



# **Facility Monitoring and Control System (FMCS)**



*Vendor Interface Briefing Booklet*

*May 2014*

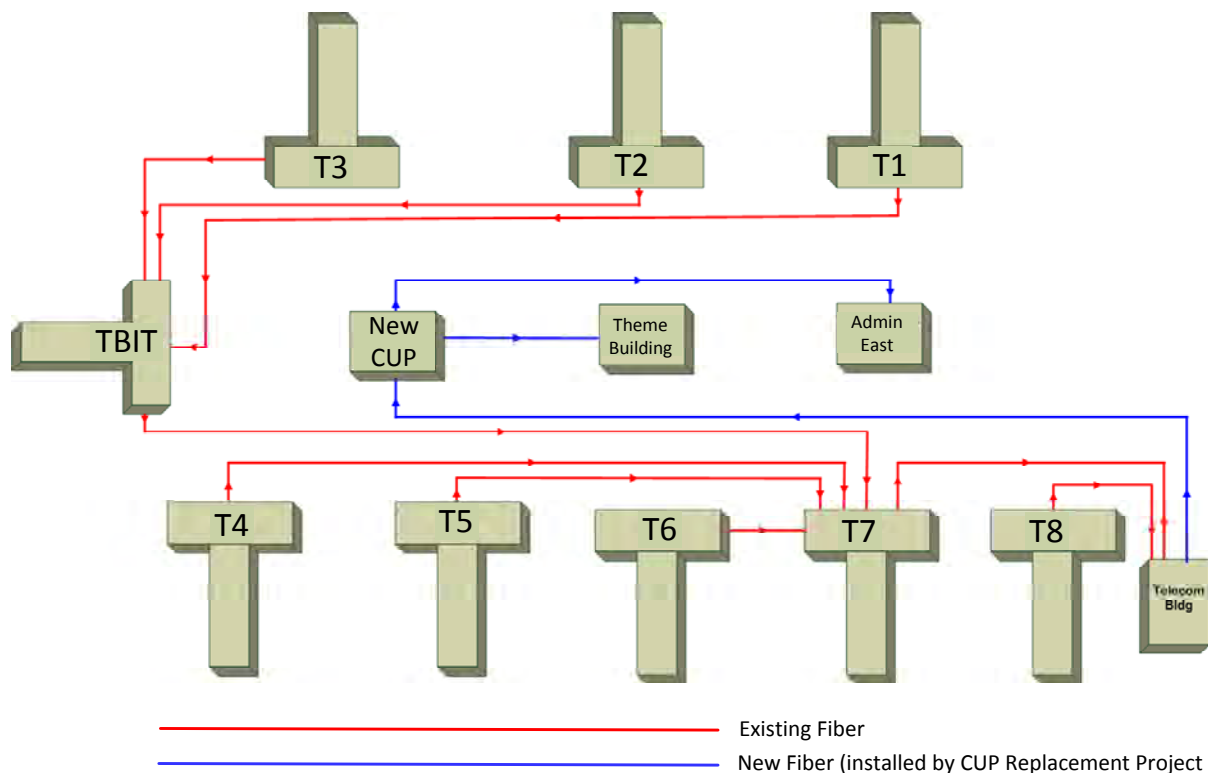
The new LAX Facility Monitoring and Control System (FMCS) is connected to the Central Utility Plant (CUP) Building Automation System (BAS) in each terminal. This FMCS/BAS system allows LAWA to optimize energy utilization in the airport and monitor operations in order to address HVAC issues more swiftly.

The FMCS is based on the Wonderware Archestra<sup>®</sup> System Platform and an integrated BAS based on the JCI Metasys Platform. The FMCS also has a dedicated Ethernet fiber infrastructure throughout the LAX Central Terminal Area (CTA), providing connectivity to the BAS systems installed in terminals 1-8, TBIT, Admin East and Theme buildings.

The FMCS was required to be non-proprietary and capable of integrating any vendor's BAS systems and components, as long as those components are BACnet<sup>®</sup>-compatible.

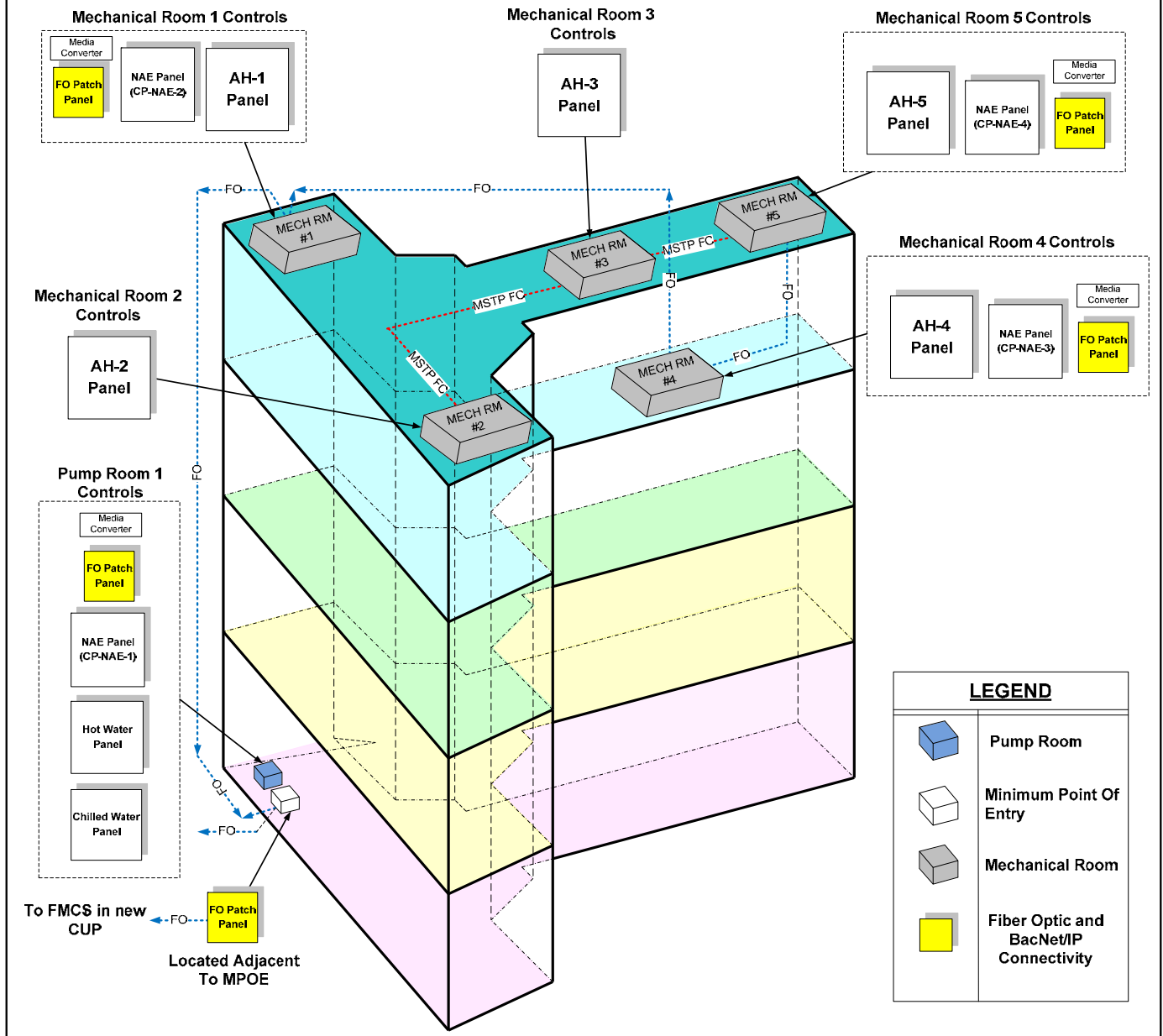
The CUP Replacement Project has installed a fiber backbone within each terminal/building for current and future connections to the FMCS by new tenant BAS installations and other potential systems (e.g., conveyance - escalators, elevators, etc.). The system has established locations with JCI NAE panels and Ethernet switches for BACnet<sup>®</sup>/IP interconnections to the FMCS by any compliant vendor. Technical interface requirements can be found in LAWA Guide Specification 25 20 00 *TERMINAL BUILDING AUTOMATION SYSTEM (BAS)*.

The high-level overview of the FMCS fiber infrastructure in the CTA is shown below.



