CHILDERS
ARCHITECT

BID PACKAGE 02 – ADDENDUM 01

Date: January 10, 2020

Re: Wilma P Mankiller Health Center Expansion

From: James R Childers Architect, Inc.
45 South 4th Street
Fort Smith, Arkansas 72901

01-10-20

This addendum forms part of the Contract Documents, and modifies the documents as noted below. Acknowledge receipt of this addendum in the space provided on the bid form. Failure to do so may subject the bidder to disqualification.

Item 01

A1.21 – Added door 02-18-00
A1.30 – Door 03-19-01 Revised door swing.
A2.02 – Project phase and date revised.
A2.03 – Project phase and date revised.
A5.01 – Project phase and date revised.
A5.02 – Project phase and date revised.
A5.03 – Project phase and date revised.
A6.02 – Project phase and date revised.
A6.10 – Added door 02-18-00 / Door hardware for door 03-19-01 had been revised. Project phase and date revised.
A6.20 – Project phase and date revised.
A7.13 – Flooring changed to exposed sealed concrete in corridor.
A7.14 – Flooring changed to exposed sealed concrete in corridor.
A8.31 – Project phase and date revised.
A9.21 – Lighting fixtures taken out / Ceiling changed to open to structure.
A9.22 – Lighting fixtures taken out / Ceiling changed to open to structure.

Item 02

Please see attached narrative from HP Egineering.

HP ENGINEERING

5214 W. Village Parkway, Suite 120, Rogers, AR 72758 | 479-899-6370

CHANGE NARRATIVE LETTER

TO: MATHEW THOMAS- CHILDERS ARCHITECTS

FROM: STEPHEN EDMONDSON, TREY SMITH, BETSY WELLS– HP ENGINEERING, INC.

DATE: 1/10/2020

PROJECT: WPMHC EXPANSION BID PACKAGE 02 ADDENDUM 01

MECHANICAL DESIGN ITEMS

1. M1.02
    a. Mini Split Air Conditioning Schedule – Revised MCA and MOCP.
    b. Dental Equipment Louver Schedule – Added schedule to sheet.
    c. Dental Equipment Exhaust Fan schedule – Add schedule to sheet.
2. M2.03
    a. Added detail 6 to sheet.
3. M4.02
    a. Removed ductwork and air devices from corridor.
4. M.503
    a. Removed ductwork and air devices from corridor.
    b. Added equipment to dental mechanical room.
5. M5.04
    a. Removed ductwork and air devices from corridor.
6. M5.05
    a. Revised hood location.
    b. Revise air device locations.

7. M6.04
    a. Removed air devices from corridor.
8. M6.05
    a. Removed air devices from corridor.
9. M6.06
    a. Remove air devices from corridor.
10. M8.01
    a. Revised hydronic pipe routing to miss electrical equipment.
11. M8.02
    a. Revised hydronic pipe routing to miss electrical equipment.
12. M8.10
    a. Added E-stop location for boilers.
13. M8.11
    a. Added detail callouts for boilers.

ELECTRICAL DESIGN ITEMS

1. E1.01
    a. Notes updated
2. E1.03
    a. H1 panel relocated.
3. E1.04
    a. Detail 1 – Revised water fountain receptacle to not be GFI.
    b. Detail 1 – Added (1) circuit in Closed Opp 02-17-35 for receptacles.
    c. Detail 1 – Revised circuit number for Circulation 02-17-27 receptacles.
    d. Detail 1 – Revised note for miele instrument washer receptacles in Soiled 02-17-43 to include NEMA type.

e. Detail 1 – Added NEMA rating for coffee receptacle in Breakroom/Conf 02-17-04.

f. Detail 2 – Revised orientation of detail.

g. Detail 2 – Added (1) junction box for x-ray in Closed Opp 02-17-48.

h. Detail 2 – Added (1) junction for remoted station in Closed Opp 02-17-48.

i. Detail 2 – Added (1) junction for exposure button in Circulation 02-17-07.

j. Keynotes – Removed keynote 26.39.

4. E1.05

    a. Detail 1 – Added keynote 26.46 to elevator service GFCI receptacle.

    b. Keynotes – Added to sheet.

5. E1.06

    a. Circuits have been updated.

6. E1.07

    a. Circuits have been updated.

7. E1.08

    a. Circuits have been updated.

8. E1.09

    a. Circuits have been updated.

9. E1.10

    a. Circuits have been updated.

10. E1.11

    a. Circuits have been updated.

11. E1.13

    a. Key notes have been revised

    b. Circuits have been updated.

    c. Detail 1 – Added EF-9 location and equipment tag.

12. E1.14

a. Detail 1 – Revised VAV-1 and VAV-2 circuitry to be isolated from each other.

b. Detail 1 – Added note for VAV-1 circuitry.

c. Detail 1 – Added EF-9 location and equipment tag.

13. E1.15

a. Detail 1 – Added (2) emergency shunt switches for boiler shunt control in MEP 01-05-01.

b. Detail 1 – Added equipment tag for VAV-1.23.

c. Detail 1 – Added junction and 120V circuit for BAS in MEP 01-05-01.

d. Detail 1 – Added (2) 30A disconnects for CPF-1 and CPF-2 generator annunciator panels in MEP 01-05-01.

e. Detail 1 – Added (2) junction boxes for CPF-1 and CPF-2 generator estops in MEP 01-05-01.

f. Detail 1 – Revised location of KH-1 junction box in Kitchen 01-14-04.

g. Detail 1 – Revised location of VAV-1.09 switch.

h. Detail 1 – Revised location of VAV-1.15 switch.

i. Detail 1 – Removed VAV-1.36 switch from detail.

j. Kitchen Power Notes – Added to sheet.

k. Keynotes – Added to sheet.

14. E1.16

a. Detail 1 – Added keynote 26.53 to (4) elevator disconnects.

b. Detail 1 – Revised (2) elevator control service disconnect notes.

c. Detail 1 – Removed circuit from EF-7.

d. Keynotes – Added to sheet.

15. E1.17

a. Detail 1 – Added keynote 26.53 to (2) elevator disconnects.

b. Detail 1 – Revised elevator control service disconnect note.

c. Keynotes – Added to sheet.

16. E1.18

a. Detail 1 – Revised scale of detail.

b. Detail 1 - Added note for exhaust fan pre-wired, factory mounted, integral disconnects.

c. Detail 1 – Added keynote 26.52 and GFI receptacle for MCUs maintenance.

d. Detail 1 – Removed circuit to AHUs.

e. Detail 1 – Added equipment tag for EF-10.

f. Detail 1 – Added note for roof penetrations.

g. Detail 1 – Added (1) GFI receptacle at AHU-1.

h. Detail 1 – Added MAC-10 location and equipment tag.

i. Keynotes – Removed keynote 28.06.

j. Keynotes – Added keynote 26.52.

17. E1.19

a. Fire alarm notes have been revised.

18. E1.21

a. Detail 1 – Added keynote 26.54 to (1) phone/data in Group Room 01-08-10.

b. Detail 1 – Added keynote 26.54 to (1) phone/data in Play Therapy 01-08-06.

c. Detail 1 – Removed (1) phone/data from Office Therapist 01-08-15.

d. Detail 1 – Added keynote 26.54 to (1) phone/data in Exercise Area 01-07-14.

e. Detail 1 – Added keynote 26.54 to phone/data in Kitchen 01-14-04.

f. Keynotes – Added to sheet.

19. E1.22

a. Detail 1 – Added phone/data for chairs and counters in all Open Opp areas.

b. Detail 1 – Added phone/data for (1) counter and chair in Closed Opp 02-17-35.

c. Detail 1 – Added phone/data for (2) counters and chair in Closed Opp 02-17-49.

d. Detail 1 - Added phone/data for (1) counter and chair in Closed Opp 02-17-11.

e. Detail 1 – Added phone/data for (1) counter and chair in Closed Opp 02-17-10.

f. Detail 1 – Added phone/data for (2) counters and chair in Closed Opp 02-17-48.

g. Detail 1 – Removed (1) phone/data from Breakroom/Conf 02-17-04.

h. Keynotes – Added to sheet.

20. E1.23

    a. Detail 1 – Added smoke detector to ELEC 02-05-12.

21. E2.01

    a. Lighting zones updated.

    b. Light fixture L5 added.

22. E2.02

    a. Lighting zones revised.

23. E2.03

    a. Lighting zones revised.

24. E2.04

    a. Circuits have been updated.

25. E2.05

    a. Detail 1 – Revised all wires to be shown as dashed.

26. E2.06

    a. Detail 1 – Revised location of ceiling OS in Stair #2 01-00-10.

    b. Detail 1 – Revised location of Type X1 fixture in Stair #2 01-00-01.

    c. Detail 1 – Added light switch for (2) elevators.

    d. Detail 1 – Added (1) Type X1 fixture to Circulation 01-00-11.

    e. Detail 1 – Revised location of ceiling OS in Circulation 01-00-11.

    f. Detail 1 - Added (1) Type X1 fixture to Circulation 01-01-05.

    g. Detail 1 – Added (1) Type X1 fixture to Circulation 01-00-06.

    h. Detail 1 – Added (1) Type X1 fixture to Lobby 01-00-01.

    i. Detail 1 – Added (1) ceiling OS to Vestibule.

    j. Keynotes – Added to sheet.

27. E2.07

    a. Detail 1 – Revised detail to be detail 1 previously on sheet E2.08.

    b. Detail 1 – Added (2) Type X1 fixtures to Circulation 01-13-01.

    c. Detail 1 – Added (1) Type X1 fixture to Circulation 01-11-00.

    d. Detail 1 – Revised switch to be dimmer switch in Exam Refrac 01-10-03.

    e. Detail 1 – Revised switch to be dimmer switch in Breastfeeding Room 01-11-02.

    f. Detail 1 – Added (1) switch to Reception 01-13-00.

    g. Detail 1 – Revised switch to be dimmer switch in Lactation 01-00-07.

28. E2.08

    a. Detail 1 – Revised detail to be detail 1 previously on sheet E2.07.

    b. Detail 1 – Revised (2) switches to be dimmer switches in Conference Room 01-16-07.

    c. Detail 1 – Revised all lighting in Conference Room 01-16-07 to be bi-level switched.

    d. Detail 1 – Revised (1) Type X1 fixture to be wall mounted in Circulation 01-00-12.

    e. Detail 1 – Added (1) Type X1 fixture to Circulation 01-16-11.

    f. Detail 1 – Added (1) Type X1 fixture to Pharmacy 01-15-14.

    g. Detail 1 – Revised location and quantity of faces for (1) Type X1 fixture in Pharmacy 01-15-14.

    h. Detail 1 – Revised location of (1) ceiling OS in Pharmacy 01-15-14.

    i. Detail 1 – Added (1) Type X1 fixture to Circulation 01-00-12.

29. E2.09

    a. Detail 1 – Added (2) ceiling OS to Circulation 01-00-06.

    b. Detail 1 – Added (1) switch to Circulation 01-00-06.

    c. Detail 1 – Added (1) Type X1 fixture to Circulation 01-00-06.

    d. Detail 1 – Removed (9) Type C1 fixtures from Circulation 01-00-06.

    e. Detail 1 - Added (5) Type L4 fixtures to Circulation 01-00-06.

    f. Detail 1 – Added (4) Type L2 fixtures to Circulation 01-00-06.

    g. Detail 1 – Removed (1) ceiling OS from Restroom Alcove.

h. Detail 1 – Revised location of (1) ceiling OS in Restroom Alcove.

i. Detail 1 – Revised location of (1) ceiling OS in Men's RR 01-00-04.

j. Detail 1 – Revised location of (1) ceiling OS in Women's RR 01-00-03.

k. Detail 1 – Revised location of (2) Type C1 fixtures in Women's RR 01-00-03.

30. E2.10

a. Detail 1 - Revised (1) Type G1 fixture to be Type G2 in Stair #3 01-19-06.

b. Detail 1 – Removed (1) ceiling OS from Stair #3 01-19-06.

c. Detail 1 – Revised (1) Type X1 fixture two be dual faced in Circulation 01-00-13.

d. Detail 1 – Removed (1) ceiling OS from Employee Area 01-02-01.

e. Detail 1 - Revised location of (1) ceiling OS in Employee Area 01-02-01.

f. Detail 1 - Revised circuitry for light fixtures in MEP 01-05-01.

g. Detail 1 - Added keynote 26.41 to elevator Type G1 fixture.

h. Detail 1 – Added (2) Type X1 fixtures to Exercise Area 01-07-14.

i. Detail 1 – Removed (1) Type X1 fixture from Exercise Area 01-07-14.

j. Detail 1 – Added (1) Type X1 fixture to Circulation 01-09-01.

k. Detail 1 – Removed switch from Office Therapist 01-08-14.

l. Detail 1 – Added (1) Type X1 fixture to Circulation 01-07-02.

m. Detail 1 – Revised (2) Type G1 fixtures to be Type G2 in Stair #1 01-14-03.

31. E2.11

a. Detail 1 – Added circuitry note for circuit HE3-1.

b. Detail 1 – Added (1) switch to Shell Space 02-19-01.

c. Detail 1 – Added (2) switches to Shell Space 02-19-02.

32. E2.12

a. Detail 1 – Added (11) switches for Open Opp areas.

b. Detail 1 – Added (1) Type G1 fixture to Shell Space 02-19-01.

c. Detail 1 - Added (1) Type X1 fixture to Circulation 02-17-27.

d. Detail 1 – Removed wall OS from EVS Closet 02-17-30.

e. Detail 1 – Added (1) ceiling OS to EVS Closet 02-17-30.

f. Detail 1 - Added (1) ceiling OS to Storage 02-17-29.

g. Detail 1 – Removed wall OS from Storage 02-17-38.

h. Detail 1 – Added (1) ceiling OS to Storage 02-17-38.

i. Detail 1 – Removed (1) Type X1 fixture from Circulation 02-17-45.

j. Detail 1 – Revised (1) Type X1 fixture to be wall mounted in Circulation 02-17-07.

k. Detail 1 – Added (1) Type X1 fixture to Waiting 02-17-00.

l. Detail 1 – Revised (1) Type X1 fixture to be single faced in Circulation 02-18-00.

m. Detail 1 – Hallway ceiling has been removed. Hallway fixtures changed to G1 fixture

33. E2.13

    a. Detail 1 – Hallway ceiling has been removed. Hallway fixtures changed to G1 fixture

    b. Detail 1 – Added(1) G2 fixture in stairs #1 and #3

34. E3.01

    a. Fault current schedule revised.

    b. Detail 1 – H1 feeder size changed to 200 amps.

35. E3.02

    a. Circuit HE1-4 wire size changed to #8

    b. Circuit HE1-18 wire size change to #8

    c. Circuit HE3-14,16,18 circuit breaker size changed to 30amp.

36. E3.03

    a. Fault current schedule revised.

    b. Detail 1 – H1 feeder size changed to 200 amps.

37. E3.04

    a. Panel schedule L1A revised.

    b. Circuit L2A-97 added

c. Panel schedule L3A revised.

d. Circuit breakers L1B 31,33 and L1B 32,34 changed to 15amps

e. Circuit breaker L1B-57 added.

f. Circuit breaker L3B-43 added.

38. E3.05

a. Panel schedule L4A revisied.

b. Circuit breakers L4B 1,3 and L4B 4,6 changed to 15amps

PLUMBING DESIGN ITEMS

1. P1.00:

a. The booster pump schedule has been fixed to show the BP-1 information.

b. SP-1 – Addition electrical information has been added. Trim information has been corrected.

SPEC SECTIONS

1. Division 28 specification added.

a. 283111 digital, addressable fire-alarm system spec added.

2. Division 21 specifications added.

a. 210513 common motor requirements for fire suppression equipment spec added.

b. 210517 sleeves and sleeve seals for fire-suppression piping spec added.

c. 210518 escutcheons for fire-suppression piping spec added.

d. 210523 general-duty valves for water-based fire-suppression piping spec added.

e. 210553 identification for fire-suppression piping and equipment spec added.

f. 211119 fire-department connections spec added.

g. 211313 wet-pipe sprinkler systems spec added.

h. 211316 dry-pipe sprinkler systems spec added.

END OF RESPONSES

WILMA P. MANKILLER HEALTH CENTER EXPANSION

BID PACKAGE 02

(CIVIL / ARCHITECTURAL / STRUCTURAL / MEP)

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M6.03	MECH CEILING PLAN LEVEL 01 SECTOR 02	■	
M6.04	OVERALL MECH CEILING PLAN LEVEL 02	■	■
M6.05	MECH CEILING PLAN LEVEL 02 SECTOR 01	■	■
M6.06	MECH CEILING PLAN LEVEL 02 SECTOR 02	■	■
M8.01	MECH YARD HYD PLAN	■	
M8.02	MECH YARD UG HYD PLAN	■	■
M8.03	OVERALL MECH HYD PLAN LEVEL 01	■	
M8.04	MECH HYD PLAN LEVEL 01 SECTOR 01	■	
M8.05	MECH HYD PLAN LEVEL 01 SECTOR 02	■	
M8.06	OVERALL MECH HYD PLAN LEVEL 02	■	
M8.07	MECH HYD PLAN LEVEL 02 SECTOR 01	■	
M8.08	MECH HYD PLAN LEVEL 02 SECTOR 02	■	
M8.09	OVERALL MECH HYD ROOF PLAN	■	
M8.10	ENLARGED MECH. ROOM HYDRONIC PLAN	■	■
M8.11	HYDRONIC PIPING DIAGRAMS	■	■
M9.01	MECHANICAL CONTROLS	■	
M9.02	MECHANICAL CONTROLS	■	
M9.03	MECHANICAL CONTROLS	■	
M10.01	MECH AXONOMETRIC PLAN LEVEL 01	■	
M10.02	MECH AXONOMETRIC PLAN LEVEL 02	■	
ELECTRICAL			
E1.01	ELECTRICAL NOTES AND LEGEND	■	■
E1.02	POWER PLAN LEVEL 01 SECTOR 01	■	■
E1.03	POWER PLAN LEVEL 01 SECTOR 02	■	■
E1.04	POWER PLAN LEVEL 02 SECTOR 01	■	■
E1.05	POWER PLAN LEVEL 02 SECTOR 02	■	■
E1.06	POWER PLAN LEVEL 01 SECTOR 01 NORTH	■	■
E1.07	POWER PLAN LEVEL 01 SECTOR 01 CENTER	■	■
E1.08	POWER PLAN LEVEL 01 SECTOR 01 SOUTH	■	■
E1 09	POWER PLAN LEVEL 01 SECTOR 02 NORTH	■	■
E1.10	POWER PLAN LEVEL 01 SECTOR 02 CENTER	■	■
E1.11	POWER PLAN LEVEL 01 SECTOR 02 SOUTH	■	■
E1.13	MAINTENANCE /MECH YARD POWER/LIGHTING	■	■
E1.14	MECH POWER PLAN LEVEL 01 SECTOR 01	■	■
E1.15	MECH POWER PLAN LEVEL 01 SECTOR 02	■	■
E1.16	MECH POWER PLAN LEVEL 02 SECTOR 01	■	■
E1.17	MECH POWER PLAN LEVEL 02 SECTOR 02	■	■
E1.18	MECH POWER PLAN ROOF	■	■
E1.19	FIRE ALARM LEGEND AND NOTES	■	■
E1.20	SYSTEMS PLAN LEVEL 01 SECTOR 01	■	■
E1.21	SYSTEMS PLAN LEVEL 01 SECTOR 02	■	■
E1.22	SYSTEMS PLAN LEVEL 02 SECTOR 01	■	■
E1.23	SYSTEMS PLAN LEVEL 02 SECTOR 02	■	■
E1.24	FIRST FLOOR CABLE TRAY PLAN	■	
E1.25	SECOND FLOOR CABLE TRAY PLAN	■	■
E2.01	ZONING PLAN LEVEL 01 SECTOR 01	■	■
E2.02	ZONING PLAN LEVEL 01 SECTOR 02	■	■
E2.03	ZONING PLAN LEVEL 02 SECTOR 01	■	■
E2.04	ZONING PLAN LEVEL 02 SECTOR 02	■	■
E2.05	SITE LIGHTING PLAN	■	■
E2.06	NORTH SECTOR 1 ENLARGED LIGHTING PLAN	■	■
E2.07	CENTER SECTOR 1 ENLARGED LIGHTING PLAN	■	■
E2.08	SOUTH SECTOR 1 ENLARGED LIGHTING PLAN	■	■
E2.09	NORTH SECTOR 2 ENLARGED LIGHTING PLAN	■	■
E2.10	CENTER SECTOR 2 ENLARGED LIGHTING PLAN	■	■
E2.11	NORTH SECTOR 1 LEVEL 02 ENLARGED LIGHTING PLAN	■	■
E2.12	SOUTH SECTOR 1 LEVEL 02 ENLARGED LIGHTING PLAN	■	■
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E3.01	ELECTRICAL SCHEDULES AND RISER	■	■
E3.02	PANEL SCHEDULES	■	■
E3.03	PANEL SCHEDULES	■	■
E3.04	PANEL SCHEDULES	■	■
E3.05	ELECTRICAL DETAILS	■	■

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EQUIPMENT			
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EQ1.12	EQUIPMENT PLAN LEVEL 01 SECTOR 02	■	
EQ1.21	EQUIPMENT PLAN LEVEL 02 SECTOR 01	■	
Grand total: 226			

1836 SOUTH BALTIMORE AVE.
TULSA, OK 74119
(539) 664-4618

MECHANICAL / ELECTRICAL / PLUMBING ENGINEER

Barker Associates — Consulting Engineers

3902 UNIVERSITY BOULEVARD
DURANT, OK 74701
(580) 931-9045

CIVIL ENGINEER

Chavez-Grieves consulting engineers, Inc.

4700 LINCOLN ROAD NE, SUITE 102
ALBUQUERQUE, NM 87109
(505) 344-4080

STRUCTURAL ENGINEER

wsp

808 TRAVIS STREET, SUITE 200
HOUSTON, TX 77002
(281) 589-5900

FIRE PROTECTION / LIFE SAFETY

Interior Logistics

1316 E 35TH PLACE, SUITE 100
TULSA, OK 74105
(918) 382-9120

EQUIPMENT PLANNER

James R. Childers Architect, Inc.
45 South 4th Street
Fort Smith, AR 72901
479-783-2480
www.childersarchitect.com

PROFESSIONAL SEAL:

STATE OF OKLAHOMA — JAMES R. CHILDERS — REGISTERED ARCHITECT

01-10-2020

CONSULTANT LOGO:

CLIENT:

THE CHEROKEE NATION — TRIBAL SEAL — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

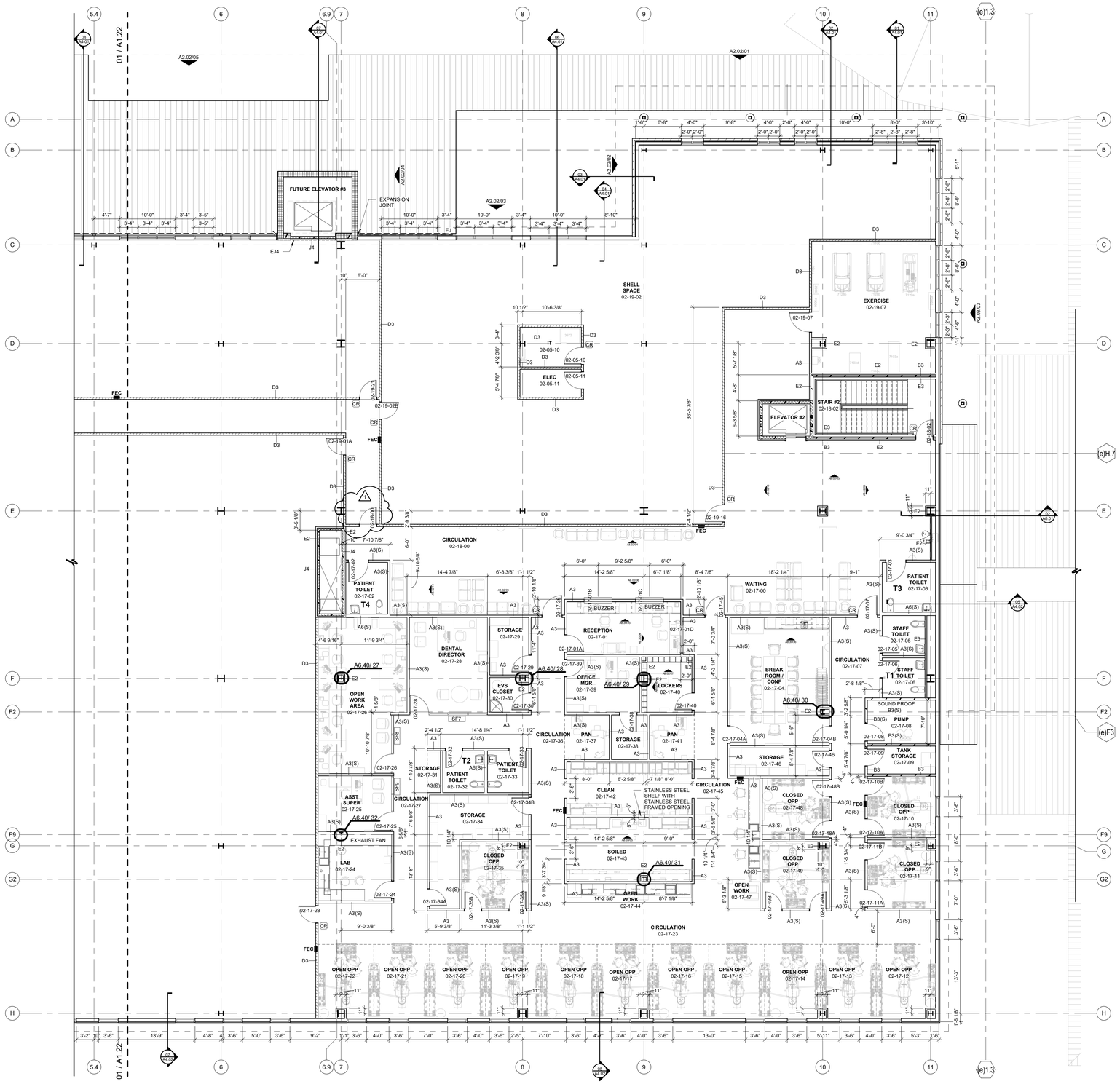
REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: G0.02
COVER / INDEX

GENERAL NOTES - FLOOR PLAN

1. INTERIOR DIMENSIONS ARE TO THE FACE OF DRYWALL OR FINISH.
2. ALL EXTERIOR DIMENSIONS ARE TO THE FACE OF EXTERIOR SHEATHING, UNLESS OTHERWISE NOTED.
3. REFER TO SHEET A2 FOR SERIES FOR EXTERIOR ELEVATIONS.
4. REFER TO SHEET A6.01 - A6.02 FOR PARTITION TYPES AND FRAMING DETAILS.
5. REFER TO SHEET A6.10 FOR DOOR SCHEDULE.
6. REFER TO SHEET A6.20 SERIES FOR TOILET & ACESSORY INFORMATION.
7. REFER TO SHEET A8 SERIES FOR MILLWORK AND INTERIOR ELEVATIONS.



01 FLOOR PLAN LEVEL 02 SECTOR 01
1/8" = 1'-0"

PLAN NORTH
TRUE NORTH

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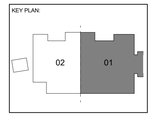
TRIBAL SEAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

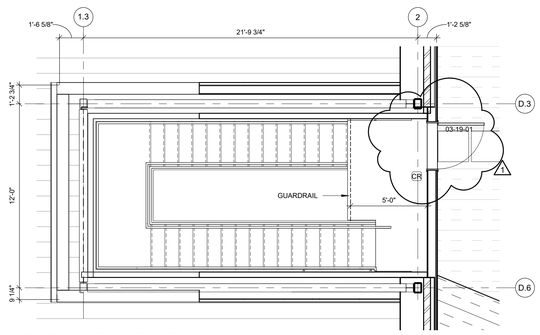
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

A1.21

FLOOR PLAN LEVEL 02 SECTOR 01



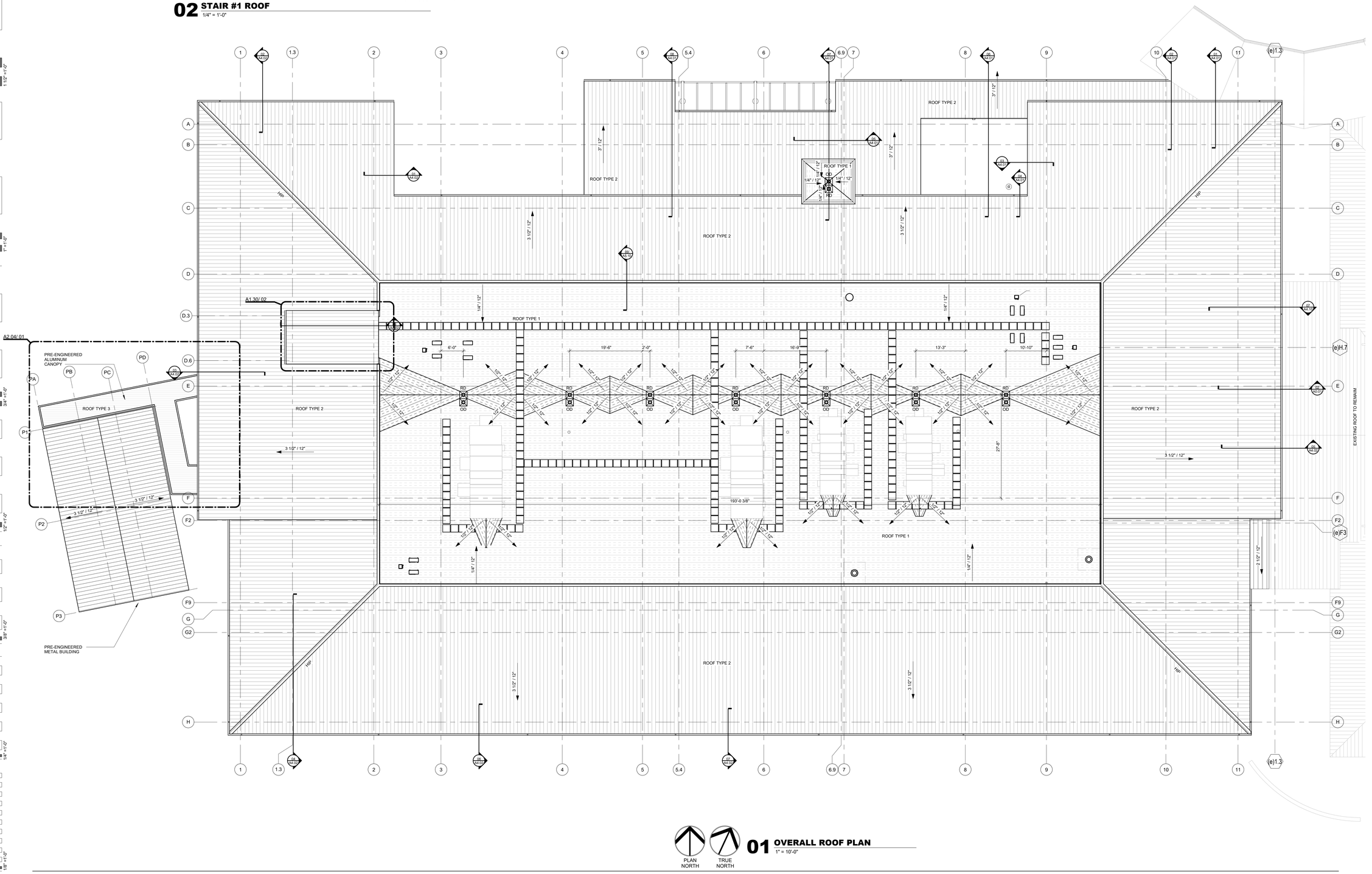
02 STAIR #1 ROOF
1/4" = 1'-0"

ROOF LEGEND

- TAPERED INSULATION
- STANDING SEAM METAL ROOF
- PRE-ENGINEERED CANOPY SYSTEM
- RD — ROOF DRAIN AND OVERFLOW DRAIN
- OD
- WALKWAY PROTECTION

ROOF PLAN GENERAL NOTES

1. ROOF TYPES ARE AS FOLLOWS:
   1. ROOF TYPE 1: SINGLE PLY ROOFING
   2. ROOF TYPE 2: STANDING SEAM METAL ROOF
   3. ROOF TYPE 3: PRE-ENGINEERED ALUMINUM CANOPY
2. ALL ROOFING SURFACES TO SLOPE 1/4" VERTICAL PER 1'-0" HORIZONTAL MINIMUM, UNLESS NOTED OTHERWISE.
3. HATCHING INDICATES AREAS WHERE THE ROOF SLOPE IS ACHIEVED WITH TAPERED INSULATION.
4. TOP OF INSULATION HEIGHTS, HIGH POINTS AND LOW POINTS, ARE INDICATED AS THE TOP OF ROOF SURFACE ABOVE THE ROOF DRAIN(S). (I.E. +4.5" WHERE HIGH POINT OF ROOF DRAIN SUMP IS +0"
5. ALL ROOF TOP MECHANICAL, ELECTRICAL, AND/OR PLUMBING EQUIPMENT SHOWN FOR INFORMATION ONLY. REFERENCE MECHANICAL, ELECTRICAL, AND PLUMBING DOCUMENTS AND SPECIFICATIONS FOR SPECIFIC DESIGN INFORMATION.
6. PROVIDE WALKWAY PROTECTION TO MAJOR MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT AS REQUIRED TO PROVIDE SERVICE ACCESS.WALKWAY PROTECTION IS INDICATED AS A GENERAL LAYOUT AND MAY NOT SHOW ALL FINAL LOCATIONS OF ALL EQUIPMENT.
7. EXISTING ROOFS TO REMAIN, UNLESS NOTED OTHERWISE.
8. REFERENCE DEMOLITION PLANS, SECTIONS
9. PATCH AND REPAIR EXISTING ROOFS DAMAGED DURING CONSTRUCTION.



01 OVERALL ROOF PLAN
1" = 10'-0"

PLAN NORTH

TRUE NORTH

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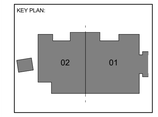
THE CHEROKEE NATION — SEPT. 6, 1839 — TSA-LA-GI

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:
BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

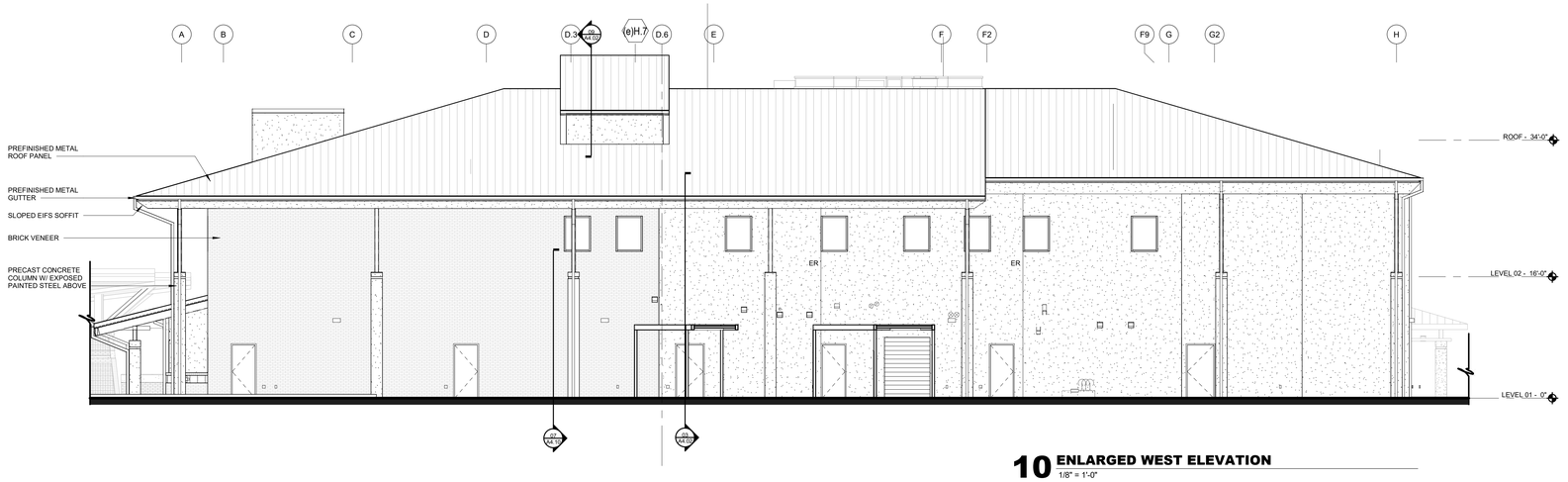
JOB NUMBER: 18-01.01

SHEET NUMBER:
A1.30

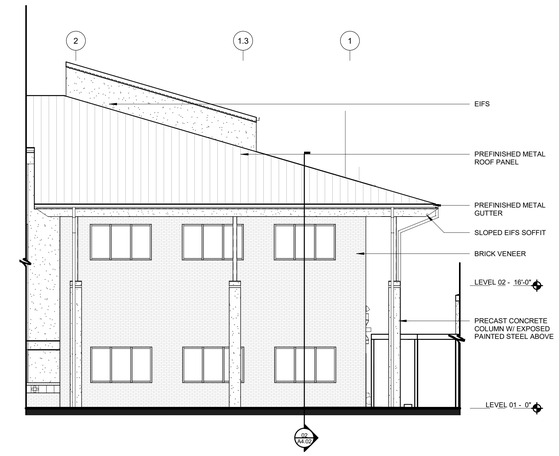
OVERALL ROOF PLAN

MATERIAL LEGEND

- BRICK VENEER
- EIFS SYSTEM
- TINTED INSULATED GLAZING



10 ENLARGED WEST ELEVATION
1/8" = 1'-0"



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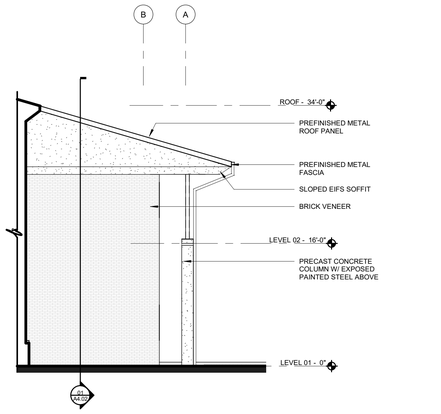
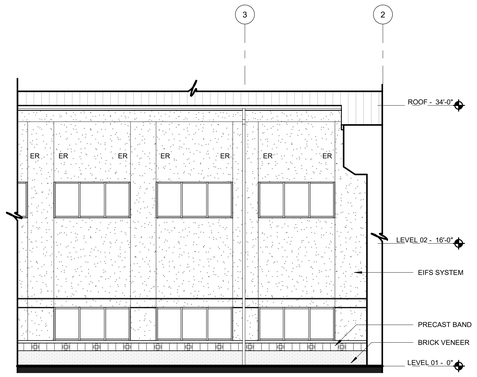
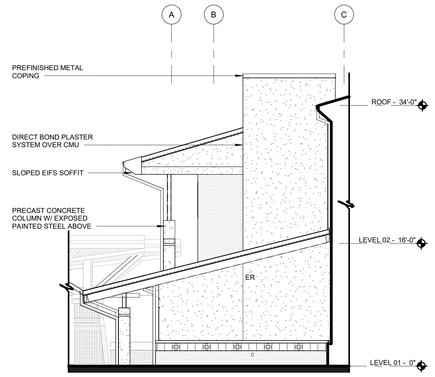
1/8" = 1'-0"



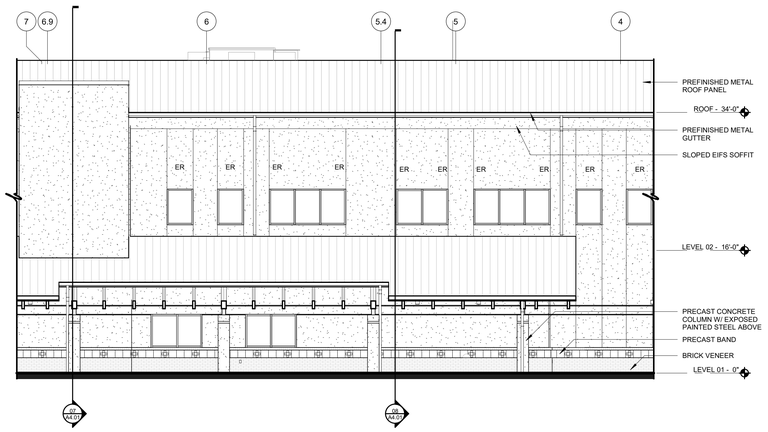
08 ENLARGED ELEVATION
1/8" = 1'-0"



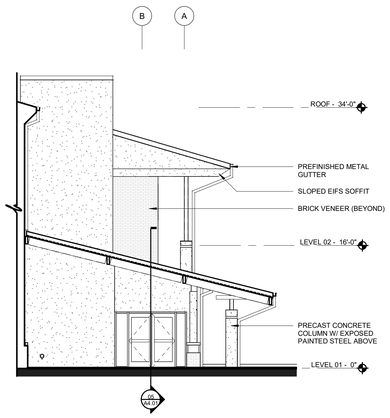
07 ENLARGED ELEVATION
1/8" = 1'-0"



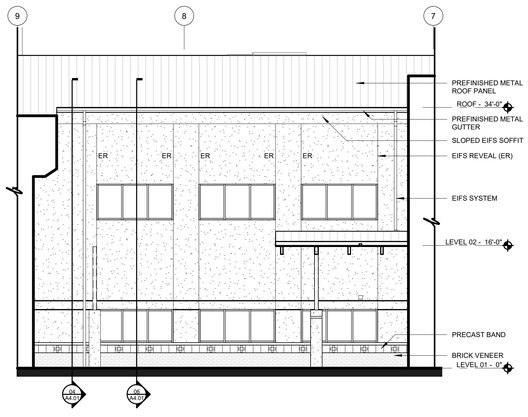
06 ENLARGED ELEVATION
1/8" = 1'-0"



05 ENLARGED ELEVATION
1/8" = 1'-0"



04 ENLARGED ELEVATION
1/8" = 1'-0"



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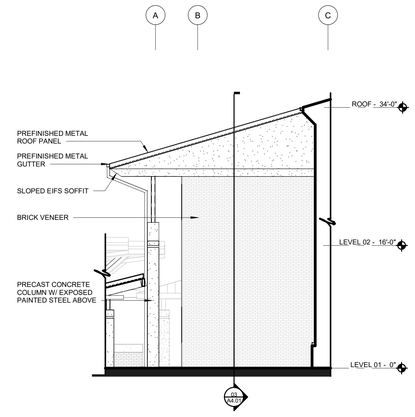
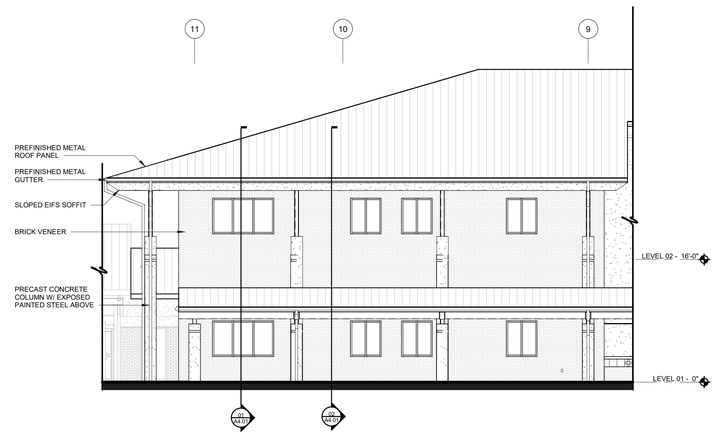


02 ENLARGED ELEVATION
1/8" = 1'-0"



01 ENLARGED ELEVATION
1/8" = 1'-0"

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01-10-2020

CONSULTANT LOGO:

CLIENT:

THE CHEROKEE NATION — SEAL OF THE CHEROKEE NATION — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: A2.02

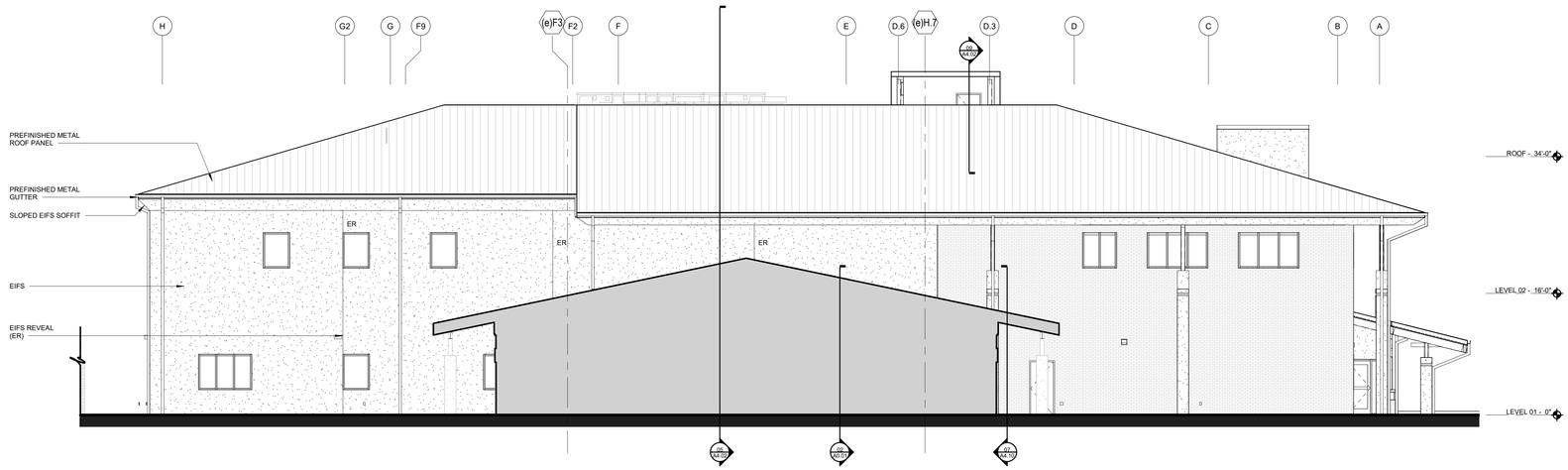
ENLARGED EXTERIOR ELEVATIONS

MATERIAL LEGEND

BRICK VENEER

EIFS SYSTEM

TINTED INSULATED GLAZING



03 ENLARGED EAST ELEVATION
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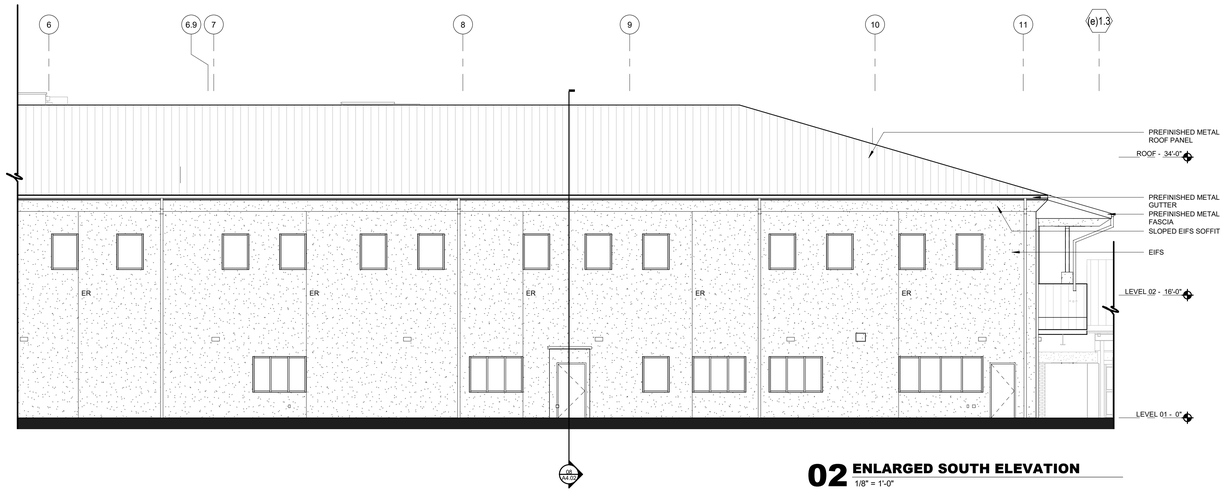
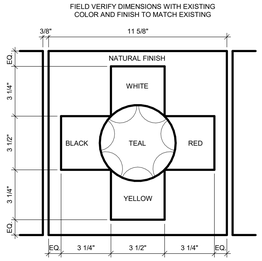
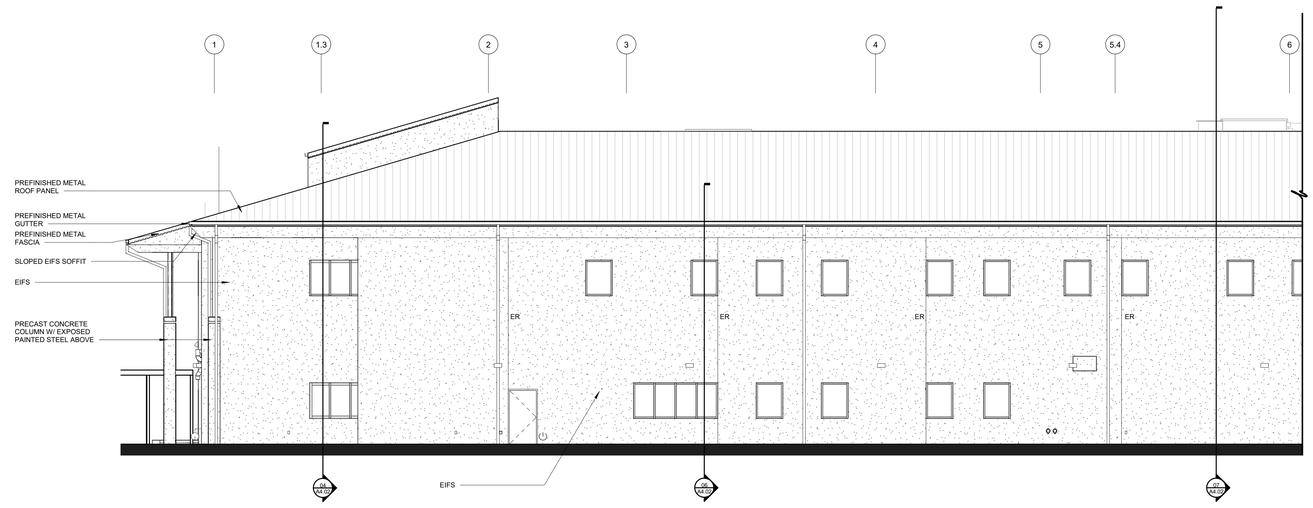


02 ENLARGED SOUTH ELEVATION
1/8" = 1'-0"



04 PRECAST PANEL DETAIL
3" = 1'-0"



01 ENLARGED SOUTH ELEVATION
1/8" = 1'-0"

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SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
1 BID PACKAGE 02

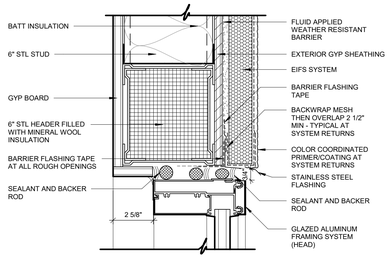
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 1 12-06-19

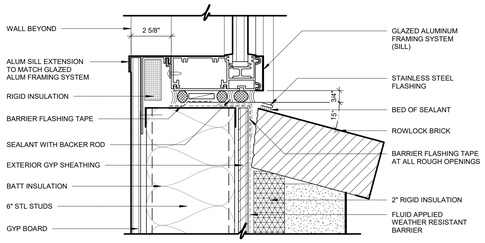
JOB NUMBER: 18-01.01

SHEET NUMBER: A2.03

ENLARGED EXTERIOR ELEVATIONS



12 WALL SECTION DETAIL
3" = 1'-0"



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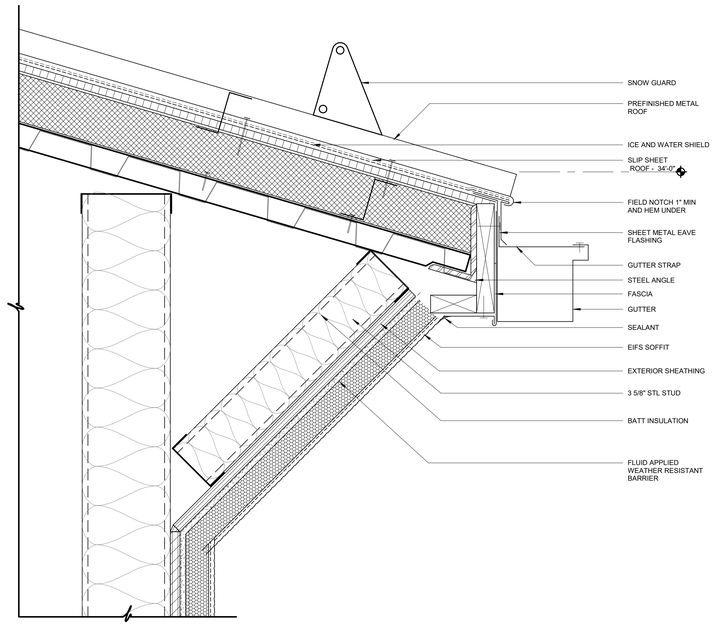

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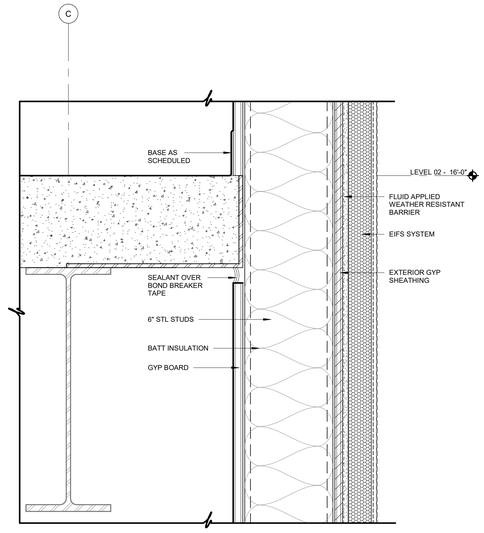

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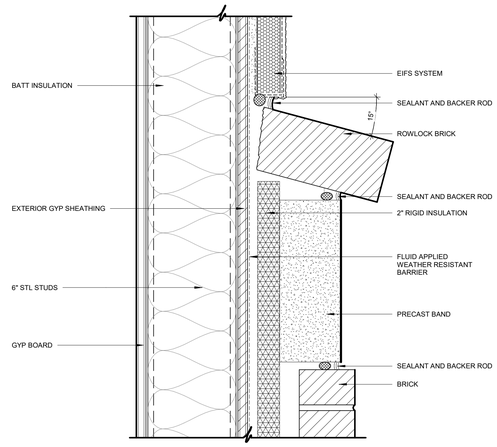

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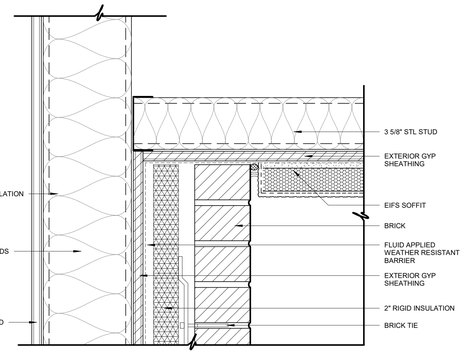

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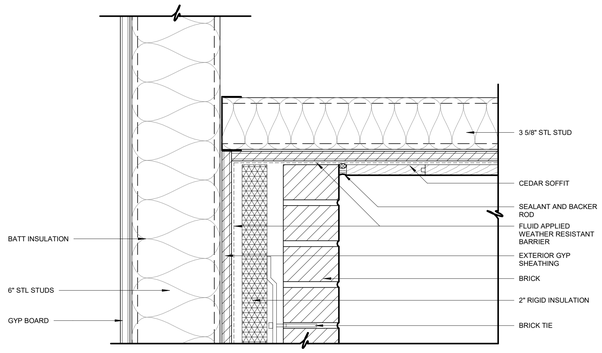

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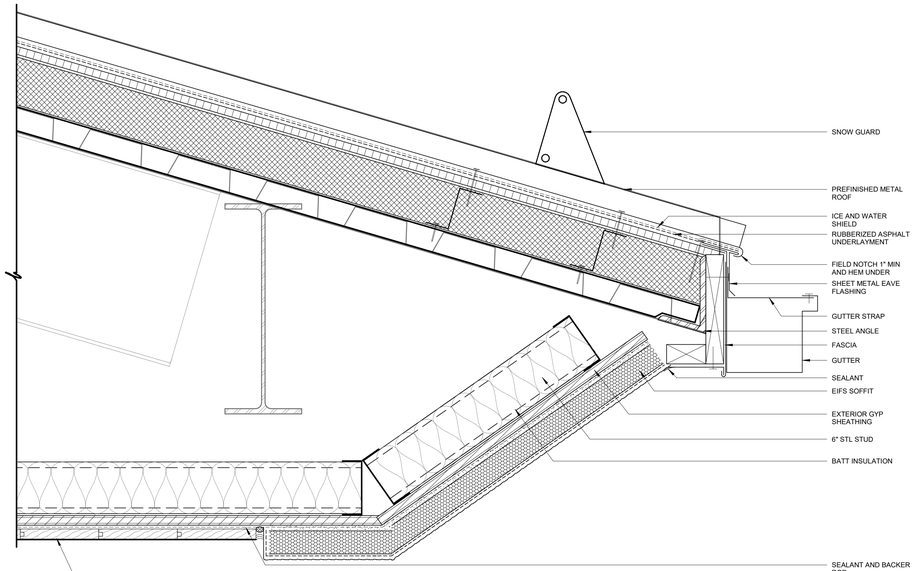

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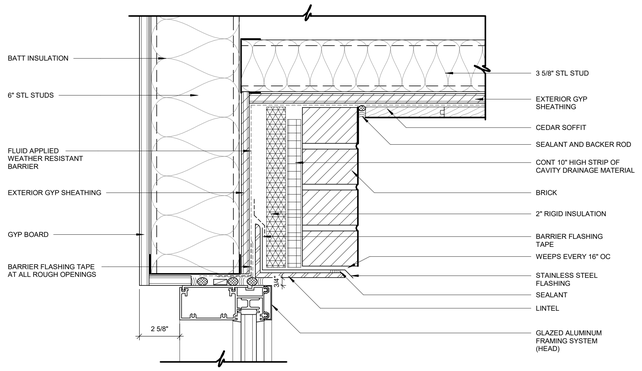

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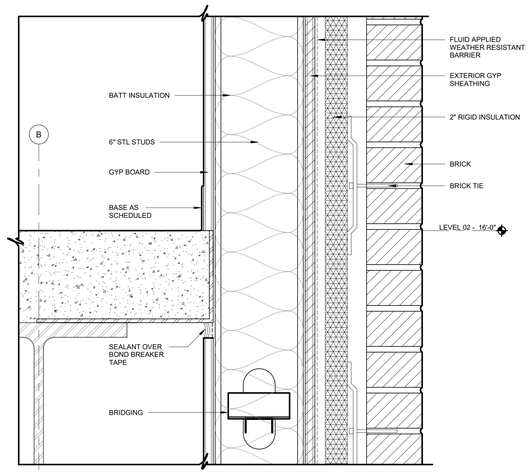

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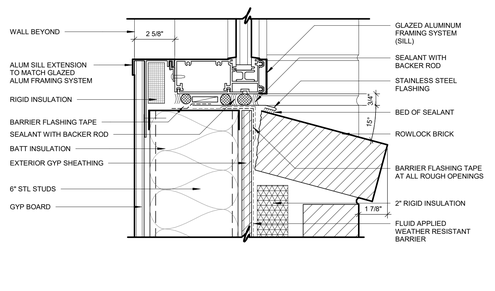

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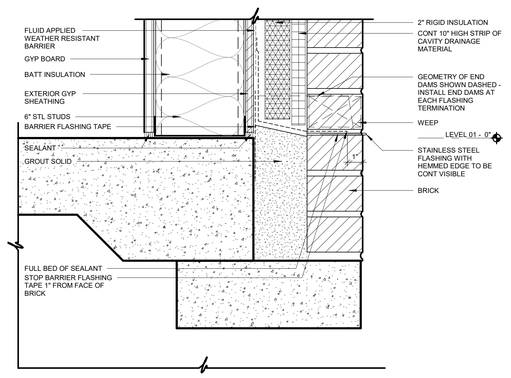

01 WALL SECTION DETAIL
3" = 1'-0"

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PROFESSIONAL SEAL:

STATE OF OKLAHOMA
JAMES R. CHILDERS
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01-10-2020

CONSULTANT LOGO:

CLIENT:

THE CHEROKEE NATION
FIRST CAPITAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
1 BID PACKAGE 02

REVISIONS		
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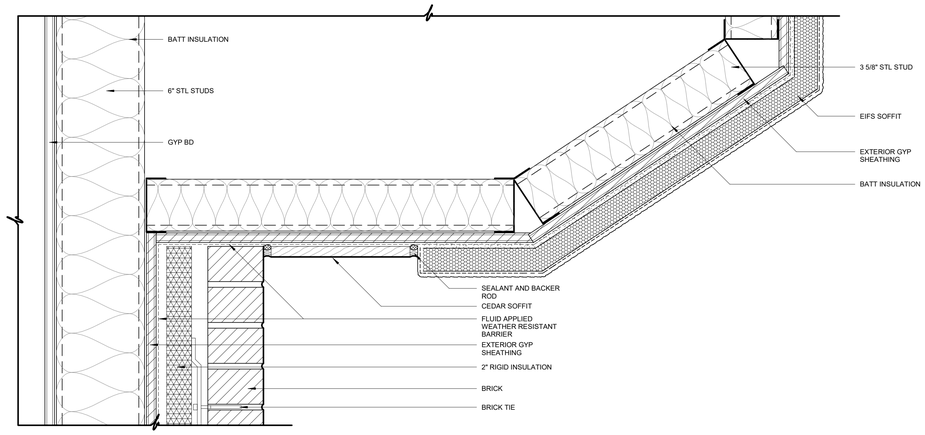
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01

SHEET NUMBER:
A5.01

WALL SECTION DETAILS



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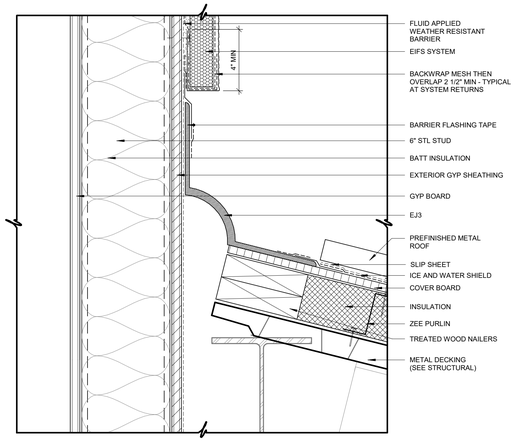

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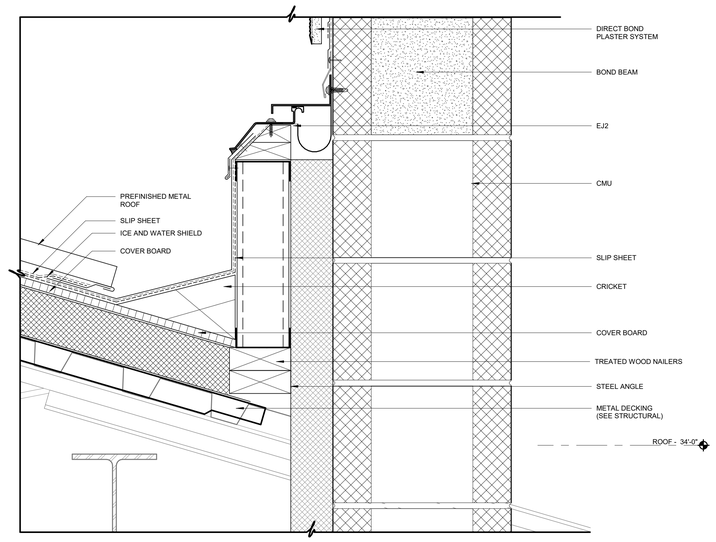

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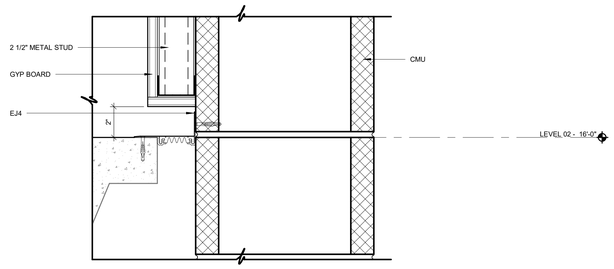

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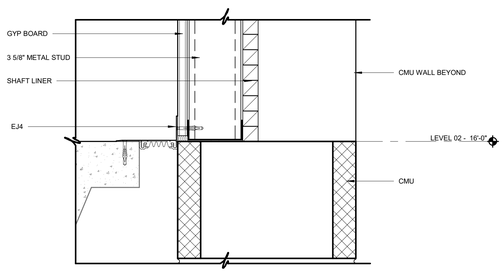

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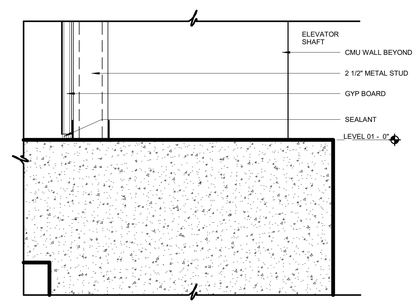

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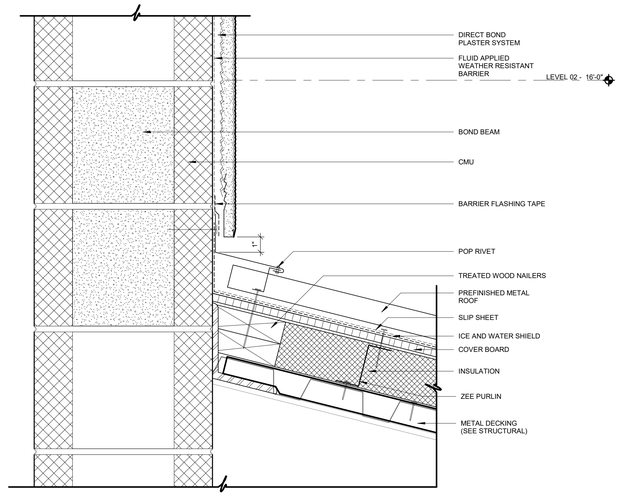

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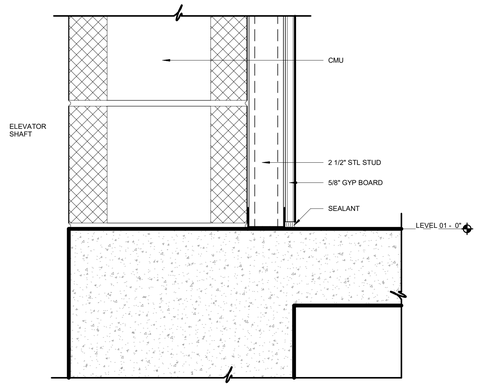

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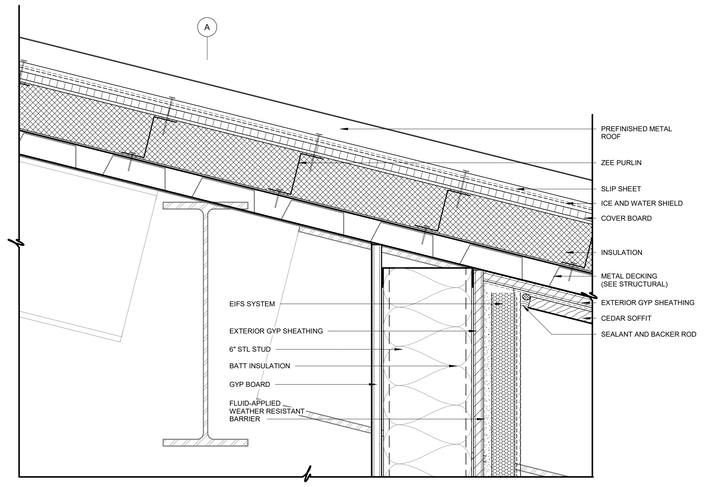

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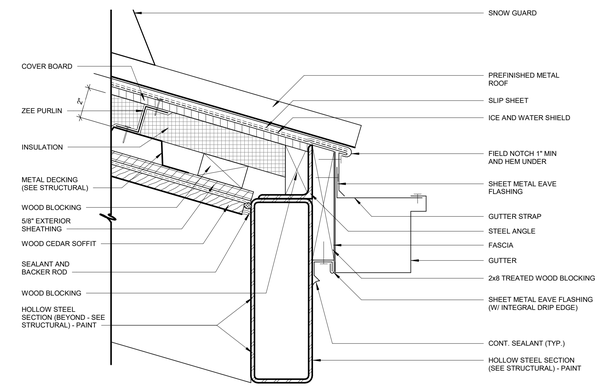

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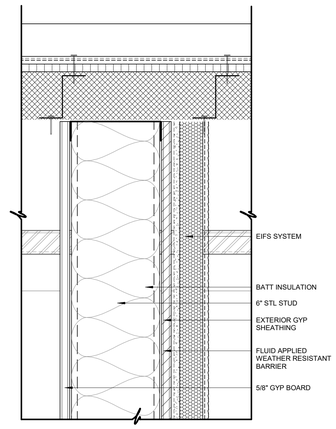

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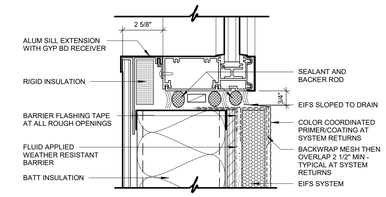

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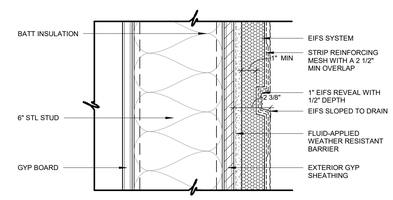

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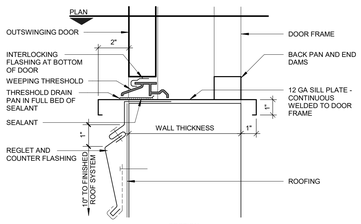

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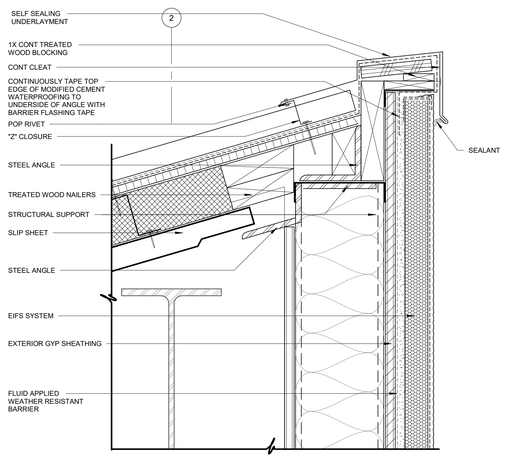

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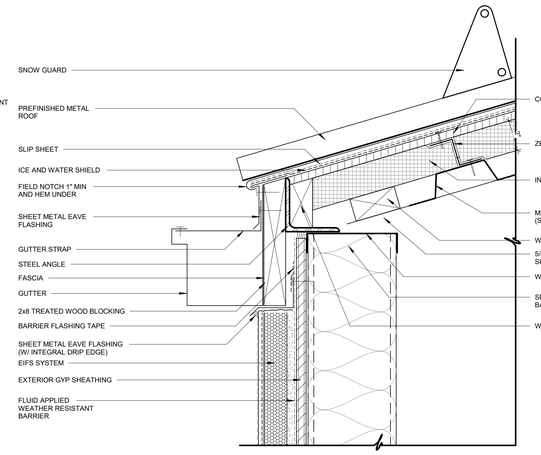

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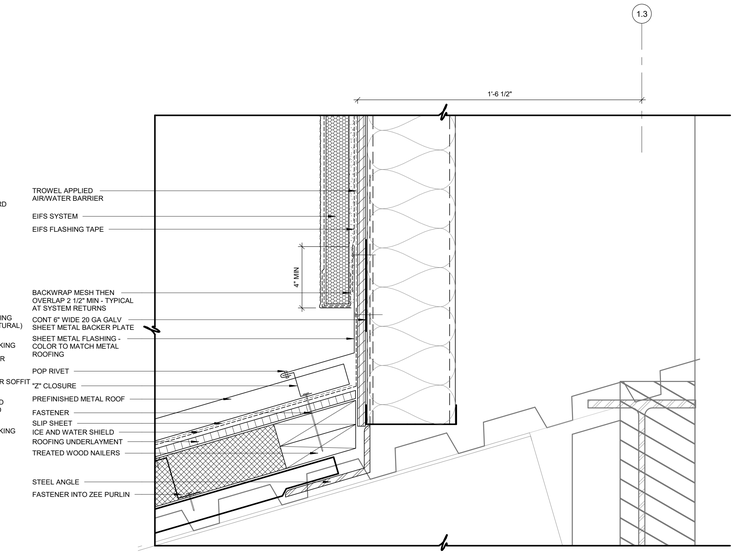

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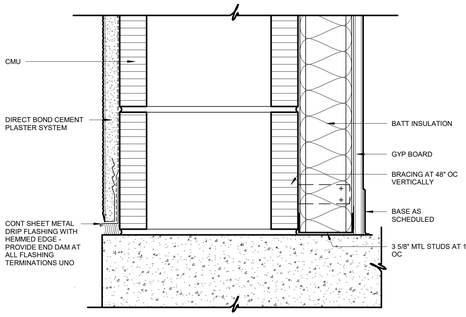

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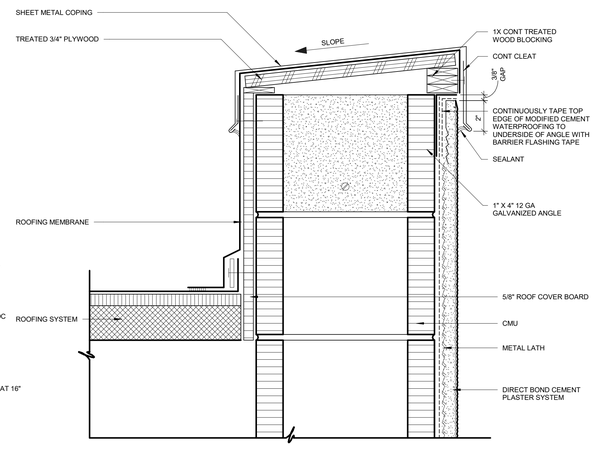

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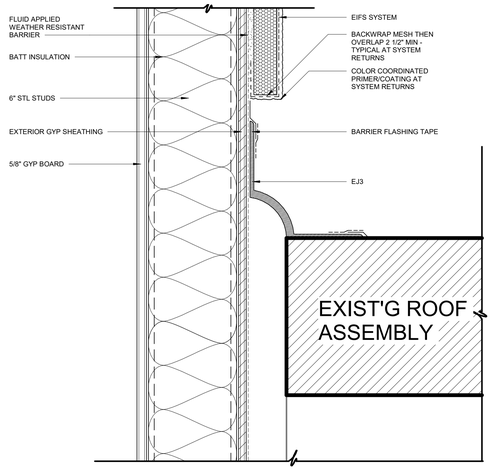

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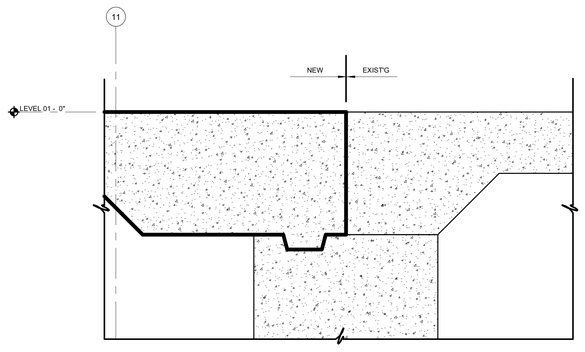

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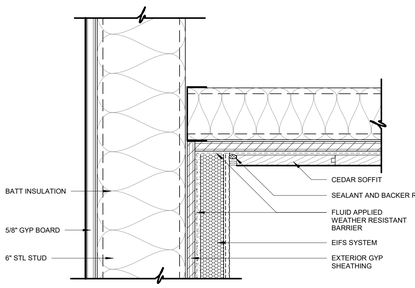

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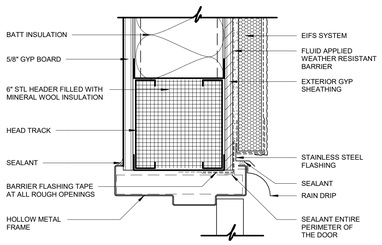

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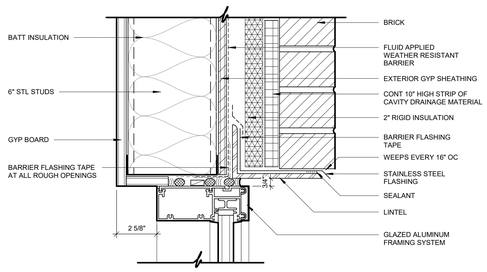

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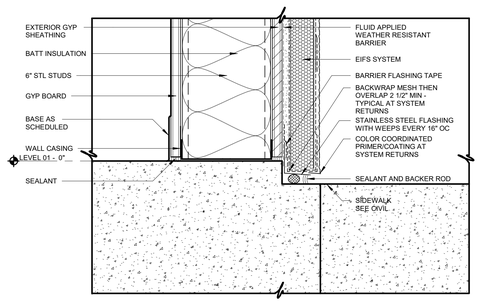

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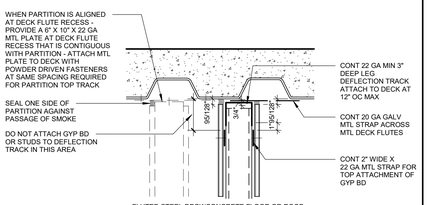
SHEET NUMBER:
A5.03

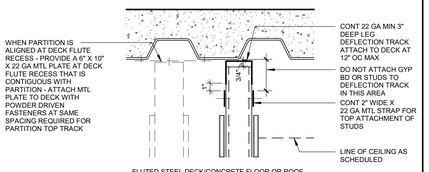
WALL SECTION DETAILS

HEAD DETAILS - NON RATED



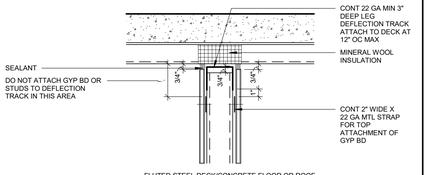
FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PARALLEL TO FLUTES

NON-RATED OR SMOKE RESISTANT



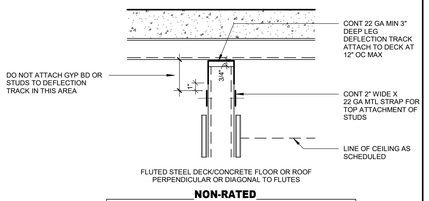
FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PARALLEL TO FLUTES

NON-RATED



FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PERPENDICULAR OR DIAGONAL TO FLUTES

NON-RATED OR SMOKE RESISTANT



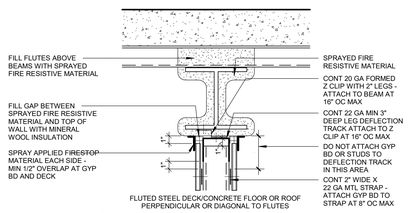
FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PERPENDICULAR OR DIAGONAL TO FLUTES

NON-RATED

HEAD OF WALL GENERAL NOTES

1. REFER TO SPECIFICATIONS FOR HEAD OF WALL SLOTTED TRACK OPTIONS FOR METAL STUD WALLS. CONT 2" WIDE X 22 GA METAL STRAP CAN BE DELETED IF OPTIONAL SLOTTED TRACKS ARE SELECTED.

