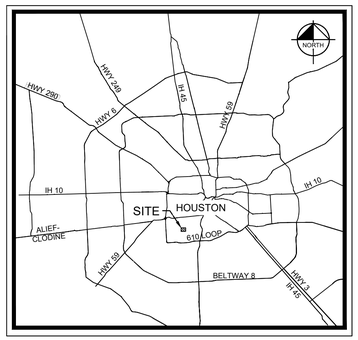
BUILDING PLANS
FOR
WEST UNIVERSITY PLACE WWTP
CONTROL BUILDING

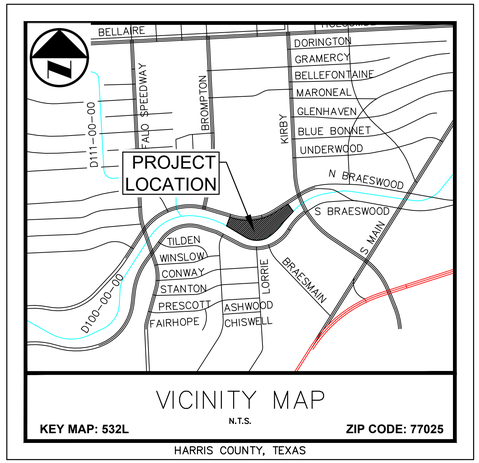
2801 N BRAESWOOD BLVD
CITY OF HOUSTON, TX 77025

PLANS SUBMITTAL/REVIEW LOG

- COH BUILDING PERMIT — FEBRUARY 2022
- COH BUILDING PERMIT RESUBMITTAL #1 — NOVEMBER 2023



LOCATION MAP
N.T.S.



HARRIS COUNTY, TEXAS

AS PART OF THE BASE BID FOR THIS PROJECT, CONTRACTOR SHALL ADHERE TO THE PROJECT GEOTECHNICAL REPORT FOR ALL RECOMMENDATIONS FOR BOTH MATERIALS AND PRACTICE OF INSTALLATION GIVEN IN THE PROJECT GEOTECHNICAL REPORT FOR EARTHWORK, SITE SUBGRADE PREPARATION, BUILDING PAD SUBGRADE PREPARATION, PAVING, AND WET/SOFT SOILS CONDITIONS ALONG WITH ANY OTHER SECTIONS PROVIDED IN THE REPORT.

TITLE: GEOTECHNICAL ENGINEERING REPORT
BY: GORRONDONA ENGINEERING SERVICES
DATED: JUNE 15,2022

INCLUDING ALL REVISIONS AND ADDENDA TO THIS REPORT THAT MAY HAVE BEEN RELEASED AFTER THE NOTED DATE.

REFERENCE BENCHMARKS

H.C.F.C.D. - RM 040130
FROM THE INTERSECTION OF NORTH BRAESWOOD BOULEVARD AND KIRBY DRIVE. TRAVEL SOUTH ON KIRBY APPROXIMATELY 50 FEET TO BRIDGE OVER BRAYS BAYOU.
ELEV = 44.30' (NAVD88 2001 ADJ.)

TBM "A"
BOX CUT IN CONCRETE ON A CONCRETE WALL APPROXIMATELY 20.51 FEET SOUTH FROM THE WEST GATE POST OF THE NORTHERN GATE OF SUBJECT TRACT LOCATED ON THE SOUTH R.O.W. LINE OF NORTH BRAESWOOD BOULEVARD.
ELEV = 46.93'

TBM "B"
BOX CUT IN CONCRETE, 29.50 Feet SOUTHEAST OF FOUND $\frac{5}{8}$ INCH IRON ROD STAMPED "LANDTECH" LOCATED ALONG EAST BOUNDARY LINE OF SUBJECT TRACT, APPROXIMATELY 142.27 FEET OF THE SOUTH R.O.W. LINE OF NORTH BRAESWOOD BOULEVARD.
ELEV = 46.99'

SHEET INDEX

OWNER:
CITY OF WEST UNIVERSITY PLACE
3826 AMHERST ST.
WEST UNIVERSITY PLACE, TX 77005
CONTACT:GERARDO BARRERA
(713)662-5839

SURVEYOR:
WINDROSE
11111 RICHMOND AVE, STE 150
HOUSTON, TX 77082
(713)458-2281

PREPARED BY:
Kimley»Horn
11700 Katy Freeway, Suite 800
Houston, Texas 77079
Tel. No. (281) 597-9300
Certificate of Authorization F-928
Contact: MICHAEL MORIARTY, P.E.

811 Know what's below. Call before you dig.

CAUTION!!

EXISTING UNDERGROUND UTILITIES IN THE AREA CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS TO EXISTING UTILITIES DUE TO DAMAGE INCURRED DURING CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES ON THE PLANS.

NOTE:

QUORUM ARCHITECTS INC. IS DESIGNING UNDER THE INFORMATION THAT THE PROJECT WILL GO THROUGH THE CITY OF HOUSTON FOR PERMIT. WEST UNIVERSITY WILL REVIEW THE DRAWINGS BUT NOT PERMIT THE BUILDING.

RATED WALL ASSEMBLIES
GYPSUM WALL:
UL 419

MASONRY WALL:
UL 263

1 HOUR FIRE & SMOKE PARTITION
(SECTION 708 IN IBC 2015)

NEW PARTITION AS INDICATED

FLOOR PLAN LEGEND

GENERAL NOTES - LIFE SAFETY

A. ALL WORK SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATORY AGENCIES, AND APPLICABLE CODES AND STANDARDS IN EFFECT AT TIME OF CONSTRUCTION.

B. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY & OSHA PRECAUTIONS AND LOCAL SAFETY REQUIREMENTS DURING CONSTRUCTION.

C. GENERAL CONTRACTOR TO PROVIDE TEMPORARY SAFETY GUARD RAILS AT ALL FLOOR OPENINGS DURING CONSTRUCTION.

D. GENERAL CONTRACTOR BE RESPONSIBLE FOR AND OBTAIN PERMITS, APPROVALS, INSPECTIONS, CERTIFICATE FOR COMPLIANCE AND CERTIFICATE OF OCCUPANCY.

E. ALL WALKS SHALL NOT EXCEED 5% SLOPE IN THE DIRECTIONS OF TRAVEL AND 2% MAXIMUM ON CROSS SLOPES.

F. CONTRACTOR SHALL COORDINATE ALL CLEARANCE REQUIREMENTS WITH ADA AND TAS AT FIXTURES, CONTROLS, AND DOORWAYS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

G. ALL WOOD USED IN BUILDING ASSEMBLIES SHALL BE FIRE RETARDANT AND MAY BE REQUIRED TO BE DECAY RESISTANT, REF: PROJECT MANUAL.

H. SHORE AND BRACE ALL EXCAVATION IN ACCORDANCE WITH CITY, STATE AND O.S.H.A. REQUIREMENTS.

PROJECT INFORMATION

ZONING:	
ZONING GROUP:	N / A
USE:	WASTE WATER TREATMENT PLANT CONTROL BUILDING
BUILDING:	
BUILDING HEIGHT:	ALLOWABLE: 55 FEET, 3 STORIES (TABLES: 504.3 & 504.4) PROPOSED: 38 FEET ; ELEVATED SINGLE STORY
BUILDING AREA:	ALLOWABLE: 23,000 SF (TABLE 506.2) PROPOSED ENCLOSED GROSS: 3,320 SF PROPOSED OPEN AIR GROSS: 9,680 SF PROPOSED TOTAL GROSS: 13,000 SF ENCLOSED FIRST STORY: 120 SF OPEN AIR FIRST STORY: 6,500 SF ENCLOSED SECOND STORY: 3,200 SF OPEN AIR SECOND STORY: 3,180 SF
OCCUPANCY:	GROUP B - BUSINESS
CONSTRUCTION TYPE:	TYPE II-B, NON SPRINKLED
EXITING:	
OCCUPANTS:	TABLE 1004.1.2 - FOR ENCLOSED AREAS ONLY STORAGE & MECHANICAL AREAS 675 SF / 300 = 3 OCCUPANTS BUSINESS AREAS 1700 SF / 100 GROSS = 17 OCCUPANTS ASSEMBLY AREAS (UNCONCENTRATED) 500 SF / 100 GROSS = 5 OCCUPANTS TOTAL FIRST FLOOR: 25 OCCUPANTS (STORAGE 6,500 SF / 500) TOTAL: 13 OCCUPANTS (SECOND FLOOR-NOT ENCLOSED) TOTAL: 38 OCCUPANTS
MAX TRAVEL DISTANCE:	200' WITHOUT SPRINKLER SYSTEM (TABLE 1017.2)
MAX COMMON PATH:	100' WITHOUT SPRINKLER SYSTEM (TABLE 1006.2.1)
EXITS:	2 EXITS REQUIRED 2 EXITS PROVIDED

PLUMBING FIXTURE COUNT

OCCUPANCY: B	
WATER CLOSETS:	1 per 25 (1st 50), 1 per 50 (>50): Required: 3 WC Provided: 3 WC
LAVATORIES:	1 per 40 (1st 80), 1 per 80 (>80): Required: 2 LAV Provided: 2 LAV
DRINKING FOUNTAIN:	1 per 100 ; Required: 1 ; Provided: 1 Hi-Lo
SERVICE SINK:	1 Required Provided: 1

APPLICABLE CODES

2015 INTERNATIONAL BUILDING CODE
2015 UNIFORM PLUMBING CODE
2015 UNIFORM MECHANICAL CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE
2015 INTERNATIONAL FIRE CODE
2020 NATIONAL ELECTRICAL CODE
2012 TEXAS ACCESSIBILITY STANDARDS
NOTE: ALL CODES TO COMPLY WITH LOCAL AMENDMENTS

NOTE: IBC 2015 WIND SPEED DESIGN CRITERIA RISK CATEGORY III (146 MPH WINDS)* LEADS TO A BUILDING AND OTHER STRUCTURES THAT REPRESENT A SUBSTANTIAL HAZARD TO HUMAN LIFE IN THE EVENT OF FAILURE, INCLUDING BUT NOT LIMITED TO:

- POWER-GENERATING STATIONS, WATER TREATMENT FACILITIES FOR POTABLE WATER, WASTEWATER TREATMENT FACILITIES AND OTHER PUBLIC UTILITY FACILITIES NOT INCLUDED IN RISK CATEGORY IV.
- RISK CATEGORY III RESULTS IN A WIND-BORNE DEBRIS REGION THAT CAN WITHSTAND 146 MPH WINDS*

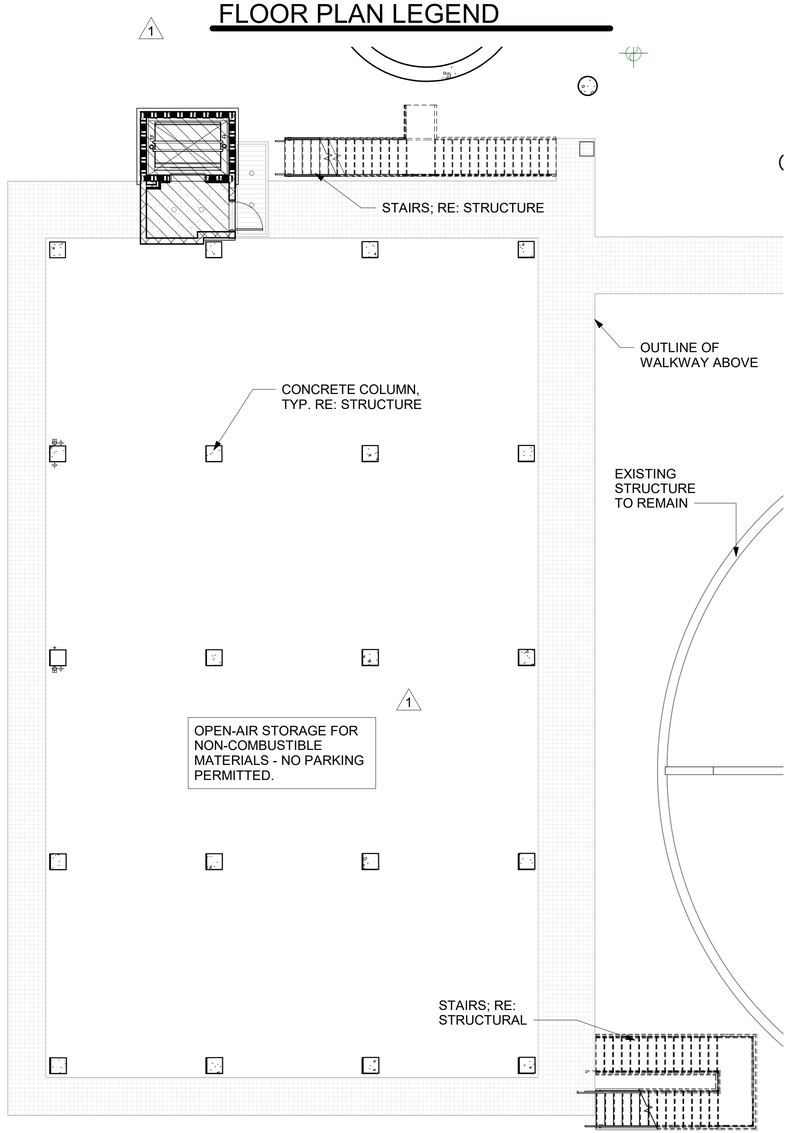
*BUILDING DESIGNED FOR 150 MPH WINDS

ENERGY CODE

HARRIS COUNTY = ZONE 2A

ENVELOPE REQUIREMENTS: (IECC C402.1.3)
ROOFS: INSULATION ENTIRELY ABOVE ROOF DECK = R-25 CI
WALLS: MASS R-5.7 CI
FLOORS: R-6.3 CI

FENESTRATION REQUIREMENTS:
FIXED: 0.46 U-FACTOR
OPERABLE: 0.60 U-FACTOR
ENTRANCE DOORS: 0.77 U-FACTOR
SHGC: MIN 0.25



2 FIRST FLOOR LIFE SAFETY PLAN
A-900 SCALE: 1/8" = 1'-0"

1 SECOND FLOOR LIFE SAFETY PLAN
A-900 SCALE: 1/8" = 1'-0"

Kimley»Horn
11700 Katy Freeway, Suite 800, Houston, TX 77079
P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date
1	PERMIT COMMENTS	TAJ	01/10/24
2	PERMIT COMMENTS V.2	TAJ	04/25/24

REGISTERED ARCHITECT DAVID G. DUMAN 14305 STATE OF TEXAS
David Duman 2024.04.22 10:15:09-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

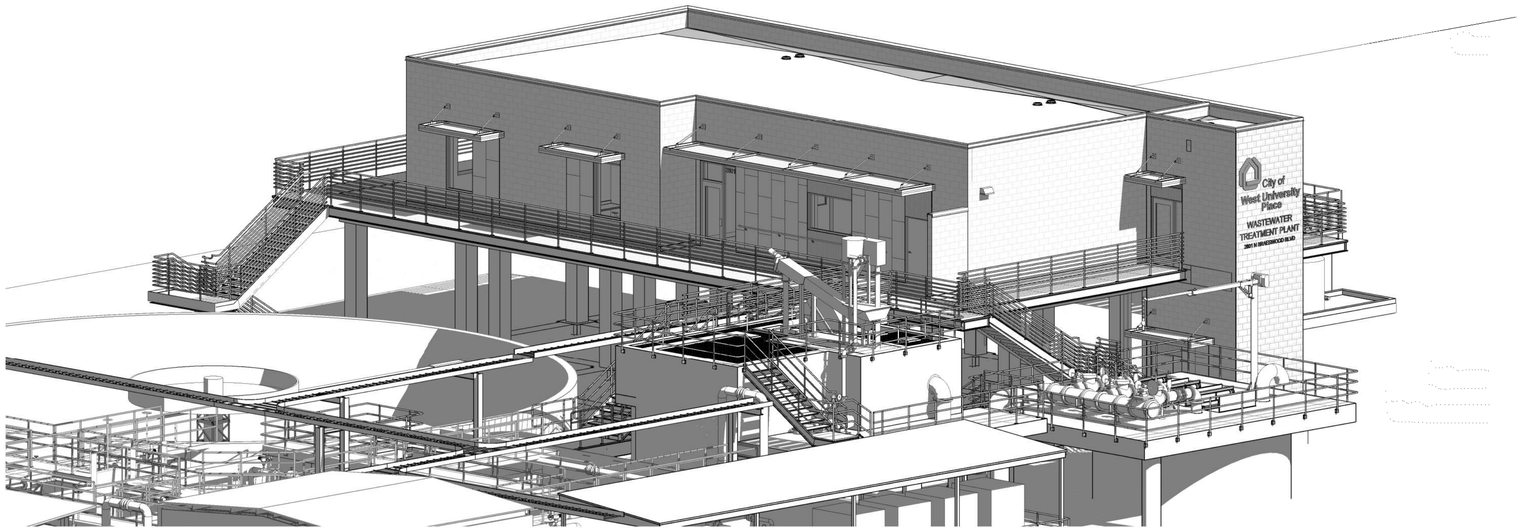
CONTROL BUILDING
LIFE SAFETY AND CODE ANALYSIS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-900

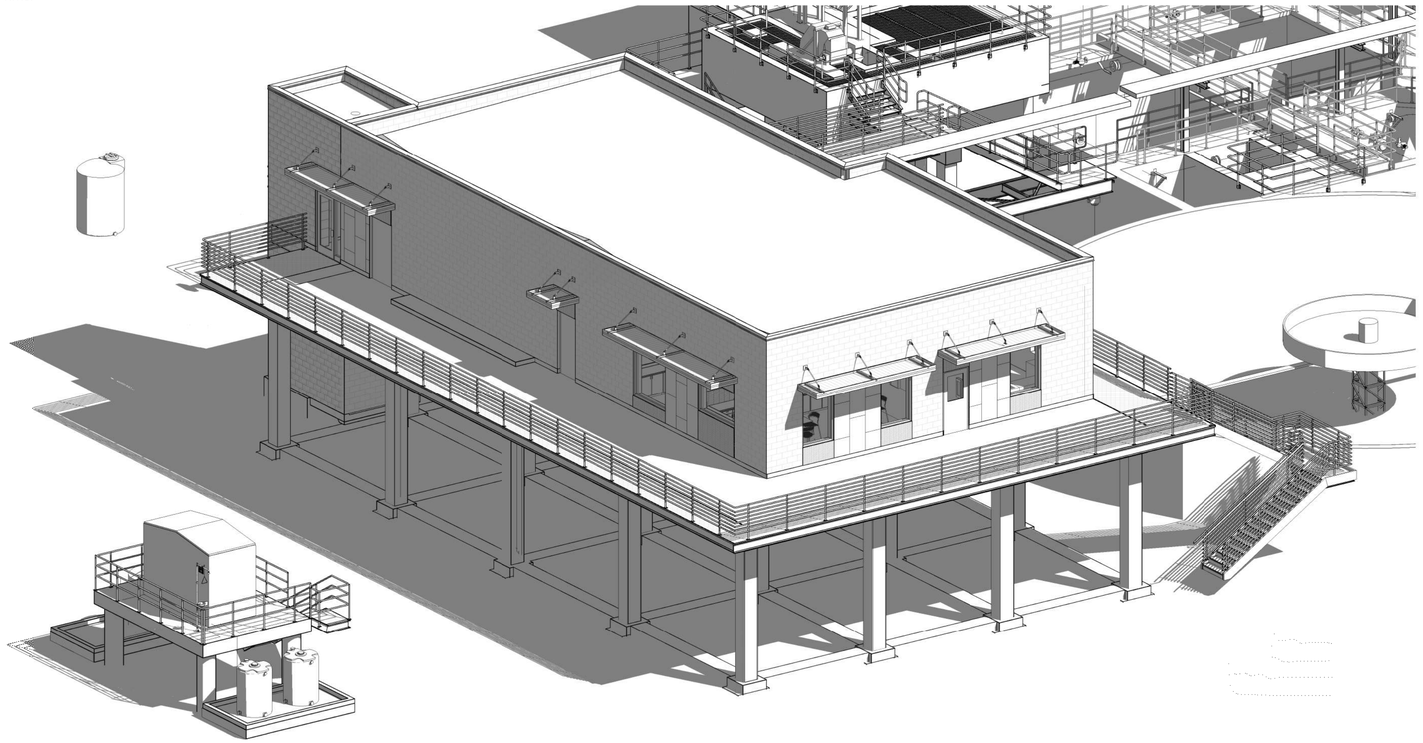
quorum
ARCHITECTURE · INTERIOR DESIGN
825 W Vickery Blvd, Suite 100
Fort Worth, TX 76104
(817) 738-8095

S:\Temp Revit Files\Trevor's Local\21051.01 West University WWTP_CENTRAL_trevorANKBG.rvt



2 NORTHEAST VIEW

A-901 SCALE: N.T.S.



1 SOUTHWEST VIEW

A-901 SCALE: N.T.S.

quorum
ARCHITECTURE · INTERIOR DESIGN
825 W Vickery Blvd, Suite 100
Fort Worth, TX 76104
(817) 738-8095

Kimley»Horn
11700 Katy Freeway, Suite 800, Houston, TX 77079
TBPE No. 928
P: 281 597 9300

No.	Revisions	By	Date

REGISTERED ARCHITECT
DAVID G. DUMAN
14305
STATE OF TEXAS

David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING
3D MODEL VIEWS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-901

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203 General Conditions

203.1 General

203.7 Detention and Correctional Facilities: In detention and correctional facilities, common use areas that are used only by inmates or detainees and security personnel and that do not serve holding cells or housing cells required to comply with 232, shall not be required to comply with these requirements or to be on an accessible route

203.12 Animal Containment Areas : Animal containment areas that are not for public use shall not be required to comply with these requirements or to be on an accessible route.

204 Protruding Objects

204.1 General: Protruding objects on circulation paths shall comply with 307.

205.1 Operable Parts

205.1 General : Operable parts on accessible elements, accessible routes, and in accessible rooms and spaces shall comply with 309.

206 Accessible Routes

206.1 General: Accessible routes shall be provided in accordance with 206 and shall comply with Chapter 4.

206.2 Where Required: Accessible routes shall be provided where required by 206.2.

206.2.1 Site Arrival Points: At least one accessible route shall be provided within the site from accessible parking spaces and accessible passenger loading zones; public streets and sidewalks; and public transportation stops to the accessible building or facility entrance they serve.

206.2.2 Within a Site : At least one accessible route shall connect accessible buildings, accessible facilities, accessible elements, and accessible spaces that are on the same site.

206.2.3 Multi-Story Buildings and Facilities : At least one accessible route shall connect each story and mezzanine in multi-story buildings and facilities.

302 Floor or Ground Surfaces

302.1 General: Floor and ground surfaces shall be stable, firm, and slip resistant and shall comply with 302.

EXCEPTIONS:
1. Within animal containment areas, floor and ground surfaces shall not be required to be stable, firm, and slip resistant.

302.2 Carpet: Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be 1/2 inch (13 mm) maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge. Carpet edge trim shall comply with 303.

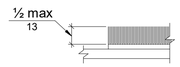


Figure 302.2 Carpet Pile Height

302.3 Openings: Openings in floor or ground surfaces shall not allow passage of a sphere more than 1/2 inch (13 mm) diameter except as allowed in 407.4.3, 409.4.3, 410.4, 810.5.3 and 810.10. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

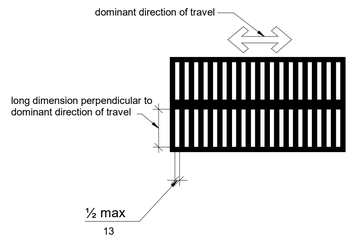


Figure 302.3 Elongated Openings in Floor or Ground Surfaces

303 Changes in Level

303.1 General: Where changes in level are permitted in floor or ground surfaces, they shall comply with 303.

303.2 Vertical: Changes in level of 1/4 inch (6.4 mm) high maximum shall be permitted to be vertical.

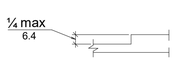


Figure 303.2 Vertical Change in Level

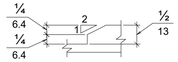


Figure 303.3 Beveled Change in Level

303.3 Beveled: Changes in level between 1/4 inch (6.4 mm) high minimum and 1/2 inch (13 mm) high maximum shall be beveled with a slope not steeper than 1:2.

303.4 Ramps: Changes in level greater than 1/2 inch (13 mm) high shall be ramped, and shall comply with 405 or 406.

304 Turning Space

304.1 General: Turning space shall comply with 304.

304.2 Floor or Ground Surfaces: Floor or ground surfaces of a turning space shall comply with 302.Changes in level are not permitted.

304.3 Size: Turning space shall comply with 304.3.1 or 304.3.2.

304.3.1 Circular Space: The turning space shall be a space of 60 inches (1525 mm) diameter minimum. The space shall be permitted to include knee and toe clearance complying with 306.

304.3.2 T-Shaped Space: The turning space shall be a T-shaped space within a 60 inch (1525 mm) square minimum with arms and base 36 inches (915 mm) wide minimum. Each arm of the T shall be clear of obstructions 12 inches (305 mm) minimum in each direction and the base shall be clear of obstructions 24 inches (610 mm) minimum. The space shall be permitted to include knee and toe clearance complying with 306 only at the end of either the base or one arm.

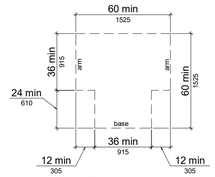


Figure 304.3.2 T-Shaped Turning Space

304.4 Door Swing: Doors shall be permitted to swing into turning spaces.

305 Clear Floor or Ground Space

305.2 Floor or Ground Surfaces: Floor or ground surfaces of a clear floor or ground space shall comply with 302. Changes in level are not permitted.

305.3 Size: The clear floor or ground space shall be 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum.

305.4 Knee and Toe Clearance: Unless otherwise specified, clear floor or ground space shall be permitted to include knee and toe clearance complying with 306.

305.5 Position: Unless otherwise specified, clear floor or ground space shall be positioned for either forward or parallel approach to an element.

305.6 Approach: One full unobstructed side of the clear floor or ground space shall adjoin an accessible route or adjoin another clear floor or ground space.

305.7 Maneuvering Clearance: Where a clear floor or ground space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearance shall be provided in accordance with 305.7.1 and 305.7.2.

306 Knee and Toe Clearance

306.1 General: Where space beneath an element is included as part of clear floor or ground space or turning space, the space shall comply with 306. Additional space shall not be prohibited beneath an element but shall not be considered as part of the clear floor or ground space or turning space.

306.2 Toe Clearance

306.2.1 General: Space under an element between the finish floor or ground and 9 inches (230 mm) above the finish floor or ground shall be considered toe clearance and shall comply with 306.2.

306.2.2 Maximum Depth: Toe clearance shall extend 25 inches (635 mm) maximum under an element.

306.2.3 Minimum Required Depth: Where toe clearance is required at an element as part of a clear floor space, the toe clearance shall extend 17 inches (430 mm) minimum under the element.

306.2.4 Additional Clearance: Space extending greater than 6 inches (150 mm) beyond the available knee clearance at 9 inches (230 mm) above the finish floor or ground shall not be considered toe clearance.

306.2.5 Width: Toe clearance shall be 30 inches (760 mm) wide minimum.

306.3 Knee Clearance

306.3.1 General: Space under an element between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground shall be considered knee clearance and shall comply with 306.3.

306.3.2 Maximum Depth: Knee clearance shall extend 25 inches (635 mm) maximum under an element at 9 inches (230 mm) above the finish floor or ground.

306.3.3 Minimum Required Depth: Where knee clearance is required under an element as part of a clear floor space, the knee clearance shall be 11 inches (280 mm) deep minimum at 9 inches (230 mm) above the finish floor or ground, and 8 inches (205 mm) deep minimum at 27 inches (685 mm) above the finish floor or ground.

306.3.4 Clearance Reduction: Between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

306.3.5 Width . Knee clearance shall be 30 inches (760 mm) wide minimum.

307 Protruding Objects

307.1 General: Protruding objects shall comply with 307.

307.2 Protrusion Limits: Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finish floor or ground shall protrude 4 inches (100 mm) maximum horizontally into the circulation path.

EXCEPTION: Handrails shall be permitted to protrude 4 1/2 inches (115 mm) maximum.

307.3 Post-Mounted Objects. Free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches (305 mm) maximum when located 27 inches (685 mm) minimum and 80 inches (2030 mm) maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the finish floor or ground.

EXCEPTION: The sloping portions of handrails serving stairs and ramps shall not be required to comply with 307.3.

307.4 Vertical Clearance. Vertical clearance shall be 80 inches (2030 mm) high minimum. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches (2030 mm) high. The leading edge of such guardrail or barrier shall be located 27 inches (685 mm) maximum above the finish floor or ground.

EXCEPTION: Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the finish floor or ground

307.5 Required Clear Width: Protruding objects shall not reduce the clear width required for accessible routes.

308 Reach Ranges

308.2 Forward Reach.

308.2.1 Unobstructed: Where a forward reach is unobstructed, the high forward reach shall be 48 inches (1220 mm) maximum and the low forward reach shall be 15 inches (380 mm) minimum above the finish floor or ground.

308.2.2 Obstructed High Reach: Where a high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (1220 mm) maximum where the reach depth is 20 inches (510 mm) maximum. Where the reach depth exceeds 20 inches (510 mm), the high forward reach shall be 44 inches (1120 mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.

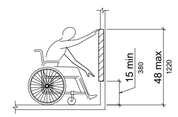


Figure 308.2.1 Unobstructed Forward Reach.

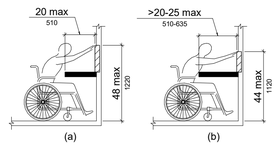
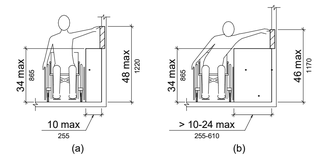


Figure 308.2.2 Obstructed High Forward Reach

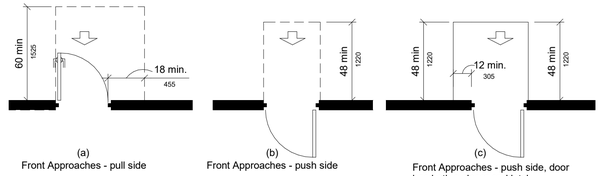
308.3.2 Obstructed High Reach. Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (1220 mm) maximum for a reach depth of 10 inches (255 mm) maximum. Where the reach depth exceeds 10 inches (255 mm), the high side reach shall be 46 inches (1170 mm) maximum for a reach depth of 24 inches (610 mm) maximum.



404 Doors, Doorways, and Gates

404.1 General: Doors, doorways, and gates that are part of an accessible route shall comply with 404.

A. Front approach, pull side - 60" min. width & 18" min. beside strike edge
Front approach, push side - 48" min. width & 0" beside strike edge
(12" beside strike edge if door has both a closer and a latch)

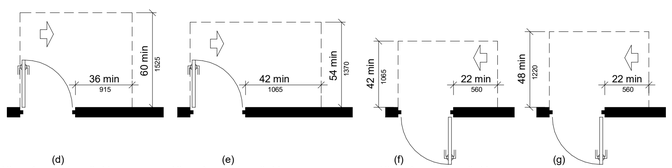


Front Approaches - pull side

Front Approaches - push side

Front Approaches - push side, door has both a closer and latch

B. Hinge side approach, pull side - 60" min. width; 36" min. beside strike edge or,
- 54" min. width: 42" min. beside strike edge.
Hinge side approach push side - 42" min. width & 22" min. beside hinge edge
(48" min. width if door has both a closer and a latch)



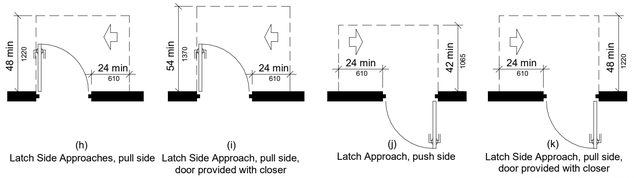
Hinge Approach, pull side

Hinge Approach, pull side

Hinge Approach, pull side

Hinge Approach, pull side, door provided with both closer and latch

C. Latch side approach pull side - 48" min. width & 24" min. beside strike edge (54" min. width if door has a closer)
Latch side approach push side - 42" min. width & 24" min. beside strike edge (48" min. width if door has a closer)



Latch Side Approaches, pull side

Latch Side Approach, pull side, door provided with closer

Latch Approach, push side

Latch Side Approach, pull side, door provided with closer

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No.	Revisions	By	Date

REGISTERED ARCHITECT
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STATE OF TEXAS
David Duman
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES (TAS)

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
AUGUST 10, 2023	DGD	TAJ	WRM	067812104

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404.2.11 Vision Lights: Doors, gates, and side lights adjacent to doors or gates, containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one glazed panel located 43 inches (1090 mm) maximum above the finish floor.

405 Ramps

405.1 General: Ramps on accessible routes shall comply with 405
.
EXCEPTION: In assembly areas, aisle ramps adjacent to seating and not serving elements required to be on an accessible route shall not be required to comply with 405.

405.2 Slope. Ramp runs shall have a running slope not steeper than 1:12.

EXCEPTION: In existing sites, buildings, and facilities, ramps shall be permitted to have running slopes steeper than 1:12 complying with Table 405.2 where such slopes are necessary due to space limitations.

Table 405.2 Maximum Ramp Slope and Rise for Existing Sites, Buildings, and Facilities:

Slope[1]	Maximum Rise
Steeper than 1:10 but not steeper than 1:8	3 inches (75 mm)
Steeper than 1:12 but not steeper than 1:10	6 inches (150 mm)

1. A slope steeper than 1:8 is prohibited.

405.3 Cross Slope: Cross slope of ramp runs shall not be steeper than 1:48.

405.5 Clear Width: The clear width of a ramp run and, where handrails are provided, the clear width between handrails shall be 36 inches (915 mm) minimum.

EXCEPTION: Within employee work areas, the required clear width of ramps that are a part of common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.

405.6 Rise: The rise for any ramp run shall be 30 inches (760 mm) maximum.

405.7 Landings: Ramps shall have landings at top and the bottom of each ramp run. Landings shall comply with 405.7.

405.7.1 Slope: Landings shall comply with 302. Changes in level are not permitted.

EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

405.8 Handrails: Ramp runs with a rise greater than 6 inches (150 mm) shall have handrails complying with 505.

EXCEPTION: Within employee work areas, handrails shall not be required where ramps that are part of common use circulation paths are designed to permit the installation of handrails complyingwith 505. Ramps not subject to the exception to 405.5 shall be designed to maintain a 36 inch (915 mm) minimum clear width when handrails are installed.

405.9 Edge Protection. Edge protection complying with 405.9.1 or 405.9.2 shall be provided on each side of ramp runs and at each side of ramp landings.

EXCEPTIONS:
1. Edge protection shall not be required on ramps that are not required to have handrails and have sides complying with 406.3.
2. Edge protection shall not be required on the sides of ramp landings serving an adjoining ramp run or stairway.
3. Edge protection shall not be required on the sides of ramp landings having a vertical drop-off of ½ inch (13 mm) maximum within 10 inches (255 mm) horizontally of the minimum landing area specified in 405.7.

405.9.1 Extended Floor or Ground Surface: The floor or ground surface of the ramp run or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a handrail complying with 505.

405.9.2 Curb or Barrier: A curb or barrier shall be provided that prevents the passage of a 4 inch (100 mm) diameter sphere, where any portion of the sphere is within 4 inches (100 mm) of the finish floor or ground surface.

405.10 Wet Conditions: Landings subject to wet conditions shall be designed to prevent the accumulation of water.

406 Curb Ramps

406.1 General: Curb ramps on accessible routes shall comply with 406, 405.2 through 405.5, and 405.10.

406.2 Counter Slope: Counter slopes of adjoining gutters and road surfaces immediately adjacent to the curb ramp shall not be steeper than 1:20. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.

406.3 Sides of Curb Ramps: Where provided, curb ramp flares shall not be steeper than 1:10.

406.4 Landing: Landings shall be provided at the tops of curb ramps. The landing clear length shall be 36 inches (915 mm) minimum. The landing clear width shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing.

EXCEPTION: In alterations, where there is no landing at the top of curb ramps, curb ramp flares shall be provided and shall not be steeper than 1:12.

501 General

501.1 Scope. The provisions of Chapter 5 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

502 Parking Spaces

502.1 General: Car and van parking spaces shall comply with 502. Where parking spaces are marked with lines, width measurements of parking spaces and access aisles shall be made from the centerline of the markings.

EXCEPTION: Where parking spaces or access aisles are not adjacent to another parking space or access aisle, measurements shall be permitted to include the full width of the line defining the parking space or access aisle.

502.2 Vehicle Spaces: Car parking spaces shall be 96 inches (2440 mm) wide minimum and van parking spaces shall be 132 inches (3350 mm) wide minimum, shall be marked to define the width, and shall have an adjacent access aisle complying with 502.3.

EXCEPTION: Van parking spaces shall be permitted to be 96 inches (2440 mm) wide minimum where the access aisle is 96 inches (2440 mm) wide minimum.

502.3 Access Aisle. Access aisles serving parking spaces shall comply with 502.3. Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common access aisle.

502.3.1 Width : Access aisles serving car and van parking spaces shall be 60 inches (1525 mm) wide minimum.

502.3.2 Length: Access aisles shall extend the full length of the parking spaces they serve.

502.3.3 Marking: Access aisles shall be marked so as to discourage parking in them.

502.3.4 Location: Access aisles shall not overlap the vehicular way. Access aisles shall be permitted to be placed on either side of the parking space except for angled van parking spaces which shall have access aisles located on the passenger side of the parking spaces.

502.4 Floor or Ground Surfaces: Parking spaces and access aisles serving them shall comply with 302. Access aisles shall be at the same level as the parking spaces they serve. Changes in level are

EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

502.5 Vertical Clearance. Parking spaces for vans and access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (2490 mm) minimum.

502.6 Identification: Parking space identification signs shall include the International Symbol of Accessibility complying with 703.7.2.1. Signs identifying van parking spaces shall contain the designation "van accessible." Signs shall be 60 inches (1525 mm) minimum above the finish floor or ground surface measured to the bottom of the sign.

502.7 Relationship to Accessible Routes. Parking spaces and access aisles shall be designed so that cars and vans, when parked, cannot obstruct the required clear width of adjacent accessible routes.

505 Handrails

505.1 General : Handrails provided along walking surfaces complying with 403, required at ramps complying with 405, and required at stairs complying with 504 shall comply with 505.

505.2 Where Required: Handrails shall be provided on both sides of stairs and ramps.

EXCEPTION: In assembly areas, handrails shall not be required on both sides of aisle ramps where a handrail is provided at either side or within the aisle width.

505.3 Continuity: Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights or runs.

EXCEPTION: In assembly areas, handrails on ramps shall not be required to be continuous in aisles serving seating.

505.4 Height: Top of gripping surfaces of handrails shall be 34 inches (865 mm) minimum and 38 inches (965 mm) maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above walking surfaces, stair nosings, and ramp surfaces.

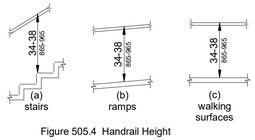

Figure 505.4 Handrail Height

505.5 Clearance. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1 1/2 inches (38 mm) minimum.

505.6 Gripping Surface: Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur 1 1/2 inches (38 mm) minimum below the bottom of the handrail gripping surface.

EXCEPTIONS:
1. Where handrails are provided along walking surfaces with slopes not steeper than 1:20, the bottoms of handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.

2. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by 1/8 inch (3.2 mm) for each 1/2 inch (13 mm) of additional handrail perimeter dimension that exceeds 4 inches (100 mm).

505.10.1 Top and Bottom Extension at Ramps: Ramp handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent ramp run.

505.10.2 Top Extension at Stairs: At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beginning directly above the first riser nosing. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

505.10.3 Bottom Extension at Stairs: At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance at least equal to one tread depth beyond the last riser nosing. Extension shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

602 Drinking Fountains

602.2 Clear Floor Space: Units shall have a clear floor or ground space complying with 305 positioned for a forward approach and centered on the unit. Knee and toe clearance complying with 306 shall be provided.

EXCEPTION: A parallel approach complying with 305 shall be permitted at units for children's use where the spout is 30 inches (760 mm) maximum above the finish floor or ground and is 3 1/2 inches (90 mm) maximum from the front edge of the unit, including bumpers.

602.4 Spout Height: Spout outlets shall be 36 inches (915 mm) maximum above the finish floor or ground.

602.5 Spout Location. The spout shall be located 15 inches (380 mm) minimum from the vertical support and 5 inches (125 mm) maximum from the front edge of the unit, including bumpers.

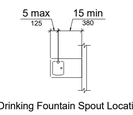

Figure 602.5 Drinking Fountain Spout Location

602.6 Water Flow. The spout shall provide a flow of water 4 inches (100 mm) high minimum and shall be located 5 inches (125 mm) maximum from the front of the unit. The angle of the water stream shall be measured horizontally relative to the front face of the unit. Where spouts are located less than 3 inches (75 mm) of the front of the unit, the angle of the water stream shall be 30 degrees maximum. Where spouts are located between 3 inches (75 mm) and 5 inches (125 mm) maximum from the front of the unit, the angle of the water stream shall be 15 degrees maximum

602.7 Drinking Fountains for Standing Persons: Spout outlets of drinking fountains for standing persons shall be 38 inches (965 mm) minimum and 43 inches (1090 mm) maximum above the finish floor or ground.

603 Toilet and Bathing Rooms

603.1 General: Toilet and bathing rooms shall comply with 603.

603.2 Clearances: Clearances shall comply with 603.2.

603.2.1 Turning Space: Turning space complying with 304 shall be provided within the room.

603.2.2 Overlap: Required clear floor spaces, clearance at fixtures, and turning space shall be permitted to overlap.

603.2.3 Door Swing: Doors shall not swing into the clear floor space or clearance required for any fixture. Doors shall be permitted to swing into the required turning space.

EXCEPTIONS:
1. Doors to a toilet room or bathing room for a single occupant accessed only through a private office and not for common use or public use shall be permitted to swing into the clear floor space or clearance provided the swing of the door can be reversed to comply with 603.2.3.
2. Where the toilet room or bathing room is for individual use and a clear floor space complying with 305.3 is provided within the room beyond the arc of the door swing, doors shall be permitted to swing into the clear floor space or clearance required for any fixture. life safety codes when the door swing is reversed.

603.3 Mirrors: Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches (1015 mm) maximum above the finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches (890 mm) maximum above the finish floor or ground.

603.4 Coat Hooks and Shelves: Coat hooks shall be located within one of the reach ranges specified in 308. Shelves shall be located 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the finish floor.

604 Water Closets and Toilet Compartments

604.1 General : Water closets and toilet compartments shall comply with 604.2 through 604.8.

EXCEPTION: Water closets and toilet compartments for children's use shall be permitted to comply with 604.9.

604.2 Location: The water closet shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 16 inches (405 mm) minimum to 18 inches (455 mm) maximum from the side wall or partition, except that the water closet shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in 604.8.2. Water closets shall be arranged for a left-hand or right-hand approach.

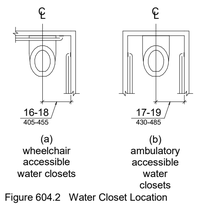

Figure 604.2 Water Closet Location

604.3 Clearance: Clearances around water closets and in toilet compartments shall comply with 604.3.

Figure 604.3.1 Size of Clearance at Water Closets

604.3.2 Overlap: The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures, and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance.

EXCEPTION: In residential dwelling units, a lavatory complying with 606 shall be permitted on the rear wall 18 inches (455 mm) minimum from the water closet centerline where the clearance at the water closet is 66 inches (1675 mm) minimum measured perpendicular from the rear wall.

604.4 Seats. The seat height of a water closet above the finish floor shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position.

EXCEPTIONS:
1. A water closet in a toilet room for a single occupant accessed only through a private office and not for common use or public use shall not be required to comply with 604.4.
2. In residential dwelling units, the height of water closets shall be permitted to be 15 inches (380 mm) minimum and 19 inches (485 mm) maximum above the finish floor measured to the top of the seat.

604.5 Grab Bars. Grab bars for water closets shall comply with 609. Grab bars shall be provided on the side wall closest to the water closet and on the rear wall.

EXCEPTIONS:
1. Grab bars shall not be required to be installed in a toilet room for a single occupant accessed only through a private office and not for common use or public use provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with 604.5.

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No.	Revisions	By	Date

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES (TAS)

DATE:	AUGUST 10, 2023
DESIGN:	DGD
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604.5 Grab Bars EXCEPTION CONTINUED:

2. In residential dwelling units, grab bars shall not be required to be installed in toilet or bathrooms provided that reinforcement has been installed in walls and located so as to permit the installationof grab bars complying with 604.5.

3. In detention or correction facilities, grab bars shall not be required to be installed in housing or holding cells that are specially designed without protrusions for purposes of suicide prevention.

604.5.1 Side Wall: The side wall grab bar shall be 42 inches (1065 mm) long minimum, located 12 inches (305 mm) maximum from the rear wall and extending 54 inches (1370 mm) minimum from the rear wall.

604.5.2 Rear Wall. The rear wall grab bar shall be 36 inches (915 mm) long minimum and extend from the centerline of the water closet 12 inches (305 mm) minimum on one side and 24 inches (610 mm) minimum on the other side.

EXCEPTIONS:
1. The rear grab bar shall be permitted to be 24 inches (610 mm) long minimum, centered on the water closet, where wall space does not permit a length of 36 inches (915 mm) minimum due to the location of a recessed fixture adjacent to the water closet.
2. Where an administrative authority requires flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then the rear grab bar shall be permitted to be split or shifted to the open side of the toilet area.

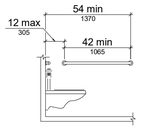


Figure 604.5.1
Side Wall Grab Bar at Water Closets

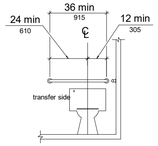


Figure 604.5.2
Rear Wall Grab Bar at Water Closets

604.6 Flush Controls: Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309. Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with 604.8.2.

604.7 Dispensers: Toilet paper dispensers shall comply with 309.4 and shall be 7 inches (180 mm) minimum and 9inches (230 mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be 15 inches (380 mm) minimum and 48 inches (1220 mm) maximum above the finish floor and shall not be located behind grab bars. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.

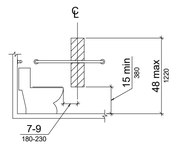


Figure 604.7 Dispenser Outlet Location

604.8 Toilet Compartments. Wheelchair accessible toilet compartments shall meet the requirements of 604.8.1 and 604.8.3. Compartments containing more than one plumbing fixture shall comply with 603. Ambulatory accessible compartments shall comply with 604.8.2 and 604.8.3.

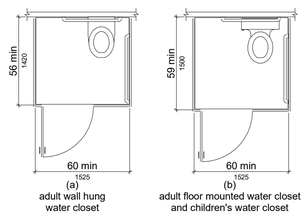


Figure 604.8.1.1 Size of Wheelchair Accessible Toilet Compartment

604.8.1.1 Size. Wheelchair accessible compartments shall be 60 inches (1525 mm) wide minimum measured perpendicular to the side wall, and 56 inches (1420 mm) deep minimum for wall hung water closets and 59 inches (1500 mm) deep minimum for floor mounted water closets measured perpendicular to the rear wall. Wheelchair accessible compartments for children's use shall be 60 inches (1525 mm) wide minimum measured perpendicular to the side wall, and 59 inches (1500 mm) deep minimum for wall hung and floor mounted water closets measured perpendicular to the rear wall.

604.8.1.2 Doors. Toilet compartment doors, including door hardware, shall comply with 404 except that if the approach is to the latch side of the compartment door, clearance between the door side of the compartment and any obstruction shall be 42 inches (1065 mm) minimum. Doors shall be located in the front partition or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches (100 mm) maximum from the side wall or partition Farthest from the water closet. Where located in the side wall or partition, the door opening shall be 4 inches (100 mm) maximum from the front partition. The door shall be self-closing. A door pull complying with 404.2.7 shall be placed on both sides of the door near the latch. Toilet compartment doors shall not swing into the minimum required compartment area.

604.8.1.3 Approach: Compartments shall be arranged for left-hand or right-hand approach to the water closet.

604.8.1.4 Toe Clearance: The front partition and at least one side partition shall provide a toe clearance of 9 inches (230 mm) minimum above the finish floor and 6 inches (150 mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition support members.Compartments for children's use shall provide a toe clearance of 12 inches (305 mm) minimum above the finish floor.

EXCEPTION: Toe clearance at the front partition is not required in a compartment greater than 62 Inches (1575 mm) deep with a wall-hung water closet or 65 inches (1650 mm) deep with a floormountedwater closet. Toe clearance at the side partition is not required in a compartment greater than 66 inches (1675 mm) wide. Toe clearance at the front partition is not required in a compartment for children's use that is greater than 65 inches (1650 mm) deep.

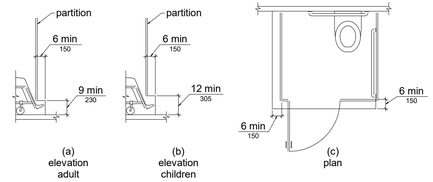


Figure 604.8.1.4 Wheelchair Accessible Toilet Compartment Toe Clearance

604.8.1.5 Grab Bars: Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 shall be provided and shall be located on the wall closest to the water closet. In addition, a rear-wall grab bar complying with 604.5.2 shall be provided.

604.8.2 Ambulatory Accessible Compartments: Ambulatory accessible compartments shall comply with

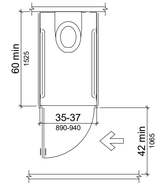


Figure 604.8.2 Ambulatory Accessible Toilet Compartment

604.8.2.1 Size. Ambulatory accessible compartments shall have a depth of 60 inches (1525 mm) minimum and a width of 35 inches (890 mm) minimum and 37 inches (940 mm) maximum.

604.8.2.2 Doors: Toilet compartment doors, including door hardware, shall comply with 404, except that if the approach is to the latch side of the compartment door, clearance between the door side of the compartment and any obstruction shall be 42 inches (1065 mm) minimum. The door shall be self-closing. A door pull complying with 404.2.7 shall be placed on both sides of the door near the latch. Toilet compartment doors shall not swing into the minimum required compartment area.

604.8.2.3 Grab Bars: Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 shall be provided on both sides of the compartment.

604.8.3 Coat Hooks and Shelves. Coat hooks shall be located within one of the reach ranges specified in 308. Shelves shall be located 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the finish floor.

604.9.1 Location: The water closet shall be located with a wall or partition to the rear and to one side. The centerline of the water closet shall be 12 inches (305 mm) minimum and 18 inches (455 mm) maximum from the side wall or partition, except that the water closet shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in 604.8.2. Compartments shall be arranged for left-hand or right-hand approach to the water closet.

604.9.2 Clearance: Clearance around a water closet shall comply with 604.3.

604.9.3 Height: The height of water closets shall be 11 inches (280 mm) minimum and 17 inches (430 mm) maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position.

604.9.4 Grab Bars. Grab bars for water closets shall comply with 604.5.

604.9.5 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.2 and 309.4 and shall be installed 36 inches (915 mm) maximum above the finish floor. Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with 604.8.2.

604.9.6 Dispensers. Toilet paper dispensers shall comply with 309.4 and shall be 7 inches (180 mm) minimum and 9 inches (230 mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be 14 inches (355 mm) minimum and 19 inches (485 mm) maximum above the finish floor. There shall be a clearance of 1 1/2 inches (38 mm) minimum below the grab bar. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.

605 Urinals

605.2 Height and Depth. Urinals shall be the stall-type or the wall-hung type with the rim 17 inches (430 mm) maximum above the finish floor or ground. Urinals shall be 13 1/2 inches (345 mm) deep minimum measured from the outer face of the urinal rim to the back of the fixture.

605.3 Clear Floor Space. A clear floor or ground space complying with 305 positioned for forward approach shall be provided.

605.4 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.

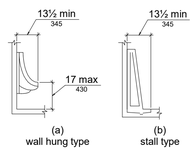


Figure 605.2 Height and Depth of Urinals

606 Lavatories and Sinks

606.2 Clear Floor Space. A clear floor space complying with 305, positioned for a forward approach, and knee and toe clearance complying with 306 shall be provided.

EXCEPTIONS:
1. A parallel approach complying with 305 shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided and to wet bars.
2. A lavatory in a toilet room or bathing facility for a single occupant accessed only through a private office and not for common use or public use shall not be required to provide knee and toe clearance omplying with 306.
3. In residential dwelling units, cabinetry shall be permitted under lavatories and kitchen sinks provided that all of the following conditions are met:
   (a) the cabinetry can be removed without removal or replacement of the fixture;
   (b) the finish floor extends under the cabinetry; and
   (c) the walls behind and surrounding the cabinetry are finished.
4. A knee clearance of 24 inches (610 mm) minimum above the finish floor or ground shall be permitted at lavatories and sinks used primarily by children 6 through 12 years where the rim or counter surface is 31 inches (785 mm) maximum above the finish floor or ground.
5. A parallel approach complying with 305 shall be permitted to lavatories and sinks used primarily by children 5 years and younger.
6. The dip of the overflow shall not be considered in determining knee and toe clearances.
7. No more than one bowl of a multi-bowl sink shall be required to provide knee and toe clearance complying with 306.

606.3 Height: Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches (865 mm) maximum above the finish floor or ground.

EXCEPTIONS:
1. A lavatory in a toilet or bathing facility for a single occupant accessed only through a private office and not for common use or public use shall not be required to comply with 606.3.
2. In residential dwelling unit kitchens, sinks that are adjustable to variable heights, 29 inches (735 mm) minimum and 36 inches (915 mm) maximum, shall be permitted where rough-in plumbing permits connections of supply and drain pipes for sinks mounted at the height of 29 inches (735 mm).

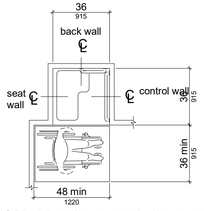
606.4 Faucets: Controls for faucets shall comply with 309. Hand-operated metering faucets shall remain open for 10 seconds minimum.

606.5 Exposed Pipes and Surfaces : Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

608 Shower Compartments

608.2 Size and Clearances for Shower Compartments: Shower compartments shall have sizes and clearances complying with 608.2.

608.2.1 Transfer Type Shower Compartments: Transfer type shower compartments shall be 36 inches (915 mm) by 36 inches (915 mm) clear inside dimensions measured at the center points of opposing sides and shall have a 36 inch (915 mm) wide minimum entry on the face of the shower compartment. Clearance of 36 inches (915 mm) wide minimum by 48 inches (1220 mm) long minimum measured from the control wall shall be provided.



Note: inside finished dimensions measured at the center points of opposing sides

Figure 608.2.1 Transfer Type Shower Compartments Size and Clearance

608.2.2 Standard Roll-In Type Shower Compartments: Standard roll-in type shower compartments shall be 30 inches (760 mm) wide minimum by 60 inches (1525 mm) deep minimum clear inside dimensions measured at center points of opposing sides and shall have a 60 inches (1525 mm) wide minimum entry on the face of the shower compartment.

608.2.2.1 Clearance. A 30 inch (760 mm) wide minimum by 60 inch (1525 mm) long minimum clearance shall be provided adjacent to the open face of the shower compartment.

EXCEPTION: A lavatory complying with 606 shall be permitted on one 30 inch (760 mm) wide minimum side of the clearance provided that it is not on the side of the clearance adjacent to the controls or, where provided, not on the side of the clearance adjacent to the shower seat.

608.3.1 Transfer Type Shower Compartments: In transfer type compartments, grab bars shall be provided across the control wall and back wall to a point 18 inches (455 mm) from the control wall.

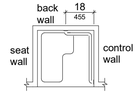


Figure 608.3.1 Grab Bars for Transfer Type Shower

608.4 Seats: A folding or non-folding seat shall be provided in transfer type shower compartments. A folding seat shall be provided in roll-in type showers required in transient lodging guest rooms with mobility features complying with 806.2. Seats shall comply with 610.

EXCEPTION: In residential dwelling units, seats shall not be required in transfer type shower compartments provided that reinforcement has been installed in walls so as to permit the installation of seats complying with 608.4.

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No.	Revisions	By	Date

REGISTERED ARCHITECT
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES (TAS)

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-904

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608.5 Controls: Controls, faucets, and shower spray units shall comply with 309.4.

608.5.1 Transfer Type Shower Compartments. In transfer type shower compartments, the controls, faucets, and shower spray unit shall be installed on the side wall opposite the seat 38 inches (965 mm) minimum and 48 inches (1220 mm) maximum above the shower floor and shall be located on the control wall 15 inches (380 mm) maximum from the centerline of the seat toward the shower opening.

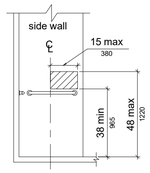

Figure 608.5.1 Transfer Type Shower Compartment Control Location

608.6 Shower Spray Unit and Water. A shower spray unit with a hose 59 inches (1500 mm) long minimum that can be used both as a fixed-position shower head and as a hand-held shower shall be provided. The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Shower spray units shall deliver water that is 120°F (49°C) maximum.

EXCEPTION: A fixed shower head located at 48 inches (1220 mm) maximum above the shower finish floor shall be permitted instead of a hand-held spray unit in facilities that are not medical care facilities, long-term care facilities, transient lodging guest rooms, or residential dwelling units.

608.7 Thresholds. Thresholds in roll-in type shower compartments shall be 1/2 inch (13 mm) high maximum in accordance with 303. In transfer type shower compartments, thresholds 1/2 inch (13 mm) high maximum shall be beveled, rounded, or vertical.

EXCEPTION: A threshold 2 inches (51 mm) high maximum shall be permitted in transfer type shower compartments in existing facilities where provision of a 1/2 inch (13 mm) high threshold would disturb the structural reinforcement of the floor slab. 608.8 Shower Enclosures. Enclosures for shower compartments shall not obstruct controls, faucets, and shower spray units or obstruct transfer from wheelchairs onto shower seats.

609 Grab Bars

609.3 Spacing: The space between the wall and the grab bar shall be 1 1/2 inches (38 mm). The space between the grab bar and projecting objects below and at the ends shall be 1 1/2 inches (38mm) minimum. The space between the grab bar and projecting objects above shall be 12 inches (305 mm) minimum.

EXCEPTION: The space between the grab bars and shower controls, shower fittings, and other grab bars above shall be permitted to be 1 1/2 inches (38 mm) minimum.

609.4 Position of Grab Bars: Grab bars shall be installed in a horizontal position, 33 inches (840 mm) minimum and 36 inches (915 mm) maximum above the finish floor measured to the top of the gripping surface, except that at water closets for children's use complying with 604.9, grab bars shall be installed in a horizontal position 18 inches (455 mm) minimum and 27 inches (685 mm) maximum above the finish floor measured to the top of the gripping surface. The height of the lower grab bar on the back wall of a bathtub shall comply with 607.4.1.1 or 607.4.2.1.

609.5 Surface Hazards: Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges.

609.6 Fittings: Grab bars shall not rotate within their fittings.

609.7 Installation. Grab bars shall be installed in any manner that provides a gripping surface at the specified locations and that does not obstruct the required clear floor space.

609.8 Structural Strength: Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure.

610 Seats

610.3 Shower Compartment Seats: Where a seat is provided in a standard roll-in shower compartment, it shall be a folding type, shall be installed on the side wall adjacent to the controls, and shall extend from the back wall to a point within 3 inches (75 mm) of the compartment entry. Where a seat is provided in an alternate roll-in type shower compartment, it shall be a folding type, shall be installed on the front wall opposite the back wall, and shall extend from the adjacent side wall to a point within 3 inches (75 mm) of the compartment entry. In transfer-type showers, the seat shall
extend from the back wall to a point within 3 inches (75 mm) of the compartment entry. The top of the seat shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum above the bathroom finish floor. Seats shall comply with 610.3.1 or 610.3.2.

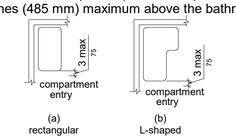

Figure 610.3 Extent of Seat

703 Signs

703.1 General: Signs shall comply with 703. Where both visual and tactile characters are required, either one sign with both visual and tactile characters, or two separate signs, one with visual, and one with tactile characters, shall be provided.

703.2 Raised Characters: Raised characters shall comply with 703.2 and shall be duplicated in braille complying with 703.3. Raised characters shall be installed in accordance with 703.4.

703.2.1 Depth: Raised characters shall be 1/32 inch (0.8 mm) minimum above their background.

703.2.2 Case: Characters shall be uppercase.

703.2.3 Style: Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.2.4 Character Proportions. Characters shall be selected from fonts where the width of the uppercase letter "O" is 55 percent minimum and 110 percent maximum of the height of the uppercase letter "I".

703.2.5 Character Height: Character height measured vertically from the baseline of the character shall be 5/8 inch (16 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter "I".

EXCEPTION: Where separate raised and visual characters with the same information are provided, raised character height shall be permitted to be 1/2 inch (13 mm) minimum.

703.2.6 Stroke Thickness: Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character.

703.2.7 Character Spacing: Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding word spaces. Where characters have rectangular cross sections, spacing between individual raised characters shall be 1/8 inch (3.2 mm) minimum and 4 times the raised character stroke width maximum. Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch (1.6 mm) minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and 1/8 inch (3.2 mm) minimum and 4 times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch (9.5 mm) minimum.

703.2.8 Line Spacing: Spacing between the baselines of separate lines of raised characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.

703.3 Braille . Braille shall be contracted (Grade 2) and shall comply with 703.3 and 703.4.

703.3.1 Dimensions and Capitalization. Braille dots shall have a domed or rounded shape and shall comply with Table 703.3.1. The indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials, and acronyms.

Table 703.3.1 Braille Dimensions

Measurement Range	Minimum in Inches /Maximum in Inches
Dot base diameter	0.059 (1.5 mm) to 0.063 (1.6 mm)
Distance between two dots in the same cell[1]	0.090 (2.3 mm) to 0.100 (2.5 mm)
Distance between corresponding dots in adjacent cells[1]	0.241 (6.1mm) to 0.300 (7.6mm)
Dot height	0.025 (0.6mm) to 0.037 (0.9mm)
Dist. between corresponding dots from one cell directly below[1]	0.395 (10 mm) to 0.400 (10.2 mm)

1. Measured center to center.

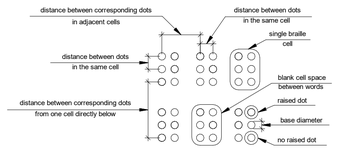

Figure 703.3.1 Braille Measurement

703.3.2 Position: Braille shall be positioned below the corresponding text. If text is multi-lined, braille shall be placed below the entire text. Braille shall be separated 3/8 inch (9.5 mm) minimum from any other tactile characters and 3/8 inch (9.5 mm) minimum from raised borders and decorative elements.

EXCEPTION: Braille provided on elevator car controls shall be separated 3/16 inch (4.8 mm) minimum and shall be located either directly below or adjacent to the corresponding raised characters or symbols.

703.4 Installation Height and Location: Signs with tactile characters shall comply with 703.4.

703.4.1 Height Above Finish Floor or Ground: Tactile characters on signs shall be located 48 inches (1220 mm) minimum above the finish floor or ground surface, measured from the baseline of the lowest tactile character and 60 inches (1525 mm) maximum above the finish floor or ground surface, measured from the baseline of the highest tactile character.

EXCEPTION: Tactile characters for elevator car controls shall not be required to comply with 703.4.1.

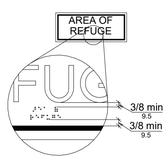

Figure 703.3.2 Position of Braille

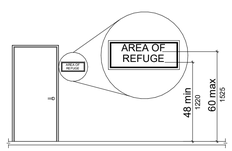

Figure 703.4.1 Height of Tactile Characters Above Finish Floor or Ground

703.4.2 Location: Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. Where a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the right hand door. Where there is no wall space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be located so that a clear floor space of 18 inches (455 mm) minimum by 18 inches (455 mm) minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position.

EXCEPTION: Signs with tactile characters shall be permitted on the push side of doors with closers and without hold-open devices.

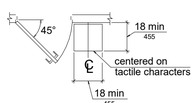

Figure 703.4.2 Location of Tactile Signs at Doors

703.5 Visual Characters: Visual characters shall comply with 703.5

EXCEPTION: Where visual characters comply with 703.2 and are accompanied by braille complying with 703.3, they shall not be required to comply with 703.5.2 through 703.5.9

703.5.1 Finish and Contrast. Characters and their background shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

703.5.6 Height From Finish Floor or Ground: Visual characters shall be 40 inches (1015 mm) minimum above the finish floor or ground.

EXCEPTION: Visual characters indicating elevator car controls shall not be required to comply with 703.5.6.

703.6 Pictograms. Pictograms shall comply with 703.6.

703.6.1 Pictogram Field. Pictograms shall have a field height of 6 inches (150 mm) minimum. Characters and braille shall not be located in the pictogram field.

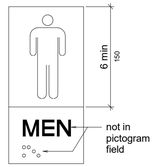

Figure 703.6.1 Pictogram Field

703.6.2 Finish and Contrast: Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field.

703.6.3 Text Descriptors: Pictograms shall have text descriptors located directly below the pictogram field. Text descriptors shall comply with 703.2, 703.3 and 703.4.

703.7 Symbols of Accessibility: Symbols of accessibility shall comply with 703.7.

703.7.1 Finish and Contrast: Symbols of accessibility and their background shall have a non-glare finish. Symbols of accessibility shall contrast with their background with either a light symbol on a dark background or a dark symbol on a light background.

703.7.2 Symbols

703.7.2.1 International Symbol of Accessibility: The International Symbol of Accessibility shall comply with Figure 703.7.2.1.

Figure 703.7.2.1 International Symbol of Accessibility

803 Dressing, Fitting, and Locker Rooms

803.1 General: Dressing, fitting, and locker rooms shall comply with 803.

803.2 Turning Space: Turning space complying with 304 shall be provided within the room.

803.3 Door Swing: Doors shall not swing into the room unless a clear floor or ground space complying with 305.3 is provided beyond the arc of the door swing.

803.4 Benches: A bench complying with 903 shall be provided within the room.

803.5 Coat Hooks and Shelves: Coat hooks provided within the room shall be located within one of the reach ranges specified in 308. Shelves shall be 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the finish floor or ground.

804 Kitchens and Kitchenettes

804.1 General: Kitchens and kitchenettes shall comply with 804.

EXCEPTION: Spaces that do not provide a cooktop or conventional range shall not be required to comply with 804.2.

804.3.2 Height: The kitchen work surface shall be 34 inches (865 mm) maximum above the finish floor or ground.

EXCEPTION: A counter that is adjustable to provide a kitchen work surface at variable heights, 29 inches (735 mm) minimum and 36 inches (915 mm) maximum shall be permitted.

804.3.3 Exposed Surfaces: There shall be no sharp or abrasive surfaces under the work surface counters.

903 Benches

903.1 General: Benches shall comply with 903.

903.2 Clear Floor or Ground Space: Clear floor or ground space complying with 305 shall be provided and shall be positioned at the end of the bench seat and parallel to the short axis of the bench.

903.3 Size: Benches shall have seats that are 42 inches (1065 mm) long minimum and 20 inches (510 mm) deep minimum and 24 inches (610 mm) deep maximum.

903.4 Back Support: The bench shall provide for back support or shall be affixed to a wall. back support shall be 42 inches (1065 mm) long minimum and shall extend from a point 2 inches (51 mm) maximum above the seat surface to a point 18 inches (455 mm) minimum above the seat surface. Back support shall be 2 1/2 inches (63 mm) maximum from the rear edge of the seat measured horizontally.

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No.	Revisions	By	Date

REGISTERED ARCHITECT
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STATE OF TEXAS
David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ACCESSIBILITY GUIDELINES
(TAS)

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-905

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BUILDING ASSEMBLY ENVELOPE VALUES

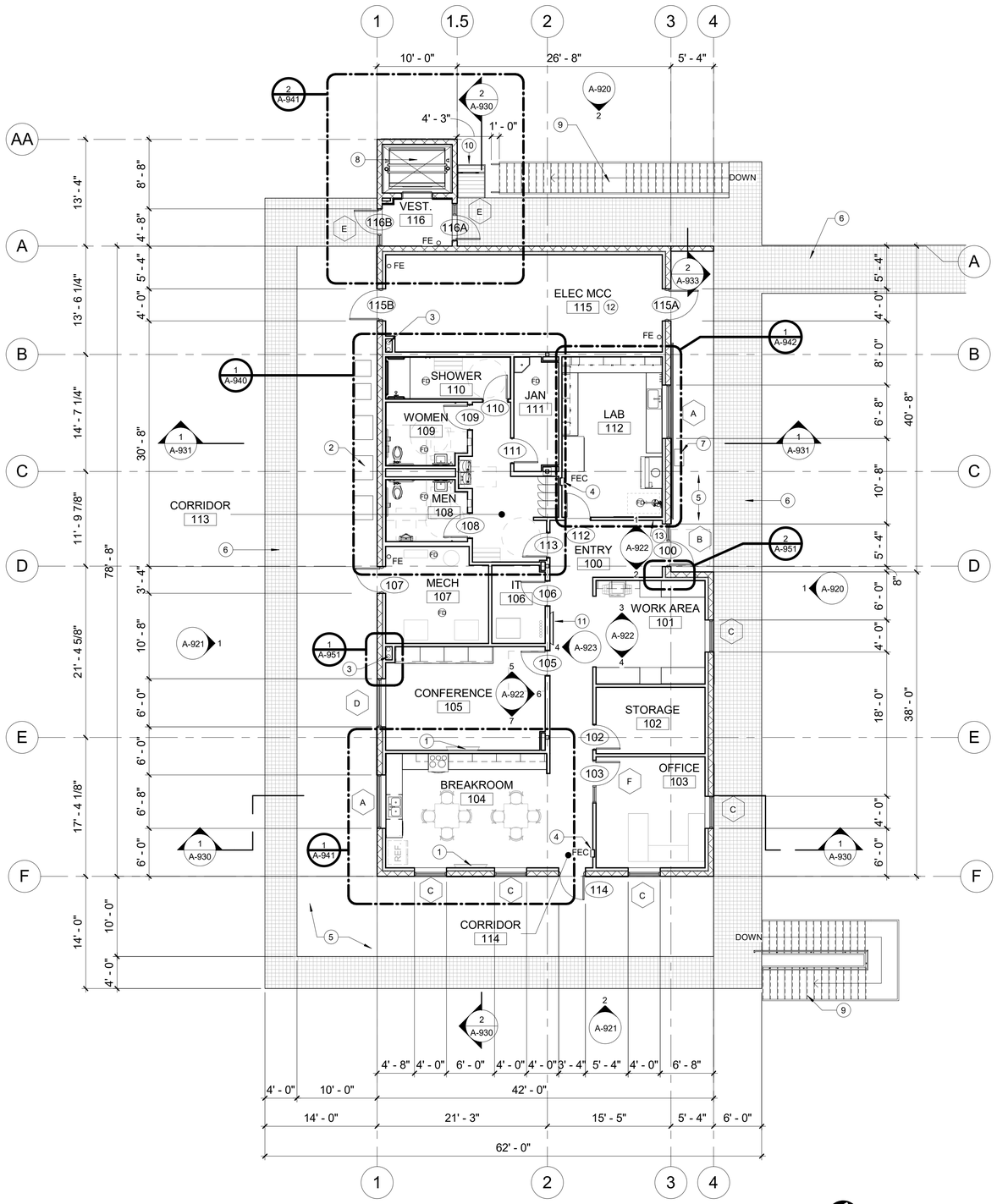
CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES (SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75



1 FLOOR PLAN

A-910 SCALE: 1/8" = 1'-0"

GENERAL NOTES - FLOOR PLAN

A. DIMENSIONS AS SHOWN ARE TO FACE OF STUD, CMU OR FACE OF BRICK, CONCRETE, UNLESS NOTED OTHERWISE (UNO).

B. PROVIDE IN WALL BLOCKING FOR ALL CABINETS, TOILET ACCESSORIES, AND OTHER WALL MOUNTED ITEMS.

C. CONTRACTOR SHALL COORDINATE SIZE, LOCATION, AND CHARACTERISTICS OF ALL EQUIPMENT, AND ITEMS SUPPLIED BY THE OWNER, OR OTHERS, WITH THE SUPPLIER PRIOR TO THE START OF THE RELATED WORK.

D. COORDINATE ALL LIGHTING, DUCTS, DIFFUSERS, AND ROOF PENETRATIONS WITH MEP DRAWINGS TO AVOID CONFLICT WITH STRUCTURE, AND OTHER BUILDING SYSTEMS.

E. PROVIDE GYP. BD. FURR OUT AROUND ALL EXPOSED STEEL STRUCTURE. FIELD COORDINATE EXACT SIZE OF FURR OUT. HOLD TIGHT TO STRUCTURE.

F. ALL MASONRY WALLS SHALL BE REINFORCED WITH STEEL PER THE SPECIFICATIONS AND/OR STRUCTURAL DRAWINGS. ADDITIONAL COST WILL NOT BE AWARDED FOR MASONRY WALL REINFORCEMENT.

G. DO NOT SUSPEND ANY ITEMS FROM BOTTOM OF JOIST CHORD, HORIZONTAL BRIDGING, X-BRACING, PIPING OR CONDUITS. ALL ROOF LOADS EXCEEDING 150 LBS SHALL BE SUBMITTED TO ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW.

H. ALL EXPOSED WALL MOUNTED CONDUITS, BUS GUTTERS, JUNCTION BOXES, PANEL BOXES, METERS, PIPES, ETC ARE TO BE THREE (3) COAT PAINTED WITH COLOR TO BE SELECTED BY THE ARCHITECT. ALL EXPOSED CONDUIT PIPES, JUNCTION BOXES, ROOF SCUTTLES, ETC ABOVE THE ROOF BOTH IN MID FIELD AREAS AND ON BACKS OF PARAPETS ARE TO BE THREE (3) COAT PAINTED. COLOR TO BE SELECTED BY ARCHITECT.

I. UNLESS OTHERWISE INDICATED, EACH SUBCONTRACTOR AND GENERAL CONTRACTOR IS RESPONSIBLE FOR ADEQUATELY BRACING AND SUPPORTING ALL ITEMS FROM THE ROOF STRUCTURE FOR GRAVITY LOADS AND TO RESIST SEISMIC MOVEMENT AS REQUIRED BY ALL APPLICABLE CODES (ANY BRACING WITH A SIGNIFICANT VISUAL IMPACT IS SUBJECT TO ARCHITECT FOR APPROVAL).

J. CONTRACTOR IS RESPONSIBLE FOR PROVIDING HINGED ACCESS PANELS AT ALL LOCATIONS REQUIRING ACCESS TO MEP ITEMS REGARDLESS AS TO WHETHER THEY MAY BE SPECIFICALLY IDENTIFIED ON THE CONSTRUCTION DOCUMENTS. CONTRACTOR IS REQUIRED FOR COORDINATING ALL ACCESS PANEL LOCATIONS FOR DRYWALL, TILE WORK WITH ALL TRADES.

K. REFER TO SHEET A-912 FOR PARTITION TYPES.

FLOOR PLAN KEY NOTES

1 TV MONITOR DISPLAY BY OWNER. CONTRACTOR TO PROVIDE ADDITIONAL BLOCKING AS REQUIRED.
2 HVAC CONDENSER UNITS, TYP.- REFER TO MECHANICAL.
3 ROOF & OVERFLOW DRAIN PIPES - REFER TO PLUMBING.
4 FIRE EXTINGUISHER CABINET AS SPECIFIED.
5 CONCRETE SLAB - REFER TO STRUCTURAL.
6 STAINLESS STEEL GRATE WALKWAY - REFER TO STRUCTURAL. CONTRACTOR TO ENSURE THAT GRATE WALKWAY IS FLUSH WITH ADJACENT CONCRETE SLAB.
7 BOOT AND SHOE SCRAPER AS SPECIFIED
8 ELEVATOR AS SPECIFIED
9 STAIR TO GROUND LEVEL REFER TO STRUCTURAL
10 PREFINISHED METAL CANOPY AS SPECIFIED BELOW
11 SCADA MONITOR BY CONTRACTOR - REFER TO ELECTRICAL. CONTRACTOR TO PROVIDE ADDITIONAL BLOCKING AS REQUIRED.
12 REFER TO ELECTRICAL FOR ROOM LAYOUT AND EQUIPMENT
13 FIRE ALARM ANNUNCIATOR PANEL; REF: 1/A-922 FOR LOCATION; REF: ELECTRICAL

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TBPE No. 928

No.	Revisions	By	Date

REGISTERED ARCHITECT DAVID G. DUMAN 14305 STATE OF TEXAS
David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING FLOOR PLAN

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-910

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BUILDING ASSEMBLY ENVELOPE VALUES

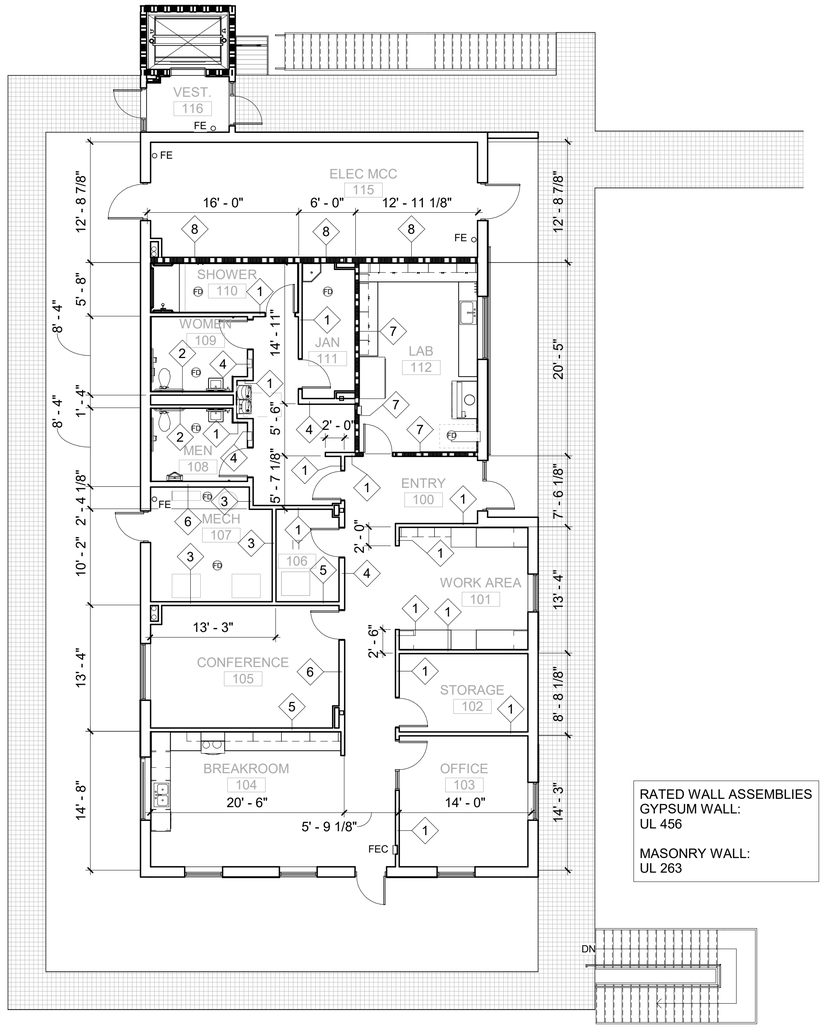
CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES (SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75



1 DIMENSION FLOOR PLAN

A-911 SCALE: 1/8" = 1'-0"

GENERAL NOTES - FLOOR PLAN

A. DIMENSIONS AS SHOWN ARE TO FACE OF STUD, CMU OR FACE OF BRICK, CONCRETE, UNLESS NOTED OTHERWISE (UNO).

B. PROVIDE IN WALL BLOCKING FOR ALL CABINETS, TOILET ACCESSORIES, AND OTHER WALL MOUNTED ITEMS.

C. CONTRACTOR SHALL COORDINATE SIZE, LOCATION, AND CHARACTERISTICS OF ALL EQUIPMENT, AND ITEMS SUPPLIED BY THE OWNER, OR OTHERS, WITH THE SUPPLIER PRIOR TO THE START OF THE RELATED WORK.

D. COORDINATE ALL LIGHTING, DUCTS, DIFFUSERS, AND ROOF PENETRATIONS WITH MEP DRAWINGS TO AVOID CONFLICT WITH STRUCTURE, AND OTHER BUILDING SYSTEMS.

E. PROVIDE GYP. BD. FURR OUT AROUND ALL EXPOSED STEEL STRUCTURE. FIELD COORDINATE EXACT SIZE OF FURR OUT. HOLD TIGHT TO STRUCTURE.

F. ALL MASONRY WALLS SHALL BE REINFORCED WITH STEEL PER THE SPECIFICATIONS AND/OR STRUCTURAL DRAWINGS. ADDITIONAL COST WILL NOT BE AWARDED FOR MASONRY WALL REINFORCEMENT.

G. DO NOT SUSPEND ANY ITEMS FROM BOTTOM OF JOIST CHORD, HORIZONTAL BRIDGING, X-BRACING, PIPING OR CONDUITS. ALL ROOF LOADS EXCEEDING 150 LBS SHALL BE SUBMITTED TO ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW.

H. ALL EXPOSED WALL MOUNTED CONDUITS, BUS GUTTERS, JUNCTION BOXES, PANEL BOXES, METERS, PIPES, ETC ARE TO BE THREE (3) COAT PAINTED WITH COLOR TO BE SELECTED BY THE ARCHITECT. ALL EXPOSED CONDUIT PIPES, JUNCTION BOXES, ROOF SCUTTLES, ETC ABOVE THE ROOF BOTH IN MID FIELD AREAS AND ON BACKS OF PARAPETS ARE TO BE THREE (3) COAT PAINTED. COLOR TO BE SELECTED BY ARCHITECT.

I. UNLESS OTHERWISE INDICATED, EACH SUBCONTRACTOR AND GENERAL CONTRACTOR IS RESPONSIBLE FOR ADEQUATELY BRACING AND SUPPORTING ALL ITEMS FROM THE ROOF STRUCTURE FOR GRAVITY LOADS AND TO RESIST SEISMIC MOVEMENT AS REQUIRED BY ALL APPLICABLE CODES (ANY BRACING WITH A SIGNIFICANT VISUAL IMPACT IS SUBJECT TO ARCHITECT FOR APPROVAL).

J. CONTRACTOR IS RESPONSIBLE FOR PROVIDING HINGED ACCESS PANELS AT ALL LOCATIONS REQUIRING ACCESS TO MEP ITEMS REGARDLESS AS TO WHETHER THEY MAY BE SPECIFICALLY IDENTIFIED ON THE CONSTRUCTION DOCUMENTS. CONTRACTOR IS REQUIRED FOR COORDINATING ALL ACCESS PANEL LOCATIONS FOR DRYWALL, TILE WORK WITH ALL TRADES.

K. REFER TO SHEET A-912 FOR PARTITION TYPES.

RATED WALL ASSEMBLIES
GYPSUM WALL:
UL 456

MASONRY WALL:
UL 263

1 HOUR FIRE & SMOKE PARTITION (SECTION 708 IN IBC 2015)

NEW PARTITION AS INDICATED

FLOOR PLAN LEGEND

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No.	Revisions	By	Date

REGISTERED ARCHITECT
DAVID G. DUMAN
14305
STATE OF TEXAS
David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING DIMENSION FLOOR PLAN

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-911

quorum
ARCHITECTURE · INTERIOR DESIGN
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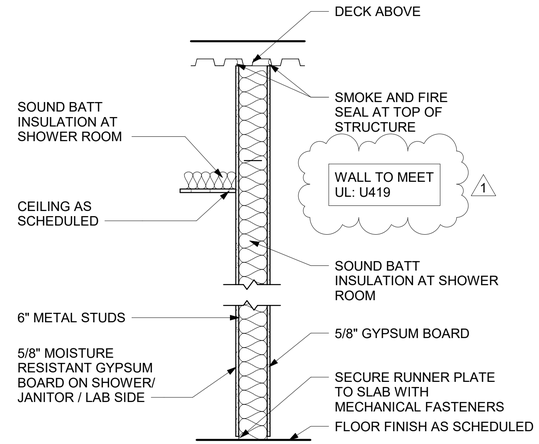
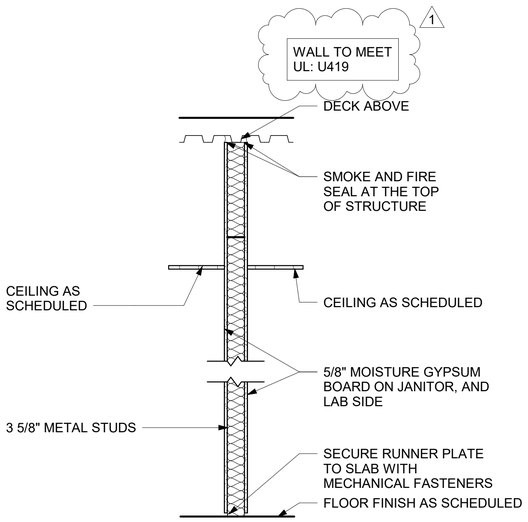
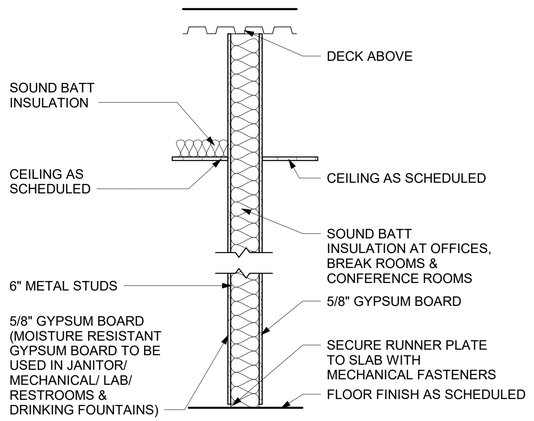


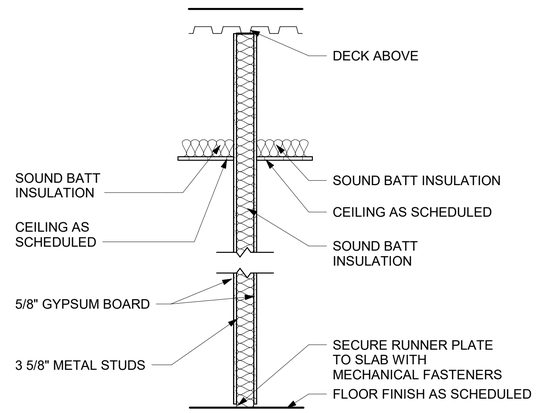
PARTITION TYPE 8 - 1 HOUR WALL



PARTITION TYPE 7 - 1 HOUR WALL



PARTITION TYPE 6



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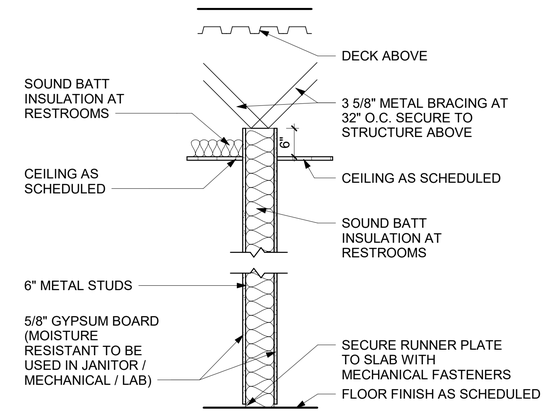

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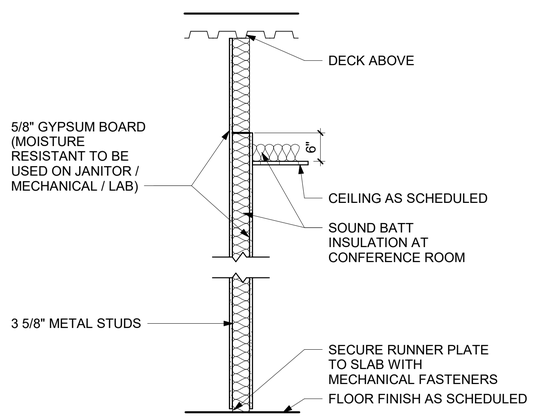

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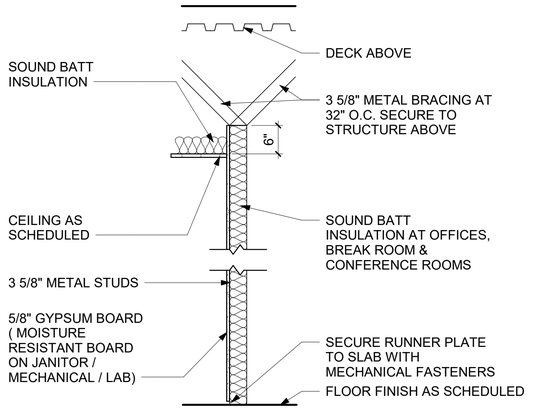

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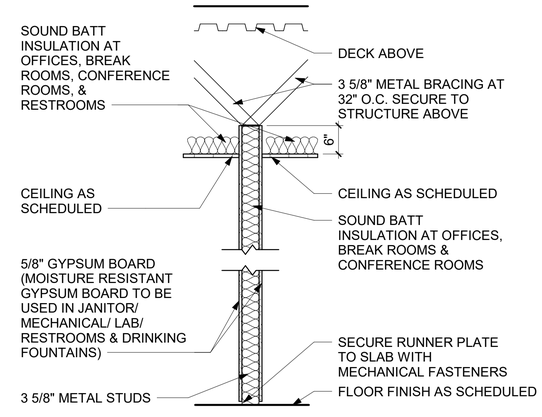

PARTITION TYPE 1

Kimley»Horn
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No.	Revisions	By	Date
1	PERMIT COMMENTS	TAJ	01/10/24

REGISTERED ARCHITECT DAVID G. DUMAN 14305 STATE OF TEXAS
David Duman 2024.01.09 05:31:00 06'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING PARTITION TYPES

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-912

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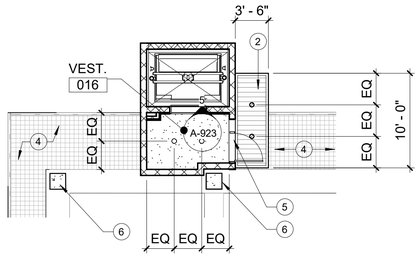
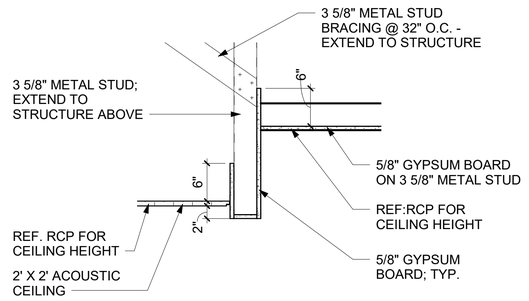


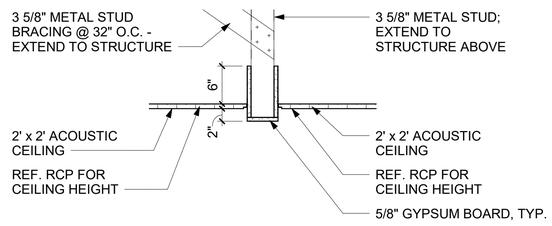
5 ELEVATOR RCP - GRADE LEVEL

A-913 SCALE: 1/8" = 1'-0"



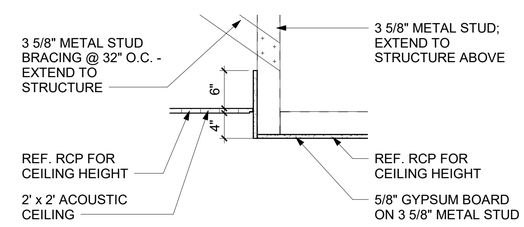
4 CEILING DETAIL

A-913 SCALE: 1" = 1'-0"



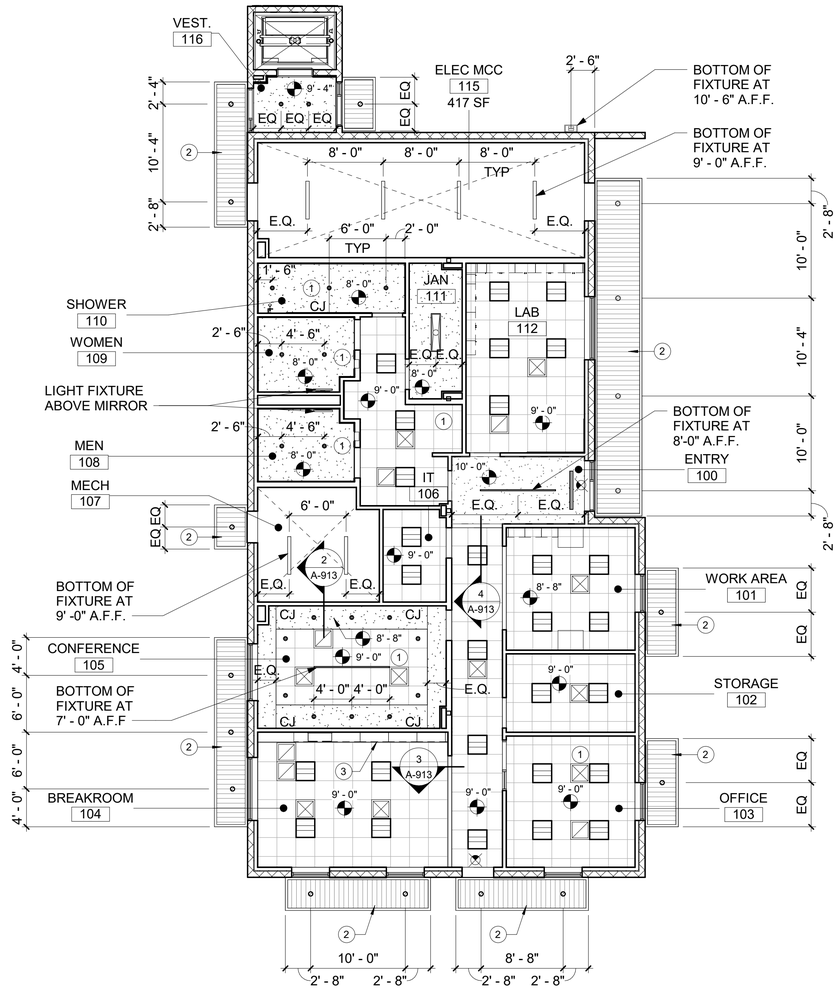
3 CEILING DETAIL

A-913 SCALE: 1" = 1'-0"



2 CEILING DETAIL

A-913 SCALE: 1" = 1'-0"



REFLECTED CEILING PLAN - 1 FINISH FLOOR LEVEL

A-913 SCALE: 1/8" = 1'-0"

GENERAL NOTES - RCP

A. COORDINATE ALL LOCATIONS OF ALL LIGHTS, DIFFUSERS AND CEILING PENETRATIONS. NOTIFY ARCHITECT OF CONFLICTS FOR CLARIFICATIONS.

