Level P2	West wall	APH
IA15	Parking Level P2	West wall	APH and CVOCs
IA16	Parking Level P2	South wall	CVOCs
IA17	Parking Level P1	West wall	CVOCs
IA18	Parking Level P1	West wall	APH and CVOCs
IA19	Parking Level P1	South wall area	CVOCs
IA20	Parking Level P1	Interior Stairway—North area	APH and CVOCs
OA01	Outside	HVAC Intake	APH and CVOCs

NOTES:

[(1)]APH analyzed by EPA Method TO-15.

[(2)]CVOCs analyzed by EPA Method TO-15.

APH = air-phase petroleum hydrocarbon

CVOC = chlorinated volatile organic compound

EPA = U.S. Environmental Protection Agency

HVAC = heating, ventilation, and air conditioning

IA = indoor air

OA = outdoor air

Table 4
Indoor Air Cleanup Levels for Proposed Analytes
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Proposed Analyte List	MTCA Method B Indoor Air Cleanup Level[(1)] ($\mu g/m^3$)	Modified MTCA Method B Screening Level[(2)] ($\mu g/m^3$)
Tetrachloroethene	9.62	323.08
Trichloroethene	0.37	20.49
cis 1,2-Dichloroethene	NE	NE
trans 1,2-Dichloroethene	NE	NE
Vinyl Chloride	0.28	9.55
APH EC5-8 Aliphatic	2,700	113,400
APH EC9-12 Aliphatic	140	5,880
APH EC9-10 Aromatics	180	7,560

NOTES:

[(1)]MTCA Method B Cancer, Washington State Department of Ecology Cleanup Level and Risk Assessment Database

[(2)]Cleanup levels modified for commercial worker exposure in the parking garage. Assumes 1 hour of exposure, 5 days a week, for 52 week a year.

$\mu g/m^3$ = micrograms per cubic meter

APH = air-phase petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

NE = not established

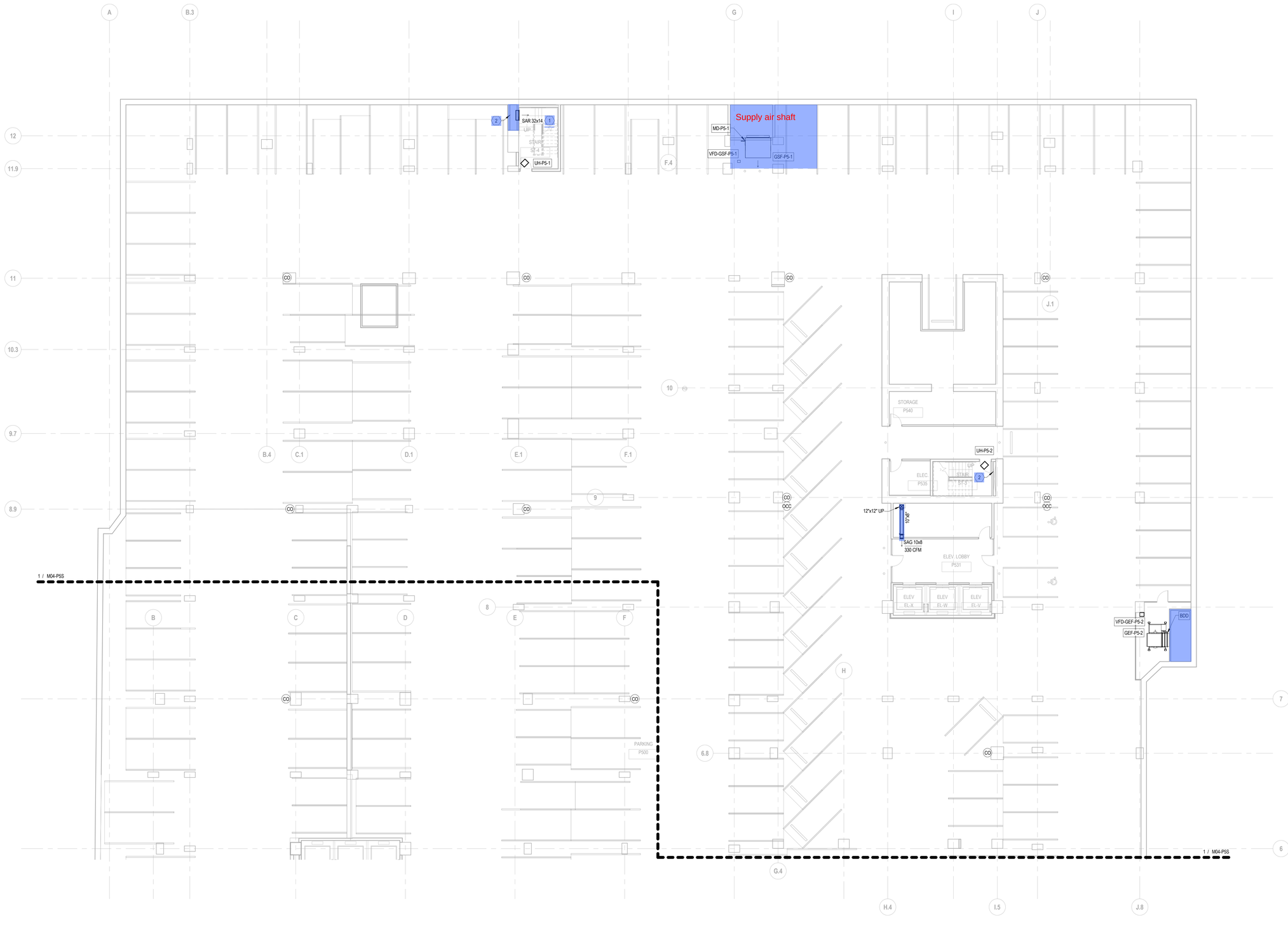
APPENDIX A
SELECT BUILDING PLANS

SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. MOUNT REGISTER 6' 8" AFF
2. AIR TIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL P5 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

PERKINS + WILL

1221 Second Avenue
Suite 200
Seattle, WA 98101
t 206.381.6000
f 206.441.4981
www.perkinswill.com

TROY BLOCK

South Tower:
300 Boren Avenue North
Seattle, WA 98109

North Tower:
399 Fairview Avenue North
Seattle, WA 98109

touchstone

USAA Real Estate Company

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PO BOX 24567
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Revisions

2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
	CONSTRUCTION DOCUMENTS	26 JUN 2014
NO	ISSUE	DATE

Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL P5 HVAC PLAN - NORTH

Sheet

M04-P5N

9/4/2015 10:35:18 AM
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SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. MOUNT REGISTER 6' 8" AFF
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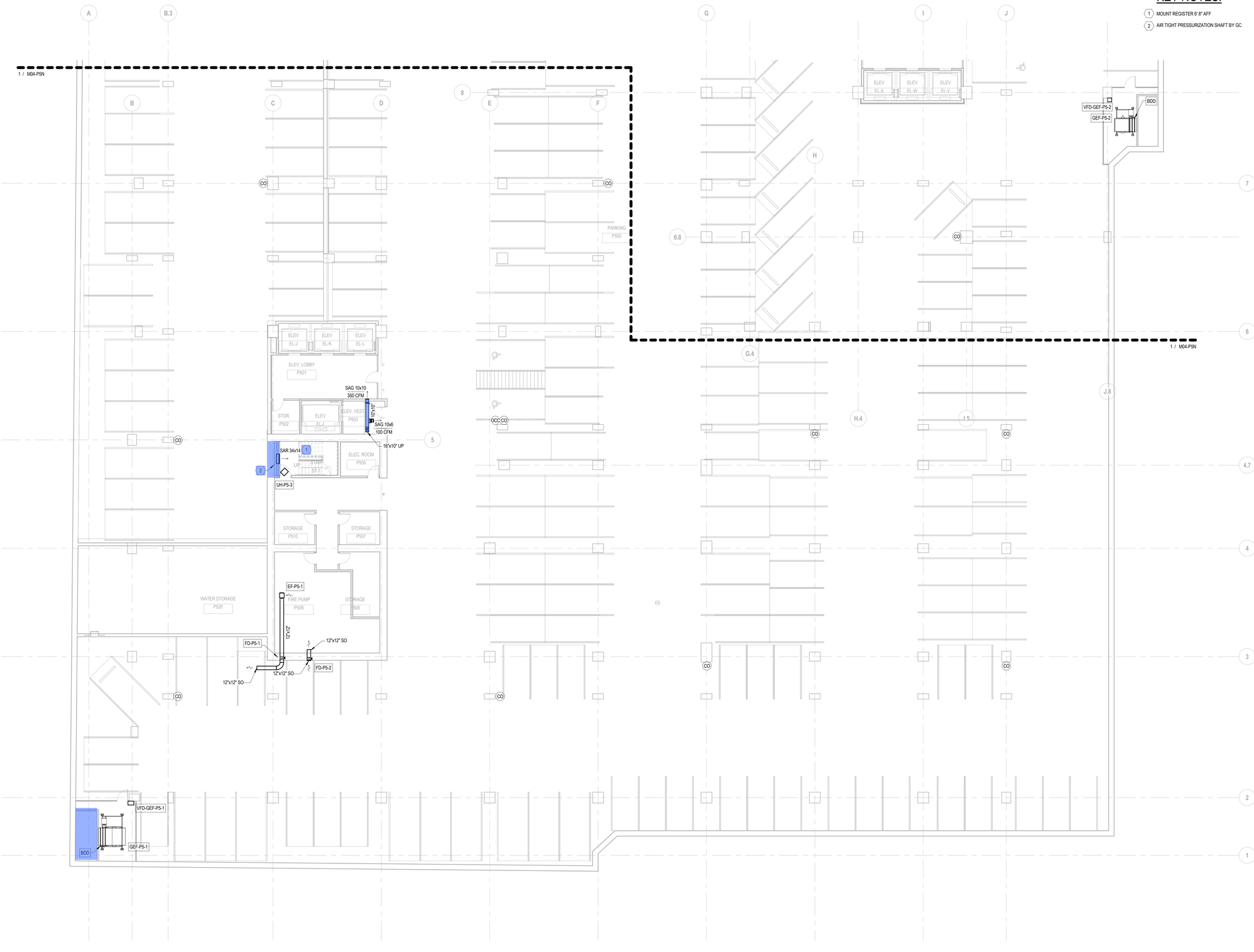

1 LEVEL P5 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

PERKINS + WILL

1221 Second Avenue
Suite 200
Seattle, WA 98101
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TROY BLOCK

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Seattle, WA 98109

North Tower:
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Revisions

2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
	CONSTRUCTION DOCUMENTS	26 JUN 2014
NO	ISSUE	DATE

Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
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Title

LEVEL P5 HVAC PLAN - SOUTH

Sheet

M04-P5S

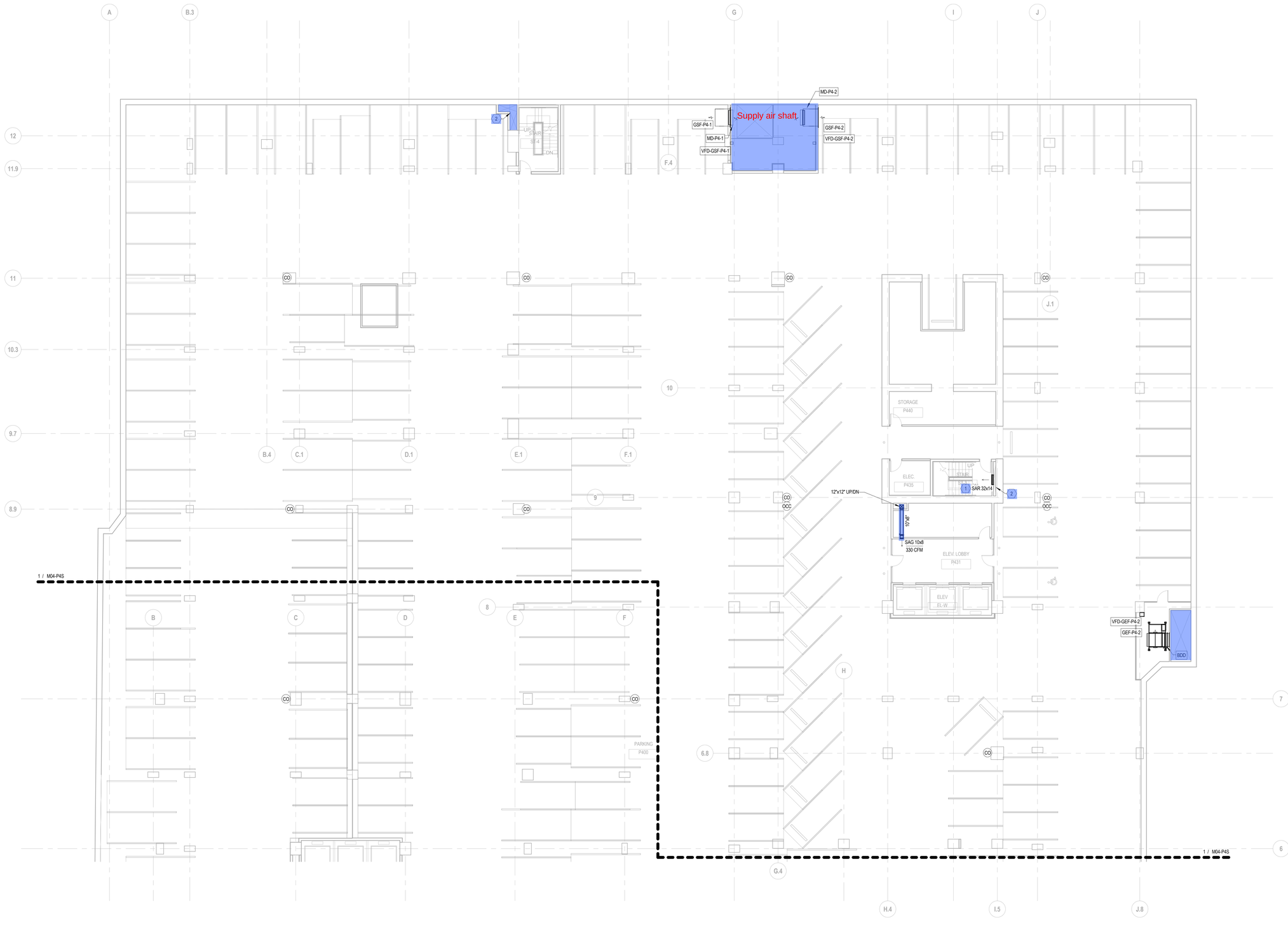
9/4/2015 10:35:20 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. MOUNT REGISTER 6' 8" AFF
2. AIR TIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL P4 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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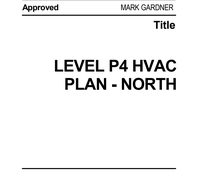

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Title

LEVEL P4 HVAC PLAN - NORTH

Sheet

M04-P4N

9/4/2015 10:35:15 AM
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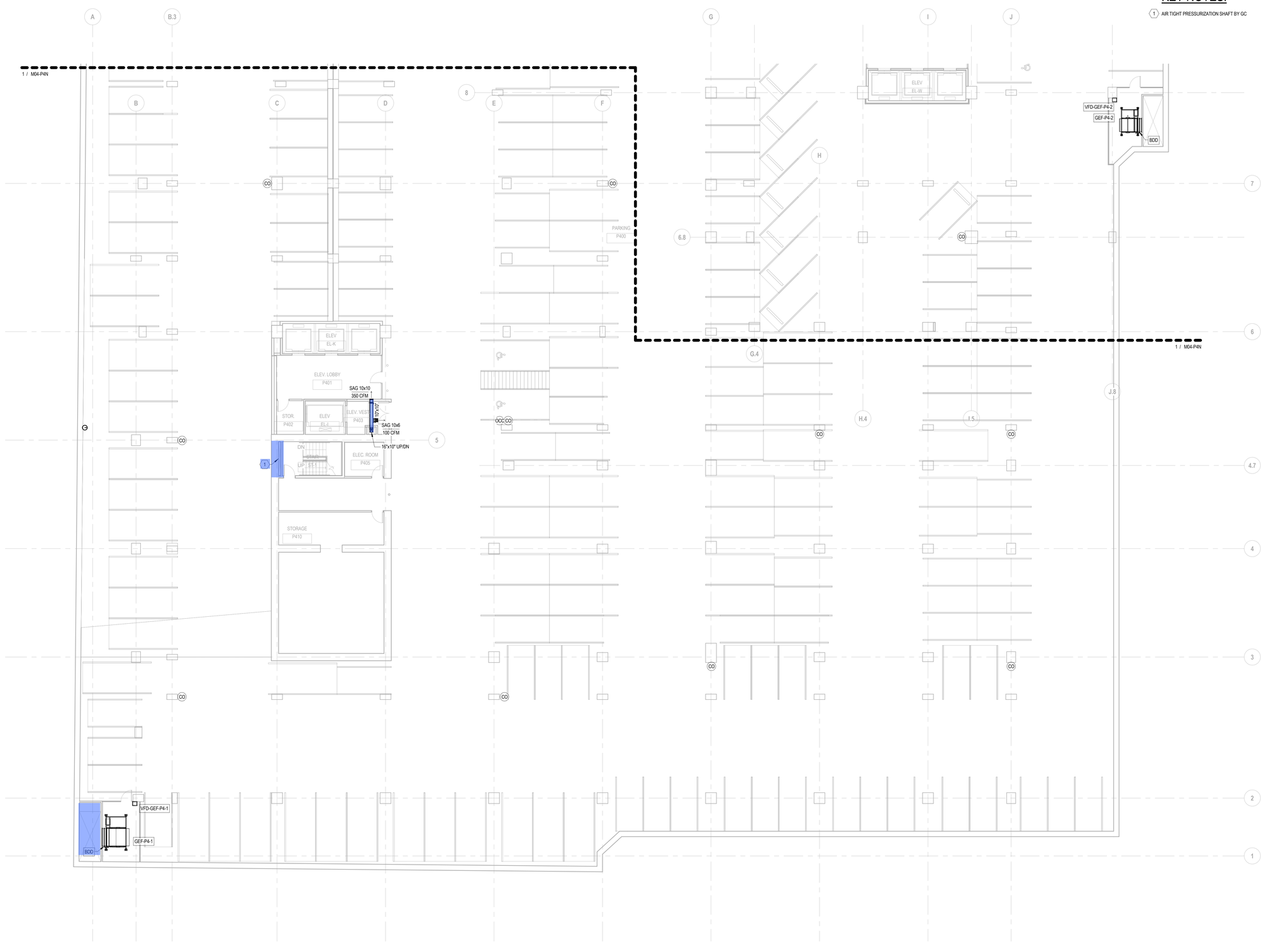
SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1 AIR TIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL P4 HVAC PLAN - SOUTH

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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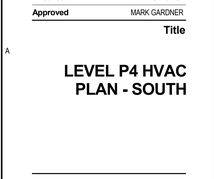

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LEVEL P4 HVAC PLAN - SOUTH

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M04-P4S

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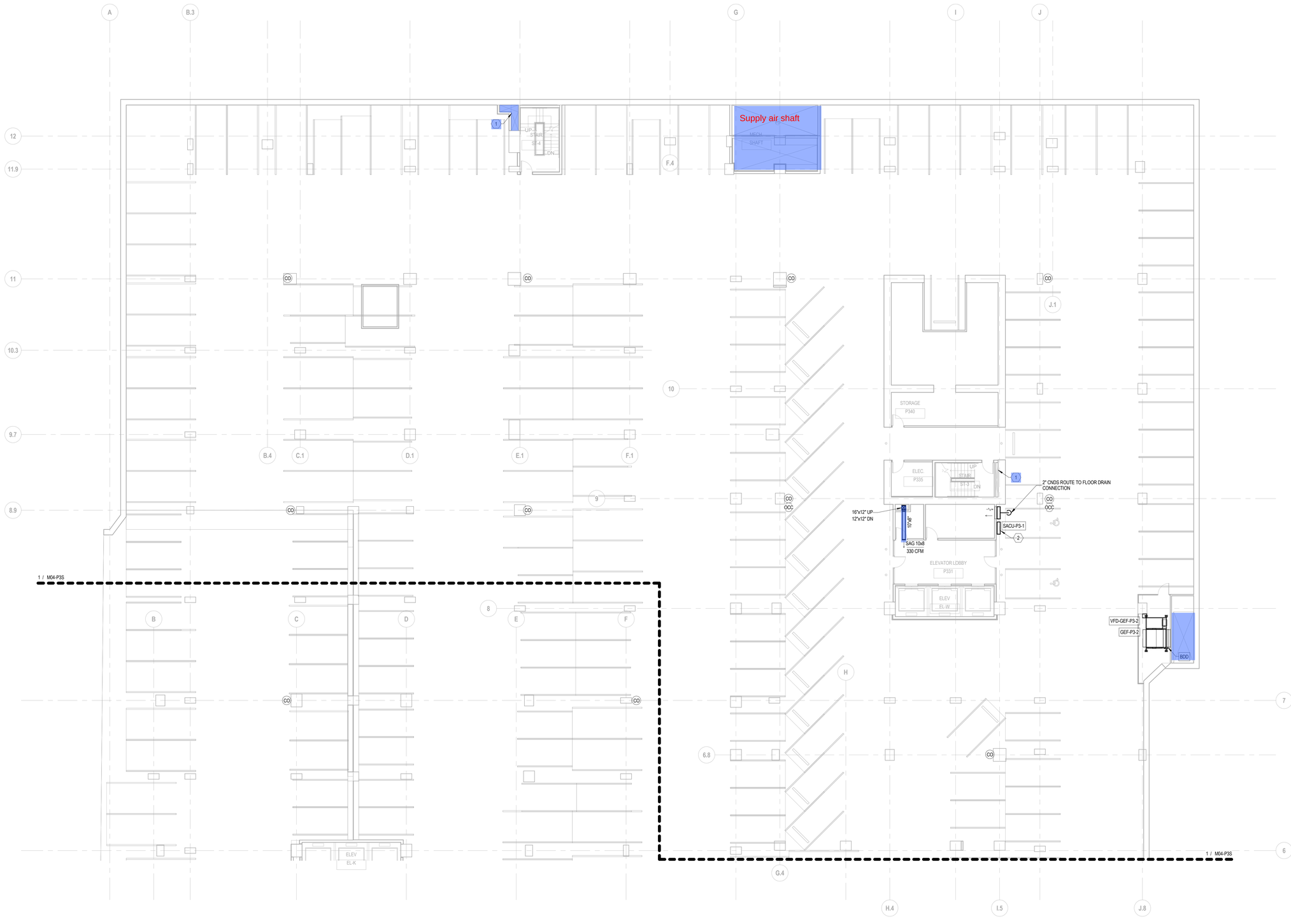
SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. AIR TIGHT PRESSURIZATION SHAFT BY GC
2. MOUNT UNIT TO WALL MIN 8' 8" AFF. DUCT THROUGH WALL.



1 LEVEL P3 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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LEVEL P3 HVAC PLAN - NORTH

Sheet

M04-P3N

9/4/2015 10:35:15 AM
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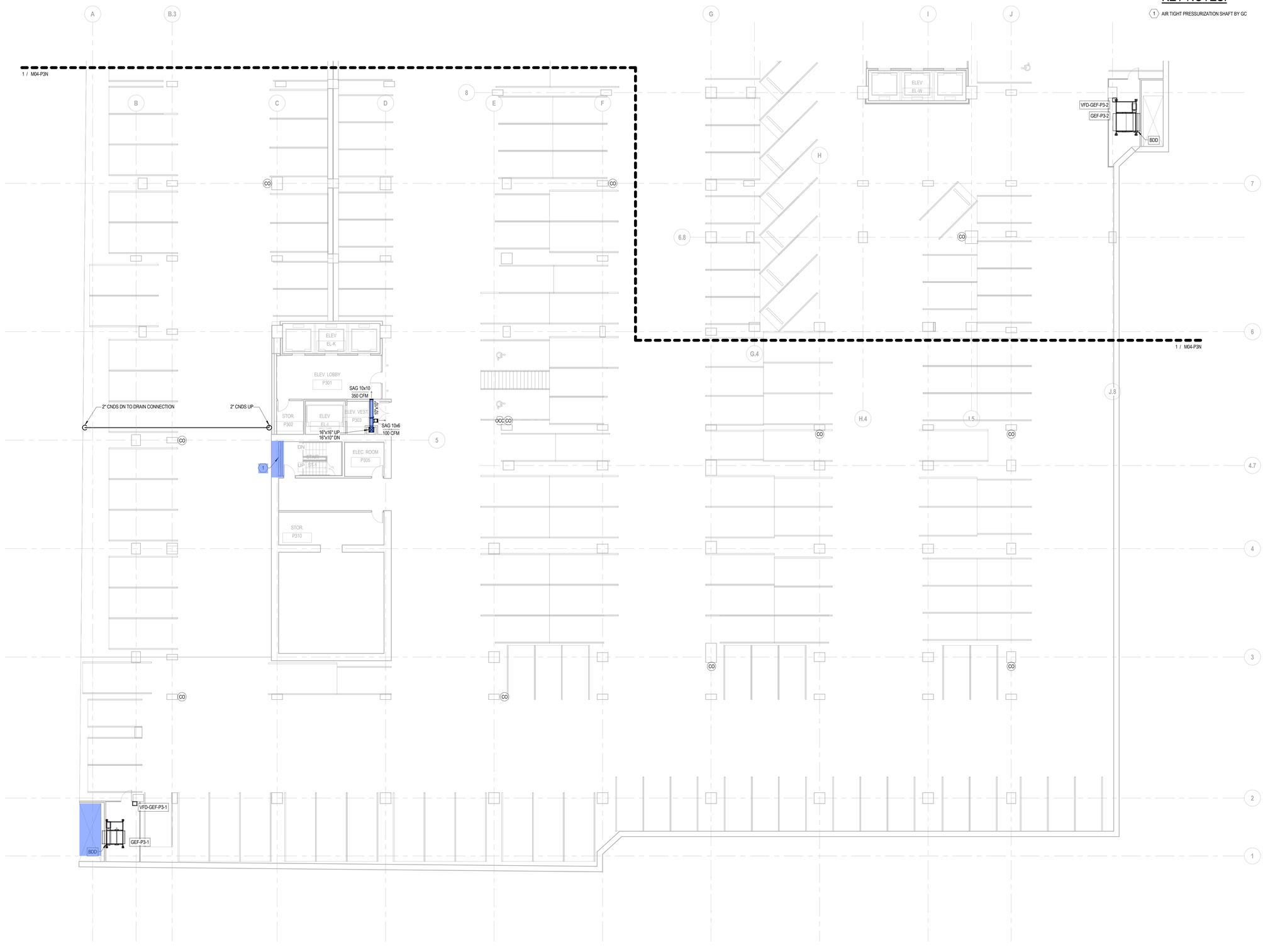
SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1 AIR TIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL P3 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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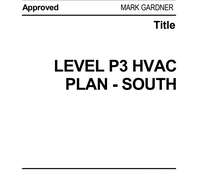