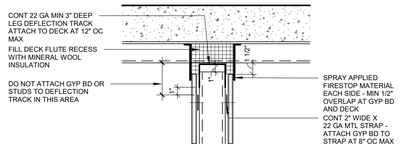
HEAD DETAILS - ONE HOUR RATED



FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PERPENDICULAR OR DIAGONAL TO FLUTES

ONE HOUR FIRE RESISTANT AND ONE HOUR FIRE RESISTANT SMOKE BARRIER
UL-HW-D-0252

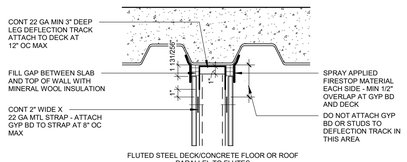
NOTE:
REFER TO UL LISTING FOR COMPLETE ASSEMBLY REQUIREMENTS



FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PERPENDICULAR OR DIAGONAL TO FLUTES

ONE HOUR FIRE RESISTANT AND ONE HOUR FIRE RESISTANT SMOKE BARRIER
UL-HW-D-0107

NOTE:
REFER TO UL LISTING FOR COMPLETE ASSEMBLY REQUIREMENTS



FLUTED STEEL DECK/CONCRETE FLOOR OR ROOF PARALLEL TO FLUTES

ONE HOUR FIRE RESISTANT AND ONE HOUR FIRE RESISTANT SMOKE BARRIER
UL-HW-D-0107

NOTE:
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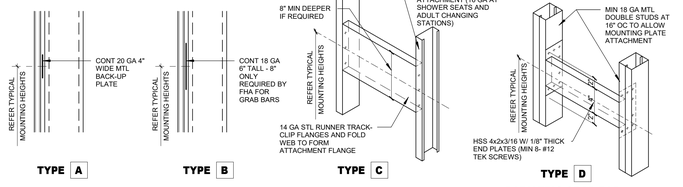
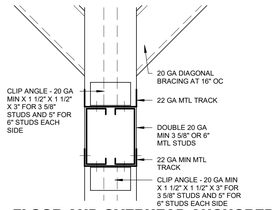
ACCESSORY/EQUIPMENT MOUNTING DETAILS

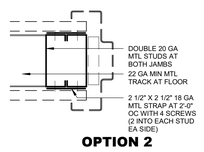


BARIATRIC GRAB BAR

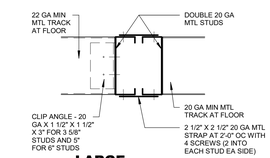
PARTITION FRAMING DETAILS



FLOOR AND OVERHEAD ANCHORED TOILET PARTITION HEADER
06 3" = 1'-0"



OPTION 2 DOOR OPENING JAMB STUDS
05 3" = 1'-0"



LARGE OPENING JAMB STUDS
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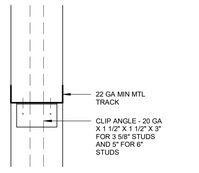

OPENING HEADER
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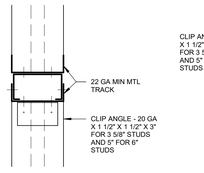
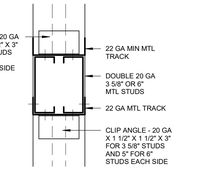
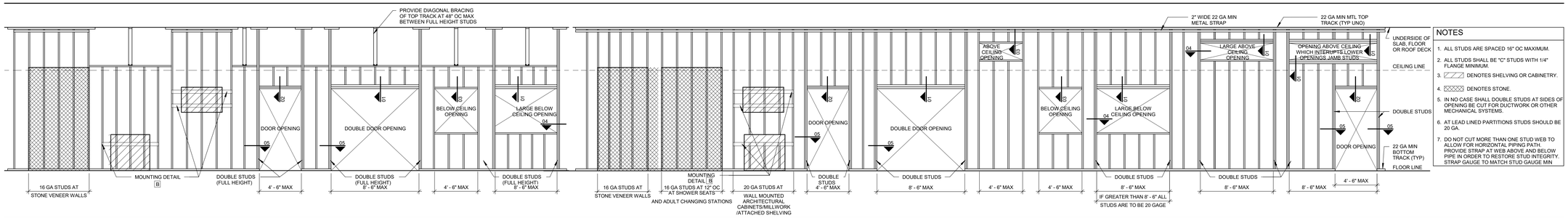


DOOR OPENING HEADER
02 3" = 1'-0"



DOUBLE DOOR/LARGE OPENING HEADER
01 3" = 1'-0"

TYPICAL INTERIOR PARTITION FRAMING



NOTES

1. ALL STUDS ARE SPACED 16" OC MAXIMUM.
2. ALL STUDS SHALL BE "C" STUDS WITH 1/4" FLANGE MINIMUM.
3. ▨ DENOTES SHELVING OR CABINETRY.
4. ▩ DENOTES STONE.
5. IN NO CASE SHALL DOUBLE STUDS AT SIDES OF OPENING BE CUT FOR DUCTWORK OR OTHER MECHANICAL SYSTEMS.
6. AT LEAD LINED PARTITIONS STUDS SHOULD BE 20 GA.
7. DO NOT CUT MORE THAN ONE STUD WEB TO ALLOW FOR HORIZONTAL PIPING PATH. PROVIDE STRAP AT WEB ABOVE AND BELOW PIPE IN ORDER TO RESTORE STUD INTEGRITY. STRAP GAUGE TO MATCH STUD GAUGE MIN

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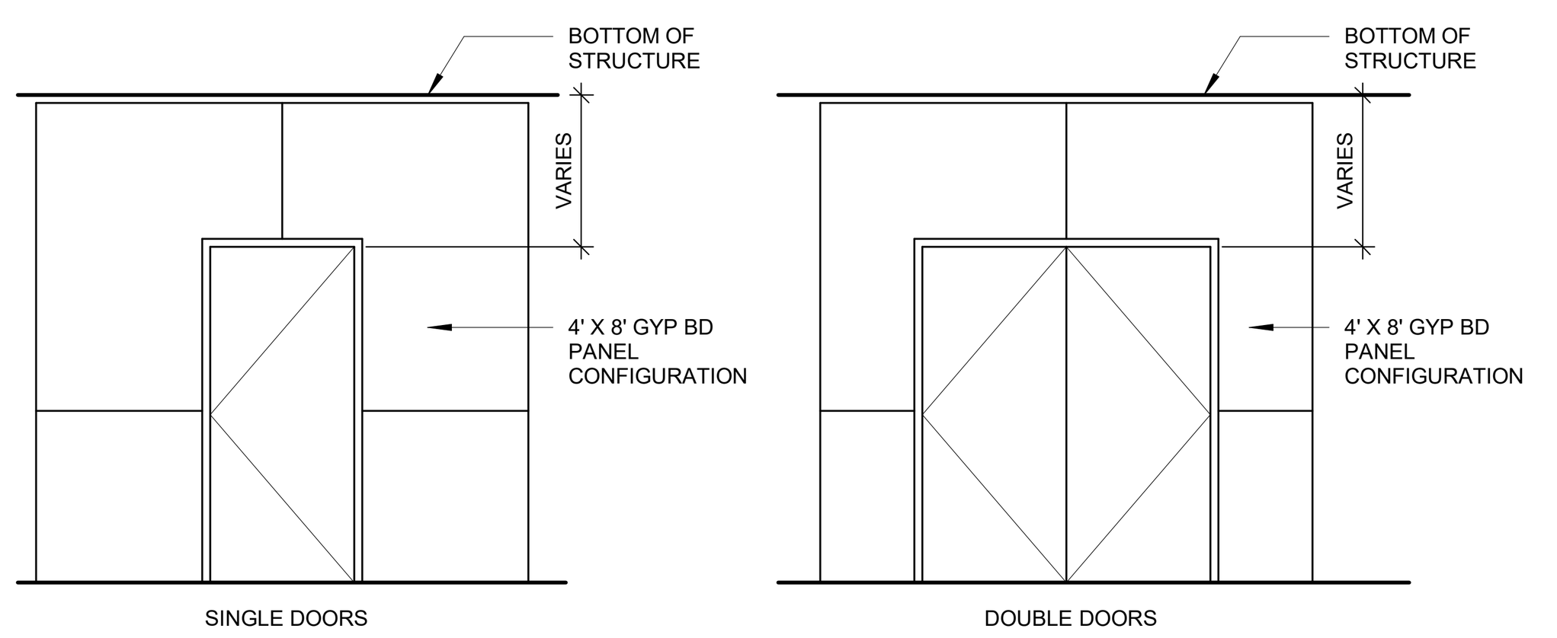
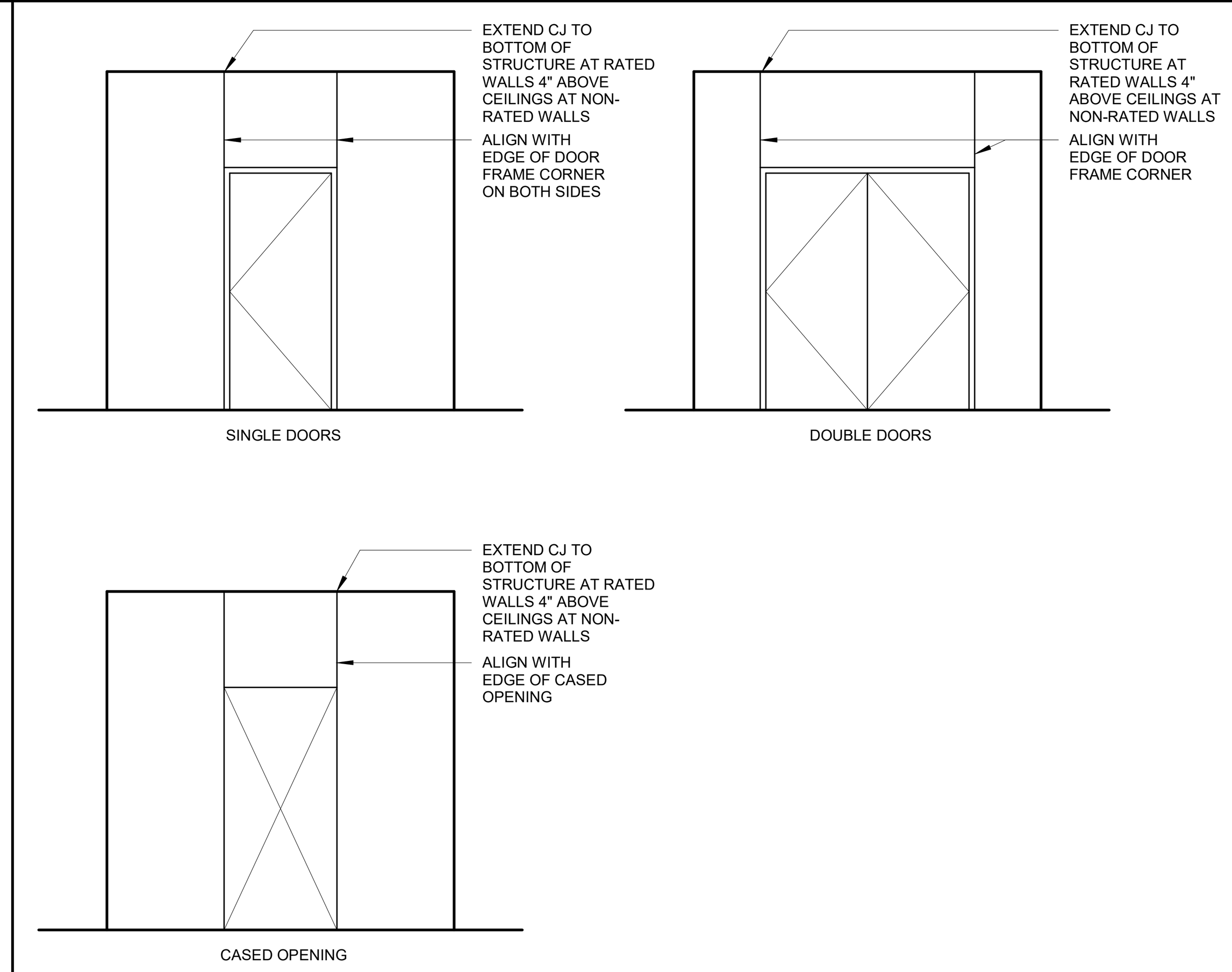
PARTITION FRAMING / HEAD DETAILS

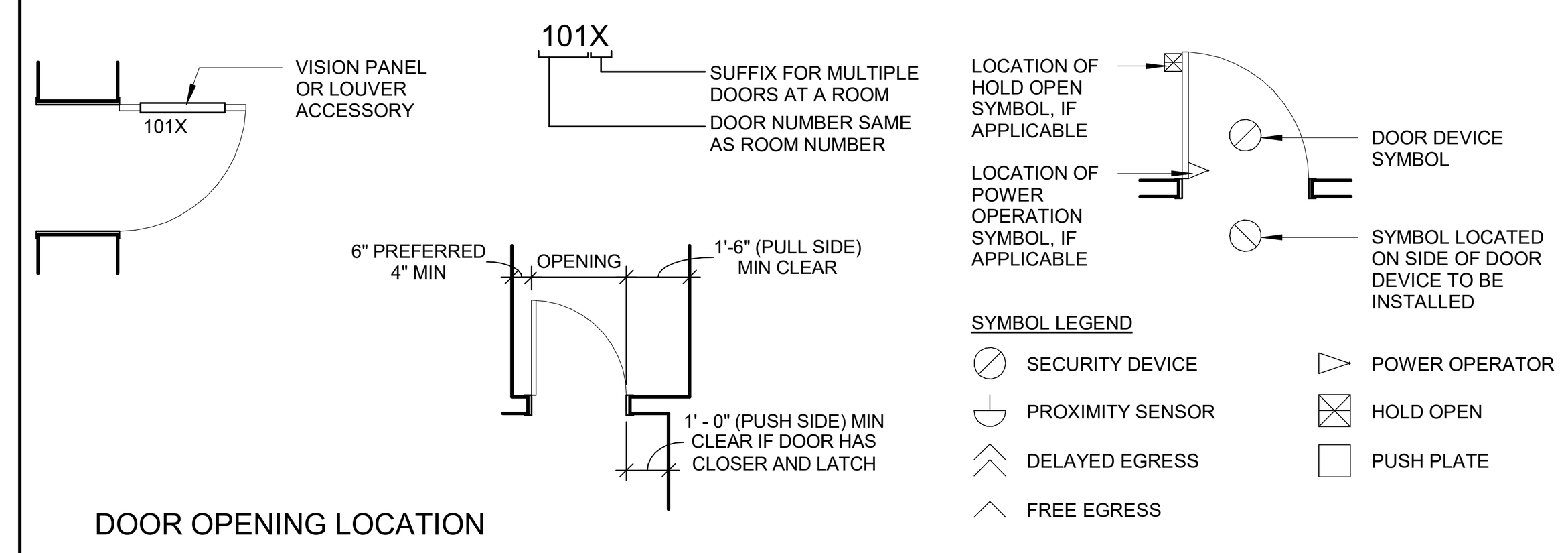
GYPSUM BD CONFIGURATION AT DOORS



CONTROL JOINT AT DOOR FRAMES



DOOR PLAN DESIGNATION

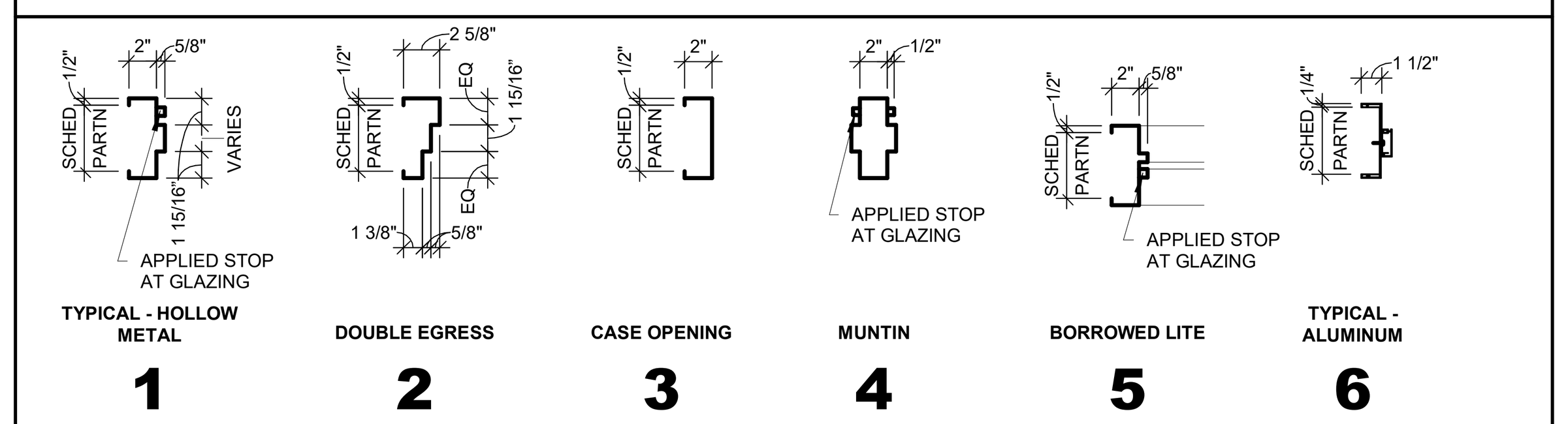


DOOR OPENING LOCATION

A. DOORS SHOWN ADJACENT TO A FLANKING WALL OR OTHER FIXED OBSTRUCTION, SHALL BE LOCATED AS SHOWN ABOVE.

B. OTHER LOCATIONS SHALL BE ON CENTERLINE OF ROOM OR AS SPECIFICALLY DIMENSIONED.

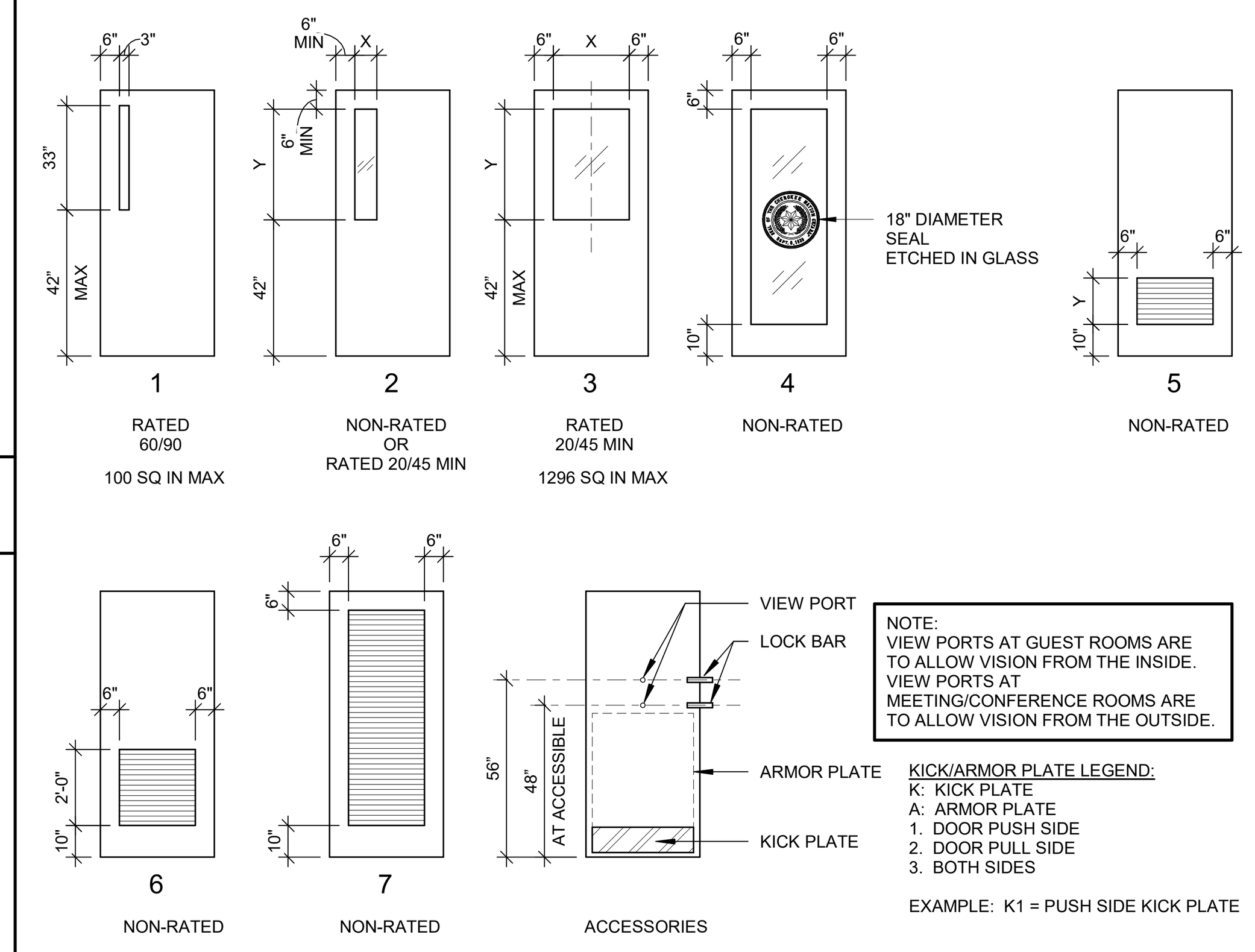
FRAME TYPES



VISION PANELS / LOUVERS / ACCESSORIES

DOOR NOTES

1. CONTRACTORS TO USE THE ARCHITECT'S FLOOR PLAN DESIGNATION DOOR NUMBER IN ADDITION TO THE ROOM NUMBER ON ALL SHOP DRAWING SCHEDULE SUBMITTALS.



NOTE:
VIEW PORTS AT GUEST ROOMS ARE TO ALLOW VISION FROM THE INSIDE.
VIEW PORTS AT MEETING/CONFERENCE ROOMS ARE TO ALLOW VISION FROM THE OUTSIDE.

KICK/ARMOR PLATE LEGEND:
K: KICK PLATE
A: ARMOR PLATE
1. DOOR PUSH SIDE
2. DOOR PULL SIDE
3. BOTH SIDES

EXAMPLE: K1 = PUSH SIDE KICK PLATE

DOOR SCHEDULE

DOOR SCHEDULE

DOOR REVISION	DOOR NUMBER	WIDTH	HEIGHT	DOOR TYPE	MATERIALS AND FINISHES: FRAME TYPE	DOOR MATERIAL	FRAME MATERIAL	VISION PANEL & LOUVER TYPE	CONTROLS: POWER OPERATOR	HOLD OPEN	DOOR CONTROL A	DOOR CONTROL B	FIRE RATING	HARDWARE	COMMENTS
LEVEL 01															
-	01-00-00A	6'-0"	7'-1 1/2"	C2		AL/GL	AL		-	-	CR	-	-	C714A M	
-	01-00-00B	6'-0"	7'-1 1/2"	C2		AL/GL	AL		-	-	-	-	-	800AV	
-	01-00-02A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C207	
	01-00-02B	4'-11 1/8"	5'-6"	P		AL	AL		X					002	
	01-00-02C	4'-11 1/8"	5'-6"	P		AL	AL		X					002	
	01-00-02D	4'-11 1/8"	5'-6"	P		AL	AL		X					002	
-	01-00-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
	01-00-07A	5'-0"	5'-6"	P		AL	AL		X					002	
-	01-00-09	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-00-10A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	45	731R	
-	01-00-10B	3'-0"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	45	C715	
-	01-00-11	3'-6"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	
-	01-00-13	3'-6"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	
-	01-00-14	3'-6"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	
-	01-01-00A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201C	
	01-01-00B	5'-0"	5'-6"	P		AL	AL		X					002	
	01-01-00C	5'-0"	5'-6"	P		AL	AL		X					002	
-	01-01-01A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	503W	
-	01-01-01B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-02A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	503W	
-	01-01-02B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-03A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	503W	
-	01-01-03B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-04A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	503W	
-	01-01-04B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-06	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-07	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-08	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-09	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-01-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-02-01	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-02-02	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-02-03	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-02-04	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-02-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-02-06	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-02-07	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-02-08A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-02-08B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-04-01	3'-0"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C205I	
-	01-04-02	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	207W	
-	01-04-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-04-04	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-04-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501W	
-	01-04-06	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501W	
-	01-04-07	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501W	
-	01-05-01A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
	01-05-01B	6'-0"	8'-0"	M		STL	STL		X					002	
-	01-05-01C	3'-0"	7'-0"	A1	1	HM	HM		-	-	CR	-	45	C715	
	01-05-01G	5'-0"	6'-0"	P		AL	AL		X					002	
-	01-05-02	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	45	201	
-	01-05-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	45	C201W	
-	01-05-04	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	45	C201	
-	01-05-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	45	201	
-	01-06-01	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-06-02	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-07-01	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-07-02A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	701	
-	01-07-02B	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-07-02C	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-07-03	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-07-05	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-07-06	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-07-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-07-08	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-07-09	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-07-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	207	
-	01-07-11	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-07-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-07-14	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-08-00A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-08-00B	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
	01-08-01A	5'-0"	5'-6"	P		AL	AL		X					002	
-	01-08-01B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-08-02	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-08-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201W	
-	01-08-04	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-08-05	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-08-06	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	507	
-	01-08-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-08-08	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-08-09	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-08-10	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-08-11	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-08-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-08-13	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	201	
-	01-08-14	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103W	
-	01-08-15	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103W	
-	01-08-16	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	603W	
-	01-09-00A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C207	
	01-09-00B	5'-0"	6'-0"	P		AL	AL		X					002	
	01-09-00C	5'-8 7/8"	5'-6"	P		AL	AL		X					002	
	01-09-00D	5'-8 7/8"	5'-6"	P		AL	AL		X					002	
	01-09-00E	5'-8 7/8"	5'-6"	P		AL	AL		X					002	
-	01-09-01A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-09-01B	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-09-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-09-04	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-09-05	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-09-06	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-09-07	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	C201	
-	01-09-11	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-09-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-09-13	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-09-14	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201W	
-	01-09-15	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-09-16	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-09-17	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-10-00	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501W	
-	01-10-02	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-04	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-05B	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-06B	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	

DOOR SCHEDULE

DOOR REVISION	DOOR NUMBER	WIDTH	HEIGHT	DOOR TYPE	MATERIALS AND FINISHES: FRAME TYPE	DOOR MATERIAL	FRAME MATERIAL	VISION PANEL & LOUVER TYPE	CONTROLS: POWER OPERATOR	HOLD OPEN	DOOR CONTROL A	DOOR CONTROL B	FIRE RATING	HARDWARE	COMMENTS
-	01-10-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-08	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-09	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-10-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-10-11	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-11-00A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-11-00B	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	701	
-	01-11-00C	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-11-01	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-11-02	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-11-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103W	
-	01-11-04	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103W	
-	01-11-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-11-06	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103W	
-	01-11-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103W	
-	01-11-08	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501W	
-	01-12-00	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-12-01	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-12-02	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-12-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403W	
-	01-12-04	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-12-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-12-06	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
	01-13-00A	5'-0"	5'-6"	P		AL	AL		X					002	
-	01-13-00B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-13-01	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-13-01A	8'-0"	8'-0"	M		STL	STL		X				-	002	
-	01-13-01B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C715	
-	01-13-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	01-13-04	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	01-13-05	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	403SW	
-	01-13-06	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201W	
-	01-13-07	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-13-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-13-11	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-13-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-14-01A	6'-0"	7'-0"	A2	1	WD	HM	-	-	-	-	-	-	700M	
-	01-14-01B	3'-0"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	
-	01-14-02A	6'-0"	7'-0"	A2	1	WD	HM	-	-	-	-	-	-	700M	
-	01-14-02B	3'-0"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	
-	01-14-03	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	45	731CR	
-	01-14-04A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-14-04B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
	01-15-01A	4'-8 3/4"	5'-6"	P		AL	AL		X					002	
	01-15-01B	4'-8 3/4"	5'-6"	P		AL	AL		X					002	
	01-15-01C	4'-8 3/4"	5'-6"	P		AL	AL		X					002	
-	01-15-02A	3'-0"	7'-0"	G2		WD	HM	-					-	001	KI SYSTEMS
-	01-15-02B	3'-0"	7'-0"	G2		WD	HM	4			CR		-	C001	KI SYSTEMS
-	01-15-03A	3'-0"	7'-0"	G2		WD	HM	-					-	001	KI SYSTEMS
-	01-15-03B	3'-0"	7'-0"	G2		WD	HM	4			CR		-	C001	KI SYSTEMS
-	01-15-04A	4'-0"	7'-0"	G2		WD	HM	-					-	001	KI SYSTEMS
-	01-15-04B	3'-0"	7'-0"	G2		WD	HM	4			CR		-	C001	KI SYSTEMS
-	01-15-05A	3'-0"	7'-0"	G2		WD	HM	-					-	001	KI SYSTEMS
-	01-15-05B	3'-0"	7'-0"	G2		WD	HM	4			CR		-	C001	KI SYSTEMS
-	01-15-06A	3'-0"	7'-0"	G2		WD	HM	-					-	001	KI SYSTEMS
-	01-15-06B	3'-0"	7'-0"	G2		WD	HM	4			CR		-	C001	KI SYSTEMS
-	01-15-07A	3'-0"	7'-0"	G2		WD	HM	-					-	001	KI SYSTEMS
-	01-15-07B	3'-0"	7'-0"	G2		WD	HM	4			CR		-	C001	KI SYSTEMS
-	01-15-09	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-15-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-15-11A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-15-11B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-15-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-15-14	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	01-16-01A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
	01-16-01B	5'-0"	5'-6"	P		AL	AL		X					002	
-	01-16-02	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-16-03	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	01-16-04	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	01-16-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-16-06A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-16-06B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-16-07A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	01-16-07B	3'-0"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	
-	01-16-08	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-16-09	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-16-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-16-11	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	01-16-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	01-19-06A	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	45	731R	
-	01-19-06B	3'-6"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	-	C715	

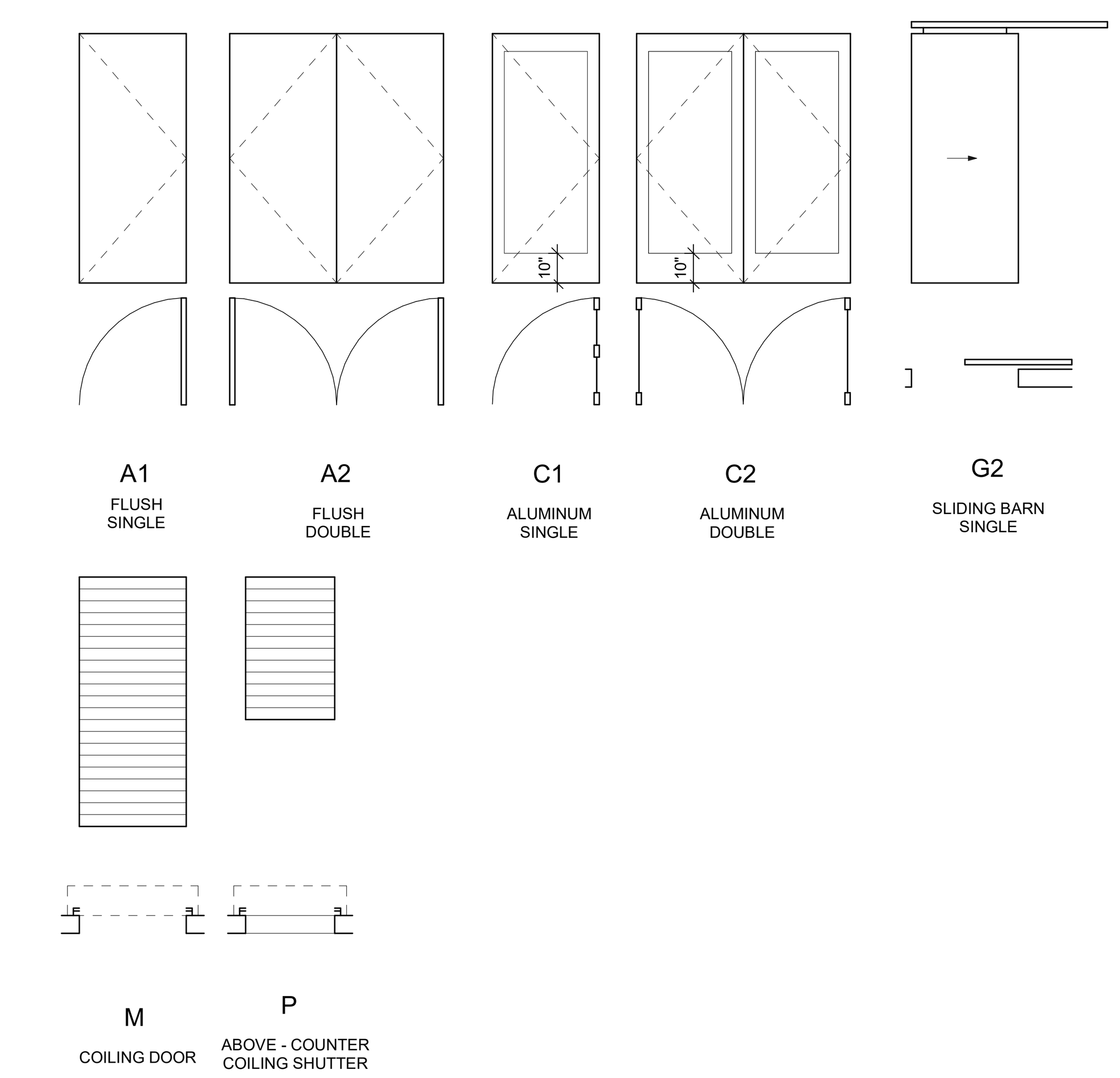
DOOR SCHEDULE

DOOR REVISION	DOOR NUMBER	WIDTH	HEIGHT	DOOR TYPE	MATERIALS AND FINISHES: FRAME TYPE	DOOR MATERIAL	FRAME MATERIAL	VISION PANEL & LOUVER TYPE	CONTROLS: POWER OPERATOR	HOLD OPEN	DOOR CONTROL A	DOOR CONTROL B	FIRE RATING	HARDWARE	COMMENTS
LEVEL 02															
-	02-05-10	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	45	C201	
-	02-05-11	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	45	201	
-	02-05-12	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-01A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
	02-17-01B	5'-0"	5'-6"	P		AL	AL		X					002	
	02-17-01C	5'-0"	5'-6"	P		AL	AL		X					002	
	02-17-01D	5'-0"	5'-6"	P		AL	AL		X					002	
-	02-17-02	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	02-17-03	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301W	
-	02-17-04A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	02-17-04B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	02-17-05	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	02-17-06	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	02-17-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201W	
-	02-17-08	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-09	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-10A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-10B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-11A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-11B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-23	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711C	
-	02-17-24	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	02-17-25	3'-4"	7'-11"	C1		AL/GL	AL		-	-	-	-	-	103A	
-	02-17-26	3'-4"	7'-11"	C1		AL/GL	AL		-	-	-	-	-	501A	
-	02-17-28	3'-4"	7'-11"	C1		AL/GL	AL		-	-	-	-	-	103A	
-	02-17-29	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-30	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-32	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	02-17-33	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	301	
-	02-17-34A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-34B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-35A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-35B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-36	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711C	
-	02-17-38	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	503	
-	02-17-39	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	103	
-	02-17-40	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-45	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711C	
-	02-17-46	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	201	
-	02-17-48A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-48B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-49A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
-	02-17-49B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	801L	
1	02-18-00	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	701	
-	02-18-02	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	45	C711R	
-	02-19-01A	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C711	
-	02-19-01B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	501	
-	02-19-02B	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	-	CR	-	507	
-	02-19-07	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	-	-	-	701	
-	02-19-08	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	45	C711R	
-	02-19-16	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	02-19-21	3'-0"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	-	C201	
-	02-19-30	3'-6"	7'-0"	A1	1	WD	HM	-	-	-	CR	-	45	C711R	
ROOF															
1	03-19-01	3'-0"	7'-0"	A1	1	HM	HM	-	-	-	CR	-	45	C205I	

DOOR TYPES

DOOR NOTES

1. CONTRACTORS TO USE THE ARCHITECT'S FLOOR PLAN DESIGNATION DOOR NUMBER IN ADDITION TO THE ROOM NUMBER ON ALL SHOP DRAWING SCHEDULE SUBMITTALS.



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Fort Smith, AR 72901
479-783-2480
www.childersarchitect.com

PROFESSIONAL SEAL:

STATE OF OKLAHOMA — JAMES R. CHILDERS — REGISTERED ARCHITECT
01-10-2020

CONSULTANT LOGO:

CLIENT:

SEAL OF THE CHEROKEE NATION — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

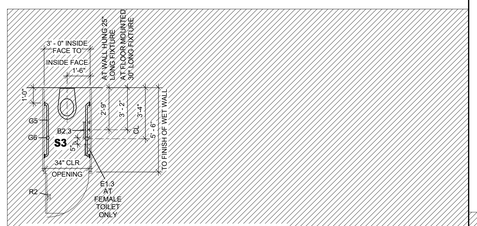
DATE: 12-06-19
JOB NUMBER: 18-01.01

SHEET NUMBER: A6.10

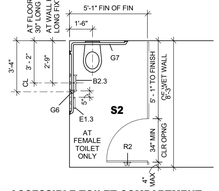
DOOR SCHEDULE / INFORMATION

TOILET STALLS

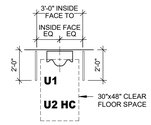
NOTE: LOCATE FLUSH ACTIVATION ON WIDE SIDE AT ALL TOILETS - LOCATE FLUSH VALVE BENEATH ADJACENT GRAB BARS.



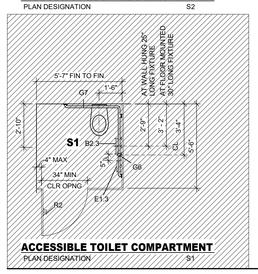
AMBULATORY ACCESSIBLE TOILET COMPARTMENT
PLAN DESIGNATION S3



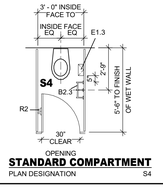
ACCESSIBLE TOILET COMPARTMENT
PLAN DESIGNATION S2



STANDARD URINAL
PLAN DESIGNATION U1
PLAN DESIGNATION U2 @ ACCESSIBLE

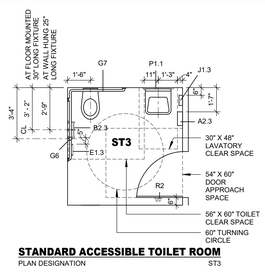


ACCESSIBLE TOILET COMPARTMENT
PLAN DESIGNATION S1

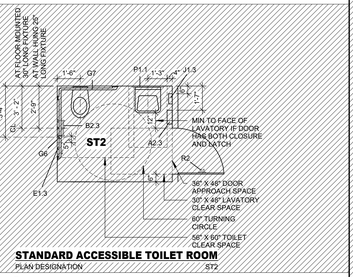


STANDARD COMPARTMENT
PLAN DESIGNATION S4

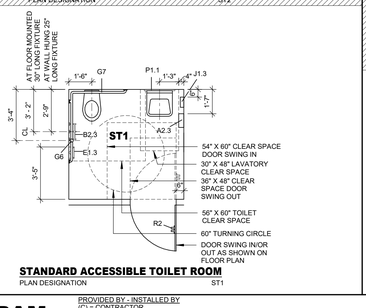
STANDARD TOILET LAYOUTS



STANDARD ACCESSIBLE TOILET ROOM
PLAN DESIGNATION ST3

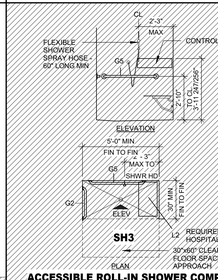


STANDARD ACCESSIBLE TOILET ROOM
PLAN DESIGNATION ST2

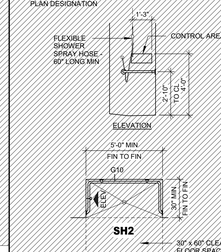


STANDARD ACCESSIBLE TOILET ROOM
PLAN DESIGNATION ST1

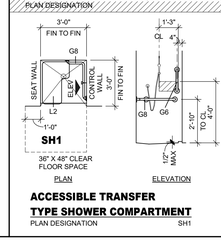
SHOWER / TUB LAYOUTS



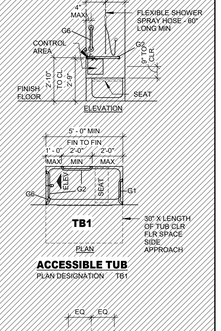
ACCESSIBLE ROLL-IN SHOWER COMPARTMENT
WITH GRAB BAR AND FOLDING SHOWER SEAT
PLAN DESIGNATION SH3



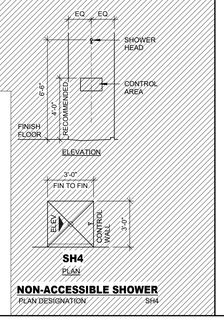
ACCESSIBLE ROLL-IN SHOWER COMPARTMENT
STALL WITH GRAB BAR, NO SHOWER SEAT
PLAN DESIGNATION SH2



ACCESSIBLE TRANSFER
TYPE SHOWER COMPARTMENT
PLAN DESIGNATION SH1

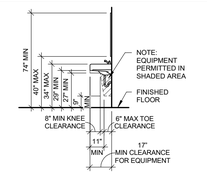


ACCESSIBLE TUB
PLAN DESIGNATION TB1



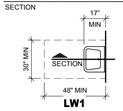
NON-ACCESSIBLE SHOWER
PLAN DESIGNATION SH4

ACCESSIBLE LAVATORIES / EWC



LAVATORY CLEARANCE

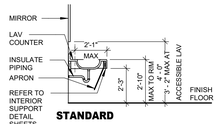
ACCESSIBLE LAVATORY
FRONT APPROACH SECTION
SECTION LW1



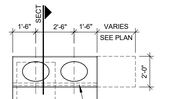
LW1
LW2 AT NON-ACCESSIBLE

CLEAR FLOOR SPACE AT LAVATORY

ACCESSIBLE LAVATORY
FRONT APPROACH
PLAN DESIGNATION LW1

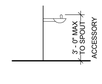


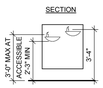
STANDARD
ACCESSIBLE LAVATORY
SECTION L1, L2, L3



STANDARD
ACCESSIBLE LAVATORY
PLAN DESIGNATION L1, L2, L3

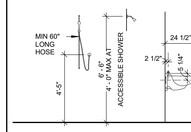
NOTE:
1.THE NUMBER (1,2,3, ETC.) REPRESENTS THE NUMBER OF LAVATORIES
2. COORDINATE LAVATORY MF08 SUPPORTS WITH BOWL LOCATIONS.



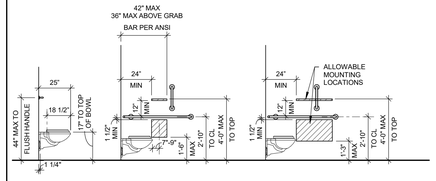


FOUNTAIN/COOLER HI-LO
PLAN DESIGNATION EWC1

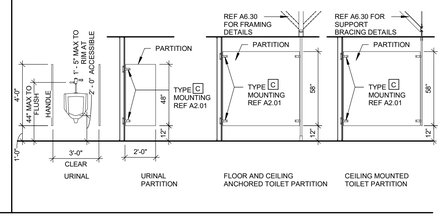
FIXTURE MOUNTING DIAGRAM



HAND HELD SHOWER / SHOWER HEAD — SERVICE SINK — MOP SINK FAUCET SUPPORT BRACKET



WALL MOUNTED TOILET — ACCESSIBLE MOUNTING DIAGRAM FOR TOILET PAPER DISPENSER — ACCESSIBLE MOUNTING DIAGRAM FOR OTHER APPROVED TOILET ACCESSORIES PER ADA 604.3.2



URINAL — URINAL PARTITION — FLOOR AND CEILING ANCHORED TOILET PARTITION — CEILING MOUNTED TOILET PARTITION

TOILET ACCESSORY MOUNTING DIAGRAM

PROVIDED BY - INSTALLED BY
(C) = CONTRACTOR
(O) = OWNER
(V) = VENDOR

TOILET ACCESSORY ITEM	ITEM [A] - PAPER TOWEL DISPENSER	ITEM [B] - TOILET TISSUE DISPENSER	ITEM [C] - FACIAL TISSUE DISPENSER	ITEM [D] - WASTE RECEPTACLE	ITEM [E] - SANITARY NAPKIN DISPOSAL	ITEM [F] - SANITARY NAPKIN VENDOR	ITEM [G] - GRAB BARS	ITEM [H] - PAPER TOWEL DISPENSER & WASTE RECEPTACLE
FINISH FLOOR	3'-4" TO DISPENSING POINT; 3'-4" TO DISPENSING POINT; 3'-4" TO DISPENSING POINT	FINISH FACE OF WET WALL; SEE PLAN; CL; 2'-3" TO CL OF SPINDLE; 2'-3" TO CL OF SPINDLE; 2'-3" TO TOP; 1'-6" TO CL OF SPINDLE	CL; 3'-4" TO DISPENSING POINT	1'-6" TO RECPT TOP EDGE; 2'-7" TO RECPT TOP EDGE; 3'-0" TO RECPT TOP EDGE	2'-6" TO TOP	3'-4" TO COIN SLOT	REFER TO PLAN FOR LENGTH AND CONFIGURATION; 2'-10" TO CL; 3'-4" TO CL; VERTICAL GRAB BAR; 1'-4" TO 2'-4" AT ALL LOCATIONS; 2'- 10" TO CL; ACCESSIBLE TOILET STALL OR SHOWER GRAB BAR WITH SEAT; ROLL-IN SHOWER STALL GRAB BAR; 2'-10" TYP TO CL	
TYPES:	[1] SURFACE - MANUAL [2] SURFACE - AUTOMATIC [3] RECESSED - MANUAL MOUNTING: TYPE A (SHEET A2.01)	[1] SURFACE - SINGLE ROLL [2] SURFACE - DOUBLE ROLL [3] SURFACE - MULTI-ROLL [4] PARTITION-MOUNTED [5] RECESSED - SINGLE ROLL [6] RECESSED - MULTI-ROLL MOUNTING: TYPE A (SHEET A2.01)	[1] SURFACE [2] RECESSED MOUNTING: TYPE A (SHEET A2.01)	[1] SURFACE [2] RECESSED [3] SEMI-RECESSED [4] UNDER-COUNTER MOUNTING: TYPE A (SHEET A2.01)	[1] SURFACE [2] RECESSED [3] PARTITION-MOUNTED MOUNTING: TYPE A (SHEET A2.01)	[1] SURFACE [2] RECESSED MOUNTING: TYPE A (SHEET A2.01)	[1] HORIZONTAL - 18 INCHES [2] HORIZONTAL - 24 INCHES [3] HORIZONTAL - 30 INCHES [4] HORIZONTAL - 36 INCHES [5] HORIZONTAL - 42 INCHES [6] VERTICAL - 18 INCHES [7] L-SHAPED, HORIZONTAL - 42"x54" [8] L-SHAPED, HORIZONTAL - 16"x30" [9] U-SHAPED, HORIZONTAL - 24"x60"x24" MOUNTING: TYPE C OR D @ BARIATRIC CONDITIONS ONLY (SHEET A2.01)	[1] SEMI-RECESSED - 12 GAL. [2] SEMI-RECESSED - 18 GAL. [3] RECESSED - 12 GAL. MOUNTING: TYPE A (SHEET A2.01)
DRAWING DESIGNATION	A1.1 - SURFACE - MANUAL (C) - (C) A1.2 - SURFACE - MANUAL (O) - (C) A1.3 - SURFACE - MANUAL (O) - (V) A2.1 - SURFACE - AUTOMATIC (C) - (C) A2.2 - SURFACE - AUTOMATIC (O) - (C) A2.3 - SURFACE - AUTOMATIC (O) - (V) A3.1 - RECESSED - MANUAL (C) - (C) A3.2 - RECESSED - MANUAL (O) - (C) A3.3 - RECESSED - MANUAL (O) - (V)	B1.1 - SURFACE - SINGLE ROLL (C) - (C) B1.2 - SURFACE - SINGLE ROLL (O) - (C) B1.3 - SURFACE - SINGLE ROLL (O) - (V) B2.1 - SURFACE - DOUBLE ROLL (C) - (C) B2.2 - SURFACE - DOUBLE ROLL (O) - (C) B2.3 - SURFACE - DOUBLE ROLL (O) - (V) B3.1 - SURFACE - MULTI-ROLL (C) - (C) B3.2 - SURFACE - MULTI-ROLL (O) - (C) B3.3 - SURFACE - MULTI-ROLL (O) - (V) B4.1 - PARTITION-MOUNTED (C) - (C) B4.2 - PARTITION-MOUNTED (O) - (C) B4.3 - PARTITION-MOUNTED (O) - (V) B5.1 - RECESSED - SINGLE ROLL (C) - (C) B5.2 - RECESSED - SINGLE ROLL (O) - (C) B5.3 - RECESSED - SINGLE ROLL (O) - (V) B6.1 - RECESSED - MULTI-ROLL (C) - (C) B6.2 - RECESSED - MULTI-ROLL (O) - (C) B6.3 - RECESSED - MULTI-ROLL (O) - (V)	C1.1 - SURFACE (C) - (C) C1.2 - SURFACE (O) - (C) C1.3 - SURFACE (O) - (V) C2.1 - RECESSED (C) - (C) C2.2 - RECESSED (O) - (C) C2.3 - RECESSED (O) - (V)	D1.1 - SURFACE (C) - (C) D1.2 - SURFACE (O) - (C) D1.3 - SURFACE (O) - (V) D2.1 - RECESSED (C) - (C) D2.2 - RECESSED (O) - (C) D2.3 - RECESSED (O) - (V) D3.1 - SEMI-RECESSED (C) - (C) D3.2 - SEMI-RECESSED (O) - (C) D3.3 - SEMI-RECESSED (O) - (V) D4.1 - UNDER-COUNTER (C) - (C) D4.2 - UNDER-COUNTER (O) - (C) D4.3 - UNDER-COUNTER (O) - (V)	E1.1 - SURFACE (C) - (C) E1.2 - SURFACE (O) - (C) E1.3 - SURFACE (O) - (V) E2.1 - RECESSED (C) - (C) E2.2 - RECESSED (O) - (C) E2.3 - RECESSED (O) - (V) E3.1 - PARTITION-MOUNTED (C) - (C) E3.2 - PARTITION-MOUNTED (O) - (C) E3.3 - PARTITION-MOUNTED (O) - (V)	F1.1 - SURFACE (C) - (C) F1.2 - SURFACE (O) - (C) F1.3 - SURFACE (O) - (V) F2.1 - RECESSED (C) - (C) F2.2 - RECESSED (O) - (C) F2.3 - RECESSED (O) - (V)	G1 - HORIZONTAL - 18 INCHES G2 - HORIZONTAL - 24 INCHES G3 - HORIZONTAL - 30 INCHES G4 - HORIZONTAL - 36 INCHES G5 - HORIZONTAL - 42 INCHES G6 - VERTICAL - 18 INCHES G7 - L-SHAPED, HORIZONTAL - 42"x54" G8 - L-SHAPED, HORIZONTAL - 16"x30" G9 - U-SHAPED, HORIZONTAL - 24"x60"x24"	H1.1 - SEMI-RECESSED - 12 GAL. (C) - (C) H1.2 - SEMI-RECESSED - 12 GAL. (O) - (C) H1.3 - SEMI-RECESSED - 12 GAL. (O) - (V) H2.1 - SEMI-RECESSED - 18 GAL. (C) - (C) H2.2 - SEMI-RECESSED - 18 GAL. (O) - (C) H2.3 - SEMI-RECESSED - 18 GAL. (O) - (V) H3.1 - RECESSED - 12 GAL. (C) - (C) H3.2 - RECESSED - 12 GAL. (O) - (C) H3.3 - RECESSED - 12 GAL. (O) - (V)

TOILET ACCESSORY ITEM	ITEM [J] - SOAP DISPENSER	ITEM [K] - SOAP DISH	ITEM [L] - FOLDING SHOWER SEAT	ITEM [M] - CHANGING STATION	ITEM [N] - SHELF	ITEM [P] - MIRROR	ITEM [Q] - HAND DRYER	ITEM [R] - ROBE HOOK	ITEM [S] - TOWEL BAR	ITEM [T] - SANITIZER DISPENSER	ITEM [U] - MOP & BROOM HOLDER	ITEM [V] - ROD, HOOKS AND CURTAIN
FINISH FLOOR	LAVATORY COUNTER; 3'-4" TO SPOUT; 3'-4" TO SPOUT	3'-4"; 3'-4"; 4'-0" MAX	1'-6"	2'-0" MAX TO TOP	6'-0" 4' - 0" AT ACCESSIBLE	6'-2" TO TOP OF FRAME; ALIGN MIRROR WITH TOP OF DOOR FRAME; 3'- 3 1/4" TO BOTTOM OF REFLECTIVE SURFACE	3'-2"	6'- 0" 4' - 0" MAX AT ACCESSIBLE	3'-6" TO CL		U1; U2; 6'-0"; 6'-0"	
TYPES:	[1] SURFACE - MANUAL [2] SURFACE - AUTOMATIC [3] RECESSED - MANUAL MOUNTING: TYPE A (SHEET A2.01) [4] COUNTER - MANUAL [5] COUNTER - AUTOMATIC	[1] SURFACE [2] RECESSED [3] RECESSED - CERAMIC	[1] WALL MOUNTED - PADDED [2] WALL MOUNTED - COMPOSITE MOUNTING: TYPE C (SHEET A2.01)	[1] SURFACE - HDPE [2] SURFACE - STAINLESS STEEL [3] RECESSED - HDPE [4] RECESSED - STAINLESS STEEL MOUNTING: TYPE C (SHEET A2.01)	[1] STAINLESS STEEL - 18 INCH [2] SURFACE TOWEL SHELF - 24 INCH [3] FOLDING UTILITY MOUNTING: TYPE A (SHEET A2.01)	[1] STAINLESS STEEL FRAME (S.S.F.) [2] S.S.F. W/ SHELF [3] TILT S.S.F. MOUNTING: TYPE A (SHEET A2.01) [4] SELF-ILLUMINATED [5] DECORATIVE [ ] 24 x 36 INCHES [ ] 24 x 72 INCHES [ ] __ x __ INCHES (OTHER)	[1] AUTOMATIC - HIGH SPEED [2] AUTOMATIC SENSOR [3] PUSH BUTTON MOUNTING: TYPE A (SHEET A2.01)	[1] SINGLE [2] DOUBLE MOUNTING: TYPE A (SHEET A2.01)	[1] 18 INCH [2] 24 INCH MOUNTING: TYPE B (SHEET A2.01)	[1] SURFACE - MANUAL [2] SURFACE - AUTOMATIC MOUNTING: TYPE A (SHEET A2.01)	[1] WITH SHELF [2] WITHOUT SHELF MOUNTING: TYPE B (SHEET A2.01)	[1] STRAIGHT ROD [2] CURVED ROD MOUNTING: TYPE B (SHEET A2.01)
DRAWING DESIGNATION	J1.1 - SURFACE - MANUAL (C) - (C) J1.2 - SURFACE - MANUAL (O) - (C) J1.3 - SURFACE - MANUAL (O) - (V) J2.1 - SURFACE - AUTOMATIC (C) - (C) J2.2 - SURFACE - AUTOMATIC (O) - (C) J2.3 - SURFACE - AUTOMATIC (O) - (V) J3.1 - RECESSED - MANUAL (C) - (C) J3.2 - RECESSED - MANUAL (O) - (C) J3.3 - RECESSED - MANUAL (O) - (V) J4.1 - COUNTER - MANUAL (C) - (C) J4.2 - COUNTER - MANUAL (O) - (C) J4.3 - COUNTER - MANUAL (O) - (V) J5.1 - COUNTER - AUTOMATIC (C) - (C) J5.2 - COUNTER - AUTOMATIC (O) - (C) J5.3 - COUNTER - AUTOMATIC (O) - (V)	K1 - SURFACE K2 - RECESSED K3 - RECESSED - CERAMIC	L1 - WALL - PADDED L2 - WALL - COMPOSITE	M1 - SURFACE - HDPE M2 - SURFACE - STAINLESS STEEL M3 - RECESSED - HDPE M4 - RECESSED - STAINLESS STEEL	N1 - STAINLESS STEEL - 18 INCH N2 - SURFACE TOWEL SHELF - 24 INCH N3 - FOLDING UTILITY	P1.1 - STAINLESS STEEL FRAME P1.2 - STAINLESS STEEL FRAME P2.1 - STAINLESS STEEL FRAME W/ SHELF P3.1 -TILT STAINLESS STEEL FRAME P4.1 - SELF-ILLUMINATED P4.3 - SELF-ILLUMINATED P5.1 - DECORATIVE	Q1 - AUTOMATIC - HIGH SPEED Q2 - AUTOMATIC SENSOR Q3 - PUSH BUTTON	R1 - SINGLE R2 - DOUBLE	S1 - 18 INCH S2 - 24 INCH	T1.1 - SURFACE - MANUAL T1.2 - SURFACE - MANUAL T1.3 - SURFACE - MANUAL T2.1 - SURFACE - AUTOMATIC T2.2 - SURFACE - AUTOMATIC T2.3 - SURFACE - AUTOMATIC	U1 - WITH SHELF U2 - WITHOUT SHELF	V1 - STRAIGHT ROD V2 - CURVED ROD

TOILET ACCESSORY ITEM	ITEM [W] - WASH CLOTH BATH AND HAND TOWEL HOLDER	ITEM [X] - GLOVE DISPENSER	ITEM [Y] - SPECIMEN PASS THRU
FINISH FLOOR	4'-0" MAX	4'-0" MAX	4'-0" MAX
TYPES:	[1] TOWEL HOLDER MOUNTING: TYPE A (SHEET A2.01)	[1] STAINLESS STEEL - DOUBLE [2] STAINLESS STEEL - TRIPLE [3] STAINLESS STEEL - QUAD MOUNTING: TYPE A (SHEET A2.01)	[1] RECESSED - STAINLESS STEEL [2] RECESSED - STAINLESS STEEL (HEAVY DUTY) MOUNTING: TYPE B (SHEET A2.01)
DRAWING DESIGNATION	W1 - TOWEL HOLDER	X1 - STAINLESS STEEL - DOUBLE X2 - STAINLESS STEEL - TRIPLE X3 - STAINLESS STEEL - QUAD	Y1 - RECESSED STAINLESS STEEL Y2 - RECESSED STAINLESS STEEL (HEAVY DUTY)

NOTE:
1. ACCESSORIES CAN APPEAR ON FLOOR PLANS OR INTERIOR ELEVATIONS.
2. THE SHADED PORTIONS ARE NOT INCLUDED IN THE SCOPE OF THE WORK.
3. THE UN-SHADED PORTIONS ARE INTENDED TO BE IN THE SCOPE OF THE WORK.

HATCHING:
INCLUDED IN SCOPE OF WORK
NOT INCLUDED IN SCOPE OF WORK

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PROFESSIONAL SEAL:
STATE OF OKLAHOMA — JAMES R. CHILDERS — REGISTERED ARCHITECT
01-10-2020

CONSULTANT LOGO:

CLIENT:
THE CHEROKEE NATION — TRUST OF THE CHEROKEE NATION — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

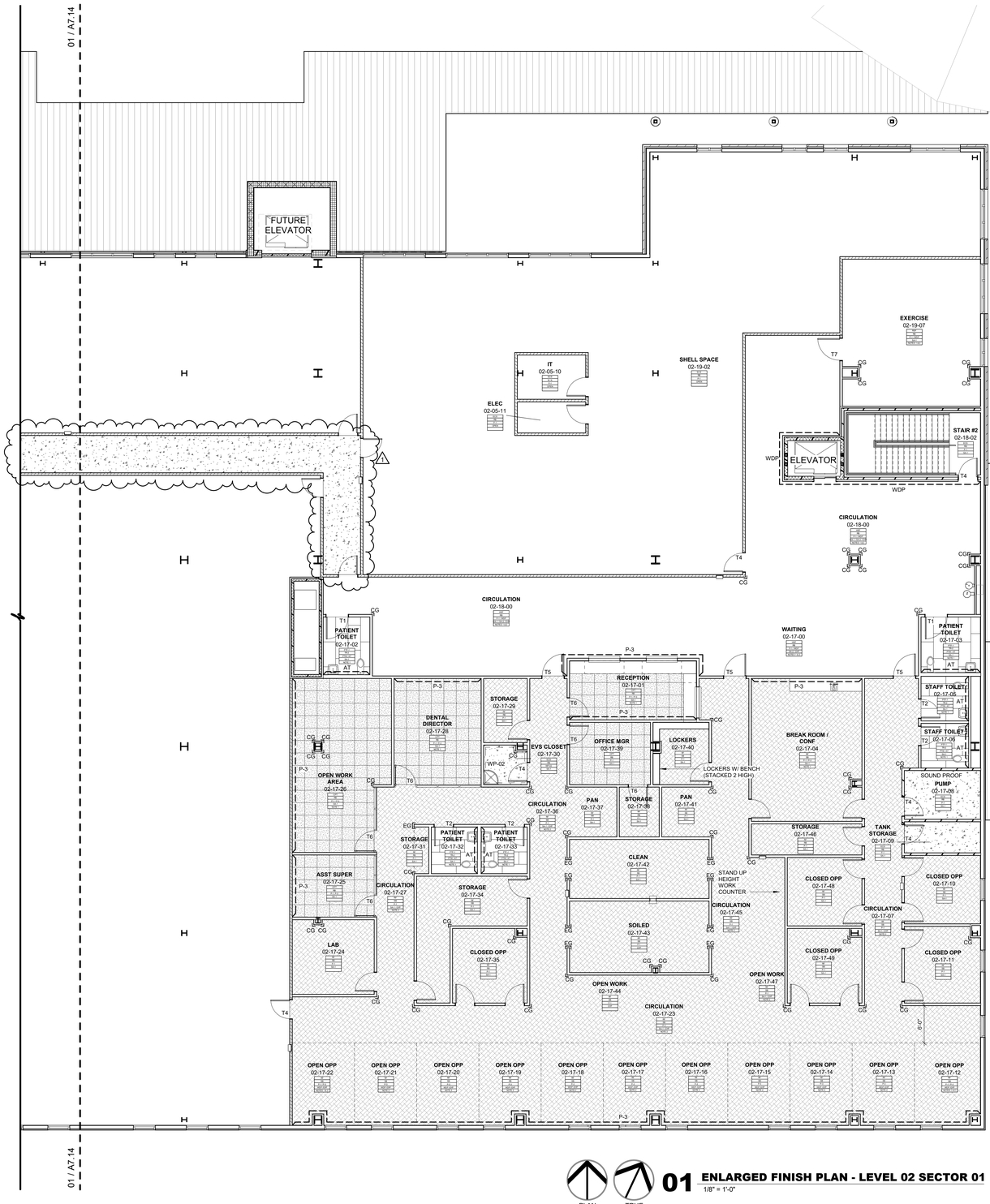
KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: A6.20

STANDARD TOILET LAYOUT / ACCESSORIES



PLAN NORTH

TRUE NORTH

01 ENLARGED FINISH PLAN - LEVEL 02 SECTOR 01

1/8" = 1'-0"

FINISH TAG LEGEND

ROOM NAME — **ROOM**
ROOM NUMBER — 100
FLOOR FINISH — CPTX
BASE FINISH — RBX
TYP WALL FINISH — PXX
CEILING — ACT
REMARKS — 1

REFER TO INTERIOR FINISH LEGEND FOR DEFINITION OF MATERIAL DESIGNATIONS

FINISH TAG REMARKS

1. SEE FINISH PLANS & ENLARGED FLOOR PATTERN DETAILS FOR FINISH LOCATIONS.
2. SEE REFLECTED CEILING PLANS FOR FINISH LOCATIONS & HEIGHTS.
3. SEE TOILET ELEVATIONS & FINISH PLANS FOR WALL FINISH LOCATIONS.
4. SEE FINISH LEGEND FOR ELEVATOR FINISH LOCATIONS.

GENERAL NOTES - FINISH PLAN

1. ALL GYPSUM BOARD WALLS TO BE PAINTED P-1 U.N.O.
2. ALL GYPSUM BOARD CEILINGS TO BE PAINTED P-4 U.N.O.
3. SEE SHEETS A1.40, A6.20-21, A8.20 TOILET & SHOWER PLANS / ELEVATIONS / ACCESSORIES.
4. SEE INTERIOR FINISH LEGEND FOR THRESHOLD & TRANSITION DETAILS.
5. SEE INTERIOR ELEVATIONS & MILLWORK ELEVATIONS FOR MILLWORK FINISH TYPES & LOCATIONS.
6. SEE INTERIOR ELEVATIONS & WALL PROTECTION ELEVATIONS FOR WALL PROTECTION FINISH TYPES & LOCATIONS.
7. COORDINATE ALL FLOOR DRAINS, SINKS & CLEAN OUTS W/ PLUMBING - IF DISCREPANCIES OCCUR NOTIFY ARCHITECT.
8. WELDING ROD AT WELDED SEAMS SHALL MATCH THE DARKER OF THE COLORS AT SEAMS THAT DIVIDE TWO COLORS U.N.O.
9. ALL RUBBER BASE TO EXTEND TO WALL BEHIND EQUIPMENT REGARDLESS OF EQUIPMENT ELEVATION & ROTATION.
10. ALL FLOOR FINISHES TO EXTEND UNDERNEATH MILLWORK.
11. MANUAL WINDOW SHADES TO BE PROVIDED AT ALL EXTERIOR WINDOW LOCATIONS U.N.O.
12. COORDINATE ALL FLOOR RECEPTACLES W/ ELECTRICAL - IF DISCREPANCIES OCCUR NOTIFY ARCHITECT.

FINISH MATERIALS LEGEND

AT	ACCENT TILE	PL	PLASTIC LAMIINATE
CG	CORNER GUARD	PTF	PORCELAIN FLOOR TILE
CH	CHAIR RAIL	PTW	PORCELAIN WALL TILE
CPT	CARPET	RB	RUBBER BASE
DH	DOOR HARDWARE	RF	RUBBER FLOOR
ECS	EXPOSED CONCRETE - SEALED	RSF	RUBBER SPORTS FLOORING
EG	END GUARD	SA	SUSPENDED ACCOUSTIC
EM	ENTRY MAT	SB	SANITARY BASE
G	GROUT	SS	SOLID SURFACE
GYP	GYPSUM BOARD	T	TRANSITIONS
HIWC	HIGH MPACT WALL COVERING	TH	THRESHOLDS
HM	HOLLOW METAL	TP	TOILET PARTITIONS
HSF	HETEROGENEOUS SHEET FLOORING	TR	TRIM
IB	INTEGRAL BASE	WD	WOOD DOOR
MB	METAL BASE	WDP	WOOD PANELING
P	PAINT	WS	WINDOW SHADES

FLOOR PATTERN LEGEND

HSF	HETEROGENEOUS SHEET FLOORING
RF	RUBBER FLOORING
CPT	CARPET TILE
EM	ENTRY MAT
RSF	RUBBER SPORTS FLOOR
ECS	EXPOSED CONCRETE - SEALED
PTF-1	PORCELAIN FLOOR TILE
PTF-2	PORCELAIN FLOOR TILE

THRESHOLD & TRANSITION LEGEND

TH1	METAL THRESHOLD
TH2	MARBLE THRESHOLD
T1	METAL TRANSITION
T2	METAL TRANSITION
T3	METAL TRANSITION
T4	METAL TRANSITION
T5	METAL TRANSITION
T6	METAL TRANSITION
T7	METAL TRANSITION
T8	METAL TRANSITION

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STATE OF OKLAHOMA — JAMES R. CHILDERS — REGISTERED ARCHITECT

01-10-2020

CONSULTANT LOGO:

CLIENT:

THE CHEROKEE NATION — FIRST CAPITAL — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

BID PACKAGE 02

REVISIONS

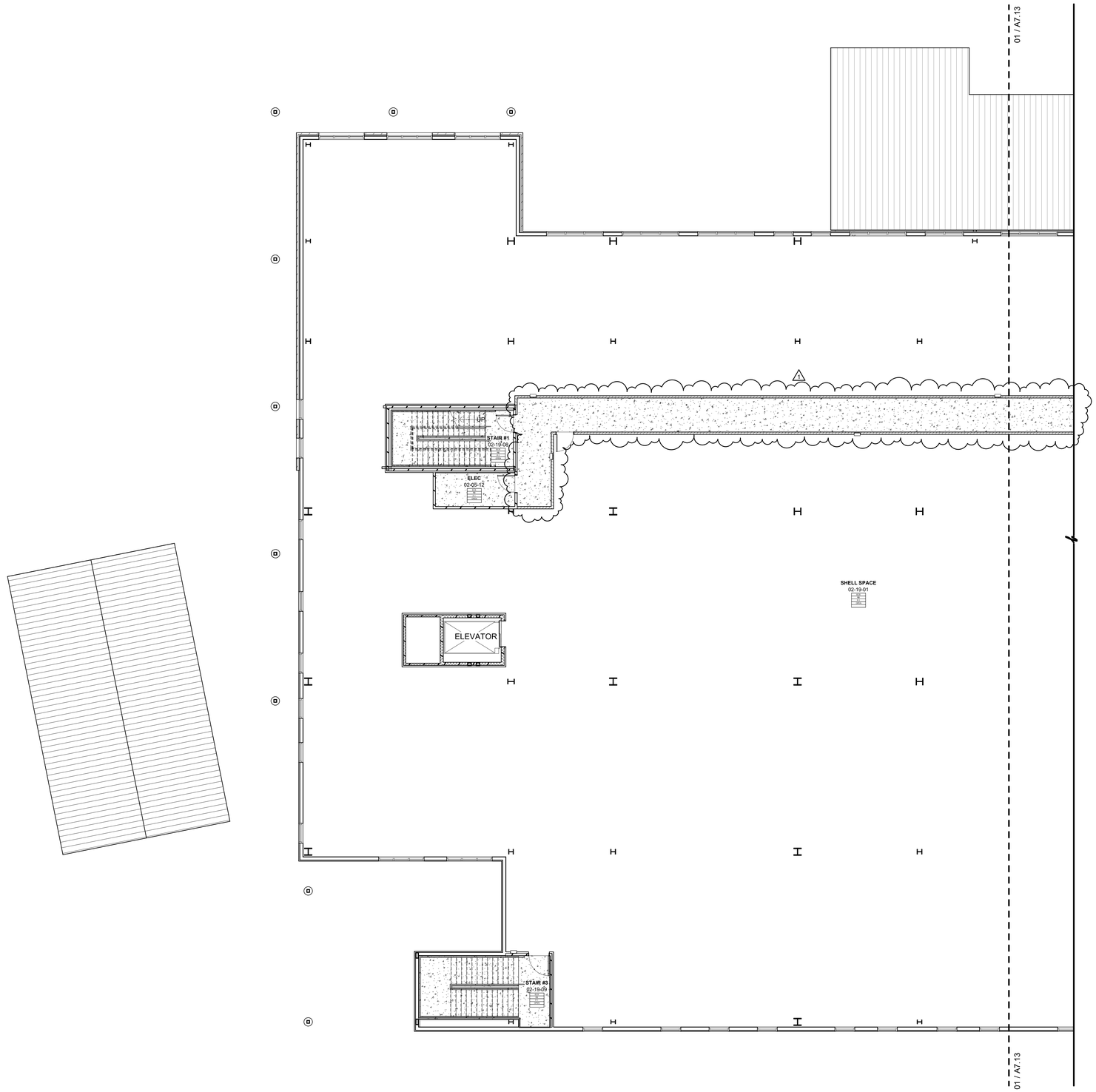
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: A7.13

FINISH PLAN LEVEL 02 SECTOR 01



01 ENLARGED FINISH PLAN - LEVEL 02 SECTOR 02

1/8" = 1'-0"

PLAN NORTH

TRUE NORTH

FINISH TAG LEGEND

ROOM NAME → **ROOM**
ROOM NUMBER → 100
FLOOR FINISH → CPTX
BASE FINISH → RBX
TYP WALL FINISH → PXX
CEILING → ACT
REMARKS → 1

REFER TO INTERIOR FINISH LEGEND FOR DEFINITION OF MATERIAL DESIGNATIONS

FINISH TAG REMARKS

1. SEE FINISH PLANS & ENLARGED FLOOR PATTERN DETAILS FOR FINISH LOCATIONS.
2. SEE REFLECTED CEILING PLANS FOR FINISH LOCATIONS & HEIGHTS.
3. SEE TOILET ELEVATIONS & FINISH PLANS FOR WALL FINISH LOCATIONS.
4. SEE FINISH LEGEND FOR ELEVATOR FINISH LOCATIONS.

GENERAL NOTES - FINISH PLAN

1. ALL GYPSUM BOARD WALLS TO BE PAINTED P-1 U.N.O.
2. ALL GYPSUM BOARD CEILINGS TO BE PAINTED P-4 U.N.O.
3. SEE SHEETS A1.40, A6.20-21, A8.20 TOILET & SHOWER PLANS / ELEVATIONS / ACCESSORIES.
4. SEE INTERIOR FINISH LEGEND FOR THRESHOLD & TRANSITION DETAILS.
5. SEE INTERIOR ELEVATIONS & MILLWORK ELEVATIONS FOR MILLWORK FINISH TYPES & LOCATIONS.
6. SEE INTERIOR ELEVATIONS & WALL PROTECTION ELEVATIONS FOR WALL PROTECTION FINISH TYPES & LOCATIONS.
7. COORDINATE ALL FLOOR DRAINS, SINKS & CLEAN OUTS W/ PLUMBING - IF DISCREPANCIES OCCUR NOTIFY ARCHITECT.
8. WELDING ROD AT WELDED SEAMS SHALL MATCH THE DARKER OF THE COLORS AT SEAMS THAT DIVIDE TWO COLORS U.N.O.
9. ALL RUBBER BASE TO EXTEND TO WALL BEHIND EQUIPMENT REGARDLESS OF EQUIPMENT ELEVATION & ROTATION.
10. ALL FLOOR FINISHES TO EXTEND UNDERNEATH MILLWORK.
11. MANUAL WINDOW SHADES TO BE PROVIDED AT ALL EXTERIOR WINDOW LOCATIONS U.N.O.
12. COORDINATE ALL FLOOR RECEPTACLES W/ ELECTRICAL - IF DISCREPANCIES OCCUR NOTIFY ARCHITECT.

FINISH MATERIALS LEGEND

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CG	CORNER GUARD	PTF	PORCELAIN FLOOR TILE
CH	CHAIR RAIL	PTW	PORCELAIN WALL TILE
CPT	CARPET	RB	RUBBER BASE
DH	DOOR HARDWARE	RF	RUBBER FLOOR
ECS	EXPOSED CONCRETE - SEALED	RSF	RUBBER SPORTS FLOORING
EG	END GUARD	SA	SUSPENDED ACCOUSTIC
EM	ENTRY MAT	SB	SANITARY BASE
G	GROUT	SS	SOLID SURFACE
GYP	GYPSUM BOARD	T	TRANSITIONS
HWC	HIGH MPACT WALL COVERING	TH	THRESHOLDS
HM	HOLLOW METAL	TP	TOILET PARTITIONS
HSF	HETEROGENEOUS SHEET FLOORING	TR	TRIM
IB	INTEGRAL BASE	WD	WOOD DOOR
MB	METAL BASE	WDP	WOOD PANELING
P	PAINT	WS	WINDOW SHADES

FLOOR PATTERN LEGEND

HSF	HETEROGENEOUS SHEET FLOORING
RF	RUBBER FLOORING
CPT	CARPET TILE
EM	ENTRY MAT
RSF	RUBBER SPORTS FLOOR
ECS	EXPOSED CONCRETE - SEALED
PTF-1	PORCELAIN FLOOR TILE
PTF-2	PORCELAIN FLOOR TILE

THRESHOLD & TRANSITION LEGEND

TH1	METAL THRESHOLD
TH2	MARBLE THRESHOLD
T1	METAL TRANSITION
T2	METAL TRANSITION
T3	METAL TRANSITION
T4	METAL TRANSITION
T5	METAL TRANSITION
T6	METAL TRANSITION
T7	METAL TRANSITION
T8	METAL TRANSITION

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CONSULTANT LOGO:

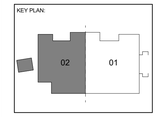
CLIENT:

THE CHEROKEE NATION — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

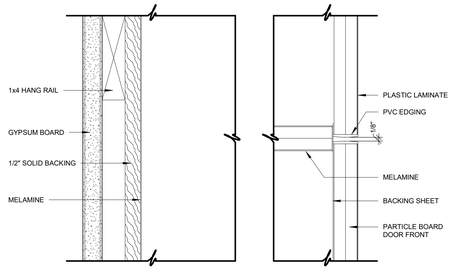
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

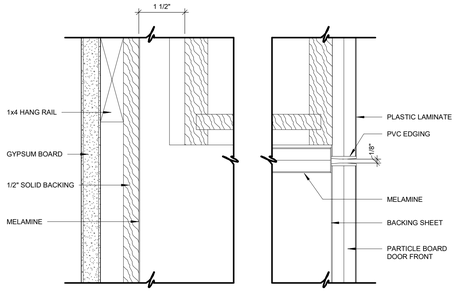
JOB NUMBER: 18-01.01

SHEET NUMBER: A7.14

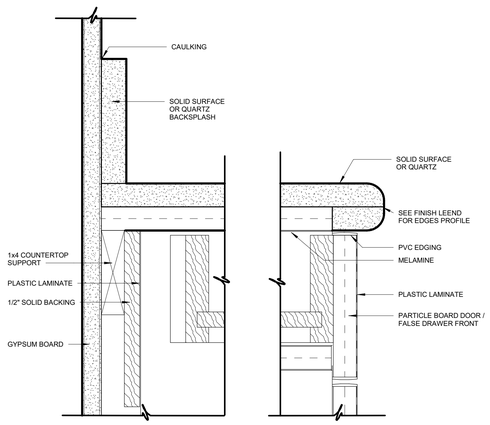
FINISH PLAN LEVEL 02 SECTOR 02



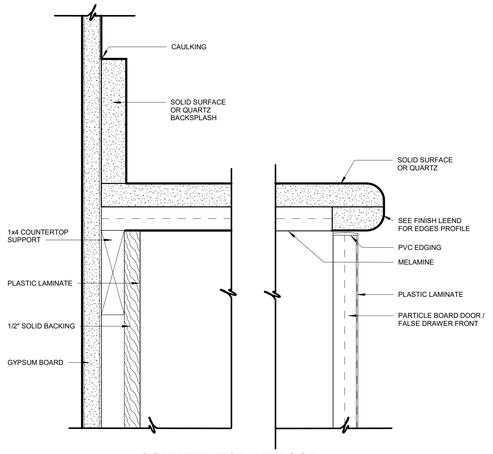
21 FALSE DRAWER TO DOOR SECTION
6" = 1'-0"



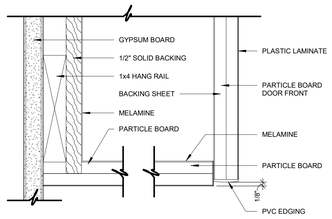
20 DRAWER TO DOOR SECTION
6" = 1'-0"



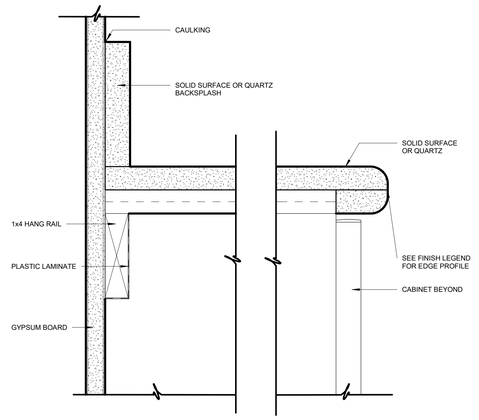
19 COUNTERTOP AT DRAWER
6" = 1'-0"



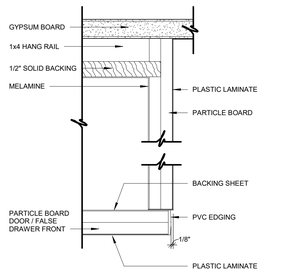
18 COUNTER TOP AT DOOR
6" = 1'-0"



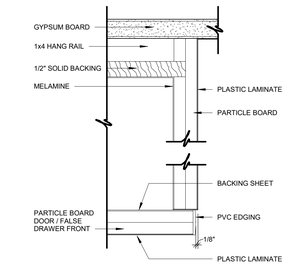
17 WALL CABINET AT BOTTOM
6" = 1'-0"



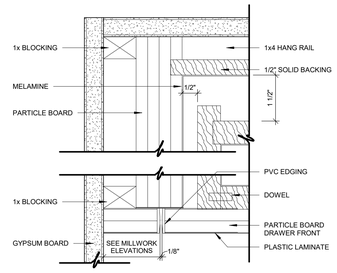
16 COUNTERTOP AT KNEESPACE
6" = 1'-0"



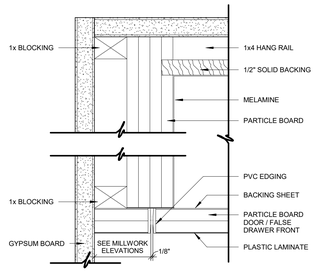
15 DRAWER AT FINISHED END SECTION
6" = 1'-0"



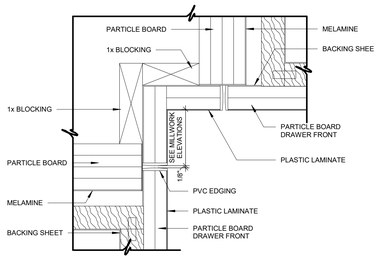
14 DOOR AT FINISHED END SECTION
6" = 1'-0"



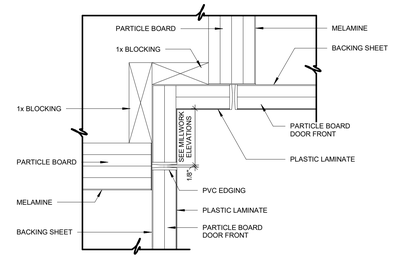
13 DRAWER SECTION
6" = 1'-0"



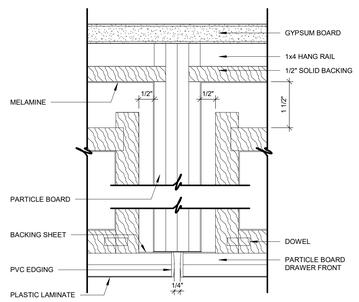
12 DOOR SECTION
6" = 1'-0"



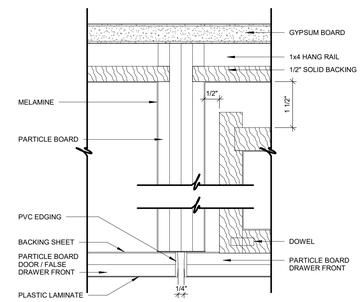
11 DRAWER SECTIONS AT CORNER
6" = 1'-0"



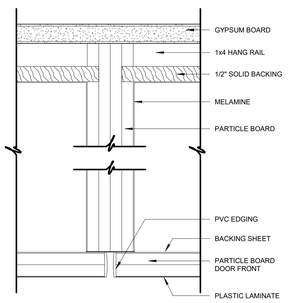
10 DOOR SECTIONS AT CORNER
6" = 1'-0"



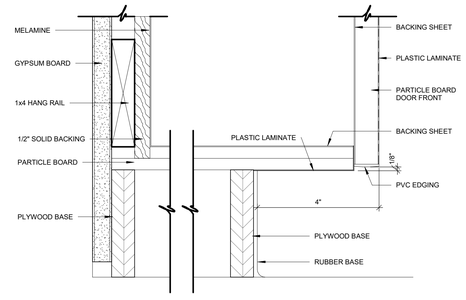
09 CABINET TO CABINET SECTION
6" = 1'-0"



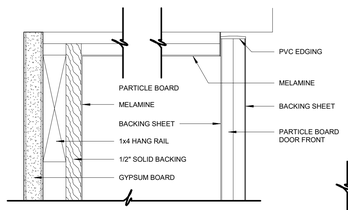
08 CABINET TO CABINET SECTION
6" = 1'-0"



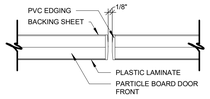
07 CABINET TO CABINET SECTION
6" = 1'-0"



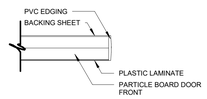
06 BASE CABINET AT FLOOR
6" = 1'-0"



05 WALL CABINET AT FURR DOWN
6" = 1'-0"

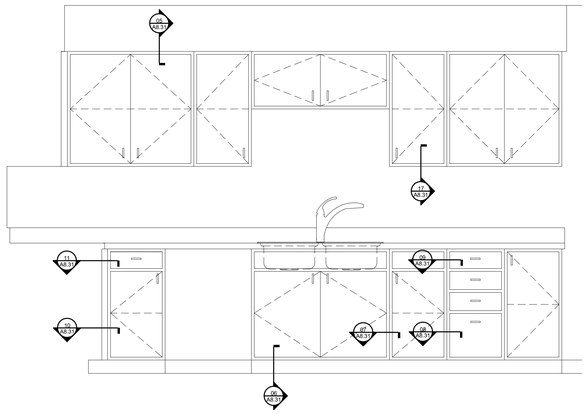


04 DOOR TO DOOR SECTION
6" = 1'-0"

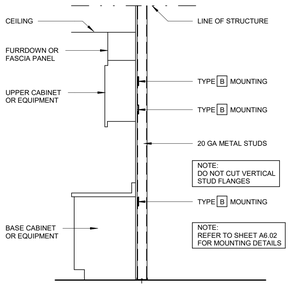


NOTE: 1" PARTICLE BOARD SHELF AT SPANS GREATER THAN 3'-0"

03 SHELF SECTION
6" = 1'-0"



02 MILLWORK DETAIL KEY (GENERIC ELEVATIONS)
3/4" = 1'-0"



01 TYPICAL STUD WALL SUPPORTING EQUIPMENT AND CABINETRY
1/4" = 1'-0"

James R. Childers Architect, Inc.
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479-783-2480
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PROFESSIONAL SEAL:
STATE OF OKLAHOMA JAMES R. CHILDERS REGISTERED ARCHITECT
01-10-2020

CONSULTANT LOGO:

CLIENT:
THE CHEROKEE NATION 1839 SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

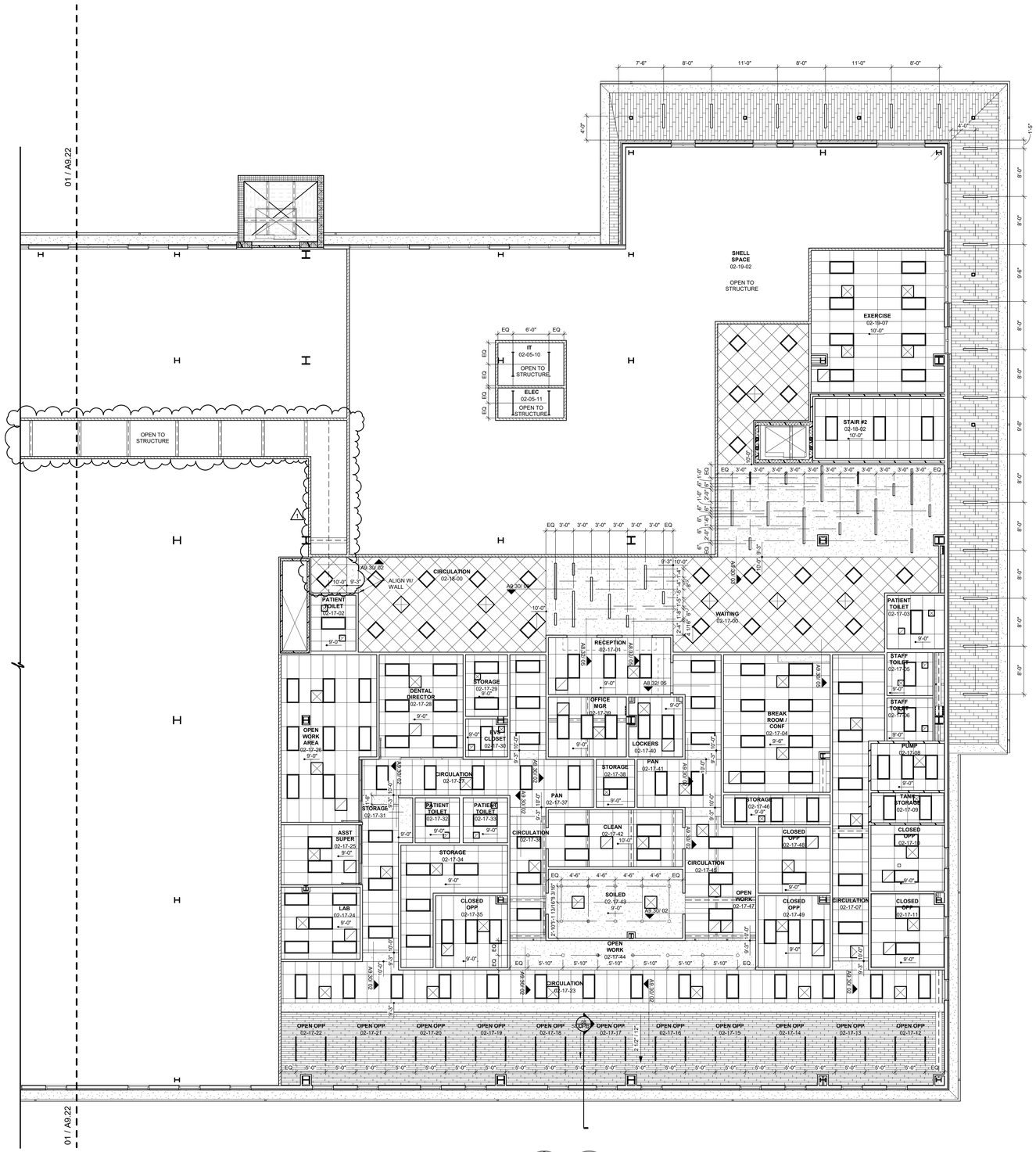
PROJECT PHASE:
BID PACKAGE 02 1

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19 1
JOB NUMBER: 18-01.01

SHEET NUMBER:
A8.31

MILLWORK DETAILS



PLAN NORTH

TRUE NORTH

01 REFLECTED CEILING PLAN - LEVEL 02 SECTOR 01

1/8" = 1'-0"

CEILING SYMBOLS

- GYPSUM BOARD CEILING
- WOOD CEILING
- 2 x 2 LAY-IN
- 2 x 4 LAY-IN
- OPEN TO STRUCTURE CEILING
- SUPPLY AIR
- RETURN AIR
- EXHAUST AIR
- ACCESS PANEL
- SUSPENDED LED LIGHT
- CONTROL JOINT
- LED TROFFER
- RECESSED LIGHT
- LINEAR DIFFUSERS
- RECESSED CAN

GENERAL NOTES

1. ALL CEILINGS SHALL BE 9' - 0" ABOVE FINISHED FLOOR, U.N.O. (COORDINATE W/ OWNER-FURNISHED VENDOR DRAWINGS & EQUIPMENT)
2. IN THE CASE OF MINOR DISCREPANCIES BETWEEN MEP & ARCHITECTURAL DOCUMENTS IN THE LOCATION OF CEILING MOUNTED COMPONENTS, THE ARCHITECTURAL REFLECTED CEILING PLAN SHALL GOVERN. IN THE CASE OF MAJOR DISCREPANCIES, THE ARCHITECT SHALL BE NOTIFIED AS SOON AS THE DISCREPANCY IS DISCOVERED PRIOR TO PROCEEDING WITH THE WORK.
3. REFERENCE MECHANICAL & ELECTRICAL DRAWINGS FOR MOUNTING LOCATIONS OF ITEMS WHERE NO CEILING IS REQUIRED OF INDICATED.
4. LIGHTS, DIFFUSERS, EXIT SIGNS, SMOKE DETECTORS, SPEAKERS, STROBES & MISCELLANEOUS DEVICES SHALL BE CENTERED IN THE CEILING TILE IN WHICH THEY OCCUR, U.N.O.
5. ALL CORRIDOR SPRINKLER HEADS SHALL BE ALIGNED IN THE SAME LOCATION PARALLEL TO THE WALL WITHIN EACH SPECIFIC CEILING CONSTRUCTION. ARCHITECTURALLY SIGNIFICANT SPRINKLER HEAD LOCATIONS MAY BE SHOWN ON REFLECTED CEILING PLAN FOR DESIGN INTENT ONLY.
6. ACCESS DOOR LOCATIONS IN GYPSUM BOARD CEILINGS ARE INDICATED ON RCP'S ONLY WHERE ARCHITECTURALLY SIGNIFICANT. REFERENCE SPECIFICATIONS & MEP DRAWINGS FOR OTHER ACCESS DOOR LOCATIONS.
7. EXIT SIGNS ARE SHOWN ON REFLECTED CEILING PLAN ONLY WHERE LOCATION IS ARCHITECTURALLY SIGNIFICANT.
8. ALL GYPSUM BOARD CEILINGS TO BE PAINTED P-4 U.N.O.
9. DIMENSIONS AT CUBICLE CURTAIN TRACKS ARE TO CENTER OF TRACK, TYP.
10. ALL CUBICLE CURTAIN TRACKS MUST CLEAR DOOR SWINGS BY 3' MINIMUM.

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01-10-2020

CONSULTANT LOGO:

CLIENT:

THE CHEROKEE NATION FIRST CAPITAL SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

BID PACKAGE 02

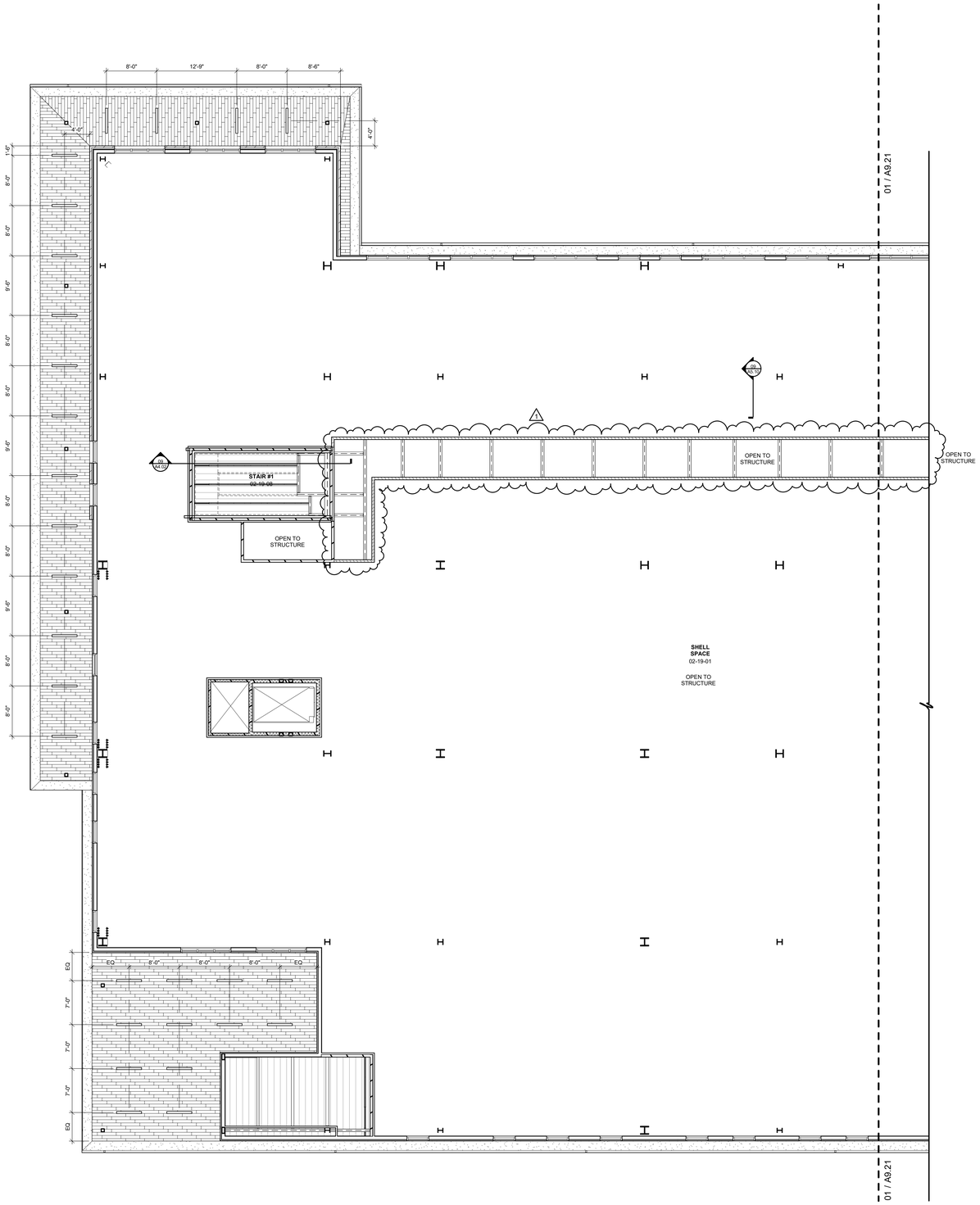
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

A9.21

CEILING PLAN LEVEL 02 SECTOR 01



PLAN NORTH

TRUE NORTH

01 REFLECTED CEILING PLAN - LEVEL 02 SECTOR 02

1/8" = 1'-0"

CEILING SYMBOLS

- GYPSUM BOARD CEILING
- WOOD CEILING
- 2 x 2 LAY-IN
- 2 x 4 LAY-IN
- OPEN TO STRUCTURE CEILING
- SUPPLY AIR
- RETURN AIR
- EXHAUST AIR
- ACCESS PANEL
- SUSPENDED LED LIGHT
- CONTROL JOINT
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- RECESSED CAN

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3. REFERENCE MECHANICAL & ELECTRICAL DRAWINGS FOR MOUNTING LOCATIONS OF ITEMS WHERE NO CEILING IS REQUIRED OF INDICATED.
4. LIGHTS, DIFFUSERS, EXIT SIGNS, SMOKE DETECTORS, SPEAKERS, STROBES & MISCELLANEOUS DEVICES SHALL BE CENTERED IN THE CEILING TILE IN WHICH THEY OCCUR, U.N.O.
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9. DIMENSIONS AT CUBICLE CURTAIN TRACKS ARE TO CENTER OF TRACK, TYP.
10. ALL CUBICLE CURTAIN TRACKS MUST CLEAR DOOR SWINGS BY 3' MINIMUM.