The example below provides a high-level overview of the FMCS infrastructure layout inside a “typical” terminal:

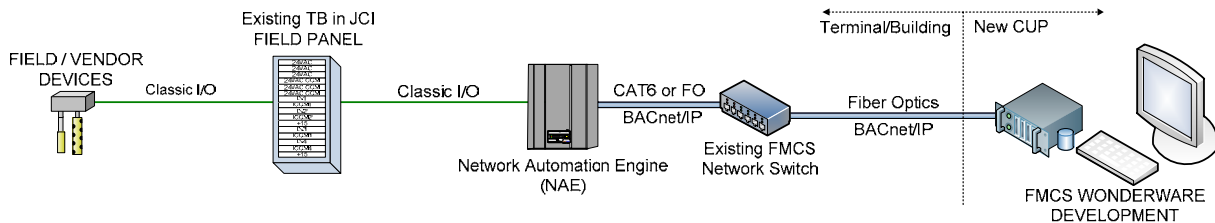
## FMCS Terminal Infrastructure Overview



There are three methods of interfacing with the FMCS in the terminals:

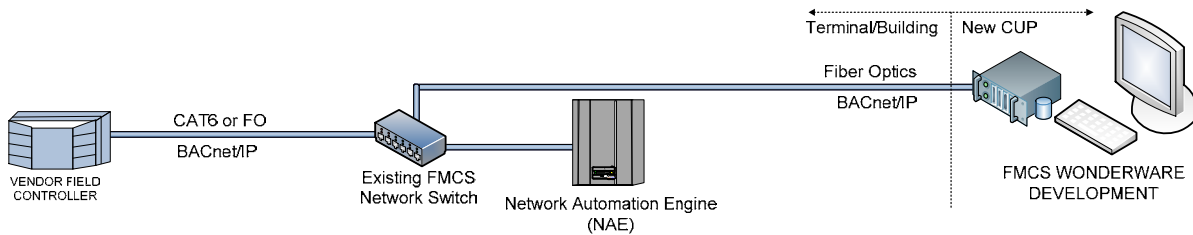
### 1) SCENARIO 1: ADD FIELD DEVICE(S) TO EXISTING SYSTEM

Identify field device's electrical and device input/output (I/O) requirements, to add onto existing controller(s). *NOTE - Coordinate with LAWA FMCS Administrator or the CUP Chief Engineer.*



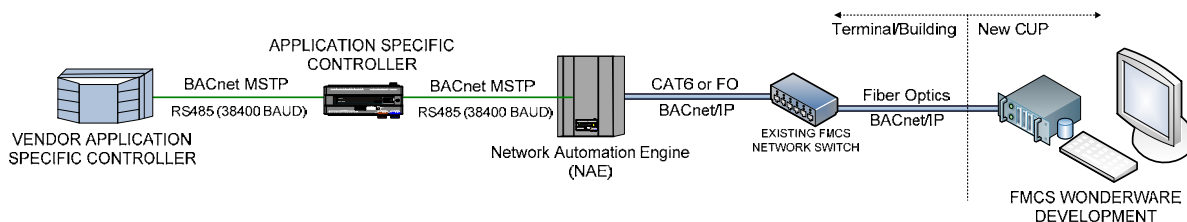
### 2) SCENARIO 2: NEW VENDOR-SUPPLIED FIELD CONTROLLER TIE-IN TO EXISTING SYSTEM

Identify network media and point of connection to system. *NOTE - Coordinate IP address and connection with LAWA FMCS Administrator or the CUP Chief Engineer.*



### 3) SCENARIO 3 - FIELD DEVICE / CONTROLLER TO EXISTING SYSTEM

Identify BACnet® MS/TP addressing, media type and point of connection to the communication bus (the MS/TP bus is based on BACnet® standard protocol SSPC-135, Clause 9). Baud Rate will need to be set at 38,400 and master type MS/TP devices only, no slave devices. End of line coordination required also. If ASC is on the end of line on the communication bus, provide 24 VAC for application of the FMCS EOL device. *NOTE - Coordinate with LAWA FMCS Administrator or the CUP Chief Engineer.*



## **FMCS Wonderware Integration**

The graphics development and Wonderware database integration into the FMCS for all additional I/O points must be coordinated with the LAWA FMCS Administrator or the CUP Chief Engineer. This guide is intended solely to assist with understanding the hardware interface options for connecting to the FMCS.

### **NAE Panel Locations by Terminal/Building**

*Each of these NAE Panel locations provides complete BACnet/IP and BACnet MS/TP connectivity to the FMCS. These NAE panels are the primary point of connection for new device installed within the terminals. These NAE panels have been strategically placed within each terminal to make connections to the FMCS readily available.*

#### **Terminal 1** (reference drawing 20090033 sheet M801, 08/01/12)

NAE Panel Identifier	Location
1-1	Pump Room 103
1-2	Mechanical Room 401
1-3	Mechanical Room 404
1-4	Mechanical Room 406

#### **Terminal 2** (reference drawing 20090033 sheet M802, 08/03/12)

NAE Panel Identifier	Location
2-1	Pump Room 1037
2-2	Mechanical Room 4521
2-3	Mechanical Room 1584

#### **Terminal 3** (reference drawing 20090033 sheet M803, 07/31/12)

NAE Panel Identifier	Location
3-1	Pump Room 124
3-2	Mechanical Penthouse Room
3-3	Mechanical Room 132
3-4	Mechanical Room 401

#### **Terminal 4** (reference drawing 20090033 sheet M804, 08/01/12)

NAE Panel Identifier	Location
4-1	Pump Room 128
4-2	Mechanical Room 4219
4-3	Mechanical Room 4115
4-4	Mechanical Room 406
4-5	Satellite Roof Mechanical Room

**Terminal 5** (reference drawing 20090033 sheet M805, 08/03/12)

NAE Panel Identifier	Location
5-1	Pump Room 122
5-2	Mechanical Room 4318
5-3	Mechanical Room 4601
5-4	Mechanical Room 4802
5-5	Mechanical Room 4905

**Terminal 6** (reference drawing 20090033 sheet M806, 08/03/12)

NAE Panel Identifier	Location
6-1	Pump Room 917
6-2	Mechanical Room 286
6-3	Mechanical Room 138
6-4	Mechanical Room 409
6-5	Mechanical Room 402

**Terminal 7** (reference drawing 20090033 sheet M807, 08/02/12)

NAE Panel Identifier	Location
7-1	Pump Room 2E67
7-2	Mechanical Room 292A
7-3	Pump Room #3 (Mezzanine)
7-4	Mechanical Room 401

**Terminal 8** (reference drawing 20090033 sheet M808, 08/02/12)

NAE Panel Identifier	Location
8-1	Pump Room 204
8-2	Roof AHU-3
8-3	Roof AHU-1

**ADMIN EAST BUILDING** (reference drawing 20090033 sheet M810, 08/02/12)

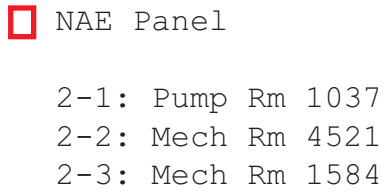
NAE Panel Identifier	Location
10-1	Pump Room (Basement)
10-2	Mechanical Room (East Penthouse)

**THEME BUILDING** (reference drawing 20090033 sheet M811, 08/02/12)

NAE Panel Identifier	Location
11-1	Pump Room (Basement)