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LEVEL P3 HVAC PLAN - SOUTH

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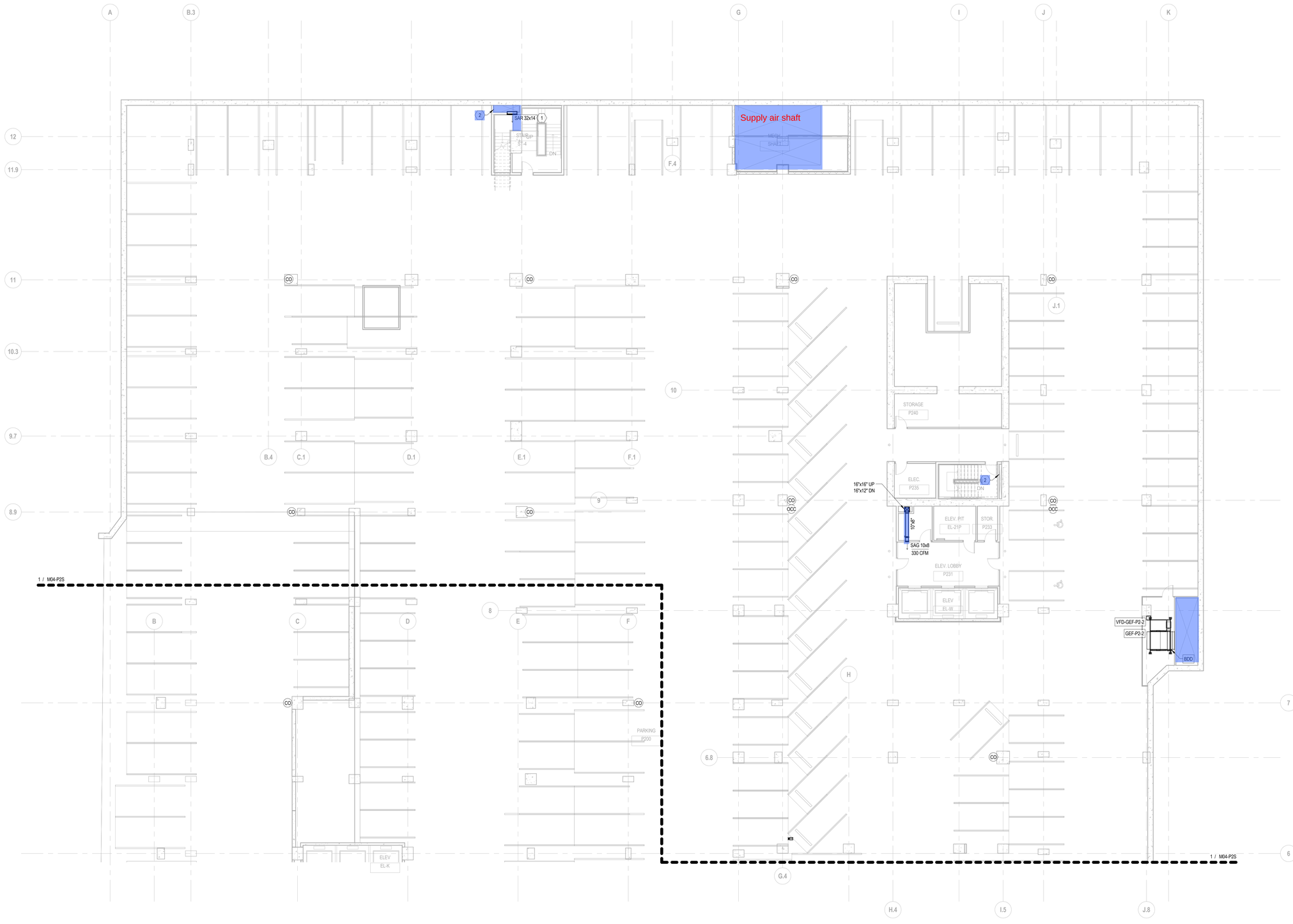
KEY NOTES:

1. MOUNT REGISTER 6' 8" AFF
2. AIR TIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL P2 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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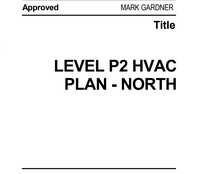

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LEVEL P2 HVAC PLAN - NORTH

Sheet

M04-P2N

9/4/2015 10:35:14 AM
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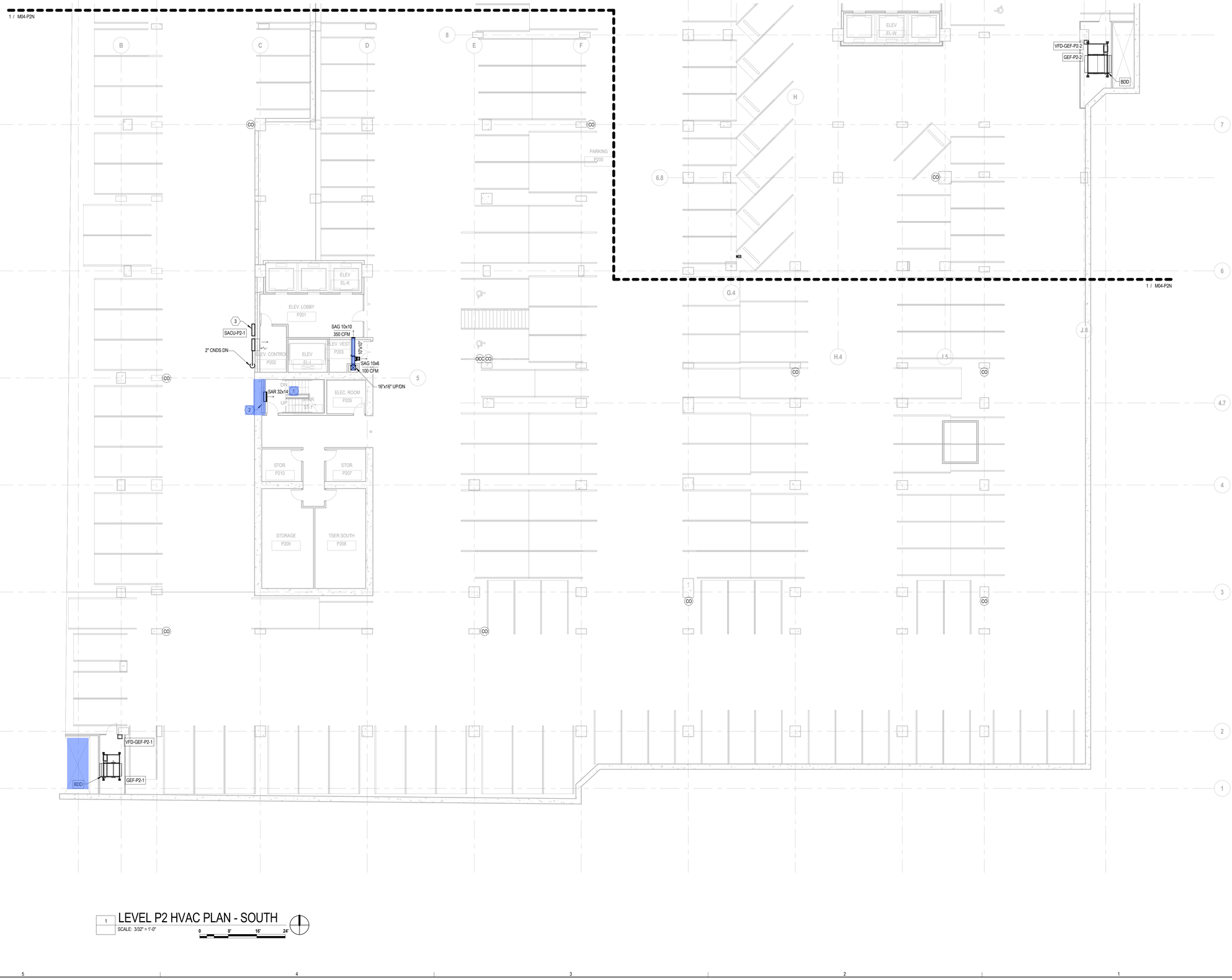
SHEET NOTES:

1. CO AND OCC SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. MOUNT REGISTER 6' 8" AFF
2. AIR TIGHT PRESSURIZATION SHAFT BY GC
3. MOUNT UNIT TO WALL MIN 6' 8" AFF. DUCT THRU WALL.



1 LEVEL P2 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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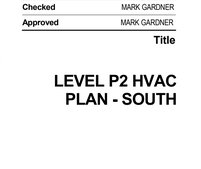

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LEVEL P2 HVAC PLAN - SOUTH

Sheet

M04-P2S

9/4/2015 10:35:14 AM
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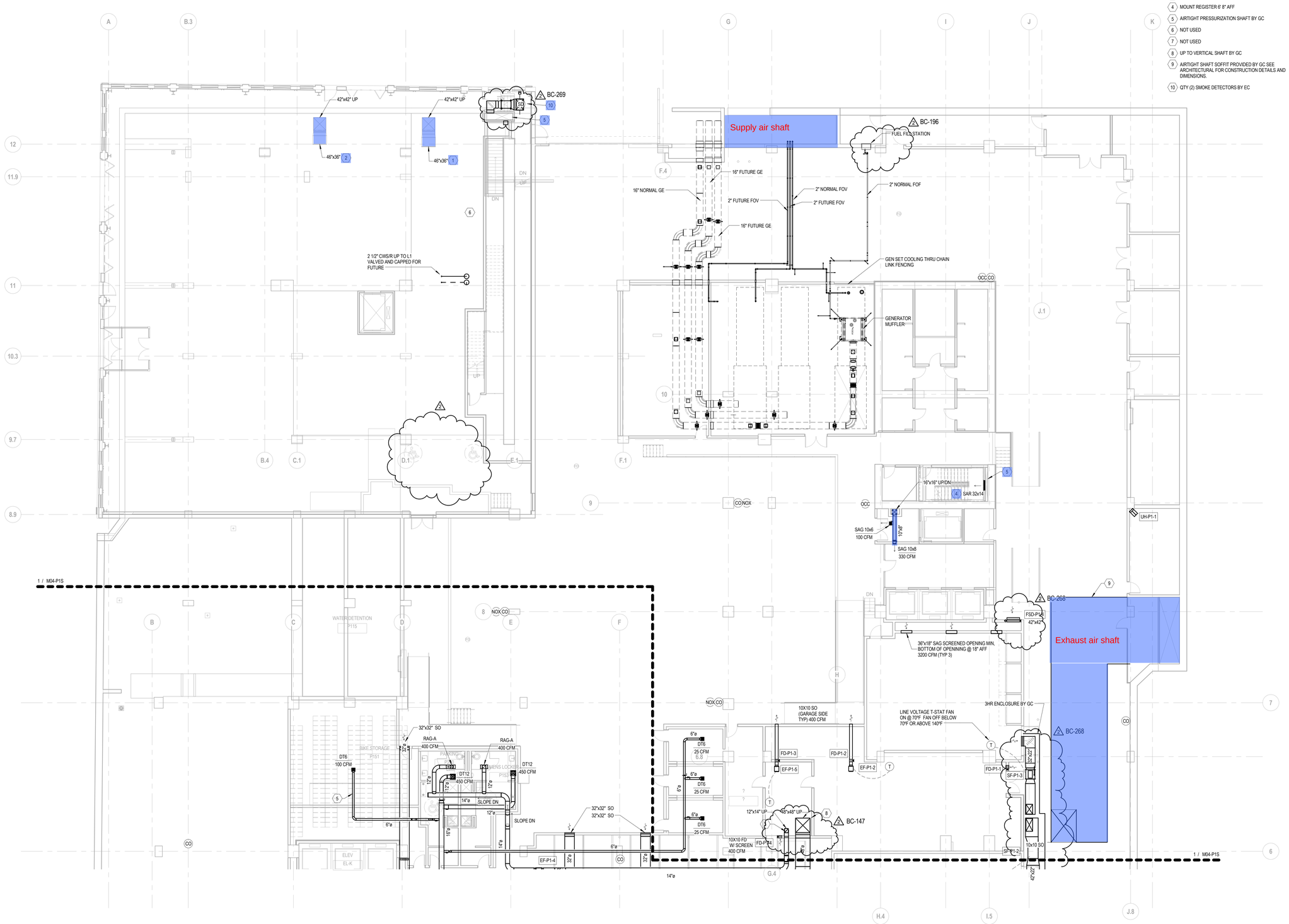
SHEET NOTES:

1. CO, OCC & NOX SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. PATHWAY FOR FUTURE OA
2. PATHWAY FOR FUTURE RELIEF
3. CAPPED FOR FUTURE TOILET EXHAUST
4. MOUNT REGISTER 6' 8" AFF
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. NOT USED
7. NOT USED
8. UP TO VERTICAL SHAFT BY GC
9. AIRTIGHT SHAFT SOFFIT PROVIDED BY GC SEE ARCHITECTURAL FOR CONSTRUCTION DETAILS AND DIMENSIONS.
10. QTY (2) SMOKE DETECTORS BY EC



1 LEVEL P1 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
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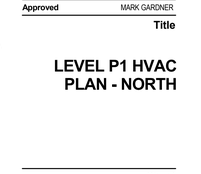

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LEVEL P1 HVAC PLAN - NORTH

Sheet

M04-P1N

9/4/2015 10:35:12 AM
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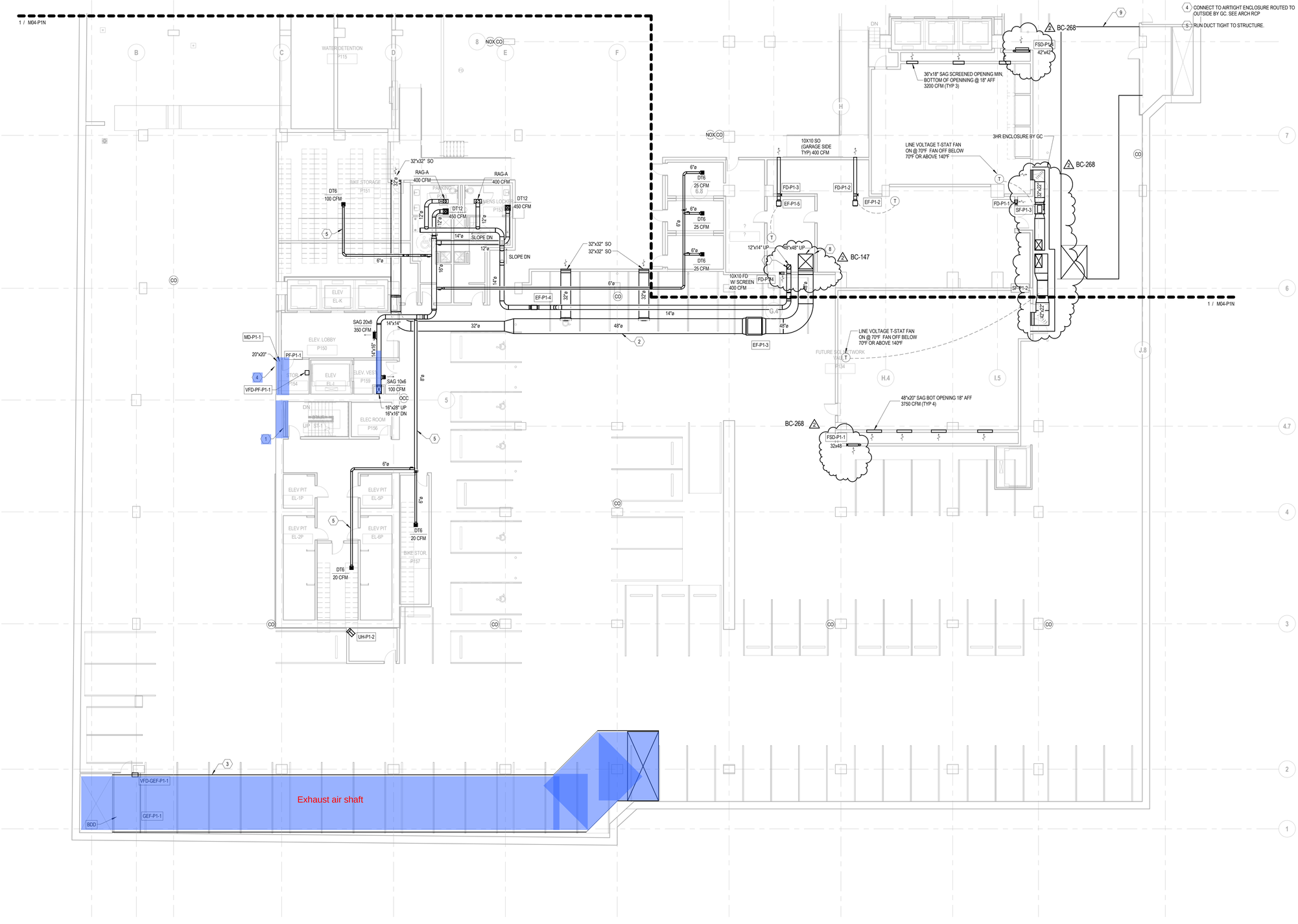
SHEET NOTES:

1. CO, OCC & NOX SENSORS TO BE PER MANUFACTURER'S RECOMMENDATIONS FOR QUANTITY AND SPACING

KEY NOTES:

1. AIR TIGHT PRESSURIZATION SHAFT BY GC
2. BOD MIN 10' 0" AFF
3. AIRTIGHT SHAFT SOFFIT PROVIDED BY GC SEE ARCHITECTURAL FOR CONSTRUCTION DETAILS AND DIMENSIONS
4. CONNECT TO AIRTIGHT ENCLOSURE ROUTED TO OUTSIDE BY GC SEE ARCH RCP
5. RUN DUCT TIGHT TO STRUCTURE.



1 LEVEL P1 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
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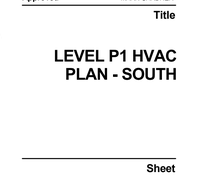

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LEVEL P1 HVAC PLAN - SOUTH

Sheet

M04-P1S

9/4/2015 10:35:14 AM
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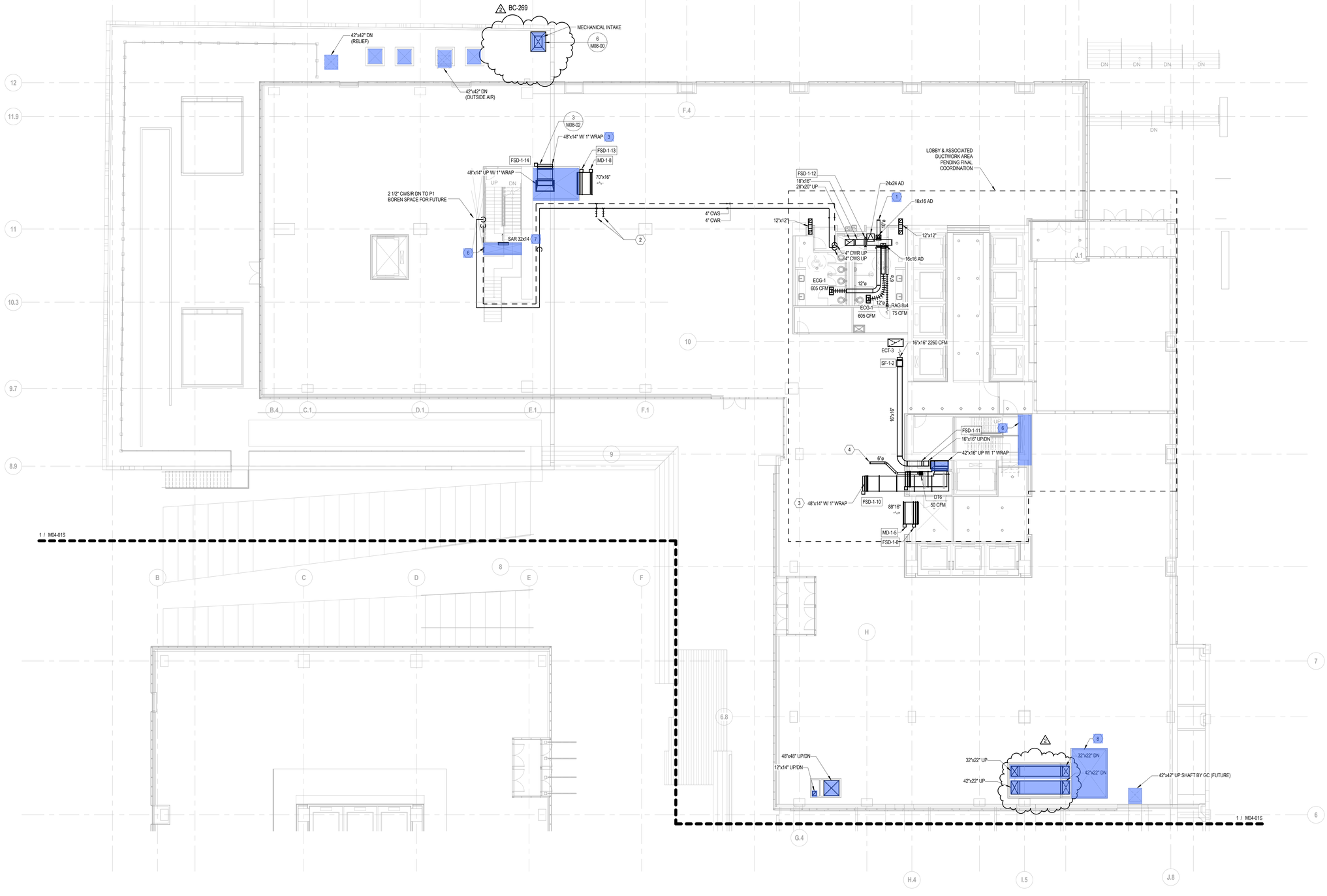
KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 3" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
5. NOT USED
6. AIRTIGHT PRESSURIZATION SHAFT BY GC
7. MOUNT REGISTER 10' 0" AFF
8. AIRTIGHT SHAFT BY GC
9. NOT USED
10. NOT USED



1 LEVEL 01 HVAC PLAN - NORTH

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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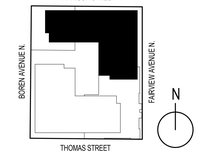

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LEVEL 01 HVAC PLAN - NORTH

Sheet

M04-01N

9/4/2015 10:34:17 AM
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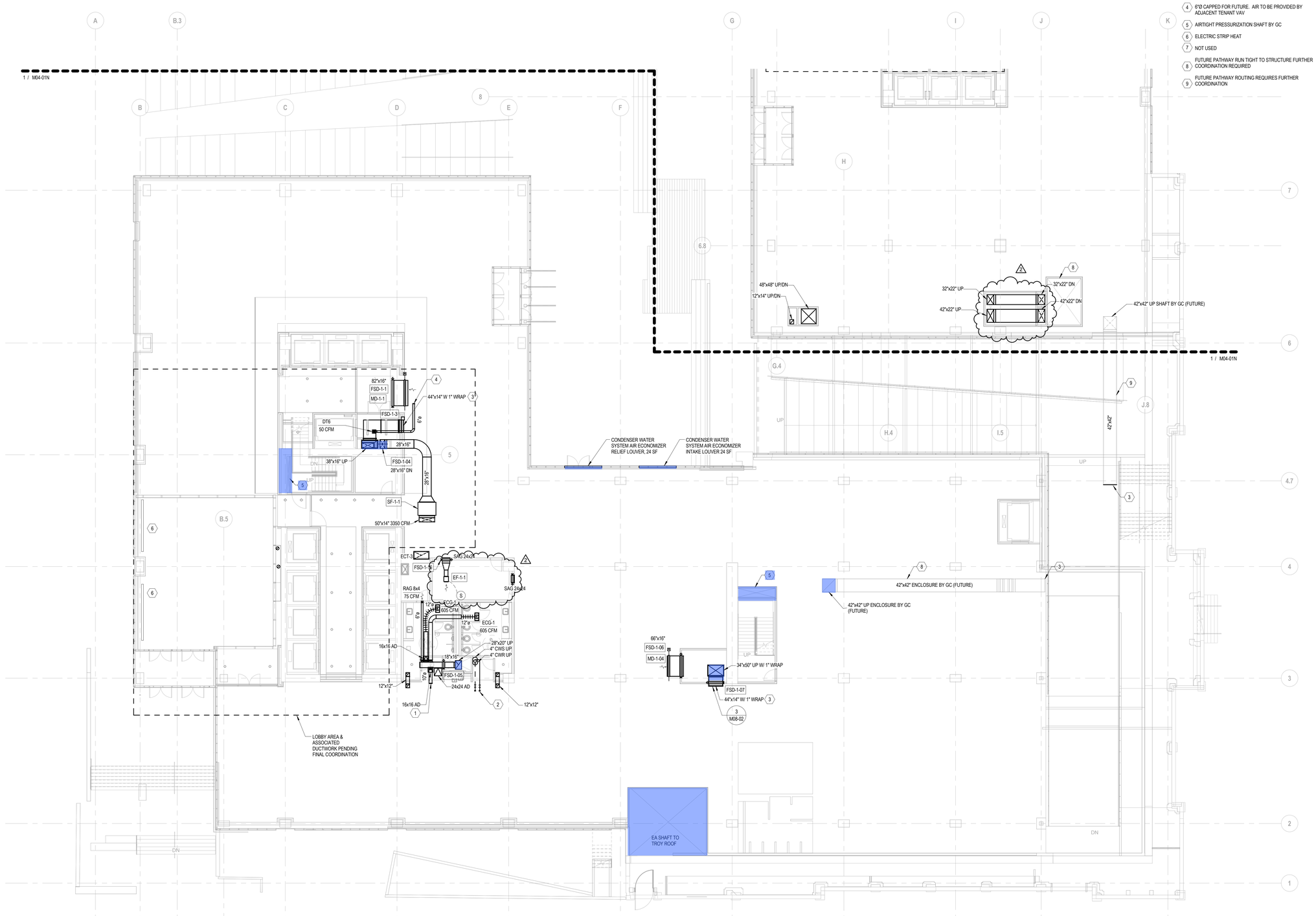
KEY NOTES:

1. 10Ø CAPPED FOR FUTURE 200 CFM
2. 4" CWS & CWR CAPPED FOR FUTURE
3. FUTURE DUCT OPENING FOR FUTURE TENANT USE
4. 6'Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. ELECTRIC STRIP HEAT
7. NOT USED
8. FUTURE PATHWAY RUN TIGHT TO STRUCTURE FURTHER COORDINATION REQUIRED
9. FUTURE PATHWAY ROUTING REQUIRES FURTHER COORDINATION



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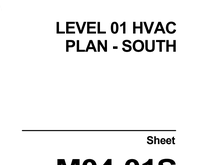