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STATE OF OKLAHOMA
JAMES R. CHILDERS
REGISTERED ARCHITECT

01-10-2020

CONSULTANT LOGO:

CLIENT:

THE CHEROKEE NATION
SEAL OF THE
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

A9.22

CEILING PLAN LEVEL 02 SECTOR 02

3" =1'-0"
1 1/2" =1'-0"
1" =1'-0"
3/4" =1'-0"
1/2" =1'-0"
3/8" =1'-0"
1/4" =1'-0"
1/8" =1'-0"

GENERAL PLUMBING SEISMIC NOTES

1	PROVIDE VIBRATION AND SEISMIC CONTROLS FOR FIRE-SUPPRESSION PIPING AND EQUIPMENT FOR DEVICES FOR FIRE-SUPPRESSION EQUIPMENT AND SYSTEMS.
2	PROVIDE VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT.
3	COORDINATE ALL VIBRATION ISOLATION DEVICE INSTALLATION AND SEISMIC BRACING FOR PLUMBING PIPING AND EQUIPMENT WITH OTHER SYSTEMS AND EQUIPMENT IN THE VICINITY, INCLUDING OTHER SUPPORTS AND RESTRAINTS, IF ANY.
4	TESTING AGENCY QUALIFICATIONS: AN INDEPENDENT AGENCY, WITH THE EXPERIENCE AND CAPABILITY TO CONDUCT THE TESTING INDICATED, THAT IS AN NRTL AS DEFINED BY OSHA IN 29 CFR 1910.7 AND THAT IS ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
5	COMPLY WITH SEISMIC-RESTRAINT REQUIREMENTS IN THE INTERNATIONAL BUILDING CODE
6	WELDING QUALIFICATIONS: QUALITY PROCEDURES AND PERSONNEL ACCORDING TO AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE-STEEL."
7	SEISMIC-RESTRAINT DEVICES SHALL HAVE HORIZONTAL AND VERTICAL LOAD TESTING AND ANALYSIS AND SHALL BEAR ANCHORAGE PRE-APPROVAL OPA NUMBER FROM OSHPD, PRE-APPROVAL BY ICC-ES, OR PRE-APPROVAL BY ANOTHER AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, SHOWING MAXIMUM SEISMIC-RESTRAINT RATINGS. RATINGS BASED ON INDEPENDENT TESTING ARE PREFERRED TO RATINGS BASED ON CALCULATIONS. IF PRE-APPROVED RATINGS ARE UNAVAILABLE, SUBMITTALS BASED ON INDEPENDENT TESTING ARE PREFERRED. CALCULATIONS (INCLUDING COMBINING SHEAR AND TENSILE LOADS) TO SUPPORT SEISMIC-RESTRAINT DESIGNS MUST BE SIGNED AND SEALED BY A QUALIFIED PROFESSIONAL ENGINEER.
8	SEISMIC RESTRAINTS FOR MEP EQUIPMENT AND SYSTEMS
9	BUILDING IS CLASSIFIED AS SEISMIC DESIGN CATEGORY C. CONTRACTOR SHALL PROVIDE SEISMIC BRACING FOR PIPING, DUCTWORK AND EQUIPMENT TO MEET ALL LOCAL AND NATIONAL CODE REQUIREMENTS.
10	CONTRACTOR'S RESPONSIBILITIES INCLUDE PROVIDING ALL SUBMITTAL'S AND DETAILS WITH STRUCTURAL ENGINEER'S CERTIFICATION FOR PERMITTING.
11	SIESMIC PROTECTION FOR CONCERNS OF ALL BUILDING SYSTEMS INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, AND ELECTRICAL MUST MEET MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES FOR BUILDINGS' CLASSIFIED SEISMIC PROTECTION MEASURES TO BE APPLIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND/OR FEDERAL CODES AND WITH MANUFACTURERS'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY

P-WATER HEATER SCHEDULE

TAG NUMBER	SERVICE	MFR	MODEL NUMBER	TYPE	GPM AT 70F RISE	POWER SUPPLY	NOTES
GWH-1 & 2	DOMESTIC HOT WATER	INTELLIHOT	iN400	TANKLESS	11	120/1/60	ALL APPLY

NOTES:
1. EACH WH TO HAVE DUAL HEAT EXCHANGERS FOR BUILT IN REDUNDANCY.
2. EACH WH TO HAVE 7" LCD TOUCHSCREEN DISPLAY DIRECT CELL LTE CONNECTIVITY.
3. HEAT EXCHANGERS TO BE 316L S.S., 3/4" ID.
4. MASTERLESS CASCADING DESIGN.
5. WHs TO COMMUNICATE WITH EACH OTHER.
6. ASME-HLW RATED.

1

P-BOOSTER PUMP SCHEDULE

TAG NUMBER	SERVICE	MFR	MODEL	TYPE	TOTAL SYSTEM US GPM	TDH FT	HP	POWER SUPPLY	NOTES
BP-1	DOMESTIC WATER	GRUNDFOS	BOOSTERPAQ HYDRO MPCE-E 2CHE10-3	DUPLEX	143	122	(2) 5	460/3/60	ALL APPLY

NOTES:
1. PUMPS TO BE FURNISHED WITH ECM MOTORS HAVING INTEGRAL MOTOR VFDs.
2. PUMPS TO BE MULTI-STAGE WITH SPLIT COUPLING.
3. SUCTION & dISCHARGE HEADERS TO BE 316L S.S.
4. PUMP BASPLATE SHALL BE 304 S.S.
5. ON-BOARD PUMP CONTROLLER SHALL CASCADE PUMPS FOR MAXIMUM EFFICIENCY.
6. PUMP CURVES SHALL BE PROGRAMMED INTO CONTROLLER.
7. ENTIRE SYSTEM (PUMPS, VFDs, CONTROLLERS) SHALL BE MANUFACTURED BY A SINGLE MANUFACTURER FOR SINGLE SOURCE RESPONSIBILITY.
8. SKID MOUNTED SYSTEM SHALL INCLUDE ALL PIPE, VALVES & FITTINGS, AND OFFER SINGLE POINT CONNECTIONS.
9. FURNISH WITH EXPANSION TANK SIZE AS RECOMMENDED BY BOOSTER PUMP MANUFACTURER.

PLUMBING PIPING INSULATION SCHEDULE

		INSULATION THICKNESS NOMINAL PIPE SIZE				
DESCRIPTION	INSULATION TYPE	<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
DOMESTIC COLD WATER PIPING BELOW GRADE	PVC OR HDPE JACKET ONLY, NO INSULATION	1	1	1.5	1.5	1.5
CONDENSATE PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	0.5	1	1	1	1.5
PVC WASTE VENT AND WASTE DRAIN IN AIR PLENUM SPACE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	0.5	0.5	0.5	0.5	0.5
WATER COOLER TRAPS, ALL EXPOSED LAVATORY AND SINK TRAPS, TAILPIECES, HOT AND COLD WATER SUPPLY LINES/ANGLE VALVES TO THESE DEVICES	EQUIVALENT TO TRUEBRO 102 E-Z PIPE COVER	0.125	0.125	0.125	0.125	0.125
DOMESTIC HOT WATER AND HOT WATER RETURN PIPING BELOW GRADE	ELASTOMERIC OR FOAM. ENCAPSULATE WITH PVC OR HDPE JACKET	1	1	1.5	1.5	1.5
DOMESTIC COLD WATER, HOT WATER, AND HOT WATER RETURN PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	1	1	1.5	1.5	1.5
PVC WASTE DRAIN IN WALLS, AND WASTE VENT IN ALL AREAS ABOVE GRADE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	1"	1"	1.5"	1.5"	1.5"

PIPING MATERIAL SCHEDULE

DESCRIPTION	MATERIAL
ABOVE GROUND GAS	SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON FITTINGS OR WELDED JOINTS WITH BUTT WELD FITTINGS. PROVIDE CORROSION-RESISTANT MATERIAL ON PIPING EXPOSED TO ATMOSPHERE OR IN CONTACT WITH MATERIAL EXERTING A CORROSIVE ACTION
ABOVE GROUND SANITARY SEWER AND VENT	PVC SCHEDULE 40 PIPE AND FITTINGS EXCEPT IN PLENUM RETURN AREAS. IN PLENUM RETURN AREAS WRAP PVC WITH 1" FIRE WRAP.
FLEXIBLE GAS PIPING INSIDE BUILDING	FOR FINAL CONNECTION TO EQUIPMENT ONLY. CORRUGATED STAINLESS STEEL GAS LINE WITH POLYETHYLENE JACKET AND FITTINGS BY MFG. MUST MEET ANSI, NFPA, FACTORY MUTUAL CODE AND LISTINGS AS AN ACCEPTABLE GAS PIPING MATERIAL, ALL STATE AND LOCAL CODE APPROVALS. PROVIDE PIPING EQUAL TO TRACPIPE BY OMEGA FLEX. SIZE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
FORCED MAIN PIPING	SCHEDULE 40 GALVANIZED STEEL WITH SCREWED JOINTS.
MEDICAL GAS PIPING	ASTM B88 TYPE L HARD COPPER WITH WROUGHT COPPER FITTINGS. MEDICAL GAS SUPPLY PIPING SHALL BE FACTORY CLEANED, OIL FREE & SEALED PER NFPA 99. JOINTS TO BE BRAZED.
UNDER GROUND GAS	APPROVED PLASTIC WITH COMPATIBLE FITTINGS CONFORMING WITH ASTM D 2513 AND SHALL BE INSTALLED IN ACCORDANCE WITH GAS CODE OR WITH SCH. 40 STEEL WITH MALLEABLE IRON FITTINGS OR WELDED JOINTS WITH BUTT WELD FITTINGS. MILL COAT PIPE WITH HIGH DENSITY POLYETHYLENE OVER ADHESIVE UNDERCOATING WRAP FIELD JOINTS AND FITTINGS WITH REPUBLIC "X-TRU-TAPE" OR EQUAL. PROVIDE WITH MARKER TAPE.
UNDERGROUND SANITARY SEWER AND VENT PIPING INSIDE BUILDING AND OUTSIDE BUILDING	PVC SCHEDULE 40 PIPE AND FITTINGS.
WATER DISTRIBUTION PIPE	WATER DISTRIBUTION PIPE SHALL CONFORM TO NSF 61 AND SHALL BE COPPER AND CONFORM TO THE STANDARDS LISTED IN TABLE 605.4 OF THE I.P.C
WATER SERVICE PIPE	WATER SERVICE PIPE SHALL CONFORM TO NSF 61 AND SHALL BE COPPER AND CONFORM TO THE STANDARDS LISTED IN TABLE 605.3 OF THE I.P.C

ROUGH-IN AND MOUNTING HEIGHT SCHEDULE

NOTES:
1. ALL VENT LINE SIZES SHOWN ARE MINIMUM UNLESS SHOWN LARGER ON RISER DIAGRAMS.
2. SIZES SHOWN FOR WASTE ARE FOR RISERS ONLY.
3. ALL DRAIN AND VENT LINES BELOW SLAB SHALL BE 2" OR LARGER.
4. VENT LINES SHALL RISE 6" ABOVE FLOOD LEVEL RIM BEFORE OFFSETTING HORIZONTALLY, EXCEPT FOR INTERCEPTORS LOCATED OUTDOORS.
5. SIZES SHOWN APPLY UNLESS NOTED DIFFERENTLY ON PLANS.

FIXTURE	WASTE	VENT	COLD WATER	HOT WATER	HEIGHT OF INSTALLATION
DRINKING FOUNTAIN	1-1/2"	1-1/2"	1/2"		NON-ADA 40" TO TOP OF ORIFICE ADA 36" TO TOP OF ORIFICE
EYEWASH STATION			1/2"	1/2"	
FLOOR DRAINS/SINKS	2"	1-1/2"			
HOSE BIBB			3/4"		18" ABOVE GRADE OUTSIDE, 18" A.F.F. INSIDE
JANITOR'S SINK	3"	1-1/2"	1/2"	1/2"	
LAVATORIES AND SINKS, COUNTER MOUNTED	1-1/2"	1-1/4"	1/2"	1/2"	
LAVATORIES AND SINKS, WALL MOUNTED	1-1/2"	1-1/4"	1/2"	1/2"	NON-ADA 31" TO TOP OF RIM ADA 34" TO TOP OF RIM
SUPPLY BOX			1/2"		12" TO BOTTOM OF BOX
URINAL FLUSH VALVE WALL MOUNTED	1-1/2"	1-1/4"	1"		NON-ADA 24" TO TOP OF FLOOD LEVEL ADA 17" TO TOP OF FLOOD LEVEL
UTILITY BOX	2"	1-1/2"	1/2"	1/2"	36" TO BOTTOM OF BOX
WASHER BOX	2"	1-1/2"	1/2"	1/2"	18" TO BOTTOM OF BOX
WATER CLOSET FLUSH VALVE FLOOR MOUNTED	3"	1-1/2"	1-1/4"		
WATER CLOSET FLUSH VALVE WALL MOUNTED	3"	1-1/2"	1-1/4"		NON-ADA 15" TO TOP OF BOWL ADA 17" TO TOP OF BOWL

GAS LOAD CALCULATION

GAS LOAD CALCULATION NOTES:
GAS LINES HAVE BEEN SIZED AS PER TABLE 402.4(2) OF THE 2006 INTERNATIONAL FUEL GAS CODE FOR PRESSURES OF LESS THAN 2PSI AND A PRESSURE DROP OF 0.5" WATER COLUMN AND 0.6 SPECIFIC GRAVITY. USING A DISTANCE OF 125 FEET.

LONGEST RUN	94 (FEET) X 1.25 (FITTING LOSS) = 117.5 FEET TOTAL DEVELOPED LENGTH
GAS TYPE:	< 0.5 PSI NATURAL

EQUIPMENT	MBH INPUT (EACH)	QTY	TOTAL MBH INPUT
BOILER	1000	2	2000
GWH-1	399.9	2	799.8
GUH-1&2	30	2	60
Grand total			2859.8

PLUMBING EQUIPMENT SCHEDULE

FIXTURE TAG	DESCRIPTION	MANUFACTURER	TRIM	ELECTRICAL REQUIREMENTS
BV-1	BALL VALVE	APOLLO INTERNATIONAL 94ALF-A	LEAD FREE BALL VALVE, FULL PORT, BLOWOUT-PROOF, PRESSURE RETAINING, ADJUSTABLE STEM PACKING NUT	
CBV-1	CALIBRATED BALANCE VALVE	BELL&GOSSETT CIRCUIT SETTER PLUS	LEAD FREE, CIRCUIT SETTER PLUS, CALIBRATED BALANCE AND POSITIVE SHUT-OFF VALVE	
COTG-1	CLEANOUT TO GRADE, SPEEDI-SET OUTLET	J. R. SMITH 4237	UNFINISHED FLOOR CLEANOUT WITH ADJUSTABLE ROUND CAST IRON TRACTOR COVER TOP, DUCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORIATED SECURED CAST IRON TOP, TAPERED THREAD BRONZE PLUG, REFER TO PLANS FOR SIZES	
CP-1	CIRCULATING PUMP	ARMSTRONG ASTRO 280 SS	THREE SPEED, BRONZE BODY WITH BRASS IMPELLER, WITH AQUASTAT AND AUTOMATIC TIMER KIT, 5 GPM @ 25 HEAD-FEET	230V, 1PH, 218 WATTS
CP-2	CIRCULATING PUMP	ARMSTRONG ASTRO 286 SS	THREE SPEED, BRONZE BODY WITH BRASS IMPELLER, WITH AQUASTAT AND AUTOMATIC TIMER KIT, 17 GPM @ 25 HEAD-FEET	230V, 1PH, 370 WATTS
DI-1	DEIONIZED WATER	PROVIDED BY OTHER INSTALLED BY CONTRACTOR	CONTRACTOR SHALL COORDINATE WITH BENCO PLANS AND REPRESENTATIVE FOR ALL REQUIREMENTS AND LOCATIONS OF DEIONIZED WATER	
ET-1	EXPANSION TANK	WATTS PLT-20	BRASS CONNECTION, WELDED STEEL CONSTRUCTION, POLYPROPYLENE LINER, BUTYL DIAPHRAGM, GROOVED DIAPHRAGM HOOP RING, WELDED AIR CHARGE FITTING, 14 GAL., 5.6 TANK ACCEPTANCE	
EWC-1	ELECTRIC WATER COOLER, SPLIT LEVEL, WALL MOUNTED, STANDARD AND HANDICAPPED, NO LEAD DESIGN, ONE PIECE, STAINLESS STEEL BASIN. FLEXIBLE SAFETY BUBBLER	ELKAY ERPBM28K	ADA APPROVED, W/ TOUCH PADS ON FRONT, FLEXIBLE SAFETY BUBBLER, P-TRAP, WATER VALVE	115V, 1PH, 380W
EWS-1	EYE WASH STATION 2-HEADS	STINGRAY S2230FLTSS/NA	WALL MOUNTED STAINLESS STEEL BOWL WITH TWO GS-PLUS SPRAY HEADS, 1/2" IPS CHROME PLATED BRASS STAY-OPEN BALL VALVE, TMV-3	
EWS-2	EYE WASH STATION 2-HEADS DECK MOUNTED	STINGRAY S2240FLT	DECK MOUNTED EMERGENCY EYEWASH, SWING-DOWN OPERATED, CORROSION RESISTANT MATERIALS, CERAMIC STAY OPEN VALVE, LEAD-FREE BRASS BODY, TMV-3	
FD-1	FLOOR DRAIN-SQUARE	MIFAB F1000-S	CAST IRON BODY, ANCHOR FLANGE, SECURED ROUND ADJUSTABLE STRAINER HEAD WITH HOLE GRATE, LOOSE GRATE AND SEDIMENT BUCKETS, MIFAB TRAP GUARD, REFER TO PLANS FOR SIZES	
FPHB-1	FROST PROOF HOSE BIBB - BOX	J.R. SMITH 5509QT	AUTOMATIC DRAINING, ANTI-SIPHON FREEZELESS, PROVIDE SHUTOFF VALVE FOR SUPPLY LINE IN AN ACCESSIBLE LOCATION	
FS-1	FLOOR SINK 12-1/2" CAST IRON RECEPTOR, 8" DEEP	J. R. SMITH 3150	CAST IRON FLANGED RECEPTOR, SEEPAGE HOLES, ACID RESISTANT COATED INTERIOR, NICKEL BRONZE RIM, LOOSE GRATE, ALUMINUM DOME BOTTOM STRAINER, GRATE, MIFAB TRAP GUARD	
GI-1	GREASE INTERCEPTOR	SCHIER GB-#75	POLYETHYLENE GREASE INTERCEPTOR WITH HIGHWAY TRAFFIC LOAD RATED, BOLTED, GAS/WATER TIGHT COMPOSITE COVER, CONTRACTOR SHALL HAVE LOCAL SANITARIAN AND ADMINISTRATIVE AUTHORITIES APPROVAL PRIOR TO ORDERING AND INSTALLATION	
HL-1	HANDICAPPED LAVATORY, COUNTER MOUNT, VITREOUS CHINA - OVAL	AMERICAN STANDARD 0476.028	AMERICAN STANDARD RELIANT 3 - 7385.004 SINGLE LEVER FAUCET, 0.5 GPM AERATOR, 4" CENTER SET TRIM PLATED, TMV-1 BELOW DECK, ZURN Z8743-PC GRID STRAINER, ZURN Z8700 SERIES P-TRAP, ZURN Z8800 SERIES STOP WITH FLEXIBLE SUPPLIES AND TURN KEY, ZURN Z8946-1-NT ADA TRAP, STOP AND SUPPLY PROTECTOR PVC TYPE INSULATION AROUND "P" TRAP & IPS CONNECTIONS, THREE HOLES ON DECK 4" CENTERS	
HL-2	HANDICAPPED LAVATORY, WALL MOUNT, VITREOUS CHINA	AMERICAN STANDARD DECLYN 0321.026	AMERICAN STANDARD RELIANT 3 - 7385.004 SINGLE LEVER FAUCET, 0.5 GPM AERATOR, 4" CENTER SET TRIM PLATED, TMV-1 BELOW DECK, ZURN Z8743-PC GRID STRAINER, ZURN Z8700 SERIES P-TRAP, ZURN Z8800 SERIES STOP WITH FLEXIBLE SUPPLIES AND TURN KEY, ZURN Z8946-1-NT ADA TRAP, STOP AND SUPPLY PROTECTOR PVC TYPE INSULATION AROUND "P" TRAP & IPS CONNECTIONS, CONCEALED ARM CARRIER SYSTEM J.R. SMITH 0700, THREE HOLES ON DECK 4" CENTERS	
HSH-1	HANDICAPPED SHOWER, 36"x 36"	AQUA BATH C4136BF-FUS 2"	STAINLESS STEEL DRAIN BODY STRAINER, SEAT, GRAB BARS, DELTA T13H332-25 SHOWER FAUCET SYSTEM	
HWC-1	HANDICAPPED WATER CLOSET, VITREOUS CHINA, FLUSH VALVE, FLOOR MOUNTED, ELONGATED RIM, 12" ROUGH-IN, SIPHON JET BOWL, 1.28 GPF	AMERICAN STANDARD MADERA 3461.001	BEMIS 1955CT OPEN FRONT SEAT, SLOAN ECOS 8111-1.6/1.1 HARDWIRED SENSOR FLUSH VALVE, EL-451 TRANSFORMER, Z5972-COMB CLOSET BOLT/WAX RING KIT	120V, 25W
HWC-2	HANDICAPPED WATER CLOSET, VITREOUS CHINA, FLUSH VALVE, WALL MOUNTED, ELONGATED RIM, 12" ROUGH-IN, SIPHON JET BOWL, 1.28 GPF	ZURN Z5615 HET SERIES	BEMIS 1955CT OPEN FRONT SEAT, SLOAN ECOS 8111-1.6/1.1 HARDWIRED SENSOR FLUSH VALVE, EL-451 TRANSFORMER, Z5972-COMB CLOSET BOLT/WAX RING KIT, J.R. SMITH 0210-M54-XK 1000# CARRIER	120V, 25W
JS-1	JANITOR'S SINK, FLOOR MOUNTED 24"x 24", ONE PIECE MOLDED CONSTRUCTION OF NATURAL CRUSHED STONE AND POLYESTER RESIN	FIAT FLOOR SINK MSB 2424	CHICAGO FAUCET 897-CP WALL MOUNTED 8" BODY W/ VACUUM BREAKER, HOSE BRACKET, MOP HANGER, BUMPER GUARDS, WALL GUARDS 2 PANELS & 1 BRACKET, SUPPLIED W/ CAST BRASS DRAIN, PROVIDE CHECK VALVES ON HOT AND COLD WATER LINES IN AN ACCESSIBLE LOCATION	
JS-2	CLINIC SERVICE SINK, WALL MOUNTED	AMERICAN STANDARD 9512.999.020	AMERICAN STANDARD 6047.117 MANUAL FLUSH VALVE TOP SPUD, AMERICAN STANDARD 7880.191 BEDPAN CLEANSER, AMERICAN STANDARD 7832504.075 RIM GUARD, CARRIER	
OD-1	OVERFLOW DRAIN	J.R. SMITH 1072	ADJUSTABLE, DUCO CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, POLYETHYLENE DOME, WATER DAM, SUMP PAN	
PT-1	PLASTER TRAP	TRAP-EZE BUFFALO DENTAL 62100	TRAP-EXE DIPOSABLE PLASTER TRAP KIT 3.5 GALLON	
RD-1	ROOF DRAINS	J.R. SMITH 1015	ADJUSTABLE EXTENSION, DUCO CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, POLYETHYLENE DOME, AND SUMP PAN	
RDOD-1	ROOF DRAIN/OVERFLOW COMBINATION	ZURN Z164	12" DIAMETER COMBINATION MAIN ROOF AND OVERFLOW DRAIN WITH LOW SILHOUETTE DOMES AND DOUBLE TOP-SET DECK PLATE	
RH-1	ROOF HYDRANT	WOODFORD SRH-MS	FREEZELESS ROOF HYDRANT, BACKFLOW PROTECTED WITH DOUBLE CHECK BACKFLOW PREVENTER, BUILT IN VENT, NO DRAIN REQUIRED	
RPZ-1	REDUCE PRESSURE PRINCIPLE BACKFLOW PREVENTER WITH WYE STRAINER, FOR DOMESTIC WATER, LEAD FREE	WATTS 375AST	PROVIDE SAME SIZE AS WATER LINE FROM METER, WATTS BALL VALVES AND "Y" STRAINER, SHALL MEET APPROVAL BY FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA	
RPZ-2	REDUCE PRESSURE PRINCIPLE BACKFLOW PREVENTER, FOR IRRIGATION WATER	WATTS LF009M2 QT	PROVIDE SAME SIZE AS WATER LINE FROM METER, WATTS BALL VALVES AND "Y" STRAINER, SHALL MEET APPROVAL BY FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA	
S-1	SINK SINGLE COMPARTMENT, OVERALL 19"x 19"x 6", OFF CENTER REAR DRAIN	ELKAY LRAD1919	ELKAY MODEL LK800GN08T4 CONCEALED DECK MOUNT 13" HIGH SPOUT, 8" REACH, AERATOR, 3-1/2" OPENING DRAIN. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE THREE FAUCET HOLES ON DECK, 8" CENTERS	
S-2	SINK- COMMERCIAL SINGLE COMPARTMENT, WALL MOUNT KITCHEN	ADVANCE TABCO 7-PS-60	FAUCET INCLUDED, 3-1/2" OPENING DRAIN. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE TWO FAUCET HOLES ON DECK	
S-3	SINK -COMMERCIAL COUNTER MOUNT THREE COMPARTMENT KITCHEN	ADVANCE TABCO DI-3-1612	(2) ADVANCE TABCO K-53 FAUCET, 12" REACH, 3-1/2" OPENING DRAIN. ZURN Z89600 TWIST DRAIN, McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE TWO FAUCET HOLES ON DECK	
S-4	SINK SINGLE COMPARTMENT,DENTAL	PROVIDED BY OTHER INSTALLED BY CONTRACTOR	FAUCET PROVIDED BY OTHER AND INSTALLED BY CONTRACTOR. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE	
S-5	SINK SINGLE COMPARTMENT, OVERALL 25"x 21"x 8", OFF CENTER REAR DRAIN	ELKAY LR2521	ELKAY MODEL LK500GN08T4 SINGLE POST MOUNT, CIRCULAR BASE, 11" HIGH SWING SPOUT, 9" REACH, 4" WRIST BLADE HANDLES, 0.5GPM AERATOR, 3-1/2" OPENING DRAIN. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE ONE FAUCET HOLE ON DECK	
S-6	SINK SINGLE COMPARTMENT	PROVIDED BY OTHER AND INSTALLED BY CONTRACTOR	FACUET PROVIDED BY OTHER AND INSTALLED BY CONTRACTOR. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE	
SB-1	SUPPLY BOX	GUY GRAY BIM-875	(1) 1/2" SUPPLY, PROVIDE WHA-1 (WATER HAMMER ARRESTOR)	
SCO-1	STACK CLEANOUT	J. R. SMITH 4510	DUCO CAST IRON CLEANOUT TEE, BRONZE PLUG, REMOVABLE STAINLESS STEEL COVER. REFER TO PLANS FOR SIZE, PROVIDE ROUND OR SQUARE FRAME AND COVER AS REQUIRED, REFER TO ARCHITECT	
SP-1	SUMP PUMP	WEIL 1412-OSS	1 HEAVY DUTY PUMP, CONTROL AND ALARM SYSTEM. SUBMERSIBLE TYPE PUMP, CAST IRON CASE, CAST IRON IMPELLER, 304 STAINLESS STEEL STRAINER AND HARDWARE, AIR-FILLED HERMETICALLY SEALED SHAFT, 15 FOOT POWER CORD, HARD WIRED, 1-1/2" OUTLET, AND CAPABLE OF 50 GPM AT 14 FEET HEAD. PROVIDE WITH ZOELLER # 30-0030 NON-CLOG, FLAPPER TYPE, CHECK VALVE. PROVIDE WITH 3 HARD WIRED WEIL #8230 FLOAT SWITCHES AND WEIL #8109-L SIMPLEX CONTROL PANEL, OIL SMART ALARM AND SWITCH	115V, 60HZ, 1PH, 1/2 HP, 1750 RPM - ALARM/SWITCH 10 FT CORD AND PLUG-115V
SV-1	SINK SINGLE COMPARTMENT, BEHAVIORAL SAFETY, LIGATURE FREE	ELKAY LRAD1919	BE SAFE PRO #SF380 LIGATURE RESISTANT METERING FAUCET, A/C CONVERSION KIT FOR #SP390, LEAD FREE MINI THERMOSTATIC MIXING VALVE #SF372, 3-1/2" OPENING DRAIN. McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2", CHROME PLATED TAILPIECE. McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE THREE FAUCET HOLES ON DECK, 8" CENTERS	120V, 1PH, 60HZ, 0.3A
TMV-1	THERMOSTATIC MIXING VALVE - MAIN 120° LINE	BRADLEY S59-3045	LEAD FREE, INTEGRAL CHECK VALVE AND STRAINER, PROVIDE, TEMPERATURE CONTROL SET AT 110°	
TMV-2	THERMOSTATIC MIXING VALVE - POINT OF USE	POWERS E480-10	LEAD FREE, INTEGRAL CHECK VALVE AND STRAINER, PROVIDE, TEMPERATURE CONTROL SET AT 110°	
TMV-3	THERMOSTATIC MIXING VALVE - EMERGENCY	STINGRAY SV107	LEAD FREE, INTEGRAL CHECK VALVE AND STRAINER, PROVIDE, TEMPERATURE CONTROL SET AT 85°, VALVE TO BE LOCATED IN A VISIBALE AND ACCESSIBLE LOCATION AND WITHIN 4 TO 10 FEET OF FIXTURE	
TWCO-1	TWO WAY CLEANOUT, SPEEDI-SET OUTLET	J. R. SMITH 4237	UNFINISHED FLOOR DUCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORIATED SECURED CAST IRON TOP, TAPERED THREAD BRONZE PLUG, REFER TO PLANS FOR SIZES	
UB-1	UTILITY BOX, WASTE, AND SUPPLY	OATLEY QUADTRO	(2) 1/2" SUPPLY VALVES, 2" DRAIN CONNECTION, 1/4" TURN VALVE, PROVIDE WHA-1 (WATER HAMMER ARRESTOR)	
UR-1	URINAL, WALL MOUNT, VITREOUS CHINA	AMERICAN STANDARD WASHBROOK 6590.001	INTEGRAL ELONGATED FLUSHING RIM, INTEGRAL TRAP, 2" FEMALE FLANGED OUTLET CONNECTION, J.R. SMITH 0637 URINAL SUPPORT, FLUSH VALVE SLOAN 186-0.5 HIGH EFFICIENCY	
WB-1	WASHER BOX, WASTE AND SUPPLY	OATLEY QUADTRO	(2) 1/2" SUPPLY VALVES, 2" DRAIN CONNECTION, 1/4" TURN VALVE, PROVIDE WHA-1 (WATER HAMMER ARRESTOR), INSTALL 18" AFF, COORDINATE WITH DISHWASHER EQUIPMENT SUPPLIER	
WC-2	WATER CLOSET, VITREOUS CHINA, FLUSH VALVE, WALL MOUNTED, ELONGATED RIM, 1.28 GPF	ZURN Z5615 HET SERIES	BEMIS 1955CT OPEN FRONT SEAT, SLOAN ECOS 8111-1.6/1.1 HARDWIRED SENSOR FLUSH VALVE, EL-451 TRANSFORMER, Z5972-COMB CLOSET BOLT/WAX RING KIT, J.R. SMITH 0210-M54-XK 1000# CARRIER	120V, 24W
WCO-1	WALL CLEANOUT	J. R. SMITH 4510	DUCO CAST IRON CLEANOUT TEE, BRONZE PLUG, REMOVABLE STAINLESS STEEL COVER. REFER TO PLANS FOR SIZE, PROVIDE ROUND OR SQUARE FRAME AND COVER AS REQUIRED, REFER TO ARCHITECT	
WHA-1	WATER HAMMER ARRESTOR	SIOUX CHIEF 650&660 HYDRARESTER	VACURESTER VACUUM BREAKER ARRESTER, TYPE L COPPER CONSTRUCTION, IF AN ACCESS DOOR IS NEEDED CONTACT THE ARCHITECT	
YH-1	YARD HYDRANT	WOODFORD MODEL Y2	BACKFLOW PROTECTED, AUTOMATIC DRAINING, FREEZELESS YARD HYDRANT	

PLUMBING PIPE LEGEND

DESCRIPTION	TAG	LINETYPE
COLD WATER	CW	
FIRE	F	
FORCED MAIN	FM	
GAS	G	
GREASE	GR	
HOT WATER	HW	
HOT WATER RETURN	HWR	
MEDIUM PRESSURE GAS	MPG	
SANITARY SEWER	SS	
VENT	V	
MEDICAL AIR	MA	
MEDICAL NITROUS	NO2	
MEDICAL OXYGEN	O2	
MEDICAL VACUUM	VAC	

PLUMBING SYMBOL LEGEND

D.F.U.	DRAIN FIXTURE UNITS		FROST PROOF HOSE BIBB (FPHB-1)
GPM	GALLONS PER MINUTE	FD-1	FLOOR DRAIN
F.L.	FLOW LINE INVERT	SWD-1	SAFE WASTE DRAIN
M	WATER/GAS METER		FLOOR SINK
R	REGULATOR	WCO-1/ SCO-1	WALL CLEAN OUT/ STACK CLEAN OUT
	PRESSURE REDUCING VALVE	COTG-1/ TWCO-1	CLEAN OUT TO GRADE/ TWO-WAY CLEAN OUT
	BALL VALVE	HOR. OR VERT.	BACKFLOW PREVENTER (RPZ-1)
	MIXING VALVE	UB-1/ SB-1	UTILITY BOX/ SUPPLY BOX

GENERAL PLUMBING NOTES

1	THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
2	THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMMATICAL. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH EXISTING CONDITIONS AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
3	THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, INSPECTIONS, TAP-ON FEES, ETC.
4	THE CONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUTDOWN WITH THE OWNER 48 HOURS IN ADVANCE.
5	ALL DOMESTIC WATER, NATURAL GAS, MEDICAL AIR, NITROUS OXIDE AND OXYGEN PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, AND WITHIN WALLS UNLESS OTHERWISE NOTED. WATER HAMMER ARRESTORS SHALL BE INSTALLED AT DISHWASHERS, WASHING MACHINES, SUPPLY BOXES, AND QUICK CLOSING VALVES NOT LISTED. INSTALL WHA-1 AS CLOSE TO QUICK CLOSING VALVE AS POSSIBLE PER MANUFACTURES RECOMMENDATIONS. ISOLATION VALVES SHALL BE INSTALLED ON ALL SUPPLY FIXTURE GROUPS AND HOT WATER BALANCING VALVES.
6	FROST PROOF HOSE BIBBS AND SUPPLY PIPING SHALL BE INSTALLED ON THE INSIDE OF THE INSULATION. SEAL SHEATHING PENETRATION TO PREVENT AIR FROM REACHING THE VALVE.
7	ALL SANITARY, GREASE WASTE AND VACUUM PIPING SHOWN IS BELOW SLAB, BELOW FLOOR, OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, OR WITHIN WALLS UNLESS OTHERWISE NOTED.
8	FLOOR DRAINS ARE TO BE THE SAME SIZE AS THE DRAIN LINE IT CONNECTS UNLESS NOTED OTHERWISE. IF SIZE IS NOT INDICATED ON DRAWINGS REFER TO PLUMBING ROUGH-IN SCHEDULE FOR PROPER SIZE.
9	FLUSH CONTROLS FOR HANDICAPPED WATER CLOSETS ARE TO BE MOUNTED TO THE OPEN SIDE OF THE TOILET AREAS.
10	CONTRACTOR SHALL COORDINATE AND PROVIDE ALL NECESSARY PIPING & PLUMBING FITTINGS, PIPING, MISCELLANEOUS ITEMS REQUIRED FOR A COMPLETE INSTALLATION OF ALL PLUMBING RELATED ITEMS.
11	THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UNDER SLAB PIPING WITH EXISTING STRUCTURAL FOUNDATIONS. UNDERGROUND UTILITY LOCATIONS SHALL BE VERIFIED PRIOR TO ANY WORK BEING PERFORMED. CONTRACTOR SHALL REPAIR OR REPLACE ALL PIPING NOT IN PROPER WORKING ORDER OR DAMAGED DURING INSTALLATION OF THE NEW UNDERGROUND PIPING.
12	ALL PIPING PENETRATIONS THROUGH NEW, EXISTING WALL, OR FLOOR SHALL BE SEALED TO EQUAL THE RATING OF THE NEW, EXISTING WALL OR FLOOR.
13	THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY LOCAL CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
14	THE ENTIRE DOMESTIC WATER SYSTEM (EXISTING/NEW) SHALL BE DISINFECTED IN ACCORDANCE TO THE LOCAL CODE & HEALTH DEPARTMENT REQUIREMENTS.
15	DOMESTIC WATER AND SEWER LOCATED OUTSIDE OF FOOTING SHALL MAINTAIN A 10' SEPARATION UNLESS WRITTEN PERMISSION IS OBTAINED FROM LOCAL AUTHORITIES AND/OR PROPER CONTAMINATION PROVISIONS PER LOCAL CODE HAVE BEEN MET.
16	FINISHED FLOOR ELEVATION (F.F.E.) SHALL BE 0.00' FOR CALCULATION PURPOSES ONLY, UNLESS NOTED OTHERWISE.
17	THE BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER LOCAL CODE & PER AUTHORITY HAVING JURISDICTION REQUIREMENTS. NON-LEAD TYPE ONLY.
18	ALL VENT THRU ROOF (VTR'S) PENETRATIONS INDICATED ON PLANS ARE PRELIMINARY. FINAL LOCATIONS SHALL BE COORDINATED WITH ALL TRADES. ALL VTR'S SHALL BE A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKE OPENINGS.
19	ANY PVC PIPE PENETRATING A FIRE RATED ASSEMBLY SHALL BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY. ANY SPACE BETWEEN THE SLEEVE AND THE FIRE RATED ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900 OR FLAME STOPPER 5000.
20	CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS FOR DISHWASHER, WASHING MACHINE, REFRIGERATOR, ETC.
21	PROVIDE SHUT-OFF VALVES FOR PROPER OPERATION AND SERVICING OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE BASE OF EACH RISER. COORDINATE WITH ARCHITECTURAL PLAN FOR ACCESS DOOR LOCATIONS.
22	VALVES SHALL BE LOCATED 6" ABOVE ACCESSIBLE CEILING WHEN AT ALL POSSIBLE AND SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM OTHER TRADES. MAINTENANCE SHALL BE ABLE TO ACCESS VALVES WITH STANDARD LADDER. SHOULD LOCATION NOT BE APPLICABLE CONTRACTOR SHALL PROVIDE A CONTROL CHAIN AND/OR ARM.
23	TEMPERED WATER, NOT EXCEEDING A MAXIMUM OF 110° F, SHALL BE DELIVERED FROM PUBLIC HANDWASHING FACILITIES THROUGH AN APPROVED WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070.
24	PLUMBING CONTRACTOR SHALL PROVIDE AS AN ADD ALTERNATE BID: HAVE A FLOW TEST DONE FOR THE DOMESTIC WATER TO DETERMINE IF A BOOSTER PUMP WILL BE REQUIRED. IF ONE IS REQUIRED, CONTRACTOR SHALL HAVE ONE SIZED AND PROVIDE IT FOR THE PROJECT. COORDINATE ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
25	REGULATORS INSTALLED ON THE INTERIOR OF THE BUILDING SHALL BE VENTED TO THE EXTERIOR PER LOCAL AND STATE CODES.
26	IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERTS AND LOCATIONS OF THE BUILDING UTILITIES ARE COMPATABLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
27	CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV-1) SHOULD THE WATER PRESSURE EXCEED 75 PSI. CONTRACTOR SHALL CONFIRM WITH ON SITE CONDITIONS AND LOCAL UTILITY.
28	PROVIDE BALANCING VALVES FOR PROPER OPERATION AND PRESSURE OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE EACH RISER. INSTALL PER MANUFACTURE'S REQUIREMENTS.
29	CONTRACTOR SHALL PAINT PIPING ABOVE OPEN CEILING AREAS TO MATCH ARCHITECT. COORDINATE COLORS WITH ARCHITECTURAL PLANS.

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:
P1.00

PLUMBING LGD, NOTES & SCHS.

DUCT SILENCER SCHEDULE

TAG	MANUF.	MODEL	FLOW DIRECTION	AIRFLOW (CFM)	LENGTH (IN)	FACE DIMMENSION WIDTH (IN)	FACE DIMMENSION HEIGHT (IN)	FACE VELOCITY (FPM)	SILENCER PD IN WG	PD W/ SYSTEM EFFECTS IN WG	MINIMUM DYNAMIC INSERTION LOSS (dB) 63	125	250	500	1K	2K	4K	8K	NOTES
SL-AHU-1R	VIBRO-ACOUSTICS	RED-HV-FB-L24517	RETURN	17500	72	34	64	-1125	0.12	0.3	9	12	17	28	25	26	20	17	A,B,C,E
SL-AHU-1S	VIBRO-ACOUSTICS	RED-UHV-F3-L24517	SUPPLY	17500	108	26	60	+1569	0.16	0.16	8	18	20	32	43	37	27	19	A,B,C,D
SL-AHU-2R	VIBRO-ACOUSTICS	RED-HV-F6-L24517	RETURN	10500	72	38	42	-947	0.13	0.32	6	12	20	28	36	35	28	23	A,B,C,E
SL-AHU-2S	VIBRO-ACOUSTICS	EXRED-HV-F7-L24517	SUPPLY	10500	60	24 (36)	40	+1575	0.26	0.26	6	9	16	21	33	35	27	21	A,B,C,D,F
SL-AHU-3R	VIBRO-ACOUSTICS	RED-UHV-FB-L24517	RETURN	17500	72	34	64	-1125	0.07	0.17	7	10	11	24	24	26	19	17	A,B,C,E
SL-AHU-3S	VIBRO-ACOUSTICS	DEXRED-UHV-FX-L24517	SUPPLY	17500	144	26 (32)	60	+1569	0.11	0.24	11	23	24	34	47	39	29	30	A,B,C,G,D
SL-AHU-4R	VIBRO-ACOUSTICS	RED-HV-FC-L24517	RETURN	10500	96	36	42	-1000	0.09	0.09	9	15	22	30	31	30	23	21	A,B,C,E
SL-AHU-4S	VIBRO-ACOUSTICS	EXRED-HV-F7-L24517	SUPPLY	10500	48	24 (36)	40	+1575	0.2	0.26	5	7	12	18	27	24	20	18	A,B,C,D,H

GENERAL NOTES APPLICABLE TO ALL:
1. LENGTH SHOWN FOR ELBOW SILENCER IS CENTERLINE LENGTH
2. VELOCITY SHOWN IS +(FORWARD FLOW) OR -(REVERSE FLOW) AS DEFINED BY ASTM E477-13.
3. PRESSURE DROP, DYNAMIC INSERSION LOSS AND SELF GENERATED NOISE PER ASTM E477-13.
4. MAXIMUM PRESSURE DROP WITH SYSTEM EFFECTS = SILENCER PRESSURE DROP PER ASTM E477-13 + SYSTEM EFFECTS FOR NEARBY DUCT ELEMENTS.

NOTES:
A. RED = RECTANGULAR ELBOW DISSIPATIVE. EXRED ELBOW DISSIPATIVE
B. HTL CASING
C. ELBOW SILENCER
D. CASING TO BE HTLEQUIVALENT TO 10 GUAGE DUCT WALL TO CONTROL BREAKOUT.
E. CASING TO BE HTL EQUIVALENT TO 12 GUAGE DUCT WALL TO CONTROL BREAKOUT.
F. DUCT DIMENSION 24"X40", OUTSIDE CASING DIMENSION 36"X40"
G. DOUBLE ELBOW SILENCER WITH EXTENDED WIDTH. DUCT DIMENSION 26"X60", OUTSIDE CASING DIMENSION 32"X60".
H. EXTENDED WIDTH SILENCER. DUCT DIMENSION 24"X40", OUTSIDE CASING DIMENSION 36"X40".

MINI SPLIT AIR CONDITIONER SCHEDULE

INDOOR UNIT	OUTDOOR UNIT	DESCRIPTION.	MFR	MODEL (INDOOR/OUTDOOR)	CFM	SEER	COOLING CAPACITY (BTU/HR)	HEATING CAPACITY (BTU/HR)	VOLTS / PH	MCA	MOCP	NOTES
MAC-01	MCU-01	COOLING ONLY DX SYSTEM	MITSUBISHI	PKA-A12HA7/PUY-A12NKA7	335	20.8	12,000	-	208-230 / 1	14 A	15 A	A,B,C
MAC-02	MCU-02	COOLING ONLY DX SYSTEM	MITSUBISHI	PKA-A12HA7/PUY-A12NKA7	335	20.8	12,000	-	208-230 / 1	14 A	15 A	A,B,C
MAC-03	MCU-03	COOLING ONLY DX SYSTEM	MITSUBISHI	PKA-A12HA7/PUY-A12NKA7	335	20.8	12,000	-	208-230 / 1	14 A	15 A	A,B,C
MAC-04	MCU-04	COOLING ONLY DX SYSTEM	MITSUBISHI	PKA-A18HA7/PUY-A18NKA7	335	18.5	18,000	-	208-230 / 1	14 A	15 A	A,B,C
MAC-05	MCU-05	COOLING ONLY DX SYSTEM	MITSUBISHI	PKA-A18HA7/PUY-A18NKA7	335	18.5	18,000	-	208-230 / 1	14 A	15 A	A,B,C
MAC-06	MCU-06	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A24HA7/PUZ-A24NHA7	635	21.4	24,000	28000	208-230 / 1	19 A	25 A	A,B
MAC-07	MCU-07	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A12HA7/PUZ-A12NKA7	335	20.8	12,000	18000	208-230 / 1	14 A	15 A	A,B
MAC-08	MCU-08	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A24HA7/PUZ-A24NHA7	635	21.4	24,000	28000	208-230 / 1	19 A	25 A	A,B
MAC-09	MCU-09	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A18HA7/PUZ-A18NKA7	335	18.5	18,000	22000	208-230 / 1	14 A	15 A	A,B
MAC-10	MCU-10	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A24HA7/PUZ-A24NHA7	635	21.4	24,000	28000	208-230 / 1	19 A	25 A	A,B
MAC-11	MCU-11	COOLING ONLY DX SYSTEM	MITSUBISHI	PKA-A24HA7/PUY-A24NKA7	335	21.4	24,000	-	208-230 / 1	19 A	25 A	A,B,C
MAC-12	MCU-12	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A18HA7/PUZ-A18NKA7	335	18.5	18,000	22000	208-230 / 1	14 A	15 A	A,B
MAC-13	MCU-13	HEAT PUMP DX SYSTEM	MITSUBISHI	PKA-A18HA7/PUZ-A18NKA7	335	18.5	18,000	22000	208-230 / 1	14 A	15 A	A,B

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. MAC & MCU COMPRISE A SINGLE AIR-CONDITIONING SPLIT SYSTEM AND INCLUDE MICROPROCESSOR CONTROLS, PROVIDE WALL MOUNT FOR WIRELESS REMOTE. ON/OFF 24-HOUR TIMER AND WASHABLE AIR FILTER.

NOTES
A PROVIDE WITH PROGRAMMABLE THERMOSTAT.
B PROVIDE WITH CONDENSATE PUMP: ASPEN MODEL MINI-TANK.
C LOW AMBIENT COOLING -100% NOMINAL CAPACITY AT 5 F.

GAS UNIT HEATER SCHEDULE

TAG	DESCRIPTION	MFR	MODEL	MBH	FAN HP	FLA	VOLTS / PH	WEIGHT	CONTROL TYPE
GUH-1	GAS UNIT HEATER WITH SEPARTED COMBUSTION	TRANE	GTNE003ATA	30	1/20	3	120/1	60 LB	THERMOSTAT
GUH-2	GAS UNIT HEATER WITH SEPARTED COMBUSTION	TRANE	GTNE003ATA	30	1/20	3	120/1	60 LB	THERMOSTAT

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. SINGLE STAGE, DIRECT SPARK IGNITION.
2. PROVIDE WITH 30 DEGREE DOWN DISCHARGE NOZZLE.
3. PROVIDE WITH CONCENTRIC VENT KIT.
4. PROVIDE WITH WALL MOUNTED THERMOSTAT.
5. SUPPORT FROM STRUCTURE PER MFR RECOMMENDATIONS.
6. E.C. TO PROVIDE DISCONNECT SWITCH.

DENTAL EQUIPMENT LOUVER SCHEDULE

TAG	DESCRIPTION	MFR	MODEL	FACE SIZE	MATERIAL/ FINISH	NOTES
DLV-1	WALL LOUVER	GRAINGER	3C972	18X24	REF ARCH	COORDINATE EXACT REQUIREMENTS WITH DENTAL EQUIPMENT PROVIDER

DENTAL EQUIPMENT EXHAUST FAN SCHEDULE

TAG	DESCRIPTION	MFR	MODEL	FLOW	VOLTS / PH	POWER	NOTES
DEF-1	DENTAL EQUIPMENT EXHAUST FAN	GRAINGER	1HKL4	820	120/1	1/20 HP	COORDINATE EXACT REQUIREMENTS WITH DENTAL EQUIPMENT PROVIDER

AHU - 03 VAV BOX WITH HOT WATER REHEAT SCHEDULE

TAG	DESCRIPTION	MFR	MODEL	VALVE SIZE (IN.)	COOLING DESIGN COOLING CFM	COOLING MINIMUM COOLING CFM	COOLING APD @ DESIGN FLOW (IN. WG)	COOLING INLET VELOCITY (FPM)	HEATING VALVE AIRFLOW (CFM)	HEATING EAT (°F)	HEATING LAT (°F)	HEATING COIL CAPACITY (MBH)	HEATING EWT (°F)	HEATING DELTA TEMP (°F)	HEATING NO. OF ROWS	HEATING COIL FLOW (GPM)	VOLTS / PH	WEIGHT (LBS.)	NOTES
VAV-3.01	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	06	6	460	140	0.37	2343	140	55	90 °F	6.89	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-3.02	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1230	540	0.33	2255	540	55	90 °F	19.79	180	40	1	1	24 / 1	34	A,C,D,E
VAV-3.03	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1300	400	0.36	2384	400	55	90 °F	16.66	180	40	1	0.9	24 / 1	34	B,C,D,E
VAV-3.04	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	720	400	0.27	2063	400	55	90 °F	13.13	180	40	1	0.7	24 / 1	25	A,C,D,E
VAV-3.05	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1200	500	0.32	2200	500	55	90 °F	18.93	180	40	1	1	24 / 1	34	A,C,D,E
VAV-3.06	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1250	530	0.34	2292	530	55	90 °F	19.58	180	40	1	1	24 / 1	34	B,C,D,E
VAV-3.07	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	430	240	0.33	2190	240	55	90 °F	8.58	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-3.08	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF14	14	2500	1350	0.22	2339	1350	55	90 °F	43.38	180	40	1	2.2	24 / 1	53	A,C,D,E
VAV-3.09	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1250	700	0.34	2292	700	55	90 °F	23.03	180	40	1	1.2	24 / 1	34	A,C,D,E
VAV-3.10	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1400	550	0.41	2567	550	55	90 °F	20	180	40	1	1	24 / 1	34	B,C,D,E
VAV-3.11	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	560	300	0.41	2200	300	55	90 °F	16.07	180	40	1	0.5	24/1	24	A,C,D,E

GENERAL NOTES APPLICABLE TO ALL UNITS:

1. DDC PROPORTIONAL HOT WATER VALVE
2. PROVIDE WITH FACTORY DISCONNECT
3. PROVIDE WITH POWER FUSE
4. PROVIDE WITH FACTORY MOUNTED 120V TO 24 V TRANSFORMER
5. DOUBLE WALL CONSTRUCTION

A. PROVIDE 2-WAY VALVE ON HOT WATER COIL.
B. PROVIDE 3-WAY VALVE ON HOT WATER COIL.
C. PROVIDE FACTORY MOUNTED AND PRE-PROGRAMMED, PRESSURE INDEPENDENT, BACNET DDC CONTROLLER WITH AIRFLOW MEASUREMENT AND WIRELESS COMMUNICATION RECEIVER
D. PROVIDE WITH WIRELESS ZONE TEMPERATURE SENSOR
E. PROVIDE WITH FACTORY WIRED AND TAGGED HOT WATER VALVE AND PIPING PACKAGE...

AHU - 01 VAV BOX WITH HOT WATER REHEAT SCHEDULE

TAG	DESCRIPTION	MFR	MODEL	VALVE SIZE (IN.)	COOLING DESIGN COOLING CFM	COOLING MINIMUM COOLING CFM	COOLING APD @ DESIGN FLOW (IN. WG)	COOLING INLET VELOCITY (FPM)	HEATING VALVE AIRFLOW (CFM)	HEATING EAT (°F)	HEATING LAT (°F)	HEATING COIL CAPACITY (MBH)	HEATING EWT (°F)	HEATING DELTA TEMP (°F)	HEATING NO. OF ROWS	HEATING COIL FLOW (GPM)	VOLTS / PH	WEIGHT (LBS.)	NOTES
VAV-1.01	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF12	12	1600	1600	0.31	2037	500	55	90 °F	18.42	180	40	1	1.02	24 / 1	43	A,C,D,E
VAV-1.02	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	600	120	0.08	2017	120	55	90 °F	5.79	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.03	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1300	1300	0.36	2384	400	55	90 °F	15.3	180	40	1	0.85	24 / 1	34	A,C,D,E
VAV-1.04	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	250	150	0.03	1719	125	55	90 °F	4.83	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.05	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	100	100	0.02	1146	75	55	90 °F	4.83	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.06	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	200	200	0.28	2037	200	55	90 °F	6.95	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.07	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	400	400	0.28	2037	260	55	90 °F	7.61	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.08	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	600	600	0.2	1719	440	55	90 °F	11.95	180	40	1	0.66	24 / 1	24	A,C,D,E
VAV-1.09	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	120	30	0.02	1300	30	55	90 °F	3.64	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.10	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	110	110	0.34	2292	35	55	90 °F	14.76	180	40	1	0.8	24 / 1	34	A,C,D,E
VAV-1.11	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	1250	1250	0.02	1261	375	55	90 °F	3.39	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.12	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	120	120	0.07	1833	40	55	90 °F	5.08	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.13	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	800	800	0.33	2292	650	55	90 °F	17.45	180	40	1	0.9	24 / 1	24	A,C,D,E
VAV-1.14	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	110	110	0.02	1261	35	55	90 °F	3.39	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.15	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	360	360	0.23	1833	360	55	90 °F	8.45	180	40	1	0.6	24 / 1	24	A,C,D,E
VAV-1.16	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	330	330	0.11	2420	100	55	90 °F	5.41	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.17A	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF12	12	1750	1750	0.36	2228	700	55	90 °F	22.38	180	40	1	1.3	24 / 1	43	A,C,D,E
VAV-1.17B	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF12	12	1500	1500	0.28	1910	700	55	90 °F	22.38	180	40	1	1.3	24 / 1	43	A,C,D,E
VAV-1.18	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	600	600	0.2	1719	175	55	90 °F	7.77	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.19	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	210	210	0.05	2406	210	55	90 °F	7.07	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.20	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	400	400	0.28	2037	400	55	90 °F	8.72	180	40	1	0.6	24 / 1	24	A,C,D,E
VAV-1.21	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	390	390	0.27	1986	225	55	90 °F	8.36	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.22	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	220	220	0.05	2521	175	55	90 °F	7.55	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.23	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	350	350	0.13	2567	205	55	90 °F	8.05	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.24	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	100	100	0.02	1146	30	55	90 °F	3.24	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.25	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	360	360	0.23	1833	250	55	90 °F	8.73	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.26	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	600	600	0.2	1719	200	55	90 °F	9.19	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.27	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	200	200	0.05	2292	120	55	90 °F	6.46	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.28	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	100	100	0.02	1146	30	55	90 °F	3.24	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.29	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	400	400	0.28	2037	400	55	90 °F	10.78	180	40	1	0.6	24 / 1	24	A,C,D,E
VAV-1.30	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	225	225	0.03	1604	100	55	90 °F	4.33	180	40	1	0.5	24 / 1	24	B,C,D,E
VAV-1.31	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF10	10	1040	1040	0.25	1907	630	55	90 °F	21.65	180	40	1	0.5	24 / 1	34	A,C,D,E
VAV-1.32	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF08	8	640	190	0.22	1833	190	55	90 °F	9	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.33	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	300	300	0.09	2200	120	55	90 °F	6.46	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.34	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	300	300	0.09	2200	120	55	90 °F	6.46	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.35	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	440	440	0.34	2241	300	55	90 °F	9.39	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.36	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	200	200	0.05	2292	100	55	90 °F	5.97	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.37	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	420	420	0.31	2139	420	55	90 °F	11.09	180	40	1	0.6	24 / 1	24	A,C,D,E
VAV-1.38	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	500	500	0.44	2546	500	55	90 °F	12.28	180	40	1	0.7	24 / 1	24	A,C,D,E
VAV-1.39	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	300	300	0.09	2200	120	55	90 °F	6.46	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.40	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	250	250	0.07	1833	160	55	90 °F	7.28	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.41	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF06	6	360	360	0.23	1833	360	55	90 °F	10.14	180	40	1	0.6	24 / 1	24	A,C,D,E
VAV-1.42	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	400	400	0.09	2200	120	55	90 °F	6.46	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.43	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	200	200	0.05	2292	80	55	90 °F	5.42	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.44	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF05	5	230	230	0.06	1687	230	55	90 °F	8.43	180	40	1	0.5	24 / 1	24	A,C,D,E
VAV-1.45	SINGLE DUCT VAV TERMINAL UNIT W/ HOT WATER REHEAT	TRANE	VCWF04	4	200	200	0.03	1719	150	55	90 °F	7.09	180	40	1	0.5	24 / 1	24	A,C,D,E

GENERAL NOTES APPLICABLE TO ALL UNITS:

1. DDC PROPORTIONAL HOT WATER VALVE
2. PROVIDE WITH FACTORY DISCONNECT
3. PROVIDE WITH POWER FUSE
4. PROVIDE WITH FACTORY MOUNTED 120V TO 24 V TRANSFORMER
5. DOUBLE WALL CONSTRUCTION

A. PROVIDE 2-WAY VALVE ON HOT WATER COIL.
B. PROVIDE 3-WAY VALVE ON HOT WATER COIL.
C. PROVIDE FACTORY MOUNTED AND PRE-PROGRAMMED, PRESSURE INDEPENDENT, BACNET DDC CONTROLLER WITH AIRFLOW MEASUREMENT AND WIRELESS COMMUNICATION RECEIVER
D. PROVIDE WITH WIRELESS ZONE TEMPERATURE SENSOR
E. PROVIDE WITH FACTORY WIRED AND TAGGED HOT WATER VALVE AND PIPING PACKAGE...

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

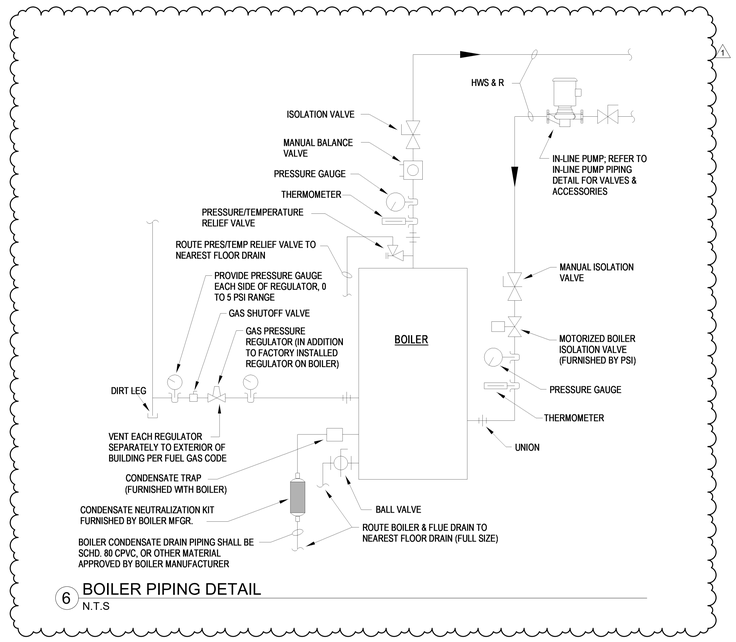
PROJECT PHASE:
BID PACKAGE 02

REVISIONS

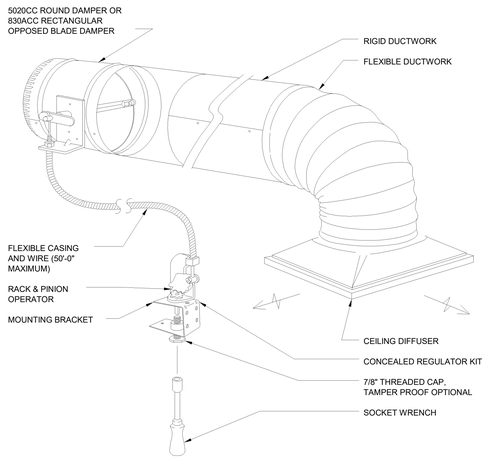
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: M1.02

MECHANICAL SCHEDULES



6 BOILER PIPING DETAIL
N.T.S



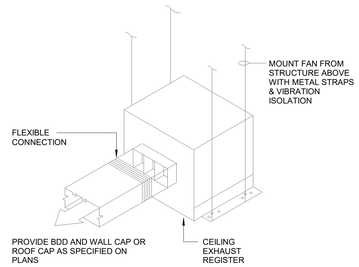
270-896 BOWDEN CABLE CONTROL SYSTEM

NO SCALE

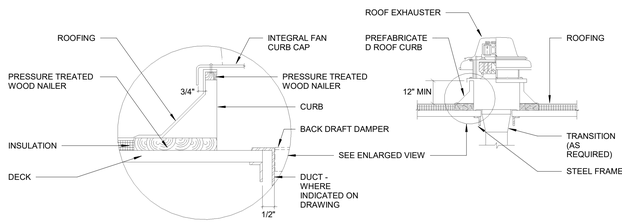
NOTE:

1) CABLE SHALL CONSIST OF 0.054" STAINLESS STEEL CONTROL WIRE ENCAPSULATED IN 1/16" FLEXIBLE GALVANIZED SPIRAL WIRE SHEATH.
2) LOCKING RACK AND PINION GEAR DRIVE SHALL BE CONSTRUCTED OF 14 GAUGE STEEL AND SHALL BE USED TO CONVERT ROTARY MOTION INTO PUSH-PULL MOTION.
3) CONTROL SHAFT SHALL BE "D"-STYLE FLATTENED 1/4" DIAMETER WITH 265° ROTATION PROVIDING 1-1/2" LINEAR TRAVEL CAPABILITY.

7 REMOTE DAMPER OPERATOR DETAIL
SCALE: N.T.S.



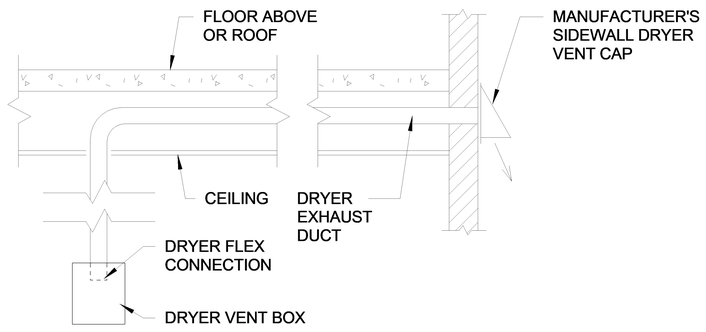
5 CEILING EXHAUST FAN DETAIL
SCALE: N.T.S.



NOTES:

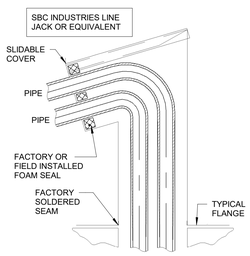
1. WHERE NO DUCT IS INDICATED, BACKDRAFT DAMPER SHALL BE FULL SIZE OF OPENING IN ROOF DECK.
2. ROOF MOUNTED EXHAUST FANS SHALL NOT BE MOUNTED ON A SLOPE OF GREATER THAN 6:12.

4 ROOF MOUNTED EXHAUST FAN DETAIL
SCALE: N.T.S.

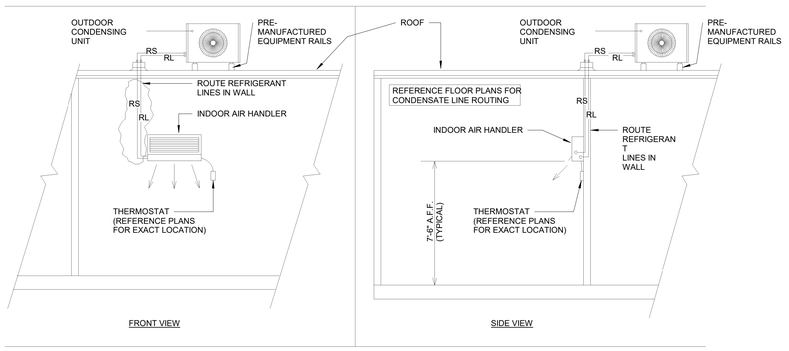


NOTE: VENT ROUTING TO BE INSTALLED PER MANUFACTURER'S RECOMMEDATIONS

3 DRYER EXHAUST VENT THRU SIDEWALL DETAIL
SCALE: N.T.S.



2 ROOF REFRIGERANT PIPING PENETRATION - GOOSENECK
N.T.S.



1 DUCTLESS SPLIT SYSTEM WITH ROOF-MOUNTED CONDENSING UNIT
SCALE: N.T.S.

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CLIENT:
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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

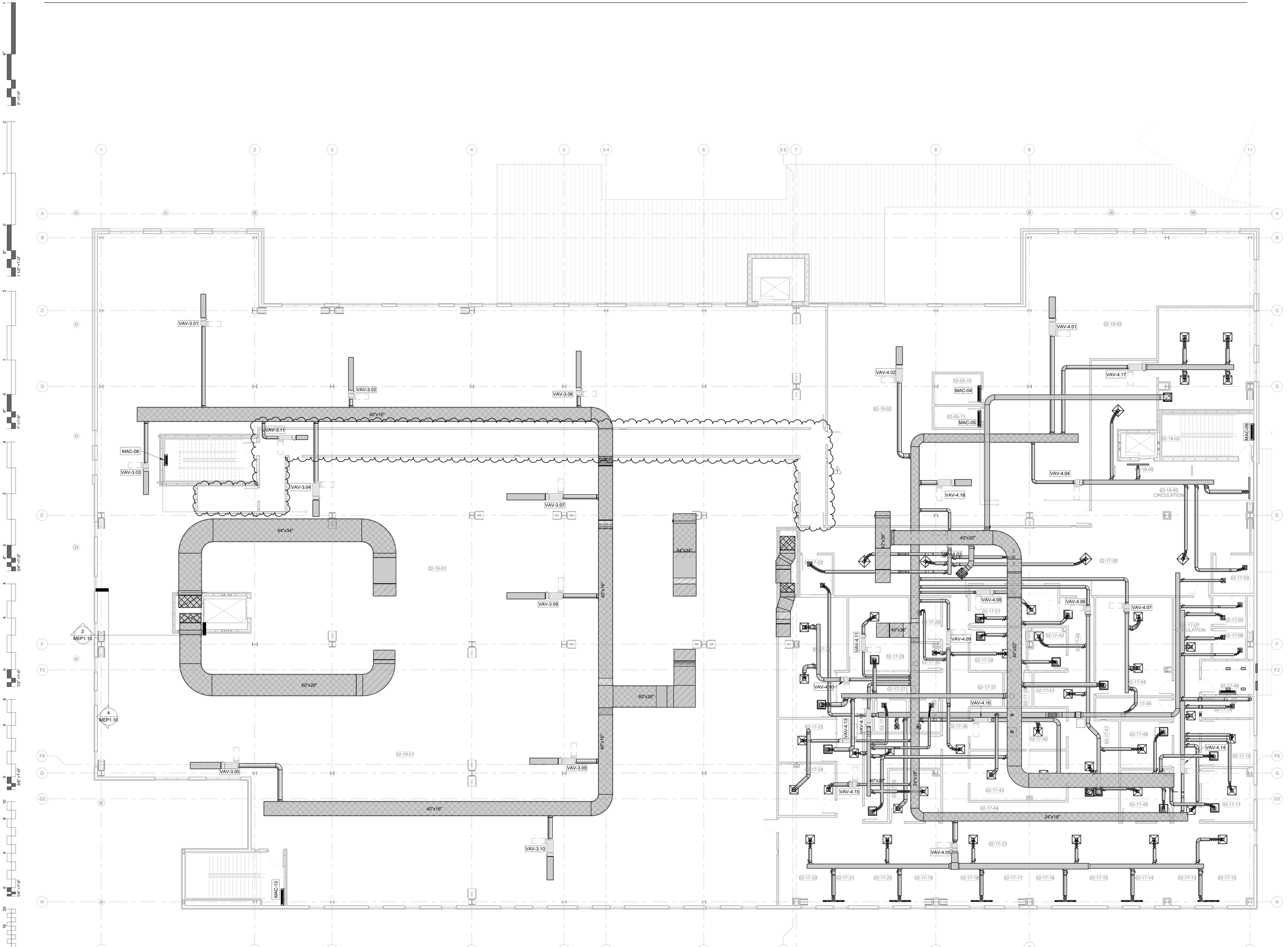
KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: M2.03
MECHANICAL DETAILS



1 **02 OVERALL MECHANICAL PLAN LEVEL 02**
1/8" = 1'-0"

PLAN NORTH

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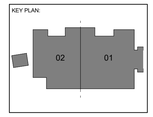
STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS:		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

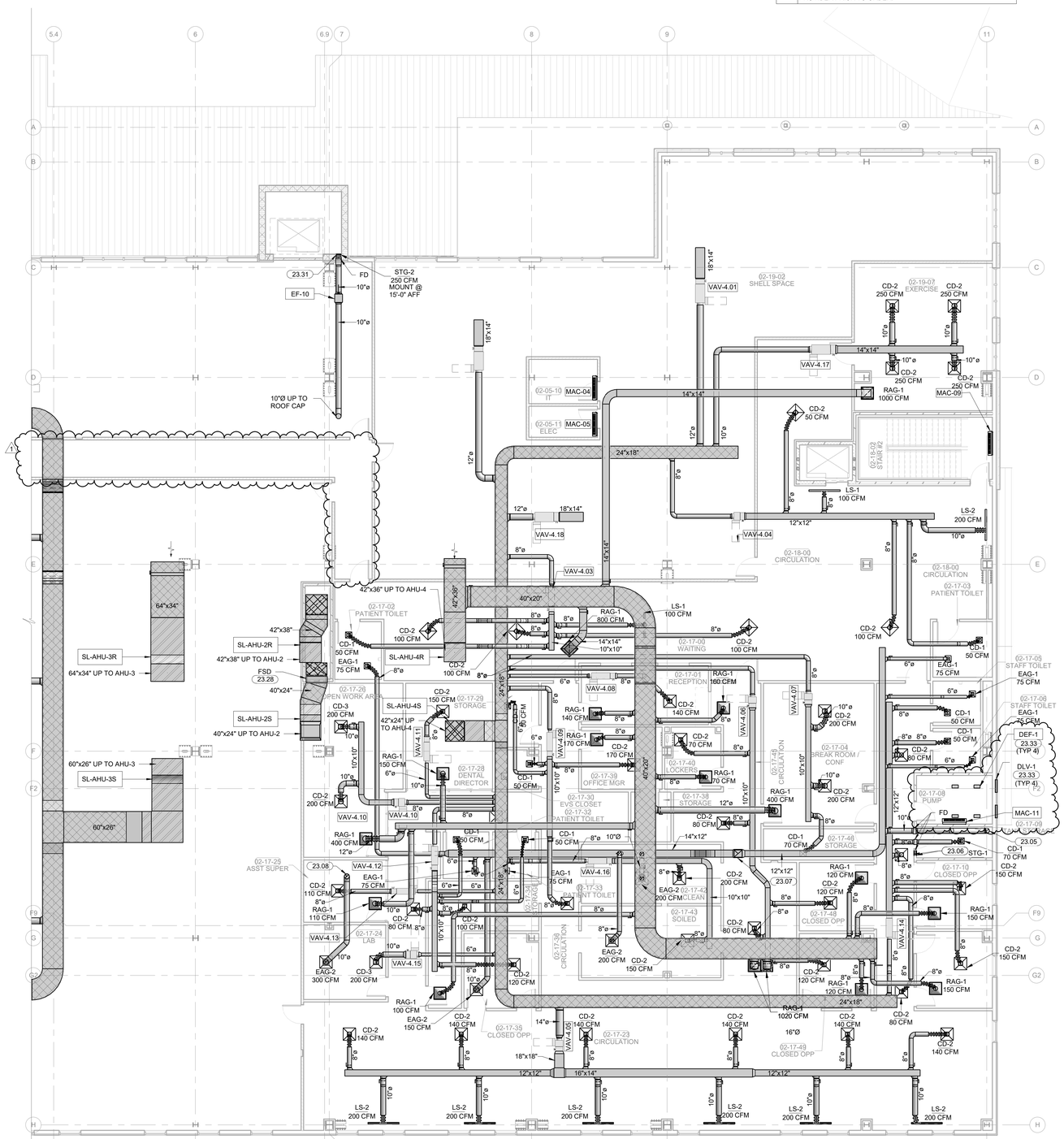
SHEET NUMBER:

M4.02

OVERALL MECH PLAN LEVEL 02

KEYNOTES

23.05	ROUTE 10"Ø DUCT DOWN TO 1'-0" AFF WITH WIRE MESH.
23.06	MOUNT TRANSFER GRILLE 8'-0" AFF.
23.07	ROUTE 14"x16" DUCT UP TO EF-8.
23.08	ROUTE 10"Ø DUCT UP TO EF-7.
23.28	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.
23.31	INSTALL STG-2 WITH FIRE DAMPER IN ELEVATOR SHAFT. COORDINATE EXACT LOCATION WITH ELEVATOR SUPPLIER. COORDINATE EXACT THERMOSTAT LOCATION FOR EF-10 WITH ELEVATOR SUPPLIER.
23.33	COORDINATE INSTALLATION OF EXHAUST FANS AND INTAKE LOUVERS FOR VACUUM AND AIR COMPRESSORS WITH DENTAL EQUIPMENT PROVIDER. REFER TO DENTAL EQUIPMENT SCHEDULE ON SHEET M1.02 AND DENTAL EQUIPMENT PLANS FOR ADDITIONAL INFORMATION AND DETAILS. COORDINATE EXACT EQUIPMENT EXHAUST AND LOUVER REQUIREMENTS WITH DENTAL EQUIPMENT PROVIDER PRIOR TO ORDER.



1 **ENLARGED MECHANICAL PLAN LEVEL 02 SECTOR 01**
1/8" = 1'-0"

PLAN NORTH

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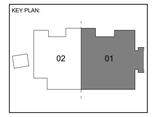
WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

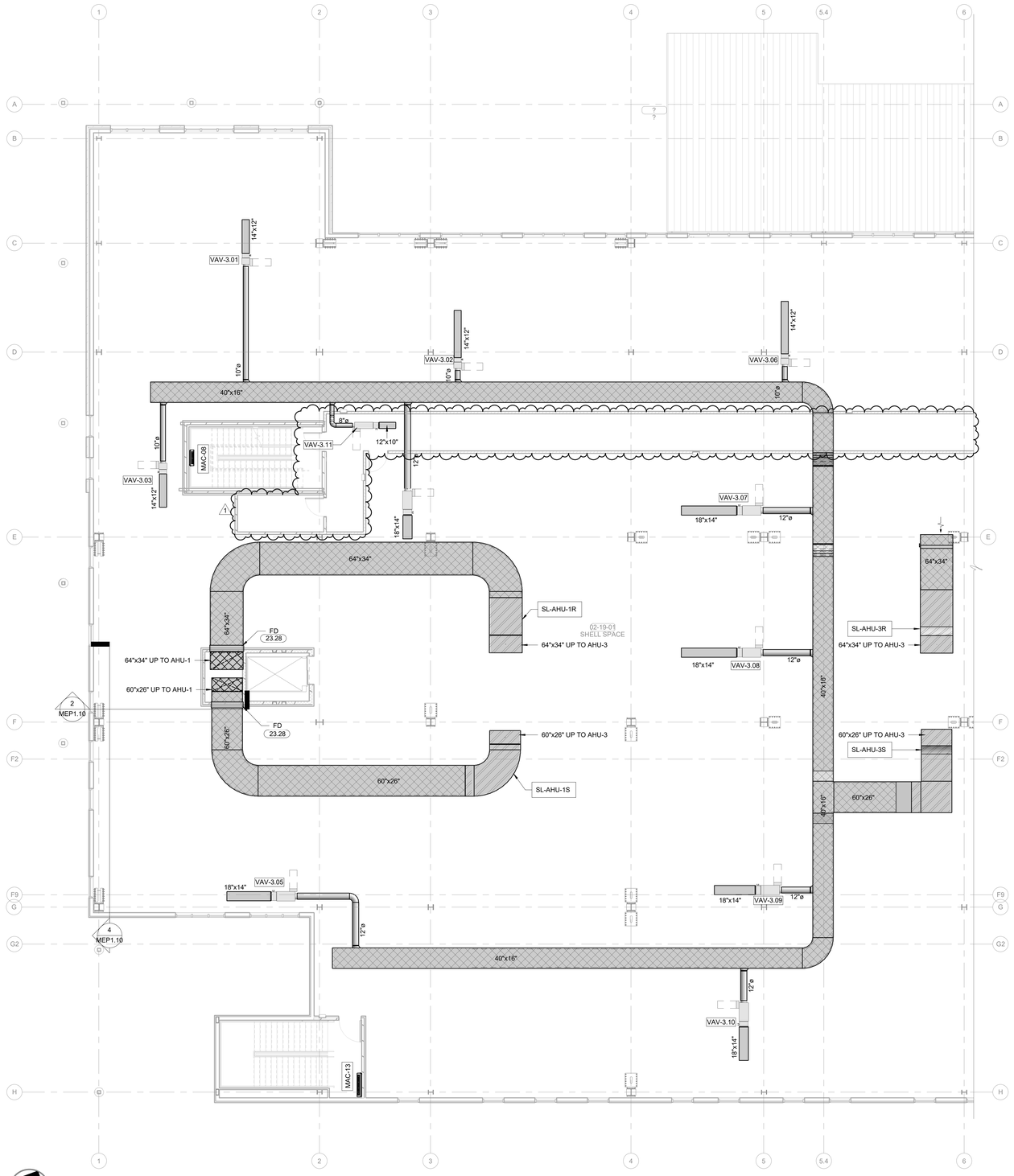
SHEET NUMBER:

M5.03

MECH PLAN
LEVEL 02
SECTOR 01

KEYNOTES

23.28	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.



PLAN NORTH

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2 ENLARGED MECHANICAL PLAN LEVEL 02 SECTOR 02

1/8" = 1'-0"

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
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1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

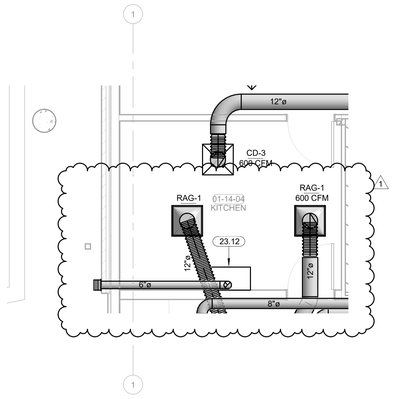
JOB NUMBER: 18-01.01

SHEET NUMBER: M5.04

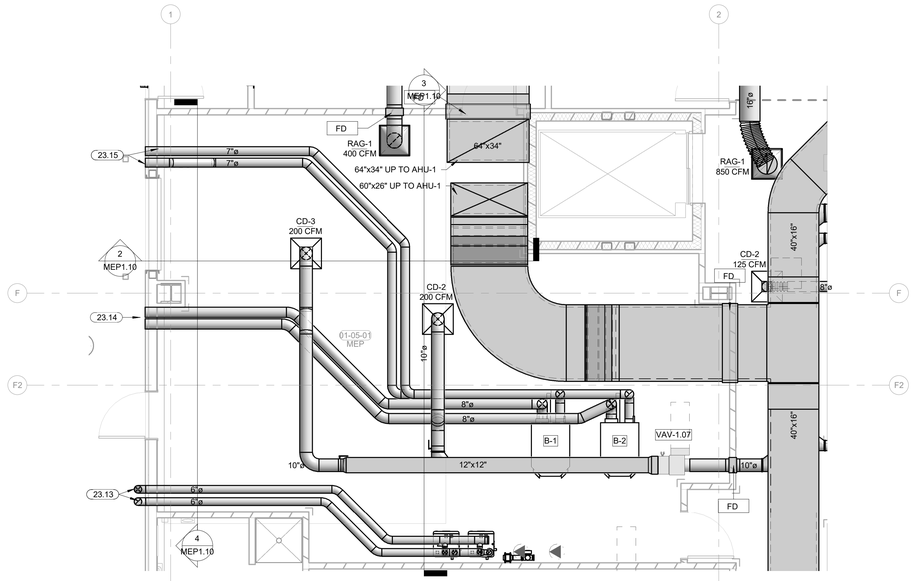
MECH PLAN LEVEL 02 SECTION 02

KEYNOTES

23.12	KITCHEN HOOD EQUAL TO BLUE STAR MODEL BS-PL3624 TS WITH 600 CFM BLOWER (BY OTHERS).PROVIDE WITH FIRE SUPPRESSION SYSTEM EQUAL TO GUARDIAN III.
23.13	ROUTE WATER HEATER INTAKE AND EXHAUST THROUGH SIDEWALL AS SHOWN. PROVIDE MFR INTAKE/EXHAUST SIDEWALL KIT. INSTALL AND SIZE PIPE PER MFR INSTRUCTIONS.
23.14	12 x24 LOUVER RUSKIN ESD-435 WITH DUCT PLENUM.
23.15	7" BOILERS EXHAUST FLUES. INSTALL AT LEAST 10'-0" FROM AIR INTAKES AND AT LEAST 3'-0" ABOVE THEM. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. USE RECOMMENDED WALL TERMINATION/PENETRATION AS SHOWN IN DETAIL 11/M2.01.



