

**ADDENDUM NUMBER NINE**  
**MBWWTP CONTROL ROOM UPGRADES**  
**W-15-009-201**  
**CITY OF CHATTANOOGA, TENNESSEE**

The following changes shall be made to the Contract Documents and Specifications:

**I. CONTRACT DOCUMENT**

- Add the following to Section 40 61 13, Paragraph 1.01 I:
  1. Provide screen modifications per Section 40 96 35 Appendix A during the HMI screen conversion to Wonderware InTouch.
- Add the following to Section 40 61 13, Paragraph 1.01:
  - V. Relocate the existing control room cabinet CP-6 with the remote site Motorola communications and control equipment as shown on Drawing E-3.
    1. The Contractor shall be Motorola certified to perform this scope of work.
  - W. Relocate the following equipment from the existing control room cabinets that are to be removed as shown on Drawing E-3 to a location where space allows in a control room cabinet that is to remain.
    1. Relocate the circuit breaker panel from existing panel CP-5 to panel CP-3.
    2. Relocate the fiber optic network equipment from existing panel CP-5 to panel CP-2.
    3. Relocate the fiber optic video surveillance equipment from existing panel CP-4 to panel CP-2.
  - X. Provide, install, and configure software for SCADA HMI screen and PLC program audit and tracking per Specification Section 40 68 00.

- Revise the table in Section 40 62 00, Paragraph 3.02 A, to the following:

	MS Windows Server	HMI Developer	HMI Server Runtime w/ specified options	HMI I/O Drivers	HMI Client Runtime	Historian software	Reporting software	Reporting Software Client	MS Windows	MS Office	Alarm dialer software	Programming Software	Graphics Controller Software	Graphics Control Client	Web Server Software	Audit Tracking Software
WS-DEV		◆						◆	◆	◆		◆				◆
WS-A1					◆			◆	◆	◆				◆		
WS-A2					◆			◆	◆	◆				◆		
WS-A3					◆			◆	◆	◆				◆		
WS-B1					◆			◆	◆	◆				◆		
WS-B2					◆			◆	◆	◆				◆		
WS-B3					◆			◆	◆	◆				◆		
GDC-A					◆				◆	◆			◆			
GDC-B					◆				◆	◆			◆			
SCADA SVR1	◆		◆	◆						◆	◆				◆	
SCADA SVR2	◆		◆	◆						◆	◆				◆	
HIST SVR	◆					◆	◆			◆						

- Revise Section 40 68 00, Paragraph 2.01 C.1 to the following:

1. OLE for Process Control (OPC). The HMI software shall be both an OPC client for communicating to any OPC compliant server as well as an OPC server to serve data to any OPC compliant client.

- Revise Section 40 68 00, Paragraph 2.03 B.1 to the following:

1. Data shall be directly stored in a standard enterprise database management system (DBMS). Data shall be directly stored in the DBMS, i.e., not passed through systems such as Microsoft Access and linked via ODBC or other mechanism into the DBMS. To insure stable operation of the network, the architecture shall incorporate native utilization of the enterprise database platform including stored procedures, triggers, and tuned indexes for your facility.

- Revise Section 40 68 00, Paragraph 2.04 A.1 to the following:
  1. Reporting software shall be a separate software package from the HMI. It shall run on the Historical Server.
- Revise Section 40 68 00, Paragraph 2.05 A.2 to the following:
  2. The remote access software shall be licensed to allow at least 25 concurrent users.
- Add the following to Section 40 68 00:

## 2.06 AUDIT TRACKING SOFTWARE

### A. General

1. The audit tracking software shall be added to the development workstation to track revisions of all HMI screens, HMI database files, HMI reports, and all PLC programs.
  2. The audit tracking software shall automatically archive older versions and provide the capability to select an older file to make it the current active file.
  3. The audit tracking software shall time stamp document modifications and require audit trail comments by the operator when updating current active files.
- Add the following to Section 40 96 35, Paragraph 1.01 B.10 a:
    - 1) Provide screen modifications per Section 40 96 35 Appendix A during the HMI screen conversion to Wonderware InTouch.
  - Add the following to Section 40 96 35, Paragraph 1.01 B.10 b:
    - 1) Provide an RTU Communications Link Diagnostics Tool for Information from each remote site RTU including:
      - a) Link data based off of the Motorola MDLC protocol directly from the RTU internal diagnostics. It will not be created within the HMI application or based on programming at the frontend processors.
      - b) Provide this link data in actual RTU tables.
      - c) Display link data in SCADA screens to include:
        - i. Number of transmit frames
        - ii. Number of received frames
        - iii. Number of retry frames
        - iv. Calculated % of entries
      - d) Provide Radio Diagnostic Reports for each RTU based on the above link data.
      - e) Automatically highlight a site if the number of retries exceed a user defined percentage in a Monthly Report.
      - f) Provide the ability to specify the dates of the report.
    - 2) Provide the following RTU battery diagnostics information on SCADA screens for each RTU:
      - a) Battery fail alarm
      - b) Battery charge level

- c) Battery internal temperature
  - d) Notification of alarm from HMI
- Replace Section 40 96 35, Paragraph 1.01 B.11 and 12 with the following:
  - 11. Provide, install, and configure software for SCADA HMI screen and PLC program audit and tracking per Specification Section 40 68 00.
  - 12. Provide PLC Program Development for the following:
    - a. Convert 3 existing PLC programs from existing 90-70 processors to RX3i processors. Provide testing per Section 40 61 21.
  - 13. Backfill historical database from existing electronic databases.
- Revise Section 40 96 35, Paragraph 1.03 F.1 d to the following:
  - d. Description of methodology for entering manual data and interface used.
- Add the attached Appendix A *Moccasin Bend WWTP O&C SCADA Upgrade General Requirements* to Section 40 96 35.

## II. PLAN SHEET REVISIONS

- Delete Plan Sheets A-2, A-4, A-5, A-6, A-7, A-8, AD-1, and AD-2 in their entirety and replace with the attached Sheets A-2, A-4, A-5, A-6, A-7, A-8, AD-1, and AD-2.
- Delete Plan Sheet H-3 in its entirety and replace with the attached Sheet H-3.
- Delete Plan Sheets E-3, E-4, and E-5 in their entirety and replace with the attached Sheets E-3, E-4, and E-5.

September 18, 2017

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Justin C Holland, Administrator  
City of Chattanooga



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CREATED: 9/8/2017  
LAST SAVED: 9/13/2017  
BY: SEWSANKERAA  
PLOT DATE: 9/14/2017

## BUILDING CODE KEY DETERMINATIONS

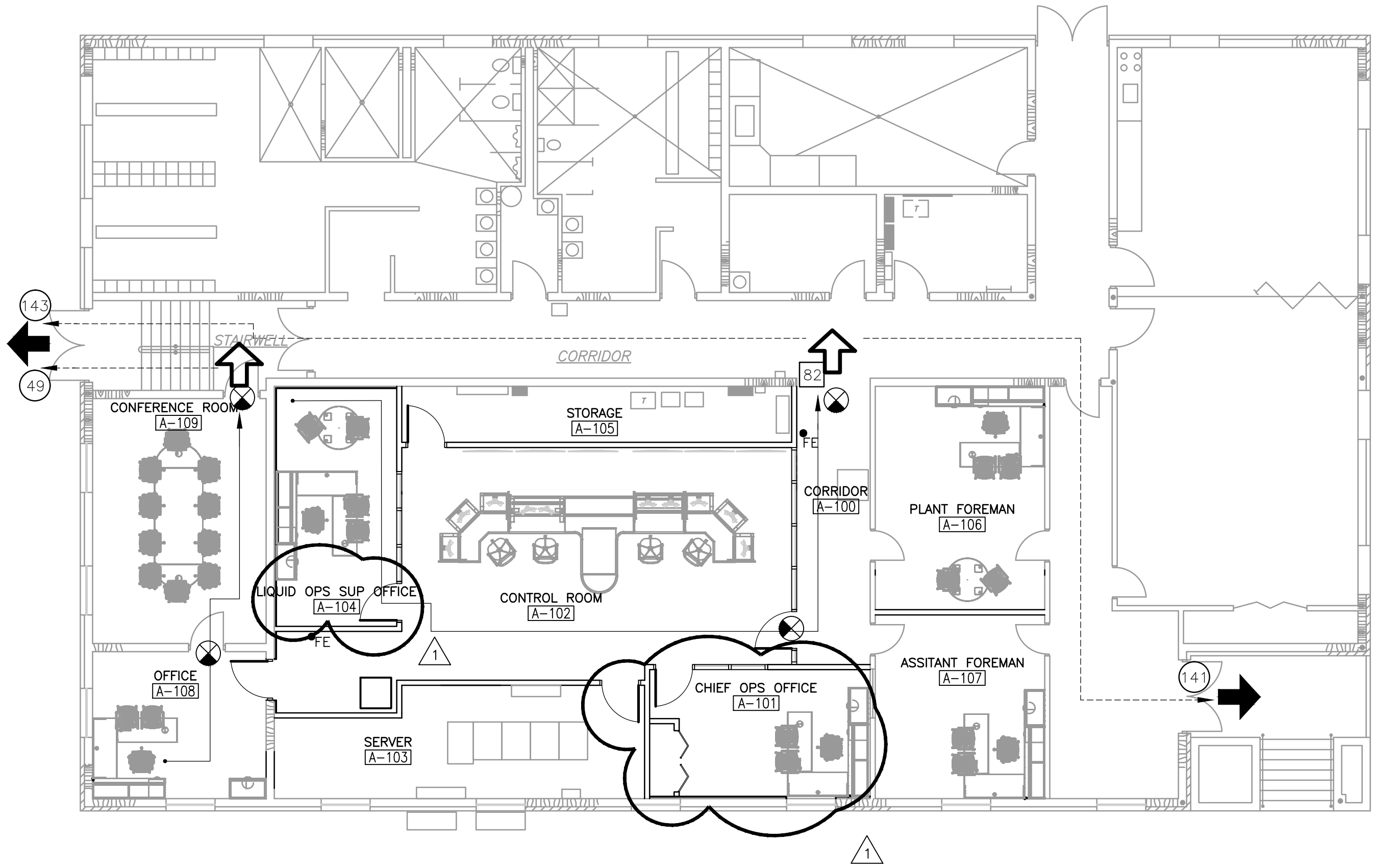
APPLICABLE CODES	2012 INTERNATIONAL EXISTING BUILDING CODE 2012 INTERNATIONAL BUILDING CODE 2012 INTERNATIONAL FIRE CODE WITH LOCAL AMENDMENTS		
<u>CONTROL ROOM UPGRADES</u>			
CLASSIFICATION OF WORK EXISTING BUILDING CODE CHAPTER 4	LEVEL 2 ALTERATION RECONFIGURATION OF SPACE, RELOCATION OF DOOR, INSTALLATION OF EQUIPMENT		
BUILDING CLASSIFICATION OCCUPANCY CONSTRUCTION	ASSUMED GROUP B, BUSINESS (NO CHANGE) TYPE II-B (NO CHANGE)		
BUILDING HEIGHTS AND AREAS	NO CHANGE IN HEIGHT OR AREA OF BUILDING		
OCCUPANT LOAD SECTION 1004.1 (EXCEPTION)	AREA/100 SF PER OCCUPANT = 22 OCCUPANTS*		
EXITS PER SPACE TABLE 1015.1	REQUIRED	1	ACTUAL 1
MAX TRAVEL DISTANCE TABLE 1016.2	MAXIMUM	200 FT	ACTUAL 143 FT
FIRE SEPARATION DISTANCE FIRE RESISTANCE RATING	NO CHANGE		
STAIRS	NO CHANGE TO EXIT STAIRS		
RAMPS	N/A		
SPRINKLERS REQUIRED	NO		
* OCCUPANT LOAD CALCULATED FOR WORK AREA ONLY			

## LIFE SAFETY PLAN LEGEND

	EXIT DISCHARGE (EXISTING)
	AREA OR SPACE EXIT
	PATH OF TRAVEL
	UNALTERED PATH OF TRAVEL
	TRAVEL DISTANCE (FEET)
	COMMON PATH OF TRAVEL (FEET)
	FIRE EXTINGUISHER
	EXIT SIGNS

## GENERAL NOTES

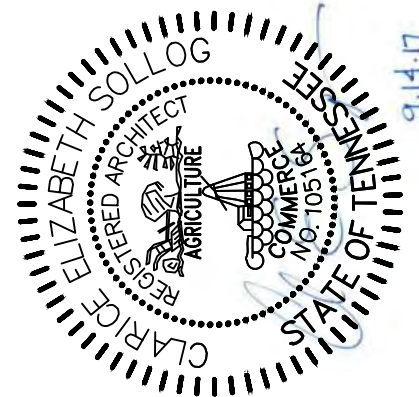
FOR GENERAL NOTES, GENERAL DEMOLITION NOTES,  
SEE SHEET A-1



CONTROL ROOM LIFE SAFETY  
PLAN  
1/8" = 1'-0"



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MBWWTP  
CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



REV	DATE	REVISION DESCRIPTION
1	9/17	ADDENDUM NO. 9

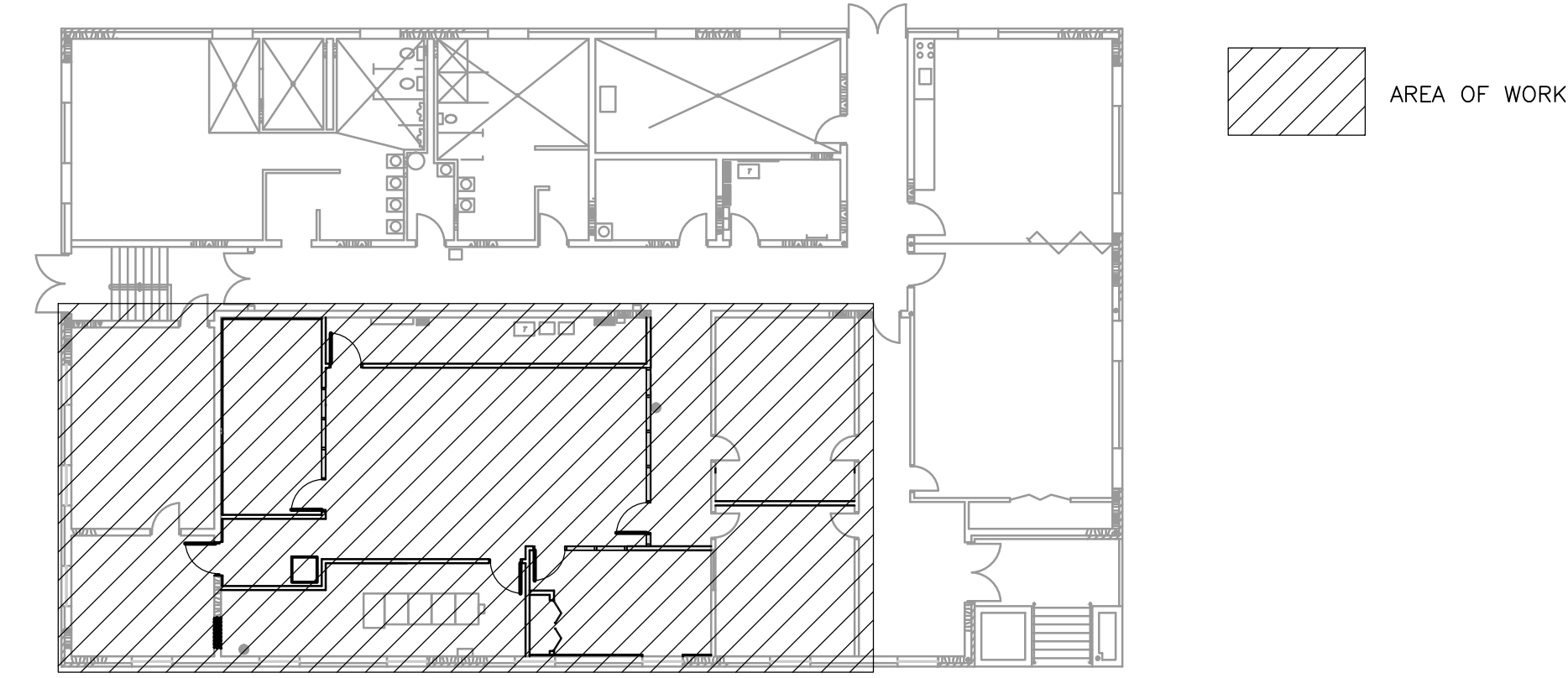
THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE		
THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS.		
PROJECT NO: W-15-009-201		
DATE: MAY 2017		
DISC. LEAD: CES	DESIGNER: AAS	CHECKER: MTA
SHEET TITLE ARCHITECTURAL		
BUILDING CODE KEY DETERMINATIONS AND LIFE SAFETY PLAN		

SHEET  
A-2

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## KEY PLAN



## MODIFICATION PLAN LEGEND

----- EXTENTS OF NEW RAISED ACCESS FLOORING



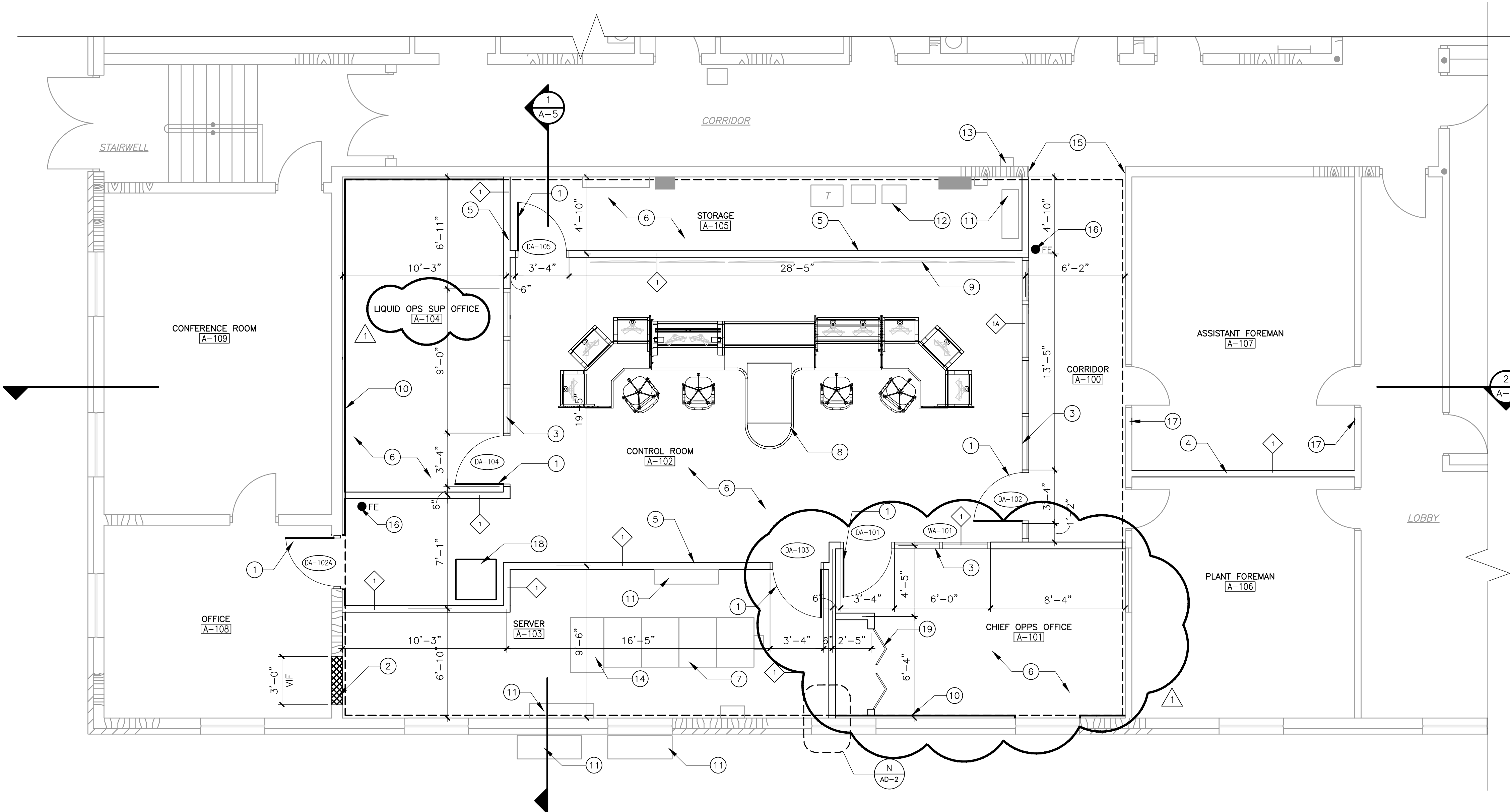
## GENERAL NOTES

FOR GENERAL NOTES, GENERAL DEMOLITION NOTES, SEE SHEET A-1

SEE SHEET A-5 FOR CMU INFILL SPECIFICATION REQUIREMENTS.

SEE SHEET A-6 FOR FURNITURE PLAN.