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LEVEL 01 HVAC PLAN - SOUTH

Sheet

M04-01S

9/4/2015 10:34:18 AM
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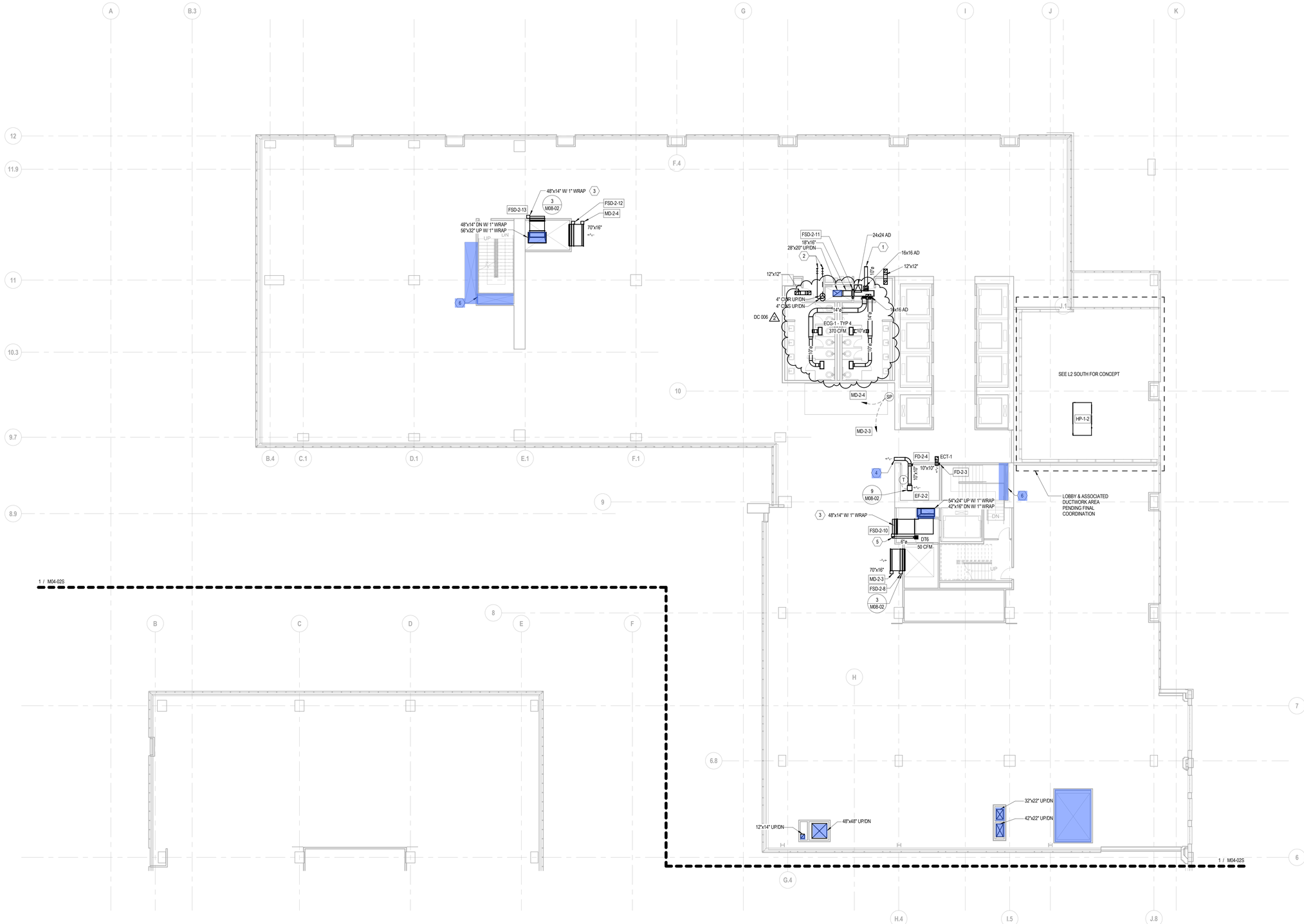
KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 02 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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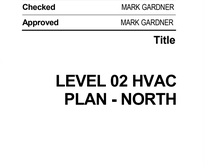

Revisions

2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
	CONSTRUCTION DOCUMENTS	26 JUN 2014
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Sheet Information

Date	09/04/2015
Job Number	638
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Checked	MARK GARDNER
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Title

LEVEL 02 HVAC PLAN - NORTH

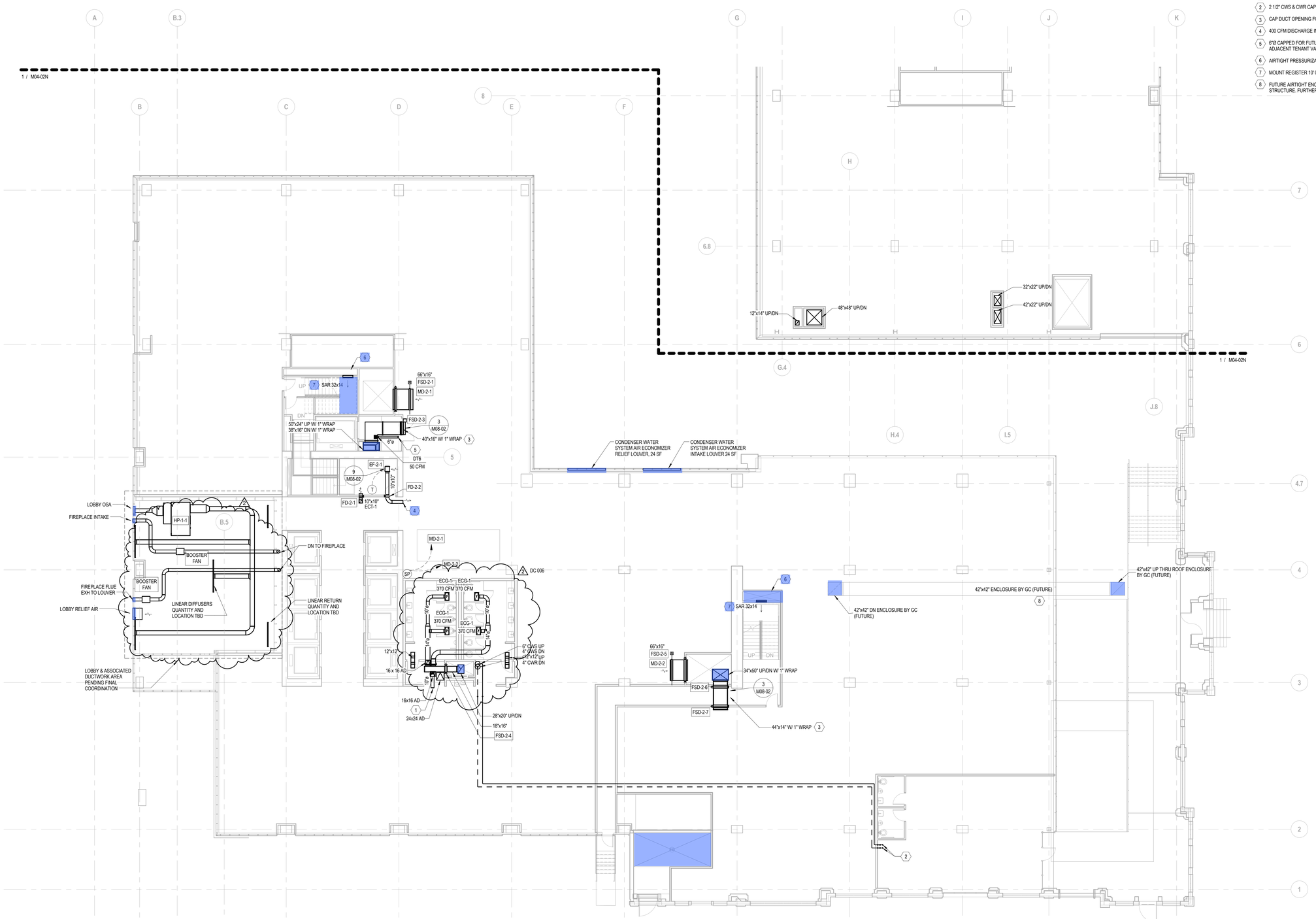
Sheet

M04-02N

9/4/2015 10:34:19 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC
7. MOUNT REGISTER 10' 0" AFF
8. FUTURE AIRTIGHT ENCLOSURE BY GC. INSTALL TIGHT TO STRUCTURE. FURTHER COORDINATION REQUIRED



1 LEVEL 02 HVAC PLAN - SOUTH

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
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NO	ISSUE	DATE

Sheet Information

Date	09/04/2015
Job Number	638
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Checked	MARK GARDNER
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Title

LEVEL 02 HVAC PLAN - SOUTH

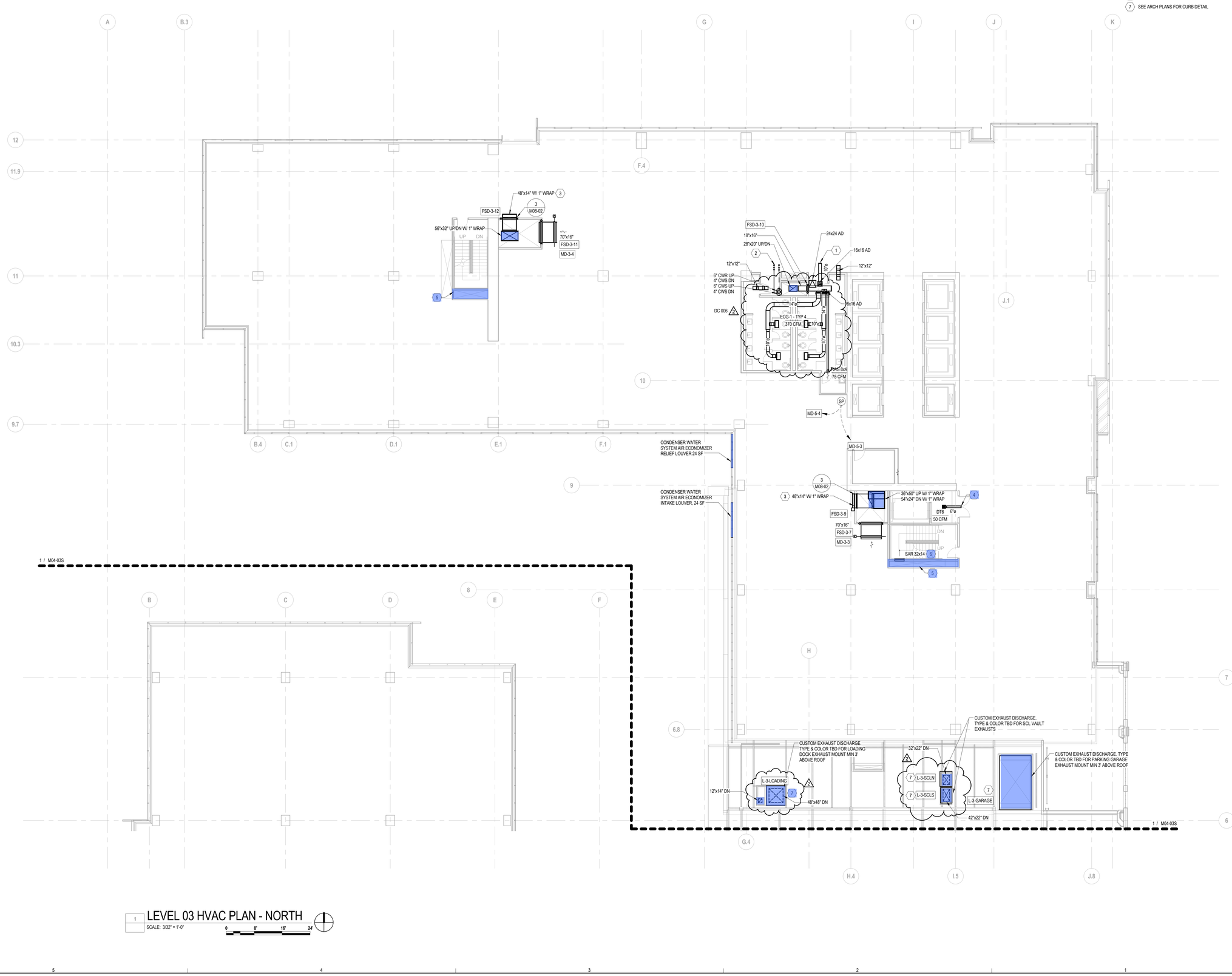
Sheet

M04-02S

9/4/2015 10:34:21 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10' 0" AFF
7. SEE ARCH PLANS FOR CURB DETAIL



1 LEVEL 03 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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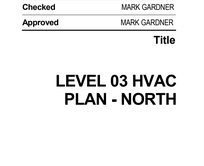

Revisions

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	CONSTRUCTION DOCUMENTS	26 JUN 2014
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Sheet Information

Date	09/04/2015
Job Number	638
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Title

LEVEL 03 HVAC PLAN - NORTH

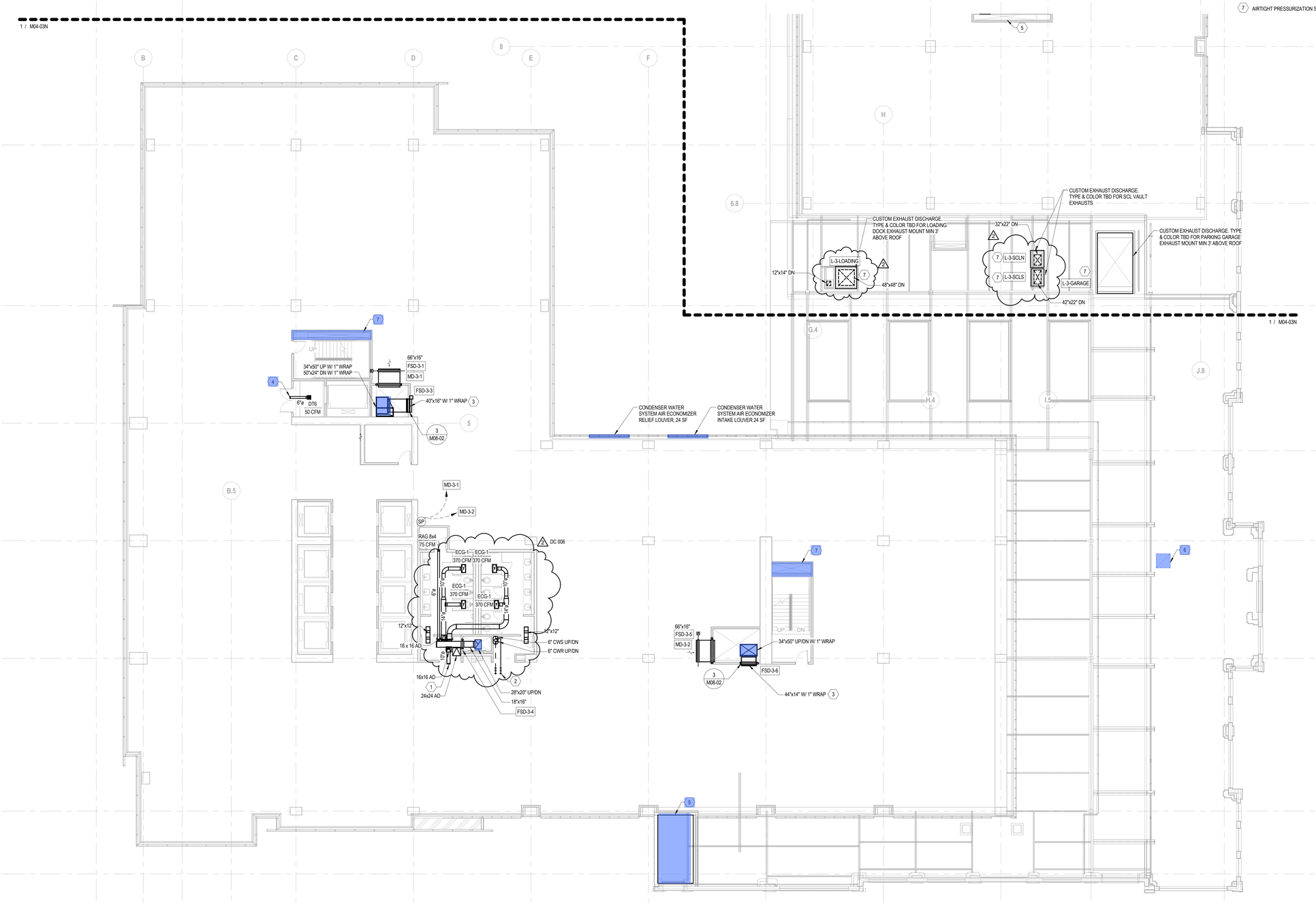
Sheet

M04-03N

9/4/2015 10:34:22 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. EXHAUST GRATE MIN 3' ABOVE ROOF. MIN 70% FREE AREA
6. 42"x42" THRU ROOF ENCLOSURE BY GC. CAPPED FOR FUTURE. FURTHER DETAIL COORDINATION REQUIRED
7. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 03 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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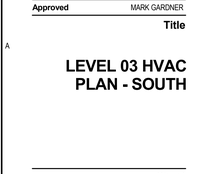

Revisions

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1	CS-1 CONFORMED SET 1	24 OCT 2014
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Sheet Information

Date	09/04/2015
Job Number	638
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Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 03 HVAC PLAN - SOUTH

Sheet

M04-03S

9/4/2015 10:34:23 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
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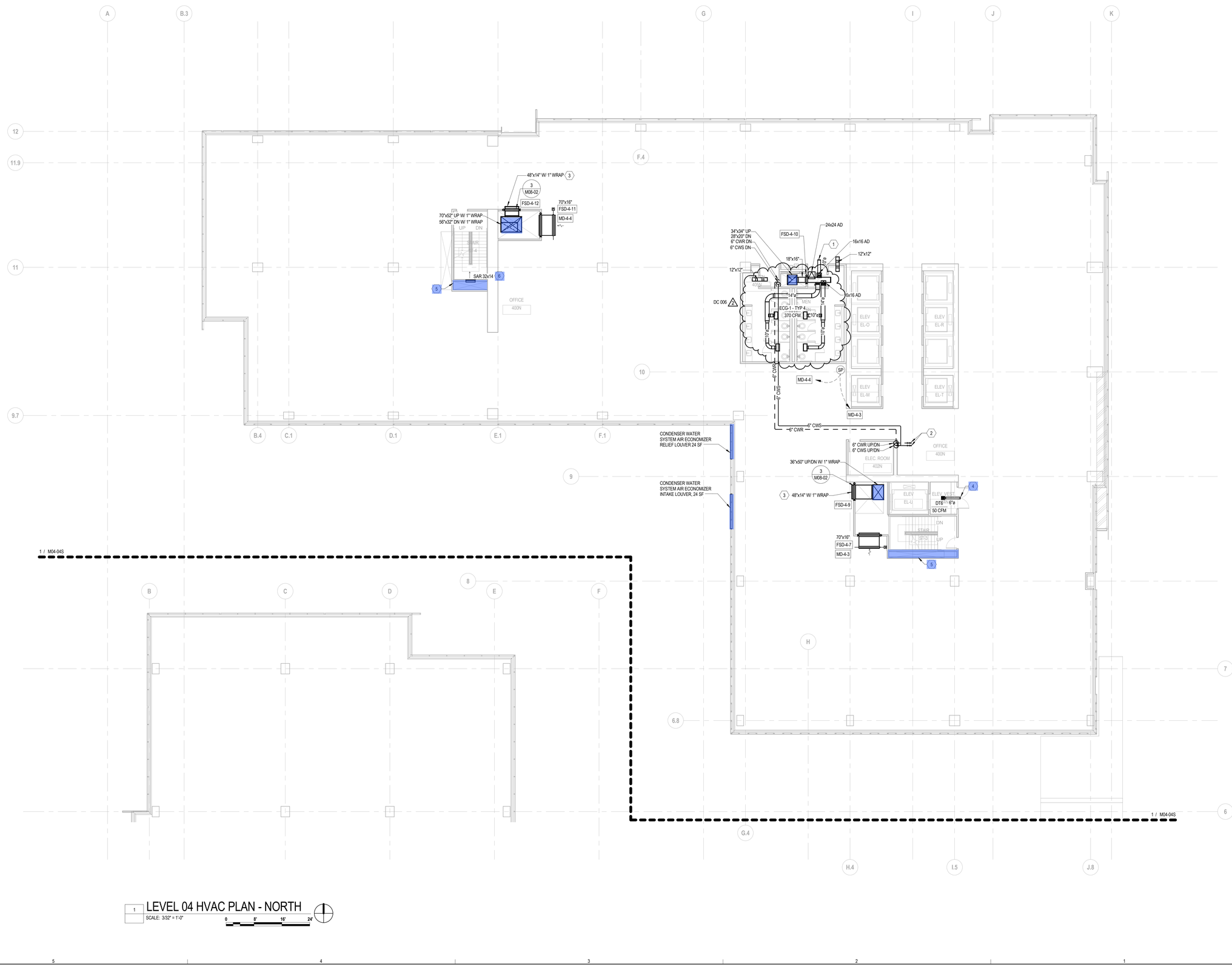
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10" 0" AFF



1 LEVEL 04 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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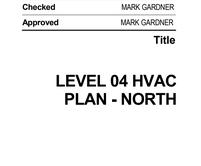

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Date	09/04/2015
Job Number	638
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LEVEL 04 HVAC PLAN - NORTH

Sheet

M04-04N

9/4/2015 10:34:24 AM
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KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
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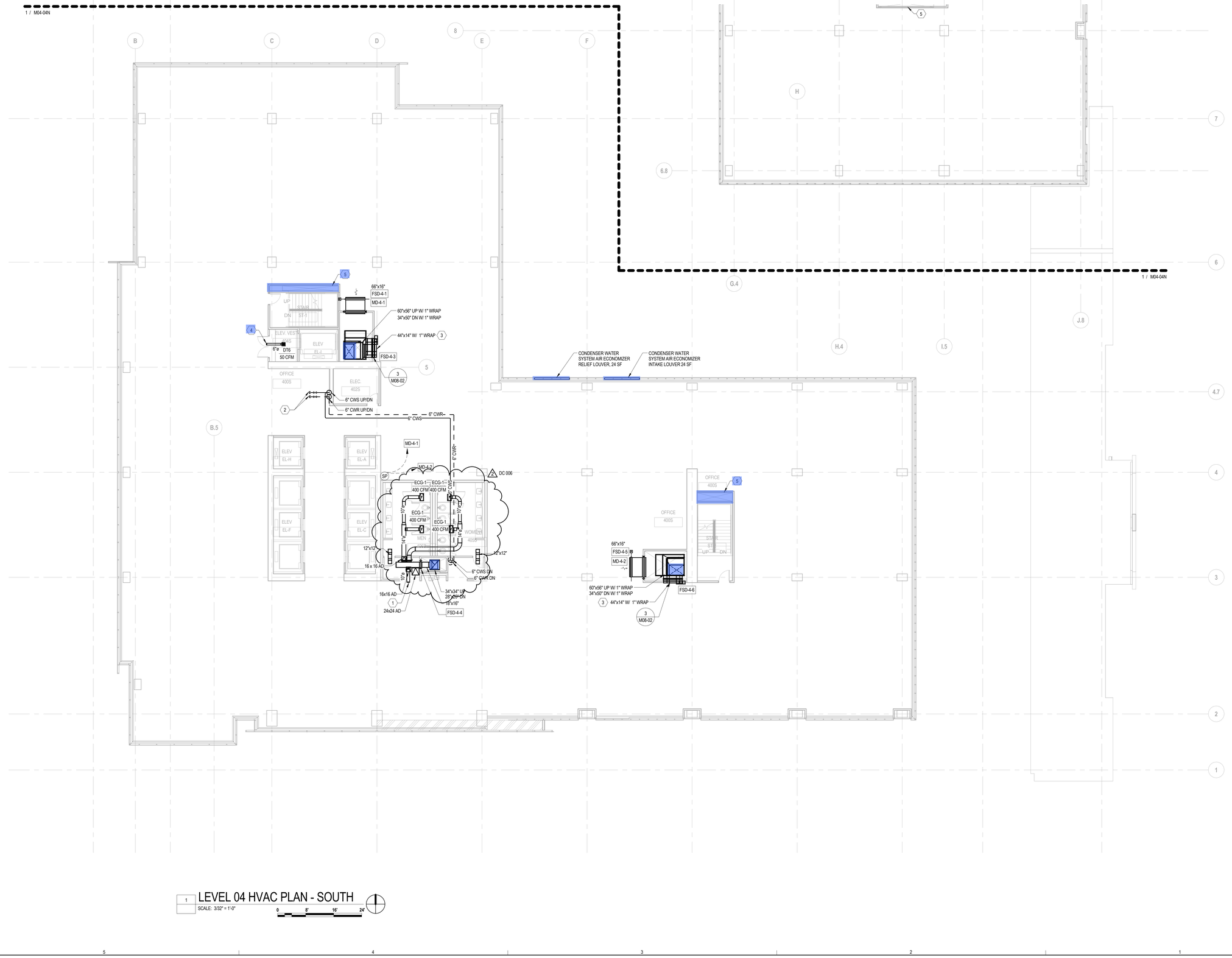
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 04 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

9/4/2015 10:34:25 AM
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1	CS-1 CONFORMED SET 1	24 OCT 2014
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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

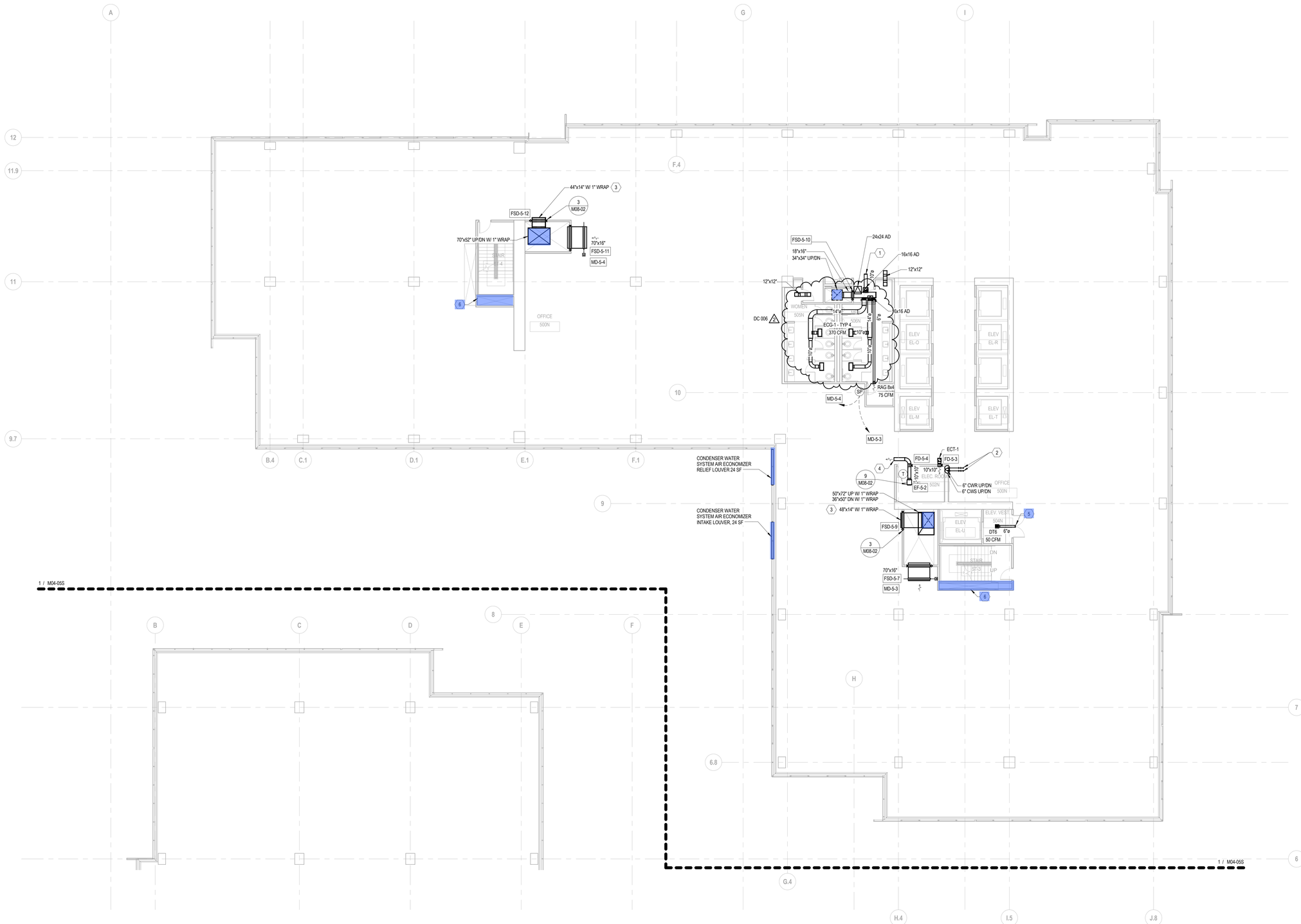
LEVEL 04 HVAC PLAN - SOUTH

Sheet

M04-04S

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 05 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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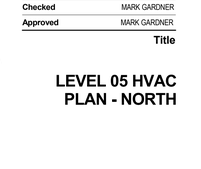