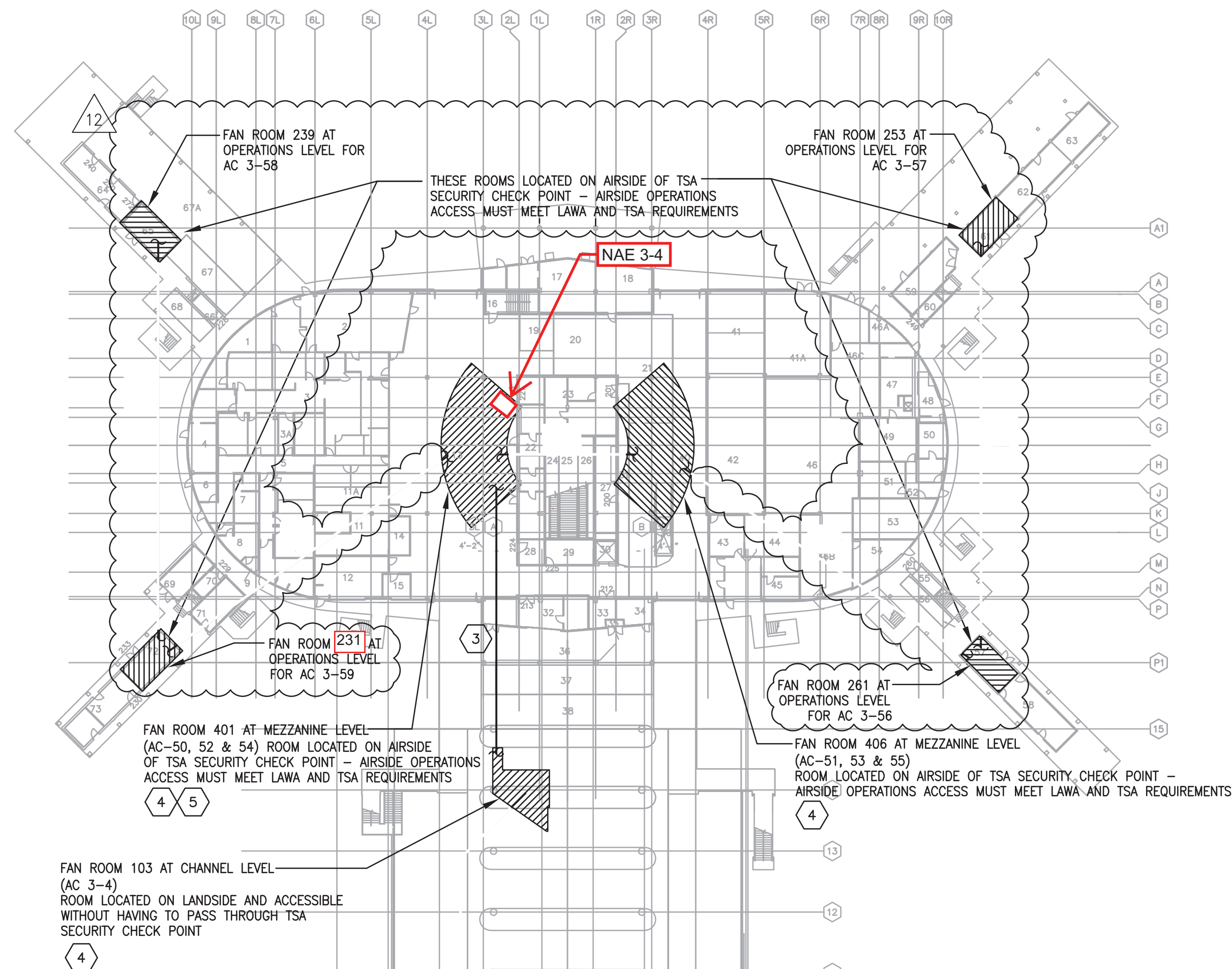


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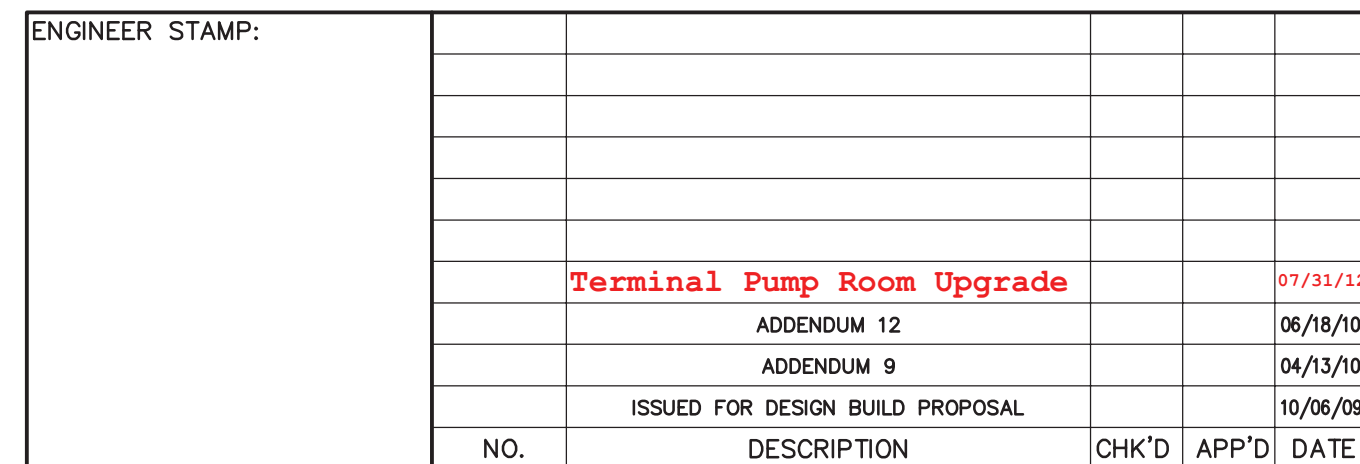
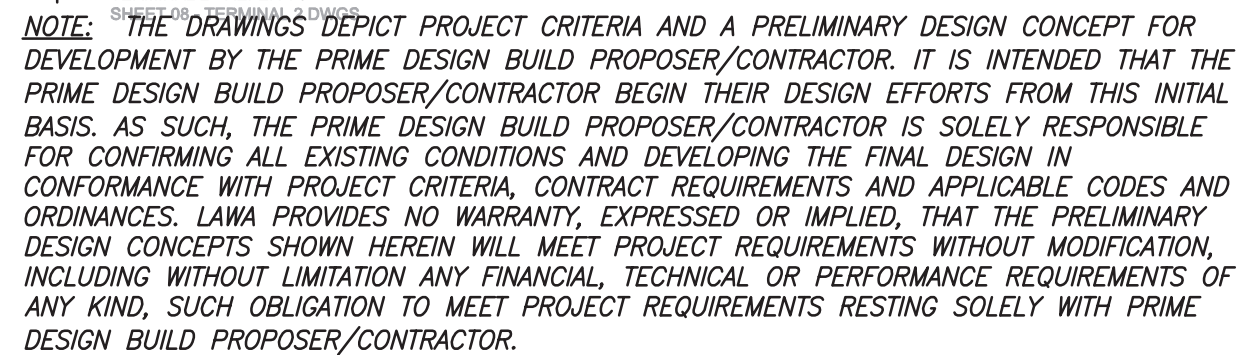
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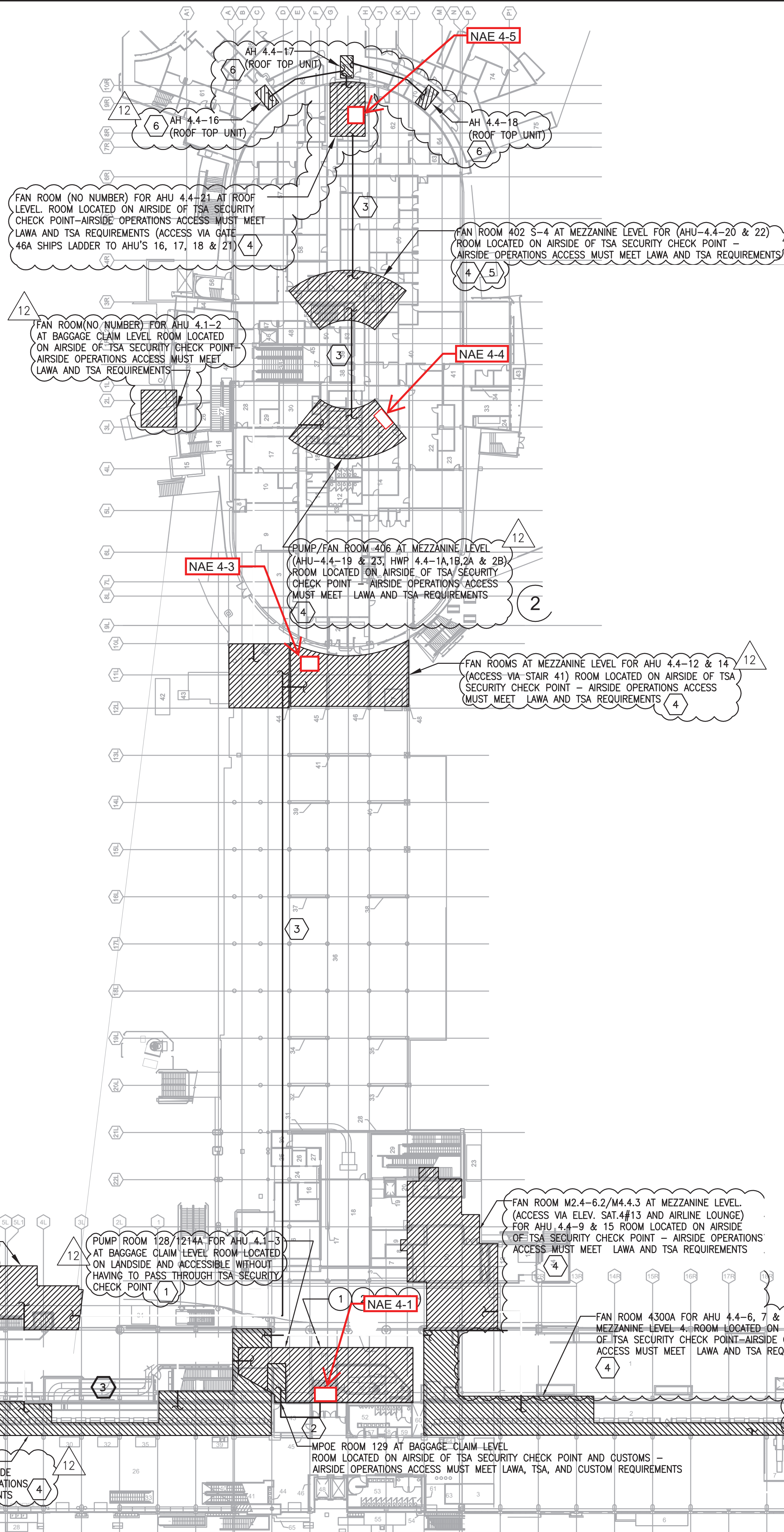