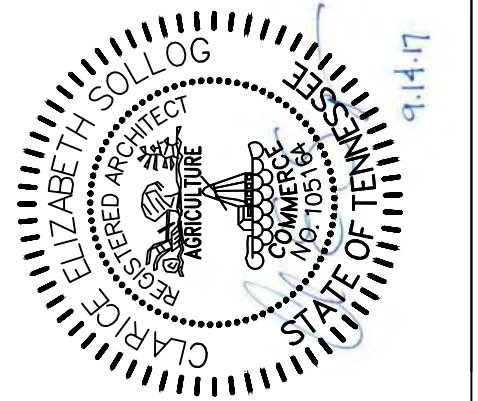
- 1 NEW WOOD DOOR AND HM FRAME  
SEE SCHD
- 2 INFILL EXISTING DOOR OPENING WITH 8" CMU BLOCK FINISH TO MATCH ADJACENT WALLS. ATTACH NEW CMU TO EXISTING CMU WITH...
- 3 NEW HM STOREFRONT SYSTEM
- 4 NEW STUD WALL, PATCH AND REPAIR ADJACENT WALLS AS NECESSARY. EXTEND WALL TO UNDERSIDE OF ROOF DECK.
- 5 NEW STUD WALL, TYP. EXTEND WALL TO UNDERSIDE OF DECK.
- 6 NEW RAISED ACCESS FLOORING SYSTEM. DASHED LINE REPRESENT EXTENTS OF NEW RAISED ACCESS FLOOR SYSTEM. SEE DETAILS SHEET AD-1.
- 7 EXISTING SERVER CABINETS TO REMAIN
- 8 NEW CONTROL CONSOLE FURNITURE
- 9 WALL MOUNTED DISPLAY SCREENS, TYP OF 6 SEE "E" DWGS
- 10 8" GYP BOARD OVER 1 1/2" METAL FURRING STRIPS. TYP OF ALL EXISTING CMU WALLS IN NEW OFFICES ONLY.
- 11 HVAC EQUIP, SEE "H" DWGS
- 12 ELEC EQUIP, SEE "E" DWGS
- 13 RELOCATED TIME CLOCK.
- 14 RELOCATED SERVER PACK, SEE "E" DWGS
- 15 PATCH AND REPAIR CMU WALLS AS NEEDED FROM EXISTING DOOR AND FRAME. REMOVAL. PAINT TO MATCH ADJACENT WALLS.
- 16 REINSTALL STORED FIRE EXTINGUISHERS.
- 17 PATCH AND REPAIR WALL TO MATCH ADJACENT WALLS. PAINT WALLS CORNER TO CORNER.
- 18 RELOCATED COPIER.
- 19 WOOD BI-FOLD CLOSET DOOR.



## CONTROL ROOM CONSTRUCTION

### PLAN

1/4" = 1'-0"



MBWWTP  
CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



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1	9/17	ADDENDUM NO. 9

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PROJECT NO: W-15-009-201

DATE: MAY 2017

DISC. LEAD:	DESIGNER:	CHECKER:
CES	AAS	MTA

SHEET TITLE  
ARCHITECTURAL

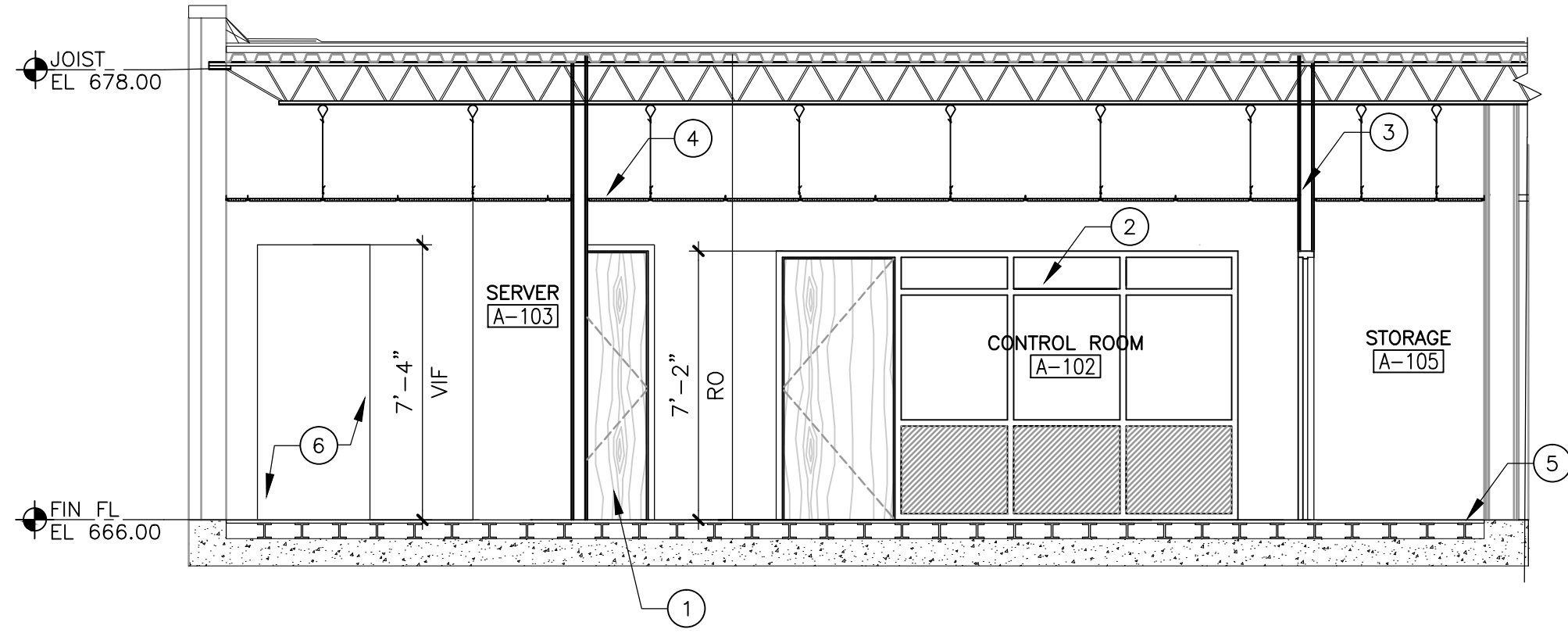
CONTROL ROOM  
MODIFICATIONS PLAN

SHEET  
A-4

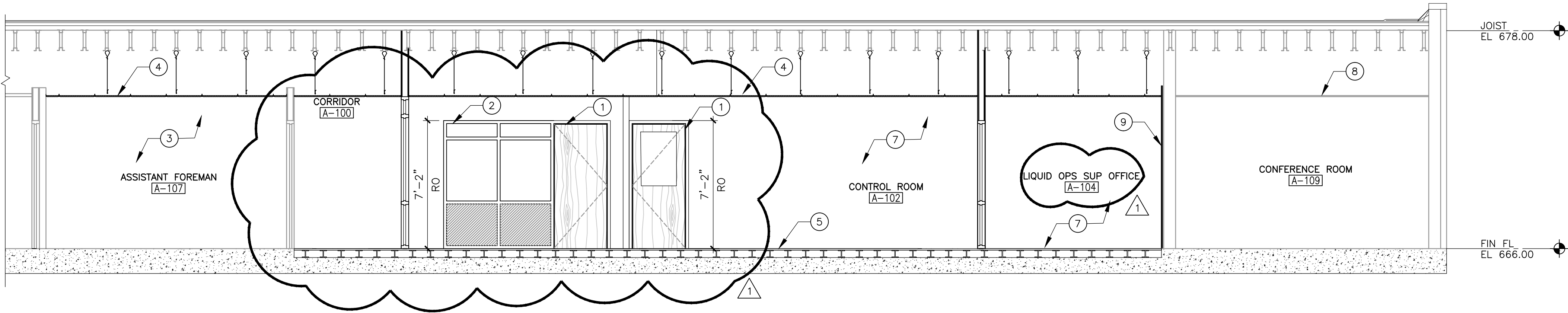
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BUILDING  
SECTION 1  
1/4" = 1'-0"



BUILDING  
SECTION 2  
1/4" = 1'-0"

## GENERAL NOTES

FOR GENERAL NOTES, GENERAL DEMOLITION NOTES,  
SEE SHEET A-1

EQUIPMENT AND FURNITURE NOT SHOWN FOR CLARITY.

- 1 NEW WOOD DOOR AND HM FRAME,  
SEE SCHD
- 2 NEW HM STOREFRONT SYSTEM, SEE SCHD
- 3 NEW STUD WALL, PATCH AND REPAIR  
ADJACENT WALLS AS NECESSARY
- 4 NEW ACOUSTICAL TILE CEILING, TYP
- 5 NEW RAISED ACCESS FLOORING SYSTEM, TYP
- 6 CMU INFILLED OPENING. PATCH AND REPAIR  
ADJACENT WALLS AS NECESSARY
- 7 PAINTED GYPSUM BOARD, TYP
- 8 EXISTING ACOUSTICAL TILE CEILING TO REMAIN.
- 9 PAINTED GYPSUM BOARD OVER METAL FURRING  
STRIPS ON EXISTING CMU WALL

## MASONRY SPECIFICATION

### 1.01 MASONRY UNITS, GENERAL

A. DEFECTIVE UNITS: REFERENCED MASONRY UNIT STANDARDS MAY ALLOW A CERTAIN PERCENTAGE OF UNITS TO CONTAIN CHIPS, CRACKS, OR OTHER DEFECTS EXCEEDING LIMITS STATED IN THE STANDARD. DO NOT USE UNITS WHERE SUCH DEFECTS WILL BE EXPOSED IN THE COMPLETED WORK.

### 1.02 CONCRETE MASONRY UNITS (CMUS)

A. CMU'S: ASTM C 90.

1. UNIT COMPRESSIVE STRENGTH: PROVIDE UNITS WITH MINIMUM AVERAGE NET-AREA COMPRESSIVE STRENGTH OF 2800 PSI.
2. DENSITY CLASSIFICATION: NORMAL WEIGHT, UNLESS OTHERWISE INDICATED.
3. SIZE (WIDTH): MANUFACTURED TO DIMENSIONS 3/8 INCH LESS THAN NOMINAL DIMENSIONS.

A. HOLLOW LOAD BEARING UNITS: 8" X 8" X 16"

4. WATER ABSORPTION SHALL NOT EXCEED 10 LB /CUFT (AVERAGE OF 3 UNITS) WHEN TESTED IN ACCORDANCE WITH ASTM C140.

5. MOISTURE CONTENT AT TIME OF DELIVERY SHALL NOT EXCEED 35 PERCENT OF TOTAL ABSORPTION. UNITS SHALL BE AIR CURED IN STORAGE FOR NOT LESS THAN 28 DAYS BEFORE DELIVERY.

### 1.01 MORTAR AND GROUT MATERIALS

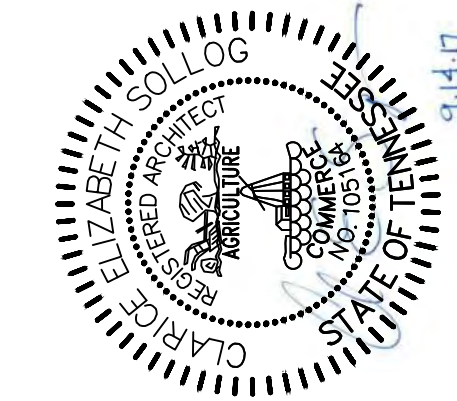
A. PORTLAND CEMENT-LIME MIX: PACKAGED BLEND OF PORTLAND CEMENT COMPLYING WITH ASTM C 150, TYPE I OR TYPE III, AND HYDRATED LIME COMPLYING WITH ASTM C 207, TYPE S.

B. AGGREGATE FOR MORTAR: ASTM C 144.

C. AGGREGATE FOR GROUT: ASTM C 404.

D. WATER: POTABLE.

**CDM Smith**  
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MBWWTP  
CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



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1	9/17	ADDENDUM NO. 9

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PROJECT NO: W-15-009-201		
DATE: MAY 2017		
DISC. LEAD: CES	DESIGNER: AAS	CHECKER: MTA
SHEET TITLE ARCHITECTURAL		
CONTROL ROOM BUILDING SECTIONS		
SHEET	A-5	

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FURNITURE SCHEDULE			
ITEM NO.	QTY	MODEL NO.	DESCRIPTION
F-1	2	TS4WRND42	42" ROUND TABLE
F-2	14	120	GUEST CHAIR
F-3	5	TS5AEBR2460	24" X 60" WORKSURFACE
F-4	19	442A40V	ADJUSTABLE DESK CHAIR
F-5	5	TSFAEFR3060	30X 60" WORKSURFACE
F-6	5	TS5AES3072L	30" x 72" CREDENZA (LEFT HAND)
F-7	5	TS5AEOH72X	72" OVERHEAD STORAGE
F-8	5	TS5AESCL2	STORAGE CABINET WITH LATERAL FILE DRAWERS
F-9	1	TS5AETRE168	48" RECTANGULAR TABLE TOP
F-10	2	TS5AETST48	24" X 48" TABLE EXTENSION

FURNITURE BASIS OF DESIGN MANUFACTURER IS STEELCASE. OR EQUAL PRODUCTS FROM ANOTHER MANUFACTURER CAN BE SUBMITTED DURING SHOP SUBMITTAL REVIEW. ALL FURNITURE SHALL BE FROM A SINGLE MANUFACTURER.

NOTE:  
QUANTITIES, SIZES AND MODEL NUMBERS SHALL BE  
VERIFIED BY MANUFACTURERS REVIEW OF LAYOUT

CONSOLE SCHEDULE			
ITEM NO.	QTY	MODEL NO.	DESCRIPTION
C-1	2	PEWS48301	RECTANGULAR SIT/STAND WORKSURFACE
C-2	2	17601568	CORNER WORKSURFACE, SIT/STAND OPTIONAL
C-3	1	PPWS30721	PENINSULA WORKSURFACE
C-4	4	-	MONITOR MOUNTS AND SUPPORTS

CONSOLE BASIS OF DESIGN MANUFACTURER IS EATON. OR EQUAL PRODUCTS FROM ANOTHER MANUFACTURER CAN BE SUBMITTED DURING SHOP SUBMITTAL REVIEW. CONSOLE SHALL BE FROM A SINGLE MANUFACTURER AND COORDINATED WITH WORKSTATION REQUIREMENTS ON "I" DRAWINGS.

ONLY MAJOR CONSOLE COMPONENTS ARE IDENTIFIED FOR BASIS OF DESIGN. WALL PANELS, ACCESSORIES AND OTHER COMPONENTS TO BE PROVIDED IN ACCORDANCE TO MANUFACTURER DESIGN REQUIREMENTS.

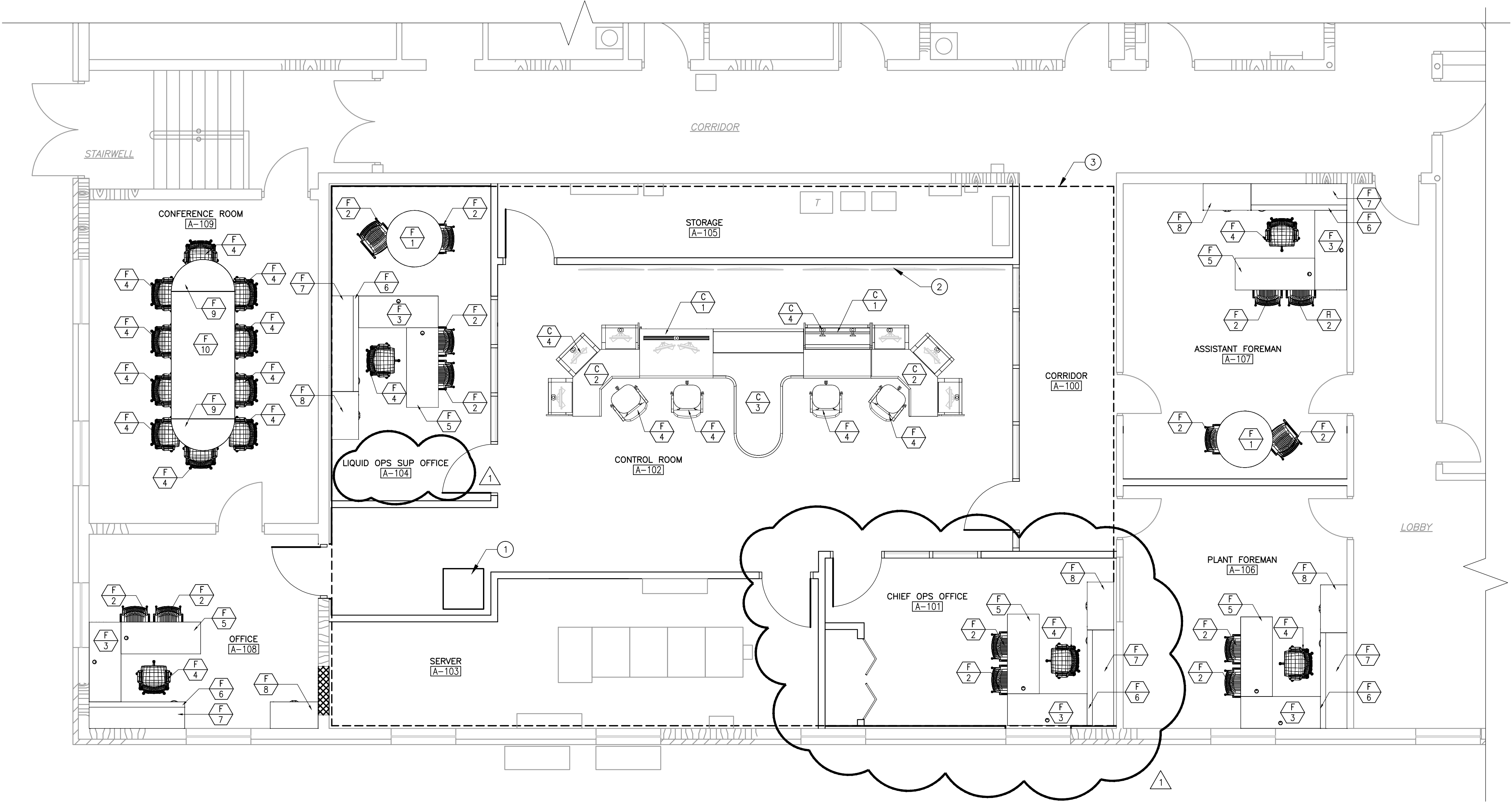


GENERAL NOTES

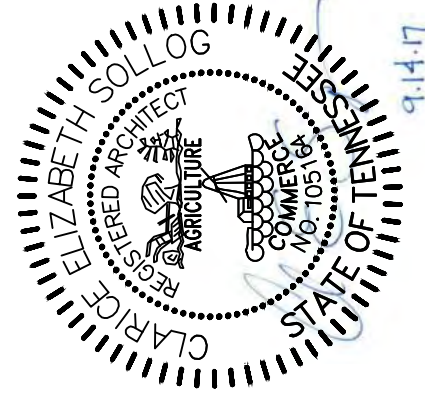
FOR GENERAL NOTES, GENERAL DEMOLITION NOTES,  
SEE SHEET A-1

SEE SPECIFICATION 12 59 90 FOR CONTROL CONSOLE  
REQUIREMENTS

- 1
- RELOCATED COPIER.
- 2
- WALL MOUNTED DISPLAY SCREENS, TYP OF 6  
SEE "E" DWGS.
- 3
- EXTENTS OF NEW RAISED ACCESS FLOOR.