2 KITCHEN ENLARGED MECHANICAL PLAN
1/4" = 1'-0"



1 ENLARGED MECHANICAL ROOM-HVAC PLAN
1/4" = 1'-0"

PLAN NORTH / TRUE NORTH

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KEY PLAN:

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REVISIONS		
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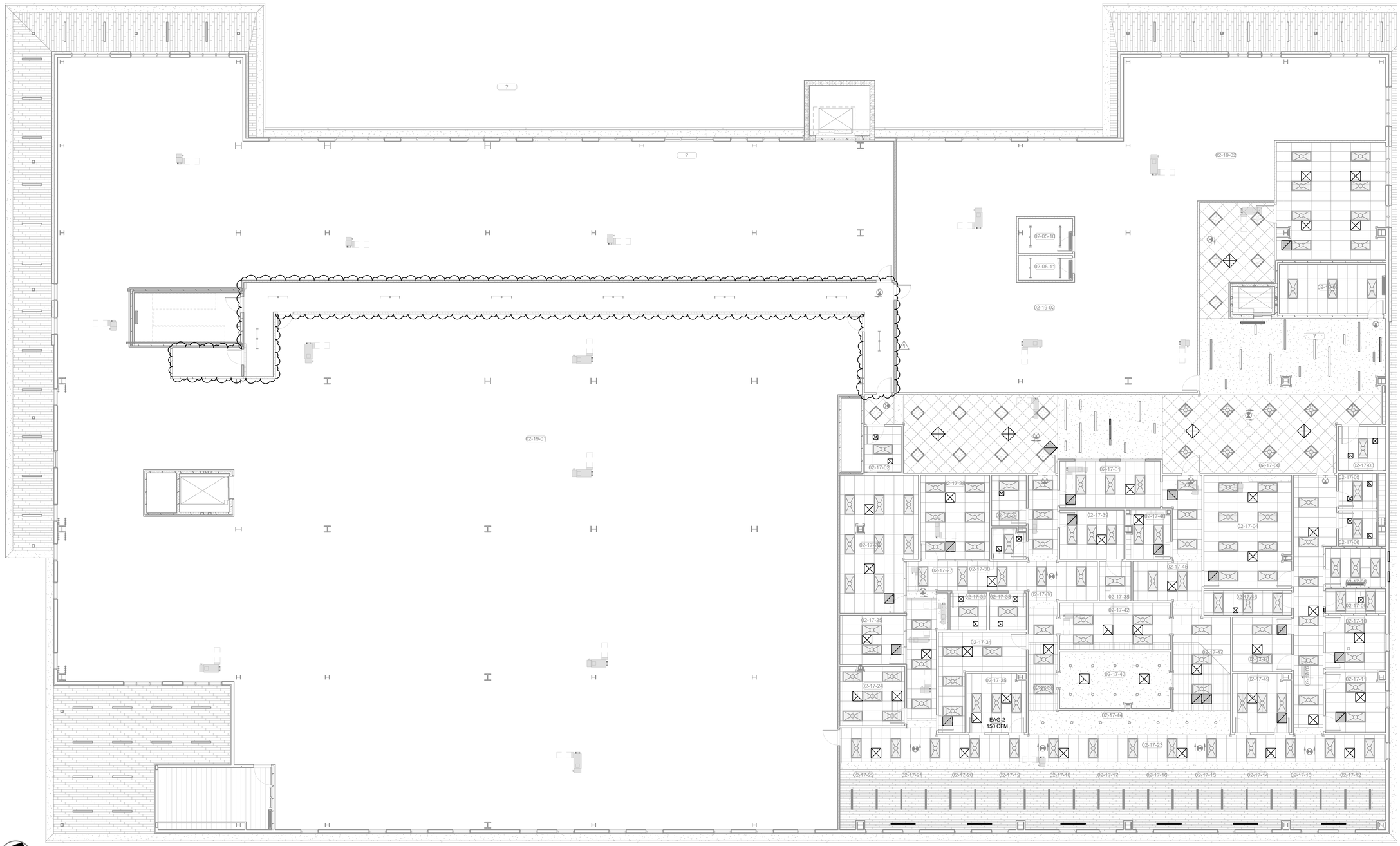
DATE: 12-06-19
JOB NUMBER: 18-01.01

SHEET NUMBER:
M5.05

ENLARGED MECH. ROOM HVAC PLAN



PLAN NORTH

TRUE NORTH

1 OVERALL MECHANICAL CEILING PLAN LEVEL 02

1/8" = 1'-0"

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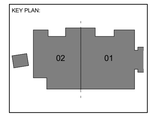


PROJECT PHASE:

BID PACKAGE 02

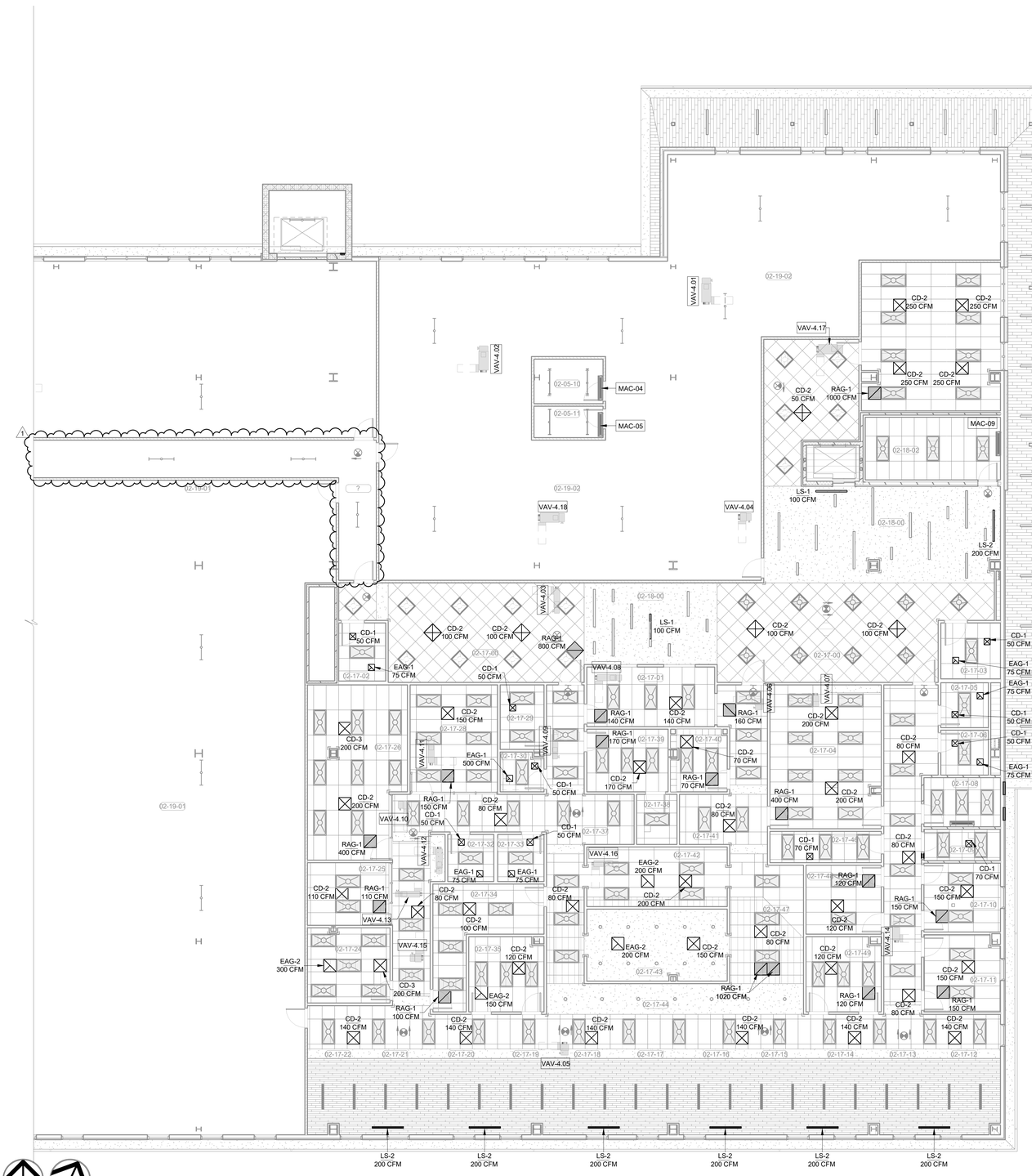
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

M6.04

OVERALL MECH CEILING PLAN LEVEL 02



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL CEILING PLAN LEVEL 02 SECTOR 01

1/8" = 1'-0"

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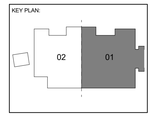
CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

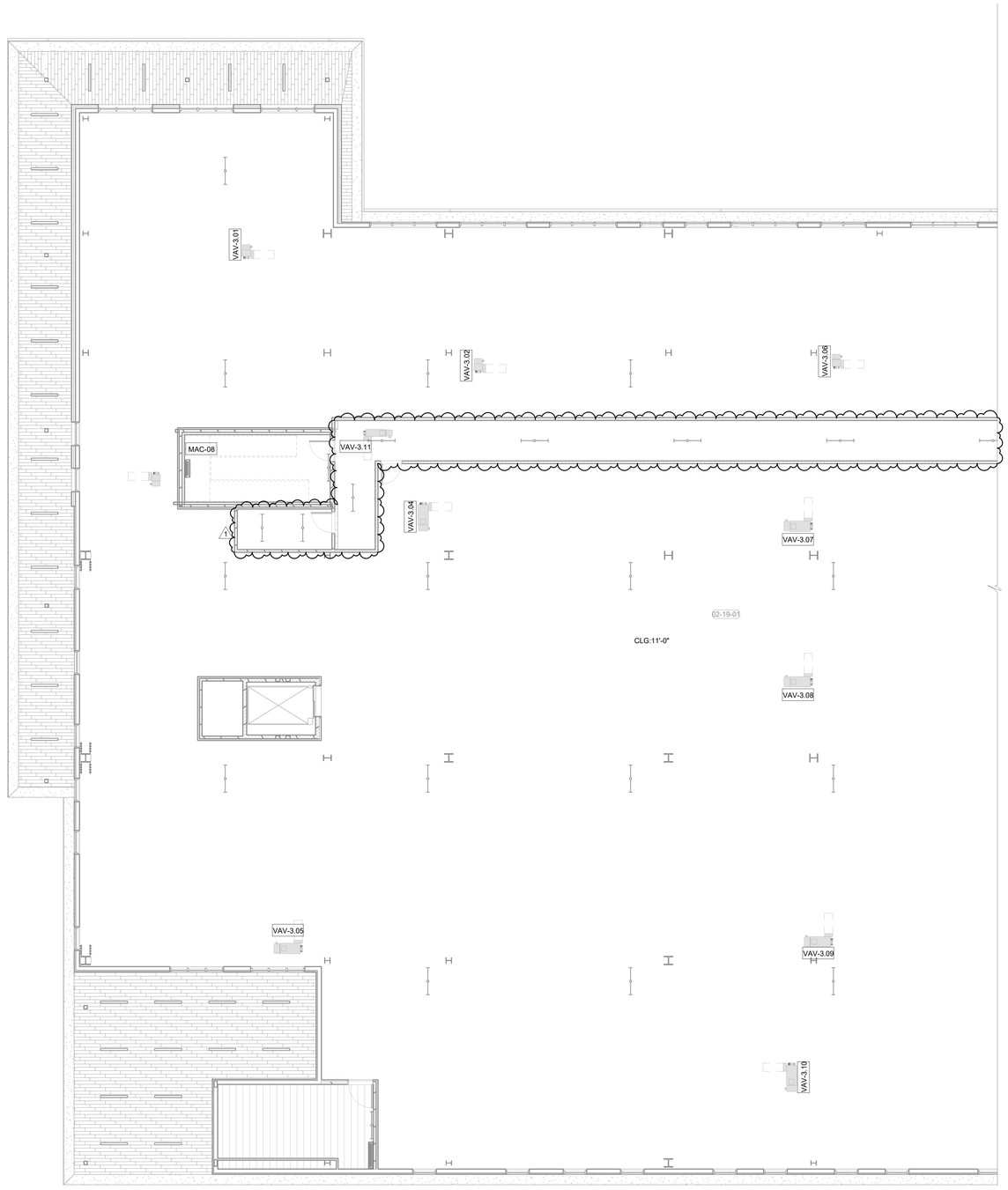
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

M6.05

MECH CEILING PLAN LEVEL 02 SECTOR 01



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL CEILING PLAN LEVEL 02 SECTOR 02
1/8" = 1'-0"

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LICENSED PROFESSIONAL ENGINEER
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CARL'S RIPE
01/10/2020

CONSULTANT LOGO:

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PROJECT NO. 18068R
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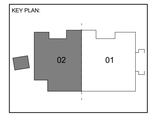
CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:
BID PACKAGE 02

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1	1/10/20	BID PACKAGE 02 - ADD 01

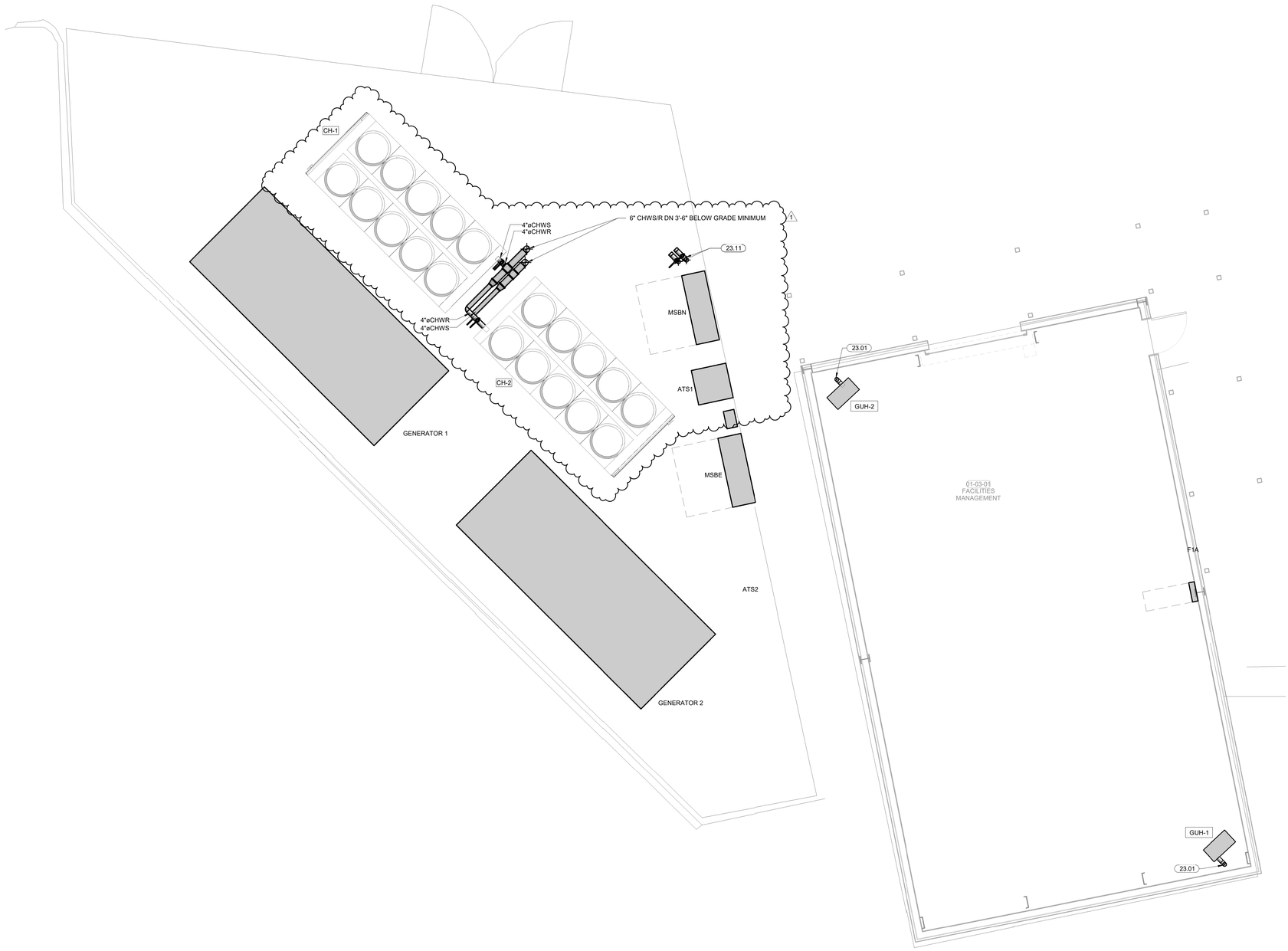
DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:
M6.06

MECH CEILING PLAN LEVEL 02 SECTION 02

KEYNOTES

23.01	MOUNT GAS UNIT HEATER AT 10'-0" AFF TO BOTTOM OF HEATER. INSTALL MFR CONCENTRIC VENT KIT THRU ROOF. SIZE AND INSTALL PER MFR INSTALLATION INSTRUCTIONS.
23.11	4" CHWR/CHWS STUP UP WITH CAP AND VALVE FOR POSSIBLE FUTURE CHILLER.



PLAN NORTH

TRUE NORTH

1 MECHANICAL YARD HYDRONIC PLAN

1/4" = 1'-0"

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WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

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JOB NUMBER: 18-01.01

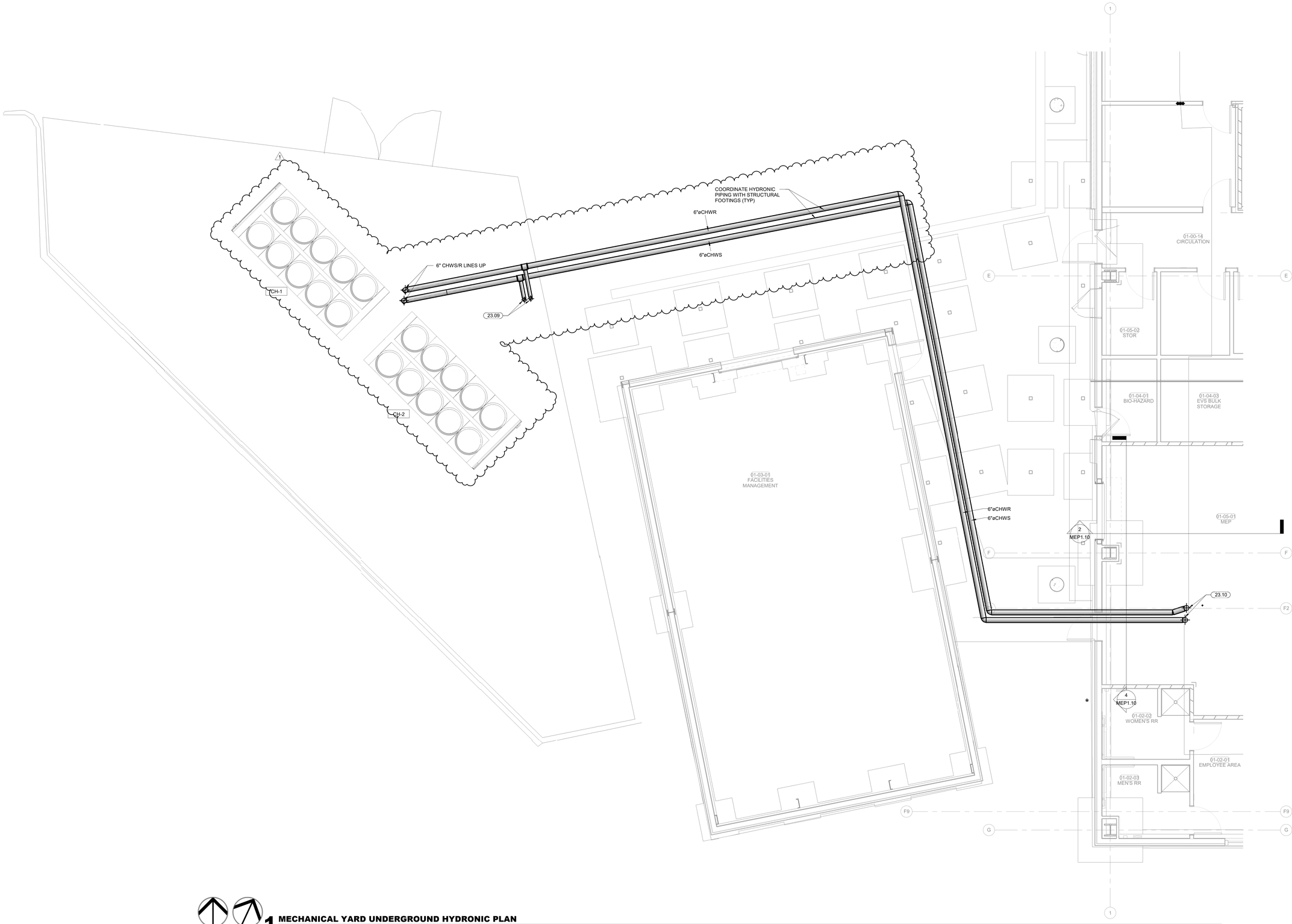
SHEET NUMBER:

M8.01

MECH YARD HYD PLAN

KEYNOTES

23.09	4" CHWS/R LINES TO STUB UP FOR POSSIBLE FUTURE CHILLER.
23.10	6" CHWS/R LINES UP THROUGH SLAB.



PLAN NORTH / TRUE NORTH

1 MECHANICAL YARD UNDERGROUND HYDRONIC PLAN
1/4" = 1'-0"

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WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

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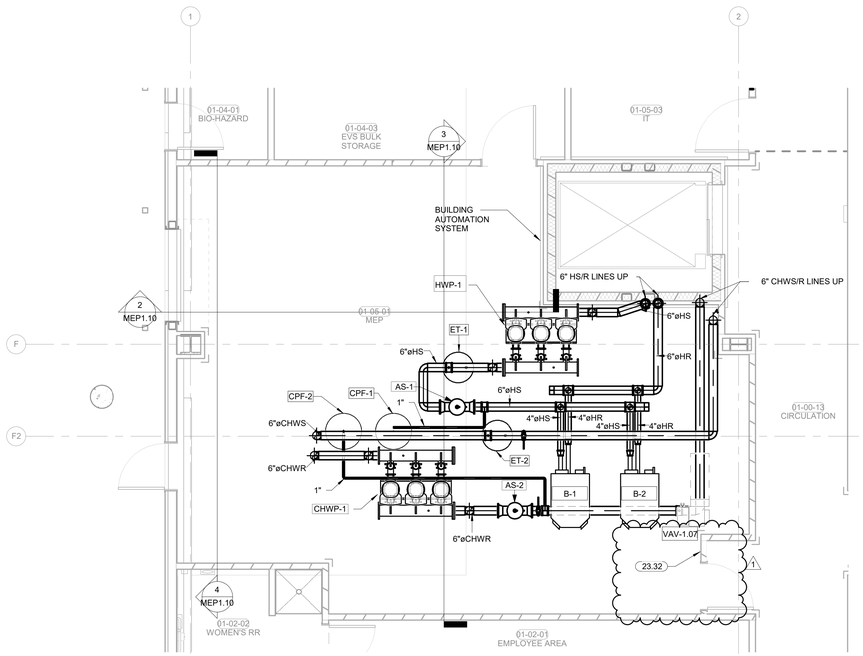
12-06-19	18-01.01

SHEET NUMBER:
M8.02

MECH YARD UG HYD PLAN

KEYNOTES	
Key Value	Keynote Text
23.32	BOILER EMERGENCY STOP SWITCH INSTALLED BY DIVISION 26 CONTRACTOR (TYP 2). INSTALL SEPARATE FEED TO EACH BOILER. DO NOT DAISY CHAIN BETWEEN BOILERS. REFER TO SHEET E1.14.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL ROOM HYDRONIC PLAN

1/4" = 1'-0"

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DATE SIGNED
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WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

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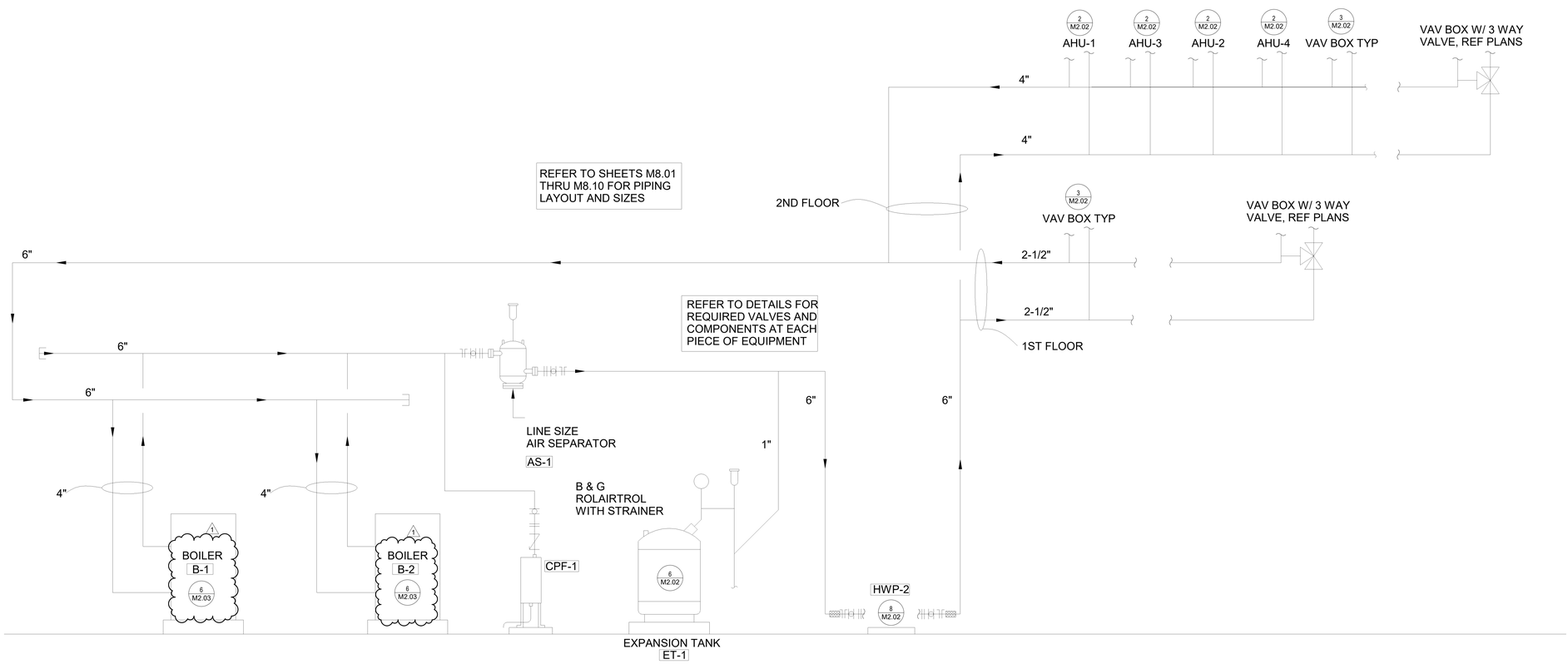
12-06-19	18-01.01

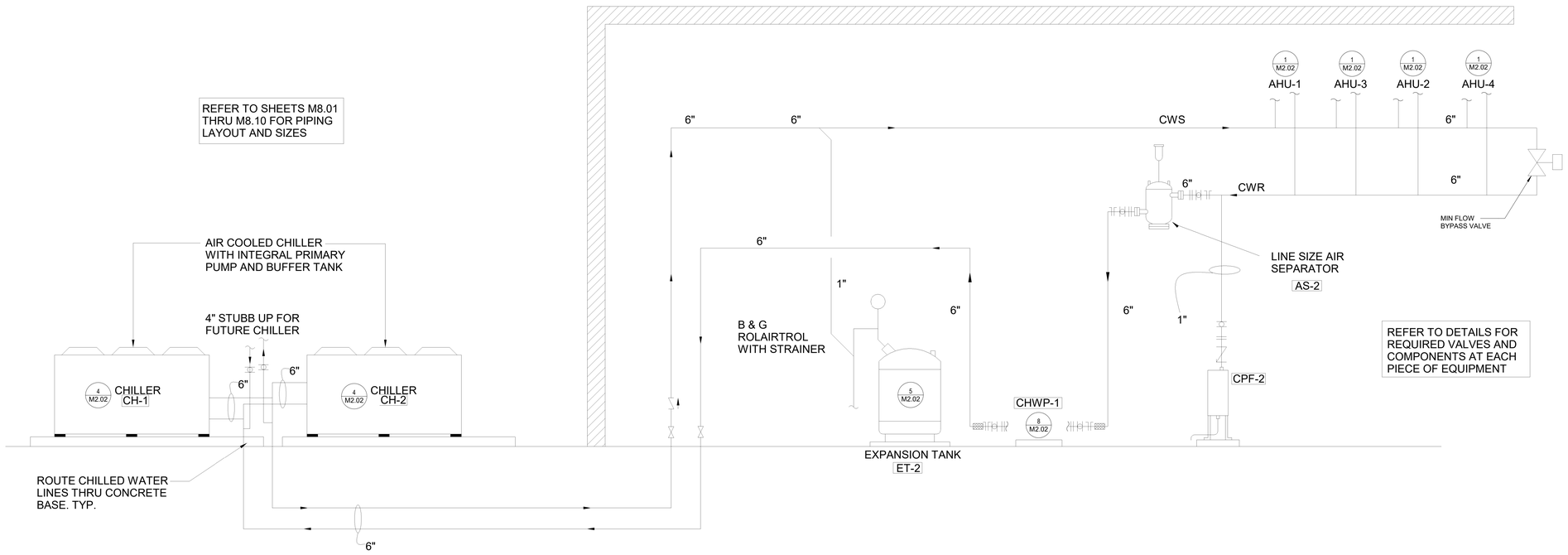
SHEET NUMBER:

M8.10

ENLARGED MECH. ROOM HYDRONIC PLAN



2 HEATING WATER SYSTEM PIPING DIAGRAM
N.T.S



1 CHILLED WATER SYSTEM PIPING DIAGRAM
N.T.S

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STILWELL, OKLAHOMA

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JOB NUMBER: 18-01.01
SHEET NUMBER: M8.11

HYDRONIC PIPING DIAGRAMS

GENERAL POWER NOTES

1	ALL RECEPTACLES SHALL BE GROUNDING TYPE.
2	ALL RECEPTACLES INSTALLED IN BATHROOMS, OUTDOORS AND KITCHENS SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY THE NATIONAL ELECTRIC CODE.
3	COORDINATE MECHANICAL EQUIPMENT CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE FEEDERS, DISCONNECTS AND MAINTENANCE RECEPTACLES SO THAT THEY WILL NOT INTERFERE WITH OPERATION OR MAINTENANCE OF MECHANICAL EQUIPMENT.
4	PROVIDE POWER TO MECHANICAL, PLUMBING, AND ALL OTHER EQUIPMENT AS REQUIRED FOR PROPER OPERATION. COORDINATE AND VERIFY EACH PIECE OF EQUIPMENTS POWER/CONTROL REQUIRMENTS PRIOR TO ORDERING RELATED ELECTRICAL EQUIPMENT. REFER TO RELATED MECHANICAL, PLUMBING, AND OTHER RELATED DOCUMENTS FOR LOCATIONS OF EQUIPMENT AND REQUIRED CLEARANCES AROUND EQUIPMENT.
5	COORDINATE EXACT MOUNTING HEIGHT OF EACH ABOVE COUNTER RECEPTACLE WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
6	ALL OUTLETS LOCATED IN AREAS REQUIRING GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION PER NEC-210 SHALL CONSIST OF A GFCI PROTECTED DEVICE, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS. THE GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED IN THE NEC. ALL RECEPTACLES SUPPLIED THROUGH A GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE MARKED "GFCI PROTECTED".
7	COORDINATE EXACT LOCATION OF ALL FLOOR BOXES WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. VERIFY EACH TYPE OF FLOOR BOX WITH INTENDED USE AND INSTALLATION. COORDINATE THIS WITH THE CONSTRUCTION OF FLOOR TYPE TO BE INSTALLED IN PRIOR TO ROUGH-IN SO AS TO ENSURE A CLEAN AND PROPER INSTALLATION. FOR INSTALLATIONS IN CONTRETE SLAB WITH OVERLAY OF CARPET, WOOD, AND/OR OTHER SIMILAR MATERIALS, LEAVE A 48"X48" BLOCK OUT WHEN FLOOR IS POURED SO THAT FINAL LOCATION OF FLOOR BOX MAY BE DETERMINED IN THE FIELD.

1

GENERAL LIGHTING NOTES

1	WHERE RECESSED LIGHTING FIXTURES ARE INDICATED IN A FIRE RATED CEILING, PROVIDE A ONE HOUR RATED "TENT" FOR FIXTURE
2	PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING HEIGHTS, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF FIXTURES.
3	CONNECT "UN-SWITCHED" HOT CONDUCTOR FROM CIRCUIT SERVING SPACE LIGHTING TO EACH EXIT SIGN, EMERGENCY LIGHT, AND ANY FIXTURE DESIGNATED AS NIGHT LIGHT SERVING THE SPACE.
4	COORDINATE ALL DEVICES AND WALL-MOUNTED LIGHT FIXTURE LOCATIONS WITH THE ARCHITECTURAL WALL FINISHES AND ELEVATIONS. SPECIAL ATTENTION AND COORDINATION OF WALL TYPES AND FINISHES IS REQUIRED PRIOR TO ROUGH-IN. EXACT LOCATION OF DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN TO AVOID INSTALLATION ON SPECIAL ARCHITCTURAL WALL FINISHES. DEVICES NOT PROPERLY COORDINATED WITH THE SPECIAL WALL FINISHES INDICATED IN THE CONSTRUCTION DOCUMENTS PRIOR TO ROUGH-IN SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.
5	ELECTRICAL CONTRATOR SHALL VERIFY CHEVRON DIRECTIONS OF ALL EXIT SIGNS PRIOR TO ORDERING.
7	COORDINATE AND PROVIDE DIMMER SWITCHES RATED FOR AND COMPATABLE WITH INTENDED LIGHT FIXTURE(S) TO BE CONTROLLED. CIRCUITS CONTROLLED WITH LINE-VOLTAGE DIMMER SWITCHES SHALL NOT SHARE NEUTRAL CONDUCTORS.
8	FOR GENERATOR FED EXIT AND EMERGENCY LIGHTS: CIRCUITS SHALL HAVE RELAY FUNCTION OVERRIDE LIGHTING CONTROLS DURING GENERATOR OPERATION.
9	WHERE SHOWER LIGHT SWITCHES ARE ACCESSIBLE FROM SHOWER, EC SHALL USE NYLON SCREWS IN FACEPLATE.

1

GENERAL LOW VOLTAGE NOTES

1	PROVIDE BACK BOX AND CONDUIT TO ABOVE THE ACCESSIBLE CEILING AS REQUIRED FOR THE HVAC BUILDING AUTOMATION SYSTEM DEVICES. COORDINATE EXACT LOCATIONS AND OTHER REQUIREMENTS WITH RELATIVE MEP DRAWINGS AND THE CONTROLS CONTRACTOR PRIOR TO ROUGH-IN. THERMOSTATS, TEMPERATURE SENSORS, STATIC PRESSURE SENSORS, HUMIDISTATS, ETC. SHALL BE INSTALLED AT THE SAME ELEVATION AS THE LIGHT SWITCHES UNLESS REQUIRED OTHERWISE.
2	PROVIDE (1) 1/2" CONDUIT, AND 4" SQUARE BOX WITH SINGLE GANG DEVICE RING FOR ALL THERMOSTAT LOCATIONS INDICATED ON THE MECHANICAL DRAWINGS. ROUTE CONDUIT FROM BOX TO ACCESSIBLE CEILING CAVITY. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. PROVIDE PULL STRING IN ALL EMPTY CONDUIT SYSTEMS. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
3	PROVIDE CABLE TRAY ABOVE CEILING IN ALL CORRIDORS FOR ROUTING OF LOW VOLTAGE CABLES.
4	PROVIDE 4'WIDE X 4'TALL X 3/4" FIRE RATED, PAINTED CDX PLYWOOD BACKBOARD WHERE SHOWN ON DRAWINGS OR AS REQUIRED FOR TELEPHONE, CATV, ALARM SYSTEM EQUIPMENT, ECT. COORDINATE EXACT LOCATION(S) WITH RESPONSIBLE CONTRACTOR(S).
5	FURNISH AND INSTALL A TELEPHONE SERVICE CONDUIT(S) PER TELEPHONE SERVICE PROVIDER SPECIFICATIONS. STUB UP AT DESIGNATED EQUIPMENT BOARD.
6	FURNISH AND INSTALL ONE #6 COPPER INSULATED GROUND WIRE FROM THE ELECTRICAL SERVICE GROUND TO THE TELEPHONE EQUIPMENT BOARD. LEAVE 36" EXTRA WIRE AT FREE END.
7	FURNISH AND INSTALL A CABLE TV SERVICE CONDUIT(S) PER CABLE TV PROVIDER SPECIFICATIONS. STUB UP AT SERVICE POINT.
8	REFER TO SITE UTILITIES PLAN AND COORDINATE ENTIRE INSTALLATION WITH CABLE TV SERVICE PROVIDER.
9	PROVIDE ROUGH-IN OF ALL BACK BOXES, CONDUITS (WITH BUSHINGS AND PULL STRINGS) AND OTHER WIRE WAYS AS REQUIRED FOR LOW VOLTAGE SYSTEMS, COORDINATE ALL REQUIRED LOCATIONS WITH OWNER AND RESPONSIBLE CONTRACTOR(S).
10	ALL CABLES PULLED IN CONDUIT ROUTED UNDERGROUND SHALL BE WET RATED.
11	REFER TO SITE UTILITIES PLAN AND COORDINATE ENTIRE INSTALLATION WITH PHONE SERVICE PROVIDER.

1

GENERAL ELECTRICAL NOTES

1	SPECIAL ATTENTION SHALL BE GIVEN TO ALL RACEWAYS WITHIN FINISHED AREAS WITHOUT CEILINGS AND EXPOSED TO STRUCTURE. IN GENERAL, ALL RACEWAYS SHALL BE CONCEALED WITHIN WALLS, ABOVE STRUCTURE FINISH, OR BELOW FLOOR SLABS WHEN SPECIFIED. WHERE EXPOSED CONDITIONS ARE NECESSARY OR UNAVOIDABLE DUE TO OTHER CONDITIONS, THE BID SHALL INCLUDE ANY REASONABLE MEANS TO MINIMIZE THE AMOUNT OF SURFACE MOUNTED EQUIPMENT. PRIOR TO ROUGH-IN, COORDINATE ALL EXPOSED RACEWAY AND BOX CONDITIONS WITH ARCHITECT PRIOR TO CONSTRUCTION OF WALLS, ROOF DECK, OR FLOOR SLABS. ATTACHMENT TO ROOF DECK OR JOIST WEBBINGS IS NOT ALLOWED, MAINTAIN A MINIMUM SPACING OF 1-1/2" FROM CONDUIT TO ROOF DECK. IN AREAS WHERE EXPOSED RACEWAYS ARE REQUIRED, INSTALL SYSTEMS SQUARE AND TIGHT TO STRUCTURE AND PAINT TO MATCH THE STRUCTURE PER ARCHITECT AND/OR OWNER SPECIFICATIONS. FAILURE TO PROPERLY COORDINATE THE ROUTING OF EXPOSED RACEWAYS MAY RESULT IN RELOCATION OF SUCH RACEWAYS AT NO ADDITIONAL COST TO THE OWNER.
2	OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RESISTANT-RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING. PROVIDE PENETRATION FIRE STOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479. FIRE STOPPING SHALL NOT BE LESS THAN FIRE RESISTANCE RATING OF CONSTRUCTED PENETRATIONS.
3	FIELD VERIFY LOCATIONS OF EXISTING ELECTRICAL EQUIPMENT, INCLUDING POWER POLES, TELEPHONE PEDESTALS, OVERHEAD AND UNDERGROUND FEEDERS, METERS, PANELS, DEVICES, ETC. PROVIDE FOR COORDINATION WITH EXISTING EQUIPMENT.
4	CONDUCTORS FOR BRANCH CIRCUITS AS DEFINED IN ARTICLE 100, SHALL BE SIZED TO PREVENT A VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST LOAD, AND WHERE THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST LOAD DOES NOT EXCEED 5%.
5	ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE, STATE LAWS, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
6	THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIAL, AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
7	CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING AND NEW EQUIPMENT.
8	ALL ELECTRIC MATERIALS AND EQUIPMENT FOR THE PROJECT SHALL BE NEW AND U.L. OR EQUALLY LISTED.
9	SUBMIT TO THE OWNER CERTIFICATES OF INSPECTIONS IN DUPLICATE FROM AN APPROVED INSPECTION AGENCY UPON COMPLETION.
10	THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED.
11	THE CONTRACTOR SHALL FURNISH ALL INSTRUMENTS AND QUALIFIED PERSONNEL OR FIRM TO PERFORM ALL REQUIRED TESTS.
12	NO EQUIPMENT SHALL BE ENERGIZED UNTIL ALL TEST AND ADJUSTMENTS HAVE BEEN MADE. THREE COPIES OF ALL TEST RESULTS SHALL BE DELIVERED TO THE OWNER
13	JUNCTION BOXES LOCATED ABOVE GRID CEILINGS SHALL BE LOCATED NO GREATER THAN 4-FEET ABOVE THE CEILING IN A LOCATION ACCESSIBLE VIA A LADDER FROM THE ROOM BELOW.
14	ALL WIRING DEVICE COVERPLATES SHALL INDICATE PANELBOARD AND CIRCUIT SERVING THE DEVICE. UTILIZE CLEAR VINYL (BLACK LETTERING) IDENTIFICATION LABLES MANUFACTURED BY 3M COMPANY (OR APPROVED EQUIVALENT).
15	THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED. APPLICATION - TYPE OF CONDUIT BURIED IN CONCRETE OR OUTDOORS - PVC WITH RIGID GALVANIZED STEEL ELBOWSSERVICE ENTRANCE - GALVANIZED RIGID STEEL OR SERVICE UTILITY SPECIFICATIONS.
16	SEISMIC PROTECTION FOR SEISMIC CONCERNS OF ALL BUILDING SYSTEMS INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, AND ELECTRICAL MUST MEET MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES FOR BUILDINGS' CLASSIFIED SEISMIC USE GROUP AND SEISMIC DESIGN CATEGORY. ANY REQUIREMENTS FOR SEISMIC PROTECTION MEASURES TO BE APPLIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND/OR FEDERAL CODES AND WITH MANUFACTURER'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TYPE AND LOCATION OF SEISMIC RESTRAINTS REQUIRED FOR THE VARIOUS SYSTEM'S ELEMENTS CONTAINED IN THE CONSTRUCTION DOCUMENTS BASED ON THE RELATED SEISMIC CODE CRITERIA, THE SIZE AND WEIGHT OF THE SUPPORTED ELEMENT AND THE DISTANCE FROM STRUCTURE THAT THE ELEMENT WILL BE INSTALLED. IF REQUIRED BY LOCAL, STATE, FEDERAL CODES AND/OR OTHER AUTHORITY HAVING JURISDICTION (AHJ) THE CONTRACTOR SHALL SUBMIT DESCRIPTIVE CATALOG DATA OF SEISMIC RESTRAINTS, SHOP DRAWINGS SHOWING THE TYPES, LOCATIONS AND INSTALLATION DETAILS OF SEISMIC RESTRAINTS AND CALCULATIONS SHOWING THAT THE SEISMIC RESTRAINTS MEET THE SEISMIC REQUIREMENTS TO THE LOCAL AHJ FOR REVIEW AND APPROVAL. CALCULATIONS SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF THE PROJECT LOCATION AND EMPLOYED BY THE MANUFACTURER OF THE SEISMIC RESTRAINT PRODUCTS. CALCULATIONS SHALL INCLUDE DEAD LOADS, STATIC SEISMIC LOADS AND CAPACITY OF MATERIALS UTILIZED FOR CONNECTIONS TO EQUIPMENT AND STRUCTURE.
17	UNLESS NOTED OTHERWISE PROVIDE MINIMUM #8 AWG CONDUCTORS IN 1" CONDUIT(S) FOR ALL UNDERGROUND SITE POWER AND LIGHTING CIRCUITS. INCREASE CONDUCTOR AND RELATED CONDUIT SIZE AS NOTED OR OTHERWISE REQUIRED TO LIMIT VOLTAGE DROP TO LESS THAN 5% FOR THE ENTIRE LENGTH OF SYSTEM.
18	UNDERGROUND UTILITIES/FEEDERS/BRANCH CIRCUITS/ETC. SHALL NOT BE ROUTED THROUGH OR WITHIN 25 FEET OF ANY AREAS DEDICATED FOR FUTURE BUILDING ADDITION.
19	DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW ALL GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS.
20	INSTALL EQUIPMENT IN A MANNER TO REMAIN ACCESSIBLE WITH REASONABLE MEANS BY THE OWNER FOLLOWING COMPLETION OF WORK. SPECIAL ATTENTION AND ADDITIONAL COORDINATION IS EXPECTED IN AREAS OF THE BUILDING WHERE THE CEILING AND STRUCTURE HEIGHTS HAVE SIGNIFICANT DIFFERENT ELEVATIONS. EQUIPMENT REQUIRING POSSIBLE FUTURE ACCESS SHALL BE INSTALLED SUCH THAT IT MAY BE SAFELY ACCESSED FROM A STANDARD STEP LADDER OR PERSONNEL LIFT SUITABLE FOR THE LOCATION AND CEILING HEIGHT, WITHOUT REMOVING OR DAMAGING THE CEILING GRID STRUCTURE.
21	COORDINATE ALL CEILING MOUNTED ELECTRICAL ITEMS WITH OTHER DISCIPLINES, WITH CEILING, AND STRUCTURE. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.
22	ROOM NAMES/NUMBERS SHOWN IN PANELBOARD SCHEDULES ARE PER ARCHITECTURAL FLOOR PLANS. CONTRACTOR SHALL PROVIDE FINALIZED PANELBOARD SCHEDULES AT COMPLETION OF PROJECT WITH OWNER PROVIDED ROOM NAMES/NUMBERS.
23	THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING SYSTEMS (AS REQUIRED) IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
24	ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE MECHANICAL WORK AS CALLED FOR IN MECHANICAL SPECIFICATIONS AND PLANS.
25	PROVIDE A MINIMUM OF (3) SPARE 1" CONDUITS FROM RECESSED PANELBOARD, UP TO ACCESSIBLE CEILING SPACE.
26	FIELD MOUNTED DEVICES SUCH AS SWITCHES, MOTOR STARTERS, RECEPTACLES, ETC., ARE SHOWN IN THEIR APPROXIMATE LOCATION. SWITCH MOUNTING HEIGHT SHALL BE 48" ABOVE FINISHED FLOOR AND RECEPTACLE MOUNTING HEIGHT SHALL BE 18" ABOVE FINISHED FLOOR UON. REFER TO THE TYPICAL MOUNTING HEIGHT DETAIL.
27	PROVIDE EMT WITH PROPERLY INSTALLED COMPRESSION OR SET-SCREW TYPE FITTINGS AND AN INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR ALL RACEWAYS SERVING EXAM ROOMS, LABS AND OTHER RETAILED AREAS TO COMPLY WITH ARTICLE 517 OF THE NEC.
28	DESIGNATED SPARE CIRCUIT BREAKERS SHALL BE PLACED IN THE OFF POSITION
29	PROVIDE SPD AS REQUIRED FOR OWNER PROVIDED EQUIPMENT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ACCESS CONTROL SYSTEM, COMMUNICATION SYSTEM, DATA SYSTEM, SECURITY SYSTEM.

1

ABBREVIATIONS

AC	ABOVE COUNTER	IG	ISOLATED GROUND
AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
E	EXISTING	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
EC	ELECTRICAL CONTRACTOR	NIC	NOT IN CONTRACT
EP	EXPLOSION PROOF	NL	NIGHT LIGHT
GFI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND
GR	GROUND	UON	UNLESS OTHERWISE NOTED
HP	HORSE POWER	WP	WEATHERPROOF
		WR	WEATHER RESISTANT

WIRING

- WIRING CONCEALED IN CEILING OR WALLS UON. ALL WIRE IS NUMBER #12 AWG MINIMUM.
- EXPOSED RACEWAY.
- UNDERGROUND RACEWAY; TYPE, SIZE, CONDUCTORS, AND ARRANGEMENT BY NOTATION OR SCHEDULE.

SWITCHES

S* SWITCH MOUNTED AT +48"; SINGLE POLE UON. REF SCHEDULE ON SHEET E2.01 FOR ALL LIGHTING DEVICE TYPES.
LOWER CASE LETTER, WHEN PRESENT, INDICATES FIXTURES CONTROLLED.

* ABBREVIATIONS FOR SWITCH

2	DOUBLE POLE SWITCH
3	3-WAY SWITCH
4	4-WAY SWITCH
D	DIMMER SWITCH (SHALL BE COMPATABLE WITH FIXTURE BEING DIMMED)
F	FAN SWITCH: DUAL OPERATION WITH DIMMER
K	KEYED SWITCH
M	MOTOR RATED SWITCH
OS	DUAL TECHNOLOGY OCCUPANCY SENSOR
V	VOLUME CONTROL SWITCH

OS CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR. 1

RECEPTACLES

- DUPLEX RECEPTACLE (NEMA 5-20R)
- DUPLEX RECEPTACLE (NEMA 5-20R); MOUNTED 8" ABOVE COUNTERTOP.
- U (ALL RECEPTACLE TYPES) WITH USB CHARGING PORTS
- GFI DUPLEX RECEPTACLE (NEMA 5-20R), SELF-TEST TYPE
- GFI DUPLEX RECEPTACLE (NEMA 5-20R), SELF-TEST TYPE; MOUNTED 8" ABOVE COUNTERTOP.
- QUADRUPLEX RECEPTACLE (TWO NEMA 5-20R)
- SPECIAL RECEPTACLE: VERIFY NEMA TYPE WITH MANUFACTURER
- FLOOR BOX WITH DATA: LEGRAND WIREMOLD SERIES RFB4E-OG OR RFB6E-OG WITH EVOLUTION COVER. ROUTE (2)1" FOR DATA FROM FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES: LEGRAND 6AT SERIES. SEE ARCHITECTURAL PLANS FOR LOCATION UON.
- TV TELEVISION: PROVIDE HUBBELL NSAV62M JUNCTION BOX (OR EQUAL) WITH 1/2" CONDUIT FOR POWER AND 1" CONDUIT (WITH PULL STRINGS) FOR A/V ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE CONNECTIONS FOR POWER, DATA, COAX, AND HDMI. MOUNT AT +60" AFF UNO. CONFIRM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN.
- SINGLE RECEPTACLE (NEMA 5-20R)
- SPLIT WIRED DUPLEX RECEPTACLE (NEMA 5-20R)
- DIRECT EQUIPMENT CONNECTION: VERIFY CONNECTION DETAILS WITH MANUFACTURER
- FLOOR BOX: HUBBEL 3SFBSS WITH 3SFBC COVER. EC SHALL ROUTE A 1"C FOR FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES: HUBBELL PT2X2 SERIES. SEE ARCHITECTURAL PLANS FOR LOCATION UON.
- CEILING MOUNTED RECEPTACLE(NEMA 5-20R)

PANELS AND MISC.

- LIGHT OR POWER PANEL
- J 4x4 JUNCTION BOX.
- EQUIPMENT DISCONNECT: INTERIOR DISCONNECTS SHALL BE NEMA 1 TYPE. EXTERIOR DISCONNECTS SHALL BE NEMA 3R TYPE. SIZE AS INDICATED IN THE PLANS AND PER NAMEPLATE RATING.
- PHONE/DATA: PROVIDE 4"X4", 30-1/4 CUBIC INCH OUTLET BOX AT 8" ABOVE COUNTER (UON) WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. REFER TO THE SYSTEMS PLANS AND SPECIFICATIONS FOR INSTALLATION REQUIREMENTS. VERIFY NUMBER OF DROPS WITH OWNER.
- PHONE/DATA: PROVIDE 4"X4", 30-1/4 CUBIC INCH OUTLET BOX AT +18" (UON) WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. REFER TO THE SYSTEMS PLANS AND SPECIFICATIONS FOR INSTALLATION REQUIREMENTS. VERIFY NUMBER OF DROPS WITH OWNER.
- PHONE/DATA: PROVIDE 4"X4", 30-1/4 CUBIC INCH OUTLET BOX IN CEILING. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. REFER TO THE SYSTEMS PLANS AND SPECIFICATIONS FOR INSTALLATION REQUIREMENTS. VERIFY NUMBER OF DROPS WITH OWNER.
- TV TELEVISION: PROVIDE 4"X4" JUNCTION BOX WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. CONFIRM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN. REFER TO THE SYSTEMS PLANS AND SPECIFICATIONS FOR INSTALLATION REQUIREMENTS. VERIFY NUMBER OF DROPS WITH OWNER.
- S CEILING MOUNTED SPEAKER
- CR CARD READER: REFER TO SYSTEM PLANS AND SPECIFICATIONS. AT EACH DOOR WITH A CARD READER PROVIDE ALL ELECTRICAL CONNECTIONS FOR DOOR HARDWARE SYSTEMS AS REQUIRED TO MAKE A COMPLETE OPERATIONAL SYSTEM. WHERE REQUIRED, BACK TO BACK 2"X4" BOXES ARE ALLOWED FOR CARD READER AND PUSH TO EXIT SWITCH. PROVIDE POWER TO THE LOCK SYSTEM IN THE I.T. ROOM WHERE NEEDED BY CONTRACTOR INSTALLING SYSTEM.

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PROFESSIONAL SEAL:
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Robert Brandon Pinkerton
23042
OKLAHOMA
(NOT VALID UNLESS SIGNED)
01/10/2020

CONSULTANT LOGO:
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PROJECT NO. 18068R
100 % COMPLETE
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(479) 899-6370
www.hpengineeringinc.com

CLIENT:
THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

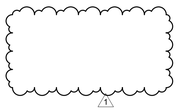
REVISIONS

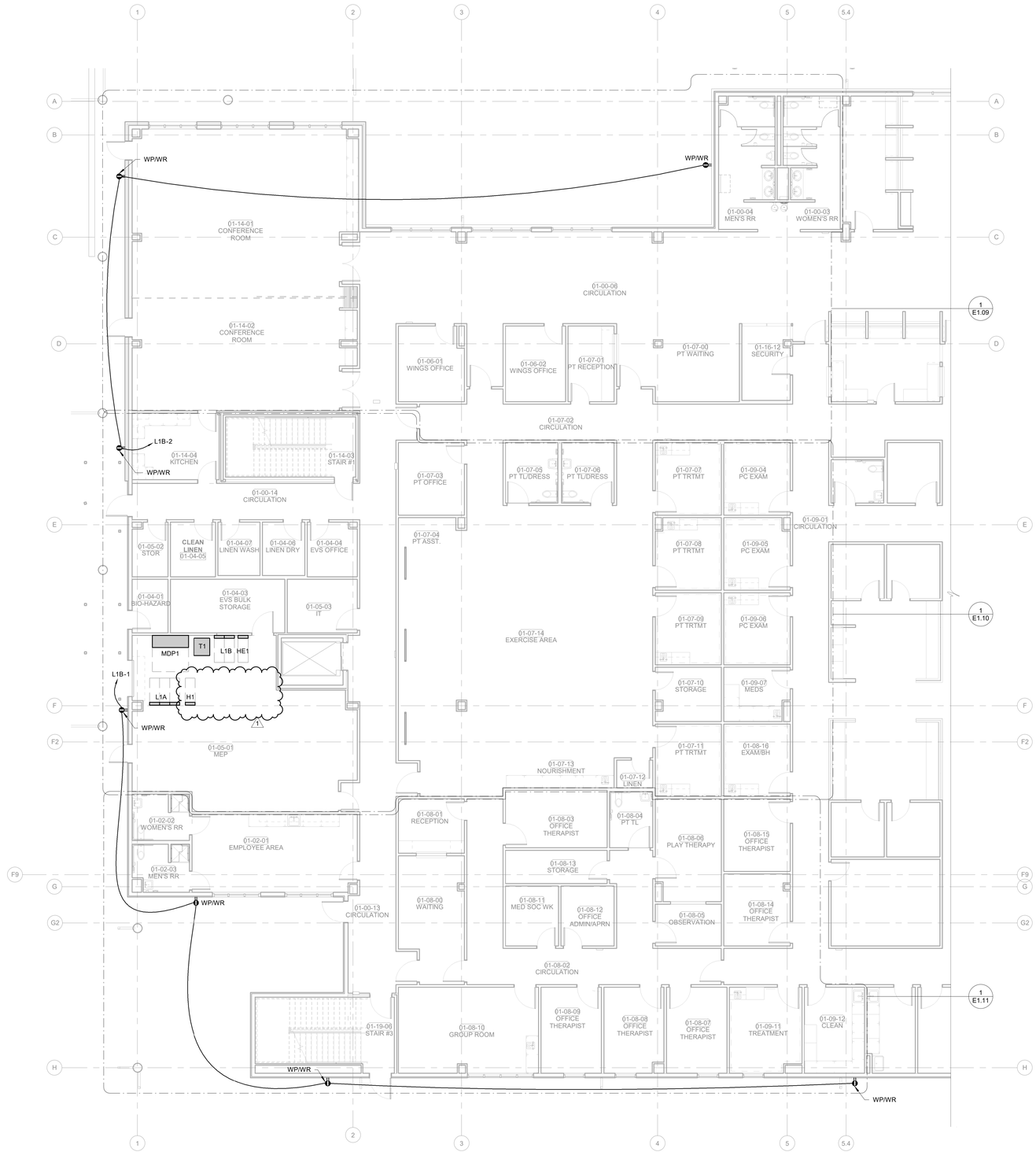
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: E1.01

ELECTRICAL NOTES AND LEGEND

1" = 1'-0" 3" = 1'-0" 1 1/2" = 1'-0" 3/4" = 1'-0" 1/2" = 1'-0" 3/8" = 1'-0" 1/4" = 1'-0" 1/8" = 1'-0"





PLAN NORTH

TRUE NORTH

1 POWER PLAN LEVEL 01 SECTOR 02

1/8" = 1'-0"

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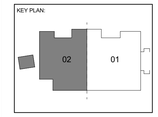
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.03

POWER PLAN LEVEL 01 SECTOR 02

KEYNOTES

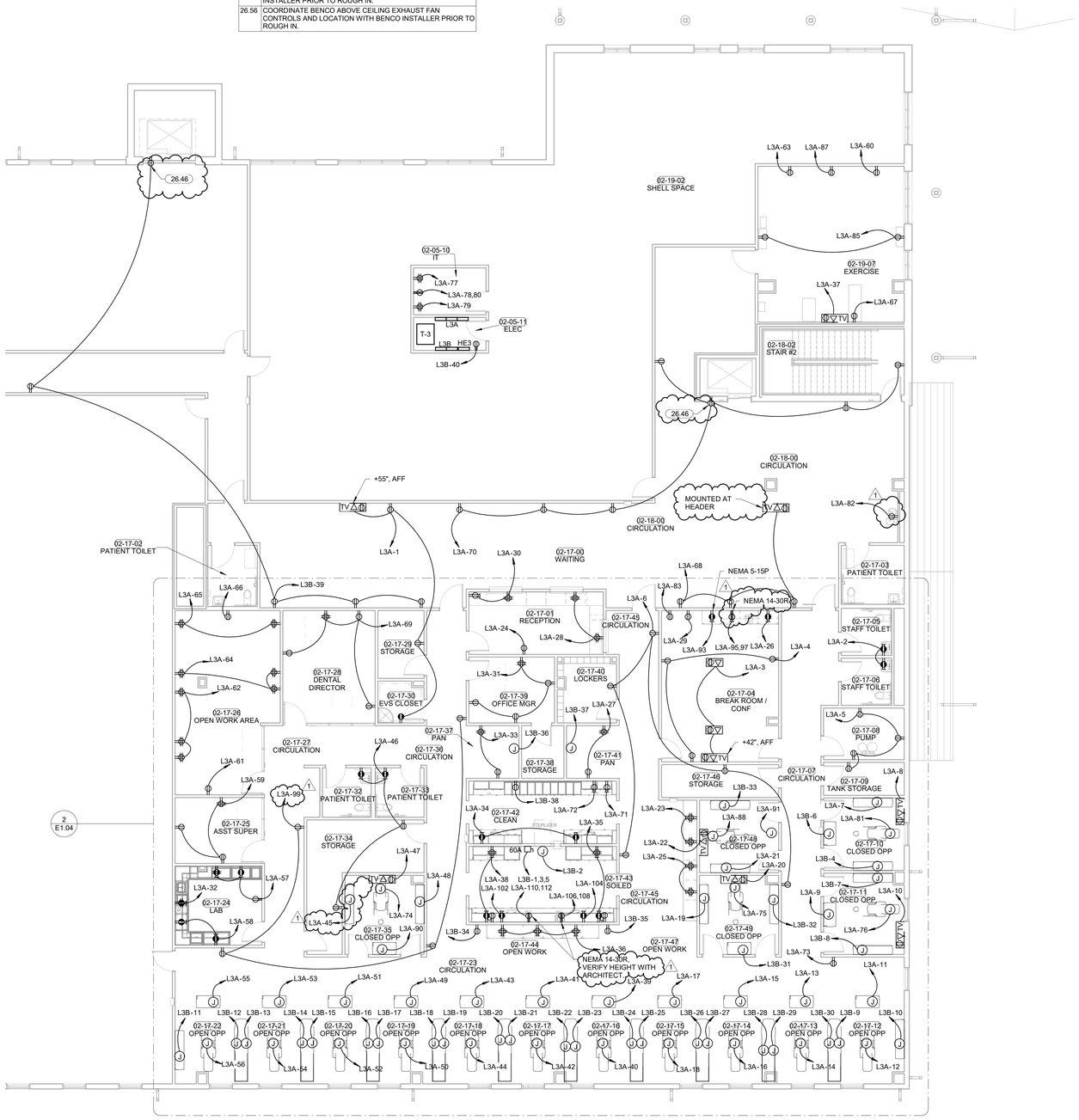
26.26	+43 1/2" XRAY.
26.27	+48" EXPOSURE BUTTON. PROVIDE 1" CONDUIT TO ACCESSIBLE CELING SPACE.
26.28	+43 1/2" REMOTE STATION. PROVIDE 1" CONDUIT TO ACCESSIBLE CELING SPACE.
26.29	REFER TO DETAIL 4 ON SHEET Q3.2 FOR INSTALLATION HEIGHTS AND COORDINATION.
26.30	REFER TO DETAIL 5 ON SHEET Q3.2 FOR INSTALLATION HEIGHTS AND COORDINATION.
26.31	EXPOSURE BUTTON. COORDINATE MOUNTING HEIGHT WITH DENTAL EQUIPMENT PROVIDER.
26.32	REMOTE STATION AND XRAY. COORDINATE MOUNTING HEIGHT WITH DETAL EQUIPMENT PROVIDER.
26.33	REFER TO DETAIL 1 SHEET Q3.2 FOR INSTALLATION HEIGHTS AND COORDINATION.
26.35	HOSPITAL GRADE RECEPTACLE
26.36	REFER TO DETAIL 6 SHEET Q3.2 FOR INSTALLATION HEIGHTS AND COORDINATION.
26.37	REFER TO DETAIL 3 SHEET Q3.2 FOR INSTALLATION HEIGHTS AND COORDINATION.
26.42	MED GAS ALARM. COORDINATE POWER REQUIREMENTS WITH BENCO PLANS. PROVIDE ALL NECESSARY CABLE AND CIRCUITS FOR PROPER OPERATION.
26.46	LOCATE ELEVATOR SERVICE GFCI INSIDE OF ELEVATOR CONTROL CABINET COORDINATE LOCATION WITH ELEVATOR INSTALLER PRIOR TO ROUGH IN.
26.56	COORDINATE BENCO ABOVE CEILING EXHAUST FAN CONTROLS AND LOCATION WITH BENCO INSTALLER PRIOR TO ROUGH IN.

POWER PLAN NOTES

- COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
- E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.
- GROUNDING OF RECEPTACLES AND FIXED ELECTRICAL EQUIPMENT IN PATIENT CARE SPACES SHALL COMPLY WITH NEC 517.13.

DENTAL EQUIPMENT NOTES

- VERIFY LOCATION AND ELECTRICAL REQUIREMENTS OF ALL DENTAL EQUIPMENT WITH DENTAL EQUIPMENT PROVIDER PRIOR TO ROUGH-IN.
- SEE Q SHEETS FOR ADDITIONAL ELECTRICAL REQUIRMENTS.



2 POWER PLAN LEVEL 02 SECTOR 01 - BENCO DENTAL POWER
1/8" = 1'-0"

1 POWER PLAN LEVEL 02 SECTOR 01
1/8" = 1'-0"

PLAN NORTH

TRUE NORTH

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01/10/2020

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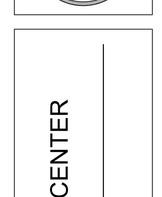
CLIENT:

THE CHEROKEE NATION
TRIBAL SEAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

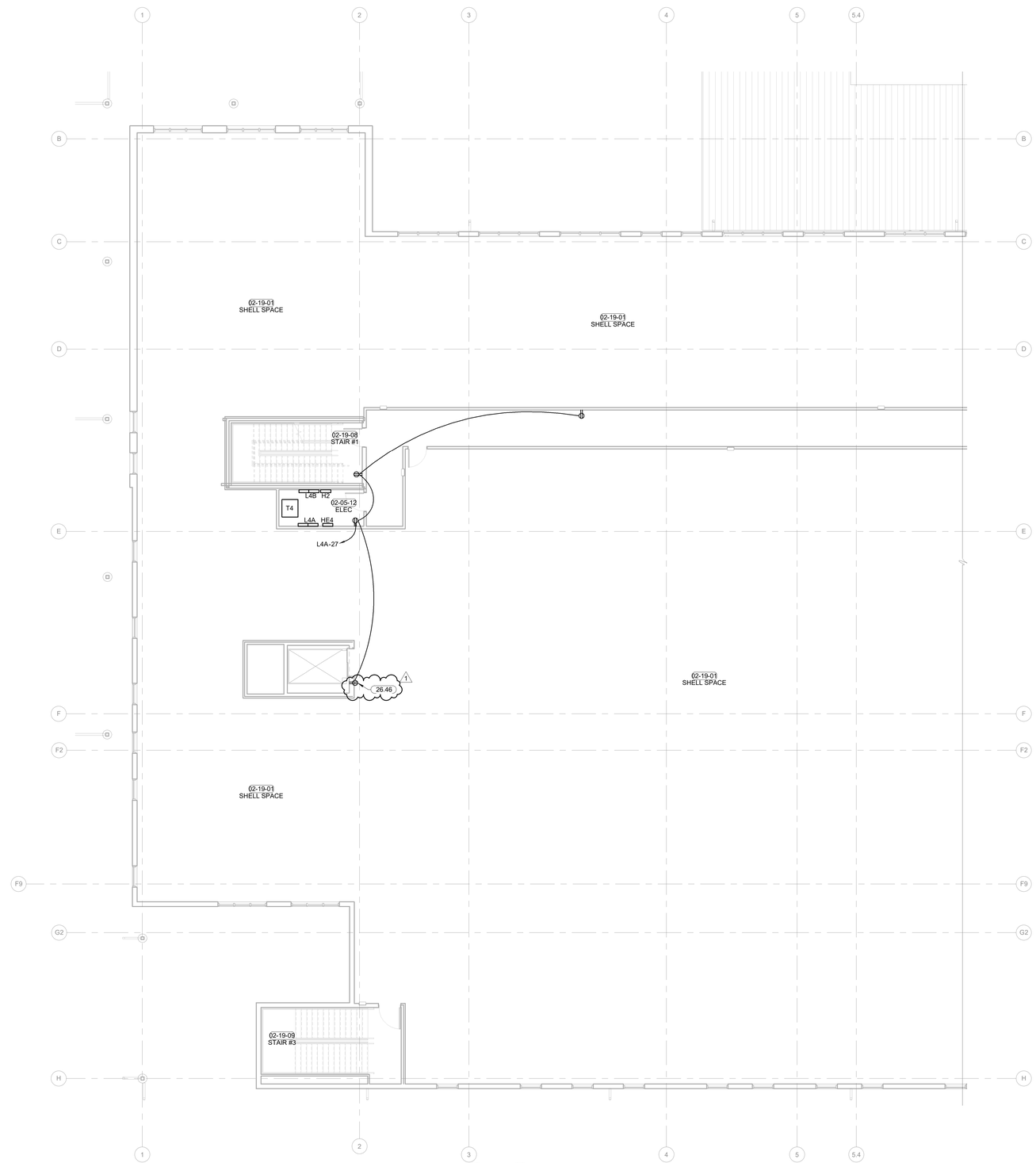
DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: E1.04

POWER PLAN LEVEL 02 SECTOR 01

KEYNOTES	
Key Value	Keynote Text
26.46	LOCATE ELEVATOR SERVICE GFCI INSIDE OF ELEVATOR CONTROL CABINET COORDINATE LOCATION WITH ELEVATOR INSTALLER PRIOR TO ROUGH IN.



PLAN NORTH

TRUE NORTH

1 POWER PLAN LEVEL 02 SECTOR 02

1/8" = 1'-0"

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WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.05

POWER PLAN LEVEL 02 SECTOR 02

KEYNOTES

26.24	MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.
26.55	COORDINATE SUMP PUMP ALARM LOCATION WITH OWNER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH IN.

POWER PLAN NOTES

COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.
GROUNDING OF RECEPTACLES AND FIXED ELECTRICAL EQUIPMENT IN PATIENT CARE SPACES SHALL COMPLY WITH NEC 517.13.

1 POWER PLAN LEVEL 01 SECTOR 01 NORTH
3/16" = 1'-0"

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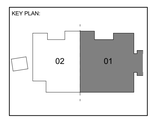
TRIBE OF THE CHEROKEE NATION OF OKLAHOMA SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: E1.06

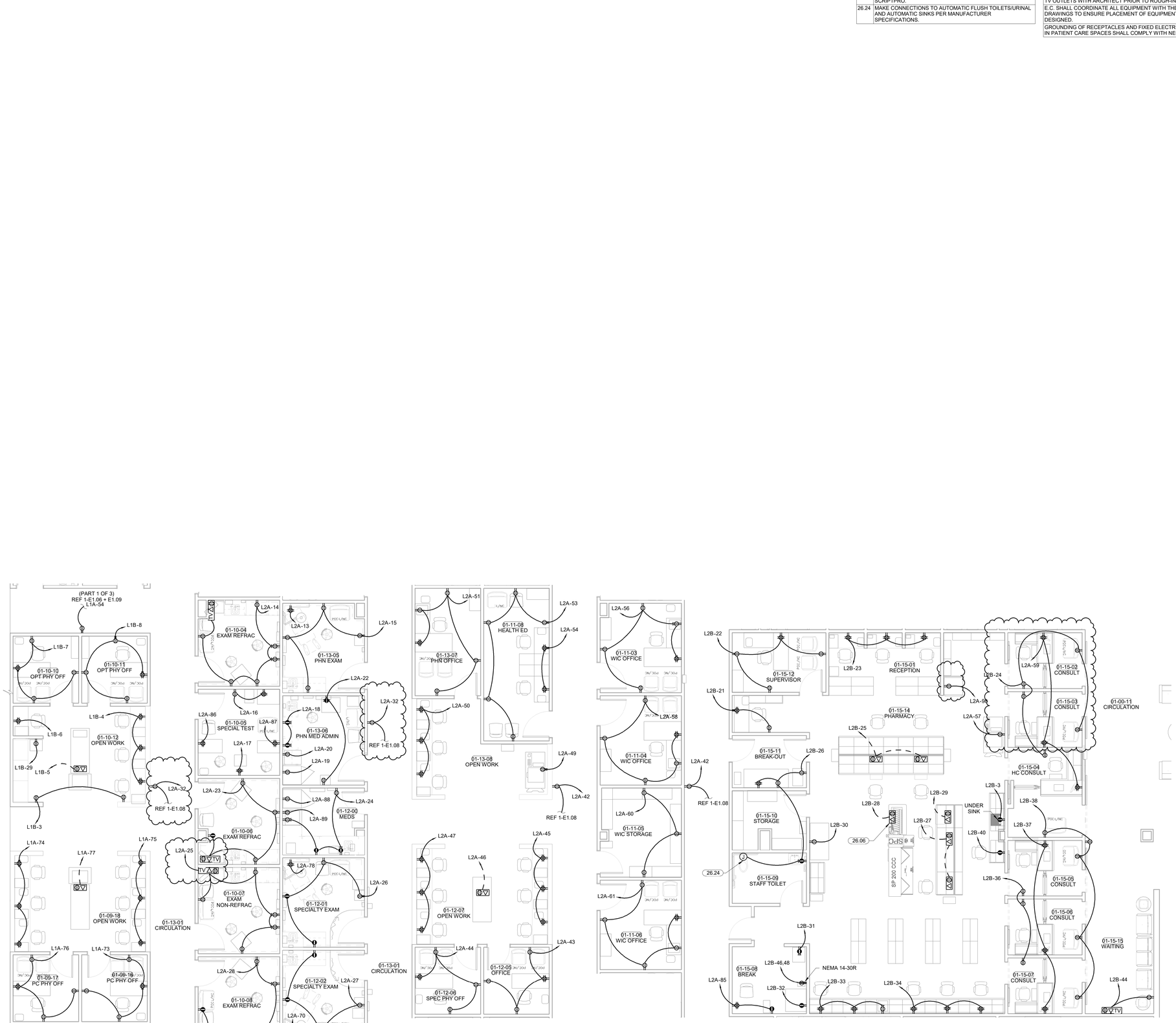
POWER PLAN LEVEL 01 SECTOR 01 N

KEYNOTES

26.06	CORDINATE POWER REQUIREMENT WITH SP 200 FROM SCRIPTPRO.
26.24	MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.

POWER PLAN NOTES

COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.
GROUNDING OF RECEPTACLES AND FIXED ELECTRICAL EQUIPMENT IN PATIENT CARE SPACES SHALL COMPLY WITH NEC 517.13.



PLAN NORTH

TRUE NORTH

1 POWER PLAN LEVEL 01 SECTOR 01 - CENTER

3/16" = 1'-0"

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.07

POWER PLAN
LEVEL 01
SECTOR 01 CTR

KEYNOTES

26.24	MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.

POWER PLAN NOTES

COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.
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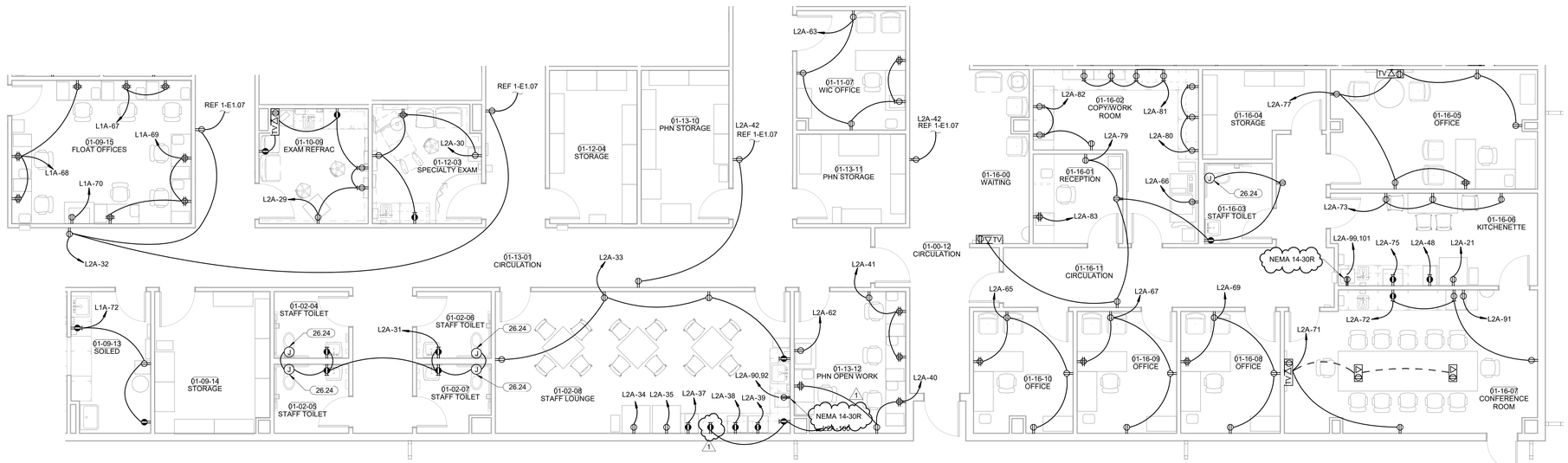

PLAN NORTH

TRUE NORTH

1 POWER PLAN LEVEL 01 SECTOR 01 - SOUTH

3/16" = 1'-0"

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01/10/2020

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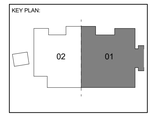
CLIENT:

TRIBAL SEAL OF THE CHEROKEE NATION ESTD. SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.08

POWER PLAN LEVEL 01 SECTOR 01 S

KEYNOTES

26.02	POWER FOR PROJECTOR OR PROJECTOR SCREEN. COORDINATE LOCATION WITH ARCHITECTURE PRIOR TO INSTALLING.
26.24	MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.

POWER PLAN NOTES

COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.

E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.

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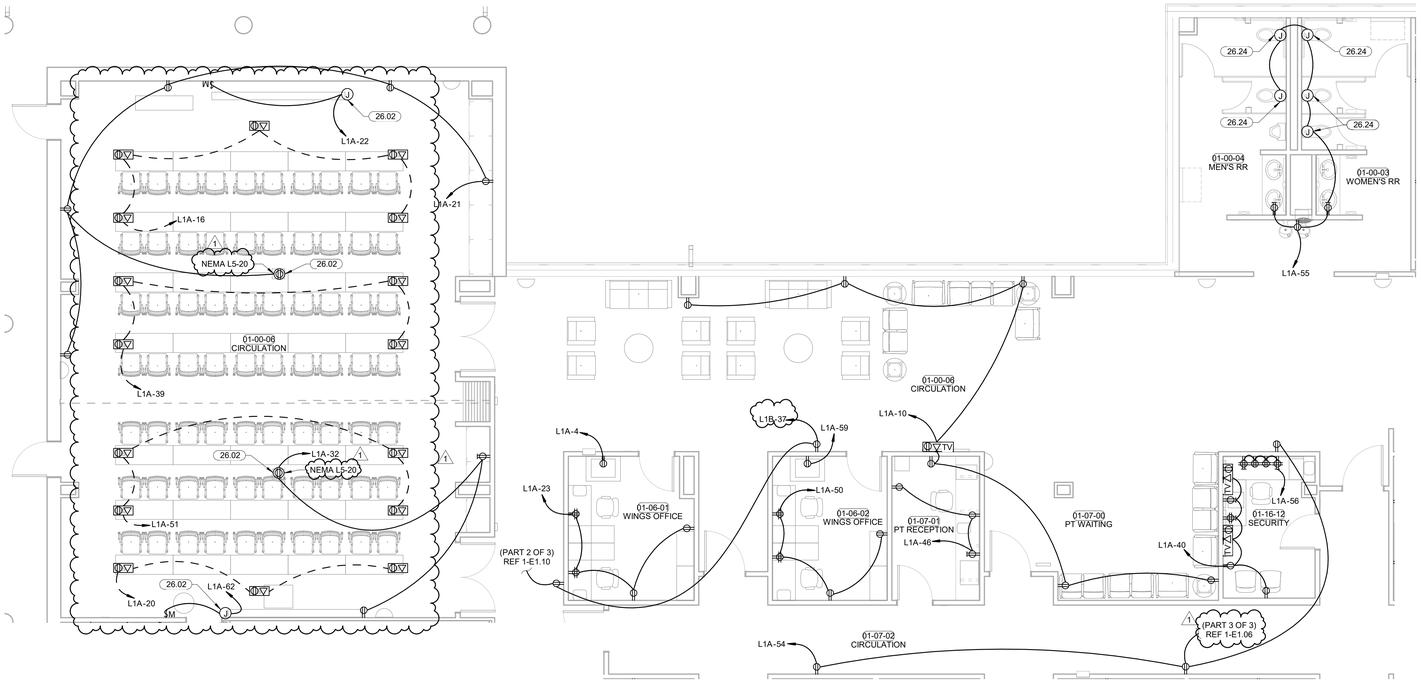

PLAN NORTH

TRUE NORTH

1 POWER PLAN LEVEL 01 SECTOR 02 - NORTH
3/16" = 1'-0"

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01/10/2020

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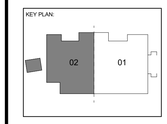
STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.09

POWER PLAN LEVEL 01 SECTOR 02 N

KEYNOTES

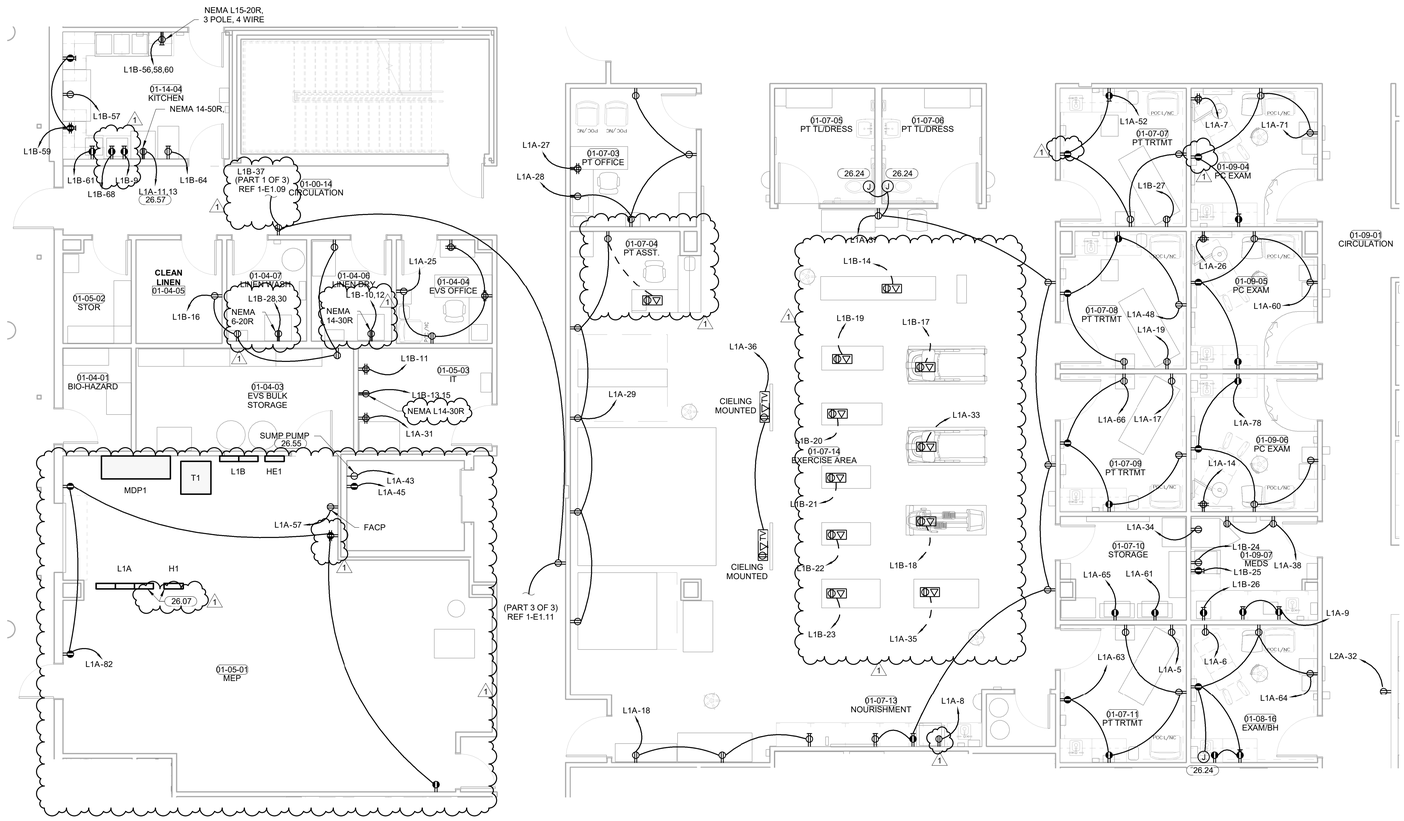
26.07	MOUNT PANELS AND DISCONNECTS ON UNISTRUT, E.C. TO FABRICATE IN FIELD. COORDINATE EXACT LOCATION AND CLEARANCES WITH PLUMBING AND MECHANICAL CONTRACTORS PRIOR TO ROUGH-IN
26.24	MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.
26.55	COORDINATE SUMP PUMP ALARM LOCATION WITH OWNER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH IN.
26.57	REFER TO SHEET E.05 DETAIL 4 FOR SHUT TRIP CONTROL DIAGRAM

POWER PLAN NOTES

COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.
GROUNDING OF RECEPTACLES AND FIXED ELECTRICAL EQUIPMENT IN PATIENT CARE SPACES SHALL COMPLY WITH NEC 517.13.

KITCHEN POWER NOTES

INTERLOCK DEVICES LOCATED UNDER KITCHEN HOOD WITH FIRE SUPPRESSION SYSTEM. DEVICES AND GAS CONNECTIONS SHALL BE AUTOMATICALLY SHUTOFF IN THE EVENT OF FIRE SUPPRESSION SYSTEM ACTIVATION. PROVIDE SHUNT-TRIP CAPABILITY FOR DEVICES LOCATED UNDER HOOD, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS.
INTERLOCK HOOD EXHAUST FAN, SUPPPLY FAN AND LIGHTS WITH FIRE SUPPRESSION SYSTEM. DEVICES SHALL BE AUTOMATICALLY SHUTOFF IF FIRE SUPPRESSION SYSTEM IS ACTIVATED.



1 **POWER PLAN LEVEL 01 SECTOR 02 - CENTER**
3/16" = 1'-0"

PLAN NORTH

TRUE NORTH

James R. Childers Architect, Inc.
45 South 4th Street
Fort Smith, AR 72901
479-783-2480
www.childersarchitect.com

PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER
Robert Brandon Pinkerton
23042
OKLAHOMA
(PASS/SHIPE)
01/10/2020

CONSULTANT LOGO:

HP ENGINEERING
PROJECT NO. 18068R
100 % COMPLETE

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CLIENT:

THE CHEROKEE NATION
TRIBAL SEAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

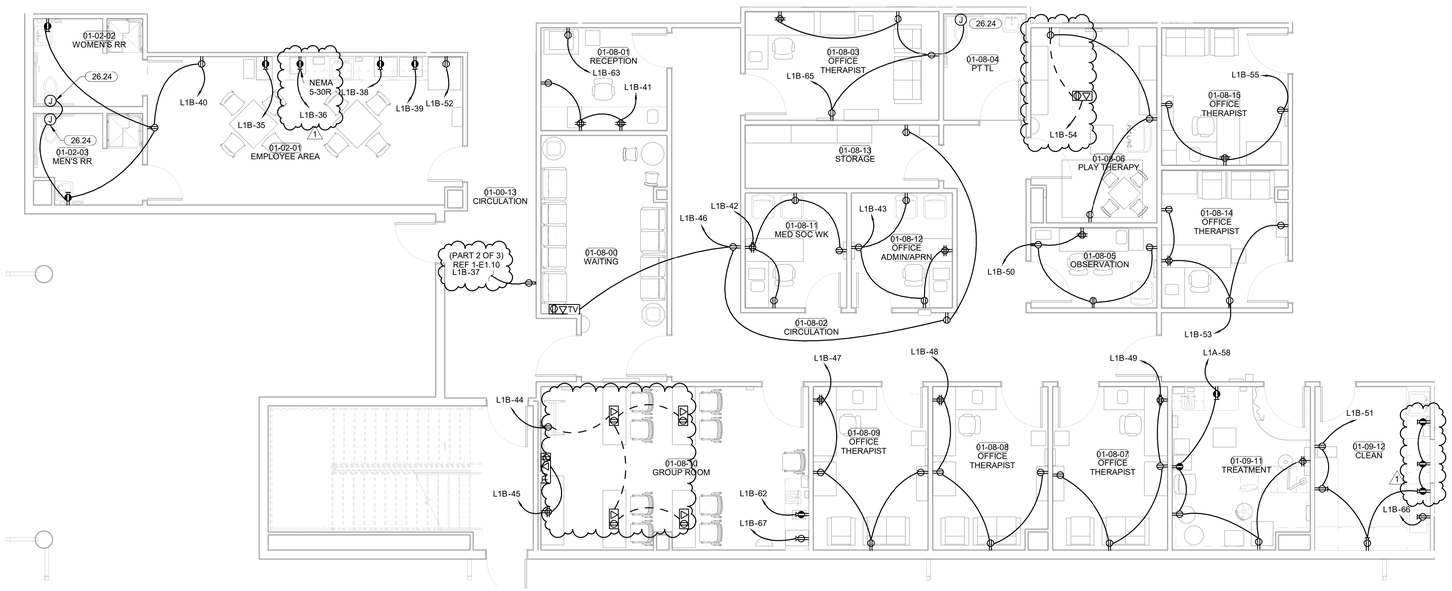
SHEET NUMBER:

E1.10

POWER PLAN LEVEL 01 SECTOR 02 CTR

KEYNOTES	
26.24	MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.

POWER PLAN NOTES
COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
E.C. SHALL COORDINATE ALL EQUIPMENT WITH THE ILO DESIGN DRAWINGS TO ENSURE PLACEMENT OF EQUIPMENT WORKS AS DESIGNED.
GROUNDING OF RECEPTACLES AND FIXED ELECTRICAL EQUIPMENT IN PATIENT CARE SPACES SHALL COMPLY WITH NEC 517.13.



PLAN NORTH

TRUE NORTH

1 POWER PLAN LEVEL 01 SECTOR 02 - SOUTH

3/16" = 1'-0"

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01/10/2020

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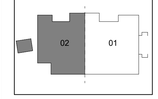
CLIENT:

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

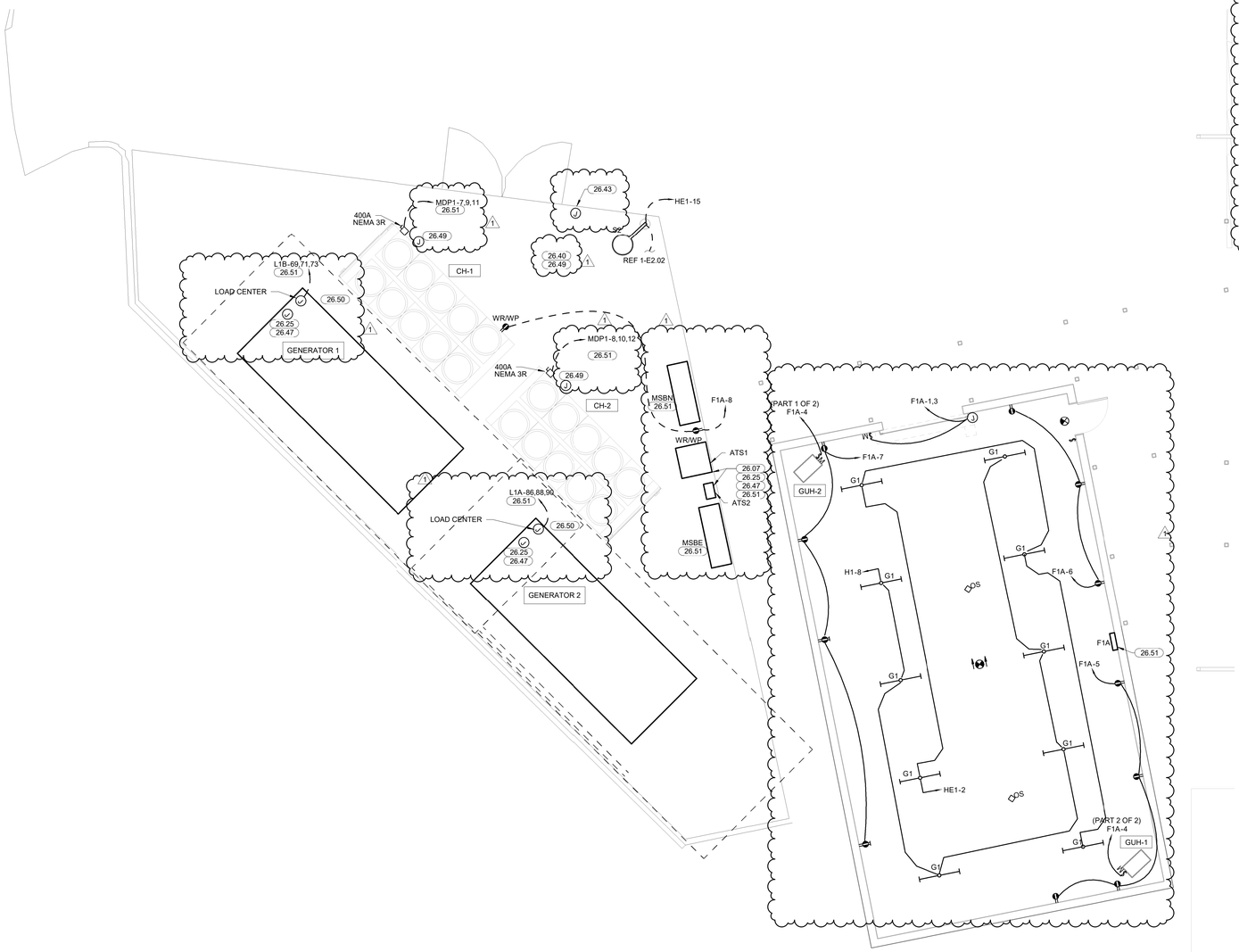
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.11

POWER PLAN
LEVEL 01
SECTOR 02 S



KEYNOTES	
26.07	MOUNT PANELS AND DISCONNECTS ON UNISTRUT, E.C. TO FABRICATE IN FIELD. COORDINATE EXACT LOCATION AND CLEARANCES WITH PLUMBING AND MECHANICAL CONTRACTORS PRIOR TO ROUGH-IN
26.25	PROVIDE 1" UNDERGROUND CONDUIT TO ACCESSIBLE CEILING SPACE IN MAIN BUILDING FOR GENERATOR CONTROLS.
26.40	PROVIDE 2-2" CONDUITS AND ASSOCIATED CONTROL CONDUITS FOR FUTURE CHILLER. COORDINATE STUB UP LOCATION WITH HYDRONIC PIPE LOCATIONS.
26.43	GENERATOR ESTOP LOCATION, CONDUITS AND CONDUCTORS SHALL BE ROUTED FROM GENERATORS TO THIS LOCATION. CONFIRM ALL REQUIREMENTS WITH GENERATOR MANUFACTURER PRIOR TO ROUGH IN.
26.47	PROVIDE CONDUIT AND CONTROL WIRES BETWEEN GENERATOR, ATS, AND ANNUNCIATOR LOCATIONS. ALL CONTROLS AND REQUIREMENTS SHALL BE COORDINATED WITH GENERATOR MANUFACTURER PRIOR TO INSTALLATION.
26.49	PROVIDE ALL CONDUITS REQUIRED FOR CONTROL WIRING. COORDINATE SIZE AND QUANTITY WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH IN. COORDINATE STUB UP LOCATIONS WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH IN. PROVIDE A PULL STRING IN ALL CONDUITS AND CAP ALL CONDUITS FOR FUTURE USE.
26.50	PROVIDE PERMEANT STEEL ACCESS STAIRS FOR GENERATORS CONFIRM LOCATION AND REQUIREMENTS WITH GENERATOR PROVIDER AND ARCHITECT PRIOR TO BID AND PURCHASE.
26.51	COORDINATE ALL UNDERGROUND CONDUITS AND FEEDERS WITH FOOTINGS PRIOR TO ROUGH IN.

1

PLAN NORTH

TRUE NORTH

1 MAINTENANCE/ MECHANICAL YARD POWER

3/16" = 1'-0"

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01/10/2020

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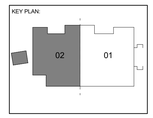
CLIENT:

TRIBAL SEAL OF THE CHEROKEE NATION ESTABLISHED SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE:	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: E1.13

MAINTENACE/ MECH YARD POWER/LIGHTING

MECHANICAL POWER PLAN NOTES

E.C.SHALL MAKE CONNECTIONS BETWEEN THE OUTDOOR AND INDOOR UNITS OF THE MINI-SPLIT SYSTEM.
EXHAUST FANS SHALL BE CIRCUITED WITH LIGHTS UNLESS SHOWN OTHERWISE. REFER TO MECHANICAL PLANS FOR CONTROLS OF EXHAUST FANS.
VAV DISCONNECTS ARE FACTORY INSTALLED.