B. ALL CEILINGS TO BE 10'-0" AFF, U.N.O.

C. COORDINATE ALL CONTROL JOINTS (HORIZONTALLY/VERTICALLY) FOR ALIGNMENT. ANY DISCREPANCY IN ALIGNMENT, COORDINATE WITH ARCHITECT.

D. ALL CONDUIT TO BE CONCEALED ABOVE CEILING / IN WALLS.

E. PRIOR TO INSTALLING CEILINGS, CONTRACTOR TO COORDINATE HEIGHTS WITH MEP REQUIRED CLEARANCES. NOTIFY ARCHITECT WITH DISCREPANCIES.

F. ALL CONDUIT / PIPING TO BE CONCEALED. ANY CONDUIT THAT CAN NOT BE CONCEALED AT THE METAL SOFFITS SHALL BE FIELD LOCATED TO MINIMIZE EXPOSURE. COORDINATE WITH ARCHITECT.

RCP LEGEND

- 2 x 2 ACOUSTICAL CEILING SYSTEM
- GYPSUM BOARD CEILING
- EXPOSED STRUCTURE - PAINT AS SCHEDULED
- CJ — CONTROL JOINT (GENERAL NOTE D)
- EXIT SIGN
- HVAC SUPPLY DIFFUSER
- HVAC RETURN DIFFUSER
- 2' X 2' LIGHT FIXTURE
- 1' X 4' LIGHT FIXTURE
- SUSPENDED LIGHT FIXTURE
- RECESSED DOWN LIGHT
- EXTERIOR WALL SCONCE
- VANITY LIGHT FIXTURE

RCP KEY NOTES

1 ROOM TO HAVE SOUND BATT INSULATION ABOVE CEILING - EXTEND TO 4' BEYOND ROOM PERIMETER.
2 PREFINISHED METAL CANOPY AS SPECIFIED.
3 UNDER CABINET LIGHTS. RE: ELECTRICAL
4 METAL GRATE WALKWAY ABOVE - REFER TO STRUCTURE
5 LOUVER AS SCHEDULED - REFER TO MECHANICAL
6 CONCRETE COLUMN - REFER TO STRUCTURE

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No.	Revisions	By	Date

REGISTERED ARCHITECT
DAVID G. DUMAN
14305
STATE OF TEXAS
David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING REFLECTED CEILING PLAN

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
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KHA NO.:	067812104

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A-913

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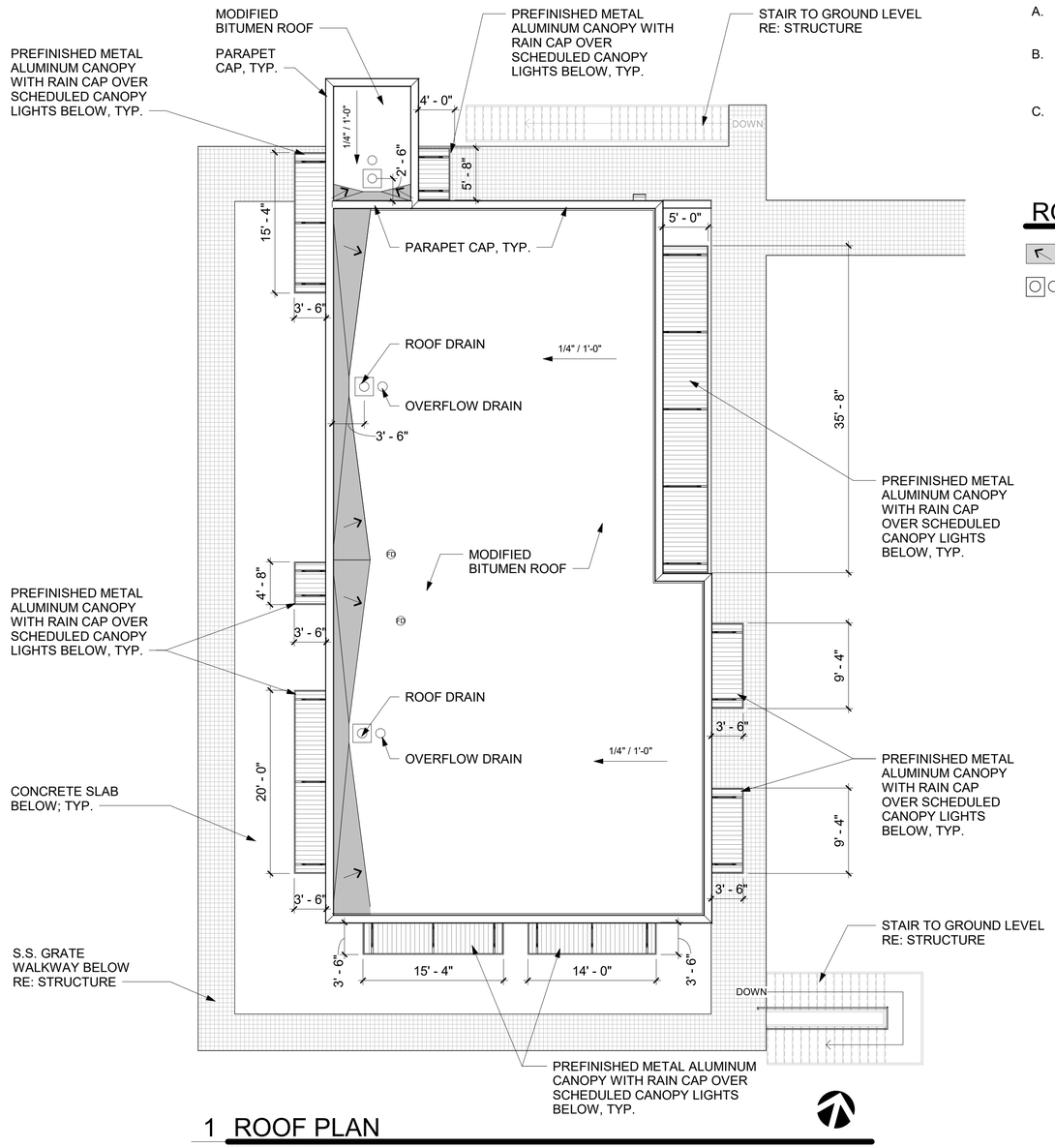

1 ROOF PLAN

A-914 SCALE: 1/8" = 1'-0"

GENERAL NOTES - ROOF PLAN

A. COORDINATE WITH MECHANICAL, ELECTRICAL, AND PLUMBING FOR ALL ROOFING PENETRATIONS.

B. ENSURE ROOF DRAINS ARE MOUNTED AT AN INCH LOWER THAN THE SURROUNDING ROOF INSULATION TO CREATE A DRAINSUMP TO MOVE WATER TO THE DRAIN.

C. TAPERED INSULATION AREAS SHALL SLOPE TWICE THE ROOF SLOPE TO ASSURE PROPER BACK SLOPE.

ROOF PLAN LEGEND

TAPERED INSULATION CRICKET, ARROW INDICATES DIRECTION OF SLOPE

ROOF DRAIN WITH OVERFLOW DRAIN

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David Duman
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING ROOF PLAN

DATE:	AUGUST 10, 2023
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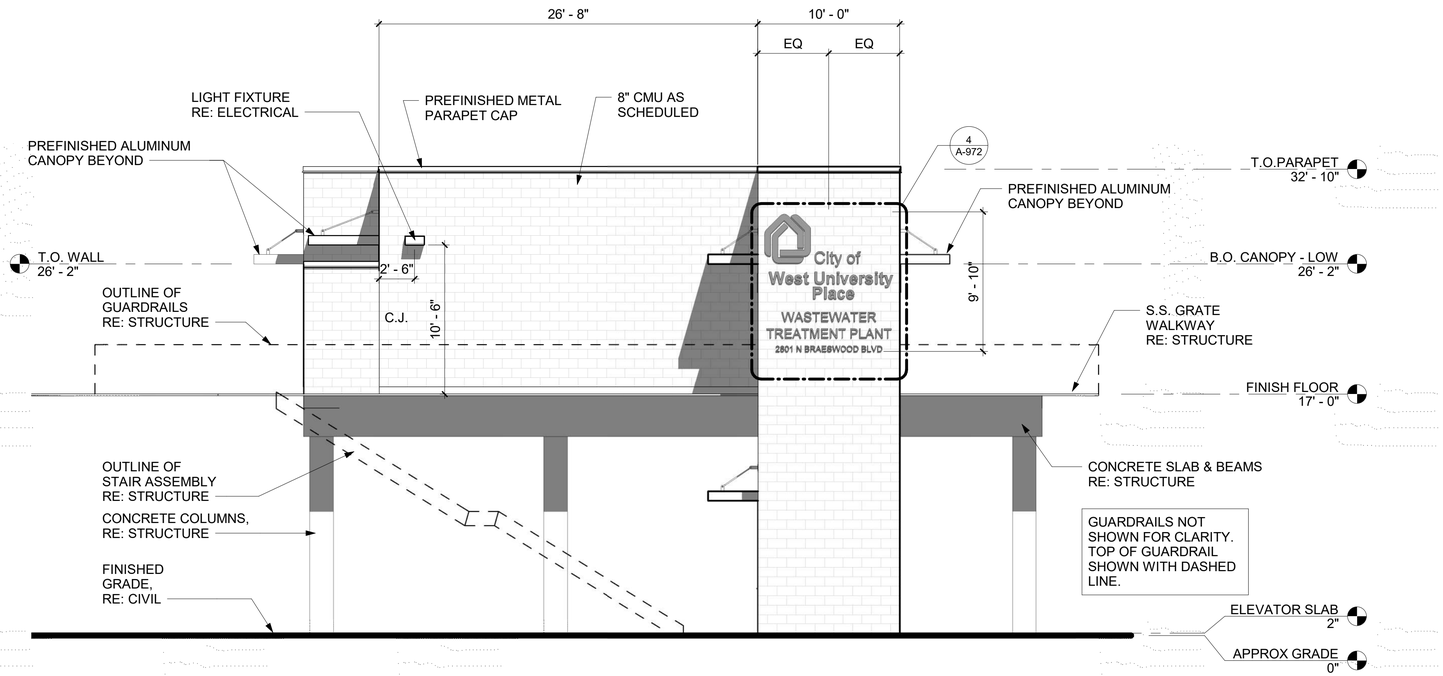
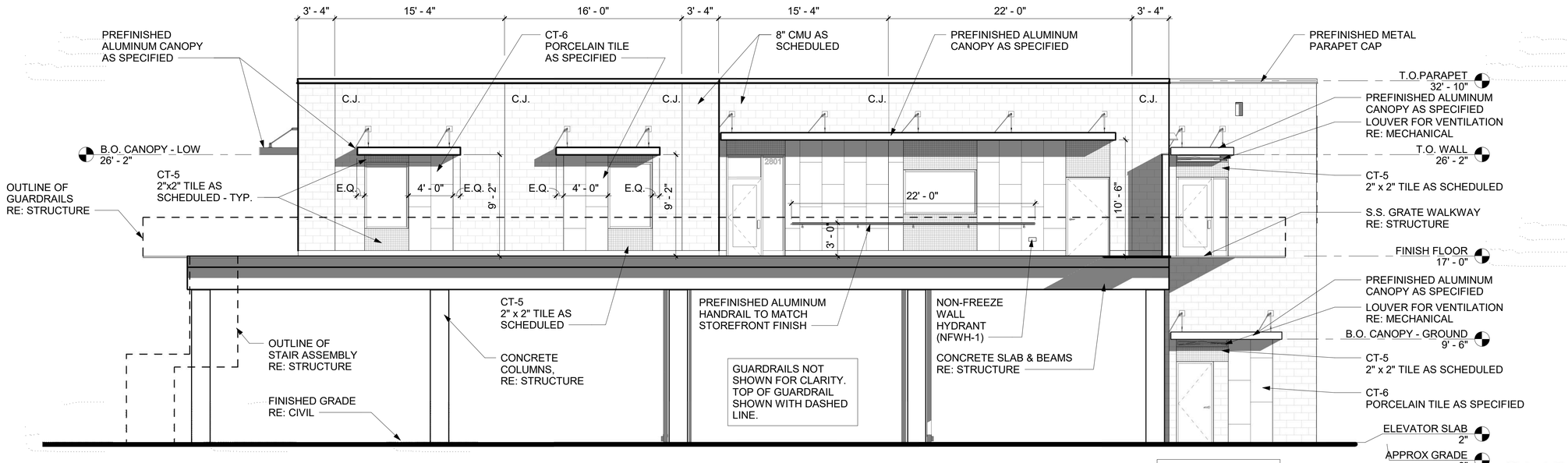


2 NORTH ELEVATION

A-920 SCALE: 3/16" = 1'-0"



1 EAST EXTERIOR ELEVATION

A-920 SCALE: 3/16" = 1'-0"

EXTERIOR FINISHES

CMU
MANUF.: TEXAS BUILDING MATERIALS
COLOR: BLANCO - BURNISHED

CT-5
2" x 2" TILE
MANUF.: DALTILE KEYSTONE
COLOR: NAUTICAL BLUE

CT-6
24" x 48" PORCELAIN TILE
MANUF.: EMSER
COLOR: MILESTONE GRAY

OTHER MATERIALS:

MATERIAL	MANUFACTURER	COLOR
CANOPIES	ARCH FAB	DARK BRONZE
WINDOW FRAMES	KAWNEER	PERMANODIC DARK BRONZE NO.40
HOLLOW METAL DOORS & FRAMES	-	SW 6006 - BLACK BEAN
PREFINISHED METAL PARAPET CAP	PAC-CLAD CONTINUOUS CLEAT COPING	DARK BRONZE

NOTE: COLOR SELECTION PROVIDED FOR BASIS OF DESIGN PURPOSES, ALL FINAL COLOR SELECTIONS TO BE MADE FROM MANUFACTURER'S FULL RANGE BY ARCHITECT AND OWNER.

NOTE: EXTERIOR SCHLUTER JOLLY SYSTEM TO BE IN ANODIZED BRUSHED DARK BRONZE. USED AT ALL TERMINATIONS OF TILE AND WRAPPING OF TILE ON THE EXTERIOR OF THE BUILDING.

NOTE: ALL EXTERIOR PAINTING SHALL REFERENCE SECTION 09 96 00 FOR COATING. INCLUDING BUT NOT LIMITED TO HOLLOW METAL DOORS & FRAMES AND EXTERIOR STEEL STRUCTURE

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No.	Revisions	By	Date

REGISTERED ARCHITECT
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STATE OF TEXAS
David Duman
2023.08.09 11:20:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING EXTERIOR ELEVATIONS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
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KHA NO.:	067812104

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A-920

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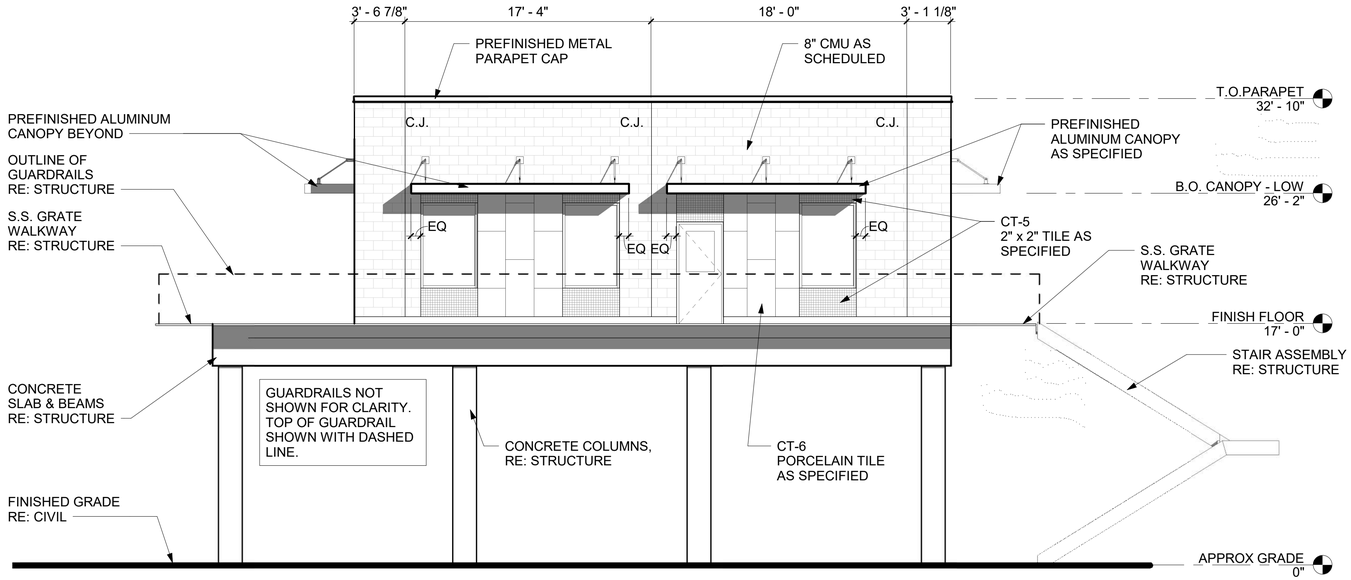
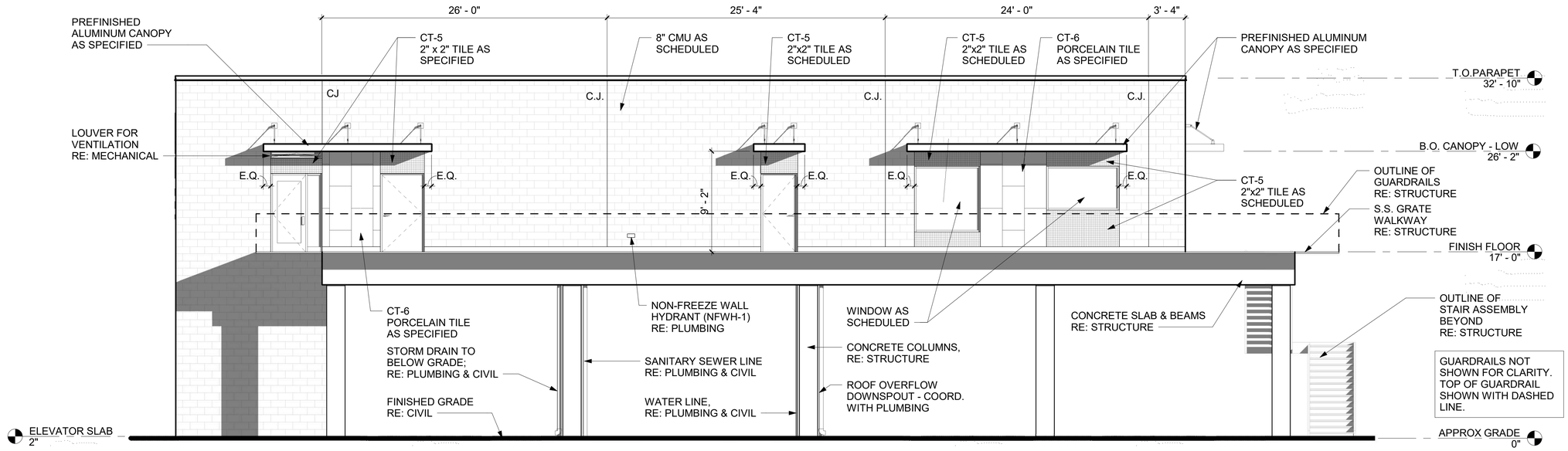


2 SOUTH EXTERIOR ELEVATION

A-921 SCALE: 3/16" = 1'-0"



1 WEST EXTERIOR ELEVATION

A-921 SCALE: 3/16" = 1'-0"

EXTERIOR FINISHES

CMU
MANUF.: TEXAS BUILDING MATERIALS
COLOR: BLANCO - BURNISHED

CT-5
2" x 2" TILE
MANUF.: DALTILE KEYSTONE
COLOR: NAUTICAL BLUE

CT-6
24" x 48" PORCELAIN TILE
MANUF.: EMSER
COLOR: MILESTONE GRAY

OTHER MATERIALS:

MATERIAL	MANUFACTURER	COLOR
CANOPIES	ARCH FAB	DARK BRONZE
WINDOW FRAMES	KAWNEER	PERMANODIC DARK BRONZE NO.40
HOLLOW METAL DOORS & FRAMES	-	SW 6006 - BLACK BEAN
PREFINISHED METAL PARAPET CAP	PAC-CLAD CONTINUOUS CLEAT COPING	DARK BRONZE

NOTE: COLOR SELECTION PROVIDED FOR BASIS OF DESIGN PURPOSES, ALL FINAL COLOR SELECTIONS TO BE MADE FROM MANUFACTURER'S FULL RANGE BY ARCHITECT AND OWNER.

NOTE: EXTERIOR SCHLUTER JOLLY SYSTEM TO BE IN ANODIZED BRUSHED DARK BRONZE. USED AT ALL TERMINATIONS OF TILE AND WRAPPING OF TILE ON THE EXTERIOR OF THE BUILDING.

NOTE: ALL EXTERIOR PAINTING SHALL REFERENCE SECTION 09 96 00 FOR COATING. INCLUDING BUT NOT LIMITED TO HOLLOW METAL DOORS & FRAMES AND EXTERIOR STEEL STRUCTURE

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STATE OF TEXAS
David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING EXTERIOR ELEVATIONS

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
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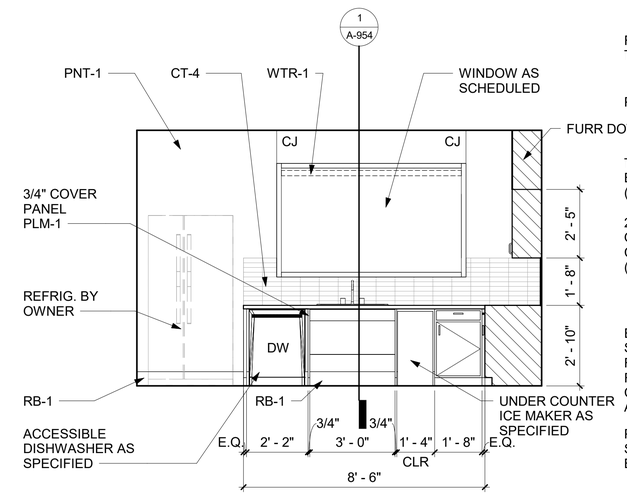
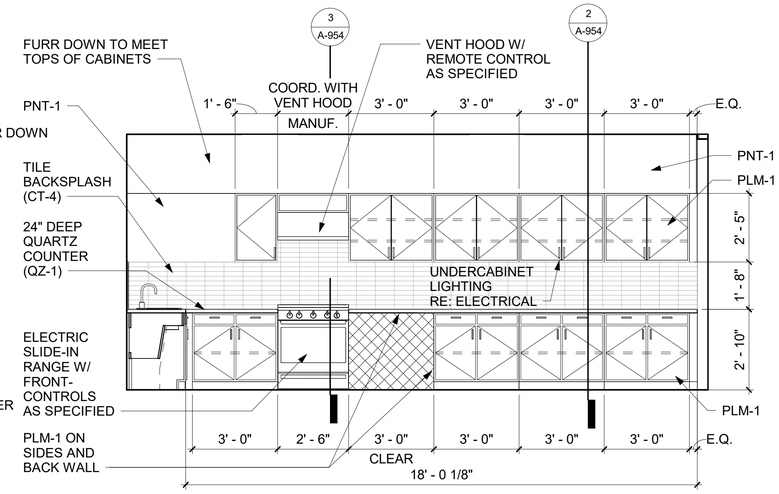


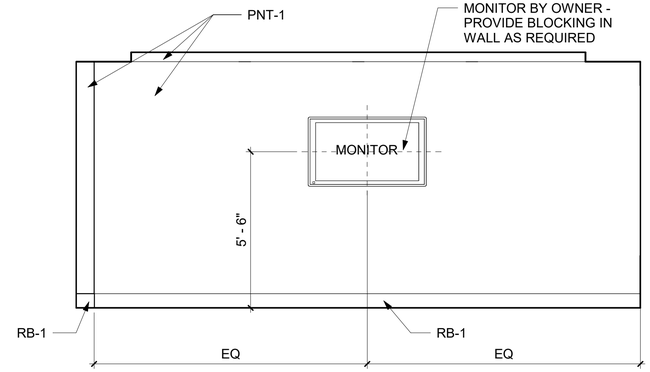
9 BREAKROOM 104 W

A-922 SCALE: 3/8" = 1'-0"



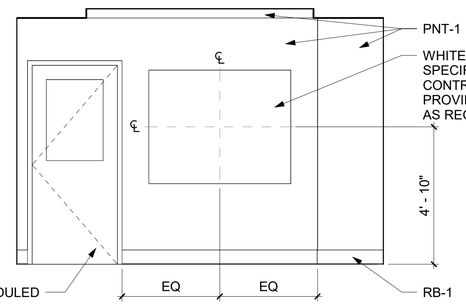
8 BREAKROOM 104 N

A-922 SCALE: 3/8" = 1'-0"



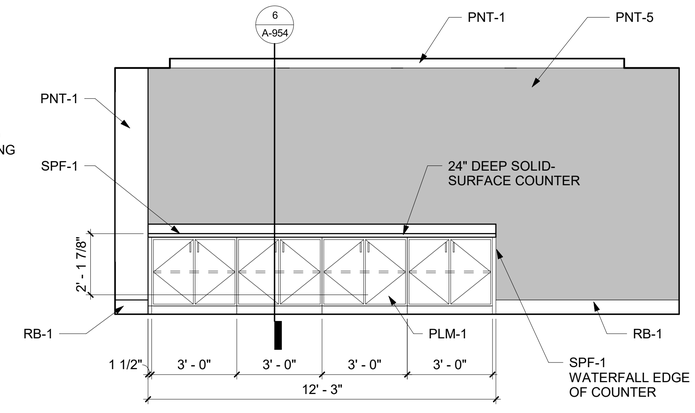
7 CONFERENCE 105 S

A-922 SCALE: 3/8" = 1'-0"



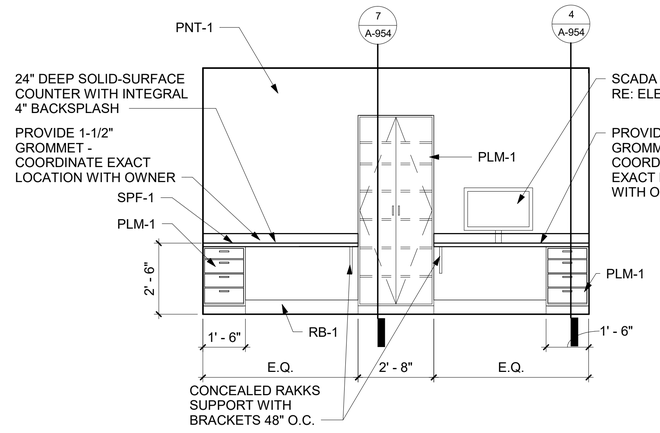
6 CONFERENCE 105 E

A-922 SCALE: 3/8" = 1'-0"



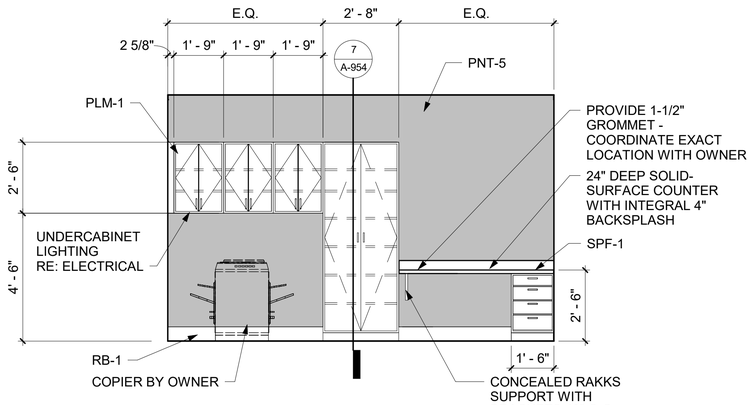
5 CONFERENCE 105 N

A-922 SCALE: 3/8" = 1'-0"



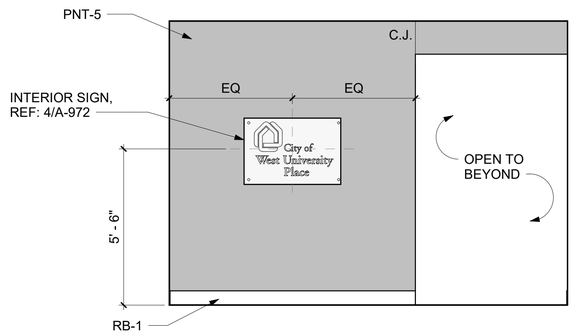
4 WORK AREA 101 S

A-922 SCALE: 3/8" = 1'-0"



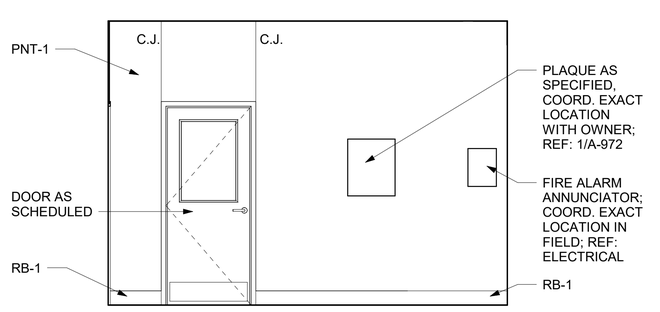
3 WORK AREA 101 N

A-922 SCALE: 3/8" = 1'-0"



2 ENTRY 100 S

A-922 SCALE: 3/8" = 1'-0"



1 ENTRY 100 N

A-922 SCALE: 3/8" = 1'-0"

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825 W Vickery Blvd, Suite 100
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No.	Revisions	By	Date

REGISTERED ARCHITECT
DAVID G. DUMAN
14305
STATE OF TEXAS
David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING INTERIOR ELEVATIONS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-922

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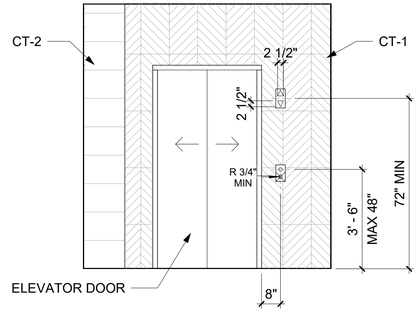
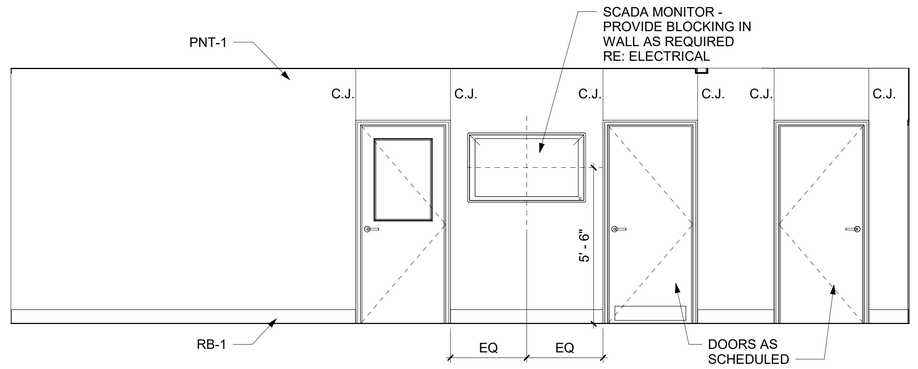


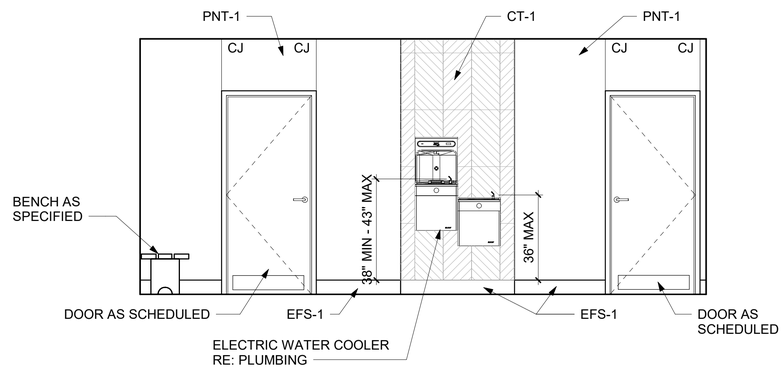
5 VEST. 016 & 116 N

A-923 SCALE: 3/8" = 1'-0"



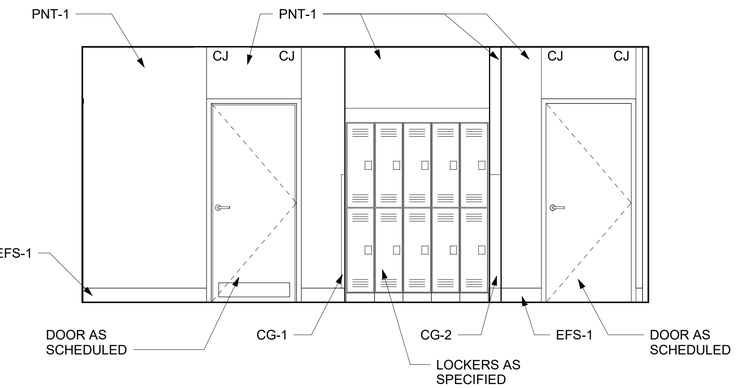
4 CORRIDOR 114 W

A-923 SCALE: 3/8" = 1'-0"



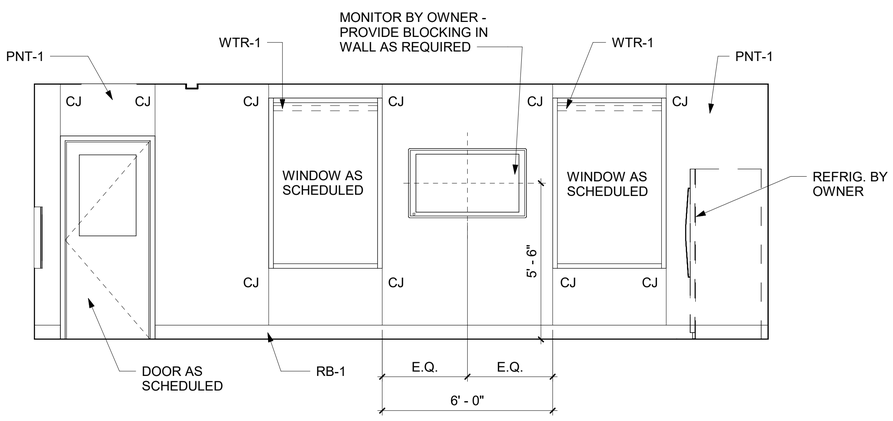
3 CORRIDOR 113 W

A-923 SCALE: 3/8" = 1'-0"



2 CORRIDOR 113 E

A-923 SCALE: 3/8" = 1'-0"



1 BREAKROOM 104 S

A-923 SCALE: 3/8" = 1'-0"

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DAVID G. DUMAN
14305
STATE OF TEXAS
David Duman
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING
INTERIOR ELEVATIONS

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
AUGUST 10, 2023	DGD	TAJ	WRM	067812104

SHEET
A-923

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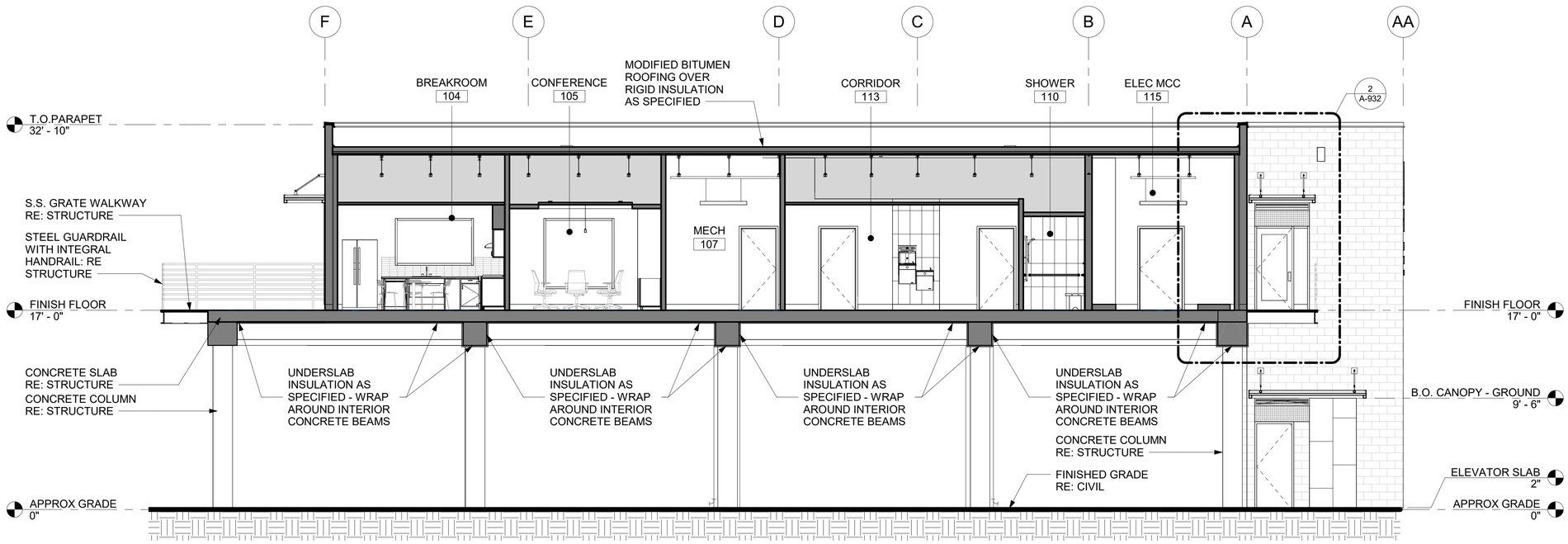
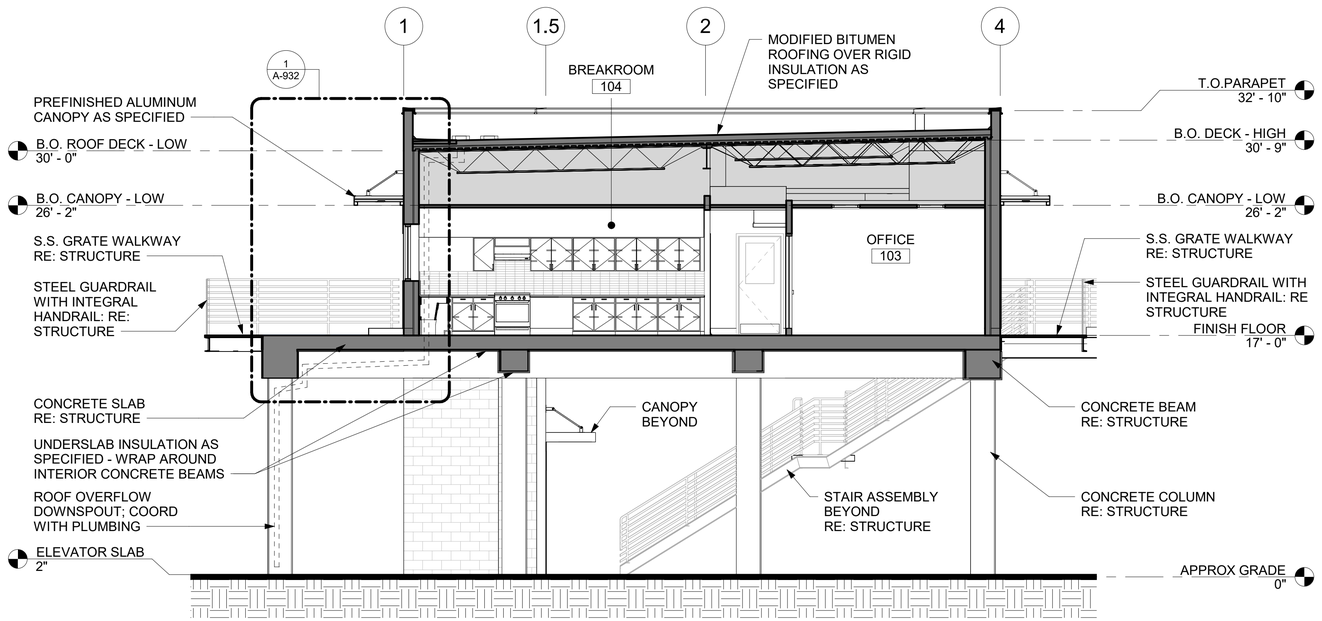


2 BUILDING SECTION

A-930 SCALE: 3/16" = 1'-0"



1 BUILDING SECTION

A-930 SCALE: 3/16" = 1'-0"

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PLANT IMPROVEMENTS

CONTROL BUILDING
SECTIONS

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KHA NO.:	067812104

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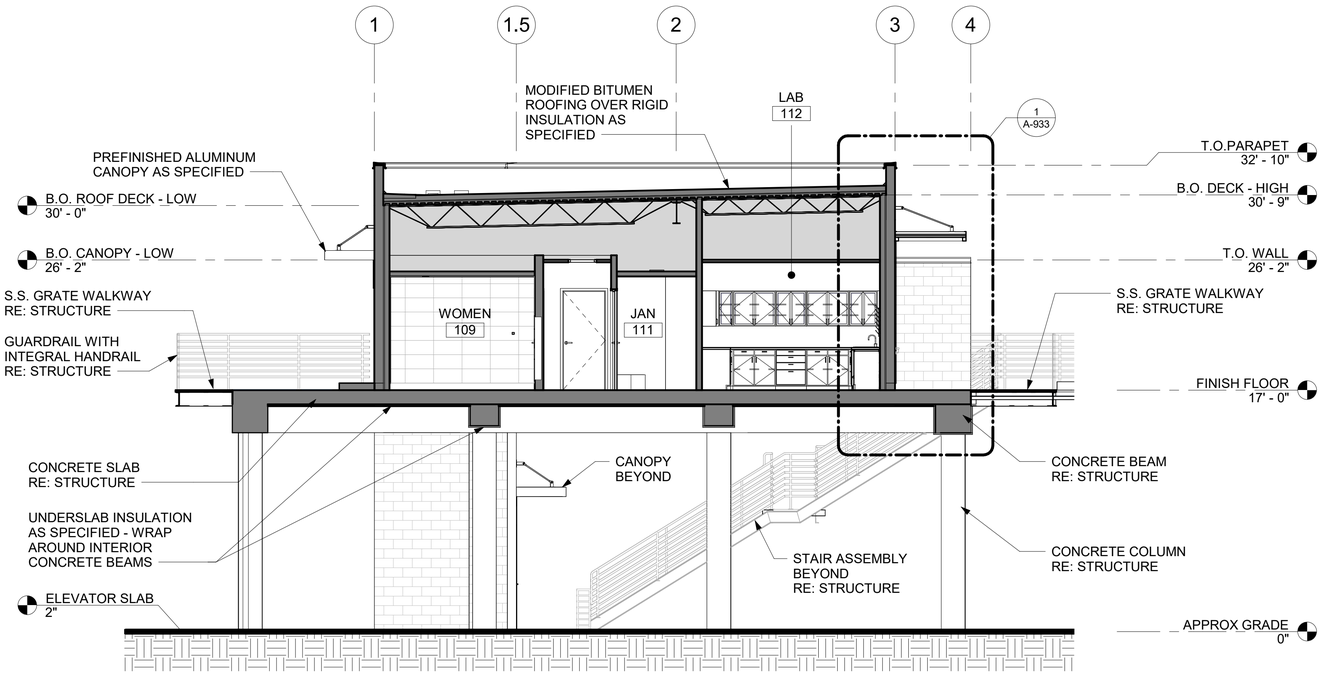
A-930

S:\Temp Revit Files\Trevor's Local\21051.01 West University WWTP_CENTRAL_trevor.ANKBG.rvt



1 BUILDING SECTION

A-931 SCALE: 3/16" = 1'-0"

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825 W Vickery Blvd, Suite 100
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A-931

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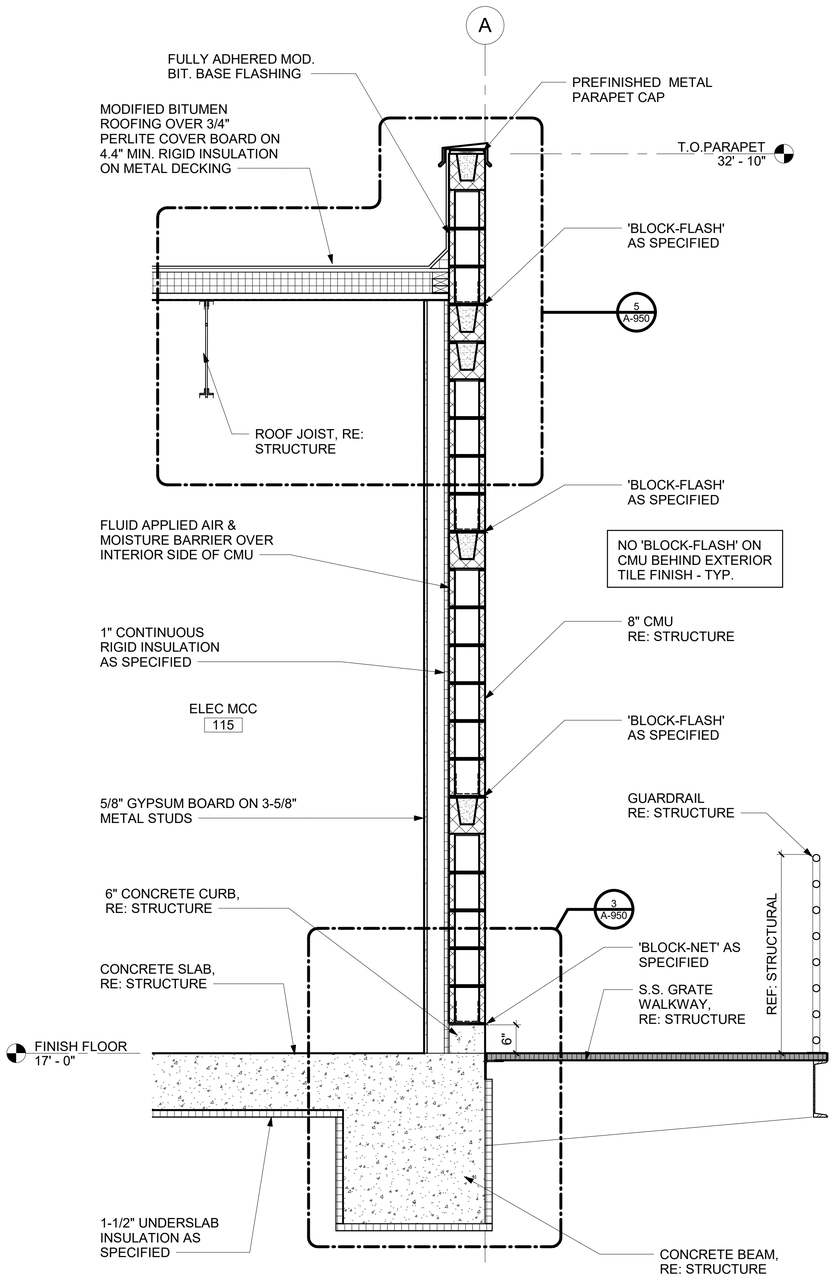
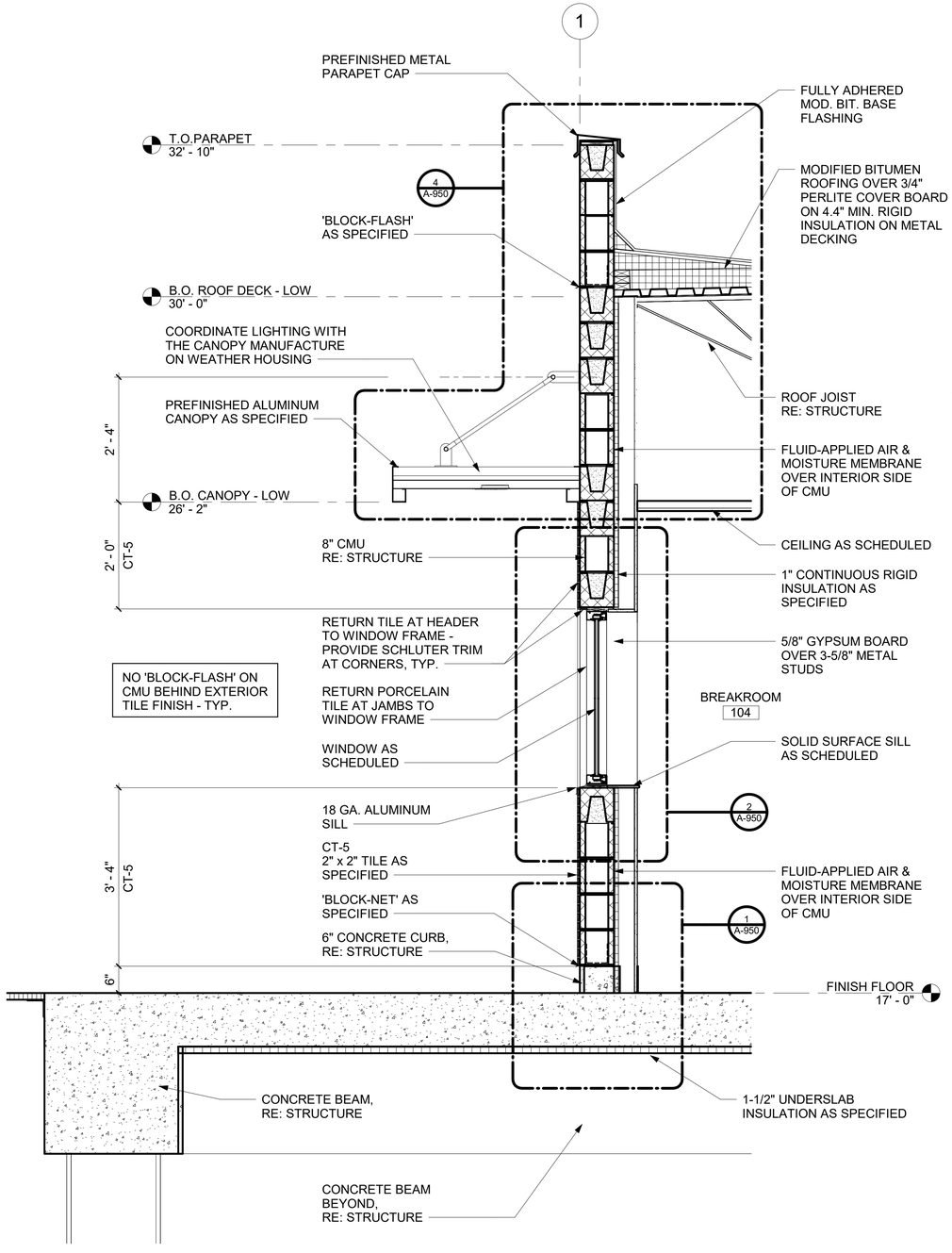


2 WALL SECTION

A-932 SCALE: 3/4" = 1'-0"



1 WALL SECTION

A-932 SCALE: 3/4" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES

(SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75

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No.	Revisions	By	Date

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING WALL SECTIONS

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A-932

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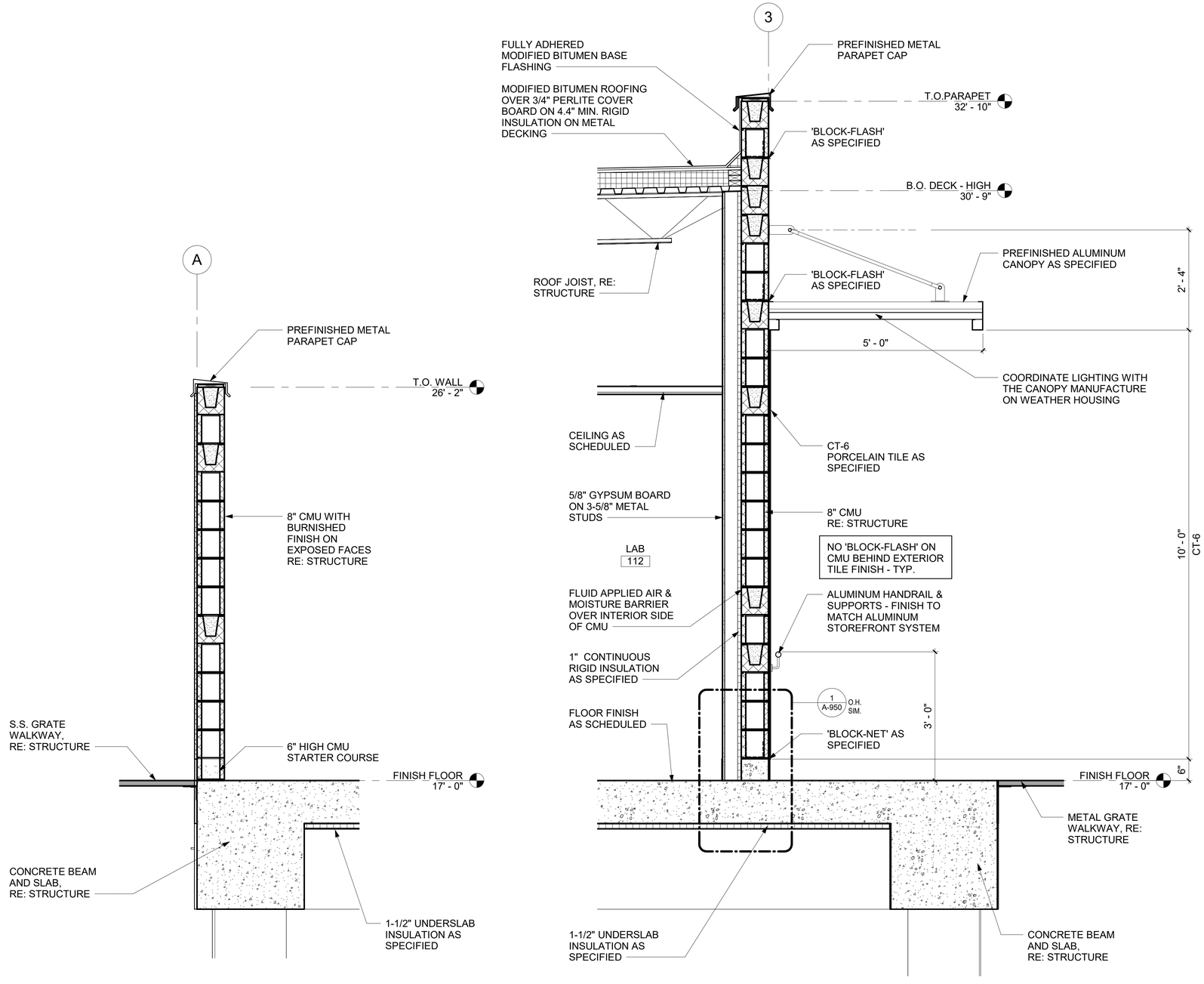

2 WALL SECTION

A-933 SCALE: 3/4" = 1'-0"

1 WALL SECTION

A-933 SCALE: 3/4" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES (SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75

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A-933

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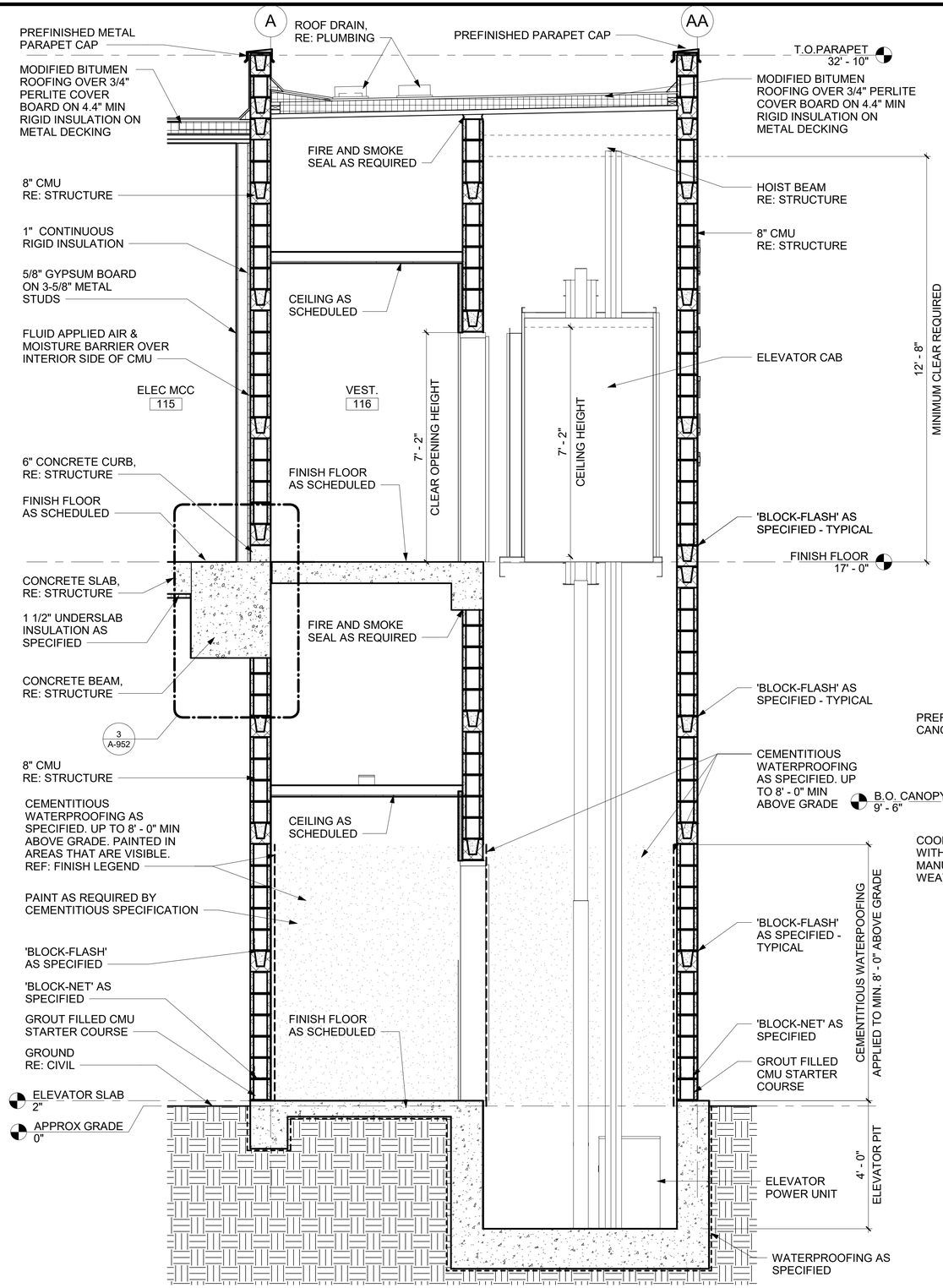
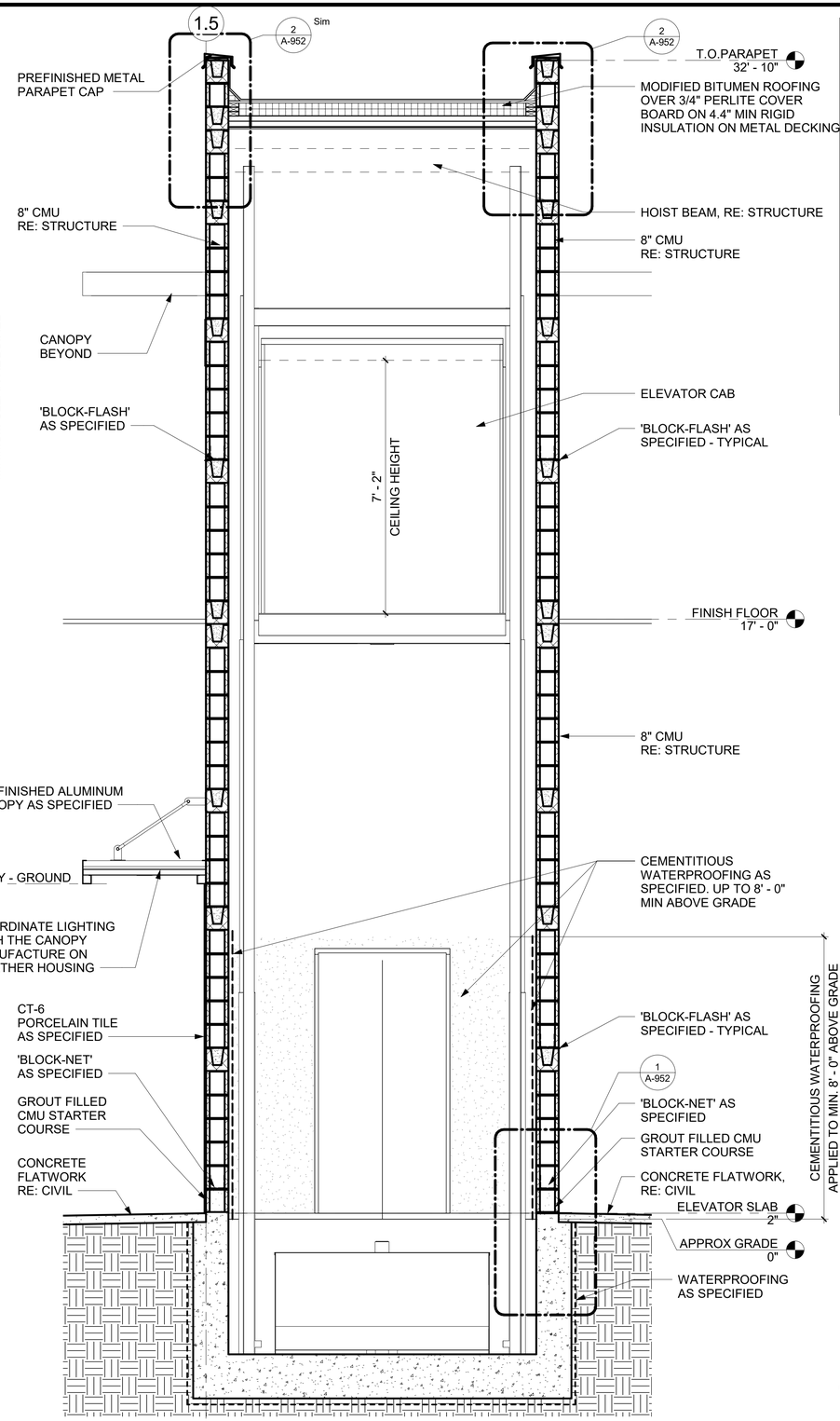


1 WALL SECTION

A-934 SCALE: 1/2" = 1'-0"



2 WALL SECTION

A-934 SCALE: 1/2" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES (SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75

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CONTROL BUILDING WALL SECTIONS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

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A-934

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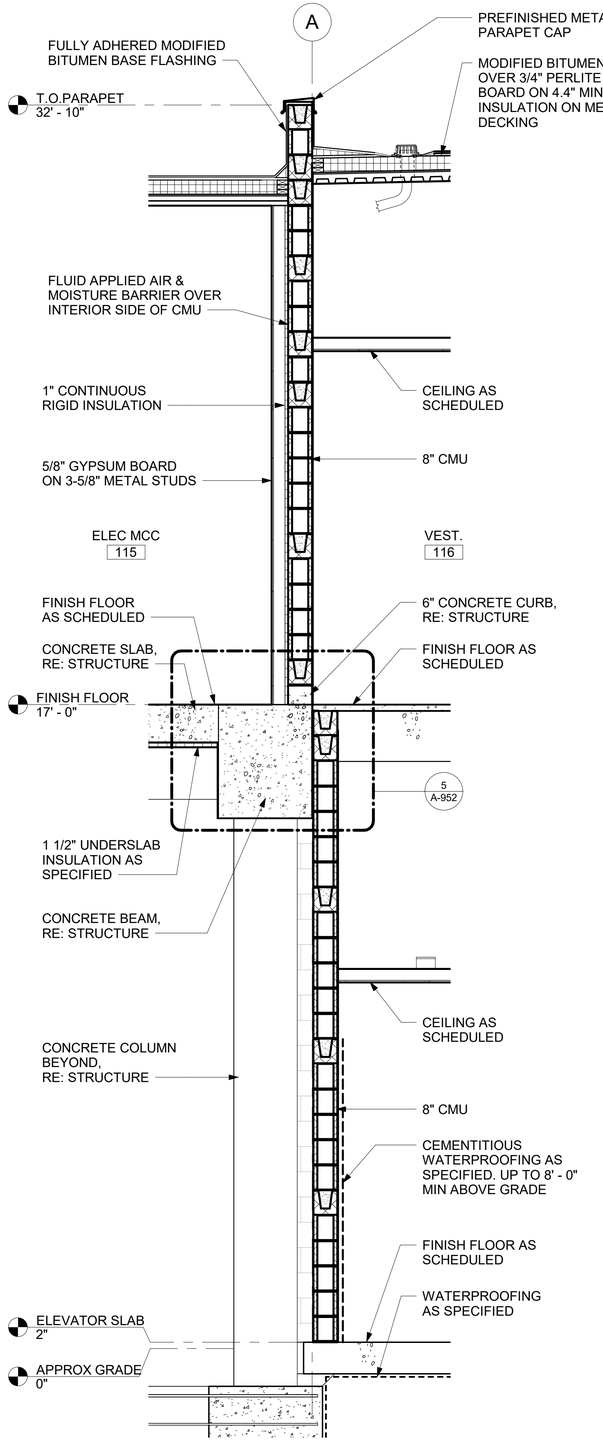
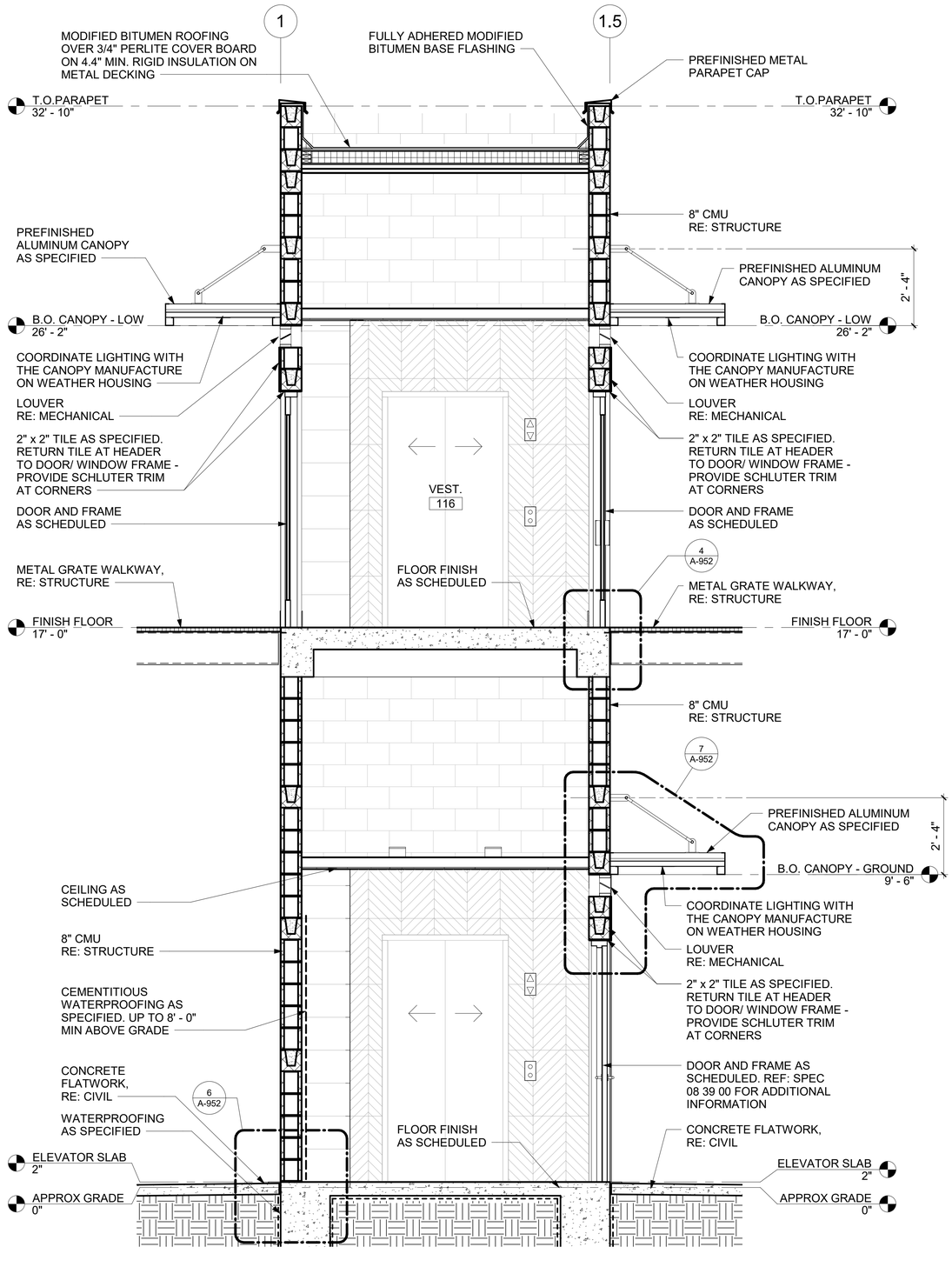


2 WALL SECTION

A-935 SCALE: 1/2" = 1'-0"



1 WALL SECTION

A-935 SCALE: 1/2" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES
(SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75

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A-935

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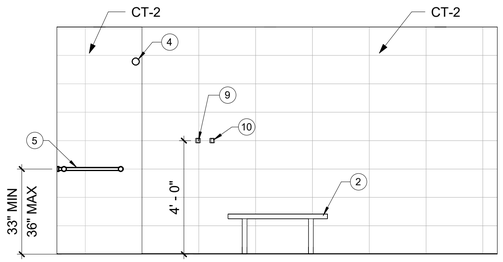
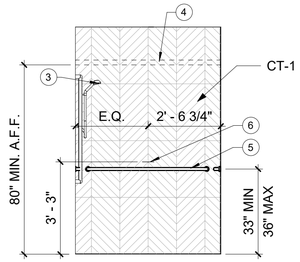


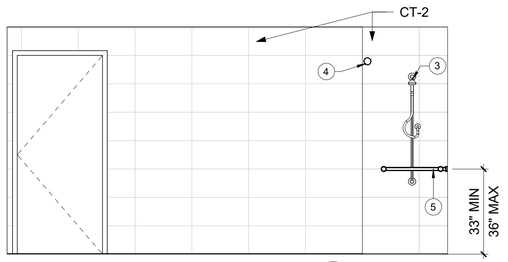
13 SHOWER 110 N

A-940 SCALE: 3/8" = 1'-0"



12 SHOWER 110 W

A-940 SCALE: 3/8" = 1'-0"

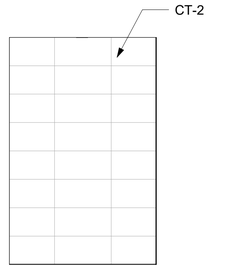


11 SHOWER 110 S

A-940 SCALE: 3/8" = 1'-0"

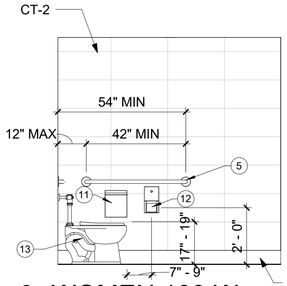
ENLARGED FLOOR PLAN NOTES

1 MOP SINK AS SPECIFIED
2 BENCH AS SPECIFIED.
3 ADA SHOWER - PROVIDE SHOWER ACCESSORIES AS SPECIFIED.
4 SHOWER ROD AND CURTAIN AS SPECIFIED. ENSURE SHOWER CURTAIN WALL IS AT LEAST 80" AFF.
5 GRAB BARS; TYPICAL.
6 PROVIDE SOAP DISH AND BAR AS SPECIFIED.
7 LINEAR SHOWER DRAIN - REFER TO DETAIL 4/A-951 AND PLUMBING FOR ADDITIONAL INFORMATION
8 SLOPING EDGE TILE AT SHOWER THRESHHOLD AS SPECIFIED, REFER TO FINISH DETAILS SHEET.
9 TOWEL HOOK AT 48" AFF.
10 ROBE HOOK AS SPECIFIED.
11 SANITARY NAPKIN WASTE RECEPTACLE AS SPECIFIED.
12 TOILET PAPER DISPENSER AS SPECIFIED.
13 WATER CLOSET, RE: PLUMBING
14 WALL-HUNG SINK, RE: PLUMBING.
15 MIRROR AS SPECIFIED.
16 SOAP DISPENSER AS SPECIFIED.
17 RECESSED PAPER TOWEL DISPENSER AND TRASH RECEPTICAL AS SPECIFIED.
18 ELECTRIC WATER COOLER AS SPECIFIED, RE: PLUMBING.
19 MIST DEODORIZER.
20 DOUBLE-TIER 72"H x15"Wx18"D LOCKERS AS SPECIFIED.
21 URINAL, RE: PLUMBING.



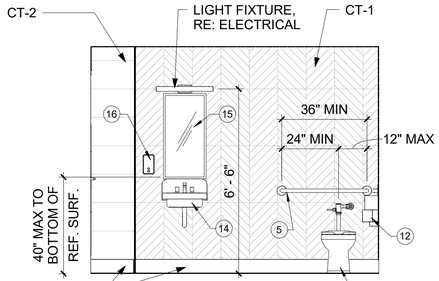
10 SHOWER 110 E

A-940 SCALE: 3/8" = 1'-0"



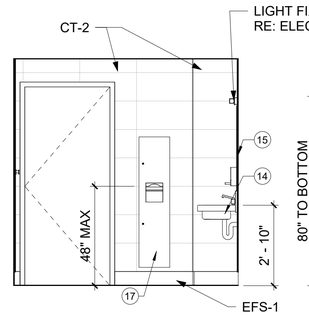
9 WOMEN 109 W

A-940 SCALE: 3/8" = 1'-0"



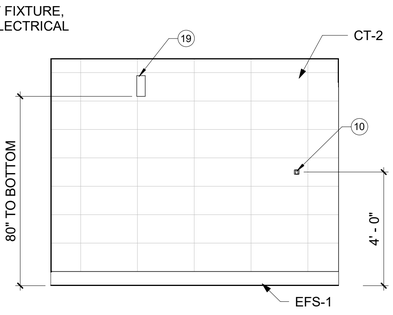
8 WOMEN 109 S

A-940 SCALE: 3/8" = 1'-0"



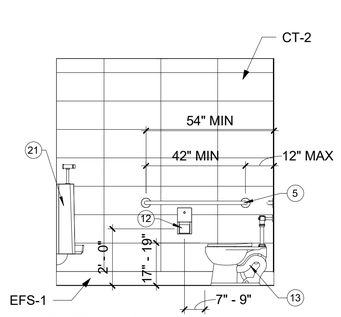
7 WOMEN 109 E

A-940 SCALE: 3/8" = 1'-0"



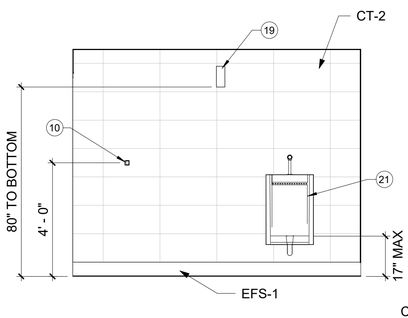
6 WOMEN 109 N

A-940 SCALE: 3/8" = 1'-0"



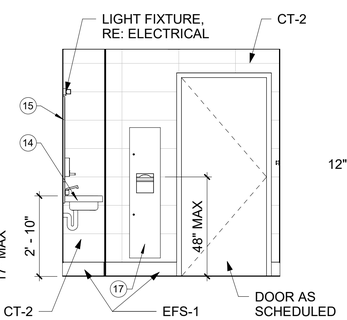
5 MEN 108 W

A-940 SCALE: 3/8" = 1'-0"



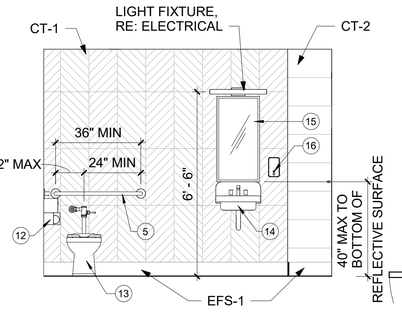
4 MEN 108 S

A-940 SCALE: 3/8" = 1'-0"



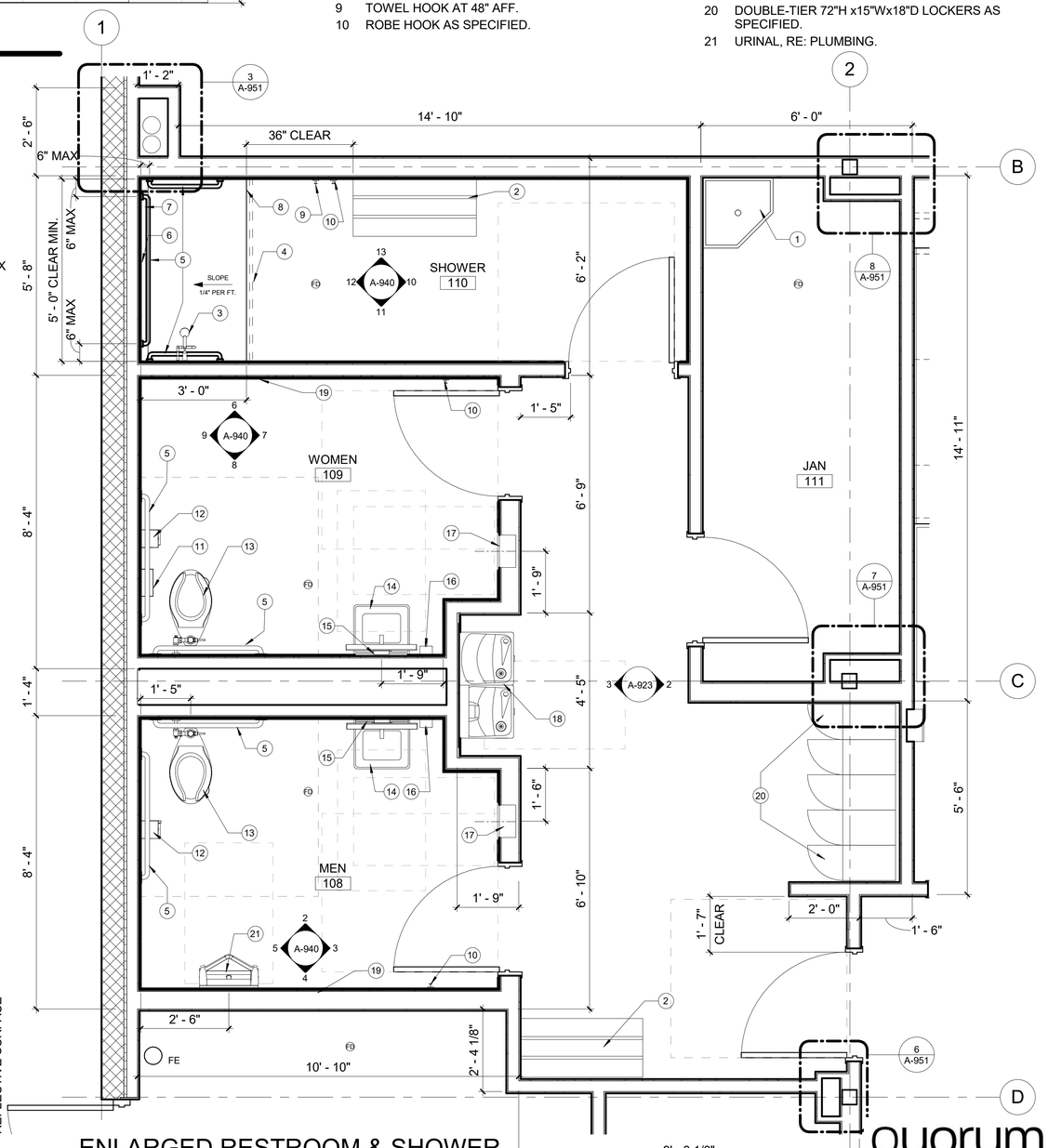
3 MEN 108 E

A-940 SCALE: 3/8" = 1'-0"



2 MEN 108 N

A-940 SCALE: 3/8" = 1'-0"



1 ENLARGED RESTROOM & SHOWER PLAN

A-940 SCALE: 1/2" = 1'-0"

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No.	Revisions	By	Date

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DAVID G. DUMAN
14305
STATE OF TEXAS
David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING
ENLARGED RESTROOM PLAN

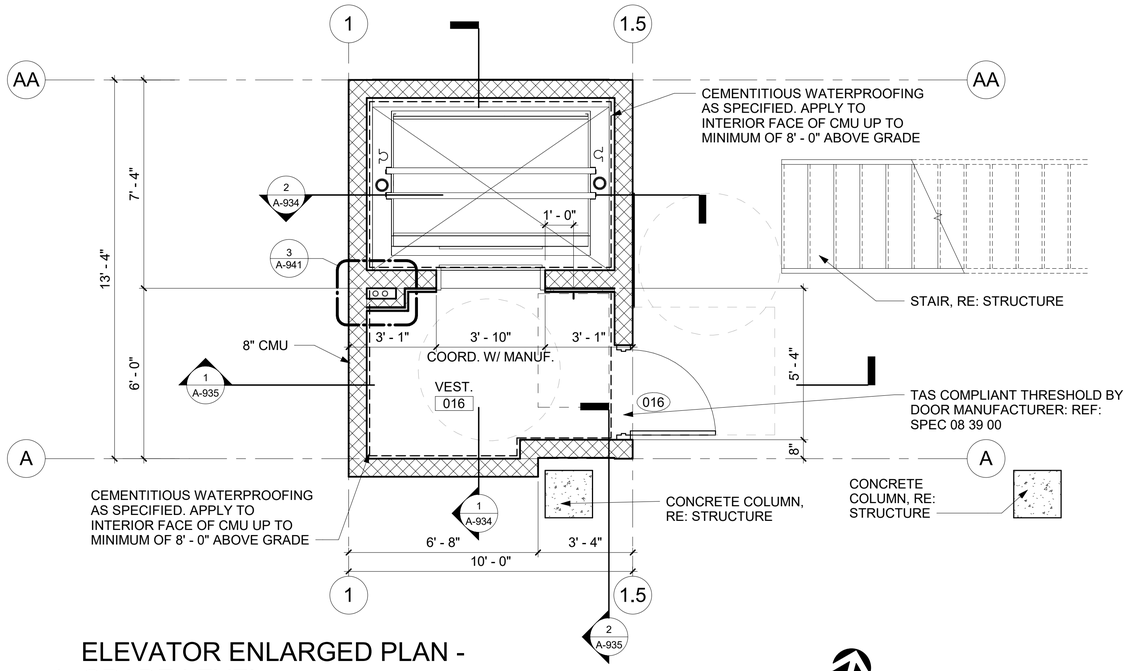
DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-940

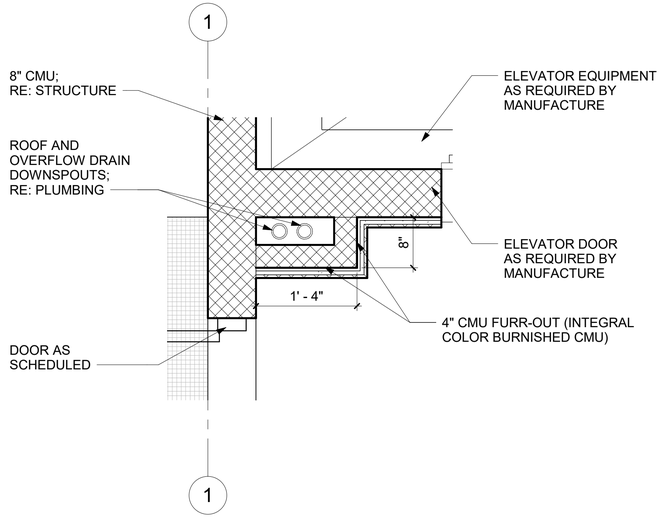
quorum
ARCHITECTURE · INTERIOR DESIGN
825 W Vickery Blvd, Suite 100
Fort Worth, TX 76104
(817) 738-8095

S:\Temp Revit Files\Trevor's Local\21051.01 West University WWTP_CENTRAL_trevor.ANKBG.rvt



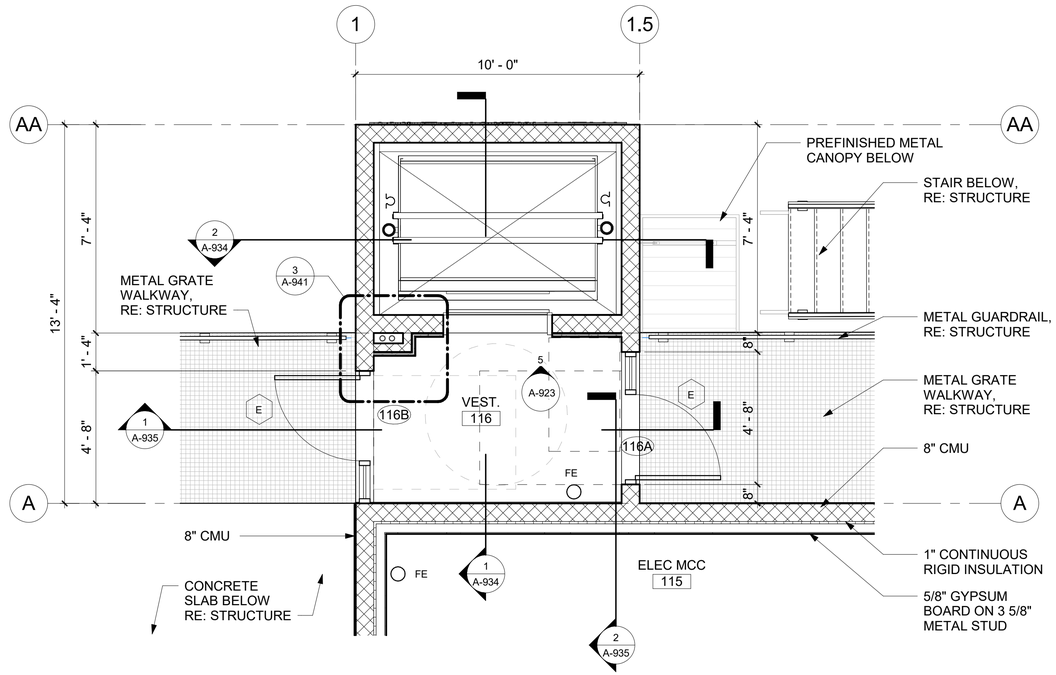
4 ELEVATOR ENLARGED PLAN - GRADE LEVEL

A-941 SCALE: 3/8" = 1'-0"



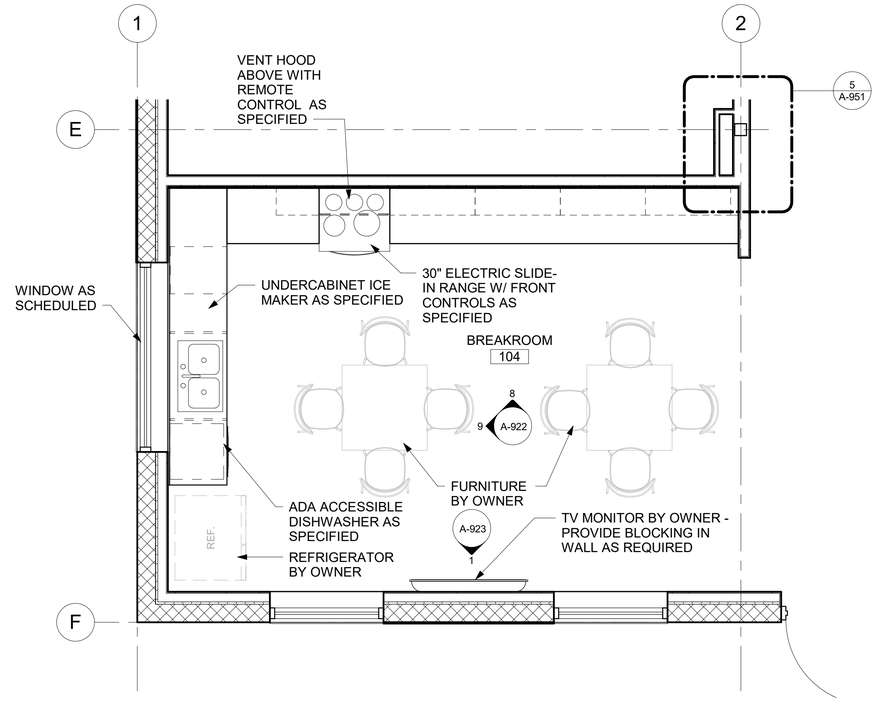
3 PLAN DETAIL

A-941 SCALE: 1" = 1'-0"



2 ELEVATOR ENLARGED PLAN - FINISH FLOOR LEVEL

A-941 SCALE: 3/8" = 1'-0"



1 BREAK ROOM ENLARGED PLAN

A-941 SCALE: 3/8" = 1'-0"

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Kimley»Horn
11700 Katy Freeway, Suite 800, Houston, TX 77079
P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

REGISTERED ARCHITECT
DAVID G. DUMAN
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David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING ENLARGED PLAN

DATE:	AUGUST 10, 2023
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KHA NO.:	067812104

SHEET
A-941

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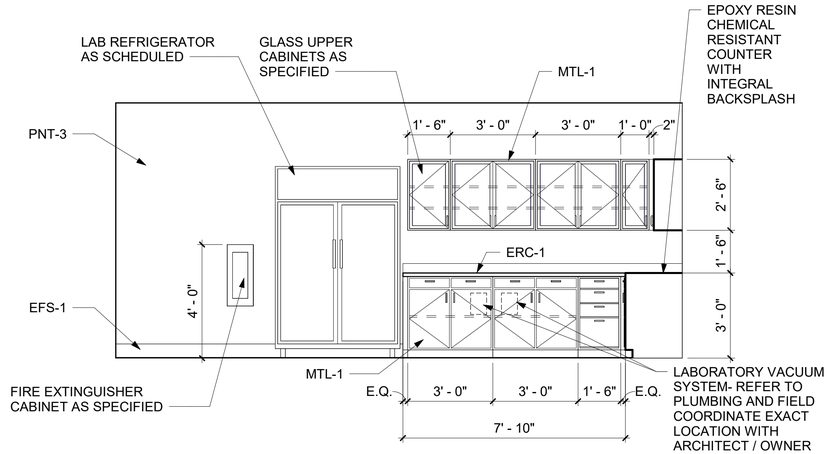
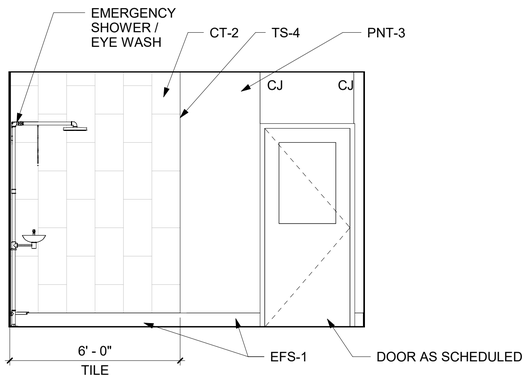
NO.	EQUIPMENT	FURNISH / INSTALL	MODEL	COMMENTS
1	EMERGENCY EYE WASH STATION / SHOWER	CF / CI		WITH FD RE: PLUMBING
2	LAB OVEN	CF / CI	QUINCY LAB OVEN 40AFE	INTERIOR 18 x 19.8 x 14"
3	FUME HOOD	CF / CI	LABCONCO PROTECTOR PREMIER CHEMICAL FUME HOOD 48" #10040040	INCLUDE BUILT-IN EXHAUST BLOWER. INCLUDE FILLER PANEL ON BASE CABINETS
4	LAB FURNACE	CF / CI	THERMO SCIENTIFIC THERMOLYNE SMALL BENCHTOP FURNACE FB1315M	INTERIOR 5 x 4 x 3.8"
5	DESICCATOR CABINETS	OF / OI	COLE-PARMER DRY-KEEPER H42056001 DESICCATOR CABINETS	
6	PROCESS CENTRIFUGE	OF / OI	RAVEN F - 10300	
7	BALANCE	CF / CI	METTLER TOLEDO ME104TE	
8	DRYING RACK	CF / CI	FISHERBRAND (HIPS) S29129	APPROX 25" H x 18" W
9	VACUUM FILTRATION KIT	OF / OI	ROCKER / SOUTHERN LABWARE SKU# 47GFS300	
10	WELCH DIAPHRAGM VACUUM PUMP	CF / CI	DRYFAST MODEL 2037	APPROX 25" H x 18" W - LOCATED INSIDE BASE CABINETS - REFER TO PLUMBING
11	LAB REFRIGERATOR	CF / CI	THERMO SCIENTIFIC TSG SERIES GENERAL PURPOSE LABORATORY REFRIGERATOR TSG45RPLA	SLIDING GLASS DOOR
12	UNDER COUNTER ICE MAKER	CF / CI	KITCHEN AIDE KUID508HPS	17 7/8" W x 33 5/8" H x 23 19/32" D
13	MICROSCOPE	CF / CI	NIKON CILPLUS 2CE-MQWK-2	INTREGAL WITH LENSES AS SPECIFIED.