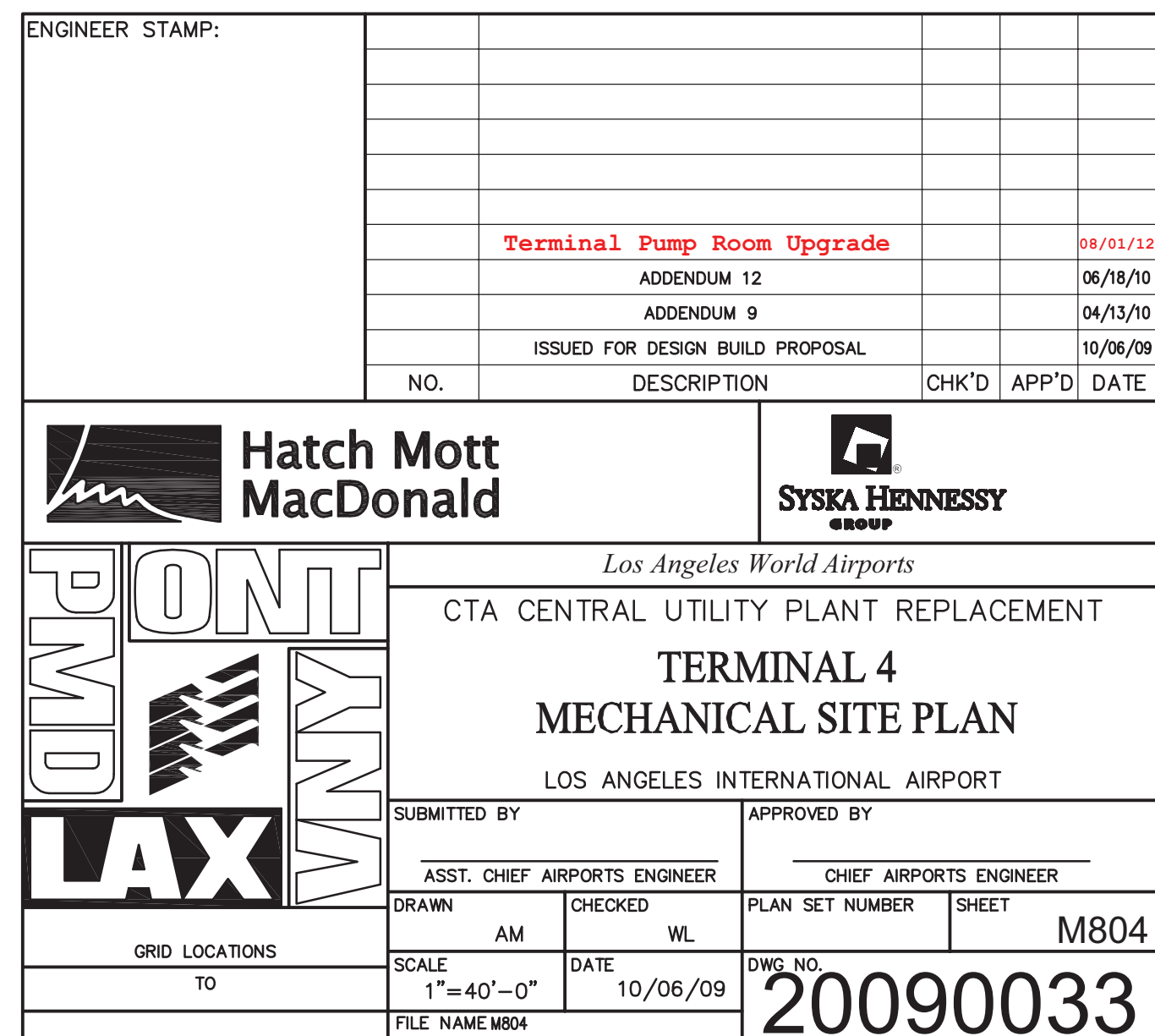
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3-2: Mech Penthouse Rm  
3-3: Mech Rm 132  
3-4: Mech Rm 401



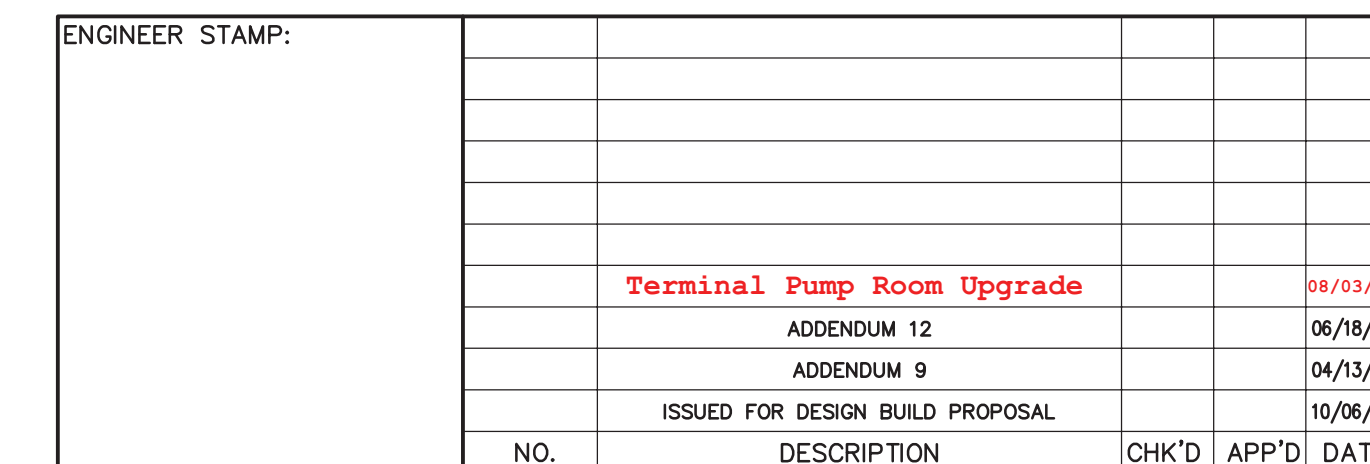
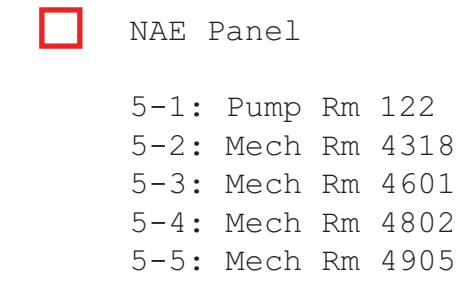