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NO	ISSUE	DATE

Sheet Information

Date	09/04/2015
Job Number	638
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Title

LEVEL 05 HVAC PLAN - NORTH

Sheet

M04-05N

9/4/2015 10:34:26 AM
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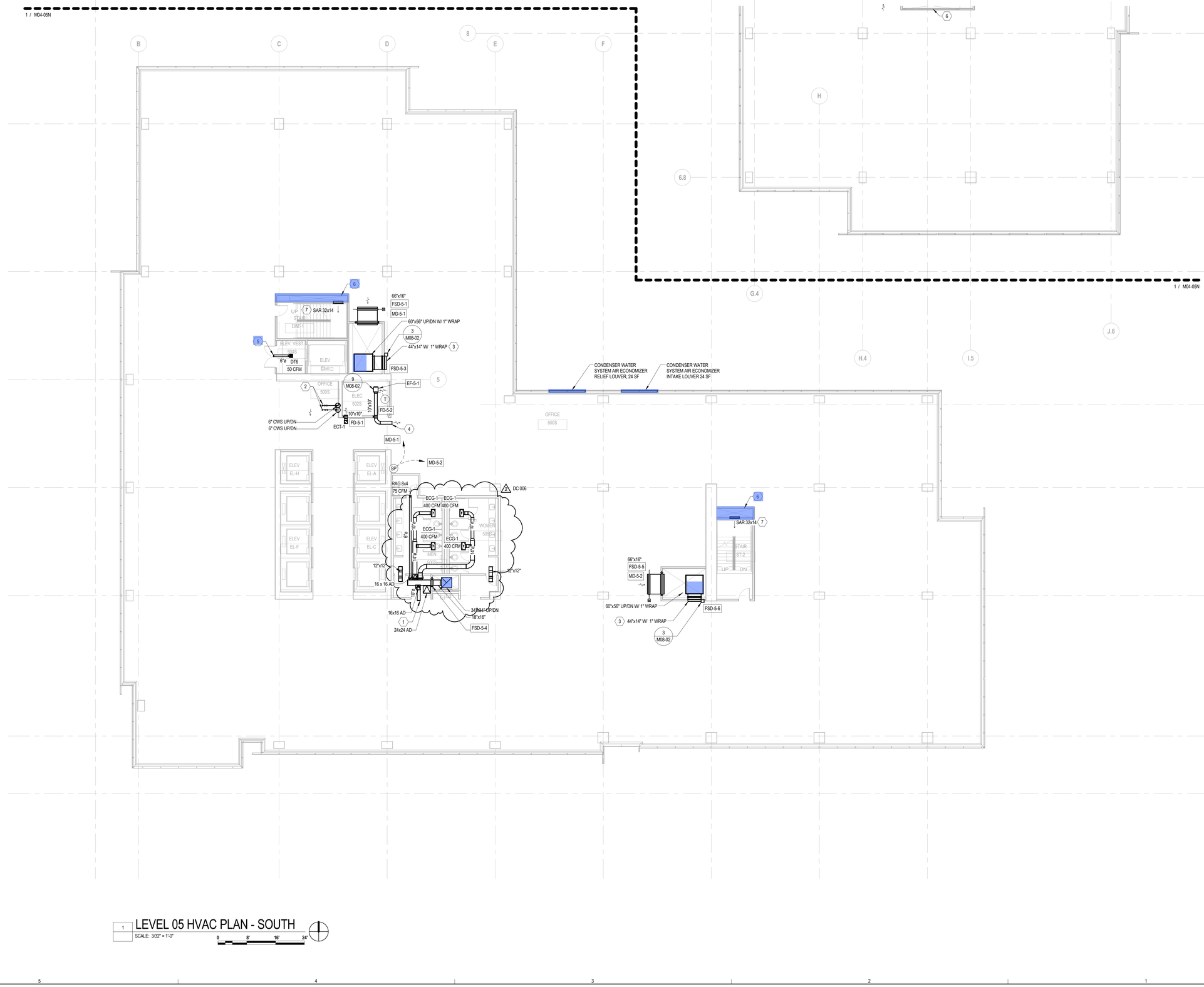
KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC
7. MOUNT REGISTER 10' 0" AFF



LEVEL 05 HVAC PLAN - SOUTH

1 SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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Date	09/04/2015
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Checked	MARK GARDNER
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Title

LEVEL 05 HVAC PLAN - SOUTH

Sheet

M04-05S

9/4/2015 10:34:27 AM
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KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
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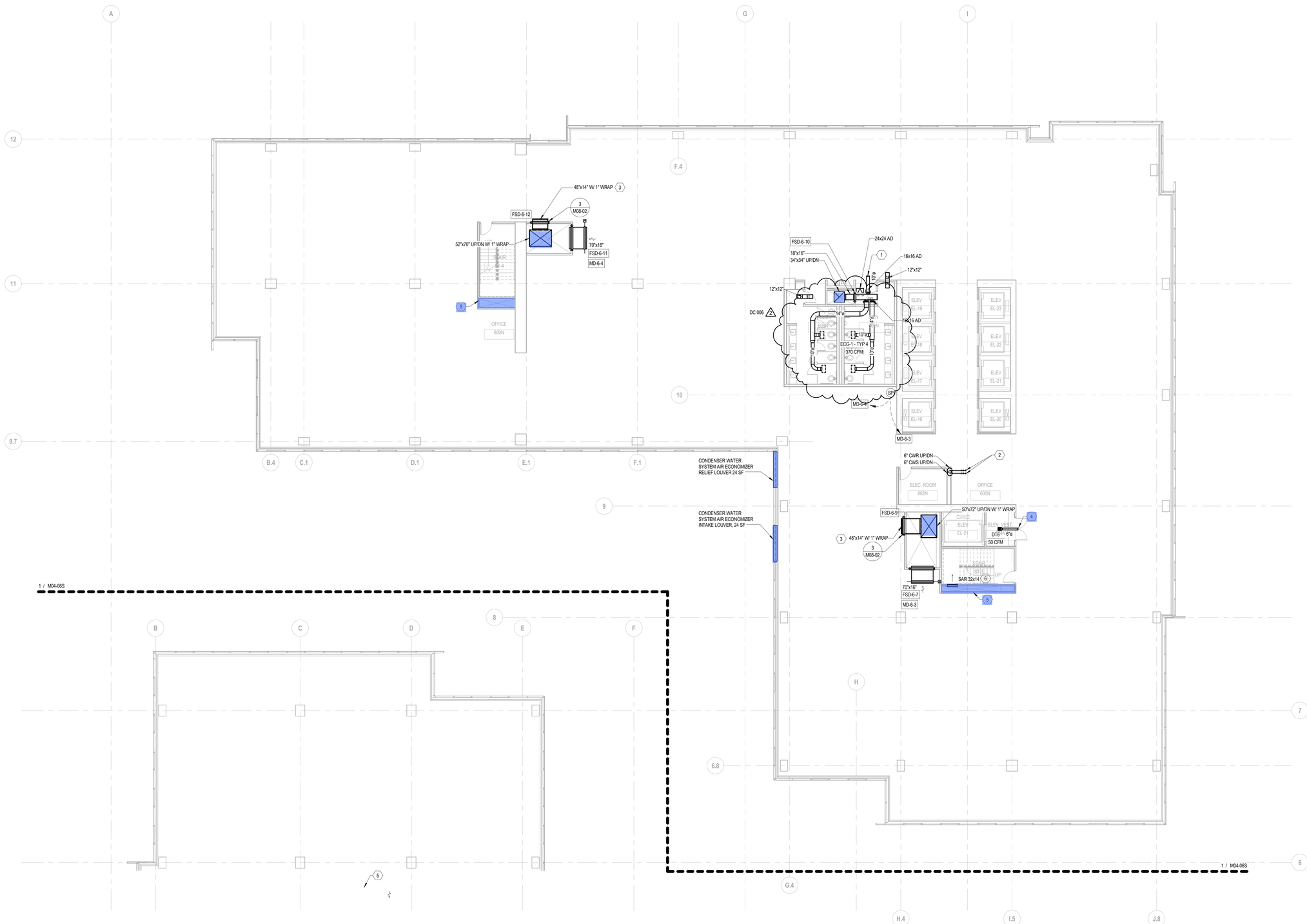
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10" 0" AFF



1 LEVEL 06 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"

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Sheet Information

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Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 06 HVAC PLAN - NORTH

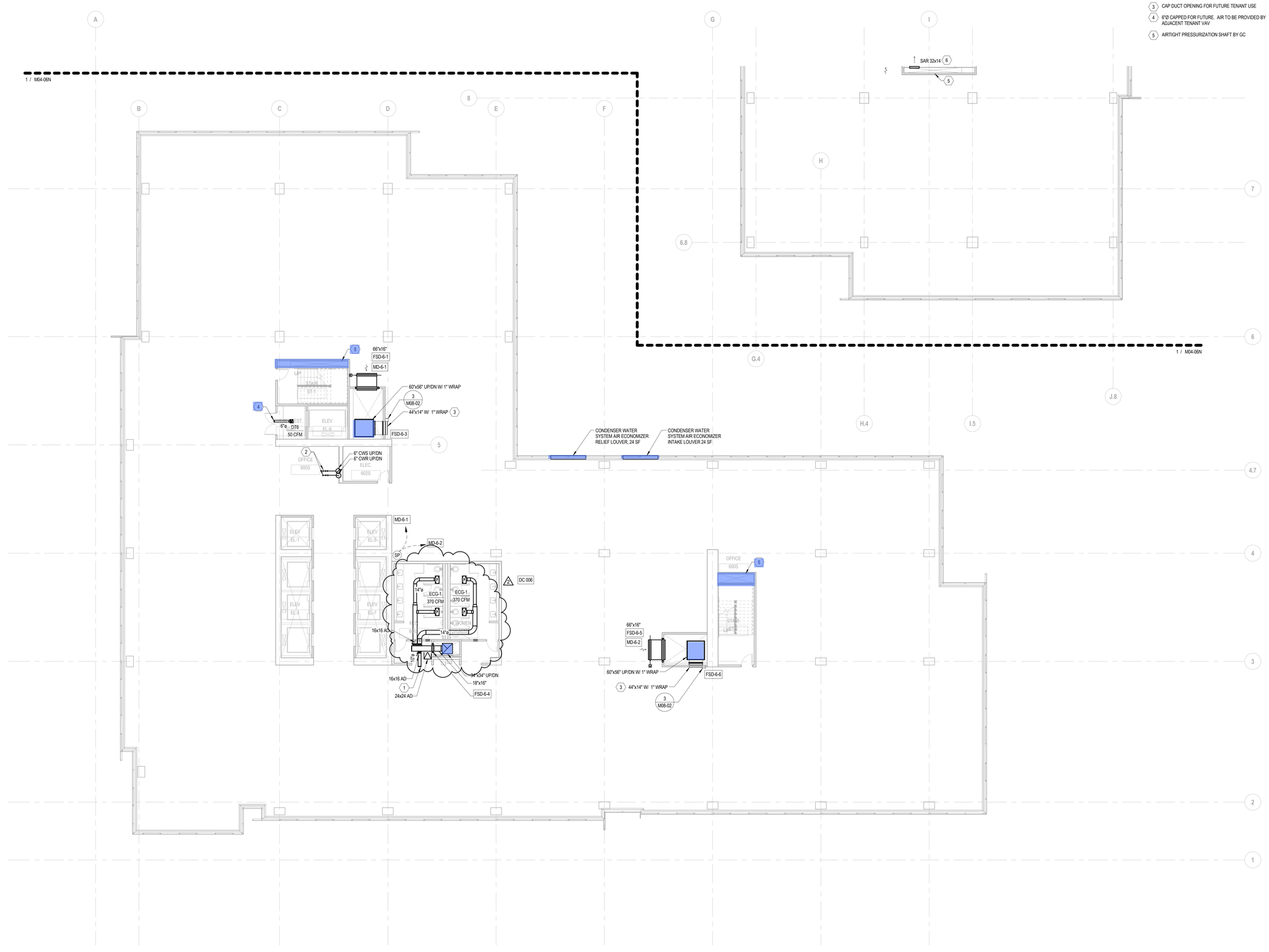
Sheet

M04-06N

9/4/2015 10:34:29 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 06 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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Sheet Information

Date	09/04/2015
Job Number	638
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Title

LEVEL 06 HVAC PLAN - SOUTH

Sheet

M04-06S

9/4/2015 10:34:31 AM
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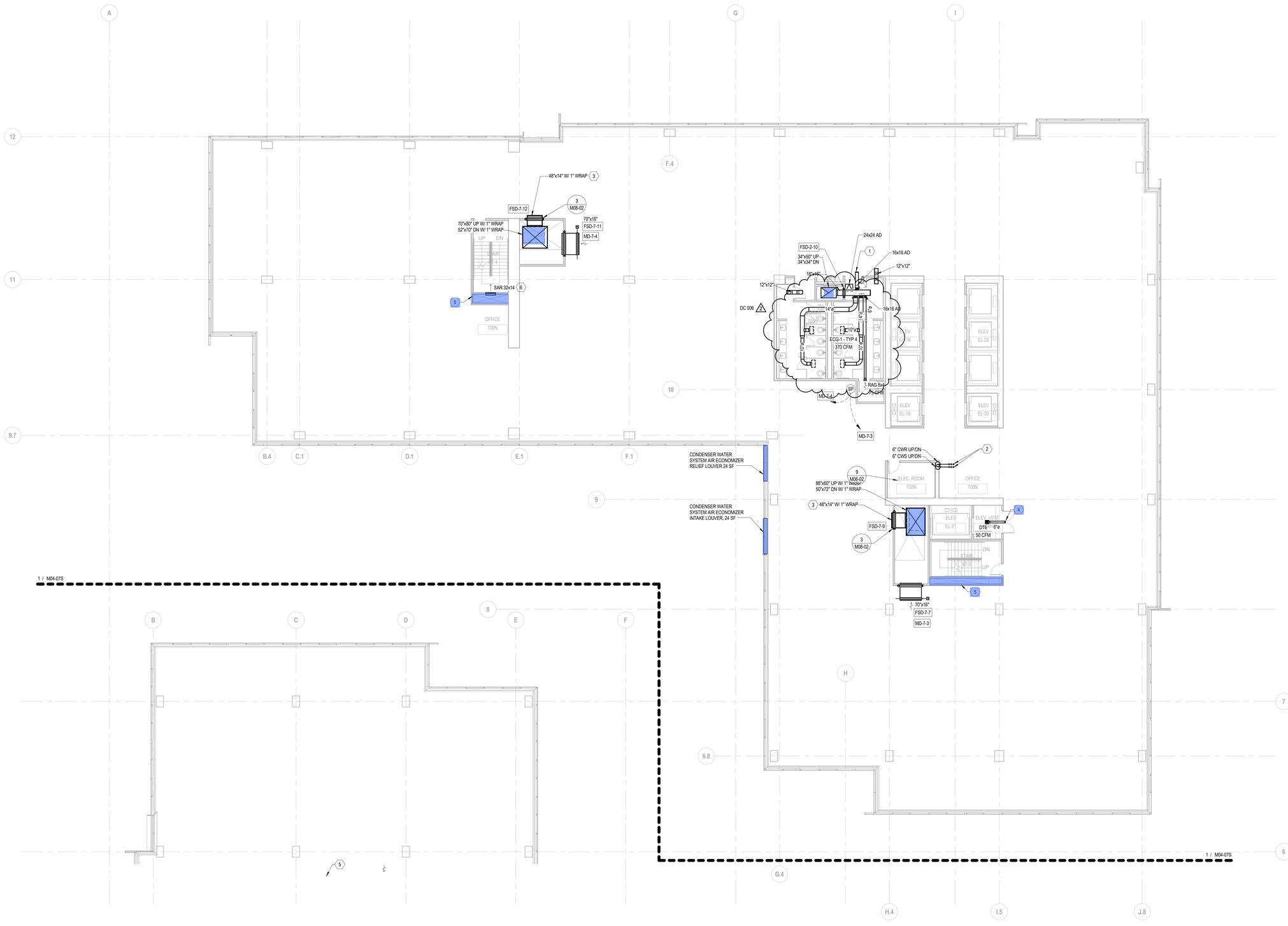
KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10" 0" AFF



1 LEVEL 07 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"

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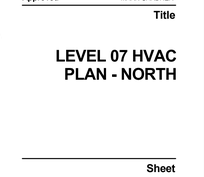

Revisions

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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
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Title

LEVEL 07 HVAC PLAN - NORTH

Sheet

M04-07N

9/4/2015 10:34:33 AM
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KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
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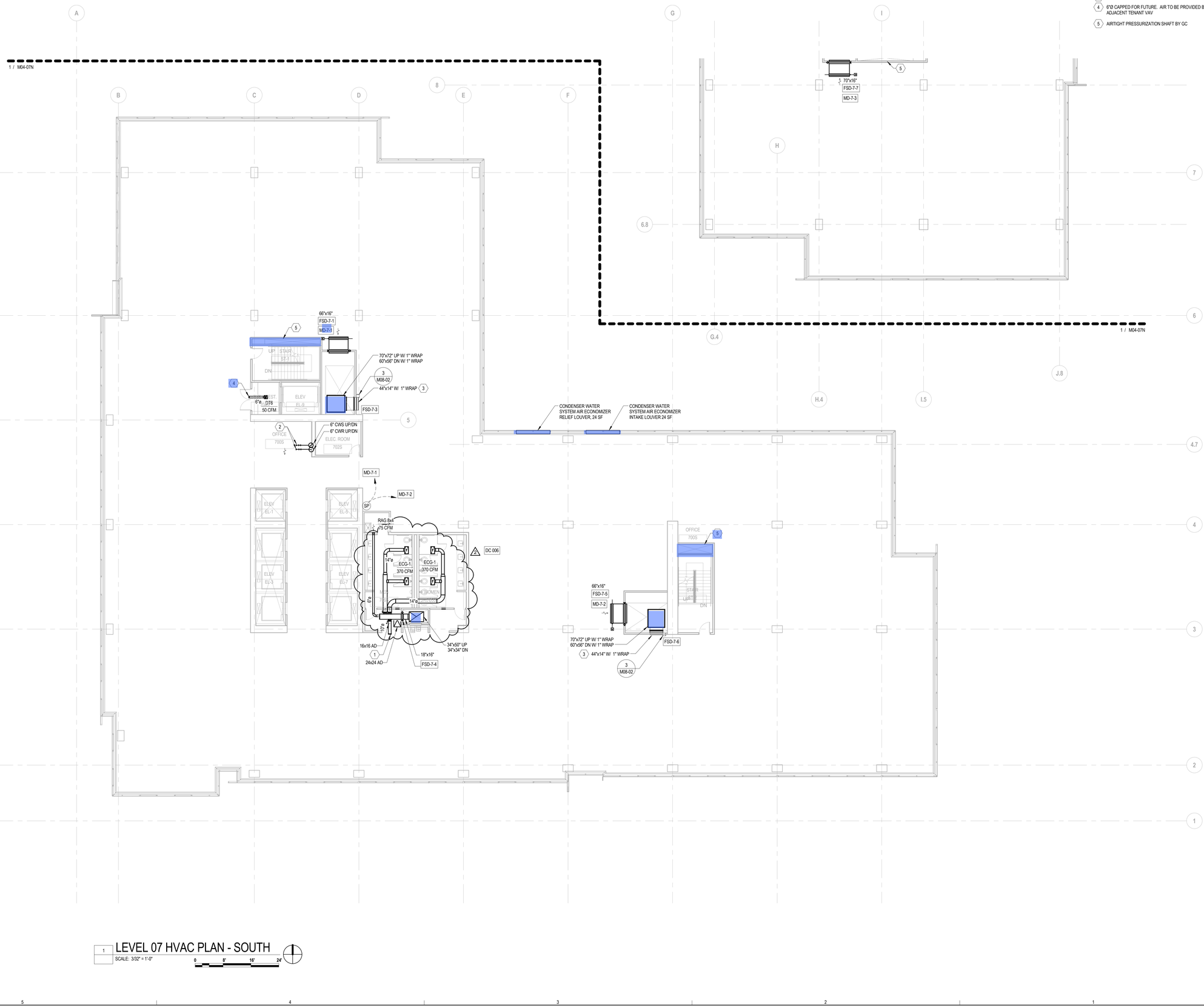
4. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 07 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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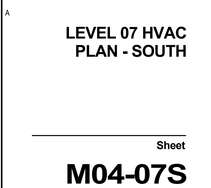

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LEVEL 07 HVAC PLAN - SOUTH

Sheet

M04-07S

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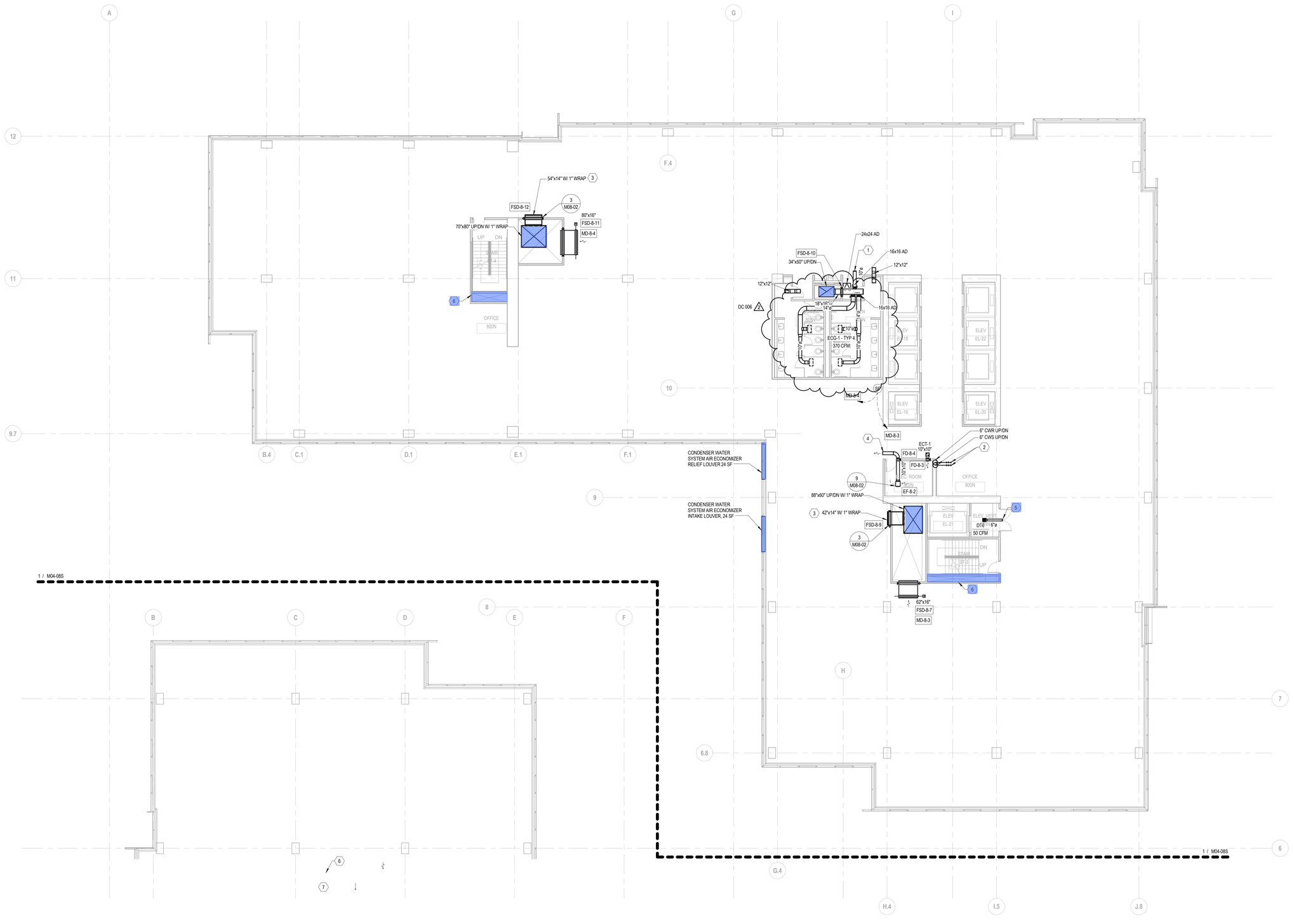
KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 08 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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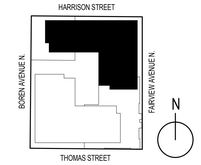


Revisions

2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
	CONSTRUCTION DOCUMENTS	26 JUN 2014
NO	ISSUE	DATE

Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 08 HVAC PLAN - NORTH

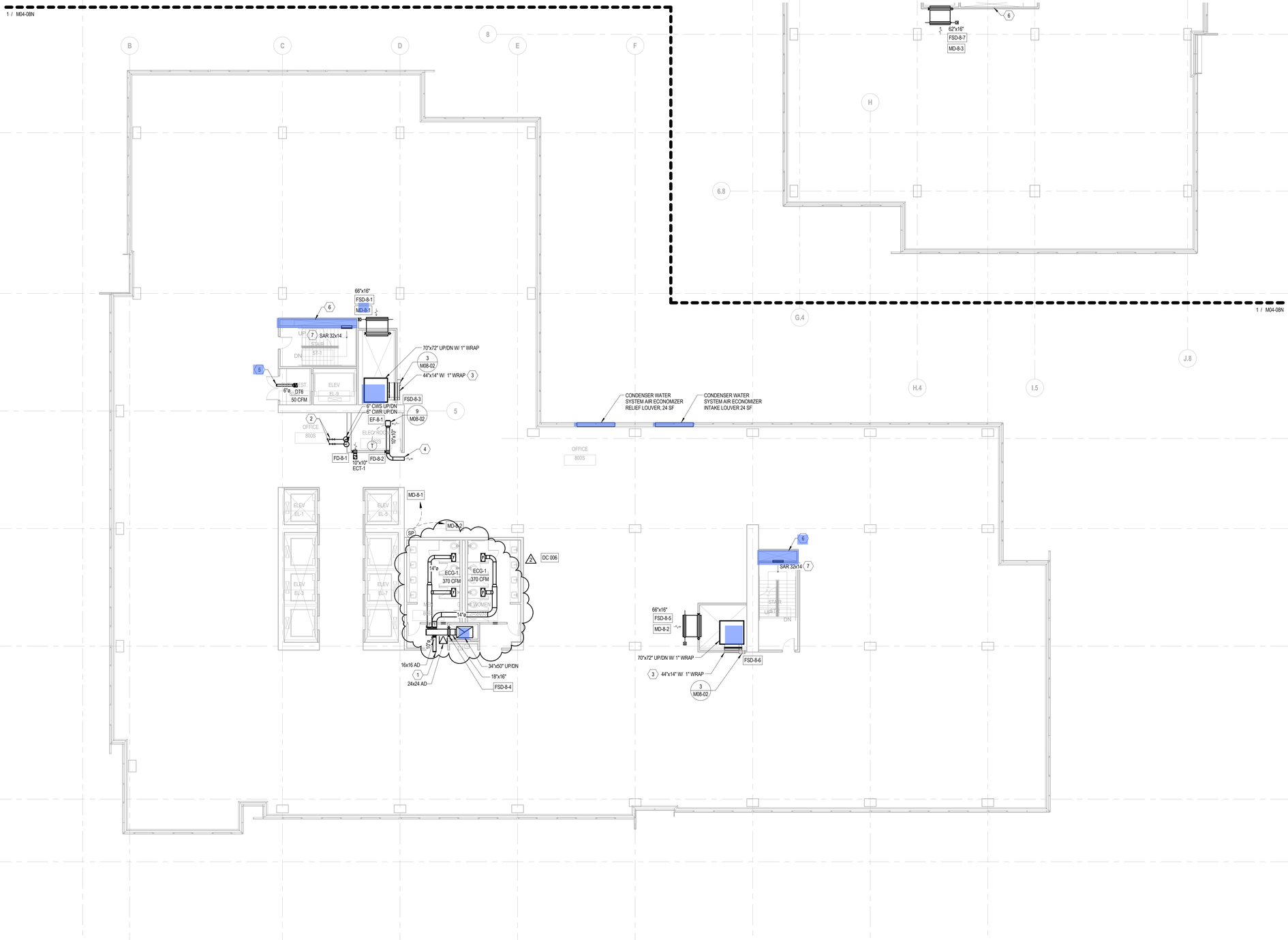
Sheet

M04-08N

9/4/2015 10:34:37 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC
7. MOUNT REGISTER 10' 0" AFF



1 LEVEL 08 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 08 HVAC PLAN - SOUTH

Sheet

M04-08S

9/4/2015 10:34:39 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
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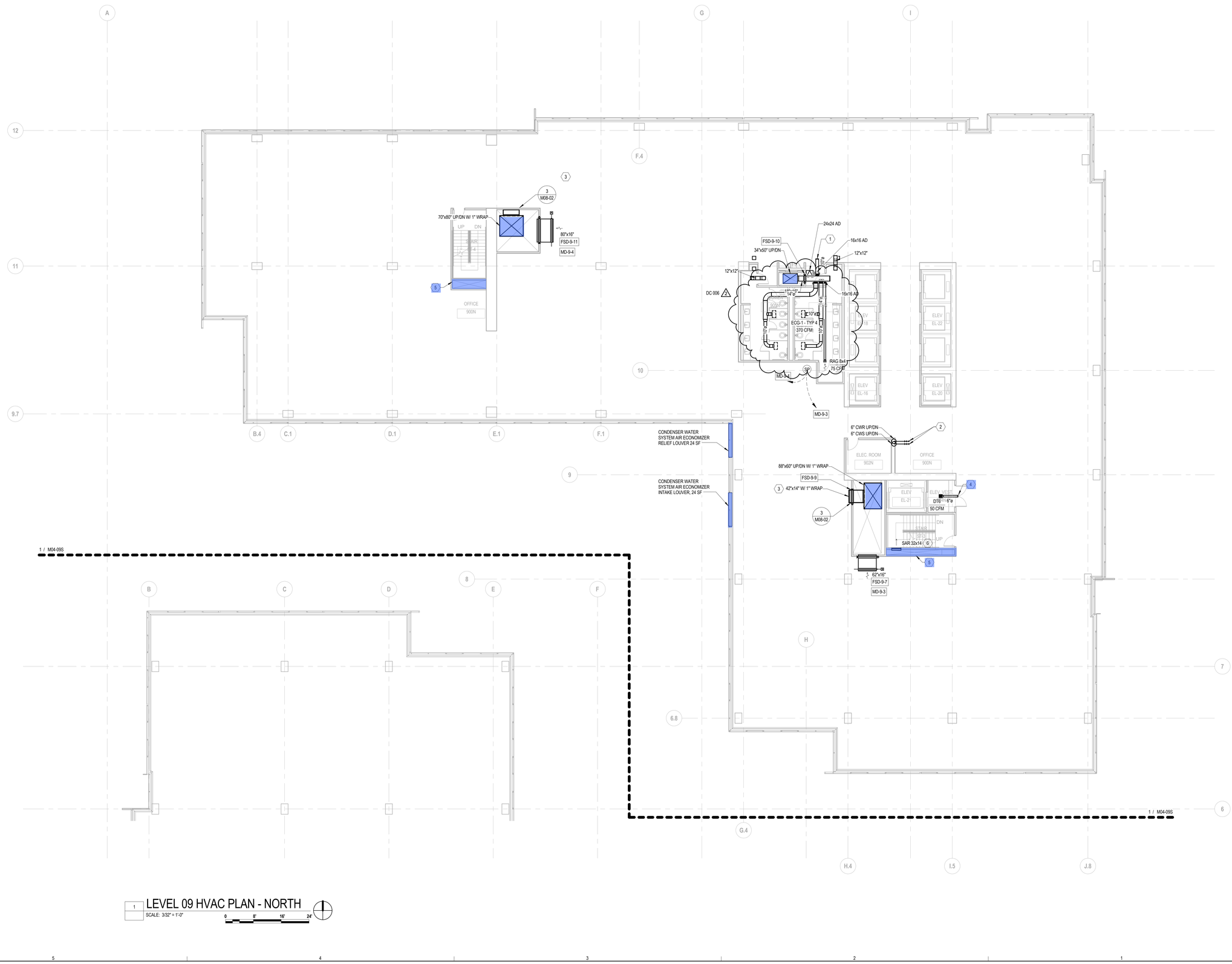
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10" 0" AFF



1 LEVEL 09 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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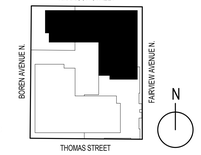

Revisions

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Sheet Information

Date	09/04/2015
Job Number	638
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Title

LEVEL 09 HVAC PLAN - NORTH

Sheet

M04-09N

9/4/2015 10:34:41 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
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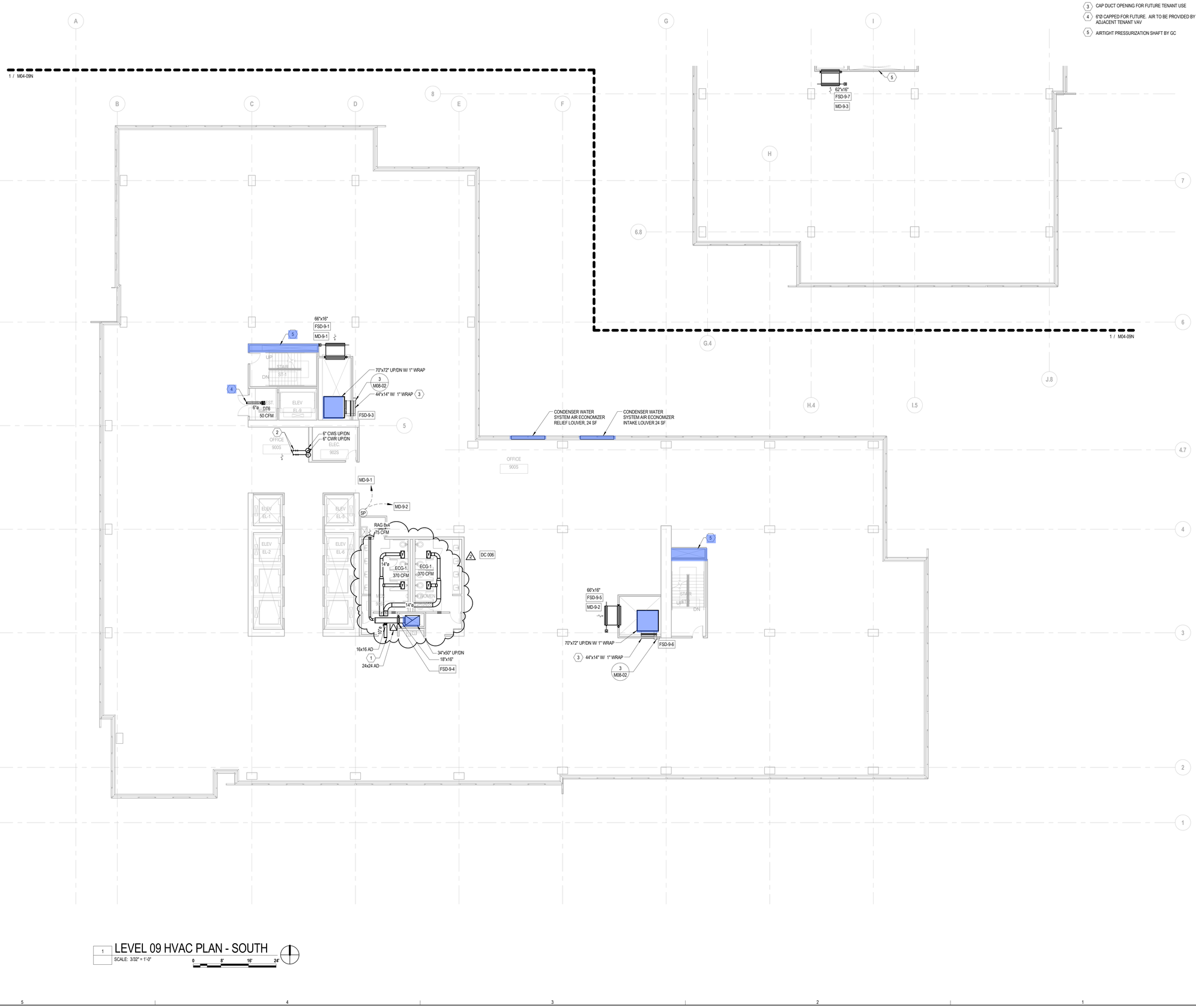
4. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC



LEVEL 09 HVAC PLAN - SOUTH

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 09 HVAC PLAN - SOUTH

Sheet

M04-09S

9/4/2015 10:34:43 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
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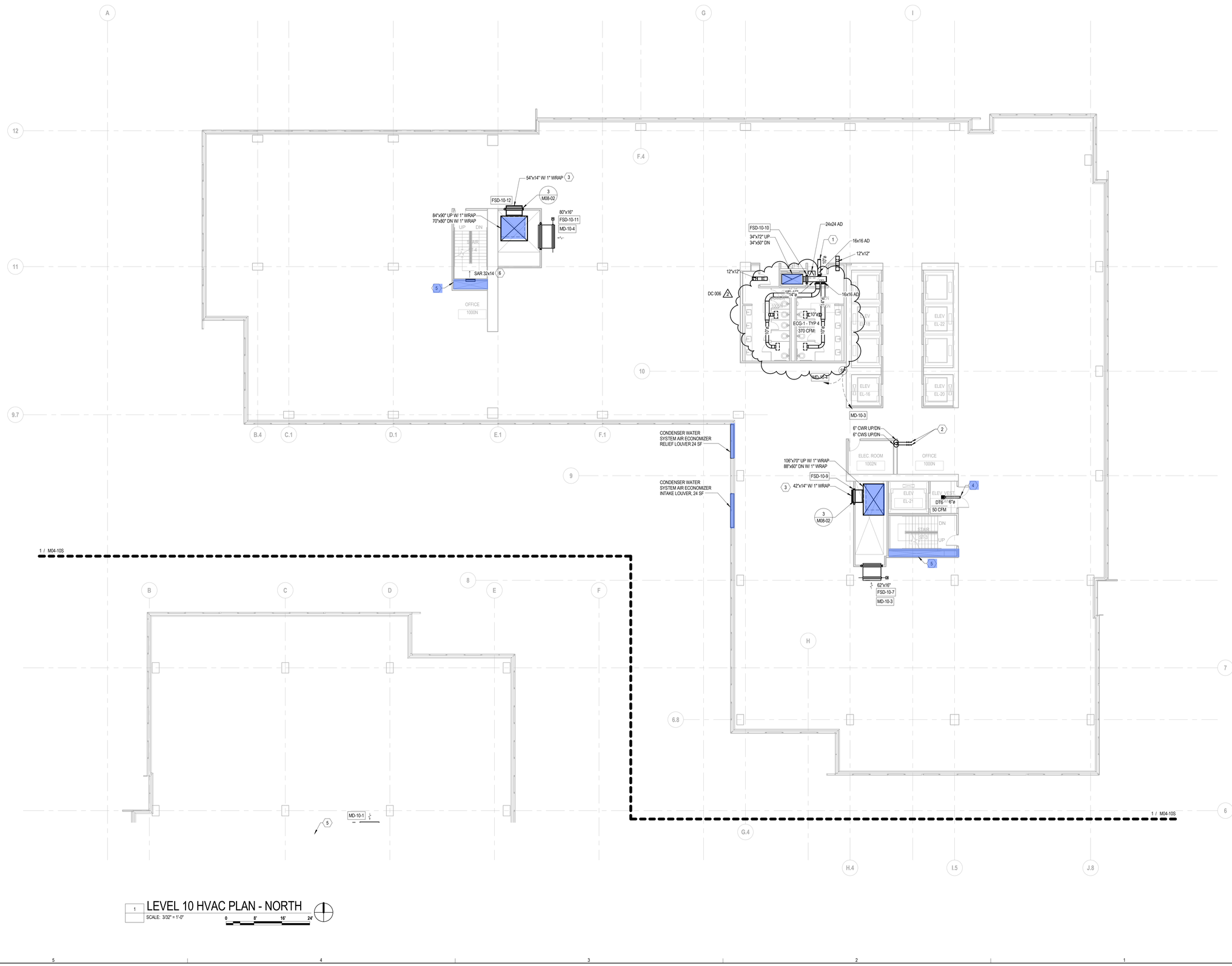
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10" 0" AFF



1 LEVEL 10 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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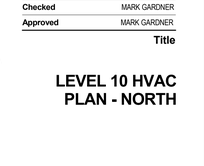

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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
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LEVEL 10 HVAC PLAN - NORTH

Sheet

M04-10N

9/4/2015 10:34:48 AM
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KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
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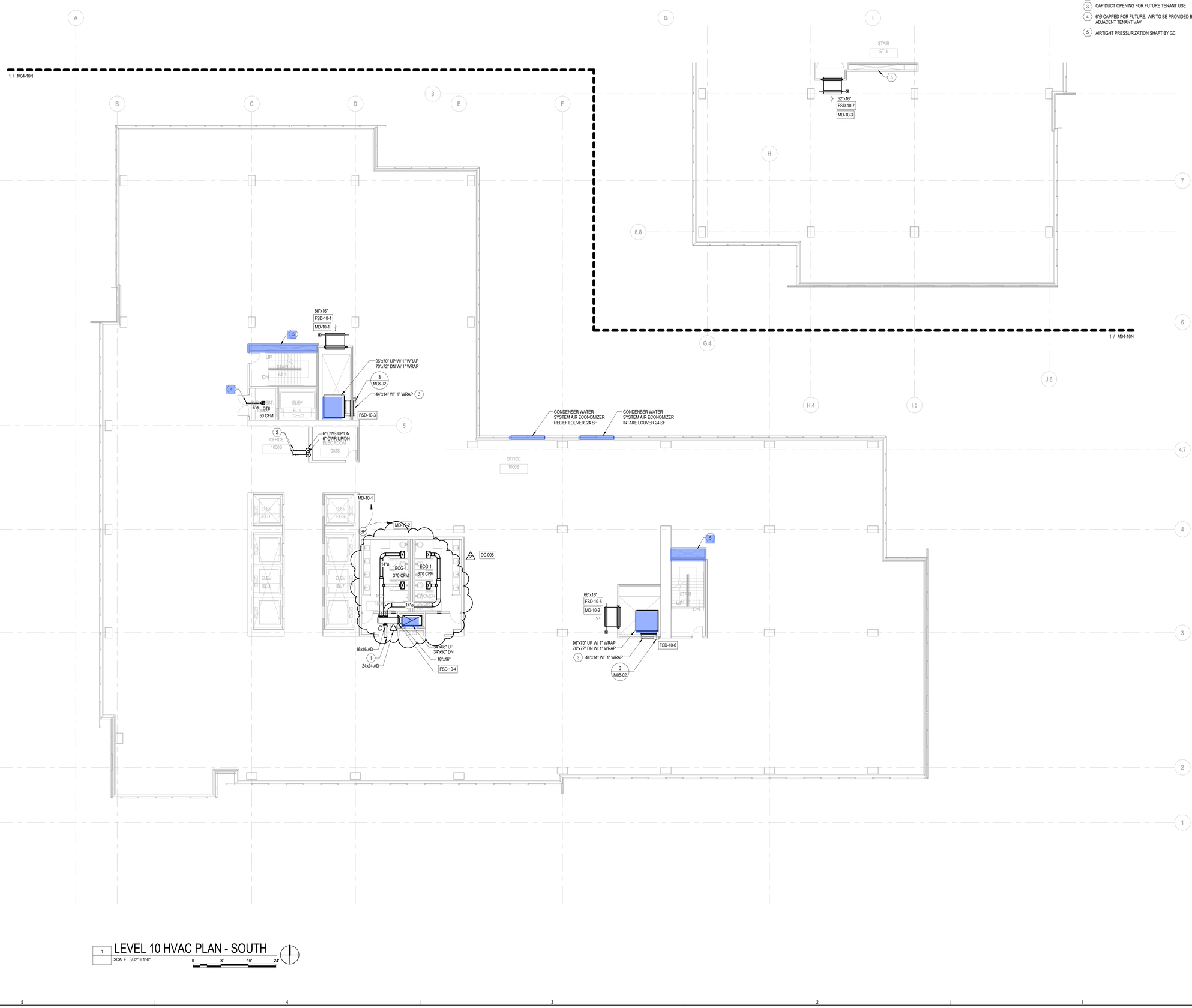
5. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 10 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 10 HVAC PLAN - SOUTH

Sheet

M04-10S

9/4/2015 10:34:47 AM
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KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
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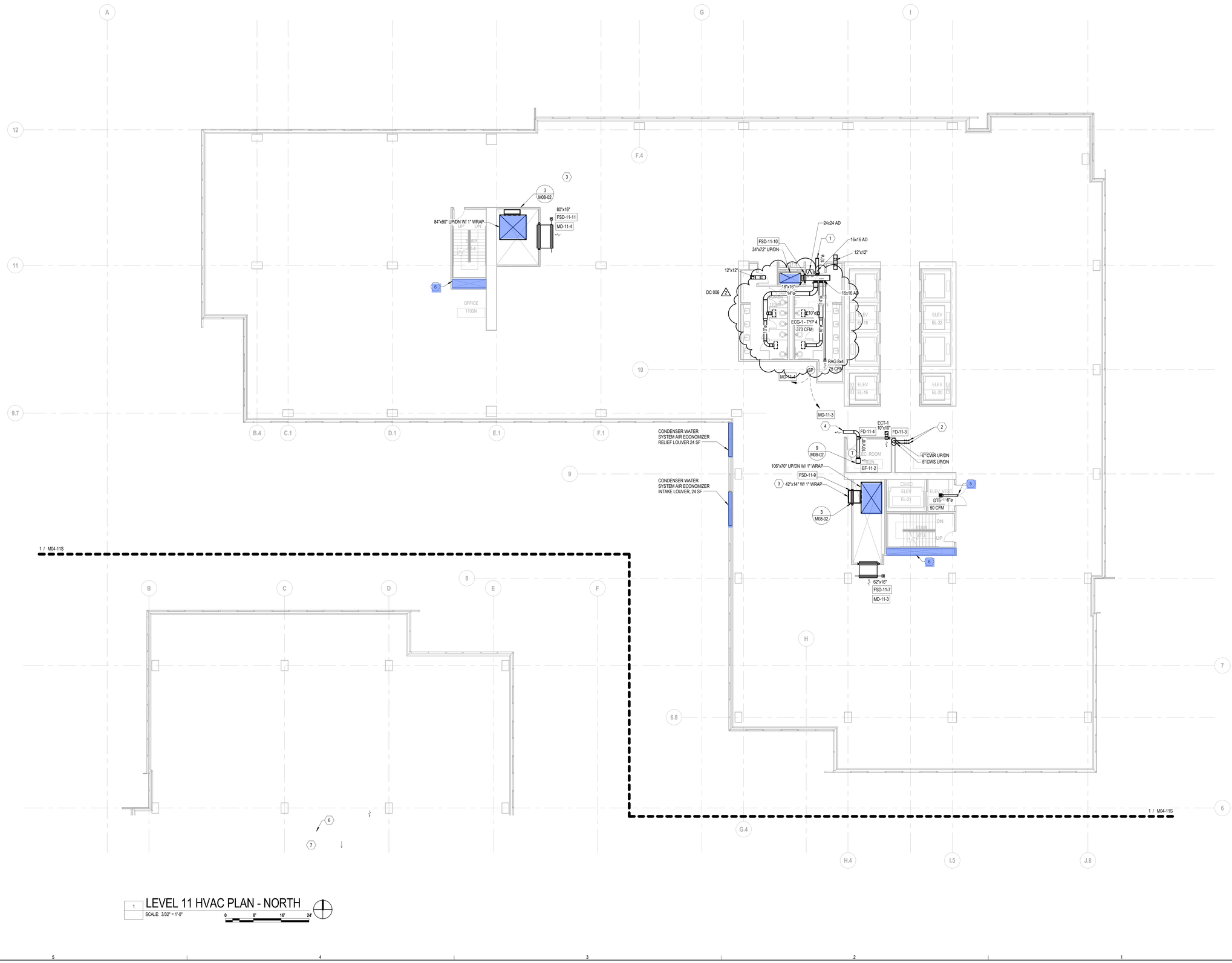
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 11 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"

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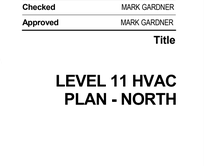

Revisions

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NO	ISSUE	DATE

Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
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Title

LEVEL 11 HVAC PLAN - NORTH

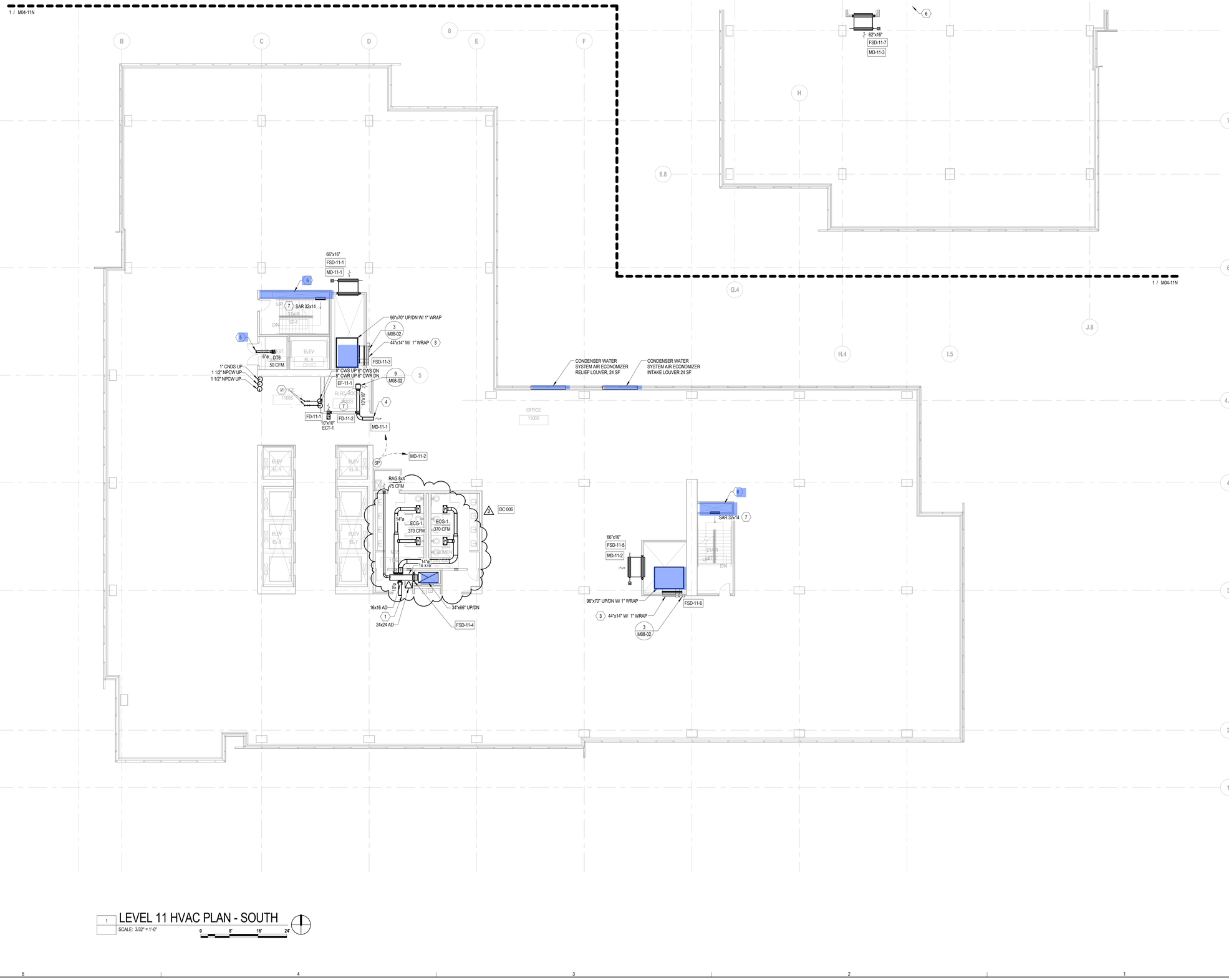
Sheet

M04-11N

9/4/2015 10:34:59 AM
C:\Users\devonpi\Documents_REVIT FILES\MECH_TROY_BASE_devonpi.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 400 CFM DISCHARGE INTO PLENUM
5. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
6. AIRTIGHT PRESSURIZATION SHAFT BY GC
7. MOUNT REGISTER 10' 0" AFF