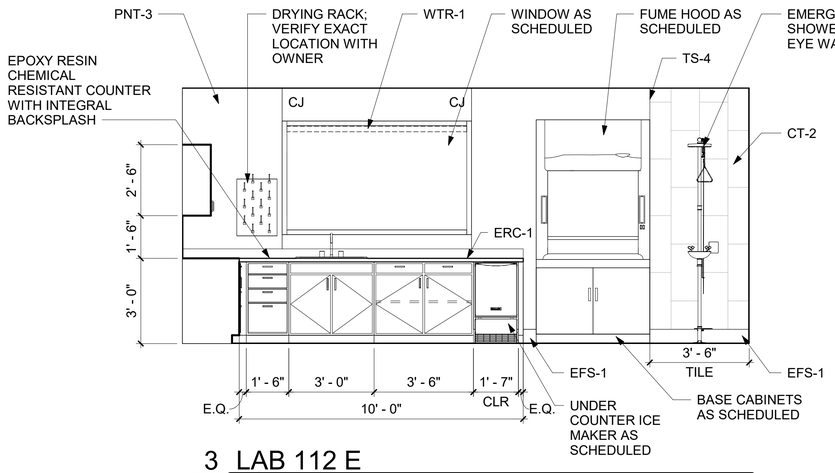
5 LAB 112 W

A-942 SCALE: 3/8" = 1'-0"



4 LAB 112 S

A-942 SCALE: 3/8" = 1'-0"



3 LAB 112 E

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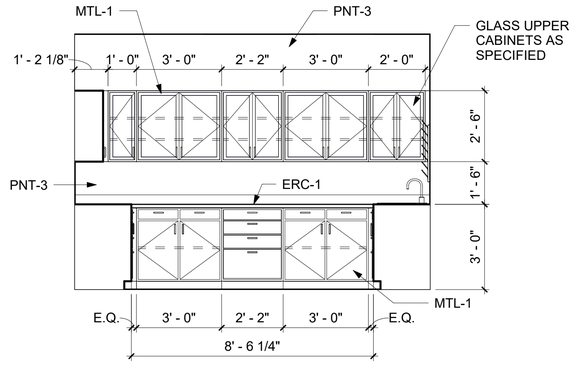
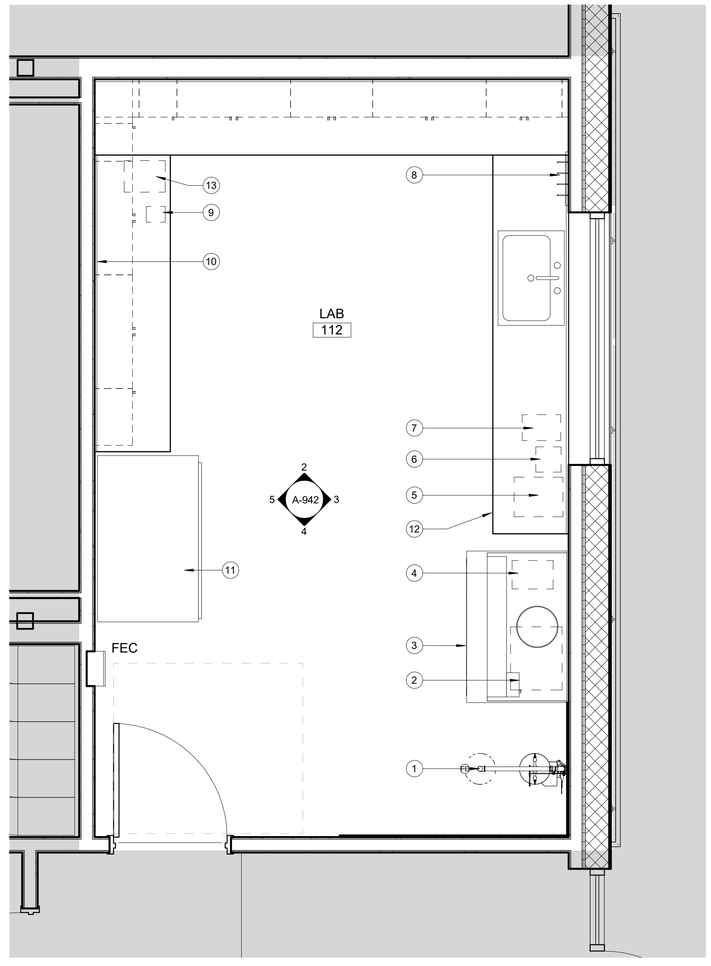


2 LAB 112 N

A-942 SCALE: 3/8" = 1'-0"



1 LAB EQUIPMENT PLAN

A-942 SCALE: 1/2" = 1'-0"

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11700 Katy Freeway, Suite 800, Houston, TX 77079
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STATE OF TEXAS
David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING
LAB EQUIPMENT PLAN

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-942

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Fort Worth, TX 76104
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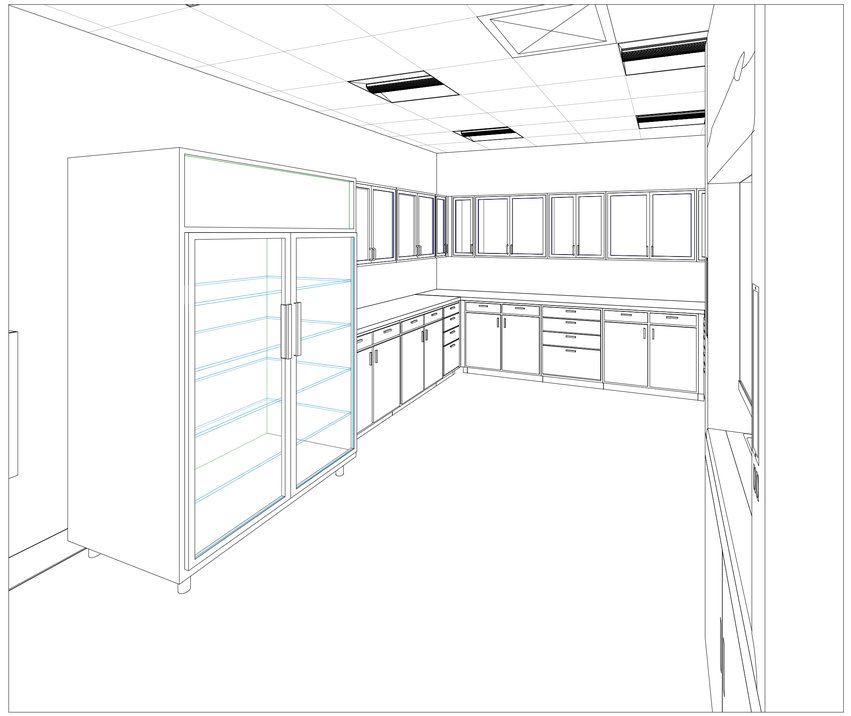
4 LAB VIEW 4

A-943 SCALE: N.T.S.



3 LAB VIEW 3

A-943 SCALE: N.T.S.

2 LAB VIEW 2

A-943 SCALE: N.T.S.

1 LAB VIEW 1

A-943 SCALE: N.T.S.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING LAB VIEWS

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A-943

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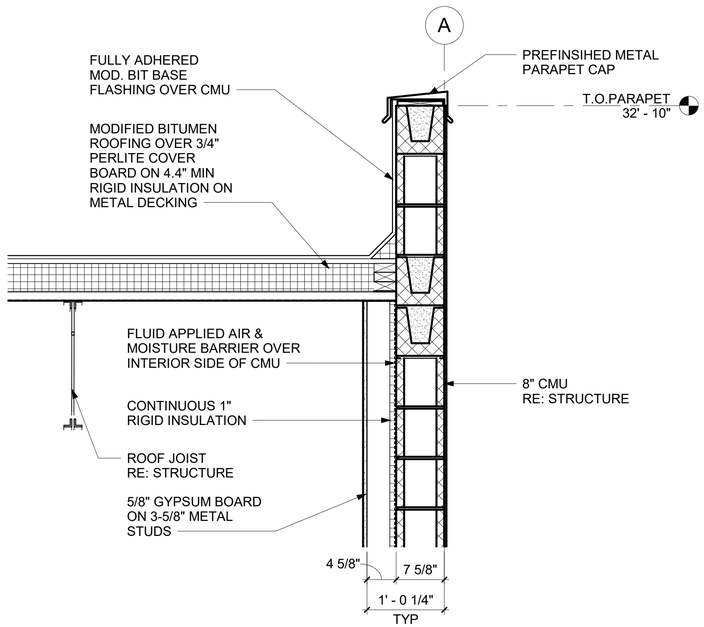
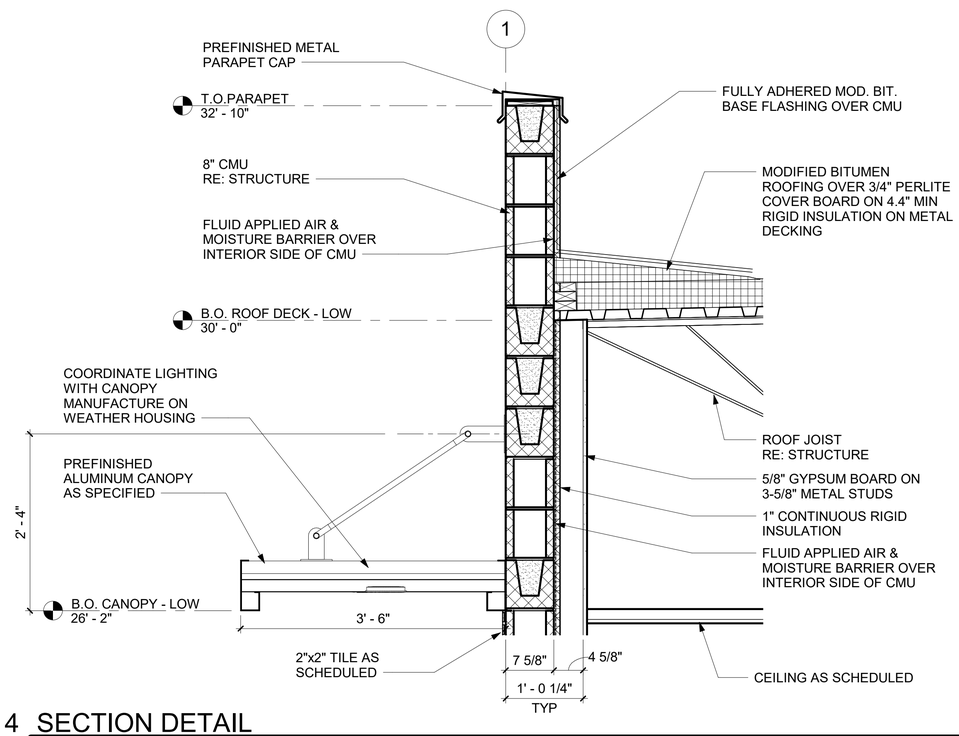


5 SECTION DETAIL

A-950 SCALE: 1" = 1'-0"



4 SECTION DETAIL

A-950 SCALE: 1" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

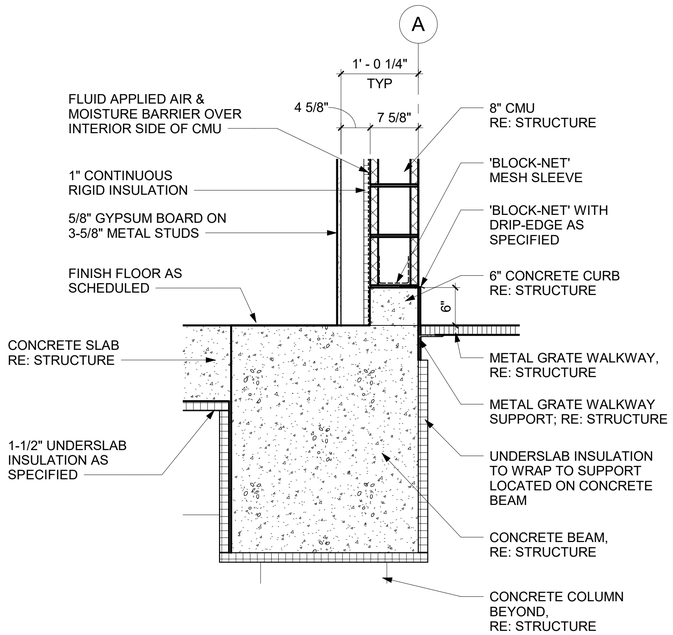
CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

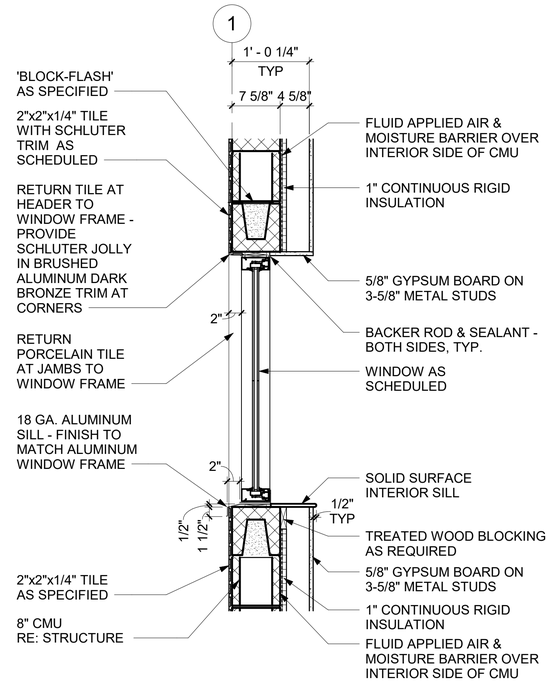
WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES
(SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75



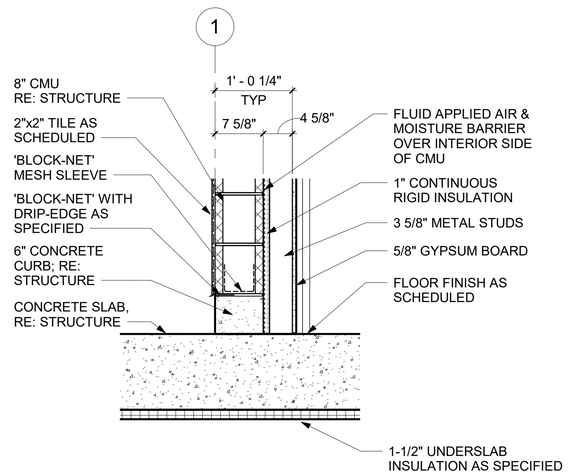
3 SECTION DETAIL

A-950 SCALE: 1" = 1'-0"



2 SECTION DETAIL

A-950 SCALE: 1" = 1'-0"



1 SECTION DETAIL

A-950 SCALE: 1" = 1'-0"

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REGISTERED ARCHITECT DAVID G. DUMAN 14305 STATE OF TEXAS
David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING DETAILS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
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SHEET
A-950

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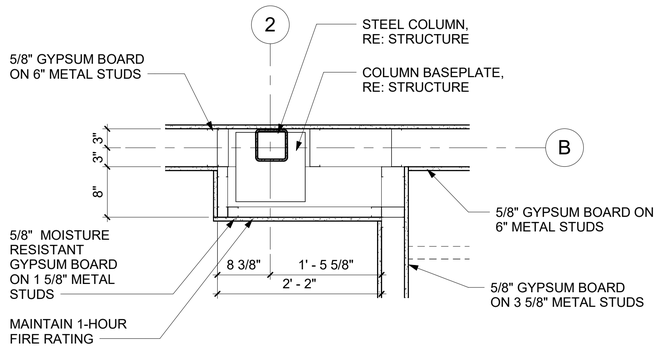
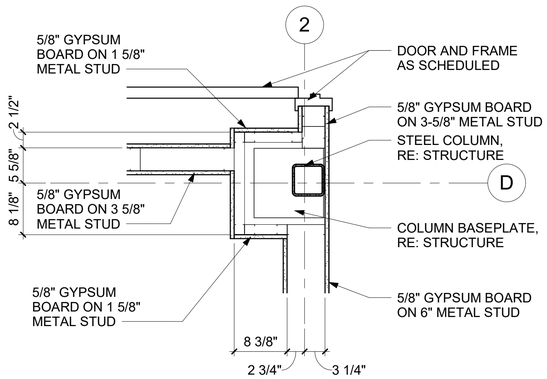


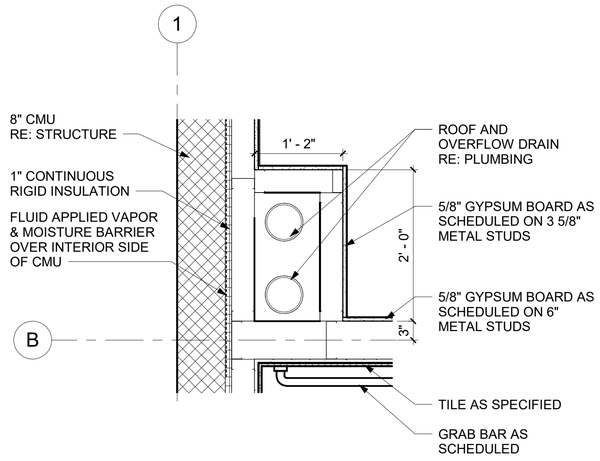
8 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"



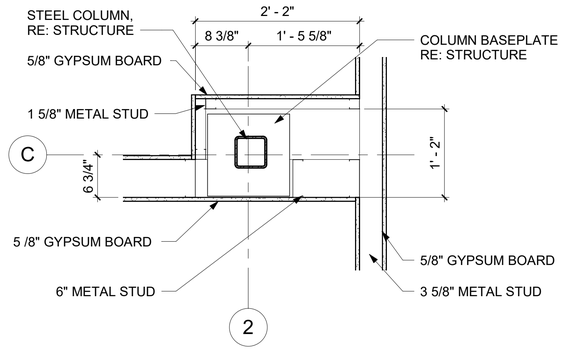
6 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"



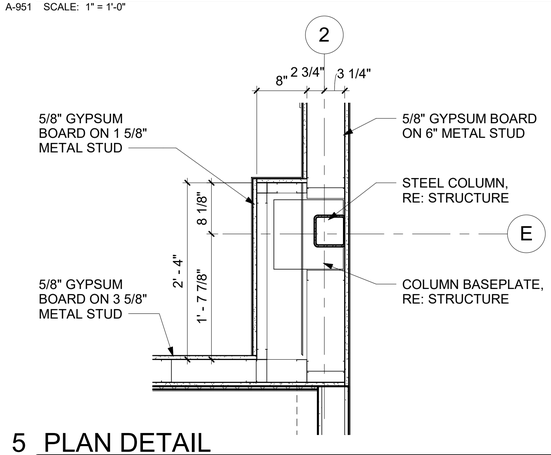
3 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"



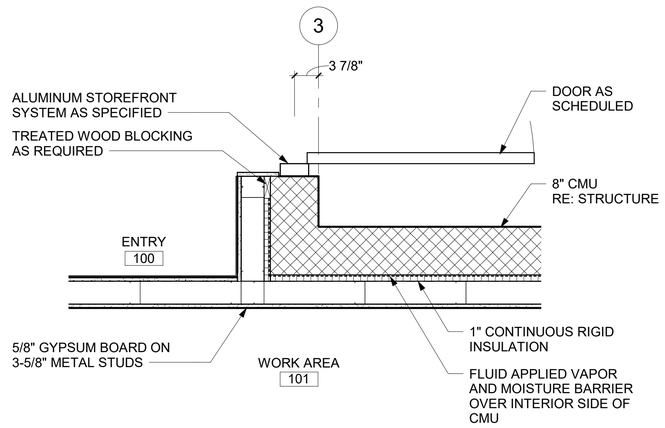
7 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"



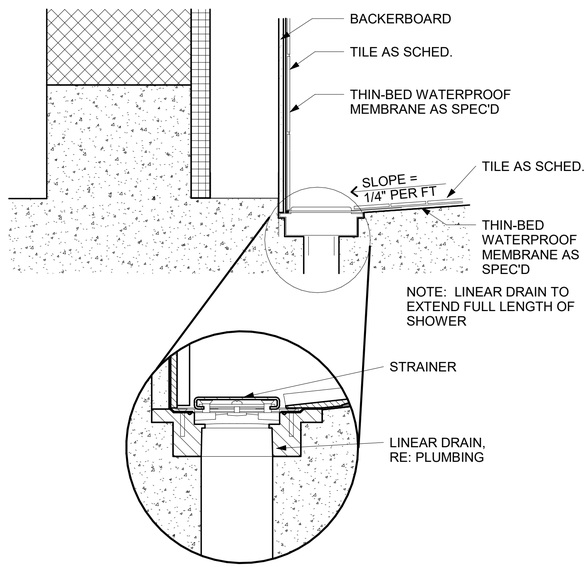
5 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"



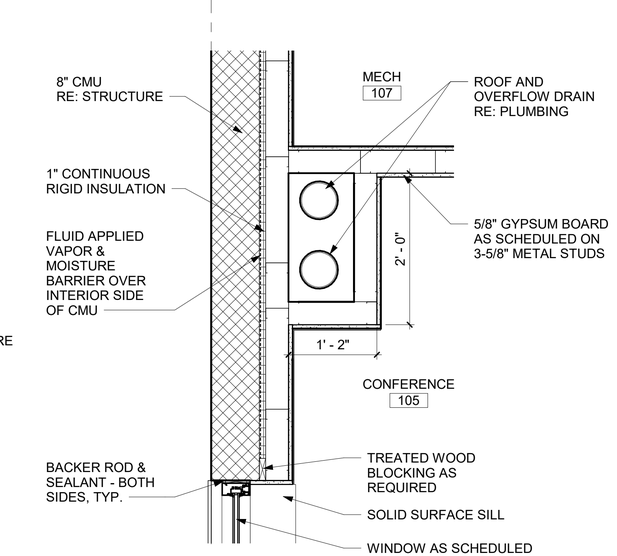
2 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"



4 SHOWER DRAIN DETAIL

A-951 SCALE: 3" = 1'-0"



1 PLAN DETAIL

A-951 SCALE: 1" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES (SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75

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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING DETAILS

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
AUGUST 10, 2023	DGD	TAJ	WRM	067812104

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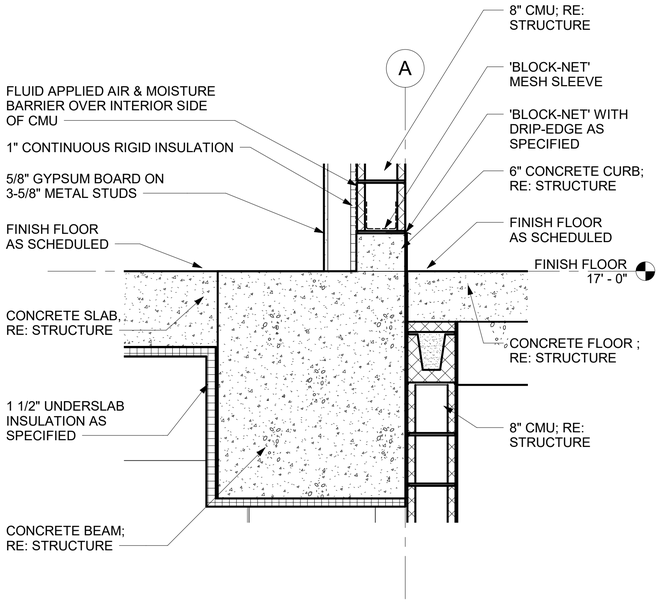
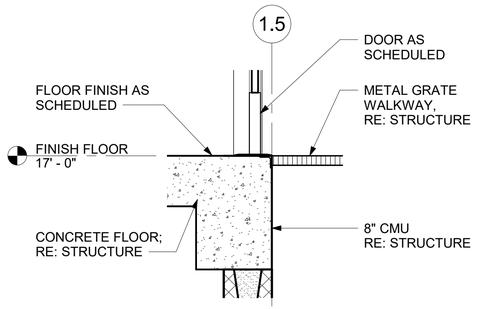


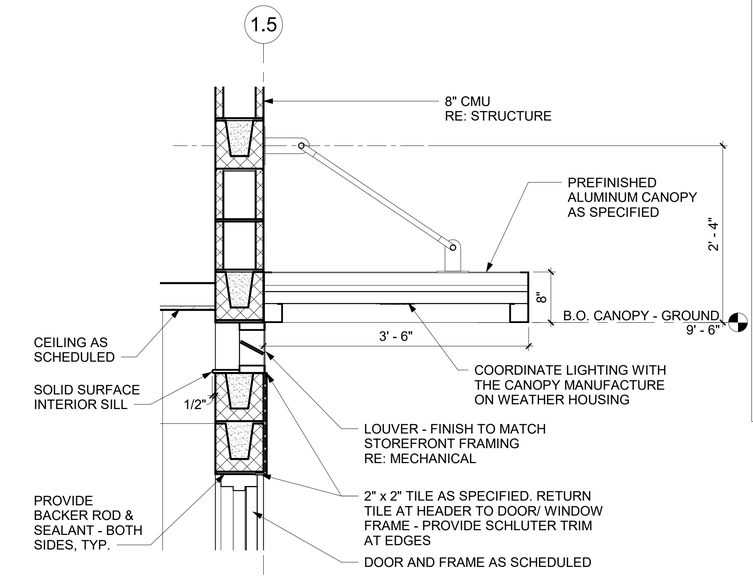
5 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"



4 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"



7 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
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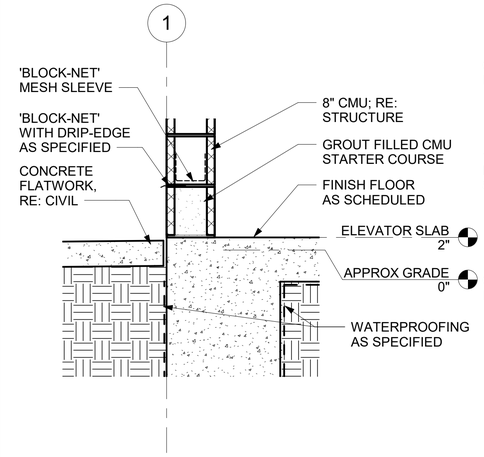
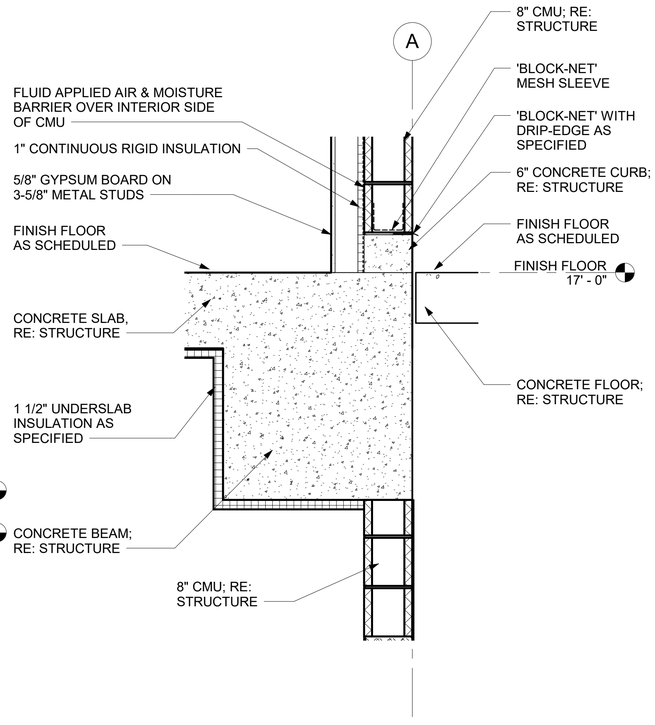


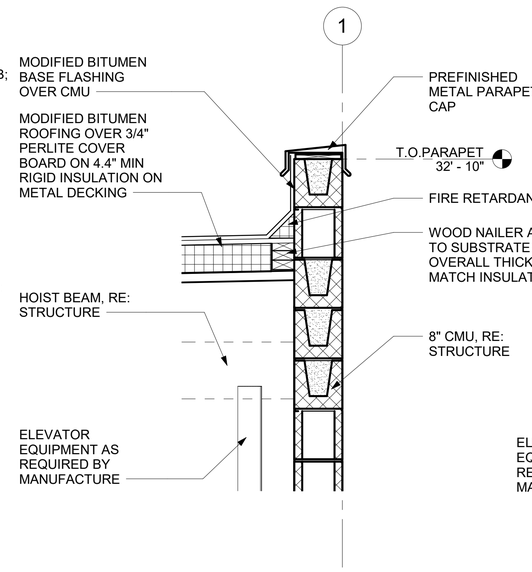
6 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"



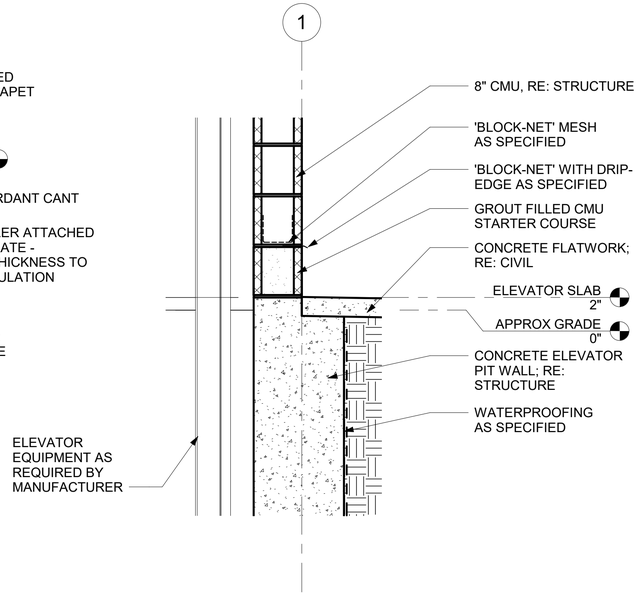
3 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"



2 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"



1 SECTION DETAIL

A-952 SCALE: 1" = 1'-0"

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David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING DETAILS

DATE:	AUGUST 10, 2023
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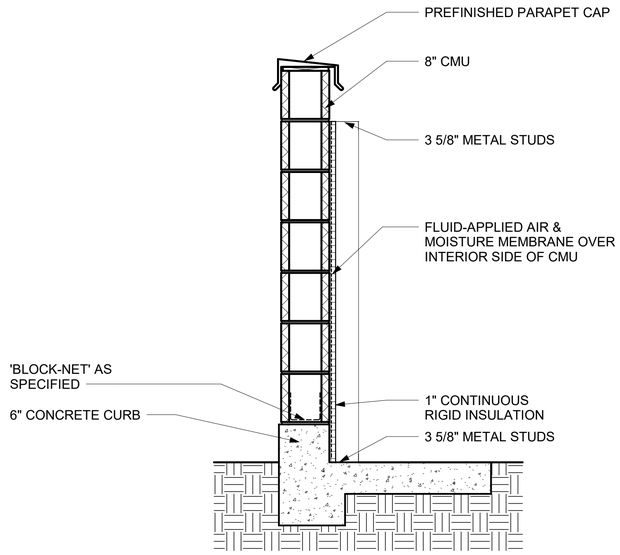
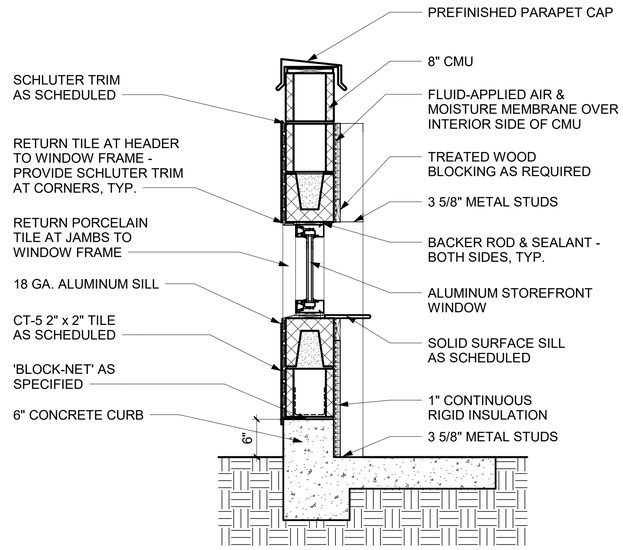


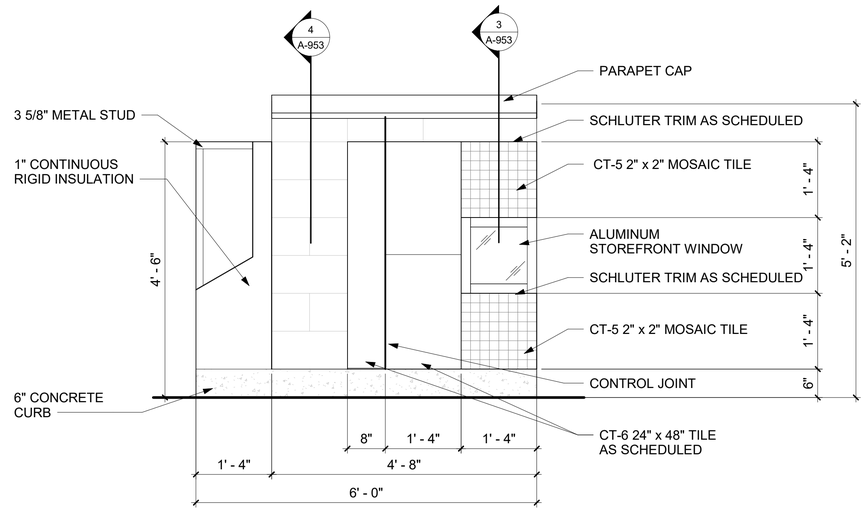
4 MOCK UP WALL SECTION

A-953 SCALE: 1" = 1'-0"



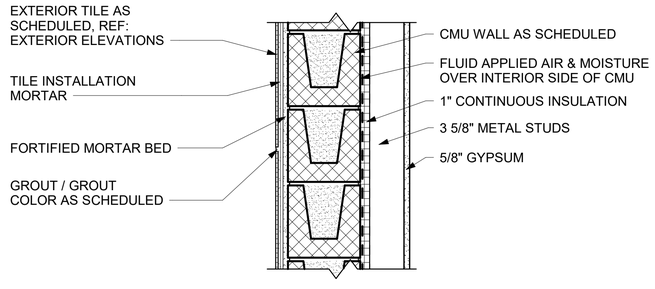
3 MOCK UP WALL SECTION

A-953 SCALE: 1" = 1'-0"



2 MOCK UP WALL ELEVATION

A-953 SCALE: 3/4" = 1'-0"



1 EXTERIOR TILE DETAIL

A-953 SCALE: 1 1/2" = 1'-0"

BUILDING ASSEMBLY ENVELOPE VALUES

CMU - PARTIALLY GROUTED

1" CONTINUOUS RIGID INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 6.5
- U-VALUE: 0.154

1 1/2" UNDERSLAB INSULATION (SPEC 07 21 00):
- MIN. R-VALUE: 9.6
- U-VALUE: 0.104

WINDOWS (SPEC 08 80 00):
- U-VALUE: 0.29
- SHGC: 0.23

ROOF ASSEMBLY VALUES (SPEC 07 52 00)
- MIN. R-VALUE: 26
- U-VALUE: 0.039
- MIN. SRI: 76
- MIN. THERMAL EMITTANCE FACTOR: 0.75

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TBPE No. 928

No.	Revisions	By	Date

REGISTERED ARCHITECT DAVID G. DUMAN 14305 STATE OF TEXAS

David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING DETAILS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET

A-953

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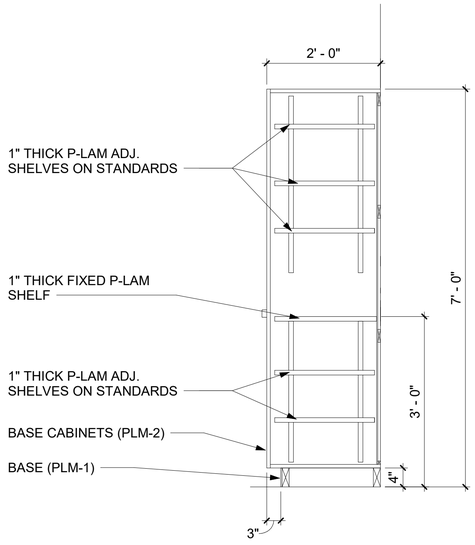
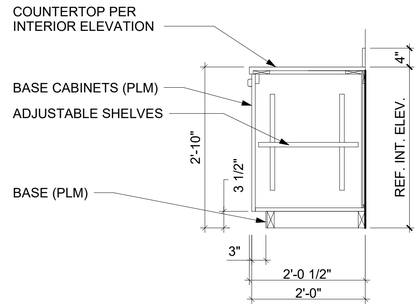


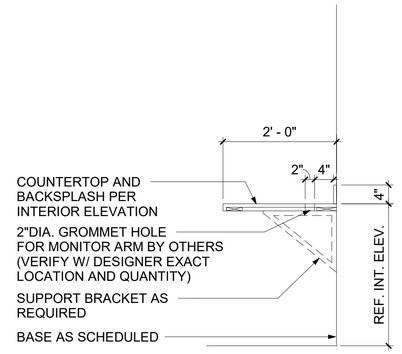
7 MILLWORK FULL HEIGHT

A-954 SCALE: 3/4" = 1'-0"



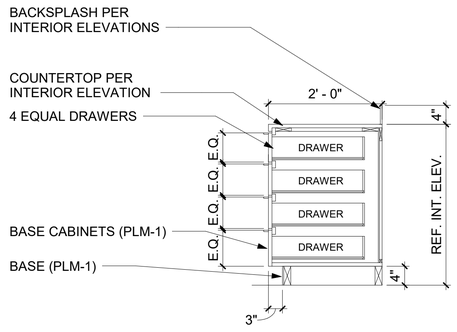
6 MILLWORK BASE DETAIL

A-954 SCALE: 3/4" = 1'-0"



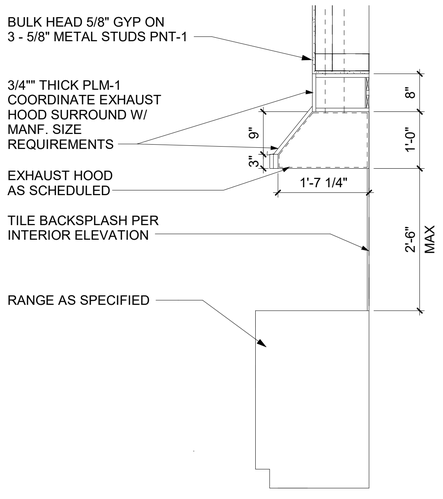
5 MILLWORK SECTION DETAIL

A-954 SCALE: 3/4" = 1'-0"



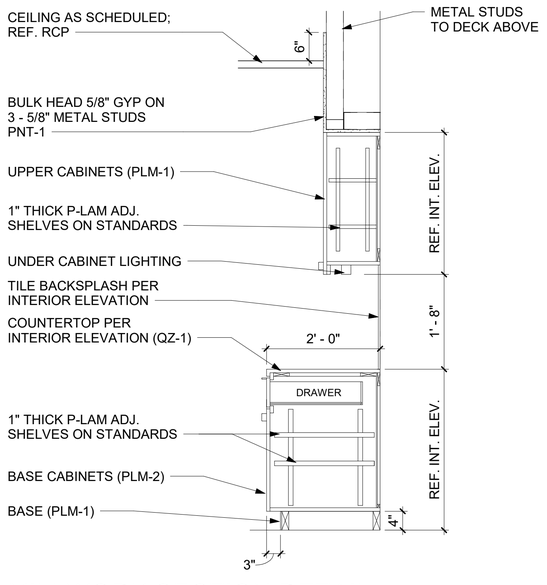
4 MILLWORK SECTION DETAIL

A-954 SCALE: 3/4" = 1'-0"



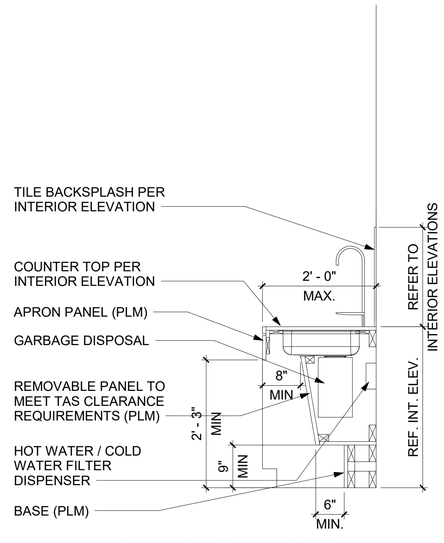
3 VENT HOOD DETAIL

A-954 SCALE: 3/4" = 1'-0"



2 MILLWORK SECTION DETAIL

A-954 SCALE: 3/4" = 1'-0"



1 MILLWORK SECTION DETAIL

A-954 SCALE: 3/4" = 1'-0"

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14305
STATE OF TEXAS
David Duman
2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING
MILLWORK DETAILS

DATE:	AUGUST 10, 2023
DESIGN:	DGD
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CHECKED:	WRM
KHA NO.:	067812104

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A-954

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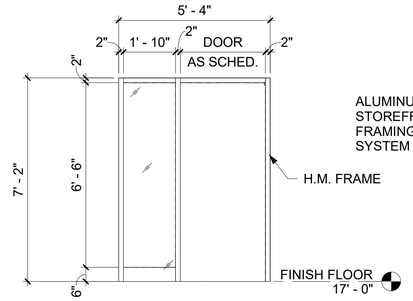
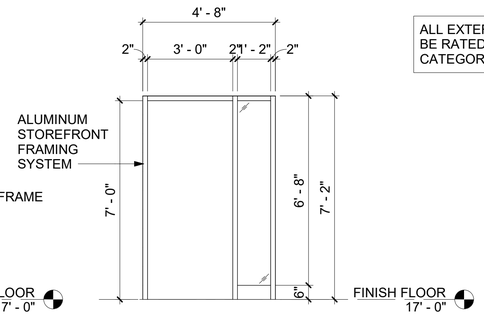


F FRAME TYPE F

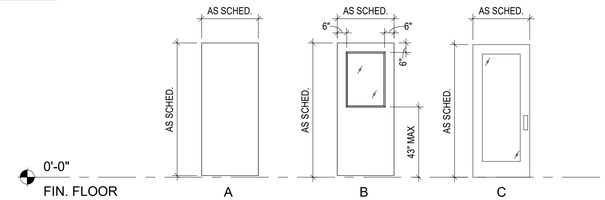
A-960 SCALE: 3/8" = 1'-0"



E FRAME TYPE E

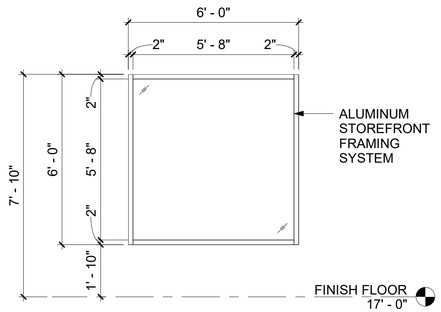
A-960 SCALE: 3/8" = 1'-0"

ALL EXTERIOR GLAZING SHALL BE RATED WIND ZONE 3, RISK CATEGORY III, MISSLE LEVEL 3



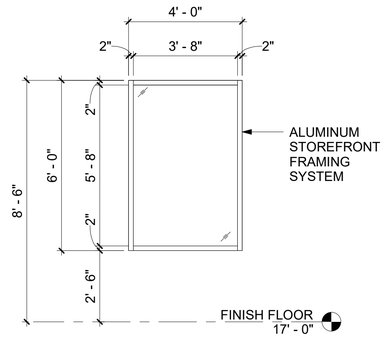
NOTE: ALL GLASS 1/4" TEMPERED

DOOR TYPE LEGEND



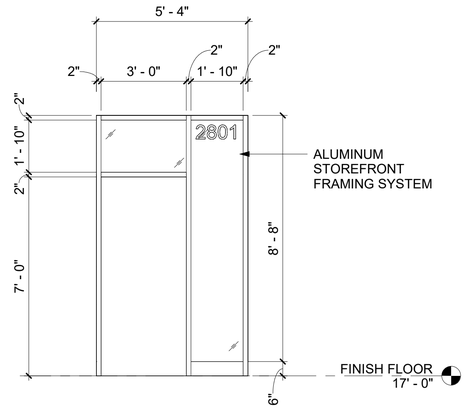
D FRAME TYPE D

A-960 SCALE: 3/8" = 1'-0"



C FRAME TYPE C

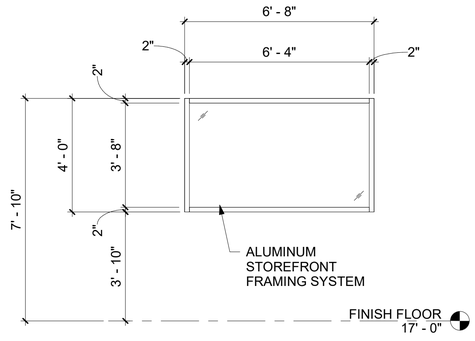
A-960 SCALE: 3/8" = 1'-0"



B FRAME TYPE B

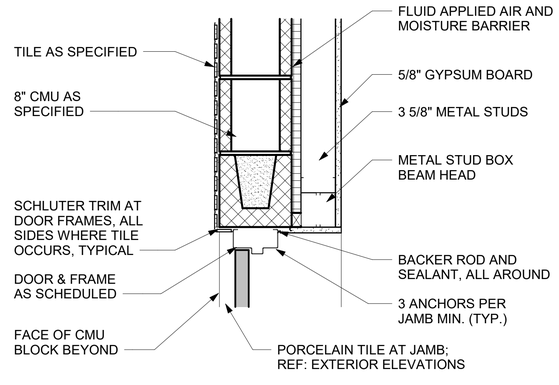
A-960 SCALE: 3/8" = 1'-0"

DOOR SCHEDULE						
	DOOR				FRAME	
MARK	WIDTH	HEIGHT	TYPE	MATERIAL	MATERIAL	NOTES
016	3' - 0"	7' - 4"	A	HM	HM	PRESSURE RESISTANT DOOR. REF SPEC: 08 39 00 FOR DOOR AND HARDWARE.
100	3' - 0"	7' - 0"	C	AL/ GLASS	AL	SECURED ACCESS
102	3' - 0"	7' - 0"	A	LAM	HM	
103	3' - 0"	7' - 0"	A	LAM	HM	WITH SIDELIGHT REF: FRAME TYPE G
105	3' - 0"	7' - 0"	B	LAM	HM	
106	3' - 0"	7' - 0"	A	LAM	HM	KICK PLATE & SECURED ACCESS
107	3' - 0"	7' - 0"	A	HM	HM	KICK PLATE & SECURED ACCESS
108	3' - 0"	7' - 0"	A	LAM	HM	KICK PLATE
109	3' - 0"	7' - 0"	A	LAM	HM	KICK PLATE
110	3' - 0"	7' - 0"	A	LAM	HM	KICK PLATE
111	3' - 0"	7' - 0"	A	LAM	HM	KICK PLATE
112	3' - 0"	7' - 0"	B	LAM	HM	KICK PLATE & SECURED ACCESS
113	3' - 0"	7' - 0"	A	LAM	HM	
114	3' - 0"	7' - 0"	B	HM	HM	SECURED ACCESS
115A	3' - 8"	7' - 0"	A	HM	HM	KICK PLATE; INCLUDE PANIC HARDWARE - SECURED ACCESS
115B	3' - 8"	7' - 0"	A	HM	HM	KICK PLATE; INCLUDE PANIC HARDWARE - SECURED ACCESS
116A	3' - 0"	7' - 0"	C	AL/ GLASS	AL	
116B	3' - 0"	7' - 0"	C	AL/ GLASS	AL	



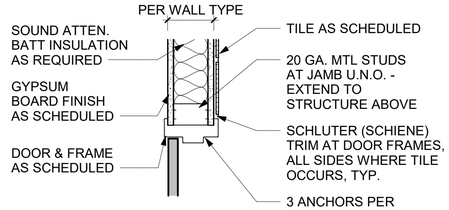
A FRAME TYPE A

A-960 SCALE: 3/8" = 1'-0"



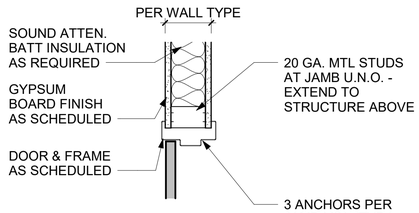
3 DOOR HEAD/JAMB - EXTERIOR

A-960 SCALE: 1 1/2" = 1'-0"



2 DOOR HEAD/JAMB - INTERIOR TILE

A-960 SCALE: 1 1/2" = 1'-0"



1 DOOR HEAD/JAMB - INTERIOR

A-960 SCALE: 1 1/2" = 1'-0"

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING DOOR AND WINDOW SCHEDULE

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WPM
KHA NO.:	067812104

SHEET
A-960

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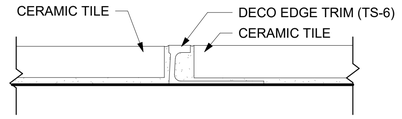
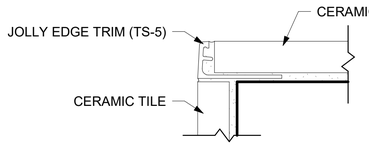


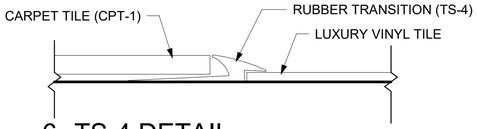
9 TS-6 DETAIL

A-970 SCALE: 1" = 1'-0"



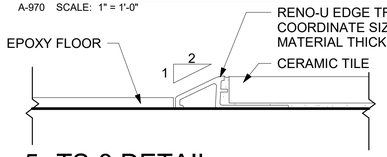
7 TS-5 DETAIL

A-970 SCALE: 1" = 1'-0"



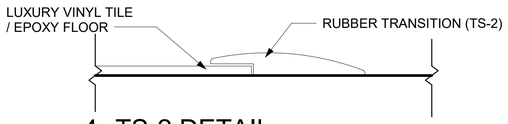
6 TS-4 DETAIL

A-970 SCALE: 1" = 1'-0"



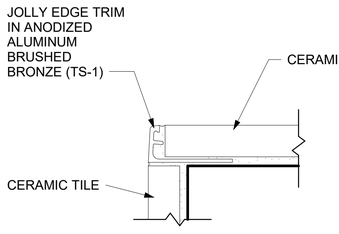
5 TS-3 DETAIL

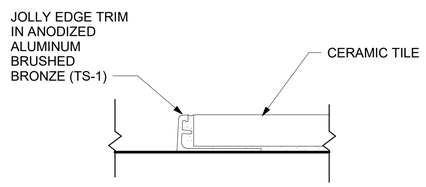
A-970 SCALE: 1" = 1'-0"



4 TS-2 DETAIL

A-970 SCALE: 1" = 1'-0"

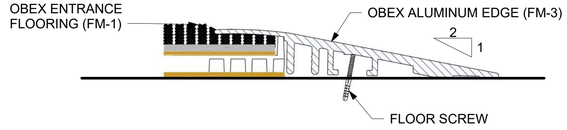




NOTE: USED ON THE EXTERIOR OF THE BUILDING

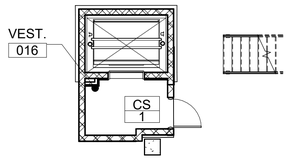
3 TS-1 DETAIL

A-970 SCALE: 1" = 1'-0"



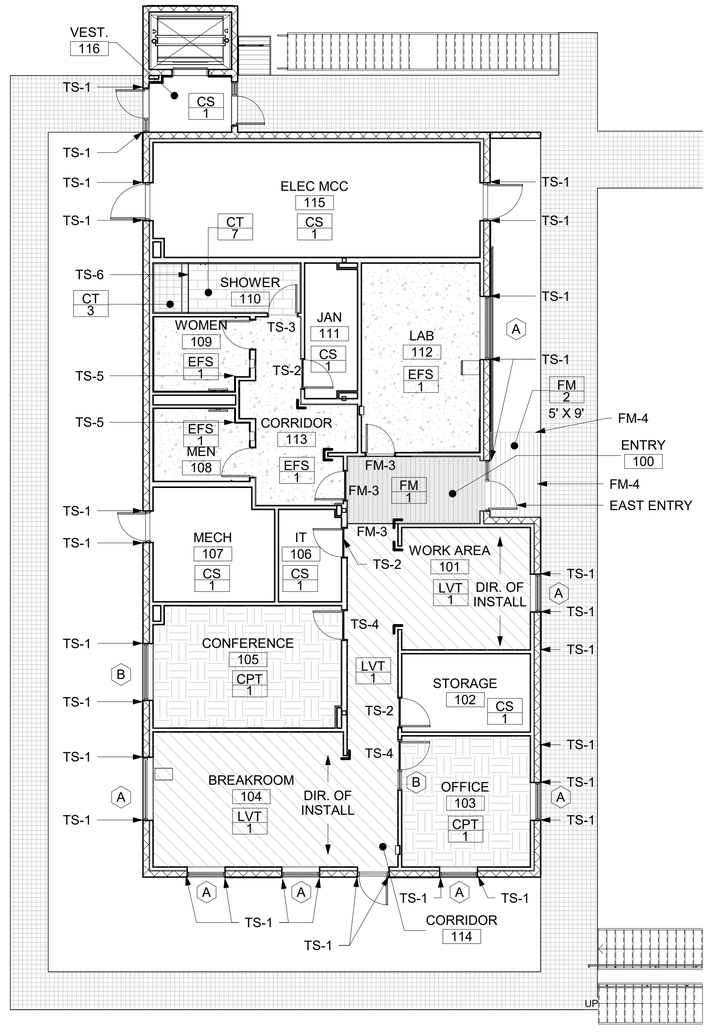
2 FM-3 DETAIL

A-970 SCALE: N.T.S.



8 FINISH PLAN - ELEVATOR GRADE LEVEL

A-970 SCALE: 1/8" = 1'-0"



1 FINISH PLAN

A-970 SCALE: 1/8" = 1'-0"

FINISH LEGEND

	EPOXY FLOOR SYSTEM (EFS-1)	EFS 1
	LUXURY VINYL TILE (LVT-1) **PLANKS ARE TO RUN PLAN NORTH TO PLAN SOUTH	LVT 1
	CERAMIC TILE (CT-7)	CT 7
	CERAMIC TILE (CT-3)	CT 3
	CONCRETE - SEALED (CS-1)	CS 1
	TEXTILE COMPOSITE FLOORING TILE (KINETEX) (CPT-1)	CPT 1
	FLOOR MAT - SURFACE MOUNTED (FM-1)	FM 1
	FLOOR MAT (FM-2)	FM 2
	CORNER GUARD (CG-1)	
	CORNER GUARD (CG-2)	
A	WINDOWS TO RECEIVE ROLLER SHADES WITH 3% VISIBILITY	
B	WINDOWS TO RECEIVE DUAL ROLLER SHADES WITH BLACKOUTS FOR PRIVACY	

NOTE: TRANSITION STRIP TS-1 IS TO BE USED ON ALL TILE ON THE EXTERIOR. NO TILE EDGES ARE TO BE EXPOSED TO VIEW.

NOTE: ALL FINISHES SHALL BE SLIP RESISTANT AND SECURELY ATTACHED TO FLOOR.

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David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING FINISH PLAN

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

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A-970

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FINISH LEGEND

CO...		MATERIAL	MANUFACTURER	NAME	COLOR	SIZE	REMARKS
APC	1	ACOUSTICAL PANEL CEILING	ARMSTRONG COMMERCIAL...	ULTIMA HIGH NRC, SQUARE TEGULAR 1941	WHITE	24" X 24"X 7/8"	15/16" PRELUDE GRID, WHITE
APC	2	ACOUSTICAL PANEL CEILING	ARMSTRONG COMMERCIAL...	KITCHEN ZONE SQUARE LAY-IN 673	WHITE	24" X 24"X 5/8"	15/16" PRELUDE AL(ALUMINUM) GRID
CG	1	CORNER GUARD	INPRO	SURFACE MOUNT STAINLESS STEEL CORNER GUARD	STAINLESS STEEL	1.5" WING	CEMENT-ON INSTALLATION. REF. FINISH PLAN FOR LOCATIONS
CG	2	CORNER GUARD	INPRO	SURFACE MOUNT STAINLESS STEEL END WALL PROTECTOR	STAINLESS STEEL	2" WING	CEMENT-ON INSTALLATION. REF. FINISH PLAN FOR LOCATIONS
CPT	1	CARPET (KINETEX)	EF CONTRACT	VESTIGE	VES56 SOOT	24"X24" TILE	INSTALLATION METHOD: BRICK ASHLAR PATTERN (REP. MATTHEW SHUMWAY @ 469.450.8439)
CS	1	CONCRETE SEALED	- - -	- - -	- - -	- - -	REF. SPECIFICATION LOCATED ON A-971
CT	1	CERAMIC TILE (PORCELAIN TILE)	CROSSVILLE STUDIOS	UPDATE	DARK GREY SX	12"X24"	ACCENT FIELD WALL TILE (USE GT-2) (REP. PAULA GREENROY @ 469.265.6804)
CT	2	CERAMIC TILE (PORCELAIN TILE)	EMSER	UPTOWN	SUGAR HILL	12"X24"	WALL TILE (USE GT-2) (REP. PAULA GREENROY @ 469.265.6804)
CT	3	CERAMIC TILE (PORCELAIN TILE)	DALTILE	KEYSTONES	DESERT GRAY SPECKLE D200	2"X2" MOSAIC	SHOWER FLOOR TILE (USE GT-1) (REP. TAYLOR LEWIS @ 918.527.3320)
CT	4	CERAMIC TILE	DALTILE	LINEAR COLOR WHEEL COLLECTION	NAVY K189	2"X8"	BACKSPLASH AND FRONT OF BAR TILE (USE GT-2) (REP. TAYLOR LEWIS @ 918.527.3320)
CT	5	CERAMIC TILE (PORCELAIN TILE)	DALTILE	KEYSTONES	NAUTICAL BLUE	2"X2" MOSAIC	EXTERIOR ACCENT WALL TILE (USE GT-3) (REP. TAYLOR LEWIS @918.527.3320)
CT	6	CERAMIC TILE (PORCELAIN TILE)	EMSER	MILESTONE	GRAY	24"X48"	EXTERIOR ACCENT WALL TILE (USE GT-3) (REP. PAULA GREENROY @ 469.265.6804)
CT	7	CERAMIC TILE (PORCELAIN TILE)	DALTILE	PORTFOLIO	DOVE GREY PF04	12" X 24"	FLOOR TILE (USE GT-1) (REP. TAYLOR LEWIS @ 918.527.3320)
EFS	1	EPOXY FLOOR SYSTEM	TNEMEC	DECO-TREAD; DECO-CLEAR	222 DECO-TREAD 205; 284 DECO-CLEAR 0000	1/4" THICK	SEALED WITH ONE COAT OF ECO-TCU AS SPECIFIED IN ARCH SPECIFICATIONS
ERC	1	EPOXY RESIN COUNTER	- - -	- - -	BLACK	- - -	REF. ARCHITECTURAL SPECIFICATION
FM	1	FLOOR MAT	MILLIKEN	OBEX ENTRANCE FLOORING GRID 11MM CUT-X - CLOSED - FIZZ	GREY	19.7" X 19.7"	INTERIOR ENTRANCE FLOORING - SEE FINISH PLAN. SURFACE MOUNTED. USE OBEX ALUMINUM EDGE TRIM (FM-3) AT LVT AND EPOXY FLOOR TRANSITIONS. (REP. ALLIE ANDERSON @ 817.681.9386)
FM	2	FLOOR MAT	MILLIKEN	OBEX ENTRANCE FLOORING GRID 11MM OPEN MONO - FIZZ	GREY	19.7" X 19.7"	EXTERIOR ENTRANCE FLOORING - SEE FINISH PLAN. MAT - USE COORDINATING VINYL TRIM AND EDGE KIT (FM-4). (REP. ALLIE ANDERSON @ 817.681.9386)
FM	3	FLOOR MAT	MILLIKEN	OBEX EDGE, ALUMINUM	ALUMINUM	- - -	INTERIOR ENTRANCE FLOORING - TRANSITION EDGE PIECE. SEE FINISH PLAN. INSTALLATION: SCREWS INTO GROUND. USE FM-3 AT LVT AND EPOXY FLOOR TRANSITIONS. (REP. ALLIE ANDERSON @ 817.681.9386)
FM	4	FLOOR MAT	MILLIKEN	OBEX EDGE, VINYL	BLACK, VINYL	- - -	INTERIOR ENTRANCE FLOORING - TRANSITION EDGE PIECE. SEE FINISH PLAN. INSTALLATION: SNAPS TO FM-2 GRID TO TRIM OUT ALL FOUR SIDES OF MAT. (REP. ALLIE ANDERSON @ 817.681.9386)
FRP	1	FIBER REINFORCED PLASTIC	PANOLAM FRP	STANDARD FRP - PEBBLED SURFACE (.090" THICK)	GRAY	4' X 8'	INSTALL FULL HEIGHT. USE APPROPRIATE TRIM PIECES.
GT	1	GROUT	LATICRETE	INDUSTRIAL GRADE EPOXY GROUT	78 STERLING SILVER	- - -	SANDED, FLOOR (USE WITH CT-1, CT-3)
GT	2	GROUT	LATICRETE	PRO LOCK EPOXY GROUT	90 LIGHT PEWTER	- - -	UNSANDED, WALL (USE WITH CT-2, CT-4)
GT	3	GROUT	CUSTOM	FUSION PRO	19 PEWTER	- - -	USED ON THE EXTERIOR ACCENT TILE (CT-5, CT-6)
LVT	1	LUXURY VINYL TILE	TARKETT	ID LATITUDE, STRIA MARBLE	5104 BRECCIA	6"X36" PLANK	INSTALLATION METHOD: UNIDIRECTIONAL. REF. FINISH PLAN. (REP. SHELLY ENLOE @ 4669.580.5668)
MTL	1	METAL CABINETS	- - -	- - -	GRAY	- - -	REF. ARCHITECTURAL SPECIFICATION
PLM	1	PLASTIC LAMINATE	WILSONART	STANDARD LAMINATE	RIVER CHERRY 7937-38	- - -	VERTICAL SURFACE. DOORS, RECEPTION DESKS
PNT	1	PAINT	SHERWIN WILLIAMS	EGG-SHELL	SW 7022 ALPACA	- - -	THROUGHOUT PAINT
PNT	2	PAINT	SHERWIN WILLIAMS	FLAT	SW 7757 HIGH REFLECTIVE WHITE	- - -	CEILING PAINT
PNT	3	PAINT	SHERWIN WILLIAMS	EPOXY PAINT	SW 7022 ALPACA	- - -	EPOXY WALL PAINT
PNT	4	PAINT	SHERWIN WILLIAMS	EPOXY PAINT	SW 7757 HIGH REFLECTIVE WHITE	- - -	EPOXY CEILING PAINT
PNT	5	PAINT	SHERWIN WILLIAMS	EGG-SHELL	SW 9178 IN THE NAVY	- - -	ACCENT PAINT
PNT	6	PAINT	SHERWIN WILLIAMS	DIRECT TO METAL	SW 9170 ACIER	- - -	DOOR FRAME PAINT
PNT	7	PAINT	PROSOCO	PROSOCO BMC-II	N/A	- - -	PAINT TINT TO MATCH PAINT 1. USED IN ROOM 016.
QZ	1	QUARTZ	WILSONART	WILSONART QUARTZ	VICENTIA	2CM	EDGE STYLE: STRAIGHT EDGE
RB	1	RUBBER BASE	TARKETT / JOHNSONITE	TRADITIONAL DURACOVE THERMOPLASTIC RUBBER...	44 DARK BROWN B	6"H	CONTINUOUS ROLLED PRODUCT. TYPICAL THROUGHOUT.
RF	1	RUBBER FLOOR	NORE BY INTERFACE	NORAMENT GRANO TILE	5304 BLACK PEPPER	39.53" X 39.53"	(ANNMARIE DESHOTEL 504.218.6654)
SPF	1	SOLID SURFACE FABRICATION	CORIAN	CORIAN SOLID SURFACE	VENARO WHITE	1/2" THICK	EDGE STYLE: STRAIGHT
SPF	2	SOLID SURFACE FABRICATION	CORIAN	CORIAN SOLID SURFACE	GLACIER WHITE	1/2" THICK	WINDOW SILLS. EDGE STYLE: STRAIGHT
TS	1	TRANSITION STRIP	SCHLUTER	JOLLY	ANODIZED ALUMINUM BRUSHED BRONZE	V.I.F.	USE AT OUTER CORNERS OF TILED WALLS AND ALL ENDS OF TILE WALLS ON EXTERIOR - NOTE H
TS	2	TRANSITION STRIP	TARKETT	RUBBER TRANSITION REDUCER, SSR-XX-B	20 CHARCOAL WG	- - -	USE ON FLOOR BETWEEN LVT AND CONCRETE, EPOXY AND CONCRETE - NOTE H
TS	3	TRANSITION STRIP	SCHLUTER	RENO-U	ANODIZED ALUMINUM	V.I.F.	USE ON FLOOR BETWEEN CERAMIC TILE AND EPOXY - NOTE H
TS	4	TRANSITION STRIP	TARKETT	WHEELED TRAFFIC TRANSITION, SLT-XX-A	20 CHARCOAL WG	- - -	USE ON FLOOR BETWEEN LVT AND CPT (KINETEX) - NOTE H
TS	5	TRANSITION STRIP	SCHLUTER	JOLLY	ANODIZED ALUMINUM	V.I.F.	USE AT OUTER CORNERS OF TILED WALLS - NOTE H
TS	6	TRANSITION STRIP	SCHLUTER	JOLLY	ANODIZED ALUMINUM	V.I.F.	USE ON FLOOR BETWEEN CERAMIC TILE AND CERAMIC TILE - NOTE H
WTR	1	WINDOW TREATMENT	SWF CONTRACT	ROLLER SHADE - 5% OPENNESS	EBONY C8308	- - -	EXTERIOR WINDOWS ONLY - TYP.
WTR	2	WINDOW TREATMENT	SWF CONTRACT	ROLLER SHADE - BLACKOUT	FAWN C2613	- - -	EXTERIOR WINDOWS ONLY - CONFERENCE ROOM AND TRAINING ROOM

ROOM FINISH SCHEDULE

NO.	ROOM NAME	FLOOR	BASE	N WALL	S WALL	E WALL	W WALL	CLG MATL	CASEWORK VERT	CASEWORK SPLASH	CASEWORK HORZ	CASEWORK TRIM	REFER TO FINISH NOTE:
016	VESTIBULE	CS 1	RB 1	CT 1	PNT 7	PNT 7	PNT 7	PNT 2	--	--	--	--	4, 5
		--	--	CT 2	--	--	CT 2	--	--	--	--	--	
	EAST ENTRY	FM 2	--	--	--	--	--	--	--	--	--	--	
100	ENTRY	FM 1	RB 1	PNT 1	PNT 5	PNT 1	PNT 1	PNT 2	--	--	--	--	
101	WORK AREA	LVT 1	RB 1	PNT 5	PNT 1	PNT 1	PNT 5	APC 1	PLM 1	SPF 1	SPF 1	SPF 1	
		--	--	--	--	--	PNT 1	--	--	--	--	--	
102	STORAGE	CS 1	RB 1	PNT 1	PNT 1	PNT 1	PNT 1	APC 1	--	--	--	--	
103	OFFICE	CPT 1	RB 1	PNT 1	PNT 1	PNT 1	PNT 1	APC 1	--	--	--	--	
104	BREAK ROOM	LVT 1	RB 1	PNT 1	PNT 1	PNT 1	PNT 1	APC 1	PLM 1	QZ 1	QZ 1	QZ 1	1
		--	--	--	CT 4	--	CT 4	--	--	--	--	--	
105	CONFERENCE	CPT 1	RB 1	PNT 5	PNT 1	PNT 1	PNT 1	APC 1	PLM 1	SPF 1	SPF 1	SPF 1	
		--	--	PNT 1	--	--	--	PNT 2	--	--	--	--	
106	I.T.	CS 1	RB 1	PNT 1	PNT 1	PNT 1	PNT 1	APC 1	--	--	--	--	
107	MECHANICAL	CS 1	RB 1	PNT 1	PNT 1	PNT 1	PNT 1	PNT 4	--	--	--	--	
108	MEN	EFS 1	EFS 1	CT 2	CT 2	CT 2	CT 2	PNT 4	--	--	--	--	
109	WOMEN	EFS 1	EFS 1	CT 2	CT 2	CT 2	CT 2	PNT 4	--	--	--	--	
110	SHOWER	CT 7	CT 7	CT 2	CT 2	CT 2	CT 2	PNT 4	--	--	--	--	
		CT 3	--	--	--	--	--	--	--	--	--	--	
111	JANITOR	CS 1	RB 1	FRP 1	FRP 1	FRP 1	FRP 1	PNT 4	--	--	--	--	
112	LAB	EFS 1	EFS 1	PNT 3	PNT 3	PNT 3	PNT 3	APC 2	MTL 1	ERC 1	ERC 1	ERC 1	
		--	--	--	CT 2	CT 2	--	--	--	--	--	--	
113	CORRIDOR	EFS 1	EFS 1	PNT 1	PNT 1	PNT 1	PNT 1	APC 1	--	--	--	--	
		--	--	--	--	--	CT 2	--	--	--	--	--	
114	CORRIDOR	LVT 1	RB 1	--	PNT 1	PNT 1	PNT 1	APC 1	--	--	--	--	
115	ELEC / MCC	CS 1	RB 1	PNT 1	PNT 1	PNT 1	PNT 1	PNT 4	--	--	--	--	
116	VESTIBULE	CS 1	RB 1	CT 1	PNT 1	PNT 1	PNT 1	PNT 2	--	--	--	--	4
		--	--	CT 2	--	--	--	--	--	--	--	--	
	ELEVATOR	RF 1	--	--	--	--	--	--	--	--	--	--	

FINISH NOTES

PROJECT NOTES:

A	ALL FINISHES NOTED ON THE FINISH SCHEDULE ARE IN RELATION TO PLAN NORTH.
B	CONTRACTOR IS TO USE MANUFACTURER'S PREFERRED METHOD OF INSTALLATION FOR PRODUCTS SPECIFIED.
C	WHERE EPOXY FLOOR SYSTEM IS SPECIFIED FOR WALL BASE, BASE IS TO COVE UP WALL TO 6" AFF. USE TERMINIATING TRIM...
D	PAINT ALL HEADERS PNT-2, UNLESS NOTED OTHERWISE.
E	WHERE FIBER REINFORCED PLASTIC IS USED, USE COLOR COORDINATING TRIM PIECES.
F	CERAMIC TILE IS TO BE INSTALLED AT FULL HEIGHT ON WALLS, UNLESS NOTED OTHERWISE.
G	USE TRANSITION STRIPS AS INDICATED ON THE FINISH LEGEND WHERE APPLICABLE.
H	CONTRACTOR TO ENSURE THAT TRANSITION STRIPS MEETS TAS RISE AND RUN GUIDELINES

ROOM FINISH NOTES:

1	PAINT PNT-1 IS TO BE LOCATED ON THE FURRDOWN ABOVE THE UPPER CABINETS AND ON THE UNDERSIDE OF THE FURRDOWN. REFERENCE ELEVATIONS FOR FURTHER CLARIFICATION.
2	FM-2 IS TO BE LOCATED ON THE EXTERIOR SIDE OF THE LOBBY DOORS. REFERENCE INTERIOR FINISH FLOOR PLAN FOR FUTHRER CLARIFICATION.
3	USE MILLIKEN OBEX ENTRANCE FLOORING TRIM AND REDUCERS.
4	FURR OUT FOR THE DRAINS TO BE IN CT-2. REF INTERIOR ELEVATIONS FOR FURTHER CLARIFICATION.
5	PAINT ON TOP OF CEMENTITIOUS WATERPROOFING IN ROOM.

CONCRETE SEALER SPECIFICATION

LIQUID CHEMICAL FLOOR HARDENER SEALER (SEALED CONCRETE): PROVIDE A COLORLESS AQUEOUS SOLUTION CONTAINING A BLEND OF MAGNESIUM FLOUSILICATE AND ZINCE FLUOSILICATE COMBINED WITH A WETTING AGENT CONTAINING NOT LESS THAN 2LBS. OF FLUOSILICATES PER GALLON; HARNOLITH A.C. HORN/W.R. GRACE; SANISEAL 50, MASTER S CO..; LITHOPLATE PROTEX INDUSTRIES; LAPIDOLITH, SONENBORN BUILDING PRODUCTS; RIW FLINTOX LIQUID, OTCH BROS.; HARBETON, NON-CRETE CHEMICAL, INC.

PROVIDE SLIGHTLY TEXTURED SURFACE FOR SLIP RESISTANCE. APPLY MINIMUM OF 3 COATS AT PROPORTIONS RECOMMENDED BY MANUFACTURER TO ACHIEVE A COMPLETE SEAL.

PROVIDE IN-FIELD MOCKUP SAMPLE FOR APPROVAL IN A NON-CONSPICUOUS AREA.

NOTE:
COLOR SELECTION PROVIDED FOR BASIS OF DESIGN PURPOSES. ALL COLOR SELECTIONS TO BE CONFIRMED BY OWNER.

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P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

REGISTERED ARCHITECT · DAVID G. DUMAN · 14305 · STATE OF TEXAS
David Duman 2023.08.09 11:25:29-05'00'

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING FINISH SCHEDULE

DATE:	AUGUST 10, 2023
DESIGN:	DGD
DRAWN:	TAJ
CHECKED:	WRM
KHA NO.:	067812104

SHEET
A-971

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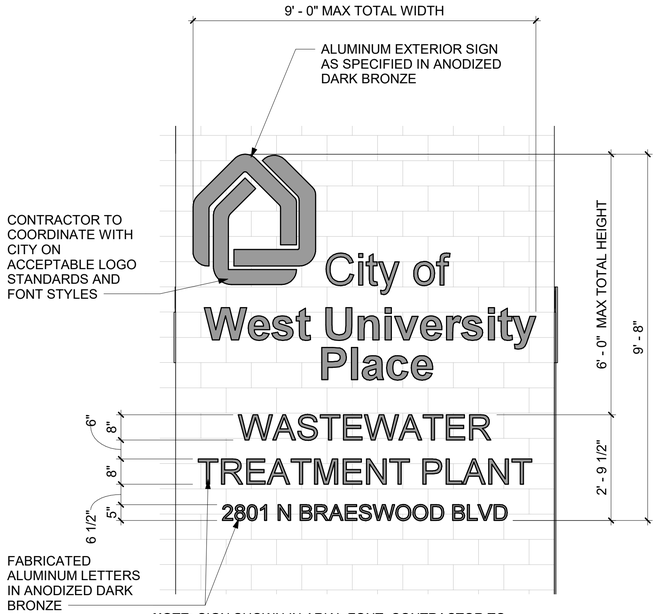
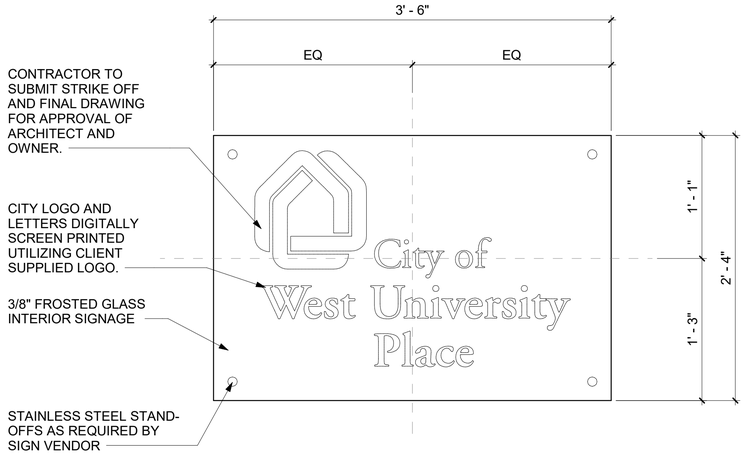


NOTE: SIGN SHOWN IN ARIAL FONT; CONTRACTOR TO COORDINATE WITH CITY ON ACCEPTABLE FONT.

NAME SUBJECT TO CHANGE, CONTRACTOR TO VERIFY WITH OWNER.

4 EXTERIOR CITY LOGO

A-972 SCALE: 1/2" = 1'-0"



2 LOBBY SIGNAGE

A-972 SCALE: 1 1/2" = 1'-0"

Vivid H.3 (V1AH27)
6"w X 6"h

Vivid J.2 (V1AJ03)
6"w X 7"h

Vivid G (V1AH13)
8.5"w X 3"h

Vivid RR (V1AE04)
6.5"w X 9"h

NOTE: PROVIDE SINGAGE READING "IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS" - CONTRACTOR TO VERIFY WITH INTERNATIONAL FIRE CODE FOR WORDAGE, LOCATION AND REQUIREMENTS.

3 INTERIOR SIGNAGE TYPICAL

A-972 SCALE: N.T.S.

1 PLAQUE

A-972 SCALE: 3" = 1'-0"

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING SIGNAGE DETAILS

DATE:	AUGUST 10, 2023
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SHEET
A-972

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CHLORINE / MISC - NORTH

CHLORINE - SOUTHWEST

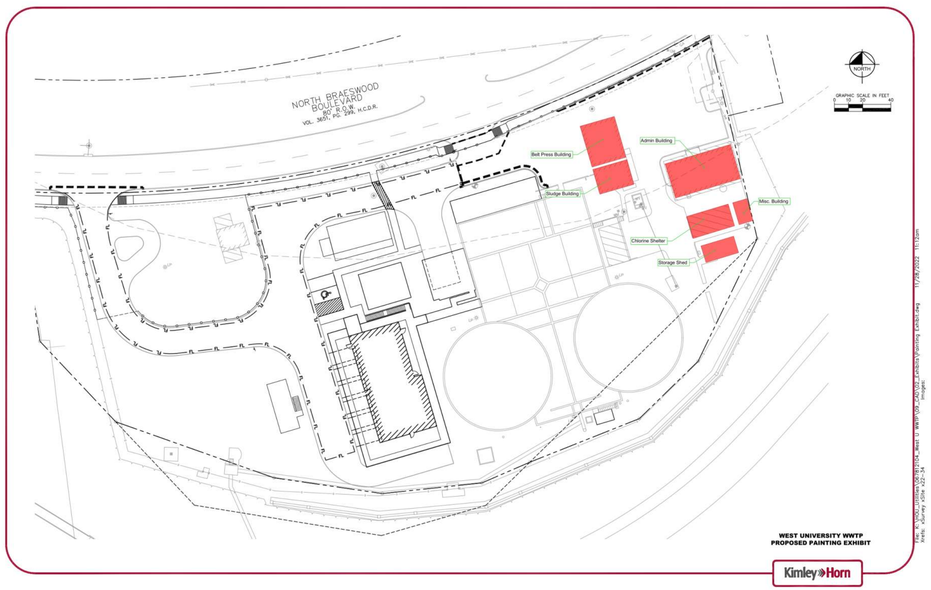
CHLORINE - INSIDE

ADMIN - WEST

ADMIN - SOUTH

ADMIN - EAST

ADMIN - NORTH



PAINTING LOCATIONS & APPROX. DIMENSIONS

Building	Location	Approximate Length	Approximate Height
Belt Press Building	North	25	30
	East	30	25
	South	25	25
	West	30	25
Sludge Building	North	25	20
	East	18	20
	South	25	20
	West	18	20
Admin Building	North	48	12
	East	25	12
	South	48	12
	West	25	12
Chlorine Shelter	North	31	20
	East	16	20
	South	31	20
	West	N/A	N/A
	Inside North	31	20
	Inside East	16	20
	Inside South	31	20
	Inside Ceiling	31	16
	Inside West	N/A	N/A
Misc. Building	North	10	13
	East	16	13
	South	10	13
	West	16	13
Storage Shed	North	24	14
	East	12	14
	South	24	14
	West	12	14

REF: SPECIFICATION 09 96 00 FOR ADDITIONAL INFORMATION MAIN PAINT SW 9170 ACIER; ACCENT PAINT SW 7019 GAUNTLET GRAY.

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STATE OF TEXAS
David Duman
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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ALTERNATE A - PAINTING EXHIBIT

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
AUGUST 10, 2023	DGD	TAJ	WRM	067812104

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A-973

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SLUDGE BELT PRESS - WEST

SLUDGE BELT PRESS - SOUTH

STAIRS EXISTING TO REMAIN; TYP.

SLUDGE BELT PRESS - EAST

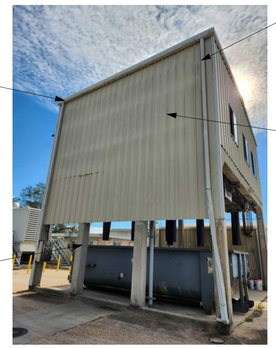
REF: SPECIFICATION 09 96 00 FOR ADDITIONAL INFORMATION MAIN PAINT SW 9170 ACIER; ACCENT PAINT SW 7019 GAUNTLET GRAY.

PAINT FASCIA ACCENT COLOR; TYP.

PAINT DOWNSPOUT; TYP.

PAINT METAL PANELS; TYP.

EXISTING CONCRETE STRUCTURE AND EQUIPMENT TO REMAIN



SLUDGE BELT PRESS - NORTH

PAINT SOFFIT; TYP.

PAINT STEEL STRUCTURE; TYP.

PAINT METAL SIDING , INTERIOR AND EXTERIOR ; TYP. ON CHLORINE STRUCTURE

PAINT METAL SIDING; TYP.

PAINT DOOR ACCENT COLOR ; TYP.

SHED - WEST

SHED - SOUTH

SHED - EAST

MISC. - SOUTH

PAINT STEEL STRUCTURE; TYP.

PAINT METAL PANELS; TYP.

PAINT SOFFIT; TYP.

PAINT CMU; TYP.

PAINT UNDERSIDE OF SOFFIT; TYP.

PAINT METAL PANELS; TYP.

PAINT SOFFIT ACCENT COLOR; TYP.

PAINT DOOR AND FRAME ACCENT COLOR; TYP.

MISC. - EAST

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ALTERNATE A - PAINTING EXHIBIT

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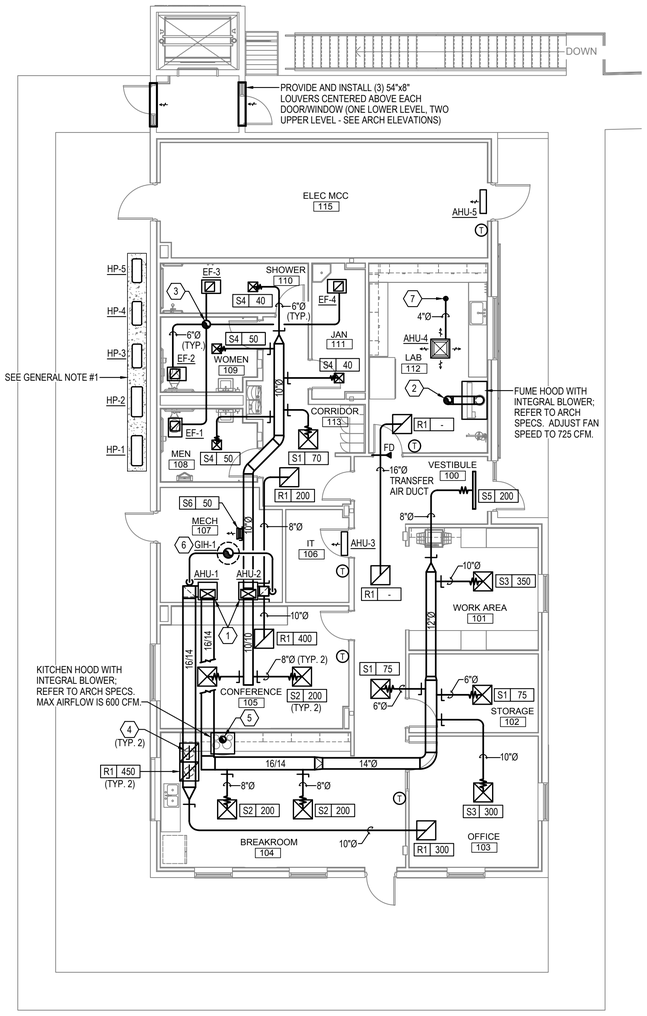


1 MECHANICAL FLOOR PLAN

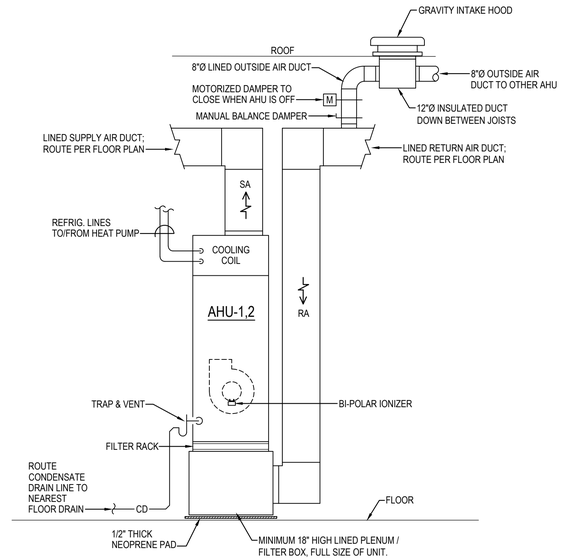
M-910 SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. THE GENERAL CONTRACTOR SHALL PROVIDE A 4" THICK CONCRETE PAD (APPROX. 23'-0" x 2'-0") FOR OUTDOOR HEAT PUMP UNITS. BOLT EACH UNIT TO CONCRETE PAD AT ALL FOUR CORNERS.