PLAN NORTH

TRUE NORTH

1 MECHANICAL POWER PLAN LEVEL 01 SECTOR 01

1/8" = 1'-0"

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Robert Brandon Pinkerton
23042
OKLAHOMA
(NOT VALID UNLESS SIGNED)
01/10/2020

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TRIBAL SEAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: E1.14

MECH POWER PLAN LEVEL 01 SECTOR 01

MECHANICAL POWER PLAN NOTES

E.C.SHALL MAKE CONNECTIONS BETWEEN THE OUTDOOR AND INDOOR UNITS OF THE MINI-SPLIT SYSTEM.
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KITCHEN POWER NOTES

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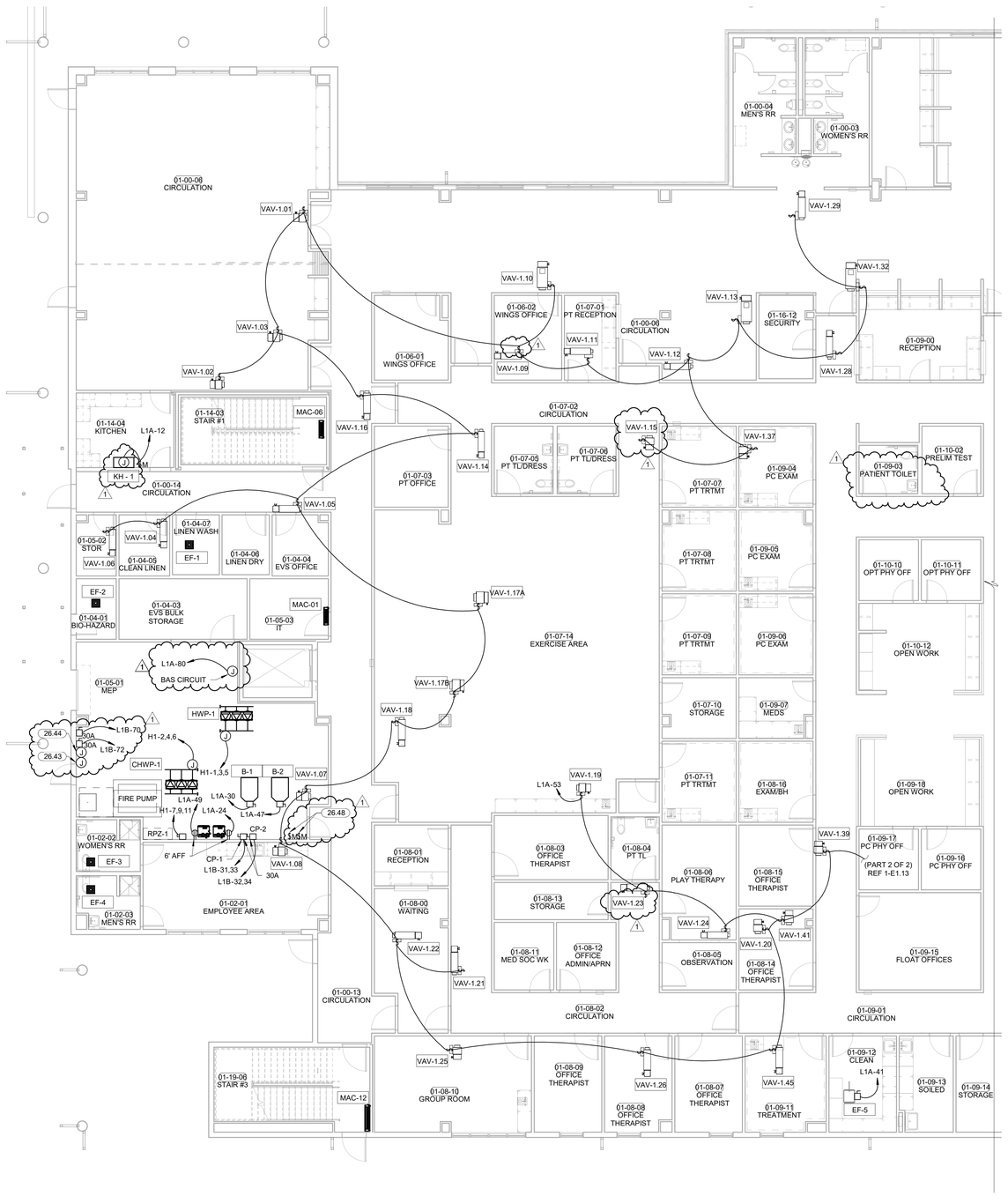
INTERLOCK HOOD EXHAUST FAN, SUPPPLY FAN AND LIGHTS WITH FIRE SUPPRESSION SYSTEM. DEVICES SHALL BE AUTOMATICALLY SHUTOFF IF FIRE SUPPRESSION SYSTEM IS ACTIVATED.

KEYNOTES

26.43	GENERATOR ESTOP LOCATION, CONDUITS AND CONDUCTORS SHALL BE ROUTED FROM GENERATORS TO THIS LOCATION. CONFIRM ALL REQUIREMENTS WITH GENERATOR MANUFACTURER PRIOR TO ROUGH IN.
26.44	GENERATOR ANNUNCIATOR PANEL LOCATION ALL CONDUITS AND CONDUCTORS SHALL BE ROUTED FROM GENERATORS TO THIS LOCATION. CONFIRM ALL REQUIREMENTS WITH GENERATOR MANUFACTURER PRIOR TO ROUGH IN.
26.48	E.C SHALL PROVIDE INDEPENDENT EMERGENCY SHUNT SWITCHES FOR BOILER SHUNT CONTROL. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MANUFACTURER PRIOR TO INSTALLATION.



PLAN NORTH

TRUE NORTH

1 MECHANICAL POWER PLAN LEVEL 01 SECTOR 02

1/8" = 1'-0"

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01/10/2020

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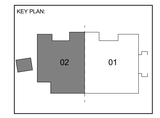
CLIENT:

THE CHEROKEE NATION
SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.15

MECH POWER PLAN LEVEL 01 SECTOR 02

MECHANICAL POWER PLAN NOTES

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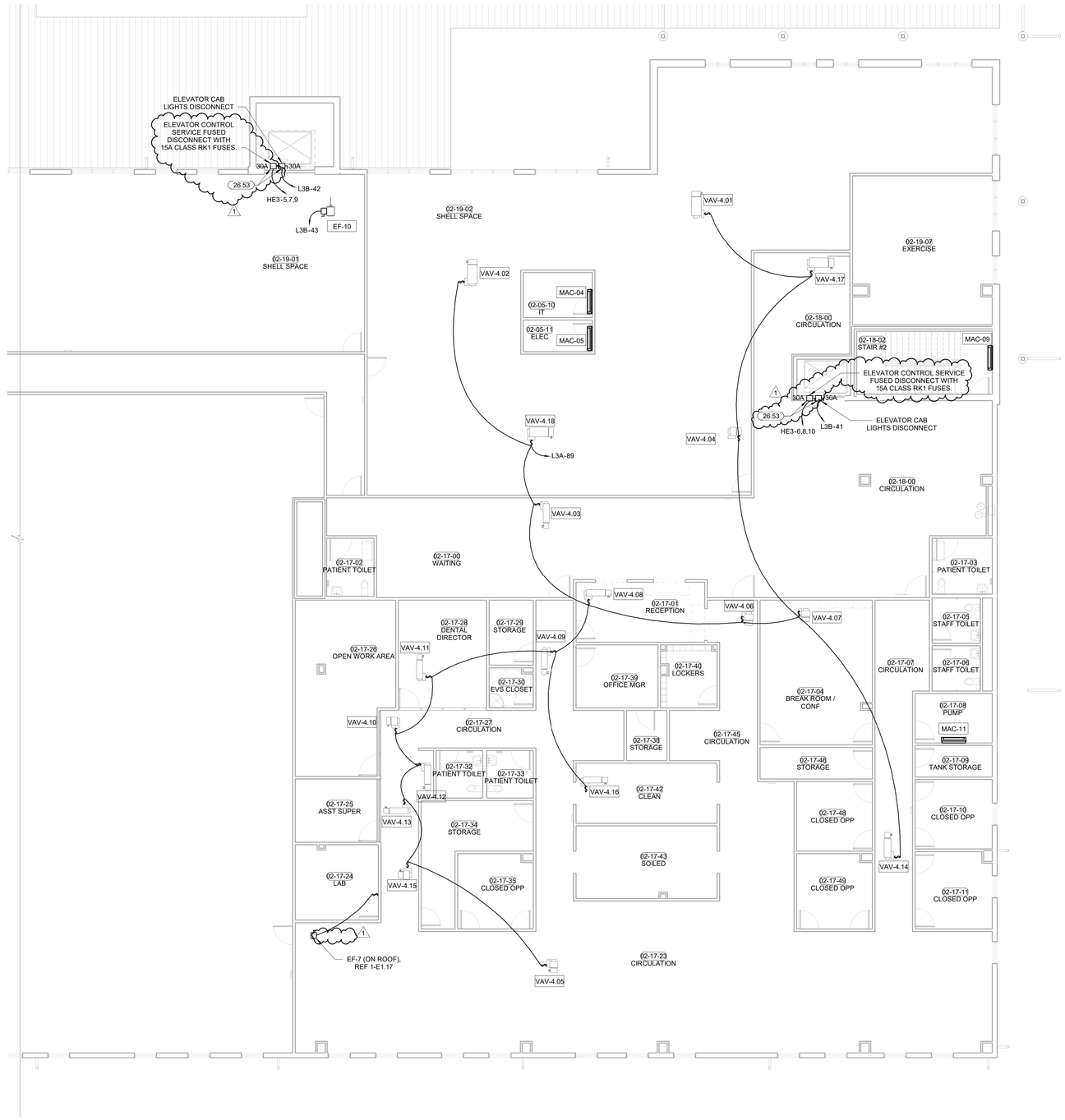
EXHAUST FANS SHALL BE CIRCUITED WITH LIGHTS UNLESS SHOWN OTHERWISE. REFER TO MECHANICAL PLANS FOR CONTROLS OF EXHAUST FANS.
VAV DISCONNECTS ARE FACTORY INSTALLED.

KEYNOTES

26.53	LOCATE ELEVATOR FUSED DISCONNECT INSIDE OF ELEVATOR CONTROL CABINET COORDINATE LOCATION WITH ELEVATOR INSTALLER PRIOR TO ROUGH IN.

1



PLAN NORTH

TRUE NORTH

1 MECHANICAL POWER PLAN LEVEL 02 SECTOR 01

1/8" = 1'-0"

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01/10/2020

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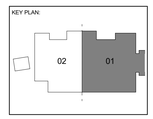
TRIBAL SEAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER:

E1.16

MECH POWER PLAN LEVEL 02 SECTOR 01

MECHANICAL POWER PLAN NOTES

MECHANICAL POWER PLAN NOTES
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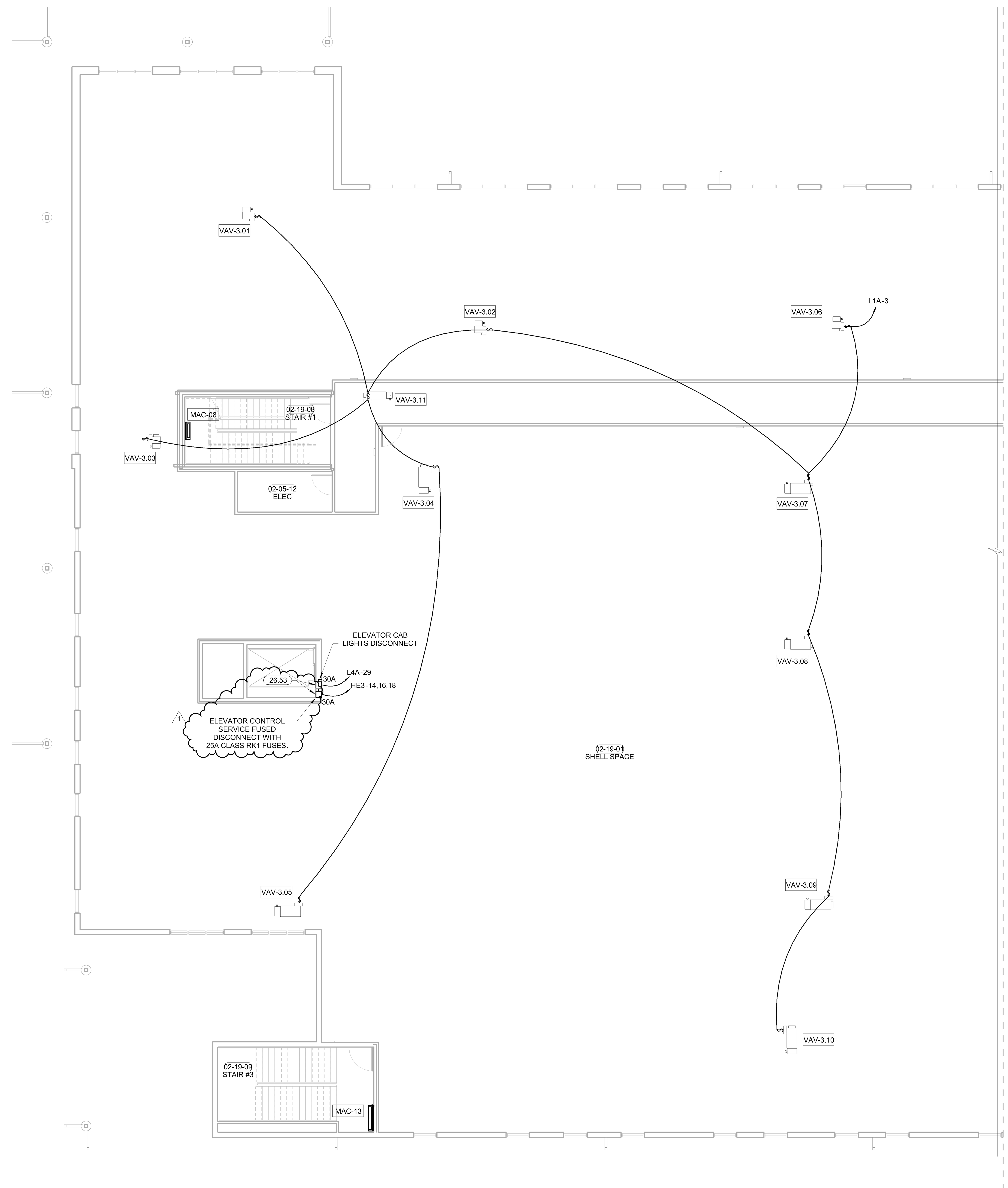
EXHAUST FANS SHALL BE CIRCUITED WITH LIGHTS UNLESS SHOWN OTHERWISE. REFER TO MECHANICAL PLANS FOR CONTROLS OF EXHAUST FANS.
VAV DISCONNECTS ARE FACTORY INSTALLED.

KEYNOTES

KEYNOTES	
26.53	LOCATE ELEVATOR FUSED DISCONNECT INSIDE OF ELEVATOR CONTROL CABINET COORDINATE LOCATION WITH ELEVATOR INSTALLER PRIOR TO ROUGH IN.

1



PLAN NORTH

TRUE NORTH

1 MECHANICAL POWER PLAN LEVEL 02 SECTOR 02

1/8" = 1'-0"

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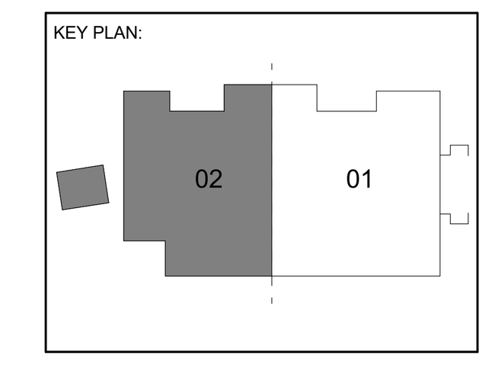

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
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DATE: 12-06-19

JOB NUMBER: 18-01.01

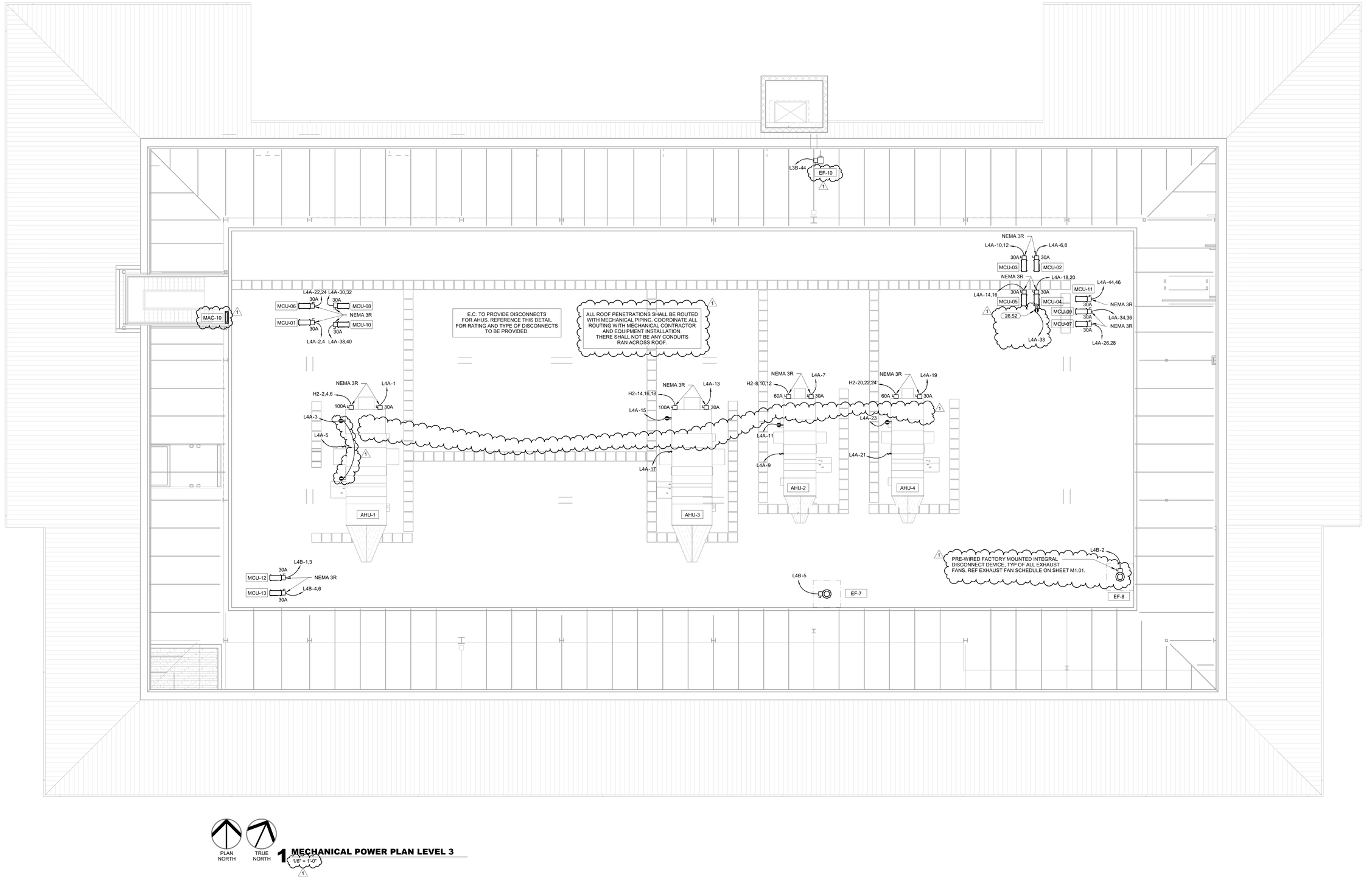
SHEET NUMBER:

E1.17

MECH POWER PLAN LEVEL 02 SECTOR 02

KEYNOTES

26.52	PROVIDE WEATHERPROOF BOX, METALLIC IN USE COVER, AND ALL REQUIRED MATERIALS FOR INSTALLATION OF GFI MAINTENANCE RECEPTACLE TO BE MOUNTED ON UNISTRUT WITH DISCONNECT.



PLAN NORTH

TRUE NORTH

1 MECHANICAL POWER PLAN LEVEL 3
1/8" = 1'-0"

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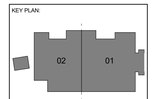


PROJECT PHASE:

BID PACKAGE 02

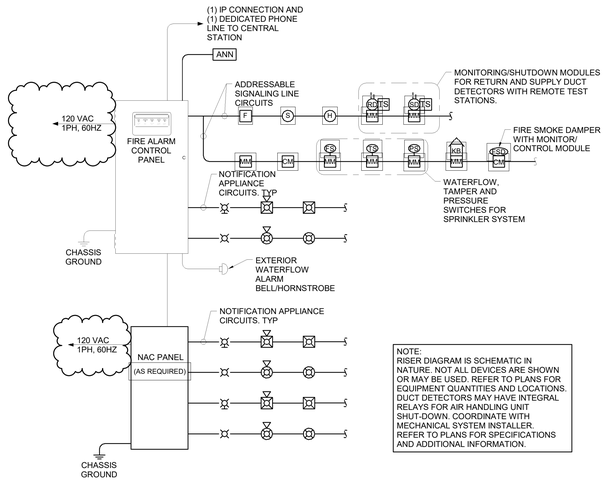
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

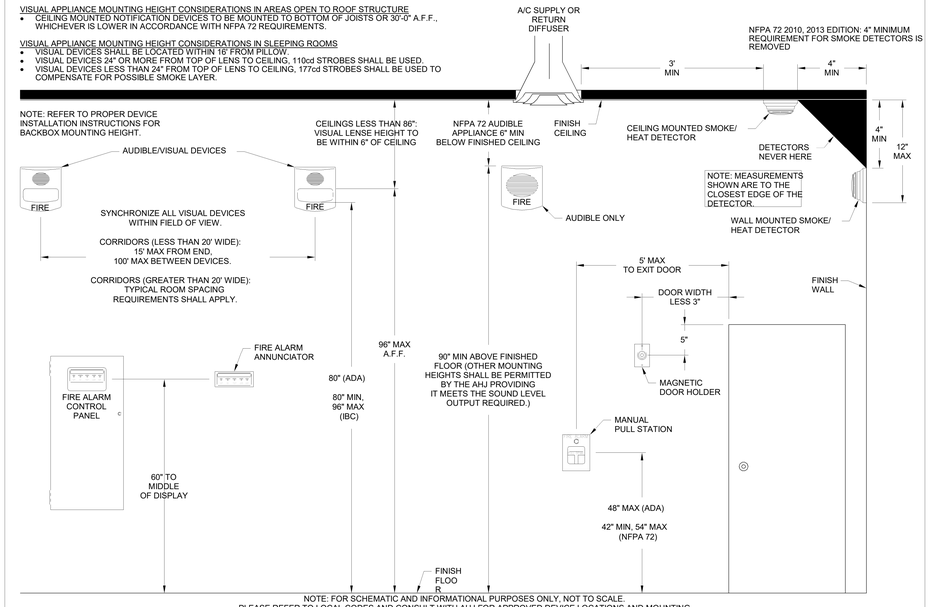
E1.18

MECH POWER PLAN ROOF



3 TYPICAL FIRE ALARM RISER DETAIL - EXISTING
N.T.S.

FIRE ALARM DEVICE MOUNTING HEIGHTS (PER NFPA 72)



2 FIRE ALARM MOUNTING HEIGHTS
N.T.S.

FIRE ALARM GENERAL NOTES

1	FIRE ALARM SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH NFPA 70 AND NFPA 72. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO BID SUBMITTAL
2	INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. PERFORM REQUIRED CALCULATIONS AND COORDINATE WITH OTHER TRADES. DEVIATIONS FROM ENGINEERS LAYOUT WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED
3	PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER
4	PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM
5	AUDIBLE NOTIFICATION DEVICES SHALL SOUND UNTIL SILENCED AT THE CONTROL PANEL OR REMOTE ANNUNCIATOR AS REQUIRED. VISUAL ALARM IS DISPLAYED UNTIL DEVICE IS RETURNED TO ITS NORMAL POSITION OR SUPERVISORY CONDITION IS CLEARED
6	FORWARD COMPLETED FIRE ALARM CERTIFICATE OF COMPLETION TO THE OWNER
7	REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
8	PROVIDE CONNECTION TO EXTERIOR WATERFLOW ALARM BELL AS REQUIRED
9	PROVIDE NOTIFICATION, INITIATING AND MONITORING DEVICES AS INDICATED ON THE DRAWINGS. FIRE ALARM DEVICES SHALL BE OF ONE MANUFACTURER AND SHALL BE LISTED FOR USE WITH THE FIRE ALARM CONTROL PANEL
10	PROVIDE NOTIFICATION APPLIANCE CIRCUIT PANEL(S) TO POWER NOTIFICATION DEVICES AS REQUIRED. CONNECT TO FIRE ALARM SYSTEM
11	THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR LOCATIONS SHOWN SHALL BE COORDINATED WITH THE FIRE DEPARTMENT AND AHJ PRIOR TO INSTALLATION
12	PROVIDE DEDICATED CONNECTION OF THE FIRE ALARM SYSTEM TO A UL LISTED CENTRAL STATION
13	PROVIDE KNOX BOX FOR FIRE DEPARTMENT ACCESS. CONNECT TAMPER SWITCH TO FIRE ALARM SYSTEM AS REQUIRED
14	AIR HANDLING SYSTEMS THAT ARE MONITORED SHALL SHUTDOWN AND REMAIN DOWN UNTIL MANUALLY RESET
15	ROOF TOP AIR DISTRIBUTION SYSTEMS EXCEEDING 2,000 CFM: PROVIDE DUCT MOUNTED SMOKE DETECTORS FOR AIR HANDLING UNIT SHUTDOWN AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MONITOR MODULE FOR SUPPLY AIR DUCT DETECTOR AND RELAY/MONITOR MODULE FOR RETURN AIR DUCT DETECTOR. REFER TO MECHANICAL SHEETS FOR AIR HANDLING UNIT AND DUCTWORK LAYOUT AND DETAILS
16	DUCT SMOKE DETECTION SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE FACP

FIRE ALARM INSTALLATION NOTES

1	SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 72 AND LOCAL CODES AND REGULATIONS. ALL EQUIPMENT AND MATERIALS SHALL BE UL LISTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION
2	INTERFACE WITH AND MONITOR ALL FIRE SUPPRESSION SYSTEM DEVICES INCLUDING (BUT NOT LIMITED TO) SPRINKLER FLOW AND TAMPER SWITCHES
3	WIRE AND CABLE SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760. SIGNALING LINE CIRCUITS TO BE TWISTED, SHIELDED PAIR, SIZED AS RECOMMENDED BY SYSTEM MANUFACTURER. NONPOWER-LIMITED CIRCUITS TO BE SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C, COLOR-CODED INSULATION. 9.1 LOW-VOLTAGE CIRCUITS: NO. 16 AWG, MINIMUM 9.2 LINE-VOLTAGE CIRCUITS: NO. 12 AWG, MINIMUM
4	INSTALL AND TEST SYSTEMS ACCORDING TO NFPA 72. COMPLY WITH NECA 1
5	TEST ALL SYSTEM DEVICES FOR PROPER OPERATION IN THE PRESENCE OF THE AHJ AND OTHER OFFICIALS INSPECTING THE FIRE ALARM SYSTEM
6	IF REQUIRED BY THE LOCAL AHJ, EQUIPMENT DATA SHEETS AND BATTERY CALCULATIONS IN ACCEPTANCE WITH NFPA 72 SHALL BE PERFORMED BY THE FIRE ALARM SYSTEM MANUFACTURER/INSTALLER TO MATCH EQUIPMENT TO BE INSTALLED
7	SYSTEM INSTALLER SHALL BE A LICENSED FIRE ALARM CONTRACTOR IN THE RESPECTIVE STATE OF THIS PROJECT
8	FIRE ALARM CONTROL PANEL SHALL BE MODULAR, POWER-LIMITED DESIGN WITH ELECTRONIC MODULES, UL 864 LISTED, AND DESIGNED TO TRANSMIT ALARM, TROUBLE, AND SUPERVISORY SIGNALS TO A UL LISTED CENTRAL STATION THROUGH A DIGITAL ALARM COMMUNICATOR TRANSMITTER WITH (1) ETHERNET PORT CONNECTION AND (1) DEDICATED TELEPHONE LINE
9	PROVIDE 120VAC POWER THROUGH DEDICATED LOCKING BREAKER AT POWER PANEL
10	GROUND THE FACP AND ALL ASSOCIATED CIRCUITS
11	INSTALL A #6 AWG GROUND WIRE FROM THE TELE-COMMUNICATIONS EQUIPMENT GROUNDING POINT TO THE FACP
12	SYSTEM SHALL INCLUDE 24V DC POWER SYSTEM WITH SEALED LEAD CALCIUM BATTERIES AND AUTOMATIC BATTERY CHARGER IN ACCORDANCE WITH NFPA 72
13	PROVIDE (1) IP CONNECTION TO CUSTOMERS INTERNET NETWORK AND (1) DEDICATED TELEPHONE LINE TERMINATED WITH (1) RJ-31X MODULAR OUTLET AT DACT LOCATION

FIRE ALARM LEGEND

S	SMOKE DETECTOR
H	HEAT DETECTOR
D	DUCT DETECTOR
	WALL MOUNT HORN STROBE
	CEILING MOUNT HORN STROBE
	WALL MOUNT STROBE
	CEILING MOUNT STROBE
F	PULL STATION
ANN	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FS	SPRINKLER FLOW SWITCH
T S	SPRINKLER TAMPER SWITCH
MM	FIRE ALARM MONITOR MODULE
CM	FIRE ALARM CONTROL MODULE

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LICENSED PROFESSIONAL ENGINEER
Robert Brandon Pinkerton
23042
OKLAHOMA
(PAPER SIGNED)
01/10/2020

CONSULTANT LOGO:
HP ENGINEERING
PROJECT NO. 18068R
100 % COMPLETE
HP ENGINEERING INC.
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SUITE 120
ROGERS, AR 72758
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www.hpengineeringinc.com

CLIENT:
TRIBAL SEAL OF THE CHEROKEE NATION EST. SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

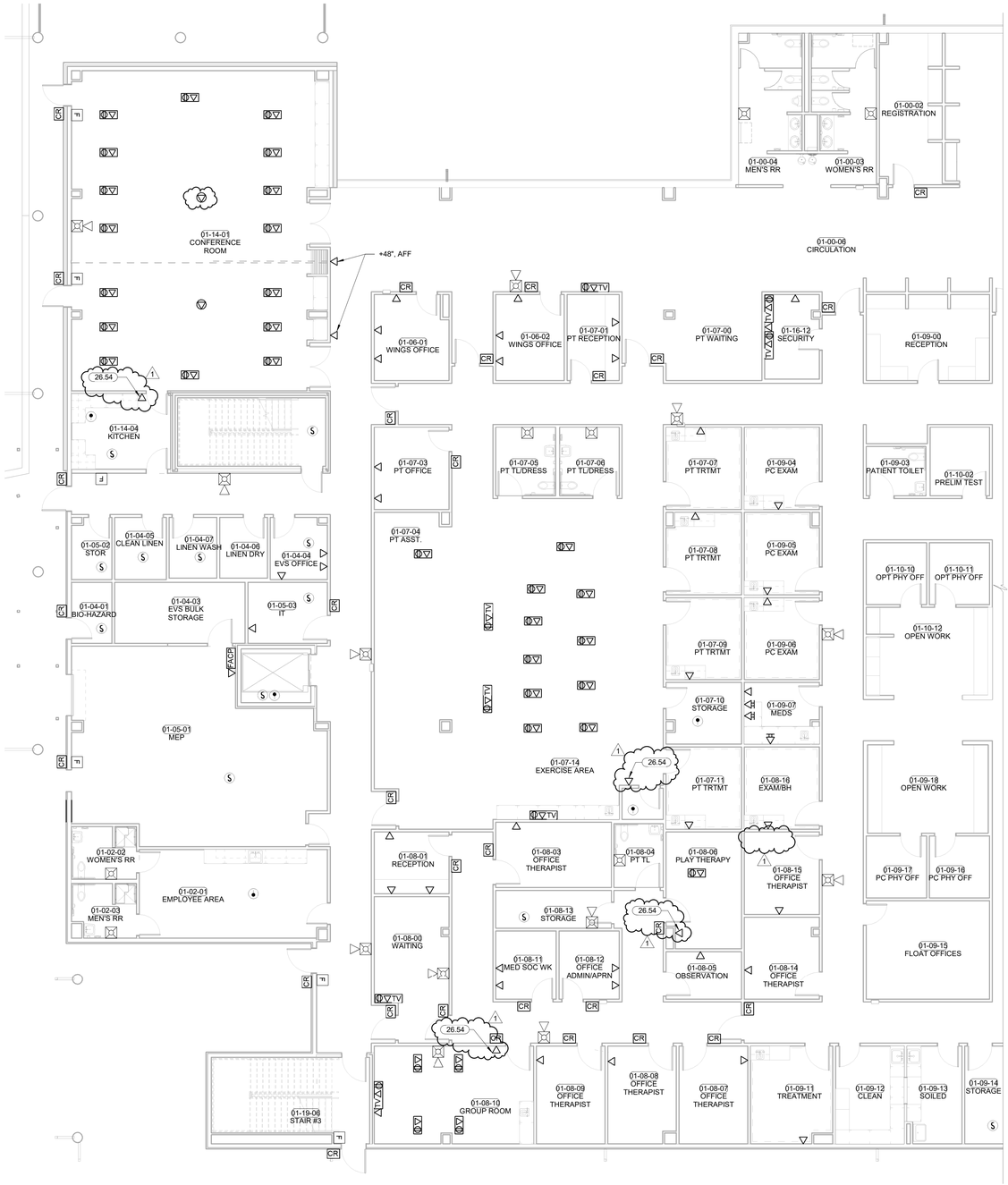
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: E1.19

FIRE ALARM LEGEND AND NOTES

KEYNOTES

26.54	WALL-MOUNTED TELEPHONE TO BE SPECIFIED BY OWNER. MOUNT AT +48" UNLESS DIRECTED OTHERWISE BY OWNER.



PLAN NORTH

TRUE NORTH

1 SYSTEMS PLAN LEVEL 01 SECTOR 02

1/8" = 1'-0"

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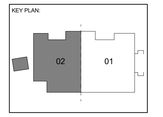


PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

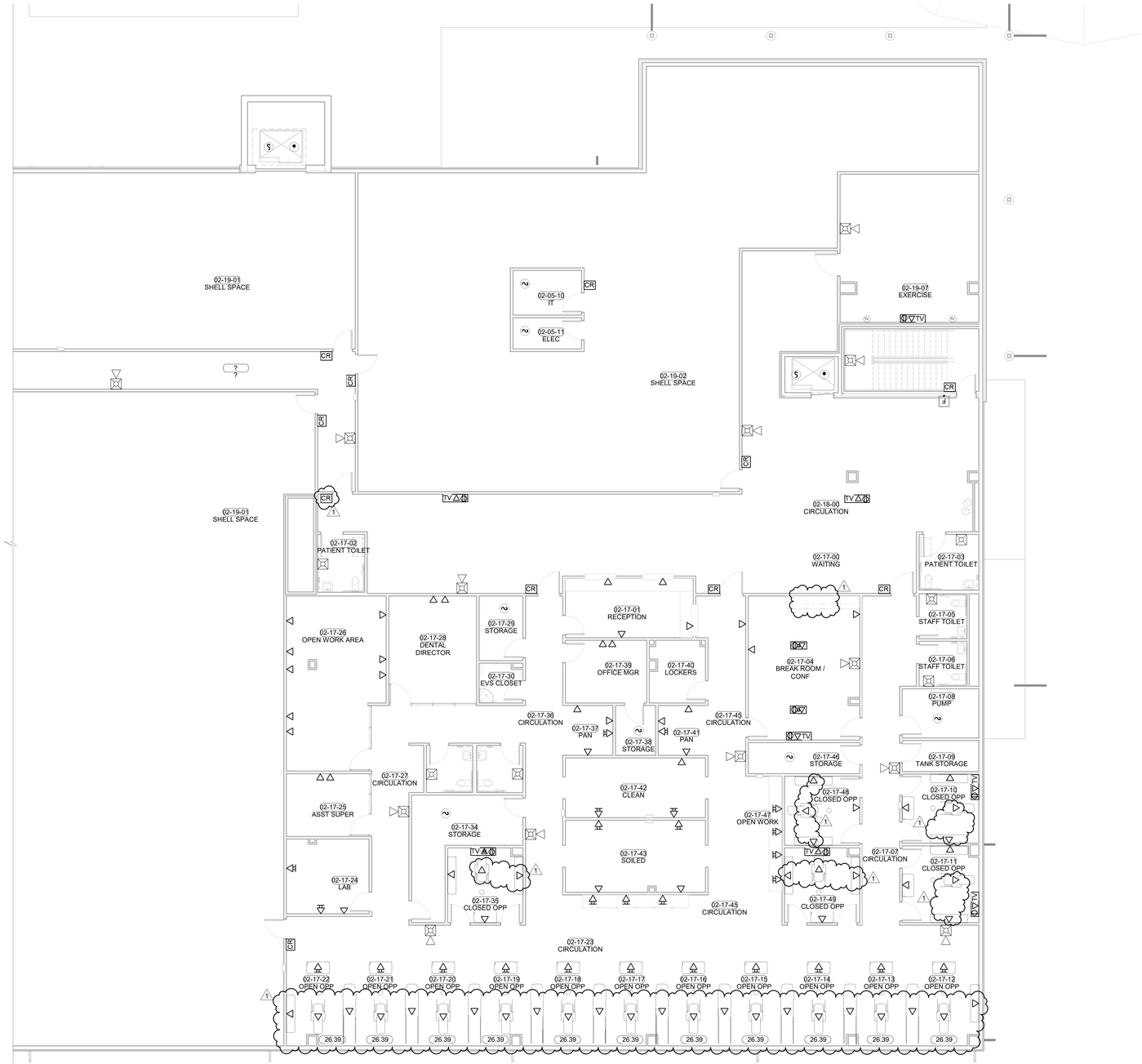
SHEET NUMBER:

E1.21

SYSTEMS PLAN LEVEL 01 SECTOR 02

KEYNOTES

26.39	REFER TO ADEC DRAWINGS AND PROVIDE A CONTINUOUS CONDUIT PATH AS DRAWN IN THE ADEC PLAN.



PLAN NORTH / TRUE NORTH

1 SYSTEMS PLAN LEVEL 02 SECTOR 01
1/8" = 1'-0"

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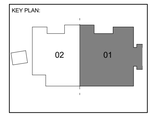
STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

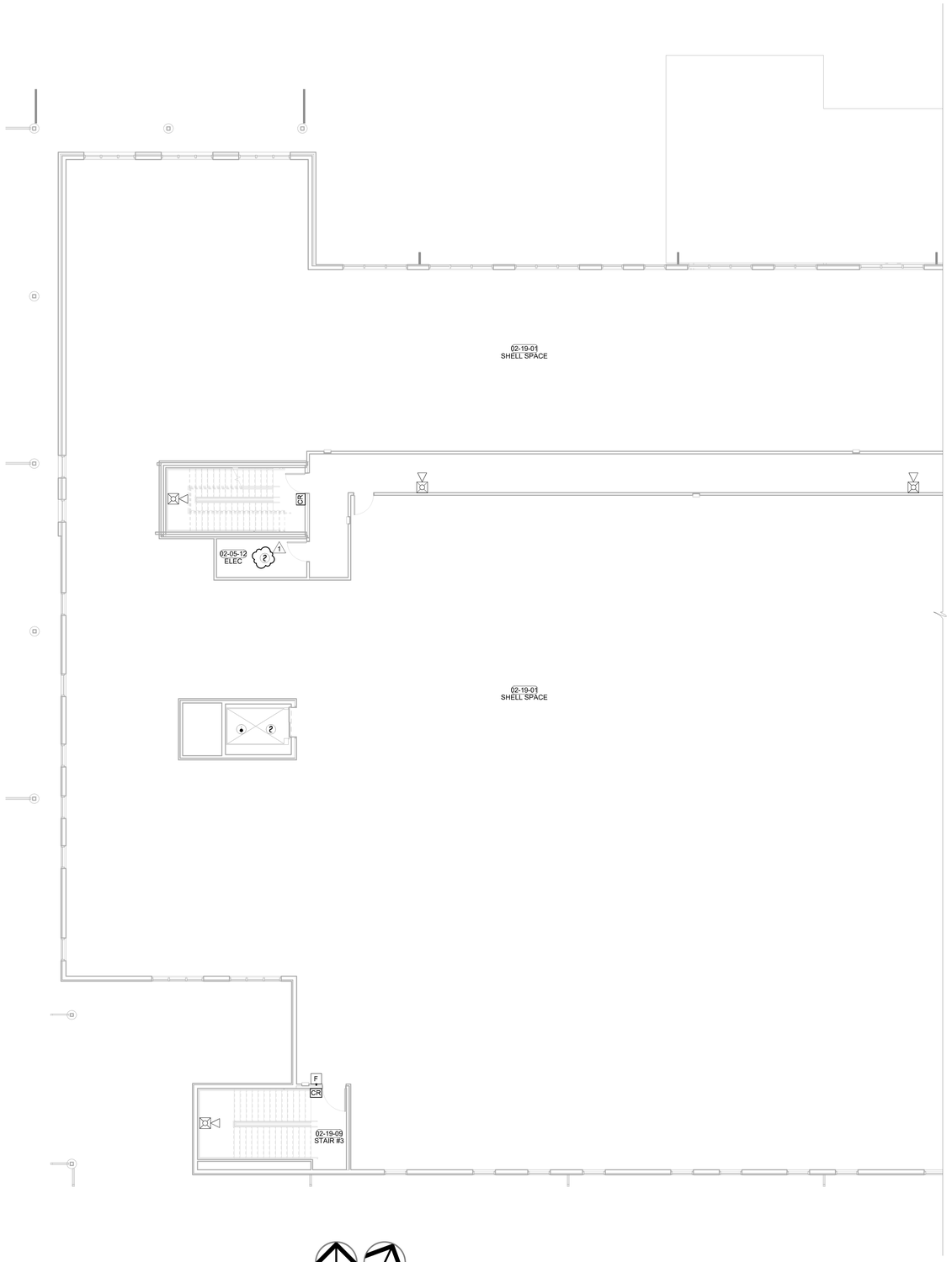
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E1.22

SYSTEMS PLAN LEVEL 02 SECTOR 01



PLAN NORTH

TRUE NORTH

1 SYSTEMS PLAN LEVEL 02 SECTOR 02

1/8" = 1'-0"

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STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

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SHEET NUMBER:

E1.23

SYSTEMS PLAN LEVEL 02 SECTOR 02

LUMINAIRE SCHEDULE

NOTES:
1. EC SHALL PROVIDE A SUBMITTAL PACKAGE INCLUDING CUTSHEETS FOR EACH FIXTURE.
2. EC SHALL PROVIDE ALL ACCESSORIES FOR A COMPLETE ASSEMBLY INCLUDING MOUNTING HARDWARE.
3. THE MOUNTING TYPE OF EACH FIXTURE SHALL BE COMPATIBLE WITH INSTALLATION SURFACE OF EACH FIXTURE.
4. ALL FINISHES SHALL BE COORDINATED WITH ARCHITECT AND DOCUMENTED ON SUBMITTALS.

TYPE	LAMP	BALLAST / DRIVER	VOLTS	WATTS	DESCRIPTION	MANUFACTURER
A1	LED, 3500K	10-100%	120/277	32 W	2X4, TROFFER, CENTER BASKET TROFFER, 4000LM, 80CRI	VISIONEERING - LRTF
A2	LED, 3500K	10-100%	120/277	32 W	2X4, TROFFER, CENTER BASKET TROFFER, 3800LM, 80CRI	VISIONEERING - LRTF
C1	LED, 3500K	10-100%	120/277	12 W	6", RECESSED, DOWNLIGHT, 1300LM, 80CRI	VANTAGE - V6CER
E1	(2) LED	BATTERY	120/277	2 W	EMERGENCY LIGHT, SELF DIAGNOSTIC	MULE LIGHTING INC - SQ-LED
G1	LED, 3500K	10-100%	120/277	35 W	4' SURFACE STRIP, 4000LM, 80CRI	VISIONEERING - LCOMN
G2	LED, 3500K	10-100%	120/277	40 W	4' LED STAIRWELL FIXTURE, 4767LM, 80CRI	ILP-CV
G3	LED, 3500K	10-100%	120/277	35 W	4' LED SEALED VAPOR B, 4000LM, 80CRI	VISIONEERING - LSVB
L2	LED, 3500K	10-100%	120/277	36 W	4"X2' :LINEAR RECESSED FLUSH MOUNT FIXTURE 500LM/FT, 80CRI	LUX - EOS
L4	LED, 3500K	10-100%	120/277	72 W	4"X4' :LINEAR RECESSED FLUSH MOUNT FIXTURE 500LM/FT, 80CRI	LUX - EOS
L5	LED, 4000K	10-100%	120/277	38 W	4"X4' :LINEAR RECESSED FLUSH MOUNT FIXTURE 650LM/FT, 90CRI	FORUM AQR-F SERIES
L6	LED, 3500K	10-100%	120/277	109 W	4"X6' :LINEAR RECESSED FLUSH MOUNT FIXTURE 500LM/FT, 80CRI	LUX - EOS
S2	LED, 4000K	STANDARD	120/277	494 W	25' POLE LIGHT, FORWARD THROW,30000LM,	LSI - MRM
S3	LED, 4000K	STANDARD	120/277	500 W	25' POLE LIGHT, FORWARD THROW, 30000LM,	LSI - MRM
S4	LED, 3500K	10-100%/BATTERY	120/277	14 W	7' 2" WEATHER PROOF AREA LIGHT	IN-LIGHTING KHA SLIM
W1	LED, 4000K	STANDARD	120/277	45 W	WALL PACK, TRAPEZOID, 6000LM, 70CRI	LSI-XWM
X	LED	N/A	120/277	5 W	EXIT SIGN, SELF DIAGNOSTIC, RED LETTERS, WHITE	SURE LITES - UNH
X1	LED	BATTERY	120/277	5 W	EXIT SIGN, EDGELIT, AC ONLY	MULE LIGHTING INC

1

CRESTRON PART NUMBER	SCHEDULE NUMBER
GLPP1SW-1OS-OCC	1
GLPP1SW-JKP-1OS-OCC	2
GLPP1DIM-JKP-1OS-OCC	3
GLPP1SW-JKP-JKP-1OS-OCC	4
GLPP1SW-KJP	5
CORRIDOR	6
STAIRWELL	7
GLPP1SW-2QUAD-OCC	8
GLPP2SW-JKP-JKP-1OS-OCC	9
GLPP1SW-2OS-OCC	10
GLPAC4-AKP-AKP-2OS-OCC-1PART	11
GLPP1SW-4OS-OCC	12
GLPP1SW-JKP-JKP	13
SHELL SPACE	14

1

ZONE	EGRESS	OCCUPANY SENSOR TYPE	SWITCH TYPE	CRESTRON PART NUMBER
1	YES	CEILING	NA	6
2	YES	CEILING	KEYPAD	2
3	NO	CEILING	NA	1
4	NO	CEILING	KEYPAD	2
5	NO	CEILING	KEYPAD	2
6	NO	CEILING	KEYPAD	2
7	YES	CEILING	KEYPAD	2
8	YES	CEILING	NA	6
9	YES	CEILING	KEYPAD	2
10	YES	CEILING	KEYPAD	2
11	YES	CEILING	KEYPAD	2
12	YES	CEILING	KEYPAD	2
13	YES	CEILING	KEYPAD	4
14	YES	CEILING	KEYPAD	2
15	YES	CEILING	KEYPAD	2
16	YES	CEILING	KEYPAD	2
17	YES	CEILING	KEYPAD	3
18	YES	NA	KEYPAD	5
19	NA	NA	MANUAL	NA
20	NO	CEILING	NA	1
21	NO	CEILING	NA	1
22	YES	CEILING	NA	6
23	YES	CEILING	NA	6
24	YES	CEILING	NA	6
25	YES	CEILING	NA	7
26	YES	CEILING	NA	1
27	YES	CEILING	KEYPAD	2
28	YES	CEILING	KEYPAD	3
29	YES	CEILING	KEYPAD	2
30	YES	CEILING	NA	1
31	YES	CEILING	NA	1
32	YES	CEILING	KEYPAD	3
33	NO	CEILING	KEYPAD	2
34	NO	CEILING	KEYPAD	2
35	YES	CEILING	KEYPAD	3
36	YES	CEILING	KEYPAD	2
37	YES	CEILING	KEYPAD	2
38	YES	CEILING	NA	1
39	NO	CEILING	KEYPAD	2
40	NO	CEILING	KEYPAD	2
41	YES	CEILING	NA	10
42	YES	CEILING	NA	1
43	YES	CEILING	NA	6
44	YES	CEILING	NA	1
45	YES	CEILING	KEYPAD	3
46	NO	CEILING	KEYPAD	2
47	YES	CEILING	NA	10
48	NO	CEILING	KEYPAD	2
49	YES	CEILING	NA	1
50	YES	CEILING	NA	1
51	YES	CEILING	KEYPAD	3
52	YES	CEILING	KEYPAD	2
53	NO	CEILING	NA	1
54	NO	CEILING	NA	1
55	YES	CEILING	NA	1
56	YES	CEILING	KEYPAD	3
57	YES	CEILING	KEYPAD	2
58	NO	CEILING	KEYPAD	2
59	YES	CEILING	NA	1
60	YES	CEILING	NA	1
61	YES	CEILING	NA	1
62	NO	CEILING	KEYPAD	2
63	NO	CEILING	KEYPAD	2
64	YES	CEILING	KEYPAD	3
65	YES	CEILING	KEYPAD	2
66	NO	CEILING	KEYPAD	2
67	NO	CEILING	KEYPAD	2
68	NO	CEILING	KEYPAD	2
69	YES	CEILING	NA	1
70	YES	CEILING	NA	1
71	YES	CEILING	NA	6
72	YES	CEILING	KEYPAD	2
73	YES	CEILING	KEYPAD	3
74	YES	CEILING	KEYPAD	2
75	NO	CEILING	NA	1
76	NO	CEILING	NA	1
77	NO	CEILING	NA	1
78	YES	CEILING	NA	1

ZONE	EGRESS	OCCUPANCY SENSOR TYPE	SWITCH TYPE	CRESTRON PART NUMBER
79	YES	CEILING	NA	1
80	NO	CEILING	NA	1
81	YES	CEILING	NA	1
82	YES	CEILING	KEYPAD	2
83	NO	CEILING	NA	1
84	NO	CEILING	KEYPAD	2
85	YES	CEILING	NA	1
86	YES	CEILING	NA	1
87	YES	CEILING	NA	1
88	YES	CEILING	NA	10
89	YES	CEILING	KEYPAD	2
90	NO	CEILING	KEYPAD	2
91	YES	CEILING	NA	6
92	NO	CEILING	NA	2
93	NO	CEILING	NA	2
94	YES	CEILING	NA	1
95	YES	CEILING	KEYPAD	9
96	YES	CEILING	KEYPAD	11
98	YES	CEILING	NA	6
99	YES	CEILING	NA	10
100	YES	CEILING	NA	10
101	YES	CEILING	NA	1
102	NO	CEILING	KEYPAD	2
103	NO	CEILING	KEYPAD	2
104	YES	CEILING	KEYPAD	2
105	YES	CEILING	KEYPAD	2
106	YES	CEILING	KEYPAD	4
107	YES	CEILING	NA	7
108	YES	CEILING	NA	6
109	YES	CEILING	NA	6
110	YES	CEILING	KEYPAD	2
111	YES	CEILING	NA	1
112	YES	CEILING	NA	1
113	YES	CEILING	NA	1
114	YES	CEILING	NA	1
115	NO	CEILING	NA	1
116	NO	CEILING	NA	1
117	NO	CEILING	NA	1
118	NO	CEILING	NA	1
119	NO	CEILING	KEYPAD	2
120	YES	CEILING	NA	12
121	YES	CEILING	NA	1
122	YES	CEILING	NA	1
123	NO	CEILING	NA	1
124	NO	CEILING	NA	1
125	YES	NA	KEYPAD	5
126	YES	CEILING	NA	1
127	YES	CEILING	NA	1
128	NA	NA	MANUAL	NA
129	YES	CEILING	NA	1
130	YES	CEILING	NA	1
131	YES	CEILING	NA	1
132	YES	CEILING	NA	1
133	NO	SWITCH	NA	1
134	YES	CEILING	NA	1
135	YES	CEILING	NA	1
136	YES	CEILING	NA	1
137	YES	CEILING	NA	10
138	YES	CEILING	KEYPAD	2
139	YES	CEILING	NA	1
140	YES	CEILING	NA	1
141	YES	CEILING	KEYPAD	2
142	YES	CEILING	NA	1
143	YES	CEILING	NA	1
144	YES	CEILING	NA	6
145	NO	CEILING	NA	1
147	YES	CEILING	KEYPAD	2
148	YES	CEILING	KEYPAD	2
149	YES	CEILING	KEYPAD	2
150	YES	CEILING	NA	1
151	YES	CEILING	KEYPAD	2
152	YES	CEILING	KEYPAD	2
153	YES	CEILING	KEYPAD	2
154	YES	CEILING	KEYPAD	2
155	YES	CEILING	KEYPAD	2
156	NO	CEILING	NA	1
157	YES	CEILING	NA	7
158	YES	CEILING	NA	6

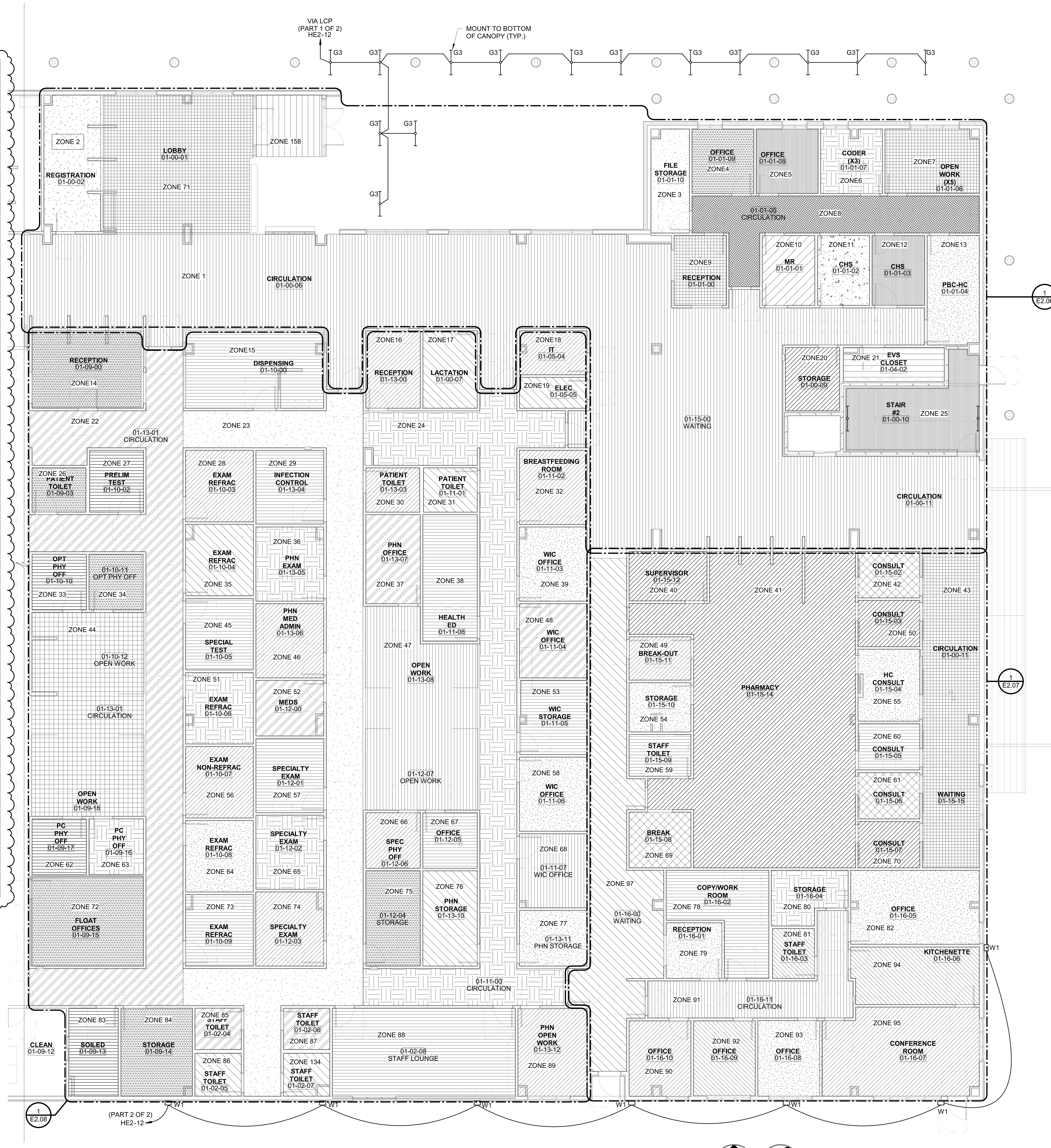
1

KEYNOTES

KITCHEN POWER NOTES

INTERLOCK DEVICES LOCATED UNDER KITCHEN HOOD WITH FIRE SUPPRESSION SYSTEM. DEVICES AND GAS CONNECTIONS SHALL BE AUTOMATICALLY SHUTOFF IN THE EVENT OF FIRE SUPPRESSION SYSTEM ACTIVATION. PROVIDE SHUNT-TRIP CAPABILIY FOR DEVICES LOCATED UNDER HOOD, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS.

INTERLOCK HOOD EXHAUST FAN, SUPPPLY FAN AND LIGHTS WITH FIRE SUPPRESSION SYSTEM. DEVICES SHALL BE AUTOMATICALLY SHUTOFF IF FIRE SUPPRESSION SYSTEM IS ACTIVATED.



1 LIGHTING PLAN LEVEL 01 SECTOR 01

1/8" = 1'-0"

PLAN NORTH

TRUE NORTH

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WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:
02
01

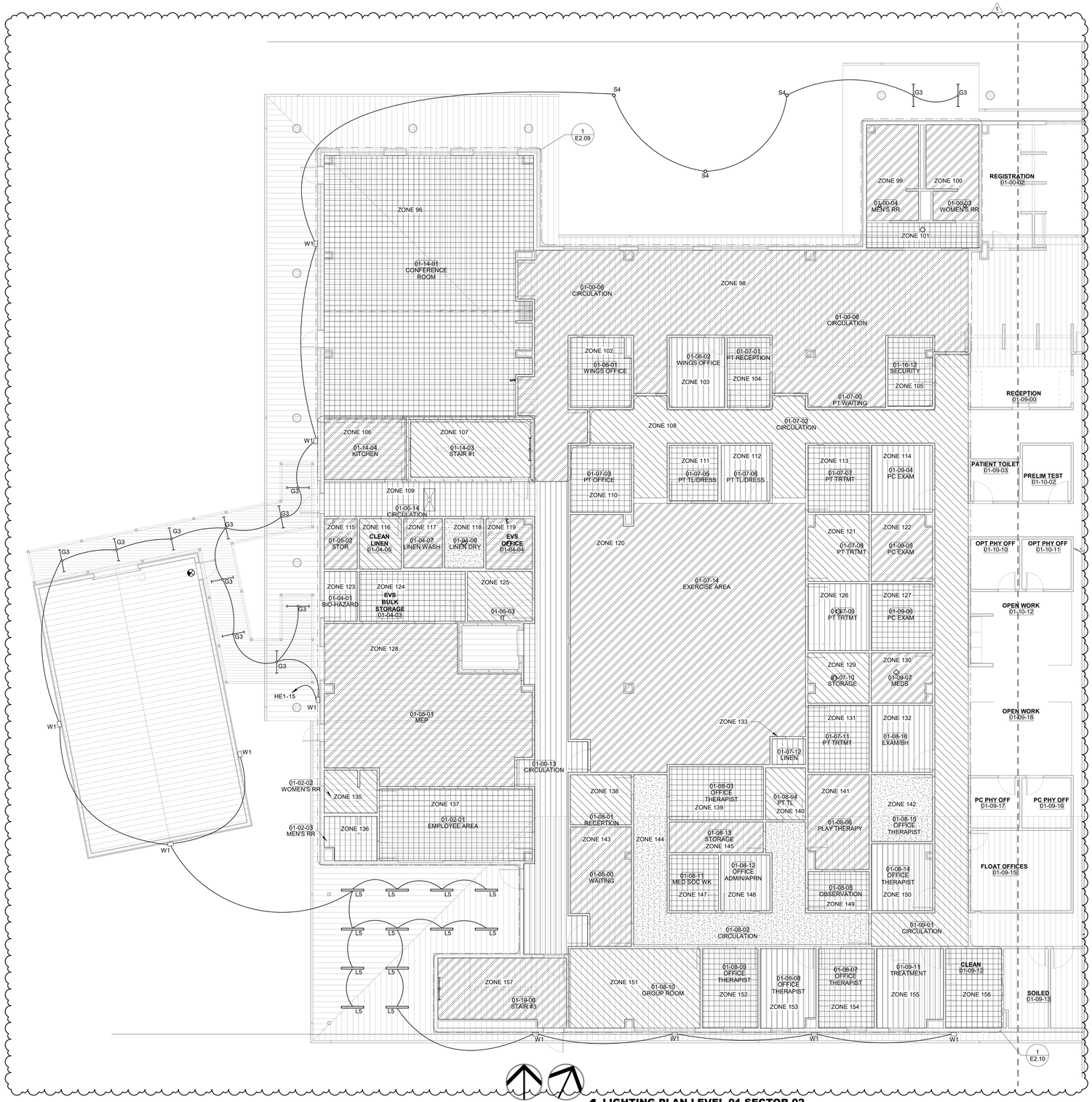
PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:
E2.01

ZONING PLAN
LEVEL 01
SECTOR 01



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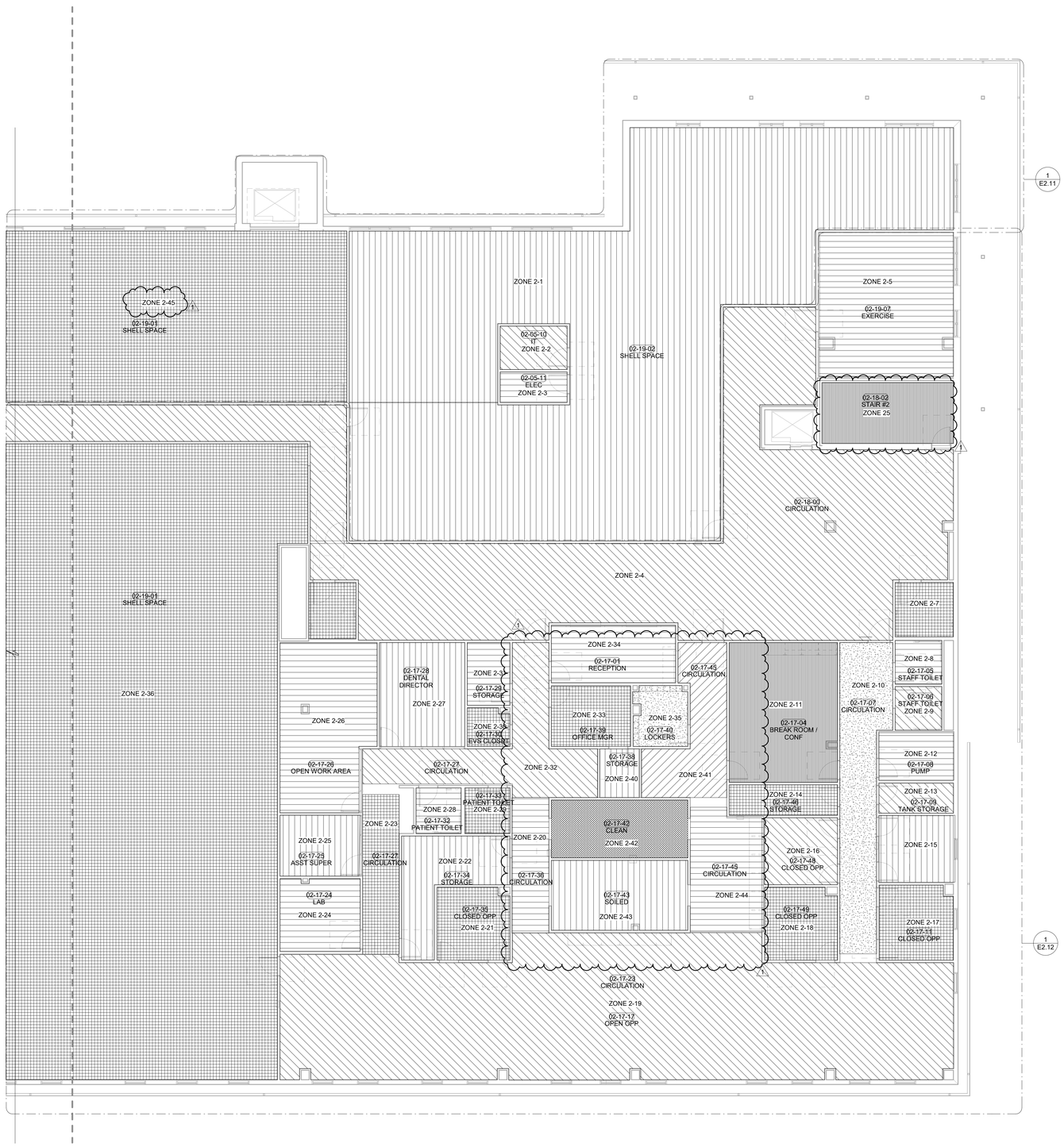
JOB NUMBER: 18-01.01
SHEET NUMBER: E2.02

ZONING PLAN
LEVEL 01
SECTOR 02

ZONE	EGRESS	OCCUPANCY SENSOR TYPE	SWITCH TYPE	CRESTRON PART NUMBER
2-1	NO	NA	KEYPAD	14
2-2	YES	NA	KEYPAD	5
2-3	NA	NA	MANUAL	NA
2-4	YES	CEILING	NA	6
2-5	YES	CEILING	KEYPAD	2
2-6	YES	CEILING	NA	7
2-7	YES	CEILING	NA	1
2-8	YES	CEILING	NA	1
2-9	YES	CEILING	NA	1
2-10	YES	CEILING	NA	6
2-11	YES	CEILING	KEYPAD	4
2-12	YES	CEILING	KEYPAD	2
2-13	YES	CEILING	KEYPAD	2
2-14	NO	CEILING	NA	1
2-15	YES	CEILING	KEYPAD	4
2-16	YES	CEILING	KEYPAD	4
2-17	YES	CEILING	KEYPAD	4
2-18	YES	CEILING	KEYPAD	4
2-19	YES	CEILING	NA	6
2-20	YES	CEILING	NA	6
2-21	YES	CEILING	KEYPAD	4
2-22	NO	CEILING	NA	1
2-23	YES	CEILING	NA	6
2-24	YES	CEILING	KEYPAD	2
2-25	NO	CEILING	KEYPAD	2
2-26	YES	CEILING	NA	1
2-27	NO	CEILING	KEYPAD	2
2-28	YES	CEILING	NA	1
2-29	YES	CEILING	NA	1
2 30	YES	CEILING	NA	1
2-31	NO	CEILING	NA	1
2-32	YES	CEILING	NA	6
2-33	YES	CEILING	KEYPAD	2
2-34	YES	CEILING	KEYPAD	2
2-35	YES	CEILING	KEYPAD	2
2-36	NO	NA	KEYPAD	14
2-37	NO	CEILING	MANUAL	NA
2-38	YES	CEILING	NA	7
2-39	YES	CEILING	NA	7
2-40	NO	CEILING	NA	2
2-41	YES	CEILING	NA	6
2-42	YES	CEILING	NA	6
2-43	YES	CEILING	NA	6
2-44	YES	CEILING	NA	6
2-45	NO	NA	KEYPAD	14



PLAN NORTH

TRUE NORTH

LIGHTING PLAN LEVEL 02 SECTOR 01

1/8" = 1'-0"

James R. Childers Architect, Inc.
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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER
Robert Brandon Pinkerton
23042
OKLAHOMA
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01/10/2020

CONSULTANT LOGO:

HP ENGINEERING
PROJECT NO. 18068R
100 % COMPLETE

HP ENGINEERING INC.
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www.hpengineeringinc.com

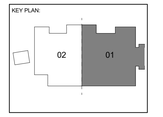
CLIENT:

TRIBAL SEAL OF THE CHEROKEE NATION ESTD. SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

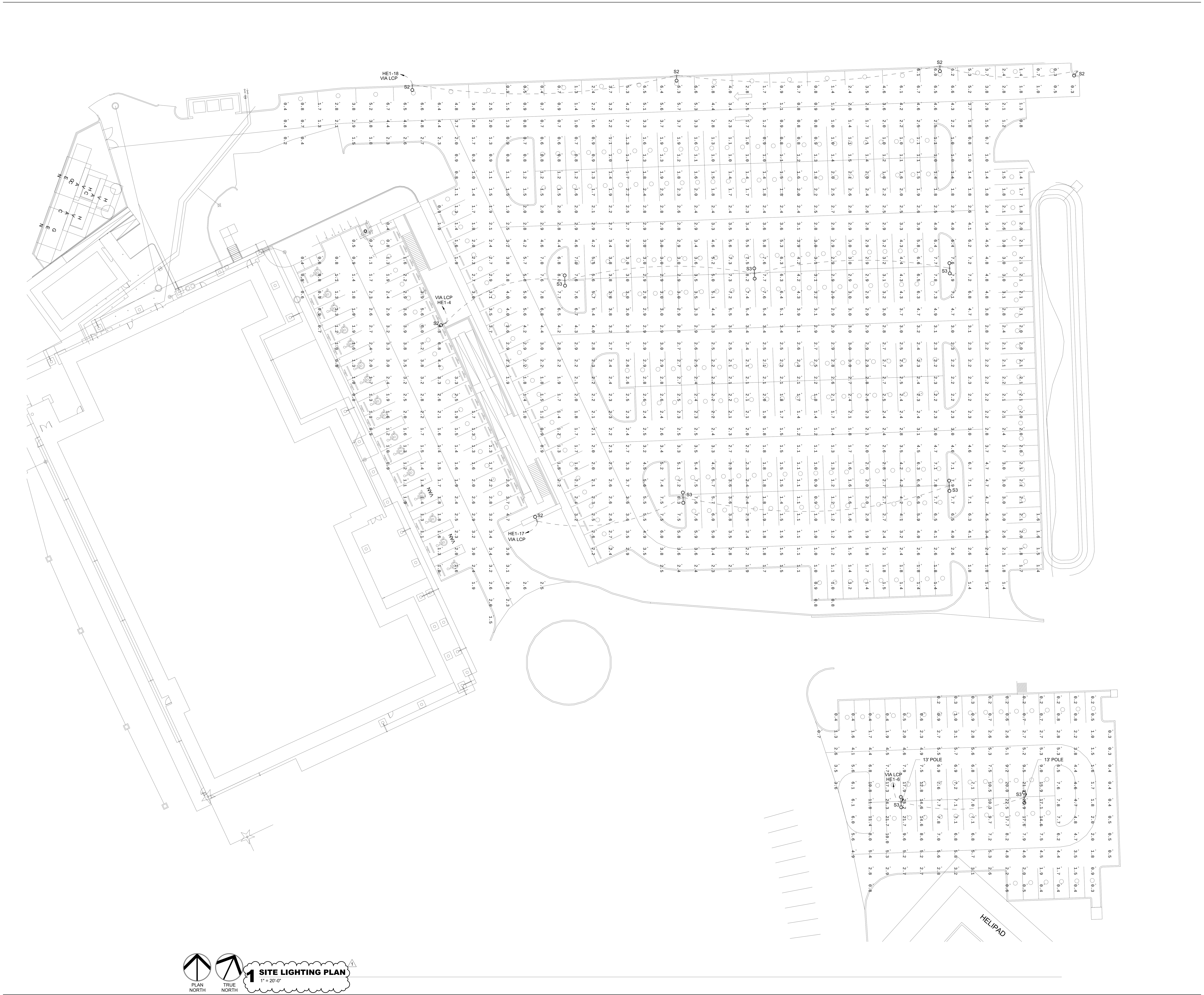
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: E2.03

ZONING PLAN LEVEL 02 SECTOR 01



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Licensed Professional Engineer
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Oklahoma
01/10/2020

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CLIENT:

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:
E2.05

SITE LIGHTING PLAN

KEYNOTES	
Key Value	Keynote Text
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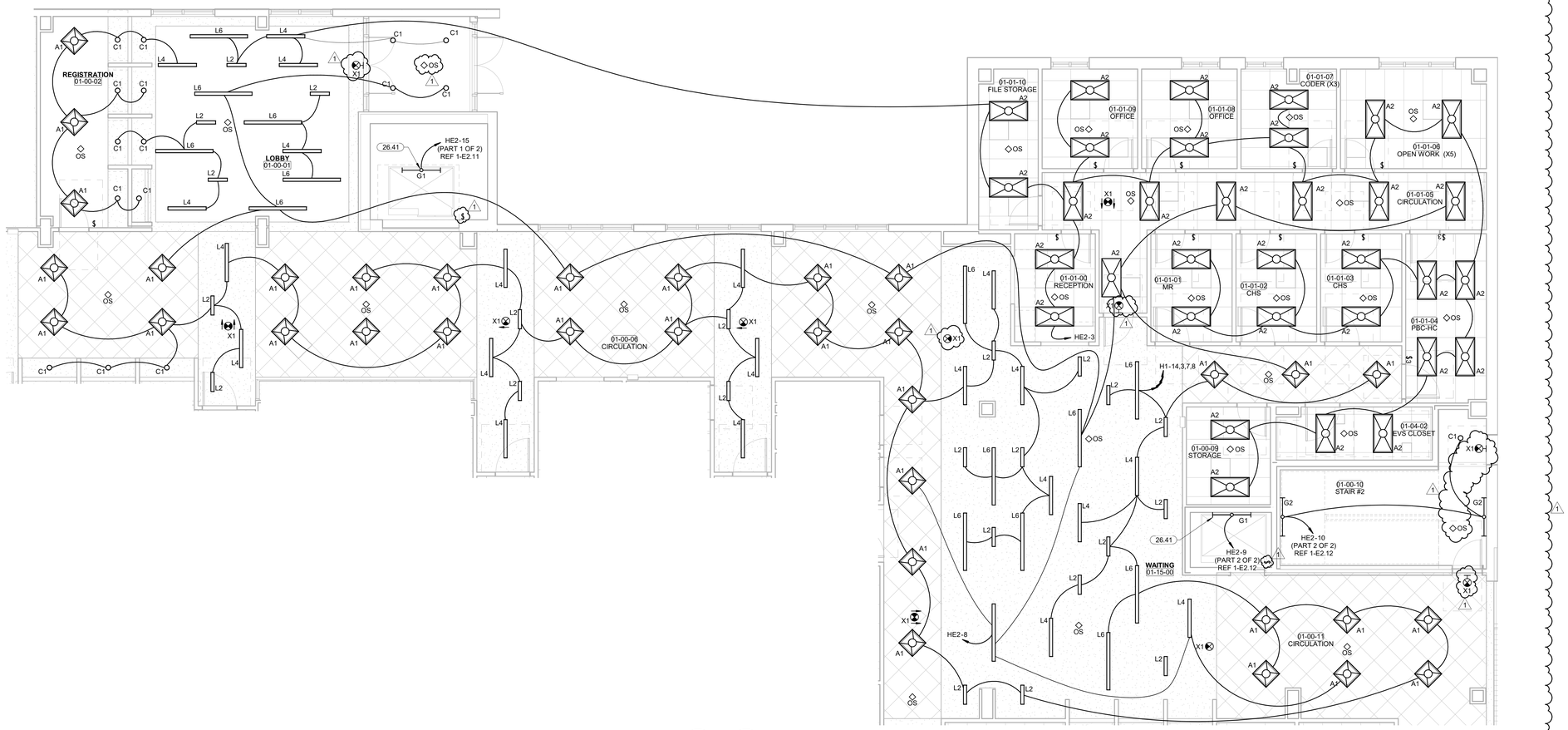

PLAN NORTH

TRUE NORTH

1 NORTH SECTOR 1 ENLARGED LIGHTING

3/16" = 1'-0"

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01/10/2020

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CLIENT:

THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

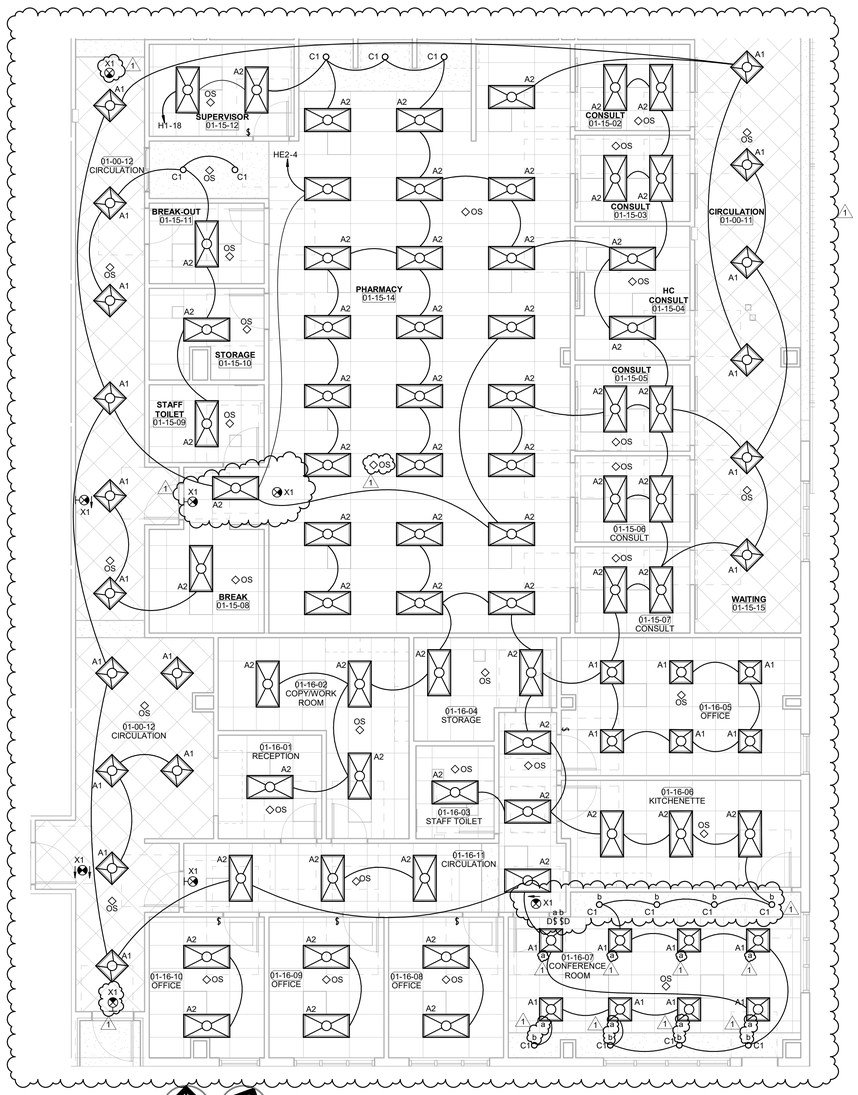
REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E2.06

NORTH SECTOR 1 ENLARGED LIGHTING PLAN



PLAN NORTH

TRUE NORTH

1 SOUTH SECTOR 1 ENLARGED LIGHTING

3/16" = 1'-0"

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OKLAHOMA
(PASS & SHIPE)

01/10/2020

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CLIENT:

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS:

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

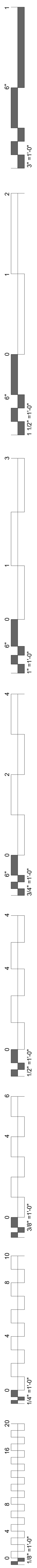
DATE: 12-06-19

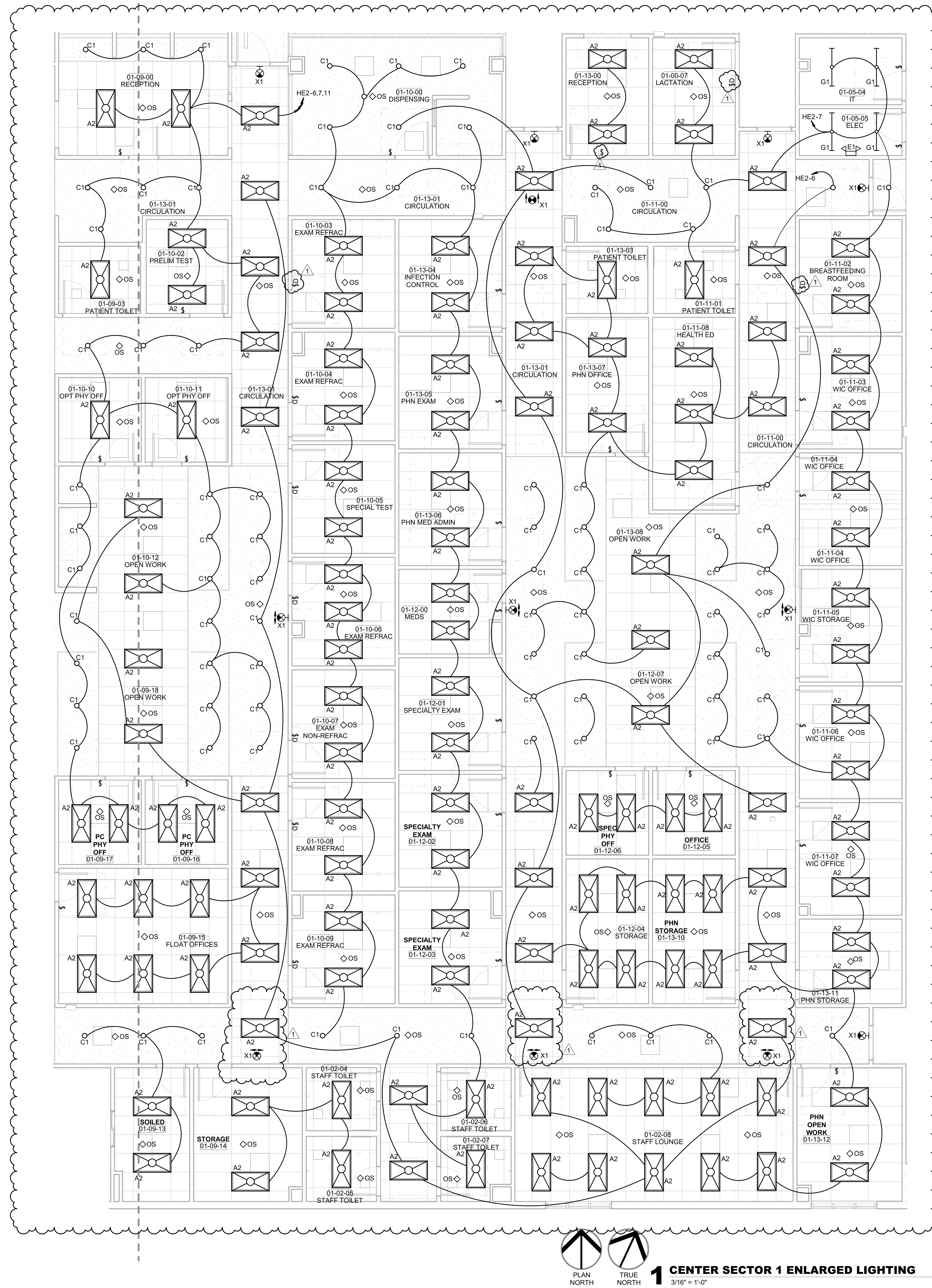
JOB NUMBER: 18-01.01

SHEET NUMBER:

E2.07

CENTER SECTOR 1 ENLARGED LIGHTING PLAN





1 CENTER SECTOR 1 ENLARGED LIGHTING
3/16" = 1'-0"

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CA5338(PE)
01/10/2020

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WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS

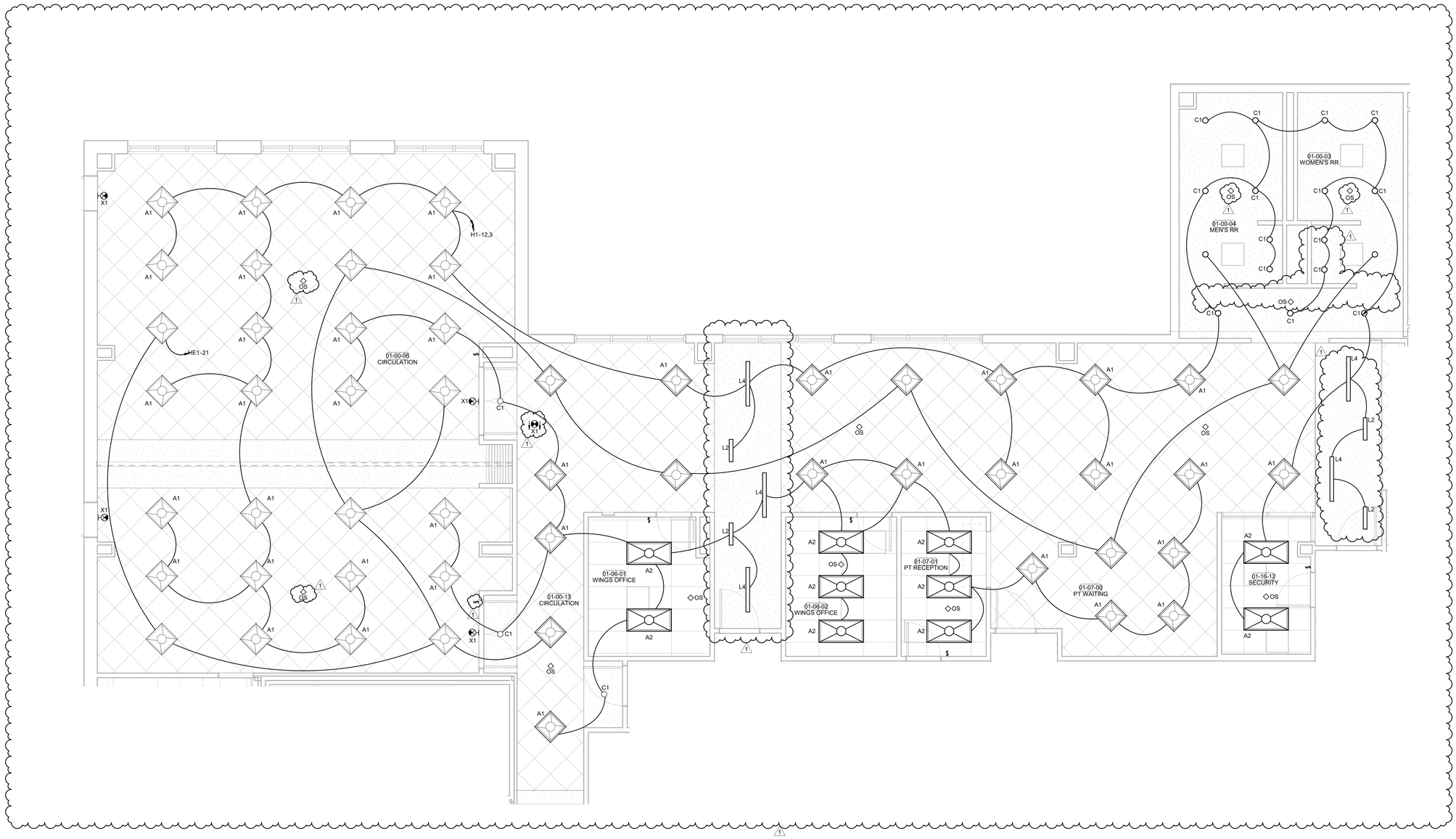
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E2.08

SOUTH SECTOR 1 ENLARGED LIGHTING PLAN



PLAN NORTH

TRUE NORTH

1 NORTH SECTOR 2 ENLARGED LIGHTING

1/4" = 1'-0"

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SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E2.09

NORTH SECTOR 2 ENLARGED LIGHTING PLAN

KEYNOTES

26.41	COORDINATE ELEVATOR SERVICE LIGHT WITH ELEVATOR INSTALLER SO NOT TO INTERFERE WITH ELEVATOR CLEARANCES OR OPERATION.