LEVEL 11 HVAC PLAN - SOUTH

SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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Sheet Information

Date	09/04/2015
Job Number	638
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Checked	MARK GARDNER
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Title

LEVEL 11 HVAC PLAN - SOUTH

Sheet

M04-11S

9/4/2015 10:34:52 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
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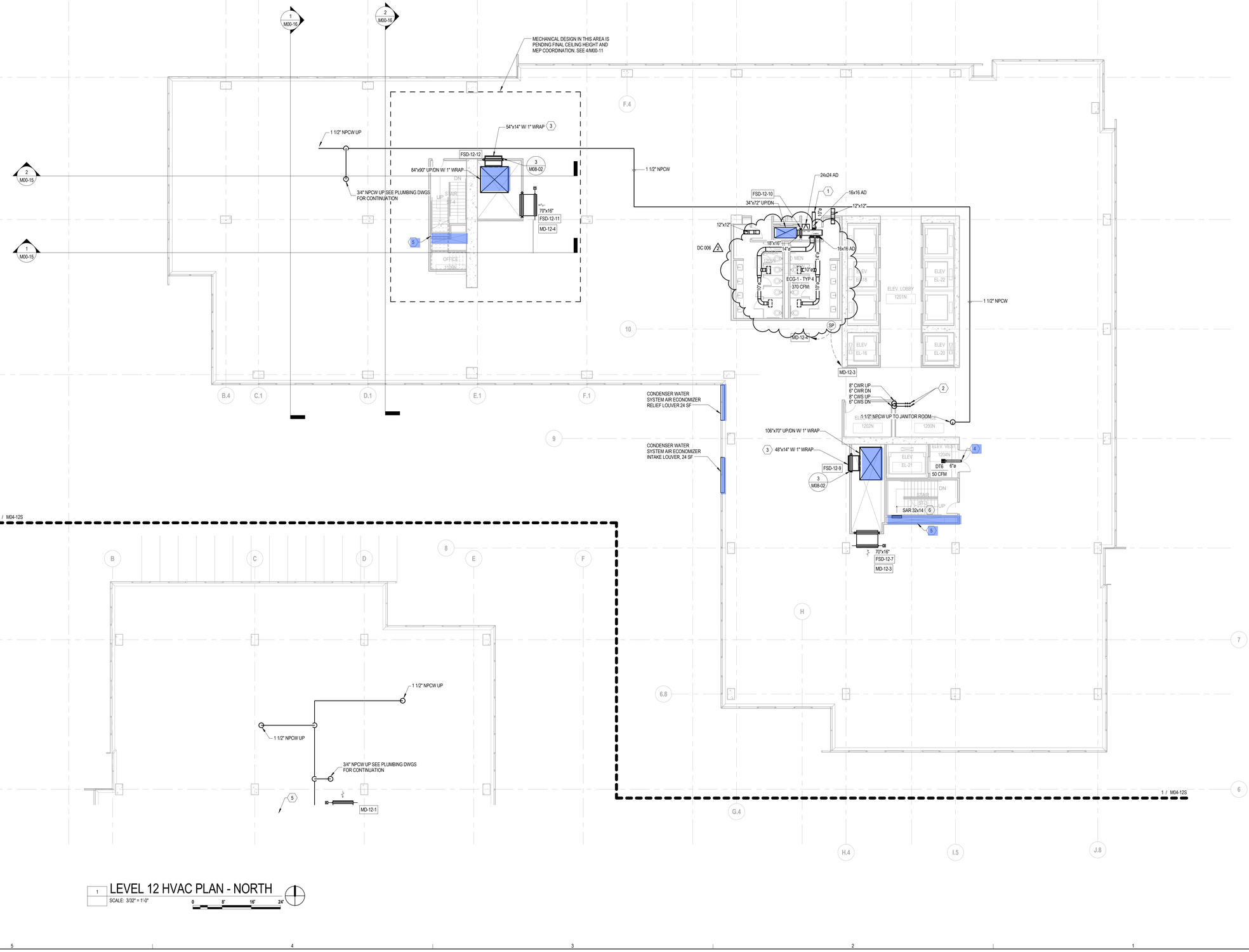
4. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC
6. MOUNT REGISTER 10" 0" AFF



1 LEVEL 12 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"

0 8' 16' 24'

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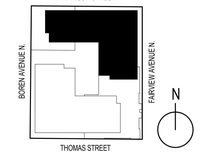

Revisions

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Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 12 HVAC PLAN - NORTH

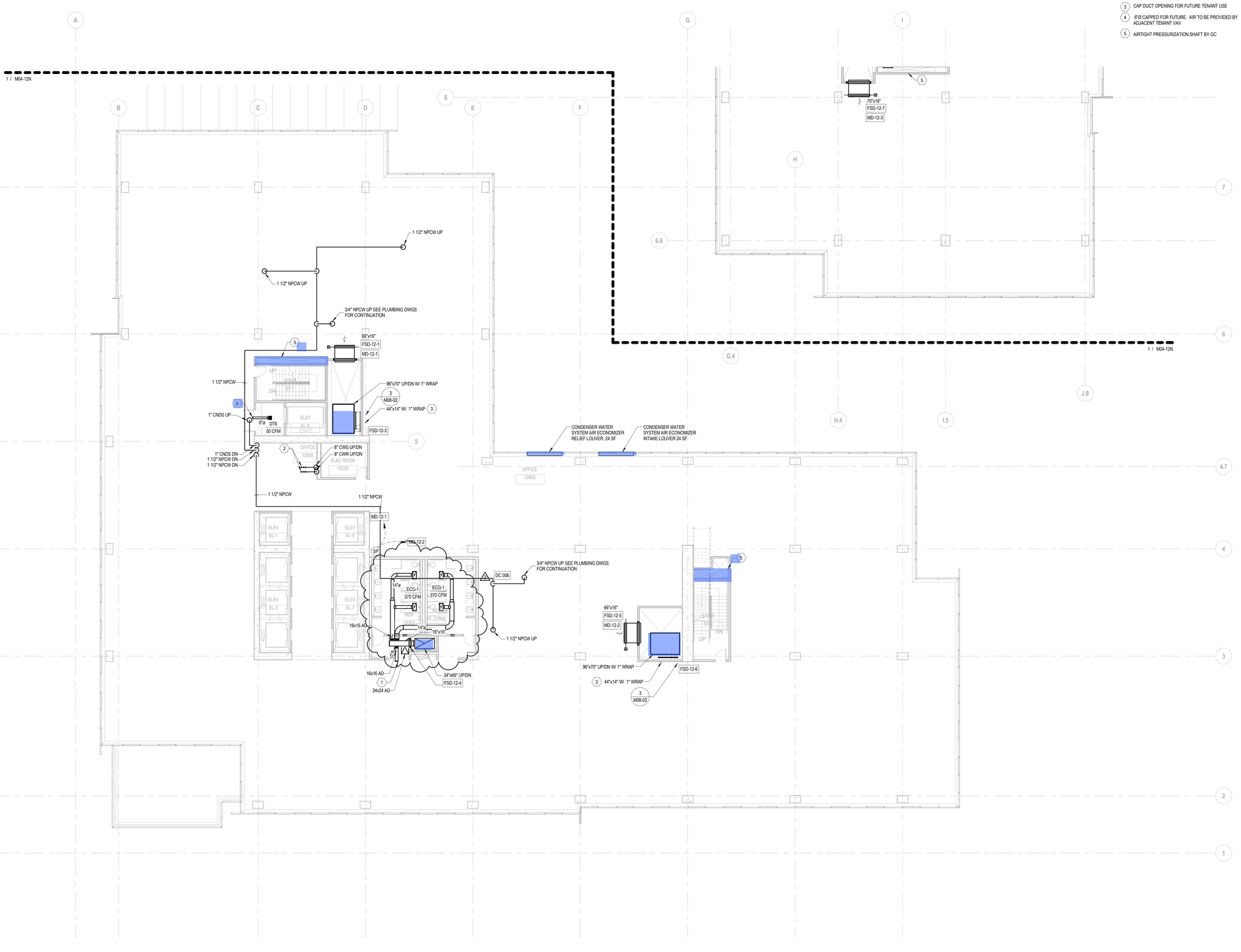
Sheet

M04-12N

9/4/2015 10:34:55 AM
C:\Users\devonpi\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. CAP DUCT OPENING FOR FUTURE TENANT USE
4. 6"Ø CAPPED FOR FUTURE. AIR TO BE PROVIDED BY ADJACENT TENANT VAV
5. AIRTIGHT PRESSURIZATION SHAFT BY GC



1 LEVEL 12 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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LEVEL 12 HVAC PLAN - SOUTH

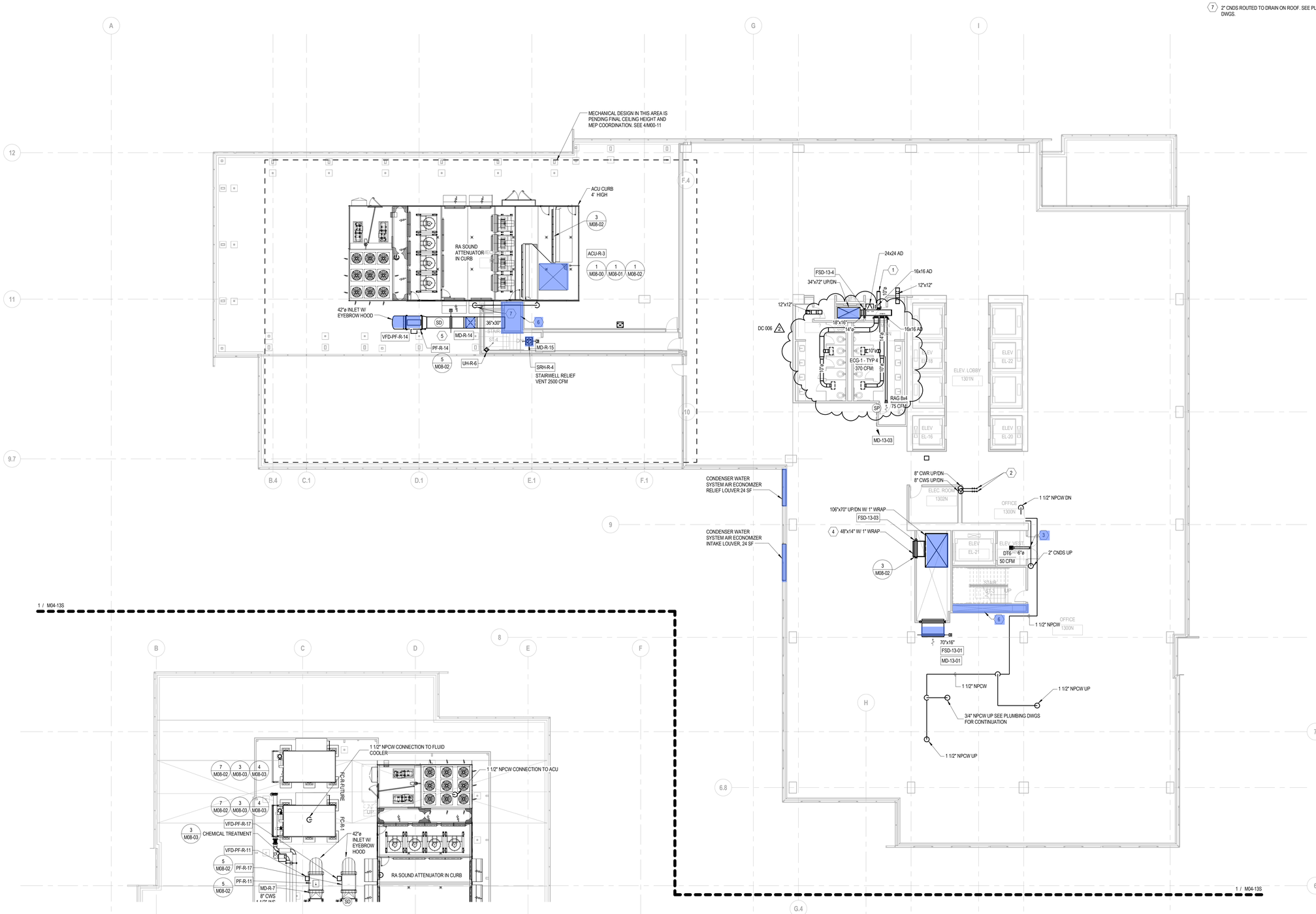
Sheet

M04-12S

9/4/2015 10:34:57 AM
C:\Users\devonp\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. 10"Ø CAPPED FOR FUTURE 200 CFM
2. 2 1/2" CWS & CWR CAPPED FOR FUTURE
3. 6"Ø CAPPED FOR FUTURE. AIR PROVIDED BY ADJACENT TENANT VAV
4. CAP DUCT OPENING FOR FUTURE TENANT USE
5. QTY (2) SMOKE DETECTORS BY EC
6. AIRTIGHT PRESSURIZATION SHAFT BY GC
7. 2" CNDS ROUTED TO DRAIN ON ROOF. SEE PLUMBING DWGS.



1 LEVEL 13 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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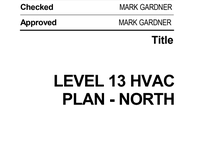

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LEVEL 13 HVAC PLAN - NORTH

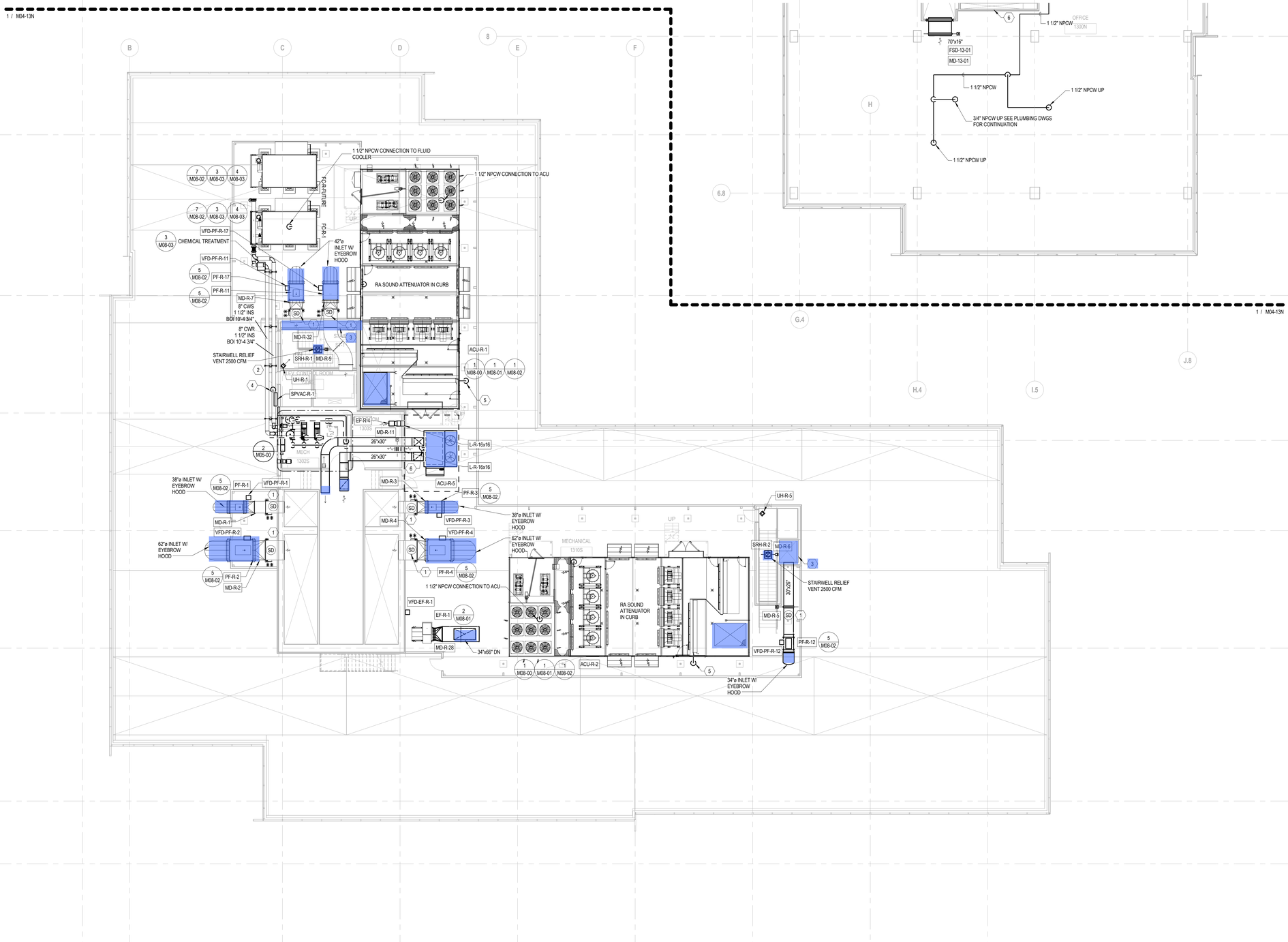
Sheet

M04-13N

9/4/2015 10:35:02 AM
C:\Users\devonpl\Documents_REVIT FILES\MECH_TROY_BASE_devonp.rvt

KEY NOTES:

1. QTY (2) SMOKE DETECTORS BY EC
2. HEAT TRACE ALL CONDENSER WATER PIPE ON ROOF
3. AIRTIGHT PRESSURIZATION SHAFT BY GC
4. ROUTE CNDS TO DRAIN. SEE PLUMBING DWGS.
5. 2" CNDS ROUTED TO DRAIN ON ROOF. SEE PLUMBING DWGS.
6. 1" CNDS ROUTED TO DRAIN ON ROOF. SEE PLUMBING DWGS.



1 LEVEL 13 HVAC PLAN - SOUTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

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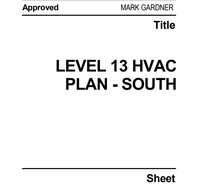
SEATTLE, WA 98124
1-800-669-6223
www.mckinstry.com



Revisions

NO	ISSUE	DATE
2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
	CONSTRUCTION DOCUMENTS	26 JUN 2014

Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 13 HVAC PLAN - SOUTH

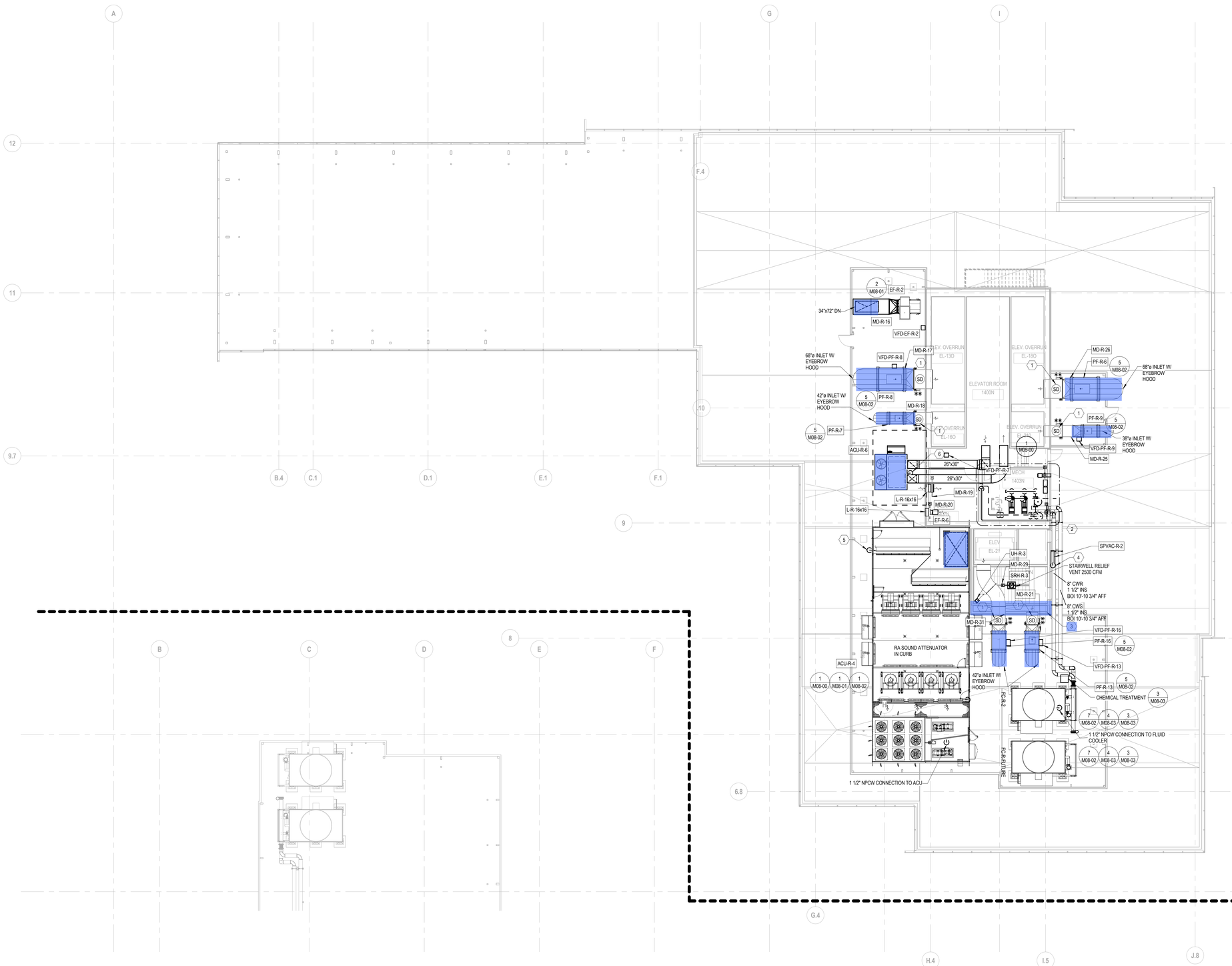
Sheet

M04-13S

9/4/2015 10:35:06 AM
C:\Users\drevorp\Documents_REVIT FILES\MECH_TROY_BASE_drevorp.rvt

KEY NOTES:

1. QTY (2) SMOKE DETECTORS BY EC
2. HEAT TRACE ALL CONDENSER WATER PIPE ON ROOF
3. AIRTIGHT PRESSURIZATION SHAFT BY GC
4. ROUTE CNDS TO DRAIN. SEE PLUMBING DWGS.
5. 2" CNDS ROUTED TO DRAIN ON ROOF. SEE PLUMBING DWGS.
6. 1" CNDS ROUTED TO DRAIN ON ROOF. SEE PLUMBING DWGS.



1 LEVEL 14 HVAC PLAN - NORTH
SCALE: 3/32" = 1'-0"
0 8' 16' 24'

PERKINS + WILL

1221 Second Avenue
Suite 200
Seattle, WA 98101
t 206.381.8000
f 206.441.4981
www.perkinswill.com

TROY BLOCK

South Tower:
300 Boren Avenue North
Seattle, WA 98109

North Tower:
399 Fairview Avenue North
Seattle, WA 98109

touchstone

USAA Real Estate Company

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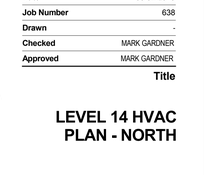

Revisions

NO	ISSUE	DATE
2	ASI-06	04 SEPT 2015
1	CS-1 CONFORMED SET 1	24 OCT 2014
	CONSTRUCTION DOCUMENTS	26 JUN 2014

Sheet Information

Date	09/04/2015
Job Number	638
Drawn	-
Checked	MARK GARDNER
Approved	MARK GARDNER

Title

LEVEL 14 HVAC PLAN - NORTH

Sheet

M04-14N

9/4/2015 10:35:10 AM
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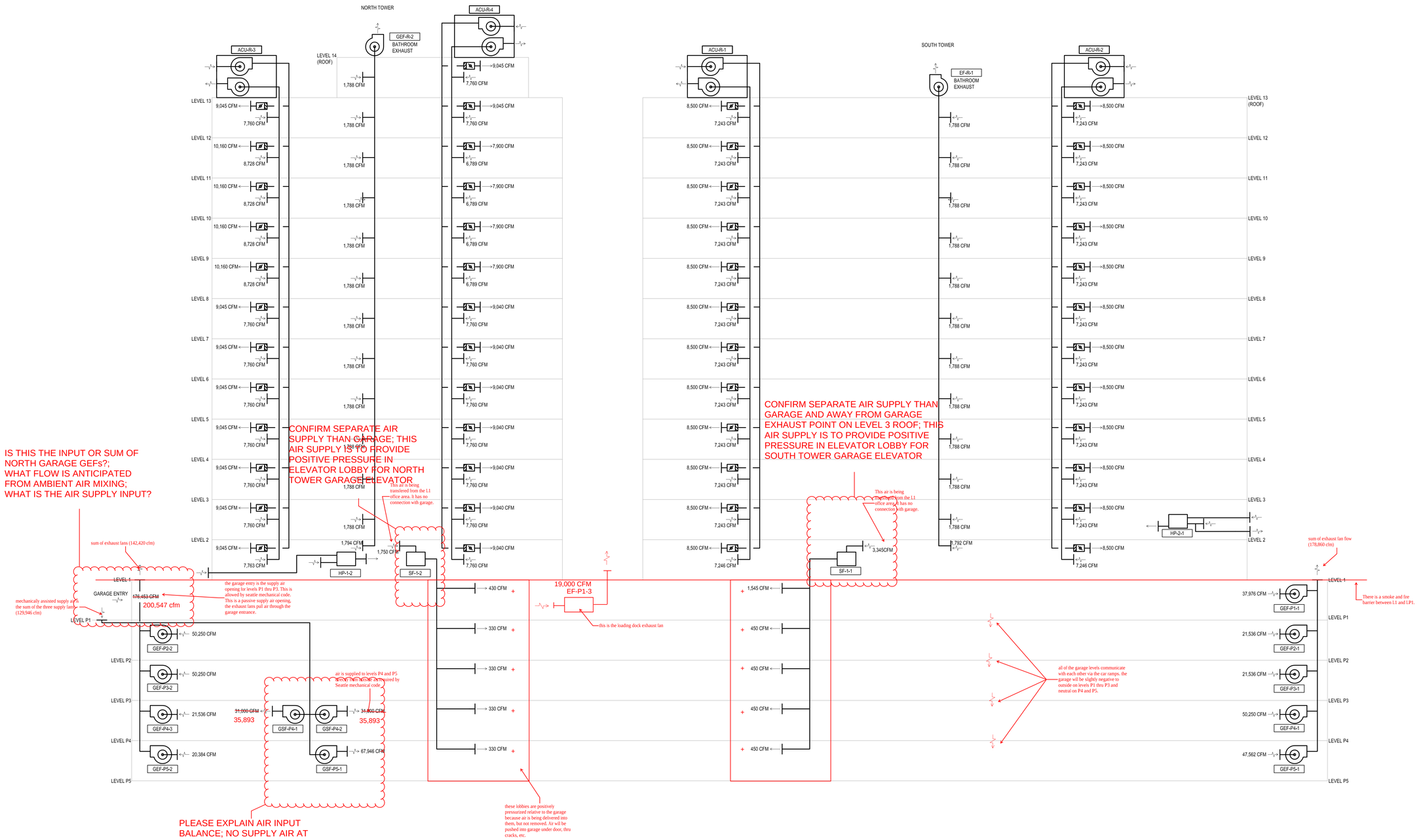

AIRFLOW REQ'TS PER FLOOR PER SHAFT				MIN AIRFLOW REQ'TS PER FLOOR PER SHAFT		
	SW EXHAUST SHAFT	**E** EXHAUST SHAFT	**N** SUPPLY SHAFT	**SW** EXHAUST SHAFT	**E** EXHAUST SHAFT	**N** SUPPLY SHAFT
P1	**37,976 cfm**	**0 cfm**	**0 cfm**	**2,532 cfm**	**0 cfm**	**0 cfm**
P2	**21,536 cfm**	**50,250 cfm**	**0 cfm**	**1,436 cfm**	**3,350 cfm**	**0 cfm**
P3	**21,536 cfm**	**50,250 cfm**	**0 cfm**	**1,436 cfm**	**3,350 cfm**	**0 cfm**
P4	**50,250 cfm**	**21,536 cfm**	**71,786 cfm**	**3,350 cfm**	**1,436 cfm**	**4,786 cfm**
P5	**47,562 cfm**	**20,384 cfm**	**67,946 cfm**	**3,171 cfm**	**1,359 cfm**	**4,530 cfm**
	178,859 cfm	**142,419 cfm**	**139,731 cfm**	**11,924 cfm**	**9,495 cfm**	**9,315 cfm**

max airflow

min airflow

1 - BUILDING AIRFLOW DIAGRAM

SCALE: NOT TO SCALE

RECORD DRAWINGS AS REPORTED

THESE RECORD DRAWINGS APPLY ONLY TO THE GARAGE AND SOUTH TOWER AREAS. THEY WILL BE SUPERSEDED BY A FINAL WHOLE SITE RECORD SET OF DRAWINGS UPON COMPLETION OF THE NORTH TOWER SCOPE OF WORK.