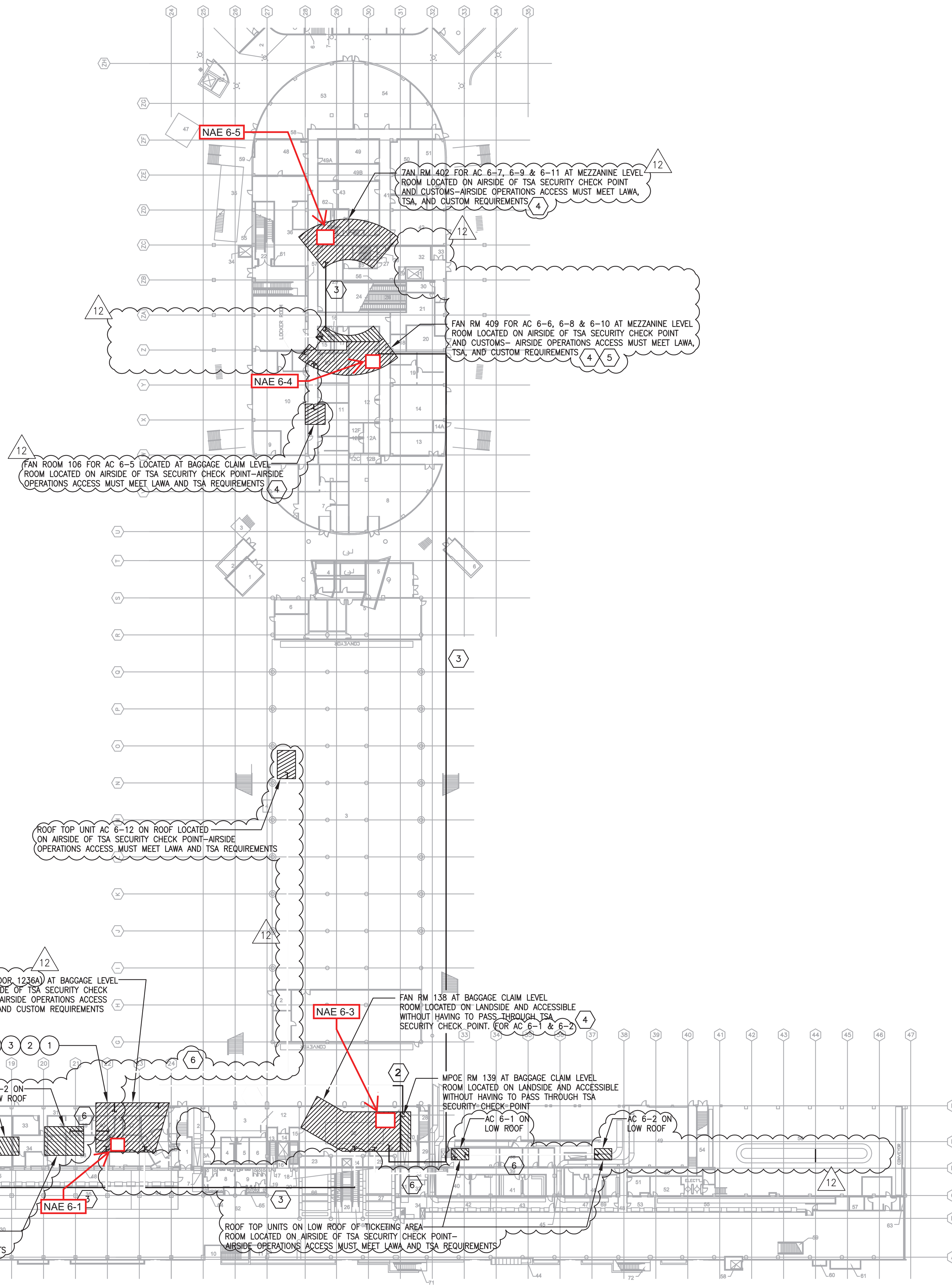
4-1: Pump Rm 128  
4-2: Mech Rm 4219  
4-3: Mech Rm 4115  
4-4: Mech Rm 406  
4-5: Sat Roof Mech Rm