PLAN NORTH / TRUE NORTH

1 CENTER SECTOR 2 ENLARGED LIGHTING
3/16" = 1'-0"

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01/10/2020

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
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1	1/10/20	BID PACKAGE 02 - ADD 01

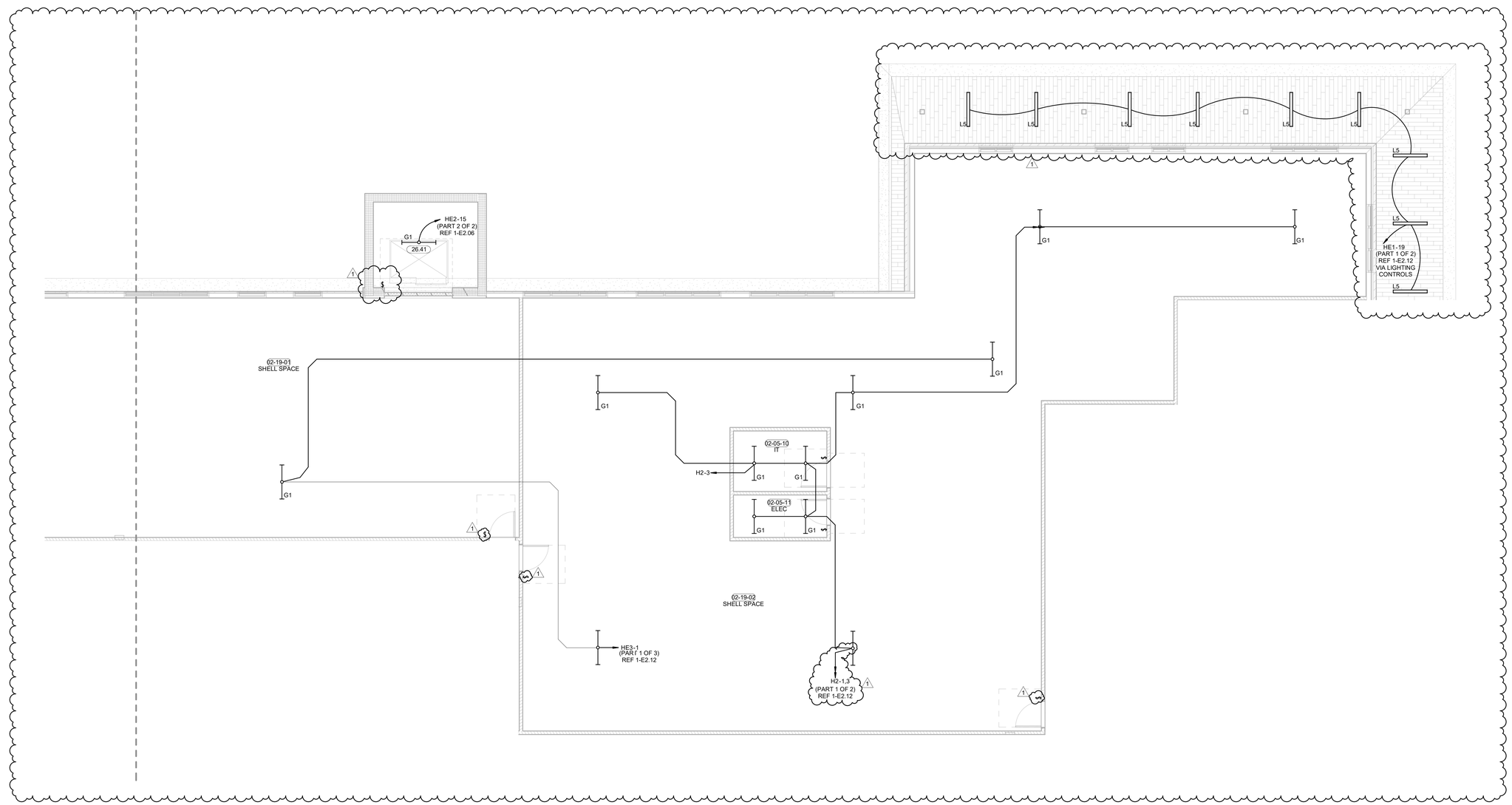
DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E2.10

CENTER SECTOR 2 ENLARGED LIGHTING PLAN

KEYNOTES	
Key Value	Keynote Text
26.41	COORDINATE ELEVATOR SERVICE LIGHT WITH ELEVATOR INSTALLER SO NOT TO INTERFERE WITH ELEVATOR CLEARANCES OR OPERATION.



PLAN NORTH

TRUE NORTH

1 NORTH SECTOR 1 LEVEL 02 LIGHTING PLAN

3/16" = 1'-0"

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SEPT. 6, 1839

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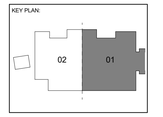
KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

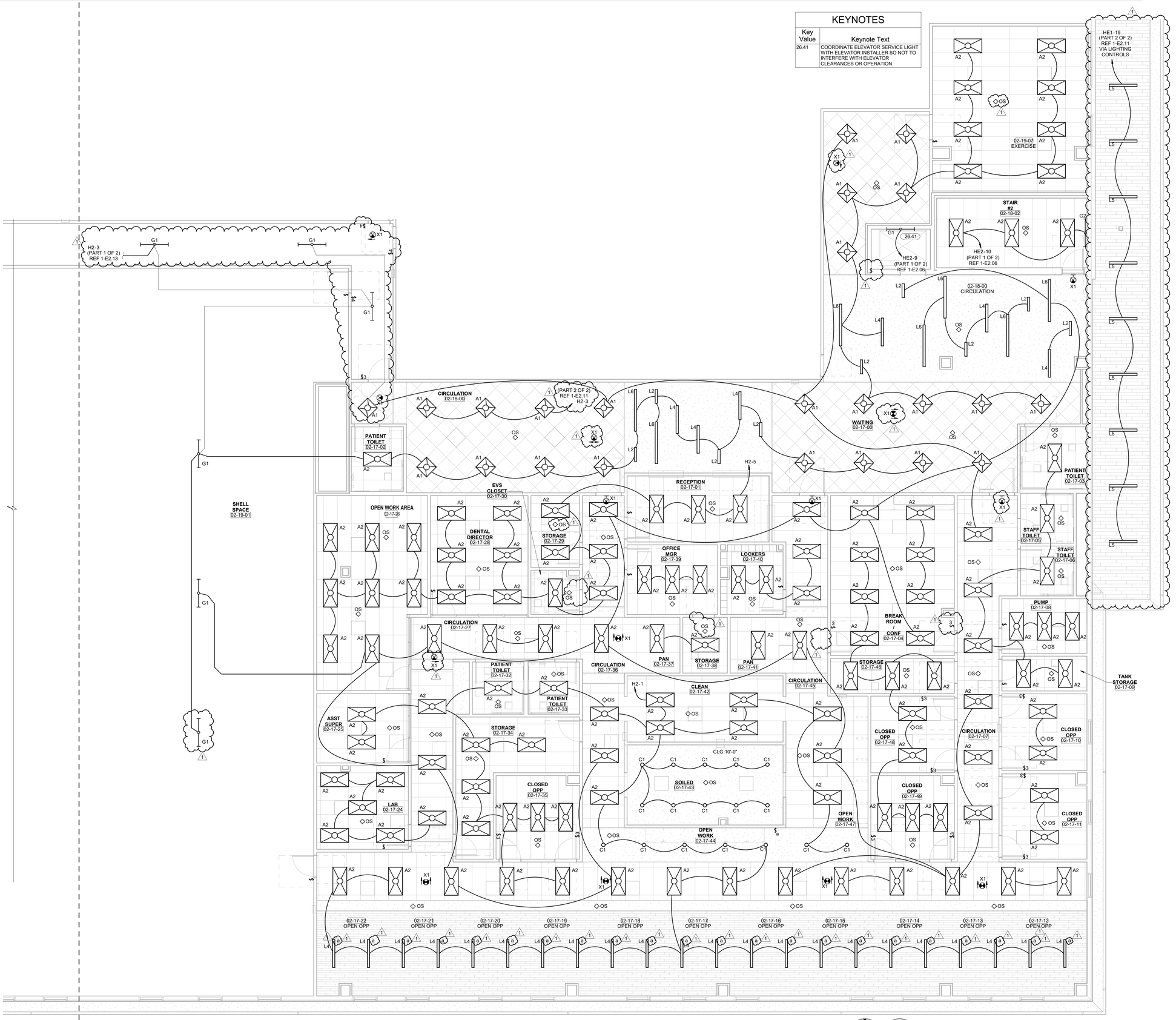
SHEET NUMBER:

E2.11

NORTH SECTOR 1 LEVEL 02 ENLARGED LIGHTING PLAN

KEYNOTES

Key Value	Keynote Text
26.41	COORDINATE ELEVATOR SERVICE LIGHT WITH ELEVATOR INSTALLER SO NOT TO INTERFERE WITH ELEVATOR CLEARANCES OR OPERATION.



PLAN NORTH

TRUE NORTH

1 LIGHTING PLAN LEVEL 02 SECTOR 01

3/16" = 1'-0"

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OKLAHOMA
REGISTERED

01/10/2020

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THE CHEROKEE NATION
TRIBAL SEAL
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

#	DATE	REVISIONS DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

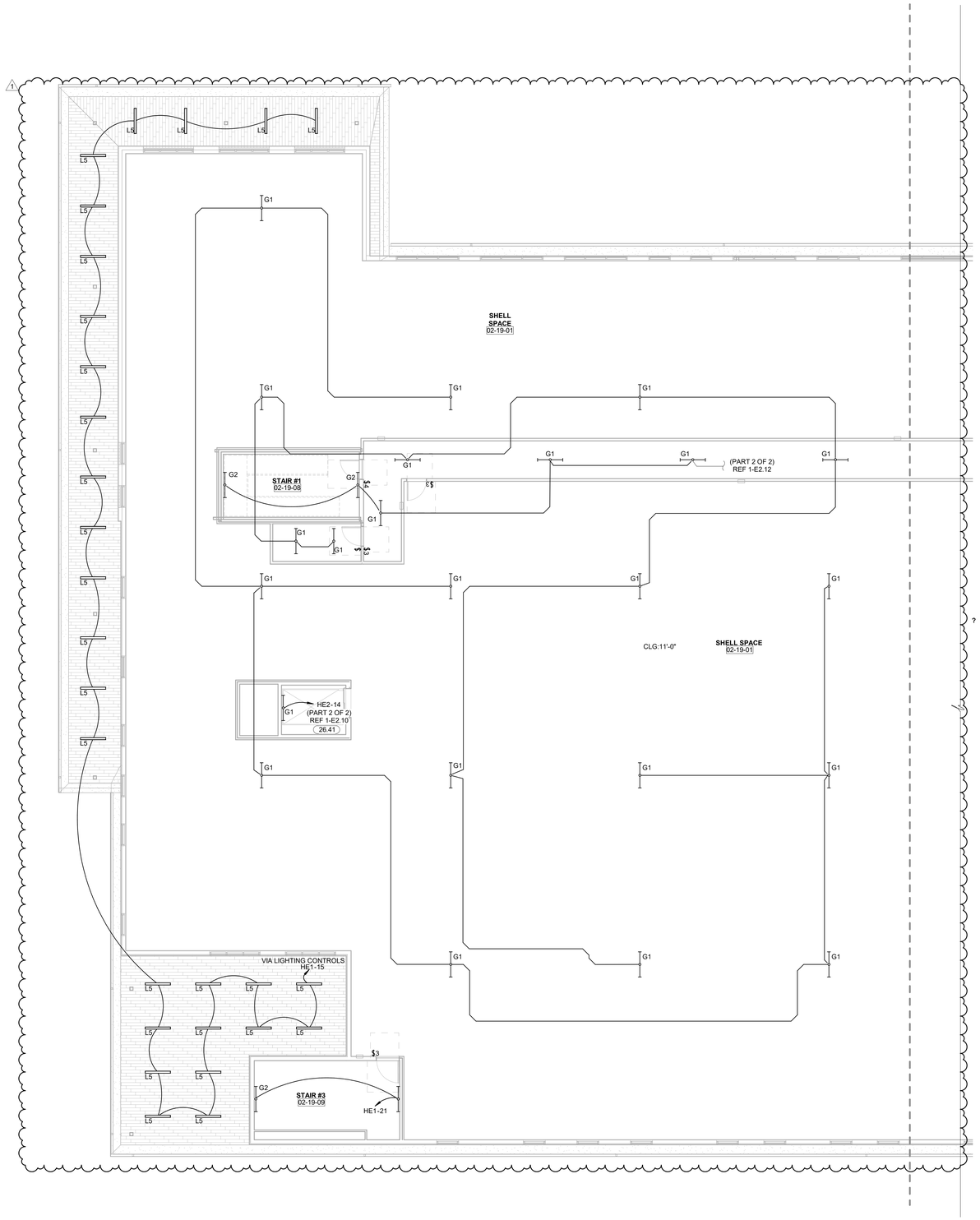
DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E2.12

SOUTH SECTOR 1 LEVEL 02 ENLARGED LIGHTING PLAN

KEYNOTES	
Key Value	Keynote Text
26.41	COORDINATE ELEVATOR SERVICE LIGHT WITH ELEVATOR INSTALLER SO NOT TO INTERFERE WITH ELEVATOR CLEARANCES OR OPERATION.



PLAN NORTH

TRUE NORTH

1 LIGHTING PLAN LEVEL 02 SECTOR 02

1/8" = 1'-0"

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01/10/2020

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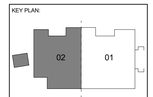
STILWELL, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

E2.13

LIGHTING PLAN LEVEL 02 SECTOR 02

FAULT CURRENT

DEVICE NAME	FAULT CURRENT
UTILITY	50117
MSBN	50055
MSBE	50055
ATS1	48551
ATS2	37797
MDP1	44784
H1	35780
H2	34068
T1	39429
T2	4990
T3	12977
T4	25572
L1A	10960
L1B	10960
F1A	2737
L2A	3259
L2B	3236
L3A	6453
L3B	6417
L4A	6828
L4B	6828
FIRE PUMP	50055
HE1	211921
HE2	4235
HE3	4103
HE4	11767
CHILLER 1	26440
CHILLER 2	26440
AHU-1	16444
AHU-2	5400
AHU-3	9117
AHU-4	4087

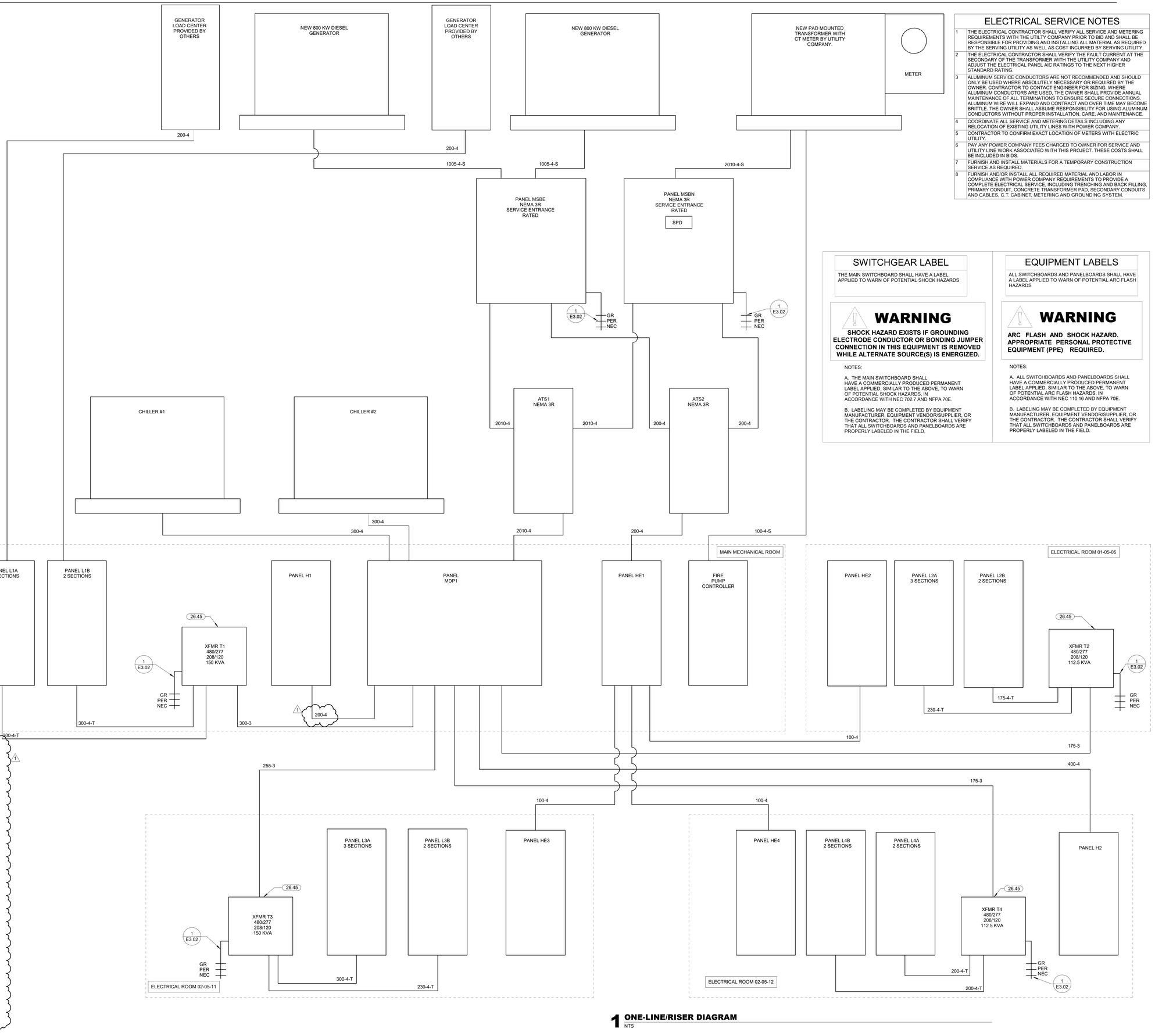
KEYNOTES

Key Value	Keynote Text
26.45	SUPPLY TRANSFORMER WITH A PERMANENT PLACARD INDICATING SUPPLY CIRCUIT AND LOCATION OF DISCONNECTING MEANS.

1. CONDUIT SIZED BASED ON CONDUCTOR PROPERTIES LISTED IN THE CURRENT NEC EDITION, CHAPTER, 9, TABLES 5 AND 5A, AND CONDUIT AREAS LISTED CHAPTER 9, TABLE 4 FOR EMT WITH 40% FILL. OTHER CONDITIONS MAY REQUIRE A LARGER CONDUIT, SUCH AS UNDERGROUND PVC, SIZED FOR NEC.
2. GROUND SIZES: EQUIPMENT GROUNDING CONDUCTOR BASED ON NEC TABLE 250.122 - COPPER / GROUNDING ELECTRODE CONDUCTOR BASED ON NEC TABLE 250.66 - COPPER
3. CONDUCTOR SIZES BASED ON NEC TABLE 310.15 - COPPER 75°C.

ELECTRICAL FEEDER KEYNOTES

65-4	1"C,4#6,1#10 GR
100-4	1 - 1 1/4"C,4#3,1#8 GR
100-4-S	1 - 1 1/4"C,4#3
175-3	1 - 1 1/2"C,3#2/0,1#6 GR
175-4SC	2"CONDUIT
175-4-T	2"C,4#2/0,1#4 GR
200-4	2"C,4#3/0,1#6 GR
200-4C	2"CONDUIT
200-4-T	2"C,4#3/0, 1#4 GR
230-4C	1 - 2 1/2"CONDUIT
230-4-T	1 - 2 1/2"C,4#4/0,1#2 GR
255-3	2"C,3-250KCMIL,1#4 GR
300-3	2 - 1 1/2"C,3#1/0,1#4 GR EACH
300-4	2 - 2"C,4#1/0,1#4 GR EACH
300-4C	2 - 2"CONDUITS
300-4-T	2 - 2"C,4#1/0,1#2 GR EACH
400-4	2 - 2"C,4#3/0,1#3 GR EACH
400-4C	2 - 2"CONDUITS
620-4C	2 - 2 1/2"CONDUITS
1005-4C	3 - 4"CONDUIT
1005-4-S	3 - 3"C,4-400KCMIL EACH
1240-4C	4 - 3"CONDUITS
2010-4	6 - 3"C,4-400KCMIL, 1-250KCMIL EACH
2010-4-S	6 - 3"C,4-400KCMIL EACH
2010-4-SC	6 - 3"CONDUITS



1 ONE-LINE/RISER DIAGRAM
NTS

ELECTRICAL SERVICE NOTES

1	THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL SERVICE AND METERING REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO BID AND SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AS REQUIRED BY THE SERVING UTILITY AS WELL AS COST INCURRED BY SERVING UTILITY.
2	THE ELECTRICAL CONTRACTOR SHALL VERIFY THE FAULT CURRENT AT THE SECONDARY OF THE TRANSFORMER WITH THE UTILITY COMPANY AND ADJUST THE ELECTRICAL PANEL AIC RATINGS TO THE NEXT HIGHER STANDARD RATING.
3	ALUMINUM SERVICE CONDUCTORS ARE NOT RECOMMENDED AND SHOULD ONLY BE USED WHERE ABSOLUTELY NECESSARY OR REQUIRED BY THE OWNER. CONTRACTOR TO CONTACT ENGINEER FOR SIZING. WHERE ALUMINUM CONDUCTORS ARE USED, THE OWNER SHALL PROVIDE ANNUAL MAINTENANCE OF ALL TERMINATIONS TO ENSURE SECURE CONNECTIONS. ALUMINUM WIRE WILL EXPAND AND CONTRACT AND OVER TIME MAY BECOME BRITTLE. THE OWNER SHALL ASSUME RESPONSIBILITY FOR USING ALUMINUM CONDUCTORS WITHOUT PROPER INSTALLATION, CARE, AND MAINTENANCE.
4	COORDINATE ALL SERVICE AND METERING DETAILS INCLUDING ANY RELOCATION OF EXISTING UTILITY LINES WITH POWER COMPANY.
5	CONTRACTOR TO CONFIRM EXACT LOCATION OF METERS WITH ELECTRIC UTILITY.
6	PAY ANY POWER COMPANY FEES CHARGED TO OWNER FOR SERVICE AND UTILITY LINE WORK ASSOCIATED WITH THIS PROJECT. THESE COSTS SHALL BE INCLUDED IN BIDS.
7	FURNISH AND INSTALL MATERIALS FOR A TEMPORARY CONSTRUCTION SERVICE AS REQUIRED.
8	FURNISH AND/OR INSTALL ALL REQUIRED MATERIAL AND LABOR IN COMPLIANCE WITH POWER COMPANY REQUIREMENTS TO PROVIDE A COMPLETE ELECTRICAL SERVICE, INCLUDING TRENCHING AND BACK FILLING, PRIMARY CONDUIT, CONCRETE TRANSFORMER PAD, SECONDARY CONDUITS AND CABLES, C.T. CABINET, METERING AND GROUNDING SYSTEM.

SWITCHGEAR LABEL

THE MAIN SWITCHBOARD SHALL HAVE A LABEL APPLIED TO WARN OF POTENTIAL SHOCK HAZARDS

WARNING

SHOCK HAZARD EXISTS IF GROUNDING ELECTRODE CONDUCTOR OR BONDING JUMPER CONNECTION IN THIS EQUIPMENT IS REMOVED WHILE ALTERNATE SOURCE(S) IS ENERGIZED.

NOTES:

A. THE MAIN SWITCHBOARD SHALL HAVE A COMMERCIALLY PRODUCED PERMANENT LABEL APPLIED, SIMILAR TO THE ABOVE, TO WARN OF POTENTIAL SHOCK HAZARDS, IN ACCORDANCE WITH NEC 702.7 AND NFPA 70E.

B. LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL SWITCHBOARDS AND PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.

EQUIPMENT LABELS

ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A LABEL APPLIED TO WARN OF POTENTIAL ARC FLASH HAZARDS

WARNING

ARC FLASH AND SHOCK HAZARD. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED.

NOTES:

A. ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A COMMERCIALLY PRODUCED PERMANENT LABEL APPLIED, SIMILAR TO THE ABOVE, TO WARN OF POTENTIAL ARC FLASH HAZARDS, IN ACCORDANCE WITH NEC 110.16 AND NFPA 70E.

B. LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL SWITCHBOARDS AND PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.

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01/10/2020

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CLIENT:
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SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE:	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: E3.01

ELECTRICAL SCHEDULES AND RISER

SWITCHBRD: MDP1 — NEW

Location: MEP 01-05-01 **Supply From:** ATS1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 2000 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1					667...	489...									2
3	T-1 (8)	300	3	--			615...	500...			--	3	250	T-3 (8)	4
5									656...	468...					6
7					723...	723...									8
9	CHILLER 1 (8)	300	3	--			723...	723...			--	3	300	CHILLER 2 (8)	10
11									723...	723...					12
13					503...	734...									14
15	T-2 (8)	175	3	--			492...	730...			--	3	400	H2 (8)	16
17									551...	724...					18
19					145...	0					--	--	--	SPACE	20
21	T-4 (8)	175	3	--			171...	0			--	--	--	SPACE	22
23									111...	0	--	--	--	SPACE	24
25					389...	0					--	--	--	SPACE	26
27	H1 (8)	200	3	--			365...	0			--	--	--	SPACE	28
29									405...	0	--	--	--	SPACE	30
31	SPACE	--	--	--	0	0					--	--	--	SPACE	32
33	SPACE	--	--	--			0	0			--	--	--	SPACE	34
35	SPACE	--	--	--					0	0	--	--	--	SPACE	36
37	SPACE	--	--	--	0	0					--	--	--	SPACE	38
39	SPACE	--	--	--			0	0			--	--	--	SPACE	40
41	SPACE	--	--	--					0	0	--	--	--	SPACE	42
				Total Load:	437705 VA		432381 VA		436439 VA						
				Total Amps:	1582 A		1561 A		1578 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	248410 VA	100.00%	248410 VA		
Lighting	17313 VA	125.00%	21642 VA	Total Conn. Load:	1306525 VA
Motor	18955 VA	100.00%	18955 VA	Total Est. Demand:	1175373 VA
Other	69080 VA	100.00%	69080 VA	Total Conn. Current:	1572 A
Power	641462 VA	100.00%	641462 VA	Total Est. Demand...	1414 A
Receptacle	239289 VA	52.09%	124645 VA		
Heating	600 VA	0.01%	0 VA		
Lighting - Exterior	2952 VA	125.00%	3690 VA		
Kitchen	63483 VA	65.00%	41264 VA		
Continuous	4981 VA	125.00%	6226 VA		

SWITCHBRD: MSBE — NEW

Location: MECHANICAL YARD **Supply From:** GENERATOR **Mounting:** SURFACE **Enclosure:** NEMA 3R
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 2000 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1					437...	223...									2
3	ATS1 (8)	2000	3	--			432...	224...			--	3	200	ATS2 (8)	4
5									436...	197...					6
7					0	0									8
9	400A SPACE	--	--	--			0	0			--	--	--	400A SPACE	10
11									0	0					12
13					0	0									14
15	400A SPACE	--	--	--			0	0			--	--	--	400A SPACE	16
17									0	0					18
				Total Load:	460018 VA		454801 VA		456220 VA						
				Total Amps:	1662 A		1642 A		1648 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	248410 VA	100.00%	248410 VA		
Lighting	37459 VA	125.00%	46823 VA	Total Conn. Load:	1371040 VA
Motor	18955 VA	100.00%	18955 VA	Total Est. Demand:	1246664 VA
Other	69080 VA	100.00%	69080 VA	Total Conn. Current:	1649 A
Power	678873 VA	100.00%	678873 VA	Total Est. Demand...	1500 A
Receptacle	239289 VA	52.09%	124645 VA		
Heating	600 VA	0.01%	0 VA		
Lighting - Exterior	9910 VA	125.00%	12388 VA		
Kitchen	63483 VA	65.00%	41264 VA		
Continuous	4981 VA	125.00%	6226 VA		

Branch Panel: MSBN — NEW

Location: MECHANICAL YARD **Supply From:** UTILITY TRANSFORMER **Mounting:** SURFACE **Enclosure:** NEMA 3R
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 2000 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1					223...	437...									2
3	ATS2 (8)	200	3	--			224...	432...			--	3	2000	ATS1 (8)	4
5									197...	436...					6
7					0	0									8
9	SPD	100	3	--			0	0			--	3	20	LCP PHASE LOSS CIRCUIT	10
11									0	0					12
13					0	0									14
15	400A SPACE	--	--	--			0	0			--	--	--	400A SPACE	16
17									0	0					18
				Total Load:	460018 VA		454801 VA		456220 VA						
				Total Amps:	1662 A		1642 A		1648 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	248410 VA	100.00%	248410 VA		
Lighting	37459 VA	125.00%	46823 VA	Total Conn. Load:	1371040 VA
Motor	18955 VA	100.00%	18955 VA	Total Est. Demand:	1246664 VA
Other	69080 VA	100.00%	69080 VA	Total Conn. Current:	1649 A
Power	678873 VA	100.00%	678873 VA	Total Est. Demand...	1500 A
Receptacle	239289 VA	52.09%	124645 VA		
Heating	600 VA	0.01%	0 VA		
Lighting - Exterior	9910 VA	125.00%	12388 VA		
Kitchen	63483 VA	65.00%	41264 VA		
Continuous	4981 VA	125.00%	6226 VA		

Branch Panel: H1 — NEW

Location: MEP 01-05-01 **Supply From:** MDP1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 225 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1					6318	224...									2
3	HWP-1	30	3	#10			6318	224...			#1	3	100	CHWP-1	4
5									6318	224...					6
7					6633	210						1	20	Lighting	8
9	BP-1	30	3	#10			6633	1129				1	20	MEP & CIRCULATION LIGHTING	10
11									6633	2322		1	20	CIRCULATION LIGHTING	12
13	SPACE	--	--	--	0	3349					#10	1	20	PHARMACY LOBBY & CORRIDOR LTG	14
15	SPACE	--	--	--			0								16
17	SPACE	--	--	--					0	2780		1	20	PHARMACY & CIRCULATION...	18
19	SPACE	--	--	--	0										20
21	SPACE	--	--	--			0								22
23	SPACE	--	--	--					0	0	--	--	--	SPACE	24
25	SPACE	--	--	--	0	0					--	--	--	SPACE	26
27	SPACE	--	--	--			0	0			--	--	--	SPACE	28
29	SPACE	--	--	--					0	0	--	--	--	SPACE	30
31	SPACE	--	--	--	0	0					--	--	--	SPACE	32
33	SPACE	--	--	--			0	0			--	--	--	SPACE	34
35	SPACE	--	--	--					0	0	--	--	--	SPACE	36
37	SPACE	--	--	--	0	0					--	--	--	SPACE	38
39	SPACE	--	--	--			0	0			--	--	--	SPACE	40
41	SPACE	--	--	--					0	0	--	--	--	SPACE	42
				Total Load:	38957 VA		36527 VA		40500 VA						
				Total Amps:	142 A		132 A		148 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	9790 VA	125.00%	12238 VA		
Motor	18955 VA	100.00%	18955 VA	Total Conn. Load:	115985 VA
Power	87240 VA	100.00%	87240 VA	Total Est. Demand:	118433 VA
				Total Conn. Current:	140 A
				Total Est. Demand...	142 A

Branch Panel: H2 — NEW

Location: ELEC 02-05-12 **Supply From:** MDP1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 400 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	OPEN OPP LIGHTING	20	1	#10	2949	208...									2
3	SHELL SPACE & CIRCULATION LTG	20	1				2590	208...			#2	3	90	AHU-01 SINGLE POINT	4
5	RECEPTION & BREAKROOM...	20	1						1984	208...					6
7	SPACE	--	--	--	0	144...									8
9	SPACE	--	--	--			0	144...			#6	3	60	AHU-02 SINGLE POINT	10
11	SPACE	--	--	--					0	144...					12
13	SPACE	--	--	--	0	208...									14
15	SPACE	--	--	--			0	208...			#2	3	90	AHU-03 SINGLE POINT	16
17	SPACE	--	--	--					0	208...					18
19	SPACE	--	--	--	0	144...									20
21	SPACE	--	--	--			0	144...			#6	3	60	AHU-04 SUPPLY FAN	22
23	SPACE	--	--	--					0	144...					24
25	SPACE	--	--	--	0	0					--	--	--	SPACE	26
27	SPACE	--	--	--			0	0			--	--	--	SPACE	28
29	SPACE	--	--	--					0	0	--	--	--	SPACE	30
31	SPACE	--	--	--	0	0					--	--	--	SPACE	32
33	SPACE	--	--	--			0	0			--	--	--	SPACE	34
35	SPACE	--	--	--					0	0	--	--	--	SPACE	36
37	SPACE	--	--	--	0	0					--	--	--	SPACE	38
39	SPACE	--	--	--			0	0			--	--	--	SPACE	40
41	SPACE	--	--	--					0	0	--	--	--	SPACE	42
				Total Load:	73448 VA		73090 VA		72483 VA						
				Total Amps:	265 A		264 A		262 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	211498 VA	100.00%	211498 VA		
Lighting	7523 VA	125.00%	9404 VA	Total Conn. Load:	219021 VA
				Total Est. Demand:	220902 VA
				Total Conn. Current:	263 A
				Total Est. Demand...	266 A

Branch Panel: HE1 — NEW

Location: MEP 01-05-01 **Supply From:** ATS2 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 225 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1					7962	140					#8	1	20	MECHANICAL SHOP LIGHTING	2
3	HE2 (8)	100	3	--			2926	1994			#8	1	20	PARKING LOT LIGHTING(10)	4
5									2841	1000	#8	1	20	PARKING LOT LIGHTING(10)	6
7					0	135...									8
9	HE4 (8)	100	3	--			0	124...			--	3	100	HE3 (8)	10
11									0	124...					12
13	SPACE	--	--	--	0	0					--	--	--	SPACE	14
15	EXTERIOR BUILDING LIGHTING(10)	20	1	#8			2470	0			--	--	--	SPACE	16
17	PARKING LOT LIGHTING(10)	20	1	#8					1494	1976	#8	1	20	PARKING LOT LIGHTING(10)	18
19	EXTERIOR BUILDING LIGHTING(10)	20	1	#8	684	0					--	--	--	SPACE	20
21	EMERGENCY LIGHTING(2)	20	1				2560	0			--	--	--	SPACE	22
23										0	--	--	--	SPACE	24
25						0					--	--	--	SPACE	26
27								0			--	--	--	SPACE	28
29										0	--	--	--	SPACE	30
31	SPACE	--	--	--	0	0					--	--	--	SPACE	32
33	SPACE	--	--	--			0	0			--	--	--	SPACE	34
35	SPACE	--	--	--					0	0	--	--	--	SPACE	36
37	SPACE	--	--	--	0	0					--	--	--	SPACE	38
39	SPACE	--	--	--			0	0			--	--	--	SPACE	40
41	SPACE	--	--	--					0	0	--	--	--	SPACE	42
				Total Load:	22313 VA		22420 VA		19781 VA						
				Total Amps:	82 A		82 A		71 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	20145 VA	125.00%	25182 VA		
Power	37411 VA	100.00%	37411 VA	Total Conn. Load:	64515 VA
Lighting - Exterior	6958 VA	125.00%	8698 VA	Total Est. Demand:	71290 VA
				Total Conn. Current:	78 A
				Total Est. Demand...	86 A

Branch Panel: HE2 — NEW

Location: ELEC 01-05-05 **Supply From:** HE1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 100 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	SPACE	--	--	--	0	0					--	--	--	SPACE	2
3	LOBBY & MEDICAL RECORDS LIGHTING	20	1				2118	480				1	20	EMERGENCY LIGHTING(2)	4
5	SPACE	--	--	--					0	680		1	20	EMERGENCY LIGHTING(2)	6
7	WIC OFFICES & LOUNGE LIGHTING	20	1		3460	876						1	20	EMERGENCY LIGHTING(2)	8
9	SECTOR 1 ELEVATOR PIT LIGHTS	20	1				70	188				1	20	STAIR #2 LIGHTING	10
11	EXAM ROOMS & OFFICES LIGHTING	20	1						1356	805		1	20	Lighting	12
13	EXERCISE & THERAPY OFFICES LTG	20	1		3556	70						1	20	SECTOR 2 ELEVATOR PIT LIGHTS	14
15	ELEVATOR PIT LIGHTS	20	1				70	0			--	--	--	SPACE	16
17	SPACE	--	--	--					0	0	--	--	--	SPACE	18
19	SPACE	--	--	--	0	0					--	--	--	SPACE	20
21	SPACE	--	--	--			0	0			--	--	--	SPACE	22
23	SPACE	--	--	--					0	0	--	--	--	SPACE	24
25	SPACE	--	--	--	0	0					--	--	--	SPACE	26
27	SPACE	--	--	--			0	0			--	--	--	SPACE	28
29	SPACE	--	--	--					0	0	--	--	--	SPACE	30
31	SPACE	--	--	--	0	0					--	--	--	SPACE	32
33	SPACE	--	--	--			0	0			--	--	--	SPACE	34
35	SPACE	--	--	--					0	0	--	--	--	SPACE	36
37	SPACE	--	--	--	0	0					--	--	--	SPACE	38
39	SPACE	--	--	--			0	0			--	--	--	SPACE	40
41	SPACE	--	--	--					0	0	--	--	--	SPACE	42
				Total Load:	7962 VA		2926 VA		2841 VA						
				Total Amps:	29 A		11 A		10 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	13729 VA	125.00%	17162 VA		
				Total Conn. Load:	13729 VA
				Total Est. Demand:	17162 VA
				Total Conn. Current:	17 A
				Total Est. Demand...	21 A

Branch Panel: HE3 — NEW

Location: ELEC 02-05-11 **Supply From:** HE1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 480/277 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MLO **Mains Rating:** 100 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	EMERGENCY LIGHTING(2)	20	1		1056	0					--	--	--	SPACE	2
3								0			--	--	--	SHUNT-TRIP BREAKER	4
5									4157	4157					6
7	ELEVATOR CONTROL SERVICE	25	3	#10	4157	4157					#10	3	25	ELEVATOR CONTROL SERVICE	8
9							4157	4157							10
11	SHUNT-TRIP BREAKER	--	--	--					0	0	--	--	--	SHUNT-TRIP BREAKER	12
13						4157									14
15	SPACE	--	--	--			0	4157			#10	3	30	ELEVATOR CONTROL SERVICE	16
17										4157					18
19	SPACE	--	--	--	0	0					--	--	--	SPACE	20
21	SPACE	--	--	--			0	0			--	--	--	SPACE	22
23	SPACE	--	--	--					0	0	--	--	--	SPACE	24
25	SPACE	--	--	--	0	0					--	--	--	SPACE	26
27	SPACE	--	--	--			0	0			--	--	--	SPACE	28
29	SPACE	--	--	--					0	0	--	--	--	SPACE	30
31	SPACE	--	--	--	0	0					--	--	--	SPACE	32
33	SPACE	--	--	--			0	0			--	--	--	SPACE	34
35	SPACE	--	--	--					0	0	--	--	--	SPACE	36
37	SPACE	--	--	--	0	0					--	--	--	SPACE	38
39	SPACE	--	--	--			0	0			--	--	--	SPACE	40
41	SPACE	--	--	--					0	0	--	--	--	SPACE	42
				Total Load:	13526 VA		12470 VA		12470 VA						
				Total Amps:	49 A		45 A		45 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	1056 VA	125.00%	1320 VA		
Power	37411 VA	100.00%	37411 VA	Total Conn. Load:	38467 VA
				Total Est. Demand:	38731 VA
				Total Conn. Current:	46 A
				Total Est. Demand...	47 A

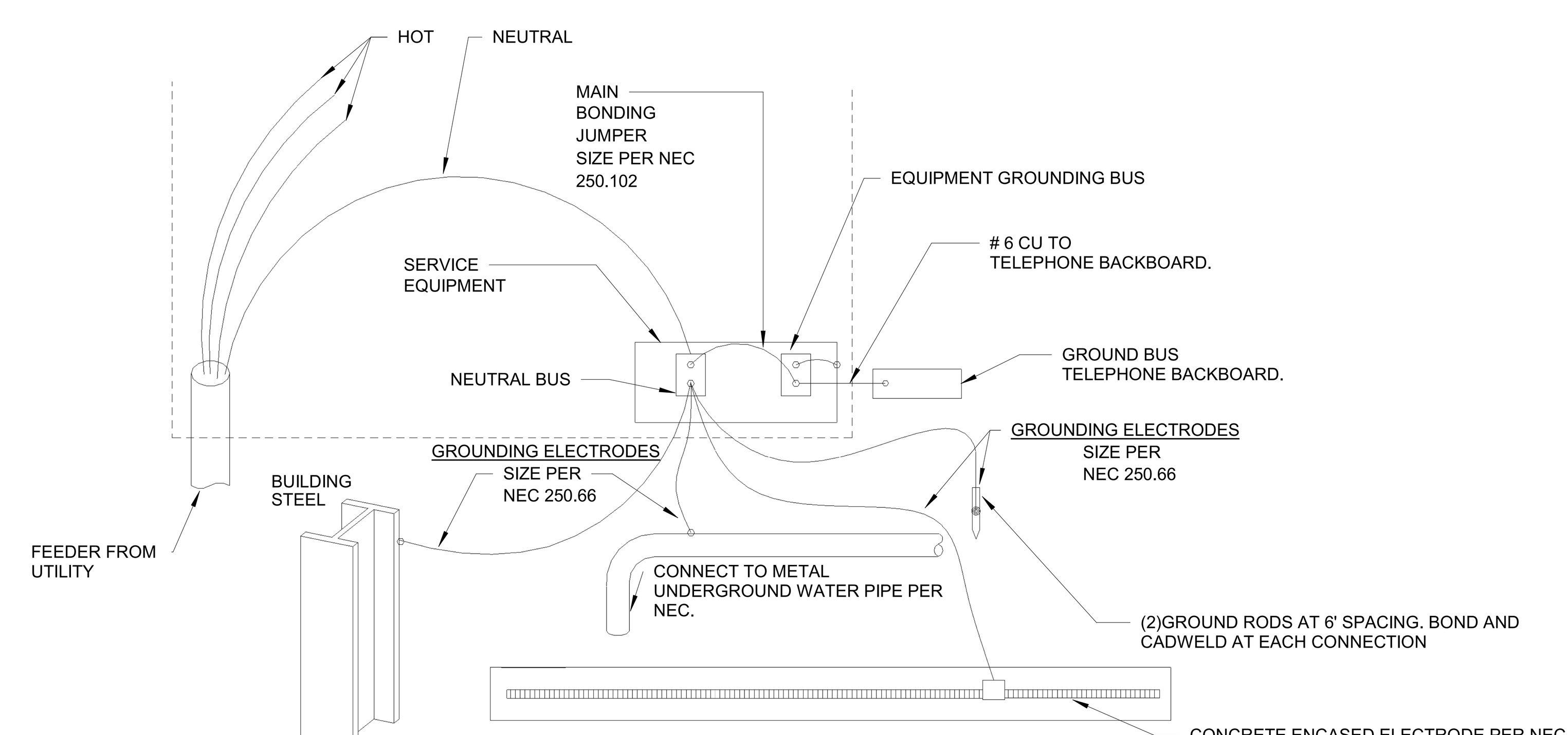
Branch Panel: F1A — NEW

Location: MECHANICAL SHOP **Supply From:** L1A **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 60 A

Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	OVERHEAD DOOR	20	2		300	0					--	--	--	SPACE	2
3							300	720				1	20	GUH-1 & GUH-2	4
5	MAINTENANCE SHOP RECEPTACLES	20	1						720	540		1	20	MAINTENANCE SHOP RECEPS	6
7	MAINTENANCE SHOP RECEPTACLES	20	1		720	360						1	20	OUTDOOR SERVICE RECEPTACLES	8
9	SPACE	--	--	--			0	0			--	--	--	SPACE	10
11	SPACE	--	--	--					0	0	--	--	--	SPACE	12
13	SPACE	--	--	--	0	0					--	--	--	SPACE	14
15	SPACE	--	--	--			0	0			--	--	--	SPACE	16
17	SPACE	--	--	--					0	0	--	--	--	SPACE	18
19	SPACE	--	--	--	0	0					--	--	--	SPACE	20
21	SPACE	--	--	--			0	0			--	--	--	SPACE	22
23	SPACE	--	--	--					0	0	--	--	--	SPACE	24
				Total Load:	1380 VA		1020 VA		1260 VA						
				Total Amps:	12 A		9 A		11 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	720 VA	100.00%	720 VA		
Other	600 VA	100.00%	600 VA	Total Conn. Load:	3660 VA
Receptacle	2340 VA	100.00%	2340 VA	Total Est. Demand:	3660 VA
				Total Conn. Current:	10 A
				Total Est. Demand...	10 A



TYPICAL GROUNDING DETAIL
12" = 1'-0"

PANELBOARD NOTES (#)

1. TERMINATE GROUND ON ISOLATED GROUND BUS.
2. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-OFF FOR MAINTENANCE).
3. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-ON FOR CRITICAL LOAD).
4. GFI BREAKER FOR PERSONNEL PROTECTION (5mA).
5. GFI BREAKER FOR EQUIPMENT PROTECTION (30mA).
6. CONDUCTOR SIZE SHOWN IN PANEL SCHEDULE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUND PROPORTIONALLY PER NEC. REFERENCE GROUND WIRE SIZING CHART.
7. REFER TO ONE-LINE DIAGRAM FOR AVAILABLE FAULT CURRENT FOR INTERRUPT RATINGS.
8. REFER TO ONE-LINE DIAGRAM FOR WIRE SIZES.
9. FACTORY WIRED TO LOAD.
10. THRU CONTROLLER. REFER TO LIGHTING CONTROLLER DETAIL.
11. ADD CIRCUIT BREAKER TO EXISTING PANEL.

EQUIPMENT GROUNDING CONDUCTOR SIZING CHART

BRKR AMPS		WIRE SIZE				
15-20	PHASE	12	10	8	6	4
	GROUND	12	10	8	6	4
25-30	PHASE	10	8	6	4	3
	GROUND	10	8	6	4	3
35-50	PHASE	8	6	4	3	2
	GROUND	10	8	4	4	4
60	PHASE	6	4	3	2	1
	GROUND	10	6	6	4	4
70	PHASE	6	4	3	2	1
	GROUND	8	4	4	3	2
80-90	PHASE	4	3	2	1	1/0
	GROUND	8	6	4	4	3
100	PHASE	3	2	1	1/0	2/0
	GROUND	8	6	4	4	3

PER NEC 250.122(B)

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PROJECT PHASE:
BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01

SHEET NUMBER:
E3.02

PANEL SCHEDULES

Branch Panel: L1A — NEW

Location: MEP 01-05-01 **Supply From:** T1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 300 A
Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	6430 TABLE 10-02	20	1		600	180						1	20	OUTDOOR SERVICE RECEPTACLE	2
3	AHU-3 VAV POWER	20	1				132	180				1	20	WINGS OFFICE COPIER/PRINTER 06-01	4
5	PT EXAM TABLE 07-11	20	1						180	180		1	20	PT EXAM TABLE 08-16	6
7	PC EXAM TABLE 09-04	20	1		360	1440						1	15	ICE MAKER 07-13(4)	8
9	MEDS WORK BENCH 09-07	20	1				360	1620				1	20	CIRCULATION TV/RECEPTACLES 00-06	10
11	KITCHEN OVEN 14-04 (4)	50	2	#6					8250	360		1	20	KH -1	12
13					8250	360						1	20	PC EXAM TABLE 09-06	14
15	SHUNT TRIP CONTROL	--	--	--			0	2500				1	20	CONFERENCE RM FLOORBOXES 14-01	16
17	PT TABLE 07-09	20	1						180	900		1	20	NOURISHMENT RECEPTACLES 07-13	18
19	PT TABLE 07-08	20	1		360	1500						1	20	CONFERENCE RM FLOORBOXES 14-02	20
21	CONFERENCE RM RECEPTACLES 14-01	20	1				1400	360				1	20	CONF. PROJECTOR SCREEN 14-01	22
23	WINGS OFFICE RECEPTACLES 06-01	20	1						1080	360		1	20	HOT WATER HEATER-2	24
25	EVS OFFICE RECEPTACLES 04-04	20	1		1440	360						1	20	PT EXAM TABLE 09-05	26
27	PT OFFICE RECEPTACLES 07-03	20	1				360	720				1	20	PT OFFICE RECEPTACLES 07-03	28
29	PT ASST RECEPS/FLOOR BOX 07-04	20	1						1400	960		1	20	BOILER 1	30
31	IT DEDICATED RECEPTACLES 05-03	20	1		360	860						1	20	CONFERENCE RM RECEPTACLES 14-02	32
33	EXERCISE AREA FLOORBOXES 07-14	20	1				500	360				1	20	MEDS RECEPTACLE 09-07	34
35	EXERCISE AREA FLOORBOXES 07-14	20	1						500	720		1	20	EXERCISE AREA TV/RECEPS 07-14	36
37	EXCERISE AREA RECEPTACLES 07-14	20	1		1130	360						1	20	MEDS RECEPTACLES 09-07	38
39	CONFERENCE RM FLOORBOXES 14-01	20	1				2000	1620			10	1	20	SECURITY RECEPTACLES 16-12	40
41	EF-5	20	1						373	180		1	20	PRELIM TEST RECEPTACLES 10-02	42
43	ELEVATOR SIMPLEX SUMP PUMP	20	1		180	720						1	20	PRELIM TEST RECEPTACLES 10-02	44
45	ELEVATOR PIT GFCI	20	1				180	540				1	20	PT RECEPTION RECEPTACLESS 07-01	46
47	BOILER 2	20	1						960	1080		1	20	PT TRTMT 07-08	48
49	WATER HEATER-1	20	1		360	1080						1	20	WINGS OFFICE RECEPTACLES 06-02	50
51	CONFERENCE RM FLOORBOXES 14-02	20	1				2000	720				1	20	PT TRTMT RECEPTACLES 07-07	52
53	AHU-1 VAV POWER	20	1						552	1285		1	20	CIRCULATION RECEPTACLES 07-02	54
55	WATER FOUNTAIN/RESTROOM SERV(4)	20	1		665	1440						1	20	SECURITY CPU RECEPTACLES 16-12	56
57	FACP (3)	20	1				360	900				1	20	TREATMENT RECEPTACLES 09-11	58
59	WINGS OFFICE COPIER/PRINTER 01-02	20	1						180	900		1	20	PC EXAM RECEPTACLES 09-05	60
61	STORAGE REFRIGERATOR 07-10	20	1		600	360						1	20	CONF. PROJECTOR SCREEN 14-01	62
63	PT TRTMT RECEPTACLES 07-11	20	1				900	1105				1	20	PC EXAM/BH RECEPTACLES 09-08	64
65	STORAGE REFRIGERATOR 07-10	20	1						600	900		1	20	PT TRTMT RECEPTACLES 07-09	66
67	FLOAT OFFICES RECEPTACLES 09-15	20	1		720	1080						1	20	FLOAT OFFICES RECEPTACLES 09-15	68
69	FLOAT OFFICES RECEPTACLES 09-15	20	1				1080	360				1	20	FLOAT OFFICES COPIER/PRINTER 01-15	70
71	PC EXAM RECEPTACLES 09-04	20	1						720	720		1	20	SOILED ROOM RECEPTACLES 09-13	72
73	PC PHY OFF RECEPTACLES 09-16	20	1		900	1080						1	20	OPEN WORK CPU RECEPTACLES 09-18	74
75	OPEN WORK CPU RECEPTACLES 09-18	20	1				1080	900				1	20	PC PHY OFF RECEPTACLES 09-17	76
77	OPEN WORK FLOORBOX 09-18	20	1						500	900		1	20	PC EXAM RECEPTACLES 09-06	78
79	SPACE	--	--	--	0	360						1	20	BAS CONTROL	80
81	SPACE	--	--	--			0	1080				1	20	01-05-01 MEP RECEPTACLES	82
83	SPACE	--	--	--					0	0	--	--	--	SPACE	84
85					1380	6667									86
87	PANEL F1A (8)	60	3	--			1020	6667			--	3	200	GENERATOR 2 LOAD CENTER (8)	88
89									1260	6667					90
91	SPARE	20	1	--	0	0					--	1	20	SPARE	92
93	SPARE	20	1	--			0	0			--	1	20	SPARE	94
95	SPARE	20	1	--					0	0	--	1	20	SPARE	96
97	SPARE	20	1	--	0	0					--	1	20	SPARE	98
99	SPARE	20	1	--			0	0			--	1	20	SPARE	100
101	SPACE	--	--	--					0	0	--	--	--	SPACE	102
103	SPACE	--	--	--	0	0					--	--	--	SPACE	104
105	SPACE	--	--	--			0	0			--	--	--	SPACE	106
107	SPACE	--	--	--					0	0	--	--	--	SPACE	108
109	SPACE	--	--	--	0	0					--	--	--	SPACE	110
111	SPACE	--	--	--			0	0			--	--	--	SPACE	112
113	SPACE	--	--	--					0	0	--	--	--	SPACE	114
115	SPACE	--	--	--	0	0					--	--	--	SPACE	116
117	SPACE	--	--	--			0	0			--	--	--	SPACE	118
119	SPACE	--	--	--					0	0	--	--	--	SPACE	120
121	SPACE	--	--	--	0	0					--	--	--	SPACE	122
123	SPACE	--	--	--			0	0			--	--	--	SPACE	124
125	SPACE	--	--	--					0	0	--	--	--	SPACE	126
				Total Load:	35152 VA		31004 VA		32847 VA						
				Total Amps:	295 A		258 A		276 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	720 VA	100.00%	720 VA		
Other	4560 VA	100.00%	4560 VA	Total Conn. Load:	99002 VA
Power	21665 VA	100.00%	21665 VA	Total Est. Demand:	77943 VA
Receptacle	53264 VA	59.39%	31632 VA	Total Conn. Current:	275 A
Kitchen	16500 VA	100.00%	16500 VA	Total Est. Demand...	216 A
Continuous	2293 VA	125.00%	2866 VA		

Branch Panel: L2A — NEW

Location: ELEC 01-05-05 **Supply From:** T-2 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 225 A
Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	DISPENSING RECEPTACLES 10-00	20	1		1040	360						1	20	DISPENSING CPU RECEPTACLES 10-00	2
3	DISPENSING FLOORBOXES 10-00	20	1				1860	1260				1	20	EXAM REFRAC RECEPTACLES 10-03	4
5	INFECTION CONTROL RECEPTS 13-04	20	1						1080	1130		1	20	WT AL 13-02/TOILET 11-01/TOILET 13-03	6
7	RECEPTION RECEPTACLES 13-00	20	1		900	540						1	20	RECEPTION RECEPTACLES 13-00	8
9	LACTATION RECEPTACLES 00-07	20	1				900	360				1	20	IT DEDICATED RECEPTACLES 05-04	10
11	IT DEDICATED RECEPTACLES 05-04	20	1						360	1080		1	20	ELEC RM/IT RM RECEPTACLES 05-05	12
13	PHN EXAM RECEPTACLES 13-05	20	1		360	1620						1	20	EXAM REFRAC RECEPTACLES 10-04(4)	14
15	PHN EXAM RECEPTACLES 13-05(4)	20	1				900	360				1	20	SPECIAL TEST RECEPTACLES 10-05	16
17	SPECIAL TEST RECEPTACLES 10-05	20	1						180	360		1	20	PHNMED ADMIN RECEPTACLES 13-06	18
19	5050 REFRIGERATOR 13-06	20	1		900	600						1	20	5054 FREEZER 13-06	20
21	KITCHENETTE REFRIGERATOR 16-06	20	1				600	360				1	20	PHNMED ADMIN RECEPTACLES 13-06	22
23	EXAM REFRAC RECEPTACLES 10-06(4)	20	1						1260	720		1	20	MEDS RECEPTACLES 12-00	24
25	EXAM NON-REFRAC RECEPTS 10-07(4)	20	1		1440	720						1	20	SPECIALTY EXAM RECEPTACLES 12-01	26
27	SPECIALTY EXAM RECEPTACLES 12-02	20	1				720	1260				1	20	EXAM REFRAC RECEPTACLES 10-08	28
29	EXAM REFRAC TV/RECEPTACLES 10-08	20	1						1440	720		1	20	SPECIALTY EXAM RECEPTACLES 12-03	30
31	TOILET RECS. 02-04,02-05,02-06,02-07	20	1		820	1080						1	20	CIRCULATION RECEPTACLES 13-01	32
33	STAFF LOUNGE RECEPTACLES 02-08	20	1				720	1000				1	20	STAFF LOUNGE REFRIGERATOR 02-08	34
35	STAFF LOUNGE REFRIGERATOR 02-08	20	1						1000	360		1	20	COPIER/PRINTER 01-05	36
37	STAFF LOUNGE ICE MAKER 02-08	20	1		1800	1501						1	20	STAFF LOUNGE MICROWAVE 02-08	38
39	STAFF LOUNGE MICROWAVE 02-08	20	1				1334	900				1	20	PHN OPEN WORK RECEPTACLES 13-12	40
41	PHN OPEN WORK RECEPTACLES 13-12	20	1						900	900		1	20	CIRCULATION RECEPTACLES	42
43	OFFICE RECEPTACLES 12-05	20	1		900	900						1	20	SPEC PHY OFF RECEPTACLES 12-06	44
45	OPEN WORK CPU RECEPTACLES 12-07	20	1				1080	500				1	20	OPEN WORK FLOORBOX 12-07	46
47	OPEN WORK RECEPTACLES 12-07	20	1						1080	1680		1	15	KITCHENETTE ICE MAKER 16-06	48
49	OPEN WORK COPIER/PRINTER 13-08	20	1		180	1080						1	20	OPEN WORK RECEPTACLES 13-08	50
51	PHN OFFICE RECEPTACLES 13-07	20	1				1080	900				1	20	RECEPTION CPU RECEPTACLES 09-00	52
53	HEALTH ED RECEPTACLES 11-08	20	1						900	720		1	20	HEALTH ED RECEPTACLES 11-08	54
55	BREASTFEEDING RECEPTACLES 11-02	20	1		720	1080						1	20	WIC OFFICE RECEPTACLES 11-03	56
57	PHARMACY COPIER/PRINTER 15-14	20	1				180	1080				1	20	WIC OFFICE RECEPTACLES 11-04	58
59	CONSULT RECEPTS 15-02, 15-03, 15-04	20	1						1080	540		1	20	WIC STORAGE RECEPTACLES 11-05	60
61	WIC OFFICE RECEPTACLES 11-06	20	1		1080	360						1	20	OPEN WORK COPIER/PRINTER 13-12	62
63	WIC OFFICE RECEPTACLES 11-07	20	1				1080	1080				1	20	RECEPTION RECEPTACLES 09-00	64
65	OFFICE RECEPTACLES 16-10	20	1						900	180		1	20	WORK ROOM COPIER/PRINTER 01-02	66
67	OFFICE RECEPTACLES 16-09	20	1		900	180						1	20	RECEPTION RECEPTACLE 13-00	68
69	OFFICE RECEPTACLES 16-08	20	1				900	360				1	20	SPEC EXAM TABLE 12-02	70
71	CONF. ROOM TV/FLOORBOXES 16-07(4)	20	1						1260	1360		1	20	CONF. ROOM RECEPTACLES 16-07	72
73	KITCHENETTE RECEPTACLES 16-06	20	1		540	900						1	20	CIRCULATION RECEPTACLES/TV 00-11	74
75	KITCHENETTE MICROWAVE 16-06 (6)	20	1	#10			1668	696				1	15	EF-6	76
77	OFFICE RECEPTACLES 16-05	20	1						1440	360		1	20	SPECIALTY EXAM RECEPTACLES 12-01	78
79	RECEPTION/CIRC. RECEPTACLES 16-01	20	1		1465	540						1	20	WORKROOM RECEPTACLES 16-02	80
81	WORKROOM RECEPTACLES 16-02	20	1				720	540				1	20	WORKROOM RECEPTACLES 16-02	82
83	RECEPTION CPU RECEPTACLES 16-01	20	1						360	1680		1	20	SUMP PUMP RECEPTACLE	84
85	BREAK CPU RECEPTACLES 15-08	20	1		540	600						1	20	6403 EQUIPMENT 10-05	86
87	6404 EQUIPMENT 10-05	20	1				600	900				1	20	5050 REFRIGERATOR 12-00	88
89	5054 FREEZER 12-00	20	1						900	8250	#10	2	25	STAFF LOUNGE COFFEE 02-08(4)	90
91	CONFERENCE REFIGERATOR 16-07	20	1		360	8250									92
93	LOBBY RECEPTACLES 01-00	20	1				1800	1080				1	20	OPENWORK CPU RECEPTACLES 01-06	94
95	RECEPTION CPU RECEPTACLES 09-00	20	1						900	1080		1	20	OPENWORK CPU RECEPTACLES 01-06	96
97	AHU-2 VAV POWER	20	1		456	600						1	20	PHARMACY REFRIGERATOR 15-14	98
99	KICHENETTE COFFEE 16-06(4)	25	2	#10			8250	360				1	20	LOUNGE RECEPTACLES 02-08	100
101									8250	0	--	1	20	SPARE	102
103	SPARE	20	1	--	0	0					--	1	20	SPARE	104
105	SPARE	20	1	--			0	0			--	1	20	SPARE	106
107	SPARE	20	1	--					0	0	--	1	20	SPARE	108
109	SPARE	20	1	--	0	0					--	--	--	SPACE	110
111	SPACE	--	--	--			0	0			--	--	--	SPACE	112
113	SPACE	--	--	--					0	0	--	--	--	SPACE	114
115	SPACE	--	--	--	0	0					--	--	--	SPACE	116
117	SPACE	--	--	--			0	0			--	--	--	SPACE	118
119	SPACE	--	--	--					0	0	--	--	--	SPACE	120
121	SPACE	--	--	--	0	0					--	--	--	SPACE	122
123	SPACE	--	--	--			0	0			--	--	--	SPACE	124
125	SPACE	--	--	--					0	0	--	--	--	SPACE	126
				Total Load:	35312 VA		37388 VA		44410 VA						
				Total Amps:	294 A		314 A		373 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	2760 VA	100.00%	2760 VA		
Power	871 VA	100.00%	871 VA	Total Conn. Load:	117110 VA
Receptacle	80479 VA	56.21%	45240 VA	Total Est. Demand:	81871 VA
Kitchen	33000 VA	100.00%	33000 VA	Total Conn. Current:	325 A
				Total Est. Demand...	227 A

Branch Panel: L3A — NEW

Location: ELEC 02-05-11 **Supply From:** T-3 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 300 A
Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	CIRCULATION RECEPTACLES 18-00	20	1		900	360						1	20	STAFF TOILET RECEPTACLES 17-05,06	2
3	BRKROOM/CONF FLOORBOXES 17-04	20	1				1080	540				1	20	BREAK RM/CONF RECEPTACLES 17-04	4
5	PUMP RECEPTACLES 17-08	20	1						720	900		1	20	RECEPTACLES 17-40,45	6
7	CLOSED OPP RADIO. UNIT 17-10	20	1		600	360						1	20	CLOSED OPP TV/RECEPTACLE 17-10	8
9	CLOSED OPP RECEPTACLES 17-11	20	1				600	360				1	20	CLOSED OPP TV/RECEPTACLE 17-11	10
11	OPEN OPP RECEPTACLES 17-12	20	1						600	1000		1	20	OPEN OPP FLOORBOX 17-12	12
13	OPEN OPP RECEPTACLES 17-13	20	1		600	1000						1	20	OPEN OPP FLOORBOX 17-13	14
15	OPEN OPP RECEPTACLES 17-14	20	1				600	1000				1	20	OPEN OPP FLOORBOX 17-14	16
17	OPEN OPP COMPUTER 17-15	20	1						600	1000		1	20	OPEN OPP FLOORBOX 17-15	18
19	CLOSED OPP RECEPTACLES 17-49	20	1		500	360						1	20	CLOSED OPP TV/RECEPTACLE 17-49	20
21	CLOSED OPP RECEPTACLES 17-48	20	1				500	360				1	20	CLOSED OPP TV/RECEPTACLE 17-48	22
23	OPEN WORK CPU RECEPTACLES 17-47	20	1						720	600		1	15	COPIER/PRINTER 17-01	24
25	OPEN WORK CPU RECEPTACLES 17-47	20	1		720	1668						1	20	CONF / BREAK MICROWAVE 17-04	26
27	PAN RECEPTACLES 17-41	20	1				540	720				1	20	RECEPTION RECEPTACLES 17-01	28
29	CONF / BREAK REFRIGERATOR 17-04	20	1						600	540		1	20	RECEPTION RECEPTACLES 17-01	30
31	OFFICE MANAGER RECEPTACLES 17-39	20	1		900	360						1	20	LAB RECEPTACLES 17-24	32
33	PAN RECEPTACLES 17-37	20	1				540	360				1	20	CLEAN ROOM RECEPTACLES 17-42	34
35	SOILED ROOM RECEPTACLES 17-43	20	1						900	1080		1	20	OPEN WORK CPU RECEPTACLES 17-44	36
37	EXERCISE TV/RECEPTACLE 19-07	20	1		360	900						1	20	SOILED ROOM RECEPTACLES 17-43	38
39	OPEN OPP COMPUTER 17-16	20	1				600	1000				1	20	OPEN OPP FLOORBOX 17-16	40
41	OPEN OPP COMPUTER 17-17	20	1						600	1000		1	20	OPEN OPP FLOORBOX 17-17	42
43	OPEN OPP COMPUTER 17-18	20	1		600	1000						1	20	OPEN OPP FLOORBOX 17-18	44
45	CLOSED OPP RECEPTACLES 17-35	20	1				600	720				1	20	RECEPTACLES 17-32,33,34,	46
47	CLOSED OPP RECEPTACLES 17-35	20	1						500	600		1	20	CLOSED OPP RECEPTACLES 17-35	48
49	OPEN OPP COMPUTER 17-19	20	1		600	1000						1	20	OPEN OPP FLOORBOX 17-19	50
51	OPEN OPP COMPUTER 17-20	20	1				600	1000				1	20	OPEN OPP FLOORBOX 17-20	52
53	OPEN OPP COMPUTER 17-21	20	1						600	1000		1	20	OPEN OPP FLOORBOX 17-21	54
55	OPEN OPP COMPUTER 17-22	20	1		600	1000						1	20	OPEN OPP FLOORBOX 17-22	56
57	LAB RECEPTACLES 17-24	20	1				720	780				1	20	LAB RECEPTACLES 17-24	58
59	ASST SUPER RECEPTACLES 17-25	20	1						720	500		1	20	EXERCISE EQUIPMENT 19-07	60
61	OPEN WORK AREA CPU RECEP 17-26	20	1		180	1080						1	20	OPEN WORK AREA RECEPTACLES...	62
63	EXERCISE EQUIPMENT 19-07	20	1				500	1080				1	20	OPEN WORK AREA RECEPTACLES...	64
65	OPEN WORK AREA CPU RECEP 17-26	20	1						720	600		1	20	OPEN WORK AREA RECEPTACLES...	66
67	EXERCISE EQUIPMENT 19-07	20	1		500	1440						1	20	CIRCULATION RECEPTACLES 18-00	68
69	DENTAL DIRECTOR RECEPS 28-30	20	1				900	2160				1	20	CIRCULATION RECEPTACLES 18-00	70
71	CLEAN TABLE TOP STERILIZER 17-42	20	1						180	180		1	20	CLEAN TABLE TOP STERILIZER 17-42	72
73	CIRCULATION RECEPTACLE 17-23	20	1		180	600						1	20	DENTAL CHAIR 17-35	74
75	DENTAL CHAIR 17-49	20	1				500	600				1	20	DENTAL CHAIR 17-11	76
77	IT RECEPTACLES 05-10	20	1						360	250		2	20	IT RACK 05-10	78
79	IT RECEPTACLES 05-10	20	1		360	250									80
81	DENTAL CHAIR 17-10	20	1				600	360				1	20	WATER FOUNTAIN (4)	82
83	CONF / BREAK REFRIGERATOR 17-04	20	1						600	960		1	20	XRAY	84
85	EXERCISE RECEPTACLES 19-07	20	1		720	0					--	1	20	SPARE	86
87	EXERCISE EQUIPMENT 19-07	20	1				500	500				1	20	DENTAL CHAIR 17-48	88
89	AHU-4 VAV POWER	20	1						216	600		1	20	CLOSED OPP RECEPTACLES 17-35	90
91	CLOSED OPP RECEPTACLES 17-48	20	1		500	0					--	1	20	SPARE	92
93	BREAK / CONF ICE MAKER 17-04	15	1				1236	0			--	1	20	SPARE	94
95	BREAKROOM/CONF. COFFEE 17-04	25	2	#10					1768	0	--	1	20	SPARE	96
97					1768	0					--	1	20	SPARE	98
99	CIRC. RECEPTACLES 17-23,27,36	20	1				720	0			--	1	20	SPARE	100
101	XRAY	20	1						960	180		1	20	ULTRASONIC CLEANER	102
103	XRAY	20	1		960	600						1	20	AUTOCLAVE	104
105	XRAY	20	1				960	500			#10	2	30	MIELE INSTRUMENT WASHER	106
107	XRAY	20	1						960	500					108
109	XRAY	20	1		960	500					#10	2	30	MIELE INSTRUMENT WASHER	110
111	XRAY	20	1				960	500							112
113	XRAY	20	1						960	0	--	--	--	SPACE	114
115	XRAY	20	1		960	0					--	--	--	SPACE	116
117	XRAY	20	1				960	0			--	--	--	SPACE	118
119	XRAY	20	1						960	0	--	--	--	SPACE	120
121					1000	0					--	--	--	SPACE	122
123	AIR COMPRESSOR	30	3	#10			1000	0			--	--	--	SPACE	124
125									1000	0	--	--	--	SPACE	126
				Total Load:	26946 VA		27756 VA		26734 VA						
				Total Amps:	225 A		232 A		223 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	27404 VA	100.00%	27404 VA		
Power	22096 VA	100.00%	22096 VA	Total Conn. Load:	81436 VA
Receptacle	31336 VA	65.96%	20668 VA	Total Est. Demand:	70168 VA
Heating	600 VA	0.01%	0 VA	Total Conn. Current:	226 A
				Total Est. Demand...	195 A

PANELBOARD NOTES (#)

1. TERMINATE GROUND ON ISOLATED GROUND BUS.
2. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-OFF FOR MAINTENANCE).
3. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-ON FOR CRITICAL LOAD).
4. GFI BREAKER FOR PERSONNEL PROTECTION (5mA).
5. GFI BREAKER FOR EQUIPMENT PROTECTION (30mA).
6. CONDUCTOR SIZE SHOWN IN PANEL SCHEDULE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUND PROPORTIONALLY PER NEC. REFERENCE GROUND WIRE SIZING CHART.
7. REFER TO ONE-LINE DIAGRAM FOR AVAILABLE FAULT CURRENT FOR INTERRUPT RATINGS.
8. REFER TO ONE-LINE DIAGRAM FOR WIRE SIZES.
9. FACTORY WIRED TO LOAD.
10. THRU CONTROLLER. REFER TO LIGHTING CONTROLLER DETAIL.
11. ADD CIRCUIT BREAKER TO EXISTING PANEL.

EQUIPMENT GROUNDING CONDUCTOR SIZING CHART

BRKR AMPS		WIRE SIZE				
15-20	PHASE GROUND	12 12	10 10	8 8	6 6	4 4
25-30	PHASE GROUND	10 10	8 8	6 6	4 4	3 3
35-50	PHASE GROUND	8 10	6 8	4 4	3 4	2 4
60	PHASE GROUND	6 10	4 6	3 6	2 4	1 4
70	PHASE GROUND	6 8	4 4	3 4	2 3	1 2
80-90	PHASE GROUND	4 8	3 6	2 4	1 4	1/0 3
100	PHASE GROUND	3 8	2 6	1 4	1/0 4	2/0 3

PER NEC 250.122(B)

Branch Panel: L1B — NEW

Location: MEP 01-05-01 **Supply From:** T1 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 300 A
Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	OUTDOOR SERVICE RECEPTACLES	20	1		720	540						1	20	OUTDOOR SERVICE RECEPTACLES	2
3	OPEN WORK RECEPTACLES 10-12	20	1				720	1080				1	20	WORKSTATION RECEPTACLES 10-12	4
5	3916 EQUIPMENT 10-12	20	1						500	360		1	20	WORKSTATION RECEPTACLES 10-12	6
7	OPT PHY OFF RECEPTACLES 10-10	20	1		900	1440						1	20	OPT PHY OFF RECEPTACLES 10-11	8
9	KITCHEN MICROWAVE 14-04	20	1				1800	2496			#10	2	30	DRYER 04-06	10
11	IT RECEPTACLES 01-05-03	20	1						360	2496					12
13	IT SERVER CIRCUIT 05-03	30	2	#10	2496	600						1	20	EXERCISE AREA FLOORBOXES 07-14	14
15							2496	1440				1	20	RECEPTACLES 04-05, 04-03, 04-06	16
17	EXERCISE AREA FLOORBOXES 07-14	20	1						500	500		1	20	EXERCISE AREA FLOORBOXES 07-14	18
19	EXERCISE AREA FLOORBOXES 07-14	20	1		500	500						1	20	EXERCISE AREA FLOORBOXES 07-14	20
21	EXERCISE AREA FLOORBOXES 07-14	20	1				500	500				1	20	EXERCISE AREA FLOORBOXES 07-14	22
23	EXERCISE AREA FLOORBOXES 07-14	20	1						500	360		1	20	UNDERCOUNTER FREEZER 09-07 (4)	24
25	MEDS RECEPTACLE 09-07	20	1		180	180						1	20	MEDS LASERJET COPY/PRINT 09-07	26
27	PT EXAM TABLE 07-07	20	1				360	1352				2	20	WASHER 04-07	28
29	3902 EQUIPMENT 10-12	20	1						180	1352					30
31	CP-1	15	2		250	250						2	15	CP-2	32
33							250	250							34
35	EMPLOYEE AREA ICE MAKER 02-01	20	1						1800	2040	#10	1	25	EMPLOYEE AREA COFFEEMAKER...	36
37	CIRCULATION RECEPTACLES 00-06	20	1		900	1334						1	20	EMPLOYEE AREA MICROWAVE 02-01	38
39	EMPLOYEE AREA MICROWAVE 02-01	20	1				1501	770				1	20	EMPLOYEE AREA/RR RECEPTS 01-02	40
41	RECEPTION RECEPTACLES 08-01	20	1						900	900		1	20	MED SOC WK RECEPTACLES 08-11	42
43	OFFICE ADMIN CPU RECEPTS 08-12	20	1		900	1620						1	20	GROUP RM FLOORBOXES 08-10	44
45	GROUP RM CPU RECEPTACLES 08-10	20	1				720	1080				1	20	CIRCULATION RECEPTACLES 08-02	46
47	OFFICE THERAPIST RECEPTS 08-09	20	1						900	900		1	20	OFFICE THERAPIST RECEPTS 08-08	48
49	OFFICE THERAPIST RECEPTS 08-07	20	1		900	900						1	20	OBSERVATION RECEPTACLES 08-05	50
51	CLEAN ROOM RECEPTACLES 09-12	20	1				1080	1000				1	20	EMPLOYEE AREA REFRIG. 02-01	52
53	OFFICE THERAPIST CPU 09-10	20	1						900	1040		1	20	PLAY THERAPY RECEPTACLES 08-06	54
55	OFFICE THERAPIST RECEPTS 09-09	20	1		540	1933									56
57	KITCHEN FRIDGE 14-04 (4)	20	1				1152	1933				3	20	KITCHEN DISHWASHER 14-04 (4)	58
59	KITCHEN GFCI 14-04	20	1						3360	1933					60
61	KITCHEN COFFEE GFCI 14-04	20	1		2040	1680					#10	1	20	COFFEE MAKER 08-10	62
63	RECEPTION COPIER/PRINTER 01-01	20	1				180	180				1	15	KITCHEN ICE MACHINE 14-04 (4)	64
65	OFFICE THERAPIST 08-03	20	1						1465	1800	#8	1	20	TABLE TOP STERILIZER 09-12	66
67	GROUP ROOM ICE MAKER 08-10 (4)	15	1		1800	1800						1	20	KITCHEN MICROWAVE 14-04	68
69							6667	1080				1	20	CPF-1	70
71	GENERATOR 1 LOAD CENTER (8)	200	3	--					6667	1080		1	20	CPF-2	72
73					6667	0					--	1	20	SPARE	74
75	SPACE	--	--	--			0	0			--	1	20	SPARE	76
77	SPACE	--	--	--					0	0	--	1	20	SPARE	78
79	SPACE	--	--	--	0	0					--	1	20	SPARE	80
81	SPACE	--	--	--			0	0			--	--	--	SPACE	82
83	SPACE	--	--	--					0	0	--	--	--	SPACE	84
				Total Load:	31570 VA		30587 VA		32793 VA						
				Total Amps:	264 A		255 A		275 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	8752 VA	100.00%	8752 VA		
Power	33763 VA	100.00%	33763 VA	Total Conn. Load:	94950 VA
Receptacle	37960 VA	63.17%	23980 VA	Total Est. Demand:	77200 VA
Kitchen	12315 VA	65.00%	8005 VA	Total Conn. Current:	264 A
Continuous	2160 VA	125.00%	2700 VA	Total Est. Demand...	214 A

Branch Panel: L2B — NEW

Location: ELEC 01-05-05 **Supply From:** T-2 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 175 A
Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1	SECTOR 2 SERVICE GFCI'S	20	1		1080	360						1	20	WT AL RECEPTACLES 13-02	2
3	WATER FILTER SYSTEM 15-14	20	1				180	360				1	20	CIRCULATION MONITOR 00-11	4
5	CIRCULATION MONITORS 00-11	20	1						360	360		1	20	CIRCULATION MONITOR 00-11	6
7	FUTURE SCRIPT PRO KIOSK 00-11	20	1		360	900						1	20	PBC-HC RECEPTACLES 01-04	8
9	CHS RECEPTACLES 01-03	20	1				900	900				1	20	CHS RECEPTACLES 01-02	10
11	FILE STORAGE/CIRC. RECEPTACLES	20	1						360	1440		1	20	CODER CPU RECEPTACLES 01-07	12
13	OFFICE RECEPTACLES 01-08	20	1		1260	1080						1	20	OFFICE RECEPTACLES 01-09	14
15	MR RECEPTACLES 01-01	20	1				1080	180				1	20	RECEPTION COPIER/PRINTER 01-00	16
17	RECEPTION CPU RECEPTACLES...	20	1						720	720		1	20	CIRCULATION RECEPTACLES 00-08	18
19	EVS CLOSET RECEPTACLES 04-02	20	1		1080	720						1	20	SIMPLEX RECEPTACLE SUMP PUMP	20
21	PHARMACY RECEPTACLES 15-14	20	1				720	1440				1	20	SUPERVISOR RECEPTACLES 15-12	22
23	RECEPTION RECEPTACLES 15-01	20	1						1080	900		1	20	CONSULT RECEPTS 15-04,15-03,15-02	24
25	PHARMACY FLOORBOXES 15-14	20	1		360	925						1	20	RECEPTACLES 15-09/15-11	26
27	PHARMACY FLOORBOXES 15-14	20	1				360	500				1	20	SP 200 MEDICINE SORTING 15-14	28
29	UNDERCOUNTER FREEZER 15-14 (4)	20	1						690	1380		1	20	PHARMACY REFRIGERATOR 15-14	30
31	BREAKROOM MICRO. OVEN 15-08	20	1		1668	444						1	20	PHARMACY BREAK REFRIG. 15-08	32
33	PHARMACY CPU RECEPTACLES 15-14	20	1				900	1080				1	20	PHARMACY CPU RECEPTACLES 15-14	34
35	REGISTRATION RECEPTACLES 00-02	20	1						900	540		1	20	CONSULT RECEPTS 15-07,15-06,15-05	36
37	CONSULT RECEPTS 15-05,15-06,15-07	20	1		1080	900						1	20	CONSULT RECEPTS 15-04,05,06,07	38
39	CIRCULATION MONITORS 00-11	20	1				360	180				1	20	PHARMACY RECEPTACLE 15-14	40
41	REGISTRATION RECEPTACLES 00-02	20	1						720	360		1	20	COPIER/PRINTER 01-02	42
43	IT SERVER CIRCUIT 05-04	30	2	#10	2496	360						1	20	WAITING MONITOR 15-15	44
45							2496	250			#10	2	25	BREAK COFFEE BREWER 15-08	46
47	SPARE	20	1	--					0	250					48
49	SPARE	20	1	--	0	0					--	1	20	SPARE	50
51	SPARE	20	1	--			0	0			--	1	20	SPARE	52
53	SPARE	20	1	--					0	0	--	1	20	SPARE	54
55	SPACE	--	--	--	0	0					--	1	20	SPARE	56
57	SPACE	--	--	--			0	0			--	--	--	SPACE	58
59	SPACE	--	--	--					0	0	--	--	--	SPACE	60
61	SPACE	--	--	--	0	0					--	--	--	SPACE	62
63	SPACE	--	--	--			0	0			--	--	--	SPACE	64
65	SPACE	--	--	--					0	0	--	--	--	SPACE	66
67	SPACE	--	--	--	0	0					--	--	--	SPACE	68
69	SPACE	--	--	--			0	0			--	--	--	SPACE	70
71	SPACE	--	--	--					0	0	--	--	--	SPACE	72
73	SPACE	--	--	--	0	0					--	--	--	SPACE	74
75	SPACE	--	--	--			0	0			--	--	--	SPACE	76
77	SPACE	--	--	--					0	0	--	--	--	SPACE	78
79	SPACE	--	--	--	0	0					--	--	--	SPACE	80
81	SPACE	--	--	--			0	0			--	--	--	SPACE	82
83	SPACE	--	--	--					0	0	--	--	--	SPACE	84
				Total Load:	15073 VA		11886 VA		10780 VA						
				Total Amps:	127 A		100 A		90 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	2004 VA	100.00%	2004 VA		
Power	5877 VA	100.00%	5877 VA	Total Conn. Load:	37739 VA
Receptacle	28190 VA	67.74%	19095 VA	Total Est. Demand:	28644 VA
Kitchen	1668 VA	100.00%	1668 VA	Total Conn. Current:	105 A
				Total Est. Demand...	80 A

Branch Panel: L3B — NEW

Location: ELEC 02-05-11 **Supply From:** T-3 **Mounting:** SURFACE **Enclosure:** NEMA 1
Volts: 120/208 Wye **Phases:** 3 **Wires:** 4
A.I.C. Rating: (7) FULLY RATED **Mains Type:** MCB **Mains Rating:** 225 A
Notes:

CKT	Load Name	CB	P	Wire	A		B		C		Wire	P	CB	Load Name	CKT
1					6667	360						1	20	BACSOFT CONTROL 17-43	2
3	SOILED DENTAL PASS THRU 17-43	60	3	#6			6667	600				1	20	CLOSED OPP RECEPTACLES 17-10	4
5									6667	600		1	20	CLOSED OPP RECEPTACLES 17-10	6
7	CLOSED OPP RECEPTACLES 17-11	20	1		600	1600						1	20	CLOSED OPP RECEPTACLES 17-11	8
9	OPEN OPP FLOORBOX 17-12	20	1				1000	600				1	20	OPEN OPP COUNTER 17-12	10
11	OPEN OPP FLOORBOX 17-22	20	1						600	1000		1	20	OPEN OPP FLOORBOX 17-22	12
13	OPEN OPP FLOORBOX 17-21	20	1		1000	1000						1	20	OPEN OPP FLOORBOX 17-21	14
15	OPEN OPP FLOORBOX 17-20	20	1				1000	1000				1	20	OPEN OPP FLOORBOX 17-20	16
17	OPEN OPP FLOORBOX 17-19	20	1						1000	1000		1	20	OPEN OPP FLOORBOX 17-19	18
19	OPEN OPP FLOORBOX 17-18	20	1		1000	1000						1	20	OPEN OPP FLOORBOX 17-18	20
21	OPEN OPP FLOORBOX 17-17	20	1				1000	1000				1	20	OPEN OPP FLOORBOX 17-17	22
23	OPEN OPP FLOORBOX 17-16	20	1						1000	1000		1	20	OPEN OPP FLOORBOX 17-16	24
25	OPEN OPP FLOORBOX 17-15	20	1		1000	1000						1	20	OPEN OPP FLOORBOX 17-15	26
27	OPEN OPP FLOORBOX 17-14	20	1				1000	1000				1	20	OPEN OPP FLOORBOX 17-14	28
29	OPEN OPP FLOORBOX 17-13	20	1						1000	1000		1	20	OPEN OPP FLOORBOX 17-13	30
31	CLOSED OPP RECEPTACLES 17-49	20	1		1600	500						1	20	CLOSED OPP RECEPTACLES 17-49	32
33	CLOSED OPP RECEPTACLES 17-48	20	1				500	1000				1	20	OPEN WORK REFRIGERATOR 17-44	34
35	OPEN WORK REFRIGERATOR 17-44	20	1						1000	600		1	20	PANORAMIC XRAY 17-37	36
37	PANORAMIC XRAY 17-41	20	1		600	180						1	20	CLEAN INCUBATOR 17-42	38
39	WAITING RECEPTACLES 17-00	20	1				1800	180				1	20	ELECTRIC RM/IT ROOM RECEP 05-11	40
41	ELEVATOR CAB LIGHTS	20	1						200	200		1	20	ELEVATOR CAB LIGHTS	42
43	EF-10	15	1		528	500						1	20	ELEVATOR CONTROL SERVICE	44
45	BENCO PUMP ROOM EF	20	1				360	1000							46
47	SPARE	20	1	--					0	1000	#10	3	30	AIR COMPRESSOR	48
49	SPARE	20	1	--	0	1000									50
51	SPARE	20	1	--			0	750				2	20	VACUUM	52
53	SPACE	--	--	--					0	750					54
55	SPACE	--	--	--	0	750						2	20	VACUUM	56
57	SPACE	--	--	--			0	750							58
59	SPACE	--	--	--					0	750		2	20	VACUUM	60
61	SPACE	--	--	--	0	750									62
63	SPACE	--	--	--			0	750				2	20	VACUUM	64
65	SPACE	--	--	--					0	750					66
67	SPACE	--	--	--	0	360						1	20	VACUUM CONTROLS	68
69	SPACE	--	--	--			0	360				1	20	MEDICAL GAS CONTROLS	70
71	SPACE	--	--	--					0	0	--	1	20	SPARE	72
73	SPACE	--	--	--	0	0					--	1	20	SPARE	74
75	SPACE	--	--	--			0	0			--	1	20	SPARE	76
77	SPACE	--	--	--					0	0	--	1	20	SPARE	78
79	SPACE	--	--	--	0	0					--	--	--	SPACE	80
81	SPACE	--	--	--			0	0			--	--	--	SPACE	82
83	SPACE	--	--	--					0	0	--	--	--	SPACE	84
				Total Load:	21995 VA		22317 VA		20117 VA						
				Total Amps:	186 A		188 A		168 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	23600 VA	100.00%	23600 VA		
Power	35780 VA	100.00%	35780 VA	Total Conn. Load:	64428 VA
Receptacle	4520 VA	100.00%	4520 VA	Total Est. Demand:	64560 VA
Continuous	528 VA	125.00%	660 VA	Total Conn. Current:	179 A
				Total Est. Demand...	179 A

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PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: E3.03

PANEL SCHEDULES

Branch Panel: L4A — NEW

Location: ELEC 02-05-12 | **Volts:** 120/208 Wye | **A.I.C. Rating:** (7) FULLY RATED
Supply From: T4 | **Phases:** 3 | **Mains Type:** MCB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: NEMA 1

Notes:

CKT	Load Name	CB	P	Wire	A	B	C	Wire	P	CB	Load Name	CKT
1	AHU-1 UV	15	1		462 1456				2	15	MCU-01	2
3	AHU-1 GFCI	15	1			360 1456						4
5	AHU-1 LIGHTING	15	1				391 1456		2	15	MCU-02	6
7	AHU-2 UV	15	1		232 1456							8
9	AHU-2 LIGHTING	15	1			391 1456			2	15	MCU-03	10
11	AHU-2 GFCI	15	1				180 1456					12
13	AHU-3 UV	15	1		462 1456				2	15	MCU-05	14
15	AHU-3 GFCI	15	1			1200 1456						16
17	AHU-3 LIGHTING	15	1				391 1456		2	15	MCU-04	18
19	AHU-4 UV	15	1		232 1456							20
21	AHU-4 LIGHTING	15	1			391 1976			2	15	MCU-06	22
23	AHU-4 GFCI	15	1				180 1976	#10	2	25		24
25	SPARE	20	1	--	0 1456				2	15	MCU-07	26
27	ELEVATOR CAB SPACE	20	1			1440 1456						28
29	ELEVATOR CAB LIGHTS	20	1				200 1976	#10	2	25	MCU-08	30
31	SPARE	20	1	--	0 1976							32
33	ROOF MAINTENANCE RECEPTACLE	20	1			180 1456			2	15	MCU-09	34
35	SPARE	20	1	--			0 1456					36
37	SPARE	20	1	--	0 1976			#10	2	25	MCU-10	38
39	SPACE	--	--	--		0 1976						40
41	SPACE	--	--	--			0 0				SPARE	42
43	SPACE	--	--	--	0 1976			#10	2	25	MCU-11	44
45	SPACE	--	--	--		0 1976						46
47	SPACE	--	--	--			0 0	--	1	20	SPARE	48
49	SPACE	--	--	--	0 0			--	1	20	SPARE	50
51	SPACE	--	--	--		0 0		--	1	20	SPARE	52
53	SPACE	--	--	--			0 0	--	--	--	SPACE	54
55	SPACE	--	--	--	0 0			--	--	--	SPACE	56
57	SPACE	--	--	--		0 0		--	--	--	SPACE	58
59	SPACE	--	--	--			0 0	--	--	--	SPACE	60
61	SPACE	--	--	--	0 0			--	--	--	SPACE	62
63	SPACE	--	--	--		0 0		--	--	--	SPACE	64
65	SPACE	--	--	--			0 0	--	--	--	SPACE	66
67	SPACE	--	--	--	0 0			--	--	--	SPACE	68
69	SPACE	--	--	--		0 0		--	--	--	SPACE	70
71	SPACE	--	--	--			0 0	--	--	--	SPACE	72
73	SPACE	--	--	--	0 0			--	--	--	SPACE	74
75	SPACE	--	--	--		0 0		--	--	--	SPACE	76
77	SPACE	--	--	--			0 0	--	--	--	SPACE	78
79	SPACE	--	--	--	0 0			--	--	--	SPACE	80
81	SPACE	--	--	--		0 0		--	--	--	SPACE	82
83	SPACE	--	--	--			0 0	--	--	--	SPACE	84
	Total Load:				14596 VA	17170 VA	11118 VA					
	Total Amps:				126 A	148 A	93 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	36192 VA	100.00%	36192 VA		
Power	200 VA	100.00%	200 VA	**Total Conn. Load:**	42884 VA
Receptacle	3540 VA	100.00%	3540 VA	**Total Est. Demand:**	43622 VA
Lighting - Exterior	2952 VA	125.00%	3690 VA	**Total Conn. Current:**	119 A
				Total Est. Demand...	121 A

Branch Panel: L4B — NEW

Location: ELEC 02-05-12 | **Volts:** 120/208 Wye | **A.I.C. Rating:** (7) FULLY RATED
Supply From: | **Phases:** 3 | **Mains Type:** MCB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: NEMA 1

Notes:

CKT	Load Name	CB	P	Wire	A	B	C	Wire	P	CB	Load Name	CKT
1	MCU-12	15	2		1456 500						EF-8	2
3						1456 1456			2	15	MCU-13	4
5	EF-7	15	1				528 1456					6
7	SPARE	20	1	--	0 0						SPARE	8
9	SPARE	20	1	--		0 0			1	20	SPARE	10
11	SPARE	20	1	--			0 0	--	1	20	SPARE	12
13	SPARE	20	1	--	0 0			--	1	20	SPARE	14
15	SPARE	20	1	--		0 0		--	1	20	SPARE	16
17	SPARE	20	1	--			0 0	--	1	20	SPARE	18
19	SPARE	20	1	--	0 0			--	1	20	SPARE	20
21	SPARE	20	1	--		0 0		--	1	20	SPARE	22
23	SPARE	20	1	--			0 0	--	1	20	SPARE	24
25	SPARE	20	1	--	0 0			--	1	20	SPARE	26
27	SPARE	20	1	--		0 0		--	1	20	SPARE	28
29	SPARE	20	1	--			0 0	--	1	20	SPARE	30
31	SPARE	20	1	--	0 0			--	1	20	SPARE	32
33	SPARE	20	1	--		0 0		--	1	20	SPARE	34
35	SPACE	--	--	--			0 0	--	--	--	SPACE	36
37	SPACE	--	--	--	0 0			--	--	--	SPACE	38
39	SPACE	--	--	--		0 0		--	--	--	SPACE	40
41	SPACE	--	--	--			0 0	--	--	--	SPACE	42
43	SPACE	--	--	--	0 0			--	--	--	SPACE	44
45	SPACE	--	--	--		0 0		--	--	--	SPACE	46
47	SPACE	--	--	--			0 0	--	--	--	SPACE	48
49	SPACE	--	--	--	0 0			--	--	--	SPACE	50
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79	SPACE	--	--	--	0 0			--	--	--	SPACE	80
81	SPACE	--	--	--		0 0		--	--	--	SPACE	82
83	SPACE	--	--	--			0 0	--	--	--	SPACE	84
	Total Load:				1956 VA	2912 VA	1984 VA					
	Total Amps:				16 A	24 A	17 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Hvac	5824 VA	100.00%	5824 VA		
Power	1028 VA	100.00%	1028 VA	**Total Conn. Load:**	6852 VA
				Total Est. Demand:	6852 VA
				Total Conn. Current:	19 A
				Total Est. Demand...	19 A

Branch Panel: HE4 — NEW

Location: ELEC 02-05-12 | **Volts:** 480/277 Wye | **A.I.C. Rating:** (7) FULLY RATED
Supply From: HE1 | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 1

Notes:

CKT	Load Name	CB	P	Wire	A	B	C	Wire	P	CB	Load Name	CKT
1	SPARE	20	1	--	0 0			--	1	20	SPARE	2
3	SPARE	20	1	--		0 0		--	1	20	SPARE	4
5	SPARE	20	1	--			0 0	--	1	20	SPARE	6
7	SPARE	20	1	--	0 0			--	1	20	SPARE	8
9	SPACE	--	--	--		0 0		--	--	--	SPACE	10
11	SPACE	--	--	--			0 0	--	--	--	SPACE	12
13	SPACE	--	--	--	0 0			--	--	--	SPACE	14
15	SPACE	--	--	--		0 0		--	--	--	SPACE	16
17	SPACE	--	--	--			0 0	--	--	--	SPACE	18
19	SPACE	--	--	--	0 0			--	--	--	SPACE	20
21	SPACE	--	--	--		0 0		--	--	--	SPACE	22
23	SPACE	--	--	--			0 0	--	--	--	SPACE	24
25	SPACE	--	--	--	0 0			--	--	--	SPACE	26
27	SPACE	--	--	--		0 0		--	--	--	SPACE	28
29	SPACE	--	--	--			0 0	--	--	--	SPACE	30
31	SPACE	--	--	--	0 0			--	--	--	SPACE	32
33	SPACE	--	--	--		0 0		--	--	--	SPACE	34
35	SPACE	--	--	--			0 0	--	--	--	SPACE	36
37	SPACE	--	--	--	0 0			--	--	--	SPACE	38
39	SPACE	--	--	--		0 0		--	--	--	SPACE	40
41	SPACE	--	--	--			0 0	--	--	--	SPACE	42
	Total Load:				0 VA	0 VA	0 VA					
	Total Amps:				0 A	0 A	0 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
				Total Conn. Load:	0 VA
				Total Est. Demand:	0 VA
				Total Conn. Current:	0 A
				Total Est. Demand...	0 A

PANELBOARD NOTES (#)

1. TERMINATE GROUND ON ISOLATED GROUND BUS.
2. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-OFF FOR MAINTENANCE).
3. INSTALL LOCKING DEVICE FURNISHED WITH PANELBOARD (LOCK-ON FOR CRITICAL LOAD).
4. GFI BREAKER FOR PERSONNEL PROTECTION (5mA).
5. GFI BREAKER FOR EQUIPMENT PROTECTION (30mA).
6. CONDUCTOR SIZE SHOWN IN PANEL SCHEDULE HAS BEEN INCREASED FOR VOLTAGE DROP. SIZE EQUIPMENT GROUND PROPORTIONALLY PER NEC. REFERENCE GROUND WIRE SIZING CHART.
7. REFER TO ONE-LINE DIAGRAM FOR AVAILABLE FAULT CURRENT FOR INTERRUPT RATINGS.
8. REFER TO ONE-LINE DIAGRAM FOR WIRE SIZES.
9. FACTORY WIRED TO LOAD.
10. THRU CONTROLLER. REFER TO LIGHTING CONTROLLER DETAIL.
11. ADD CIRCUIT BREAKER TO EXISTING PANEL.