NOTES BY SYMBOL "⟨X⟩"

1. VERTICAL AIR HANDLING UNIT - SEE DETAIL.
2. 10"Ø STAINLESS STEEL EXHAUST DUCT FROM LAB HOOD, OFFSET 36" FROM ROOF EDGE AND ROUTE UP THROUGH ROOF WITH RAIN CAP.
3. 6"Ø DUCT FROM EACH FAN. ROUTE 10"Ø EXHAUST DUCT UP THROUGH ROOF WITH RAIN CAP.
4. 12"Ø DOWN WITH VOLUME DAMPER.
5. 8"Ø EXHAUST DUCT FROM KITCHEN HOOD, ROUTE UP THROUGH ROOF WITH RAIN CAP.
6. 12"Ø OUTSIDE AIR DUCT UP TO GRAVITY INTAKE HOOD ON ROOF - SEE DETAIL.
7. 4"Ø OUTSIDE AIR DUCT UP THROUGH ROOF WITH RAIN CAP. OFFSET A MINIMUM OF 10'-0" FROM LAB EXHAUST.



2 VERTICAL AIR HANDLING UNIT

M-910 SCALE: NONE

NOTES:

1. REFER TO NOTES ON SPLIT SYSTEM SCHEDULE FOR BIPOLAR IONIZATION DEVICE.

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No.	Revisions	By	Date

LESLIE R. BROWN 60171 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS
08/09/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING MECHANICAL PLAN

DATE:	AUGUST 10, 2023
DESIGN:	SR
DRAWN:	SR
CHECKED:	LB
KHA NO.:	067812104

SHEET

M-910

BAIRD, HAMPTON & BROWN
engineering and surveying
6300 Ridglea Pl., Ste. 700 Fort Worth, TX 76116
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TBPELS Firm #44, #10011300, #10011302, #10194146
BHB PROJECT # 2021.184.000

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SPLIT SYSTEM SCHEDULE

TAG	SYSTEM NOMINAL TONS	VERTICAL INDOOR AIR HANDLING UNIT WITH DX COOLING COIL								OUTDOOR HEAT PUMP UNIT								
		FAN	OUTSIDE AIR CFM	COOLING			VOLTS/ PHASE	ELECTRICAL	MANUFACTURER AND MODEL	TAG	TOTAL COOLING CAPACITY BTUH	HEAT PUMP HEATING CAPACITY BTUH	VOLTS/ PHASE	MCA	MOCP	AMBIENT TEMP. (°F)	MIN. SEER	MANUFACTURER AND MODEL
		SUPPLY AIR CFM		TOTAL BTUH	SENS. BTUH	E.A.T. DB/WB												
AHU-1	4	1400	200	41,000	31,100	78/65	230/1	NOTE 7	CARRIER 40MBAAQ48XA3	HP-1	41,000	48,000	230/1	36.5	50	105	16.0	CARRIER 38MBRBQ48AA3
AHU-2	2	760	160	24,200	16,500	78/65	230/1	NOTE 7	CARRIER 40MBABQ24XB3	HP-2	24,200	26,900	230/1	25.0	35	105	21.0	CARRIER 38MARBQ24AA3

NOTES:

1. EXTERNAL STATIC PRESSURE (ESP) INCLUDED DUCTWORK AND AIR DEVICES ONLY.
2. REFER TO BUILDING CONTROL SYSTEM (BCS) NOTES FOR CONTROLS.
3. CONTRACTOR SHALL FURNISH AND INSTALL UNITS WITH ALL NECESSARY CONTROLS, RELAYS, ETC. REQUIRED TO MAKE EACH SYSTEM OPERATE PROPERLY.
4. CONTRACTOR SHALL FURNISH AND INSTALL REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR COIL. PIPING SHALL BE SIZED AND ROUTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
5. CONTRACTOR SHALL FURNISH AND INSTALL A BI-POLAR IONIZATION GENERATOR IN EACH AHU ON THE INLET SIDE OF THE FAN (REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS). IONIZER SHALL BE 24V, EQUAL TO AIR OASIS BP2400-24, AND WIRED TO THE CONTROL TERMINAL TO RUN WHEN THE FAN IS ON.
6. OUTDOOR UNITS SHALL BE PROTECTED FOR A HARSH ENVIRONMENT VIA FACTORY APPLIED TREATMENT:
   - CONDENSER COIL SHALL HAVE DURABLE EPOXY-PHENOLIC COATING.
   - UNIT CASING SHALL BE PROTECTED WITH RESISTANT EXTERIOR POLYURETHANE PAINT, RATED FOR 2,500 HOUR SALT SPRAY TEST.
7. INDOOR UNIT (APPROX 5.0 AMPS) IS POWERED BY OUTDOOR UNIT.

MINI-SPLIT SYSTEM SCHEDULE

TAG	SYSTEM NOMINAL TONS	TYPE	DUCTLESS AIR HANDLING UNIT								OUTDOOR HEAT PUMP UNIT								
			FAN	OUTSIDE AIR CFM	COOLING			HEAT PUMP HEATING CAPACITY BTUH	VOLTS/ PHASE	ELECTRICAL	MANUFACTURER AND MODEL	TAG	TOTAL COOLING CAPACITY BTUH	TOTAL HEATING CAPACITY BTUH	VOLTS/ PHASE	MCA	MOCP	AMBIENT TEMP. (°F)	MIN. SEER	MANUFACTURER AND MODEL
			CFM		TOTAL BTUH	SENS. BTUH	E.A.T. DB/WB													
AHU-3	3/4	WALL MOUTED	335	-	9,000	8,800	78/65	16,700	230/1	NOTE 2	CARRIER 40MAHBQ09XA3	HP-3	9,000	16,700	230/1	15.0	15	105	28.0	CARRIER 38MARBQ09AA3
AHU-4	1	CASSETTE	400	30	12,000	9,360	78/65	16,900	230/1	NOTE 2	CARRIER 40MBCQ12-3	HP-4	12,000	16,900	230/1	15.0	15	105	19.5	CARRIER 38MARBQ12AA3
AHU-5	2	WALL MOUTED	610	-	22,800	16,480	78/65	31,600	230/1	NOTE 2	CARRIER 40MAHBQ24XA3	HP-5	22,800	31,600	230/1	25.0	35	105	21.5	CARRIER 38MARBQ24AA3

NOTES:

1. PROVIDE EACH INDOOR UNIT WITH MANUFACTURER'S INLINE CONDENSATE PUMP. PROVIDE AN "EXCELAIR" ROUGH-IN BOX FOR WALL MOUNTED UNITS. EXTEND 3/4" CONDENSATE TUBING TO NEAREST APPROVED SANITARY SEWER RECEPTOR.
2. INDOOR UNIT IS POWERED FROM THE OUTDOOR UNIT (INDOOR FAN DRAW IS LESS THAN 1 AMP).
3. REFER TO BUILDING CONTROL SYSTEM (BCS) NOTES FOR CONTROLS.
4. CONTRACTOR SHALL FURNISH AND INSTALL UNITS WITH ALL NECESSARY CONTROLS, RELAYS, ETC. REQUIRED TO MAKE EACH SYSTEM OPERATE PROPERLY.
5. CONTRACTOR SHALL FURNISH AND INSTALL REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR COIL. PIPING SHALL BE SIZED AND ROUTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
6. CONTRACTOR SHALL FURNISH AND INSTALL A BI-POLAR IONIZATION GENERATOR IN THE CASING OF AHU-4 CASSETTE (REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS). IONIZER SHALL BE 24V, EQUAL TO AIR OASIS BP2400-24, AND WIRED TO THE CONTROL TERMINAL TO RUN WHEN THE FAN IS ON.
7. OUTDOOR UNITS SHALL BE PROTECTED FOR A HARSH ENVIRONMENT VIA FACTORY APPLIED TREATMENT:
   - CONDENSER COIL SHALL HAVE DURABLE EPOXY-PHENOLIC COATING.
   - UNIT CASING SHALL BE PROTECTED WITH RESISTANT EXTERIOR POLYURETHANE PAINT, RATED FOR 2,500 HOUR SALT SPRAY TEST.

COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code: 2015 IECC
Project Title: West U - WWTP
Location: West University Place, Texas
Climate Zone: 2a
Project Type: New Construction

Construction Site: West University Place, Texas
Owner/Agent: City of West University Place
Designer/Contractor: Sean Rath BHB 6300 Ridglea Place, Suite 700 Fort Worth, Texas 76116 8173381277 srath@bhbinc.com

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
High Performance HVAC, 1.0 credit

Mechanical Systems List

Quantity System Type & Description

1 HVAC System (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 48 kBtu/h,
Proposed Efficiency = 9.50 HSPF, Required Efficiency = 9.02 HSPF
Cooling Mode: Capacity = 43 kBtu/h,
Proposed Efficiency = 16.00 SEER, Required Efficiency = 15.40 SEER
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
Fan System: FAN SYSTEM 1 | FCU-1 – Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 1 Supply, Constant Volume, 1400 CFM, 0.5 motor nameplate hp, 90.0 fan efficiency grade, 90.0 total fan efficiency, 90.0 design fan efficiency , fan exception: Single fan <= 5HP

1 HVAC System (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 27 kBtu/h,
Proposed Efficiency = 9.02 HSPF, Required Efficiency = 9.02 HSPF
Cooling Mode: Capacity = 24 kBtu/h,
Proposed Efficiency = 21.00 SEER, Required Efficiency = 15.40 SEER
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
Fan System: FAN SYSTEM 2 | FCU-2 – Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 2 Supply, Constant Volume, 760 CFM, 0.3 motor nameplate hp, 90.0 fan efficiency grade, 90.0 total fan efficiency, 90.0 design fan efficiency , fan exception: Single fan <= 5HP

1 HVAC System (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 17 kBtu/h,
Proposed Efficiency = 13.00 HSPF, Required Efficiency = 9.02 HSPF
Cooling Mode: Capacity = 9 kBtu/h,
Proposed Efficiency = 28.10 SEER, Required Efficiency = 15.40 SEER
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
Fan System: FAN SYSTEM 3 | FCU-3 – Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 3 Supply, Constant Volume, 335 CFM, 0.2 motor nameplate hp, 90.0 fan efficiency grade, 90.0 total fan efficiency, 90.0 design fan efficiency , fan exception: Single fan <= 5HP

Quantity System Type & Description

1 HVAC System (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 37 kBtu/h,
Proposed Efficiency = 10.00 HSPF, Required Efficiency = 9.02 HSPF
Cooling Mode: Capacity = 12 kBtu/h,
Proposed Efficiency = 19.50 SEER, Required Efficiency = 15.40 SEER
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
Fan System: FAN SYSTEM 4 | FCU-4 – Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 4 Supply, Constant Volume, 400 CFM, 0.2 motor nameplate hp, 90.0 fan efficiency grade, 90.0 total fan efficiency, 90.0 design fan efficiency , fan exception: Single fan <= 5HP

1 HVAC System (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 32 kBtu/h,
Proposed Efficiency = 12.00 HSPF, Required Efficiency = 9.02 HSPF
Cooling Mode: Capacity = 23 kBtu/h,
Proposed Efficiency = 21.50 SEER, Required Efficiency = 15.40 SEER
Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00
Fan System: FAN SYSTEM 5 | FCU-5 – Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 5 Supply, Constant Volume, 610 CFM, 0.3 motor nameplate hp, 90.0 fan efficiency grade, 90.0 total fan efficiency, 90.0 design fan efficiency , fan exception: Single fan <= 5HP

1 Water Heater:
Electric Storage Water Heater, Capacity: 55 gallons w/ Circulation Pump
Proposed Efficiency: 1.00 SL, %/h (if > 12 kW), Required Efficiency: 0.79 SL, %/h (if > 12 kW)

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Sean Rath - Mechanical Designer — Name - Title
Signature
27 January 2023 — Date

BUILDING CONTROL SYSTEM (BCS)

THE MECHANICAL CONTRACTOR SHALL ACQUIRE THE SERVICES OF HONEYWELL CONTROLS TO PROVIDE HVAC CONTROLS FOR (5) SPLIT SYSTEMS ON THIS PROJECT. SUBMIT SHOP DRAWINGS FOR REVIEW BY THE DESIGN TEAM AND OWNER.

THE SYSTEM SHALL BE CONNECTED TO THE EXISTING CITY OF WEST UNIVERSITY PLACE HONEYWELL FRONT END.

ZONE SENSORS FOR AHU-1,2,3,4,5 SHALL BE WALL MOUNTED, USER ADJUSTABLE, WITH LCD TEMPERATURE READOUT.

CONTROL POINTS SHALL INCLUDE SPACE TEMPERATURE AND FAN STATUS FOR EACH AIR HANDLER. THE BCS SHALL PROVIDE TEMPERATURE ADJUSTMENT RANGES AND PROVIDE ALARMS. GRAPHICS SHALL BE PROVIDED AT THE FRONT END.

A CONTROL INTERLOCK SHALL BE PROVIDED TO OPEN BOTH MOTORIZED OUTSIDE AIR DAMPERS AT AHU-1 & AHU-2 WHEN EITHER THE LAB FAN OR KITCHEN FAN IS ENERGIZED.

EXHAUST FAN SCHEDULE

FAN NUMBER	EF-1,2	EF-3	EF-4
SERVICE	RESTROOM	SHOWER	JANITOR
TYPE	CEILING MOUNTED	CEILING MOUNTED	CEILING MOUNTED
ORIENTATION	HORIZONTAL	HORIZONTAL	HORIZONTAL
CFM	75	50	50
DESIGN SP. (IN.)	.40"	.40"	.40"
RPM	865	900	900
DRIVE TYPE	DIRECT	DIRECT	DIRECT
MAX. SONES	1.5	2.0	2.0
VOLTAGE/PHASE	120/1	120/1	120/1
MOTOR WATTS	35 W	33 W	33 W
MANUFACTURER	COOK	COOK	COOK
MODEL NUMBER	GC-148	GC-146	GC-146
CONTROLS	NOTE 3	NOTE 3	NOTE 3
BACKDRAFT DAMPER	YES	YES	YES
REMARKS	NOTE 2	NOTE 2	NOTE 2

NOTES:

1. STATIC PRESSURE INCLUDES DUCTWORK AND DAMPERS.
2. PROVIDE EACH CEILING MOUNTED DIRECT DRIVE FAN WITH A SOLID STATE SPEED CONTROLLER.
3. INTERLOCK FAN WITH ROOM LIGHT SWITCH.

GRAVITY INTAKE HOOD

TAG	FUNCTION	NECK SIZE	OUTSIDE DIMS	CONSTUCTION	MANUF / MODEL
GIH-1	OUTSIDE AIR INTAKE	12" DIA.	28" DIA.	ALUMINUM	COOK PR-12

NOTE: PROVIDE WITH ALUMINUM ROOF CURB AND BIRD SCREEN.

AIR DEVICE SCHEDULE

TYPE	DESCRIPTION	OPPOSED BLADE DAMPER	FINISH	PRICE MODEL NO.
S1	24"x24" SQ. PLAQUE FACE CEILING DIFFUSER, 6"Ø NECK	NO	WHITE ENAMEL	ASPD
S2	24"x24" SQ. PLAQUE FACE CEILING DIFFUSER, 8"Ø NECK	NO	WHITE ENAMEL	ASPD
S3	24"x24" SQ. PLAQUE FACE CEILING DIFFUSER, 10"Ø NECK	NO	WHITE ENAMEL	ASPD
S4	12"x12" SQ. PLAQUE FACE CEILING DIFFUSER, 6"Ø NECK	NO	WHITE ENAMEL	ASPD
S5	4'-0" LONG CEILING LINEAR SLOT DIFFUSER WITH (2) 1/2" SLOTS	NO	WHITE ENAMEL	SDS50 WITH SDA PLENUM 8"Ø INLET
S6	12"x6" SINGLE DEFLECTION SUPPLY AIR REGISTER	YES	WHITE ENAMEL	610DAL ALUMINUM
R1	24"x24" PERFORATED FACE CEILING RETURN AIR GRILLE, 22"x22" NECK	NO	WHITE ENAMEL	APDDR

NOTES:

1. SQUARE AIR DEVICES INSTALLED IN GYP BOARD, PLASTER, OR OTHER HARD CEILINGS SHALL HAVE A SEPARATE MOUNTING FRAME. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
2. ALL AIR DEVICES TO BE CONSTRUCTED FROM ALUMINUM.

HVAC LEGEND

	SUPPLY AIR DIFFUSER
	EXHAUST OR RETURN AIR GRILLE
	SIDEWALL REGISTER/GRILLE
	MANUAL BALANCE DAMPER
M	MOTORIZED DAMPER (2 POSITION)
	FLEX DUCT (MAX 6'-0" LENGTH)
FD	FIRE DAMPER
T	ADJUSTABLE TEMPERATURE SENSOR (4'-0" AFF) (BY HONEYWELL)
S1 | 200 (TYPE / CFM)	AIR DEVICE TAG

HVAC GENERAL NOTES

1. FURNISH AND INSTALL ALL MATERIALS AND LABOR REQUIRED TO PROVIDE COMPLETE AND OPERABLE HVAC SYSTEMS, WITH ALL ITEMS AND APPURTENANCES NECESSARY.
2. ALL WORK AND/OR MATERIALS SHALL BE INSTALLED BY A LICENSED CONTRACTOR AND SHALL CONFORM TO ALL APPLICABLE NATIONAL AND LOCAL BUILDING AND MECHANICAL CODES.
3. ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. INSTALL TURNING VANES IN ALL RECTANGULAR DUCTWORK ELBOWS.
4. COORDINATE EXACT ROUTING OF ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION.
5. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF AIR DEVICES WITH ARCHITECT'S REFLECTED CEILING PLANS AND ELECTRICAL LIGHTING LAYOUT.
6. ALL SUPPLY AND RETURN AIR DUCTWORK CONCEALED ABOVE CEILINGS SHALL BE INSULATED WITH 2.2" THICK, 0.75 LB/CF (MINIMUM) FSK WRAP INSULATION (MINIMUM INSTALLED R-VALUE = R-6). FOR DUCTWORK WITH INTERNAL LINER, WRAP INSULATION MAY BE OMITTED.
7. ALL SUPPLY AND RETURN AIR DUCTWORK FROM VERTICAL AIR HANDLERS SHALL BE LINED WITH 1-1/2" THICK ACOUSTICAL LINING IN THE MECHANICAL ROOM (THEN EXTERNALLY INSULATED ABOVE CEILINGS).
8. FLEXIBLE DUCTWORK RUNOUTS SHALL BE LIMITED TO 6'-0" EXTENDED LENGTH. FLEXIBLE DUCTWORK SHALL BE EQUAL TO ATCO #936. FLEXIBLE DUCTS SHALL HAVE INSULATION WITH A MINIMUM R-VALUE OF 6.0 PER IECC, AND SHALL HAVE A CONTINUOUS FLEXIBLE FIBERGLASS SHEATH WITH UL APPROVED METALIZED POLYESTER BARRIER JACKET.
9. INSTALL FLEXIBLE DUCTWORK CONNECTORS AT ALL DUCT CONNECTIONS TO AIR HANDLERS AND FANS.
10. PROVIDE A MANUAL BALANCE DAMPER AT EACH AND EVERY SUPPLY, EXHAUST AND OUTSIDE AIR BRANCH DUCT.
11. ALL DUCT DIMENSIONS SHOWN ARE NET CLEAR INSIDE DIMENSIONS.
12. FIRE DAMPERS SHALL BE PROVIDED AND INSTALLED WHERE DUCTS PENETRATE FIRE RATED WALLS. DAMPERS SHALL COMPLY WITH SMACNA, MINIMUM 16 GAUGE WELDED STEEL WITH DAMPER BLADES OUTSIDE OF AIRSTREAM. FIRE DAMPERS SHALL BE FULL SIZE OF DUCTWORK. ALL DAMPERS SHALL BE ACCESSIBLE ABOVE LAY-IN CEILINGS, OR PROVIDE ACCESS PANELS WHERE REQUIRED.
13. MOUNT ALL THERMOSTATS 4'-0" ABOVE FLOOR (TYPICAL).
14. FOR ALL VOLUME DAMPERS LOCATED ABOVE A HARD CEILING, PROVIDE AND INSTALL A WORM GEAR REMOTE VOLUME DAMPER REGULATOR. INSTALL KEY ACCESS IN THE CEILING DIRECTLY BELOW THE DAMPER AND PAINT CAP TO MATCH CEILING.
15. REFER TO SPECIFICATIONS FOR TEST & BALANCE AND COMMISSIONING REQUIREMENTS.

Kimley»Horn
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P: 281 597 5300
TBPE No. 928

No.	Revisions	By	Date

LESLIE R. BROWN 60171 REGISTERED PROFESSIONAL ENGINEER STATE OF TEXAS
08/09/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING MECHANICAL DETAILS & SCHEDULES

DATE:	AUGUST 10, 2023
DESIGN:	SR
DRAWN:	SR
CHECKED:	LB
KHA NO.:	067812104

SHEET

M-950

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TBPELS Firm #44, #10011300, #10011302, #10194146
BHB PROJECT # 2021.184.000

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825 W Vickery Blvd, Suite 100
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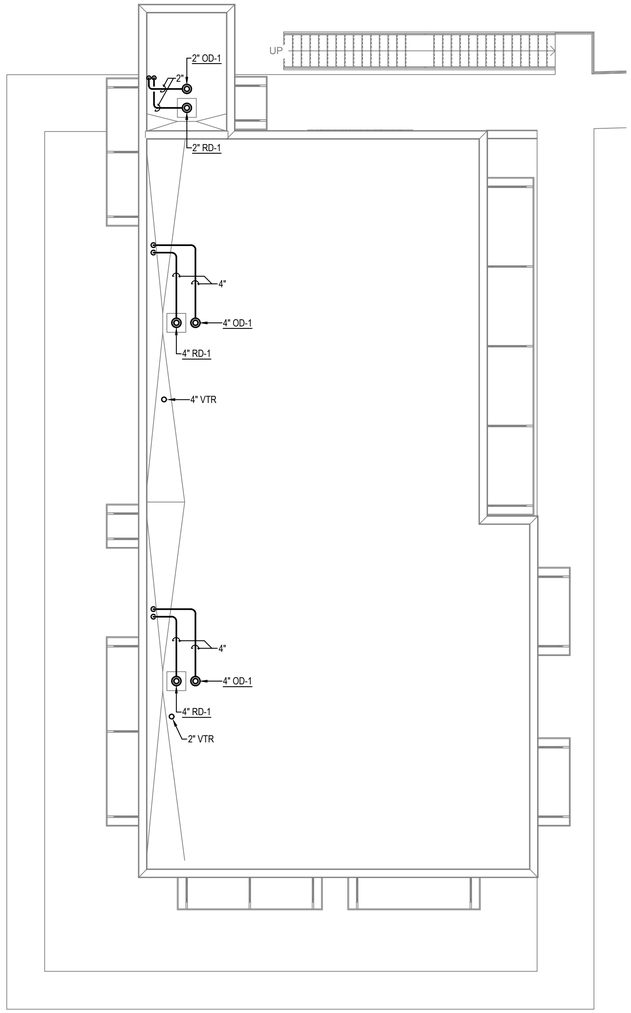
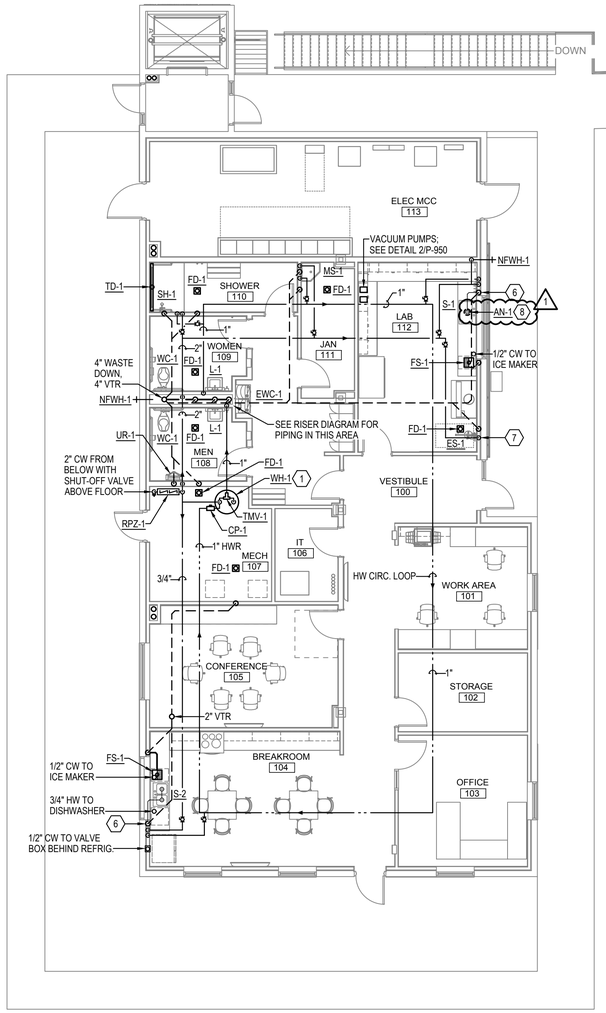


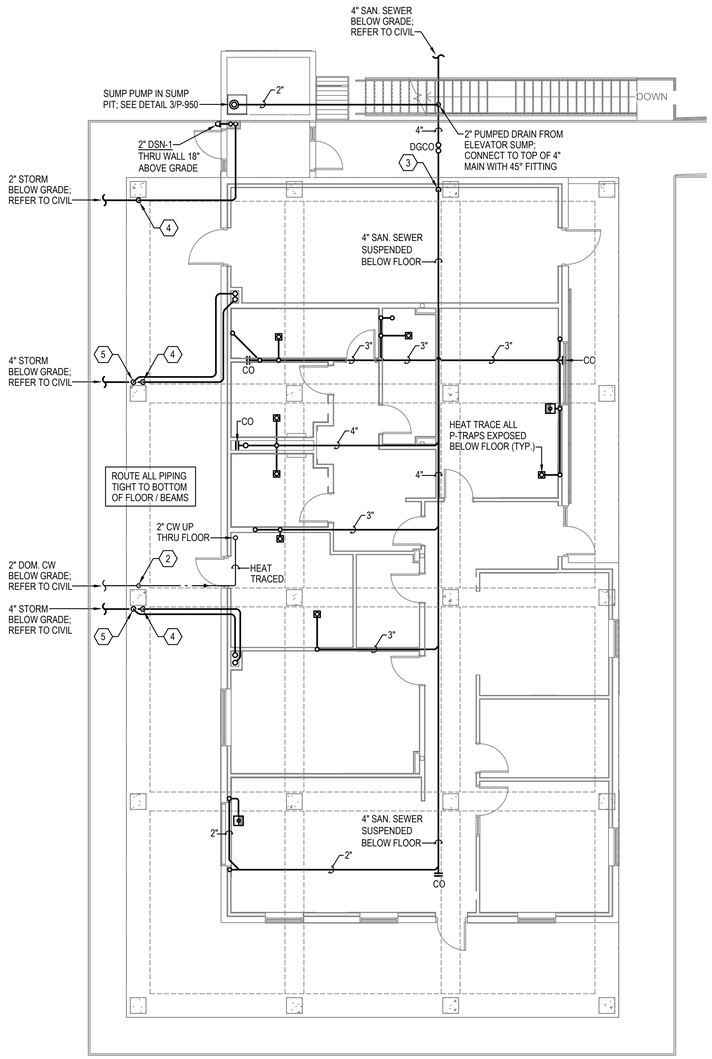
1 PLUMBING ROOF PLAN

P-910 SCALE: 1/8" = 1'-0"



2 PLUMBING FLOOR PLAN

P-910 SCALE: 1/8" = 1'-0"



3 PLUMBING UNDERFLOOR PLAN

P-910 SCALE: 1/8" = 1'-0"

GENERAL PLUMBING NOTES

1. DO NOT ROUTE ANY PIPING ABOVE ROOM IT 106.
2. ROUTE PIPING IN JOIST SPACE WHERE REQUIRED TO AVOID CONFLICTS WITH DUCTWORK AND OTHER TRADES.
3. LOCATE ALL SHUT-OFF VALVES ABOVE LAY-IN CEILINGS WHENEVER POSSIBLE.
4. PROVIDE HEAT TRACING FOR THE MAIN WATER LINE FROM 12" BELOW GRADE UP TO WITHIN THE BUILDING ENVELOPE.
5. PROVIDE HEAT TRACING FOR ALL SANITARY SEWER P-TRAPS BELOW THE FLOOR SLAB (EXPOSED BELOW RAISED FLOOR).
6. ROUTE FULL SIZE CONDENSATE DRAIN LINE FROM AHU-1,2 TO NEAREST FLOOR DRAIN - SEE DETAIL 1/M-950. ROUTE 3/4" PUMPED CONDENSATE DRAIN FROM AHU-3,4,5 TO MOP SINK - SEE MECHANICAL FOR LOCATIONS.

NOTES BY SYMBOL "⟨X⟩"

⟨1⟩ ELECTRIC WATER HEATER SET ON 4" THICK CONCRETE PAD; REFER TO DETAIL 1/P-950.

⟨2⟩ 2" CW DOWN ALONG COLUMN TO BELOW GRADE. ALL EXTERIOR WATER PIPING SHALL BE HEAT TRACED.

⟨3⟩ 4" SANITARY SEWER DOWN ALONG COLUMN TO BELOW GRADE.

⟨4⟩ PRIMARY STORM DRAIN (SIZE AS INDICATED) DOWN ALONG COLUMN TO BELOW GRADE.

⟨5⟩ OVERFLOW STORM DRAIN (SIZE AS INDICATED) DOWN ALONG COLUMN TO 12" ABOVE GRADE. TERMINATE WITH 45 DEGREE FITTING AWAY FROM COLUMN.

⟨6⟩ 2" WASTE, 1-1/2" VENT OFFSET BELOW COUNTER BEYOND WINDOW. ROUTE 3/4" AND 3/4" HW DOWN IN WALL AND OFFSET WITHIN WALL OR BELOW COUNTER TO FIXTURES AS INDICATED. PROVIDE A SHUT-OFF VALVE FOR EACH BRANCH LINE.

⟨7⟩ 1-1/4" CW DOWN IN WALL TO 8'-0" ABOVE FLOOR; PENETRATE WALL WITH ESCUTCHEON AND CONNECT TO TOP OF EMERGENCY SHOWER.

⟨8⟩ PROVIDE AND INSTALL A POINT-OF-USE ACID NEUTRALIZATION CARTRIDGE SYSTEM DIRECTLY BELOW THE SINK, WITHIN CABINET. ROUTE 1-1/2" CPVC PIPE FROM SINK TO BASIN AND 2" PVC PIPE FROM BASIN OFFSET TO WALL AS INDICATED.

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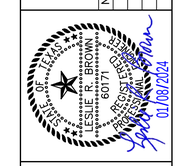
No.	Revisions	By	Date
1	REVISION 1 - PERMIT COMMENTS	SR	01/10/24



CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING PLUMBING PLAN

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PLUMBING LEGEND

COLD WATER (CW)	
HOT WATER (110° HW)	
HOT WATER RETURN	
DIRECTION OF FLOW	
SHUT-OFF (BALL) VALVE	
SS — WASTE (SANITARY SEWER)	
VENT (SANITARY SEWER)	
CD — CONDENSATE DRAIN LINE	
FD — FLOOR DRAIN	
FS — FLOOR SINK	
FCO — FLOOR CLEANOUT	
WCO — WALL CLEANOUT	
GCO — GRADE CLEANOUT	
CO — CLEAN OUT (PLUG TYPE)	
NFWH — NON-FREEZE WALL HYDRANT	
VTR — VENT THRU ROOF	

WATER HEATER SCHEDULE

TAG	LOCATION	KW INPUT	TANK STORAGE GALLONS	GPH RECOVERY @ 80° RISE	VOLTS / PH	MANUFACTURER & MODEL No.	REMARKS
WH-1	MECH 107	4.5 / 4.5	55	23	240/1	A.O. SMITH DEN-52	SET LEAVING TANK TEMP TO 140°F

NOTES:
1. PROVIDE SHUTOFF VALVE ON HOT & COLD WATER LINE.
2. REFER TO WATER HEATER DETAIL FOR ACCESSORIES.
3. DUAL WATER HEATING ELEMENTS SHALL BE WIRED NON-SIMULTANEOUS.

DOMESTIC HOT WATER CIRCULATING PUMP SCHEDULE

TAG	SERVICE	GPM FLOW	HEAD IN FEET	MOTOR HP	MOTOR RPM	ELECTRICAL CHARACTERISTICS	MANUFACTURER & MODEL No.	REMARKS
CP-1	WATER HEATER WH-1	5	25	1/12	1750	115V, 1 PHASE	GRUNDFOS UP-26-96BF A/T	INTEGRAL TIMER

NOTES:
1. PROVIDE PUMP WITH AN INTEGRAL, PROGRAMMABLE TIMER FOR SCHEDULING PER IECC.

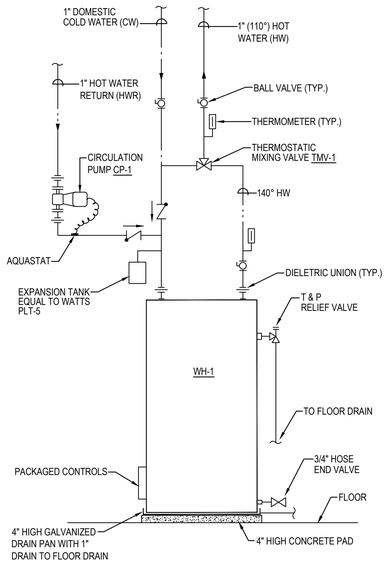
PLUMBING GENERAL NOTES

1. FURNISH AND INSTALL ALL MATERIALS AND LABOR REQUIRED TO PROVIDE COMPLETE AND OPERABLE PLUMBING SYSTEMS WITH ALL ITEMS AND APPURTENANCES NECESSARY, EVEN THOUGH NOT SPECIFICALLY CALLED OUT.
2. ALL WORK AND/OR MATERIAL SHALL BE INSTALLED BY A LICENSED CONTRACTOR.
3. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. IN CASE OF CONFLICT BETWEEN THE DRAWINGS/SPECIFICATIONS AND THE CODES AND ORDINANCES, THE HIGHEST STANDARD SHALL APPLY. THE PLUMBING CONTRACTOR SHALL SATISFY CODE REQUIREMENTS AS A MINIMUM STANDARD WITHOUT ANY EXTRA COST TO THE OWNER..
4. COORDINATE EXACT ROUTING OF ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION.
5. PROVIDE A PROSET TRAP GUARD FOR ALL FLOOR DRAINS EXCEPT FOR THOSE AREAS NOT REQUIRED BY THE CITY.
6. PROVIDE FACTORY MANUFACTURED WATER HAMMER ARRESTORS WHERE REQUIRED AND/OR INDICATED ON THE DRAWINGS.
7. CONTRACTOR SHALL CONFIRM DEPTHS OF EXISTING SEWER LINES AND CONFIRM ADEQUACY FOR CONNECTION OF NEW SYSTEM. THE ENGINEER SHALL BE NOTIFIED IF THE REQUIRED SLOPES CAN NOT BE MAINTAINED, PRIOR TO INSTALLATION OF ANY NEW PIPING.
8. INSTALL PLUMBING VENTS THROUGH ROOF TO BE A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES. COORDINATE WITH MECHANICAL.
9. THIS CONTRACTOR SHALL FURNISH ALL PIPE SUPPORTS REQUIRED FOR PLUMBING EQUIPMENT AND MATERIALS. PIPE SADDLES SHALL BE INSTALLED FOR INSULATED PIPING.
10. PROVIDE HEAT TRACING ON ALL WATER PIPING AND SANITARY SEWER P-TRAPS ABOVE GRADE AND OUTSIDE OF THE BUILDING ENVELOPE.
11. REFER TO DIVISION 22 FOR COMPLETE PROJECT SPECIFICATIONS.
12. REFER TO SPECIFICATION SECTION 22 0010 FOR COMMISSIONING REQUIREMENTS.

PLUMBING FIXTURE SCHEDULE

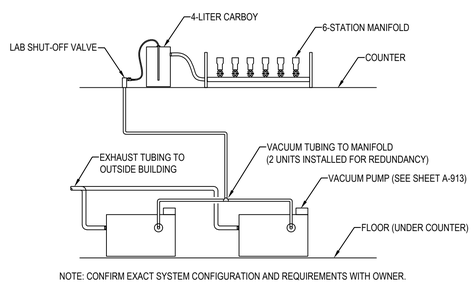
TAG	FIXTURE	H	C	W	V	DESCRIPTION
WC-1	WATER CLOSET, FLOOR SET FLUSH VALVE, ACCESSIBLE	-	1"	4"	2"	AMERICAN STANDARD #3461.128. VITREOUS CHINA, 1.28 GPF, ELONGATED TOILET. SLOAN ROYAL #113-1.28 FLUSH VALVE. CHURCH #9500CT OPEN FRONT SEAT WITH STA-TITE HINGES. TOP OF SEAT 17-1/2" AFF.
UR-1	URINAL, WALL HUNG FLUSH VALVE, ACCESSIBLE	-	3/4"	2"	2"	AMERICAN STANDARD #6590.005 VITREOUS CHINA, 0.5 GPF, ELONGATED RIM WITH TOP SPUD. SLOAN ROYAL #186-0.5 FLUSH VALVE. MOUNT RIM 15-1/4" AFF.
L-1	LAVATORY, WALL HUNG ACCESSIBLE	1/2"	1/2"	2"	1-1/2"	AMERICAN STANDARD #0355.012. VITREOUS CHINA WALL HUNG LAVATORY WITH CONCEALED ARMS SUPPORT, FAUCET HOLES ON 4" CENTERS. DELTA #22C101 CENTERSET SINGLE LEVER FAUCET, GRID STRAINER & P-TRAP. ADA INSULATION PACKAGE.
S-1	SINGLE COMPARTMENT SINK COUNTERTOP	1/2"	1/2"	2"	1-1/2"	ELKAY #ELUH181610C, 18 GA. STAINLESS STEEL 30-1/2" x 18-1/2" x 10" DEEP UNDERMOUNT SINK WITH REAR CENTER DRAIN. INCLUDES LK2500CR UTILITY FAUCET WITH FLEXIBLE SPOUT AND SINGLE LEVER, 1.5 GPM, CHROME FINISH. FURNISH AND INSTALL LK99 STRAINER, TAILPIECE AND P-TRAP.
S-2	DOUBLE COMPARTMENT SINK COUNTERTOP, ACCESSIBLE WITH GARBAGE DISPOSER	1/2"	1/2"	2"	1-1/2"	ELKAY #ELUHAD281655PD, 18 GA. STAINLESS STEEL 30-1/2" x 18-1/2" x 5-3/8" DEEP UNDERMOUNT SINK WITH REAR (OFFSET) CENTER DRAIN. ELKAY #LKAV2061 DECK MOUNTED, SINGLE HOLE FAUCET WITH SEMI-PROFESSIONAL SPOUT AND SINGLE LEVER HANDLE, CHROME FINISH, 1.8 GPM. ELKAY LKGT1054 DECK MOUNTED SOAP DISPENSER SHALL BE INSTALLED ADJACENT TO FAUCET WITH SOAP BOTTLE BELOW COUNTER. DISPOSER SHALL BE IN-SINK-ERATOR "BADGER 1", 1/3 HP, 115V, GALVANIZED STEEL IMPELLERS.
EWC-1	ELECTRIC WATER COOLER BOTTLE FILLER, ACCESSIBLE	-	1/2"	2"	1-1/2"	ELKAY LZSTL8WSLP, BI-LEVEL, VINYL CLAD STEEL FINISH WITH BOTTLE FILLING STATION, WATER FILTER AND MATCHING CANE APRON. PROVIDE CHROME PLATED P-TRAP, SUPPLY AND STOP. INSTALLATION SHALL COMPLY WITH TAS.
FD-1	FLOOR DRAIN, ROUND	-	-	3"	2"	SIOUX CHIEF 832 SERIES FINISH LINE ADJUSTABLE FLOOR DRAIN WITH ABS BASE AND STAINLESS STEEL STRAINER. FLOOR DRAIN SHALL HAVE A SCH40 HUB CONNECTION AND PROSET TRAP GUARD.
MS-1	MOP SINK	1/2"	1/2"	3"	2"	FIAT #TSBC-6000 MOP BASIN, NEO CORNER. TERRAZZO 24"x24"x12" HIGH WITH PLAIN CURBS, 3" DRAIN. PROVIDE FIAT #830-AA FAUCET; #832-AA HOSE BRACKET & HOSE; #889-CC MOP HANGER. PROVIDE FIAT MSG-2424 STAINLESS STEEL PANEL AT EACH SIDE OF MOP SINK.
NFWH-1	NON-FREEZE WALL HYDRANT	-	3/4"	-	-	WATTS HY-420 CHROME PLATED FACE (NO COVER). WALL HYDRANT SHALL HAVE INTEGRAL VACUUM BREAKER, ALL BRONZE CONSTRUCTION, KEY OPERATED.
ES-1	EMERGENCY SHOWER / EYE WASH	-	1-1/4"	-	-	BRADLEY #S19314 COMBINATION DRENCH SHOWER AND HALO EYE/FACE WASH. UNIT SHALL HAVE A DRAIN 6" ABOVE FLOOR. ALL PIPING, VALVES AND COMPONENTS SHALL BE 304 STAINLESS STEEL.
TD-1	TRENCH DRAIN	-	-	2"	1-1/2"	INFINITY DRAIN FTSG6560, 60" LONG x 2-1/2" WIDE WITH SIDE OUTLET, PACKAGE INCLUDES BA 6560 GRATE (304L STAINLESS STEEL), FIXED FLANGE CHANNEL, ADJUSTABLE CHANNEL FEET, LIFT OUT KEY.
RD-1	ROOF DRAIN	-	-	SEE PLAN	-	WATTS #RD-300 COATED CAST IRON BODY WITH ADJUSTABLE EXTENSION. ROOF DRAIN SHALL HAVE NON-PUNCTURING CLAMP RING WITH INTEGRAL GRAVEL STOP, NO HUB STANDARD OUTLET CONNECTION, DUCTILE IRON DOME AND UNDER DECK CLAMP.
OD-1	OVERFLOW ROOF DRAIN	-	-	SEE PLAN	-	WATTS #RD-300-R COATED CAST IRON BODY WITH ADJUSTABLE EXTENSION. ROOF DRAIN SHALL HAVE 2" EXTERNAL WATER GUARD, NON-PUNCTURING CLAMP RING WITH INTEGRAL GRAVEL STOP, NO HUB STANDARD OUTLET CONNECTION, DUCTILE IRON DOME AND UNDER DECK CLAMP.
DSN-1	DOWNSPOUT NOZZLE	-	-	SEE PLAN	-	WATTS #RD-950 STAINLESS STEEL DOWNSPOUT COVER WITH SECURING FLANGE AND PERFORATED HINGED COVER. DOWNSPOUT SHALL EXTEND A MAXIMUM OF 2-1/2" BEYOND WALL.
RPZ-1	REDUCED PRESSURE ZONE BACKFLOW PREVENTER	-	2"	-	-	WATTS #LF009-QT-S REDUCED PRESSURE ZONE ASSEMBLY, LEAD FREE, QUARTER TURN BALL VALVES, STRAINER, 2" INLET AND OUTLET. PROVIDE WITH AIR GAP AND DRAIN DISCHARGED TO NEAREST FLOOR DRAIN.
SH-1	SHOWER, WALL MOUNTED HAND HELD, ACCESSIBLE	1/2"	1/2"	2"	2"	DELTA #T13H153 WITH R10000-UNWS ROUGH-IN VALVE BODY. PACKAGE INCLUDES SHOWER VALVE, HANDSHOWER WITH BACKFLOW PREVENTION AND 24" SLIDE BAR. VALVE SHALL BE SINGLE LEVER, PRESSURE BALANCING TYPE WITH INTEGRAL STOPS AND CHECKS. LEVER HANDLE SHALL BE ADA & TAS COMPLIANT.
TMV-1	THERMOSTATIC MIXING VALVE	3/4"	3/4"	-	-	POWERS LFLM492 MIXING VALVE WITH 3/4" INLETS AND 3/4" OUTLET, 0.5 GPM MIN. FLOW, 10 PSI PRESSURE DROP AT 11 GPM FLOW, LEAD FREE, ASSE 1017 LISTED. CONTRACTOR TO CONFIRM CONNECTION TYPE (UNION SWEAT, PRESS, ETC.).
1 AN-1	ACID NEUTRALIZATION CARTRIDGE SYSTEM	1-1/2"	1-1/2"	-	-	MIFAB #MI-NEUT-P ACID NEUTRALIZATION CARTIDGE SYSTEM, POINT-OF-USE WITH THREADED INLET AND OUTLET. SYSTEM USES SOLID ALKALI NON-RESIN MEDIA. PROVIDE OWNER WITH TWO (2) ADDITIONAL MEDIA REPLACEMENTS (MI-NEUT-MED).

NOTES:
1. ALL FIXTURES SHALL MEET LOW WATER CONSUMPTION REQUIREMENTS.
2. PROVIDE STOPS AT ALL FIXTURES.
3. PROVIDE AND INSTALL A PROSET TRAP GUARD FOR EACH NEW FLOOR DRAIN.
4. ACCESSIBLE FIXTURES SHALL BE MOUNTED AND INSTALLED PER TAS.
5. PROVIDE FLOOR MOUNTED CARRIERS FOR ALL WALL MOUNTED FIXTURES.
6. PROVIDE TRUE-BRO 'LAV-GUARD' INSULATION KIT FOR EXPOSED PIPING AT ALL ACCESSIBLE SINKS AND LAVS.



1 WATER HEATER DETAIL

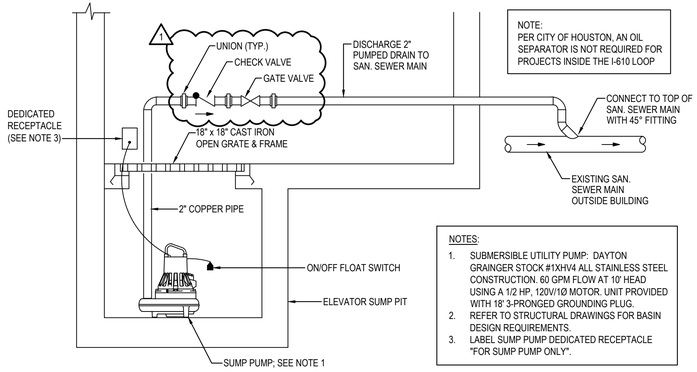
P-950 SCALE: NONE



NOTE: CONFIRM EXACT SYSTEM CONFIGURATION AND REQUIREMENTS WITH OWNER.

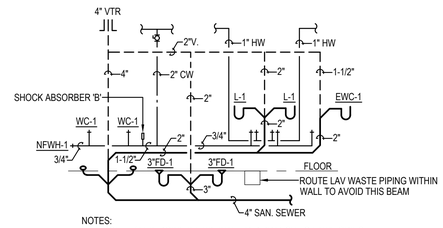
2 VACUUM PUMP DIAGRAM

P-950 SCALE: SCHEMATIC ONLY



3 ELEVATOR SUMP PUMP DETAIL

P-950 SCALE: None



NOTES:
1. ROUTE 1" HW DOWN WITHIN WALL AND BRANCH TO LAVATORIES IN COMPLIANCE WITH MAXIMUM PIPE LENGTH PER IECC.

4 RISER DIAGRAM

P-950 SCALE: SCHEMATIC ONLY

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No.	Revisions	By	Date
1	REVISION 1 - PERMIT COMMENTS	SR	01/10/24

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING PLUMBING DETAILS & SCHEDULES

DATE:	AUGUST 10, 2023
DESIGN:	SR
DRAWN:	SR
CHECKED:	LB
KHA NO.:	067812104

SHEET

P-950

SYMBOLS	DESCRIPTION
52 CS	MEDIUM VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER CS–CONTROL SWITCH
(E.O.) FRAME TRIP	LOW VOLTAGE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED. LSIG IF NOTED MCP IF NOTED ERMS IF NOTED
✳ OR	COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON–REVERSING UNLESS OTHERWISE NOTED: ✳ FVR–FULL VOLTAGE REVERSING RVNR–REDUCED VOLTAGE NON–REVERSING 2S1W–TWO SPEED, ONE WINDING 2S2W–TWO SPEED, TWO WINDING
✳ OR	NON–FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE ✳ AMPERE RATING NOTED IF OTHER THAN 30A
✳ OR F	FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED: ✳ AMPERE RATING NOTED IF OTHER THAN 30A FUSE RATING
MIS OR I	MOTOR ISOLATION SWITCH, HORSEPOWER RATED
	DRAWOUT TYPE EQUIPMENT OR DEVICE
	MEDIUM VOLTAGE CABLE TERMINATION
	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER
30KVA 480V– 120/208Y K–*	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE SINGLE LINE DIAGRAMS ALL DRY TYPE TRANSFORMERS SERVICING ADMINISTRATIVE AND LABORATORY SPACES SHALL HAVE A K FACTOR OF 13. ALL OTHER DRY TYPE TRANSFORMERS SHALL HAVE A K–4 RATING. ISOLATION TRANSFORMERS SHALL HAVE A K–20 RATING
✳ A:5	CURRENT TRANSFORMER: ✳ QUANTITY A= PRIMARY AMPERES
✳ PV–SV	POTENTIAL TRANSFORMER: ✳ QUANTITY PV= PRIMARY VOLTAGE SV= SECONDARY VOLTAGE
	GENERATOR, RATINGS AND CONNECTIONS AS NOTED
100A ATS–1 N S	TRANSFER SWITCH AUTOMATIC TRANSFER SWITCH (EG ATS–1) MANUAL TRANSFER SWITCH (EG MTS–1) "N" INDICATES NORMAL SOURCE "S" INDICATES STANDBY SOURCE 100A INDICATES CONTINUOUS CURRENT RATING
✳	VARIABLE SPEED DRIVE CONTROLLER ✳D.C.= D.C. DRIVE CONTROLLER SCR= SILICON CONTROLLED RECTIFIER VFD= VARIABLE FREQUENCY DRIVE AFD= ADJUSTABLE FREQUENCY DRIVE
	VACUUM CONTACTOR
5KW OR E	UNIT HEATER – ELECTRIC HEATING COIL AND FAN
5KW OR U	UNIT HEATER – STEAM OR WATER HEATING COIL AND FAN
M	MOTOR, NUMERAL INDICATES HORSEPOWER
SPD	SURGE PROTECTION DEVICE

SYMBOLS	DESCRIPTION
VM ✳	VOLTMETER (WITH SWITCH IF 3–PHASE)
AM ✳	AMMETER (WITH SWITCH IF 3–PHASE)
*	METER ✳ WM– WATTMETER WHM– WATTHOUR METER WHDM– WATTHOUR DEMAND METER WHDR– WATTHOUR DEMAND RECORDER PF– POWER FACTOR METER RT– RUNNING TIME METER TRANSDUCER AX– CURRENT TRANSDUCER WX– WATT TRANSDUCER
#	RELAY, NO. AS INDICATED 25– SYNCHRONISM CHECK RELAY 27– UNDER VOLTAGE RELAY 38– BEARING PROTECTIVE DEVICE 40– LOSS OF EXCITATION RELAY 42– RUNNING CONTACTOR/PILOT RELAY 46– REVERSE PHASE/PHASE BALANCE/CURRENT RELAY 47– PHASE SEQUENCE VOLTAGE RELAY 49– MACHINE OR TRANSFORMER THERMAL RELAY 50– INSTANTANEOUS OVERCURRENT RELAY 50G– INSTANTANEOUS GROUND 51– TIME OVER CURRENT RELAY 51G– TIME OVERCURRENT RELAY, GROUNDING RESISTOR TYPE 51N– TIME OVERCURRENT RELAY, RESIDUAL TYPE 51V– TIME OVERCURRENT RELAY WITH VOLTAGE RESTRAINT 60– NEGATIVE SEQUENCE VOLTAGE RELAY 62– TIME DELAY RELAY 63– OVER PRESSURE RELAY 67– AC DIRECTIONAL OVERCURRENT RELAY 83– AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY 86– LOCKING–OUT RELAY 87– DIFFERENTIAL PROTECTIVE RELAY B– SUFFIX INDICATES "BUS" G– SUFFIX INDICATES "GENERATOR" GF– GROUND FAULT ST– SHUNT TRIP T– SUFFIX INDICATES "TRANSFORMER" X– SUFFIX INDICATES "AUXILIARY"
*	SPECIAL CAPACITOR ✳ SC– SURGE CAPACITOR PF– POWER FACTOR CORRECTION CAPACITOR INCLUDING INDUCTIVE LINK AS NEEDED
	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
E–STOP	EMERGENCY STOP PUSH BUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
✳ N	STOP PUSH BUTTON WITH RED HEAD OPERATOR (MAINTAINED CONTACT) WITH LOCKABLE OPTION ✳ : E–STOP ✳ : STOP
STOP START	START–STOP PUSH BUTTON CONTROL STATION (MOMENTARY CONTACT) "L" DENOTES LOCKOUT TYPE
STOP START	START–STOP PUSH BUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
OFF ON	OFF/ON SELECTOR SWITCH
A B C ✳ (XOO) (OOX)	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O–OPEN X–CLOSED

POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT
A	X	O	O
B	O	O	O
C	O	O	X

✳ NAMEPLATE (A/B/C)
HOA– HAND/OFF/AUTO
HOR– HAND/OFF/REMOTE
LOR– LOCAL/OFF/REMOTE
RSL– RAISE/STOP/LOWER
TOA– TEST/OFF/AUTO

NOTE: 2 POSITION MULTI–CONTACT SWITCH FOLLOWS SAME CONVENTION

M#	MOTOR STARTER COIL, NUMBER AS INDICATED
CR #	CONTROL RELAY COIL, NUMBER AS INDICATED
	RVSS: REDUCED VOLTAGE SOLID STATE SOFT STARTER

SYMBOLS	DESCRIPTION
*	PILOT LIGHT, COLOR AS NOTED ✳ R– RED G– GREEN B– BLUE W– WHITE A– AMBER
* PTT	PILOT LIGHT, PUSH–TO–TEST TYPE, COLOR AS NOTED ABOVE.
TD	TIME DELAY RELAY RANGE AS NOTED SET POINT AS NOTED TDD–TIME DELAY AFTER DE–ENERGIZATION–OFF DELAY TDE–TIME DELAY AFTER ENERGIZATION–ON DELAY
	NOTC–NORMALLY OPEN, TIMED CLOSING WHEN ENERGIZED
	NCTO–NORMALLY CLOSED, TIMED OPENING WHEN ENERGIZED
	NOTO–NORMALLY OPEN, TIMED OPENING WHEN DE–ENERGIZED
	NCTC–NORMALLY CLOSED, TIMED CLOSING WHEN DE–ENERGIZED
⊗	FIELD INSTRUMENT, TAG NO. OR LOOP # AS INDICATED ✳ – INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS ## – INDICATES LOOP NO.
OR ⊗	LIQUID LEVEL (FLOAT) SWITCH NORMALLY OPEN, CLOSES ON RISING LEVEL NORMALLY CLOSED, OPENS ON RISING LEVEL NORMALLY OPEN, CLOSES ON DROPPING LEVEL NORMALLY CLOSED, OPENS ON DROPPING LEVEL
OR ⊗	PRESSURE OR VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE NORMALLY CLOSED, OPENS ON RISING PRESSURE NORMALLY OPEN, CLOSES ON DROPPING PRESSURE NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
OR ⊗	TEMPERATURE SWITCH OR THERMOSTAT NORMALLY OPEN, CLOSES ON RISING TEMPERATURE NORMALLY CLOSED, OPENS ON RISING TEMPERATURE NORMALLY OPEN, CLOSES ON DROPPING TEMPERATURE NORMALLY CLOSED, OPENS ON DROPPING TEMPERATURE
OR ⊗	FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSES ON INCREASED FLOW NORMALLY OPEN, CLOSES ON DROPPING FLOW NORMALLY CLOSED, OPENS ON INCREASED FLOW NORMALLY CLOSED, OPENS ON DROPPING FLOW
OR ⊗	POSITION (LIMIT) SWITCH NORMALLY OPEN NORMALLY OPEN – HELD CLOSED NORMALLY CLOSED NORMALLY CLOSED – HELD OPEN
OR ⊗	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	CONDUCTORS ELECTRICALLY CONNECTED

SYMBOLS	DESCRIPTION
LA SC	LIGHTNING ARRESTER/SURGE CAPACITOR
OR	GROUND ROD GROUND ROD WELL
30A	FUSE, AMPERE RATING AS NOTED
OR HTR	HEATER
	INDUCTOR
TG	TACHOMETER GENERATOR
	CONTACT, NORMALLY OPEN (NO)
	CONTACT, NORMALLY CLOSED (NC)
	OVERLOAD RELAY HEATER
K	KEY INTERLOCK
TB	TERMINAL OR TEST BLOCK
RTD	RESISTANCE TEMPERATURE DETECTOR
VE	VIBRATION DETECTOR
DM	DAMPER MOTOR
ETM OR	ELAPSED TIME METER
MOV	MOTOR OPERATED VALVE
o	PUSH BUTTON STATION, REFER TO ELECTRICAL SCHEMATIC FOR NUMBER OF DEVICES.
J	JUNCTION BOX
JP	POWER JUNCTION BOX
JI	4–20mA SIGNAL JUNCTION BOX
JC	CONTROL JUNCTION BOX
PB	PULL BOX
TC	TERMINATION CABINET
	REMOTE DEVICES
5	MOV WITHOUT INTEGRATED DISCONNECT
5	MOV WITH INTEGRATED DISCONNECT
	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
MPR	(MPR) MOTOR PROTECTION RELAY

VERIFY SCALE

0

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE.

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No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

STATE OF TEXAS ABHISHEK PANDEY 147640 LICENSED PROFESSIONAL ENGINEER 01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

LEGENDS & SYMBOLS (SHEET 1 OF 2)

DATE:	08/07/2023	AP
DESIGN:		TP
DRAWN:		AP
CHECKED:		067812104
KHA NO.:		

SHEET

E-001

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SYMBOLS	DESCRIPTION
LA–3 / A / b	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE: "A"– FIXTURE TYPE "b"– CONTROLLED BY SWITCH "b" "LA–3"– CIRCUIT 3 FROM PANEL LA
b / A / LA–3	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE, NOTATIONS SAME AS ABOVE
A / LA–3 OR LA–3 / A / NS	INDICATES LIGHT FIXTURES WHICH ARE NONSWITCHED, NOTATIONS SAME AS ABOVE "NS" – NONSWITCHED
LA–3 / A / b	WALL MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
LA–3 / A / b	POLE MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A / LA–3	EMERGENCY LIGHTING BATTERY UNIT WITH TWO LAMP HEADS, NOTATIONS SAME AS ABOVE
A	REMOTE EMERGENCY ADJUSTABLE WALL LIGHTING FIXTURE WITH TWO LAMP HEADS, NOTATIONS SAME AS ABOVE
A / LA–3	CEILING MOUNTED EXIT SIGN, NOTATIONS SAME AS ABOVE
A / LA–3	WALL OUTLET EXIT SIGN. ARROW INDICATES DIRECTION OF EGRESS, NOTATIONS SAME AS ABOVE
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCTBANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
	FLEXIBLE METAL CONDUIT "WHIP" (2#12, #12G, 3/4"C UNLESS OTHERWISE NOTED) FOR RECESSED LIGHTING FIXTURES AND LIQUID TIGHT MOTOR CONNECTIONS
LP#–1,3	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LP–1
$b	SINGLE POLE SWITCH "b"– INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" DESIGNATION
$b^x	MULTI POLE SWITCH "x"– INDICATES NUMBER OF POLE "b"– NOTATIONS SAME AS ABOVE
$b^P	SINGLE POLE SWITCH AND PILOT LIGHT, "b"– NOTATIONS SAME AS ABOVE
$b^D	DIMMER LIGHTING CONTROL SWITCH, "b"– NOTATIONS SAME AS ABOVE
$b^{TM}	TIME SWITCH, "b"–NOTATIONS SAME AS ABOVE
$^M	MANUAL MOTOR STARTER /DISCONNECT
$^{OS}	SINGLE POLE SWITCH WITH OCCUPANCY SENSOR
$^{DM}	SINGLE POLE DIMMER SWITCH
$^{xx}	SWITCH ENCLOSURE "x"– NOTATIONS SAME AS ABOVE "b"– NOTATIONS SAME AS ABOVE "xx"– INDICATES ENCLOSURE TYPE
LC–1	LIGHTING CONTACTOR WITH NUMBER OF POLES AS INDICATED

SYMBOLS	DESCRIPTION
L*–## / OR / L*–##	LIGHTING PANELBOARD (TYPICAL 120V/240V OR 120V/208V)
H*–## / OR / H*–##	DISTRIBUTION PANELBOARD (TYPICAL 277V/480V)
✳ / LA–3	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W ✳: GFI– GROUND FAULT INTERRUPTER TYPE WP– WEATHERPROOF "LA–3"– CIRCUIT 3 FROM PANEL LA
	WELDING RECEPTACLE
	20A, 240V, 2P, 3W, RECEPTACLE
	CLASS 1, DIVISION 1, RATED TWIST LOCK RECEPTACLE, VOLTAGE AND AMPERAGE RATING AS NOTED
✳	SINGLE FACE, SINGLE GANG PEDESTAL WITH 20A, 120V, 2P, 3W DUPLEX RECEPTACLE, FURNISHED AND INSTALLED UNDER DIVISION 16 UNLESS OTHERWISE NOTED. * DENOTES FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
D / ✳	DOUBLE FACE, SINGLE GANG PEDESTAL WITH 20A, 120V, 2P, 3W DUPLEX RECEPTACLE AND 20A, 240V, 2P, 3W SINGLE RECEPTACLE, FURNISHED AND INSTALLED UNDER DIVISION 16 UNLESS OTHERWISE NOTED. * DENOTES FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
	DOUBLE RECEPTACLE, 20A, 120V, 2P, 3W MOUNTED IN BOX CURB FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
	SINGLE GANG 20A, 120V, 3P, 3W RECEPTACLE
	QUAD RECEPTACLE
OS	OCCUPANCY SENSOR CAPABLE OF VACANCY
PC	PHOTOCELL
A	50A, 240 V, 1PH, 3W RANGE RECEPTACLE – NEMA 14–50R

SYMBOLS	DESCRIPTION
COMMUNICATIONS SYSTEMS	
	TELEPHONE OUTLET
	DATA OUTLET
P	DATA INPUT/OUTPUT CABLE OUTLET. "P" DENOTES PROCESS COMPUTER SYSTEM
	VOICE/DATA OUTLET
S	PAGING SPEAKER HORN
S	PAGING SPEAKER BI–DIRECTIONAL
S	PAGING SPEAKER, CEILING MOUNTED TYPE
S	PAGING SPEAKER, WALL MOUNTED TYPE
SECURITY SYSTEMS	
SAP	SECURITY ALARM PANEL
DS	SECURITY ALARM DOOR SWITCH
KP	SECURITY ALARM KEY PAD
CR	SECURITY SYSTEM CARD ACCESS READER
WS	SECURITY ALARM WINDOW SWITCH
MD	SECURITY ALARM MOTION DETECTOR
✳	SECURITY CAMERA ✳: CCTV– CLOSED CIRCUIT TV CAMERA PTZ– PAN, TILT, ZOOM CAMERA LENS CONTROLS
GB	GLASS BREAK DETECTOR
ACP	ACCESS CONTROL PANEL
FIRE ALARM SYSTEMS	
FACP	FIRE ALARM CONTROL PANEL
SD ✳	SMOKE DETECTOR ✳: D– DENOTES DUCT SMOKE DETECTOR R– DENOTES FIXED TEMPERATURE RATE–OF–RISE TYPE.
F	FIRE ALARM MANUAL PULL STATION, MOUNT AT 4'–0"
✳	ALARM HORN, MOUNT AT 7'–6" ✳: F– DENOTES FIRE ALARM
✳	ALARM STROBE, MOUNT AT 6'–8" ✳: F– DENOTES FIRE ALARM
✳	ALARM HORN AND STROBE LIGHT COMBINATION, MOUNT AT 6'–8" ✳: F– DENOTES FIRE ALARM

ABBREVIATIONS

AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
ALUM	ALUMINUM
AMP/A	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DN	DOWN
DWG	DRAWING
EHH	ELECTRICAL HANDHOLE
EC	EMPTY CONDUIT
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MANHOLE
EO	ELECTRICALLY OPERATED
ERMS	ENERGY–REDUCING MAINTENANCE SWITCH
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FU	FUSE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
G, GRD	GROUND
GFI	GROUND FAULT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HT	HEIGHT
HTP	HEAT TRACE PANEL
HZ	HERTZ
IMH	INSTRUMENT MAN HOLE
INST	INSTRUMENT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LCP	LOCAL CONTROL PANEL
LGTS	LIGHTS
LP	LIGHTING PANEL
	CONTINUED ABOVE RIGHT

	CONTINUED BELOW LEFT
LSIG	LONG TIME/SHORT TIME/ INSTANTANEOUS/GROUND FAULT FEATURE INCLUDED
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTG	MOUNTING
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
PB	PUSH BUTTON OR PULL BOX
PCC	PUMP CONTROL CONSOLE
PPR	PHASE PROTECTIVE RELAY
PFR	PHASE FAILURE RELAY
PH	PHASE
PNLBD	PANELBOARD
PR	PAIR
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RCP	RELAY CONTROL PANEL
RECP	RECEPTACLES
RVSS	REDUCED VOLTAGE SOFT STARTER
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCCR	SHORT CIRCUIT CURRENT RATING
SEC	SECONDS OR SECONDARY
SH	SHIELDED OR SHEET
SHT	SHEET
SM	MOTOR RATED SWITCH
SN	SOLID NEUTRAL
SS	STAINLESS STEEL
ST	STARTER
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TERMINATION CABINET
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TSW	TWISTED SHIELDED WIRE
TYP	TYPICAL
UG	UNDERGROUND
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VO	VALVE OPERATOR
W	WIRE
WP	WEATHERPROOF
XP	EXPLOSION PROOF
XFMR	TRANSFORMER

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No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

LEGENDS & SYMBOLS (SHEET 2 OF 2)

DATE:	08/07/2023			
DESIGN:	AP			
DRAWN:	TP			
CHECKED:	AP			
KHA NO.:	067812104			

VERIFY SCALE
0 1"
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SHEET
E-002

ELECTRICAL GENERAL NOTES

1. THE CONTRACTOR IS HEREBY ADVISED THAT THE CONTRACT DOCUMENTS CONSIST OF BOTH THE DRAWINGS AND THE SPECIFICATIONS, AND THAT THE CONTRACTOR MUST COMPLY FULLY WITH BOTH THE BOUND DRAWINGS AND THE BOUND SPECIFICATIONS.

2. ALL EQUIPMENT WIRING, RACEWAYS, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (IE. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS. REFER TO EACH SPECIFICATION SECTION FOR SPECIFIC REQUIREMENTS.

3. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS. SEE SPECIFICATION ON RACEWAYS FOR ADDITIONAL REQUIREMENTS.

4. CONDUITS SHALL BE TERMINATED IN A NEAT MANNER AND STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWING DETAILS.

5. CONDUITS TERMINATED INTO ENCLOSURES SHALL BE PERPENDICULAR TO THE WALLS OF THE ENCLOSURE. THE USE OF SHORT SEALTIGHT ELBOW FITTINGS FOR SUCH TERMINATIONS IS NOT PERMITTED.

6. ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION. SEE THE DRAWINGS AND THE SPECIFICATION ON RACEWAYS FOR THE EXACT TYPE OF FITTING TO BE USED.

7. NO CONDUIT SMALLER THAN 3/4", NOR POWER CONDUCTORS SMALLER THAN NO. 12 AWG, SHALL BE USED UNLESS SPECIFICALLY NOTED.

8. ALL UNDERGROUND SINGLE CONDUITS AND DUCTBANKS OF MULTIPLE CONDUITS SHALL BE RIGID PVC CONDUIT ENCASED IN REINFORCED RED CONCRETE. CONCRETE DYED RED BEFORE PLACEMENT. FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND CONDUIT AND DUCTBANKS. COORDINATE ROUTING OF NEW CONDUIT AND DUCTBANKS TO AVOID INTERFERENCE WITH EXISTING CONDUIT, DUCTBANKS, AND OTHER UNDERGROUND UTILITIES.

9. ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC COATED RIGID ALUMINUM LONG RADIUS BENDS. BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES, OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED. SEE THE SPECIFICATIONS FOR MORE REQUIREMENTS.

10. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL BE USED FOR THE PRIMARY AND SECONDARY OF TRANSFORMERS, GENERATOR TERMINATIONS AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. USE IN OTHER LOCATIONS IS NOT PERMITTED, EXCEPT FOR CONNECTIONS TO INSTRUMENTATION TRANSMITTERS, WHERE MULTIPLE PENETRATIONS ARE REQUIRED. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL HAVE A MAXIMUM LENGTH NOT GREATER THAN THAT OF A FACTORY MANUFACTURED LONG RADIUS ELBOW OF THE CONDUIT SIZE BEING USED. THE MAXIMUM BENDING RADIUS SHALL NOT BE LESS THAN THAT SHOWN IN THE NEC CHAPTER 9, TABLE 2, "OTHER BENDS". BX OR AC TYPE PREFABRICATED CABLES WILL NOT BE PERMITTED.

11. THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITY/SIZES OF WIRES/CONDUITS REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY APPROVED. ALL MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.

12. SEAL ALL RACEWAYS ENTERING JUNCTION BOXES OR CONTROL PANELS CONTAINING ELECTRICAL OR INSTRUMENTATION EQUIPMENT WITH WATERTIGHT SEALANT. REFER TO THE SPECIFICATIONS FOR DETAILS.

13. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURE LOCATIONS, OR TERMINAL BOX LOCATIONS, ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER, DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.

14. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURES DIMENSIONS ARE APPROXIMATE. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURES OR TERMINAL BOX DIMENSIONS SHALL BE VERIFIED WITH THE EQUIPMENT SUPPLIER. ALLOW FOR LOCATION CHANGES AND INCLUDE IN THE CONTRACT PRICE. THE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF ALL CABLES AND CONDUITS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER DURING CONSTRUCTION.

15. CORING OF AN EXISTING STRUCTURE SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER. CORING THROUGH STRUCTURAL BEAMS IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM THE OWNER/ENGINEER.

16. THE LOCATION OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF CABLES AND CONDUITS SHALL BE COORDINATED AND APPROVED BY THE OWNER.

17. THE DUCTBANK ROUTING AS SHOWN ON THE DRAWING IS APPROXIMATE. FIELD VERIFY THE EXACT DUCTBANK ROUTING, CABLE LENGTH AND CONDUIT LENGTH.

18. PROVIDE CONDUIT SEALS FOR CONDUIT PENETRATIONS AS PER NFPA 70 (NEC) AND NFPA 820.

19. COORDINATE ALL WORK WITH THE OWNER.

20. LOCATE ALL UNDERGROUND UTILITIES BEFORE DIGGING. COORDINATE THE EFFORT WITH THE OWNER.

21. ALL SLOTTED CHANNEL, SLOTTED CHANNEL SUPPORT MATERIAL, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS AND MISC. MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.

22. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO THE FINISHED FLOOR.

23. CONDUITS AND WIRES SHOWN ON THE INTERFACE DIAGRAM SHALL BE INSTALLED BY THE CONTRACTOR. GROUPING OF CONDUIT AND WIRE MAY BE CHANGED, IF APPROVED BY THE ENGINEER AND OWNER.

24. ALL CONDULETS SHALL BE FORM 7 AND SHALL HAVE 316 SS CLAMP COVERS WITH 316 SS CLAMPS AND SCREWS. SCREW DOWN COVERS ARE UNACCEPTABLE. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.

25. ALL GROUNDING CONDUCTORS SHALL BE BARE COPPER, ALL GROUND RODS SHALL BE 3/4" BY 10' LONG. ALL EXPOSED COPPER GROUND CABLES SHALL BE GREEN INSULATED CONDUCTORS. PROVIDE XHHW INSULATION.

26. WHERE NOTES ON THE DRAWING INDICATE THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTENT NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE. THE CONTRACT PRICE SHALL NOT BE INCREASED WHEN THE CONTRACTOR HAS NOT INVESTIGATED PER THE NOTES DIRECTING THAT BE DONE.

TYPICAL ENCLOSURE TYPES BY AREA TYPE

NON-HAZARDOUS AREAS	BOXES & ENCLOSURES 1	3R	4X	4X*	12	CONDUIT
OUTDOOR; GENERAL AREAS		X	X			PVC COATED ALUMINUM
OUTDOOR; CHEMICAL AREAS				X		SCHEDULE 80 PVC
INDOOR; CHEMICAL ROOM				X		SCHEDULE 80 PVC
INDOOR; CONDITIONED SPACE					X	RIGID ALUMINUM
INDOOR; NON-CONDITIONED SHOP SPACE					X	RIGID ALUMINUM
INDOOR; NON-CONDITIONED PROCESS AREA			X			RIGID ALUMINUM
INDOOR, ADMIN BUILDING	X					EMT/RIGID ALUMINUM
CLASS I, DIVISION 1	REFER TO NEC, NFPA-820, AND CONTRACT CONSTRUCTION SPECIFICATIONS					
CLASS I, DIVISION 2	REFER TO NEC, NFPA-820, AND CONTRACT CONSTRUCTION SPECIFICATIONS					

GENERAL NOTES:

- EQUIPMENT SUCH AS MOTOR CONTROL CENTER, SWITCHGEAR, ASDS, AND OTHER STAND-ALONE MOTOR STARTERS ARE TO BE SPECIFIED UNIQUELY.
- NEMA 1 ENCLOSURES ARE TO BE NEMA 1 GASKETED.
- NEMA 4X* ENCLOSURES ARE TO BE NON-METALLIC (ie PVC) NEMA 4X
- CONDUIT INSIDE ADMIN BUILDING LOCATION IS TO BE EMT IF CONCEALED IN DRY WALL (AKA SHEET ROCK WALL): OTHERWISE RIGID ALUMINUM.
- OUTDOOR GENERAL AREAS COULD BE 3R OR 4X DEPENDING ON OWNER PREFERENCE AND WHETHER WTP OR WWTP – REFER TO DRAWINGS.

CONDUIT TYPE	LOCATION
RIGID GALVANIZED CONDUIT	NOT ACCEPTABLE FOR USE ON THIS PROJECT EXCEPT FOR THE UTILITY COMPANY'S CONDUCTORS. ALL UTILITY COMPANY'S DUCTS SHALL BE AS SPECIFIED BY UTILITY COMPANY.
PVC COATED ALUMINUM CONDUIT	ALL EMBEDDED CONDUIT BENDS, UNDERGROUND DUCTBANK OF MORE THAN 20 DEGREES, AND ALL CONDUIT STUB-UPS TO A MINIMUM OF 6" ABOVE FINISHED FLOOR OR GRADE, IN CHLORINE AND CAUSTIC ROOMS, AND ALL EXPOSED CONDUIT AT LIFT STATION, HEADWORKS, AERATION BASINS, AND CLARIFIERS.
LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT	RACEWAY CONNECTION TO VIBRATING EQUIPMENT ONLY, IN ALL AREAS.
RIGID NON-METALLIC, SCHEDULE 40 PVC CONDUIT	UNDERGROUND ENCASED IN RED DYE REINFORCED CONCRETE. (AS WHERE SPECIFIED)
RIGID NON-METALLIC, SCHEDULE 80 PVC CONDUIT	FOR USE IN CHLORINE AND CAUSTIC ROOMS, AND UNDERGROUND. ENCASED IN RED DYED REINFORCED CONCRETE. (AS WHERE SPECIFIED)
FLEXIBLE ALUMINUM CONDUIT	FIXTURE WHIP CONNECTION TO LIGHTING FIXTURES IN NEMA 12 AREAS (MAXIMUM 3-FT). BX OR AC TYPE PREFABRICATED CABLES ARE NOT PERMITTED.
ALUMINUM RIGID METAL CONDUIT	ALL ABOVE GRADE AREAS, EXCEPT FOR CONCRETE EMBEDDED AND THOSE AREAS ALREADY DESCRIBED IN THIS TABLE
ELECTRIC METALLIC TUBING (EMT) CONDUIT	FOR USE ONLY ON CONCEALED, ABOVE GROUND, INTERIOR ELECTRICAL WIRING IN AIR-CONDITIONED ADMINISTRATIVE BUILDINGS REMOTE TO THE PROCESS AREA, AND CLEARLY DEFINED AS SUCH ON THE DRAWINGS OR IN THE SPECIFICATIONS.

MCC, CONTROL PANELS, PANELBOARDS

THESE NOTES APPLY TO CONTROL PANELS, MCC ETC WHICH HAS TO BE REFURBISHED, MODIFIED, DISCONNECTED & RECONNECTED OR REWORKED.

THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATION UNTIL THE FOLLOWING HAS BEEN DONE:

A. THE OWNER/CONTRACTOR SHALL WITNESS THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCY.

B. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

C. A RECORD OF THE OPERATION AND EXISTING CONDITION SHALL BE KEPT IN A THREE RING BINDER AT THE OWNER/CONTRACTOR TRAILER, IN FORM OF PICTURES AND INFORMATION.

D. A FORM SHALL BE GENERATED BY THE CONTRACTOR TO RECORD THE OBSERVATIONS. BOTH PARTIES SHALL SIGN ON THE FORM.

E. REPLACE ALL MATERIAL OR EQUIPMENT DAMAGED DURING THE COURSE OF WORK.

F. AFTER THE CHANGES ARE MADE, THE EQUIPMENT SHALL BE INSPECTED AND RE-TESTED TO DEMONSTRATE THAT IT FUNCTIONS CORRECTLY.

DEMOLITION NOTES

1. COORDINATE THE DEMOLITION OF ELECTRICAL CONDUIT, WIRE, EQUIPMENT AND DEVICES WITH THE GENERAL DEMOLITION AND SCHEDULE. THE DRAWINGS ARE INTENDED TO CONVEY THE GENERAL NATURE AND SCOPE OF THE DEMOLITION WORK. EVERY ITEM TO BE DEMOLISHED MAY NOT BE SHOWN. FIELD VERIFY, AND INCLUDE ALL DEMOLITION WORK IN THE CONTRACT PRICE.

2. PROVIDE TEMPORARY WIRE AND CONDUIT FOR THE EQUIPMENT WHICH MAY BE AFFECTED BY THE DEMOLITION BUT TO REMAIN IN SERVICE.

3. RELOCATE AND RECONNECT POWER AND CONTROL RACEWAYS AND CONDUCTORS TO EQUIPMENT AFFECTED BY DEMOLITION WORK.

4. ALL CONDUCTORS BEING DEMOLISHED SHALL BE DISCONNECTED AND REMOVED FROM THE LOAD TO THE SOURCE. SURFACE MOUNTED CONDUITS AND MOUNTING HARDWARE SHALL BE REMOVED. UNDERGROUND CONDUITS WHICH ARE NOT BEING REMOVED OR OTHERWISE NOT BEING MADE UNUSABLE SHALL BE CAPPED AND TAGGED AS SPARE, WITH INFORMATION CLEARLY INDICATING THE LOCATION OF THE OTHER END.

5. ALL SURFACES WHERE DEMOLISHED EQUIPMENT OR CONDUIT IS REMOVED SHALL BE CLEANED, PATCHED AND PAINTED TO MATCH THE SURROUNDING SURFACE.

6. CHECK THE FUNCTION OF EACH CONDUCTOR BEFORE REMOVING OR DISCONNECTING.

7. IF A CONDUCTOR WHICH HAS TO STAY IN SERVICE (NOT BEING DEMOLISHED) IS INSTALLED IN A COMMON CONDUIT WITH CONDUCTORS WHICH ARE BEING DEMOLISHED, THE CONTRACTOR SHALL REMOVE ALL CONDUCTORS FROM THE CONDUIT, PROVIDE NEW CONDUCTORS WHICH ARE REPLACEMENTS FOR THE CONDUCTORS THAT ARE TO REMAIN IN SERVICE AND RE-INSTALL THE NEW CONDUCTORS. AFTER THE CONDUCTORS ARE PULLED, MEGGER OR VFL TEST EACH CONDUCTOR. CONNECT BOTH ENDS OF THE NEW CONDUCTORS AND TEST THE SYSTEM FOR PROPER FUNCTION. DO NOT RE-PULL USED CONDUCTORS UNLESS SPECIFIED.

8. WHERE EQUIPMENT IS BEING RE-FED FROM A NEW SOURCE, EXISTING CONDUIT MAY BE REUSED ONLY IF THE CONDUIT AND FITTINGS ARE OF THE TYPE SPECIFIED FOR NEW WORK ON THIS CONTRACT. IF NOT, THE CONDUIT AND CONDUCTORS SHALL BE REPLACED WITH NEW MATERIAL MEETING THE SPECIFICATIONS, AT NO ADDITIONAL COST TO THE OWNER.

9. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER/ENGINEER TO FLAG EXISTING UNDERGROUND CONDUITS BEFORE DIGGING.

10. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. THE CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH THE OWNER WISHES TO KEEP AT A LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS.

11. DO NOT MAKE ANY MODIFICATIONS TO THE EXISTING ELECTRICAL EQUIPMENT UNTIL THE FOLLOWING HAS BEEN DONE:

    A. THE OWNER/CONTRACTOR SHALL WITNESS AND RECORD THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

    B. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

    C. A WRITTEN AND PHOTOGRAPHIC RECORD OF THE OPERATION AND EXISTING CONDITION SHALL BE KEPT IN A THREE RING BINDER AT THE OWNER/CONTRACTOR TRAILER, IN FORM OF PICTURES AND INFORMATION.

    D. A FORM SHALL BE GENERATED BY THE CONTRACTOR TO RECORD THE OBSERVATIONS. BOTH PARTIES SHALL SIGN ON THE FORM.

    E. REPLACE ALL MATERIAL OR EQUIPMENT DAMAGED DURING THE COURSE OF WORK.

    F. AFTER THE CHANGES ARE MADE, THE EQUIPMENT SHALL BE INSPECTED AND RE-TESTED TO DEMONSTRATE IT FUNCTIONS CORRECTLY.

    G. NO PORTION OF EXISTING CONDUCTORS SHALL BE SPLICED TO NEW CONDUCTORS FOR RE-USE WITHOUT SPECIFIC APPROVAL FROM THE OWNER/ENGINEER ON A CASE-BY-CASE BASIS.

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No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

STATE OF TEXAS – ABHISHEK PANDEY – 147640 – LICENSED PROFESSIONAL ENGINEER – 01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
GENERAL NOTES

VERIFY SCALE
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BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE.

DATE:	08/07/2023
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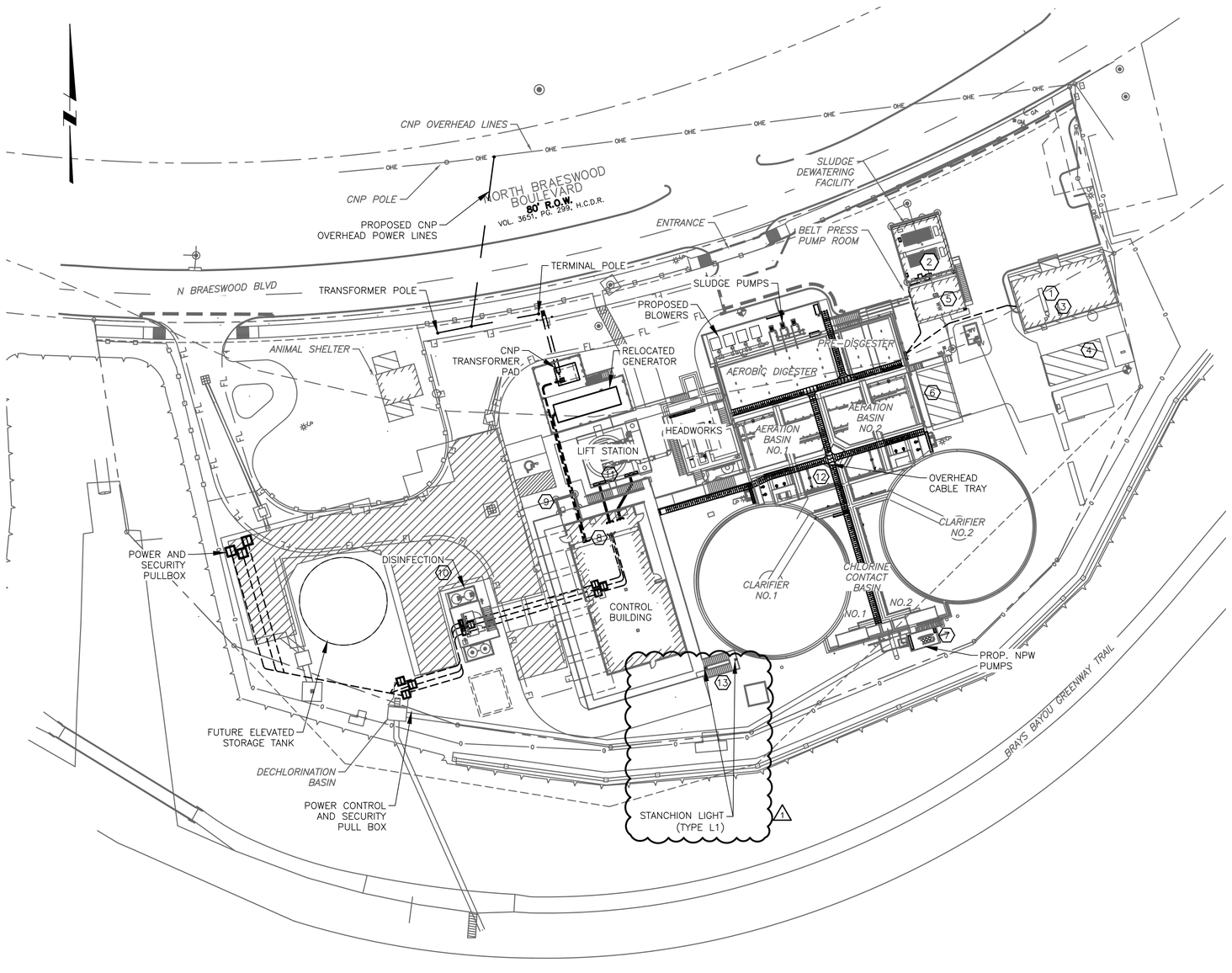
SHEET
E-003



ELECTRICAL OVERALL PROPOSED SITE

PLAN

1/32"=1'-0"

GENERAL NOTES:

A. THE WASTE WATER TREATMENT PLANT IS IN CONTINUOUS OPERATION. ANY OPERATION OF EXISTING EQUIPMENT SHALL BE PERFORMED BY OWNER PERSONNEL UNTIL SUCH TIME EQUIPMENT IS RELEASED TO CONTRACTOR FOR WORK SHOWN TO BE PERFORMED IN THIS CONTRACT.

B. CONTRACTOR SHALL COORDINATE EARLY IN THE PROJECT TO RESEARCH AND DEVELOP "AS FOUND CONDITIONS" DOCUMENTS PRIOR TO ANY DEMOLITION CONTRACTOR SHALL BE REQUIRED TO PROVIDE TEMPORARY POWER AND CONTROLS TO ANY EQUIPMENT NOT YET RELEASED IF AFFECTED BY THE OTHER WORK IN PROGRESS.

C. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS REQUIRED TO PROTECT THE EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTORS EXPENSE.

D. THE OWNER WILL RETAIN SALVAGE RIGHTS TO ALL MATERIAL AND EQUIPMENT. ALL MATERIALS AND EQUIPMENT RETAINED BY THE OWNER SHALL BE DELIVERED TO A POINT DESIGNATED BY THE OWNER REPRESENTATIVE. ANY MATERIAL OR EQUIPMENT NOT RETAINED BY THE OWNER SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH APPLICABLE REGULATIONS.