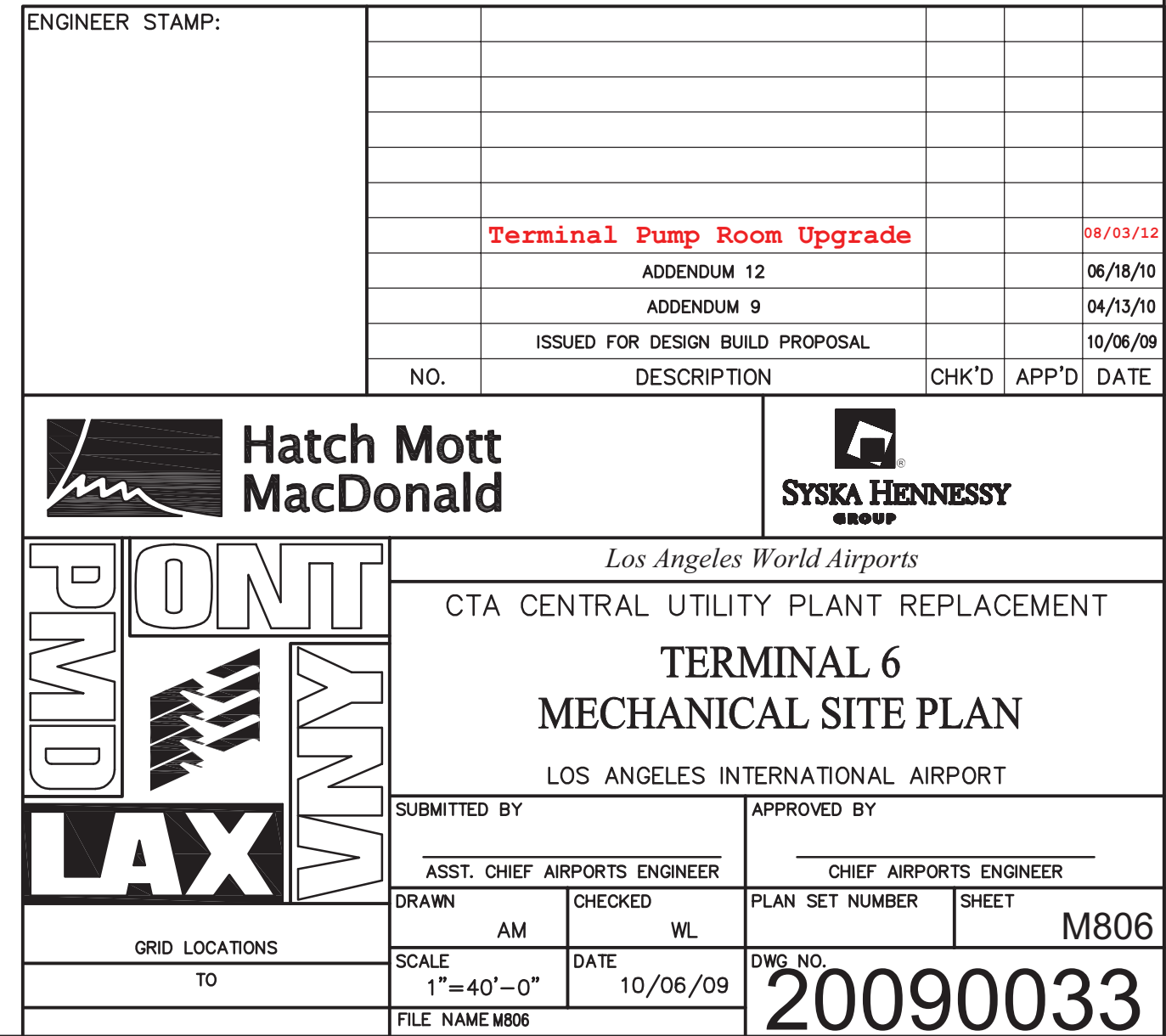




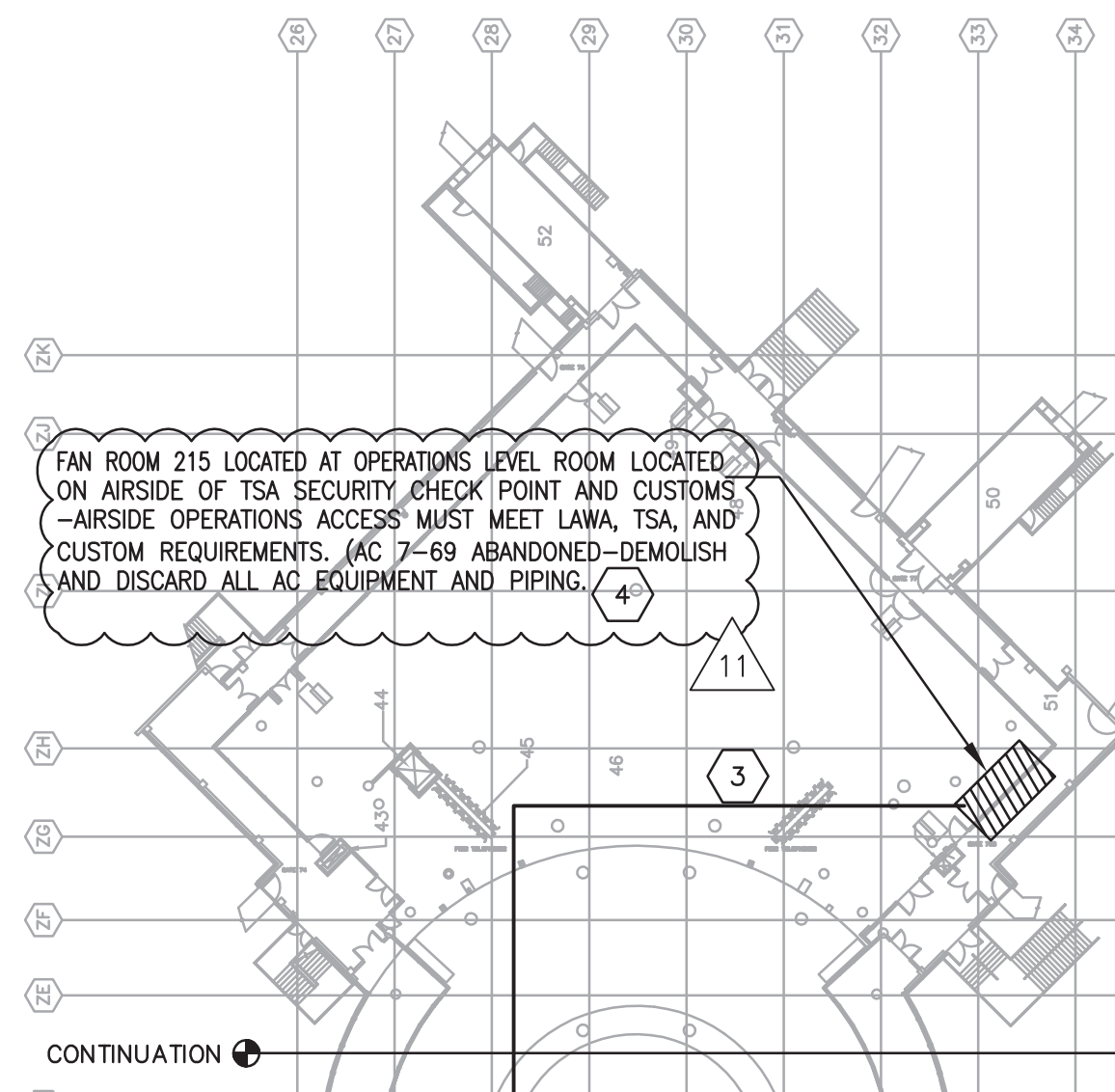




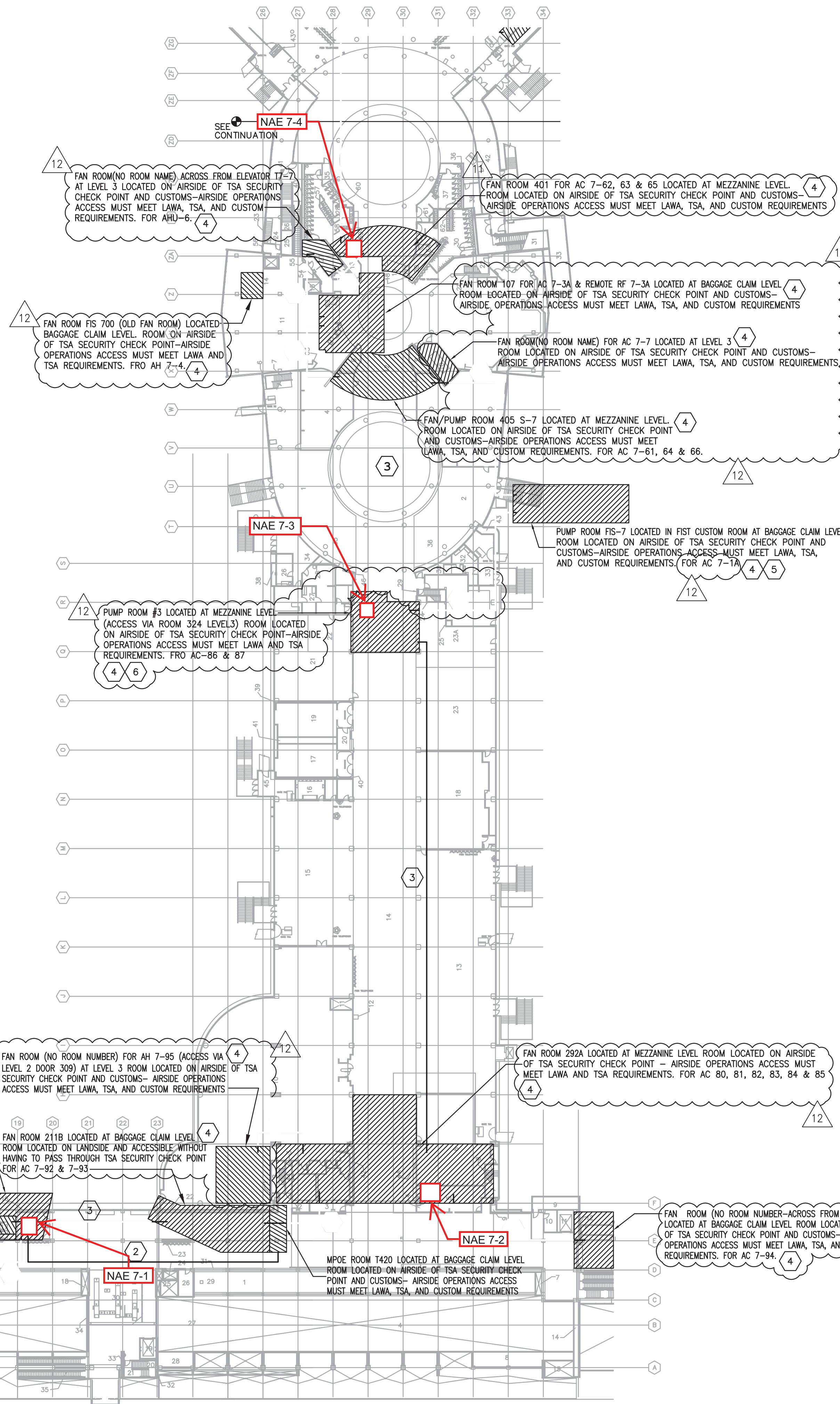
6-1: Pump Rm 917  
6-2: Mech Rm 286  
6-3: Mech Rm 138  
6-4: Mech Rm 409  
6-5: Mech Rm 402