CONTROL ROOM FURNITURE  
PLAN  
1/4" = 1'-0"



MBWWTP  
CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



REVISION DESCRIPTION		DATE	REV
ADDENDUM NO. 9			
1		9/17	1

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PROJECT NO: W-15-009-201

DATE: MAY 2017

DISC. LEAD: CES

DESIGNER: AAS

CHECKER: MTA

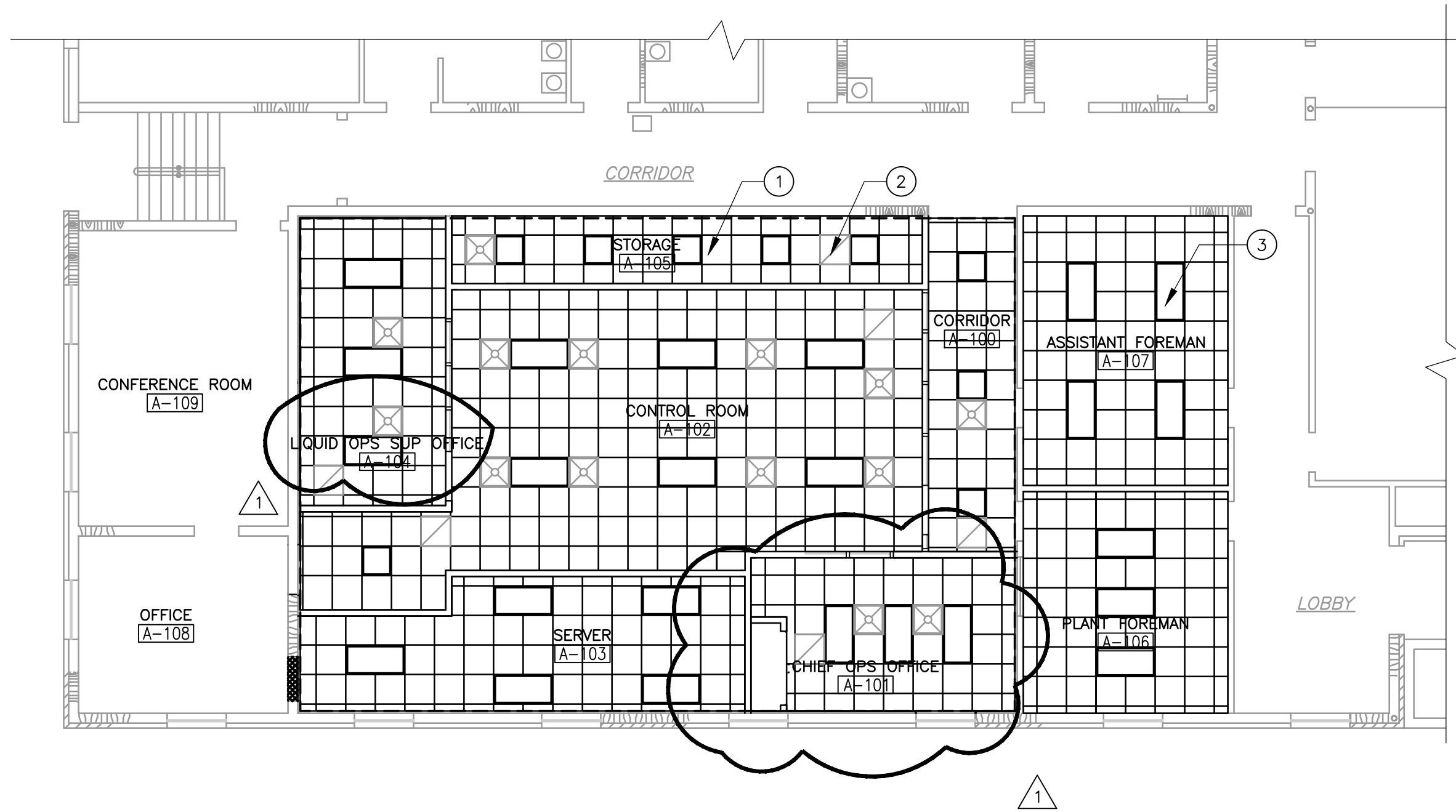
SHEET TITLE  
ARCHITECTURAL

CONTROL ROOM  
FURNITURE PLAN

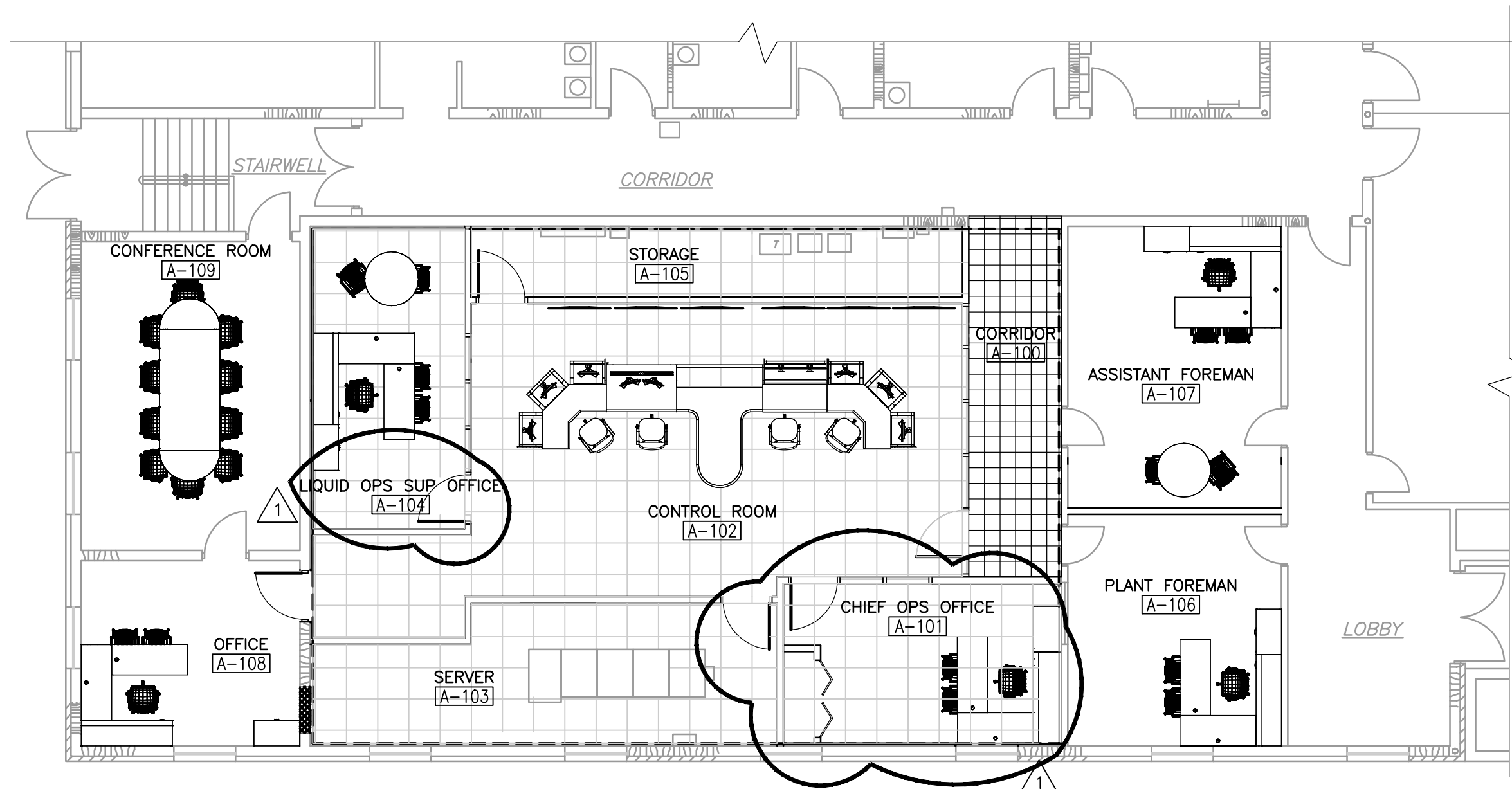
SHEET  
A-6



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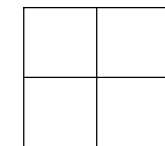
CONTROL ROOM REFLECTED CEILING  
PLAN  
1/4" = 1'-0"



CONTROL ROOM FINISH FLOOR  
PLAN  
1/4" = 1'-0"

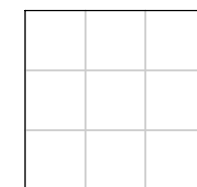
NOTE: EXISTING FLOOR FINISH TO REMAIN IN ALL OTHER ROOMS.  
CONTRACTOR TO REPAIR OR REPLACE ANY EXISTING FINISHES  
DAMAGED DURING CONSTRUCTION.

## REFLECTED CEILING PLAN

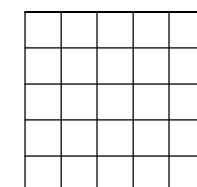


24" X 24" SUSPENDED ACOUSTICAL CEILING

## FLOOR FINISH LEGEND



24" X 24" HONED CONCRETE  
RAISED ACCESS FLOORING  
PANELS



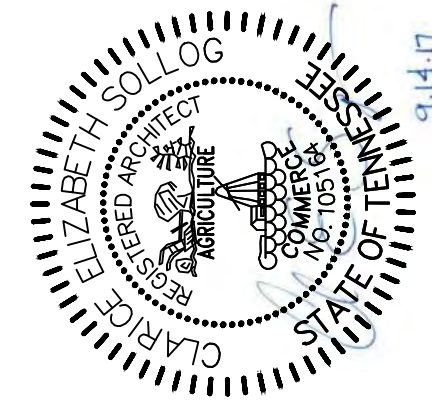
12" X 12" VCT FLOOR TILE  
OVER RAISED ACCESS  
FLOORING PANELS, MATCH  
EXISTING IN CORRIDOR

## GENERAL NOTES

FOR GENERAL NOTES, GENERAL DEMOLITION NOTES,  
SEE SHEET A-1

- 1 DIFFUSER, TYP. SEE "H" DWGS
- 2 RETURN, TYP. SEE "H" DWGS
- 3 LIGHT FIXTURE, TYP. SEE "E" DWGS

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CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



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PROJECT NO: W-15-009-201

DATE: MAY 2017

DISC. LEAD:	DESIGNER:	CHECKER:
CES	AAS	MTA

SHEET TITLE  
ARCHITECTURAL

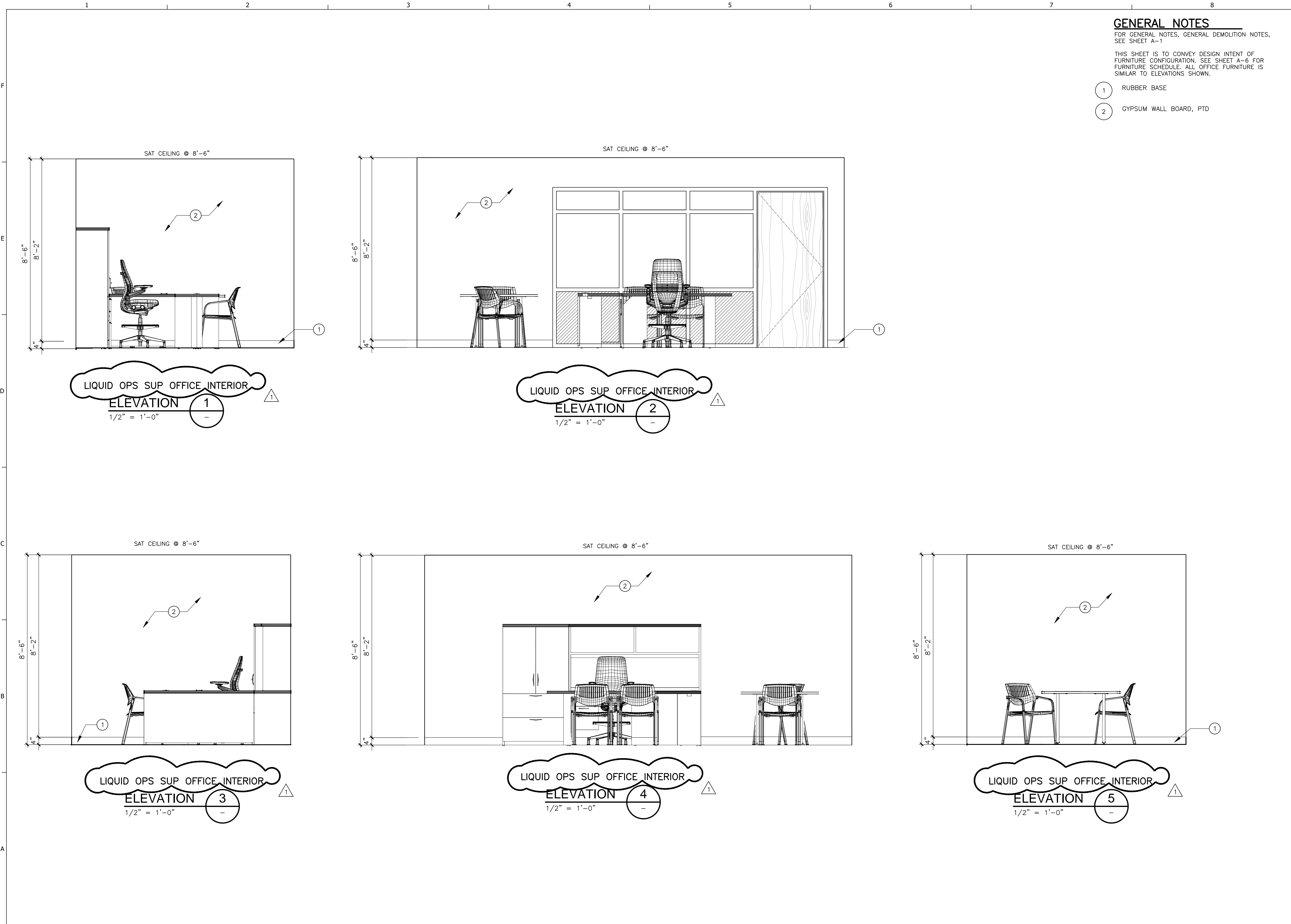
CONTROL ROOM  
REFLECTED CEILING PLAN  
AND FINISH FLOOR PLAN

SHEET

A-7

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**GENERAL NOTES**

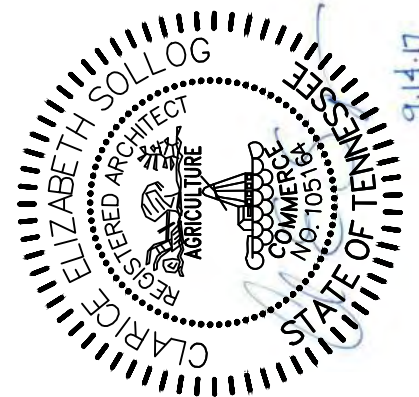
FOR GENERAL NOTES, GENERAL DEMOLITION NOTES, SEE SHEET A-1

THIS SHEET IS TO CONVEY DESIGN INTENT OF FURNITURE CONFIGURATION. SEE SHEET A-6 FOR FURNITURE SCHEDULE. ALL OFFICE FURNITURE IS SIMILAR TO ELEVATIONS SHOWN.

- 1 RUBBER BASE
- 2 GYPSUM WALL BOARD, PTD



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MBWWTP  
CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



REV	DATE	REVISION DESCRIPTION
1	9/17	ADDENDUM NO. 9

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PROJECT NO: W-15-009-201

DATE: MAY 2017

DISC. LEAD: CES DESIGNER: AAS CHECKER: MTA

SHEET TITLE  
ARCHITECTURAL

CONTROL ROOM  
INTERIOR ELEVATIONS

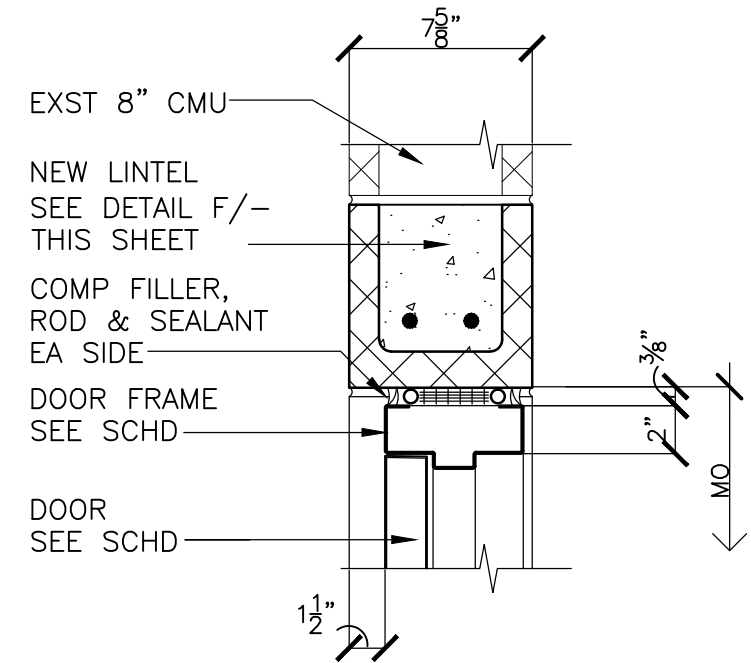
SHEET A-8



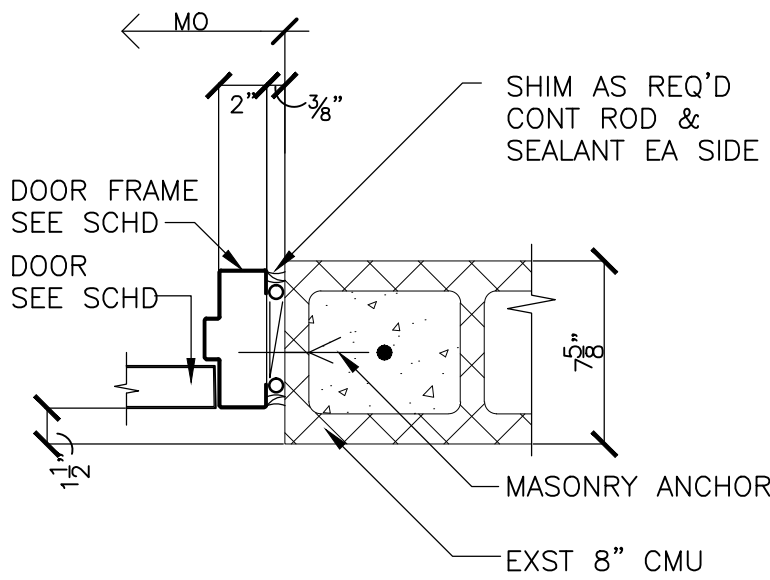




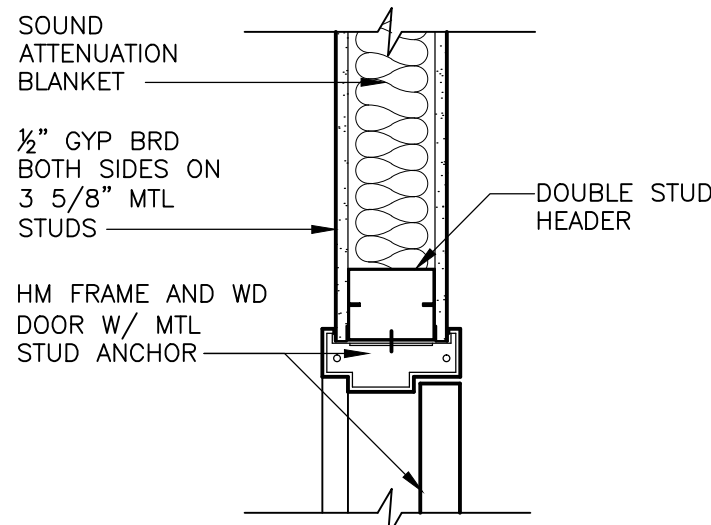
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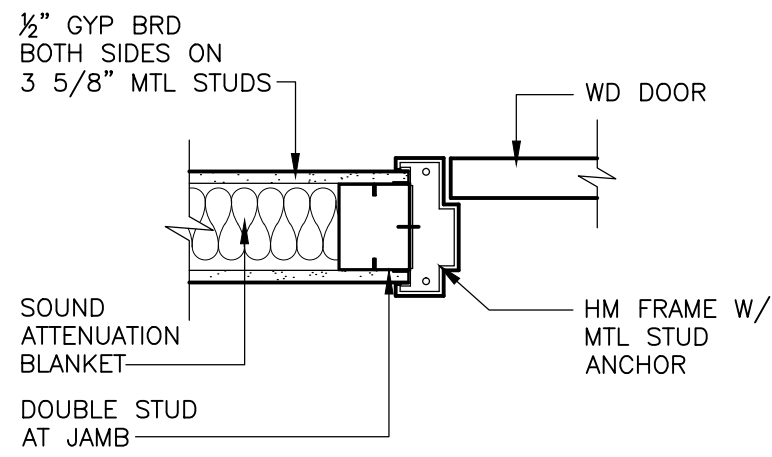
DOOR HEAD  
DETAIL A  
1 1/2" = 1'-0"



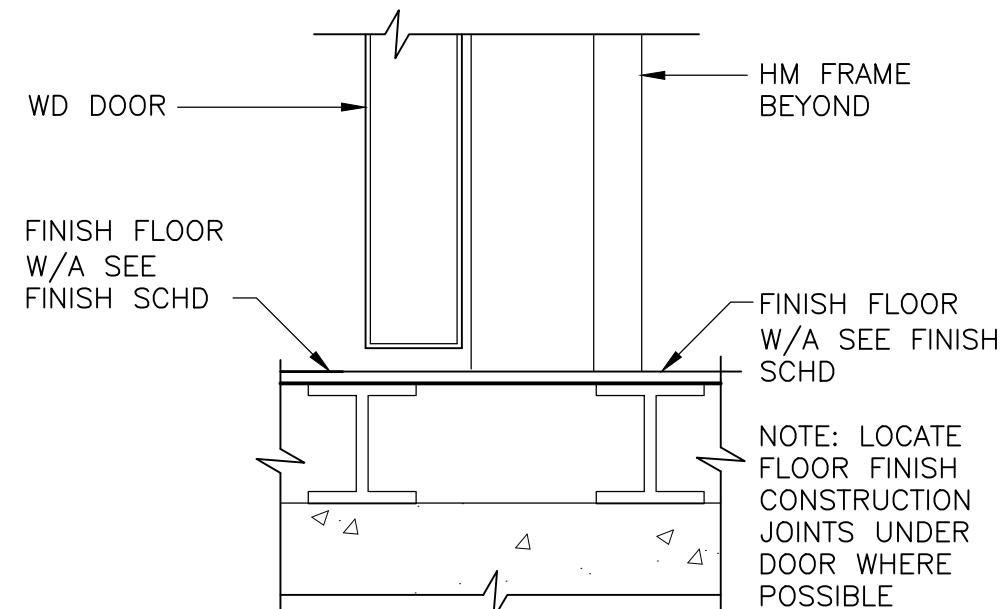
DOOR JAMB  
DETAIL B  
1 1/2" = 1'-0"



DOOR HEAD  
DETAIL C  
1 1/2" = 1'-0"



DOOR JAMB  
DETAIL D  
1 1/2" = 1'-0"