DOCUMENTS HAVE BEEN REVISED SOLEY ON RECORD WORKING DRAWINGS SUPPLIED BY THE CONTRACTOR AND THE CONTRACT DOCUMENTS. THEY DO NOT NECESSARILY SHOW ALL EXISTING CONDITIONS AND MAY NOT BE ACCURATE AT ALL LOCATIONS. FIELD VERIFY EXISTING AND/OR HIDDEN CONDITIONS PRIOR TO COMMENCEMENT OF NEW WORK

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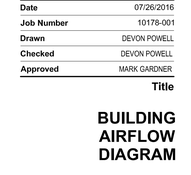

Revisions

NO	ISSUE	DATE
	SOUTH TOWER & GARAGE RECORD DRAWINGS	26 JULY 2016

Sheet Information

Date	07/26/2016
Job Number	10178-001
Drawn	DEVON POWELL
Checked	DEVON POWELL
Approved	MARK GARDNER

Title

BUILDING AIRFLOW DIAGRAM

Sheet

M06-00

Loading Dock Area Exhaust Fan

Exhaust fan will be controlled by BACnet interface only.

Run Conditions:
The fan shall start and ramp on demand.

Fan Demand:

CO sensors distributed through the loading area shall start and modulate the fans to maintain carbon monoxide levels in the space to below 35 ppm. Minimum exhaust flow shall be 1.0 CFM per SQ FT of floor area.

Monitoring:

BAS shall trend CO levels and fan speed/power consumed for each fan via BACnet interface.

Fan Status:
The controller shall monitor the fan status via the VFD BACnet Interface.

Alarms shall be provided as follows:

Fan Failure: Commanded on, but the status is off for 30 seconds.
Fan in Hand: Commanded off, but the status is on for 30 seconds.
BACnet communication fails to any VFD.
CO Level Concentration High: CO levels exceed 40 ppm (adj) for 5 minutes.

Parking Garage Supply/Exhaust Fans

Mode Control:

The Building Management system shall control occupied/unoccupied operation according to a user defined schedule. The building management system controls may be overridden by the fire alarm system or other critical systems. These systems may place the exhaust fan into operating modes not defined herein. System shall include an equipment stagger start function to minimize electrical demand on system startups

Unoccupied Mode:

The exhaust fan will be off. The back draft damper will be closed. Occupant sensors detecting pedestrian or vehicle traffic on the garage levels during unoccupied mode shall place exhaust fans on a given floor into occupied mode.

Occupied Mode:

The exhaust fans will run continuously. Exhaust fan speed is modulated to maintain carbon monoxide levels below 35 ppm. Minimum total exhaust fan flow rate shall be 0.05 CFM per SQ FT per 2009 Seattle Mechanical Code. On levels P4 and P5 the supply fan is started and operates in conjunction with the exhaust fans.

Alarms:

If the exhaust fan status does not match the exhaust fan command after a 30 second delay, an alarm is generated
If carbon monoxide levels exceed the CO sensor alarm limit, an alarm is generated.

Failure mode:

On a loss of power or control signal, the exhaust and supply fans will stop.

Monitoring:

BMS shall trend CO levels and fan speed/power consumed for each fan via the building automation system

APPENDIX B
BUILDING SURVEY FORM

SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

Building Summary Form

Address _____ Date _____

Preparer's Name & Company: _____ Phone: _____
Affiliation _____

Occupant Name _____ Phone: _____

Owner's Name _____ Phone: _____
Owner's Address _____
Point of Contact _____ Phone: _____
Contact Information _____

Weather conditions at time of indoor air sampling event:
_____

A. General Building Information

Building Year Constructed:_____
Building Type: Residential / Office / Commercial / Industrial /Government / School / Warehouse
Building Occupants: Adults _____ Children under 6 ___ Children 6-15 _____
Building Use_____
Square Footage_____
Ceiling Height _____
Number of Stories _____
Number of Elevators _____
Location of Elevator Shafts_____
General Description of Building Construction Materials:
Foundation Type: Basement / Crawl Space / Slab
Foundation Materials: Poured Concrete / Cinder Blocks / Earthen / Wood Pilings/
Other (Specify _____)
Foundation Wall Material: Poured Concrete / Cinder Blocks / Earthen / Wood / Stone

Floor Plan:

B. P5 Basement Information:

Basement Use_____
Basement floor type: Dirt / Concrete / Other
(describe):_____
Chemical seal or barrier in basement? Y/N
If yes, what type of sealant_____
Is the basement generally: wet / dry / damp?
Is there a sump in the basement? Y / N If yes, please describe the size, the construction, where it is, and whether or not there is a sump and how it is activated:

_____
_____
What was the PID reading on the air above the sump grate? _____
Elevator pits present? Y/N
If yes, are the pits lined and with what material? _____
What was the PID reading in the elevator pit? _____
Does the basement have cracks? Y / N If yes, PID reading: _____

_____
Does basement have (cont):
drainage point in floor Y / N If yes, PID reading_____
sump or sump pump Y / N If yes, PID reading _____
pipes or utility conduits through floor or outside walls Y / N If yes, PID reading

_____
Is the basement painted? Y / N
If yes, when _____and with: latex / oil-based paint / stain ?
Does the basement have flooring over the foundation? Y / N
If yes, what type: tile / carpet / wood / pergo / other, specify _____
Was glue used for installing the flooring?
Is there new furniture in the basement? Y / N If yes, describe type and date received
Are there odors in the basement? If yes, describe _____

C. Heating and Ventilation Systems:

What type of heating system(s) are used in the building?

_____
_____
What type of fuel(s) are used in the building? (check all that apply):
Natural Gas / Electric/
Fuel Oil /Wood
Coal / Solar / Propane / Kerosene
Other, specify _____
What type of mechanical ventilation systems are present and/or currently operating in the building? (check all that apply)
Mechanical Fans Open Windows
Individual Air Conditioning Units Kitchen Range Hood
Bathroom Ventilation Fan Air-to-Air Heat Exchanger

Other, specify _____

D. Potential Sources of Indoor Chemical Contaminants:

Which of these items are present in the building? (Check all that apply)

Potential VOC Source Location of Source Removed 48 hours prior to sampling

Potential VOC sources	Present? Y/N	Location/Floor (P5, P1, etc.)	Date Removed
Paints			
Gas-powered equipment			
Gasoline storage cans			
Cleaning solvents (thinner)			
Air fresheners			
Oven cleaners			
Carpet/upholstery cleaners			
Hairspray			
Nail polish/polish remover			
Bathroom cleaner			
Appliance cleaner			
Furniture/floor polish			
Moth balls			
Fuel tank			
Wood stove			
Fireplace			
Perfume/colognes			
Hobby supplies (e.g., solvents, paints, lacquers, glues, photographic darkroom chemicals)			
Scented trees, wreaths, potpourri, etc.			
Polish / wax			
Insecticide / pesticide			
Kerosene			
Gun cleaner stored in the building			
Building occupants using solvents at work			
Other			

E. Other Potential Sources of Indoor or Outdoor Air Contamination

Outside Sources of Contamination (check all that apply):
Garbage Dumpsters/ Heavy Motor Traffic
Landing Dock in Use/ Construction Activities
Airport flight path Railyard/railcar traffic
Nearby Industries, specify _____
Describe any additional information about the release (amount, when it occurred, action taken to clean up, etc.): _____
_____
_____
_____
_____

F. Building Screening Results – PID (ppm)

Parking Garage
First Floor
Other -
Other -
Other –

Instructions for Inhabitants of Building Prior to Sampling Event
(to be followed starting at least 48 hours prior to and during the sampling event)

- Do not open windows, fireplace openings or vents.
- Do not keep doors open.
- Do not operate ventilation fans or air conditioning.
- Do not use air fresheners or odor eliminators.
- Do not smoke indoors.
- Do not use wood stoves, fireplace or auxiliary heating equipment (e.g., kerosene heater).
- Do not use paints or varnishes.
- Do not use cleaning products (e.g., bathroom cleaners, furniture polish, appliance cleaners, all-purpose cleaners, floor cleaners).
- Do not use cosmetics, including hair spray, nail polish, nail polish remover, perfume, etc.
- Do not partake in indoor hobbies that use solvents.
- Do not apply pesticides.
- Do not store containers of gasoline, oil or petroleum–based or other solvents within the building.
- Do not operate or store automobiles in an attached garage.

APPENDIX C
MODIFIED MTCA METHOD B CALCULATIONS

Air Cleanup Level (Carcinogens)
Reference MTCA 173-340-750 PGS 211-213
MTCA Equation 750-2

Air Cleanup Level = (Risk x ABW x AT x UCF)/(CPF x BR x ABS x ED x EF)

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RISK \times ABW \times AT \times UFC}{CPF_i \times BR \times ABS_i \times ED \times EF}$$

Assumptions:	Commercial		Residential	
Risk	1.0E-06		1.0E-06	
Average Body Weight (ABW)	70	kg	70	kg
Average Time (AT)	75	years	75	years
Unit conversion factor (UCF)	1.0E+03	mg/kg	1.0E+03	mg/kg
Carcinogenic potency factor[1] (CPF)	CPF	kg-day/mg	CPF	kg-day/mg
Breathing Rate[2] (BR)	20	m^3/day	20	m^3/day
Inhalation absorption fraction (ABS)	1		1	
Exposure Duration (ED)	30	years	30	years
Exposure frequency[3] (EF)	0.03		1.00	365 days

Indoor Air Cleanup Level				
Exposure Frequency			Residential - 365 days/year	Commercial - 260 days/year
COC	CPF (res)	CPF	Indoor Air Cleanup Level (µg/m^3)	Indoor Air Cleanup Level (µg/m^3)
PCE	9.1E-04	9.1E-04	9.62	320.51
TCE	see note	1.4E-02	0.37	20.83
1,2-Dichloroethane		9.1E-02	0.096	3.205
1,1-Dichloroethane		5.6E-03	1.56	52.08
Chloroethane		2.9E-03	3.02	
1,1-DCE	NE	NE	NE	
cis-1,2-DCE	NE	NE	NE	
trans-1,2-DCE	NE	NE	NE	
Vinyl Chloride	see note	3.1E-02	0.28	9.41
Benzene		2.7E-02	0.32	10.80

Residential exposure scenario presented in MTCA Equation 750-2 is based on a 24 hours per day and 365 days per year

[1]CPF from CLARC database and/or WAC 173-340-708(8) - EPA IRIS database

[2]MTCA equation 750-2 presents a breathing rate of 20 m^3/day based on a 24 hour day. This equates to a 0.833 m^3/hr.

[3]Exposure frequency was modified from 365 days per year EF of 1 to 260 days per year based on 5 days per work week, 1 hours per day and 52 weeks per year EF of 0.03.

PCE Air Cleanup Levels from Cancer Risk

MTCA Equation 750-2:

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RISK \times ABW \times AT \times UFC}{CPF_i \times BR \times ABS_i \times ED \times EF}$$

C										
Exposure Scenario	**Carcinogenic Risk (unitless)**	**Average Body Weight (kg)**	**Averaging Time (years)**	**Unit Conversion Factor (µg/mg)**	**Inhalation Cancer Potency Factor (kg-day/mg)**	**Breathing Rate (m3/day)**	**Inhalation Absorption Fraction (unitless)**	**Exposure Duration (years)**	**Exposure Frequency (unitless)**	**Cleanup Level (µg/m3)**
	RISK	**ABW**	**AT**	**UCF**	**CPF_i**	**BR**	**ABS_i**	**ED**	**EF**	
DEFAULT MTCA Method B (Residential)	1.00E-06	70	75	1000	9.10E-04	20	1	30	1	9.62
MODIFIED MTCA Method B (Commercial)	1.00E-06	70	75	1000	9.10E-04	20	1	30	0.03	323.08

Risk = Acceptable excess individual lifetime cancer risk level (unitless)
ABW = Average Body Weight
AT = Average Time
UCF = Unit conversion factor
CPF = Carcinogenic potency factor. PCE is 0.00091 kg-day/mg
BR = Breathing Rate
ABS = Inhalation absorption fraction
ED = Exposure Duration
EF = Exposure frequency. EF for Commercial Garage exposure assumes 1 hour a day, 5 days a week, for 52 weeks a year.

TCE Air Cleanup Levels from Cancer Risk

MTCA Equation 750-2:

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RISK \times ABW \times AT \times UFC}{CPF_i \times BR \times ABS_i \times ED \times EF}$$

TCE										
Exposure Scenario	**Carcinogenic Risk (unitless)**	**Average Body Weight (kg)**	**Averaging Time (years)**	**Unit Conversion Factor (µg/mg)**	**Inhalation Cancer Potency Factor (kg-day/mg)**	**Breathing Rate (m3/day)**	**Inhalation Absorption Fraction (unitless)**	**Exposure Duration (years)**	**Exposure Frequency (unitless)**	**Cleanup Level (µg/m3)**
	RISK	**ABW**	**AT**	**UCF**	**CPF_i**	**BR**	**ABS_i**	**ED**	**EF**	
DEFAULT MTCA Method B (Residential)	1.00E-06	70	75	1000	1.44E-02	20	1	30	1	0.61
MODIFIED MTCA Method B (Commercial)	1.00E-06	70	75	1000	1.44E-02	20	1	30	0.03	20.49

Risk = Acceptable excess individual lifetime cancer risk level (unitless)

ABW = Average Body Weight

AT = Average Time

UCF = Unit conversion factor

CPF = Carcinogenic potency factor. TCE is 0.0144 kg-day/mg

BR = Breathing Rate

ABS = Inhalation absorption fraction

ED = Exposure Duration

EF = Exposure frequency. EF for Commercial Garage exposure assumes 1 hour a day, 5 days a week, for 52 weeks a year.

Vinyl Chloride Air Cleanup Levels from Cancer Risk

MTCA Equation 750-2:

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RISK \times ABW \times AT \times UFC}{CPF_i \times BR \times ABS_i \times ED \times EF}$$

Vinyl Chloride										
Exposure Scenario	**Carcinogenic Risk (unitless)**	**Average Body Weight (kg)**	**Averaging Time (years)**	**Unit Conversion Factor (µg/mg)**	**Inhalation Cancer Potency Factor (kg-day/mg)**	**Breathing Rate (m3/day)**	**Inhalation Absorption Fraction (unitless)**	**Exposure Duration (years)**	**Exposure Frequency (unitless)**	**Cleanup Level (µg/m3)**
	RISK	**ABW**	**AT**	**UCF**	**CPF_i**	**BR**	**ABS_i**	**ED**	**EF**	
DEFAULT MTCA Method B (Residential)	1.00E-06	70	75	1000	3.08E-02	20	1	30	1	0.28
MODIFIED MTCA Method B (Commercial)	1.00E-06	70	75	1000	3.08E-02	20	1	30	0.03	9.55

Risk = Acceptable excess individual lifetime cancer risk level (unitless)

ABW = Average Body Weight

AT = Average Time

UCF = Unit conversion factor

CPF = Carcinogenic potency factor.VC is 0.031 kg-day/mg

BR = Breathing Rate

ABS = Inhalation absorption fraction

ED = Exposure Duration

EF = Exposure frequency. EF for Commercial Garage exposure assumes 1 hour a day, 5 days a week, for 52 weeks a year.

APH (C5-C8 aliphatics) fraction Air Cleanup Levels from Noncancer Risk

MTCA Equation 750-1:

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RfDi \times ABW \times UFC \times HQ \times AT}{BR \times ABS_i \times ED \times EF}$$

EPA RfC not established, RfDi BACK-CALCULATED from MTCA Level B Noncancer cleanup level

APH (C5-C8 aliphatics) fraction Air Cleanup Levels from Noncancer Risk										
Exposure Scenario	**Inhalation Reference Dose (mg/kgday)**	**Average Body Weight (kg)**	**Unit Conversion Factor (µg/mg)**	**Hazard Quotient (unitless)**	**Averaging Time (years)**	**Breathing Rate (m^3/day)**	**Inhalation Absorption Fraction (unitless)**	**Exposure Duration (years)**	**Exposure Frequency (unitless)**	**Cleanup Level (µg/m^3)**
	RfD_i	**ABW**	**UCF**	**HQ**	**AT**	**BR**	**ABS_i**	**ED**	**EF**	
DEFAULT MTCA Method B (Residential)	*1.69E+00*	16	1000	1	6	10	1	6	1	2,700.00
MODIFIED MTCA Method B (Commercial)	*1.69E+00*	16	1000	1	75	20	1	30	0.03	113,400.00

APH = air-phase petroleum hydrocarbons

RfDi = Inhalation Reference Dose

ABW = Average Body Weight

UCF = Unit conversion factor

HQ = Hazard quotient

AT = Averaging Time

BR = Breathing Rate

ABS = Inhalation absorption fraction

ED = Exposure Duration

EF = Exposure frequency. EF for Commercial Garage exposure assumes 1 hour a day, 5 days a week, for 52 weeks a year.

APH (C9-C12 aliphatics) fraction Air Cleanup Levels from Noncancer Risk

MTCA Equation 750-1:

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RfDi \times ABW \times UFC \times HQ \times AT}{BR \times ABS_i \times ED \times EF}$$

EPA RfC not established, RfDi BACK-CALCULATED from MTCA Level B Noncancer cleanup leve

APH (C9-C12 aliphatics) fraction Air Cleanup Levels from Noncancer Risk										
Exposure Scenario	**Inhalation Reference Dose (mg/kgday)**	**Average Body Weight (kg)**	**Unit Conversion Factor (µg/mg)**	**Hazard Quotient (unitless)**	**Averaging Time (years)**	**Breathing Rate (m^3/day)**	**Inhalation Absorption Fraction (unitless)**	**Exposure Duration (years)**	**Exposure Frequency (unitless)**	**Cleanup Level (µg/m^3)**
	RfD_i	**ABW**	**UCF**	**HQ**	**AT**	**BR**	**ABS_i**	**ED**	**EF**	
DEFAULT MTCA Method B (Residential)	*8.75E-02*	16	1000	1	6	10	1	6	1	140.00
MODIFIED MTCA Method B (Commercial)	*8.75E-02*	16	1000	1	75	20	1	30	0.03	5,880.00

APH = air-phase petroleum hydrocarbons

RfDi = Inhalation Reference Dose

ABW = Average Body Weight

UCF = Unit conversion factor

HQ = Hazard quotient

AT = Averaging Time

BR = Breathing Rate

ABS = Inhalation absorption fraction

ED = Exposure Duration

EF = Exposure frequency. EF for Commercial Garage exposure assumes 1 hour a day, 5 days a week, for 52 weeks a year.

APH (C9-C10 aromatics) fraction Air Cleanup Levels from Noncancer Risk

MTCA Equation 750-1:

$$Air\ Cleanup\ Level\ (\frac{ug}{m^3}) = \frac{RfDi \times ABW \times UFC \times HQ \times AT}{BR \times ABS_i \times ED \times EF}$$

EPA RfC not established, RfDi BACK-CALCULATED from MTCA Level B Noncancer cleanup lev

APH (C9-C10 aromatics) fraction Air Cleanup Levels from Noncancer Risk										
Exposure Scenario	**Inhalation Reference Dose (mg/kgday)**	**Average Body Weight (kg)**	**Unit Conversion Factor (µg/mg)**	**Hazard Quotient (unitless)**	**Averaging Time (years)**	**Breathing Rate (m^3/day)**	**Inhalation Absorption Fraction (unitless)**	**Exposure Duration (years)**	**Exposure Frequency (unitless)**	**Cleanup Level (µg/m^3)**
	RfD_i	**ABW**	**UCF**	**HQ**	**AT**	**BR**	**ABS_i**	**ED**	**EF**	
DEFAULT MTCA Method B (Residential)	*1.13E-01*	16	1000	1	6	10	1	6	1	180.00
MODIFIED MTCA Method B (Commercial)	*1.13E-01*	16	1000	1	75	20	1	30	0.03	7,560.00

APH = air-phase petroleum hydrocarbons

RfDi = Inhalation Reference Dose

ABW = Average Body Weight

UCF = Unit conversion factor

HQ = Hazard quotient

AT = Averaging Time

BR = Breathing Rate

ABS = Inhalation absorption fraction

ED = Exposure Duration

EF = Exposure frequency. EF for Commercial Garage exposure assumes 1 hour a day, 5 days a week, for 52 weeks a year.

APPENDIX D
QUALITY ASSURANCE PROJECT PLAN

SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

QUALITY ASSURANCE PROJECT PLAN

APPENDIX D OF THE VAPOR INTRUSION ASSESSMENT WORK PLAN

Property:
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington
Ecology Facility ID: 19135499

Prepared for:
Washington State Department of Ecology
Toxics Cleanup Program
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington

Report Date:
January 25, 2018

QUALITY ASSURANCE PROJECT PLAN

Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington 98109
Ecology Facility ID: 19135499

Prepared for:

Washington State Department of Ecology
Toxics Cleanup Program, Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008

Project No.: 0731-004

Prepared by:

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SoundEarth Strategies

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

FIGURE

TABLES

ATTACHMENT

ACRONYMS AND ABBREVIATIONS

%R	percent recovery
DQO	data quality objective
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HASP	Health and Safety Plan
ID	identifier
MS	matrix spike
MSD	matrix spike duplicate
PQL	practical quantitation limit
the Property	307 Fairview Avenue North, Seattle, Washington
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RPD	relative percent difference
the Site	soil, soil vapor, and groundwater contaminated with gasoline-, diesel-, and oil-range petroleum hydrocarbons; tetrachloroethene; trichloroethene; cis-1,2-dichloroethene; and vinyl chloride beneath the Property and portions of the Boren Avenue North and Thomas Street rights-of-way, as well as trichloroethene in the Terry Avenue North right-of-way
SoundEarth	SoundEarth Strategies, Inc.
WAC	Washington Administrative Code
Work Plan	Vapor Assessment Work Plan

1.0 INTRODUCTION

SoundEarth Strategies, Inc. (SoundEarth) has prepared this Quality Assurance Project Plan (QAPP) for the implementation of the vapor intrusion assessment at the Troy Laundry Property located at 307 Fairview Avenue North in Seattle, Washington (the Property; Figure D-1). This QAPP has been drafted as part of the Vapor Intrusion Assessment Work Plan (Work Plan) for the Washington State Department of Ecology (Ecology).

1.1 PURPOSE

The purpose of this QAPP is to provide specific requirements for sample collection, handling, and analysis procedures to be used during implementation of the vapor intrusion assessment at the Property. This QAPP identifies specific sampling and analysis protocols. It also provides detailed information regarding the sampling and data quality objectives; sample location and frequency; equipment and procedures; sample handling and analysis; procedures for management of waste; quality assurance/quality control (QA/QC) protocols for field activities and laboratory analysis; and reporting requirements.

1.2 PROJECT SCHEDULE

The vapor intrusion assessment is expected to commence in Fourth Quarter 2017, pending Ecology approval of the Vapor Intrusion Assessment Work Plan.

2.0 SAMPLING OBJECTIVES

The sampling objectives for the QAPP are to collect sufficient compliance samples to evaluate vapor intrusion on the Property. The data collected as part of this QAPP will be assessed to determine if additional work is necessary as part of the interim action or sampling event.

The following compliance samples will be collected as part of the Work Plan:

- Indoor air samples from the parking garage and ambient air samples from outside the building.

3.0 SAMPLE HANDLING AND QUALITY CONTROL PROCEDURES

The following sections summarize sample labeling, containers, handling, chain of custody, field QC, and decontamination procedures to be applied during the soil gas sampling.

3.1 SAMPLE IDENTIFICATION

Each sample collected during the sampling event will be assigned a unique sample identifier (ID) and number. Sample IDs will be filled out appropriately on the chain of custody and the Vapor Sample Log. The Vapor Sample Log will include the following information: sample ID, sample location, sample date and time, flow controller ID, and initial and final vacuum. The Vapor Sample Log is included in Attachment A.

3.1.1 Indoor Air Samples

Indoor air and ambient air samples will be collected during the sampling event and will be assigned a unique sample ID that will include the components listed below:

- Indoor air samples will begin with the letters *IA* ("indoor air"), followed by the sample number determined by the sample's order in which it was collected.
- Ambient air samples will begin with the letters OA ("outdoor air"), followed by the sample number determined by the sample's order in which it was collected.
- The date the sample was collected will be formatted as follows: YYYYMMDD.

For example, the third indoor air sample collected during the sampling event on November 1, 2017, would be labeled IA03-20171101. The sample ID will be placed on the Vapor Sample Log, Field Report Form, and the Sample Chain of Custody form.