EQUIPMENT GROUNDING CONDUCTOR SIZING CHART

BRKR AMPS		WIRE SIZE				
15-20	PHASE	12	10	8	6	4
	GROUND	12	10	8	6	4
25-30	PHASE	10	8	6	4	3
	GROUND	10	8	6	4	3
35-50	PHASE	8	6	4	3	2
	GROUND	10	8	4	4	4
60	PHASE	6	4	3	2	1
	GROUND	10	6	6	4	4
70	PHASE	6	4	3	2	1
	GROUND	8	4	4	3	2
80-90	PHASE	4	3	2	1	1/0
	GROUND	8	6	4	4	3
100	PHASE	3	2	1	1/0	2/0
	GROUND	8	6	4	4	3

PER NEC 250.122(B)

James R. Childers Architect, Inc.
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PROFESSIONAL SEAL:
LICENSED PROFESSIONAL ENGINEER — Robert Brandon Pinkerton — 23042 — OKLAHOMA — CERTIFIED
01/10/2020

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CLIENT:
TRIBAL SEAL OF THE CHEROKEE NATION — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

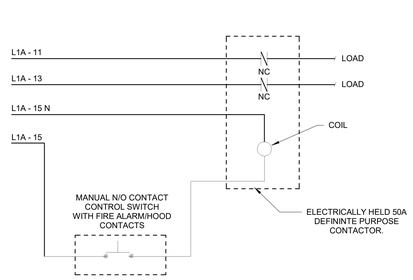
PROJECT PHASE:
BID PACKAGE 02

REVISIONS

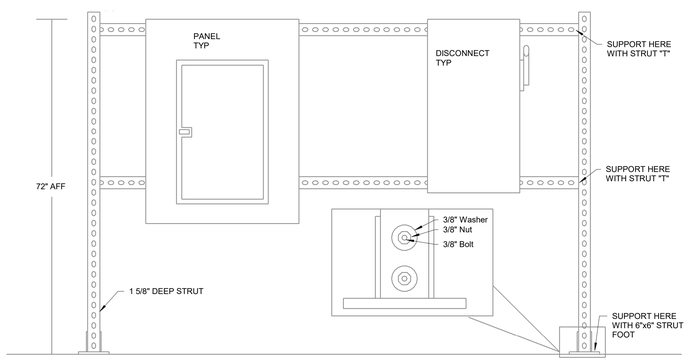
#	DATE	DESCRIPTION
1	1/10/20	BID PACKAGE 02 - ADD 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: E3.04

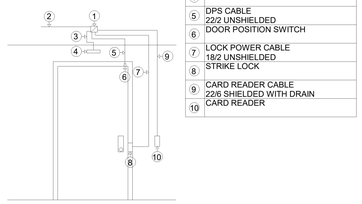
PANEL SCHEDULES



4 KITCHEN SHUNT CONTACTOR DETAIL
NTS

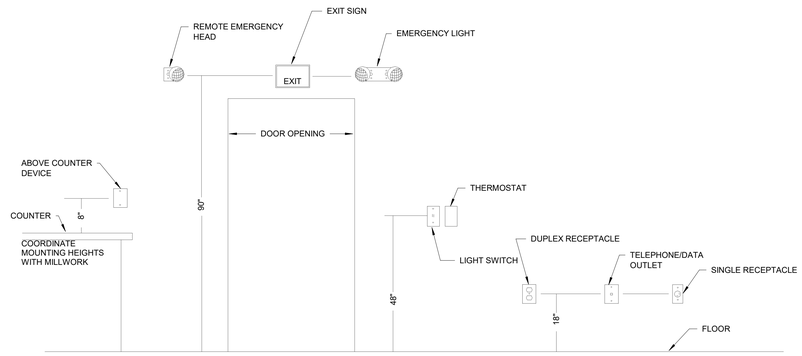


3 TYP STRUT INSTALLATION
1" = 1'-0"



NOTES	
1	MAKE-UP BOX
2	ACCESS CONTROL COMPOSITE CABLE
3	REX CABLE 22/4 UNSHIELDED
4	REX MOTION DETECTOR
5	DPS CABLE 22/2 UNSHIELDED
6	DOOR POSITION SWITCH
7	LOCK POWER CABLE 18/2 UNSHIELDED
8	STRIKE LOCK
9	CARD READER CABLE 22/6 SHIELDED WITH DRAIN
10	CARD READER

2 DOOR TYPICAL- SINGLE DOOR WITH STRIKE LOCK
NTS



1 TYPICAL MOUNTING HEIGHT
12" = 1'-0"

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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER
Robert Brandon Pinkerton
23042
OKLAHOMA
(NOT VALID UNLESS SIGNED)
01/10/2020

CONSULTANT LOGO:

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PROJECT NO. 18068R
100 % COMPLETE

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CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:
E3.05

ELECTRICAL DETAILS

Project Manual

Bid Package 02
Addendum No.01
Volume II
Divisions 21, & 28

Cherokee Nation
WILMA P. MANKILLER HEALTH CENTER EXPANSION

Stilwell, Oklahoma

January 10, 2020

Te CHILDERS ARCHITECT ildersarchitect.com www.childersarchitect.com

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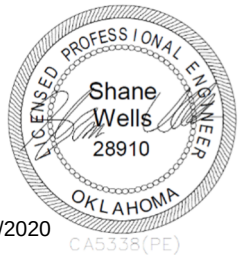
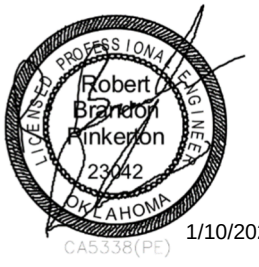


1/10/2020



1/10/2020

SECTION 21 0513

COMMON MOTOR REQUIREMENTS FOR FIRE SUPPRESSION EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.

E. Multispeed Motors: Separate winding for each speed.

F. Rotor: Random-wound, squirrel cage.

G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

H. Temperature Rise: Match insulation rating.

I. Insulation: Class F.

J. Code Letter Designation:

1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers:

1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 21 0517

SLEEVES AND SLEEVE SEALS FOR FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sleeves.
2. Stack-sleeve fittings.
3. Sleeve-seal systems.
4. Sleeve-seal fittings.
5. Grout.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.

C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

D. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

E. Galvanized-Steel-Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

F. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

G. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

A. Manufacturers:
   1. Jay R. Smith Mfg. Co.
   2. Zurn Industries, LLC
   3. (Owner Selection)

B. Description: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.

   1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

A. Manufacturers:
   1. Advanced Products and Systems, Inc.
   2. CALPICO, Inc.
   3. Metraflex Company
   4. (Owner Selection)

B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

   1. Sealing Elements: NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
   2. Pressure Plates: Carbon steel.
   3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

A. Manufacturers:
   1. Advanced Products and Systems, Inc.
   2. CALPICO, Inc.
   3. Metraflex Company
   4. (Owner Selection)

B. Description: Manufactured plastic, sleeve-type, waterstop assembly made for imbedding in concrete slab or wall. Unit has plastic or rubber waterstop collar with center opening to match piping OD.

2.5 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
2. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

3. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 07 9200 "Joint Sealants."

E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 07 8413 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

A. Install stack-sleeve fittings in new slabs as slabs are constructed.

1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 07 6200 "Sheet Metal Flashing and Trim."
3. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
5. Using grout, seal the space around outside of stack-sleeve fittings.

B. Fire-Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe

penetrations with firestop materials. Comply with requirements for firestopping specified in Section 07 8413 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Using grout, seal the space around outside of sleeve-seal fittings.

3.5 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above Grade:

    a. Piping Smaller Than NPS 6: Sleeve-seal fittings.
    b. Piping NPS 6 and Larger: Galvanized-steel-pipe sleeves with sleeve-seal system.

2. Exterior Concrete Walls below Grade:

    a. Piping Smaller Than NPS 6: Sleeve-seal fittings.

        1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

    b. Piping NPS 6 Galvanized-steel-pipe sleeves with sleeve-seal system.

        1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs-on-Grade:

    a. Piping Smaller Than NPS 6: Sleeve-seal fittings.

        1) Select sleeve size to allow for 1-inch annular clear space between piping

and sleeve for installing sleeve-seal system.

b. Piping NPS 6 Galvanized-steel-pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

4. Concrete Slabs above Grade:

a. Piping Smaller Than NPS 6: PVC-pipe sleeves.
b. Piping NPS 6 PVC-pipe sleeves.

5. Interior Partitions:

a. Piping Smaller Than NPS 6 PVC-pipe sleeves.
b. Piping NPS 6 and Larger: Galvanized-steel-sheet sleeves.

END OF SECTION

SECTION 21 0518

ESCUTCHEONS FOR FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.
2. Floor plates.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated and rough-brass finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

C. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.

D. Split-Casting Brass Type: With polished, chrome-plated and rough-brass finish and with concealed hinge and setscrew.

E. Split-Plate, Stamped-Steel Type: With chrome-plated finish, concealed hinge, and spring-clip fasteners.

2.2 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Chrome-Plated Piping: One-piece, cast-brass type with polished, chrome-plated finish.
c. Insulated Piping: One-piece, stamped-steel type.
d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished, chrome-plated finish.
g. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type.
h. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with finish.
i. Bare Piping in Unfinished Service Spaces: One-piece, stamped-steel type.
j. Bare Piping in Equipment Rooms: One-piece, cast-brass type with finish.
k. Bare Piping in Equipment Rooms: One-piece, stamped-steel type.

2. Escutcheons for Existing Piping:

a. Chrome-Plated Piping: Split-casting brass type with polished, chrome-plated finish.
b. Insulated Piping: Split-plate, stamped-steel type with concealed hinge.
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge.
e. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
f. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge.
g. Bare Piping in Unfinished Service Spaces: Split-casting brass type with rough-brass finish.
h. Bare Piping in Unfinished Service Spaces: Split-plate, stamped-steel type with concealed hinge.
i. Bare Piping in Equipment Rooms: Split-casting brass type with rough-brass finish.
j. Bare Piping in Equipment Rooms: Split-plate, stamped-steel type with concealed hinge.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping: One-piece, floor-plate type.

2. Existing Piping: Split-casting, floor-plate type.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION

SECTION 21 0523

GENERAL-DUTY VALVES FOR FIRE PROTECTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

1. Section Includes:

    1. Two-piece ball valves with indicators.
    2. Bronze butterfly valves with indicators.
    3. Iron butterfly valves with indicators.
    4. Check valves.
    5. Bronze OS&Y gate valves.
    6. Iron OS&Y gate valves.
    7. NRS gate valves.
    8. Indicator posts.
    9. Trim and drain valves.

1.3 DEFINITIONS

1. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

2. NRS: Nonrising stem.

3. OS&Y: Outside screw and yoke.

4. SBR: Styrene-butadiene rubber.

1.4 ACTION SUBMITTALS

1. Product Data: For each type of valve.

1.5 DELIVERY, STORAGE, AND HANDLING

1. Prepare valves for shipping as follows:

    1. Protect internal parts against rust and corrosion.
    2. Protect threads, flange faces, and weld ends.
    3. Set valves open to minimize exposure of functional surfaces.

2. Use the following precautions during storage:

    1. Maintain valve end protection.
    2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

3. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use operating handles or stems as lifting or rigging points.

4. Protect flanges and specialties from moisture and dirt.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

1. UL Listed: Valves shall be listed in UL's "Online Certifications Directory" under the headings listed below and shall bear UL mark:

    1. Main Level: HAMV - Fire Main Equipment.

        a. Level 1: HCBZ - Indicator Posts, Gate Valve.
        b. Level 1: HLOT - Valves.

            1) Level 3: HLUG - Ball Valves, System Control.
            2) Level 3: HLXS - Butterfly Valves.
            3) Level 3: HMER - Check Valves.
            4) Level 3: HMRZ - Gate Valves.

    2. Main Level: VDGT - Sprinkler System & Water Spray System Devices.

        a. Level 1: VQGU - Valves, Trim and Drain.

2. FM Global Approved: Valves shall be listed in its "Approval Guide," under the headings listed below:

    1. Automated Sprinkler Systems:

        a. Indicator posts.
        b. Valves.

            1) Gate valves.
            2) Check valves.

                a) Single check valves.

            3) Miscellaneous valves.

3. Source Limitations for Valves: Obtain valves for each valve type from single manufacturer.

4. ASME Compliance:

    1. ASME B16.1 for flanges on iron valves.

2. ASME B1.20.1 for threads for threaded-end valves.
3. ASME B31.9 for building services piping valves.

5. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.

6. NFPA Compliance: Comply with NFPA 24 for valves.

7. Valve Pressure Ratings: Not less than the minimum pressure rating indicated or higher as required by system pressures.

8. Valve Sizes: Same as upstream piping unless otherwise indicated.

9. Valve Actuator Types:

    1. Worm-gear actuator with handwheel for quarter-turn valves, except for trim and drain valves.
    2. Handwheel: For other than quarter-turn trim and drain valves.
    3. Handlever: For quarter-turn trim and drain valves NPS 2 and smaller.

2.2 TWO-PIECE BALL VALVES WITH INDICATORS

1. Manufacturers:
    1. Nibco Inc.
    2. Victaulic Company
    3. (Owner Selection)

2. Description:

    1. UL 1091, except with ball instead of disc and FM Global standard for indicating valves (butterfly or ball type), Class Number 1112.
    2. Minimum Pressure Rating: 175 psig.
    3. Body Design: Two piece.
    4. Body Material: Forged brass or bronze.
    5. Port Size: Full or standard.
    6. Seats: PTFE.
    7. Stem: Bronze or stainless steel.
    8. Ball: Chrome-plated brass.
    9. Actuator: Worm gear or traveling nut.
    10. Supervisory Switch: Internal or external.
    11. End Connections for Valves NPS 1 through NPS 2: Threaded ends.
    12. End Connections for Valves NPS 2-1/2: Grooved ends.

2.3 BRONZE BUTTERFLY VALVES WITH INDICATORS

1. Manufacturers:
    1. Globe Fire Sprinkler Corp.
    2. Fivalco Inc.
    3. Milwaukee Valve Company
    4. (Owner Selection)

2. Description:

1. Standard: UL 1091 and FM Global standard for indicating valves, (butterfly or ball type), Class Number 1112.
2. Minimum: Pressure rating: 175 psig.
3. Body Material: Bronze.
4. Seat Material: EPDM.
5. Stem Material: Bronze or stainless steel.
6. Disc: Stainless steel with EPDM coating.
7. Actuator: Worm gear or traveling nut.
8. Supervisory Switch: Internal or external.
9. Ends Connections for Valves NPS 1 through NPS 2: Threaded ends.
10. Ends Connections for Valves NPS 2-1/2: Grooved ends.

2.4 IRON BUTTERFLY VALVES WITH INDICATORS

1. Manufacturers:
   1. Nibco Inc.
   2. Globe Fire Sprinkler Corp.
   3. Victaulic Company
   4. (Owner Selection)

2. Description:

   1. Standard: UL 1091 and FM Global standard for indicating valves, (butterfly or ball type), Class Number 112.
   2. Minimum Pressure Rating: 175 psig.
   3. Body Material: Cast or ductile iron with nylon.
   4. Seat Material: EPDM.
   5. Stem: Stainless steel.
   6. Disc: Ductile iron.
   7. Actuator: Worm gear or traveling nut.
   8. Supervisory Switch: Internal or external.
   9. Body Design: Lug or wafer.

2.5 CHECK VALVES

1. Manufacturers:
   1. Victaulic Company
   2. Viking Corp.
   3. Nibco Inc.
   4. (Owner Selection)

2. Description:

   1. Standard: UL 312 and FM Global standard for swing check valves, Class Number 1210.
   2. Minimum Pressure Rating: 175 psig.
   3. Type: Single swing check.
   4. Body Material: Cast iron, ductile iron, or bronze.
   5. Clapper: Bronze, ductile iron, or stainless steel.
   6. Clapper Seat: Brass, bronze, or stainless steel.
   7. Hinge Shaft: Bronze or stainless steel.
   8. Hinge Spring: Stainless steel.
   9. End Connections: Flanged, grooved, or threaded.

2.6 BRONZE OS&Y GATE VALVES

1. Manufacturers:
    1. Nibco Inc.
    2. Zurn Industries, LLC
    3. United Brass Works
    4. (Owner Selection)

2. Description:

    1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y- and NRS-type gate valves).
    2. Minimum Pressure Rating: 175 psig (1200 kPa).
    3. Body and Bonnet Material: Bronze or brass.
    4. Wedge: One-piece bronze or brass.
    5. Wedge Seat: Bronze.
    6. Stem: Bronze or brass.
    7. Packing: Non-asbestos PTFE.
    8. Supervisory Switch: External.
    9. End Connections: Threaded.

2.7 IRON OS&Y GATE VALVES

1. Manufacturers:
    1. Zurn Industries
    2. Nibco Inc.
    3. Victaulic Company
    4. (Owner Selection)

2. Description:

    1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y- and NRS-type gate valves).
    2. Minimum Pressure Rating: 175 psig (1200 kPa).
    3. Body and Bonnet Material: Cast or ductile iron.
    4. Wedge: Cast or ductile iron, or bronze with elastomeric coating.
    5. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.
    6. Stem: Brass or bronze.
    7. Packing: Non-asbestos PTFE.
    8. Supervisory Switch: External.
    9. End Connections: Grooved or Threaded.

2.8 NRS GATE VALVES

1. Manufacturers:
    1. Zurn Industries
    2. Nibco Inc.
    3. Victaulic Company
    4. (Owner Selection)

2. Description:

    1. Standard: UL 262 and FM Global standard for fire-service water control valves (OS&Y-

and NRS-type gate valves).
2. Minimum Pressure Rating: 175 psig (1200 kPa).
3. Body and Bonnet Material: Cast or ductile iron.
4. Wedge: Cast or ductile iron with elastomeric coating.
5. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.
6. Stem: Brass or bronze.
7. Packing: Non-asbestos PTFE.
8. Supervisory Switch: External.
9. End Connections: Grooved or Threaded.

2.9 INDICATOR POSTS

1. Manufacturers:
    1. Mueller Co.
    2. Nibco Inc.
    3. (Owner Selection)

2. Description:

    1. Standard: UL 789 and FM Global standard for indicator posts.
    2. Type: Wall.
    3. Base Barrel Material: Cast or ductile iron.
    4. Extension Barrel: Cast or ductile iron.
    5. Cap: Cast or ductile iron.
    6. Operation: Handwheel.

2.10 TRIM AND DRAIN VALVES

1. Ball Valves:

    1. Manufacturers:
        a. Victaulic Company
        b. Nibco Inc.
        c. Potter Roemer
        d. (Owner Selection)

    2. Description:

        a. Pressure Rating: 250 psig.
        b. Body Design: Two piece.
        c. Body Material: Forged brass or bronze.
        d. Port size: Full or standard.
        e. Seats: PTFE.
        f. Stem: Bronze or stainless steel.
        g. Ball: Chrome-plated brass.
        h. Actuator: Handlever.
        i. End Connections for Valves NPS 1 through NPS 2-1/2: Threaded ends.
        j. End Connections for Valves NPS 1-1/4 and NPS 2-1/2: Grooved ends.

2. Angle Valves:

    1. Manufacturers:

a. Nibco Inc.
b. United Brass Works, Inc.
c. (Owner Selection)

2. Description:

a. Pressure Rating: 175 psig.
b. Body Material: Brass or bronze.
c. Ends: Threaded.
d. Stem: Bronze.
e. Disc: Bronze.
f. Packing: Asbestos free.
g. Handwheel: Malleable iron, bronze, or aluminum.

3. Globe Valves:

1. Manufacturers:
a. Nibco Inc.
b. United Brass Works, Inc
c. (Owner Selection)

2. Description:

a. Pressure Rating: 175 psig.
b. Body Material: Bronze with integral seat and screw-in bonnet.
c. Ends: Threaded.
d. Stem: Bronze.
e. Disc Holder and Nut: Bronze.
f. Disc Seat: Nitrile.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron, bronze, or aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

2. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

3. Examine threads on valve and mating pipe for form and cleanliness.

4. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

5. Do not attempt to repair defective valves; replace with new valves.

3.2 GENERAL REQUIREMENTS FOR VALVE INSTALLATION

1. Comply with requirements in the following Sections for specific valve installation requirements and applications:

    1. Section 21 1100 "Facility Fire-Suppression Water-Service Piping" for application of valves in fire-suppression water-service piping outside the building.
    2. Section 21 1200 "Fire-Suppression Standpipes" for application of valves in fire-suppression standpipes.
    3. Section 21 1313 "Wet-Pipe Sprinkler Systems" for application of valves in wet-pipe, fire-suppression sprinkler systems.
    4. Section 21 1316 "Dry-Pipe Sprinkler Systems" for application of valves in dry-pipe, fire-suppression sprinkler systems.
    5. Section 21 1339 "Foam-Water Systems" for application of valves in AFFF piping.

2. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

3. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

4. Install valves having threaded connections with unions at each piece of equipment arranged to allow easy access, service, maintenance, and equipment removal without system shutdown. Provide separate support where necessary.

5. Install valves in horizontal piping with stem at or above the pipe center.

6. Install valves in position to allow full stem movement.

7. Install valve tags. Comply with requirements in Section 21 0553 "Identification for Fire-Suppression Piping and Equipment" for valve tags and schedules and signs on surfaces concealing valves; and the NFPA standard applying to the piping system in which valves are installed. Install permanent identification signs indicating the portion of system controlled by each valve.

8. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire-department connections.

9. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

END OF SECTION

SECTION 21 0553

IDENTIFICATION FOR FIRE-SUPPRESSION PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Stencils.
5. Valve tags.
6. Warning tags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment-Label Schedule: Include a listing of all equipment to be labeled and the proposed content for each label.

D. Valve Schedules: Valve numbering scheme.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Manufacturers:
   a. Brady Corp.
   b. LEM Products Inc.
   c. Craftmark Pipe Markers
   d. (Owner Selection)

2. Material and Thickness: anodized aluminum, 0.032 inch thick, with predrilled holes for

attachment hardware.
3. Letter Color: White.
4. Background Color: Red.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inchfor name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Manufacturers:
   a. Brady Corp.
   b. LEM Products Inc.
   c. Craftmark Pipe Markers
   d. (Owner Selection)

2. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, with predrilled holes for attachment hardware.
3. Letter Color: White.
4. Background Color: Red.
5. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
6. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
7. Minimum Letter Size: 1/4 inchfor name of units if viewing distance is less than 24 inches, 1/2 inchfor viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
8. Fasteners: Stainless-steel rivets or self-tapping screws.
9. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

D. Equipment-Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Manufacturers:
   a. Brady Corp.
   b. LEM Products Inc.
   c. Craftmark Pipe Markers
   d. (Owner Selection)

B. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, with predrilled holes for attachment hardware.

C. Letter Color: White.

D. Background Color: Red.

E. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

F. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

G. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inchfor viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

H. Fasteners: Stainless-steel rivets or self-tapping screws.

I. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

J. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. Manufacturers:
   a. Brady Corp.
   b. LEM Products Inc.
   c. Craftmark Pipe Markers
   d. (Owner Selection)

B. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service and showing flow direction according to ASME A13.1.

C. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.

D. Self-adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

E. Pipe-Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

   1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
   2. Lettering Size: At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.

F. Pipe-Label Colors:

   1. Background Color: Safety Red.
   2. Letter Color: White.

2.4 STENCILS

A. Stencils for Piping:

1. Manufacturers:
    a. Brimar Industries, Inc.
    b. Craftmark Pipe Markers
    c. Kolbi Pipe Marker Co.
    d. (Owner Selection)

2. Lettering Size: At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.
3. Stencil Material: Fiberboard or metal.
4. Stencil Paint: Safety Red, exterior, gloss, acrylic enamel. Paint may be in pressurized spray-can form.
5. Identification Paint: White, exterior, acrylic enamel. Paint may be in pressurized spray-can form.

2.5 VALVE TAGS

A. Manufacturers:
    a. Brady Corp.
    b. LEM Products Inc.
    c. Craftmark Pipe Markers
    d. (Owner Selection)

B. Description: Stamped or engraved with 1/4-inchletters for piping-system abbreviation and 1/2-inchnumbers.

1. Tag Material: Stainless steel, 0.032 inch thick, with predrilled holes for attachment hardware.
2. Fasteners: Brass beaded chain or S-hook.
3. Valve-Tag Color: Safety Red.
4. Letter Color: White.

C. Valve Schedules: For each piping system, on 8-1/2-by-11-inchond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.6 WARNING TAGS

A. Manufacturers:
    a. Brady Corp.
    b. LEM Products Inc.
    c. Craftmark Pipe Markers
    d. (Owner Selection)

B. Description: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.

1. Size: Approximately 4 by 7 inches.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."

4. Color: Safety Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of incompatible primers, paints, and encapsulants, as well as dirt, oil, grease, release agents, and other substances that could impair bond of identification devices.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be installed.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

3.3 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.4 PIPE LABEL INSTALLATION

A. Piping: Painting of piping is specified in Section 09 "Interior Painting."

B. Stenciled Pipe-Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels, complying with ASME A13.1, with painted, color-coded bands or rectangles on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

C. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection excluding short takeoffs. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit a view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in

areas of congested piping and equipment.

7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

D. Directional Flow Arrows: Arrows shall be used to indicate direction of flow in pipes including pipes where flow is allowed in both directions.

3.5 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in fire-suppression piping systems. List tagged valves in a valve-tag schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and with captions similar to those indicated in "Valve-Tag Size and Shape" Subparagraph below:

1. Valve-Tag Size and Shape:

a. Fire-Suppression Standpipe: 2 inches, round.
b. Wet-Pipe Sprinkler System: 2 inches, round.
c. Dry-Pipe Sprinkler System: 2 inches, round.
d. Foam-Water System: 2 inches, round.
e. Clean-Agent Fire-Extinguishing System: 2 inches, round.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION

SECTION 21 1119

FIRE-DEPARTMENT CONNECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Flush-type fire-department connections.
   2. Yard-type fire-department connections.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each fire-department connection. Contractor to coordinate type of FDC, location and finish with local AHJ.

PART 2 - PRODUCTS

2.1 FLUSH-TYPE FIRE-DEPARTMENT CONNECTION

A. Manufacturers:
   1. Elkhart Brass Mfg. Co.
   2. American Fire Hose and Cabinet
   3. Fire End & Croker Corp.
   4. (Owner Selection)

B. Standard: UL 405.

C. Type: Flush, for wall mounting.

D. Pressure Rating: 175 psig minimum.

E. Body Material: Corrosion-resistant metal.

F. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.

G. Caps: Brass, lugged type, with gasket and chain.

H. Escutcheon Plate: Rectangular, brass, wall type.

I. Outlet: With pipe threads.

J. Body Style: Horizontal.

K. Number of Inlets: Two.

L. Outlet Location: Back.

M. Escutcheon Plate Marking: Similar to "AUTO SPKR"

N. Finish: Polished chrome plated.

O. Outlet Size: NPS 4 or NPS 5 or NPS 6 or NPS 8.

2.2 YARD-TYPE FIRE-DEPARTMENT CONNECTION

A. Manufacturers:
1. Elkhart Brass Mfg. Co.
2. American Fire Hose and Cabinet
3. Fire End & Croker Corp.
4. (Owner Selection)

B. Standard: UL 405.

C. Type: Exposed, freestanding.

D. Pressure Rating: 175 psig.

E. Body Material: Corrosion-resistant metal.

F. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.

G. Caps: Brass, lugged type, with gasket and chain.

H. Escutcheon Plate: Round, brass, floor type.

I. Outlet: Bottom, with pipe threads.

J. Number of Inlets: Two.

K. Sleeve: Not required.

L. Sleeve Height: 18 inches.

M. Escutcheon Plate Marking: Similar to "AUTO SPKR & STANDPIPE"

N. Finish: Polished chrome plated.

O. Outlet Size: [NPS 4] [NPS 5] [NPS 6].

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fire-department connections.

B. Examine roughing-in for fire-suppression standpipe system to verify actual locations of piping connections before fire-department connection installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install wall-type fire-department connections.

B. Install yard-type fire-department connections in concrete slab support. Comply with requirements for concrete in Section 03 3000 "Cast-in-Place Concrete."

C. Install two protective pipe bollards around each fire-department connection. Comply with requirements for bollards in Section 05 5000 "Metal Fabrications."

D. Install automatic (ball-drip) drain valve at each check valve for fire-department connection.

END OF SECTION

SECTION 21 1313

WET-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipes, fittings, and specialties.
2. Cover system for sprinkler piping.
3. Specialty valves.
4. Sprinklers.
5. Alarm devices.
6. Manual control stations.
7. Control panels.
8. Pressure gages.

B. Related Requirements:

1. Section 21 1119 "Fire Department Connections" for exposed-, flush-, and yard-type fire department connections.
2. Section 23 0523 "General-Duty Valves for Water-Based Fire-Suppression Piping" for ball, butterfly, check, gate, post-indicator, and trim and drain valves.

1.3 DEFINITIONS

A. High-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure higher than standard 175 psig, but not higher than 250 psig.

B. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175-psig maximum.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Sustainable Design Submittals:

C. Shop Drawings: For wet-pipe sprinkler systems.

1. Include plans, elevations, sections, and attachment details.
2. Include diagrams for power, signal, and control wiring.

D. Delegated-Design Submittal: For wet-pipe sprinkler systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Sprinkler systems, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Domestic water piping.
2. Compressed air piping.
3. HVAC hydronic piping.
4. Items penetrating finished ceiling include the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.

B. Qualification Data: For qualified Installer and professional engineer.

C. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.

D. Welding certificates.

E. Fire-hydrant flow test report.

F. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."

G. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For wet-pipe sprinkler systems and specialties to include in emergency, operation, and maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

1.8 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.

a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.

B. Welding Qualifications: Qualify procedures and operators according to 2010 ASME Boiler and Pressure Vessel Code.

1.9 FIELD CONDITIONS

A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:

1. Notify Construction Manager and Owner no fewer than two days in advance of proposed interruption of sprinkler service.
2. Do not proceed with interruption of sprinkler service without Construction Manager's and Owner's written permission.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13.

B. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.

C. High-Pressure Piping System Component: Listed for 250-psig minimum working pressure.

D. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design wet-pipe sprinkler systems.

1. Sprinkler system design shall be approved by authorities having jurisdiction.

a. Margin of Safety for Available Water Flow and Pressure: 5 PSI percent, including losses through water-service piping, valves, and backflow preventers.
b. Sprinkler Occupancy Hazard Classifications: According to NFPA 13 recommendations unless otherwise indicated or determined by authorities having jurisdiction.

2. Minimum Density for Automatic-Sprinkler Piping Design: According to NFPA 13 recommendations & UL listing unless otherwise indicated or determined by authorities having jurisdiction

3. Maximum Protection Area per Sprinkler: According to NFPA 13 recommendations & UL listing unless otherwise indicated or determined by authorities having jurisdiction.

E. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13 and ASCE/SEI 7.

2.2 STEEL PIPE AND FITTINGS

A. Standard-Weight, Galvanized and Black-Steel Pipe: ASTM A 53/A 53M, Pipe ends may be factory or field formed to match joining method.

B. Schedule 10, Black-Steel Pipe: ASTM A 135/A 135M or ASTM A 795/A 795M, Schedule 10 in NPS 5 and smaller; and NFPA 13-specified wall thickness in NPS 6 to NPS 10, plain end.

C. Galvanized and Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.

D. Galvanized and Uncoated-Steel Couplings: ASTM A 865/A 865M, threaded.

E. Galvanized and Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

F. Malleable- or Ductile-Iron Unions: UL 860.

G. Cast-Iron Flanges: ASME 16.1, Class 125.

H. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.

1. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or EPDM rubber gasket.

    a. Class 125 and Class 250, Cast-Iron, Flat-Face Flanges: Full-face gaskets.
    b. Class 150 and Class 300, Ductile-Iron or -Steel, Raised-Face Flanges: Ring-type gaskets.

2. Metal, Pipe-Flange Bolts and Nuts: Carbon steel unless otherwise indicated.

I. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.

1. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

J. Grooved-Joint, Steel-Pipe Appurtenances:

1. Manufacturers:
    a. Anvil International
    b. Tyco Fire Products
    c. Victaulic Company
    d. Approved Equal

2. Pressure Rating: 250-psig minimum.
3. Painted Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting, with dimensions matching steel pipe.

4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213 rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

K. Steel Pressure-Seal Fittings: UL 213, FM Global-approved, 175-psig pressure rating with steel housing, rubber O-rings, and pipe stop; for use with fitting manufacturers' pressure-seal tools.

1. Manufacturers:
   a. Victaulic Company
   b. Approved Equal

L. Alarm Valves:

1. Manufacturers:
   a. Reliable Automatic Sprinkler Co, Inc.
   b. Victaulic Company
   c. Viking Corp.
   d. Approved Equal

2. Standard: UL 193.
3. Design: For horizontal or vertical installation.
4. Include trim sets for bypass, drain, electrical sprinkler alarm switch, pressure gages, and fill-line attachment with strainer.
5. Drip Cup Assembly: Pipe drain without valves and separate from main drain piping.
6. Drip Cup Assembly: Pipe drain with check valve to main drain piping.
7. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

M. Automatic (Ball Drip) Drain Valves:

1. Manufacturers:
   a. Reliable Automatic Sprinkler Co, Inc.
   b. Tyco Fire Products
   c. (Owner Selection)

2. Standard: UL 1726.
3. Pressure Rating: 175-psig minimum.
4. Type: Automatic draining, ball check.
5. Size: NPS 3/4 .
6. End Connections: Threaded.

N. Flow Detection and Test Assemblies:

1. Manufacturers:
   a. Reliable Automatic Sprinker Co,Inc.
   b. Tyco Fire Products
   c. Victaulic Company
   d. Approved Equal

2. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
3. Pressure Rating: 175-psig minimum.
4. Body Material: Cast- or ductile-iron housing with orifice, sight glass, and integral test valve.
5. Size: Same as connected piping.
6. Inlet and Outlet: Threaded or grooved.

O. Sprinkler Inspector's Test Fittings:

1. Manufacturers:
   a. Tyco Fire Products
   b. Victaulic Company
   c. Viking Corp.

2. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
3. Pressure Rating: 175-psig minimum.
4. Body Material: Cast- or ductile-iron housing with sight glass.
5. Size: Same as connected piping.
6. Inlet and Outlet: Threaded.

P. Flexible Sprinkler Hose Fittings:

1. Manufacturers:
   a. Victaulic
   b. Approved Equal

2. Standard: UL 1474.
3. Type: Flexible hose for connection to sprinkler, and with bracket for connection to ceiling grid.
4. Pressure Rating: 175-psig minimum.
5. Style 108 Coupling

2.3 SPRINKLERS

A. Manufacturers:
1. Victaulic Company
2. Tyco Fire Products
3. Viking Company

B. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."

C. Pressure Rating for Residential Sprinklers: 175-psig maximum.

D. Pressure Rating for Automatic Sprinklers: 175-psig minimum.

E. Pressure Rating for High-Pressure Automatic Sprinklers: 250-psig minimum.

F. Automatic Sprinklers with Heat-Responsive Element:

1. Early-Suppression, Fast-Response Applications: UL 1767.
2. Nonresidential Applications: UL 199.
3. Residential Applications: UL 1626.
4. Characteristics: Nominal 1/2-inch orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

G. Open Sprinklers with Heat-Responsive Element Removed: UL 199.

1. Nominal Orifice: 1/2 inch, with discharge coefficient K between 5.3 and 5.8.
2. Nominal Orifice: 17/32 inch with discharge coefficient K between 7.4 and 8.2.

H. Sprinkler Finishes: Chrome plated.

I. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: Chrome-plated steel, one piece, flat .
2. Sidewall Mounting: Chrome-plated steel, one piece, flat.

J. Sprinkler Guards:

1. Manufacturers:
   a. Victaulic Company
   b. Tyco Fire Products
   c. Viking Company

2. Standard: UL 199.
3. Type: Wire cage with fastening device for attaching to sprinkler.

2.4 ALARM DEVICES

A. Alarm-device types shall match piping and equipment connections.

B. Water-Motor-Operated Alarm:

1. Manufacturers:
   a. Victaulic Company
   b. Tyco Fire Products
   c. Viking Company
2. Standard: UL 753.
3. Type: Mechanically operated, with Pelton wheel.
4. Alarm Gong: Cast aluminum with red-enamel factory finish.
5. Size: 8-1/2-inches diameter.
6. Components: Shaft length, bearings, and sleeve to suit wall construction.
7. Inlet: NPS 3/4.
8. Outlet: NPS 1 drain connection.

C. Electrically Operated Alarm Bell:

1. Manufacturers:
   a. Fire-Lite Alarms, Inc.
   b. Notifier
   c. Potter Electric Signal Company
   d. Approved Equal

2. Standard: UL 464.
3. Type: Vibrating, metal alarm bell.
4. Size: 6” diameter.
5. Finish: Red-enamel factory finish, suitable for outdoor use.
6. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Water-Flow Indicators:

1. Manufacturers:
   a. System Sensor
   b. Viking Corp.
   c. Potter Electric Signal Company
   d. Approved Equal

2. Standard: UL 346.
3. Water-Flow Detector: Electrically supervised.
4. Components: Two single-pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
5. Type: Paddle operated.
6. Pressure Rating: 250 psig.
7. Design Installation: Horizontal or vertical.

E. Pressure Switches:

1. Manufacturers:
   a. System Sensor
   b. Viking Corp.
   c. Potter Electric Signal Company
   d. Approved Equal
2. Standard: UL 346.
3. Type: Electrically supervised water-flow switch with retard feature.
4. Components: Single-pole, double-throw switch with normally closed contacts.
5. Design Operation: Rising pressure signals water flow.

F. Valve Supervisory Switches:

1. Manufacturers:
   a. Fire-Lite Alarms, Inc.
   b. Potter Electric Signal Company
   c. System Sensor
   d. (Owner Selection)

2. Standard: UL 346.
3. Type: Electrically supervised.
4. Components: Single-pole, double-throw switch with normally closed contacts.
5. Design: Signals that controlled valve is in other than fully open position.
6. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.5 PRESSURE GAGES

A. Manufacturers:
   1. Ashcroft, Inc.
   2. AMETEK, Inc.
   3. AGF Manufacturing Inc.
   4. Approved Equal

B. Standard: UL 393.

C. Dial Size: 3-1/2- to 4-1/2-inch diameter.

D. Pressure Gage Range: 0- to 250-psig minimum.

E. Label: Include "WATER" label on dial face.

PART 3 - EXECUTION

3.1 PREPARATION

A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in "Quality Assurance" Article.

B. Report test results promptly and in writing.

3.2 SERVICE-ENTRANCE PIPING

A. Connect sprinkler piping to water-service piping for service entrance to building. Comply with requirements for exterior piping in Section 21 1100 "Facility Fire-Suppression Water-Service Piping" for exterior piping.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-service piping. Comply with requirements for backflow preventers in Section 21 1100 "Facility Fire-Suppression Water-Service Piping."

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water service.

3.3 WATER-SUPPLY CONNECTIONS

A. Connect sprinkler piping to building's interior water-distribution piping. Comply with requirements for interior piping in Section 22 1116 "Domestic Water Piping."

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-distribution piping. Comply with requirements for backflow preventers in Section 22 1119 "Domestic Water Piping Specialties."

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water supply.

3.4 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated on approved working plans.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
2. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

B. Piping Standard: Comply with NFPA 13 requirements for installation of sprinkler piping.

C. Install seismic restraints on piping. Comply with NFPA 13 requirements for seismic-restraint device materials and installation.

D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

E. Install unions adjacent to each valve in pipes NPS 2 and smaller.

F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.

H. Install sprinkler piping with drains for complete system drainage.

I. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.

J. Install automatic (ball drip) drain valve at each check valve for fire-department connection, to drain piping between fire-department connection and check valve. Install drain piping to and spill over floor drain or to outside building.

K. Install alarm devices in piping systems.

L. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13. In seismic-rated areas, refer to Section 21 0548 "Vibration and Seismic Controls for Fire-Suppression Piping and Equipment."

M. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft-metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they are not subject to freezing.

N. Fill sprinkler system piping with water.

O. Install electric heating cables and pipe insulation on sprinkler piping in areas subject to freezing. Comply with requirements for heating cables in Section 21 0533 "Heat Tracing for Fire-Suppression Piping" and for piping insulation in Section 21 0700 "Fire-Suppression Systems Insulation."

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 21 0518 "Escutcheons for Fire-Suppression Piping."

3.5 JOINT CONSTRUCTION

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.

B. Install unions adjacent to each valve in pipes NPS 2 and smaller.

C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.

G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

H. Steel-Piping, Pressure-Sealed Joints: Join lightwall steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.

I. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.

1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.

J. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.

K. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

3.6 VALVE AND SPECIALTIES INSTALLATION

A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

D. Specialty Valves:

1. Install valves in vertical position for proper direction of flow, in main supply to system.
2. Install alarm valves with bypass check valve and retarding chamber drain-line connection.
3. Install deluge valves in vertical position, in proper direction of flow, and in main supply to deluge system. Install trim sets for drain, priming level, alarm connections, ball drip valves, pressure gages, priming chamber attachment, and fill-line attachment.

3.7 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of acoustical ceiling panels.

B. Install heat trace on sprinkler piping subject to freezing. Upon approval from AHJ and Engineer, contractor may elect to provide dry-type sprinklers with water supply from heated space if the contractor coordinates and accepts all additional cost associated with this change from all affected disciplines. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing.

C. Install sprinklers into flexible, sprinkler hose fittings, and install hose into bracket on ceiling grid.

3.8 IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 0553 "Identification for Electrical Systems."

3.9 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
4. Energize circuits to electrical equipment and devices.
5. Coordinate with fire-alarm tests. Operate as required under the direction of low voltage technician.
6. Coordinate with fire-pump tests. Operate as required under the direction of low voltage technician.

7. Verify that equipment hose threads are same as local fire department equipment.

B. Sprinkler piping system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.10 CLEANING

A. Clean dirt and debris from sprinklers.

B. Only sprinklers with their original factory finish are acceptable. Remove and replace any sprinklers that are painted or have any other finish than their original factory finish.

3.11 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain specialty valves and pressure-maintenance pumps.

3.12 PIPING SCHEDULE

A. Piping between Fire Department Connections and Check Valves: Galvanized, standard-weight steel pipe with joints.

B. Sprinkler specialty fittings may be used, downstream of control valves, instead of specified fittings.

C. Copper-tube, extruded-tee connections may be used for tee branches in copper tubing instead of specified copper fittings. Branch-connection joints must be brazed.

D. CPVC pipe, Schedule 40 CPVC fittings, and solvent-cemented joints may be used for light-hazard and residential occupancies.

E. Standard-pressure, wet-pipe sprinkler system, NPS 2 and smaller, shall be one of the following:

1. Standard-weigh, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.
2. Standard-weight, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
3. Standard-weight, black-steel pipe with plain ends; uncoated, plain-end-pipe fittings; and twist-locked joints.
4. Standard-weight, galvanized-steel pipe with plain ends; galvanized, plain-end-pipe fittings; and twist-locked joints.
5. Standard-weight, black-steel pipe with [cut-] [or] [roll-]grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
6. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
7. Standard-weight, black-steel pipe with plain ends; steel welding fittings; and welded joints.

F. Standard-pressure, wet-pipe sprinkler system, NPS 2-1/2 to NPS 4, shall be one of the following:

1. Standard-weight, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.

2. Standard-weight, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
3. Standard-weight, black-steel pipe with [cut-] [or] [roll-]grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
4. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
5. Standard-weight, black-steel pipe with plain ends; steel welding fittings; and welded joints.

G. Standard-pressure, wet-pipe sprinkler system, NPS 5 and larger, shall be one of the following:

1. Standard-weight, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.
2. Standard-weight, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
3. Standard-weight, black-steel pipe with cut or roll grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
4. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
5. Standard-weight, black-steel pipe with plain ends; steel welding fittings; and welded joints.

3.13 SPRINKLER SCHEDULE

A. Use sprinkler types in subparagraphs below for the following applications:

1. Rooms without Ceilings: Upright sprinklers.
2. Rooms with Suspended Ceilings: Recessed sprinklers unless indicated otherwise.
3. Wall Mounting: Sidewall sprinklers.
4. Spaces Subject to Freezing: Sidewall, dry sprinklers unless indicated otherwise.

B. Provide sprinkler types in subparagraphs below with finishes indicated.

1. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
2. Flush Sprinklers: Bright chrome, with painted white escutcheon.
3. Recessed Sprinklers: Bright chrome, with bright chrome escutcheon.
4. Residential Sprinklers: Dull chrome.
5. Upright, Pendent and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.

END OF SECTION

SECTION 21 1316

DRY-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipes, fittings, and specialties.
2. Specialty valves.
3. Sprinkler specialty pipe fittings.
4. Sprinklers.
5. Alarm devices.
6. Manual control stations.
7. Control panels.
8. Pressure gages.

B. Related Requirements:

1. Section 21 1119 "Fire Department Connections" for exposed-, flush-, and yard-type fire department connections.
2. Section 23 0523 "General-Duty Valves for Water-Based Fire-Suppression Piping" for ball, butterfly, check, gate, post-indicator, and trim and drain valves.

1.3 DEFINITIONS

A. Standard-Pressure Sprinkler Piping: Dry-pipe sprinkler system piping designed to operate at working pressure of 175-psig maximum.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For dry-pipe sprinkler systems.

1. Include plans, elevations, sections, and attachment details.
2. Include diagrams for power, signal, and control wiring.

C. Delegated-Design Submittal: For dry-pipe sprinkler systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Sprinkler systems, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Domestic water piping.
2. Compressed air piping.
3. HVAC hydronic piping.
4. Items penetrating finished ceiling including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.

B. Qualification Data: For qualified Installer and professional engineer.

C. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.

D. Fire-hydrant flow test report.

E. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."

F. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For dry-pipe sprinkler systems and specialties to include in emergency, operation, and maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

1.8 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.

    a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.

1.9 FIELD CONDITIONS

A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:

1. Notify Architect Construction Manager Owner no fewer than two days in advance of proposed interruption of sprinkler service.
2. Do not proceed with interruption of sprinkler service without Architect's Construction Manager's Owner's written permission.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTIONS

A. Dry-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing compressed air. Opening of sprinklers releases compressed air and permits water pressure to open dry-pipe valve. Water then flows into piping and discharges from opened sprinklers.

B. Combined Dry-Pipe and Preaction Sprinkler System: Automatic sprinklers are attached to piping containing compressed air. Fire-detection system, located in same area as sprinklers, actuates tripping devices that open dry-pipe valve without loss of air pressure and actuates fire alarm. Water discharges from opened sprinklers.

C. Single-Interlock Preaction Sprinkler System: Automatic sprinklers are attached to piping containing low-pressure air. Actuation of fire-detection system, located in same area as sprinklers, opens deluge valve, permitting water to flow into sprinkler piping and to discharge from opened sprinklers.

D. Double-Interlock Preaction Sprinkler System: Automatic sprinklers are attached to piping containing low-pressure air. Actuation of a fire-detection system, located in same area as sprinklers, opens deluge valve, permitting water to flow into sprinkler piping. A closed solenoid valve in the sprinkler piping is opened by another fire-detection device; water will then discharge from opened sprinklers.

2.2 PERFORMANCE REQUIREMENTS

A. Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13.
2. NFPA 13R.

B. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.

C. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design wet-pipe sprinkler systems.

D. Sprinkler system design shall be approved by authorities having jurisdiction.

1. Margin of Safety for Available Water Flow and Pressure: 20 percent, including losses through water-service piping, valves, and backflow preventers.
2. Sprinkler Occupancy Hazard Classifications: According to NPFA 13 recommendations & As determined by authorities having jurisdiction

3. Minimum Density for Automatic-Sprinkler Piping Design: According to NPFA 13 recommendations & As determined by authorities having jurisdiction

4. Maximum Protection Area per Sprinkler: According to UL listing.

5. Total Combined Hose-Stream Demand Requirement: According to NPFA 13 recommendations & As determined by authorities having jurisdiction

E. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13 and ASCE/SEI 7.

2.3 STEEL PIPE AND FITTINGS

A. Standard-Weight, Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.

B. Schedule 30, Galvanized-Steel Pipe: ASTM A 135/A 135M; ASTM A 795/A 795M, Type E; or ASME B36.10M wrought steel, with wall thickness not less than Schedule 30 and not more than Schedule 40. Pipe ends may be factory or field formed to match joining method.

C. Thinwall Galvanized-Steel Pipe: ASTM A 135/A 135M or ASTM A 795/A 795M, threadable, with wall thickness less than Schedule 30 and equal to or greater than Schedule 10. Pipe ends may be factory or field formed to match joining method.

D. Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.

E. Galvanized-Steel Couplings: ASTM A 865/A 865M, threaded.

F. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

G. Malleable- or Ductile-Iron Unions: UL 860.

H. Cast-Iron Flanges: ASME B16.1, Class 125.

I. Plain-End-Pipe Fittings: UL 213, ductile-iron body with retainer lugs that require one-quarter turn or screwed retainer pin to secure pipe in fitting.

J. Grooved-Joint, Steel-Pipe Appurtenances:
1. Pressure Rating: [**300-psig**] minimum.
2. Galvanized, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting, with dimensions matching steel pipe.

3. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213 rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.4 SPECIALTY VALVES

A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."

B. Pressure Rating:

1. Standard-Pressure Piping Specialty Valves: 175-psig minimum.

C. Body Material: Cast or ductile iron.

D. Size: Same as connected piping.

E. End Connections: Flanged or grooved.

F. Dry-Pipe Valves:
1. Standard: UL 260.
2. Design: Differential-pressure type.
3. Include UL 1486, quick-opening devices, trim sets for air supply, drain, priming level, alarm connections, ball drip valves, pressure gages, priming chamber attachment, and fill-line attachment.
4. Air-Pressure Maintenance Device:

5. Standard: UL 260.
6. Type: Automatic device to maintain minimum air pressure in piping.
7. Include shutoff valves to permit servicing without shutting down sprinkler piping, bypass valve for quick filling, pressure regulator or switch to maintain pressure, strainer, pressure ratings with 14- to 60-psig adjustable range, and [**175-psig**] [**300-psig**] outlet pressure.
8. Air Compressor:
   a. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
   b. Motor Horsepower: Fractional.
   c. Power: 120-V ac, 60 Hz, single phase.

G. Deluge Valves:
1. Standard: UL 260.
2. Design: Hydraulically operated, differential-pressure type.
3. Include trim sets for alarm-test bypass, drain, electrical water-flow alarm switch, pressure gages, drip cup assembly piped without valves and separate from main drain line, and fill-line attachment with strainer.
4. Dry, Pilot-Line Trim Set: Include dry, pilot-line actuator; air- and water-pressure gages; low-air-pressure warning switch; air relief valve; and actuation device. Dry, pilot-line actuator includes cast-iron, operated, diaphragm-type valve with resilient facing plate, resilient diaphragm, and replaceable bronze seat. Valve includes threaded water and air inlets and water outlet. Loss of air pressure on dry, pilot-line side allows pilot-line actuator to open and causes deluge valve to open immediately.
5. Air-Pressure Maintenance Device:
   a. Standard: UL 260.
   b. Type: Automatic device to maintain minimum air pressure in piping.
   c. Include shutoff valves to permit servicing without shutting down sprinkler piping, bypass valve for quick filling, pressure regulator or switch to maintain pressure,

strainer, pressure ratings with 14- to 60-psig adjustable range, and [**175-psig**] [**300-psig**] outlet pressure.

6. Air Compressor:

7. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
8. Motor Horsepower: Fractional.
9. Power: 120-V ac, 60 Hz, single phase.
10. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application

H. Automatic (Ball Drip) Drain Valves:
1. Standard: UL 1726.
2. Pressure Rating: 175-psig minimum.
3. Type: Automatic draining, ball check.
4. Size: NPS 3/4.
5. End Connections: Threaded.

2.5 SPRINKLER PIPING SPECIALTIES

A. General Requirements for Dry-Pipe System Fittings: UL listed for dry-pipe service.

B. Branch Outlet Fittings:
1. Standard: UL 213.
2. Pressure Rating: 300 psig.
3. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
4. Type: Mechanical-tee and -cross fittings.
5. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
6. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
7. Branch Outlets: Grooved, plain-end pipe, or threaded.

C. Flow Detection and Test Assemblies:
1. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
2. Pressure Rating: 300 psig.
3. Body Material: Cast- or ductile-iron housing with orifice, sight glass, and integral test valve.
4. Size: Same as connected piping.
5. Inlet and Outlet: Threaded.

D. Branch Line Testers:
1. Standard: UL 199.
2. Pressure Rating: 175-psig minimum.
3. Body Material: Brass.
4. Size: Same as connected piping.
5. Inlet: Threaded.
6. Drain Outlet: Threaded and capped.
7. Branch Outlet: Threaded, for sprinkler.

E. Sprinkler Inspector's Test Fittings:
1. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
2. Pressure Rating: 300 psig.
3. Body Material: Cast- or ductile-iron housing with sight glass.
4. Size: Same as connected piping.

5. Inlet and Outlet: Threaded.

F. Adjustable Drop Nipples:
1. Standard: UL 1474.
2. Pressure Rating: 300 psig.
3. Body Material: Steel pipe with EPDM O-ring seals.
4. Size: Same as connected piping.
5. Length: Adjustable.
6. Inlet and Outlet: Threaded.

G. Flexible Sprinkler Hose Fittings:
1. Standard: UL 1474.
2. Type: Flexible hose for connection to sprinkler, and with bracket for connection to ceiling grid.
3. Pressure Rating: 300 psig.
4. Size: Same as connected piping, for sprinkler.

2.6 SPRINKLERS

A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."

B. Pressure Rating for Residential Sprinklers: 175-psig maximum.

C. Pressure Rating for Automatic Sprinklers: 175-psig minimum.

D. Pressure Rating for High-Pressure Automatic Sprinklers: 300 psig.

E. Automatic Sprinklers with Heat-Responsive Element:

1. Nonresidential Applications: UL 199.
2. Residential Applications: UL 1626.
3. Characteristics: Nominal 1/2-inch orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

F. Sprinkler Finishes: Chrome plated.

G. Special Coatings: corrosion-resistant paint.

H. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: Chrome-plated steel, , with 1-inch vertical adjustment.
2. Sidewall Mounting: Chrome-plated steel, one piece, flat.

I. Sprinkler Guards:
1. Standard: UL 199.
2. Type: Wire cage with fastening device for attaching to sprinkler.

2.7 ALARM DEVICES

A. Alarm-device types shall match piping and equipment connections.

B. Water-Motor-Operated Alarm:
   1. Standard: UL 753.
   2. Type: Mechanically operated, with Pelton wheel.
   3. Alarm Gong: Cast aluminum with red-enamel factory finish.
   4. Size: 10-inch diameter.
   5. Components: Shaft length, bearings, and sleeve to suit wall construction.
   6. Inlet: NPS 3/4.
   7. Outlet: NPS 1 drain connection.

C. Electrically Operated Alarm Bell:
   1. Standard: UL 464.
   2. Type: Vibrating, metal alarm bell.
   3. Finish: Red-enamel factory finish, suitable for outdoor use.
   4. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Pressure Switches:
   1. Standard: UL 346.
   2. Type: Electrically supervised water-flow switch with retard feature.
   3. Components: Single-pole, double-throw switch with normally closed contacts.
   4. Design Operation: Rising pressure signals water flow.

E. Valve Supervisory Switches:
   1. Standard: UL 346.
   2. Type: Electrically supervised.
   3. Components: Single-pole, double-throw switch with normally closed contacts.
   4. Design: Signals that controlled valve is in other than fully open position.
   5. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application

2.8 MANUAL CONTROL STATIONS

A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide" for hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve.

B. Include metal enclosure labeled "MANUAL CONTROL STATION" with operating instructions and cover held closed by breakable strut to prevent accidental opening.

2.9 CONTROL PANELS

A. Description: Single-area, two-area, or single-area cross-zoned type control panel as indicated, including NEMA ICS 6, Type 1 enclosure, detector, alarm, and solenoid-valve circuitry for operation of deluge valves.

   1. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide" when used with thermal detectors and Class A detector circuit wiring.
   2. Electrical characteristics are 120-V ac, 60 Hz, with 24-V dc rechargeable batteries.
   3. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application

B. Manual Control Stations: Electric operation, metal enclosure, labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.

C. Manual Control Stations: Hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve. Include metal enclosure labeled "MANUAL CONTROL STATION," with operating instructions and cover held closed by breakable strut to prevent accidental opening.

D. Panels Components:

1. Power supply.
2. Battery charger.
3. Standby batteries.
4. Field-wiring terminal strip.
5. Electrically supervised solenoid valves and polarized fire-alarm bell.
6. Lamp test facility.
7. Single-pole, double-throw auxiliary alarm contacts.
8. Rectifier.

2.10 PRESSURE GAGES

A. Standard: UL 393.

B. Dial Size: 3-1/2- to 4-1/2-inch diameter.

C. Pressure Gage Range: 0 to 300 psig.

D. Label: Include "WATER" or "AIR/WATER" label on dial face.

E. Air System Piping Gage: Include retard feature and "AIR" or "AIR/WATER" label on dial face.

PART 3 - EXECUTION

3.1 PREPARATION

A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in "Quality Assurance" Article.

B. Report test results promptly and in writing.

3.2 SERVICE-ENTRANCE PIPING

A. Connect sprinkler piping to water-service piping for service entrance to building. Comply with requirements in Section 21 1100 "Facility Fire-Suppression Water-Service Piping" for exterior piping.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-service piping. Comply with requirements for backflow preventers in Section 21 1100 "Facility Fire-Suppression Water-Service Piping."

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water service.

3.3 WATER-SUPPLY CONNECTIONS

A. Connect sprinkler piping to building's interior water-distribution piping. Comply with requirements for interior piping in Section 22 1116 "Domestic Water Piping."

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-distribution piping. Comply with requirements in Section 22 1119 "Domestic Water Piping Specialties" for backflow preventers.

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water supply.

3.4 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated on approved working plans.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
2. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

B. Piping Standard: Comply with NFPA 13 requirements for installation of sprinkler piping.

C. Install seismic restraints on piping. Comply with NFPA 13 requirements for seismic-restraint device materials and installation.

D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

E. Install unions adjacent to each valve in pipes NPS 2 and smaller.

F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.

H. Install sprinkler piping with drains for complete system drainage.

I. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.

J. Install automatic (ball drip) drain valves to drain piping between fire department connections and check valves. Drain to floor drain or to outside building.

K. Connect compressed-air supply to dry-pipe sprinkler piping.

L. Connect air compressor to the following piping and wiring:

1. Pressure gages and controls.
2. Electrical power system.
3. Fire-alarm devices, including low-pressure alarm.

M. Install alarm devices in piping systems.

N. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements in NFPA 13. In seismic-rated areas, refer to Section 21 0548 "Vibration and Seismic Controls for Fire-Suppression Piping and Equipment."

O. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft-metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they are not subject to freezing.

P. Drain dry-pipe sprinkler piping.

Q. Pressurize and check dry-pipe sprinkler system piping and air-pressure maintenance devices air compressors.

R. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."

S. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 21 0517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."

T. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 21 0518 "Escutcheons for Fire-Suppression Piping."

3.5 JOINT CONSTRUCTION

A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.

B. Install unions adjacent to each valve in pipes NPS 2 and smaller.

C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.

D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.

G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

H. Twist-Locked Joints: Insert plain end of steel pipe into plain-end-pipe fitting. Rotate retainer lugs one-quarter turn or tighten retainer pin.

I. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.

J. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Brazed Joints" Chapter.

K. Copper-Tubing Grooved Joints: Roll rounded-edge groove in end of tube according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join copper tube and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

L. Copper-Tubing, Pressure-Sealed Joints: Join copper tube and copper pressure-seal fittings with tools recommended by fitting manufacturer.

M. Extruded-Tee Connections: Form tee in copper tube according to ASTM F 2014. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.

N. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.6 VALVE AND SPECIALTIES INSTALLATION

A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.

D. Specialty Valves:

1. Install valves in vertical position for proper direction of flow, in main supply to system.
2. Install dry-pipe and deluge valves with trim sets for air supply, drain, priming level, alarm connections, ball drip valves, pressure gages, priming chamber attachment, and fill-line attachment.

    a. Install air compressor and compressed-air-supply piping.
    b. Install air-pressure maintenance device with shutoff valves to permit servicing without shutting down sprinkler system; bypass valve for quick system filling; pressure regulator or switch to maintain system pressure; strainer; pressure ratings with 14- to 60-psig adjustable range; and 175-psig maximum inlet pressure.
    c. Install compressed-air-supply piping from building's compressed-air piping system.

3.7 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of narrow dimension of acoustical ceiling panels.

B. Install dry-type sprinklers with water supply from heated space. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing.

C. Install sprinklers into flexible, sprinkler hose fittings, and install hose into bracket on ceiling grid.

3.8 IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 0553 "Identification for Electrical Systems."

3.9 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
4. Energize circuits to electrical equipment and devices.
5. Start and run air compressors.
6. Coordinate with fire-alarm tests. Operate as required.
7. Coordinate with fire-pump tests. Operate as required.
8. Verify that equipment hose threads are same as local fire department equipment.

B. Sprinkler piping system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.10 CLEANING

A. Clean dirt and debris from sprinklers.

B. Only sprinklers with their original factory finish are acceptable. Remove and replace any sprinklers that are painted or have any other finish than their original factory finish.

3.11 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain specialty valves.

3.12 PIPING SCHEDULE

A. Piping between Fire Department Connections and Check Valves: Galvanized, standard-weight steel pipe with threaded ends, cast-iron threaded fittings, and threaded grooved ends, grooved-end fittings, grooved-end-pipe couplings, and grooved joints.

B. Sprinkler specialty fittings may be used, downstream of control valves, instead of specified fittings.

C. Copper-tube, extruded-tee connections may be used for tee branches in copper tubing instead of specified copper fittings. Branch-connection joints must be brazed.

D. Standard-pressure, dry-pipe sprinkler system, NPS 2 and smaller, shall be one of the following:

1. Standard-weight, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
2. Standard-weight, galvanized-steel pipe with plain ends; plain-end-pipe fittings; and twist-locked joints.
3. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

E. Standard-pressure, dry-pipe sprinkler system, NPS 2-1/2 to NPS 4, shall be one of the following:

1. Standard-weight, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
2. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

F. Standard-pressure, dry-pipe sprinkler system, NPS 5 and NPS 6, shall be one of the following:

1. Standard-weight, galvanized-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
2. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

3.13 SPRINKLER SCHEDULE

A. Use sprinkler types in subparagraphs below for the following applications:

1. Rooms without Ceilings: Upright sprinklers.
2. Rooms with Suspended Ceilings: Dry concealed sprinklers.
3. Wall Mounting: Dry sidewall sprinklers.
4. Spaces Subject to Freezing: Dry sidewall sprinklers.
5. Special Applications: Extended-coverage and quick-response sprinklers where indicated.

B. Provide sprinkler types in subparagraphs below with finishes indicated.

1. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
2. Flush Sprinklers: Bright chrome, with painted white escutcheon.
3. Recessed Sprinklers: Bright chrome, with bright chrome escutcheon.
4. Upright Pendent and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.

END OF SECTION

SECTION 21 3113

ELECTRIC-DRIVE, CENTRIFUGAL FIRE PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. End-suction fire pumps.
2. In-line fire pumps.
3. Horizontally mounted, single-stage, split-case fire pumps.
4. Horizontally mounted, multistage, split-case fire pumps.
5. Vertically mounted, single-stage, split-case fire pumps.
6. Fire-pump accessories and specialties.
7. Flowmeter systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rated capacities, operating characteristics, performance curves, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For fire pumps, motor drivers, and fire-pump accessories and specialties.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For fire pumps, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Product Certificates: For each type of fire pump, from manufacturer.

C. Source quality-control reports.

D. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire pumps to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Comply with NFPA 20.

B. Seismic Performance: Fire pumps shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event.
2. Component Importance Factor: 1.5.

C. Pump Equipment, Accessory, and Specialty Pressure Rating: 175 psig minimum unless higher pressure rating is indicated.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 GENERAL REQUIREMENTS FOR CENTRIFUGAL FIRE PUMPS

A. Description: Factory-assembled and -tested fire-pump and driver unit.

B. Base: Fabricated and attached to fire-pump and driver unit, with reinforcement to resist movement of pump during seismic events when base is anchored to building substrate.

C. Finish: Red paint applied to factory-assembled and -tested unit before shipping.

2.3 END-SUCTION FIRE PUMPS

A. Manufacturers:
1. Peerless Pump Company
2. Patterson Pump Company
3. S.A. Armstrong Limited
4. (Owner Selection)

B. Pump:

1. Standard: UL 448, for end-suction pumps for fire service.
2. Casing: Radially split case, top centerline discharge, self-venting, cast iron, with ASME B16.1 pipe-flange connections.
3. Impeller: Cast bronze, statically and dynamically balanced, and keyed to shaft.
4. Wear Rings: Replaceable bronze.
5. Shaft and Sleeve: Steel shaft with stainless-steel sleeves.

    a. Shaft Bearings: Grease-lubricated, back-to-back thrust ball bearings and one radial roller bearing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

6. Mounting: Back pullout design, allowing complete rotating assembly removal without disturbing the casing piping connections. Pump and driver shafts are horizontal, with pump and driver on same base.

C. Coupling: Flexible and capable of absorbing torsional vibration and shaft misalignment. Include metal coupling guard.

D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

E. Capacities and Characteristics:
1. Per design build fire protection contractor.

2.4 IN-LINE FIRE PUMPS

A. Manufacturers:
1. Peerless Pump Company
2. Patterson Pump Company
3. S.A. Armstrong Limited
4. (Owner Selection)

B. Pump:

1. Standard: UL 448, for in-line pumps for fire service.
2. Casing: Radially split case, cast iron, with ASME B16.1 pipe-flange connections.
3. Impeller: Cast bronze, statically and dynamically balanced, and keyed to shaft.
4. Wear Rings: Replaceable bronze.
5. Shaft and Sleeve: Steel shaft with bronze sleeve.

    a. Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

6. Mounting: Pump and driver shaft is vertical, with motor above pump and pump on base. Motor and pump rotating assembly shall be removable from top without removing the pump casing from the piping.

C. Coupling: None or rigid.

D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

E. Capacities and Characteristics:
1. Per design build fire protection contractor.

2.5 HORIZONTALLY MOUNTED, SINGLE-STAGE, SPLIT-CASE FIRE PUMPS

A. Manufacturers:
1. Peerless Pump Company
2. Patterson Pump Company
3. S.A. Armstrong Limited
4. (Owner Selection)

B. Pump:

1. Standard: UL 448, for split-case pumps for fire service.
2. Casing: Axially split case, cast iron, with ASME B16.1 pipe-flange connections.
3. Impeller: Double suction, cast bronze, statically and dynamically balanced, and keyed to shaft.
4. Wear Rings: Replaceable bronze.
5. Shaft and Sleeve: Alloy steel shaft with bronze sleeve.

    a. Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

6. Mounting: Pump and driver shafts are horizontal, with pump and driver on same base.

C. Coupling: Flexible and capable of absorbing torsional vibration and shaft misalignment. Include metal coupling guard.

D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

E. Capacities and Characteristics:
1. Per design build fire protection contractor.

2.6 HORIZONTALLY MOUNTED, MULTISTAGE, SPLIT-CASE FIRE PUMPS

A. Manufacturers:
1. Peerless Pump Company
2. Patterson Pump Company
3. S.A. Armstrong Limited
4. (Owner Selection)

B. Pump:

1. Standard: UL 448, for split-case pumps for fire service.
2. Number of Stages: Two.
3. Casing: Axially split case, cast iron with ASME B16.1 pipe-flange connections.
4. Impeller: Single suction, cast bronze, statically and dynamically balanced, and keyed to shaft.
5. Wear Rings: Replaceable bronze.
6. Shaft and Sleeve: Alloy steel shaft with bronze sleeve.

    a. Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

7. Mounting: Pump and driver shafts are horizontal, with pump and driver on same base.

C. Coupling: Flexible and capable of absorbing torsional vibration and shaft misalignment. Include metal coupling guard.

D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

E. Capacities and Characteristics:
1. Per design build fire protection contractor.

2.7 VERTICALLY MOUNTED, SINGLE-STAGE, SPLIT-CASE FIRE PUMPS

A. Manufacturers:
1. Peerless Pump Company
2. Patterson Pump Company
3. S.A. Armstrong Limited
4. (Owner Selection)

B. Pump:

1. Standard: UL 448, for split-case pumps for fire service.
2. Casing: Axially split case, cast iron, with ASME B16.1 pipe-flange connections.
3. Impeller: Double suction, cast bronze, statically and dynamically balanced, and keyed to shaft.
4. Wear Rings: Replaceable bronze.
5. Shaft and Sleeve: Alloy steel shaft with bronze sleeve.

    a. Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

6. Mounting: Pump and driver shafts are vertical, with motor above pump and pump on base.

C. Coupling: Flexible and capable of absorbing torsional vibration and shaft misalignment. Include metal coupling guard.

D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

E. Capacities and Characteristics:
1. Per design build fire protection contractor.

2.8 FIRE-PUMP ACCESSORIES AND SPECIALTIES

A. Automatic Air-Release Valves: Comply with NFPA 20 for installation in fire-pump casing.

B. Circulation Relief Valves: UL 1478, brass, spring loaded; for installation in pump discharge piping.

C. Relief Valves:

1. Manufacturers:
   a. Zurn Industries
   b. Cla-Val Automatic Control Valves
   c. BERMAD Control Valves

2. Description: UL 1478, bronze or cast iron, spring loaded; for installation in fire-suppression water-supply piping.

D. Inlet Fitting: Eccentric tapered reducer at pump suction inlet.

E. Outlet Fitting: Concentric tapered reducer at pump discharge outlet.

F. Discharge Cone: Closed or open type.

G. Hose Valve Manifold Assembly:

1. Standard: Comply with requirements in NFPA 20.
2. Header Pipe: ASTM A 53/A 53M, Schedule 40, galvanized steel, with ends threaded according to ASME B1.20.1.
3. Header Pipe Fittings: ASME B16.4, galvanized cast-iron threaded fittings.
4. Automatic Drain Valve: UL 1726.
5. Manifold:

   a. Test Connections: Comply with UL 405; however, provide outlets without clappers instead of inlets.
   b. Body: Flush type, brass or ductile iron, with number of outlets required by NFPA 20.
   c. Nipples: ASTM A 53/A 53M, Schedule 40, galvanized-steel pipe, with ends threaded according to ASME B1.20.1.
   d. Adapters and Caps with Chain: Brass or bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads.
   e. Escutcheon Plate: Brass or bronze; rectangular.
   f. Hose Valves: UL 668, bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads.
   g. Exposed Parts Finish: chrome plated.
   h. Escutcheon Plate Marking: Equivalent to "FIRE PUMP TEST."

6. Manifold:

a. Test Connections: Comply with UL 405; however, provide outlets without clappers instead of inlets.
b. Body: Exposed type, brass, with number of outlets required by NFPA 20.
c. Escutcheon Plate: Brass or bronze; round.
d. Hose Valves: UL 668, bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads. Include caps and chains.
e. Exposed Parts Finish: chrome plated.
f. Escutcheon Plate Marking: Equivalent to "FIRE PUMP TEST."

2.9 FLOWMETER SYSTEMS

A. Manufacturers:
1. Victaulic Company
2. Hydro Flow Products, Inc.
3. Emerson Process Management

B. Description: UL-listed or FM-Approved, fire-pump flowmeter system able to indicate flow to not less than 175 percent of fire-pump rated capacity.

C. Pressure Rating: 175 psig minimum.

D. Sensor: Annubar probe, orifice plate, or venturi unless otherwise indicated. Sensor size shall match pipe, tubing, flowmeter, and fittings.

E. Permanently Mounted Flowmeter: Compatible with flow sensor; with dial not less than 4-1/2 inches in diameter. Include bracket or device for wall mounting.

1. Tubing Package: NPS 1/8 or NPS 1/4 plastic tubing with copper or brass fittings and valves.

F. Portable Flowmeter: Compatible with flow sensor; with dial not less than 4-1/2 inches in diameter and with two 12-foot- long hoses in carrying case.

2.10 GROUT

A. Standard: ASTM C 1107, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink and recommended for interior and exterior applications.

C. Design Mix: 5000-psi , 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.11 SOURCE QUALITY CONTROL

A. Testing: Test and inspect fire pumps according to UL 448 requirements for "Operation Test" and "Manufacturing and Production Tests."

1. Verification of Performance: Rate fire pumps according to UL 448.

B. Fire pumps will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine equipment bases and anchorage provisions, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of fire pumps.

B. Examine roughing-in for fire-suppression piping systems to verify actual locations of piping connections before fire-pump installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Fire-Pump Installation Standard: Comply with NFPA 20 for installation of fire pumps, relief valves, and related components.

B. Equipment Mounting:

1. Install fire pumps on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 03 "Cast-in-Place Concrete." and "Miscellaneous Cast-in-Place Concrete."
2. Comply with requirements for vibration isolation and seismic-control devices specified in Section 21 0548 "Vibration and Seismic Controls for Fire-Suppression Piping and Equipment."
3. Comply with requirements for vibration isolation devices specified in Section 21 0548.13 "Vibration Controls for Fire-Suppression Piping and Equipment."

C. Install fire-pump suction and discharge piping equal to or larger than sizes required by NFPA 20.

D. Support piping and pumps separately, so weight of piping does not rest on pumps.

E. Install valves that are same size as connecting piping. Comply with requirements for fire-protection valves specified in Section 21 "Fire-Suppression Standpipes." and "Wet-Pipe Sprinkler Systems."

F. Install pressure gages on fire-pump suction and discharge flange pressure-gage tappings. Comply with requirements for pressure gages specified in Section 21 "Fire-Suppression Standpipes." and "Wet-Pipe Sprinkler Systems."

G. Install piping hangers and supports, anchors, valves, gages, and equipment supports according to NFPA 20.

H. Install flowmeters and sensors. Install flowmeter-system components and make connections according to NFPA 20 and manufacturer's written instructions.

I. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not factory mounted. Furnish copies of manufacturers' wiring diagram submittals to electrical Installer.

J. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

3.3 ALIGNMENT

A. Align end-suction and split-case pump and driver shafts after complete unit has been leveled on concrete base, grout has set, and anchor bolts have been tightened.

B. After alignment is correct, tighten anchor bolts evenly. Fill baseplate completely with grout, with metal blocks and shims or wedges in place. Tighten anchor bolts after grout has hardened. Check alignment and make required corrections.

C. Align piping connections.

D. Align pump and driver shafts for angular and parallel alignment according to HI 1.4 and to tolerances specified by manufacturer.

3.4 CONNECTIONS

A. Comply with requirements for piping and valves specified in Section 21 "Fire-Suppression Standpipes." and "Wet-Pipe Sprinkler Systems." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to pumps and equipment to allow service and maintenance.

C. Connect relief-valve discharge to drainage piping or point of discharge.

D. Connect flowmeter-system meters, sensors, and valves to tubing.

E. Connect fire pumps to their controllers.

3.5 IDENTIFICATION

A. Identify system components. Comply with requirements for fire-pump marking according to NFPA 20.

3.6 FIELD QUALITY CONTROL

A. Test each fire pump with its controller as a unit. Comply with requirements for electric-motor-driver fire-pump controllers specified in Section 26 2933 "Controllers for Fire-Pump Drivers."

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. After installing components, assemblies, and equipment, including controller, test for compliance with requirements.
2. Test according to NFPA 20 for acceptance and performance testing.
3. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
4. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Components, assemblies, and equipment will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

F. Furnish fire hoses in number, size, and length required to reach storm drain or other acceptable location to dispose of fire-pump test water. Hoses are for tests only and do not convey to Owner.

3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire pumps.

END OF SECTION

SECTION 28 3111

DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Non-system smoke detectors.
5. Heat detectors.
6. Notification appliances.
7. Remote annunciator.
8. Addressable interface device.
9. Network communications.

B. Related Requirements:

1. Section 28 0513 "Conductors and Cables for Electronic Safety and Security" for cables and conductors for fire-alarm systems.

1.3 DEFINITIONS

A. EMT: Electrical Metallic Tubing.

B. FACP: Fire Alarm Control Panel.

C. HLI: High Level Interface.

D. NICET: National Institute for Certification in Engineering Technologies.

E. PC: Personal computer.

F. VESDA: Very Early Smoke-Detection Apparatus.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product, including furnished options and accessories.

1. Include construction details, material descriptions, dimensions, profiles, and finishes.

2. Include rated capacities, operating characteristics, and electrical characteristics.

B. Shop Drawings: For fire-alarm system.

1. Comply with recommendations and requirements in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
2. Include plans, elevations, sections, details, and attachments to other work.
3. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes, indicate termination locations and requirements, and distinguish between factory and field wiring.
4. Detail assembly and support requirements.
5. Include voltage drop calculations for notification-appliance circuits.
6. Include battery-size calculations.
7. Include input/output matrix.
8. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this Specification and in NFPA 72.
9. Include performance parameters and installation details for each detector.
10. Verify that each duct detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
11. Provide program report showing that air-sampling detector pipe layout balances pneumatically within the airflow range of the air-sampling detector.
12. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale; coordinate location of duct smoke detectors and access to them.

    a. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators.
    b. Show field wiring required for HVAC unit shutdown on alarm.
    c. Show field wiring and equipment required for HVAC unit shutdown on alarm and override by firefighters' control system.
    d. Show field wiring and equipment required for HVAC unit shutdown on alarm and override by firefighters' smoke-evacuation system.
    e. Locate detectors according to manufacturer's written recommendations.
    f. Show air-sampling detector pipe routing.

13. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.
14. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits and point-to-point wiring diagrams.

C. General Submittal Requirements:

1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
2. Shop Drawings shall be prepared by persons with the following qualifications:

    a. Trained and certified by manufacturer in fire-alarm system design.
    b. NICET-certified, fire-alarm technician; Level IV minimum.
    c. Licensed or certified by authorities having jurisdiction.

D. Delegated-Design Submittal: For notification appliances and smoke and heat detectors, in addition to submittals listed above, indicate compliance with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Drawings showing the location of each notification appliance and smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the device.
2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72. Calculate spacing and intensities for strobe signals and sound-pressure levels for audible appliances.
3. Indicate audible appliances required to produce square wave signal per NFPA 72.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Certificates: For fire-alarm control unit, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Field quality-control reports.

1.6 Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 01 7823 "Operation and Maintenance Data," include the following:

a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
b. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
c. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.
d. Riser diagram.
e. Device addresses.
f. Air-sampling system sample port locations and modeling program report showing layout meets performance criteria.
g. Record copy of site-specific software.
h. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:

1) Equipment tested.
2) Frequency of testing of installed components.

3) Frequency of inspection of installed components.
4) Requirements and recommendations related to results of maintenance.
5) Manufacturer's user training manuals.

i. Manufacturer's required maintenance related to system warranty requirements.
j. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.

B. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: On magnetic media or compact disk, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
3. Smoke Detectors, Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
4. Detector Bases: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.
5. Keys and Tools: One extra set for access to locked or tamperproofed components.
6. Audible and Visual Notification Appliances: One of each type installed.
7. Fuses: Two of each type installed in the system. Provide in a box or cabinet with compartments marked with fuse types and sizes.
8. Filters for Air-Sampling Detectors: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.
9. Air-Sampling Fan: Quantity equal to one for every five detectors, but no fewer than one unit of each type.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level IV technician.

C. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL (nationally recognized testing laboratory).

D. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

E. NFPA Certification: Obtain certification according to NFPA 72 in the form of a placard by an FM Global-approved alarm company.

F. NFPA Certification: Obtain certification according to NFPA 72 by.

1.10 PROJECT CONDITIONS

A. Perform a full test of the existing system prior to starting work. Document any equipment or components not functioning as designed.

B. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of fire-alarm service.
2. Do not proceed with interruption of fire-alarm service without Construction Manager's written permission.

C. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.11 SEQUENCING AND SCHEDULING

A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service, and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.

1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Source Limitations for Fire-Alarm System and Components: Components shall be compatible with, and operate as an extension of, existing system. Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.

B. Noncoded, UL-certified addressable system, with multiplexed signal transmission and horn/strobe evacuation.

C. Automatic sensitivity control of certain smoke detectors.

D. All components provided shall be listed for use with the selected system.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices:

1. Manual stations.
2. Heat detectors.
3. Flame detectors.
4. Smoke detectors.
5. Duct smoke detectors.
6. Air-sampling smoke-detection system (VESDA).
7. Carbon monoxide detectors.
8. Combustible gas detectors.
9. Automatic sprinkler system water flow.
10. Preaction system.
11. Fire-extinguishing system operation.
12. Fire standpipe system.
13. Dry system pressure flow switch.
14. Fire pump running.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm and specific initiating device at fire-alarm control unit.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Unlock electric door locks in designated egress paths.
5. Release fire and smoke doors held open by magnetic door holders.
6. Activate voice/alarm communication system.
7. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
8. Activate smoke-control system (smoke management) at firefighters' smoke-control system panel.
9. Activate stairwell and elevator-shaft pressurization systems.
10. Close smoke dampers in air ducts of designated air-conditioning duct systems.
11. Activate preaction system.
12. Recall elevators to primary or alternate recall floors.
13. Activate elevator power shunt trip.
14. Activate emergency lighting control.
15. Activate emergency shutoffs for gas and fuel supplies.
16. Record events in the system memory.
17. Record events by the system printer.
18. Indicate device in alarm on the graphic annunciator.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. High- or low-air-pressure switch of a dry-pipe or preaction sprinkler system.
3. Alert and Action signals of air-sampling detector system.
4. Elevator shunt-trip supervision.
5. Fire pump running.
6. Fire-pump loss of power.

7. Fire-pump power phase reversal.
8. Independent fire-detection and -suppression systems.
9. User disabling of zones or individual devices.
10. Loss of communication with any panel on the network.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of communication with any addressable sensor, input module, relay, control module, remote annunciator, printer interface, or Ethernet module.
4. Loss of primary power at fire-alarm control unit.
5. Ground or a single break in internal circuits of fire-alarm control unit.
6. Abnormal ac voltage at fire-alarm control unit.
7. Break in standby battery circuitry.
8. Failure of battery charging.
9. Abnormal position of any switch at fire-alarm control unit or annunciator.
10. Voice signal amplifier failure.
11. Hose cabinet door open.

E. System Supervisory Signal Actions:

1. Initiate notification appliances.
2. Identify specific device initiating the event at fire-alarm control unit.
3. Record the event on system printer.
4. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.
5. Transmit system status to building management system.
6. Display system status on graphic annunciator.