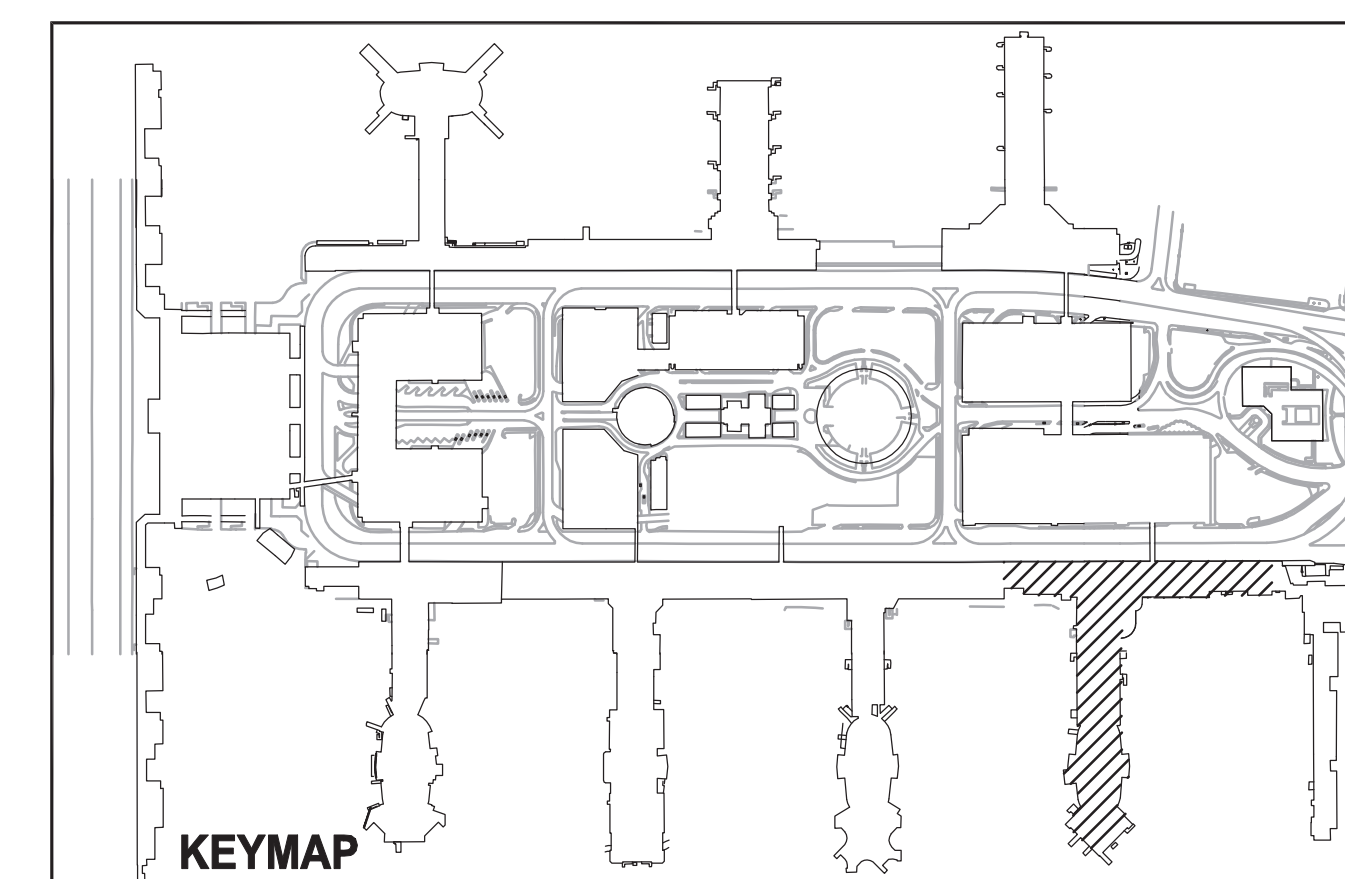




CONTINUATION 4



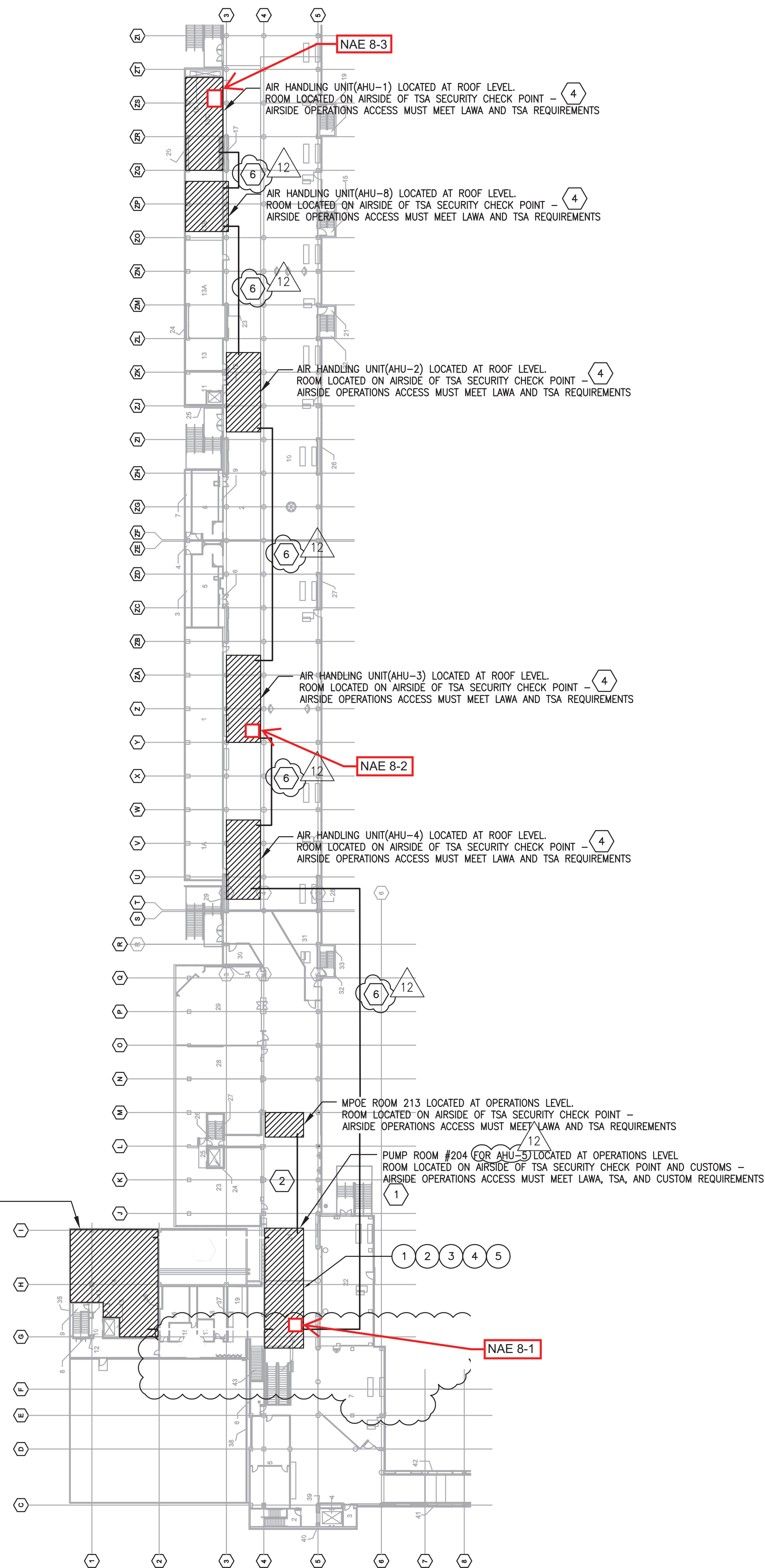
7-1: Pump Rm 2E67  
7-2: Mech Rm 292A  
7-3: Pump Rm #3  
7-4: Mech Rm 401

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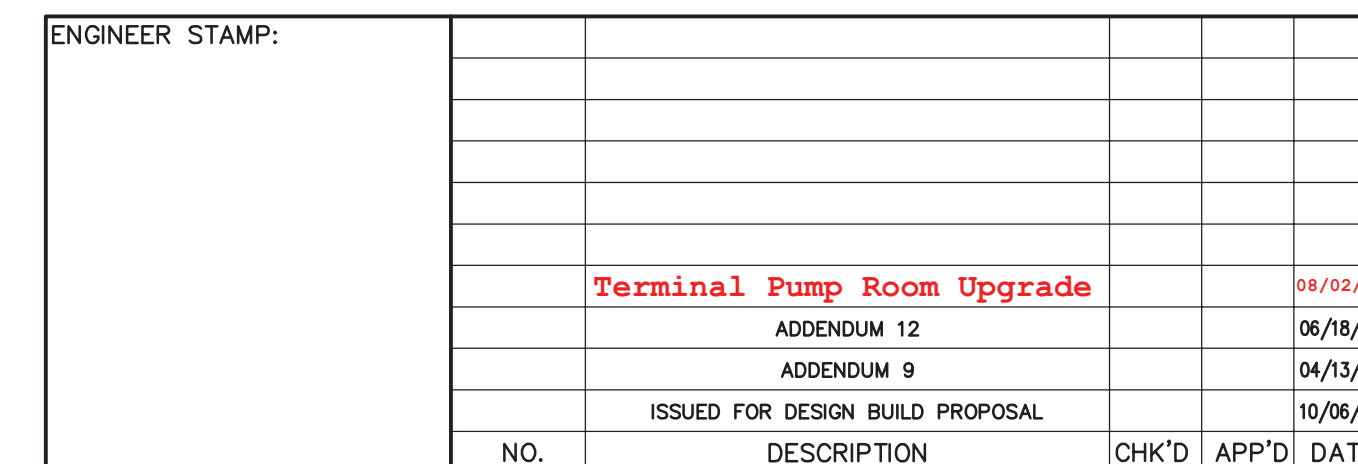
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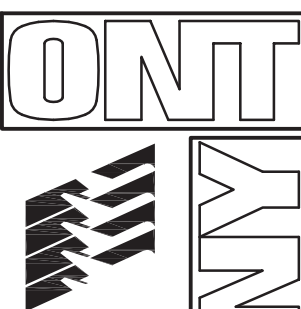

NOTE: THE DRAWINGS EXCEPT PROJECT CRITERIA AND A PRELIMINARY DESIGN CONCEPT FOR DEVELOPED BY THE PRIME DESIGN BUILD PROPOSER/CONTRACTOR. IT IS INTENDED THAT THE PRIME DESIGN BUILD PROPOSER/CONTRACTOR BEGIN THEIR DESIGN EFFORTS FROM THIS INITIAL BASIS. AS SUCH, THE PRIME DESIGN BUILD PROPOSER/CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFIRMING ALL EXISTING CONDITIONS AND DEVELOPING THE FINAL DESIGN IN CONFORMANCE WITH PROJECT CRITERIA, CONTRACT REQUIREMENTS AND APPLICABLE CODES AND ORDINANCES. LWA PROVIDES NO WARRANTY, EXPRESSED OR IMPLIED, THAT THE PRELIMINARY DESIGN CONCEPTS SHOWN HEREIN WILL MEET PROJECT REQUIREMENTS WITHOUT MODIFICATION, INCLUDING WITHOUT LIMITATION ANY FINANCIAL, TECHNICAL OR PERFORMANCE REQUIREMENTS OF ANY WHICH ARE NOT IN THE PROJECT REQUIREMENTS LISTING SOLELY WITH PRIME DESIGN BUILD PROPOSER/CONTRACTOR.