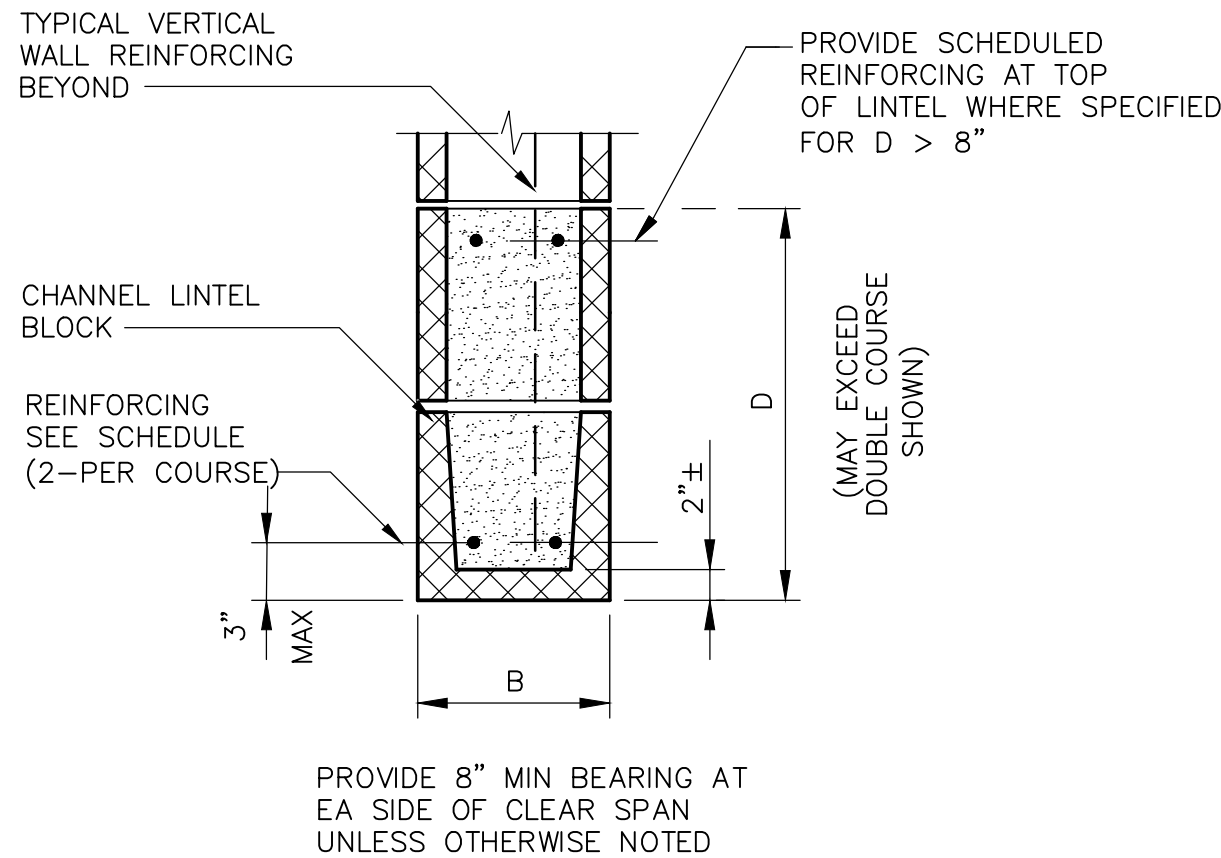


THRESHOLD  
DETAIL E  
1 1/2" = 1'-0"

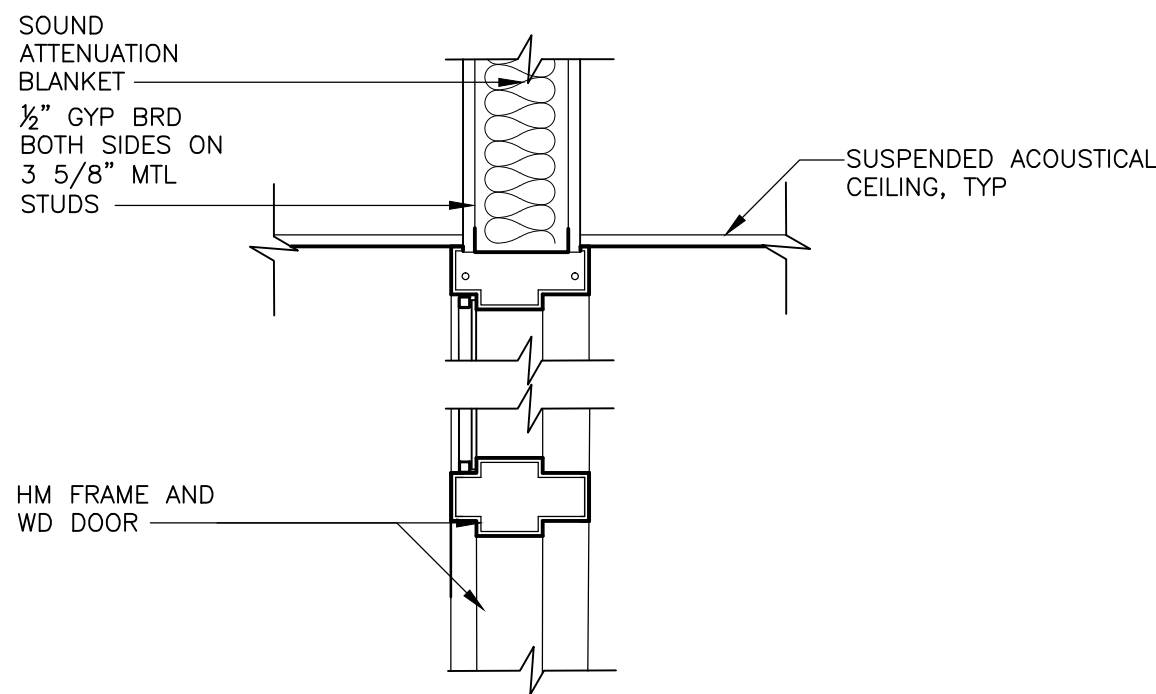
LINTEL ID	SPAN	MARK	B	D	REINF	STIRRUPS
L1	≤ 4'-0"		8"	8"	2-#5	-

NOTES:

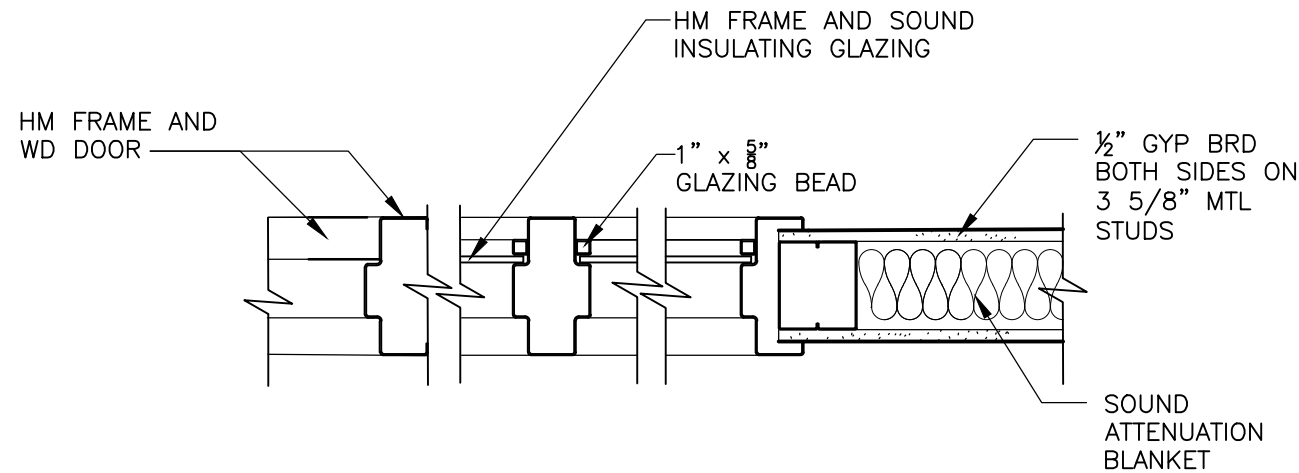
1. PROVIDE REINFORCING AS INDICATED AT ALL OPENINGS, BOTH INTERIOR & EXTERIOR WALLS
2. REINFORCING TYPICAL UNLESS NOTED OTHERWISE



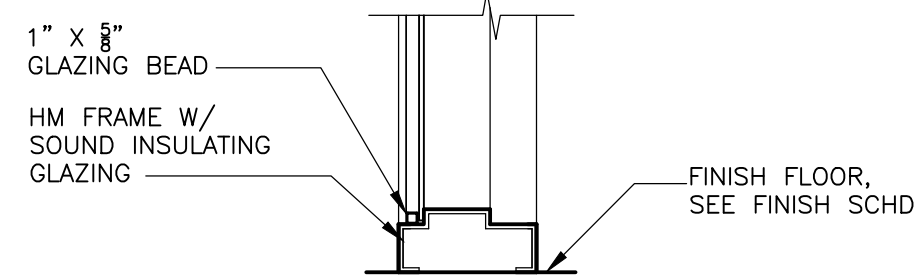
CMU LINTEL  
DETAIL F  
1 1/2" = 1'-0"



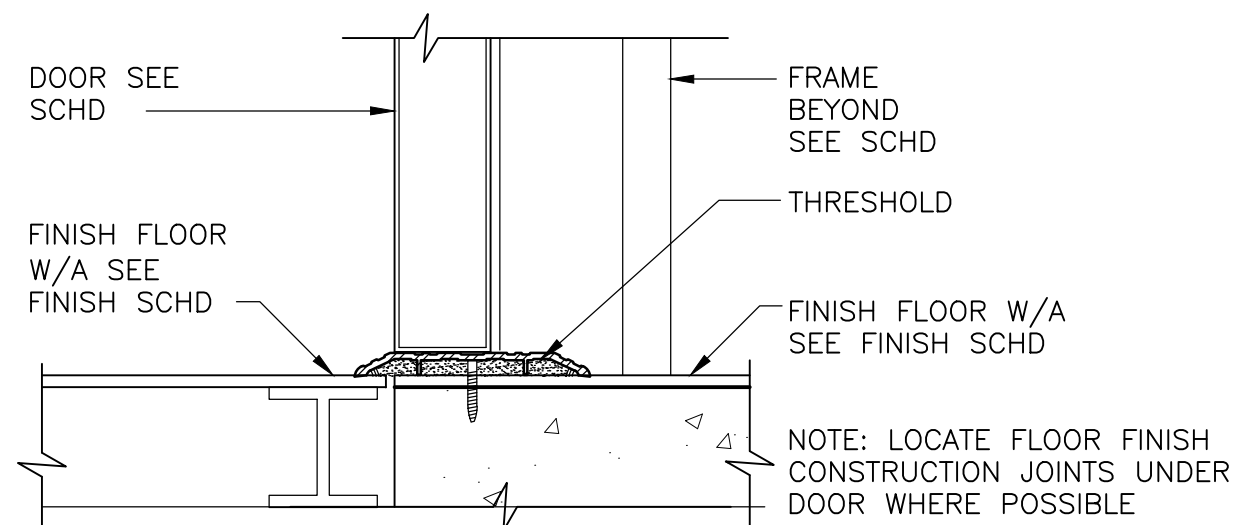
STOREFRONT HEAD  
DETAIL G  
1 1/2" = 1'-0"



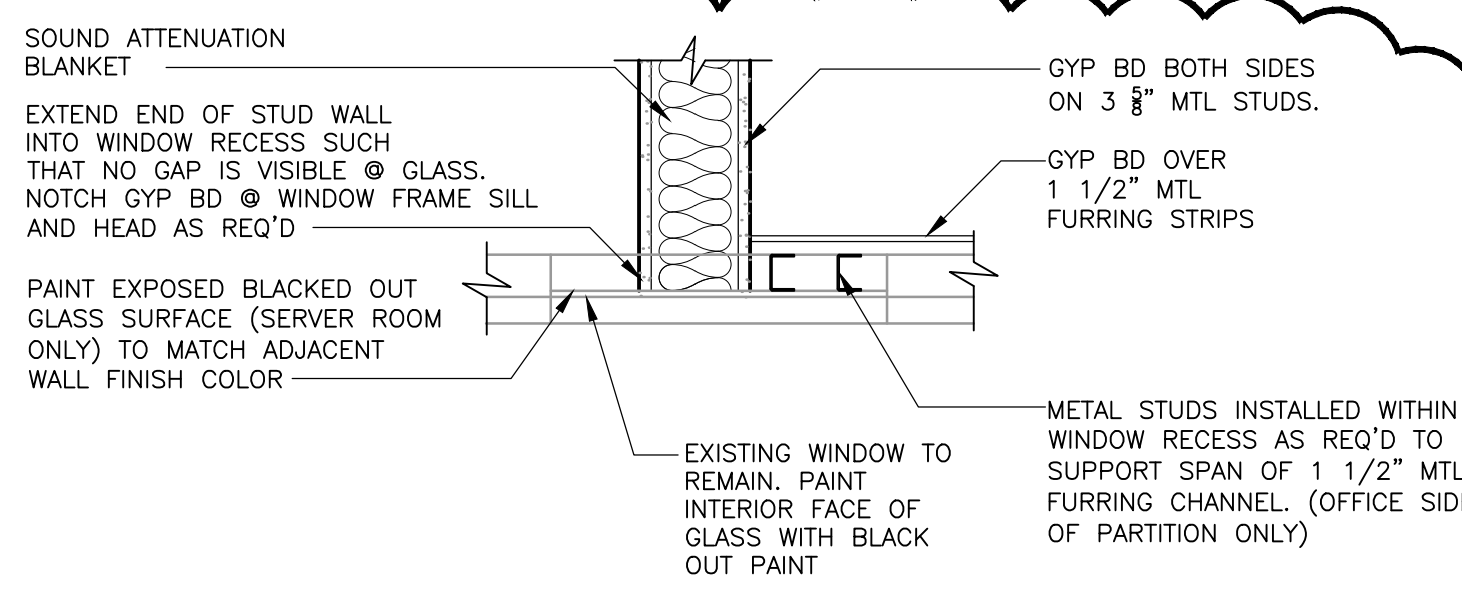
STOREFRONT JAMB  
DETAIL H  
1 1/2" = 1'-0"



STOREFRONT SILL  
DETAIL J  
1 1/2" = 1'-0"



THRESHOLD  
DETAIL M  
1 1/2" = 1'-0"

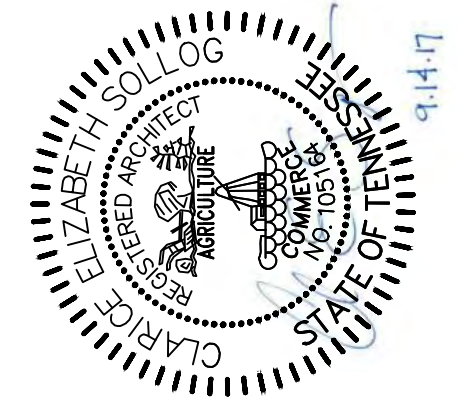


WALL TERMINATION  
DETAIL N  
1 1/2" = 1'-0"

GENERAL NOTES

FOR GENERAL NOTES, GENERAL DEMOLITION NOTES, SEE SHEET A-1

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DATE: MAY 2017

DISC. LEAD: CES DESIGNER: AAS CHECKER: MTA

SHEET TITLE: ARCHITECTURAL

DETAILS

SHEET AD-2

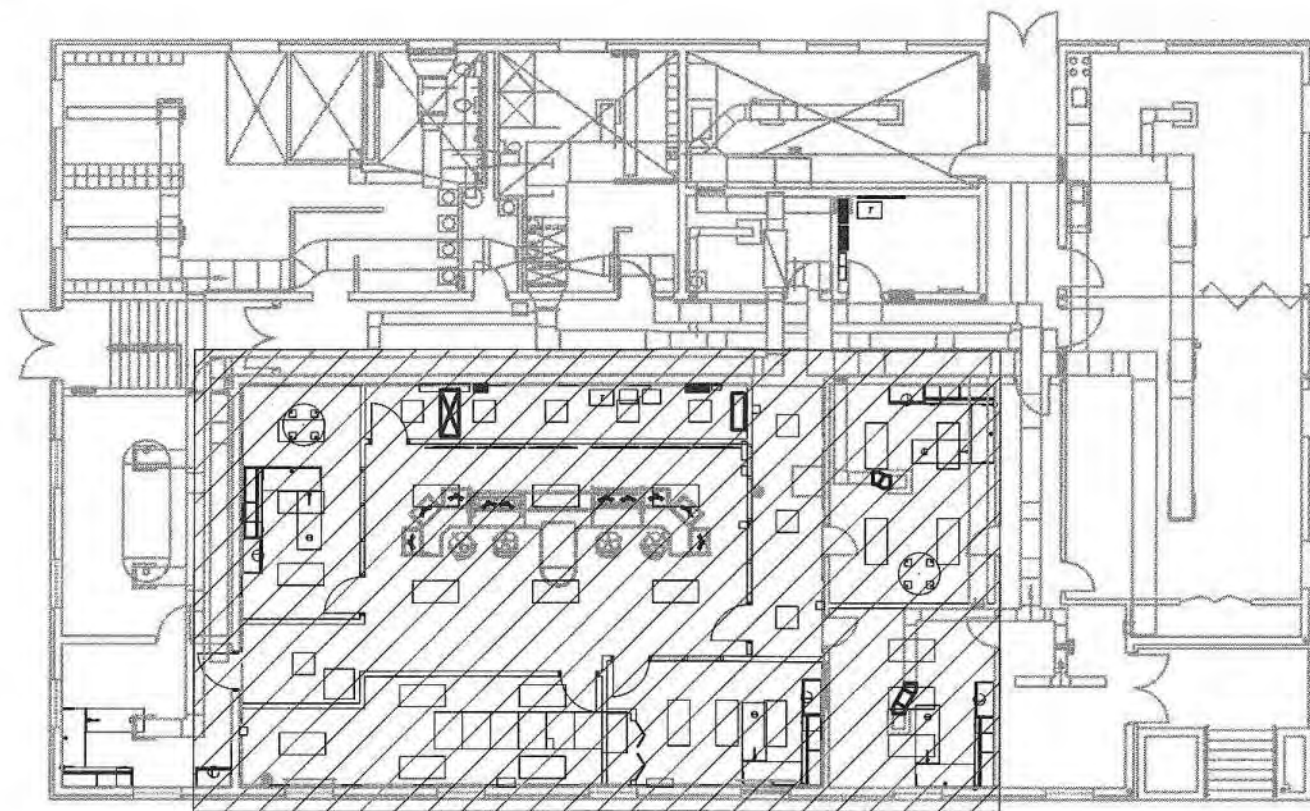
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## KEY PLAN

NTS



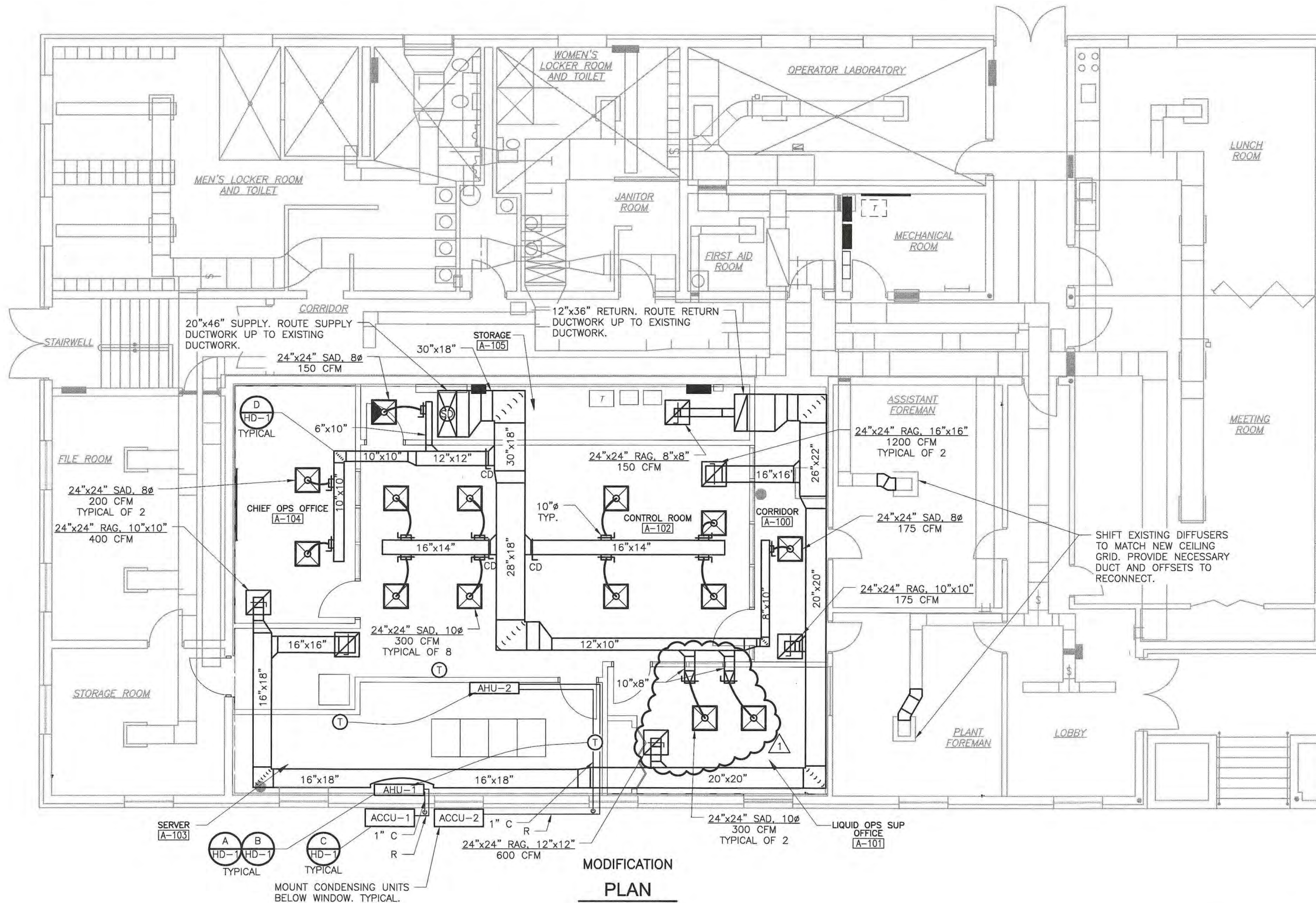
### SERVER ROOM ENERGY CODE NOTES:

THIS BUILDING (SERVER ROOM) IS EXEMPT FROM THE REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE, CHAPTER 5, SECTION 501 OF THE INTERNATIONAL ENERGY CONSERVATION CODE DEFERS TO ASHRAE/IESNA STANDARD 90.1 - ENERGY STANDARD FOR BUILDINGS EXCEPT LOW RISE RESIDENTIAL BUILDINGS. FOR COMMERCIAL BUILDINGS, THE APPLICABLE EXEMPTIONS FROM ASHRAE 90.1 ARE PARAGRAPHS 2.3.c AND 2.5:

2.3.c "THE PROVISIONS OF THIS STANDARD DO NOT APPLY TO EQUIPMENT AND PORTIONS OF BUILDING SYSTEMS THAT USE ENERGY PRIMARILY TO PROVIDE FOR INDUSTRIAL, MANUFACTURING, OR COMMERCIAL PROCESSING."