3.2 SAMPLE CONTAINER HANDLING PROCEDURES

Required containers, preservation, and holding times for each anticipated analysis are listed in Table D-1. SoundEarth field staff and laboratory personnel will be responsible for following the container handling procedures below:

- Each sample will be labeled and handled with the date and time sampled, well ID number, project number, and preservative(s), if any.
- All sample collection information will be documented on a Sample Chain of Custody form.
- All samples shipped for laboratory analysis will be packaged according to applicable regulations. SoundEarth field staff may drive the samples to the laboratory, or samples will be shipped by a same-day courier service.
- Upon transfer of the samples to laboratory personnel, the laboratory will assume responsibility for custody of the samples.
- The field coordinator will check all sample labels, chain of custody for entries, and field notes for completeness and accuracy at the end of each day.

3.3 SAMPLE CHAIN-OF-CUSTODY PROCEDURES

The written procedures that will be followed whenever samples are collected, transferred, stored, analyzed, or destroyed are designed to create an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis and reporting of analytical values. This written record, the Sample Chain of Custody form, will be filled out by SoundEarth field staff at the time the sample is obtained. An example of the Sample Chain of Custody form is included in Attachment A.

All samples submitted to the laboratory are accompanied by the Sample Chain of Custody Form. This form is checked for accuracy and completeness and then signed and dated by the laboratory sample custodian accepting the sample. At the laboratory, each sample is assigned a unique, sequential laboratory ID number that is stamped or written on the Sample Chain of Custody Form.

All samples are held under internal chain of custody in the sample control room using the appropriate storage technique (i.e., ambient, refrigeration, frozen). The Laboratory Project Manager assigned to a particular client will be responsible for tracking the status of the samples throughout the laboratory. Samples will be signed out of the sample control room in a sample control logbook by the analyst who will prepare the samples for analysis.

The Sample Chain of Custody form will include the following information: client, project name and number, date and time sampled, sample ID, sample start and stop time, sample volume or flow rate, analysis, and analyte preservative(s), if any.

3.4 FIELD QUALITY ASSURANCE SAMPLING

Field and laboratory activities will be conducted in such a manner that the results be valid and meet the data quality objectives (DQOs) for this remedial action.

3.4.1 Indoor Air Sampling

Indoor air duplicate samples are not planned at this time.

4.0 ANALYTICAL TESTING

Eurofins Air Toxics, Inc., of Folsom, California, has been selected as the laboratory to conduct the analysis of soil gas samples collected. Eurofins Air Toxics, Inc. is an Ecology-accredited laboratory and meets the QA/QC requirements of Ecology and the U.S. Environmental Protection Agency (EPA).

In completing chemical analyses for this project, the laboratory will meet the following minimum requirements:

- Adhere to the methods outlined in this QAPP, including methods referenced for each analytical procedure.
- Provide a detailed discussion of any modifications made to previously approved analytical methods.
- Deliver PDF and electronic data as specified.
- Meet reporting requirements for deliverables.
- Meet turnaround times for deliverables.
- Implement QA/QC procedures discussed in Section 7.0, including DQOs, laboratory quality control requirements, and performance evaluation testing requirements.
- Notify the Project QA/QC Manager of any QA/QC problems when they are identified to allow for quick resolution.
- Allow laboratory and data audits to be performed, if deemed necessary.

Copies of the *Laboratory Quality Assurance Manual* from Eurofins Air Toxics, Inc. will be available at their Folsom, California office. Access to laboratory personnel, equipment, and records pertaining to samples, collection, transportation, and analysis can be provided. Container requirements, holding times, and preservation methods for indoor air samples are summarized in Table D-1.

Sample laboratory analytical results for each analyte will be compared to regulatory limits applicable to the interim action. A detailed description of the analytical methods, laboratory practical quantitation limits (PQLs), and applicable regulatory limits for each analyte are provided in Table D-2. Additional analyses may be required during the interim action due to new discoveries or requests from disposal facilities.

4.1 INDOOR AIR

Indoor air samples will be submitted for laboratory analysis of chlorinated volatile organic compounds and/or air-phase petroleum hydrocarbons by EPA Method TO-15. The analytes for each air sample are presented in Table 3 of the Work Plan.

5.0 DATA QUALITY OBJECTIVES

Field and laboratory activities will be conducted in such a manner that the results will be valid and meet the DQOs for this project. Guidance for QA/QC will be derived in general accordance from the protocols developed for the cited methods within EPA's documents *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (also known as SW-846, Update VI) and the National Contract Laboratory Review Program, *National Functional Guidelines for Organic Superfund Data Review* (January 2017). The DQOs are designed to:

- Assist the Project Manager and project team to focus on the factors affecting data quality during the planning stage of the project.
- Facilitate communication among field, laboratory, and project staff as the project progresses.
- Document the planning, implementation, and assessment procedures for QA/QC activities.
- Verify that the DQOs are achieved.
- Provide a record of the project to facilitate final report preparation.

The DQOs for the project include both qualitative and quantitative objectives, which define the appropriate type of data and specify the tolerable levels of potential decision errors that will be used as a basis for establishing the quality and quantity of data needed to support the interim action. To verify that the DQOs are achieved, this QAPP details aspects of sample collection and analysis, including analytical methods, QA/QC procedures, and data quality reviews. This QAPP describes both qualitative and quantitative measures of data quality to verify that the DQOs are achieved.

Detailed QA/QC procedures in the field and at the laboratory are provided in the following sections. The DQOs for the indoor air sampling will be used to develop and implement procedures to verify that data collected are of sufficient quality to adequately address the objectives of the sampling event. All observations and measurements will be made and recorded in such a manner as to yield results representative of the media and conditions observed and/or measured. Goals for representativeness will be met by verifying that sampling locations are selected properly, that a sufficient number of samples are collected, and that field screening and laboratory analyses are conducted properly.

The quality of the laboratory data will be assessed by precision, accuracy, representativeness, completeness, comparability, and sensitivity. Definitions of these parameters and the applicable QC procedures are described in the following sections. Quantitative DQOs are provided following each

definition. Laboratory DQOs have been established by the analytical laboratory. Applicable quantitative goals for these DQOs are listed in Table (In preparation).

5.1 PRECISION

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of two or more measurements compared to their average values. Precision is calculated from results of duplicate sample analyses. Precision is quantitatively expressed as the relative percent difference (RPD) and is calculated as follows:

Where:

C1 = larger of the two duplicate results (i.e., the highest detected concentration)

C2 = smaller of the two duplicate results (i.e., the lowest detected concentration)

RPD = relative percent difference

There are no specific RPD criteria for organic chemical analyses.

5.2 ACCURACY

Accuracy is a measure of the closeness (bias) of the measured value to the true value. The accuracy of chemical analytical results is assessed by "spiking" samples in the laboratory with known standards (a surrogate or matrix spike of known concentration) and determining the percent recovery. The accuracy is measured as the percent recovery (%R) and is calculated as follows:

Where:

%R = percent recovery

C_{sa} = actual concentration of spike added

M_{sa} = measured concentration in spiked aliquot

M_{ua} = measured concentration in unspiked aliquot

Laboratory matrix spikes and surrogates will be carried out at the analytical laboratory in accordance with EPA Method TO-15. The frequency of matrix spikes and matrix spike duplicates will each be one per batch of 20 samples or less for air samples. Quantitative percent recovery criteria for organic analyses will be based on laboratory-derived control limits for surrogate recovery and matrix spike results.

The accuracy of sample results can also be affected by the introduction of contaminants to the sample during collection, handling, or analysis. Contamination of the sample can occur because of improperly cleaned sampling equipment, exposing samples to chemical concentrations in the field or during transport to the laboratory, or because of chemical concentrations in the laboratory. To demonstrate that the samples collected are not contaminated, laboratory method blank samples will be analyzed. The laboratory will run method blanks at a minimum frequency of 5 percent or one per batch to assess potential contamination of the sample within the laboratory.

5.3 REPRESENTATIVENESS

Representativeness is a qualitative assessment of how closely the measured results reflect the actual concentration or distribution of the constituent concentrations in the matrix sampled. The sampling plan

design, sample collection techniques, sample handling protocols, sample analysis methods, and data review procedures have been developed to verify that the results obtained are representative of the Site conditions. These issues are addressed in detail in Section 4.0, Analytical Testing and, Section 7.0, Quality Control Procedures.

5.4 COMPLETENESS

Completeness is defined as the percentage of measurements judged to be valid. Results will be considered valid if they are not rejected during data validation (Section 7.0, Quality Control Procedures). Completeness is calculated as follows:

$$\% \ Completeness = \frac{x}{y} \ x \ 100$$

x = amount of valid data obtained
y = amount of data expected to be obtained

Objectives for completeness are based, in part, on the subsequent uses of the data (i.e., the more critical the use, the greater the completeness objective). The objectives for completeness of samples are expressed as percentages, which refer to the minimum acceptable percentages of samples received at the laboratory in good condition and acceptable for analysis. The objectives of completeness for other samples are 95 percent for soil, water, and air samples. These objectives will be met through the use of proper sample containers, proper sample packaging procedures to prevent breakage during shipment, proper sample preservation, and proper labeling and chain-of-custody procedures. A loss of 5 to 10 percent of intended samples is common, and the goals set are sufficient for intended data uses.

The objectives for completeness of chemical analyses are also expressed as percentages and refer to the percentages of analytical requests for which usable analytical data are produced. The initial objective for completeness of chemical analyses in the laboratory is 95 percent.

5.5 COMPARABILITY

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The use of standard Ecology and EPA methods and procedures for both sample collection and laboratory analysis will make the data collected comparable to both internal and other data generated.

5.6 SENSITIVITY

Analytical sensitivities are measured by PQLs, which are defined as the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. PQLs are determined by the laboratory. The specific analytes and their corresponding PQLs that will be required are presented in Table D-2. The detection or reporting limits for actual samples may be higher depending on the sample matrix and laboratory dilution factors.

6.0 DATA COLLECTION

This section outlines the procedures to be followed for the inventory, control, storage, and retrieval of data collected during performance of the sampling event. The procedures contained in this QAPP are designed to verify that the integrity of the collected data is maintained for subsequent use. Moreover,

project-tracking data (e.g., schedules and progress reports) will be maintained to monitor, manage, and document the progress of the interim action.

6.1 DATA COLLECTION APPROACH

All sampling protocols will be performed in accordance with generally accepted environmental practices and will meet or exceed current regulatory standards and guidelines. Sampling procedures may be modified, if necessary, to satisfy amendments to current regulations, methods, or guidelines. The data collection approach for key elements field program will verify the project DQOs are met or exceeded. The key elements include indoor air samples collected and analytical results used to demonstrate that the concentrations of chemicals of concern in the indoor air of parking garage are below applicable cleanup levels as defined in the Vapor Intrusion Assessment Work Plan. The total number of samples collected and specific analyses to be performed will be based on field screening results, field observations, and analytical results for performance and confirmational monitoring.

6.2 DATA TYPES

A variety of data will be generated during the sampling event, including sampling and analytical data. The laboratory analytical data will be transmitted to SoundEarth as an electronic file, in addition to a hardcopy laboratory data report. This method will facilitate the subsequent validation and analysis of these data while avoiding transcription errors that may occur with computer data entry. Examples of data types include manually recorded field data, such as boring logs, and electronically reported laboratory data.

6.3 DATA TRANSFER

Procedures controlling the receipt and distribution of incoming data packages to SoundEarth and outgoing data reports from SoundEarth include the following:

- Incoming documents will be date-stamped and filed. Correspondence and transmittal letters for all reports, maps, and data will be filed chronologically. Data packages, such as those from field personnel, laboratories (such as soil data), and surveyors (elevation data), will be filed by project task, subject heading, and date. If distribution is required, the appropriate number of copies will be made and distributed to the appropriate persons or agencies.
- A transmittal sheet will be attached to all project data and reports sent out. A copy of each transmittal sheet will be kept in the administrative file and the project file. The Project Manager and Project QA/QC Officer will review all outgoing reports and maps.

6.4 DATA INVENTORY

Procedures for filing, storage, and retrieval of project data and reports are discussed below.

6.4.1 Document Filing and Storage

As previously discussed, project files and raw data files will be maintained at SoundEarth's office. Files will be organized by project tasks or subject heading and maintained by the document control clerk. Hard copy project files will be archived for a minimum of 3 years after completion of the project. Electronic copies of files will be maintained in a project directory and backed up daily, weekly, and monthly.

6.4.2 Access to Project Files

Access to project files will be controlled and limited to Touchstone and its authorized representatives, Ecology, and SoundEarth personnel. When a hard copy file is removed for use, a sign-out procedure will be used to track custody. If a document is to be used for a long period, a copy will be used, and the original will be returned to the project file. Electronic access to final reports, figures, and tables will be write-protected in the project directory.

6.5 DATA VALIDATION

Data quality review will be performed where applicable in accordance with the current EPA guidance as set forth in *Guidance on Environmental Data Verification and Data Validation* (QA/G-8; November 2002). The following types of QC information will be reviewed, as appropriate:

- Method deviations
- Sample extraction and holding times
- Method reporting limits
- Blank samples (equipment rinsate and laboratory method)
- Duplicate samples
- Matrix spike/matrix spike duplicate samples (accuracy)
- Surrogate recoveries
- Percent completeness and RPD (precision)
- A quality assurance review of the final analytical data packages for samples collected during the sampling event

6.6 DATA REDUCTION AND ANALYSIS

The Project Manager is responsible for data review and validation. Data validation parameters are outlined as quantitative DQOs in Section 5.0, Data Quality Objectives. The particular type of analyses and presentation method selected for any given data set will depend on the type, quantity, quality, and prospective use of the data in question. The analysis of the project data will require data reduction for the preparation of tables, charts, and maps. To verify that data are accurately transferred during the reduction process, two data reviews will be performed, one by the Project QA/QC Officer or Project Manager and another by the Project Principal, prior to issuing the documents. Any incorrect transfers of data will be highlighted and changed.

7.0 QUALITY CONTROL PROCEDURES

This section provides a description of the QC procedures for both field activities and laboratory analysis. The field QC procedures include standard operating procedures for sample collection and handling, equipment calibration, and field QC samples.

7.1 FIELD QUALITY CONTROL

Field QC samples are not currently planned for indoor air sampling.

7.2 LABORATORY QUALITY CONTROL

Analytical laboratory QA/QC procedures are provided in Eurofins Air Toxics, Inc., *Laboratory Quality Assurance Manual* and summarized below:

- **Laboratory Quality Control Criteria.** Results of the QC samples from each sample group will be reviewed by the analyst immediately after a sample group has been analyzed. The QC sample results will then be evaluated to determine whether control limits were exceeded. If control limits are exceeded in the sample group, corrective action (e.g., method modifications followed by reprocessing the affected samples) will be initiated prior to processing a subsequent group of samples. All primary chemical standards and standard solutions used in this project will be traceable to documented and reliable commercial sources. Standards will be validated to determine their accuracy by comparison with an independent standard. Any impurities identified in the standard will be documented.

The following paragraphs summarize the procedures that will be used to assess data quality throughout sample analysis:

- **Laboratory Duplicates.** Analytical duplicates provide information on the precision of the analysis and are useful in assessing potential sample heterogeneity and matrix effects. Analytical duplicates are subsamples of the original sample that are prepared and analyzed as a separate sample. A minimum of 1 duplicate will be analyzed per sample group or for every 20 samples, whichever is more frequent.
- **Matrix Spikes and Matrix Spike Duplicates.** Analysis of matrix spike (MS) samples provides information on the extraction efficiency of the method on the sample matrix. By performing matrix spike duplicate (MSD) analyses, information on the precision of the method is also provided for organic analyses. A minimum of 1 MS/MSD will be analyzed for every sample group or for every 20 samples, whichever is more frequent.
- **Laboratory Control Samples.** A laboratory control sample is a method blank sample carried throughout the same process as the samples to be analyzed, with a known amount of standard added. The blank spike compound recovery assesses analytical accuracy in the absence of any sample heterogeneity or matrix effects.
- **Surrogate Spikes.** All project samples analyzed for organic compounds will be spiked with appropriate surrogate compounds as defined in the analytical methods. Surrogate recoveries will be reported by the laboratories; however, no sample result will be corrected for recovery using these values.
- **Method Blanks.** Method blanks are analyzed to assess possible laboratory contamination at all stages of sample preparation and analysis. A minimum of 1 method blank will be analyzed for every extraction batch or for every 20 samples, whichever is more frequent.

7.3 DATA QUALITY CONTROL

All data generated by Eurofins Air Toxics, Inc. will undergo two levels of QA/QC evaluation: one by the laboratory and one by SoundEarth. As specified in Eurofins Air Toxics, Inc. *Laboratory Quality Assurance Manual*, the laboratory will perform initial data reduction, evaluation, and reporting. The analytical data will then be validated at SoundEarth under the supervision of the Project QA/QC Officer. The following types of QC information will be reviewed, as appropriate:

- Method deviations
- Sample transport conditions (temperature and integrity)
- Sample extraction and holding times
- Method reporting limits
- Blank samples
- Duplicate samples
- Surrogate recoveries
- Percent completeness
- RPD (precision)

SoundEarth will review field records and results of field observations and measurements to verify procedures were properly performed and documented. The review of field procedures will include:

- Completeness and legibility of field logs
- Preparation and frequency of field QC samples
- Equipment calibration and maintenance
- Sample Chain-of-Custody forms

Corrective actions are described in Section 8.0, Corrective Actions.

7.4 DATA ASSESSMENT PROCEDURES

The Project Manager and Project QA/QC Officer are responsible for data review and validation. Upon receipt of each data package from the laboratory, calculations using the equations presented for precision, accuracy, and completeness will be performed. Results will be compared to quantitative DQOs, where established, or qualitative DQOs. Data validation parameters are outlined in Section 5.0, Data Quality Objectives.

7.5 PERFORMANCE AUDITS

Performance audits will be completed for both sampling and analysis work. Field performance will be monitored through regular review of Sample Chain-of-Custody forms, field forms, and field measurements. The Project Manager and/or the Project QA/QC Officer may also perform periodic review of work conducted.

Accreditation received from Ecology for each analysis by Eurofins Air Toxics, Inc. demonstrates the laboratory's ability to properly perform the requested methods. Therefore, a system audit of the analytical laboratory during the course of this sampling event will not be conducted.

The Project Manager and/or Project QA/QC Officer will oversee communication with the analytical laboratory on a frequent basis while samples are being processed and analyzed at the laboratory. This will allow SoundEarth to assess progress toward meeting the DQOs and to take corrective measures if problems arise.

The analytical laboratory will be responsible for identifying and correcting, as appropriate, any deviations from performance standards as discussed in Eurofins Air Toxics, Inc. *Laboratory Quality Assurance Manual.* The laboratory will communicate to the Project Manager or the Project QA/QC Officer all deviations to the performance standards and the appropriate corrective measures made during sample analysis. Corrective actions are discussed in Section 8.0.

8.0 CORRECTIVE ACTIONS

Corrective actions will be the joint responsibility of the Project Manager and the Project QA/QC Officer. Corrective procedures can include the following:

- Identifying the source of the violation.
- Reanalyzing samples, if holding time criteria permit.
- Resampling and analyzing.
- Re-measuring parameter.
- Evaluating and amending sampling and analytical procedures.
- Qualifying data to indicate the level of uncertainty.

During field sampling operations, the Project Manager and field staff will be responsible for identifying and correcting protocols that may compromise the quality of the data. All corrective actions taken will be documented in the field notes.

9.0 DOCUMENTATION AND RECORDS

Project files and raw data files will be maintained at SoundEarth's office. Project records will be stored and maintained in a secure manner. Each project team member is responsible for filing all necessary project information or providing it to the person responsible for the filing system. Individual team members may maintain files for individual tasks, but must provide such files to the central project files upon completion of each task. A project-specific index of file contents will be kept with the project files. Hard copy documents will be kept on file at SoundEarth or at a document storage facility throughout the duration of the project, and all electronic data will be maintained in the database at SoundEarth. All sampling data will be submitted to Ecology in both printed and electronic formats pursuant to Washington Administrative Code (WAC) Chapter 173-340-840(5) and Ecology's Toxics Cleanup Program Policy 840 (Data Submittal Requirements).

9.1 FIELD DOCUMENTATION

Field forms will be scanned and saved to an electronic project folder. Original and copied forms will be filed in a binder that will be maintained by the Project Manager.

Field personnel will be required to keep a daily field log on a Field Report form. Field notes will be as descriptive and as inclusive as possible, allowing independent parties to reconstruct the sampling situation from the recorded information. Language will be objective, factual, and free of inappropriate terminology. A summary of each day's events will be completed on a Field Report form. At a minimum, field documentation will include the date, job number, project identification and location, weather conditions, sample collection data, personnel present and responsibilities, field equipment used, and

activities performed in a manner other than specified in the QAPP. In addition, if other forms are completed or used (e.g., Sample Chain-of-Custody form), they will be referred to in and attached to the Field Report form. Field personnel will sign the Field Report form.

9.2 ANALYTICAL RECORDS

Analytical data records will be retained by the laboratory and stored electronically in the SoundEarth project file and project database. For all analyses, the data reporting requirements will include those items necessary to complete data validation, including copies of all raw data. The analytical laboratory will be required to report the following, as applicable: project narrative, chain-of-custody records, sample results, QA/QC summaries, calibration data summary, method blank analysis, surrogate spike recovery, matrix spike recovery, matrix duplicate, and laboratory control sample(s).

10.0 HEALTH AND SAFETY PROCEDURES

Field personnel will adhere to health and safety procedures that detailed in a project-specific Health and Safety Plan (HASP). The health and safety and emergency response protocols outlined in the HASP are designed to ensure compliance with state and federal regulations governing worker safety on hazardous waste sites. The Department of Labor has published final rules (Part 1910.120 of Title 29 of the Code of Federal Regulations, March 6, 1990) that amend the existing Occupational Safety and Health Administration standards for hazardous waste operations and emergency response. Within Washington State, these requirements are addressed in WAC 296-843, Hazardous Waste Operations. These regulations apply to the activities to be performed at this Site as a site remediation, or cleanup, under Resource Conservation and Recovery Act 1976 and/or Washington State Model Toxics Control Act.

Subcontractors to SoundEarth are required to prepare and effectively implement their own HASP based on their unique scope of work and professional expertise. Each subcontractor's HASP must comply with all applicable federal, state, and local regulations. The subcontractor's HASP should employ appropriate best practices to protect all personnel working on the Site, as well as the public, and to prevent negative impacts to the project or Site.

The responsibilities of SoundEarth for safety on this Site are limited to the following:

- Implementation of the provisions of this HASP for the protection of its employees and visitors on the Site to the extent that the Site and its hazards are under the control of SoundEarth.
- Protection of the Site, other personnel, and the public from damage, injury, or illness as a result of the activities of SoundEarth and its employees while on the Site.
- Provision of additional safety-related advice and/or management as contractually determined between the parties.

It is anticipated that all field work will be performed during the sampling event in Level D personal protective equipment. Potential hazards that may be encountered during the field activities include exposure to contaminants; traffic/mobile equipment; process hazards; unstable ground; noise exposure; overhead and underground utilities; slips, trips, and falls; powered tools and equipment; working around heavy equipment; rolling and/or pinching objects; and exposure to weather conditions.

FIGURE

6/9/2015

P:\0731 TOUCHSTONE\0731-004 TROY LAUNDRY\TECHNICAL\CAD\FIGURE 1\0731-004-04_FIG 1_F.DWG

SoundEarth Strategies

WWW.SOUNDEARTHINC.COM

TROY LAUNDRY PROPERTY
307 FAIRVIEW AVENUE NORTH
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0731-004

FIGURE D-1
PROPERTY LOCATION MAP

TABLES

Table D-1
Analytical Methods, Container, Preservation, and Holding Time Requirements
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Analyte and Analytical Method	Size and Type of Container	Number of Containers	Preservation Requirements	Holding Time
Indoor Air Samples				
CVOCs by EPA Method TO-15	6-L SUMMA Canister	1	--	30 days
Air-Phase Petroleum Hydrocarbons by EPA Method TO-15				

NOTES:

-- = not applicable

CVOC = chlorinated volatile compound

EPA = U.S. Environmental Protection Agency

L = liter

Table D-2
Practical Quantitation Limits and
Method B Cleanup Levels
Troy Laundry Property
307 Fairview Avenue North
Seattle, Washington

Analyte	Analytical Method	Unit	Laboratory PQLs[1]	MTCA Method B Cleanup Levels[2]
Indoor Air				
Tetrachloroethene	EPA Method TO-15	µg/m^3	<2	9.62
Trichloroethene			<0.02	0.37
cis 1,2-Dichloroethene			<0.02	NE
trans 1,2-Dichloroethene			<0.02	NE
Vinyl Chloride			<0.06	0.28
APH EC5-8 Aliphatic			<0.025	2,700
APH EC9-12 Aliphatic			<0.03	140
APH EC9-10 Aromatic			<0.05	180

NOTES:

[1]Standard PQLs for Friedman & Bruya, Inc., standard PQLs.

[2]MTCA Method B Cleanup Levels, per CLARC 2018.

µg/m^3 = micrograms per cubic meter
APH = air-phase hydrocarbon
CLARC = Cleanup Levels and Risk Calculations
EPA = U.S. Environmental Protection Agency
MTCA = Washington State Model Toxics Control Act
NE = not established
PQL = practical quantitation limit
WAC =- Washington Administrative Code

ATTACHMENT A
FIELD FORMS

FIELD REPORT

SoundEarth Strategies
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102
P: (206) 306-1900 F: (206) 306-1907

Client & Site Name/Number:		**SoundEarth Project Number:**	**Date:**
Site Address:		**Purpose of Visit/Task #:**	**Field Report Prepared by:**
Temp/Weather:	**Permit Required to Work:**	**Time of Arrival/Departure** (2400)**:** _____ onsite to _____ offsite	**Personnel Onsite:**

Attachments:

Table 1
Vapor Sample Log
Troy Laundry Property
307 Fairview Ave North
Seattle, Washington

Sample Identification	Sample Location[(1)]	Sampled By	Sample Date	Canister Number	Flow Controller Number	Initial Vacuum (inHg)	Final Vacuum (inHg)	Sample Start Time	Sample End Time
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							
		SoundEarth							

NOTES:

Analyzed by EPA Modified TO-15 SIM Analysis.

Dilution Factor = Based on the final pressure of the sample canister and the required pressure applied for canister analysis.

[(1)]Reference Figures 1 and 2 - Vapor Sample Locations.

inHg = inches of mercury

SAMPLE CHAIN OF CUSTODY

Send Report to _____

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS *(signature)*	
PROJECT NAME/NO.	PO #
REMARKS	

Page # _____ of _____

TURNAROUND TIME
Standard (2 Weeks)
RUSH_____
Rush charges authorized by:
_____

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED								
								DRPH & ORPH by NWTPH-Dx	GRPH by NWTPH-Gx	VOCs by EPA 8260C	RCRA 8 Metals by EPA 200.8 & 1631E					Notes

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				