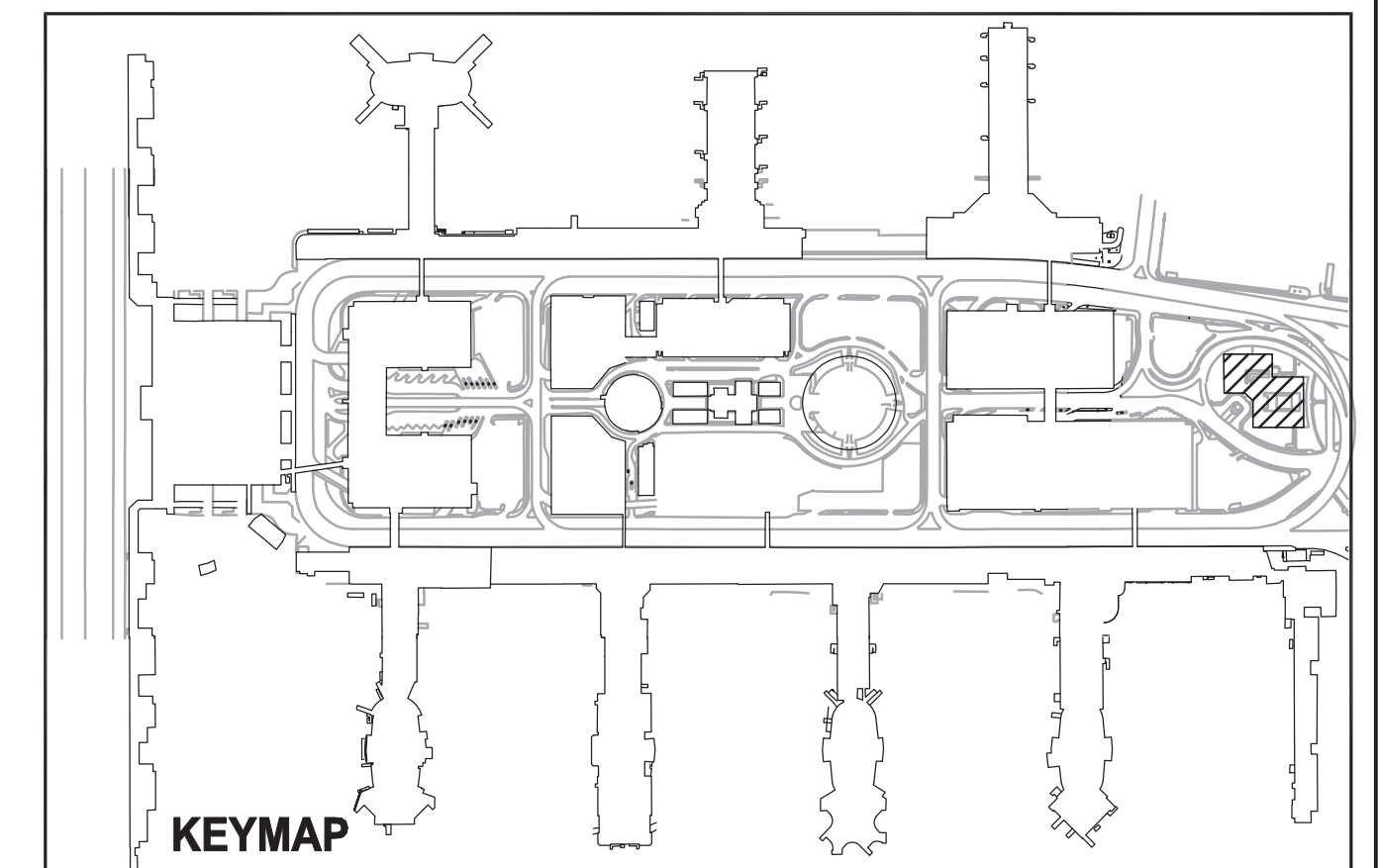
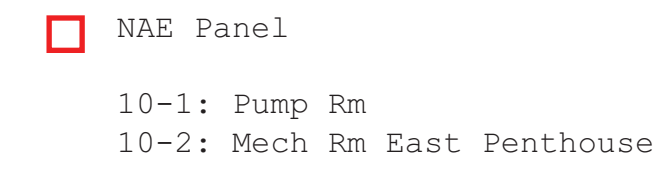







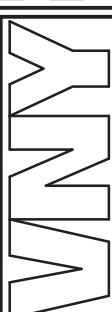


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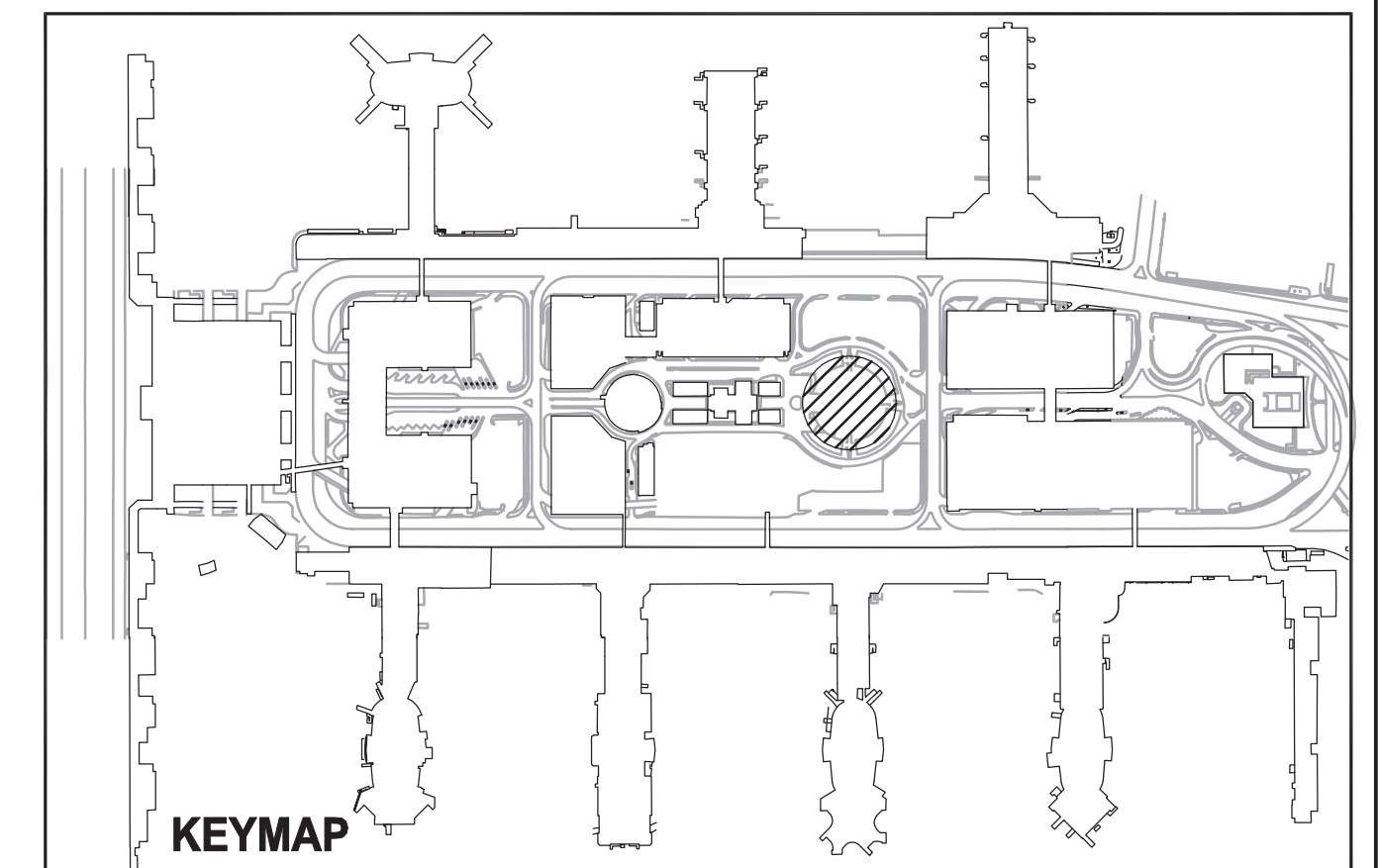
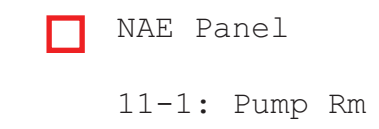







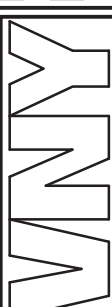
 <b>Hatch Mott MacDonald</b>		 <b>SYSKA HENNESSY GROUP</b>	
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TO			

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 <b>Hatch Mott MacDonald</b>		 <b>PSS</b> <b>SKANSKA</b> <b>GROUP</b>	
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 		<b>SUBMITTED BY</b>  <b>ASST. CHIEF AIRPORTS ENGINEER</b>	
<b>GRID LOCATIONS</b>  <b>TO</b>		<b>DRAWN</b>  <b>AM</b>	<b>CHECKED</b>  <b>WL</b>
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