ELECTRICAL TASKS NOTES:

1. ALL OF THE ELECTRICAL EQUIPMENT TO BE REMOVED FROM THE BUILDING. HVAC, LIGHTING AND RECEPTACLES SHALL BE RECONNECTED WITH NEW DISTRIBUTION PANELBOARDS. A NEW 480V FEEDER SHALL BE PROVIDED FROM NEW MCC LOCATED IN PROPOSED CONTROL BUILDING. SEE DETAILS ON DRAWING E-908
2. A NEW 480V DISTRIBUTION PANELBOARD SHALL BE INSTALLED IN THE DEWATERING BUILDING. THE 480V FEEDER, COME FROM NEW MCC, WILL BE PROVIDED TO POWER THE NEW PANELBOARD.
3. OFFICE/LAB ELECTRICAL DISTRIBUTION TO BE DISCONNECTED AND REMOVED. UNDERGROUND CONDUITS ARE TO HAVE CONDUCTORS REMOVED WHEN POSSIBLE. CONDUITS AND ABANDONED CONDUCTORS ARE TO BE REMOVED TO BELOW SLAB AND SEALED. FLOOR TO BE REPAIRED.
4. CHLORINE BUILDING AND TON CYLINDER STORAGE TO HAVE ELECTRICAL REMOVED. LIGHTING AND GENERAL RECEPTACLES TO REMAIN AND BE RECONNECTED TO NEW ELECTRICAL PANEL. SEE PROPOSED PLANS.
5. BELT PRESS PUMP ROOM ELECTRICAL TO BE DISCONNECTED FROM OFFICE/LAB MCC AND RECONNECTED TO NEW ELECTRICAL DISTRIBUTION.
6. EXISTING BLOWERS ARE TO BE DISCONNECTED FROM OFFICE/LAB MCC. ALL EXPOSED ELECTRICAL TO BE REMOVED SO SPACE MAYBE REPURPOSED. CONDUITS IN SLAB SHALL HAVE CONDUCTORS REMOVED, THEN REMOVED TO BELOW SLAB SEALED. REPAIR CONCRETE TO MATCH EXISTING.
7. NPW PUMPS TO BE FED FROM CONTROL BUILDING UTILIZING OVERHEAD CABLE TRAY.
8. NEW MCC AND 480V CONTROL PANEL SHALL BE LOCATED IN THE ELECTRICAL ROOM OF CONTROL BUILDING.
9. A HANDICAP ELEVATOR SHALL BE PROVIDED NEXT TO THE CONTROL BUILDING.
10. PROPOSED DISINFECTION BUILDING WITH LIGHTING, MOTOR, AND CONTROL PANEL SHALL BE LOCATED AT THE WEST AREA, NEAR CONTROL BUILDING. SEE DRAWING E-500 FOR ENLARGED PLAN.
11. PROPOSED LIFT STATION SHALL GET NEW LARGER PUMPS. THE POWER FOR THE PUMPS AND INSTRUMENTS ARE FROM MCC LOCATED IN CONTROL BUILDING. SEE DRAWING E-101 FOR ENLARGED PLAN.
12. A OVERHEAD CABLE TRAY SHALL BE INSTALLED FOR CONDUITS RUN FROM NEW CONTROL BUILDING TO EQUIPMENT AT MOST OF THE AREA AT THE SITE.
13. STANCHION LIGHT WITH EMERGENCY BACK-UP BATTERY SHALL BE INSTALLED AT THE STAIRWELL OUTSIDE PROPOSED CONTROL BUILDING

VERIFY SCALE

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STATE OF TEXAS
ABHISHEK PANDEY
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PROFESSIONAL ENGINEER
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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

OVERALL SITE PLAN PROPOSED

DATE:	08/07/2023
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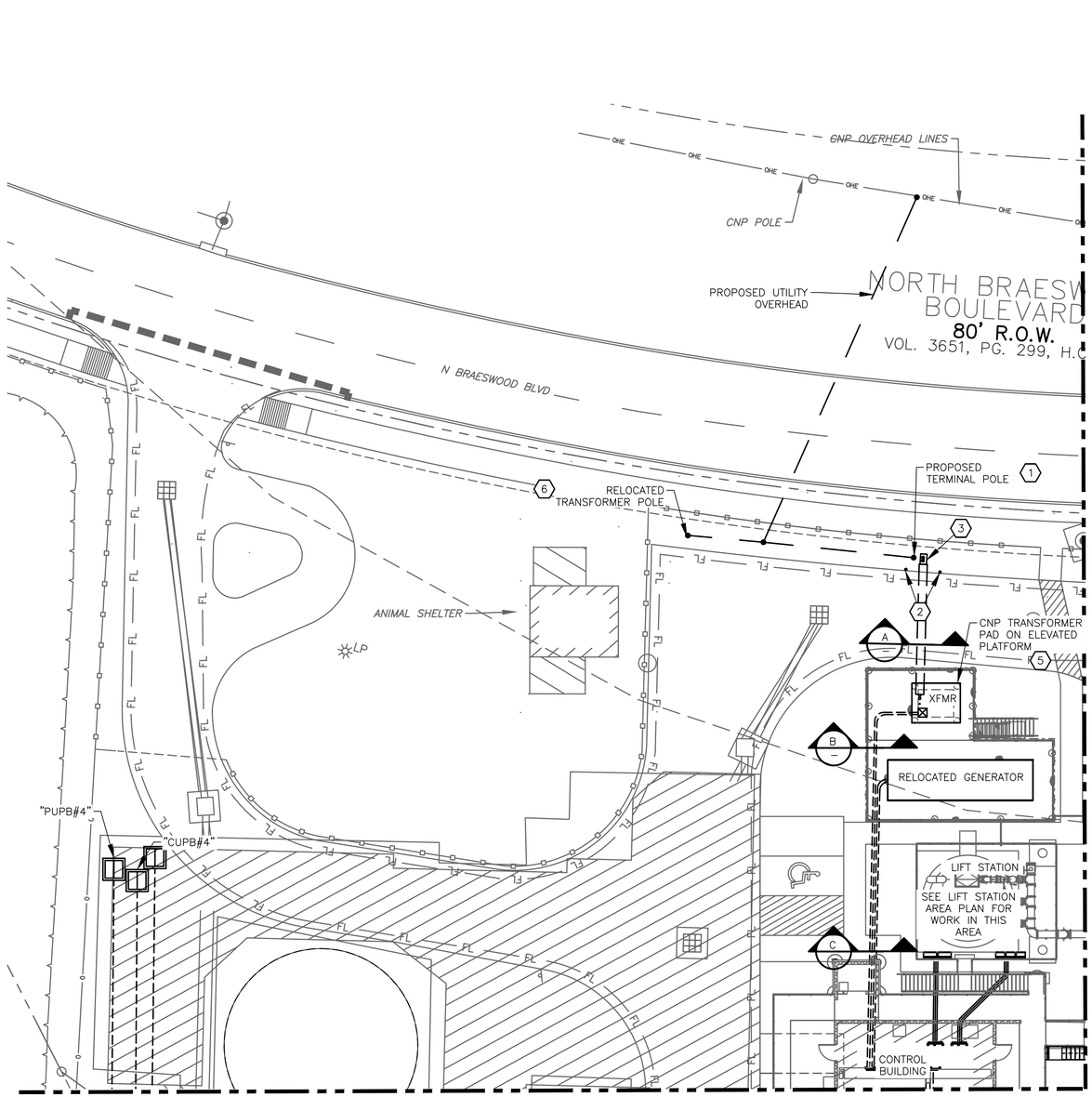
SHEET

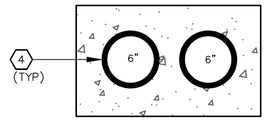
E-004



PROPOSED ENLARGED SITE

PLAN

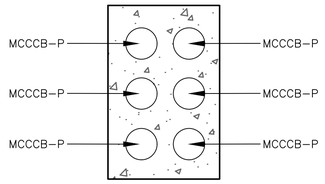
1/16"=1'-0"



DUCTBANK

SECTION A

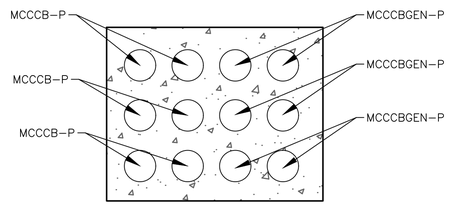
NTS



DUCTBANK

SECTION B

NTS



DUCTBANK

SECTION C

NTS

GENERAL NOTES:

A. CONTRACTOR TO COORDINATE WITH CENTERPOINT ENERGY (CNP) TO EXTEND UTILITY POWER TO PROPOSED LOCATION.

B. CONTRACTOR TO REQUEST A PRECONSTRUCTION MEETING PRIOR TO STARTING THE REQUIRED UNDERGROUND CONSTRUCTION WITH CNP.

C. CNP WILL PROVIDE A TERMS AND CONDITIONS PACKAGE (T&C) FOR ELECTRIC SERVICE AND PROVIDE CONSTRUCTION DETAILS FOR UNDERGROUND DUCT BANKS, CONDUIT STUB-UPS AT TERMINAL POLE AND TRANSFORMER FOUNDATION.

D. REFER TO T&C PACKAGE FOR ADDITIONAL CNP REQUIREMENTS.

E. ALL THE FACILITIES FOR CNP'S USE SHALL BE INSPECTED BY CNP AFTER THE CONDUIT IS INSTALLED, PADS ARE FORMED, REINFORCING RODS INSTALLED, ETC. BUT PRIOR TO POURING OF CONCRETE.

KEYED NOTES:

1. CNP TO INSTALL PROPOSED TERMINAL POLE. PROPOSED SERVICE LOCATION TO BE COORDINATED WITH TERMS AND CONDITION DOCUMENTATION. CONTRACTOR TO COORDINATE STUB UP LOCATION WITH T&C DOCUMENTATION.
2. CONTRACTOR TO PROVIDE TERMINAL POLE PROTECTIVE REMOVABLE BARRIERS AROUND THE POLE AS PER T&C DOCUMENTATION.
3. CONTRACTOR TO PROVIDE CONCRETE PEDESTAL PER LATEST CNP STANDARDS.
4. CONTRACTOR TO INSTALL 2-6" CONCRETE ENCASED PVC CONDUITS PER LATEST CNP STANDARDS.
5. PROPOSED CENTERPOINT PAD MOUNTED TRANSFORMER AS PER CENTERPOINT STANDARDS. CONTRACTOR TO COORDINATE WITH CENTERPOINT FOR INSTALLATION OF PAD MOUNT TRANSFORMER AS PER LATEST CNP STANDARDS.
6. CONTRACTOR TO COORDINATE WITH CNP TO RELOCATE THE EXISTING TRANSFORMER FEEDING THE ANIMAL SHELTER TO PROPOSED LOCATION. CONTRACTOR SHALL PROVIDE TEMPORARY POWER FOR THE SHELTER DURING ALL SCHEDULED OUTAGES.

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PROFESSIONAL ENGINEER
01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ENLARGED SITE PLAN AREA A PROPOSED

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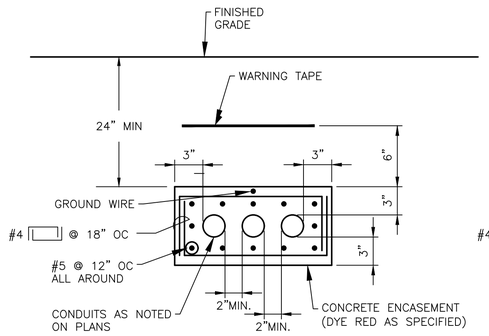
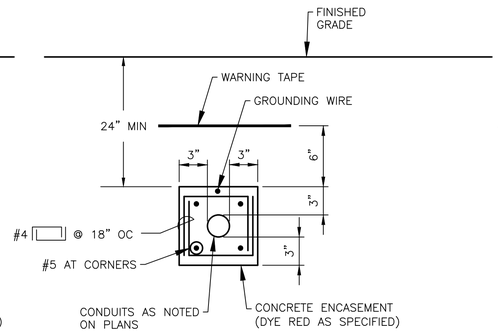
SHEET

E-005

C:\Users\Laptop_NS\Kalluri Group, Inc\KGI - Documents\4138-KH (West U - WWTP Imp)\Drawings\Permit Drawing Set\E-005 (Enlarged Site Plan Area A Proposed).dwg 5/7/2013 10:40 AM

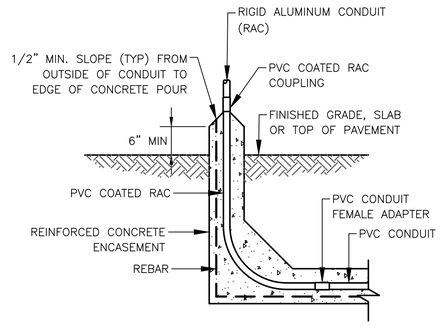


TYP MULTI–CONDUIT DUCTBANK SECTION



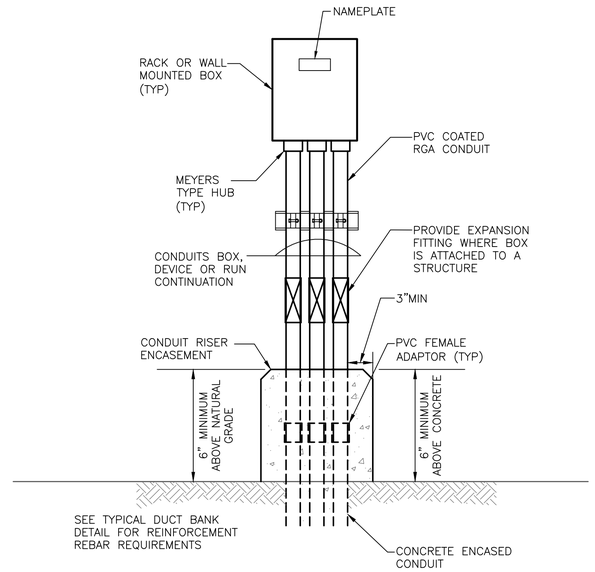
TYP SINGLE–CONDUIT DUCTBANK SECTION

DETAIL 1
NTS



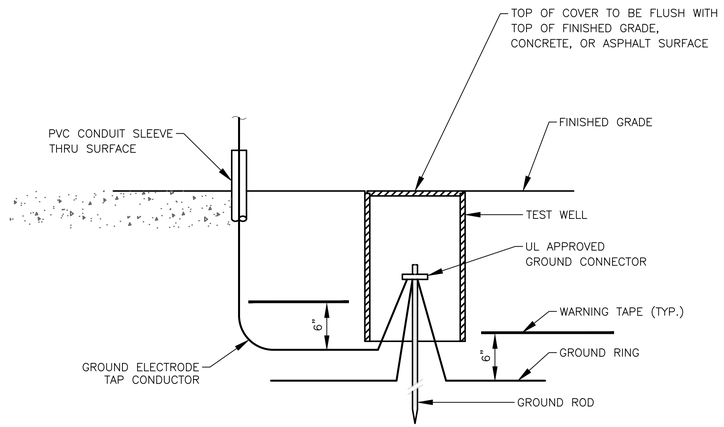
TYPICAL CONDUIT STUB–UP

DETAIL 2
NTS



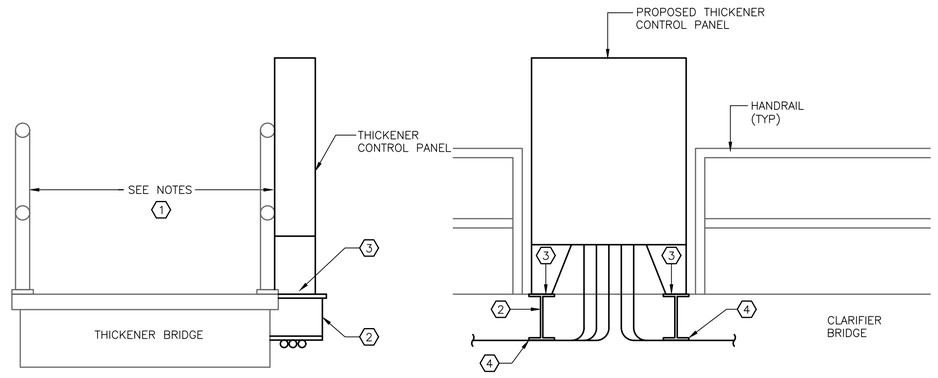
CONDUIT RISER CONCRETE ENCASEMENT

DETAIL 3
NTS



TYPICAL GROUND ROD AND WELL INSTALLATION

DETAIL 4
NTS



SIDE VIEW

REAR VIEW

TYPICAL CONTROL PANEL

DETAIL 5
NTS

KEYED NOTES:

1. PROVIDE MINIMUM OF 42" CLEARANCE BETWEEN CONTROL PANEL AND HANDRAIL.
2. PROVIDE SOLID STRUCTURAL SUPPORT AS REQUIRED FOR CLARIFIER CONTROL PANEL. PANEL MOUNTING IS FREE STANDING WITHOUT ATTACHMENT TO HAND RAILS.
3. ALL FASTENERS TO BE 316 STAINLESS STEEL.
4. ATTACH CONDUITS TO STRUCTURAL SUPPORTS WITH KORNS CLAMP.

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1	PERMIT RESUBMITAL	AP	01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

DETAILS SHEET I

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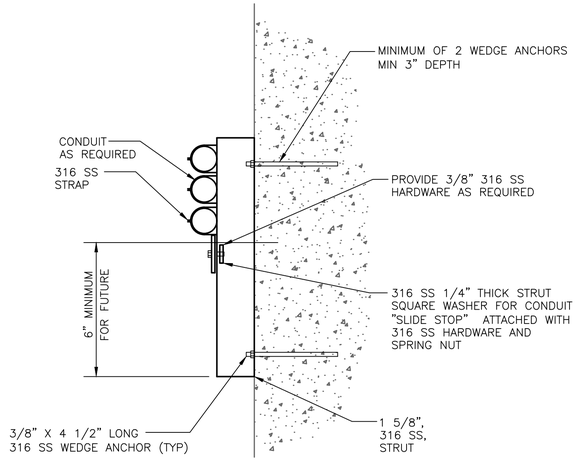
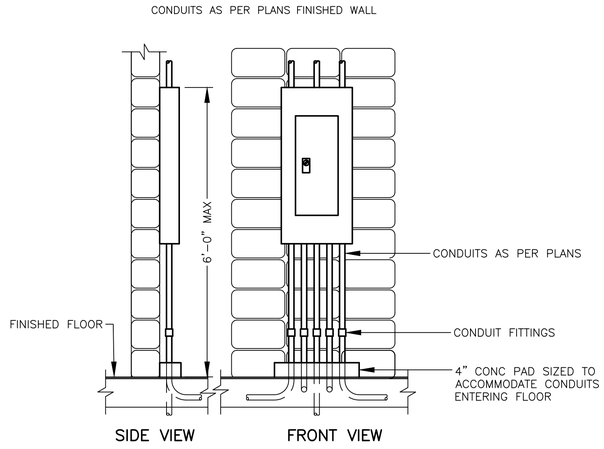


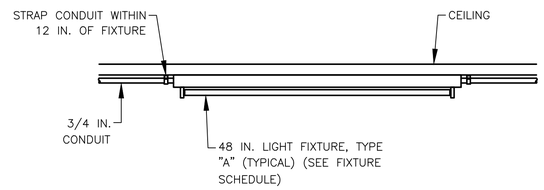
WALL OF STRUCTURE CONDUIT SUPPORT

DETAIL 1 / NTS



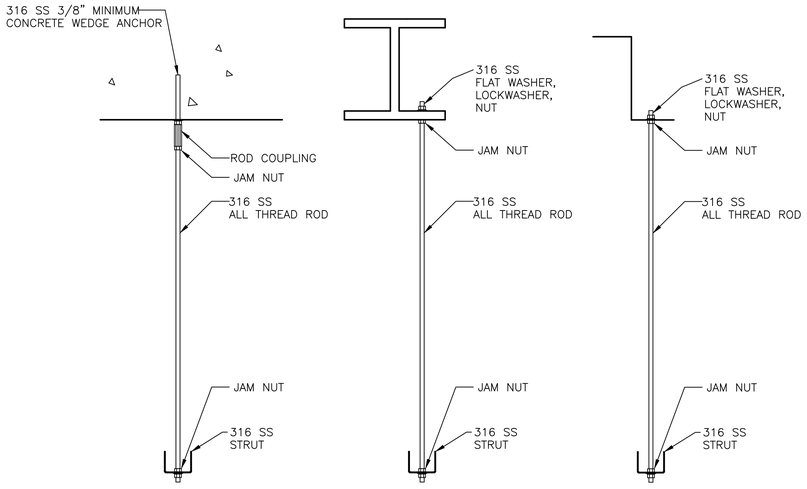
TYPICAL PANELBOARD INSTALLATION

DETAIL 2 / NTS



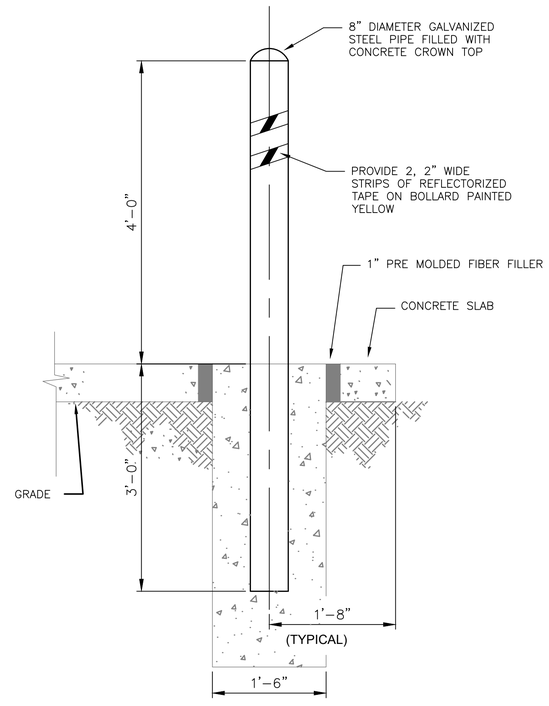
SURFACE MOUNTED LIGHT FIXTURE STRIP

DETAIL 3 / NTS



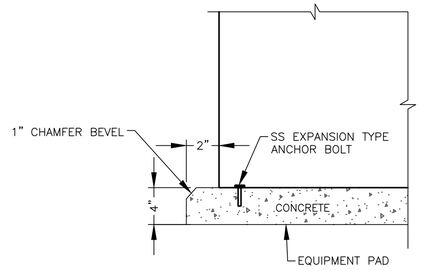
ACCEPTABLE CONDUIT SUPPORTS

DETAIL 4 / NTS



TYPICAL BOLLARD

DETAIL 5 / NTS



MCC PAD & ANCHOR DETAIL

DETAIL 6 / NTS

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CITY OF WEST UNIVERSITY PLACE, TX
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PLANT IMPROVEMENTS

ELECTRICAL

DETAILS SHEET II

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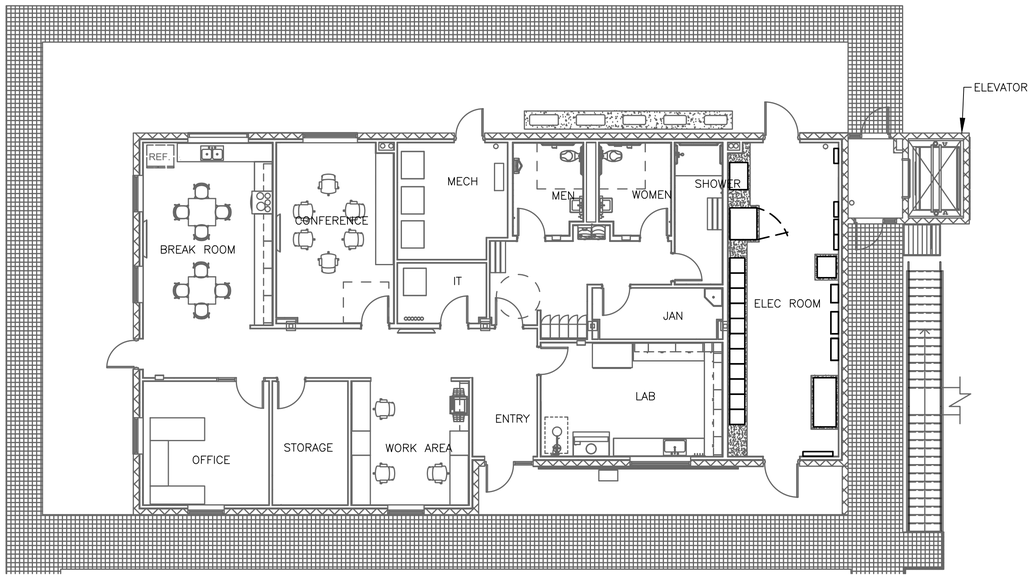
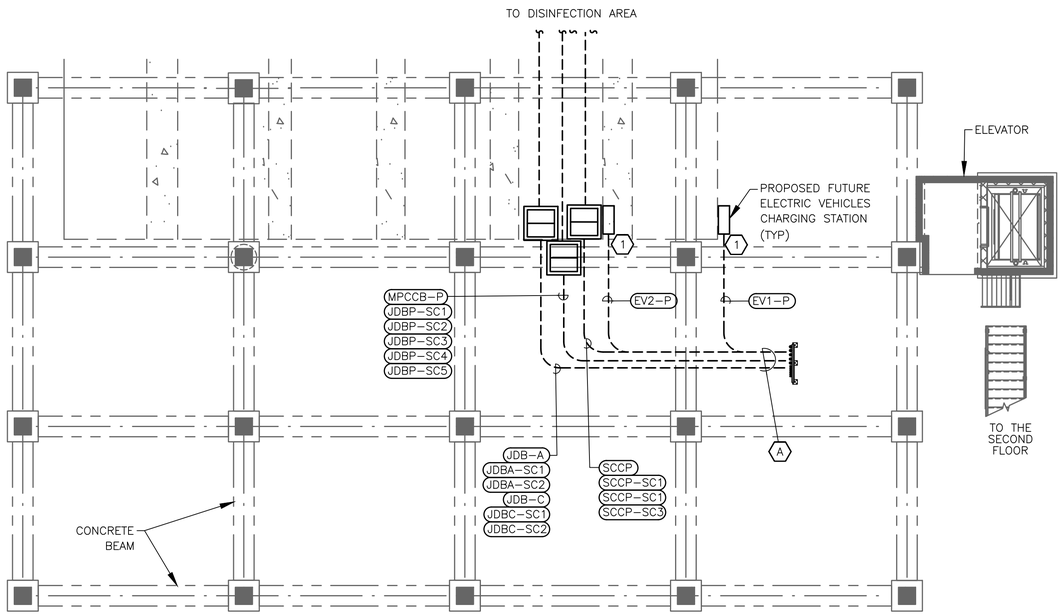
SHEET

E-007



CONTROL BUILDING UPPER LEVEL AREA PLAN

PLAN
1/8" = 1'-0"



CONTROL BUILDING LOWER LEVEL AREA PLAN

PLAN
1/8" = 1'-0"

KEYED NOTES:

1. PROPOSED LOCATION FOR FUTURE ELECTRIC VEHICLES CHARGING STATION. PROVIDE TWO (2) OF 4" CONDUITS RUN FROM "CB-L2" PANEL TO PEDESTAL FOR EACH CHARGING STATION.

FOLLOWING CONDUIT TAGS ARE NOTED AT THIS LOCATION:

A
- EV1-P
- EV2-P
- MPCCB-P
- JDBP-SC1
- JDBP-SC2
- JDBP-SC3
- JDBP-SC4
- JDBP-SC5
- SCCP
- SCCP-SC1
- SCCP-SC1
- SCCP-SC3
- JDB-A
- JDBA-SC1
- JDBA-SC2
- JDB-C
- JDBC-SC1
- JDBC-SC2
- AREA-LTG
- POLE-LTG

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

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CONTROL BUILDING AREA PLAN

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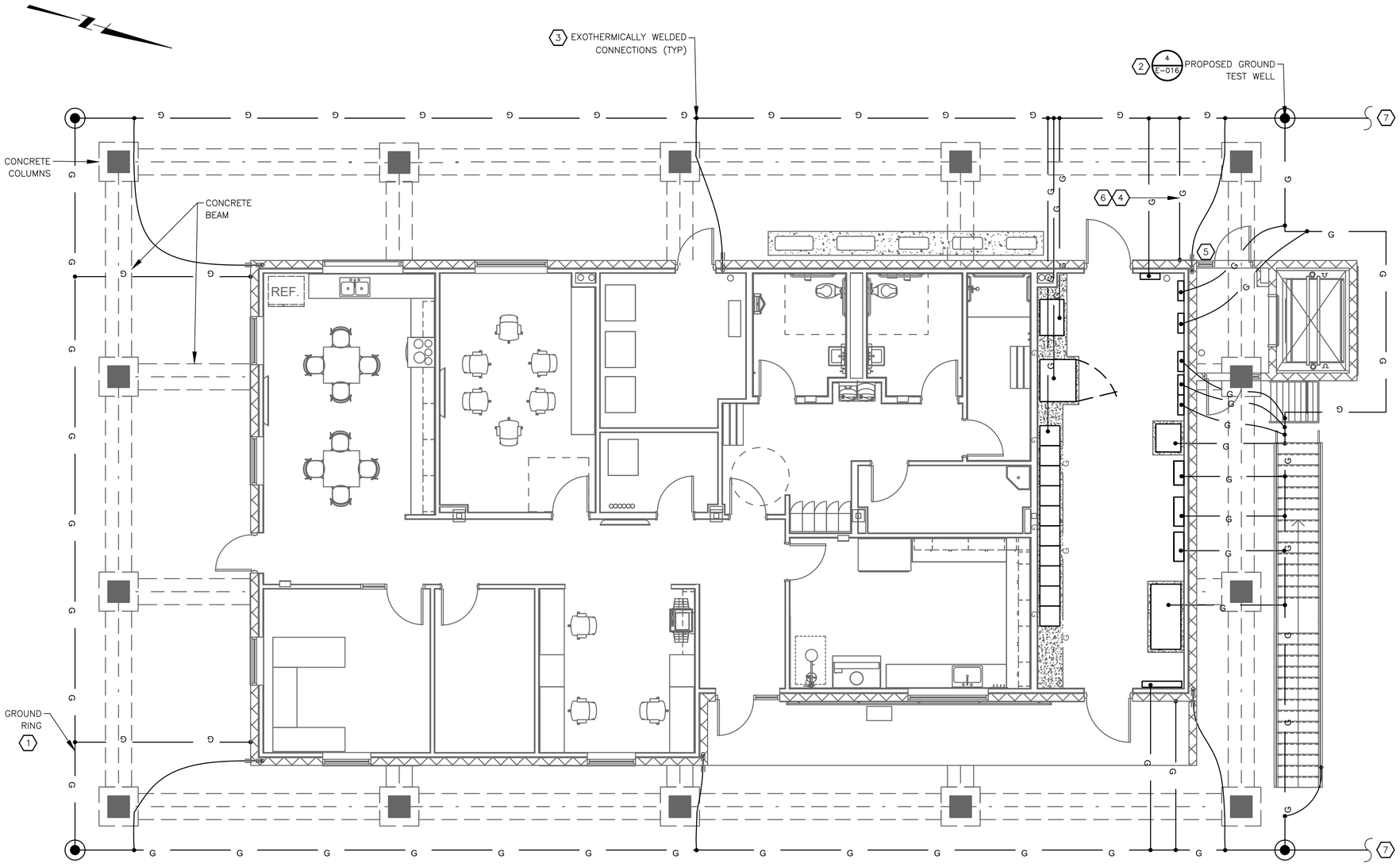

CONTROL BUILDING GROUNDING PLAN

PLAN

1" = 5'-0"

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE CONTROL BUILDING GROUNDING, LIGHTNING PROTECTION AND UNDER SLAB PROVISIONS.

B. REFER TO SPECIFICATION 26 41 13 FOR LIGHTNING PROTECTION REQUIREMENTS.

C. REFER TO SPECIFICATION 26 05 26 FOR GROUNDING AND BONDING REQUIREMENTS.

D. ELECTRICAL EQUIPMENT, STRUCTURAL STEEL, FOUNDATION REBAR AND LIGHTNING PROTECTION SHALL ALL BE CONNECTED TO THE GROUND RING.

KEYED NOTES:

1. REFER TO SPECIFICATION 26 05 26 FOR GROUND RING REQUIREMENTS.
2. 3/4"X20' GROUND ROD WITH EXOTHERMIC CONNECTIONS TO GROUND RING.
3. EXOTHERMICALLY WELDED CONNECTION, SEE SPECIFICATIONS FOR REQUIREMENTS.
4. PROVIDE ONE, 1 1/2" SCH-40 PVC CONDUIT, FROM 12" BELOW TOP OF WALL TO GROUND RING FOR LIGHTNING PROTECTION DOWN LEAD AT EACH CORNER OF THE BUILDING AND IN THE CENTER OF THE LONG SIDES AS INDICATED.
5. THERMO WELD BUILDING GROUND CONDUCTOR TO BUILDING REINFORCING STEEL.
6. ROUTE PLASTIC PVC CONDUIT IN SLAB AND STUB UP IN WALL. ROUTE CONDUIT UP INTERIOR WALL TO 12 INCHES BELOW ROOF FOR LIGHTNING PROTECTION DOWN LEAD.
7. EXTEND GROUND RING TO ENCOMPASS LIFT STATION AND GENERATOR/ TRANSFORMER PAD.

BUILDING TO HAVE LIGHTNING PROTECTION. SEE SPECIFICATIONS.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING GROUNDING PLAN

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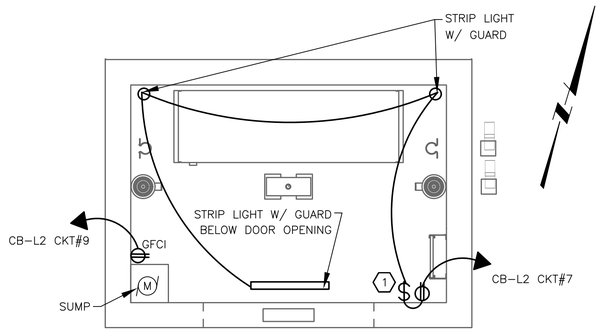
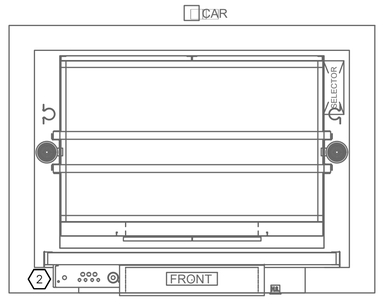


ELEVATOR PIT AT GROUND LEVEL

PLAN

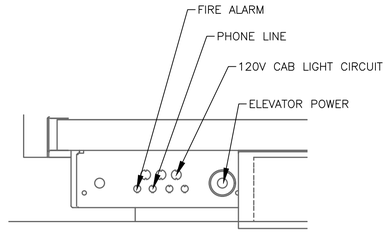
1/2" = 1'-0"



ELEVATOR HOISTWAY AT CONTROLLER 2ND FLOOR LANDING

PLAN

1/2" = 1'-0"



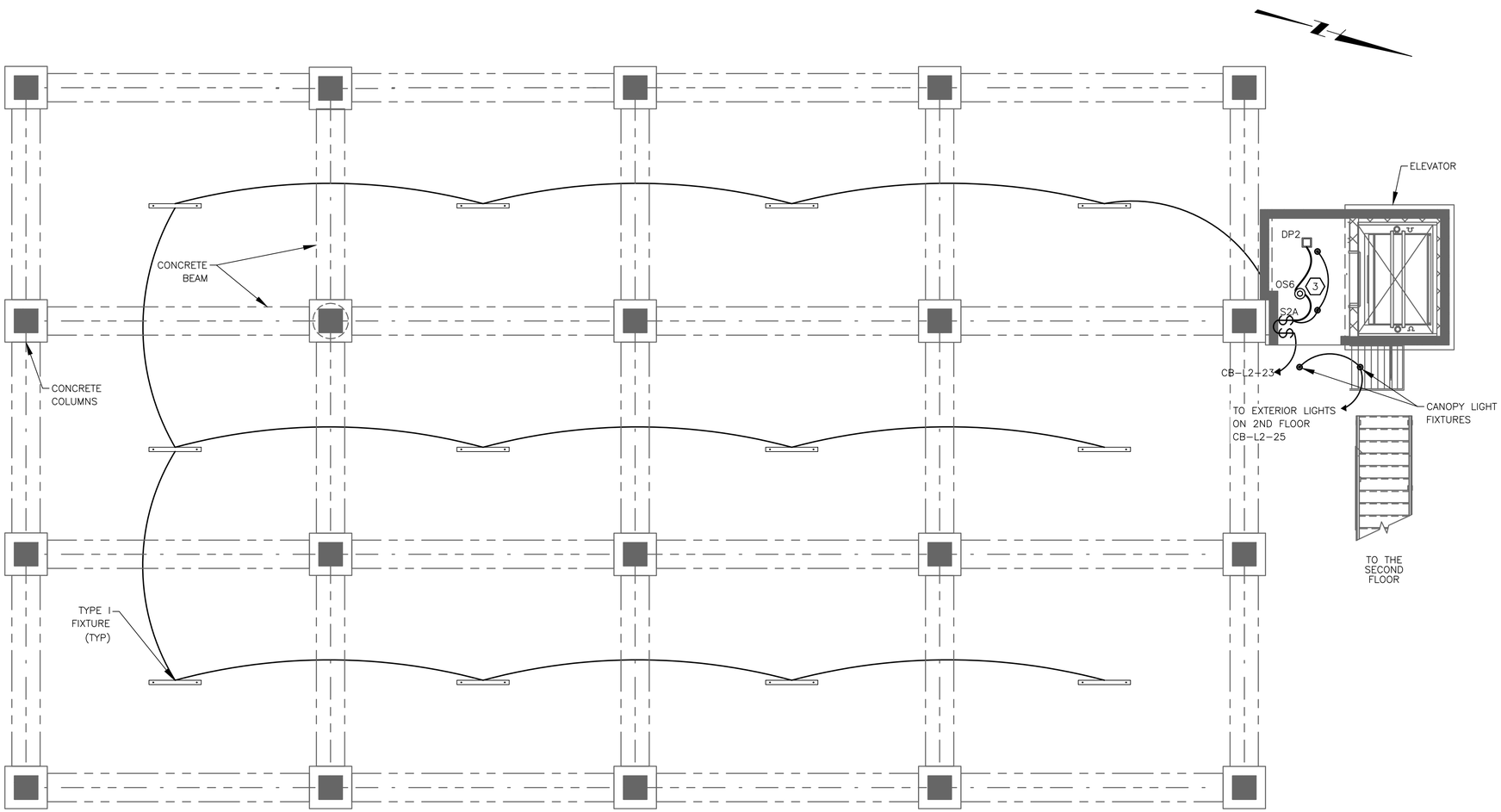
ELEVATOR CONTROLLER AT SECOND FLOOR LANDING

DETAIL

N.T.S.

KEYED NOTES:

1. A LIGHT SWITCH SHALL BE LOCATED 4' ABOVE THE BOTTOM LANDING NEXT TO THE TOP RUNG OF THE LADDER. ONE MORE LIGHT SWITCH ALSO SHALL BE LOCATED 4' ABOVE THE CONTROLLER LANDING FLOOR.
2. A 3 PHASE POWER, 120 VOLTS, 15 AMPS CIRCUIT, FIRE ALARM AND PHONE TO BE ROUTED TO THE TOP OF THE CONTROLLER AT THE CONTROLLER LANDING LEVEL.
3. THE CONDUITS TO BE CONCEALED WITHIN THE WALL ASSEMBLY. CONDUITS SHALL NOT BE EXPOSED IN THE ELEVATOR VESTIBULE.



CONTROL BUILDING LOWER LEVEL AREA LIGHTING AND POWER PLAN

PLAN

1" = 5'-0"

GENERAL NOTES:

A. THIS DRAWING ILLUSTRATES LIGHTING PLAN AT THE GROUND LEVEL OF THE CONTROL BUILDING. IT ALSO SHOW THE POWER AND LIGHTING PLAN AT THE ELEVATOR.

B. THE FOURTH WIRE OF SAME SIZE AS THREE PHASE WIRE IS REQUIRED FOR GROUNDING PURPOSES TO MINIMIZE ELECTRICAL NOISE INTERFERENCE. THE GROUNDING WIRE MUST BE CONNECTED TO CONTROL BUILDING ELECTRICAL GROUND SYSTEM.

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WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING LIGHTING
AND POWER PLAN LOWER LEVEL

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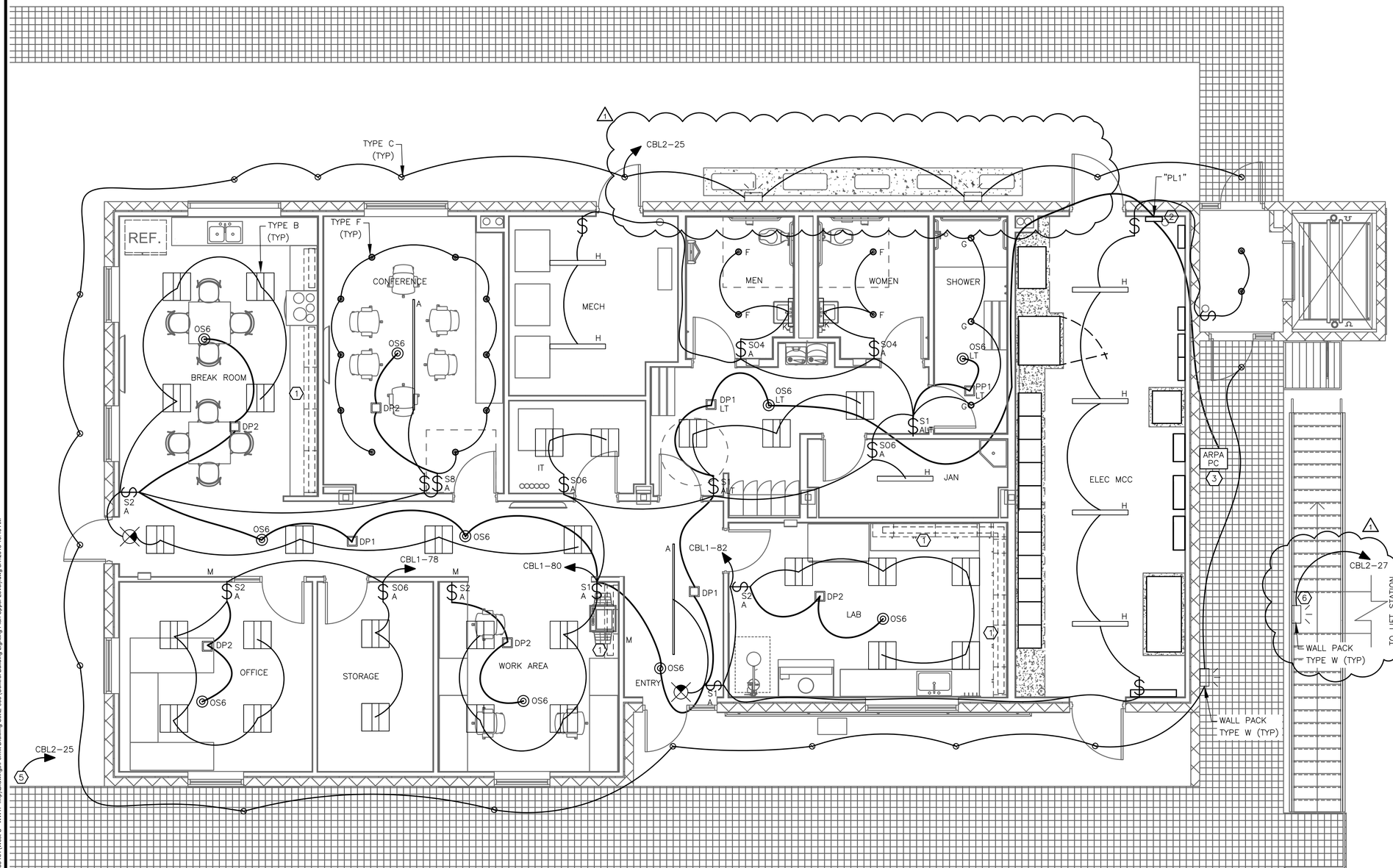

CONTROL BUILDING UPPER LEVEL AREA LIGHTING PLAN

PLAN

1/4"=1'-0"

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE LIGHTING FIXTURE DISTRIBUTED IN THE CONTROL BUILDING UPPER LEVEL.

TASKS NOTES:

1. THE 24V LED TAPE LIGHT SHALL BE INSTALLED UNDERCABINET AT BREAK ROOM, WORK AREA, AND LAB ROOM AS SHOWN IN THE DRAWING.
2. ARP INTENC08 NLT 4 FCR MVOLT SC SM DTC ACUITY RELAY PANEL, INCLUDE INT AND ENC, 8-SIZE, NLIGHT, 4-FIELD CONFIGURABLE RELAYS, 120-277V, SCREW COVER, SURFACE MOUNT, DTC.
3. PHOTOCELL INTENDED TO BE CONNECTED DIRECTLY TO ARP.
4. ROUTE CIRCUIT THROUGH ARP RELAY PANEL 'PL1'.
5. ROUTE CIRCUIT TO STAIRWELL LIGHTS. SEE E-004 FOR LIGHT LOCATIONS.
6. WALL PACK SHALL BE MOUNTED AT SECOND FLOOR BEAM STRUCTURE FOR STAIRWAY LIGHTING.

LEGEND:

OS6	NCM PDT 10 LOW VOLTAGE CEILING MOUNT SENSOR. PASSIVE DUAL TECHNOLOGY, LARGE MOTION/ EXTENDED RANGE 360 DEGREE LENS.
OS6 LT	NCM PDT 10 LT RJB LOW VOLTAGE CEILING MOUNT SENSOR. PASSIVE DUAL TECHNOLOGY, LARGE MOTION/ EXTENDED RANGE 360 DEGREE LENS. LOW TEMPERATURE/ HIGH HUMITIDY, REAR RJ-45 PORTS
DP1	NPP16 D EFP POWER/RELAY PACK, OCCUPANCY CONTROLLED DIMMING, EXTERNAL FAULT PROTECTION
DP1 LT	NPP16 D EFP LT POWER/RELAY PACK, DIMMING, EXTERNAL FAULT PROTECTION, LOW TEMPERATURE/ HIGH HUMITIDY
DP2	NPP16 D EFP SA POWER/RELAY PACK, OCCUPANCY CONTROLLED DIMMING, EXTERNAL FAULT PROTECTION, VACANCY OR AUTO-ON
PP1 LT	NPP16 EFP LT POWER/RELAY PACK, EXTERNAL FAULT PROTECTION, LOW TEMPERATURE/ HIGH HUMITIDY
S1 A	NPODMA XX NLIGHT WIRED AESTHETIC WALLPOD
S1 ALT	NPODMA XX LT NLIGHT WIRED AESTHETIC WALLPOD, LOW TEMPERATURE/ HIGH HUMIDITY
S2 A	NPODMA DX XX NLIGHT WIRED AESTHETIC WALLPOD, RAISE/LOWER DIMMING WITHOUT WIRES
S8 A	NPODMA 2S DX XX NLIGHT WIRED AESTHETIC WALLPOD, RAISE/LOWER DIMMING WITHOUT WIRES
SO4 A	WSXA PDT XX WALL SWITCH SENSOR, PASSIVE DUAL TECHNOLOGY
SO6 A	WSXA PDT SA XX WALL SWITCH SENSOR, PASSIVE DUAL TECHNOLOGY, VACANCY OR AUTO-ON

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING LIGHTING PLAN UPPER LEVEL

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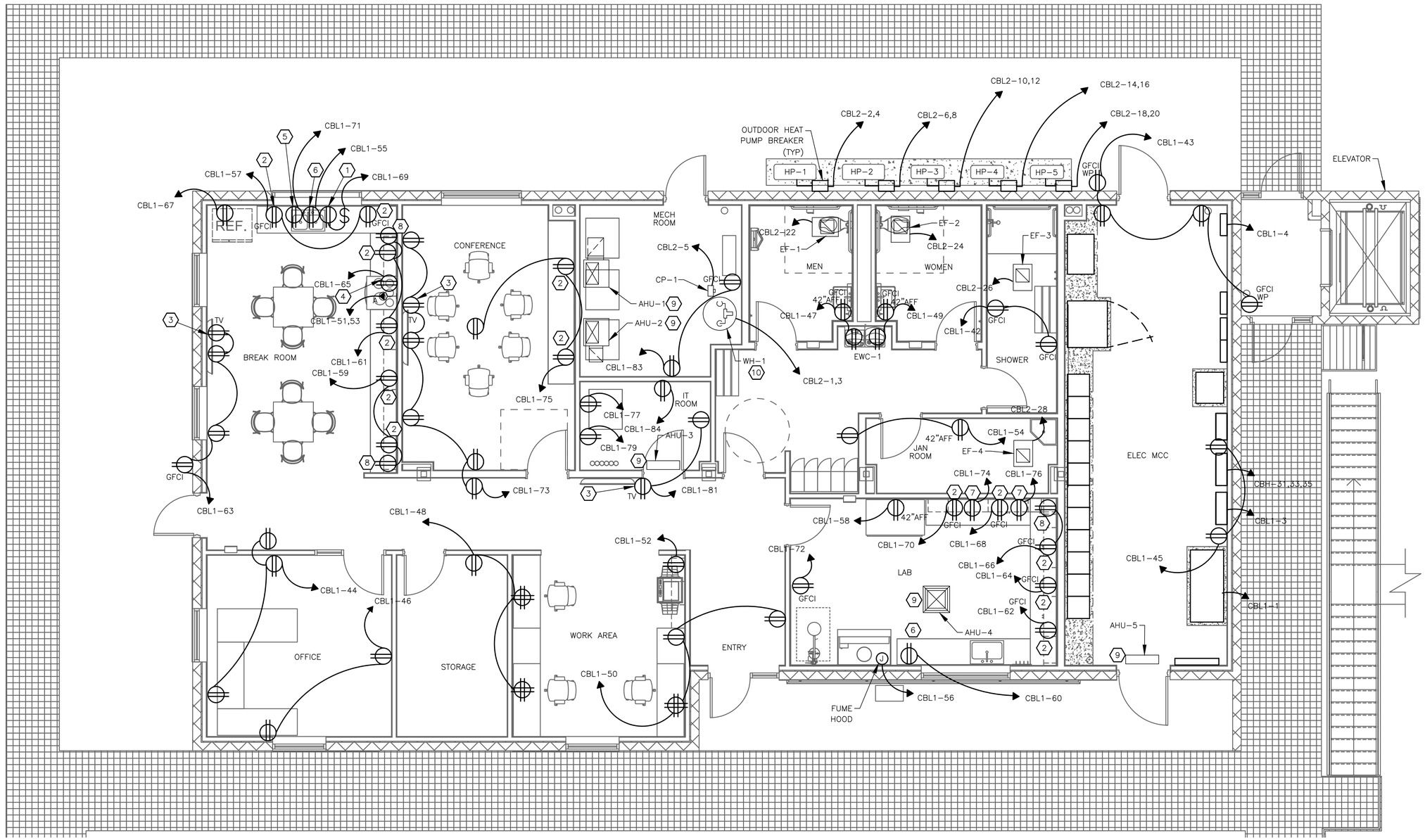
SHEET

E-903



CONTROL BUILDING UPPER LEVEL AREA POWER PLAN

PLAN
1/4"=1'-0"

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE ELECTRICAL POWER CIRCUITS DISTRIBUTED IN THE CONTROL BUILDING UPPER LEVEL.

NOTES:

1. PROVIDE RECEPTACLE UNDER SINK FOR GARBAGE DISPOSAL.
2. MOUNT RECEPTACLE 6" ABOVE COUNTERTOP (TYP.)
3. COORDINATE MOUNTING HEIGHT OF TV RECEPTACLE WITH ARCHITECTURAL DRAWINGS.
4. PROVIDE RECEPTACLE ABOVE RANGE FOR VENT HOOD. COORDINATE MOUNTING LOCATION OF THE VENT HOOD AND THE ASSOCIATED REMOTE CONTROL WITH ARCHITECTURAL DRAWINGS.
5. PROVIDE RECEPTACLE UNDER SINK FOR DISHWASHER CONNECTION. PROVIDE 6FT APPLIANCE CORD ON DISHWASHER FOR CORD AND PLUG CONNECTION. PROVIDE GFCI PROTECTION USING BLANK FACE GFCI OUTLET LOCATED BOVE COUNTER.
6. PROVIDE RECEPTACLE UNDER SINK FOR UNDERCABINET ICE MAKER CONNECTION. PROVIDE 6FT APPLIANCE CORD ON ICE MAKER FOR CORD AND PLUG CONNECTION.
7. PROVIDE RECEPTACLE UNDER COUNTER FOR VACUUM PUMPS.
8. UNDER COUNTER LIGHT RECEPTACLES WILL BE PROVIDED INSIDE THE CABINET WITH A CLEAN TRANSITION OF POWER CORD THROUGH THE UNDERSIDE OF THE CABINET DIRECTLY INTO AN OUTLET CONCEALED WITHIN THE CABINET.
9. PROVIDE 1" CONDUIT FROM EACH AHU TO OUTSIDE UNIT FOR POWER AND CONTROLS.
10. PROVIDE LOCAL DISCONNECTING MEANS FOR WATER HEATER.

VERIFY SCALE
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PHONE: 281-597-9300
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KGL
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Houston, Texas 77094
Phone: (713)-360-9086

No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED
PROFESSIONAL ENGINEER
01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
CONTROL BUILDING POWER PLAN UPPER LEVEL

DATE:	08/07/2023
DESIGN:	AP
DRAWN:	TP
CHECKED:	AP
KHA NO.:	067812104

SHEET
E-904

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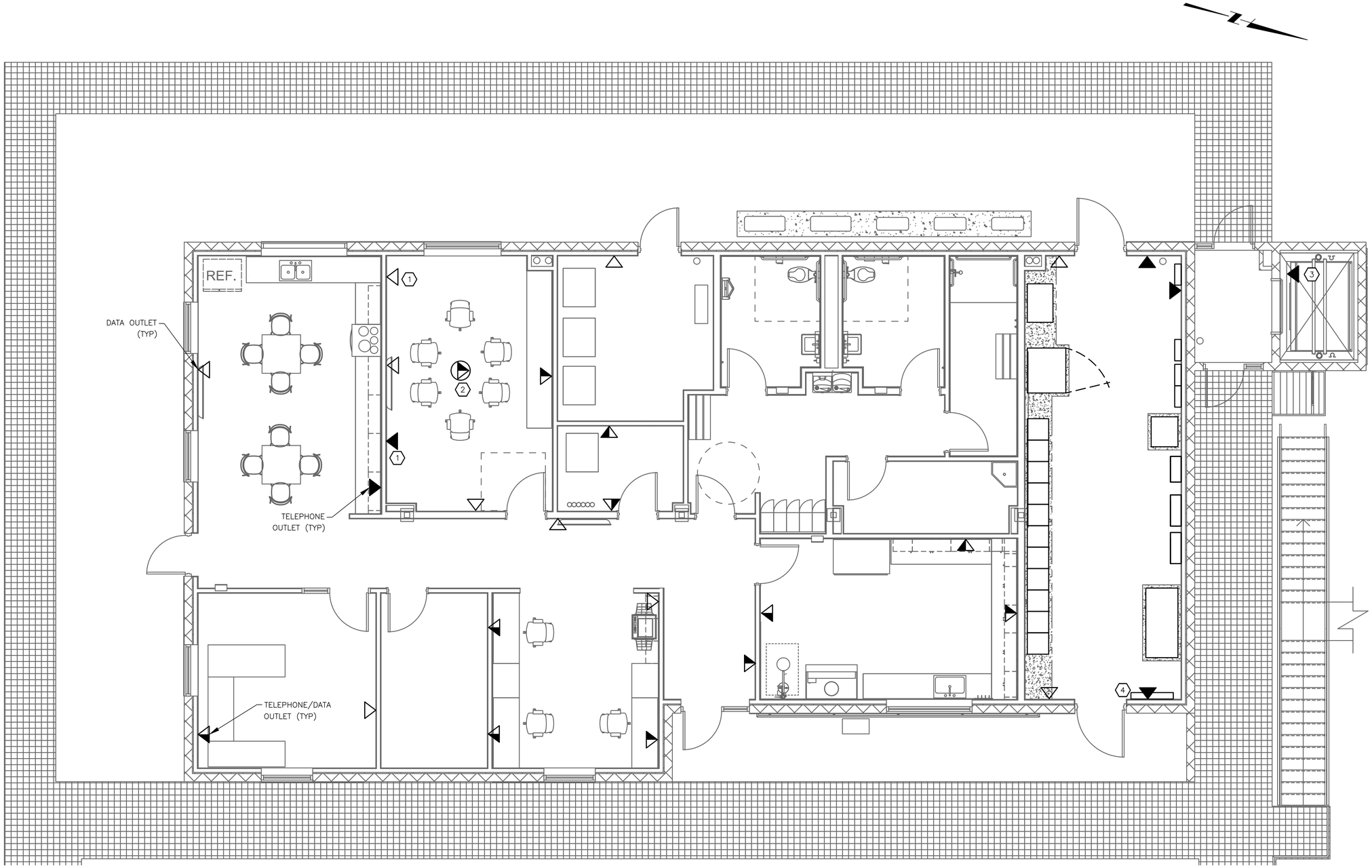

CONTROL BUILDING UPPER LEVEL LOW VOLTAGE CONDUIT PLAN

PLAN
1/4"=1'-0"

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE LOW VOLTAGE CONDUIT IN THE CONTROL BUILDING UPPER LEVEL.

B. THIS DRAWING ILLUSTRATES THE CONCEPT FOR THE LOW VOLTAGE CONDUIT PLAN AND LOCATIONS OF DATA BOX AND TELEPHONE BOX.

KEYED NOTES:

1. THE BOXES SHALL BE INSTALLED INSIDE THE GYPSUM BOARD WALL ABOUT 50" ABOVE THE FINISH FLOOR, AND AN EMPTY CONDUIT GO INSIDE THE WALL FROM THE BOX UP OVER THE ACOUSTIC CEILING AND STUB OUT 90 DEGREE. SEE DRAWING XXX FOR BUILDING SECTION.
2. THE COMBINATION DATA/TELEPHONE OUTLET LOCATED IN CONFERENCE ROOM SHALL BE INSTALLED ON THE FLOOR.
3. PROVIDE DEDICATED PHONE FOR ELEVATOR.
4. QTY 2-4" CONDUITS FOR COMMUNICATION.

VERIFY SCALE
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LICENSED
PROFESSIONAL ENGINEER
01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING LOW VOLTAGE PLAN UPPER LEVEL

DATE:	08/07/2023	
DESIGN:	AP	
DRAWN:	TP	
CHECKED:	AP	
KHA NO.:	067812104	

SHEET
E-905

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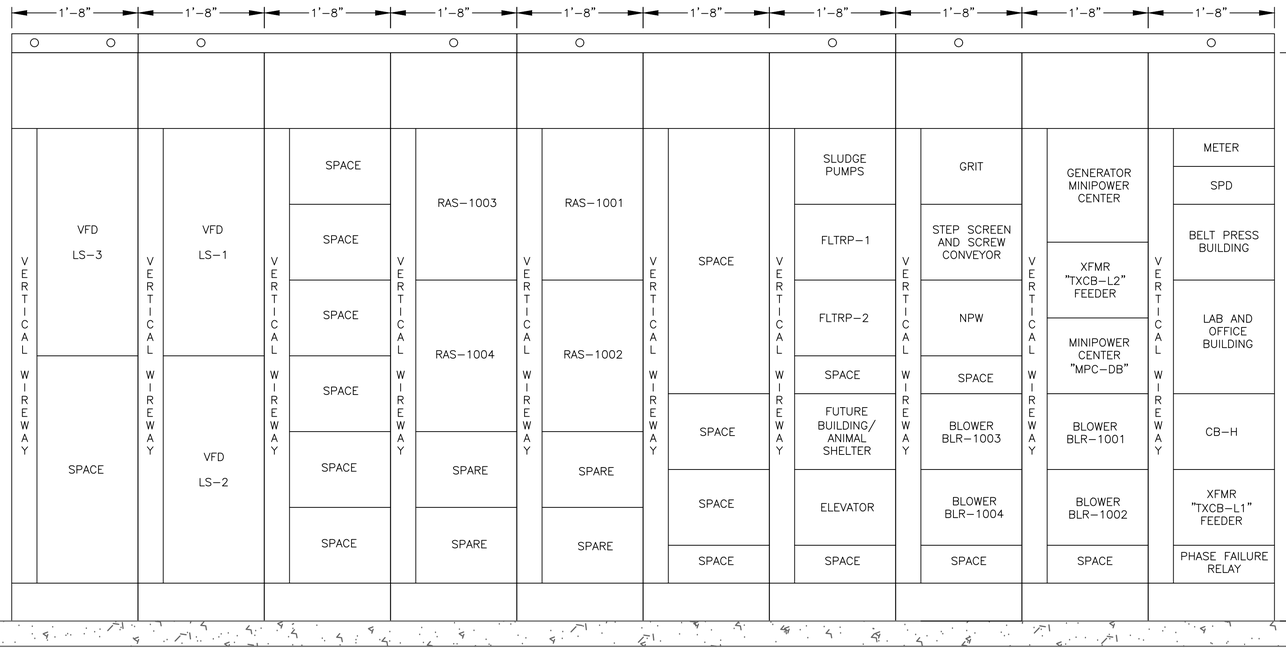
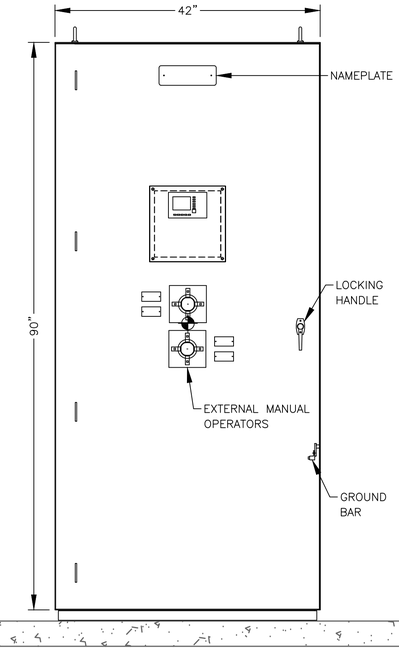


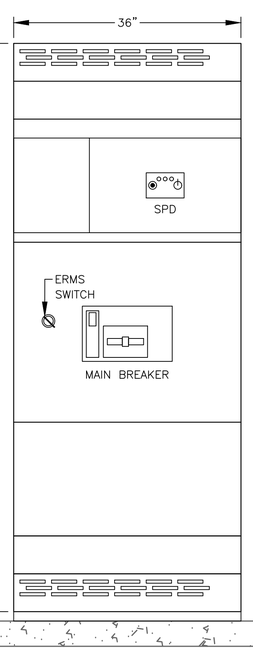
MCC-CB

ELEVATION
1"=1'-0"



ATS-CB

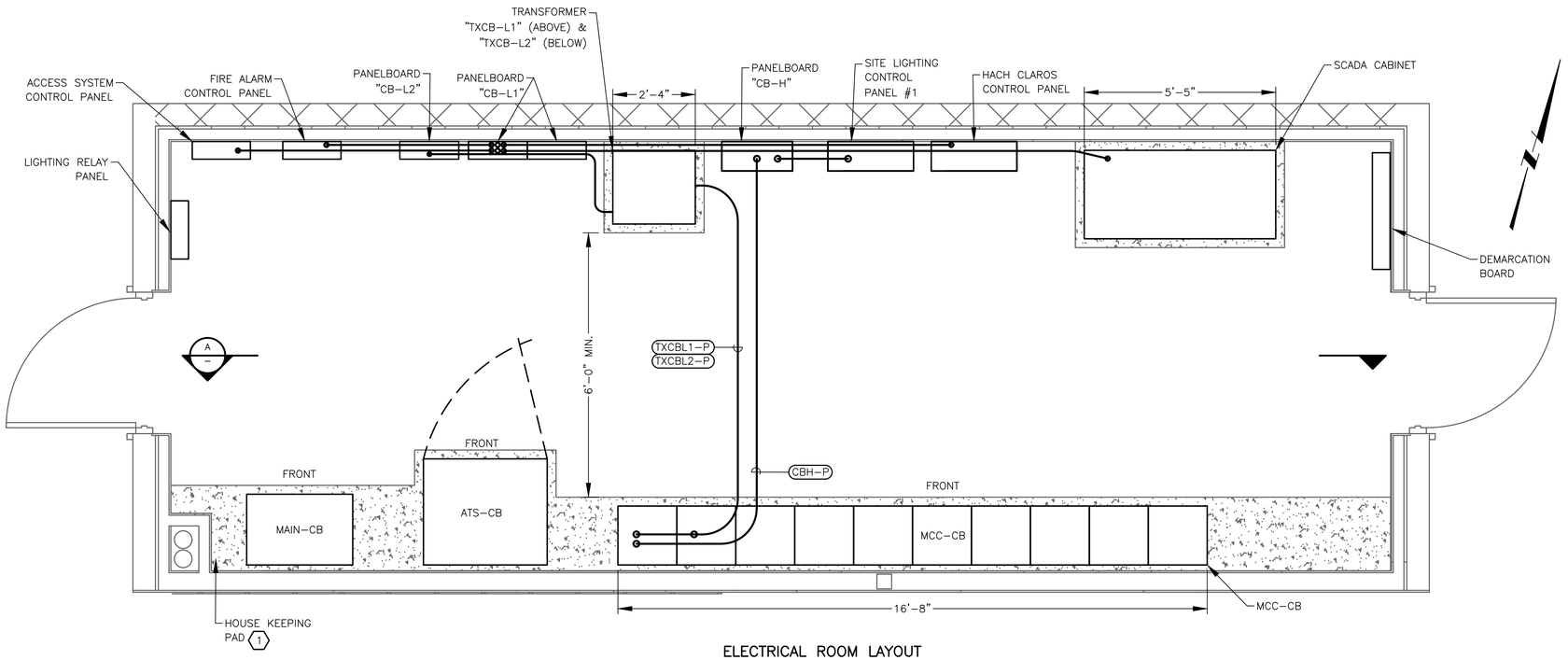
ELEVATION
1"=1'-0"



MAIN-CB

ELEVATION
1"=1'-0"

SECTION A
1" = 1'-0"



ELECTRICAL ROOM LAYOUT

PLAN
1/2"=1'-0"

GENERAL NOTES:

A. THIS DRAWING IS PROVIDED TO ILLUSTRATE THE EQUIPMENTS LOCATED IN THE ELECTRICAL ROOM INSIDE CONTROL BUILDING UPPER LEVEL.

B. DIMENSIONS INSIDE THE BUILDING ARE SUBJECTED TO THE PROPOSED BUILDING DIMENSIONS. THE BUILDING SHOP DRAWING SHALL BE APPROVED PRIOR TO ELECTRICAL EQUIPMENT SUBMITTAL OR UNDERGROUND INSTALLATIONS FOR ENSURED COORDINATION.

C. PROVIDE 3 ½" HOUSEKEEPING PAD UNDER ALL FLOOR MOUNTED EQUIPMENT IN ELECTRICAL ROOM.

D. ALL ANCHORS, STRUTS, STRUT FITTINGS, STRAPS AND HARDWARE SHALL BE 316 STAINLESS STEEL.

E. ROUTE CONDUITS SUCH THAT THERE IS NO CONNECTIONS IN CONDUIT FITTINGS. IF CONNECTIONS ARE REQUIRED A BOX SHALL BE SIZED ACCORDINGLY.

KEYED NOTES:

(1) HOUSE KEEPING PAD SHALL EXTEND 3" PAST THE EDGE OF THE EQUIPMENT. PROVIDE 1" CHAMFER ON EXPOSED EDGES.

VERIFY SCALE
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No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING ENLARGED PLAN ELECTRICAL ROOM

DATE:	08/07/2023	
DESIGN:	AP	
DRAWN:	TP	
CHECKED:	AP	
KHA NO.:	067812104	

SHEET
E-906

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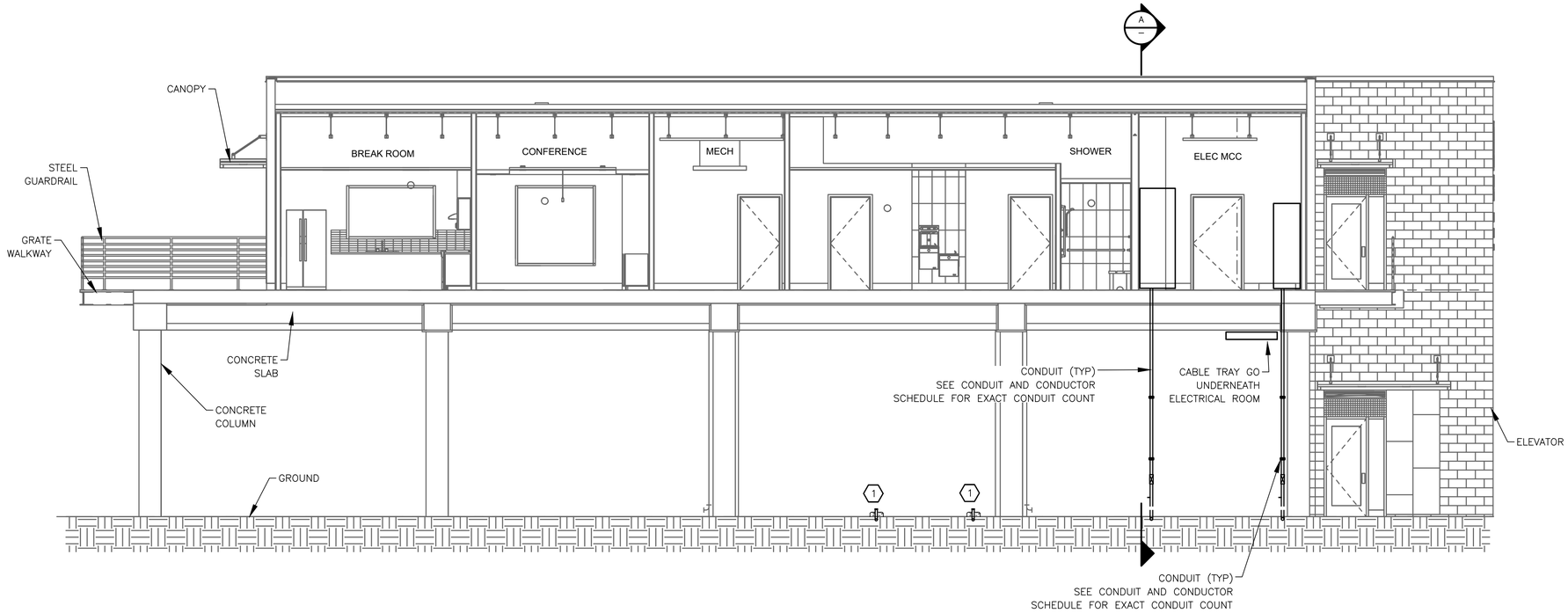
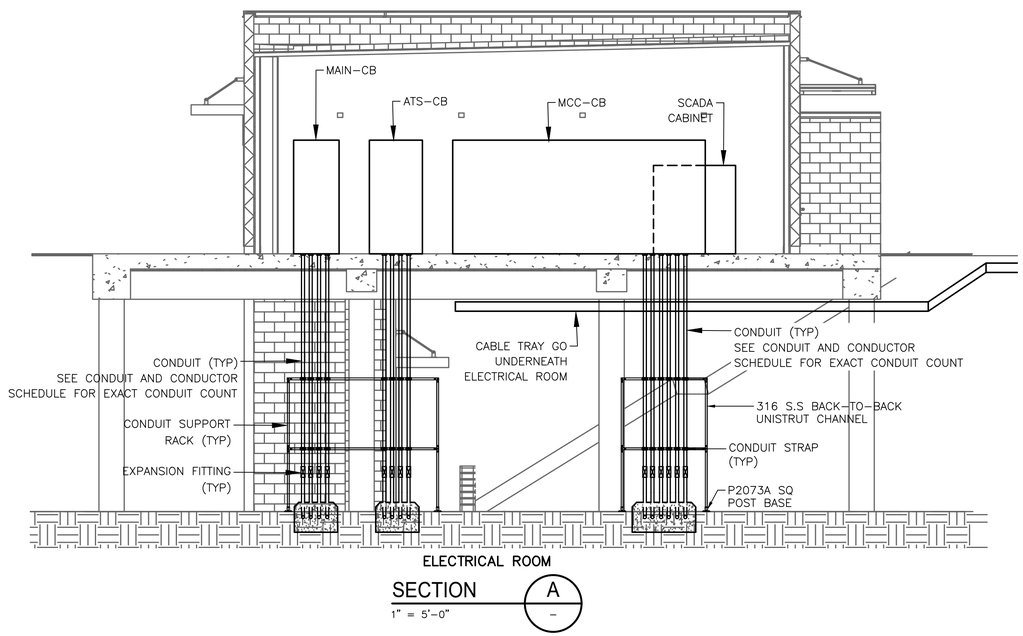


CONTROL BUILDING

SECTION

1" = 5'–0"



SECTION A – 1" = 5'–0"

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY THE EQUIPMENT INSTALLED LOCATION AND SUPPLY MOUNTING HARDWARE APPROPRIATE FOR THE APPLICATION.

B. ALL THE SUPPORT, HARDWARE, STRUTS, STRAPS SHOULD BE 316 STAINLESS STEEL.

C. CONTRACTOR SHOULD CONFIRM THE INFORMATION FROM THE CONDUITS AND CONDUCTORS SCHEDULE FOR EXACT CONDUITS COUNT BEFORE INSTALLATION.

KEY NOTES:

(1) INSTALL THE CONDUIT STUB UP FROM CONCRETE ENCASED WITH THE CAB COVER THE CONDUIT FOR FUTURE ELECTRICAL VEHICLE INSTALLATION.

VERIFY SCALE

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1	PERMIT RESUBMITAL	AP	01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

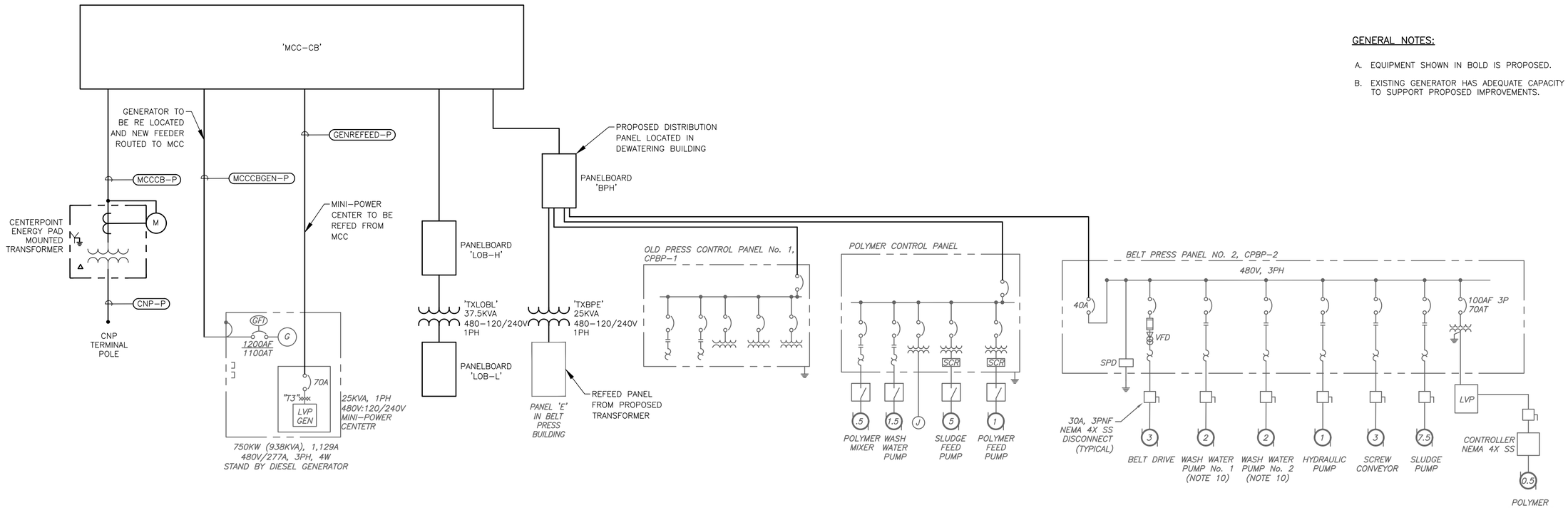
ELECTRICAL

CONTROL BUILDING ELEVATION

DATE:	08/07/2023
DESIGN:	AP
DRAWN:	TP
CHECKED:	AP
KHA NO.:	067812104

SHEET

E-907



OVERALL PLANT

ONE LINE DIAGRAM

NONE

GENERAL NOTES:

A. EQUIPMENT SHOWN IN BOLD IS PROPOSED.

B. EXISTING GENERATOR HAS ADEQUATE CAPACITY TO SUPPORT PROPOSED IMPROVEMENTS.

VERIFY SCALE

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

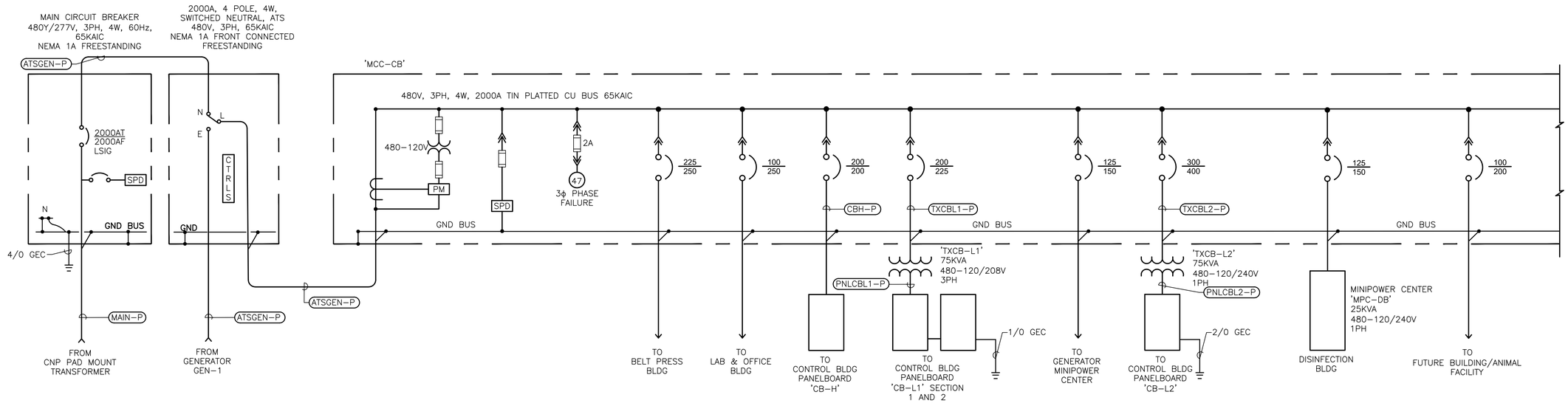
ELECTRICAL

ONE LINE DIAGRAM
PROPOSED SERVICE

DATE:	08/07/2023
DESIGN:	AP
DRAWN:	TP
CHECKED:	AP
KHA NO.:	067812104

SHEET

E-908



KEYED NOTES:

1. PROVIDE POWER DISTRIBUTION BLOCKS AT FEEDER BREAKER TO HANDLE OVER-SIZE CONDUCTORS.

CONTROL BUILDING MCC-CB

ONE LINE DIAGRAM

NONE

VERIFY SCALE

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STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED
PROFESSIONAL ENGINEER
01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

ONE-LINE DIAGRAM
MCC-CB

DATE:	08/07/2023
DESIGN:	AP
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SHEET

E-909

Existing	Proposed	Phase III 22 MGD	Construction Phase	Process Area Designation	Process Area Description	Tag No.	Equipment Description	Load Value	Units (HP, FLA, kVA)	Voltage	Phase	Controller Type - FVNR, RVSS, ASD, Feeder, Etc	Notes	Running Load Factor (zero to 1)	Load Type	Connected Load (Amps)	Connected Load (kVA)	Running Load (Amps)	Running Load (kVA)	Standby Power? (Y/N)
.	✓	.	2	BP	BELT PRESS BUILDING	PNL 'BPH'	PANELBOARD 'BPH'	225	FLA	480	3	FEEDER	EXCESS CAPACITY ALLOWANCE	0.5	Other	225	187	113	94	Y
.	✓	.	2	CB	CONTROL BUILDING	PNL 'CB-H'	PANELBOARD 'CB-H'	125	FLA	480	3	FEEDER	MISC. 480V LOADS	0.05	Other	125	104	6	5	Y
.	✓	.	2	CB	CONTROL BUILDING	CB-ELEL	CONTROL BUILDING ELEVATOR	25	HP	480	3	FEEDER		1	Motor	34	28	34	28	Y
.	✓	.	2	CB	CONTROL BUILDING	TXCB-L1	TRANSFORMER CB-L1	75	kVA	480	3	FEEDER	FEEDS PANELBOARD CB-L1	0.5	Other	90	75	45	38	Y
.	✓	.	2	CB	CONTROL BUILDING	TXCB-L2	TRANSFORMER CB-L2	75	kVA	480	1	FEEDER	FEEDS PANELBOARD CB-L2	0.67	Other	156	75	105	50	Y
.	✓	.	2	DISINF	DISINFECTION AREA	MPC-DB	MINI POWER CENTER MPC-DB	25	kVA	480	1	FEEDER		0.5	Other	52	25	26	13	Y
.	✓	.	2	LOB	LAB & OFFICE BUILDING	PNL 'LOBH'	PANELBOARD 'LOBH'	100	FLA	480	3	FEEDER	EXCESS CAPACITY ALLOWANCE	0.5	Other	100	83	50	42	N
.	✓	.	2	LS	LIFT STATION	INFP-1	LIFT STATION PUMP 1	35	HP	480	3	ASD		1	Motor	40	33	40	33	Y
.	✓	.	2	LS	LIFT STATION	INFP-2	LIFT STATION PUMP 2	35	HP	480	3	ASD		1	Motor	40	33	40	33	Y
.	✓	.	2	LS	LIFT STATION	INFP-3	LIFT STATION PUMP 3	35	HP	480	3	ASD	STANDBY LOAD	0	Motor	40	33	0	0	N
✓	.	.	1	PA	PROCESS AREA	TH-1	THICKENER 1	0.5	HP	480	3	FVNR		1	Motor	1	1	1	1	N
.	✓	.	2	PA	PROCESS AREA	BLR-1001	BLOWER 1	75	HP	480	3	FVNR		1	Motor	96	80	96	80	Y
.	✓	.	2	PA	PROCESS AREA	BLR-1002	BLOWER 2	75	HP	480	3	FVNR		1	Motor	96	80	96	80	Y
.	✓	.	2	PA	PROCESS AREA	BLR-1003	BLOWER 3	75	HP	480	3	FVNR		1	Motor	96	80	96	80	Y
.	✓	.	2	PA	PROCESS AREA	BLR-1004	BLOWER 4	75	HP	480	3	FVNR		1	Motor	96	80	96	80	Y
.	✓	.	2	PA	PROCESS AREA	GRP-1001	GRIT PUMP	6	HP	480	3	FVNR		1	Motor	8	6	8	6	Y
.	✓	.	2	PA	PROCESS AREA	GWU-1002	GRIT WATERING UNIT	2	HP	480	3	FVNR		1	Motor	3	3	3	3	Y
.	✓	.	2	PA	PROCESS AREA	NPWP-1001	NPW PUMP 1	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
.	✓	.	2	PA	PROCESS AREA	NPWP-1002	NPW PUMP 2	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
.	✓	.	2	PA	PROCESS AREA	NPWP-1003	NPW PUMP 3	10	HP	480	3	FVNR		1	Motor	14	12	14	12	N
.	✓	.	2	PA	PROCESS AREA	RAS-1001	RAS PUMP 1	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
.	✓	.	2	PA	PROCESS AREA	RAS-1002	RAS PUMP 2	10	HP	480	3	FVNR		1	Motor	14	12	14	12	N
.	✓	.	2	PA	PROCESS AREA	RAS-1003	RAS PUMP 3	10	HP	480	3	FVNR		1	Motor	14	12	14	12	Y
.	✓	.	2	PA	PROCESS AREA	RAS-1004	RAS PUMP 4	10	HP	480	3	FVNR		1	Motor	14	12	14	12	N
.	✓	.	2	PA	PROCESS AREA	SC-1002	STEP SCREEN SCREW CONVEYOR	5	HP	480	3	FVNR		1	Motor	8	6	8	6	Y
.	✓	.	2	PA	PROCESS AREA	SCP-1001	SCUM PUMP 1	3	HP	480	3	FVNR		1	Motor	5	4	5	4	N
.	✓	.	2	PA	PROCESS AREA	SCP-1002	SCUM PUMP 2	3	HP	480	3	FVNR		1	Motor	5	4	5	4	Y
.	✓	.	2	PA	PROCESS AREA	SCP-1003	SCUM PUMP 3	3	HP	480	3	FVNR		1	Motor	5	4	5	4	N
.	✓	.	2	PA	PROCESS AREA	SCP-1004	SCUM PUMP 4	3	HP	480	3	FVNR		1	Motor	5	4	5	4	Y
.	✓	.	2	PA	PROCESS AREA	SP-1001	SLUDGE PUMP 1	3	HP	480	3	FVNR		1	Motor	5	4	5	4	Y
.	✓	.	2	PA	PROCESS AREA	SP-1002	SLUDGE PUMP 2	3	HP	480	3	FVNR		1	Motor	5	4	5	4	N
.	✓	.	2	PA	PROCESS AREA	SP-1003	SLUDGE PUMP 3	3	HP	480	3	FVNR	STANDBY (REDUNDANT)	0	Motor	5	4	0	0	N
.	✓	.	2	PA	PROCESS AREA	SS-1001	STEP SCREEN	2	HP	480	3	FVNR		1	Motor	3	3	3	3	Y
✓	.	.	1	SA	SURROUNDING AREA	MPC-GEN	GENERATOR MINI-POWER CENTER	70	kVA	480	3	FEEDER		0.5	Other	84	70	42	35	N
.	✓	.	2	SA	SURROUNDING AREA	FLTRP-1	FILTER PUMP 1 (FUTURE)	12	HP	480	3	FVNR		0	Motor	14	12	0	0	N
.	✓	.	2	SA	SURROUNDING AREA	FLTRP-2	FILTER PUMP 2 (FUTURE)	12	HP	480	3	FVNR		0	Motor	14	12	0	0	N
.	✓	.	2	SA	SURROUNDING AREA	FUTR	FUTURE BUILDING ALLOWANCE	100	FLA	480	3	FEEDER	POSSIBLE FUTURE BUILDING	0.5	Other	100	83	50	42	N
.	✓	.	2	SA	SURROUNDING AREA	SB_CL2-BLDGS	SODIUM BISULFITE & CHLORINE BUILDING POWER	60	FLA	480	3	FEEDER		1	Other	60	50	60	50	Y
✓	.	.	1												**Existing Total:**	**85**	**71**	**43**	**36**	**0**
.	✓	.	2												**Proposed Total:**	**1628**	**1280**	**1101**	**870**	**1007**
.	.	.	TOTAL												**Overall Total:**	**1713**	**1351**	**1145**	**906**	**1007**

OVERALL PLANT

LOAD ANALYSIS

NONE

FAULT CURRENT SUMMARY

LOCATION	MAXIMUM AVAILABLE FAULT CURRENT	AIC RATING
MAIN CIRCUIT BREAKER	22.6 KA	65 KA
ATS	22.6 KA	65 KA
MCC-CB	22.6 KA	65 KA
CB-H	22.6 KA	65 KA
CB-L1	8.6 KA	22 KA
GENERATOR MINI POWER CENTER	5.2 KA	10 KA
CB-L2	14 KA	22 KA
MPC-DB	5.2 KA	22 KA
BPH	22.6 KA	65 KA
LOB-H	22.6 KA	65 KA
LOB-L	7.8 KA	22 KA

GENERAL NOTES:

A. AVAILABLE FAULT CURRENT LABELING - PER CITY OF HOUSTON ELECTRICAL CODE, IN LIEU OF MAXIMUM AVAILABLE FAULT CURRENT MARKING AS REQUIRED BY 110.24, A PERMANENTLY AFFIXED LABEL SHALL BE APPLIED WITH THE FAULT CURRENT AT THE TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL BE 2"X3" IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF THE CALCULATION.

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No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

STATE OF TEXAS — ABHISHEK PANDEY — 147640 — LICENSED PROFESSIONAL ENGINEER — 01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

LOAD ANALYSIS
PROPOSED SERVICE

DATE:	08/07/2023	
DESIGN:	AP	
DRAWN:	TP	
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KHA NO.:	067812104	

VERIFY SCALE
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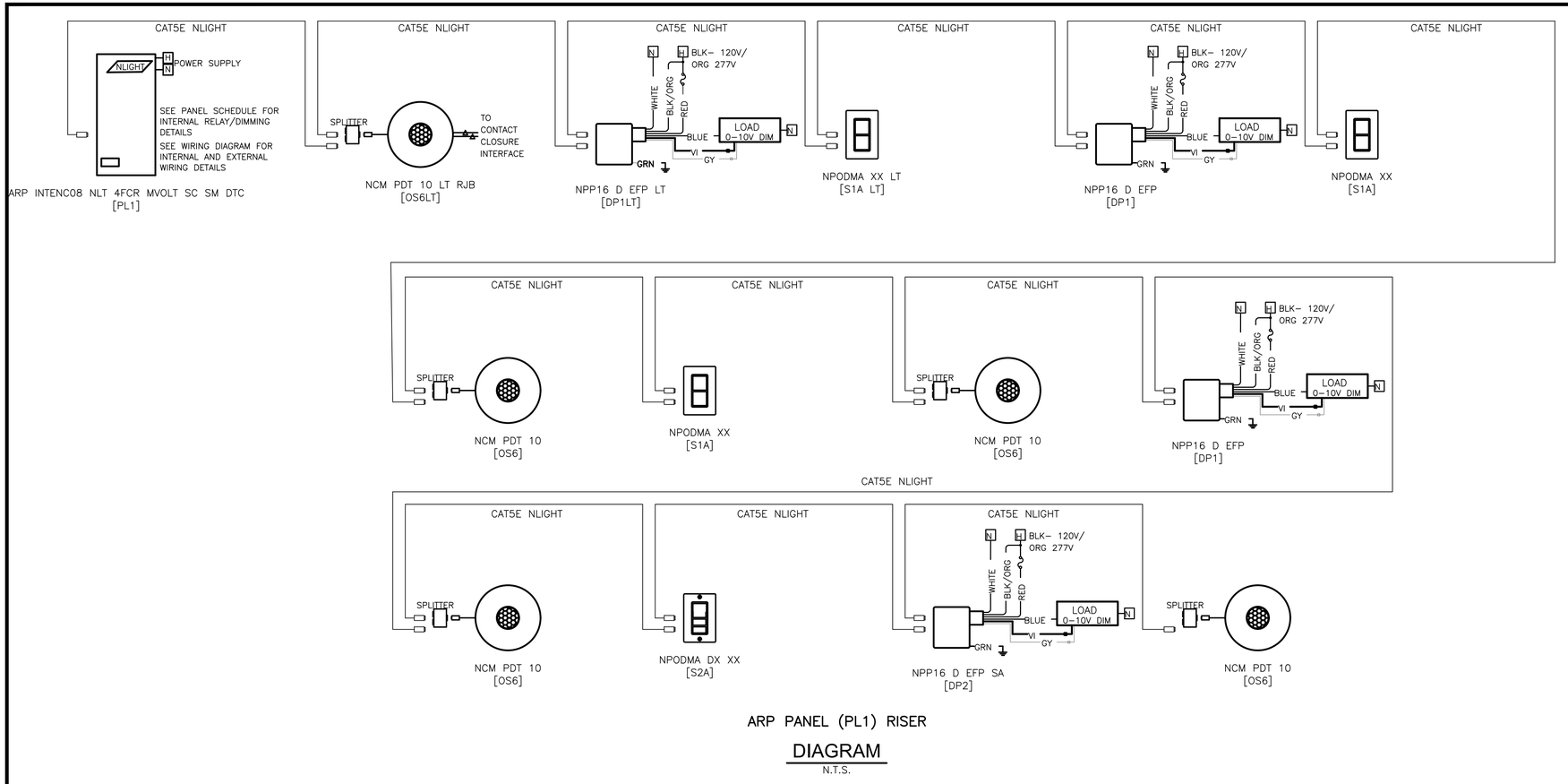
SHEET
E-910



ARP PANEL (PL1) RISER

DIAGRAM

N.T.S.

PANEL SCHEDULE

LOCATION: ELEC MMC
CATALOG: ARP INTENC08 NLT 4FCR MVOLT SC SM DTC
NAME: PL1

SUPPLY CIRCUIT: XXXXX
VOLTAGE: 120V NORMAL
ENCLOSURE DIM:
MOUNTING: SURFACE

ROW	LINE	FEED	POLE	VOLT	EM	LOAD	ZONE
1	T.B.D.	T.B.D.	1	120	NO	EXTERIOR CANOPY DOWNLIGHTS	C
2	T.B.D.	T.B.D.	1	120	NO	EXTERIOR SCONCE	D
3			1		NO	SPARE	
4			1		NO	SPARE	
5			1		NO		
6			1		NO		
7			1		NO		
8			1		NO		

RELAY SUMMARY:
ACTIVE: 2
SPARE: 2
SPACES: 4

ARP PANEL (PL1) LOAD

SCHEDULE

N.T.S.

SOO		OCCUPANCY SENSOR				TIME CLOCK			WALL SWITCH					DAYLIGHT SENSOR			OTHER			
		VACANCY MODE (MANUAL ON)	OCCUPANCY MODE (AUTO ON)	SENSOR TIME OUT PERIOD (MINUTES)	DUAL TECHNOLOGY	SCHEDULE ON TIME	SCHEDULE OFF TIME	SCHEDULE OVERRIDE SWITCH	MANUAL (ON/OFF)	MANUAL DIMMING	KEY SWITCH	SCENE CONTROL	GRAPHIC TOUCHSCREEN	SWITCHING (ON/OFF)	DIMMING	TARGET LIGHTING LEVELS (FC)	EXTERIOR LOCATION	PLUG LOAD CONTROL	NETWORKED	NOTES
A	VESTIBULE		X	10	X	T.B.D.	T.B.D.	X	X										X	1
B	CORRIDOR		X	10	X	T.B.D.	T.B.D.		X										X	1
C	BREAKROOM	X		10	X					X									X	1
D	OFFICE/ WORK AREA	X		10	X					X										
E	CONFERENCE	X		10	X					X										
F	STORAGE/JAN/IT	X		10	X				X											
G	EXTERIOR FACADE					DUSK	DAWN										X		X	2
H	MEN/WOMEN RR/SHOWER		X	10	X				X											
I	LAB	X		10	X					X										

NOTES:
1. LIGHTING SHALL BE CONTROLLED BY TIME-CLOCK AND SENSOR, COORDINATE SCHEDULE WITH OWNER AT STARTUP. OCCUPANCY SENSORS SHALL BE USED FOR AFTER HOURS OPERATION.
2. LIGHTING SHALL BE CONTROLLED BY TIME-CLOCK AND PHOTOCELL. PHOTOCELL SHALL TURN LIGHTS ON AT DUSK AND OFF AT DAWN, VERIFY SCHEDULE WITH OWNER AT STARTUP.