2.5 "THIS STANDARD SHALL NOT BE USED TO CIRCUMVENT ANY SAFETY, HEALTH, OR ENVIRONMENTAL REQUIREMENTS."

THE SERVER ROOM IS NORMALLY AN UNOCCUPIED AREA ON A WASTEWATER TREATMENT PLANT SITE THAT HOUSES ELECTRICAL EQUIPMENT ESSENTIAL TO THE WATER TREATMENT PROCESS. THE SERVER ROOM COOLING EQUIPMENT PROVIDES SPACE CONDITIONING FOR THE EQUIPMENT ONLY.



### MODIFICATION PLAN

3/16" = 1'-0"

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CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



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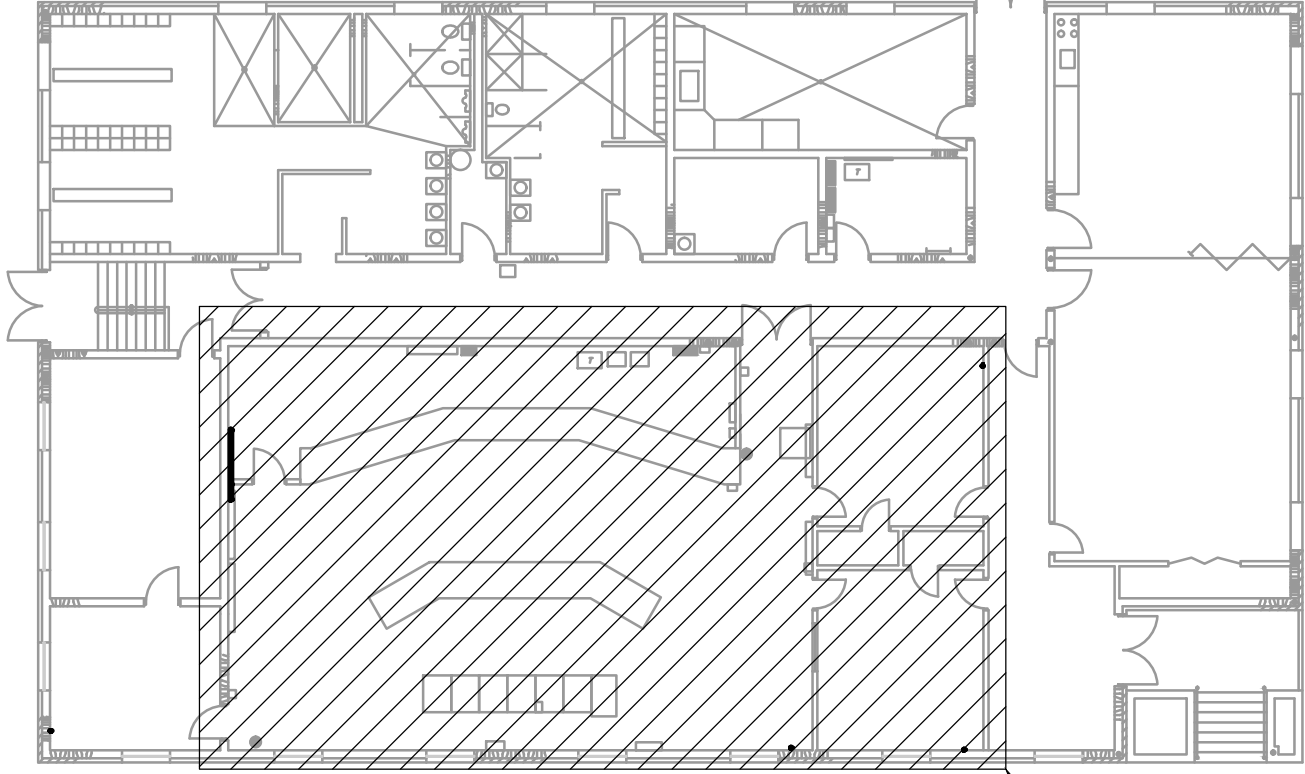
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PROJECT NO: W-15-009-201		
DATE: MAY 2017		
DISC. LEAD:	DESIGNER:	CHECKER:
J. MEINIG	B. BASIL	K. BOWEN
SHEET TITLE		
HVAC		
CONTROL ROOM MODIFICATION PLAN		

SHEET H-3

ISSUED FOR BID



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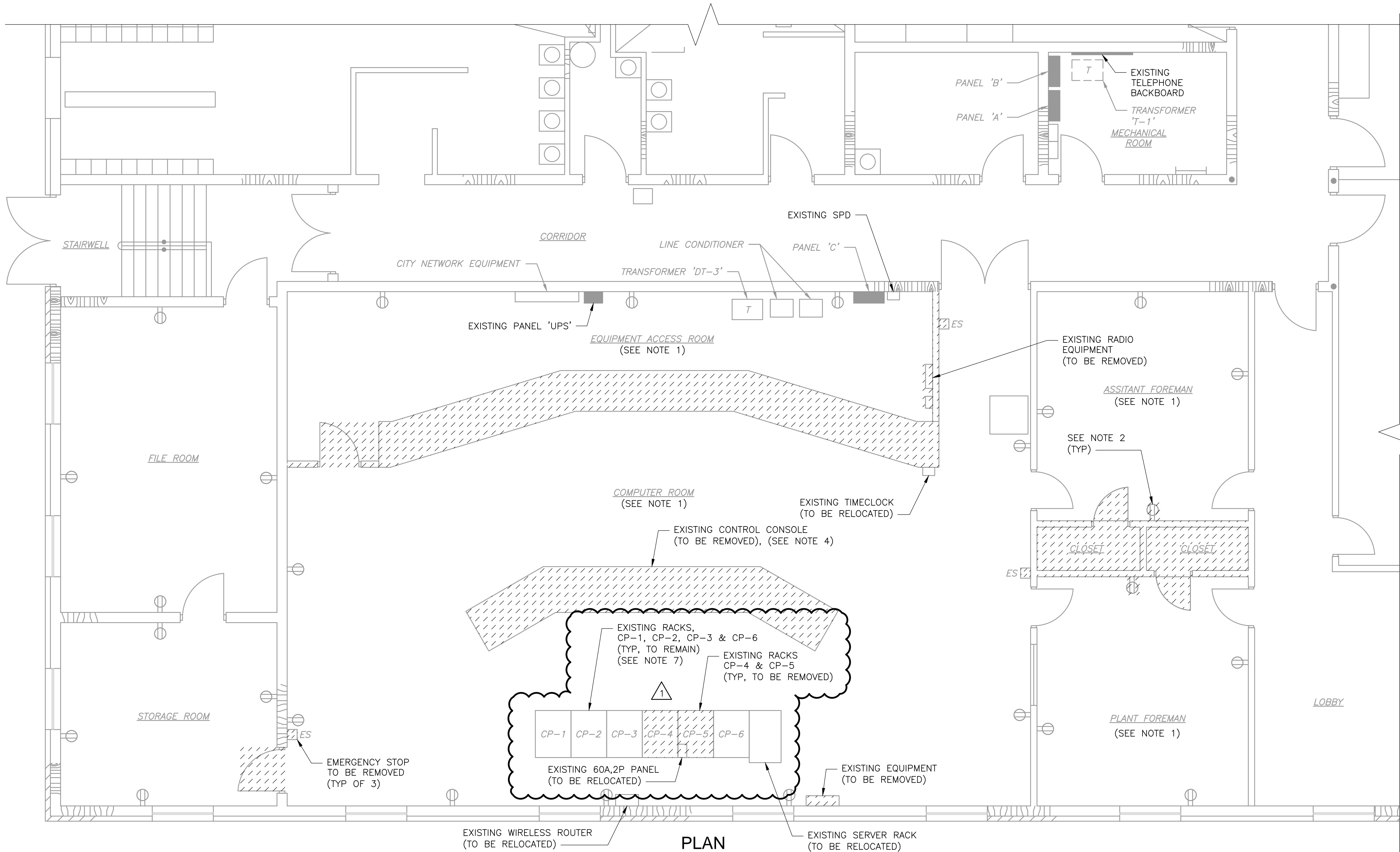


KEY PLAN  
NTS

AREA OF WORK

NOTES:

1. **LIGHTING FIXTURES:** THE EXISTING LIGHTING FIXTURES, LIGHT SWITCHES, LIGHTING BRANCH CIRCUITRY, CONDUITS, FITTINGS, ETC. SHALL BE REMOVED BACK TO THE SOURCE. WHEN THE FIXTURE TO BE REMOVED IS SERVED BY A CIRCUIT, THAT SUPPLIES FIXTURES IN OTHER AREAS THAT ARE TO REMAIN, THE ELECTRICAL CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF THE CIRCUIT TO THE REMAINING FIXTURES.
2. **RECEPTACLES:** REMOVE RECEPTACLES AS REQUIRED OR AS DIRECTED BY THE OWNER. WHEN THE RECEPTACLE TO BE REMOVED IS SERVED BY A CIRCUIT THAT SUPPLIES RECEPTACLES IN OTHER AREAS, THAT ARE TO REMAIN, THE ELECTRICAL CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF THE CIRCUIT TO THE REMAINING RECEPTACLES.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE TYPE WRITTEN PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THE DEMOLITION AND/OR NEW WORK. CIRCUIT BREAKERS NOT USED FOR NEW WORK SHALL BE LABELED AS SPARE.
4. EXISTING CONTROL CONSOLE TO BE REMOVED. DUE CARE SHALL BE TAKEN WITH THE REMOVAL OF ALL EXISTING WIRING, CONDUIT, ETC. INTERCEPT AND EXTEND THE EXISTING WIRING FOR THE GENERATOR AND GATE CONTROLS TO PLC-6. MATCH EXISTING WIRING.
5. EXISTING INTERCOM SYSTEM SHALL REMAIN. REMOVE FROM EXISTING CEILING AND REINSTALL IN THE NEW CEILING. COORDINATE WITH OWNER FOR EXACT LOCATION OF INTERCOM EQUIPMENT. PROVIDE ALL NECESSARY APPURTENANCES TO REINSTALL THE INTERCOM SYSTEM IN THE NEW CEILING FOR A COMPLETE WORKING SYSTEM.
6. EXISTING CCTV CAMERAS SHALL REMAIN. REMOVE FROM EXISTING CEILING AND REINSTALL IN THE NEW CEILING. COORDINATE WITH OWNER FOR EXACT LOCATION OF CCTV CAMERAS. PROVIDE ALL NECESSARY APPURTENANCES TO REINSTALL THE CCTV SYSTEM IN THE NEW CEILING FOR A COMPLETE WORKING SYSTEM.
7. EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. ALL ELECTRICAL/SCADA EQUIPMENT TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION. REPAIR AT NO ADDITIONAL COST TO THE OWNER ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

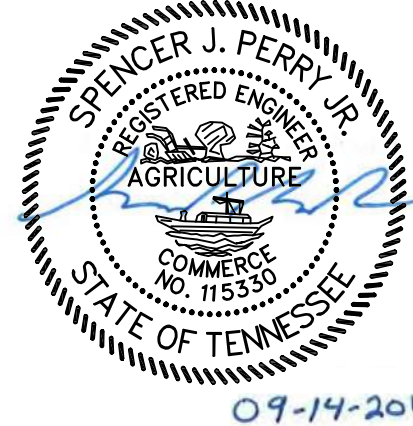


PLAN

1/4" = 1'-0"



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CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



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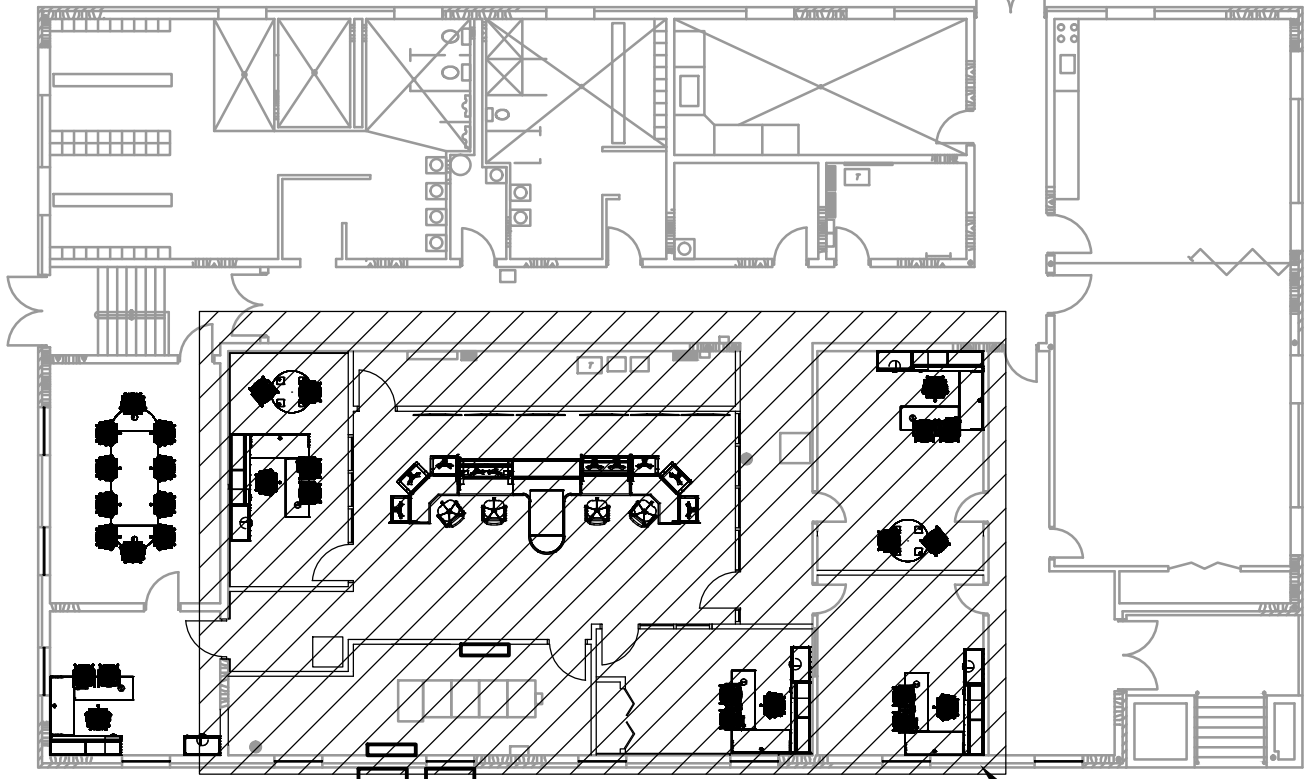
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PROJECT NO: W-15-009-201  
DATE: MAY 2017  
DISC. LEAD: S. PERRY  
DESIGNER: R. CARTER  
CHECKER:  
SHEET TITLE: ELECTRICAL  
CONTROL ROOM DEMOLITION PLAN

SHEET E-3

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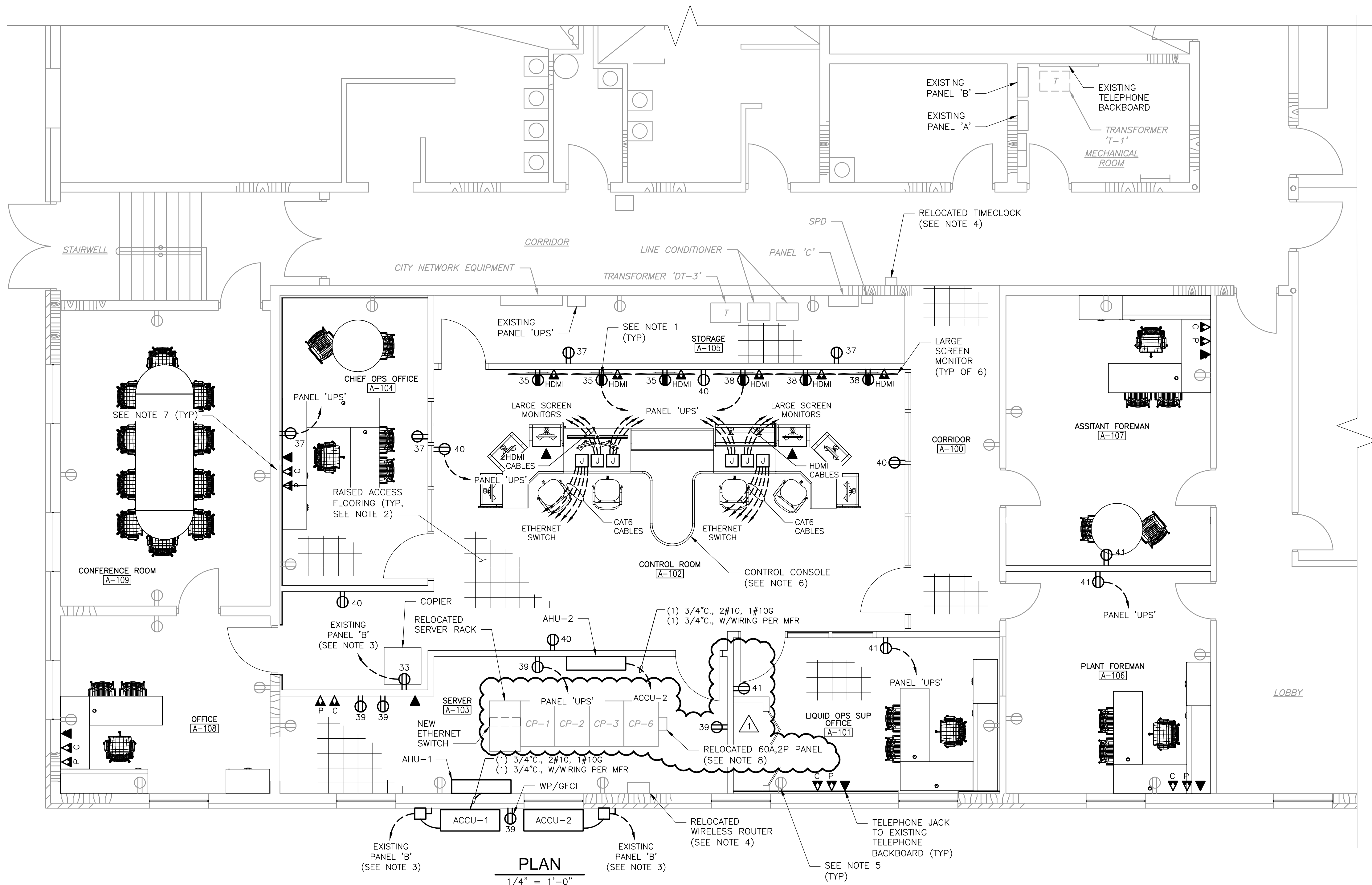
KEY PLAN  
NTS

AREA OF WORK

NOTES:

- COORDINATE MONITOR RECEPTACLES AND MEDIA CONNECTION MOUNTING HEIGHTS WITH MONITOR MOUNTING HEIGHTS AND OWNER.
- THE EXISTING RAISED ACCESS FLOORING SHALL BE REPLACED. ALL CABLES (INCLUDING NEW AND EXISTING ETHERNET, COMMUNICATION AND COMPUTER CABLES) INSTALLED BELOW THE RAISED FLOOR SHALL COMPLY WITH NEC ARTICLE 300. ANY UNUSED WIRING, CONDUIT, BOXES, ETC. SHALL BE REMOVED AND DISCARDED.
- PROVIDE NEW CIRCUIT BREAKERS IN EXISTING PANELS FOR ALL NEW CIRCUITS ASSOCIATED WITH THE NEW WORK UNLESS SPECIFIED OTHERWISE. MATCH EXISTING MANUFACTURER, TYPE, AIC RATING, ETC. ALL NEW CIRCUITS SHALL HAVE NEW CONDUIT, CONDUCTORS, BOXES, ETC. PULLED FROM SOURCE TO LOAD. REFER TO SHEET E-6 FOR PANELBOARD SCHEDULES.
- COORDINATE WITH OWNER FOR EXACT LOCATION. PROVIDE ALL APPURTENANCES REQUIRED FOR A COMPLETE WORKING SYSTEM.
- NOT ALL EXISTING RECEPTACLES ARE SHOWN. IN AREAS WHERE THE EXISTING WALL IS MODIFIED, RECEPTACLES SHALL BE REINSTALLED FLUSH WITH THE NEW WALL FINISH. COORDINATE EXACT LOCATION WITH OWNER.