2.3 FIRE-ALARM CONTROL UNIT

A. Manufacturers:
1. FCI
2. SimplexGrinnell LP.
3. Notifier
4. (Owner Selection)

B. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864.

a. System software and programs shall be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining the information through failure of primary and secondary power supplies.
b. Include a real-time clock for time annotation of events on the event recorder and printer.
c. Provide communication between the FACP and remote circuit interface panels, annunciators, and displays.
d. The FACP shall be listed for connection to a central-station signaling system service.

e. Provide nonvolatile memory for system database, logic, and operating system and event history. The system shall require no manual input to initialize in the event of a complete power down condition. The FACP shall provide a minimum 500-event history log.

2. Addressable Initiation Device Circuits: The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliance by building communication zone.
3. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment: The FACP shall be listed for releasing service.

C. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

D. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, two or three] line(s) of 40 or 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

E. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:

1. Pathway Class Designations: NFPA 72, Class A or Class B.
2. Pathway Survivability:[Level 0 or Level 1.
3. Install no more than 256 addressable devices on each signaling-line circuit.
4. Serial Interfaces:

a. One dedicated RS 485 port for central-station or remote station operation using point ID DACT.
b. One RS 485 port for remote annunciators, Ethernet module, or multi-interface module (printer port).
c. One USB port for PC configuration.
d. One RS 232 port for VESDA HLI connection.
e. One RS 232 port for voice evacuation interface.

F. Smoke-Alarm Verification:

1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.
2. Activate an approved "alarm-verification" sequence at fire-alarm control unit and detector.
3. Record events by the system printer.
4. Sound general alarm if the alarm is verified.
5. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.

G. Notification-Appliance Circuit:

1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.
2. Where notification appliances provide signals to sleeping areas, the alarm signal shall be a 520-Hz square wave with an intensity 15 dB above the average ambient sound level or 5 dB above the maximum sound level, or at least 75 dBA, whichever is greater, measured at the pillow.
3. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

H. Elevator Recall:

1. Elevator recall shall be initiated only by one of the following alarm-initiating devices:

   a. Elevator lobby detectors except the lobby detector on the designated floor.
   b. Smoke detector in elevator machine room.
   c. Smoke detectors in elevator hoistway.

2. Elevator controller shall be programmed to move the cars to the alternate recall floor if lobby detectors located on the designated recall floors are activated.
3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.

   a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

I. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke-barrier walls shall [be] [not be] connected to fire-alarm system.

J. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.

K. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

L. Voice/Alarm Signaling Service: Central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided.

1. Indicate number of alarm channels for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of the central-control microphone. Amplifiers shall comply with UL 1711.

   a. Allow the application of, and evacuation signal to, indicated number of zones and, at the same time, allow voice paging to the other zones selectively or in any combination.
   b. Programmable tone and message sequence selection.
   c. Standard digitally recorded messages for "Evacuation" and "All Clear."
   d. Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification-appliance circuits of fire-alarm control unit.

2. Status Annunciator: Indicate the status of various voice/alarm speaker zones and the status of firefighters' two-way telephone communication zones.

3. Preamplifiers, amplifiers, and tone generators shall automatically transfer to backup units, on primary equipment failure.

M. Printout of Events: On receipt of signal, print alarm, supervisory, and trouble events. Identify zone, device, and function. Include type of signal (alarm, supervisory, or trouble) and date and time of occurrence. Differentiate alarm signals from all other printed indications. Also print system reset event, including same information for device, location, date, and time. Commands initiate the printing of a list of existing alarm, supervisory, and trouble conditions in the system and a historical log of events.

N. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

O. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead calcium.

P. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.4 MANUAL FIRE-ALARM BOXES

A. Manufacturers:
1. SimplexGrinnell LP.
2. Notifier
3. Bosch Security Systems
4. (Owner Selection)

B. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral or attached addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key- or wrench-operated switch.
3. Indoor Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.
4. Weatherproof Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

2.5 SYSTEM SMOKE DETECTORS

A. Manufacturers:
1. SimplexGrinnell LP.

2. System Sensor
3. Bosch Security Systems
4. (Owner Selection)

B. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be four or two wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type, indicating detector has operated.
7. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition.

    a. Rate-of-rise temperature characteristic of combination smoke- and heat-detection units shall be selectable at fire-alarm control unit for 15 or 20 deg per minute.
    b. Fixed-temperature sensing characteristic of combination smoke- and heat-detection units shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F
    c. Multiple levels of detection sensitivity for each sensor.
    d. Sensitivity levels based on time of day.

C. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

D. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector for smoke detection in HVAC system ducts.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Fully programmable relay rated to interrupt fan motor-control circuit.

2.6 CARBON MONOXIDE DETECTORS

A. General: Carbon monoxide detector listed for connection to fire-alarm system.

1. Mounting: Adapter plate for outlet box mounting.
2. Testable by introducing test carbon monoxide into the sensing cell.
3. Detector shall provide alarm contacts and trouble contacts.
4. Detector shall send trouble alarm when nearing end-of-life, power supply problems, or internal faults.
5. Comply with UL 2075.
6. Locate, mount, and wire according to manufacturer's written instructions.
7. Provide means for addressable connection to fire-alarm system.
8. Test button simulates an alarm condition.

2.7 HEAT DETECTORS

A. Manufacturers:
1. SimplexGrinnell LP.
2. System Sensor
3. Bosch Security Systems
4. (Owner Selection)

B. General Requirements for Heat Detectors: Comply with UL 521.

1. Temperature sensors shall test for and communicate the sensitivity range of the device.

C. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or a rate of rise that exceeds 15 deg F per minute unless otherwise indicated.

1. Mounting: [Adapter plate for outlet box mounting] [Twist-lock base interchangeable with smoke-detector bases].
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

D. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.

1. Mounting: [Adapter plate for outlet box mounting] [Twist-lock base interchangeable with smoke-detector bases].
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

E. Continuous Linear Heat-Detector System:

1. Detector Cable: Rated detection temperature 155 deg F. Listed for "regular" service and a standard environment. Cable includes two steel actuator wires twisted together with spring pressure, wrapped with protective tape, and finished with PVC outer sheath. Each actuator wire is insulated with heat-sensitive material that reacts with heat to allow the cable twist pressure to short circuit wires at the location of elevated temperature.
2. Control Unit: Two-zone or multizone unit as indicated. Provide same system power supply, supervision, and alarm features as specified for fire-alarm control unit.
3. Signals to Fire-Alarm Control Unit: Any type of local system trouble shall be reported to fire-alarm control unit as a composite "trouble" signal. Alarms on each detection zone shall be individually reported to central fire-alarm control unit as separately identified zones.
4. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.8 NOTIFICATION APPLIANCES

A. Manufacturers:
1. SimplexGrinnell LP.
2. Gentex Corp.
3. Siemens Industry, Inc.
4. (Owner Selection)

B. General Requirements for Notification Appliances: Individually addressed, connected to a signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.

C. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

D. Chimes, Low-Level Output: Vibrating type, 75-dBA minimum rated output.

E. Chimes, High-Level Output: Vibrating type, 81-dBA minimum rated output.

F. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.

G. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.

1. Rated Light Output:

a. [15] [30] [75] [110] [175] cd.
b. 15/30/75/110 cd, selectable in the field.

2. Mounting: Wall mounted unless otherwise indicated.

3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be in a temporal pattern, synchronized with other units.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, [red] [white].

H. Voice/Tone Notification Appliances:

1. Comply with UL 1480.
2. Speakers for Voice Notification: Locate speakers for voice notification to provide the intelligibility requirements of the "Notification Appliances" and "Emergency Communications Systems" chapters in NFPA 72.
3. High-Range Units: Rated 2 to 15 W.
4. Low-Range Units: Rated 1 to 2 W.
5. Mounting: Flush.
6. Matching Transformers: Tap range matched to acoustical environment of speaker location.

I. Exit Marking Audible Notification Appliance:

1. Exit marking audible notification appliances shall meet the audibility requirements in NFPA 72.
2. Provide exit marking audible notification appliances at the entrance to all building exits.
3. Provide exit marking audible notification appliances at the entrance to areas of refuge with audible signals distinct from those used for building exit marking.

2.9 GRAPHIC ANNUNCIATOR

A. Manufacturers:
1. SimplexGrinnell LP
2. Siemons Industry, Inc.
3. GE UTC Fire & Security
4. (Owner Selection)

B. Graphic Annunciator Panel: Mounted in an aluminum frame with nonglare, minimum 3/16-inch-thick, clear acrylic cover over graphic representation of the facility. Detector locations shall be represented by red LED lamps. Normal system operation shall be indicated by a lighted, green LED. Trouble and supervisory alarms shall be represented by an amber LED.

1. Comply with UL 864.
2. Operating voltage shall be 24-V dc provided by a local 24-V power supply provided with the annunciator.
3. Include built-in voltage regulation, reverse polarity protection, RS 232/422 serial communications, and a lamp test switch.
4. Surface mounted in a NEMA 250, Type 1 cabinet, with key lock and no exposed screws or hinges.
5. Graphic representation of the facility shall be a CAD drawing and each detector shall be represented by an LED in its actual location. CAD drawing shall be at 1/8-inch per foot scale or larger.
6. The LED representing a detector shall flash two times per second while detector is an alarm.

C. Graphic Annunciator Workstation: PC-based, with fire-alarm annunciator software with historical logging, report generation, and a graphic interface showing all alarm points in the system. PC

with operating system software, minimum hard drive, <Insert inches digital display monitor, with wireless keyboard and mouse.

2.10 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

1. Mounting: [Flush] [Surface] cabinet, NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.11 ADDRESSABLE INTERFACE DEVICE

A. General:

1. Include address-setting means on the module.
2. Store an internal identifying code for control panel use to identify the module type.
3. Listed for controlling HVAC fan motor controllers.

B. Monitor Module: Microelectronic module providing a system address for alarm-initiating devices for wired applications with normally open contacts.

C. Integral Relay: Capable of providing a direct signal.

1. Allow the control panel to switch the relay contacts on command.
2. Have a minimum of two normally open and two normally closed contacts available for field wiring.

D. Control Module:

1. Operate notification devices.
2. Operate solenoids for use in sprinkler service.

2.12 NETWORK COMMUNICATIONS

A. Provide network communications for fire-alarm system according to fire-alarm manufacturer's written requirements.

B. Provide network communications pathway per manufacturer's written requirements and requirements in NFPA 72 and NFPA 70.

C. Provide integration gateway using [BACnet] [Modbus] <Insert protocol> for connection to building automation system.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

1. Devices placed in service before all other trades have completed cleanup shall be replaced.
2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.

B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.

1. Connect new equipment to existing control panel in existing part of the building.
2. Connect new equipment to existing monitoring equipment at the supervising station.
3. Expand, modify, and supplement existing monitoring equipment as necessary to extend existing monitoring functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.

C. Equipment Mounting: Install fire-alarm control unit on finished floor.

1. Comply with requirements for seismic-restraint devices specified in Section 26 0548.16 "Seismic Controls for Electrical Systems."

D. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.

1. Comply with requirements for seismic-restraint devices specified in Section 26 0548.16 "Seismic Controls for Electrical Systems."

E. Manual Fire-Alarm Boxes:

1. Install manual fire-alarm box in the normal path of egress within 60 inches of the exit doorway.
2. Mount manual fire-alarm box on a background of a contrasting color.

3. The operable part of manual fire-alarm box shall be between 42 inches and 48 inches above floor level. All devices shall be mounted at the same height unless otherwise indicated.

F. Smoke- or Heat-Detector Spacing:

1. Comply with the "Smoke-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for smoke-detector spacing.
2. Comply with the "Heat-Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for heat-detector spacing.
3. Smooth ceiling spacing shall not exceed 30 feet.
4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Annex A in NFPA 72.
5. HVAC: Locate detectors not closer than 36 inches from air-supply diffuser or return-air opening.
6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture and not directly above pendant mounted or indirect lighting.

G. Install a cover on each smoke detector that is not placed in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover.

H. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct. Tubes more than 36 inches long shall be supported at both ends.

1. Do not install smoke detector in duct smoke-detector housing during construction. Install detector only during system testing and prior to system turnover.

I. Single-Station Smoke Detectors: Where more than one smoke alarm is installed within a dwelling or suite, they shall be connected so that the operation of any smoke alarm causes the alarm in all smoke alarms to sound.

J. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

K. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.

L. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.

M. Device Location-Indicating Lights: Locate in public space near the device they monitor.

N. Antenna for Radio Alarm Transmitter: Mount to building structure where indicated. Use mounting arrangement and substrate connection that resists 100-mph wind load with a gust factor of 1.3 without damage.

3.3 PATHWAYS

A. Pathways above recessed ceilings and in no accessible locations may be routed exposed.

1. Exposed pathways located less than 96 inches above the floor shall be installed in EMT.

B. Pathways shall be installed in EMT.

C. Exposed EMT shall be painted red enamel.

3.4 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 08 7100 "Door Hardware." Connect hardware and devices to fire-alarm system.

1. Verify that hardware and devices are listed for use with installed fire-alarm system before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Alarm-initiating connection to smoke-control system (smoke management) at firefighters' smoke-control system panel.
2. Alarm-initiating connection to stairwell and elevator-shaft pressurization systems.
3. Smoke dampers in air ducts of designated HVAC duct systems.
4. Magnetically held-open doors.
5. Electronically locked doors and access gates.
6. Alarm-initiating connection to elevator recall system and components.
7. Alarm-initiating connection to activate emergency lighting control.
8. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
9. Supervisory connections at valve supervisory switches.
10. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
11. Supervisory connections at elevator shunt-trip breaker.
12. Data communication circuits for connection to building management system.
13. Data communication circuits for connection to mass notification system.
14. Supervisory connections at fire-extinguisher locations.
15. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
16. Supervisory connections at fire-pump engine control panel.

3.5 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 0553 "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.6 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction and engineer.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

D. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Visual Inspection: Conduct visual inspection prior to testing.

    a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
    b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective

components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.9 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION

AIA® Document G710™ – 2017

Architect's Supplemental Instructions

PROJECT: *(name and address)* Wilma P. Mankiller Health Center Expansion Stilwell, OK	**CONTRACT INFORMATION:** Contract For: CMAR Date:	**ASI INFORMATION:** ASI Number: Bid Package 02 - ASI 001 Date: 02-26-20
OWNER: *(name and address)* Cherokee Nation Property Management, LLC.	**ARCHITECT:** *(name and address)* Jame R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901	**CONTRACTOR:** *(name and address)* M. Ross, Inc.

The Contractor shall carry out the Work in accordance with the following supplemental instructions without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgment that there will be no change in the Contract Sum or Contract Time.
(Insert a detailed description of the Architect's supplemental instructions and, if applicable, attach or reference specific exhibits.)
See attached revised Civil plans that have been issued and approved by ODOT. Follings sheets re-issued
CD100
CD101
CI102
CP102
CG100
CG104
CG105
CG106
CG108
CU505

ISSUED BY THE ARCHITECT:

James R. Childers Architect, Inc.
ARCHITECT *(Firm name)*

J. Breck Childers
SIGNATURE

J. Breck Childers - Architect
PRINTED NAME AND TITLE

02-26-20
DATE

Existing

Basin	SQ.FT.	ACRE	CN	L_o (ft)	Sheet flow	time (min)	concentrated flow	time (min)
EAST 1	26579.83	0.61	96	437	300 ft @ 5%	1.91	137 ft @ 3.61%	0.59
Curve Number =[(0.08 X 80)+(0.53 X 98)]/0.61								

	Q PR YR	VOL PR YR	Q OUT (cfs)
2 yr	3.231	6527	3.231
5 yr	4.366	8997	4.366
10 yr	5.118	10648	5.118
25 yr	6.056	12715	6.056
50 yr	6.805	14370	6.805
100 yr	7.459	15820	7.459

Basin	SQ.FT.	ACRE	CN	L_o (ft)	Sheet flow	time (min)	concentrated flow	time (min)
EAST 2	66962.65	1.54	85	352	300 ft @ 5%	1.91	52 ft @ 5%	0.24
Curve Number =[(1.12 X 80)+(0.42 X 98)]/1.54								

	Q PR YR	VOL PR YR	Q OUT (cfs)
2 yr	6.133	11025	6.133
5 yr	9.083	16685	9.083
10 yr	11.08	20578	11.08
25 yr	13.55	25528	13.55
50 yr	15.52	29536	15.52
100 yr	17.24	33068	17.24

Basin	SQ.FT.	ACRE	CN	L_o (ft)	Sheet flow	time (min)	concentrated flow	time (min)
EAST 3	71777	1.65	93	325	300 ft @ 5%	1.91	25 ft @ 5%	0.09
Curve Number =[(0.45 X 80)+(1.20 X 98)]/1.65								

	Q PR YR	VOL PR YR	Q OUT (cfs)
2 yr	8.26	15900	8.26
5 yr	11.39	22470	11.39
10 yr	13.46	26886	13.46
25 yr	16.04	32430	16.04
50 yr	18.09	36878	18.09
100 yr	19.88	40777	19.88

Basin	SQ.FT.	ACRE	CN	L_o (ft)	Sheet flow	time (min)	concentrated flow	time (min)
WEST 1	89391	2.05	94	669	300 ft @ 7%	1.67	369 ft @ 3%	1.75
Curve Number =[(0.42 X 80)+(1.63 X 98)]/2.05								

	Q PR YR	VOL PR YR	Q OUT (cfs)
2 yr	9.37	20463	9.37
5 yr	12.85	28678	12.85
10 yr	15.15	34189	15.15
25 yr	18.01	41100	18.01
50 yr	20.29	46641	20.29
100 yr	22.28	51495	22.28

Basin	SQ.FT.	ACRE	CN	L_o (ft)	Sheet flow	time (min)	concentrated flow	time (min)
WEST 2	134565.4	3.09	94	482	300 ft @ 6.67%	1.7	182 ft @ 2%	1.06
Curve Number =[(0.68 X 80)+(2.41 X 98)]/3.09								

	Q PR YR	VOL PR YR	Q OUT (cfs)
2 yr	15.8	30844	15.8
5 yr	21.63	43227	21.63
10 yr	25.48	51534	25.48
25 yr	30.28	61951	30.28
50 yr	34.1	70303	34.1
100 yr	37.44	77620	37.44

TOTAL	Q PR YR	VOL PR YR
2 yr	42.794	84759
5 yr	59.319	120057
10 yr	70.288	143835
25 yr	83.936	173724
50 yr	94.805	197728
100 yr	104.299	218780

Map Unit Symbol	Map Unit Name	Soil Gorup	Grass Area Curve Number	Impervious Area Curve Number
DkA	Tonti gravely silt loam	C/D	80	98
Hc	Enders-Linker-Hector Association	D	80	98
JaA	Jay silt loam	C/D	80	98
So	Sogn silty clay loam	D	80	98
Sub	Apperson silty clay loam	D	80	98

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OK. CA. 3998
EXP. 06/30/2020

CLIENT:

TRIBE OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: CD100

EXISTING DRAINAGE MAP

Proposed

Basin	SQ FT.	ACRE	CN	Lo (ft)	Sheet flow	time (min)	concentrated flow	time (min)
EAST 1	26579.83	0.61	96	437	300 ft @ 5%	1.91	137 ft @ 3.61%	0.59
Curve Number ={(0.08 X 80)+(0.53 X 98)}/0.61								

	Site outflow		No pond routing			
	Q PR YR	VOL PR YR	Q RET ONSITE	ELEV. (ft)	Storage (cu.ft.)	RET OUT (cfs)
2 yr	3.231	6527	0.000	N/A	N/A	3.231
5 yr	4.366	8997	0.000	N/A	N/A	4.366
10 yr	5.118	10648	0.000	N/A	N/A	5.118
25 yr	6.056	12715	0.000	N/A	N/A	6.056
50 yr	6.805	14370	0.000	N/A	N/A	6.805
100 yr	7.459	15820	0.000	N/A	N/A	7.459

Basin	SQ FT.	ACRE	CN	Lo (ft)	Sheet flow	time (min)	concentrated flow	time (min)
EAST 2	66962.65	1.54	90	389	300 ft @ 5%	1.91	89 ft @ 3%	0.42
Curve Number ={(0.83 X 98)+(0.71X 80)}/1.54								

	Site outflow		After pond routing			
	Q PR YR	VOL PR YR	Q RET ONSITE	ELEV. (ft)	Storage (cu.ft.)	RET OUT (cfs)
2 yr	7.157	13321	0.584	1154.44	1049	6.573
5 yr	10.12	19305	1.082	1154.59	1407	9.038
10 yr	12.08	23358	1.330	1154.69	1678	10.750
25 yr	14.520	28466	1.570	1154.8	2008	12.950
50 yr	16.46	32575	1.720	1154.89	2261	14.740
100 yr	18.150	36183	1.840	1154.96	2475	16.310

Basin	SQ FT.	ACRE	CN	Lo (ft)	Sheet flow	time (min)	concentrated flow	time (min)
EAST 3	71777	1.65	93	325	300 ft @ 5%	1.91	25 ft @ 5%	0.09
Curve Number ={(0.45 X 80)+(1.20 X 98)}/1.65								

	Site outflow		No pond routing			
	Q PR YR	VOL PR YR	Q RET ONSITE	ELEV. (ft)	Storage (cu.ft.)	RET OUT (cfs)
2 yr	8.26	15900	0.000	N/A	N/A	8.260
5 yr	11.39	22470	0.000	N/A	N/A	11.390
10 yr	13.46	26886	0.000	N/A	N/A	13.460
25 yr	16.04	32430	0.000	N/A	N/A	16.040
50 yr	18.09	36878	0.000	N/A	N/A	18.090
100 yr	19.88	40777	0.000	N/A	N/A	19.880

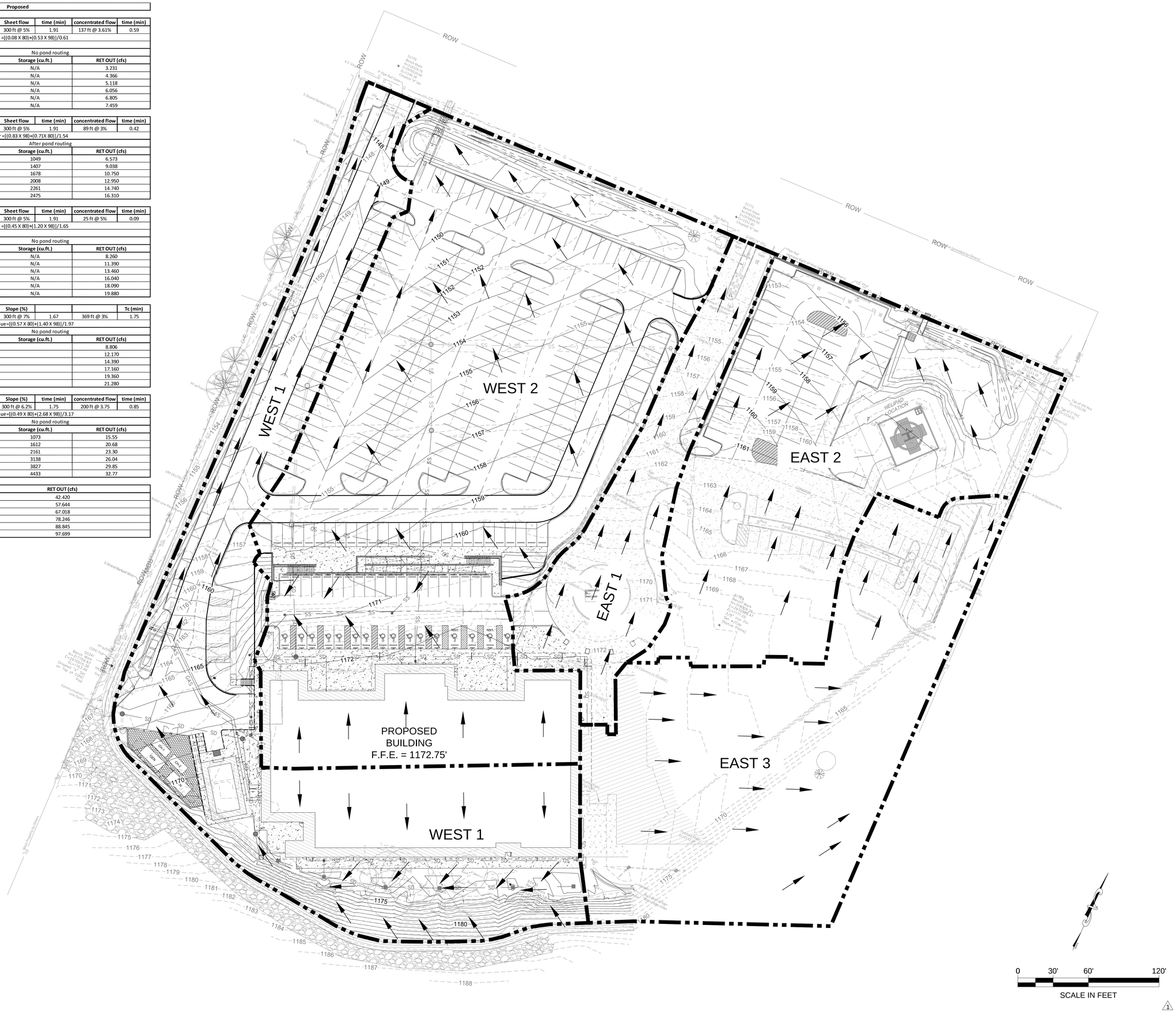
Basin	SQ FT.	ACRE	C	Lo (ft)	Slope (%)			Tc (min)
WEST 1	85737.32	1.97	93	669	300 ft @ 7%	1.67	369 ft @ 3%	1.75
COMPOSITE C value={(0.57 X 80)+(1.40 X 98)}/1.97								

	Site outflow		No pond routing			
	Q PR YR	VOL PR YR	Q RET ONSITE	ELEV. (ft)	Storage (cu.ft.)	RET OUT (cfs)
2 yr	8.806	18983	0.000			8.806
5 yr	12.17	26828	0.000			12.170
10 yr	14.39	32100	0.000			14.390
25 yr	17.16	38719	0.000			17.160
50 yr	19.36	44030	0.000			19.360
100 yr	21.280	48685	0.000			21.280

Basin	SQ FT.	ACRE	C	Lo (ft)	Slope (%)	time (min)	concentrated flow	time (min)
WEST 2	138219.1	3.17	95	500	300 ft @ 6.2%	1.75	200 ft @ 3.75	0.85
COMPOSITE C value={(0.49 X 80)+(2.68 X 98)}/3.17								

	Site outflow		No pond routing			
	Q PR YR	VOL PR YR	Q RET ONSITE	ELEV. (ft)	Storage (cu.ft.)	RET OUT (cfs)
2 yr	16.52	32766	0.970	1148.16	1073	15.55
5 yr	22.45	45541	1.770	1148.44	1612	20.68
10 yr	26.39	54095	3.090	1148.65	2161	23.30
25 yr	31.28	64812	5.240	1148.98	3138	26.04
50 yr	35.19	73399	5.340	1149.16	3827	29.85
100 yr	38.60	80919	5.830	1149.98	4433	32.77

TOTAL	Q PR YR	VOL PR YR	Q RET ONSITE	RET OUT (cfs)
2 yr	43.974	87497	1.554	42.420
5 yr	60.496	123141	2.852	57.644
10 yr	71.438	147087	4.420	67.018
25 yr	85.056	177142	6.810	78.246
50 yr	95.905	201252	7.060	88.845
100 yr	105.369	222384	7.670	97.699



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EXP. 06/30/2020

CLIENT:

SEAL OF THE CHEROKEE NATION
FORT WAYNE
SEPT. 6, 1820

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

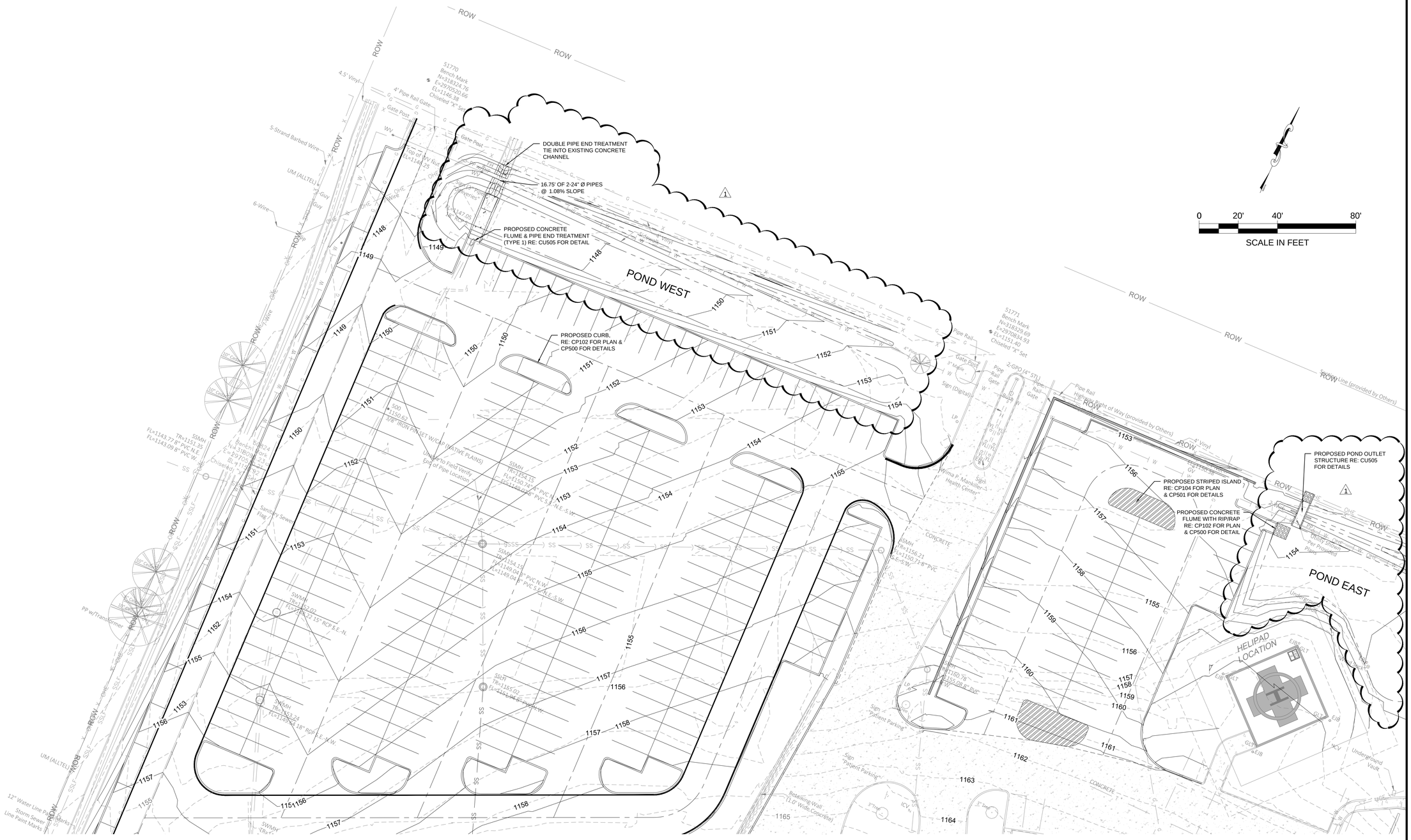
REVISIONS		
#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: CD101

PROPOSED DRAINAGE MAP



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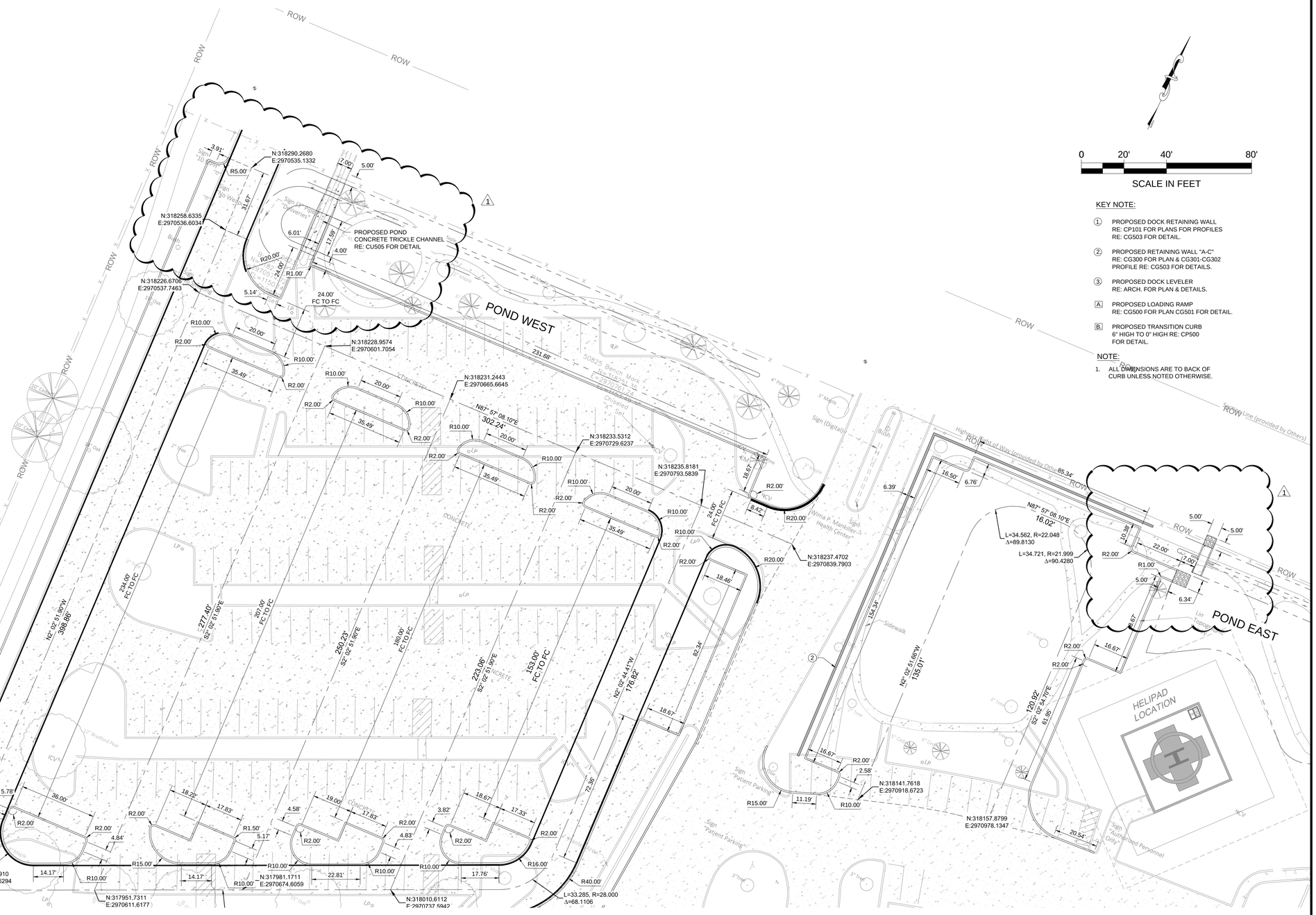
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19
JOB NUMBER: 18-01.01

SHEET NUMBER:
CI102

ENLARGED PROPOSED SITE PLAN



KEY NOTE:

1. PROPOSED DOCK RETAINING WALL
   RE: CP101 FOR PLANS FOR PROFILES
   RE: CG503 FOR DETAIL.
2. PROPOSED RETAINING WALL "A-C"
   RE: CG300 FOR PLAN & CG301-CG302
   PROFILE RE: CG503 FOR DETAILS.
3. PROPOSED DOCK LEVELER
   RE: ARCH. FOR PLAN & DETAILS.

A. PROPOSED LOADING RAMP
   RE: CG500 FOR PLAN CG501 FOR DETAIL.

B. PROPOSED TRANSITION CURB
   6" HIGH TO 0" HIGH RE: CP500
   FOR DETAIL.

NOTE:

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.

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SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

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REVISIONS		
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DATE: 12-06-19

JOB NUMBER: 18-01.01

SHEET NUMBER: CP102

ENLARGED PAVING PLAN

REFER TO CG105
FOR ENLARGED VIEW

REFER TO CG106
FOR ENLARGED VIEW

REFER TO CG103
FOR ENLARGED VIEW

REFER TO CG104
FOR ENLARGED VIEW

REFER TO CG101
FOR ENLARGED VIEW

REFER TO CG102
FOR ENLARGED VIEW

REFER TO CG108
FOR ENLARGED VIEW

POND WEST

POND EAST

PROPOSED
BUILDING
F.F.E. = 1172.75' *

F.F.E. = 1172.75'

ENLARGED VIEW 1
RE: CG106 FOR PLAN

HELIPAD LOCATION

0' 30' 60' 120'
SCALE IN FEET

NOTES:
* BUILDING TO MATCH EXISTING F.F.E.

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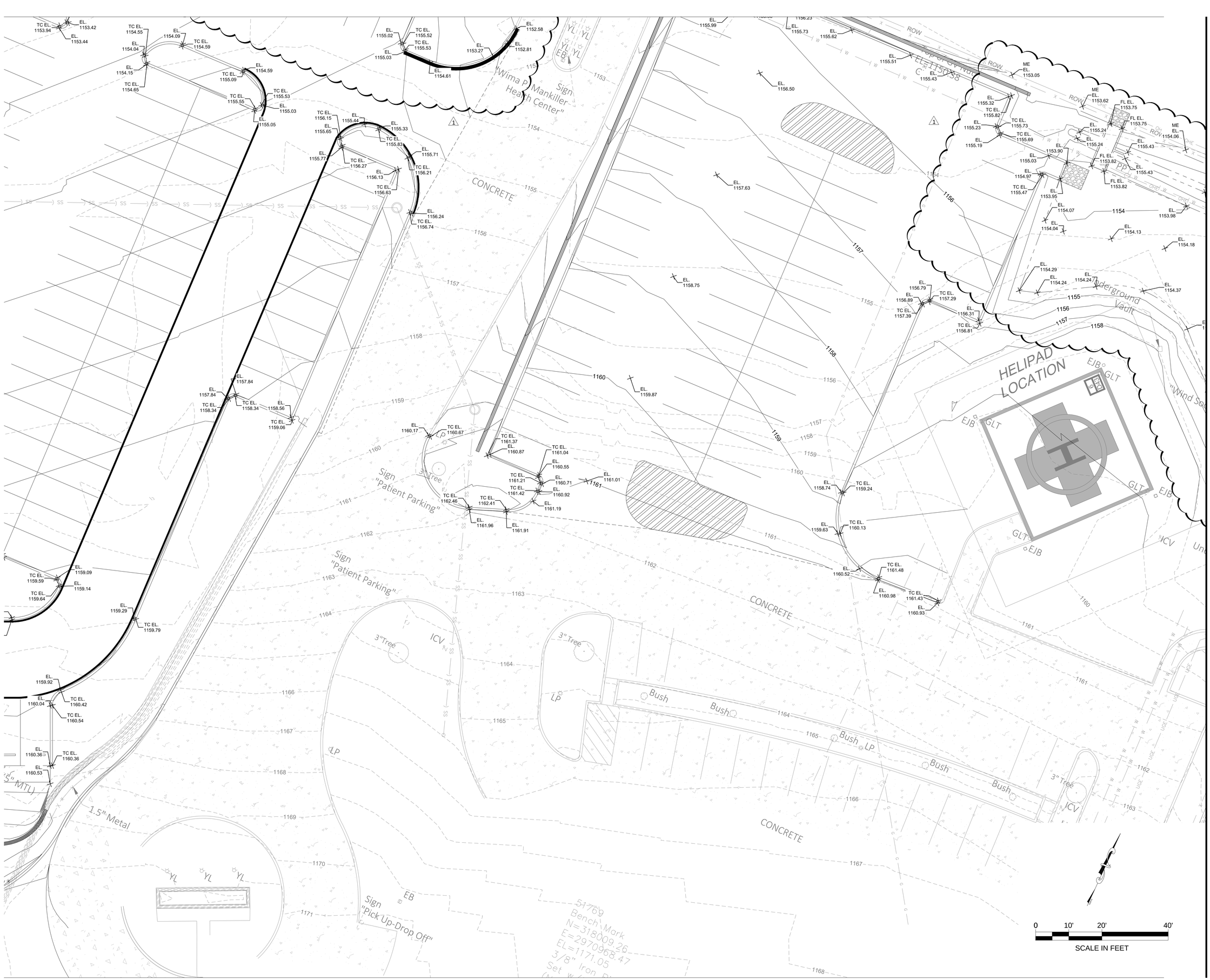
REVISIONS		
#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: CG100

OVERALL GRADING PLAN



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EXP. 06/30/2020

CLIENT:

THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19

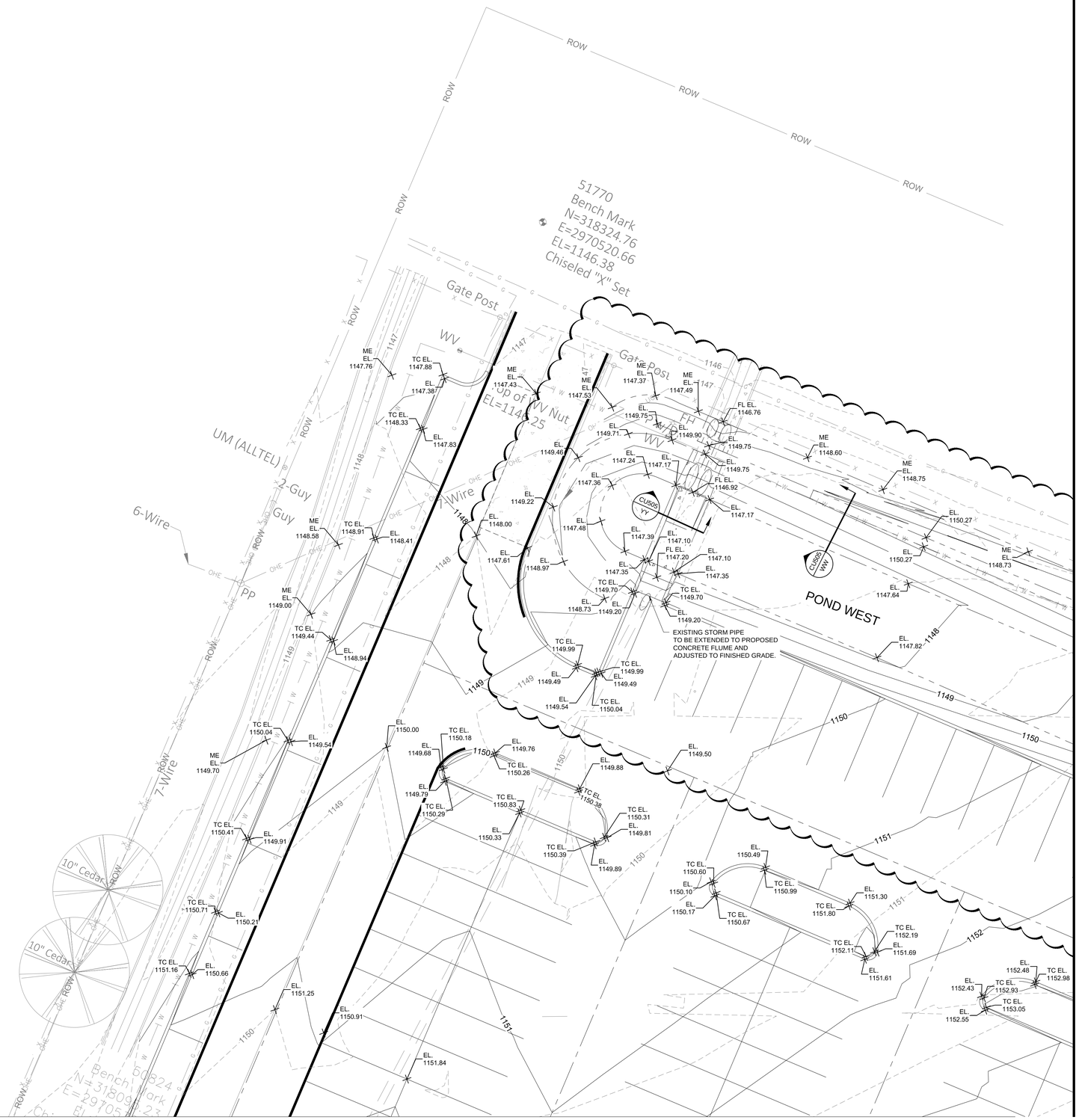
JOB NUMBER: 18-01.01

SHEET NUMBER: CG104

ENLARGED GRADING PLAN

0 10' 20' 40'

SCALE IN FEET



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EXP. 06/30/2020

CLIENT:

THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

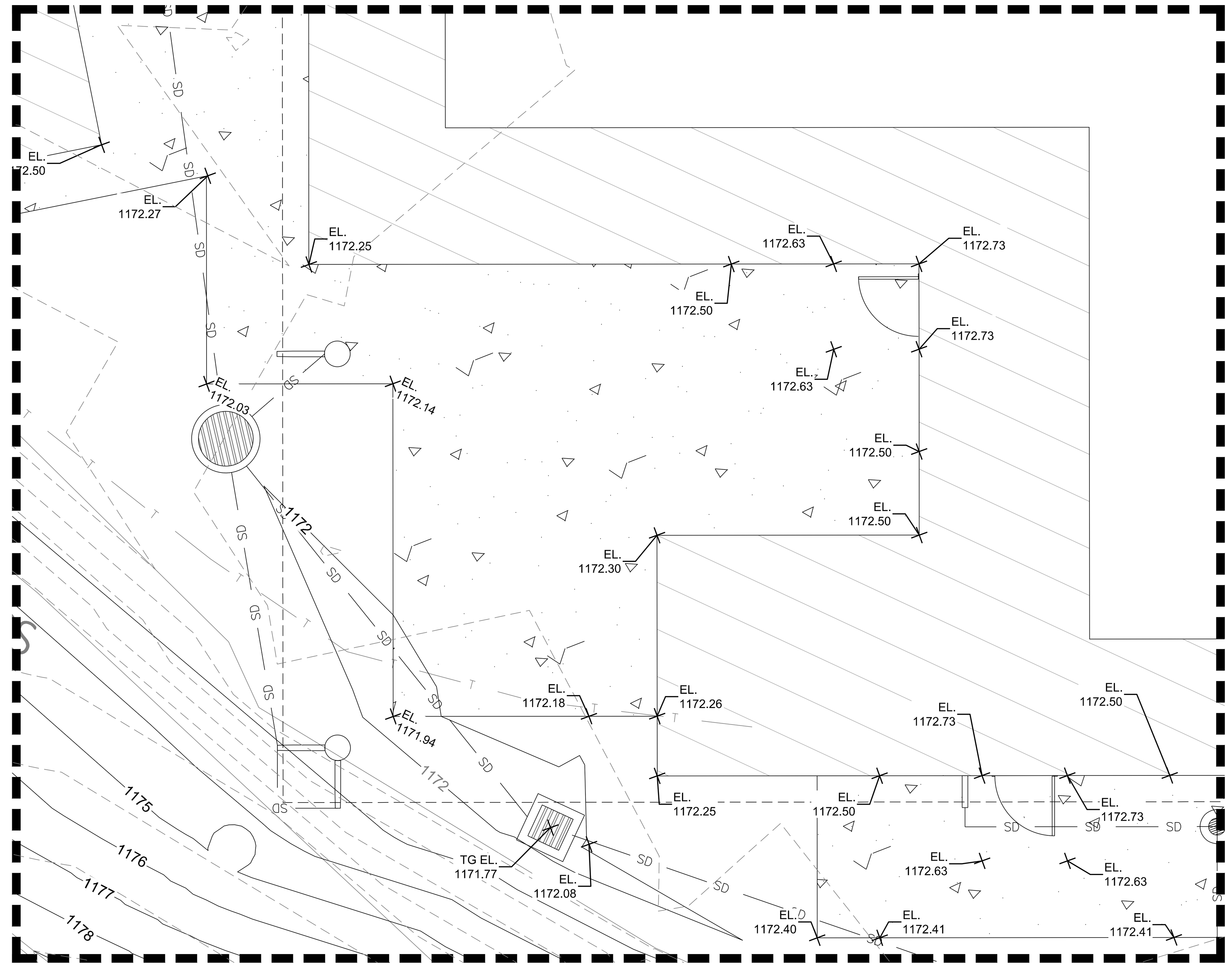
REVISIONS		
#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19

JOB NUMBER: 18-01.01

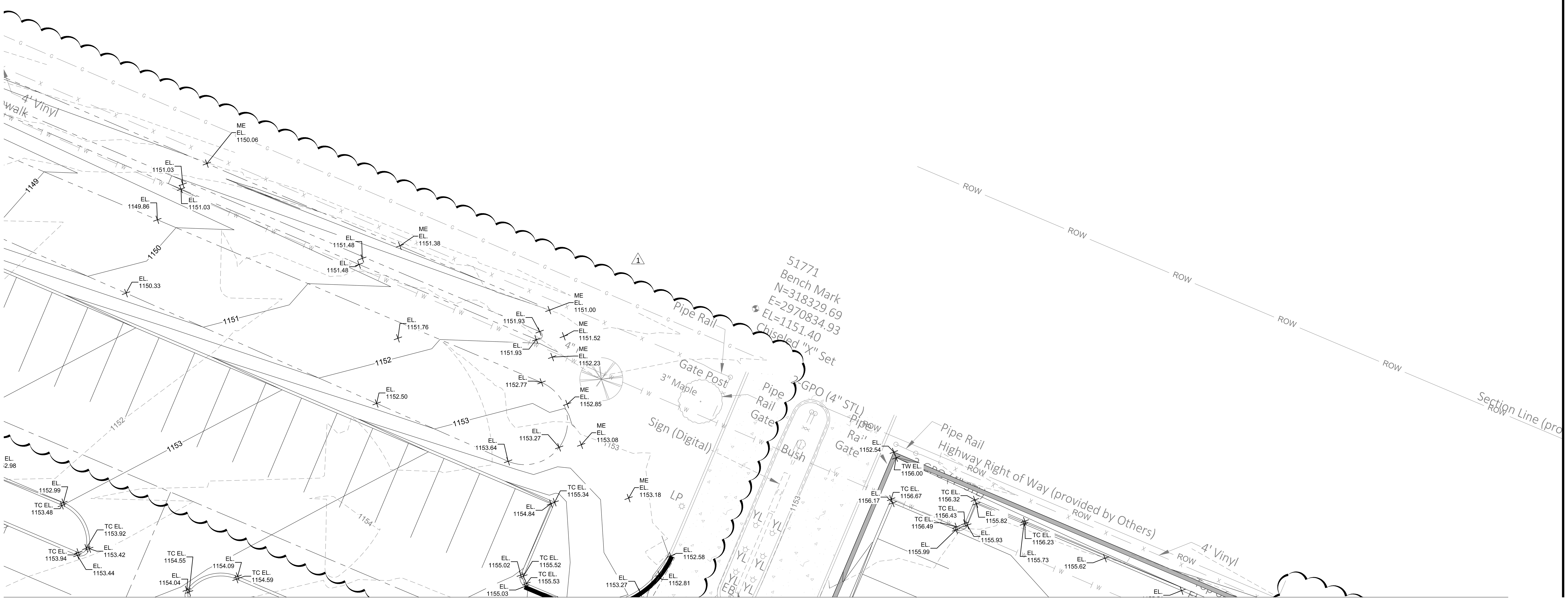
SHEET NUMBER: CG105

ENLARGED GRADING PLAN



ENLARGED VIEW 1
REFER TO CG101
FOR LOCATION
1" = 5' SCALE

0 10' 20' 40'
SCALE IN FEET



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EXP. 06/30/2020

CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

REVISIONS

#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE:	JOB NUMBER:
12-06-19	18-01.01

SHEET NUMBER:

CG106

ENLARGED
GRADING PLAN

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REGISTERED PROFESSIONAL ENGINEER — H. WAYNE BARKER — 12-6-19 — 11553 — OKLAHOMA

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CLIENT:

THE CHEROKEE NATION — SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER EXPANSION

STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

BID PACKAGE 02

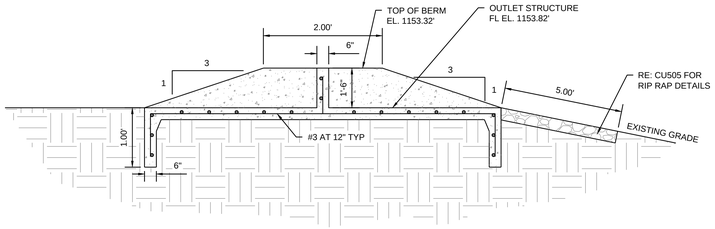
REVISIONS		
#	DATE:	DESCRIPTION:
1	02/25/20	BID PACKAGE 02 - ASI 01

DATE: 12-06-19

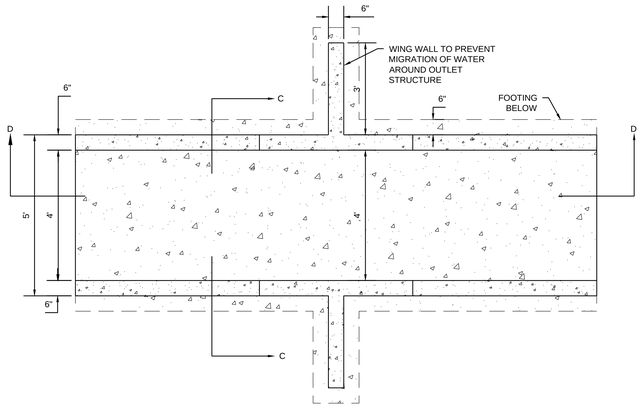
JOB NUMBER: 18-01.01

SHEET NUMBER: CG108

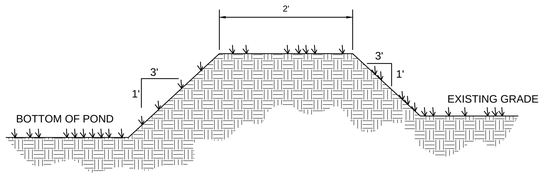
ENLARGED GRADING PLAN



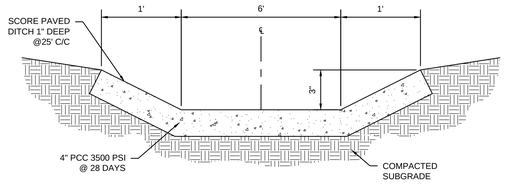
POND OUTLET STRUCTURE
SECTION D-D
NOT TO SCALE



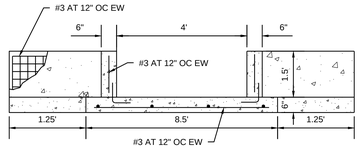
POND OUTLET STRUCTURE
NOT TO SCALE



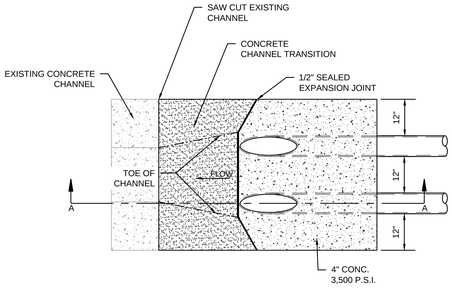
POND BERM SECTION
SECTION "W-W" DETAIL
NTS

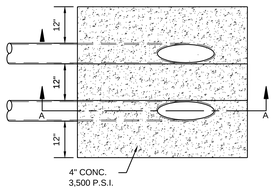


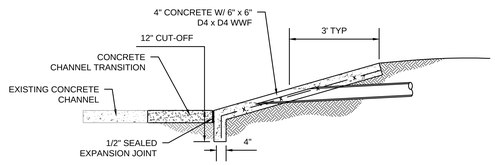
POND TRICKLE CHANNEL
SECTION "Y-Y" DETAIL
NTS



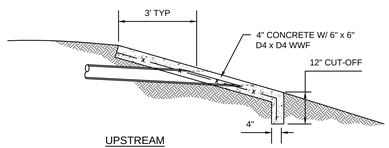
POND OUTLET STRUCTURE
SECTION C-C
NOT TO SCALE







SECTION A-A
DOWNSTREAM

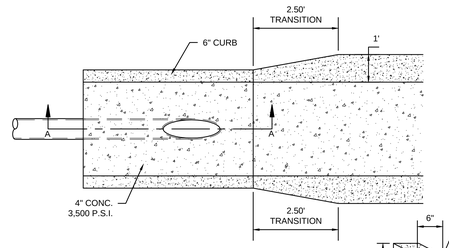


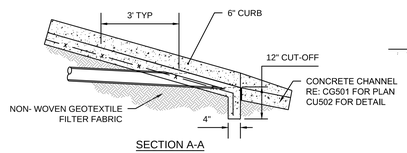
UPSTREAM

NOTES:

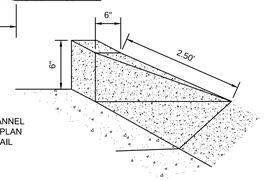
1. LA IS THE LENGTH OF RIPRAP APRON SEE PLAN.
2. LB IS THE LENGTH OF RIPRAP APRON SEE PLAN.
3. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 9 INCHES.
4. IN A WELL - DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION EQUAL TO THE TOP OF THE BANK.
5. A FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION. AASHTO M-288-97 CLASS 2.
6. MEDIAN STONE DIAMETER D_{50} = 8"

DOUBLE PIPE END TREATMENT
N.T.S.





SECTION A-A
DOWNSTREAM

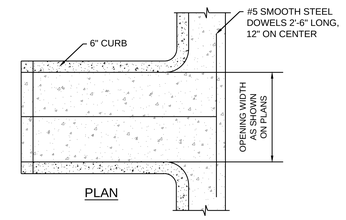


TRANSITION FROM CURB
FLUME TO CHANNEL
NOT TO SCALE

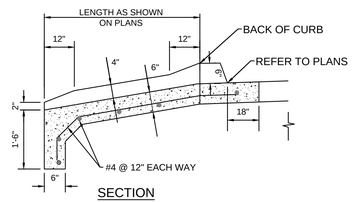
PIPE END TREATMENT (TYPE 1)
NOT TO SCALE

NOTES:

1. IN A WELL - DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION EQUAL TO THE TOP OF THE BANK.
2. A FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION. AASHTO M-288-97 CLASS 2.
3. MEDIAN STONE DIAMETER D_{50} = 8"
4. TRIM PIPE TO FIT SLOPE.



PLAN



SECTION

CONCRETE FLUME DETAIL
NOT TO SCALE

James R. Childers
Architect, Inc.
45 South 4th Street
Fort Smith, AR 72901
479-783-2480
www.childersarchitect.com

PROFESSIONAL SEAL:

REGISTERED PROFESSIONAL ENGINEER
H. WAYNE BARKER
12-6-19
11553
OKLAHOMA

CONSULTANT LOGO:

Barker & Associates
3902 UNIVERSITY BLVD
Durant, OK 74701
580.931.9045
OK. CA. 3998
EXP. 06/30/2020

CLIENT:

THE CHEROKEE NATION
SEPT. 6, 1839

WILMA P. MANKILLER HEALTH CENTER
EXPANSION
STILWELL, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 02

REVISIONS		
#	DATE	DESCRIPTION
1	02/25/20	BID PACKAGE 02 - ASI: 01

DATE: 12-06-19
JOB NUMBER: 18-01.01
SHEET NUMBER: CU505

POND
WEST & EAST
DETAILS

BUILDING & EARTH
Geotechnical, Environmental, and Materials Engineers

1403 South 70th East Avenue
Tulsa, OK 74112
Ph: (918) 439-9005

www.BuildingAndEarth.com

March 3, 2020

Cherokee Nation Businesses
777 West Cherokee Street
Catoosa, OK 74015

Attn: Mr. Kevin Ogle, P.E.

Subject: Addendum No. 1 to Report of Subsurface Exploration and Preliminary Geotechnical Evaluation
Wilma P. Mankiller Clinic Renovations
Stilwell, Oklahoma
Building & Earth Project No: OK200040

Dear Mr. Ogle:

Please accept this Addendum No. 1 to our report of subsurface exploration and preliminary geotechnical evaluation (Project No: OK180172, dated August 30, 2018). The referenced report was prepared with preliminary recommendation pending demolition of the clinic structure. At the time of this addendum, the structure had been removed and additional exploration was performed within the footprint of the planned new clinic building. This addendum provides supplemental or amended recommendations and information to be used for final design and construction of the planned new structure.

The information in this Addendum may not be used separately from the preliminary report. Each document must be used concurrently in order to be valid for final design and construction of the referenced project.

Supplemental Exploration and Subsurface Conditions

The purpose of the supplemental geotechnical exploration was to determine general subsurface conditions at specific boring locations within the proposed footprint of the planned new structure, and to gather data on which to base a final geotechnical evaluation with respect to the proposed construction. The supplemental subsurface exploration for this project consisted of five (5) test borings. The site was drilled using an ATV-mounted CME-550 drill rig equipped with hollow stem augers and an automatic hammer.

The samples recovered during our site investigation were visually classified and specific samples were selected by the project engineer for laboratory analysis. The laboratory analysis consisted of:

Test	ASTM	No. of Tests
Natural Moisture Content	D2216	21
Atterberg Limits	D4318	3

Table A1-1: Scope of Laboratory Tests

The results of the laboratory analysis are presented on the enclosed Boring Logs appended to this Addendum.

Subsurface conditions within the supplemental borings appear generally consistent with those noted during our original exploration (performed July 25, 2018). The supplemental borings encountered existing fill material at all boring locations to depths ranging from approximately 5.3 to 7 feet below existing grades (elevations 1165 to 1167). In boring SB-01, the fill material was underlain by a residual lean to fat clay layer with a thickness of about 1.4 feet. Limestone bedrock associated with the Boone Formation was encountered below the residual soil. In all other supplemental borings, the existing fill material was underlain by limestone.

Auger refusal was encountered on limestone at each supplemental boring location. Depth and elevation of auger refusal are shown in the following table.

Boring	Auger Refusal Depth (ft)	Auger Refusal Elevation (ft)
SB-01	7.1	1165.0
SB-02	5.3	1166.8
SB-03	7.8	1164.1
SB-04	5.5	1166.4
SB-05	6.5	1165.2

Table A1-2: Auger Refusal Depths and Elevations

Groundwater was encountered in boring SB-03 at an approximate depth of 5.5 feet below existing grades the time of drilling (elevation 1166.3). Free water within this borehole was at approximate depth of 6.5 feet prior to backfilling (elevation 1165.3). Groundwater seepage was not noted at the other supplemental boring locations. Fluctuations in the water level can occur due to seasonal rainfall. Water levels reported are accurate only for the time and date that the borings were drilled. Long term monitoring of the boreholes was not included as part of our subsurface exploration. The borings were backfilled the same day that they were drilled.

Building Pad Preparation Recommendations

Upon review of the provided civil plan set (prepared by Barker & Associates and dated September 25, 2018) we understand a finished floor elevation (FFE) 1172.75 is planned. Based on the estimated elevation of our supplemental borings, less than 1 foot of cut/fill is planned to achieve design grades.

Based on the planned grades and encountered subsurface conditions at our supplemental boring locations and review of the provided civil plan set, the preliminary recommendations presented in the noted report remain valid and may be used for final design and construction of the clinic. A brief summary of the recommendations are as follows:

- Initial site preparation should consist of removal of all structures, foundations, below grades walls, and other deleterious materials.
- Building pad preparation shall consist of improvement of the existing fill materials and residual soils by means of:
    - Installation of stone columns extending to the top of limestone unit and,
    - Partial undercutting and replacement (minimum 18 inches) of existing fill materials with structural fill to reduce the risk of heave of floor slabs with post-construction moisture fluctuation.
    - Soil moisture contents of the fill within the upper 2 feet were relatively high at 25 to 30 percent in borings SB-01, SB-02, and SB-03 at the time of our supplemental subsurface exploration. Following the above recommended amount of undercut, the subgrade across the proposed building area should be scarified, moisture conditioned and recompacted to a depth of 8 inches. The clay soils should be moisture conditioned within a range of 1 percent below to 3 percent above the material's optimum moisture content, and the subgrade soils recompacted to least 95 percent of the material's standard Proctor maximum dry density.

Shallow Foundation Recommendations

As noted in the preliminary report, all shallow foundations are to bear on the following materials:

- Newly installed stone columns where the depth of bedrock allows or,
- when shallow depths to bedrock prohibit feasible installation of stone columns below shallow foundations, footings are to bear:
  - directly on limestone (auger refusal material) or,
  - on lean concrete or well compacted graded aggregate base (98% of standard Proctor maximum dry density) which has been placed after undercutting to expose limestone.

Closing

Unless specifically revised in this addendum, the recommendations presented in the referenced geotechnical report remain valid. We appreciate the opportunity to provide continued geotechnical consultation services for this project. If you have any questions regarding the information in this addendum or need any additional information, please call us.

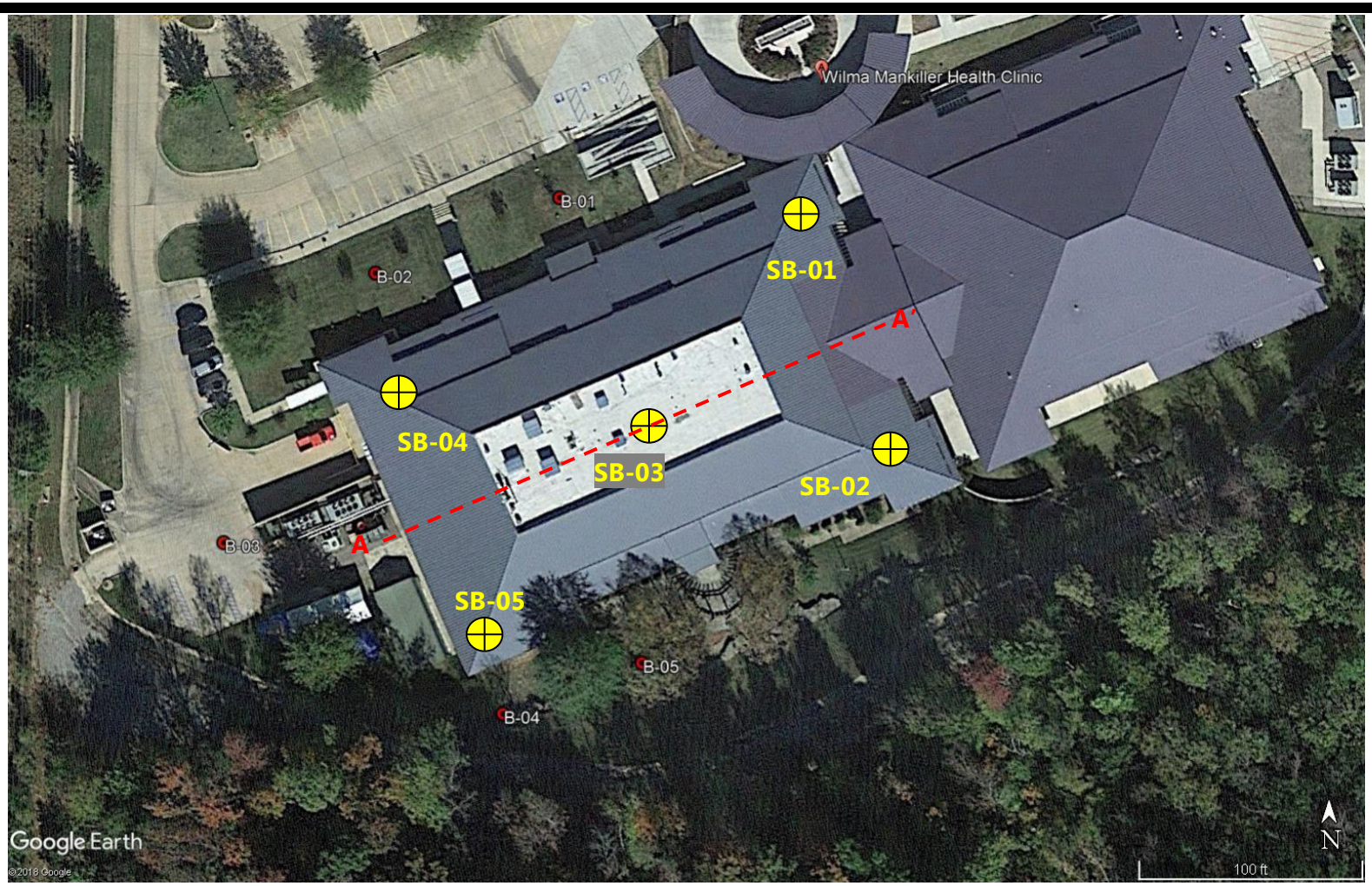
Respectfully Submitted,

BUILDING & EARTH SCIENCES, INC.
Certificate of Authorization #3975, Expires 6/30/2020

Joseph D. Vistad, P.E.
Branch Manager (AR)
OK: 30303

Marco V. Vicente Silvestre, P.G. P.E.
Regional Vice President
OK: 21903

Attachments: Supplemental Boring Location Plan
Supplemental Boring Logs
Supplemental Subsurface Profile



REFERENCE USED TO PRODUCE THIS DRAWING: Google Earth Satellite Imagery	**BORING LOCATION PLAN**		**DATE: 02/19/2020**
	PROJECT NO. OK200040	**PROJECT NAME / LOCATION:** Wilma P Mankiller Clinic Renovations Stilwell, Oklahoma	**SCALE:** As Shown

BUILDING & EARTH

Geotechnical, Environmental, and Materials Engineers

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Geotechnical, Environmental, and Materials Engineers

LOG OF BORING

Designation: SB-01

1403 S 70th East Avenue
Tulsa, OK 74112
Office: 918-439-9005
www.buildingandearth.com

PROJECT NAME:	Wilma P Mankiller Health Center Expansion	LOCATION:	Stilwell, OK
PROJECT NUMBER:	OK200040	DATE DRILLED:	2/19/20
DRILLING METHOD:	Hollow Stem Auger	WEATHER:	Sunny
EQUIPMENT USED:	CME 550X ATV	ELEVATION:	1172.1
HAMMER TYPE:	Automatic	DRILL CREW:	Building & Earth Sciences, Inc.
BORING LOCATION:	NE corner of the building	LOGGED BY:	Taru

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	N-Value / Qu (tsf) / Atterberg Limits / % Moisture	LAB DATA	SOIL DESCRIPTION	GRAPHIC	REMARKS
			1	2 3 11		Sample 1 LL: 35 PL: 23 PI: 12 M: 27.0%	LEAN CLAY (CL): very stiff, reddish brown, brown, yellowish brown, low plasticity, moist, with greenish gray broken shale, fat clay clods, and sand; with limestone gravel in top 6 inches (not sampled), (FILL)		
	1170						hard		
			2	22 26 32		Sample 2 M: 22.8%			
5							5.5 1166.6		
			3	14 7 9		Sample 3 M: 17.4%	LEAN TO FAT CLAY (CL-CH): very stiff, reddish brown, yellowish brown, medium to high plasticity, moist, with ferrous nodules, (RESIDUAL)		
							6.9 1165.2		
	1165		4	50/0.25"		Sample 4 M: 11.3%	7.1 1165.0 LIMESTONE: hard, gray, light gray, (BOONE FORMATION)		
							Auger Refusal at 7.1 feet.		Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)
% MOISTURE PERCENT NATURAL MOISTURE CONTENT
▽ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
▼ STABILIZED GROUNDWATER LEVEL

REC RECOVERY
RQD ROCK QUALITY DESIGNATION
UD UNDISTURBED
Qu POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT
PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE
PI: PLASTICITY INDEX

BUILDING & EARTH
Geotechnical, Environmental, and Materials Engineers

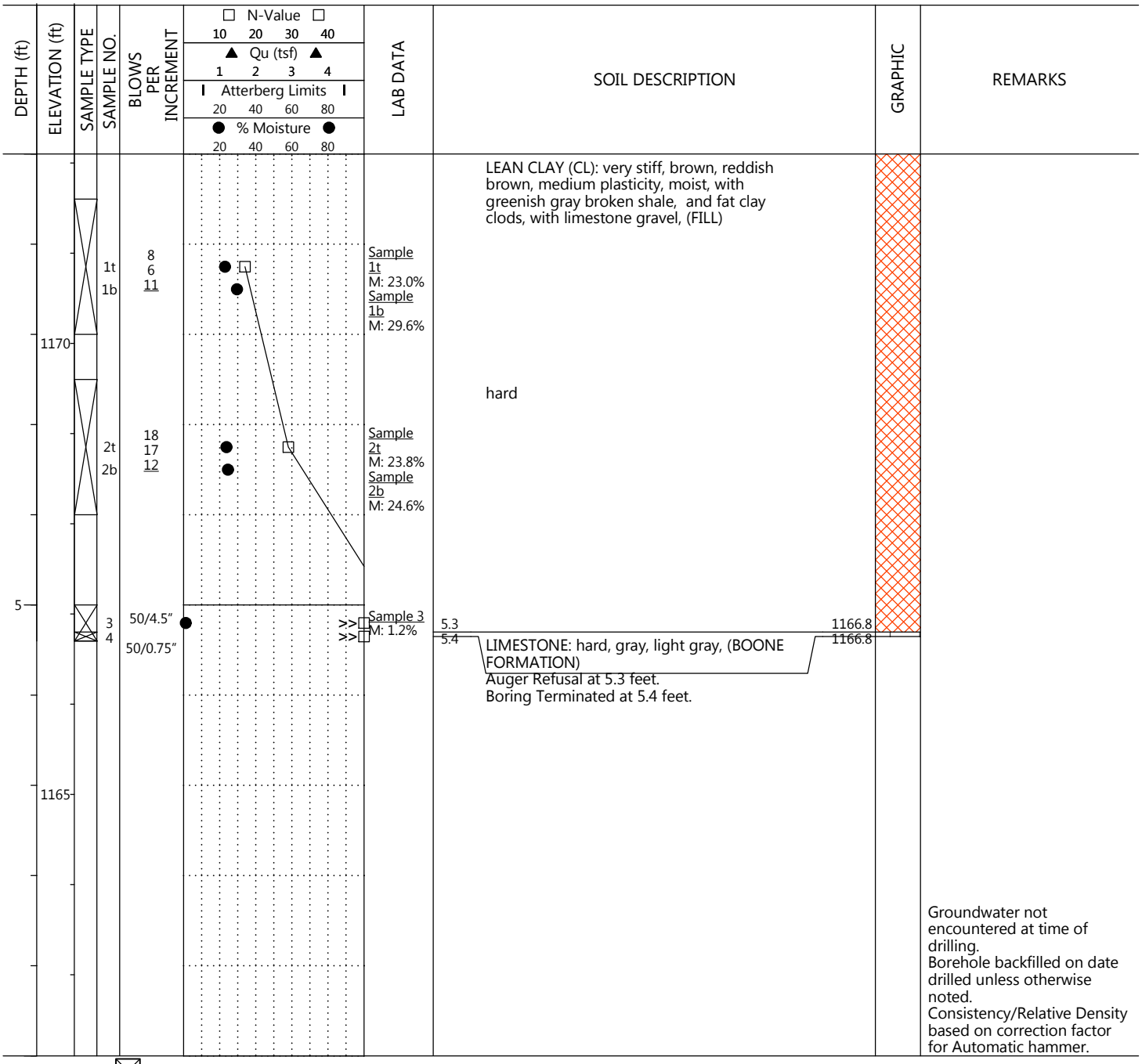
LOG OF BORING

Designation: SB-02

Sheet 1 of 1

1403 S 70th East Avenue
Tulsa, OK 74112
Office: 918-439-9005
www.buildingandearth.com

PROJECT NAME:	Wilma P Mankiller Health Center Expansion	LOCATION:	Stilwell, OK
PROJECT NUMBER:	OK200040	DATE DRILLED:	2/19/20
DRILLING METHOD:	Hollow Stem Auger	WEATHER:	Sunny
EQUIPMENT USED:	CME 550X ATV	ELEVATION:	1172.1
HAMMER TYPE:	Automatic	DRILL CREW:	Building & Earth Sciences, Inc.
BORING LOCATION:	SE corner of the building	LOGGED BY:	Taru



SAMPLE TYPE ⊠ Split Spoon

N-VALUE	STANDARD PENETRATION RESISTANCE (AASHTO T-206)	**REC**	RECOVERY	**LL:**	LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT
% MOISTURE	PERCENT NATURAL MOISTURE CONTENT	**RQD**	ROCK QUALITY DESIGNATION	**PL:**	PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE
▽	GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING	**UD**	UNDISTURBED	**PI:**	PLASTICITY INDEX
▼	STABILIZED GROUNDWATER LEVEL	**Qu**	POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH		

BUILDING & EARTH
Geotechnical, Environmental, and Materials Engineers

LOG OF BORING

Designation: SB-03

Sheet 1 of 1

1403 S 70th East Avenue
Tulsa, OK 74112
Office: 918-439-9005
www.buildingandearth.com

PROJECT NAME: Wilma P Mankiller Health Center Expansion
PROJECT NUMBER: OK200040
DRILLING METHOD: Hollow Stem Auger
EQUIPMENT USED: CME 550X ATV
HAMMER TYPE: Automatic
BORING LOCATION: Building - Central Area

LOCATION: Stilwell, OK
DATE DRILLED: 2/19/20
WEATHER: Sunny
ELEVATION: 1171.8
DRILL CREW: Building & Earth Sciences, Inc.
LOGGED BY: Taru

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	N-Value / Qu (tsf) / Atterberg Limits / % Moisture	LAB DATA	SOIL DESCRIPTION	GRAPHIC	REMARKS
			1	4 4 6		Sample 1 M: 24.6%	LEAN CLAY (CL): stiff, reddish brown, pale yellow, low plasticity, moist, with sand, (FILL)		
	1170								
			2	27 9 10		Sample 2 M: 8.9%	very stiff, olive yellow, medium plasticity, moist, with olive yellow broken shale		
5							5.0 1166.8		
			3	4 2 1		Sample 3 LL: 40 PL: 16 PI: 24 M: 18.4%	LEAN CLAY (CL): soft, reddish brown, yellowish brown, olive gray, medium plasticity, wet, with trace limestone gravel, (POSSIBLE FILL)		wet, augers had wet clay and sand mixture as we pulled them out
	1165								Groundwater encountered at 5.5 feet (EL 1166.3) at time of drilling and stabilized at 6.5 feet (EL 1165.3).
							7.0 1164.8		
							LIMESTONE: hard, gray, light gray, (BOONE FORMATION)		
			4	50/0.5"	>>	Sample 4 M: 0.8%	7.9 1164.0		
							Auger Refusal at 7.8 feet. Boring Terminated at 7.9 feet.		

Borehole backfilled on date drilled unless otherwise noted.
Consistency/Relative Density based on correction factor for Automatic hammer.

SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)
% MOISTURE PERCENT NATURAL MOISTURE CONTENT
▽ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
▼ STABILIZED GROUNDWATER LEVEL

REC RECOVERY
RQD ROCK QUALITY DESIGNATION
UD UNDISTURBED
Qu POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT
PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE
PI: PLASTICITY INDEX

BUILDING & EARTH
Geotechnical, Environmental, and Materials Engineers

LOG OF BORING

Designation: SB-04

Sheet 1 of 1

1403 S 70th East Avenue
Tulsa, OK 74112
Office: 918-439-9005
www.buildingandearth.com

PROJECT NAME:	Wilma P Mankiller Health Center Expansion	LOCATION:	Stilwell, OK
PROJECT NUMBER:	OK200040	DATE DRILLED:	2/19/20
DRILLING METHOD:	Hollow Stem Auger	WEATHER:	Sunny
EQUIPMENT USED:	CME 550X ATV	ELEVATION:	1171.8
HAMMER TYPE:	Automatic	DRILL CREW:	Building & Earth Sciences, Inc.
BORING LOCATION:	NW corner of the building	LOGGED BY:	Taru

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	N-Value / Qu (tsf) / Atterberg Limits / % Moisture	LAB DATA	SOIL DESCRIPTION	GRAPHIC	REMARKS
			1	2 11 13		Sample 1 M: 20.0%	LEAN CLAY (CL): hard, dark greenish gray, reddish brown, yellowish brown, low plasticity, moist, with broken shale, (FILL)		
	1170								
			2	7 13 20		Sample 2 M: 25.1%	very stiff, olive gray, medium plasticity		
5			3	50/4.75"	>>	Sample 3 M: 14.7%	5.3 1166.5		
			4	50/0.75"	>>	Sample 4 M: 16.6%	5.6 LIMESTONE: hard, gray, light gray, (BOONE FORMATION) 1166.3 Auger Refusal at 5.5 feet. Boring Terminated at 5.6 feet.		
	1165								

Groundwater not encountered at time of drilling.
Borehole backfilled on date drilled unless otherwise noted.
Consistency/Relative Density based on correction factor for Automatic hammer.

SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)
% MOISTURE PERCENT NATURAL MOISTURE CONTENT
▽ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
▼ STABILIZED GROUNDWATER LEVEL

REC RECOVERY
RQD ROCK QUALITY DESIGNATION
UD UNDISTURBED
Qu POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT
PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE
PI: PLASTICITY INDEX

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Geotechnical, Environmental, and Materials Engineers

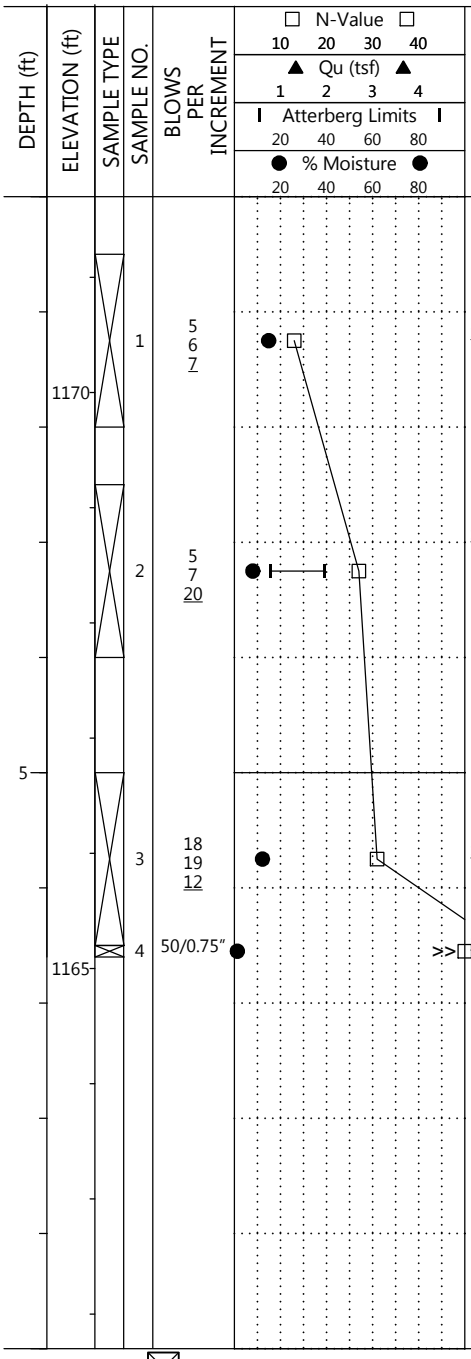
LOG OF BORING

Designation: SB-05

Sheet 1 of 1

1403 S 70th East Avenue
Tulsa, OK 74112
Office: 918-439-9005
www.buildingandearth.com

PROJECT NAME:	Wilma P Mankiller Health Center Expansion	LOCATION:	Stilwell, OK
PROJECT NUMBER:	OK200040	DATE DRILLED:	2/19/20
DRILLING METHOD:	Hollow Stem Auger	WEATHER:	sunny
EQUIPMENT USED:	CME 550X ATV	ELEVATION:	1171.7
HAMMER TYPE:	Automatic	DRILL CREW:	Building & Earth Sciences, Inc.
BORING LOCATION:	SW corner of the building	LOGGED BY:	Taru



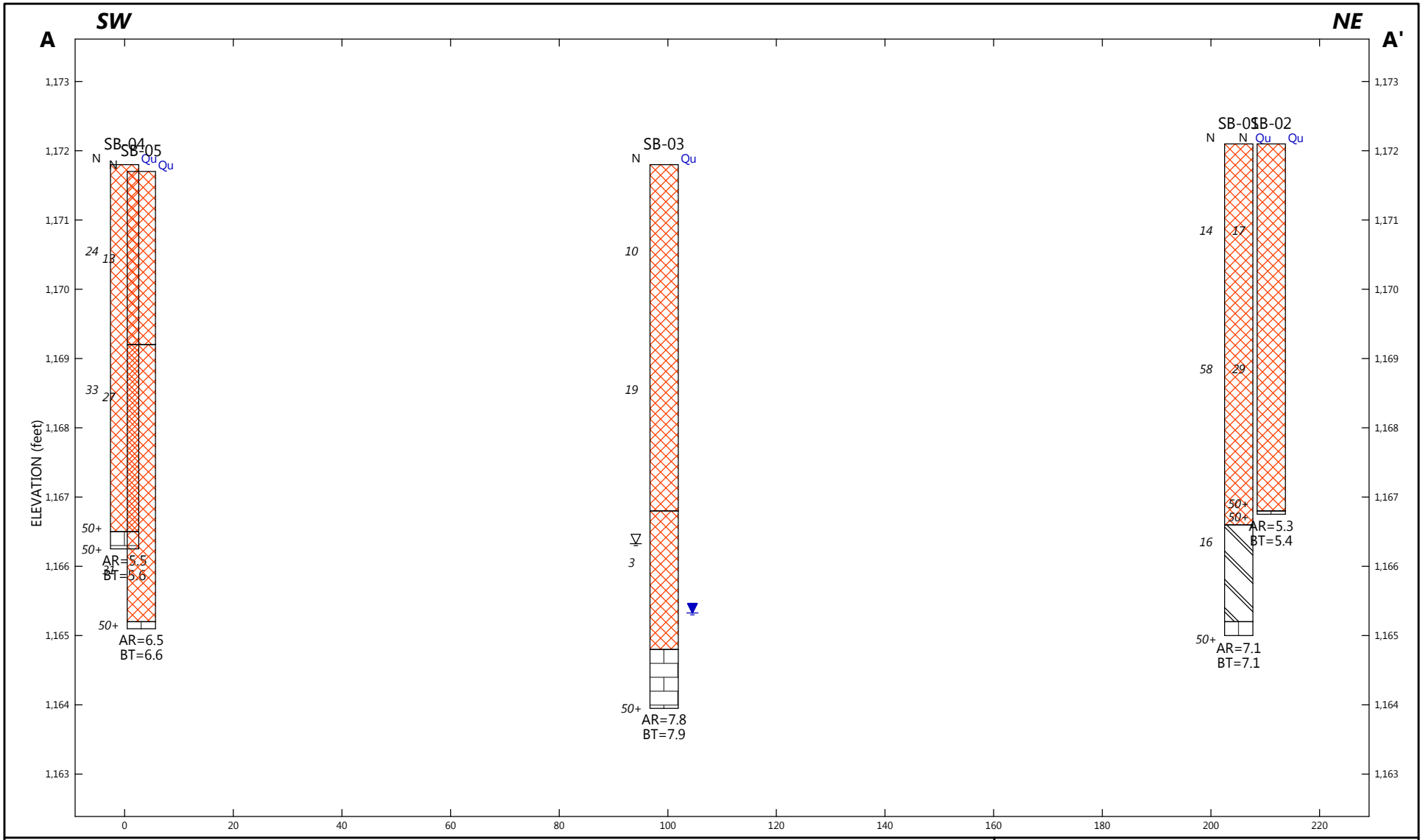
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA	SOIL DESCRIPTION	GRAPHIC	REMARKS
			1	5 6 7	Sample 1 M: 14.9%	LEAN CLAY (CL): very stiff, brown, dark grayish brown, low plasticity, moist, with limestone gravel, (FILL)		
	1170					2.5 1169.2		
			2	5 7 20	Sample 2 LL: 39 PL: 15 PI: 24 M: 8.0%	LEAN CLAY (CL): very stiff, yellowish brown, olive, medium plasticity, moist, with limestone gravel, (FILL) hard, with limestone cobbles		
5			3	18 19 12	Sample 3 M: 12.2%	olive gray, with brown lean clay clods		Slow drilling
	1165		4	50/0.75"	Sample 4 M: 1.3%	6.5 1165.2 6.6 1165.1 LIMESTONE: hard, gray, light gray, (BOONE FORMATION) Auger Refusal at 6.5 feet. Boring Terminated at 6.6 feet.		Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

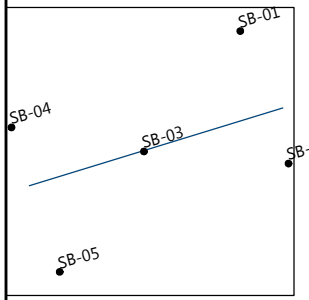
SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)
% MOISTURE PERCENT NATURAL MOISTURE CONTENT
▽ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
▼ STABILIZED GROUNDWATER LEVEL

REC RECOVERY
RQD ROCK QUALITY DESIGNATION
UD UNDISTURBED
Qu POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT
PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE
PI: PLASTICITY INDEX





Site Map Scale 1 inch equals 95 feet

Key to Hatches

Fill

USCS Low to High Plasticity Clay

Limestone

Legend

BT=Boring Termination, TPT=Test Pit Terminated
AR=Auger Refusal, ER=Excavation Refusal
N=Standard Penetration Test N-Value
Qu=Unconfined compressive strength estimate from pocket penetrometer test (tsf)
Water Level Reading at time of drilling.
Water Level Reading after drilling.

0 26

Horizontal Scale (feet)
Vertical Exaggeration: 13x

Building & Earth Sciences, Inc.
1403 S. 70th East Avenue, Tulsa, OK 74112

Wilma P Mankiller Health Center Expansion
Stilwell, OK

A-A': Subsurface Profile

PROJECT NO: Ok200040	PLATE NO: A-1	DATE: 3/2/20

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Geotechnical, Environmental, and Materials Engineers