SEQUENCE OF OPERATIONS

SCHEDULE

N.T.S.

VERIFY SCALE
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE.

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TBPE NO. 928

No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

STATE OF TEXAS
ABHISHEK PANDEY
147640
LICENSED
PROFESSIONAL
ENGINEER
01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

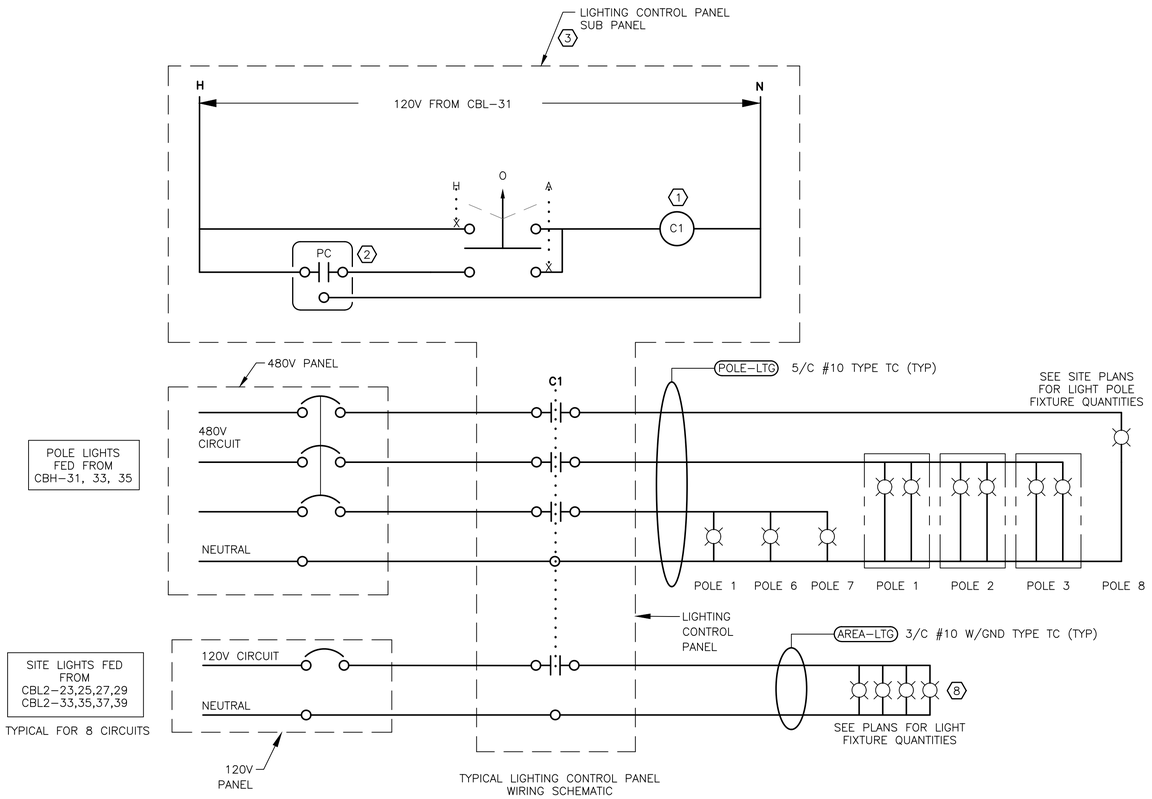
ELECTRICAL

CONTROL BUILDING LIGHTING CONTROLS

DATE:	08/07/2023
DESIGN:	AP
DRAWN:	TP
CHECKED:	AP
KHA NO.:	067812104

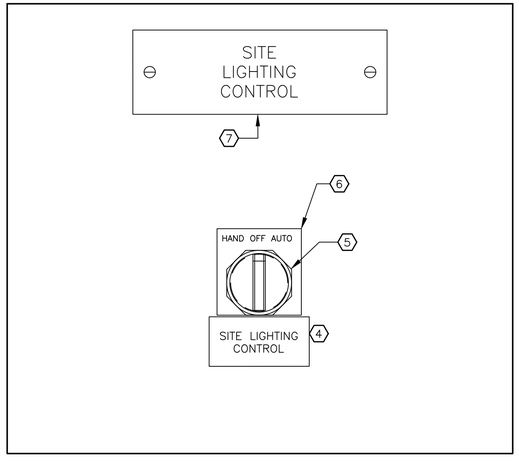
SHEET

E-911



SITE LIGHTING CONTROL PANEL #1

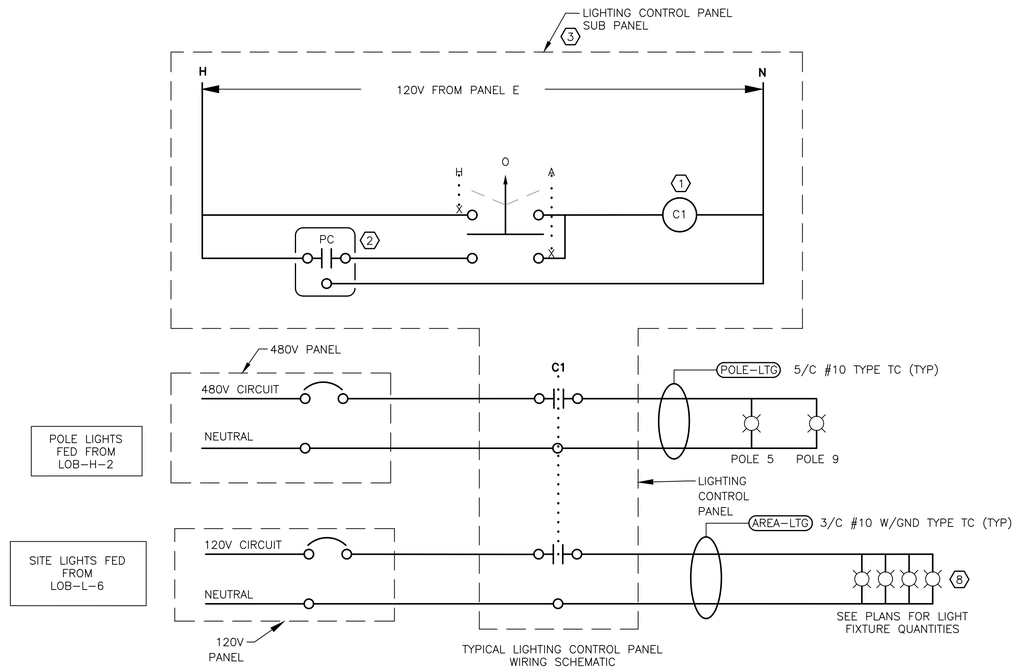
DIAGRAM



TYPICAL LIGHTING CONTROL PANEL
FRONT

KEYED NOTES:

1. PROVIDE EATON "CN35 SERIES" (OR EQUAL) ELECTRICALLY HELD LIGHTING CONTACTOR, WITH MINIMUM OF TWO SPARE CONTACTS PER CONTACTOR.
2. PROVIDE PHOTOCELL 4' MINIMUM ABOVE ROOF LINE LOCATED WITH NORTHERN EXPOSURE AND PROVEN FUNCTIONAL FOR SUNSET TO SUNRISE OPERATION.
3. INSTALL COMPONENTS ON SUB PANEL, PROVIDE FIELD WIRING AND RAIL MOUNTED TERMINAL BLOCKS (30A MIN.). ALL CONDUCTORS TO/FROM CONTROL PANEL SHALL PASS THROUGH TERMINAL BLOCKS BEFORE CONNECTION TO DEVICE WITHIN THE PANEL. PANEL WIRING SHOP DRAWING SHALL BE SUBMITTED FOR ENGINEER APPROVAL AND A PERMANENT COPY OF APPROVED DRAWING SHALL BE PROVIDE IN POCKET INSIDE ON PANEL DOOR.
4. PHENOLIC THREE LAYER NAMEPLATE WITH 3/16" BLACK LETTERS ON WHITE BACKGROUND, INDICATE CIRCUIT NUMBERS FOR EACH CIRCUIT. SEE PANEL SCHEDULES FOR RELATED CIRCUITS.
5. 3 POSITION SELECTOR SWITCH WITH SEALED MAINTAINED CONTACTS.
6. FACTORY LEGEND PLATE WITH 3/16" BLACK TEXT ON WHITE LABELED AS SHOWN.
7. PHENOLIC THREE LAYER NAMEPLATE WITH 3/8" BLACK LETTERS ON WHITE BACKGROUND.
8. SEE THE DRAWINGS OF EACH PLAN AREA FOR THE EXACT FIXTURE QUANTITIES.



SITE LIGHTING CONTROL PANEL #2

DIAGRAM

1

LIGHT FIXTURE SCHEDULE

SYMBOL	TYPE	MANUFACTURER/ CATALOG NUMBER	INPUT VOLTAGE	TOTAL LUMEN OUTPUT	TOTAL INPUT WATTS
	A	MARK S1LD 8FT 600LMF 35K STD	120	4390	40.6641
	B	LITHONIA BLC 2X2 3300LM ADSM 35K	120	3408	30.11
	C	LITHONIA LDN4-35/15-L04-AR-LSS-TRW-MVOLT-GZ10-EL	120	1500	17.5
	D	BROWNLEE 7075-12-H16-35K	120	1462	17.3504
	F	LITHONIA LDN4 35_20 L04AR LD	120	1773	22.12
	G	GOTHAM EVO4SH 35_25 DFR SMO	120	1697	25.7
	H	LITHONIA LX L48 5000LM SEF FDL MVOLT 35K 80CRI	120	4802	31.8274
	I	HOLOPHANE, PETROLUX EMXH LED EMXH-L48-6000LM-FPCL-MD-MVOLT-40K-80CRI-DGXD CR	120	6247	39.5
	K	VANITY FIXTURE FLOW-SQ 5165 90CRI 3500K	120	1663	13.2
	P	AUTOBAHN COBRA HEAD ATB2 P605 R5 4K	277	36,748	590
	L	COOPER CROUSE-HINDS V-MV-3L-J-UNV1	120	3000	28
	L1	COOPER CROUSE-HINDS VMVL-3-W-J-UNV1-EM1	120	3250	30
	W	LITHONIA WST-LED-P3-50K-VF-MVOLT-E20WC-DDBXD	120	6000	50

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL

OVERALL FIXTURE SCHEDULE
AND CONTROL DIAGRAM

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
08/07/2023	AP	TP	AP	067812104

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SHEET

E-912

PANEL: PROPOSEO PANELBOARO "CB-L1" SECTION 1 — **LOCATION: CONTROL BUILOING ELECTRICAL ROOM**
SERVICE VOLTAGE: 120/208V — **PHASE: 3** — **WIRE: 4**
TOTAL LOAD KVA: 18.12 — **BUS SIZE: 400A** — **MAIN SIZE: 300A** — **TYPE: MCB**
50.30 AMPS AT 208V — **NEUTRAL: 100%** — **MOUNTING: SURFACE**
REMARKS: NEMA 1 — **FED FROM: MCC-CB VIA XFMR "TXCB-L1"**
BOLT IN BREAKERS

LOAD IN VA A	LOAD IN VA B	LOAD IN VA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B	LOAD IN VA C
2000			WWTP SCADA CONTROL PANEL	30/1	1	2	20/1	FIRE ALARM CONTROL PANEL	1000		
	1000		HACH CLAROS CONTROL PANEL	20/1	3	4	20/1	ACCESS SYSTEM CONTROL PANEL		1000	
		180	LS RECPT. #1	20/1	5	6	20/1	ACCESS DOOR POWER SUPPLY			1000
180			HW RECPT.#1	20/1	7	8	20/1	HW RECPT. #2	180		
	180		BASIN RECPT. #1	20/1	9	10	20/1	BASIN RECPT. #2		180	
		180	BASIN RECPT. #3	20/1	11	12	20/1	BASIN RECPT. #4			180
180			BASIN RECPT. #5	20/1	13	14	20/1	RACK 1001	1400		
	1000		RACK 1002	20/1	15	16	20/1	RACK 1003		1400	
		1400	RACK 1004	20/1	17	18	20/1	RACK 1005			1000
100			RACK 1006	20/1	19	20	20/1	RACK 1007	1300		
	100		RACK 1008	20/1	21	22	30/2	SPARE			
		100	RACK 1010	20/1	23	24					
180			BLOWER AREA RECPT. #1	20/1	25	26	30/2	SPARE			
	2000		BLOWER CONTROL PANEL LCP-BLR	20/1	27	28					
		400	LIFT STATION LOCAL CONTROL PANEL (LCP-LS)	20/1	29	30	30/2	SPARE			
300			SITE LIGHT CONTROL PANEL #1	20/1	31	32					
			SPARE	20/1	33	34	20/2	SPARE			
			SPARE	20/1	35	36					
			SPARE	20/1	37	38	20/1	SPARE			
			SPARE	20/1	39	40	20/1	SPARE			
			SPARE	20/1	41	42	20/1	SPARE			
2940	4280	2260	TOTAL					TOTAL	3880	2580	2180

PANEL: PROPOSED PANELBOARD "CB-L1" SECTION 2 — **LOCATION: CONTROL BUILDING ELECTRICAL ROOM**
SERVICE VOLTAGE: 120/208V — **PHASE: 3** — **WIRE: 4**
TOTAL LOAD KVA: 27.57 — **BUS SIZE: 400A** — **MAIN SIZE: 300A** — **TYPE: MCB**
76.53 AMPS AT 208V — **NEUTRAL: 100%** — **MOUNTING: SURFACE**
REMARKS: NEMA 1 — **FED FROM: THROUGH LUG FROM "CB-L1" SECTION 1**
BOLT IN BREAKERS

LOAD IN VA A	LOAD IN VA B	LOAD IN VA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B	LOAD IN VA C
540			ELECTRICAL RM 3 RECEPTACLES	20/1	43	44	20/1	OFFICE RM 2 RECEPTACLES	360		
	360		ELECTRICAL RM 2 RECEPTACLES	20/1	45	46	20/1	OFFICE RM 2 RECEPTACLES		360	
		360	MENS RR RECEPTACLES	20/1	47	48	20/1	STORAGE RM 4 RECEPTACLES			720
360			WOMENS RR RECEPTACLE	20/1	49	50	20/1	WORK AREA 3 RECEPTACLES	540		
			SPARE	20/1	51	52	20/1	WORK AREA PHOTOCOPIER		180	
			SPARE	20/1	53	54	20/1	JANITOR ROOM 2 RECEPTACLES			360
2400			BREAK RM ICE MAKER	20/1	55	56	20/1	LAB RM FUME HOOD	1200		
	360		BREAK RM 2 RECEPTACLES	20/1	57	58	20/1	LAB RM REFRIGERATOR		600	
		540	BREAK RM 3 RECEPTACLES	20/1	59	60	20/1	LAB RM ICE MAKER			2400
540			BREAK RM 3 RECEPTACLES	20/1	61	62	20/1	LAB RM OVEN	1500		
	720		BREAK RM 4 RECEPTACLES	20/1	63	64	20/1	LAB RM FURNACE		1100	
		600	BREAK ROOM VENT HOOD	20/1	65	66	20/1	LAB RM 2 RECEPTACLES			360
800			BREAK RM REFRIGERATOR	20/1	67	68	20/1	LAB RM 1 RECEPTACLES	180		
	700		BREAK RM GARBAGE DISPOSAL	20/1	69	70	20/1	LAB RM 1 RECEPTACLES		180	
		1440	BREAK RM DISH WASHER	20/1	71	72	20/1	LAB RM 1 RECEPTACLES			180
1080			CONF RM 6 RECEPTACLES	20/1	73	74	20/1	LAB RM VACCUM PUMPS	200		
	540		CONF RM 3 RECEPTACLES	20/1	75	76	20/1	LAB RM VACCUM PUMPS		200	
		1000	IT ROOM SERVER RACK	20/1	77	78	20/1	CB LIGHTING ZONE 1			700
1000			IT ROOM SERVICE RACK	20/1	79	80	20/1	CB LIGHTING ZONE 2	600		
	600		IT ROOM AND SCADA TV	20/1	81	82	20/1	CB LIGHTING ZONE 3		350	
		360	MECHANICAL RM 2 RECEPTACLES	20/1	83	84	20/1	IT ROOM BAS			1000
6720	3280	4300	TOTAL					TOTAL	4580	2970	5720

PANEL: PROPOSED PANELBOARD "CB-H" — **LOCATION: CONTROL BUILDING ELECTRICAL ROOM**
SERVICE VOLTAGE: 277/480V — **PHASE: 3** — **WIRE: 4**
TOTAL LOAD KVA: 28.34 — **BUS SIZE: 225A** — **MAIN SIZE: 200A** — **TYPE: MCB**
34.09 AMPS AT 480V — **NEUTRAL: 100%** — **MOUNTING: SURFACE**
REMARKS: NEMA 1 — **FED FROM: MCC-CB**
BOLT IN BREAKERS — **65 KAIC**

LOAD IN VA A	LOAD IN VA B	LOAD IN VA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B	LOAD IN VA C
582					1	2					
	582		CLARIFIER CONTROL PANEL CLCP-1001	20/3	3	4	20/3	SPARE			
		582			5	6					
582					7	8					
	582		CLARIFIER CONTROL PANEL CLCP-1002	20/3	9	10	20/3	SPARE			
		582			11	12					
2950					13	14					
	2950		LCP SCUM /RAS PS#1	30/3	15	16	-	SPACE			
		2950			17	18					
2950					19	20					
	2950		LCP SCUM/RAS PS#2	30/3	21	22	-	SPACE			
		2950			23	24					
582					25	26					
	582		LIFT STATION CRANE	20/3	27	28	-	SPACE			
		582			29	30					
1800					31	32					
	1800		LIGHTING POLES	30/3	33	34	-	SPACE			
		1800			35	36					
					37	38					
			SPARE	40/3	39	40	-	SPACE			
					41	42					
9446	9446	9446	TOTAL					TOTAL	0	0	0

1

PANEL: PROPOSED PANELBOARD "CB-L2" — **LOCATION: CONTROL BUILDING ELECTRICAL ROOM**
SERVICE VOLTAGE: 120/240V — **PHASE: 1** — **WIRE: 3**
TOTAL LOAD KVA: 51.84 — **BUS SIZE: 400A** — **MAIN SIZE: 400A** — **TYPE: MCB**
215.98 AMPS AT 240V — **NEUTRAL: 100%** — **MOUNTING: SURFACE**
REMARKS: NEMA 1 — **FED FROM: MCC-CB VIA XFMR "TXCB-L2"**
BOLT IN BREAKERS. — **22 KAIC**

LOAD IN VA A	LOAD IN VA B	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B
4500				1	2				
	4500	WATER HEATER WH -1	30/2	3	4	50/2	HEAT PUMP HP-1	4380	
1800		ELEVATOR CONTROL PANEL	20/1	5	6				4380
	180	ELEVATOR RECEPTACLE	20/1	7	8	35/2	HEAT PUMP HP-2	3000	
200		ELEVATOR SUMP PUMP RECPT.	20/1	9	10				3000
	780	AHU-1	15/2	11	12	15/2	HEAT PUMP HP-3	1800	
780				13	14				1800
	588	AHU-2	15/2	15	16	15/2	HEAT PUMP HP-4	1800	
588				17	18				1800
	2500	BREAK RM ELECTRIC RANGE	50/2	19	20	25/2	HEAT PUMP HP-5	3000	
2500				21	22				3000
	600	CB EXTERIOR LIGHTING - 1ST FLR.	20/1	23	24	20/1	EXHAUST FAN EF-1	100	
420		CB EXTERIOR LIGHTING - 2ND FLR	20/1	25	26	20/1	EXHAUST FAN EF-2		100
	230	LIFT STATION AND XFMR PAD SITE LIGHTINGS	20/1	27	28	20/1	EXHAUST FAN EF-3	100	
120		DISINFECTION AREA SITE LIGHTINGS	20/1	29	30	20/1	EXHAUST FAN EF-4		100
	300	ELEVATOR LIGHTING	20/1	31	32	20/1	EV VEHICLE CHARGER	1100	
260		BASIN AREA SITE LIGHTINGS	20/1	33	34	20/1	EV VEHICLE CHARGER		1100
	180	BLOWER SITE LIGHTINGS	20/1	35	36	20/1	SPARE		
150		HEADWORK AREA LIGHTINGS	20/1	37	38	20/1	SPARE		
	100	NPW AREA LIGHTING	20/1	39	40	20/1	SPARE		
		SPARE	20/1	41	42	20/1	SPARE		
11318	9958	TOTAL					TOTAL	15280	15280

CONTROL BUILDING PANELBOARD

SCHEDULE

NONE

VERIFY SCALE
0 1
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STATE OF TEXAS — ABHISHEK PANDEY — 147640 — LICENSED PROFESSIONAL ENGINEER — 08/07/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL
CONTROL BUILDING SCHEDULES I

DATE:	08/07/2023			
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SHEET
E-913

CONDUIT AND CONDUCTOR SCHEDULE

TAG	DESCRIPTION	VOLTAGE	ROUTING			CONDUIT QTY & SIZE	CONDUCTORS	NOTES
			FROM	TO	VIA			
CNP-P	CENTERPOINT ENERGY DUCTS	12470	CNP TERMINAL POLE	CNP PAD MOUNTED TRANSFORMER		2 - 6"C	EMPTY	CONDUITS ENCASED IN CONCRETE PER CNP SPEC
MAIN-P	FEEDER	480	CNP PAD MOUNTED TRANSFORMER	MAIN CIRCUIT BREAKER (MAIN-CB)		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU	
ATS-P	ATS NORMAL FEEDER	480	MAIN CIRCUIT BREAKER (MAIN-CB)	ATS		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU, 1#250 KCMIL GND	
ATSGEN-P	ATS EMERGENCY FEEDER	480	RELOCATED GENERATOR	ATS		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU, 1#250 KCMIL GND	
MCC-P	MCC FEEDER	480	ATS	MCC-CB		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU, 1#250 KCMIL GND	
TXCBL1-P	TRANSFORMER "TXCB-L1" FEEDER	480	MCC-CB	TRANSFORMER "TXCB-L1"		1 - 1 ¼" C	3 #2, #6 GND	
PNLCBL1-P	PANELBOARD "CB-L1" FFEDER	208	TRANSFORMER "TXCB-L1"	PANELBOARD "CB-L1"		1 - 3"C	4 #400 KCMIL, 1/0 SSBJ	
TXCBL2-P	TRANSFORMER "TXCB-L2" FEEDER	480	MCC-CB	TRANSFORMER "TXCB-L2"		1 - 1 ½" C	2 #3/0, #4 GND	
PNLCBL2-P	PANELBOARD "CB-L2" FFEDER	240	TRANSFORMER "TXCB-L2"	PANELBOARD "CB-L2"		2 - 2"C	3 #3/0, #4 SSBJ	
CBH-P	PANELBOARD "CB-H" FEEDER	480	MCC-CB	PANELBOARD "CB-H"		1 - 2 ½"C	4 #4/0, #6 GND	
SLCP-P	SITE LIGHTING CONTROL PANEL FEEDER	480	PANELBOARD "CB-H"	SITE LIGHTING CONTROL PANEL		1 - 1"	3/C #10, #10 GND	
SCADA-P	SCADA CONTROL PANEL POWER	120	PANELBOARD " CB-L1"	SCADA CONTROL PANEL		1 - 1"	2/C #10, #10 GND	
HCCP-P	HACH CLAROS CONTROL PANEL FEEDER	120	PANELBOARD " CB-L1"	HACH CLAROS CONTROL PANEL		1 - 3/4"	2/C #12, #12 GND	
FACP-P	FIRE ALARM CONTROL PANEL FEEDER	120	PANELBOARD " CB-L1"	FIRE ALARM CONTROL PANEL		1 - 3/4"	2/C #12, #12 GND	
ASCP-P	ACCESS SYSTEM CONTROL PANEL FEEDER	120	PANELBOARD " CB-L1"	ACCESS SYSTEM CONTROL PANEL		1 - 3/4"	2/C #12, #12 GND	
EV1-P	ELECTRIC VEHICLE CHARGING STATION 1	120	PANEL "CB-L2"	EV CHARGING STATION 1	CONDUIT	2 - 4"C	EMPTY	
EV2-P	ELECTRIC VEHICLE CHARGING STATION 2	120	PANEL "CB-L2"	EV CHARGING STATION 2	CONDUIT	2 - 4"C	EMPTY	
JDBP-SC1	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC2	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC3	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC4	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC5	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBC-SC1	CONTROL SPARE CONDUIT		PLC-CB CONTROL PANEL	DISINF. AREA CONTROL PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBC-SC2	CONTROL SPARE CONDUIT		PLC-CB CONTROL PANEL	DISINF. AREA CONTROL PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBA-SC1	ANALOG SPARE CONDUIT		PLC-CB CONTROL PANEL	DISINF. AREA CONTROL PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBA-SC2	ANALOG SPARE CONDUIT		PLC-CB CONTROL PANEL	DISINF. AREA CONTROL PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
SCCP-SC1	SECURITY AND SITE LIGHTING SPARE CONDUIT		WWTP SERVER RACK	DISINF. AREA SECURITY PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
SCCP-SC2	SECURITY AND SITE LIGHTING SPARE CONDUIT		WWTP SERVER RACK	DISINF. AREA SECURITY PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
SCCP-SC3	SECURITY AND SITE LIGHTING SPARE CONDUIT		WWTP SERVER RACK	DISINF. AREA SECURITY PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	

CONTROL BUILDING CONDUIT AND CONDUCTOR

SCHEDULE

NONE

Kimley»Horn
11700 KATY FREEWAY, SUITE 800, HOUSTON, TEXAS 77079
PHONE: 281-597-9300
TBPE NO. 928

No.	Revision	By	Date
1	PERMIT RESUBMITAL	AP	01/10/2024

STATE OF TEXAS · ABHISHEK PANDEY · 147640 · LICENSED PROFESSIONAL ENGINEER · 01/10/2024

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

ELECTRICAL
CONTROL BUILDING
SCHEDULES II

DATE:	08/07/2023
DESIGN:	AP
DRAWN:	TP
CHECKED:	AP
KHA NO.:	067812104

VERIFY SCALE
0 1
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE.

KGL
Kalluri Group, Inc.
TBPE Registration No. F-665
18500 Katy Freeway, Suite 172
Houston, Texas 77094
Phone: (713)-360-8888

SHEET
E-914

CONDUIT AND CONDUCTOR SCHEDULE

TAG	DESCRIPTION	VOLTAGE	ROUTING			CONDUIT QTY & SIZE	CONDUCTORS	NOTES
			FROM	TO	VIA			
CNP-P	CENTERPOINT ENERGY DUCTS	12470	CNP TERMINAL POLE	CNP PAD MOUNTED TRANSFORMER		2 - 6"C	EMPTY	CONDUITS ENCASED IN CONCRETE PER CNP SPEC
MAIN-P	FEEDER	480	CNP PAD MOUNTED TRANSFORMER	MAIN CIRCUIT BREAKER (MAIN-CB)		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU	
ATS-P	ATS NORMAL FEEDER	480	MAIN CIRCUIT BREAKER (MAIN-CB)	ATS		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU, 1#250 KCMIL GND	
ATSGEN-P	ATS EMERGENCY FEEDER	480	RELOCATED GENERATOR	ATS		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU, 1#250 KCMIL GND	
MCC-P	MCC FEEDER	480	ATS	MCC-CB		6 - 3"C	3C #400 KCMIL, 1#1/0 NEU, 1#250 KCMIL GND	
TXCBL1-P	TRANSFORMER "TXCB-L1" FEEDER	480	MCC-CB	TRANSFORMER "TXCB-L1"		1 - 1 ¼" C	3 #2, #6 GND	
PNLCBL1-P	PANELBOARD "CB-L1" FFEDER	208	TRANSFORMER "TXCB-L1"	PANELBOARD "CB-L1"		1 - 3"C	4 #400 KCMIL, 1/0 SSBJ	
TXCBL2-P	TRANSFORMER "TXCB-L2" FEEDER	480	MCC-CB	TRANSFORMER "TXCB-L2"		1 - 1 ½" C	2 #3/0, #4 GND	
PNLCBL2-P	PANELBOARD "CB-L2" FFEDER	240	TRANSFORMER "TXCB-L2"	PANELBOARD "CB-L2"		2 - 2"C	3 #3/0, #4 SSBJ	
CBH-P	PANELBOARD "CB-H" FEEDER	480	MCC-CB	PANELBOARD "CB-H"		1 - 2 ½"C	4 #4/0, #6 GND	
SLCP-P	SITE LIGHTING CONTROL PANEL FEEDER	480	PANELBOARD "CB-H"	SITE LIGHTING CONTROL PANEL		1 - 1"	3/C #10, #10 GND	
SCADA-P	SCADA CONTROL PANEL POWER	120	PANELBOARD " CB-L1"	SCADA CONTROL PANEL		1 - 1"	2/C #10, #10 GND	
HCCP-P	HACH CLAROS CONTROL PANEL FEEDER	120	PANELBOARD " CB-L1"	HACH CLAROS CONTROL PANEL		1 - 3/4"	2/C #12, #12 GND	
FACP-P	FIRE ALARM CONTROL PANEL FEEDER	120	PANELBOARD " CB-L1"	FIRE ALARM CONTROL PANEL		1 - 3/4"	2/C #12, #12 GND	
ASCP-P	ACCESS SYSTEM CONTROL PANEL FEEDER	120	PANELBOARD " CB-L1"	ACCESS SYSTEM CONTROL PANEL		1 - 3/4"	2/C #12, #12 GND	
EV1-P	ELECTRIC VEHICLE CHARGING STATION 1	120	PANEL "CB-L2"	EV CHARGING STATION 1	CONDUIT	2 - 4"C	EMPTY	
EV2-P	ELECTRIC VEHICLE CHARGING STATION 2	120	PANEL "CB-L2"	EV CHARGING STATION 2	CONDUIT	2 - 4"C	EMPTY	
JDBP-SC1	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC2	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC3	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC4	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
JDBP-SC5	POWER SPARE CONDUIT		MCC-CB	DISINF. AREA POWER PULL BOX	CONDUIT	1 - 2"	SPARE CONDUIT	
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CONTROL BUILDING CONDUIT AND CONDUCTOR

SCHEDULE

NONE

VERIFY SCALE

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TBPE NO. 928

No.	Revision	By	Date

STATE OF TEXAS — ABHISHEK PANDEY — 147640 — LICENSED PROFESSIONAL ENGINEER — 08/07/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

ELECTRICAL

CONTROL BUILDING SCHEDULES II

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S T R U C T U R A L N O T E S

COORDINATION:

A. THE CONTRACTOR SHALL COMPARE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND OTHER SERIES DRAWINGS AND REPORT ANY DISCREPANCIES BETWEEN EACH SET OF DRAWINGS AND WITHIN EACH SET OF DRAWINGS PRIOR TO FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.

B. ONLY LARGER SLEEVE OPENINGS AND FRAMED OPENINGS IN STRUCTURAL FRAMING COMPONENT MEMBERS ARE INDICATED ON THE STRUCTURAL DRAWINGS. HOWEVER, ALL SLEEVES, INSERTS AND OPENINGS, INCLUDING FRAMES AND/OR SLEEVES SHALL BE PROVIDED FOR PASSAGE, PROVISION AND/OR INCORPORATION OF THE WORK OF THE CONTRACT, INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL AND PLUMBING WORK. THIS WORK SHALL INCLUDE THE COORDINATION OF SIZES, ALIGNMENT, DIMENSIONS, POSITION, LOCATIONS, ELEVATIONS AND GRADES AS REQUIRED TO SERVE THE INTENDED PURPOSE. OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS, BUT REQUIRED AS NOTED ABOVE, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

C. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR FLOOR ELEVATIONS, SLOPES, DRAINS AND LOCATION OF DEPRESSED AND ELEVATED FLOOR AREAS.

D. COMPATIBILITY OF THE STRUCTURE AND PROVISIONS FOR BUILDING EQUIPMENT SUPPORTED ON OR FROM STRUCTURAL COMPONENTS SHALL BE VERIFIED AS TO SIZE, DIMENSIONS, CLEARANCES, ACCESSIBILITY, WEIGHTS AND REACTION WITH THE EQUIPMENT FOR WHICH THE STRUCTURE HAS BEEN DESIGNED PRIOR TO SUBMISSION OF SHOP DRAWINGS AND DATA FOR EACH PIECE OF EQUIPMENT AND FOR STRUCTURAL COMPONENTS. DIFFERENCES SHALL BE NOTED ON THE SUBMITTALS.

E. SHOP DRAWINGS SHALL BE PREPARED FOR ALL STRUCTURAL ITEMS AND SUBMITTED FOR REVIEW BY THE ENGINEER. STRUCTURAL DRAWINGS SHALL NOT BE REPRODUCED AND USED AS SHOP DRAWINGS. ALL ITEMS DEVIATING FROM THE STRUCTURAL DRAWINGS OR FROM PREVIOUSLY SUBMITTED SHOP DRAWINGS SHALL BE CLOUDED.

F. THE DETAILS DESIGNATED AS "TYPICAL DETAILS" APPLY GENERALLY TO THE STRUCTURAL DRAWINGS IN ALL AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED IN THE DETAILS.

G. ALL DIMENSIONS AND CONDITIONS OF EXISTING CONSTRUCTION SHALL BE VERIFIED AT THE JOB SITE PRIOR TO THE PREPARATION OF SHOP DRAWINGS. DIFFERENCES BETWEEN EXISTING CONSTRUCTION AND THAT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE REFERRED TO THE ARCHITECT. DIFFERENCES SHALL ALSO BE CLOUDED ON THE SHOP DRAWINGS.

H. ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL REQUIRED BRACING DURING CONSTRUCTION TO MAINTAIN THE STABILITY AND SAFETY OF ALL STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PROCESS UNTIL THE LATERAL-LOAD RESISTING OR STABILITY-PROVIDING SYSTEM IS COMPLETELY INSTALLED AND THE STRUCTURE IS COMPLETELY TIED TOGETHER. TEMPORARY SUPPORTS SHALL NOT RESULT IN THE OVERSTRESS OR DAMAGE OF THE ELEMENTS TO BE BRACED NOR ANY ELEMENTS USED AS BRACE SUPPORTS.

I. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR AND THEIR SUB-CONTRACTORS SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCES AND SAFETY MEASURES INCLUDING, BUT NOT LIMITED TO, ADHERENCES TO ALL OSHA GUIDELINES. THE ENGINEER SHALL NOT HAVE CONTROL OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR ANY OTHER PERSON PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THESE PERSONS TO CARRY OUT THE WORK IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS.

J. WHERE CONFLICT EXISTS AMONG THE VARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS, STRUCTURAL DRAWINGS, GENERAL NOTES, AND SPECIFICATIONS, THE STRICTEST REQUIREMENTS, AS INDICATED BY THE ENGINEER, SHALL GOVERN.

K. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF JQ IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK IS PROCEEDING IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION IS NOT INTENDED TO BE A CHECK OF THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER A PERIODIC CHECK IN AN EFFORT TO INFORM THE OWNER AGAINST DEFECTS AND DEFICIENCIES IN THE WORK OF THE CONTRACTOR.

CODES:

A. THE GENERAL BUILDING CODE USED AS THE BASIS FOR THE STRUCTURAL DESIGN IS AS FOLLOWS:
   1. INTERNATIONAL BUILDING CODE, 2015 EDITION WITH CITY OF HOUSTON AMENDMENTS.

B. STRUCTURAL CONCRETE: BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, AMERICAN CONCRETE INSTITUTE, ACI 318, AS REFERENCED BY THE GENERAL BUILDING CODE.

C. STRUCTURAL CONCRETE: CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES, AMERICAN CONCRETE INSTITUTE, ACI 350.

D. CONCRETE MASONRY: BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES, AMERICAN CONCRETE INSTITUTE, ACI 530, AS REFERENCED BY THE GENERAL BUILDING CODE.

E. STRUCTURAL STEEL: MANUAL OF STEEL CONSTRUCTION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC., ANSI/AISC 360, AS REFERENCED BY THE GENERAL BUILDING CODE.

F. CODE OF FEDERAL REGULATIONS, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, LATEST EDITION.

G. ALUMINUM: 2005 ALUMINUM DESIGN MANUAL - SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES, THE ALUMINUM ASSOCIATION.

H. GEOTECHNICAL REPORT: FOUNDATION ELEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH INFORMATION PROVIDED IN THE FOLLOWING GEOTECHNICAL REPORT:

GEOTECHNICAL ENGINEER:	GORRONDONA ENGINEERING SERVICES
REPORT NUMBER:	21-0277
DATE:	JUNE 15, 2022

DESIGN LOADS:

A. DEAD LOADS INCLUDE THE SELF-WEIGHT OF THE STRUCTURAL ELEMENTS AND THE FOLLOWING SUPERIMPOSED LOADS:
   1. MECH AND ELEC AT LIFT STATION ROOF 20 PSF
   2. MECH AND ELEC AT ELEVATED SLABS 30 PSF

B. LIVE LOADS

OCCUPANCY OR USE	UNIFORM (PSF)	CONCENTRATED (LBS)
PUMP ROOM	250	2,000 OR EQUIP WT
DRIVE LANES	HS25	20,000 WHEEL LOAD
ELECTRICAL ROOM	250	2,000 OR EQUIP WT
MECHANICAL ROOM	150	2,000 OR EQUIP WT
CONTROL ROOM	150	2,000 OR EQUIP WT
RESTROOMS	60	2,000
ROOF - UNREDUCED	20	N/A
STAIRS AND EXITS	100	300
STORAGE:		
1. LIGHT	125	N/A
2. HEAVY	250	

C. LIVE LOAD REDUCTION
   1. FLOOR OR ROOF LIVE LOAD HAVE NOT BEEN REDUCED.

D. WIND LOADS
   1. WIND LATERAL LOAD ON STRUCTURAL FRAME IS BASED ON ASCE 7 USING THE FOLLOWING:
      a. BASIC WIND SPEED 150 MPH
      b. EXPOSURE C
      c. IMPORTANCE FACTOR, IW 1.15
      d. INTERNAL PRESSURE COEFFICIENT, GCPI ± 0.18
      e. OCCUPANCY CATEGORY III
   2. COMPONENTS AND CLADDING WIND PRESSURES:
      a. CONTROL BUILDING

SURFACE	PSF	ZONE	AT (FT²) AREA
EXTERIOR WALLS	+51.9	INTERIOR AND EDGE	10 OR LESS
	-56.3	INTERIOR	10 OR LESS
	-69.3	EDGE	10 OR LESS
	+39.0	INTERIOR AND EDGE	500 OR GREATER
	-43.3	INTERIOR AND EDGE	500 OR GREATER
ROOF	-56.7	INTERIOR	10 OR LESS
	-95.2	EDGES	10 OR LESS
	-143.3	CORNERS	10 OR LESS
	-51.9	INTERIOR	100 OR GREATER
	-61.6	EDGES AND CORNERS	100 OR GREATER

DESIGN LOADS: (CONT)

- PRESSURES FOR TRIBUTARY AREA IN BETWEEN THE LISTED VALUES MAY BE LINEARLY INTERPOLATED.
- NEGATIVE VALUE SIGNIFIES PRESSURE ACTING AWAY FROM THE SURFACE (SUCTION).
- EDGE AND CORNER ZONE DISTANCES SHALL BE DETERMINED IN ACCORDANCE WITH REFERENCED STANDARD.
- PRESSURES ON PARAPETS SHALL BE DETERMINED BY COMBINING POSITIVE AND NEGATIVE WALL PRESSURES OR WALL AND ROOF PRESSURES LISTED ABOVE IN ACCORDANCE WITH THE REFERENCED STANDARD.
- PRESSURES ARE FOR GROSS UPLIFT CONDITIONS. REFER TO ROOF PLAN(S) FOR NET UPLIFT VALUES FOR DESIGN OF JOISTS, JOIST GIRDERS, AND BRIDGING.

E. SEISMIC LOADS
   1. THE STRUCTURE AND STRUCTURAL COMPONENTS OF THE BUILDING HAVE BEEN DESIGNED IN ACCORDANCE WITH GENERAL BUILDING CODE WITH THE FOLLOWING CRITERIA:
      a. SEISMIC IMPORTANCE FACTOR, IE 1.25
      b. RISK CATEGORY III
      c. MAPPED SPECTRAL RESPONSE ACCELERATIONS
         - Ss (%g) 0.067G
         - S1 (%g) 0.039G
      d. SITE CLASS D
      e. SPECTRAL RESPONSE COEFFICIENTS
         - Sds 0.071
         - Sd1 0.062
      f. SEISMIC DESIGN CATEGORY A
      g. BASIC SEISMIC-FORCE-RESISTING SYSTEM CONC MOMENT FRAME

F. MECHANICAL EQUIPMENT LOADS:
   1. LOADING FOR MECHANICAL ROOMS ARE BASED ON THE WEIGHTS OF EQUIPMENT AND CONCRETE PADS AS INDICATED ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL SUBMIT ACTUAL WEIGHTS OF EQUIPMENT TO BE USED IN THE PROJECT TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF LOADS USED IN THE DESIGN AT LEAST THREE WEEKS PRIOR TO FABRICATION AND CONSTRUCTION OF THE SUPPORTING STRUCTURE. ANY REVISIONS IN EQUIPMENT TYPE, SIZE, OR QUANTITY SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY FOR VERIFICATION OF THE STRUCTURAL DESIGN.

G. RAILINGS AND GUARDRAILS:
   1. ALL RAILINGS AND GUARDRAILS SHALL BE DESIGNED FOR 50 POUNDS/FT LOAD APPLIED HORIZONTALLY AT RIGHT ANGLES TO THE TOP RAIL OR A 200 POUND CONCENTRATED LOAD APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP RAIL, WHICHEVER IS GREATER. THE RAILING SHALL HAVE ATTACHMENT DEVICES TO ADEQUATELY ANCHOR TO THE SUPPORTING STRUCTURE FOR THE LOADING INDICATED. INTERMEDIATE RAILS AND PANEL FILLERS SHALL BE DESIGNED TO WITHSTAND A HORIZONTALLY APPLIED NORMAL LOAD OF 50 POUNDS ON AN AREA NOT TO EXCEED 12-INCHES BY 12-INCHES INCLUDING OPENINGS AND SPACE BETWEEN RAILS AND LOCATED SO AS TO PRODUCE THE MAXIMUM LOAD EFFECT. RESULTING REACTIONS DUE TO THESE LOADS NEED NOT BE COMBINED WITH THE DESIGN LOADS FOR HANDRAILS OR GUARDRAILS.

EXCAVATION PROTECTION:

A. THE SIDES OF ALL EXCAVATIONS GREATER THAN 5'-0" IN DEPTH SHALL BE LAID BACK TO A SLOPE OF 1.5 HORIZONTAL TO 1 VERTICAL, UNLESS THE FOLLOWING APPLIES:
   1. A STEEPER SLOPE IS ALLOWED BY THE GEOTECHNICAL ENGINEER FOR THE PARTICULAR LOCATION AND SITE CONDITIONS IN QUESTION.
   2. A TEMPORARY RETENTION SYSTEM IS INDICATED ON THE STRUCTURAL DRAWINGS.
   3. AN ALTERNATIVE PROTECTIVE SYSTEM IS SUBMITTED BY THE CONTRACTOR AND ALLOWED BY THE OWNER.

B. CONTRACTOR SHALL SUBMIT DRAWINGS AND CALCULATIONS SEALED BY A REGISTERED ENGINEER LICENSED IN THE STATE HAVING JURISDICTION AT THE PROJECT SITE FOR THE DESIGN OF ANY TEMPORARY RETENTION OR ALTERNATIVE PROTECTIVE SYSTEMS. TEMPORARY RETENTION OR ALTERNATIVE PROTECTIVE SYSTEMS SHALL BE DESIGNED TO RESIST THE SOIL PRESSURES STIPULATED IN THE REFERENCED GEOTECHNICAL REPORT. IN ADDITION, THE DESIGN SHALL CONSIDER SURCHARGES CREATED BY CONSTRUCTION EQUIPMENT, EXCAVATION SPOIL, AND OTHER SURFACE ENCUMBRANCES.

C. CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS AND ALL OTHER REGULATORY AGENCY STANDARDS REGARDING EXCAVATION SAFETY.

PAD PREPARATION AND DEWATERING:

A. GIVEN THE DEPTH OF EXCAVATION AND ANTICIPATED GROUND WATER LEVELS, SIGNIFICANT LONG-TERM DEWATERING OPERATIONS ARE ANTICIPATED. THE CONTRACTOR SHALL SUBMIT A COMPLETE DEWATERING PLAN DESCRIBING MEANS AND METHODS USED FOR CONTROLLING WATER INFILTRATION OF THE EXCAVATIONS. DEWATERING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02750.

B. THE WATER TABLE SHALL BE LOWERED TO A MINIMUM DEPTH OF 2 FEET BELOW THE PROPOSED EXCAVATION TO PREVENT EXCAVATION SANDS FROM BECOMING A "QUICK" CONDITION.

C. THE BEARING STRATUM IS SANDY SILTY CLAY/SILTY CLAY.

D. EXCAVATE TO 4 INCHES BELOW THE BASE OF THE LOWEST MAT FOUNDATION SLAB LEVEL. EXTEND THE EXCAVATION A MINIMUM OF 3 FEET BEYOND THE EDGE OF THE MAT SLAB.

E. PLACE A LEAN CONCRETE MUD SLAB, 4 INCHES THICK OVER THE EXCAVATED SUBGRADE WITHIN 24 HOURS OF EXPOSING THE SUBGRADE.

F. THE EXPOSED BOTTOM OF EXCAVATION SHOULD BE OBSERVED BY A QUALIFIED, OWNER APPROVED GEOTECHNICAL ENGINEER TO CONFIRM THAT THE BEARING STRATUM IS CONSISTENT WITH THE DESIGN ASSUMPTIONS.

G. THE ABOVE RECOMMENDATIONS HAVE BEEN PREPARED IN ACCORDANCE WITH THE REFERENCED GEOTECHNICAL REPORT.

CONTROLLED BACKFILL BEHIND BELOW GRADE WALLS & RETAINING WALLS:

A. BACKFILL SHALL BE SELECT BACKFILL AND SHALL CONSIST OF CLAYEY SAND AND/OR SANDY CLAY MATERIAL.

B. BACKFILL MATERIAL SHALL HAVE A PLASTICITY INDEX OF 16 OR LESS WITH A LIQUID LIMIT LESS THAN 35.

C. FILL SHALL BE PLACED IN LIFTS NOT TO EXCEED 8".

D. FILL SHALL BE COMPACTED AT THE OPTIMUM MOISTURE CONTENT (-3% TO + 3%) TO BETWEEN 95 AND 100 PERCENT OF THE MAXIMUM DRY DENSITY PER ASTM D698.

E. COMPACTION AND MOISTURE CONTENT OF CONTROLLED BACKFILL SHALL BE VERIFIED BY AN INDEPENDENT TESTING LABORATORY.

F. THE TOP 2 FT OF MATERIAL BELOW THE GROUND SURFACE SHALL CONSIST OF RELATIVELY IMPERVIOUS MATERIAL, WITH A LIQUID LIMIT BETWEEN 40 AND 50 PERCENT AND A PLASTICITY INDEX BETWEEN 20 AND 30. THIS MATERIAL SHALL BE PLACED IN 6" LIFTS AND COMPACTED AT OPTIMUM MOISTURE CONTENT, TO 95 PERCENT OF THE MAXIMUM DENSITY PER ASTM D698.

G. BACKFILL MATERIAL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNTIL ALL SUPPORTING SLABS, BEAMS, STRUTS, ETC., HAVE ATTAINED THEIR 28 DAY DESIGN STRENGTH UNLESS PROPER BRACING IS INSTALLED.

H. WHERE BACKFILL IS REQUIRED ON BOTH SIDES OF A STRUCTURE OR BUILDING ELEMENT, BACKFILL SHALL BE PLACED SIMULTANEOUSLY ALONG BOTH SIDES SO THAT THE BACKFILL HEIGHT ON ONE SIDE DOES NOT EXCEED THE HEIGHT ON THE OPPOSITE SIDE BY MORE THAN 4'-0".

I. COMPACTION AND MOISTURE CONTENT OF SUBGRADE AND EACH LIFT OF STRUCTURAL FILL SHALL BE INSPECTED AND APPROVED BY A QUALIFIED ENGINEERING TECHNICIAN, SUPERVISED BY A GEOTECHNICAL ENGINEER.

J. DESIGN OF BELOW GRADE WALLS IS BASED ON EQUIVALENT HYDROSTATIC PRESSURES OF 105 PCF, ASSUMING BACKFILL OR SELECT FILL AND USE OF PERFORATED DRAIN PIPE.

K. THE ABOVE RECOMMENDATIONS HAVE BEEN PREPARED IN ACCORDANCE WITH THE REFERENCED GEOTECHNICAL REPORT.

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11700 Katy Freeway, Suite 800, Houston, TX 77079
P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
LICENSED
PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL NOTES I

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-001

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

S T R U C T U R A L N O T E S

DRILLED PIERS:

A. PIER DESIGN IS BASED ON THE FOLLOWING DESIGN CRITERIA:
   1. ALLOWABLE END BEARING (DEAD + SUSTAINED LIVE): 3,500 PSF
   2. ALLOWABLE END BEARING (TOTAL): 5,250 PSF
   3. UPLIFT SIDE FRICTION: 1,000 PSF
   4. UPLIFT DESIGN DEPTH: 8 FEET
   5. MINIMUM PENETRATION INTO BEARING STRATUM: 10 FEET

B. PIER DESIGN IS IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT.

C. BEARING STRATUM SHOWN ON THE PIER DETAILS IS SOFT TO VERY STIFF CLAY/CLAY WITH SAND (CH), STIFF TO HARD SANDY LEAN CLAY (CL).

D. PIERS NOT SPECIFICALLY LOCATED ON THE PLAN SHALL BE LOCATED ON CENTERLINE OF COLUMN ABOVE. WHERE NO COLUMN OCCURS, LOCATE ON CENTERLINE OF WALL OR BEAM.

E. PROVIDE DOWELS FROM PIERS INTO CONCRETE ABOVE USING SAME BAR SIZE AND NUMBER AS SHOWN FOR PILASTER ABOVE. WHERE NO PILASTER OCCURS, USE DOWELS OF SAME SIZE AND NUMBER AS PIER REINFORCING STEEL. EXTEND DOWELS 30 BAR DIAMETERS INTO PIER AND BEAM, WALL, PILASTER OR COLUMN, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

F. ELEVATION OF TOP OF PIERS, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, IS AT THE BOTTOM OF THE DEEPEST INTERSECTING BEAM OR WALL SUPPORTED BY THE PIER.

G. REINFORCING CAGE SHALL BE HELD SECURELY AWAY FROM EARTH AT SIDES AND BOTTOM BY SETS OF 3 SPACERS AT A MAXIMUM SPACING OF 8 FT. ALONG THE LENGTH OF THE CAGE AND 1'-0" FROM THE BOTTOM.

H. PIER REINFORCING AND CONCRETE SHALL BE PLACED IMMEDIATELY AFTER DRILLING OPERATIONS ARE COMPLETE; IN NO CASE SHALL A PIER BE DRILLED THAT CANNOT BE PLACED BY THE END OF THE WORKDAY.

I. SEE PLANS FOR PIER SIZES, REINFORCING, AND DEPTH.

J. THE CONTRACTOR SHALL VERIFY DEPTHS OF PIERS BEFORE PIER STEEL IS CUT. PIER STEEL MAY BE DELIVERED TO THE JOBSITE IN STANDARD LENGTHS AND CUT AS REQUIRED. PROVIDE 64 BAR DIAMETER LAPS IN ALL VERTICAL PIER REINFORCING.

K. REINFORCING STEEL SHOP DRAWINGS SHALL INCLUDE PLACING DRAWINGS FOR TEMPLATES TO SET DOWELS IN PIERS.

L. TOP OF PIER SHALL BE OF THE SPECIFIED DIAMETER. FORM TOP OF PIER IF REQUIRED TO MAINTAIN THE SPECIFIED DIAMETER. ANY CONCRETE EXTENDING BEYOND THE SPECIFIED DIAMETER SHALL BE REMOVED.

M. TEMPORARY STEEL CASING MAY BE REQUIRED DURING PIER DRILLING OPERATIONS. PRIOR TO THE PLACEMENT OF CONCRETE, ANY SEEPAGE WATER SHALL BE REMOVED FROM THE PIER HOLES. SPECIAL CONSTRUCTION PROCEDURES IN ACCORDANCE WITH ACI 336.1 AND ACI 336.3R AND SPECIFICATIONS SHALL BE FOLLOWED DURING EXTRACTION OF THE CASING AND DURING CONCRETE PLACEMENT.

N. CONTRACTOR SHALL INCLUDE IN BID DOCUMENTS, UNIT-COSTS FOR CASING IF REQUIRED AND UNIT-COST FOR GREATER AND LESSER DEPTH OF DRILLING FOR EACH PIER SIZE.

O. ALL PIERS SHALL BE INSPECTED BY A REPRESENTATIVE OF [XX] IN ORDER TO ENSURE THAT THE PROPOSED BEARING MATERIAL HAS BEEN REACHED IN ACCORDANCE WITH THE RECOMMENDATIONS GIVEN IN THE GEOTECHNICAL REPORT.

P. THE CONTRACTOR SHALL MAKE AND MAINTAIN ACCURATE RECORDS OF THE DRILLED PIER DEPTHS, BEARING STRATUM, DEPTH OF PENETRATION INTO BEARING STRATUM, DIAMETER AND LOCATION (INCLUDING OFF CENTER ECCENTRICITIES), AND SHALL SUBMIT THIS INFORMATION TO THE ENGINEER.

CAST-IN-PLACE CONCRETE:

A. CLASSES OF CONCRETE
   1. ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS AS SPECIFIED IN THE TABLE BELOW, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS:

CLASS	28 DAY STRENGTH	USE
A	4,500 PSI	TYPICAL STRUCTURE, SEE SPEC 03 30 00
B	3,000 PSI	SEE SPEC 03 30 00
C	2,000 PSI	SEE SPEC 03 30 00
D	350 PSI	SEE SPEC 03 30 00

B. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE PLACEMENTS SHALL BE PERMITTED ONLY WHERE INDICATED ON THE STRUCTURAL DRAWINGS. ALL VERTICAL CONSTRUCTION JOINTS SHALL BE MADE IN THE CENTER OF SPANS IN ACCORDANCE WITH THE TYPICAL DETAILS. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR CONSTRUCTION JOINTS NOT SHOWN ON THE STRUCTURAL DRAWINGS FOR REVIEW BY THE ARCHITECT AND ENGINEER. ADDITIONAL CONSTRUCTION JOINTS MAY REQUIRE ADDITIONAL REINFORCING AS SPECIFIED BY THE ENGINEER WHICH SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

CAST-IN-PLACE CONCRETE (CONT):

C. EMBEDDED CONDUITS, PIPES, AND SLEEVES SHALL MEET THE REQUIREMENTS OF ACI 318, INCLUDING THE FOLLOWING:
   1. CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL, OR BEAM (OTHER THAN THOSE PASSING THROUGH) SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN 1/3 THE OVERALL THICKNESS OF THE SLAB, WALL OR BEAM IN WHICH THEY ARE EMBEDDED.
   2. CONDUITS, PIPES AND SLEEVES SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS OR WIDTHS ON CENTER.

D. CONCRETE PLACEMENTS SHALL NOT EXCEED 5,000 SQUARE FEET OR 100 LINEAR FEET ON EACH SIDE WITHOUT PRIOR APPROVAL BY THE ARCHITECT FOR EACH PLACEMENT.

E. GRADE BEAMS IN CONTACT WITH EARTH SHALL BE FORMED BOTH SIDES UNLESS NOTED OTHERWISE IN DETAILS.

F. REFER TO SPECIFICATION SECTION 03 30 00 FOR ADDITIONAL INFORMATION.

CONCRETE REINFORCING:

A. CONCRETE REINFORCEMENT FOR THE PROJECT SHALL CONFORM TO THE FOLLOWING:
   1. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL IN ACCORDANCE WITH ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS OR THESE NOTES.
   2. WELDED REINFORCING STEEL. PROVIDE REINFORCING STEEL CONFORMING TO ASTM A706.
   3. DEFORMED BAR ANCHORS. ASTM A496 MINIMUM YIELD STRENGTH 70,000 PSI AS NOTED ON THE STRUCTURAL DRAWINGS. REINFORCING BARS SHALL NOT BE SUBSTITUTED FOR DEFORMED BAR ANCHORS.

B. DETAILING OF REINFORCING STEEL SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE 315 DETAILING MANUAL AND ALL HOOKS AND BENDS IN REINFORCING BARS SHALL CONFORM TO ACI DETAILING STANDARDS, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

C. IN UNSCHEDULED GRADE BEAMS, WALLS, AND SLABS, DETAIL REINFORCING AS FOLLOWS:
   1. CLASS A LAP BEAM TOP REINFORCING BARS AT MID SPAN.
   2. CLASS A LAP BEAM BOTTOM REINFORCING BARS AT THE SUPPORTS.
   3. PROVIDE CLASS B LAP AT OTHER LOCATION PENDING ENGINEER'S APPROVAL.
   4. PROVIDE STANDARD HOOKS IN TOP BARS AT CANTILEVER AND DISCONTINUOUS ENDS OF BEAMS, WALLS AND SLABS.
   5. PROVIDE CORNER BARS FOR ALL HORIZONTAL BARS AT THE INSIDE AND OUTSIDE FACES OF INTERSECTING BEAMS OR WALLS. CORNER BARS ARE NOT REQUIRED IF HORIZONTAL BARS ARE HOOKED.
   6. PROVIDE 2-#4 DIAGONAL BARS AT ALL SLAB RE-ENTRANT CORNERS PLACED UNDER THE TOP MAT OF STEEL.

D. WELDING OF REINFORCING STEEL WILL NOT BE PERMITTED UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.

E. HEAT SHALL NOT BE USED IN THE FABRICATION OR INSTALLATION OF REINFORCEMENT.

F. REINFORCING STEEL CLEAR COVER SHALL BE AS FOLLOWS:

1. WALLS	2" TYP
2. BEAMS	1 1/2" INT, 2" EXT EXPOSURE
3. COLUMNS	1 1/2" INT, 2" EXT EXPOSURE
4. DRILLED PIERS	3"
5. FOOTINGS	3"
6. FORMED GRADE BEAMS	1 1/2" TOP, 3" SIDES, 3" BOTTOM
7. SLAB-ON-GRADE	2" TOP, 2" BOTTOM
8. SLAB-ON-VOID	3/4" TOP, 2" BOTTOM

   a. "EXTERIOR EXPOSURE" REFERS TO CONCRETE EXPOSED TO EARTH OR WEATHER

G. SUBMITTAL: SUBMIT SHOP DRAWINGS FOR FABRICATION, BENDING, AND PLACEMENT OF CONCRETE REINFORCEMENT. COMPLY WITH ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT". DO NOT REPRODUCE THE STRUCTURAL DRAWINGS FOR USE AS SHOP DRAWINGS.

H. REFER TO SPECIFICATION SECTION 03 20 00 FOR ADDITIONAL INFORMATION.

STRUCTURAL STEEL:

A. MATERIAL
   1. ALL HOT ROLLED STEEL MEMBERS SHALL BE NEW AND CONFORM TO ASTM SPECIFICATION A6.
   2. ASTM SPECIFICATION AND GRADE - CLEARLY MARK THE GRADE ON EACH MEMBER.
   3. UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, STRUCTURAL MEMBERS SHALL BE:
      a. W-SHAPES SHALL CONFORM TO ASTM A992.
      b. CHANNELS SHALL CONFORM TO ASTM A36.
      c. ANGLES SHALL CONFORM TO ASTM A36.
      d. STEEP PIPE SHALL CONFORM TO ASTM A53, TYPE E OR S, GRADE B.
      e. ROUND HOLLOW STRUCTURAL SHAPE MEMBERS SHALL CONFORM TO ASTM 500, GRADE B Fy = 42 KSI.
      f. SQUARE OR RECTANGULAR HOLLOW STRUCTURAL SHAPE MEMBERS SHALL CONFORM TO ASTM 500 GRADE B, Fy = 46 KSI.
      g. STRUCTURAL STEEL PLATE SHALL CONFORM TO ASTM A36.
      h. ANY OTHER STEEL SHALL CONFORM TO ASTM A36.
      i. HEADED STUD SHEAR CONNECTORS SHALL CONFORM TO ASTM A108.

B. FABRICATION
   1. SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE. ANY MEMBER HAVING SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.

C. ERECTION
   1. ERECTION TOLERANCES OF ANCHOR BOLTS, EMBEDDED ITEMS, AND ALL STRUCTURAL STEEL UNLESS SPECIFIED OTHERWISE ON THE STRUCTURAL DRAWINGS SHALL CONFORM TO THE AISC CODE OF STANDARD PRACTICE.
   2. FIELD CUTTING OF STRUCTURAL STEEL OR ANY FIELD MODIFICATIONS TO STRUCTURAL STEEL SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
   3. CONTRACTOR SHALL PROTECT ANY UNPRIMED STRUCTURAL STEEL FROM DETRIMENTAL EFFECTS OF CORROSION, AS REQUIRED, UNTIL THE STEEL IS ENCLOSED AND PROTECTED BY THE NEW CONSTRUCTION.
   4. HOT DIP GALVANIZE AFTER FABRICATION ALL STRUCTURAL STEEL ITEMS AND CONNECTIONS PERMANENTLY EXPOSED TO THE WEATHER, WHETHER SPECIFIED ON THE STRUCTURAL DRAWINGS OR NOT. SUCH ITEMS INCLUDE, BUT ARE NOT LIMITED TO:
      a. SHELF ANGLES
      b. PARAPET WALL SUPPORTING MEMBERS
      c. ALL EMBEDDED PLATES IN CONCRETE
      d. BUILDING CLADDING SUPPORT STEEL IN SPACE NOT AIR CONDITIONED AND/OR EXPOSED TO MOISTURE OUTSIDE THE EXTERIOR WATERPROOFING SURFACE IF ANY.
      e. RAILING EXPOSED TO WEATHER
      f. EXAMINE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR OTHER ITEMS REQUIRED TO BE HOT DIPPED GALVANIZED. GALVANIZE ALL NUTS, BOLTS, AND WASHERS USED IN CONNECTION WITH SUCH STEEL. FIELD WELDED CONNECTIONS SHALL HAVE WELDS PROTECTED WITH "Z.R.C. COLD GALVANIZING COMPOUND" AS MANUFACTURED BY Z.R.C. COMPANY.

D. REFER TO SPECIFICATION SECTION 05 12 00 FOR ADDITIONAL INFORMATION.

STRUCTURAL STEEL CONNECTIONS:

A. WELDED CONNECTIONS
   1. ALL WELDING SHALL CONFORM TO ANSI/AWS D1.1, LATEST EDITION.
   2. FILLET WELDS WITH NO SIZE SPECIFIED SHALL BE 3/16 INCH OR MINIMUM SIZE REQUIRED BY AISC, WHICHEVER IS LARGER.

B. BOLTED CONNECTIONS
   1. UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, BOLTS SHALL BE 3/4 INCH DIAMETER AND CONFORM TO ASTM A325. BOLTS SHALL BE DESIGNED USING VALUES FOR BEARING TYPE BOLTS WITH THREAD ALLOWED IN THE SHEAR PLANE.

C. STRUCTURAL STEEL CONNECTIONS NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED AND DETAILED BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE HAVING JURISDICTION AT THE PROJECT SITE. SEALED CALCULATIONS FOR ALL CONNECTIONS DESIGNED BY THE CONTRACTOR SHALL BE SUBMITTED FOR THE ARCHITECT'S FILES.

D. BEAM CONNECTIONS SHALL BE DESIGNED AND DETAILED AS FOLLOWS, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS:
   1. CONNECTIONS SHALL BE AISC TYPE 2 SIMPLE FRAMING CONNECTIONS. SHEAR TAB CONNECTIONS SHALL NOT BE USED UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS, OR CONNECTIONS ARE DESIGNED AND DETAILED BY THE FABRICATOR'S REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF [XX] AND SEALED CALCULATIONS ARE SUBMITTED.
   2. IN GENERAL, SHOP CONNECTIONS SHALL BE BOLTED OR WELDED AND FIELD CONNECTIONS SHALL BE BOLTED.
   3. IF NOT INDICATED ON THE STRUCTURAL DRAWINGS, CONNECTIONS SHALL BE DESIGNED FOR 55 PERCENT OF THE TOTAL LOAD CAPACITY FOR THE BEAM SPAN SHOWN IN THE BEAM TABLES IN THE AISC MANUAL REFERENCED IN THE "CODES & REFERENCED REPORTS" NOTES.
   4. SHORT SLOTTED HOLES SHALL BE PERMITTED PROVIDED WASHERS ARE INSTALLED IN ACCORDANCE WITH AISC REQUIREMENTS. WASHERS SHALL BE HARDENED WHERE A325 BOLTS ARE UTILIZED.

E. ALL BEAM SHEARS, REACTIONS, MEMBER FORCES, MOMENTS, ETC. SHOWN ON THE STRUCTURAL DRAWINGS ARE UNFACTORED LOADS CONFORMING TO THE REQUIREMENTS OF AISC ALLOWABLE STRESS DESIGN (ASD).

F. ROOF EDGE ANGLES SHALL BE CONTINUOUS AND SHALL BE SPLICED ONLY AT SUPPORTS. SPLICES SHALL BE BUTT WELDED TO DEVELOP FULL CAPACITY OF THE MEMBER.

G. BASE PLATES
   1. COLUMN BASE PLATES SHALL BE SET TO THE ELEVATION INDICATED ON THE STRUCTURAL DRAWINGS AND LEVELED USING SHIMS OR BY DOUBLE NUTS ON ANCHOR BOLTS. BASE PLATES SHALL THEN BE GROUTED WITH A NON-SHRINK, HIGH STRENGTH NONMETALLIC GROUT. TIGHTEN ANCHOR BOLTS AFTER SUPPORTED MEMBERS HAVE BEEN POSITIONED AND PLUMBED.
   2. HOLE SIZES IN BASE PLATES SHALL BE OVERSIZED WITH PLATE WASHERS PER AISC TABLE 14-2.

H. ANCHOR RODS SHALL BE:
   1. TYPICAL: ASTM F1554 GR. 55, WELDABLE.

I. FOR CONNECTIONS NOT SPECIFICALLY ADDRESSED BY THESE NOTES OR THE STRUCTURAL DRAWINGS, PROVIDE FILLET WELDS AT ALL CONTACT SURFACES SUFFICIENT TO DEVELOP THE TENSILE STRENGTH OF THE SMALLER MEMBER AT THE JOINT.

Kimley»Horn
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No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
LICENSED PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL NOTES II

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-002

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
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PROJECT NO: 4220079
TBPE FIRM F-7986

S T R U C T U R A L N O T E S

OPEN WEB JOISTS:

A. OPEN WEB STEEL JOISTS SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE STEEL JOIST INSTITUTE (SJI). CHORDS OF JOISTS SHALL BE ANGLES OR TEES.

B. PROVIDE BRIDGING IN ACCORDANCE WITH SJI SPECIFICATIONS AND OSHA STANDARD 29 CFR-1926.757(C). BRIDGING SHALL BE CONTINUOUS THROUGH STRUCTURAL STEEL MEMBERS, AND SHALL BE ANCHORED TO SPANDREL MEMBERS OR WALLS. PROVIDE ADDITIONAL BRIDGING WHERE REQUIRED FOR UPLIFT.

C. SEE DESIGN LOADS SECTION OF THE STRUCTURAL NOTES FOR JOIST DESIGN WIND PRESSURES.

D. JOIST MANUFACTURER SHALL DESIGN CHORDS OF JOISTS TO SUPPORT A NOMINAL CONCENTRICALLY-APPLIED LOAD OF 100 POUNDS BETWEEN ALL PANEL POINTS WITHOUT REQUIRING ADDITIONAL REINFORCING. THIS ADDITIONAL LOAD HAS BEEN ACCOUNTED FOR IN THE OVERALL DESIGN LOADS AND IS NOT ADDITIVE TO THOSE SPECIFIED.

E. ALL HANGERS OR ATTACHMENTS TO JOISTS SHALL BE PLACED CONCENTRIC WITH THE TOP AND BOTTOM CHORD(S). HANGERS WITH REACTIONS IN EXCESS OF 100 POUNDS MUST BE LOCATED AT THE PANEL POINTS OF THE JOIST, OR THE CHORD(S) SHALL BE REINFORCED IN ACCORDANCE WITH THE "TYPICAL DETAILS."

F. PROVIDE FLAT BEARING FOR ALL JOISTS. BEAR JOISTS ON SUPPORTS IN ACCORDANCE WITH SJI SPECIFICATIONS.

G. JOISTS SHALL BE CONNECTED TO THEIR SUPPORTS IN ACCORDANCE WITH SJI SPECIFICATIONS AND AS INDICATED BY THE JOIST MANUFACTURER.

H. REFER TO SPECIFICATION SECTION 05 21 00 FOR ADDITIONAL INFORMATION.

METAL DECKS:

A. METAL ROOF DECK
1. METAL ROOF DECK SCHEDULE:

LOCATION	GAUGE	SDI DECK TYPE	DECK DEPTH (IN)	SHEET WIDTH (IN)	MIN Ix (IN^4)	MIN Sp (IN^3)	MIN Sn (IN^3)
TYP UNO	20	WR	1.5	36	0.212	0.234	0.245

Sp = POSITIVE SECTION MODULUS IN^3
Sn = NEGATIVE SECTION MODULUS IN^3
I = MOMENT OF INTERIA IN^4

2. ROOF DECK SHALL BE GALVANIZED.
3. SHEET STEEL FOR GALVANIZED ROOD DECK AND ACCESSORIES SHALL CONFORM TO ASTM A653, STRUCTURAL QUALITY, WITH A MINIMUM YIELD STRENGTH OF 33 KSI. GALVANIZING SHALL CONFORM TO ASTM A653 WITH A MINIMUM COATING OF {G60 OR G90} AS DEFINED IN A653.
4. ROOF DECK SHALL BE CONTINUOUS OVER FOUR OR MORE SUPPORTS.
5. PLACE DECK PANELS ON STRUCTURAL SUPPORTS AND ADJUST TO FINAL POSITION WITH ENDS LAPPED 2 INCHES OVER STRUCTURAL SUPPORTS. PROVIDE MINIMUM END BEARING OF 2 INCHES.
6. ROOF DECK CONNECTIONS SHALL BE AS FOLLOWS:

LOCATION	SUPPORT CONN PATTERN	SUPPORT FASTENER	SIDELAP FASTENER/NO PER SPAN
TYPICAL BUILDING:			
INTERIOR FIELD	36/4	5/8 PW	#10 TEK/2
PERIMETER BAND	36/7	5/8 PW	#10 TEK/3
CORNER ZONES	36/7	5/8 PW	#10 TEK/5

SEE DESIGN WIND LOAD INFORMATION OR PLANS FOR "A" DIMENSION AND INTERIOR FIELDS, PERIMETER BAND, RIDGE BAND, AND CORNER ZONE WIND LOADS.
PW = PUDDLE WELD

7. POWER DRIVEN FASTENERS SHALL BE SELECTED BY THE CONTRACTOR FOR THE COMBINATIONS OF DECK GAUGE AND DECK SUPPORT MEMBER THICKNESS. SUBMIT PROPOSED FASTENERS WITH COMPLETE MANUFACTURER'S INFORMATION, INCLUDING DIAPHRAGM SHEAR VALUES FOR THE ENGINEER TO REVIEW.
8. PUDDLE WELDS SHALL BE 5/8" MINIMUM DIAMETER AND SHALL BE MADE THROUGH WELD WASHERS FOR DECKING LIGHTER THAN 22 GAUGE.
9. MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS SHALL NOT BE SUPPORTED BY THE METAL ROOF DECK.
10. REFER TO SPECIFICATION SECTION 05 30 00 FOR ADDITIONAL INFORMATION.

DESIGN BY OTHERS:

A. IN ACCORDANCE WITH THE SPECIFICATIONS THE ITEMS LISTED BELOW ARE NOT INCLUDED IN THE CONTRACT DOCUMENTS. DESIGN OF THESE ELEMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE DESIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE HAVING JURISDICTION AT THE PROJECT SITE.
1. STEEL CONNECTIONS
2. METAL STAIRS
3. METAL LADDERS
4. GUARDRAIL AND HANDRAIL SYSTEM
5. PRE-ENGINEERED/PRE-FABRICATED CANOPIES
6. ELEVATOR SUPPORT RAILS
7. EMBEDDED ASSEMBLIES AND INSERTS, CLAMPS, HANGERS, TRAPEZES, UNISTRUT, ETC. FOR THE SUPPORT OF MEP SYSTEMS.
8. EMBEDDED ASSEMBLIES, INSERTS, AND/OR HANGERS FOR FIRE SUPPRESSION SYSTEMS.
9. EXCAVATION SUPPORT AND PROTECTION
10. SPECIALTY RETENTION SYSTEMS

B. DESIGN OF THE ITEMS LISTED ABOVE SHALL BE IN ACCORDANCE WITH THE GENERAL BUILDING CODE, AND SHALL INCLUDE ALL ATTACHMENTS TO THE STRUCTURE.

CEMENT STABILIZED SAND

A. PROVIDE A SAND-CEMENT MIXTURE TO PRODUCE A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI IN 48 HOURS WHEN COMPACTED TO 95 PERCENT IN ACCORDANCE WITH ASTM D558 AND WHEN CURED IN ACCORDANCE WITH ASTM D1632, AND TESTED IN ACCORDANCE WITH ASTM D1633. COMPACT MIX WITH MOISTURE CONTENT ON THE DRY SIDE OF OPTIMUM.

B. MIX SHALL CONTAIN A MINIMUM OF 1-1/2 SACKS OF CEMENT PER CUBIC YARD.

C. CEMENT: TYPE I PORTLAND CEMENT CONFORMING TO ASTM C-150.

D. SAND: CLEAN, DURABLE SAND MEETING GRADING REQUIREMENTS FOR FINE AGGREGATES OF ASTM C33, AND THE FOLLOWING REQUIREMENTS:
1. CLASSIFIED AS SW, SP, OR SM BY UNITED SOIL CLASSIFICATION SYSTEM OF ASTM D2487.
2. DELETERIOUS MATERIALS:
a. CLAY LUMPS, ASTM C142; LESS THAN 0.5 PERCENT
b. LIGHTWEIGHT PIECES, ASTM C123; LESS THAN 0.5 PERCENT
c. ORGANIC IMPURITIES, ASTM C40; COLOR NO DARKER THAN THE STANDARD COLOR.
3. PLASTICITY INDEX OF 4 OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM D4318.

E. WATER: POTABLE WATER, FREE OF OILS, ACIDS, ALKALIS, ORGANIC MATTER OR OTHER DELETERIOUS SUBSTANCES, MEETING THE REQUIREMENTS OF ASTM C94.

F. PLACE SAND-CEMENT MIXTURE IN 8-INCH THICK LOOSE LIFTS AND COMPACT TO 95 PERCENT OF ASTM D558. THE MOISTURE CONTENT DURING COMPACTION SHALL BE ON THE DRY SIDE OF OPTIMUM BUT SUFFICIENT FOR HYDRATION. PERFORM COMPLETE COMPACTION OF THE SAND-CEMENT MIXTURE WITHIN 4 HOURS AFTER ADDITION OF WATER TO THE MIX AT THE PLANT. MATERIAL NOT PLACED AND COMPACTED WITH 4 HOURS SHALL BE REJECTED.

G. DO NOT PLACE OR COMPACT SAND-CEMENT MIXTURE IN STANDING OR FREE WATER.

H. SUBMITTAL: SUBMIT PROPOSED MIX DESIGN ACCOMPANIED BY A RECORD OF PAST PERFORMANCE BASED ON AT LEAST 30 CONSECUTIVE STRENGTH TEST, OR BY THREE LABORATORY TRIAL MIXTURES WITH CONFIRMATION TESTS.

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

A. CLSM FILL SHALL BE OF THE EXCAVATABLE TYPE WHICH MUST ALLOW THE MATERIAL TO BE RE-EXCAVATED WITH CONVENTIONAL EXCAVATION EQUIPMENT.

B. CLSM MIX DESIGN SHALL HAVE THE FOLLOWING CHARACTERISTICS:
a. COMPRESSIVE STRENGTH SHALL NOT EXCEED 300 PSI AT 90 DAYS.
b. A SLUMP BETWEEN 6" AND 9"
c. A MINIMUM CEMENT CONTENT OF 40 LB/CY AND A MAXIMUM OF 100 LB/CY.
d. FLY ASH, IF USED, DOES NOT NEED TO CONFORM TO CLASS F OR C AS DESCRIBED IN ASTM C618.
e. COARSE AGGREGATE SHALL NOT BE USED IN EXCAVATABLE CLSM.

C. SUBMIT PROPOSED MIX DESIGN FOR ENGINEER'S REVIEW A MINIMUM OF TWO WEEKS PRIOR TO STARTING CLSM MOCK-UP WORK.

D. MOCK-UP: CONTRACTOR SHALL PROVIDE A 4'-0" x 4'-0" MOCK TRIAL BATCH MOCK-UP TO DEMONSTRATE THE FLOWABILITY DURING PLACEMENT AND EXCAVATABILITY OF THE CLSM MATERIAL AFTER THE CURE. MOCK-UP SHALL BE CAST A MINIMUM OF 120 DAYS PRIOR TO ACTUAL PLACEMENT TO ALLOW CONCRETE CORES FOR VERIFICATION OF SPECIFIED MAXIMUM COMPRESSIVE STRENGTHS AND TO DEMONSTRATE EXCAVATABILITY.

E. MAKE ONE STRENGTH TEST (FOUR CYLINDERS) FOR THE APPROVED MIX DESIGN.
a. FINAL APPROVAL OF MIX DESIGN IS CONTINGENT ON THE DEMONSTRATION OF EXCAVATABILITY AT 90-DAYS AFTER MOCK-UP IS CAST.

F. CLSM BACKFILL SHALL BE PLACED IN MAXIMUM 4'-0" LIFTS. EACH LIFT SHALL BE ALLOWED TO CURE PRIOR TO THE NEXT LIFT PLACEMENT. WHERE BACKFILL IS REQUIRED ON BOTH SIDES OF THE STRUCTURE, BACKFILL SHALL BE PLACED SIMULTANEOUSLY ON BOTH SIDES SO THAT BACKFILL HEIGHT ON ONE SIDE DOES NOT EXCEED THE HEIGHT ON THE OPPOSITE SIDE BY MORE THAN 4'-0".

G. CLSM BACKFILL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNTIL ALL SUPPORTING WALLS, SLABS, BEAMS, STRUTS, AND OTHER UPPER-LEVEL FLOOR OR ROOF MEMBERS HAVE ATTAINED THEIR 28-DAY STRENGTH UNLESS PROPER BRACING IS DESIGNED AND INSTALLED BY THE CONTRACTOR.

H. REFER TO ACI COMMITTEE 229R-99 REPORT "CONTROLLED LOW STRENGTH MATERIALS" FOR ADDITIONAL INFORMATION.

STRUCTURAL ALUMINUM:

A. MATERIAL
1. UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS, STRUCTURAL ALUMINUM MEMBERS SHALL BE:
a. ALUMINUM SHAPES: ASTM B308/B308M, ALLOY 6061-T6, ASTM B221, ALLOY 6061-T6.
b. ALUMINUM TUBES AND PIPES: ASTM B429, ALLOY 6061-T6.
c. ALUMINUM BARS AND RODS: ASTM B211, ALLOY 6061-T6.
d. ALUMINUM PLATES: ASTM B209, ALLOY 6061-T6.

B. CONNECTIONS
1. THREADED FASTENERS:
a. STAINLESS STEEL BOLTS, ASTM F593, AISI TYPE 303, AND STAINLESS STEEL NUTS AND WASHERS, ASTM F594, AISI TYPE 303 UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS.
b. UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, BOLTS SHALL BE 3/4 INCH DIAMETER. BOLTS SHALL BE DESIGNED USING VALUES FOR BEARING TYPE BOLTS WITH THREAD ALLOWED IN THE SHEAR PLANE.
c. BOLTS SHALL BE TIGHTENED TO "SNUG TIGHT" AS DEFINED BY AISC, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.
2. WELDS
a. QUALIFY WELDING PROCESSES AND WELDING OPERATORS IN ACCORDANCE WITH AWS D1.2.
b. ELECTRODES FOR WELDING: ER 5356 COMPLYING WITH AWS D1.2/D1.2M.
c. FOR CONNECTIONS NOT SPECIFICALLY ADDRESSED BY THESE NOTES OR THE STRUCTURAL DRAWINGS, PROVIDE FILLET WELDS AT ALL CONTACT SURFACES SUFFICIENT TO DEVELOP THE TENSILE STRENGTH OF THE SMALLER MEMBER AT THE JOINT.

C. SPLICING OF STRUCTURAL ALUMINUM MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE. ANY MEMBER HAVING SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.

D. FIELD CUTTING OF STRUCTURAL ALUMINUM OR ANY FIELD MODIFICATIONS TO STRUCTURAL ALUMINUM SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

E. FABRICATION AND ERECTION OF STRUCTURAL ALUMINUM SHALL CONFORM TO CHAPTER M OF THE AA ADM-1, ALUMINUM DESIGN MANUAL – SPECIFICATIONS FOR ALUMINUM STRUCTURES, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

F. STRUCTURAL ALUMINUM CONNECTIONS NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED AND DETAILED BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE HAVING JURISDICTION AT THE PROJECT SITE. SEALED CALCULATIONS FOR ALL CONNECTIONS DESIGNED BY THE CONTRACTOR SHALL BE SUBMITTED FOR THE ENGINEER'S FILES.

G. REFER TO SPECIFICATION SECTION 05 14 00 FOR ADDITIONAL INFORMATION

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No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
LICENSED
PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

STRUCTURAL NOTES III

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-003

shaping the built environment
JQ INFRASTRUCTURE, LLC
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PROJECT NO: 4220079
TBPE FIRM F-7986

SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH CHAPTER 17 OF THE 2015 INTERNATIONAL BUILDING CODE (IBC) BY A SPECIAL INSPECTOR HIRED BY THE OWNER TO PERFORM THE SPECIAL INSPECTIONS LISTED BELOW. THE SPECIAL INSPECTOR SHALL BE QUALIFIED BY AN APPROVED AGENCY ACCORDING TO THE CITY'S BUILDING OFFICIAL TO PERFORM THE SPECIAL INSPECTIONS FOR WHICH THEY WILL BE UNDERTAKING. THE CONTRACTOR SHALL COORDINATE WITH AND NOTIFY THE SPECIAL INSPECTOR OF ALL TESTS. THE SPECIAL INSPECTOR SHALL BE RESPONSIBLE TO VERIFY THAT THE ITEMS DETAILED IN THE CONSTRUCTION DOCUMENTS WERE BUILT ACCORDINGLY AND SHALL PREPARE, SIGN, AND FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL AND THE ENGINEER FOR ALL TIME SPENT AT THE SITE. THE INSPECTOR SHALL BRING DISCREPANCIES TO THE IMMEDIATE ATTENTION OF THE GENERAL CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE ENGINEER PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. THESE SPECIAL INSPECTIONS ARE IN ADDITION TO THE OTHER INSPECTIONS LISTED IN THESE STRUCTURAL NOTES OR PROJECT SPECIFICATIONS.
2. WHERE STRUCTURAL LOAD-BEARING MEMBERS AND ASSEMBLIES ARE SHOP FABRICATED, THE SPECIAL INSPECTOR SHALL VERIFY THAT THE FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO THE CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS, UNLESS THE FABRICATOR IS REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION.

VERIFICATION AND INSPECTION TASKS FOR WELDING OF STRUCTURAL STEEL [1] (AISC 360-10 TABLE N5.4)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. INSPECTION TASKS PRIOR TO WELDING:				
YES	A. WELDING PROCEDURE SPECIFICATIONS (WPSS) AVAILABLE	X	--	AISC 360-10 N5.4-1: AWS D1.1	1705.2.1
YES	B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE.	X	--		
YES	C. MATERIAL IDENTIFICATION (TYPE/GRADE) [2]	--	X		
YES	D. WELDER IDENTIFICATION SYSTEM [2]	--	X		
YES	E. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) [2] a. JOINT PREPARATION b. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) c. CLEANLINESS (CONDITION OF STEEL SURFACES) d. TACKING (TACK WELD QUALITY AND LOCATION) e. BACKING TYPE AND FIT (IF APPLICABLE)	--	X		
YES	F. CONFIGURATION AND FINISH OF ACCESS HOLES. [2]	--	X		
YES	G. FIT-UP OF FILLET WELDS [2] a. DIMENSIONS (ALIGNMENT, GAPS AT ROOT) b. CLEANLINESS (CONDITION OF STEEL SURFACES) c. TACKING (TACK WELD QUALITY AND LOCATION)	--	X		
YES	H. CHECK WELDING EQUIPMENT	--	X		
	2. INSPECTION TASKS DURING WELDING:				
YES	A. USE OF QUALIFIED WELDERS	--	X	AISC 360-10 N5.4-2: AWS D1.1	1705.2.1
YES	B. CONTROL AND HANDLING OF WELDING CONSUMABLES [2] a. PACKAGING b. EXPOSURE CONTROL	--	X		
YES	C. NO WELDING OVER CRACKED TACK WELDS [2]	--	X		
YES	D. ENVIRONMENTAL CONDITIONS [2] a. WIND SPEED WITHIN LIMITS b. PRECIPITATION AND TEMPERATURE	--	X		
YES	E. WPS FOLLOWED [2] a. SETTINGS ON WELD EQUIPMENT b. TRAVEL SPEED c. SELECTED WELDING MATERIALS d. SHIELDING GAS TYPE/FLOW RATE e. PREHEAT APPLIED f. INTERPASS TEMPERATURE MAINTAINED (MIN/MAX) g. PROPER POSITION (F, V, H, OH)	--	X		
YES	F. WELDING TECHNIQUES [2] a. INTERPASS AND FINAL CLEANING b. EACH PASS WITHIN PROFILE LIMITATIONS c. EACH PASS MEETS QUALITY REQUIREMENTS	--	X		
	3. INSPECTION TASKS AFTER WELDING:				
YES	A. WELDS CLEANED	--	X	AISC 360-10 N5.4-2: AWS D1.1	1705.2.1
YES	B. SIZE, LENGTH AND LOCATION OF WELDS	X	--		
YES	C. WELDS MEET VISUAL ACCEPTANCE CRITERIA a. CRACK PROHIBITION b. WELD/BASE-METAL FUSION c. CRATER CROSS SECTION d. WELD PROFILES e. WELD SIZE f. UNDERCUT g. POROSITY	X	--		
YES	D. ARC STRIKES	X	--		
YES	E. K-AREA [3]	X	--		
YES	F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	X	--		
YES	G. REPAIR ACTIVITIES	X	--		
YES	H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	X	--		

1. INSPECTION TASKS NOTED IN THIS TABLE ARE THE RESPONSIBILITY OF THE SPECIAL INSPECTOR OR QUALITY ASSURANCE INSPECTOR (QAI). THE FABRICATOR AND ERECTOR ARE RESPONSIBLE FOR ALL INSPECTION TASKS INDICATED IN AISC 360-10 SECTION N5 AND ASSIGNED TO THE QUALITY CONTROL INSPECTOR (QCI).
2. INSPECTION TASKS MAY BE COORDINATED WITH THE FABRICATOR OR ERECTOR'S QUALITY CONTROL INSPECTOR (QCI) WHERE INDICATED WITH THIS FOOTNOTE. ALL OTHER TASKS SHALL BE PERFORMED BY THE SPECIAL INSPECTOR.
3. WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE WELD.

VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL (IBC 1705.2.2)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. COLD-FORMED STEEL DECK:				
YES	A. FLOOR AND ROOF DECK WELDS	--	X	SDI QA/QC	1705.2.2

REQUIRED SPECIAL INSPECTION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS (IBC TABLE 1705.2.3)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS.				
YES	A. END CONNECTIONS - WELDING OR BOLTED.	--	X	SJI SPECS PER IBC 2207.1	1705.2.3
YES	B. BRIDGING - HORIZONTAL OR DIAGONAL	--			
	a. STANDARD BRIDGING	--	X	SJI SPECS PER IBC 2207.1	1705.2.3
	b. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS LISTED IN IBC SECTION 2207.1	--	X		1705.2.3

VERIFICATION AND INSPECTION TASKS FOR BOLTING STRUCTURAL STEEL [1] (AISC 360-10 TABLES N5.6)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
	1. INSPECTION TASKS PRIOR TO BOLTING:				
YES	A. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	X	--	AISC 360-10 N5.6-1	1705.2.1
YES	B. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	--	X		
YES	C. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL [2] (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	--	X		
YES	D. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL [2]	--	X		
YES	E. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEETAPPLICABLE REQUIREMENTS	--	X		
YES	F. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	--	X		
YES	G. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	--	X		
	2. INSPECTION TASKS DURING BOLTING:				
YES	A. FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED [2]	--	X	AISC 360-10 N5.6-2	1705.2.1
YES	B. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION [2]	--	X		
YES	C. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING. [2]	--	X		
YES	D. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	--	X		
	3. INSPECTION TASKS AFTER BOLTING:				
YES	A. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	X	--	AISC 360-10 N5.6-3	1705.2.1

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2. INSPECTION TASKS MAY BE COORDINATED WITH THE FABRICATOR OR ERECTOR'S QUALITY CONTROL INSPECTOR (QCI) WHERE INDICATED WITH THIS FOOTNOTE. ALL OTHER TASKS SHALL BE PERFORMED BY THE SPECIAL INSPECTOR.

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STATE OF TEXAS
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CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

SPECIAL INSPECTIONS I

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SHEET
S-004

shaping the built environment
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2. WHERE STRUCTURAL LOAD-BEARING MEMBERS AND ASSEMBLIES ARE SHOP FABRICATED, THE SPECIAL INSPECTOR SHALL VERIFY THAT THE FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO THE CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS, UNLESS THE FABRICATOR IS REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION.

VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION (IBC TABLE 1705.3)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
		CONTINUOUS	PERIODIC		
YES	1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT.	--	X	ACI 318 CH. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
	2. REINFORCING BAR WELDING:			AWS D1.4 ACI 318: 26.5.4	--
YES	A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	--	X		
YES	B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"	--	X		
YES	C. INSPECT ALL OTHER WELDS.	X	--		
YES	3. INSPECTION OF ANCHORS CAST IN CONCRETE.	--	X	ACI 318: 17.8.2	--
	4. INSPECTION OF POST-INSTALLED ANCHORS IN HARDENED CONCRETE.				--
YES	A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	--	ACI 318: 17.8.2.4	
YES	B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	--	X	ACI 318: 17.8.2	
YES	SPECIAL INSPECTOR MUST BE CERTIFIED BY ACI/CRSI "ADHESIVE ANCHOR INSTALLER. A REPORT MUST BE SUBMITTED TO THE LICENSED DESIGN PROFESSIONAL AND BUILDING OFFICIAL DOCUMENTING, STATING HOW EACH ANCHOR WAS INSTALLED, INCLUDING THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS PER ACI 318	--	--	ACI 318: 17.8.2.2 17.8.2.4	
YES	5. VERIFY USE OF REQUIRED DESIGN MIX.	--	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
YES	6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	--	ASTM C172 ASTM C31 ACI 318: 26.4.5, 26.12	1908.10
YES	7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	--	ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
YES	8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	--	X	ACI 318: 26.4.7-26.4.9	1908.9
	9. INSPECTION OF PRESTRESSED CONCRETE:				--
NO	A. APPLICATION OF PRESTRESSING FORCES	X	--	ACI 318: 26.9.2.1	
NO	B. GROUTING OF BONDED PRESTRESSING TENDONS	X	--	ACI 318: 26.9.2.3	
NO	10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	--	X	ACI 318: 26.8	--
NO	11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	--	X	ACI 318: 26.10.2	--
YES	12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	--	X	ACI 318: 26.10.1(B)	--

VERIFICATION AND INSPECTION OF SOILS (IBC TABLE 1705.6)

SPECIAL INSPECTION REQUIRED	VERIFICATION, INSPECTION AND TESTING	INSPECTION FREQUENCY	
		CONTINUOUS	PERIODIC
YES	1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	--	X
YES	2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	--	X
YES	3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	--	X
YES	4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	--
YES	5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	--	X

LEVEL B VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION (ACI 530 TABLE 3.1.2)

SPECIAL INSPECTION REQUIRED	VERIFICATION, INSPECTION AND TESTING	INSPECTION FREQUENCY	
		CONTINUOUS	PERIODIC
	MINIMUM TESTS		
YES	VERIFICATION OF SLUMP FLOW AND VSI AS DELIVERED TO THE SITE IN ACCORDANCE WITH ARTICLE 1.5 B.1.B.3 FOR SELF-CONSOLIDATING GROUT	--	--
YES	VERIFICATION OF F'M AND F'AAC IN ACCORDANCE WITH ARTICLE 1.4B PRIOR TO CONSTRUCTION, EXCEPT WHERE SPECIFICALLY EXEMPTED BY THIS CODE	--	--
	INSPECTION TASKS		
YES	1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTAL	--	X
	2. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:		
YES	A. PROPORTIONS OF SITE-PREPARED MORTAR	--	X
YES	B. CONSTRUCTION OF MORTAR JOINTS	--	X
YES	C. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES	--	X
YES	D. LOCATION OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	--	X
YES	E. PRESTRESSING TECHNIQUE	--	X
NO	F. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY	X [1]	X [2]
	3. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:		
YES	A. GROUT SPACE	--	X
YES	B. GRADE, TYPE AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	--	X
YES	C. PLACEMENT OF REINFORCEMENT, CONNECTORS AND PRESTRESSING TENDONS AND ANCHORAGES	--	X
YES	D. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	--	X
YES	E. CONSTRUCTION OF MORTAR JOINTS	--	X
	4. VERIFY DURING CONSTRUCTION:		
YES	A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	--	X
YES	B. TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION	--	X
YES	C. WELDING OF REINFORCEMENT	X	--
YES	D. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C))	--	X
YES	E. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE	X	--
YES	F. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE	X	--
NO	G. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS	X [1]	X [2]
YES	5. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS	--	X

1. REQUIRED FOR THE FIRST 5,000 SQUARE FEET OF AAC MASONRY.
2. REQUIRED AFTER THE FIRST 5,000 SQUARE FEET OF AAC MASONRY.

VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (IBC TABLE 1705.8)

SPECIAL INSPECTION REQUIRED	VERIFICATION AND INSPECTION	INSPECTION FREQUENCY	
		CONTINUOUS	PERIODIC
YES	1. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.	X	--
YES	2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, BELL DIAMETERS (IF APPLICABLE), LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE) AND ADEQUATE END BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES.	X	--
YES	3. FOR CONCRETE ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH IBC 2015 SECTION 1705.3	--	--

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STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

SPECIAL INSPECTIONS II

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET

S-005

shaping the built environment
JQ INFRASTRUCTURE, LLC
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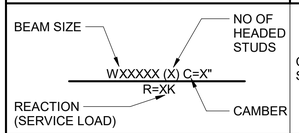
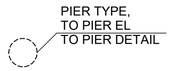
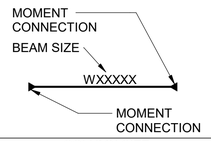
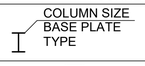
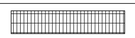
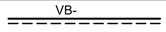
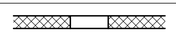
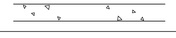
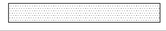
Autodesk Docs://067812104 West U WWTP/West U WWTP – Struct_R22.rvt

SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	COMPOSITE STEEL BEAM
	CONCRETE PIER
	STEEL BEAM MOMENT CONNECTION
	STEEL COLUMN
	CONCRETE COLUMN
	NEW COLUMN GRID
	EXISTING COLUMN GRID
	GRATING
	SLAB OR DECK SPAN DIRECTION
	DROP IN SLAB OR DECK
	DROP AND SLOPE IN SLAB OR DECK
	SLOPE IN SLAB OR DECK
	VERTICAL STEEL BRACE
	STEEL BEAM SPLICE
	HEAVY STEEL CONNECTION
	STUDRAIL
	MASONRY WALL
	WINDOW IN MASONRY WALL
	DOOR IN MASONRY WALL
	NONLOAD-BEARING WALL
	CONCRETE WALL
	PRECAST WALL PANEL
	EXISTING CONSTRUCTION
	MISCELLANEOUS, SEE PLAN
	ROOF TOP UNIT (RTU)

ABOVE	ABV
ABOVE FINISHED FLOOR	AFF
ADDITIONAL	ADDN'L
ADHESIVE	ADH
ADJACENT	ADJ
AGGREGATE	AGGR
AIR CONDITIONER	A/C
AIR HANDLING UNIT	AHU
ALTERNATE	ALT
ALUMINUM	AL
AMERICAN CONCRETE INSTITUTE	ACI
AMERICAN INSTITUE OF STEEL CONSTRUCTION	AISC
ANCHOR BOLT	AB
AND	&
ANGLE	L
APPROVED	APPD
APPROXIMATE	APPROX
ARCHITECT	ARCH
ARCHITECTURAL	ARCH'L
AT	@
BACK FACE	BF
BACK TO BACK	B TO B
BASEMENT	BSMT
BEAM	BM
BEARING	BRG
BELOW FINISH FLOOR	BFF
BETWEEN	BTWN
BEVEL(ED)	BEV('D)
BLOCK	BLK
BLOCK LINTEL	BL
BLOCKING	BLKG
BOTTOM	BOT
BOTTOM OF	BO
BOTTOM OF STEEL	BOS
BRACKET	BRKT
BRICKLEDGE	BRL
BRIDGING	BRDG
BUILDING	BLDG
CAMBER	C
CAST-IN-PLACE	CIP
CEILING	CLG
CENTER LINE	CL
CENTER OF GRAVITY	CG
CENTER OF GRAVITY OR STRAND	CGS
CLEAR OR CLEARANCE	CLR
COLD FORMED STEEL	CFS
COLUMN	COL
COMPRESSION	C OR COMP
CONCRETE	CONC
CONCRETE MASONRY UNIT	CMU
CONNECTION(S)	CONN(S)
CONSTRUCTION	CONST
CONSTRUCTION JOINT	CONST JT
CONTINUOUS	CONT
CONTRACTOR	CONTR
CONTROL JOINT	CJ
COORDINATE	COORD
COVER PLATE	COV PL
DEAD LOAD	DL
DEFORMED BAR ANCHOR	DBA
DEMOLISH	DEMO
DETAIL	DTL
DIAGONAL	DIAG
DIAMETER	DIA OR Ø
DIMENSION(S)	DIM(S)
DOUBLE	DBL
DOUBLE EXTRA STRONG	XX-STR
DOVETAIL	DVTL
DOWEL(S)	DWL(S)
DRAWING(S)	DWG(S)
EACH	EA
EACH FACE	EF
EACH WAY	EW
ELECTRICAL	ELEC
ELEVATION	EL
ELEVATOR	ELEV
EMBEDMENT	EMBED
ENGINEER	ENGR
EQUAL	EQ
EQUIPMENT	EQUIP
EXHAUST FAN	EF
EXISTING	EX OR EXIST
EXPANSION	EXP
EXPANSION JOINT	EJ
EXTERIOR	EXT
EXTRA STRONG	X-STR
FABRICATOR	FABR
FACE TO FACE	F TO F
FAR SIDE	FS
FIELD VERIFY	FV
FINISH(ED)	FIN('D)
FINISHED FLOOR	FIN FL
FIREPROOF(ING)	FP
FLANGE	FLG
FLOOR	FL
FLOOR DRAIN	FD
FOOT (OR) FEET	FT
FOUNDATION	FNDN
FRAMING	FRMG
GAGE OR GAUGE	GA
GALVANIZED	GALV
GENERAL CONTRACTOR	GC
GRADE	GR
GRADE BEAM	GR BM
GRATING	GRTG
HEADED STUD ANCHOR	HSA
HEIGHT	HT
HIGH POINT	HP
HOLLOW STRUCTURAL SECTION	HSS
HOOK	HK
HORIZONTAL	HORIZ
HORIZONTAL BRACE	HB
HOT-DIP HYDROPHILIC	HD HYD
INCH	IN
INFORMATION	INFO
INSIDE DIAMETER	ID
INSIDE FACE	IF
INTERIOR	INT
INTERMEDIATE	INTERM
JOINT	JT
JOIST GIRDER	JG
JOIST(S)	JST(S)
KIP PER LINEAR FOOT	KLF
KIP PER SQUARE FOOT	KSF
KIP PER SQUARE INCH	KSI
KIPS (1000 LBS)	K
LENGTH	L
LIGHTWEIGHT	LW
LIGHTWEIGHT CONCRETE	LWC
LIVE LOAD	LL
LOCATION(S)	LOC(S)
LONG LEG HORIZONTAL	LLH
LONG LEG VERTICAL	LLV
LONG SIDE HORIZONTAL	LSH
LONG SIDE VERTICAL	LSV
LONG SLOTTED HOLE	LSL
LONGITUDINAL	LONG
LOW POINT	LP
MANUFACTURE(R)	MFR
MASONRY	MAS
MATERIAL	MAT
MAXIMUM	MAX
MECHANICAL	MECH
MECHANICAL, ELECTRICAL, PLUMBING	MEP
METAL	MTL
MEZZANINE	MEZZ
MIDDLE	MID
MINIMUM	MIN
MISCELLANEOUS	MISC
MOMENT	M
MOMENT CONNECTION(S)	MC
NEAR FACE	NF
NOMINAL	NOM
NON-SHRINK	NS
NOT IN CONTRACT	NIC
NOT TO SCALE	NTS
NUMBER	NO OR #
ON CENTER	OC
OPENING(S)	OPNG(S)
OPPOSITE	OPP
OPPOSITE HAND	OH
OUTSIDE DIAMATER	OD
OUTSIDE FACE	OF
OVER-SIZED HOLE	OVS
PAN	P
PANEL JOINT	PJ
PARALLEL	PAR
PERPENDICULAR	PERP
PIECE	PC
PLATE	PL
POINT	PT
POST-TENSION(ED)	P-T
POUNDS	# OR LBS
POUNDS PER CUBIC FOOT	PCF
POUNDS PER LINEAR FOOT	PLF
POUNDS PER SQUARE FOOT	PSF
POUNDS PER SQUARE INCH	PSI
PRE-ENGINEERED METAL BUILDING	PEMB
PRECAST CONCRETE	P/C
PREFABRICATED	PREFAB
PRELIMINARY	PRELIM
PRESSURE TREATED	PT
PROJECTION	PROJ
QUANTITY	QTY
RADIUS	R
REINFORCE(D)(MENT)	REINF
REINFORCED CONCRETE PIPE	RCP
REMAINDER	REM
REQUIRE	REQ
REQUIRED	REQ'D
RISER	RIS
ROOF	RF
ROOF DRAIN	RD
ROOF TOP UNIT	RTU
ROOM	RM
ROUGH OPENING	RO
ROUND	RND
SCHEDULE(D)	SCHED
SECTION	SECT
SHEAR	V
SHEET	SHT
SHORT SLOTTED HOLE	SSL
SIDEWALK	SW
SIMILAR	SIM
SLAB ON GRADE	SOG
SPACE	SPA
SPECIFICATION(S)	SPEC(S)
SPECIFIED	SPEC'D
SQUARE	SQ
SQUARE FOOT	SF
STAGGERED	STAGG
STAINLESS STEEL	SS
STANDARD	STD
STEEL	STL
STEEL JOIST INSTITUE	SJI
STIFFENER	STIFF
STIRRUPS	STIRR
STRAIGHT	STR
STRUCTURAL	STRUCT'L
STRUCTURE	STRUCT
SUBCONTRACTOR	SUBCONTR
SUPPORT(S)	SUPT(S)
TEMPERATURE	TEMP
TENSION	T
THICK	THK
THREAD(ED)	THRD
TOP AND BOTTOM	T&B
TOP OF	TO
TOP OF BEAM	TOB
TOP OF CONCRETE	TOC
TOP OF GRATING	TOG
TOP OF STEEL	TOS
TOP OF WALL	TOW
TRANSVERSE	TRANSV
TREAD	TR
TYPICAL	TYP
UNLESS NOTED OTHERWISE	UNO
VERTICAL	VERT
VERTICAL BRACE	VB
WATERSTOP	WS
WEIGHT	WT
WELDED WIRE MESH	WWM
WIDTH	W
WIND LOAD	WL
WINDOW	WDW
WITH	W/
WITHOUT	W/O
WORK POINT	WP

NOTE:

THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR ON THE CONTRACT DRAWINGS.

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P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
LICENSED
PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

PROJECT SYMBOLS & ABBREVIATIONS

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

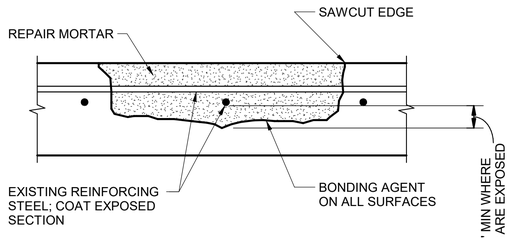
SHEET

S-006

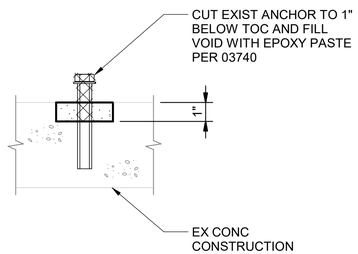
shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

CONCRETE REPAIR MORTAR FOR REPAIR OF SPALLED CONCRETE:

1. CONCRETE REPAIR MORTAR SHALL BE A POLYMER MODIFIED, CEMENTITIOUS PRODUCT EQUAL TO THE FOLLOWING:
   A. HORIZONTAL APPLICATIONS: "SIKATOP 122 PLUS" REPAIR MORTAR AS MANUFACTURED BY THE SIKA CORPORATION, LYNDHURST, NEW JERSEY.
   B. OVERHEAD OR VERTICAL APPLICATIONS: "SIKATOP 123 PLUS" NON-SAG MORTAR AS MANUFACTURED BY THE SIKA CORPORATION, LYNDHURST, NEW JERSEY.
2. ALL SURFACES TO WHICH CONCRETE IS TO BE APPLIED SHALL HAVE ALL LOOSE AND UNSOUND MATERIAL REMOVED. SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. AT A MINIMUM PROVIDE A 1/16" SURFACE PROFILE (CSP-5) PER ICRI GUIDELINE 310.1R-2008 (FORMERLY 03730).
3. IF MORE THAN ONE HALF THE CIRCUMFERENCE OF A REINFORCING BAR IS EXPOSED, CHIP BEHIND BAR MIN. 3/4"
4. WIREBRUSH, POWER TOOL BRUSH, OR SANDBLAST ANY EXPOSED RUSTED REINFORCING STEEL TO REMOVE LOOSE RUST. COAT EXPOSE STEEL USING ANTI-CORROSION COATING, SIKA ARMATEC 110 EPOCEM OR EQUIVALENT AS DETERMINED BY ENGINEER.
5. AT PERIMETER OF AREA TO BE REPAIRED, SAWCUT THE EXISTING CONCRETE TO A MINIMUM DEPTH OF 1/4". DO NOT FEATHER REPAIR MORTAR AT EDGES.
6. COMPLY WITH ALL HANDLING, MIXING, PLACING AND CURING REQUIREMENTS AS SPECIFIED BY THE REPAIR MORTAR MANUFACTURER.
7. EXTEND MORTAR WITH 3/8" CLEAN PEA GRAVEL AGGREGATE WHERE THICKNESS OF REPAIR EXCEEDS 1" AND AS REQUIRED BY PRODUCT SPECIFICATIONS.
8. APPLY SCRUB COAT OF REPAIR MORTAR TO SATURATED SURFACE DRY CONCRETE IN ACCORDANCE WITH PRODUCT SPECIFICATIONS. AS ALTERNATE TO SCRUB COAT, CONTRACTOR MAY APPLY ONE COAT OF SIKA ARMATEC 110 BONDING AGENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
9. FINISH CONCRETE REPAIR MORTAR TEXTURE TO MATCH TEXTURE OF SURROUNDING CONCRETE.
10. CONTRACTOR SHALL BE CERTIFIED BY THE MANUFACTURER FOR THE APPLICATION OF PRODUCT.
11. REFER TO SPEC. SECTION 3930 FOR ADDITIONAL INFORMATION.



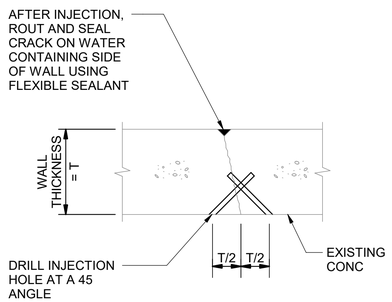
1 S-012 TYPICAL MORTAR REPAIR
N.T.S.



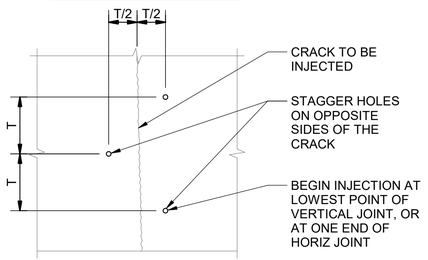
6 S-012 TYPICAL ANCHORAGE REPAIR
N.T.S.

PRESSURE INJECTED URETHANE GROUT:

1. EXPANDING POLYURETHANE GROUT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 03930.
2. GROUT SHALL BE LOW-VISCOSITY, HYDROPHOBIC POLYURETHANE, FLEXIBLE WHEN CURED, AND DESIGNED FOR USE IN HAIRLINE CRACKS. SUBMIT PROPOSED MATERIAL FOR REVIEW AND APPROVAL. POLYURETHANE GROUTS OFFERED BY THE FOLLOWING MANUFACTURERS ARE ACCEPTABLE:
   A. SIKA CORPORATION
   B. OR APPROVED EQUAL
3. ALL SURFACES OF CRACKS TO RECEIVE URETHANE GROUT SHALL BE FREE OF ALL LOOSE AND UNSOUND MATERIAL, OIL, GREASE, WAX, OR OTHER BOND INHIBITING AGENTS. USE SANDBLAST OR WATERBLAST TO CLEAN SURFACE. ACID ETCHING SHALL NOT BE USED. SEAL FACE OF CRACKS USING EPOXY PASTE ADHESIVE.
4. DRILL AND INSTALL INJECTION PORTS (PACKERS) AT A 45 DEGREE ANGLE TO THE SURFACE IN ORDER TO INTERSECT THE CRACK AT THE MID-DEPTH OF THE STRUCTURAL MEMBER. STAGGER HOLES ON OPPOSITE SIDES OF THE CRACK. PORT SPACING IS DEPENDENT UPON CRACK WIDTH, AND MAY VARY FROM 6" TO 24".
5. FLUSH CRACKS WITH CLEAN WATER PRIOR TO PRESSURE INJECTION WITH URETHANE GROUT. IF WATER DOES NOT TRAVEL TO ADJACENT PORTS, DRILL AND PORT ADDITIONAL HOLES.
6. BEGIN INJECTION OF URETHANE GROUT AT THE INJECTION PORT OF LOWEST ELEVATION OR AT ONE END OF HORIZONTAL CRACK. INJECT GROUT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNTIL ENTIRE CRACK IS FILLED.
7. FOLLOW URETHANE GROUT INJECTION WITH WATER INJECTION AS RECOMMENDED BY MANUFACTURER.
8. ANY INJECTED CRACK THAT CONTINUES TO EXHIBIT SIGNS OF LEAKS OR SEEPAGE SHALL BE RE-INJECTED.
9. AFTER COMPLETION OF INJECTION, REMOVE EXCESS GROUT AND ALL INJECTION PORTS, SLEEVES, ETC. CLEAN AND PATCH HOLES USING NON-SHRINK GROUT. GRIND SURFACE SEALER FLUSH WITH SURROUNDING CONCRETE.
10. ROUT AND SEAL FACE OF CRACK ON WATER-CONTAINING SIDE OF WALL USING FLEXIBLE SEALANT. IN CASE OF CONFLICT BETWEEN THE REPAIR MATERIAL MANUFACTURER'S APPLICATION GUIDELINES AND THE NOTES PROVIDED ABOVE, THE MANUFACTURER'S GUIDELINES SHALL GOVERN.
11. THE NOTES PROVIDED ABOVE ARE FOR GENERAL INFORMATION ONLY.



WALL PLAN OR SLAB SECTION

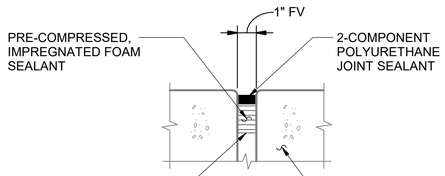


WALL ELEVATION OR SLAB PLAN

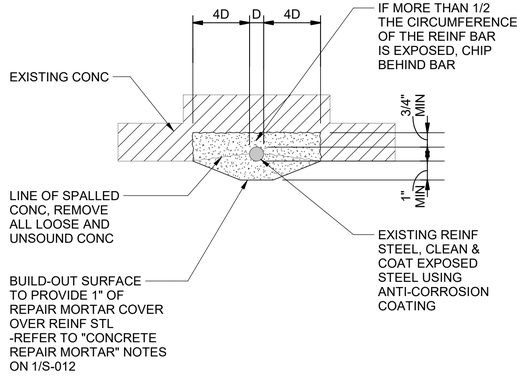
2 S-012 TYPICAL CRACK INJECTION
N.T.S.

PRE-COMPRESSED FOAM SEALANT:

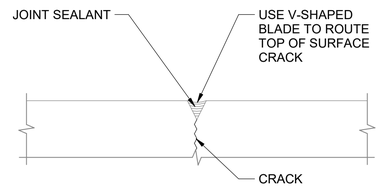
1. PRE-COMPRESSED FOAM SEALANT SHALL BE A PREFORMED EXPANDING FOAM SEALANT PRODUCED BY IMPREGNATING PERMANENTLY ELASTIC, HIGH-DENSITY, OPEN-CELL POLYURETHANE FOAM WITH WATER-BASED, POLYMER-MODIFIED ASPHALT. MATERIAL SHALL BE PRECOMPRESSED TO 20% OF THE MATERIAL'S ORIGINAL UNCOMPRESSED DIMENSION.
2. ALL JOINT SURFACES SHALL BE FREE FROM GROSS IRREGULARITIES, LOOSE PARTICLES, FOREIGN MATTER SUCH AS DIRT, DUST, ICE, SNOW, OR WATER, COATINGS SUCH AS OIL, GREASE, OR CURING COMPOUND RESIDUES, AND ANY OTHER FOREIGN MATTER THAT MAY PREVENT BOND. CLEANING AND PREPARATION OF JOINT SURFACES SHALL BE ACCOMPLISHED BY MECHANICAL MEANS.
3. MIX AND APPLY EPOXY PRIMER TO THE JOINT SURFACES AND INSTALL EXPANSION JOINT SEALS PER MANUFACTURER'S INSTRUCTIONS.
4. MANUFACTURER'S REPRESENTATIVE SHALL REVIEW JOINT AFTER SURFACE PREPARATION AND PRIOR TO SEAL INSTALLATION, AND SHALL OBSERVE INITIAL INSTALLATION OF SEAL TO CONFIRM CONTRACTOR IS COMPLYING WITH MANUFACTURER'S INSTRUCTIONS.
5. EXPANSION JOINT SEALS SHALL BE 20H SYSTEM BY EMSEAL JOINT SYSTEMS, LTD. OR APPROVED EQUAL.
6. SUBMITTAL: SUBMIT MANUFACTURER'S DATA SHEETS AND INSTALLATION INSTRUCTIONS FOR REVIEW.
7. REFER TO SPEC. SECTION 03930 FOR ADDITIONAL INFORMATION.



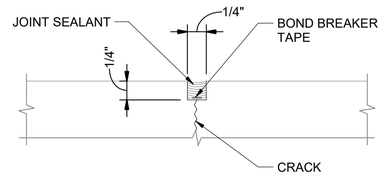
3 S-012 TYPICAL JOINT REPAIR
N.T.S.



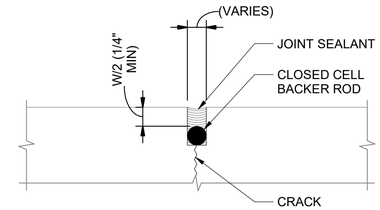
4 S-012 TYPICAL REPAIR
N.T.S.



SECTION @ CRACK - OPTION 1



SECTION @ CRACK - OPTION 2



SECTION @ CONTROL JOINT

JOINT SEALANT

1. JOINT SEALANT SHALL BE 2-COMPONENT, PREMIUM GRADE, POLYURETHANE-BASE, ELASTOMETRIC SEALANT WITH A CHEMICAL CURE. SEALANT SHALL HAVE A SELF-LEVELING CONSISTENCY IN HORIZONTAL APPLICATIONS.
2. CRACKS SHALL BE ROUTED WITH A V-SHAPED BLADE, OR TO A MINIMUM DIMENSION OF 1/4 IN. BY 1/4 IN. JOINT WALLS SHALL BE FREE OF OIL, GREASE, CURING COMPOUND RESIDUES, AND ANY OTHER FOREIGN MATTER THAT MAY PREVENT BOND. CLEANING AND PREPARATION OF JOINT SURFACES SHALL BE ACCOMPLISHED BY MECHANICAL MEANS.
3. ALL JOINT SURFACES SHALL BE CLEAN, SOUND AND FROST-FREE.
4. BOND BREAKER TAPE, BACKER ROD OR OTHER APPROVED METHOD SHALL BE USED IN BOTTOM OF JOINT TO PREVENT BOND.
5. POUR OR EXTRUDE SEALANT IN ONE DIRECTION AND ALLOW TO FLOW AND LEVEL AS NECESSARY. PLACE NOZZLE OF GUN INTO BOTTOM OF JOINT AND FILL ENTIRE JOINT. KEEP THE NOZZLE DEEP IN THE SEALANT AND CONTINUE WITH STEADY FLOW OF SEALANT PRECEDING NOZZLE TO AVOID AIR ENTRAPMENT. DO NOT OVERLAP SEALANT. TOOL JOINT SURFACE AS REQUIRED.
6. JOINT SEALANT SHALL BE SIKAFLEX 2C SL (SELF-LEVELING) OR SIKAFLEX 2C NS (NON-SAG) BY SIKA CORP. OR APPROVED EQUAL.
7. SUBMITTALS: SUBMIT MANUFACTURER'S DATA SHEETS AND APPLICATION INSTRUCTIONS FOR REVIEW.

5 S-012 TYPICAL REPAIR
N.T.S.

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11700 Katy Freeway, Suite 800, Houston, TX 77079
P: 281 597 9300
TBPE No. 928

No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
LICENSED PROFESSIONAL ENGINEER
08/10/2023

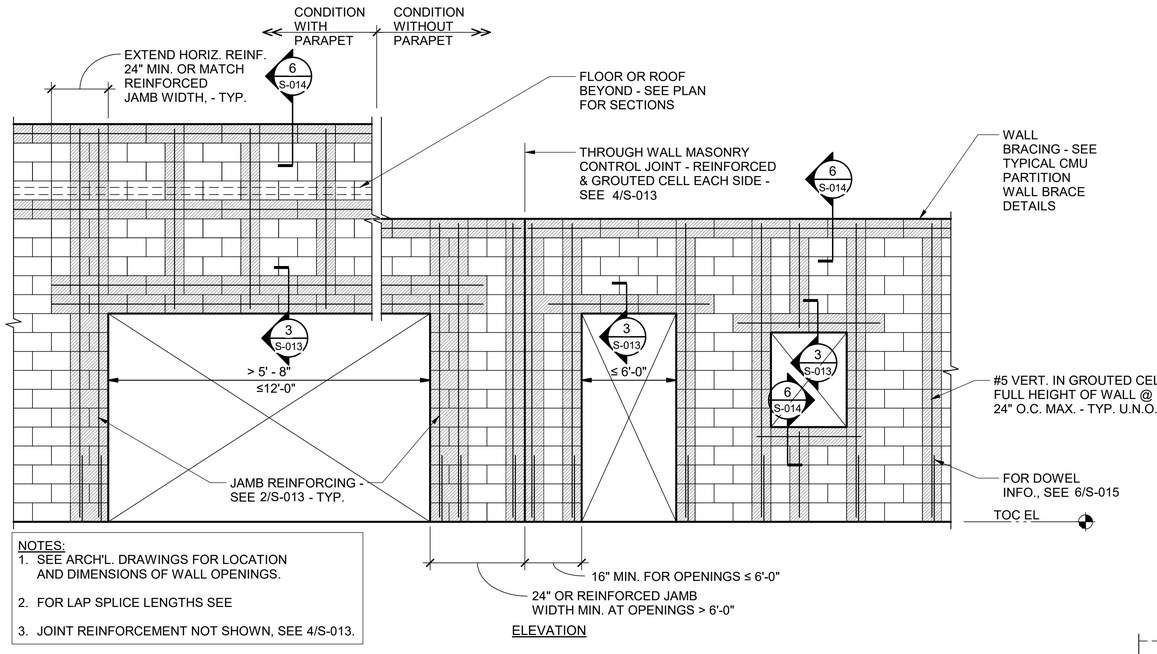
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS I

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-012

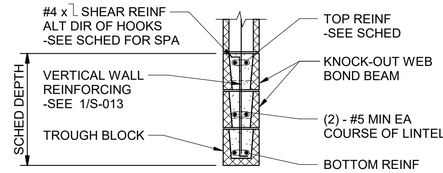
shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQIENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



NOTES:
1. SEE ARCH'L. DRAWINGS FOR LOCATION AND DIMENSIONS OF WALL OPENINGS.
2. FOR LAP SPLICE LENGTHS SEE
3. JOINT REINFORCEMENT NOT SHOWN, SEE 4/S-013.

ELEVATION

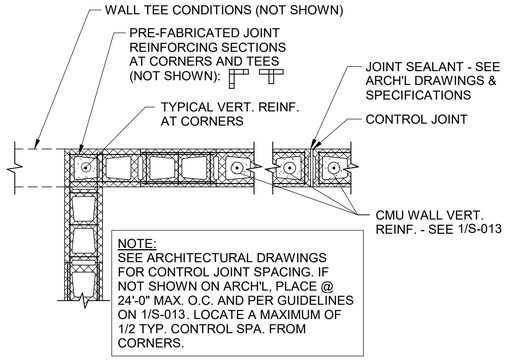
1 S-013 TYPICAL CMU WALL REINFORCING DETAIL
N.T.S.



NOTES:
1. LINTELS SHALL REMAIN SHORED UNTIL MASONRY CONSTRUCTION ABOVE HAS CURED FOR A MINIMUM OF 14 DAYS.
2. SEE ARCHITECTURAL DRAWINGS FOR OPENING SIZE AND LOCATION.
3. EXTEND LINTELS PAST EDGES OF OPENINGS PER 1/S-013.
4. VERTICAL CONTROL JOINTS SHALL NOT CROSS LINTEL REINFORCING.
5. JAMB DETAIL PER 2/S-013.

LINTEL REINFORCING SCHEDULE					
CLEAR SPAN	LOCATION	DEPTH	BOTTOM REINF	TOP REINF	TIE SPA
≤ 6'-0"	INTERIOR	8"	2-#5	-	-
≤ 12'-0"	INTERIOR	16"	2-#6	2-#6	8"
≤ 3'-8"	EXTERIOR	8"	2-#5	-	-
≤ 7'-4"	EXTERIOR	16"	2-#6	2-#6	8"
≤ 12'-0"	EXTERIOR	24"	2-#6	2-#6	8"
≤ 14'-0"	EXTERIOR	32"	2-#6	2-#6	8"
≤ 16'-8"	EXTERIOR	48"	2-#6	2-#6	8"

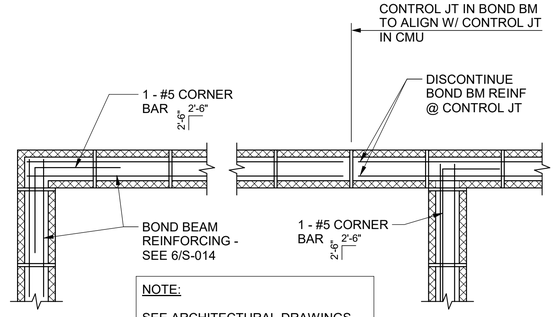
3 S-013 TYPICAL CMU LINTEL DETAIL & REINFORCING SCHEDULE
N.T.S.



NOTE:
SEE ARCHITECTURAL DRAWINGS FOR CONTROL JOINT SPACING. IF NOT SHOWN ON ARCH'L, PLACE @ 24'-0" MAX. O.C. AND PER GUIDELINES ON 1/S-013. LOCATE A MAXIMUM OF 1/2 TYP. CONTROL SPA. FROM CORNERS.

PLAN

4 S-013 TYPICAL CMU BAR PLACEMENT DETAIL
N.T.S.

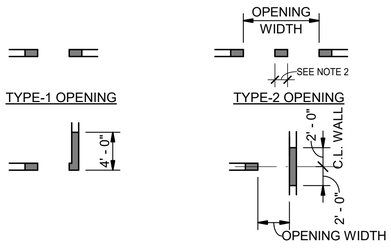


NOTE:
SEE ARCHITECTURAL DRAWINGS FOR CONTROL JOINT SPA. IF NOT SHOWN ON ARCH'L, PLACE @ 24'-0" MAX OC AND PER GUIDELINES ON 1/S-013. LOC A MAX OF 1/2 TYP CONTROL SPA FROM CORNERS.

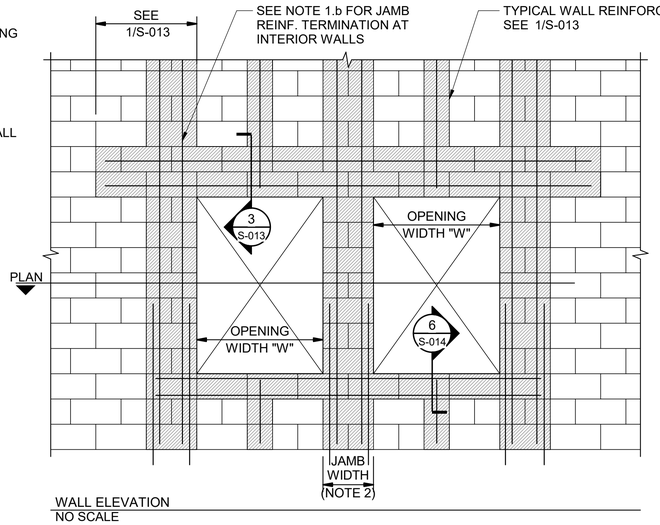
5 S-013 TYPICAL CORNER BARS AT BOND BEAMS DETAIL
N.T.S.

NOTES

1. a. FOR OPENING AT EXTERIOR WALL, EXTEND JAMB REINFORCING TO TOP OF WALL.
   b. FOR OPENING AT INTERIOR WALL ≤ 6'-0", TERMINATE JAMB REINFORCING AT TOP OF LINTEL.
2. FOR TYPE 2 OPENINGS, LINTEL SHALL SPAN ACROSS BOTH OPENINGS. INTERMEDIATE CMU WALL BETWEEN OPENINGS SHALL BE EQUIVALENT OF COMBINED JAMB REINFORCING FROM EACH OPENING.
3. FOR REINFORCING DETAIL AT JAMB CONDITIONS SEE 7/S-014.



PLAN
NO SCALE



WALL ELEVATION
NO SCALE

2 S-013 TYPICAL CMU WALL JAMB REINFORCING DETAIL
N.T.S.

JAMB WIDTH & REINFORCING SCHEDULE

WALL HEIGHT BETWEEN SUPPORTS *	CLEAR OPENING SIZE (W)				
	< 8'-0"	<10'-0"	<12'-0"	<14'-0"	<16'-8"
≤10'-0"	8" / 2-#5	8" / 2-#5	8" / 2-#5	8" / 2-#5	16" / 4-#6
≤12'-0"	8" / 2-#5	8" / 2-#5	8" / 2-#6	16" / 4-#6	16" / 4-#6
≤14'-0"	8" / 2-#6	8" / 2-#7	16" / 4-#5	16" / 4-#6	24" / 6-#6
≤16'-0"	16" / 4-#6	16" / 4-#6	16" / 4-#6	16" / 4-#7	24" / 6-#7
≤18'-0"	16" / 4-#6	16" / 4-#6	24" / 6-#6	24" / 6-#7	32" / 8-#7

* SUPPORTS ARE DEFINED AS FLOORS, ROOFS, GIRTS, ETC. THAT ARE CONNECTED TO THE WALL WHICH BRACE THE WALL OUT OF PLANE.

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No.	Revisions	By	Date

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS II

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-013

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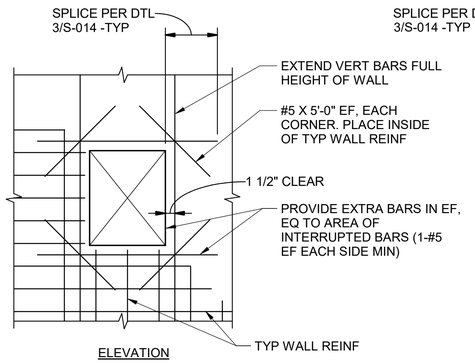
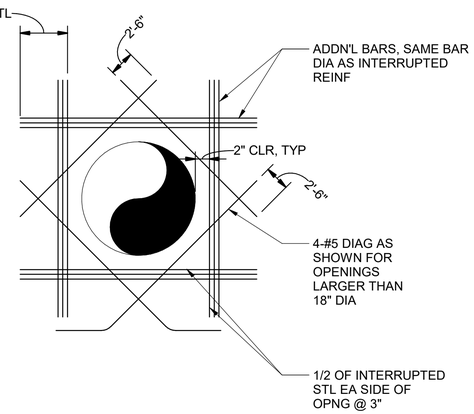


ELEVATION



NOTES:

1. TYP FOR ALL OPNGS IN CONC WALLS AND SLABS UNO ON PLANS.
2. DO NOT WELD REINF TO PIPE SLEEVES AND INSERTS.
3. FOR OPNGS LARGER THAN 4'-0", REINF SAME AS FOR 4'-0" OPNGS.
4. SPA @ 3 BAR DIAMETERS (OR 3" MIN) OC.
5. SPLICE PER TENSION LAP SPLICE DTL 3/S-014.
6. INCREASE SIZE OF ADDN'L BARS TO PROVIDE EQ AREA AS NEEDED TO FIT WITHIN A DISTANCE OF 2 X WALL/SLAB THICKNESS FROM OPNG. PROVIDE 2" MIN CLR BTWN BARS.
7. WHERE A SLAB OR INTERSECTING WALL CONNECTS WITHIN ONE WALL THICKNESS OF THE OPNGS ADDN'L BARS ON THAT SIDE MAY BE OMITTED.

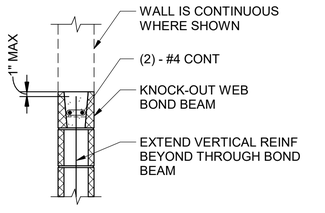
1 / S-014 TYPICAL WALL AND SLAB OPENING REINFORCING
N.T.S.

BAR SIZE	MIN EMBEDMENT LENGTH		MIN LAP SPLICE LENGTHS		TENSION EMBEDMENT LENGTHS Ldh FOR STANDARD END HOOK (INCHES)
	** TOP BARS (INCHES)	OTHER BARS (INCHES)	* TOP BARS (INCHES)	OTHER BARS (INCHES)	
#3	14	12	18	16	7
#4	18	15	25	20	8
#5	23	18	32	24	12
#6	28	22	40	31	14
#7	40	29	54	42	16
#8	46	33	63	45	18
#9	57	41	76	54	20
#10	70	49	84	66	24

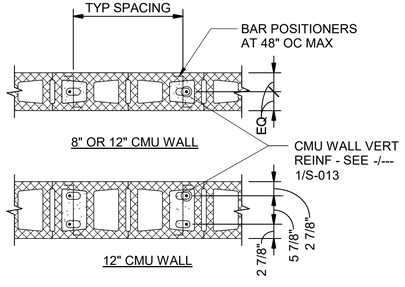
FOOTNOTES:

1. TOP BARS ARE HORIZ BARS SO THAT MORE THAN 12" OF CONC IS CAST IN THE MEMBER BELOW THE BAR. HORIZ BARS IN WALLS ARE TO BE PROVIDED WITH LAPS AS REQ'D FOR TOP BARS.
2. EXCEPT AS OTHERWISE INDICATED ON THE DWGS, TENSION LAP SPLICE LENGTHS AND TENSION EMBEDMENT LENGTHS LDH FOR STANDARD AND END HOOKS SHALL BE NO LESS THAN (NO MINUS TOLERANCE) SHOWN ON THIS SHEET.
3. LAP SPLICES SHALL NOT BE MADE AT POINTS OF MAX STRESS AS DETERMINED BY THE ENGR AND SHALL NOT BE SPACED CLOSER THAN 6" OC.

3 / S-014 TYPICAL TENSION LAP SPLICE AND EMBEDMENT LENGTH
N.T.S.



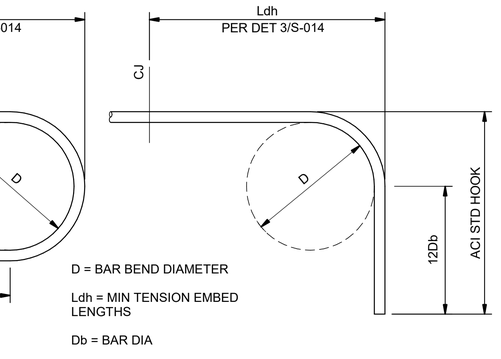
6 / S-014 TYPICAL CMU BOND BEAM DETAIL
N.T.S.



NOTE:

PROVIDE BAR POSITIONERS AT TOP AND BOTTOM OF LAP SPLICES AND AT 48" OC MAX VERTICALLY.

7 / S-014 TYPICAL CMU BAR PLACEMENT DETAIL
N.T.S.



D = BAR BEND DIAMETER

Ldh = MIN TENSION EMBED LENGTHS

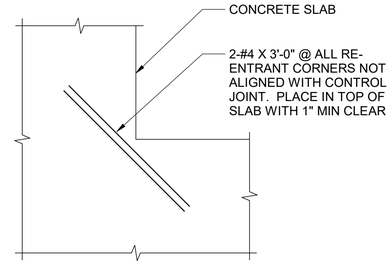
Db = BAR DIA

D=6 Db #3 THROUGH #8

D=8 Db #9, #10, AND #11

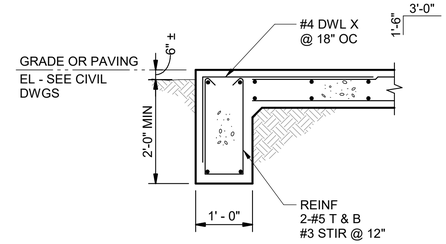
D=10 Db #14 AND 18

2 / S-014 TYPICAL HOOKED BAR
N.T.S.

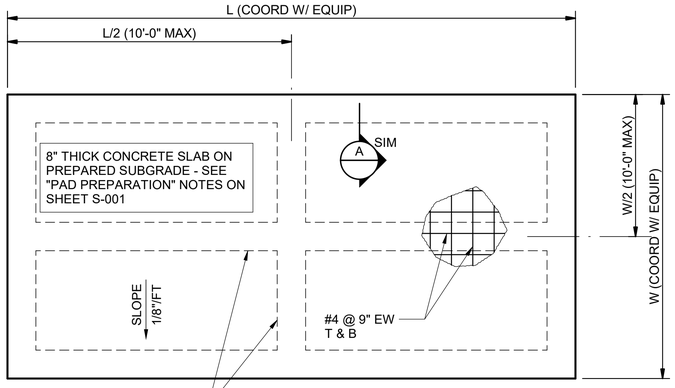


PLAN

5 / S-014 TYPICAL CORNER REINFORCING
N.T.S.



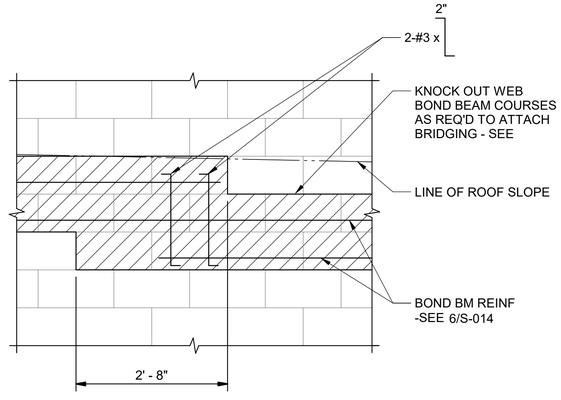
SECTION "A"



NOTES:

1. THIS DTL APPLIES AT THE FOLLOWING UNO IN THE DRAWINGS:
   A. SITE ELECTRICAL EQUIP PADS
   B. SITE MECH EQUIP PADS
2. REFER TO ELEC/MECH DWGS FOR EXACT SITE LOCATIONS OF PADS.
3. COORD W/ EQUIP MFR FOR ANY OPNGS AND PENETRATIONS REQ'D IN SITE PADS.

4 / S-014 TYPICAL MECHANICAL OR ELECTRICAL YARD PAD
N.T.S.



ELEVATION

8 / S-014 TYPICAL STEP IN BOND BEAM DETAIL
N.T.S.

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No.	Revisions	By	Date

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WASTEWATER TREATMENT
PLANT IMPROVEMENTS

TYPICAL STRUCTURAL
DETAILS III

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-014

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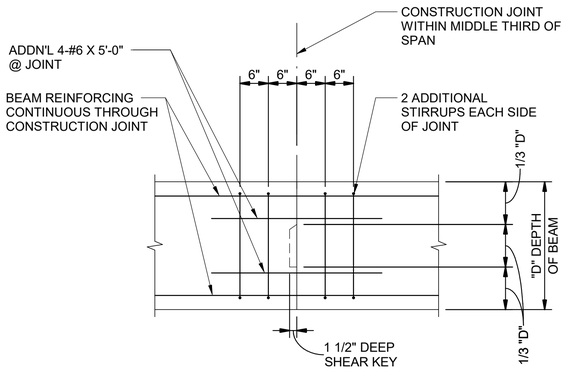


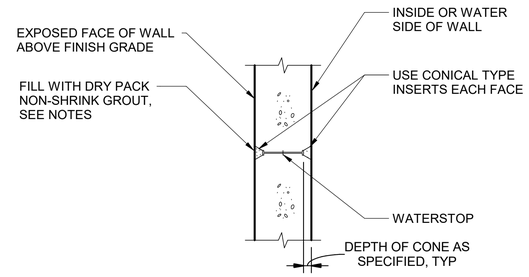
ELEVATION

NOTE:

1. THIS DETAIL APPLIES TO BEAMS ≤ 4'-0" DEPTH.

KEY WIDTH	
GR BM WIDTH "T"	W
≤ 12"	3 1/2"
12" TO 16"	5 1/2"
16" TO 20"	7 1/4"
20" TO 24"	9 1/4"
24" TO 30"	11 1/4"

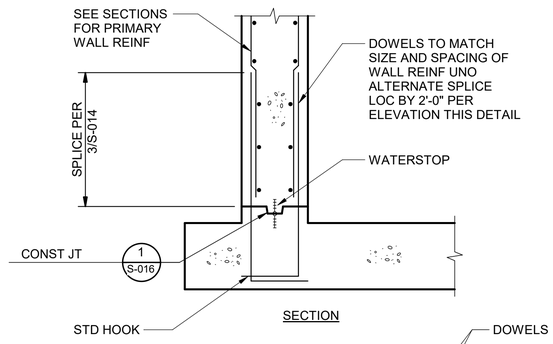
1 S-015 TYPICAL GRADEBEAM CONSTRUCTION JOINT
N.T.S.



NOTES:

1. THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.
2. DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS.

2 S-015 TYPICAL FORM SNAP-TIE HOLE
N.T.S.

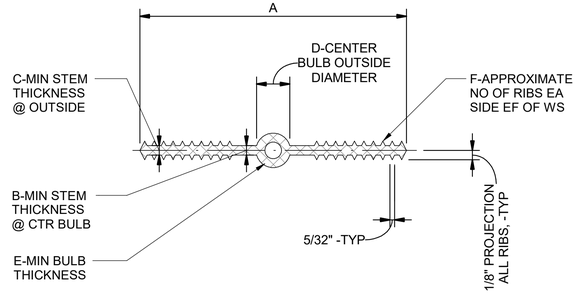


SECTION

ELEVATION

3 S-015 TYPICAL WALL DOWEL
N.T.S.

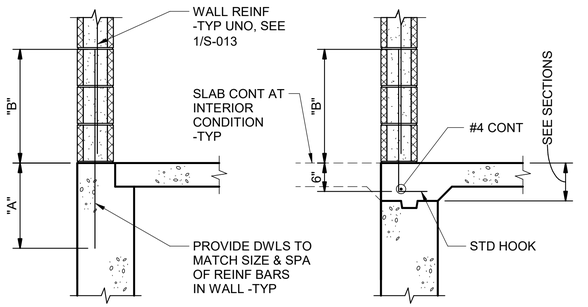
SIZE	A	B	C	D	E	F
6"X3/8"	6"	3/8"	3/8"	7/8"	1/4"	6
9"X3/8"	9"	3/8"	3/8"	1"	1/4"	8



NOTES:

1. MATERIAL QUALITY PER SPECIFICATIONS SECTION 03251.
2. DIM REQUIREMENTS INDICATED SHOULD BE GIVEN TO SUPPLIERS PRIOR TO PLACING ORDERS.
3. NON-ROUND CENTER BULBS SHALL HAVE A MIN OUTSIDE DIM OF "D".
4. SPLICING AT CORNERS AND INTERSECTIONS SHALL BE MADE PER MANUFACTURER RECOMMENDATIONS TO PROVIDE CONTINUOUS WATERTIGHT SEAL.
5. WHERE WATERSTOP IS PLACED ACROSS AN EXPANSION JOINT, WATERSTOP SHALL BE PROVIDED WITH CENTER BULB CAPABLE OF MOVING WITH THE EXPANSION JOINT MOVEMENT.
6. 6" WATERSTOPS SHALL BE USED IN TYPICAL CONDITIONS UNLESS NOTED OTHERWISE. 9" WATERSTOPS SHALL BE USED AT EXPANSION JOINTS IN WALLS AND SLABS.

4 S-015 TYPICAL WATERSTOP
N.T.S.



CAST-IN-PLACE (STRAIGHT BAR)

CAST-IN-PLACE (HOOKED BAR)

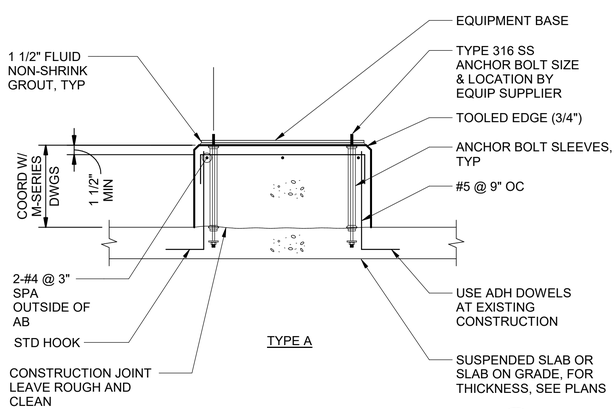
DRILLED-IN ALTERNATE (@ INTERIOR PARTITIONS ONLY)

NOTES:

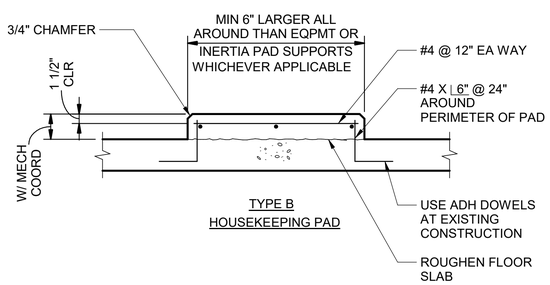
1. AT WALLS WITH DOUBLE REINFORCING, PROVIDE SINGLE DOWEL AT SIZE AND SPACING OF SCHEDULED WALL REINFORCING. CENTER DOWEL ON WALL, UNO.
2. MASONRY DOWELS SHALL BE TIED IN OR DRILLED AND ADHERED. MASONRY DOWELS SHALL NOT BE "STABBED" IN.
3. HOLES FOR MASONRY DOWELS MUST BE CLEANED WITH A WIRE BRUSH AND COMPRESSED AIR FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

DOWEL SIZE	DIMENSIONS		
	"A"	"B"	"C"
#4	1'-6"	2'-6"	5 1/2"
#5	1'-6"	3'-2"	7"
#6	2'-0"	3'-9"	8 1/2"
#7	2'-6"	4'-5"	10"

6 S-015 TYPICAL MASONRY WALL DOWEL DETAIL
N.T.S.



TYPE A



TYPE B
HOUSEKEEPING PAD

5 S-015 TYPICAL EQUIPMENT PAD
N.T.S.

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No.	Revisions	By	Date

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08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS IV

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-015

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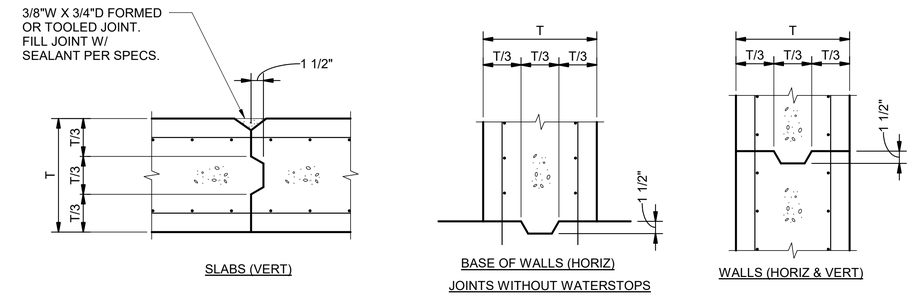
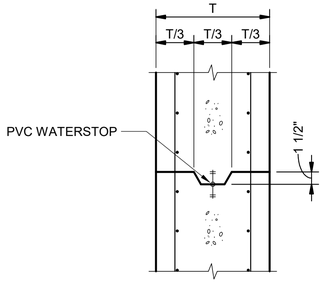


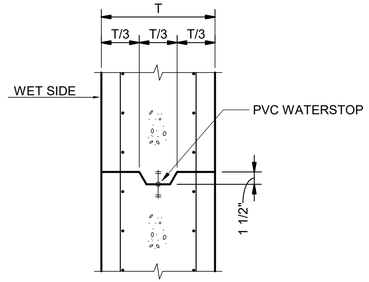
SLABS (VERT)

BASE OF WALLS (HORIZ)

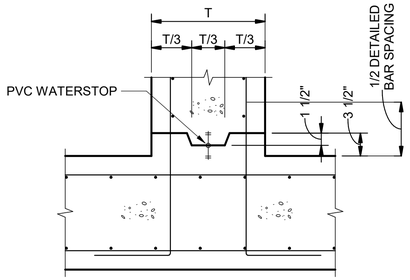
JOINTS WITHOUT WATERSTOPS

WALLS (HORIZ & VERT)

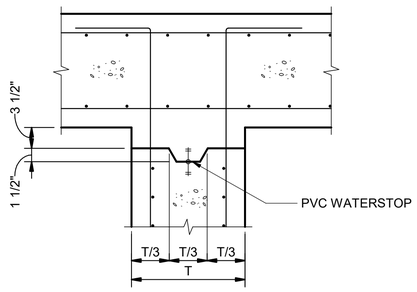




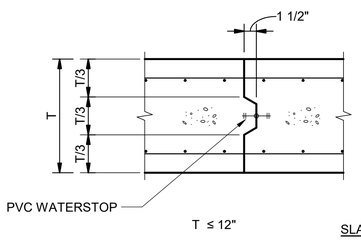
WALLS (HORIZ & VERT)

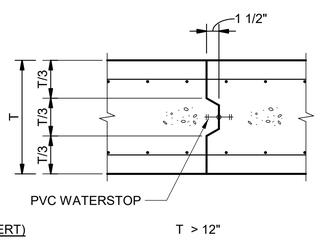


BASE OF WALLS (HORIZ)



WALLS TO SOFFIT (HORIZ)





SLABS (VERT)
WATERTIGHT JOINTS

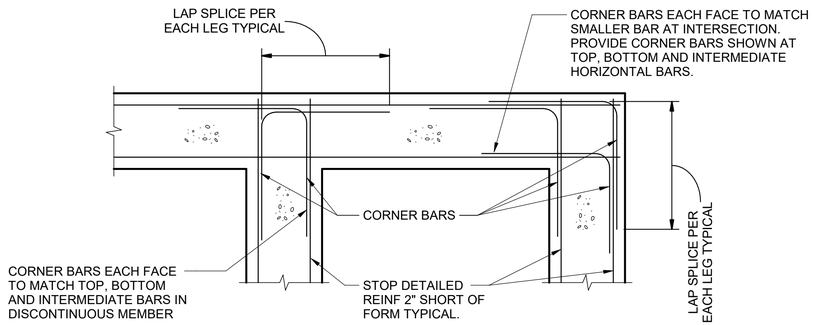
NOTES:

1. REINFORCING STEEL IS TO BE CONTINUOUS ACROSS ALL CONSTRUCTION JOINTS. ALL WATERSTOPS SHALL BE AS INDICATED ON STRUCTURAL DRAWINGS. MATERIALS AS DESCRIBED IN SPECIFICATIONS.
2. WATERSTOPS SHALL BE 6" PVC WS UNO.

1 S-016 TYPICAL CONSTRUCTION JOINTS
N.T.S.

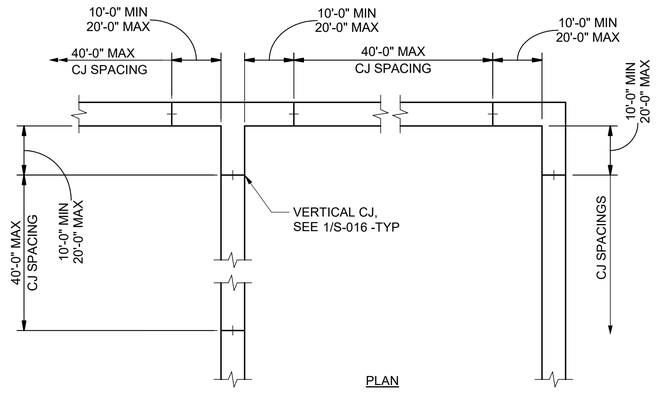
NOTES:

1. WHERE 90 DEGREE HOOKS ARE SCHEDULED OR DETAILED FOR TOP BARS, CORNER BARS MAY BE OMITTED.
2. MATCH SIZE, LOCATION AND NUMBER OF HORIZONTAL BEAM AND WALL BARS, EXCEPT THAT WHERE THERE ARE MORE THAN 2 TOP OR BOTTOM BARS, ONLY THE INSIDE AND OUTSIDE BARS MUST BE MATCHED.



PLAN

2 S-016 TYPICAL CORNER BARS AT BEAM
N.T.S.



PLAN

NOTES:

1. COORDINATE CJ LOCS AND TIME BETWEEN CONC POURS WITH SPEC 3300.
2. LOCATE WALL CJ AS SHOWN, UNO.

3 S-016 TYPICAL JOINT SPACING
N.T.S.

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No.	Revisions	By	Date

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08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

TYPICAL STRUCTURAL
DETAILS V

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-016

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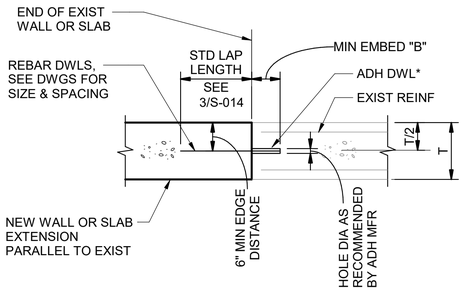
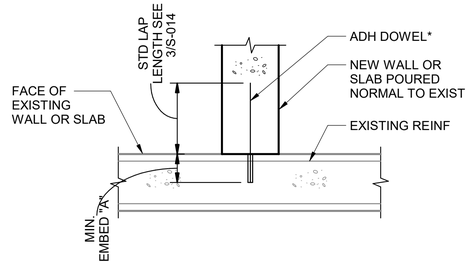
JQIENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



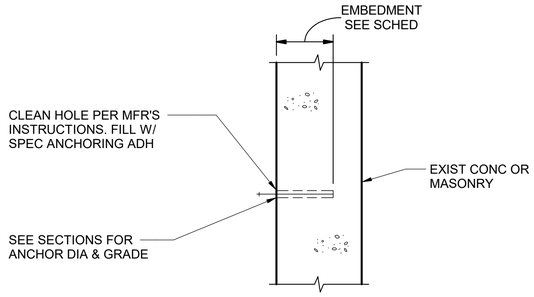


DOWEL SIZE	MIN EDGE DIST	MIN EMBEDMENT "A"	MIN EMBEDMENT "B"
#3	2"	3 1/2"	6"
#4	2 1/2"	5"	8"
#5	3"	6 1/2"	10"
#6	4"	9"	13"
#7	5"	10 1/2"	16"
#8	6"	12"	19"

NOTE:

1. CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03200, CONCRETE REINFORCEMENT.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MIN EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MIN RECOMMENDED EMBEDMENT IF GREATER.
4. "" LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

1 S-017 TYPICAL ADHESIVE DOWELS
N.T.S.

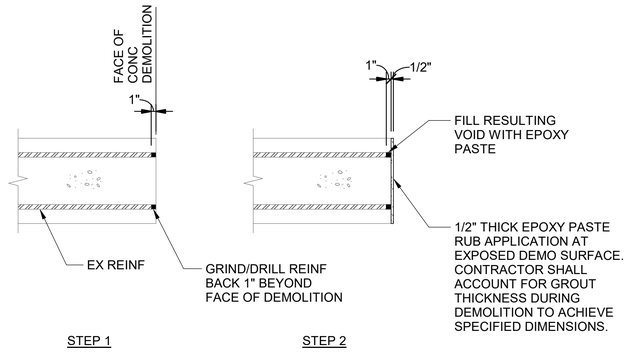


ADHESIVE ANCHOR NOTES

1. ADHESIVE ANCHORS SHALL BE ONE OF THE FOLLOWING:
   - HILTI "HIT HY 200" ADHESIVE
   - SIMPSON "ACRYLIC-TIE" ADHESIVE
2. LOCATE EXISTING REINFORCING STEEL IN THE CONCRETE USING NON-DESTRUCTIVE METHODS AND POSITION ANCHOR LOCATIONS TO AVOID CONFLICTS WITH EXISTING REINFORCING. ANCHOR LOCATIONS CAN BE ADJUSTED BY A MAXIMUM OF 1 1/2" FROM DETAILED LOCATIONS TO AVOID CONFLICTS, UNLESS NOTED OTHERWISE.
3. BASED ON FIELD VERIFIED LOCATIONS OF REINFORCING STEEL AND EMBEDDED ITEMS, THE CONTRACTOR SHALL CREATE TEMPLATES FOR EACH ANCHOR GROUP.
4. ALL DEBRIS SHALL BE BLOWN OUT OF THE HOLES WITH COMPRESSED AIR AFTER DRILLING. (NOT REQUIRED FOR "HIT-TZ" ANCHORS).
5. ALL ABANDONED HOLES SHALL BE FILLED WITH NONSHRINK GROUT.
6. HOLES IN CONNECTION PLATES SHALL BE NO MORE THAN 1/16" LARGER THAN THE ANCHOR DIAMETER. IF LARGER HOLES ARE REQUIRED FOR ERECTION PURPOSES, PROVIDE 1/4" X 3" X 3" PLATE WASHERS CONTINUOUSLY WELDED TO THE CONNECTION PLATE.

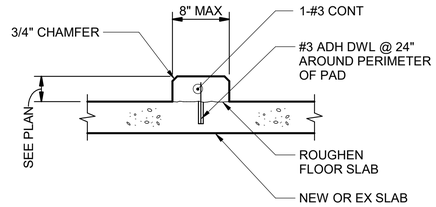
ANCHOR INSTALLATION INFORMATION			
ANCHOR DIAMETER	1/2"	5/8"	3/4"
HOLE DIAMETER	9/16"	11/16"	13/16"
EMBEDMENT FOR SS, A307 OR A36 THIRD ROD HIT-TZ	4 1/4" 3 1/2"	5 1/2" 4"	6 3/4" 5 1/4"
MAX TORQUE (FT LBS) SS, A307, A36 THIRD ROD HIT-TZ	30 20	75 50	150 105

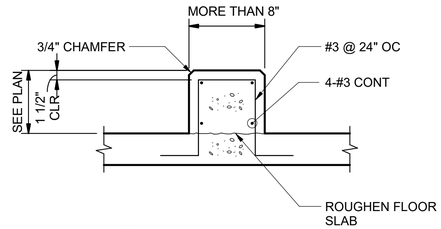
2 S-017 TYPICAL ADHESIVE ANCHOR FOR SOLID & GROUTED MASONRY AND CONCRETE
N.T.S.



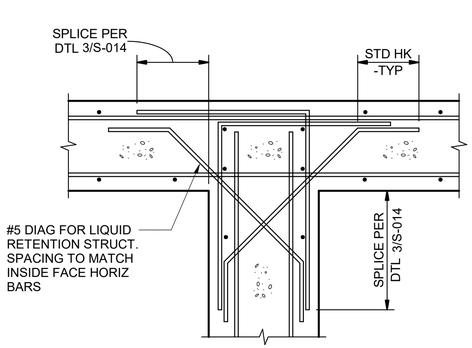
STEP 1 STEP 2

3 S-017 TYPICAL CONCRETE DEMOLITION REPAIR
N.T.S.

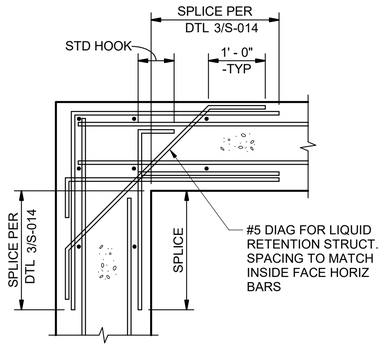




4 S-017 TYPICAL CURB
N.T.S.



INTERSECTION

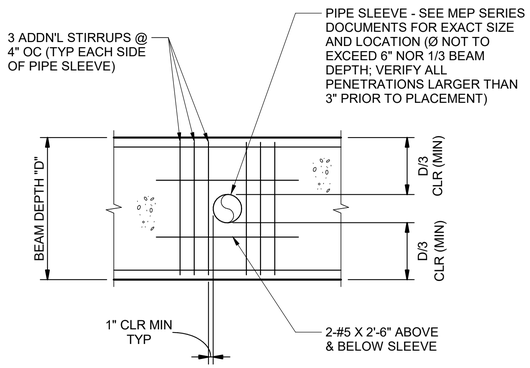


CORNER

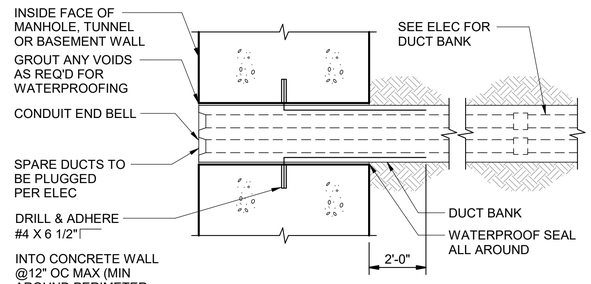
NOTES:

1. CORNER AND INTERSECTING REINF SHALL MATCH SIZE AND SPACING OF WALL REINF
2. HORIZ BARS ARE IN SAME PLANE

5 S-017 TYPCAL WALL/BEAM CORNER AND INTERSECTING REINFORCING
N.T.S.



6 S-017 TYPICAL HORIZONTAL GRADEBEAM PENETRATION
N.T.S.



NOTES:

1. REFER TO ELECTRICAL DRAWINGS FOR LOCATION AND CONFIGURATION OF DUCT BANKS.
2. REFER TO1/S-017 FOR ADHESIVE DOWEL INFO.
3. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR INFO REGARDING CONDUIT BELL ENDS & DUCT PLUGS.

7 S-017 TYPICAL DUCT BANK PENETRATION
NTS

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TBPE No. 928

No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
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PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS VI

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-017

shaping the built environment
JQ INFRASTRUCTURE, LLC
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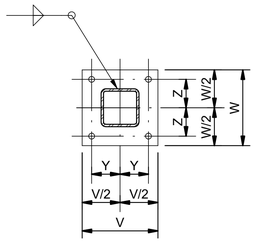
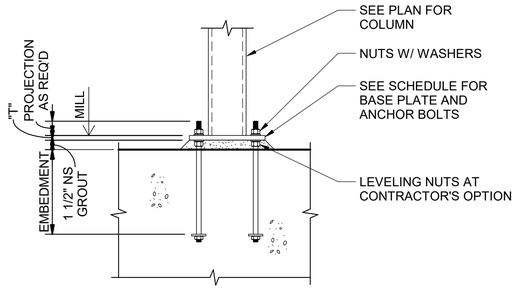
PROJECT NO: 4220079
TBPE FIRM F-7986



NOTES:

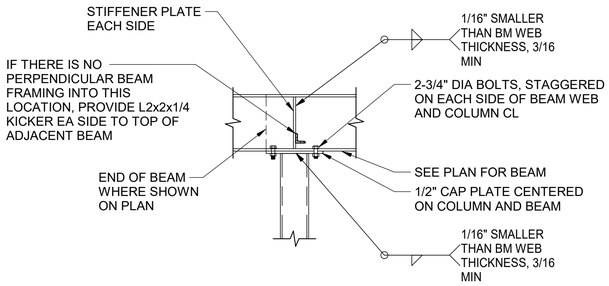
1. WELD TO BE 1/16" SMALLER THAN THICKNESS OF TUBE.
2. FOR BASE PLATE ELEVATION SEE DETAIL 2/S-018.

1 S-018 TYPICAL BASE PLATE
N.T.S.



ELEVATION

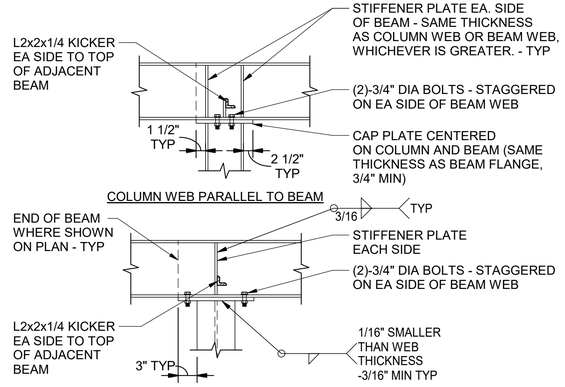
2 S-018 TYPICAL COLUMN BASE PLATE
N.T.S.



NOTES:

1. SEE ROOF PLAN FOR ROOF SLOPE. SLOPE CAP PLATES ACCORDINGLY.
2. STIFFENER PLATES SHALL BE EQUAL IN THICKNESS TO THE COLUMN WALL THICKNESS OR BEAM WEB THICKNESS, WHICHEVER IS GREATER.
3. CONNECT INTERSECTING BEAMS TO STIFFENER PLATES USING BOLTS IN SINGLE SHEAR DESIGNED FOR ECCENTRIC BEAM REACTION.

3 S-018 TYPICAL CAP PLATE - BOLTED CONNECTION
N.T.S.

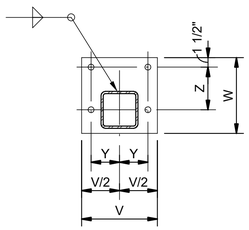


COLUMN WEB PERPENDICULAR TO BEAM

NOTES:

1. CONNECT INTERSECTING BEAMS TO STIFFENER PLATES USING BOLTS IN SINGLE SHEAR DESIGNED FOR ECCENTRIC BEAM REACTION. SEE 5/T-SC-04.
2. SEE ROOF PLAN FOR ROOF SLOPE AND SLOPE CAP PLATES ACCORDINGLY.

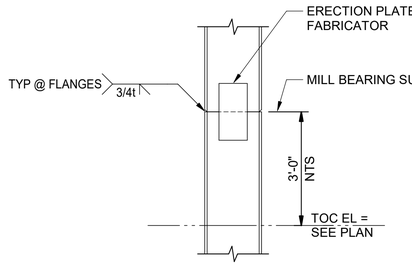
4 S-018 TYPICAL COLUMN CAP PLATE TO BEAM CONNECTION
N.T.S.



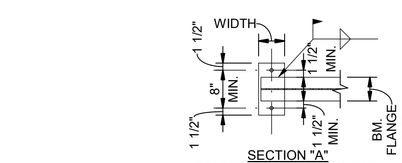
NOTES:

1. WELD TO BE 1/16" SMALLER THAN THICKNESS OF TUBE.
2. FOR BASE PLATE ELEVATION SEE DETAIL 2/S-018.

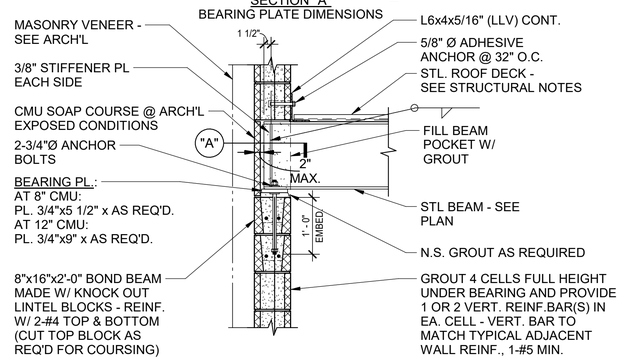
6 S-018 TYPICAL BASE PLATE DETAIL - EDGE COLUMN
N.T.S.



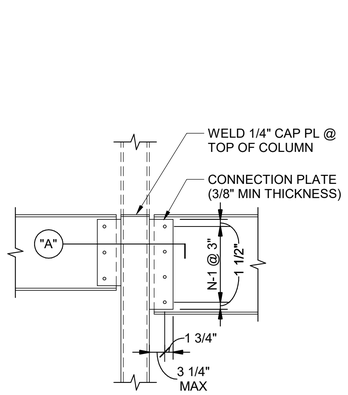
7 S-018 TYPICAL COLUMN SPLICE
N.T.S.

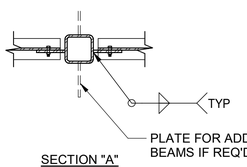


SECTION "A"
BEARING PLATE DIMENSIONS



8 S-018 TYPICAL MASONRY WALL BEARING DETAIL
N.T.S.





SECTION "A"

BEAM SIZE	PLATE LENGTH (L)	NO OF BOLTS (N)	MAX BEAM REACTIONS (KIPS) 3/4" DIA	7/8" DIA
W8	6	2	21.2	25.6
W10	6	2	21.2	25.6
W12	9	3	31.8	38.4
W14	9	3	31.87	39.2
W16	12	4	42.4	52.2
W18	15	5	53	65.3
W21	18	6	63.6	78.3
W24	18	6	63.6	78.3
W27	21	7	74.2	91.3
W30	24	8	84.8	103.5
W33	27	9	95.4	115.6
W36	30	10	106	127.8
W40	33	11	116.6	139.9
W44	36	12	127.2	152.1

NOTES:

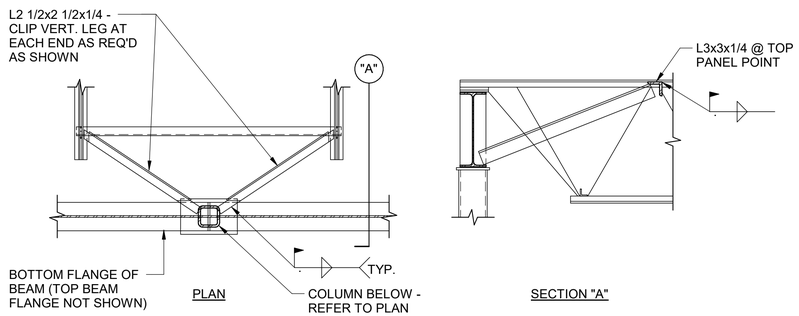
1. CONNECTIONS SHALL BE BASED ON REACTIONS SHOWN ON PLANS AND MAXIMUM BEAM REACTION IN ABOVE TABLE, UNO.
2. NOTED REACTIONS ARE FOR SERVICE LOADS.
3. SEE "STRUCTURAL STEEL CONNECTIONS" IN STRUCTURAL NOTES FOR ADDN'L INFO.
4. MINIMUM CONNECTION: PLATE THICKNESS IS 3/8" TYPICAL AND 7/16" AT W33 AND DEEPER "HEAVY" CONNECTIONS.
5. BOLTS ARE A325N, TYPICAL.
6. BEAM CONNECTIONS ARE "STANDARD" UNO ON PLAN.

5 S-018 TYPICAL BEAM WEB TO TUBE COLUMN CONNECTION
N.T.S.

BASE PLATE & ANCHOR BOLT SCHEDULE

MARK	BASE PLATE DIMENSIONS V	W	Y	Z	T	DETAIL	ANCHOR BOLTS NO./TYPE	DIA.	EMBED LENGTH
BP-1	11"	11"	4"	4"	1"	1/S-018	4/AB-1	3/4"	10"
BP-2	11"	11"	4"	6 1/2"	1"	6/S-018	4/AB-1	3/4"	10"

9 S-018 BASE PLATE & ANCHOR BOLT SCHEDULE
N.T.S.



PLAN

SECTION "A"

11 S-018 TYPICAL COLUMN BRACE DETAIL - JOISTS PERPENDICULAR TO BEAM
N.T.S.

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No.	Revisions	By	Date

STATE OF TEXAS
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08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS VII

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-018

shaping the built environment
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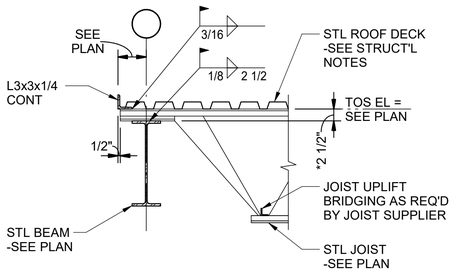
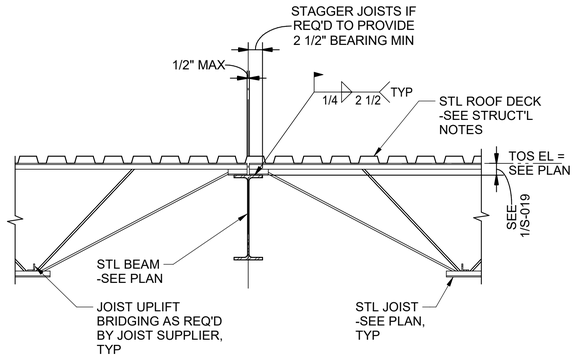
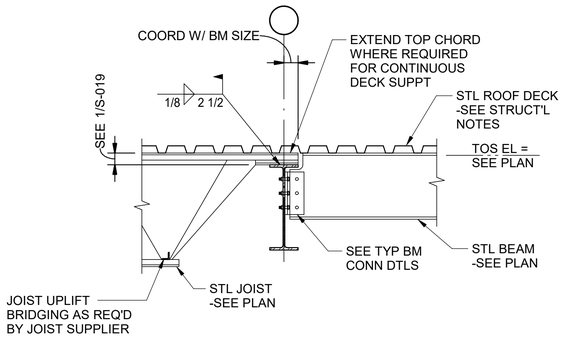


*JOIST MFR TO VERIFY ROOF SLOPES & ADJUST SEAT DEPTH AS NECESSARY.

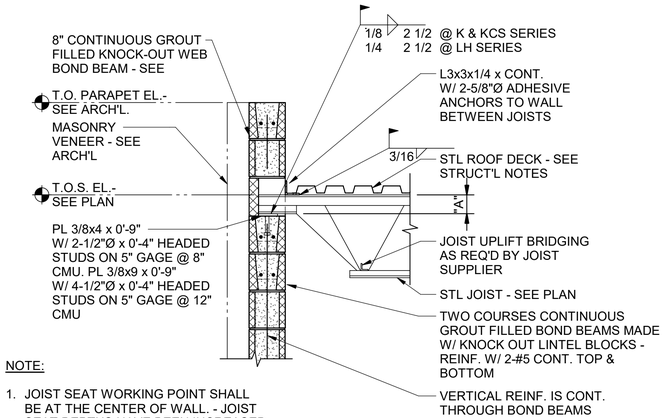
1 S-019 TYPICAL KCS OR K SERIES STEEL JOIST BEARING ON PERIMETER BEAM
N.T.S.



2 S-019 TYPICAL KCS OR K SERIES STEEL JOIST BEARING ON INTERIOR BEAM
N.T.S.



3 S-019 TYPICAL EXTENDED TOP CHORD FOR DECK SUPPORT
N.T.S.

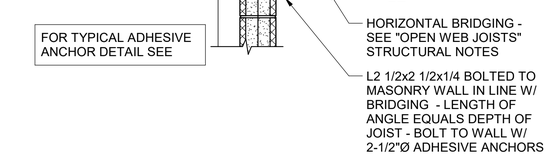


NOTE:

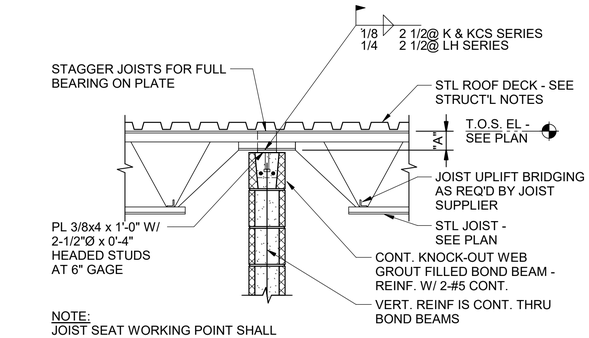
1. JOIST SEAT WORKING POINT SHALL BE AT THE CENTER OF WALL. - JOIST SEAT DEPTHS HAVE BEEN INCREASED TO ALLOW FOR THIS.
2. STEP BOND BEAM AS REQUIRED TO FOLLOW SLOPE OF ROOF. SEE DETAIL

JOIST SEAT BEARING DEPTH "A"		
JOIST SERIES	8" CMU	12" CMU
K & KCS	4"	7"
LH	5"	7"

4 S-019 TYPICAL JOIST BEARING ON EXTERIOR MASONRY WALL
N.T.S.



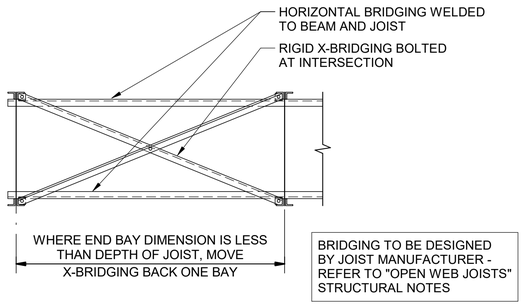
5 S-019 TYPICAL HORIZONTAL BRIDGING TO CMU
N.T.S.



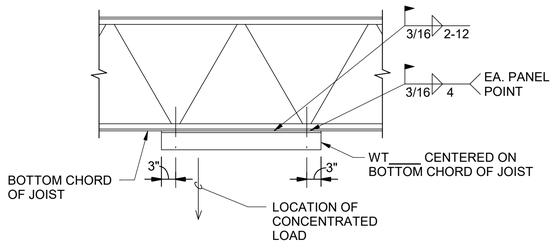
NOTE:
JOIST SEAT WORKING POINT SHALL BE AT CENTER OF WALL. - JOIST SEAT DEPTH HAS BEEN INCREASED TO ALLOW FOR THIS.

JOIST SEAT BEARING DEPTH "A"		
JOIST SERIES	8" CMU	12" CMU
K & KCS	4"	7"
LH	5"	7"

6 S-019 TYPICAL JOIST BEARING ON 8" INTERIOR CMU WALL
N.T.S.



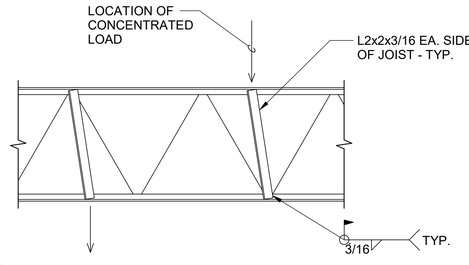
7 S-019 TYPICAL CROSS-BRIDGING AT END BAY FOR K AND KCS SERIES JOISTS
N.T.S.



NOTES:

1. THIS DETAIL APPLIES WHEREVER A CONCENTRATED LOAD GREATER THAN 100 POUNDS DOES NOT OCCUR WITHIN 4" OF A JOIST BOTTOM CHORD PANEL POINT. MAXIMUM LOAD TO BE APPLIED WITHOUT CONSULTATION WITH ENGINEER IS 250 POUNDS. DO NOT PLACE CONCENTRATED LOADS CLOSER THAN 4'-0" O.C.
2. ALL HANGERS OR ATTACHMENTS TO JOISTS SHALL BE PLACED CONCENTRIC WITH THE BOTTOM CHORD.

8 S-019 TYPICAL JOIST BOTTOM CHORD REINFORCEMENT
N.T.S.



NOTES:

1. THIS DETAIL APPLIES WHEREVER A CONCENTRATED LOAD GREATER THAN 100 POUNDS OCCURS MORE THAN 4" AWAY FROM A JOIST TOP OR BOTTOM CHORD PANEL POINT. MAXIMUM LOAD TO BE APPLIED WITHOUT CONSULTATION WITH ENGINEER IS 250 POUNDS. DO NOT PLACE CONCENTRATED LOADS CLOSER THAN 4'-0" O.C.
2. ALL HANGERS OR ATTACHMENTS TO JOISTS SHALL BE PLACED CONCENTRIC WITH THE TOP AND BOTTOM CHORD(S) AND SHALL NOT ATTACH TO ONLY ONE ANGLE OF CHORD.

9 S-019 TYPICAL JOIST CHORD REINFORCEMENT
N.T.S.

Autodesk Docs://067812104 West U WWTP/West U WWTP – Struct_R22.rvt

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No.	Revisions	By	Date

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS VIII

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-019

shaping the built environment
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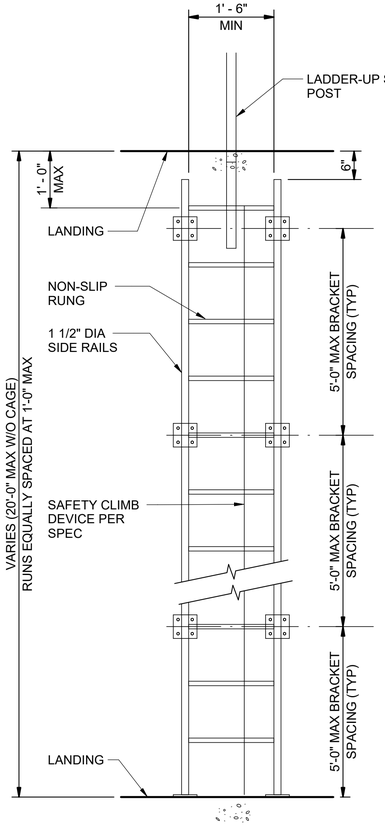
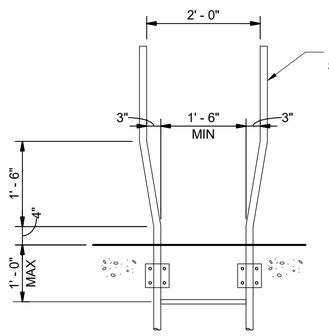
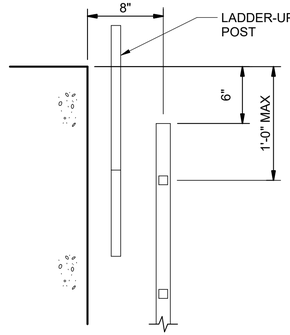


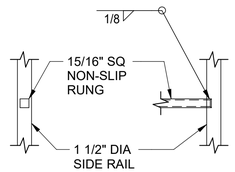
ELEVATION



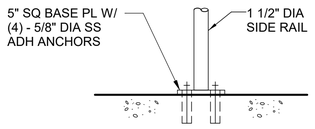
@ STEP THRU



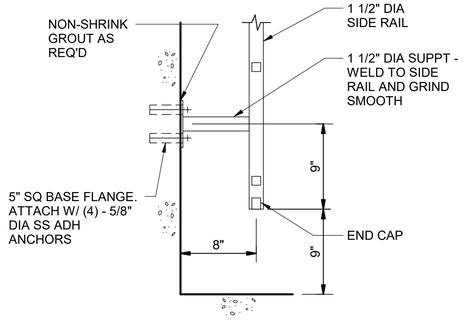
AT ROOF ACCESS HATCH



RUNG DETAIL

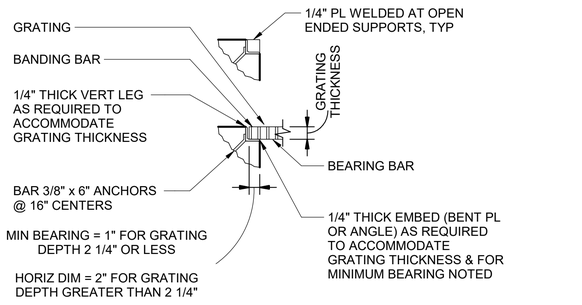


BASE CONNECTION

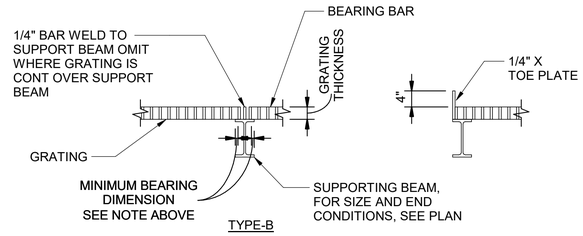


BRACKET CONNECTION

1 S-020 TYPICAL LADDER
N.T.S.



TYPE-A



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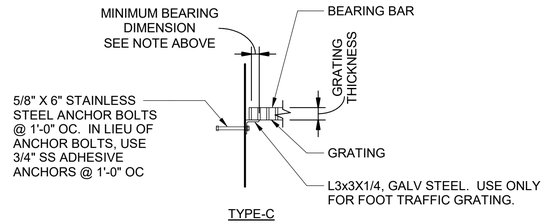
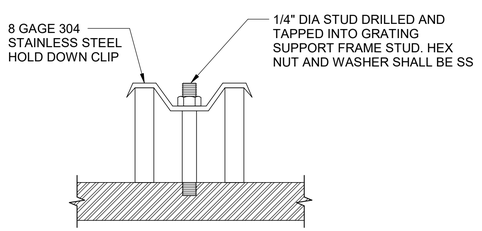


TYPE-C

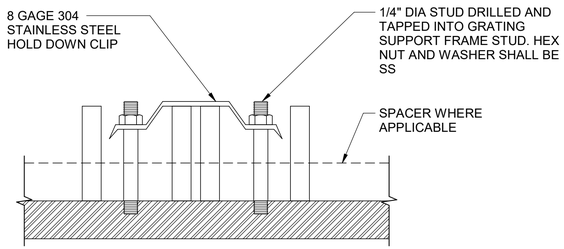
NOTE:

1. ALL BEARING ANGLES AND GRATING EMBEDS SHALL MATCH GRATING MATERIAL UNO ON DRAWINGS.

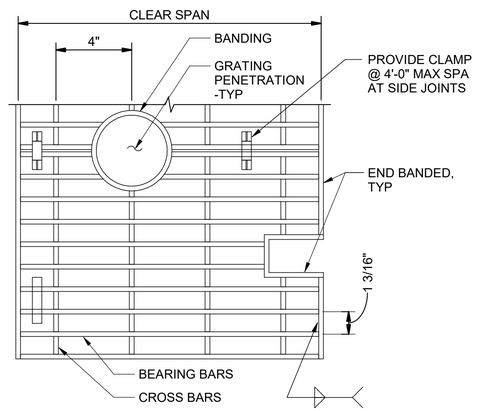
2 S-020 TYPICAL GRATING SUPPORT
N.T.S.