- COORDINATE WITH CONTROL CONSOLE MANUFACTURER AND OWNER FOR EXACT LOCATION OF POWER, MEDIA, TELEPHONE CABLES, ETC. PROVIDE ALL NECESSARY, WIRING, CABLES, JUNCTION BOXES, ETC. AS REQUIRED FOR A COMPLETE SYSTEM.
- COORDINATE QUANTITY OF COMPUTER AND DATA SYSTEM OUTLETS WITH THE OWNER FOR EXACT LOCATION.
- SUGGESTED LOCATION FOR EXISTING 60A,2P PANEL. RELOCATE ALL EXISTING CIRCUITS ASSOCIATED WITH EXISTING PANEL. MATCH EXISTING WIRE IF NECESSARY TO EXTEND TO NEW LOCATION. PROVIDE BOXES, SUPPORTS, ALL APPURTENANCES REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM. ALL NEC WORKING CLEARANCES SHALL BE PROVIDED.

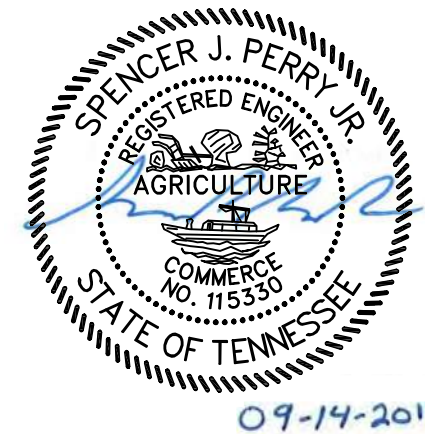


PLAN

1/4" = 1'-0"



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CONTROL ROOM UPGRADES  
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DATE: MAY 2017  
DISC. LEAD: S. PERRY  
DESIGNER: R. CARTER  
CHECKER:  
SHEET TITLE  
ELECTRICAL

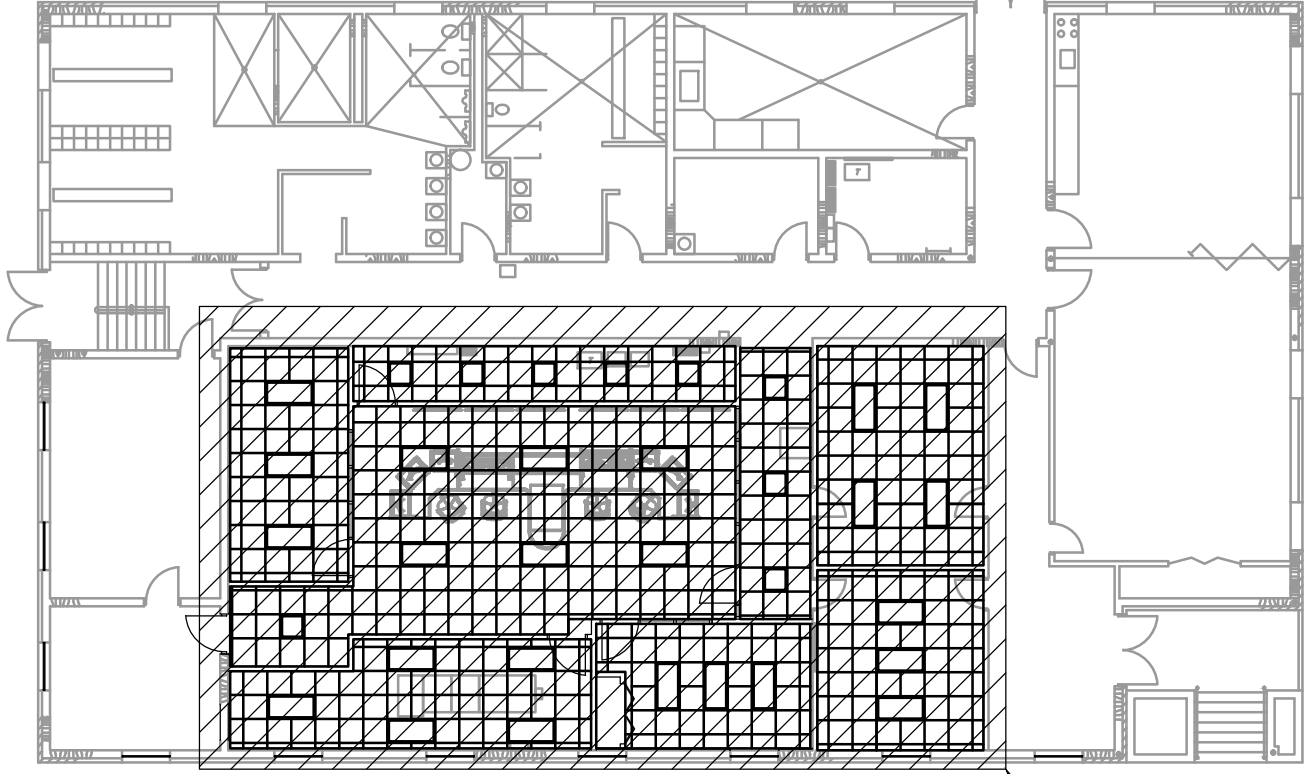
CONTROL ROOM  
POWER MODIFICATIONS  
PLAN

SHEET  
E-4

ISSUED FOR BID

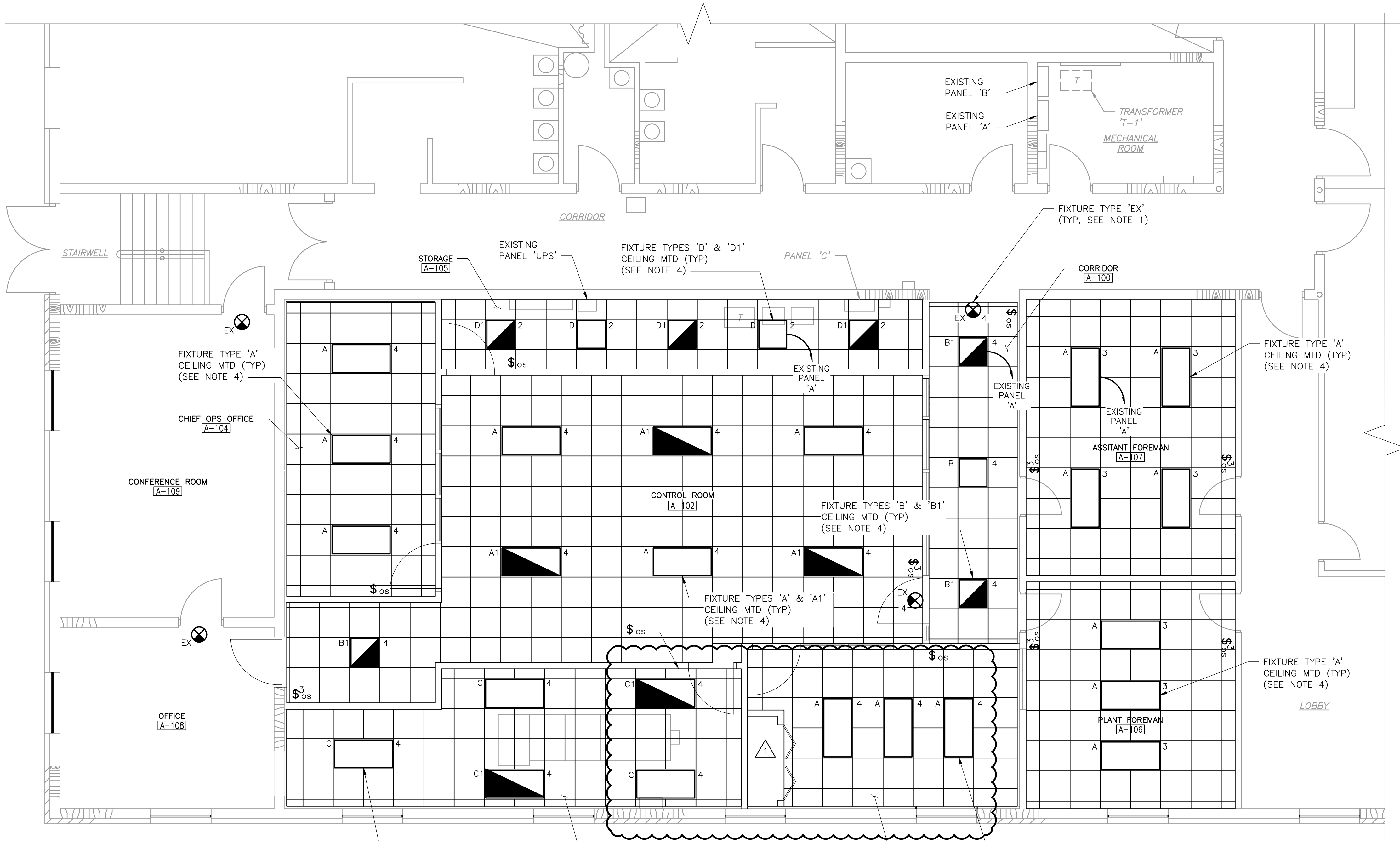


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KEY PLAN  
NTS

AREA OF WORK

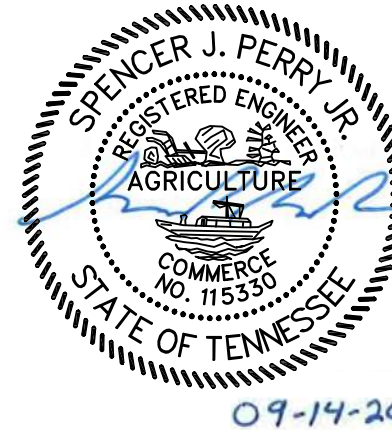
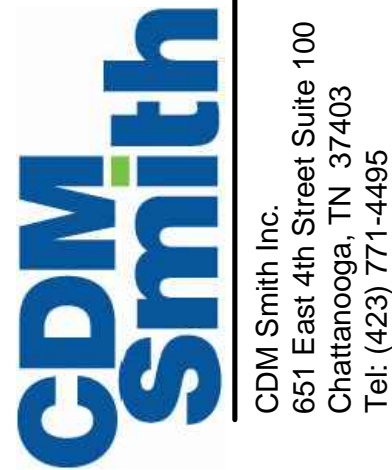


PLAN

1/4" = 1'-0"

NOTES:

1. EXIT SIGNS SHALL BE WIRED TO THE NORMAL LIGHTING CIRCUIT OF THE ROOM IT SERVES AND TO THE LINE-SIDE OF THE LIGHT SWITCH.
2. ASSISTANT FOREMAN OFFICE A-107, PLANT FOREMAN OFFICE A-106, LIQUID OPS SUP OFFICE A-101, CONTROL ROOM A-102 AND CHIEF OPS OFFICE A-104, SHALL UTILIZE A DUAL TECHNOLOGY MULTI-WAY 0-10 VOLT DIMMING WALL SWITCH OCCUPANCY SENSOR. SWITCH SHALL INCLUDE A MANUAL AUTO/OFF BUTTON. SWITCH SHALL BE WHITE IN COLOR. SWITCH SHALL BE UL LISTED AND OPERATE AT 120V. SWITCH SHALL BE TYPE DW-311 AS MANUFACTURED BY WATTSTOPPER OR APPROVED EQUAL.
3. CORRIDOR A-100, SERVER ROOM A-103, AND STORAGE ROOM A-105, SHALL UTILIZE A DUAL TECHNOLOGY MULTI-WAY WALL SWITCH SENSOR. SWITCH SHALL BE WHITE IN COLOR. SWITCH SHALL BE UL LISTED AND OPERATE AT 120V. SWITCH SHALL BE TYPE DW-103 AS MANUFACTURED BY WATTSTOPPER OR APPROVED EQUAL.
4. PROVIDE NEW 20A,1P CIRCUIT BREAKERS IN EXISTING PANEL 'A' FOR ALL NEW CIRCUITS ASSOCIATED WITH THE NEW WORK. MATCH EXISTING MANUFACTURER, TYPE, AIC RATING, ETC. ALL NEW CIRCUITS SHALL HAVE NEW CONDUIT, CONDUCTORS, BOXES, ETC. PULLED FROM SOURCE TO LOAD.



MBWWTP  
CONTROL ROOM UPGRADES  
CITY OF CHATTANOOGA, TN



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PROJECT NO: W-15-009-201  
DATE: MAY 2017  
DISC. LEAD: S. PERRY  
DESIGNER: R. CARTER  
CHECKER:  
SHEET TITLE: ELECTRICAL

CONTROL ROOM  
LIGHTING MODIFICATIONS  
PLAN  
SHEET E-5

ISSUED FOR BID



8/15/2017

# Moccasin Bend WWTP

O&C SCADA Upgrade General Requirements

[RMJ Consulting LLC]

Authored by: Ron Hinkle II

## O & C SCADA Wonderware Scope and General Requirements

### GENERAL

- Purpose
  - a. The purpose of this scope is to provide the general requirements for the Proficy Machine Edition SCADA conversion to Wonderware Intouch software for the O&C SCADA upgrade.
  - b. This document will provide a detailed changes that are required for each screen currently operating.
  - c. This document will provide a detail of the new screens required.
- Appendix: 1-36
  - Sample pictures for screens
  - Customer to provide aerial pictures and equipment pictures to be used
  - Site pictures for Pump Stations
  - Report Examples
    - The examples are currently filled in by operator manually and all data entered does not come from the SCADA collection. Once contractor is selected it will be their responsibility to work with the customer to define in detail.

### 1. Scope

- 1.1. All new screen conversions must be converted utilizing the following criteria.
  - 1.1.1. Background colors shall be dark blue in color
  - 1.1.2. All screens shall have the name at the top of each screen, location to be consistent with all screens
  - 1.1.3. Screen resolution must be capable for 1920/1080 and 1900/1600 without rescale of screen objects.
  - 1.1.4. All graphics must be updated to actual pictures of areas and devices where possible.
  - 1.1.5. All overview Screens must have animation flow, movement etc...
  - 1.1.6. All devices on screens must be animated using the following colors
    - 1.1.6.1. Condition- Running/On/Open                      Green
    - 1.1.6.2. Auto/Ready    White
    - 1.1.6.3. Stopped/Off/Closed                                      Red
    - 1.1.6.4. Fail/Alarm    Amber
    - 1.1.6.5. Generic Status    White
  - 1.1.7. All Motors/VFDs/Pumps to have Device ID, Rate, Hrs. on device where applicable
  - 1.1.8. All Valve to have Device ID
  - 1.1.9. All piping animated to show flow where applicable
  - 1.1.10. All PID pop up menu/screens shall be password protected
  - 1.1.11. All text to be same color scheme

## Plant Operations: Proficy SCADA

---

2. Mixed Liquor Flow Distribution
  - 2.1. Change clarifier graphics
  - 2.2. Add animation movement to indicate Rake position (left/right) (up-down)
  - 2.3. Remove Gates in and out of Mixed Liquor Channel
  - 2.4. Remove Clear/Lead/Follow buttons
  - 2.5. Add color animation to flow meters
  - 2.6. Add A/B labels on Clarifiers 5-10
  - 2.7. All valves to animated using color scheme
  - 2.8. Remove Oxy. Tank Inf. Flow navigation button
  - 2.9. Flow Meters to be animated Green when flow is above 5% else Red
  - 2.10. Change Chlor. Cont. Basin 1&2 navigation button to Contact Tanks 1&2
  - 2.11. Add navigation button for Contact Tank #7
  - 2.12. Remove text Bypass from Primary
  - 2.13. Remove valve buttons on Clarifiers 11-14
  - 2.14. Add navigation button to New Clarifiers 15&16
3. Influent Relief PS
  - 3.1.1. Remove Screens1 &2
  - 3.1.2. Remove all controls for Screens 1&2
  - 3.1.3. Remove Sequence selector switch
  - 3.1.4. Remove Lift Station selector switch
  - 3.1.5. Add Level Set Point field for Pumps 4&5
  - 3.1.6. Remove Start/Stop Level for Pumps 4&5
4. Main Influent PS
  - 4.1. Remove Sequence selector switch
  - 4.2. Change label on Level Control Bubblers/ Level Control
    - 4.2.1. Change A/B - Bubbler/Radar
    - 4.2.2. Remove A/B from level indicators
    - 4.2.3. Change Bubbler level indicator to Radar
5. Det 1-2/Fine Screen 1-5
  - 5.1. Remove all MOG gates with control button
  - 5.2. Remove FS-1 Fine Screen
  - 5.3. Remove FS-2 Fine Screen
  - 5.4. Remove Comminutor 6
  - 5.5. Remove pumps in Detritor 1 and 2
  - 5.6. Animate rotation of Detritor 1 Clockwise movement
  - 5.7. Animate rotation of Detritor 2 Counter-Clockwise movement
  - 5.8. Add test to Detritor Diverter Box
  - 5.9. Remove AT060 with text Screen Room Air Percent Level
  - 5.10. Add animation to Detritor Diverter Box Gates
6. Det 3/Fine Screens 5-6



- 6.1. Animate rotation of Detritor 3 Clockwise movement
- 6.2. Remove pump from Detritor 3
- 6.3. Remove FS-5/FS-6 and all control buttons
- 6.4. Remove Screen
- 6.5. Remove lines to Grit & Screenings
- 6.6. Remove LC1855 level indicator
- 6.7. Remove SC1851 % indicator
- 6.8. Remove influent WW PH indicator
- 6.9. Remove influent WW temp indicator
- 6.10. Remove influent WW Orp indicator
- 6.11.
- 7. Primary Clarifiers 1-8
  - 7.1. Remove Plant Outfall navigation button
  - 7.2. Remove Chlor. Cont. Tanks 1&2 navigation button
    - 7.2.1. Remove Gate and all lines to buttons
  - 7.3. New graphics for clarifiers required
  - 7.4. Add animation for Sludge Rake movement and on/off status
  - 7.5. Add animation for Scum Rake movement and on/off status
  - 7.6. Add additional indicators
    - 7.6.1. PH/Low water Press/Low Sump Pump
    - 7.6.2. Recirculation Pump for each Fan
    - 7.6.3. Alarms for each Clarifiers 4ea
  - 7.7. Add separate Alarm screen for viewing these alarms
    - 7.7.1. Add Alarm navigation button
    - 7.7.2. Animate Alarm Navigation button blinking when alarm present
- 8. Add new Clarifier Screen for 15 & 16
- 9. Primary Sludge Pump Station No.1
  - 9.1. Remove Air Blowers 1&2 with all lines to Air Influent Channel
  - 9.2. Remove XT0129 flow indicator/ Meter graphic and lines/piping
  - 9.3. Remove Primary Scum Wet well
  - 9.4. Remove Primary Clarifier navigation button
  - 9.5. Remove LT0128 indicator
  - 9.6. Remove Primary Sludge PS 1 Flow indicator (to Digesters) flow
  - 9.7. Add Primary Sludge PS 2 to this screen if possible
- 10. Primary Sludge Pump Station No.2
  - 10.1. Remove Primary Clarifiers navigation button
  - 10.2. Remove LT0158 level indicator
  - 10.3. Remove Primary Scum Pumps with piping
  - 10.4. Remove Anaerobic Digester navigation button
    - 10.4.1. Remove vertical piping to Thick Sludge Pmp Stn 1
  - 10.5. Remove Primary Influent Sampler pump and piping
  - 10.6. Remove Grit Sampler



- 10.7. Remove Effluent Sampler
- 11. Blower Building
  - 11.1. Replace graphics to represent actual equipment
  - 11.2. Remove Pri. Clarifier Air Flow FT0367 indicator with text
  - 11.3. Remove Sec. Clarifier 1-4 Air Flow FT0363 indicator with text
  - 11.4. Remove Sec. Clarifier 5-10 Air Flow FT0366 indicator with text
  - 11.5. Remove INST. Air Low Pressure (visibility) text
  - 11.6. Remove EQ1 Air Dist Control valve graphic with text
  - 11.7. Remove EQ2 Air Dist Control valve graphic with text
  - 11.8. Remove Switch over Valve 1 graphic with text
  - 11.9. Remove Switch over Valve 2 graphic with text
  - 11.10. Remove Inst. Air Comp 1 graphic with text
  - 11.11. Remove Inst. Air Comp 2 graphic with text
  - 11.12. Remove indicators
    - 11.12.1. FT0335A, PT0336, AT0344, FT0335B, PT0338, AT0345
- 12. EQ Basins
  - 12.1. Remove the following indicators
    - 12.1.1. AT1537, AT0344, AT0345
  - 12.2. Add label to #1 EQ Inlet Valve
  - 12.3. Add label to #2 EQ Inlet Valve
  - 12.4. Add label to Bypass Valve
- 13. EQ Pump Station
  - 13.1. MOG 8 can deliver to Contact Tank 6 or MOG 3
    - 13.1.1. Correct piping to indicate flow
      - 13.1.1.1. Animate flow
  - 13.2. Remove Sample Pumps #1- #2
  - 13.3. Remove E.Q Basin Eff pH indicator
  - 13.4. Change text on Oxygen Tank Influent Flow/ UNOX Tank Influent Flow
  - 13.5. Label Distribution Box
  - 13.6. Remove Mixed Liquor Channel LVL High indicator
- 14. Recycle & Drain PS
  - 14.1. Change navigation button Detritor & Fine Screens/ Primary Clarifiers
    - 14.1.1. Correct navigation source
    - 14.1.2. Add 3<sup>rd</sup> Pump to Wet well
    - 14.1.3. Add 3 Flow meter indicators
    - 14.1.4. Change label Drain Pump Station/ West Recycled Pump Station
- 15. OXY Tank Influent Flow Distribution
  - 15.1. Remove Screen

16. Oxygen Plant
  - 16.1. Remove 2nd Pump on Main Air Compressors 1 & 2
    - 16.1.1. Remove all piping and alarm text
  - 16.2. Add label to Oil Pump at Product Oxygen
  - 16.3. Change Lox Tank 1 & 2 graphic to represent vertical tanks
17. OXY Tank 1
  - 17.1. Add animation to WW/RAS valves
  - 17.2. Remove Mix Liquor Pump Station navigation button
  - 17.3. Change text on navigation buttons
    - 17.3.1. Oxy tank No.1/ UNOX Tank No.1
      - 17.3.1.1. 2-4 repeat
18. OXY Tank 2
  - 18.1. Add animation to WW/RAS valves
  - 18.2. Remove Mix Liquor Pump Station navigation button
  - 18.3. Change text on navigation buttons
    - 18.3.1. Oxy tank No.1/ UNOX Tank No.1
      - 18.3.1.1. 2-4 repeat
19. OXY Tank 3
  - 19.1. Add animation to WW/RAS valves
  - 19.2. Remove Mix Liquor Pump Station navigation button
  - 19.3. Change text on navigation buttons
    - 19.3.1. Oxy tank No.1/ UNOX Tank No.1
      - 19.3.1.1. 2-4 repeat
20. OXY Tank 4
  - 20.1. Add animation to WW/RAS valves
  - 20.2. Remove Mix Liquor Pump Station navigation button
  - 20.3. Change text on navigation buttons
    - 20.3.1. Oxy tank No.1/ UNOX Tank No.1
      - 20.3.1.1. 2-4 repeat
21. Mixed Liquor PS
  - 21.1. Remove Screen
22. Return Sludge Flow Distribution
  - 22.1. Animate all Flow Meters
  - 22.2. Remove Buttons
    - 22.2.1. Clear, Indiv.,
    - 22.2.2. 11-14 RAS Valve buttons
  - 22.3. New graphics for clarifiers required
  - 22.4. Add animation for Sludge Rake movement and on/off status
  - 22.5. Add animation for Scum Rake movement and on/off status

### 23. Return Sludge PS

- 23.1. Remove RAS to EQ Basina navigation button
  - 23.1.1. Remove Valve and FT0914 indicator
  - 23.1.2. Remove Flow SP indicator
  - 23.1.3. Remove % indicator
    - 23.1.3.1. FT1119A, FT1119B, FT1119C and FT1119D
  - 23.1.4. Remove Density indicator DT0908
  - 23.1.5. Remove Flow SP indicator
  - 23.1.6. Remove WAS pump 1& 2 manual control button
  - 23.1.7. Add animation to Flow Meters
  - 23.1.8. Add animation to control valves
  - 23.1.9. Change label Oxygenation Tanks/ UNOX Tanks
  - 23.1.10. Change UNOX tank graphics

### 24. Chlorination Sys

- 24.1. Remove Chlorine Cylinders graphics
- 24.2. Remove Vaporizers
- 24.3. Remove Chlorinators piping all graphics
- 24.4. Remove all navigation buttons
- 24.5. Move Clarifier Flow Legend to next screen if possible
  - 24.5.1. If move of legend is possible remove screen

### 25. Chlor Cont Basin 1-2

- 25.1. Remove Sample Pumps text
  - 25.1.1. Remove Tank #1 pump
  - 25.1.2. Remove piping and Analyzer text
  - 25.1.3. Remove Tank #2 pump
  - 25.1.4. Remove piping and Analyzer text
- 25.2. Remove Injector Pumps 1-3 and all piping
- 25.3. Remove Storage Tank graphics and piping
- 25.4. Remove Traveling Screen graphic
- 25.5. Remove CI Contact Tank 1 graphic
- 25.6. Remove CI Contact Tank 2 graphic
- 25.7. Remove navigation button Secondary Clarifiers
- 25.8. Remove navigation button Chlor Cont Basin 3-4
- 25.9. Remove FT1347B Flow meter and indicator
- 25.10. Add Secondary Clarifier 1&2 flow to Wet well
- 25.11. Add Secondary Clarifier 3&4 flow to Wet well
- 25.12. Add Contact Tank 1&2 flow to Wet well
- 25.13. Change piping flow to indicate corrected flow
- 25.14. Add label from Plant Water pumps to (Plant)

## 26. Chlor Cont Basin 3-4

- 26.1. Remove Sample Pumps text
  - 26.1.1. Remove Contact Tanks pump and all piping/text
  - 26.1.2. Remove Plant Effluent pump and all piping/text
- 26.2. Remove Traveling Screen and all piping
- 26.3. Remove Injector Pump and all piping
- 26.4. Remove Plant effluent from 3&4 indicator
- 26.5. Change label Effluent to Tennessee River/ Outfall
- 26.6. Add/Move Gate to CI Contact Tank 4
  - 26.6.1. Animate gate open/close
- 26.7. Add/Move gate to CI Contact Tank 3
  - 26.7.1. Animate gate open/close

## 27. Chlor Cont Basin 5-6

- 27.1. Remove Plant Effluent Sample Pump
  - 27.1.1. Remove indicator AT2334
- 27.2. Change CCB5 graphic
- 27.3. Add label from MOG-B2 to Plant Effluent System

## 28. Plant Effluent

- 28.1. Remove Sample PumpM0938
- 28.2. Remove AT0942 indicator
- 28.3. Remove AT0943 indicator
- 28.4. Remove AT0249 indicator
- 28.5. Change text on navigation button Wet Weather System/ Contact Tank #6
  - 28.5.1. Change screen source
- 28.6. Change text on navigation button Chlorine Contact Tank/ Contact Tank #5
  - 28.6.1. Change screen source
- 28.7. Remove Control Weir graphic and text
  - 28.7.1. Add label Diversion Box
- 28.8. Add % to MOG-4 gate position
- 28.9. Remove Sample Pump M1943
- 28.10. Remove AT1943 Indicator
- 28.11. Remove Sample Pump M2350
- 28.12. Remove Dissolved O2 indicator
- 28.13. Remove AT2354 NH3 indicator
- 28.14. Change Turbidity AT2353 label/ Plant Eff. TSS Outfall #2
- 28.15. Change Outfall #1 Valve graphic to manual valve symbol
  - 28.15.1. On bottom of tank
- 28.16. Change Outfall 1 & 2 Tank graphics
- 28.17. Animate level in Outfall 1 & 2 tanks

- 29. WW Grit Basins
  - 29.1. Change entire screen graphics to represent actual layout and flow (see plant)
- 30. WW Clarifiers/Sludge PS
  - 30.1. Change screen to clarifier type with rakes on/off indicators
  - 30.2. Add animation to Grinder Pumps
  - 30.3. Remove Sequence selector switch
  - 30.4. Remove control buttons
    - 30.4.1. Clear, Indiv. All locations
  - 30.5. Remove Clarifiers Required/Online text and I/O field
    - 30.5.1. Remove all text in this area
  - 30.6. Remove Chlorine Injector 1& 2 navigation buttons
    - 30.6.1. Remove all control buttons and piping
  - 30.7. Remove Chlorine Injection Box
  - 30.8. Remove LT1921 Indicator
  - 30.9. Remove LT1922 Indicator
  - 30.10. Remove LT1923 Indicator
  - 30.11. Remove visibility animation from Grinder
- 31. WW Coagulant
  - 31.1. Remove Coagulant Pump Speed Control box and all I/O fields
  - 31.2. Add animation to Compressor 1 & 2
  - 31.3. Remove Coagulant Pumps
  - 31.4. Change label Coagulant Tank/ Chemical Tank
  - 31.5. Remove FT2250 indicator
    - 31.5.1. Remove indicator MGD adjacent
- 32. Wet Weather Program Overview Page 1
  - 32.1. Change entire design
    - 32.1.1. Need to add graphical pic to represent actual equipment
- 33. Overview
  - 33.1. Remove Influent AT9001 indicator
  - 33.2. Remove Influent ORP AT0041 indicator
  - 33.3. Remove Effluent AT0942 indicator
  - 33.4. Remove Sec Inf AT0372 indicator
  - 33.5. Remove Total Flow (Hardware) FY0256C indicator
  - 33.6. Change label Digester indicator/ Thickener Station 1
  - 33.7. Remove Density DT0135 indicator
  - 33.8. Remove Density DT0165 indicator
  - 33.9. Remove Wet well LT1459 indicator
  - 33.10. Remove entire Blend Tank Level graphics and indicators
  - 33.11. Add Sludge Storage Tank with level indicators
  - 33.12. Remove Mixed Liquor AT0943 indicator

- 33.13. Remove Chlorine Residuals graphics and indicators
- 33.14. Suspended Solids
  - 33.14.1. Add new indicator field for Tank 2
  - 33.14.2. Keep indicator field for Tank 1
  - 33.14.3. Add indicator for Tank 5
  - 33.14.4. Add indicator for Tank 6
- 33.15. Add animation to all valves
- 34. Electrical Power Distribution
  - 34.1. No change
- 35. PLC Diagnostics
  - 35.1. No change
- 36. Flow Totals
  - 36.1. No change
- 37. Network Diagnostics
  - 37.1. Change graphics to show correct flow and connections
  - 37.2. Add Fiber Ring for Gigabit and 100 Base with device locations
- 38. Disinfection System
  - 38.1. Update Tanks and Pump graphics
- 39. Thickened Sludge PS1
  - 39.1. Change screen name Thickener Station 1
  - 39.2. Change Thickener graphics, replace with real image with animation
  - 39.3. Animate Flow Meters
  - 39.4. Animate flow
  - 39.5. Remove LT3105 indicator
- 40. Thickened Sludge PS2
  - 40.1. Change screen name Thickener Station 2
  - 40.2. Change Thickener graphics, replace with real image with animation
  - 40.3. Animate Flow Meters
  - 40.4. Animate flow
- 41. Sludge Blending
  - 41.1. No change
- 42. Thermophilic Digesters
  - 42.1. No change
- 43. Mesophilic Digesters
  - 43.1. No change
- 44. Digester Water System
  - 44.1. No Change
- 45. Water Heating/Cooling
  - 45.1. No change
- 46. Gas System
  - 46.1. Remove BioGas Valve Control graphic and text
  - 46.2. Remove Gas Scrubber graphic, piping and text

- 47. DB/TSP1&2 Misc. Equip
  - 47.1. Remove control buttons for Drain Pumps
  - 47.2. Remove Gas Scrubber text
    - 47.2.1. Remove H<sub>2</sub>S AE3530A indicator
    - 47.2.2. Remove Combustible AE3530B indicator
    - 47.2.3. Remove NaOH , NaOCl tank graphics with indicators
- 48. Filter Press Sludge Blend
  - 48.1. Flow Totals Train 1
    - 48.1.1. Remove Sludge text and I/O (tons) field
  - 48.2. Flow Totals Train 2
    - 48.2.1. Remove Sludge text and I/O (tons) field
- 49. Sludge Storage Tank
  - 49.1. Remove Blending Tanks graphic and piping
  - 49.2. Remove Decant MOVs graphic
- 50. C2 Sludge Auxiliary
  - 50.1. Animate Air Compressors on/off
- 51. C2 Neat Polymer
  - 51.1. Change Main Neat Storage Tank graphic
  - 51.2. Add additional Neat Storage Tank with Recirculation Pump
  - 51.3. Animate new tank and pump
  - 51.4. Add piping for new tank and pump
- 52. C2 Dry Polymer
  - 52.1. Remove screen
- 53. Polymer Mix Tanks
  - 53.1. Change tank graphics
- 54. Polymer Feed Pumps
  - 54.1. Change graphics
    - 54.1.1. Add picture graphic with animation for pumps
- 55. C2 Sludge Feed Pumps
  - 55.1. Add Flow Meters to Water Supply
- 56. Centrifuge Overview
  - 56.1. Centrifuge 1
    - 56.1.1. Remove Central Streaming Current indicator
  - 56.2. Centrifuge 2
    - 56.2.1. Remove Central Streaming Current indicator
- 57. C1 Centrifuge Screen
  - 57.1. Change Centrifuge graphic
  - 57.2. Remove Oil Cooler System graphics
  - 57.3. Remove Centrifuge One System Status & Control
    - 57.3.1. Remove all graphics and text
  - 57.4. Remove Centrate Streaming Current indicator and text
- 58. C2 Centrifuge Screen

- 58.1. Change Centrifuge graphic
- 58.2. Remove Oil Cooler System graphics
- 58.3. Remove Centrifuge One System Status & Control
  - 58.3.1. Remove all graphics and text
- 58.4. Remove Centrate Streaming Current indicator and text
- 59. Old Centrifuge
  - 59.1. Remove screen
- 60. C2 Lime Biosolids
  - 60.1. Change tank graphics to real picture with animation
  - 60.2. Animate Lime Silo discharge gate
    - 60.2.1. Add Level field I/O indicator
  - 60.3. Change screen name C2 Lime Biosolids/ Lime – Biosolids
- 61. FeCl & Acid
  - 61.1. No Change
- 62. Lime Slurry
  - 62.1. No Change
- 63. Auxiliary Systems
  - 63.1. Reverse all compressor location on screen and correct piping flow
  - 63.2. Animate all devices
- 64. Overview
  - 64.1. No change
- 65. Wet Weather System Overview
  - 65.1. Change all graphics to real picture and animate
  - 65.2. Remove small tank/circle on Wet Weather Grit Basins 1-5(1-4)
- 66. Liquids Overview
  - 66.1. Change all graphics
  - 66.2. Secondary Clarifiers
    - 66.2.1. Change graphic and add animation
      - 66.2.1.1. Add Rake position animation with movement
  - 66.3. Chlorine Building
    - 66.3.1. Change graphics of clarifiers 3&4 – 1&2
      - 66.3.1.1. Remove left motor indicator (3) dots
      - 66.3.1.2. Remove Contact tank motor indicator
      - 66.3.1.3. Secondary Clarifiers
        - 66.3.1.3.1. Change graphics
        - 66.3.1.3.2. Remove Contact tank motor indicator
      - 66.3.1.4. Primary Sludge Pump Station 1
        - 66.3.1.4.1. Change graphics
        - 66.3.1.4.2. Remove left 2 motor indicators
        - 66.3.1.4.3. Add label for Scum Rakes
        - 66.3.1.4.4. Add label for Sludge Rake
      - 66.3.1.5. Primary Sludge Pump Station 2



- 66.3.1.5.1. Remove left 2 motor indicators
- 66.3.2. Influent Pump Station
  - 66.3.2.1. Remove bottom right motor indicator
- 66.3.3. Detritor 1-2
  - 66.3.3.1. Remove Fine Screen 1-4 & Comminutors
- 66.3.4. Blower Building
  - 66.3.4.1. Remove square graphics
- 66.3.5. Remove Mixed Liquor Pump Station 1&2 graphics
- 66.3.6. Remove Detritor 3 Fine Screen graphic
- 67. Solids Overview
  - 67.1. Filter Press Building
    - 67.1.1. Motor 134- 136 are same motor combine animation
  - 67.2. Change label Plant Warehouse Building #2/ Centrifuge Building #2
  - 67.3. Change graphics use same as Thickener screens
    - 67.3.1. Label Thickener Sludge stations
  - 67.4. Remove graphics in Centrifuge Building
  - 67.5. Add label Centrifuge/ Centrifuge Building 1
- 68. Filter Press Trends
  - 68.1. All current trends are acceptable
- 69. Chlorine Residuals
  - 69.1. Remove all Chlorine Trends
- 70. Suspended Solids
  - 70.1. Add Contact Tank 5 & 7 trends
- 71. Dissolved Oxygen
  - 71.1. Remove Effluent Trend screen
- 72. Ph Level
  - 72.1. Remove Ph Level Screen
- 73. Contact Tank Basin 3
  - 73.1. Remove trend screen
- 74. Fine Screens 1-6
  - 74.1. Remove trend screen
- 75. Thickener Blanket
  - 75.1. Remove trend screen

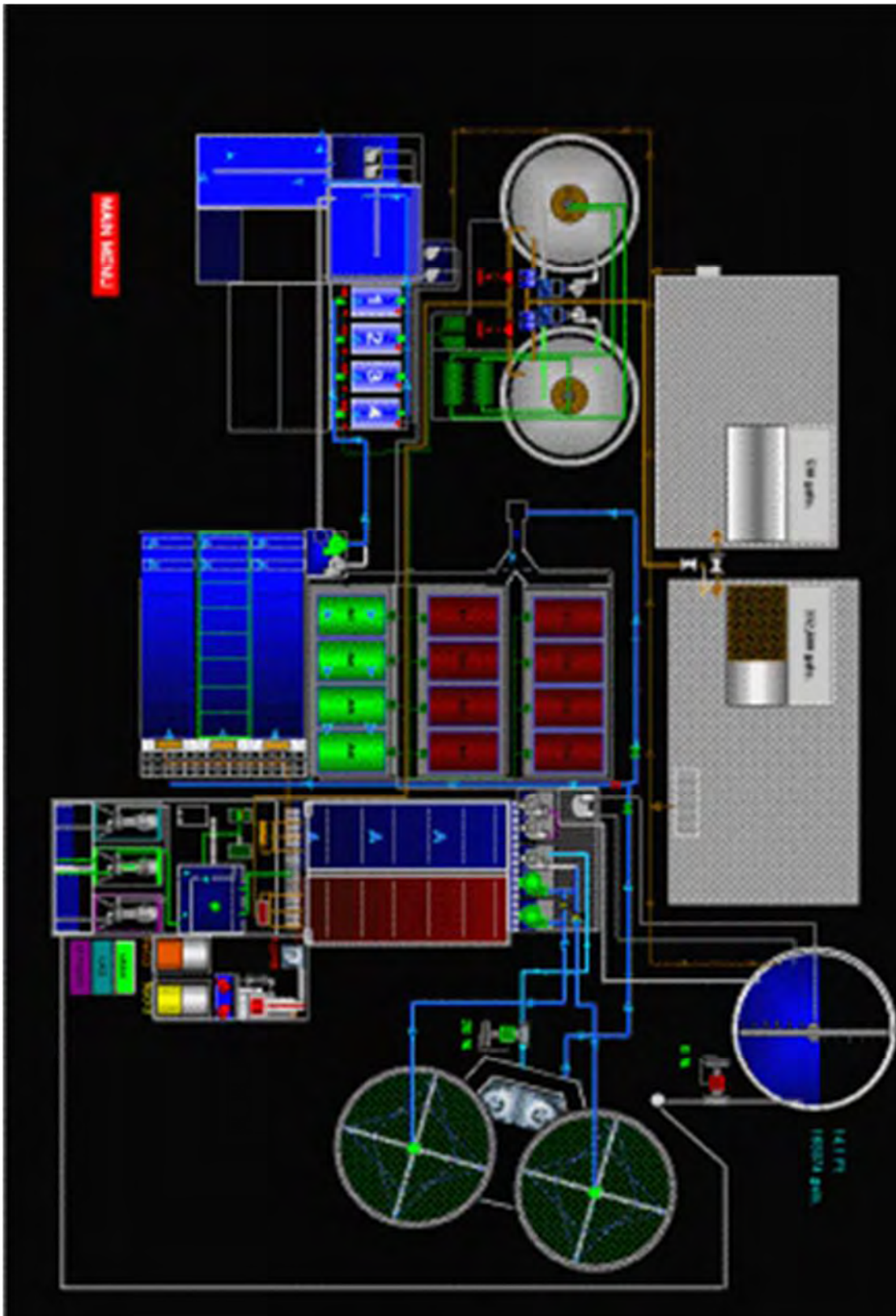
## Pump Station Operations: Wonderware Intouch SCADA

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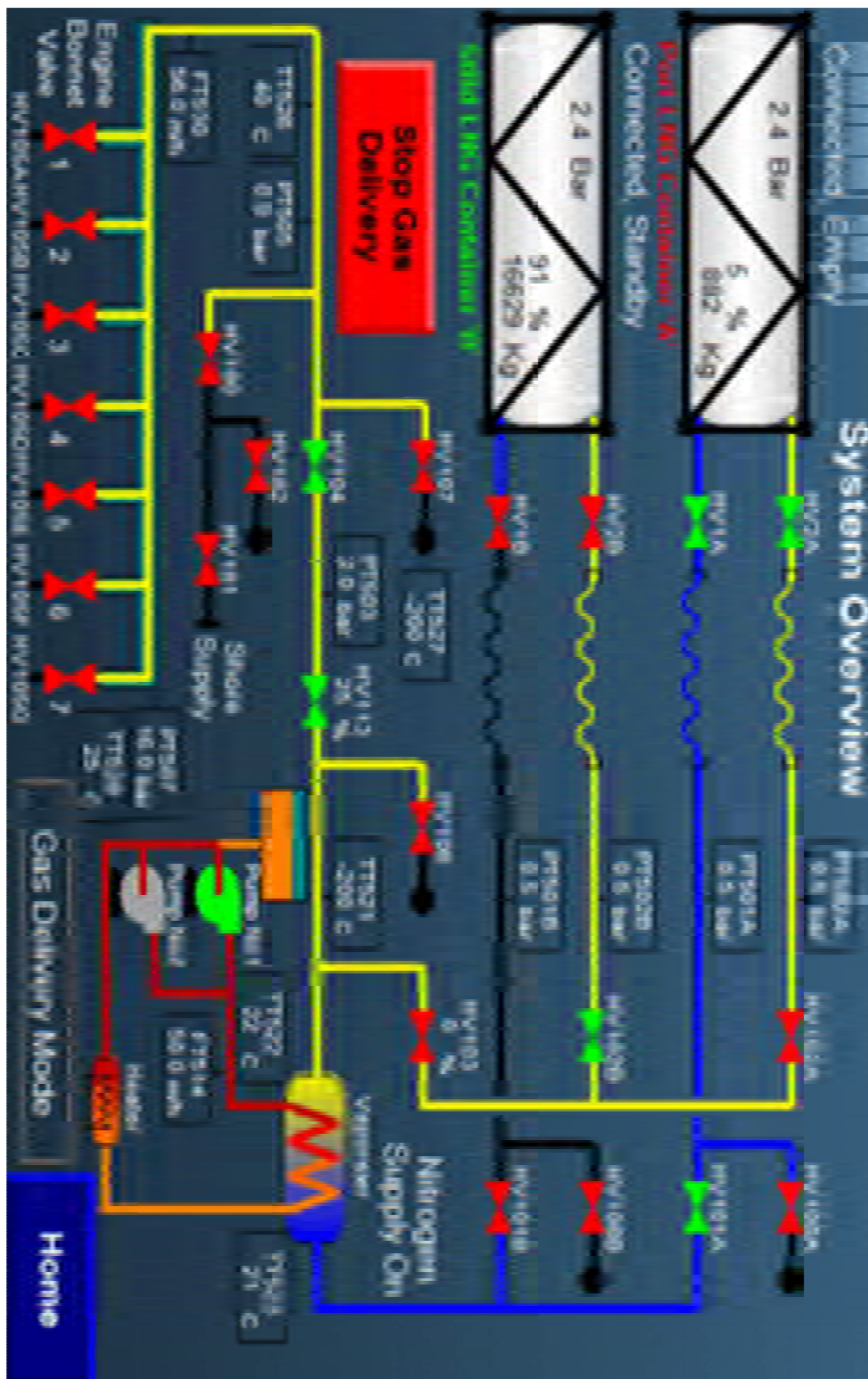
1. All screen graphics are required to be updated as defined in *Part 1: Scope*
2. Pump Station that need to be removed
  - 2.1. Site 29,36,46,54,56,62,64,78,80,89,93,104,105,106,107,109-121,123,124,126 and 128
3. Orchard Knob P.S.
  - 3.1.1. Create new screen with Old pump station screen and new pump station screen on the same screen
  - 3.1.2. Create detail screen if needed
4. Create Critical Wet Weather Overview screen, to consist of;
  - 4.1. The design of the screen shall be realistic view of the geographical location
  - 4.2. 17 Stations, 9 CSO's and 8 Storm Stations
    - 4.2.1. Create 19<sup>th</sup> Street
    - 4.2.2. Create 23<sup>rd</sup> Street
    - 4.2.3. Create Citico
    - 4.2.4. Create East Brainerd
    - 4.2.5. Create Friar Branch
    - 4.2.6. Create Mountain Creek
    - 4.2.7. Orchard Knob
    - 4.2.8. Create Ringgold
    - 4.2.9. Create South Chick
    - 4.2.10. Create Tiftonia #1
    - 4.2.11. Create Spring Creek
    - 4.2.12. Create Hixson #2
    - 4.2.13. Create Hixson #1
    - 4.2.14. Create Boy Scout Road
    - 4.2.15. Create Big Ridge #2
    - 4.2.16. Create Big Ridge #6
    - 4.2.17. Create Dupont Parkway
5. Site pictures for all locations to be added for training purposes
  - 5.1. Picture can be invoked by separate button on screen
6. Create new screen navigation in alphabetical order
7. All pump stations to have Information and Alarm banner at bottom of page
8. Create separate Storm Stations for Pump Station
9. Create separate CSO Station screens
10. Create animation on all Overview screens to indicate site running or in alarm
11. Create report screen for;
  - 11.1. Revenue Report
  - 11.2. Critical Station Report
    - 11.2.1. Example; Water Meter, Electric Meter and Pump Hours
12. Create screens for each pump stations to show MCC Room and Drywell for Critical Stations

13. Create screen to show site pictures of Manholes and inward and outward flow of each station
  - 13.1. See appendix for example of site picture
  - 13.2. Animation of site would be preferred for flow and alarm condition
14. Additions required for multiple sites
  - 14.1. Start/Stop Buttons
  - 14.2. PLC Time readings
  - 14.3. False alarms need to be removed
  - 14.4. Scaling on numerous readings need to be analyzed, units changed

Appendix 1: Overview Screen with flow animation, prefer real site pictures where possible



## Appendix 2: Device and Flow Color Schemes



Appendix 3: Overview Site picture to be animated with transparent navigation





#### Appendix 4: Equipment Pump Station with animation



Appendix 5: Site picture with Manhole location and system flow (Section 13.0)





Appendix 6: Site picture with Manhole location and system flow



MONTH \_\_\_\_\_ REVENUE STATION ELECTRIC WATER METER READINGS YEAR \_\_\_\_\_

PAGE 1 JUNE 13

## 23

YEAR \_\_\_\_\_

termination of my job.

[illegible]

# Appendix 9: Critical Station Check Report

CRITICAL STATION CHECK														
DATE:	TIME:				PUMP STATUS    A - AVAILABLE    R - RUNNING    F - PUMP FAILURE									
STATION	PUMP 1	PUMP 2	PUMP 3	PUMP 4	WET WELL LEVEL	HIGH WET WELL LEVEL	PUMP #1 FLOW	PUMP #2 FLOW	PUMP #3 FLOW	PUMP #4 FLOW	TOTAL FLOW	MAXIMUM FLOW	MOST RECENT PUMP START TIME	SITE ALARMS
19th St						11.6'						14000 GPM		
23rd St						17.5'						78 MGD		
Citico						13.0'						118 MGD		
East Brainerd						10.0'						9.7 MGD		
Friar Branch						11.6'						72.5 MGD		
Mountain Creek						9.0'						12 MGD		
Orchard Knob						10.5'						67 MGD		
Ringgold						11.0'						4320 GPM		
South Chick						20.0'						103 MGD		
Tiftonia #1						126"					Q/S	12528 GPM		
Spring Creek						10.0'						14.4 MGD		
Hixson #2						8.0'						26 MGD		
Boyscout Rd						8.0'					Q/S	11.9 MGD		

NOTES:

## Appendix 10: Filter Press Report

MOCCASIN BEND WASTEWATER TREATMENT PLANT FILTER PRESS BUILDING TOTALIZER READINGS		
DATE:		
OPERATOR:		
SHIFT:		
	TRAIN 1	TRAIN 2
US Filter Sludge Totalizer – Start:		
US Filter Sludge Totalizer – End:		
Shift Total:		
Conditioned Sludge Feed – Shift Total:		
Lime Slurry Totalizer – Start:		
Lime Slurry Totalizer – End:		
Shift Total:		
Ferric Chloride Totalizer – Start:		
Ferric Chloride Totalizer – End:		
Shift Total:		
Boiler #1 Gas Reading – Start:		
Boiler #1 Gas Reading – End:		
Shift Total:		
Boiler #2 Gas Reading – Start:		
Boiler #2 Gas Reading – End:		
Shift Total:		
Boiler #3 Gas Reading – Start:		
Boiler #3 Gas Reading – End:		
Shift Total:		
Gas Used Natural or Digester Bldg:		
<b>Certification:</b> "I hereby certify that the information presented above has been reviewed by me and to the best of my knowledge is true, accurate and complete. I am aware that there is significant disciplinary action up to and including dismissal for submitting false information."		
Signature	Date	

Appendix 11: Liquid Operations Report (Page 1)

SEPT

LIQUID OPERATION REPORT PAGE 1

2017

LT	PLT	RPOS	INF	RPOS	TO	SEC	INF	SEC	WME	TO	PLAN	RAS	WAS	RAW	WV	PLT	SEC	PLT	SEC	PLT	SEC	PLT	SEC	PLT	SEC	PLT	SEC	PLT	SEC
FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW	FLW
MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD
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Appendix 12: Liquid Operations Report (Page 2)

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LIQUID OPERATION REPORT PAGE 2														
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DATE	SEC	UNOX	UNOX	CLAR	CLAR	CLAR	THICK	THICK	RAW	RAW	MLSS	5 THRU 10	BLEACH	PLT EFF
TIME	IN	MLSS	MLSS	RAS	BUK	IN	BLTS	SLD	SLD	TSB	SETT	Sec Clat	USED	CL2 RES
PPM	TK-N	%	PPM	PPM	FT	SEPV	FT	%	%	%	MLSS	PPM	GALS	CL2 PPM
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Appendix 13: Liquid Operations Report (Page 3)

SEPT

LIQUID OPERATION REPORT PAGE 3

2017

Jan-17																													
RAIN	MAX	MIN	RIVER	RIVER	RIVER	RIVER	RIVER	UNOX	O2	O2	UNOX 1	UNOX 2	UNOX 3	UNOX 4	UNOX 1	UNOX 2	UNOX 3	UNOX 4	UNOX 1	UNOX 2	UNOX 3	UNOX 4	UNOX 1	UNOX 2	UNOX 3	UNOX 4	UNOX 1	UNOX 2	UNOX 3
FALL	TEMP	TEMP	ELEV	ELEV	ELEV	FLOW	FLOW	IN	PROD	PURITY	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP	TEMP
INCH	F	F	FT	FT	FT	QFS	QFS	#	TONS	%	C	C	C	C	C	C	C	C	FT3D	FT3D	FT3D	FT3D	FT3D	FT3D	FT3D	FT3D	FT3D	FT3D	
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Appendix 14: Liquid Operations Report (Page 4)

SEPT

LIQUID OPERATION REPORT PAGE 4

Jun-17		UNOX 4	UNOX 1	UNOX 2	UNOX 3	UNOX 4	ML	TOT	TOT	PR 1	PR 2	TK 142	TK 355	LOK 1	LOK 2
O2	O2	O2	O2	O2	O2	CHAM	PLT	PLT	TK 142	TK 355	TO	TO	TO	LEVEL	LEVEL
PURITY	PURITY	PURITY	PURITY	PURITY	PURITY	AVG DO	REC'D	WATER	TK 142	TK 355	TANK	ST	IN		
FT30	%	%	%	%	%	PPM	MGD	MGD	GALS	GALS	GALS	GALS	GALS		
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Appendix 15: Liquid Operations Report (Page 5)

SEPT

LIQUID OPERATION REPORT PAGE 5

2017

Jun-17	BOLERO ON		BOLERO ON	
	DISCLOSURE	NATURAL	DISCLOSURE	NATURAL
	1	2	1	2
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## Appendix 20: Process Control Log Report (Page 5)

[illegible]





## 37

[illegible]

Appendix 23: Process Control Log Report (Page 8)

JULY									
PROCESS CONTROL LOG 8									
PLANT EFFLUENT MONITORING TEST									
DATE	800 AM	1000 AM	1200 PM	200 PM	400 PM	600 PM	800 PM	1000 PM	1200 PM
01	01	01	01	01	01	01	01	01	01
02	02	02	02	02	02	02	02	02	02
03	03	03	03	03	03	03	03	03	03
04	04	04	04	04	04	04	04	04	04
05	05	05	05	05	05	05	05	05	05
06	06	06	06	06	06	06	06	06	06
07	07	07	07	07	07	07	07	07	07
08	08	08	08	08	08	08	08	08	08
09	09	09	09	09	09	09	09	09	09
10	10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20	20	20
21	21	21	21	21	21	21	21	21	21
22	22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24	24	24
25	25	25	25	25	25	25	25	25	25
26	26	26	26	26	26	26	26	26	26
27	27	27	27	27	27	27	27	27	27
28	28	28	28	28	28	28	28	28	28
29	29	29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31	31	31

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2017

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2017

Appendix 27: Process Control Log Report (Page 12)

DATE		LOCATION		DESCRIPTION		ACTION	
7/1	7/1	INF. SCR	INF. SCR	INF. SCR	INF. SCR	INF. SCR	INF. SCR
7/2	7/2	INF. RFF	INF. RFF	INF. RFF	INF. RFF	INF. RFF	INF. RFF
7/3	7/3	WW/GR1	WW/GR1	WW/GR1	WW/GR1	WW/GR1	WW/GR1
7/4	7/4	FIVE SCR AAA	FIVE SCR AAA	FIVE SCR AAA	FIVE SCR AAA	FIVE SCR AAA	FIVE SCR AAA
7/5	7/5	DET 1	DET 1	DET 1	DET 1	DET 1	DET 1
7/6	7/6	DET 2	DET 2	DET 2	DET 2	DET 2	DET 2
7/7	7/7	DET 3	DET 3	DET 3	DET 3	DET 3	DET 3
7/8	7/8	PRIMARY 1	PRIMARY 1	PRIMARY 1	PRIMARY 1	PRIMARY 1	PRIMARY 1
7/9	7/9	PRIMARY 2	PRIMARY 2	PRIMARY 2	PRIMARY 2	PRIMARY 2	PRIMARY 2
7/10	7/10	CHRD ST	CHRD ST	CHRD ST	CHRD ST	CHRD ST	CHRD ST
7/11	7/11	19TH ST	19TH ST	19TH ST	19TH ST	19TH ST	19TH ST
7/12	7/12	SOUTH CHICK	SOUTH CHICK	SOUTH CHICK	SOUTH CHICK	SOUTH CHICK	SOUTH CHICK
7/13	7/13	CINCO	CINCO	CINCO	CINCO	CINCO	CINCO
7/14	7/14	PLT TRASH	PLT TRASH	PLT TRASH	PLT TRASH	PLT TRASH	PLT TRASH
7/15	7/15	Recess's Trash	Recess's Trash	Recess's Trash	Recess's Trash	Recess's Trash	Recess's Trash
7/16	7/16	PLT. INF TSS	PLT. INF TSS	PLT. INF TSS	PLT. INF TSS	PLT. INF TSS	PLT. INF TSS
7/17	7/17	REC INF TSS	REC INF TSS	REC INF TSS	REC INF TSS	REC INF TSS	REC INF TSS
7/18	7/18	PLT INF CSDOS	PLT INF CSDOS	PLT INF CSDOS	PLT INF CSDOS	PLT INF CSDOS	PLT INF CSDOS
7/19	7/19	REC INF CSDOS	REC INF CSDOS	REC INF CSDOS	REC INF CSDOS	REC INF CSDOS	REC INF CSDOS
7/20	7/20	PLT L-F TSS	PLT L-F TSS	PLT L-F TSS	PLT L-F TSS	PLT L-F TSS	PLT L-F TSS
7/21	7/21	PLT EFF CSDOS	PLT EFF CSDOS	PLT EFF CSDOS	PLT EFF CSDOS	PLT EFF CSDOS	PLT EFF CSDOS
7/22	7/22	LINK MLVSS	LINK MLVSS	LINK MLVSS	LINK MLVSS	LINK MLVSS	LINK MLVSS
7/23	7/23	WAN EFF TSS	WAN EFF TSS	WAN EFF TSS	WAN EFF TSS	WAN EFF TSS	WAN EFF TSS
7/24	7/24	PLT EFF REC	PLT EFF REC	PLT EFF REC	PLT EFF REC	PLT EFF REC	PLT EFF REC
7/25	7/25	PT EFF C-001	PT EFF C-001	PT EFF C-001	PT EFF C-001	PT EFF C-001	PT EFF C-001
7/26	7/26	WWB-COL	WWB-COL	WWB-COL	WWB-COL	WWB-COL	WWB-COL
7/27	7/27	M.L. CHAN MLVSS	M.L. CHAN MLVSS	M.L. CHAN MLVSS	M.L. CHAN MLVSS	M.L. CHAN MLVSS	M.L. CHAN MLVSS
7/28	7/28	RAW MLVSS	RAW MLVSS	RAW MLVSS	RAW MLVSS	RAW MLVSS	RAW MLVSS
7/29	7/29	WAN EFF LEGAL	WAN EFF LEGAL	WAN EFF LEGAL	WAN EFF LEGAL	WAN EFF LEGAL	WAN EFF LEGAL
7/30	7/30	PLT INF TSS	PLT INF TSS	PLT INF TSS	PLT INF TSS	PLT INF TSS	PLT INF TSS
7/31	7/31	PLT EFF TSS	PLT EFF TSS	PLT EFF TSS	PLT EFF TSS	PLT EFF TSS	PLT EFF TSS
7/32	7/32	PLT INF HIO-N	PLT INF HIO-N	PLT INF HIO-N	PLT INF HIO-N	PLT INF HIO-N	PLT INF HIO-N
7/33	7/33	PLT EFF HIO-N	PLT EFF HIO-N	PLT EFF HIO-N	PLT EFF HIO-N	PLT EFF HIO-N	PLT EFF HIO-N
7/34	7/34	PLT INF VSS	PLT INF VSS	PLT INF VSS	PLT INF VSS	PLT INF VSS	PLT INF VSS

Appendix 28: Process Control Log Report (Page 13)

DATE		TIME COLLECTED										VOLUME COLLECTED										
TIME COLLECTED		PLANT INF.	PRI INF. NO.1	PRI INF. NO.2	PRI. EFF.	SEC. INF.	FINAL 1&2	FINAL 3&4	FINAL NO.5	DOUBLE SAMPLE	NEW PLANT EFF.	PLANT INF.	PRI INF. NO.1	PRI INF. NO.2	PRI. EFF.	SEC. INF.	FINAL 1&2	FINAL 3&4	FINAL NO.5	DOUBLE SAMPLE	NEW PLANT EFF.	
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JULY

PROCESS CONTROL LOG PAGE

2017

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2017



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2017

Appendix 32: Process Control Log Report (Page 17)

DATE	PRIV THICK SLUDGE TEMPERATURE		CCT EFFLUENT PH				
	8:30 AM	4:30 PM	12:30 AM	AVERAGE	SU	CCT 1	CCT 2
1							
2							
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PROCESS CONTROL LOG PAGE \_\_\_\_\_

2017

# Appendix 33: Digester Operations Report (Page 1)

- The following 4 pages provide a layout for the first 9 days of the month. The remaining days of the month are to be filed in consecutive order.

August

DIGESTER OPERATION FORM  
YEAR 1 OF 15

YEAR 2017

DATE	TIME	PRIMARY SLUDGE		SLUDGE TRANSFERS												DIGESTER LIQUID LEVELS								
		TO HQT	TO HOS	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 13	13 TO 14	14 TO 15	15 TO 16	16 TO 17	17 TO 18	18 TO 19	19 TO 20		
1	8:00 AM																							
	4:00 PM																							
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	4:00 PM																							

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# Appendix 34: Digester Operations Report (Page 2)

August

DIGESTER OPERATION FORM  
Page 2 of 16

YEAR: 2017

DATE	TIME	DIG GAS HOLDER LEVELS						8:00 AM DIG SLUDGE TEMP												8:00 PM DIG SLUDGE TEMP						DIG WATER JACKET TEMPS					
		3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	TIME	3	4	5	6									
		FT/IN	FT/IN	FT/IN	FT/IN	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F									
1	8:00 AM					TT3001	TT3002	TT3050	TT3042	TT3043	TT3045	TT3031	TT3002	TT3050	TT3042	TT3049	TT3045	8:00 AM	TT3324	TT3325	TT3326	TT3327									
	8:00 PM					VT1011	VT2011	VT3011	VT4011	VT5011	VT6011	VT1012	VT2012	VT3012	VT4012	VT5012	VT6012	8:00 PM													
2	8:00 AM																	8:00 AM													
	8:00 PM																	8:00 PM													
3	8:00 AM																	8:00 AM													
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# Appendix 35: Digester Operations Report (Page 3)

August

PAGE 3 OF 16

DIGESTER OPERATION FORM

YEAR: 2017

DIGESTER GAS PRODUCTION AND USE													BOILER WATER TEMPS			
DATE	TIME	1	2	3	4	5	6	WGB.1	WGB.2	BOILER	SCRUBBER	TIME	NO.1	NO.2		
		FT3	FT3	FT3	FT3	FT3	FT3	WGP	FT3	FT3	FT3		SUPPLY/RETURN	SUPPLY/RETURN		
1	8:00 AM	011650	012090	013100	014030	015200	016000			017001	017002	017001	017002	017001		
2	8:00 AM											8:00 AM				
3	8:00 AM											8:00 PM				
4	8:00 AM											8:00 AM				
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8	8:00 AM											8:00 AM				
9	8:00 AM											8:00 PM				

Appendix 36: Digester Operations Report (Page 4)

August

DIGESTER OPERATION FORM  
Page 4 of 16

YEAR: 2017

DATE	HE NO. 1		HE NO. 2		HE NO. 4		HE NO. 5		COOLING TOWER				
	SLUDGE TEMP TT3054	HEAT EXCH. TEMP TT3053	SLUDGE TEMP TT3051	HEAT EXCH. TEMP TT3052	SLUDGE TEMP TT3057	HEAT EXCH. TEMP TT3058	SLUDGE TEMP TT3052	HEAT EXCH. TEMP TT3053	SUPPLY TEMP TT3058	RETURN TEMP TT3054	TIME	CHEMICAL TREATMENT	
												COND.	COND.
												DAY	NIGHT
1	8:00 AM										8:00 AM		
	8:00 PM												
2	8:00 AM										8:00 AM		
	8:00 PM												
3	8:00 AM										8:00 AM		
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4	8:00 AM										8:00 AM		
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