3 S-020 TYPICAL GRATING CONNECTION AT EXTERIOR
N.T.S.



4 S-020 TYPICAL GRATING CONNECTION AT PANEL JOINT
N.T.S.



NOTES:

1. GRATING SHALL CONFORM TO THE METAL BAR GRATING MANUAL OF NAAMM. UNLESS OTHERWISE SPECIFIED.
2. GRATING SHALL BE AS NOTED ON THE DRAWINGS
3. WHERE BOLTED GRATING IS SPECIFIED, PROVIDED 4 GRATING CLIPS APPROX 4" FROM THE CORNERS OF EACH PIECE. ADJACENT PIECES MAY BE ANCHORED WITH ONE CLIP AND TWO STUDS
4. GRATING SHALL BE REMOVABLE.
5. CLEAR SPAN SHALL BE PLAN DIMENSION, FACE TO FACE OF OPENING.
6. WELD END BANDING TO BEARING BARS PER MANUFACTURER'S RECOMMENDATIONS.

5 S-020 TYPICAL GRATING
N.T.S.

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No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
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PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS IX

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET

S-020

shaping the built environment
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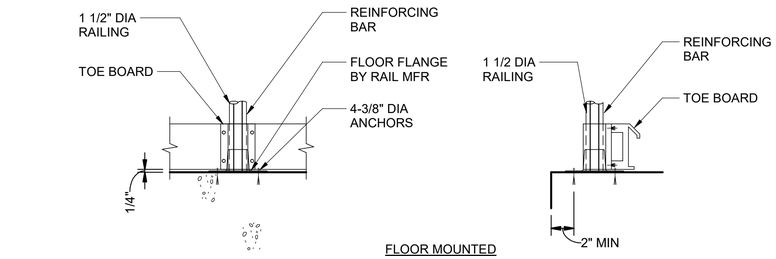
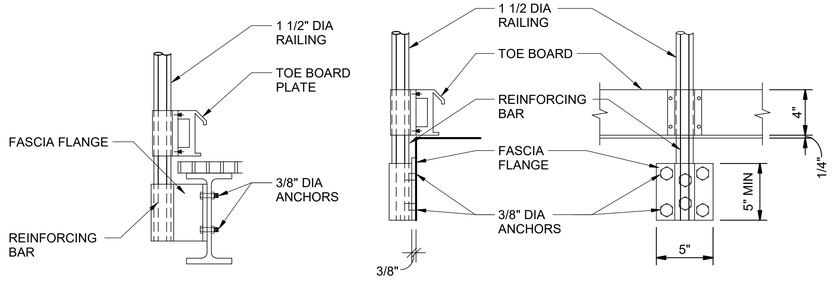
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



FLOOR MOUNTED



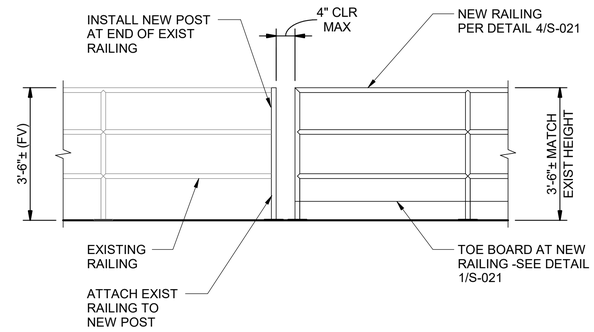
AT BEAM

SIDE MOUNT DETAIL

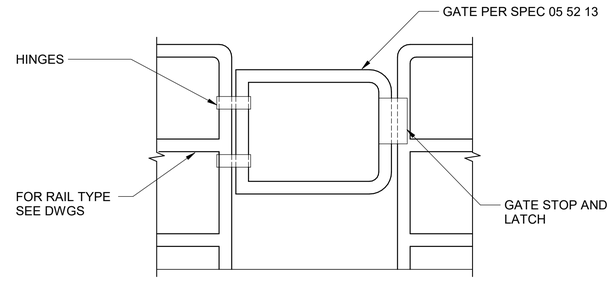
NOTE:

1. ALL ANCHORS, BOLTS, NUTS, AND CONNECTIONS SHALL BE TYPE 316 STAINLESS STEEL.

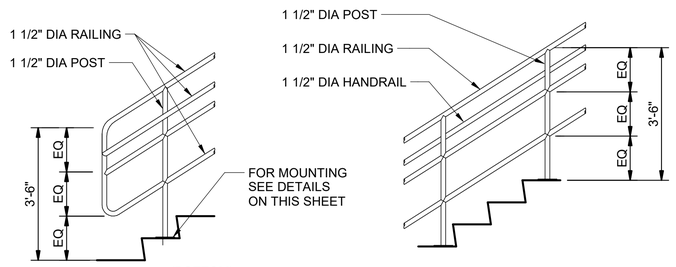
1 S-021 TYPICAL RAILING POST MOUNTING
N.T.S.



2 S-021 TYPICAL EXISTING TO NEW RAILING TRANSITION
N.T.S.

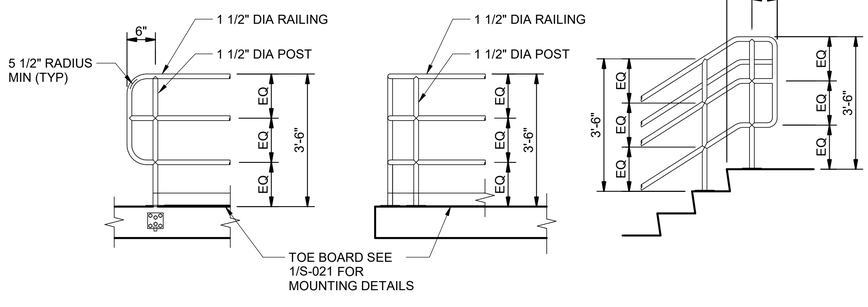


3 S-021 TYPICAL SWING GATE AT RAILING OPENING
N.T.S.



(BOTTOM)
TYPICAL STAIR END

TYPICAL STAIR

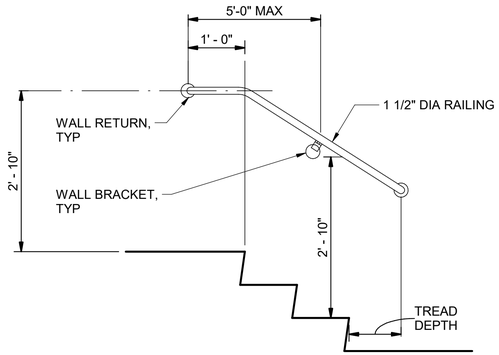


TYPICAL RAILING END

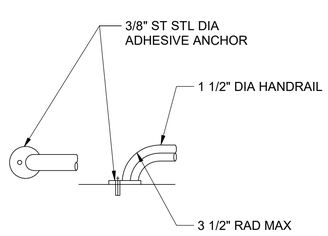
TYPICAL RAILING CORNER

TYPICAL STAIR END

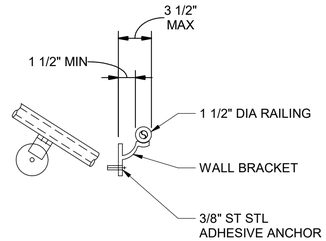
4 S-021 TYPICAL RAILING
N.T.S.



TYPICAL WALL RAILING ELEVATION



WALL RETURN



WALL BRACKET

5 S-021 TYPICAL ALUMINUM WALL RAIL DETAIL
N.T.S.

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No.	Revisions	By	Date

STATE OF TEXAS
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08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS X

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-021

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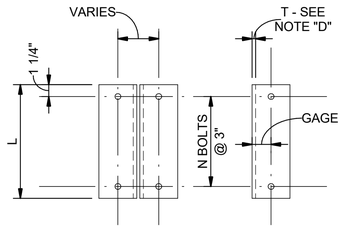
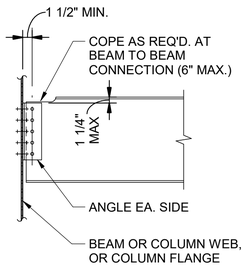
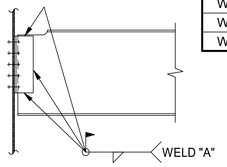
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986





BOLTED/BOLTED CONNECTION



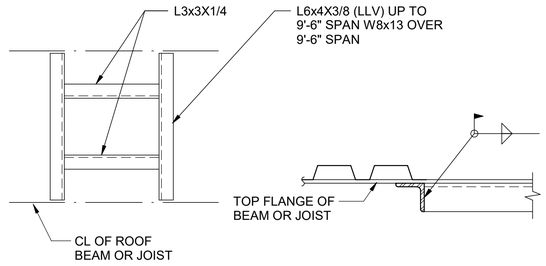
WELD "A"
STANDARD CONN. - 3/16"
HEAVY CONN. - 1/4"

BOLTED/WELDED CONNECTION

BEAM SIZE	STANDARD			HEAVY		
	ANGLE LENGTH (L)	NO OF ROWS OF BOLTS (N)	MAX BEAM REACTION (KIPS)	ANGLE LENGTH (L)	NO OF ROWS OF BOLTS (N)	MAX BEAM REACTION (KIPS)
W8	5 1/2"	2	17	-	-	NA
W10	5 1/2"	2	19	-	-	NA
W12	5 1/2"	2	20	8 1/2"	3	28
W14	8 1/2"	3	32	11 1/2"	4	42
W16	8 1/2"	3	35	11 1/2"	4	46
W18	11 1/2"	4	55	14 1/2"	5	68
W21	11 1/2"	4	64	17 1/2"	5	94
W24	14 1/2"	5	89	20 1/2"	7	123
W27	14 1/2"	5	89	23 1/2"	8	148
W30	17 1/2"	6	104	26 1/2"	9	167
W33	20 1/2"	7	119	29 1/2"	10	186
W36	23 1/2"	8	133	29 1/2"	10	186
W40	26 1/2"	9	147	29 1/2"	10	213
W44	29 1/2"	10	160	29 1/2"	10	213

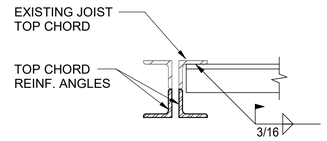
NOTES:

1. RIGHT ANGLE CONNECTIONS SHALL BE DOUBLE ANGLE AS SCHEDULED. SKEWED CONNECTIONS SHALL BE BENT DOUBLE ANGLES OR BENT PLATES PER DET 3/S-022.
2. NOTED REACTIONS ARE FOR SERVICE LOADS.
3. REFER TO "STRUCTURAL STEEL CONNECTIONS" IN STRUCTURAL NOTES FOR ADDN'L INFO.
4. MINIMUM CONNECTION: ANGLE THICKNESS IS 1/4" TYPICAL AND 5/16" AT W33 AND DEEPER "HEAVY" CONNECTIONS.
5. BOLTS ARE 3/4" DIA TYP AND 7/8" DIA AT W40 & W44 "HEAVY CONNECTIONS". BOLTS ARE A325N.
6. BEAM CONNECTIONS ARE "STANDARD" UNO ON PLAN.
7. CONTRACTOR SHALL CHECK DESIGN OF ALL BEAMS REQUIRING COPES GREATER THAN SHOWN IN DETAIL BASED ON REACTIONS SHOWN IN TABLE. CONNECTION ANGLES, BOLTS AND WELDS SHALL NOT BE LESS THAN THAT SHOWN.



PLAN

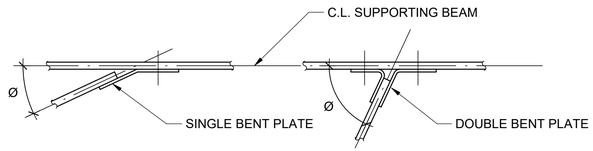
SECTION "A"



SECTION "B"

2 / S-022 TYPICAL ROOF OPENING
N.T.S.

1 / S-022 TYPICAL AISC TYPE 2 SIMPLE FRAMING CONNECTIONS
N.T.S.

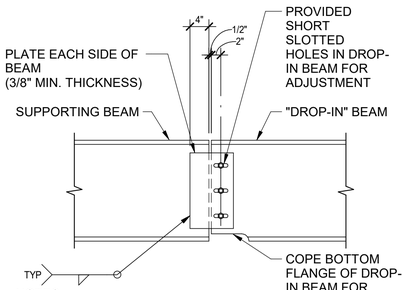


Ø < 60°

1. DESIGN CONNECTION FOR SINGLE SHEAR AND ECCENTRICITY.

60° ≤ Ø

1. WHERE "Ø" > 85° USE BENT DOUBLE ANGLES IN LIEU OF BENT PLATES.

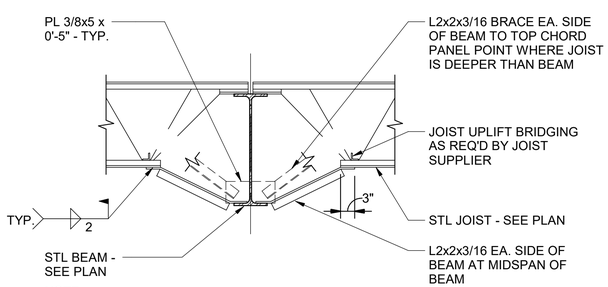


NOTES:

1. SPLICE CONNECTIONS SHALL BE DESIGNED BY THE CONTRACTOR TO MEET THE REQUIREMENTS SPECIFIED FOR STANDARD CONNECTIONS IN THE STRUCTURAL NOTES.
2. PROVIDE SHIM PLATES AS REQ'D & BETWEEN WEB AND SPLICE PLATES.

4 / S-022 TYPICAL BOLTED BEAM SPLICE DETAIL
N.T.S.

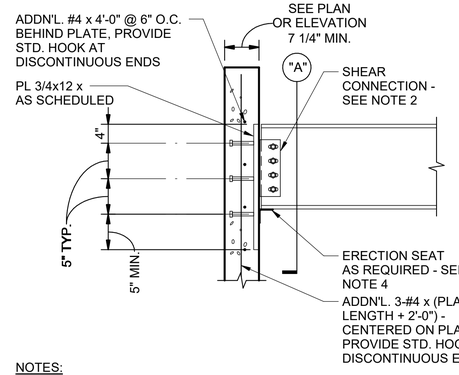
3 / S-022 TYPICAL SKEWED SIMPLE FRAMING CONNECTIONS DETAIL
N.T.S.

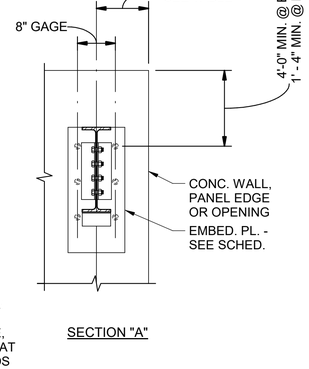


NOTE:
INSTALL BRACING AFTER ROOF DEAD LOAD HAS BEEN APPLIED

6 / S-022 TYPICAL JOIST CONNECTION TO BOTTOM FLANGE OF BEAM
N.T.S.

CONNECTION LOAD CAPACITY (NOTE 5)				
MAX BEAM DEPTH	PLATE LENGTH (NOTE 4)	NUMBER OF STUDS	MAXIMUM REACTION (KIPS) EDGE DIM. ≥ 2'-4"	MAXIMUM REACTION (KIPS) EDGE DIM. < 2'-4"
10"	1'-2"	4	33	16
16"	1'-7"	6	45	20
20"	2'-0"	8	54	23
26"	2'-5"	10	58	26
30"	2'-10"	12	63	30
36"	3'-3"	14	66	33





SECTION "A"

NOTES:

1. ALL BEAM REACTIONS ARE IN KIPS, AT STRENGTH LEVEL LOADS (FACTORED).
2. SHEAR CONNECTION SHALL BE DESIGNED BY THE DELEGATED DESIGNER OR IN ACCORDANCE WITH THE TYPICAL SHEAR CONNECTION DETAILS CONTAINED IN THESE DRAWINGS.
3. HEADED STUDS SHALL BE 3/4" DIA. x 0'-5".
4. PLATE LENGTH PROVIDED IN TABLE ACCOUNTS FOR A 3" TALL ERECTION SEAT. ERECTION SEAT BY ERECTOR AND SHALL EXTEND PLATE LENGTH AS REQUIRED.
5. THESE CAPACITIES ARE APPLICABLE FOR BEAMS WHICH ONLY HAVE VERTICAL (R=) REACTIONS AND MEET THE CONDITIONS PROVIDED IN THE DETAIL. REFER TO "STRUCTURAL STEEL CONNECTIONS" IN THE STRUCTURAL NOTES FOR ADDITIONAL INFORMATION.

5 / S-022 TYPICAL STEEL BEAM TO CONCRETE CONNECTION DETAIL
N.T.S.

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TBPE No. 928

No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
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PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

TYPICAL STRUCTURAL DETAILS XI

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-022

shaping the built environment
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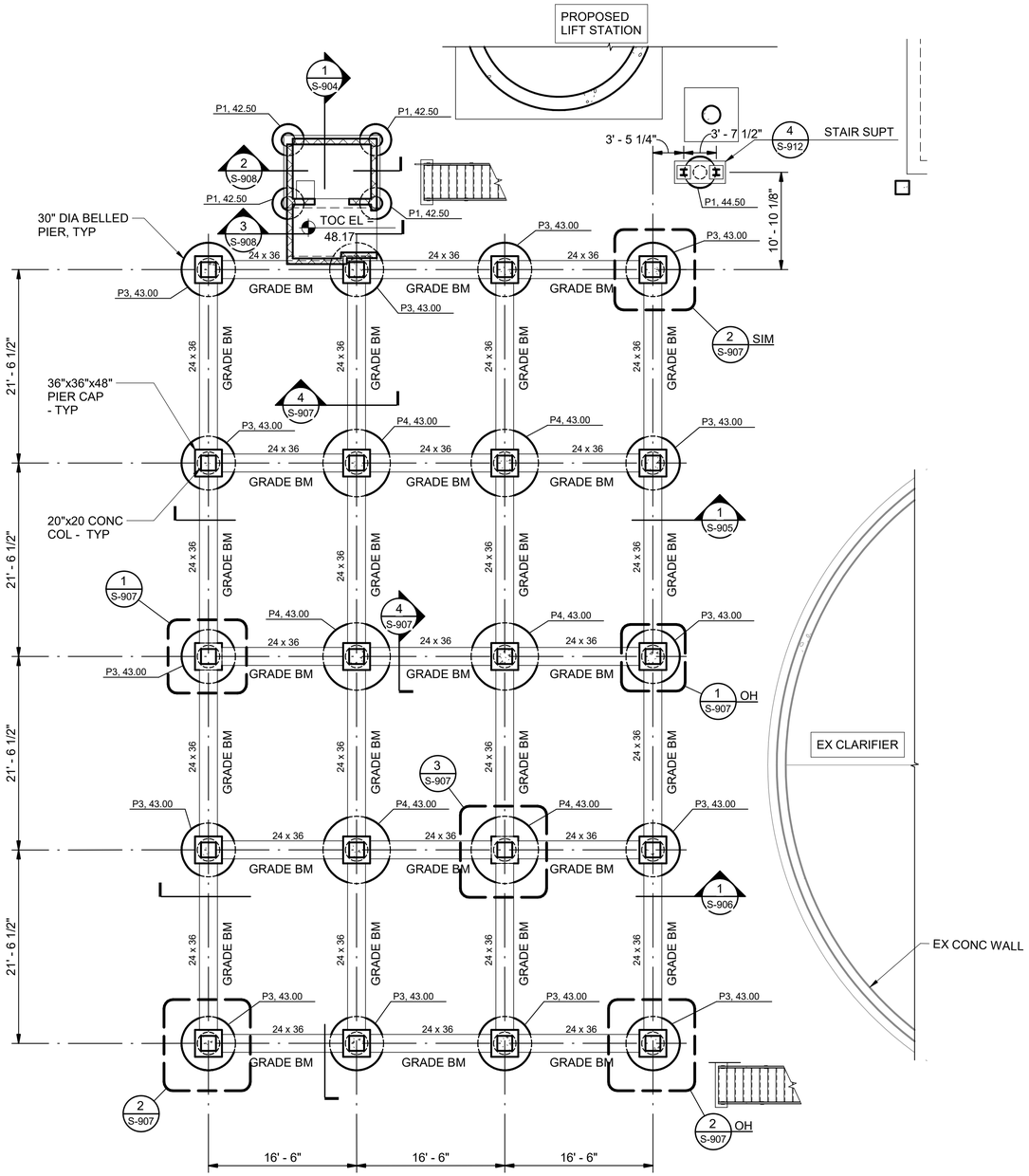
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



1 S-901 FOUNDATION PLAN
1/8" = 1'-0"

NORTH

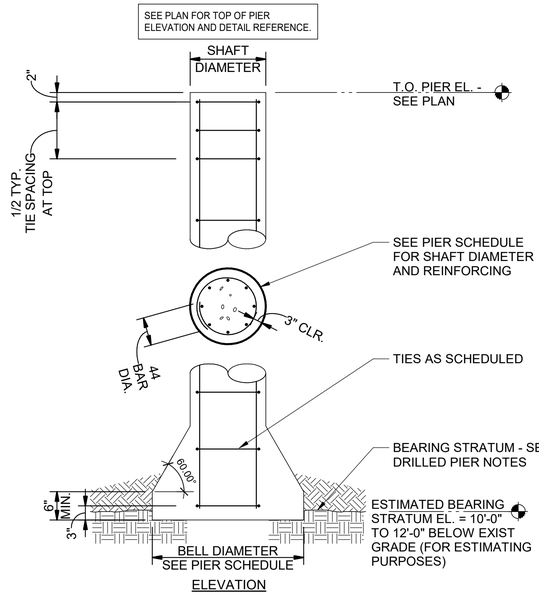
PLAN NOTES:

1. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATION AND DIMENSIONS OF FLOOR PENETRATIONS NOT DIMENSIONED ON PLAN.
2. THE CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES AND PIPING PRIOR TO BEGINNING EXCAVATION AND PIER DRILLING. NOTIFY ENGINEER IN CASE OF CONFLICT PRIOR TO RELOCATING UTILITIES.
3. CENTERLINES OF PIERS NOT SPECIFICALLY LOCATED ON PLAN BY NOTE OR DIMENSION SHALL BE LOCATED AS FOLLOWS:
   A. SUPPORTING FREESTANDING COLUMNS: CENTERLINES OF COLUMN.
   B. SUPPORTING GRADE BEAMS AND WALLS: CENTERLINE OF GRADE BEAMS AND WALLS; CENTRLINE OF GRADE BEAM OF WALL IN ONE DIRECTION, GRID OR AS NOTED IN OTHER DIRECTION. AT CORNER CONDITIONS: CENTERLINES OF GRADE BEAMS OR WALLS.
   C. COLUMNS EMBEDDED IN GRADE BEAMS OR WALLS (PILASTERS): CENTERLINESOF THE COLUMN.
4. PIERS ARE NOTED THUS ON PLANS:

PX, TO PIER EL
TO PIER DTL

SEE SHEET 2/S-901 FOR DRILLED PIER SCHEDULE.

5. THE GRADE BEAMS ARE RATED FOR HS-20 LOADING.



ELEVATION

PIER SCHEDULE

MARK	SHAFT DIAMETER	BELL DIAMETER	VERTICAL BARS	TIES	CAPACITY
P1	1'-6"	3'-6"	4 - #6	#3 @ 12"OC	50 KIPS
P3	2'-6"	6'-0"	9 - #8	#4 @ 12"OC	148 KIPS
P4	2'-6"	7'-6"	9 - #8	#4 @ 12"OC	230 KIPS

2 S-901 DRILLED PIER WITH UNDERREAMED SHAFT
N.T.S.

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TBPE No. 928

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JOHN D. MISCHKOT
107566
LICENSED
PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING
FOUNDATION PLAN

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-901

shaping the built environment
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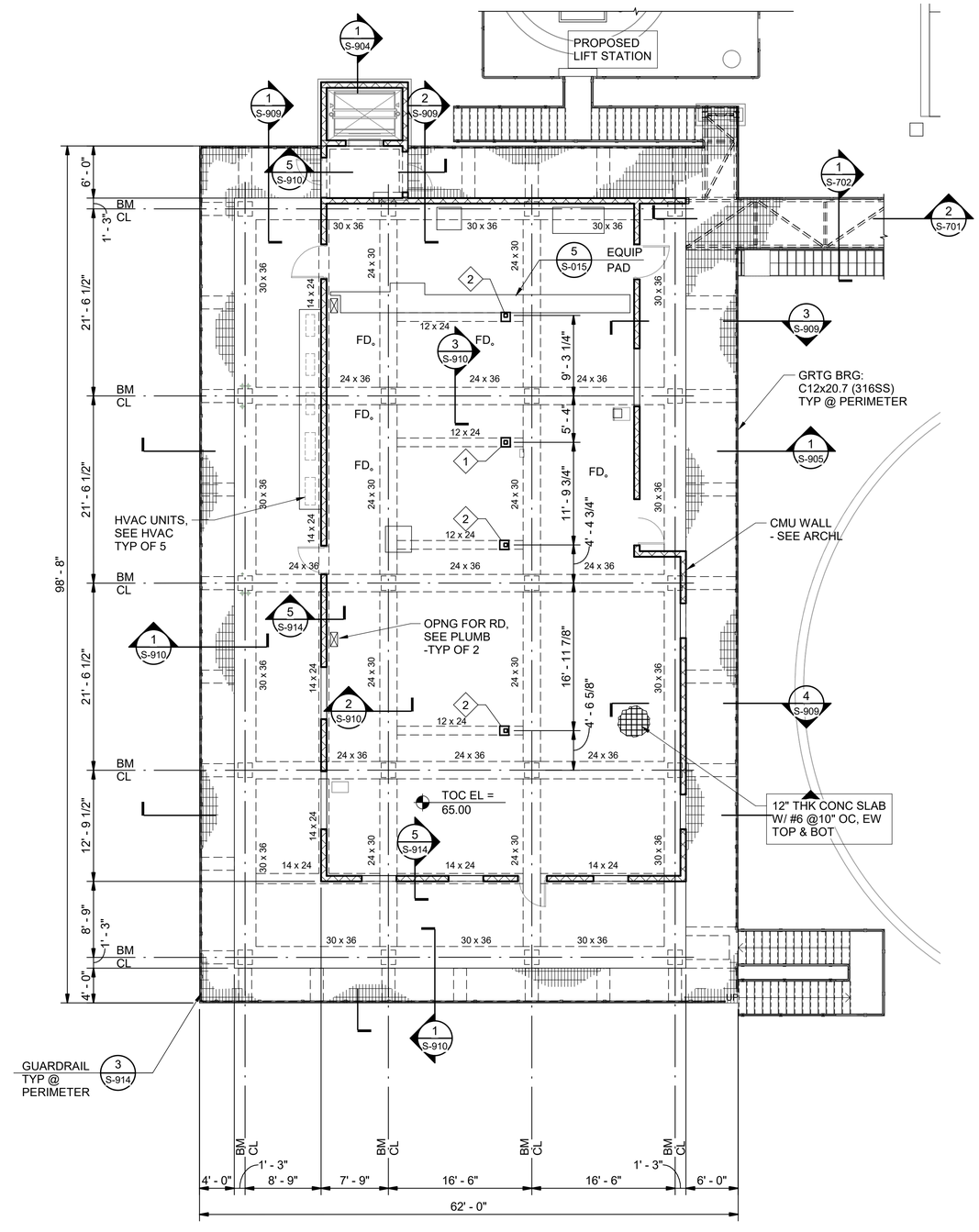

1 S-902 INTERMEDIATE FLOOR PLAN
1/8" = 1'-0"

NORTH

PLAN NOTES:

1. COORDINATE WITH ARCHITECTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, HVAC, AND OTHER DISCIPLINES FOR LOCATIONS OF EQUIPMENT, FLOOR AND WALL PENETRATIONS, SLOPES, OR EMBEDDED ITEMS NOT SHOWN.
2. TYPICAL ADDITIONAL REINFORCING BARS FOR OPENINGS AND CORNERS IN THIS SHEET ARE NOT SHOWN FOR CLARITY. REFER TO THE TYPICAL DETAILS FOR THE ADDITION REINFORCING REQUIREMENTS.
3. COORDINATE EQUIPMENT PAD AND HOUSEKEEPING PAD DIMENSIONS AND ELEVATION WITH THE EQUIPMENT MANUFACTURER, MECHANICAL, AND ELECTRICAL.
4. SEE THE STRUCTURAL NOTES ON SHEETS S-001 THRU S-003.
5. SEE THE STRUCTURAL TYPICAL DETAILS ON SHEETS S-012 THRU S-022.

KEY NOTES:

1. HSS 5x5x5/16 COLUMN, BASE PL TYPE BP-1. SEE DETAILS 1/S-018 & 9/S-018.
2. HSS 5x5x5/16 COLUMN, BASE PL TYPE BP-2. SEE DETAILS 6/S-018 & 9/S-018.

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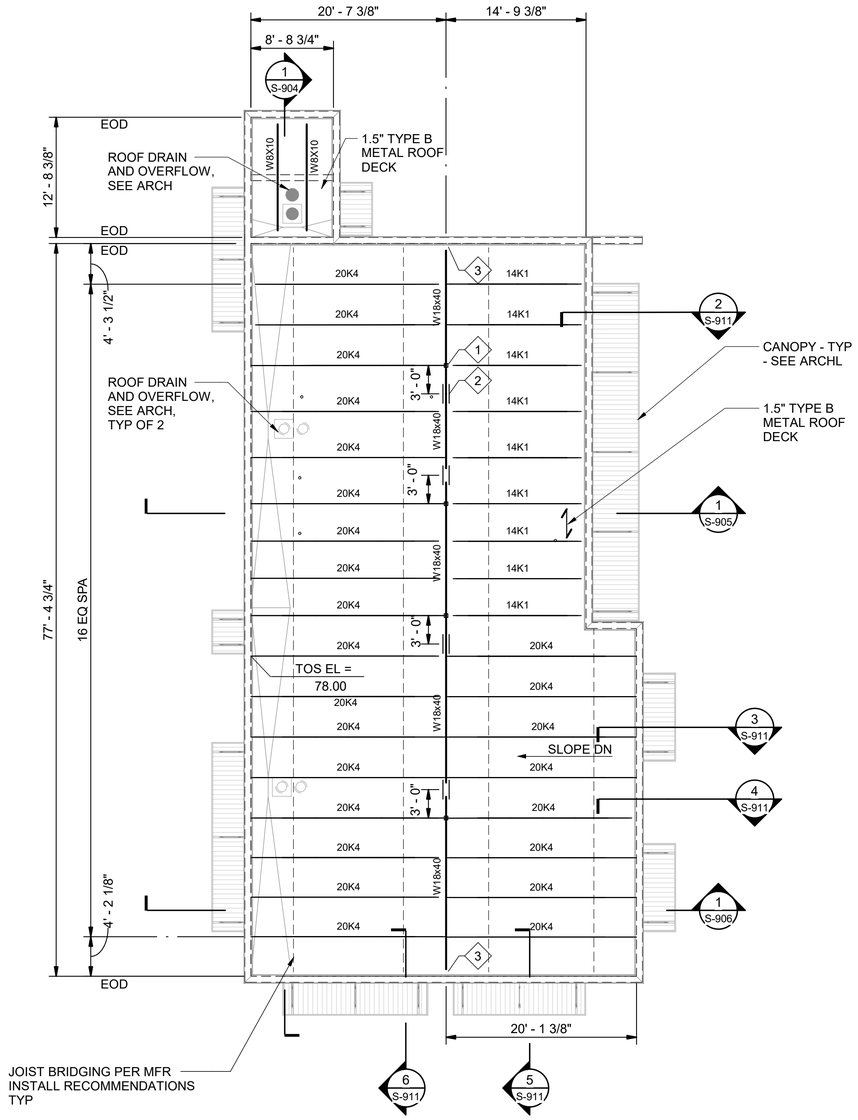
CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING
INTERMEDIATE PLAN

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

SHEET
S-902

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986



1 S-903 ROOF FRAMING PLAN
1/8" = 1'-0"

NORTH

ROOF PLAN NOTES:

1. TOP OF ROOF IS SLOPED FOR DRAINAGE, SEE THE ARCHITECTURAL DRAWINGS FOR SLOPE AND ROOF DRAIN LOCATIONS.
2. TOP OF STEEL ELEVATION (TOS EL) = TOP OF BEAM, JOIST, OR MEMBER SUPPORTING ROOF DECK = BOTTOM OF ROOF DECK.
3. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATION AND DIMENSIONS OF ROOF PENETRATIONS NOT DIMENSIONED ON PLAN, CONTRACTOR TO COORDINATE.
4. STEEL JOISTS SHALL BE CENTERED ON AND EQUALLY SPACED BETWEEN COLUMN CENTERLINES, UNLESS NOTED OTHERWISE.
5. JOISTS NOTED AS "SP" ARE SPECIAL DESIGNS TO BE PROVIDED BY SUPPLIER FOR LOADINGS INDICATED.
6. SEE STRUCTURAL NOTES ON SHEETS S-001 THRU S-003.

KEY NOTES:

1. TOP OF COLUMN, SEE DETAIL 3/S-018.
2. BEAM SPLICE, SEE DETAIL 4/S-022.
3. BEAM BEARING AT CMU, SEE DETAIL 8/S-018.

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WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING ROOF
FRAMING PLAN

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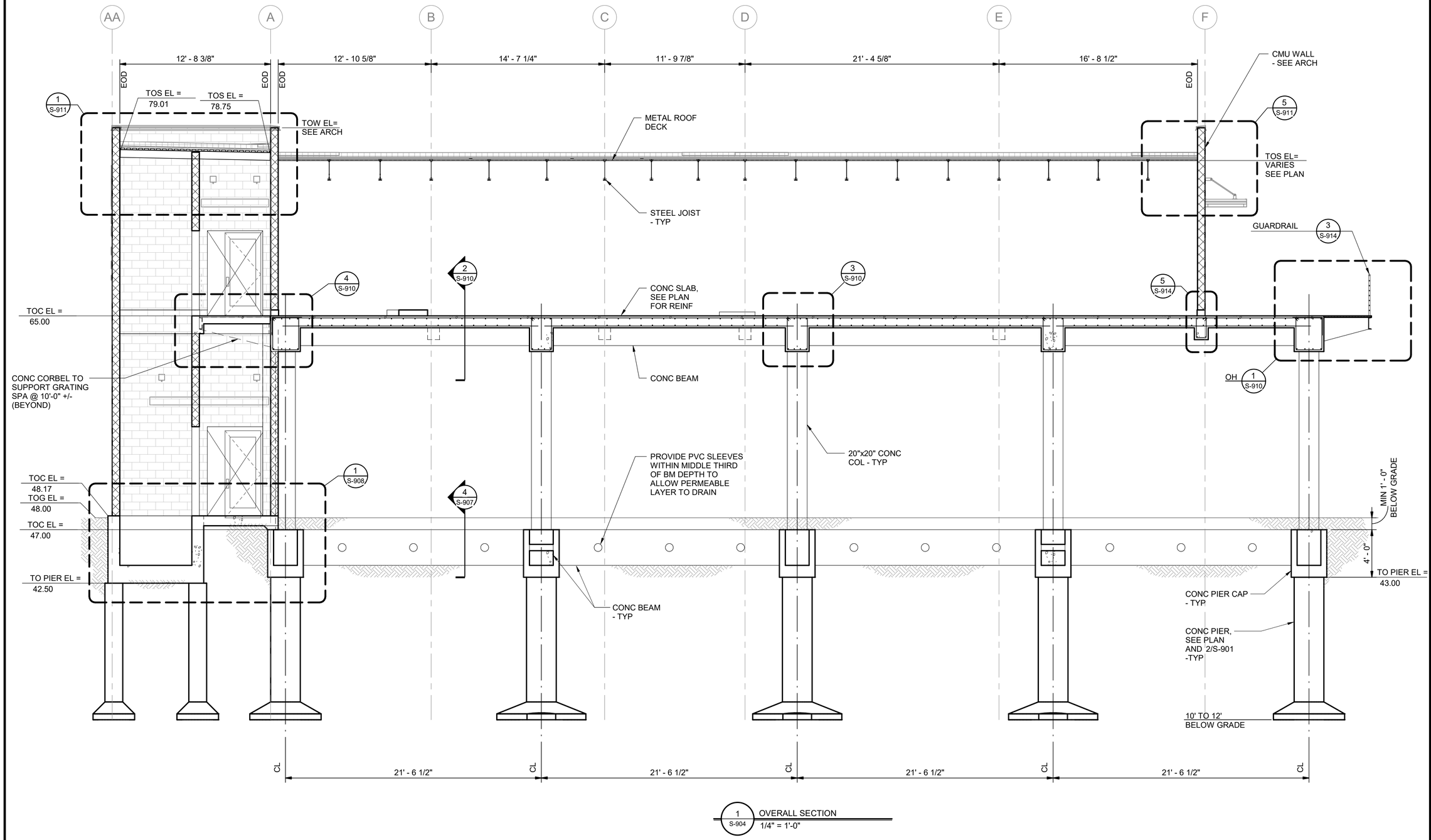

1 S-904 OVERALL SECTION
1/4" = 1'-0"

Autodesk Docs://067812104 West U WWTP/West U WWTP – Struct_R22.rvt

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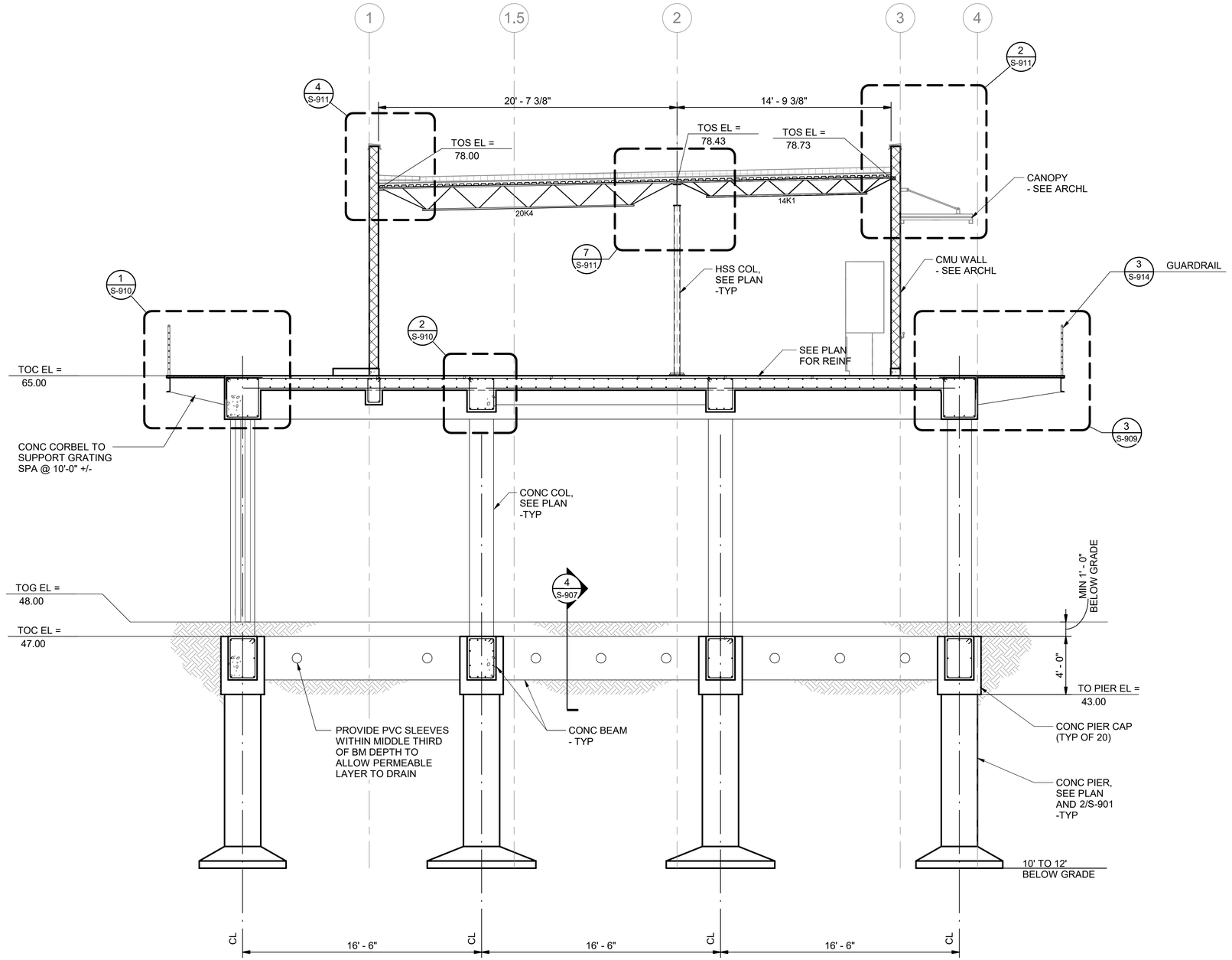

1 S-905 OVERALL SECTION
1/4" = 1'-0"

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

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CONTROL BUILDING OVERALL
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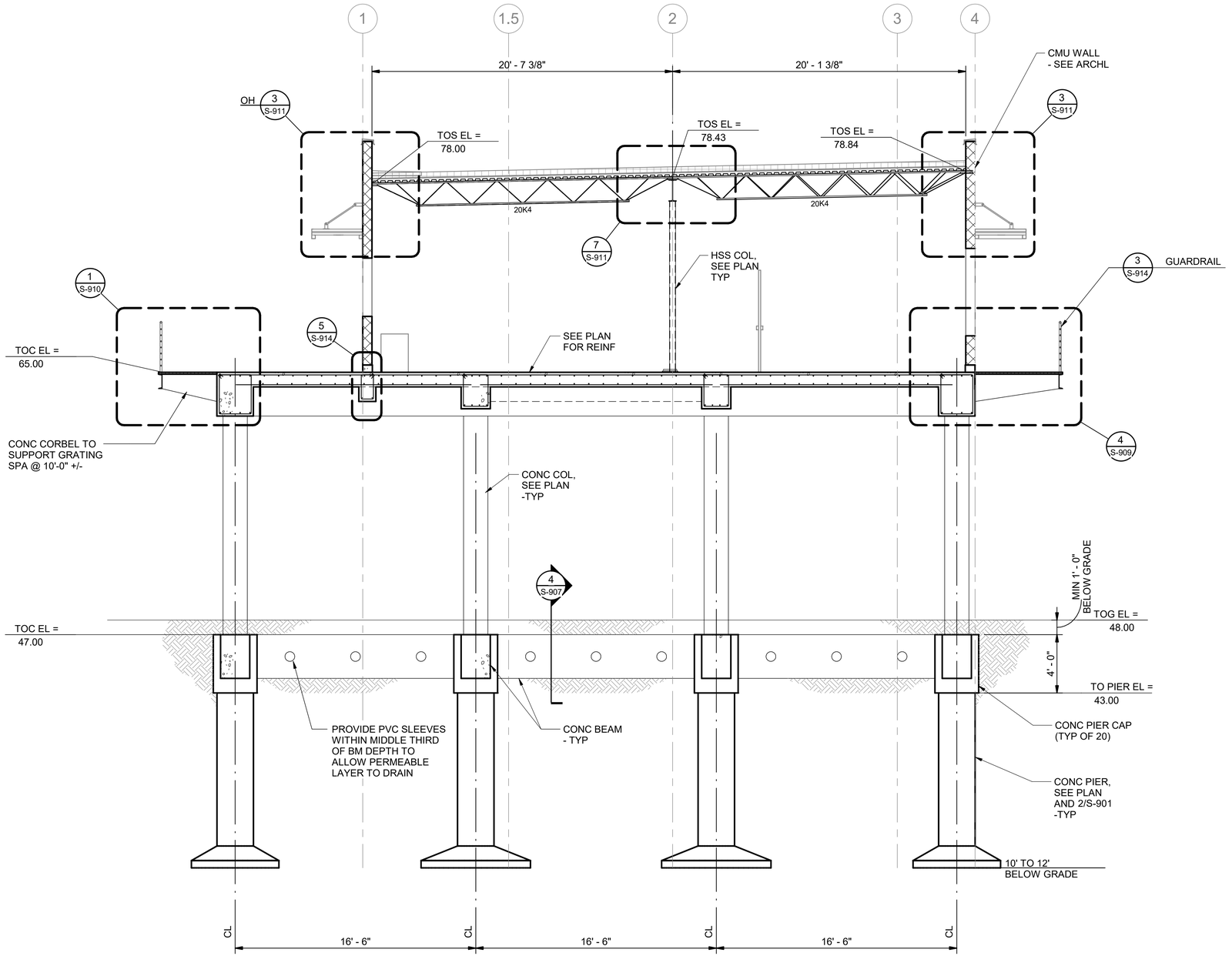

1 S-906 OVERALL SECTION

1/4" = 1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING OVERALL SECTION III

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SHEET

S-906

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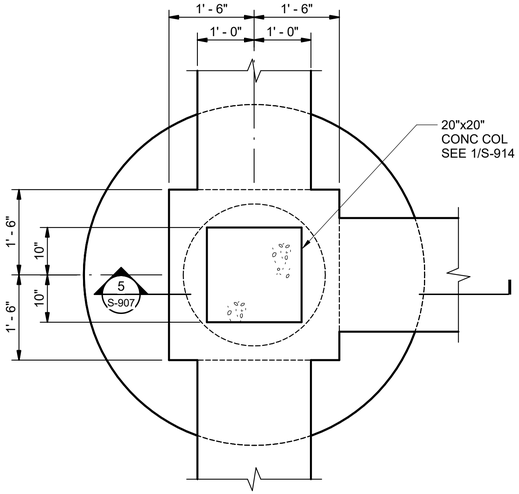
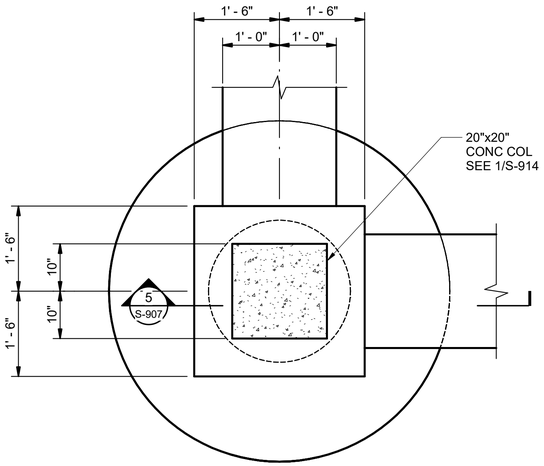
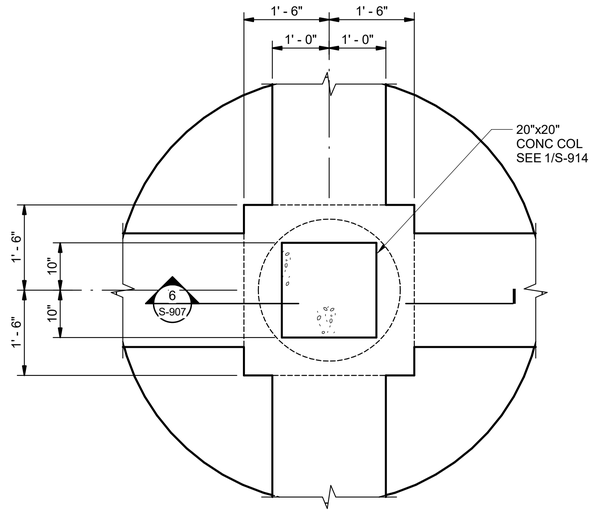


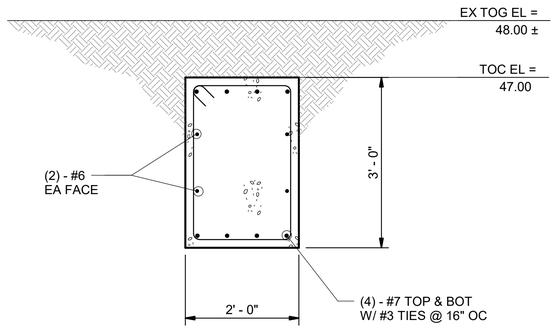
1 S-907 PLAN VIEW DETAIL
3/4" = 1'-0"



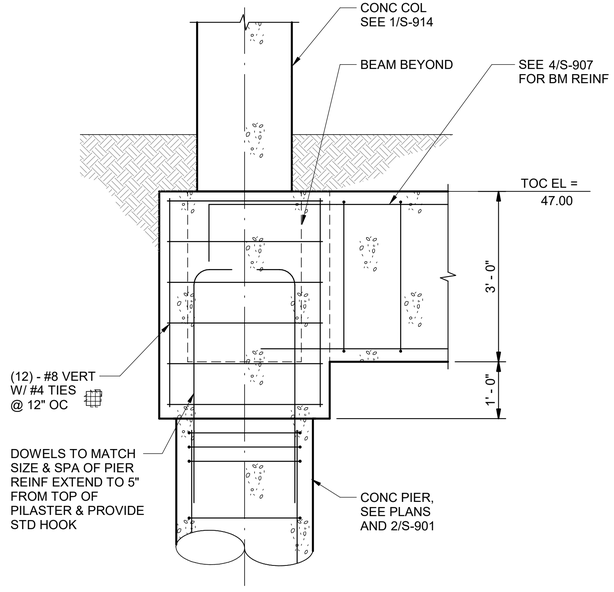
2 S-907 PLAN VIEW DETAIL
3/4" = 1'-0"



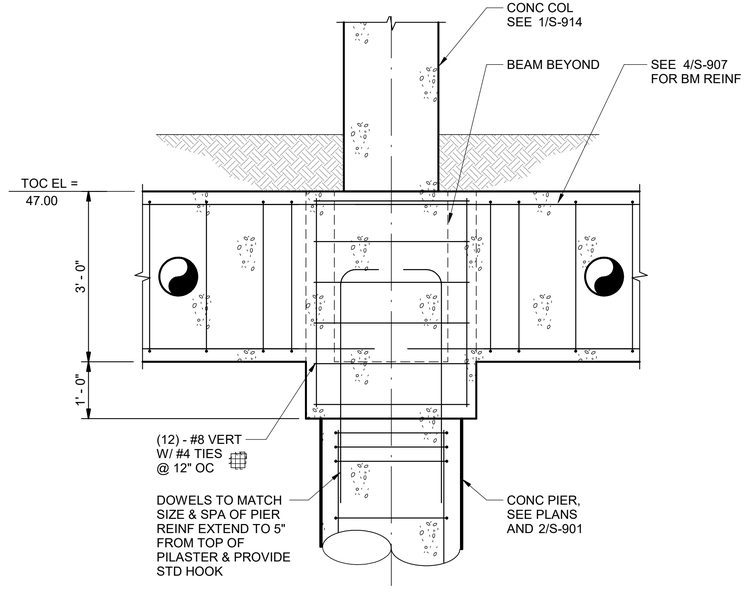
3 S-907 PLAN VIEW DETAIL
3/4" = 1'-0"



4 S-907 SECTION
3/4" = 1'-0"



5 S-907 SECTION
3/4" = 1'-0"



6 S-907 SECTION
3/4" = 1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS I

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SHEET
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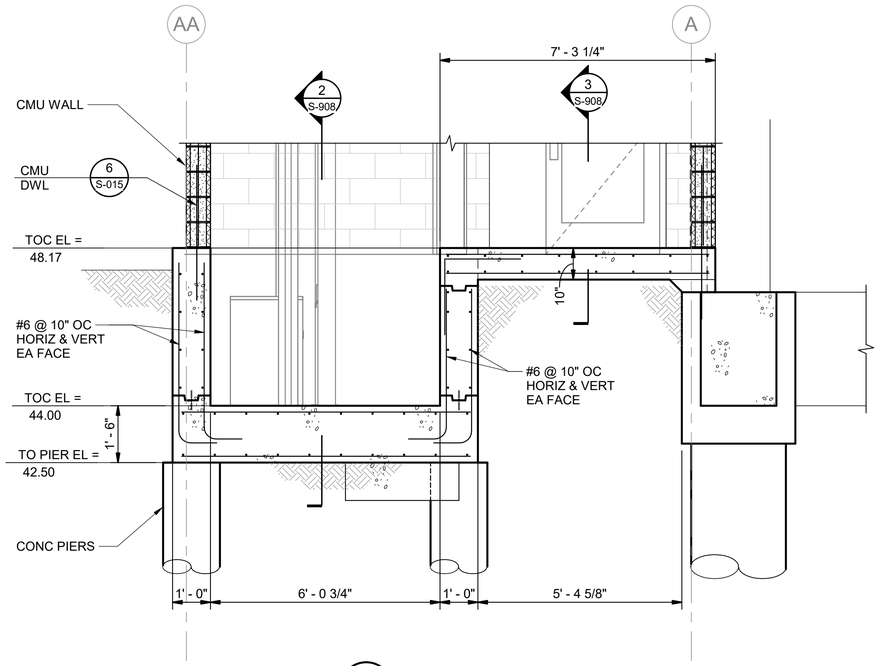
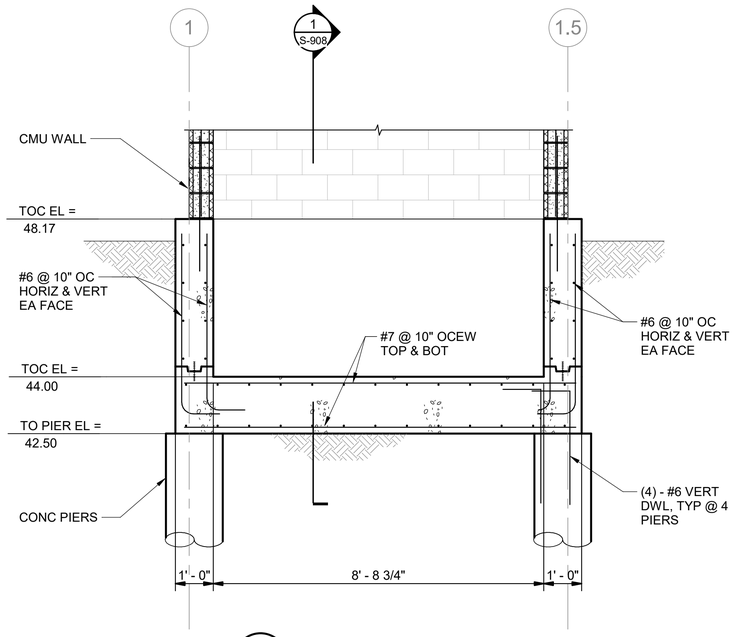


1 S-908 SECTION
1/2" = 1'-0"



2 S-908 SECTION
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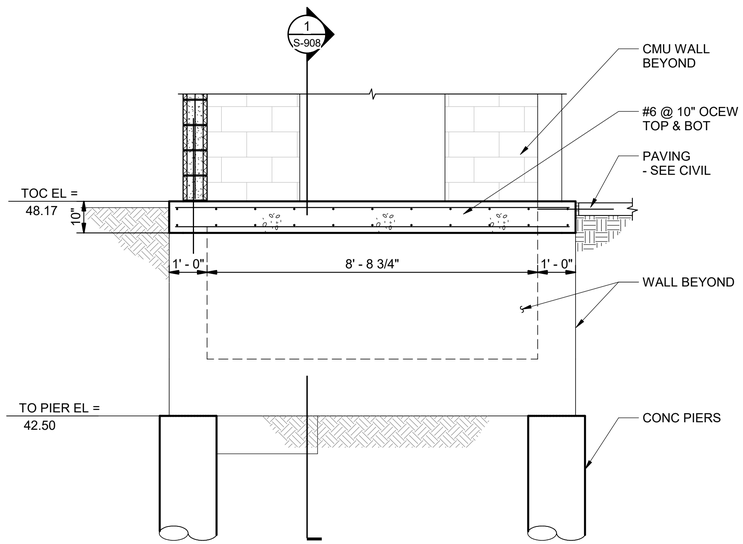

3 S-908 SECTION
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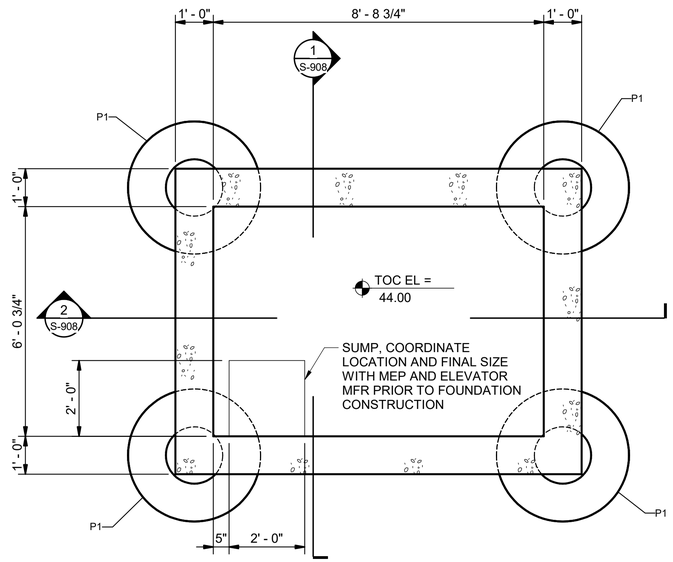

4 S-908 ELEVATOR SHAFT FOUNDATION
1/2" = 1'-0"

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CONTROL BUILDING SECTIONS AND DETAILS II

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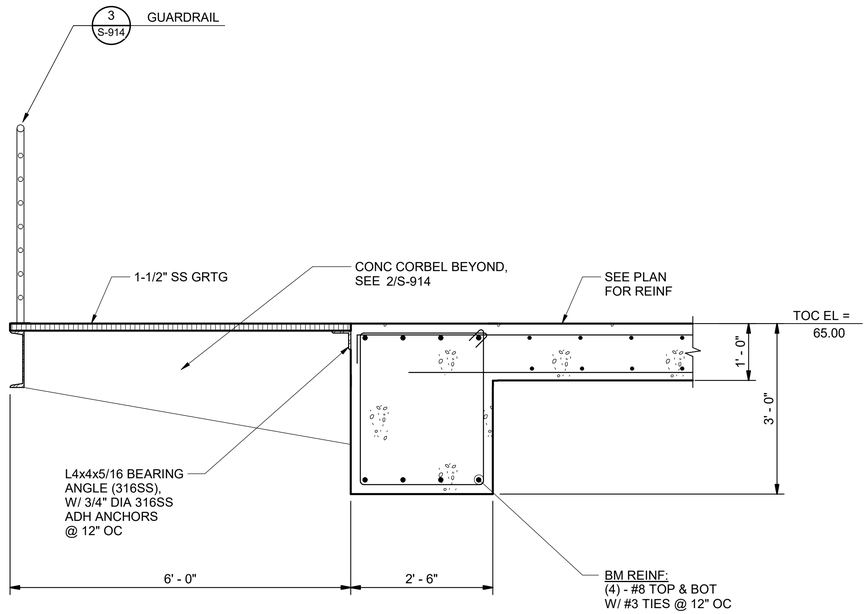
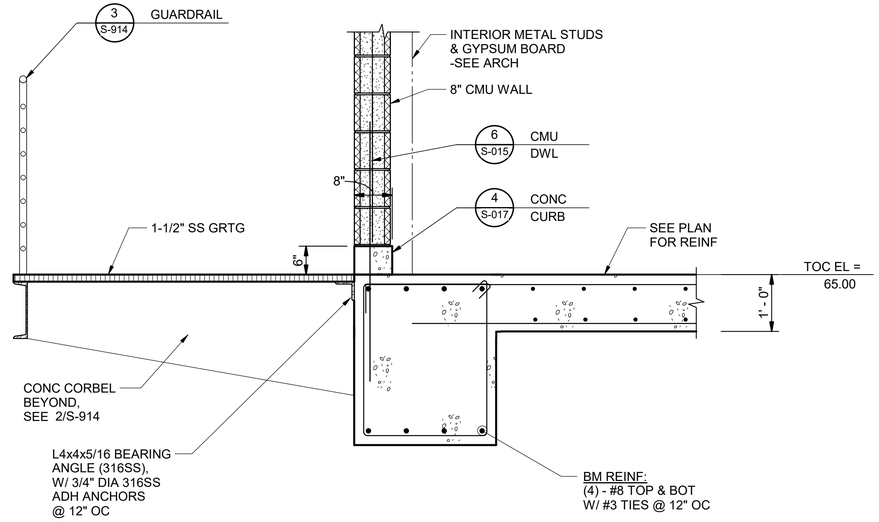


1 S-909 SECTION
3/4" = 1'-0"



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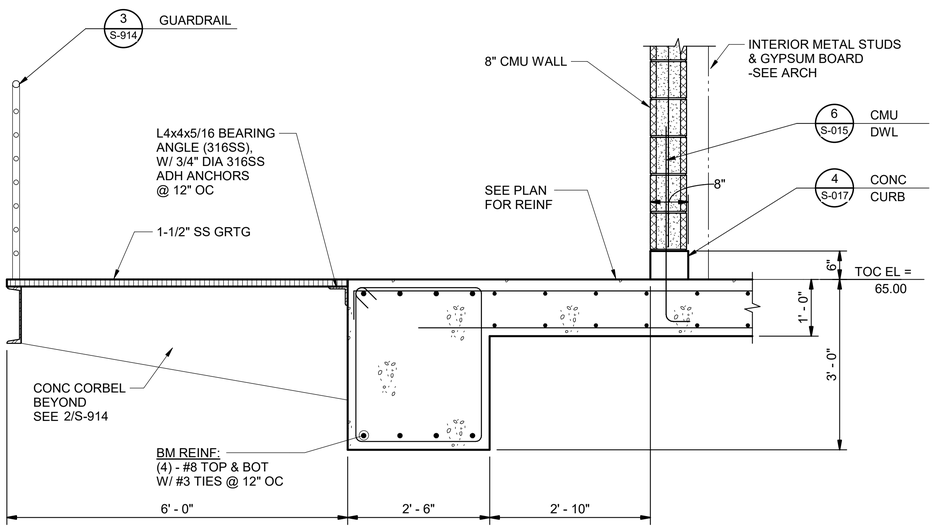

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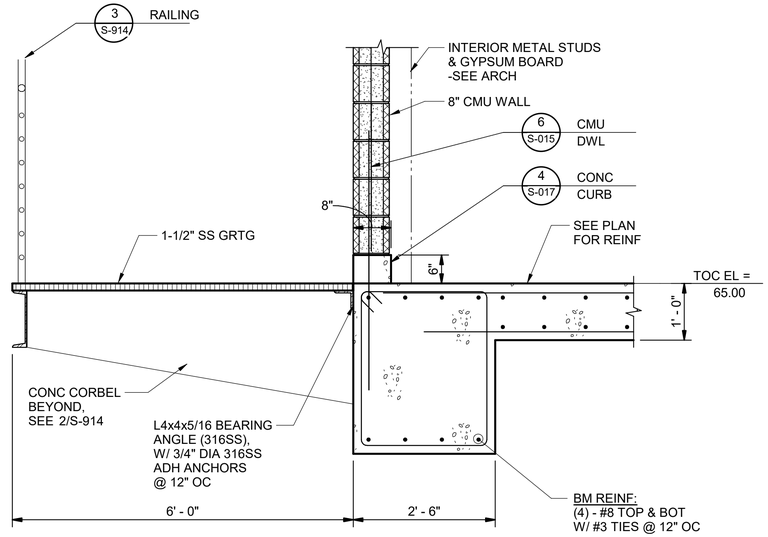

4 S-909 SECTION
3/4" = 1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS III

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SHEET
S-909

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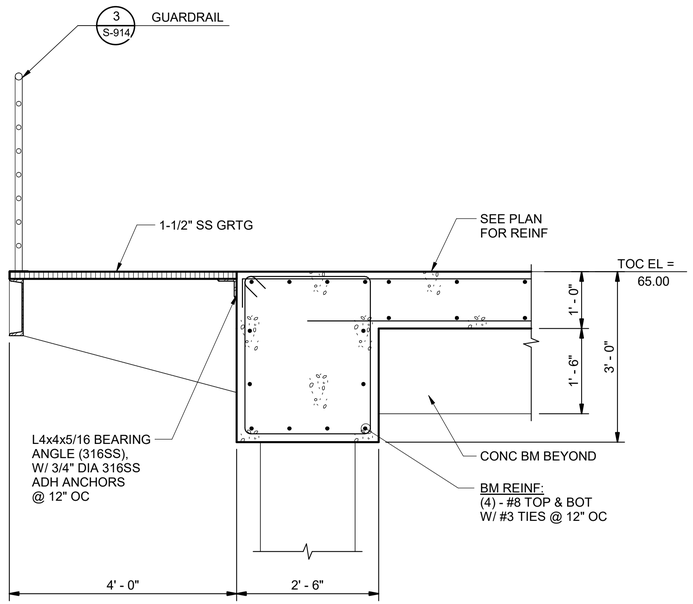

1 S-910 SECTION
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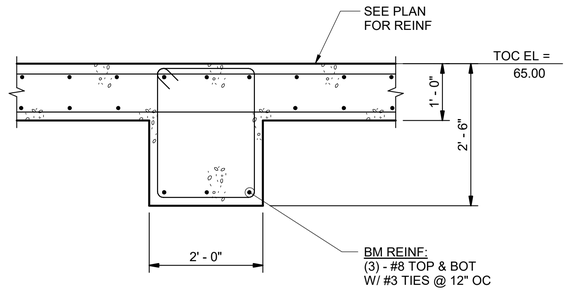

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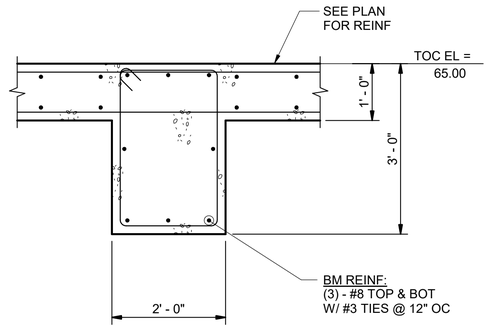

3 S-910 SECTION
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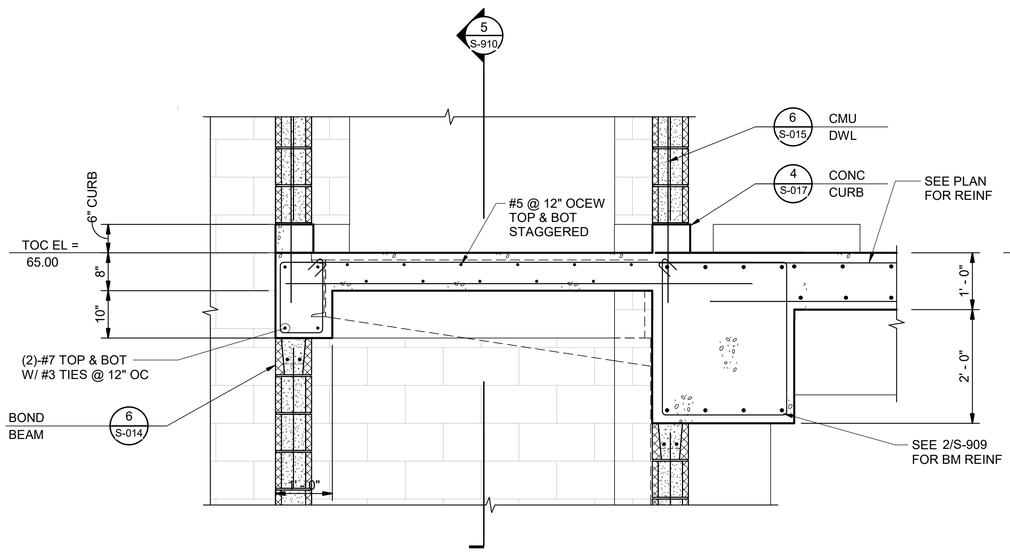

4 S-910 SECTION
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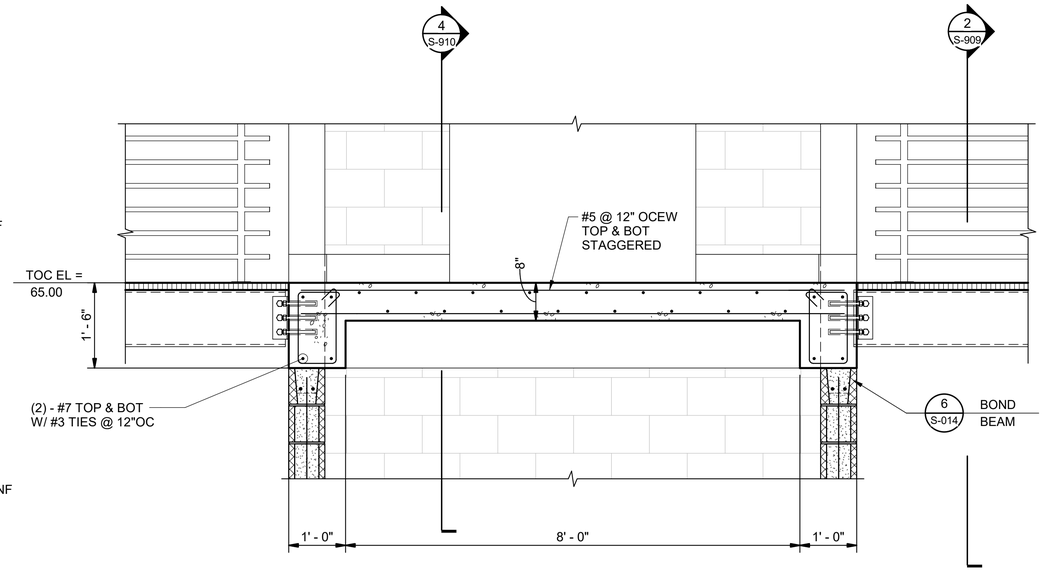

5 S-910 SECTION
3/4" = 1'-0"

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PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS IV

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SHEET
S-910

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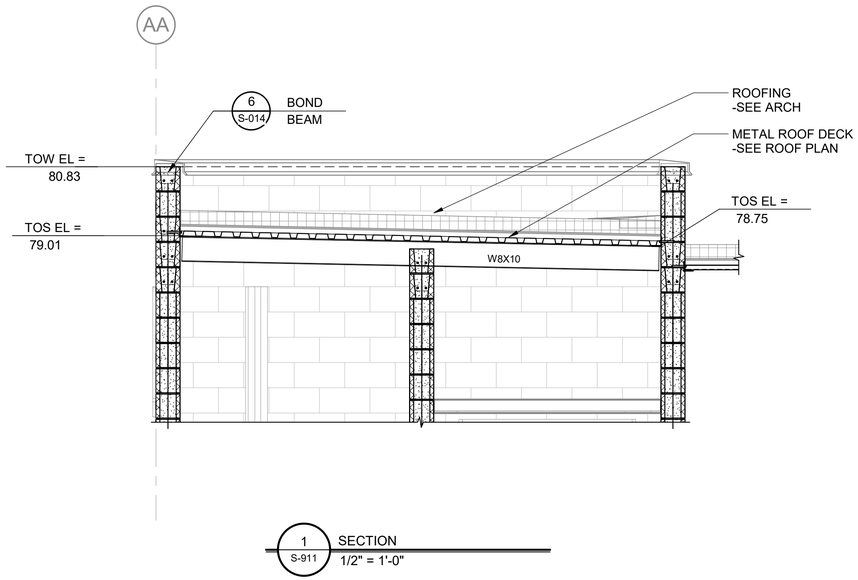

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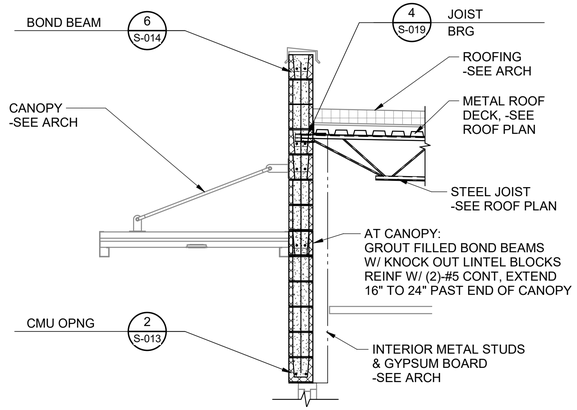

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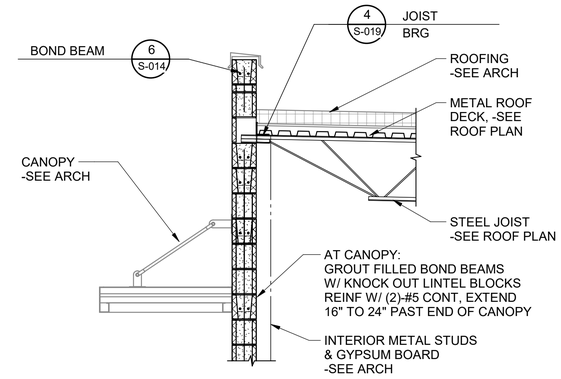

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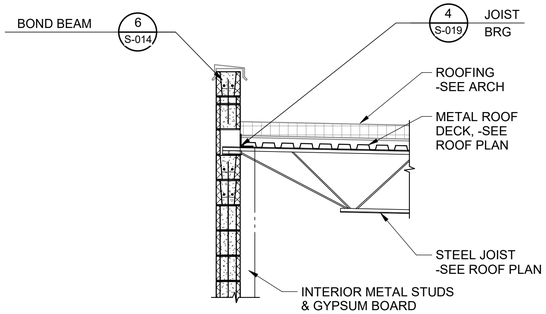

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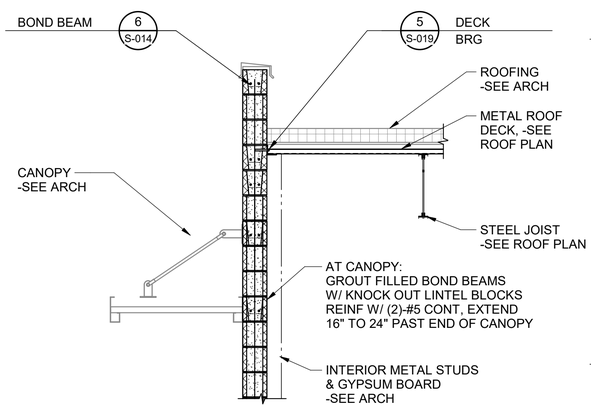
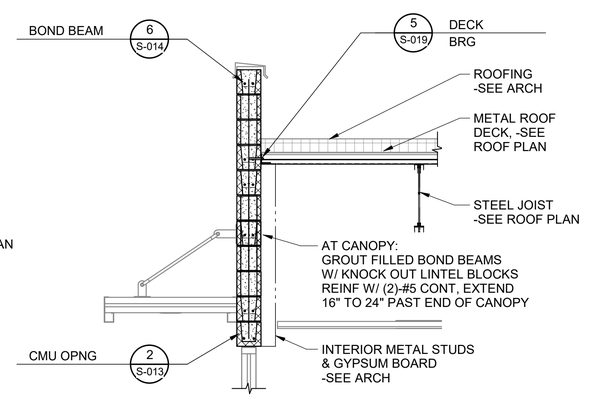


5 SECTION S-911 1/2" = 1'-0"



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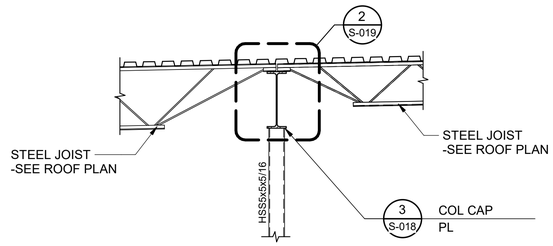

7 SECTION S-911 1/2" = 1'-0"

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PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS V

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SHEET
S-911

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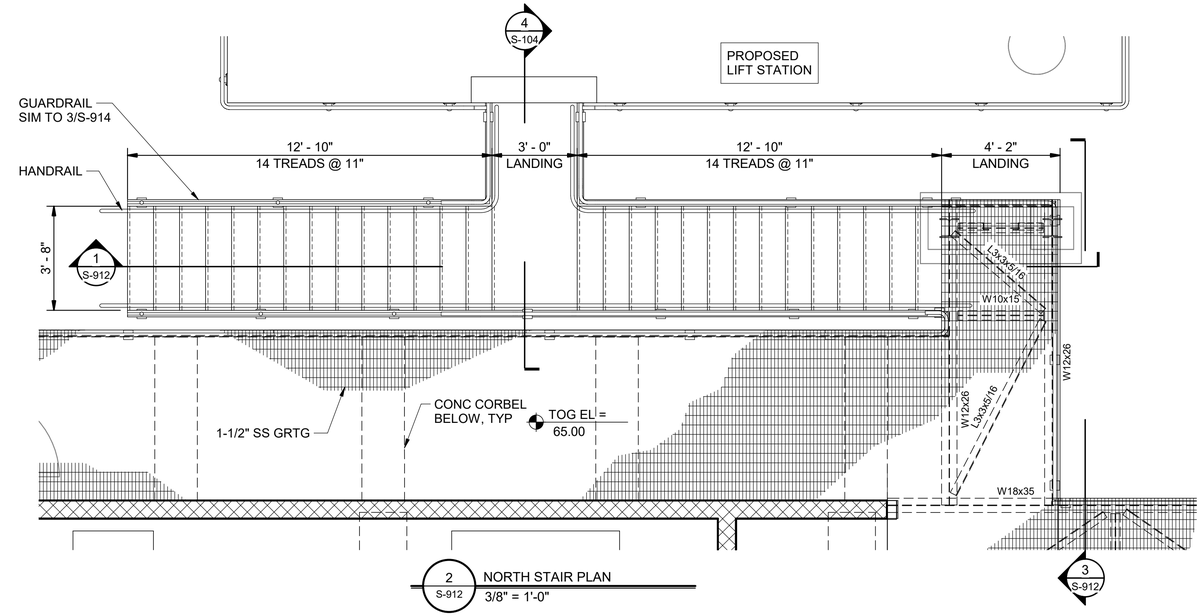
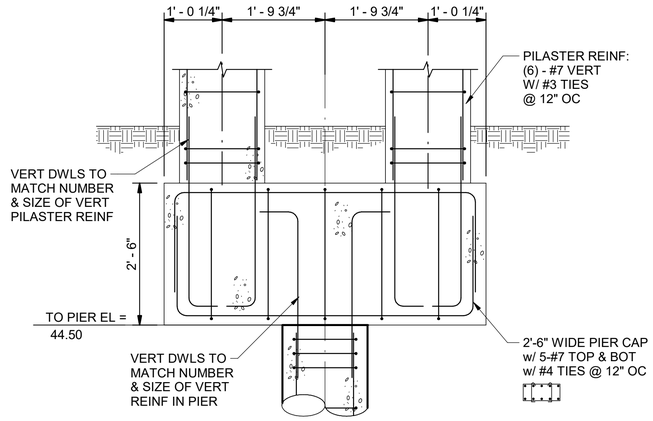
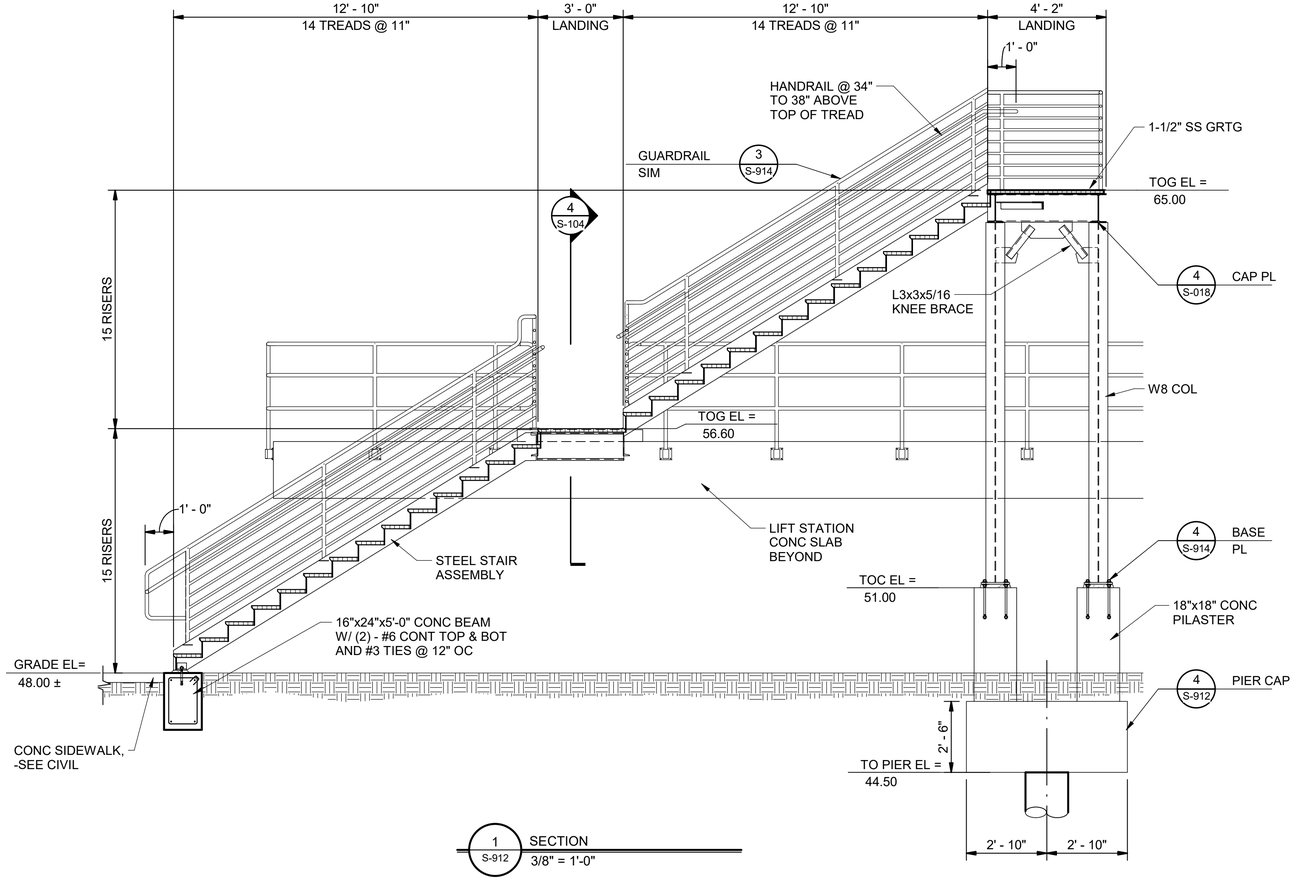


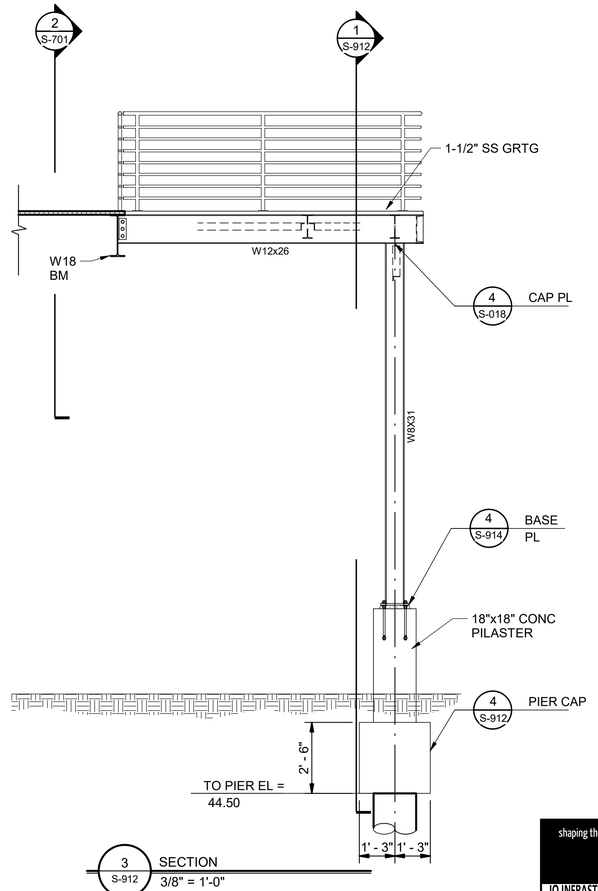
2 S-912 NORTH STAIR PLAN
3/8" = 1'-0"



4 S-912 PIER CAP
3/4" = 1'-0"



1 S-912 SECTION
3/8" = 1'-0"



3 S-912 SECTION
3/8" = 1'-0"

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P: 281 597 9300
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No.	Revisions	By	Date

STATE OF TEXAS
JOHN D. MISCHKOT
107566
LICENSED
PROFESSIONAL ENGINEER
08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

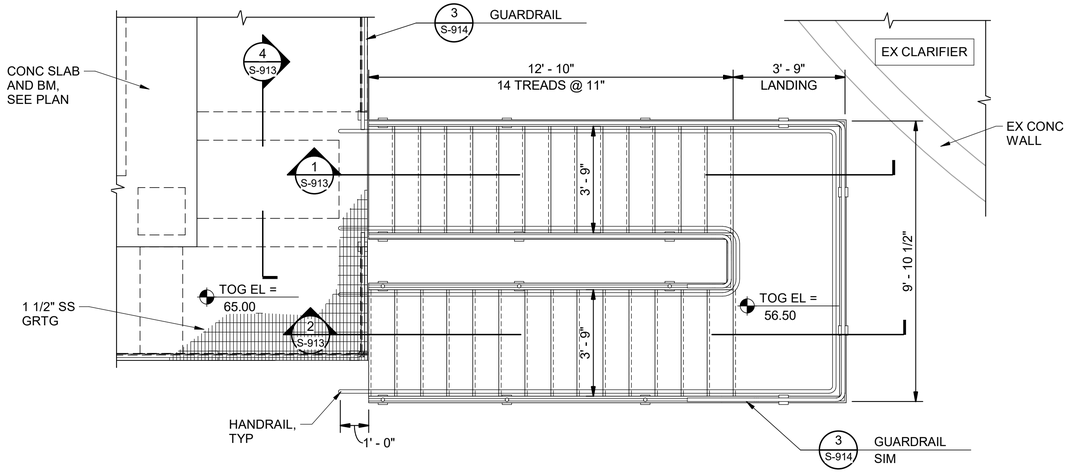
WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS VI

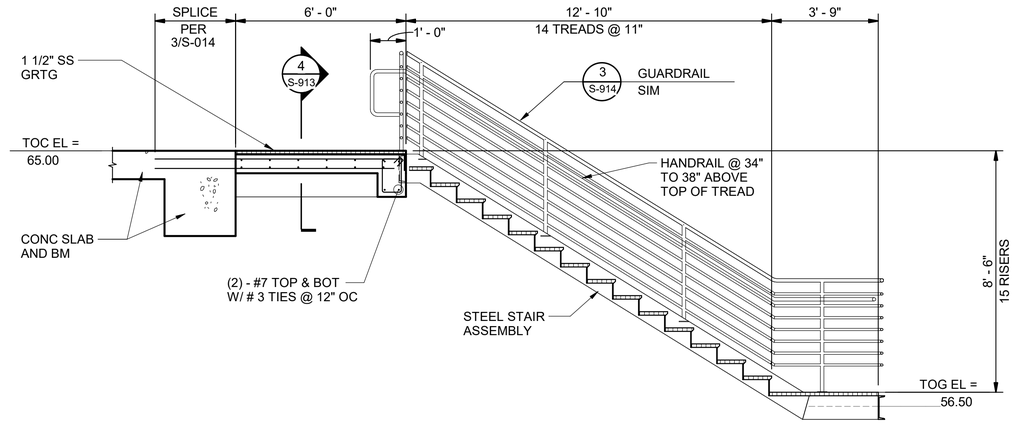
DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

shaping the built environment
JQ INFRASTRUCTURE, LLC
15810 PARK TEN PLACE, SUITE 225
832.941.5233
HOUSTON, TEXAS 77084
JQENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

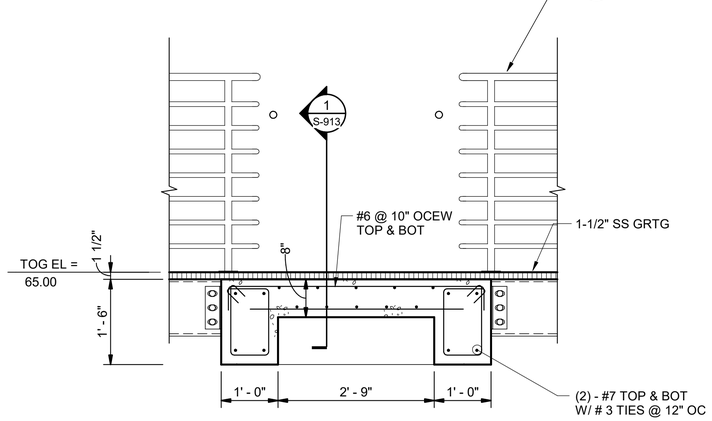
SHEET
S-912



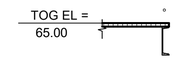
3 S-913 SOUTHEAST STAIR PLAN
3/8" = 1'-0"

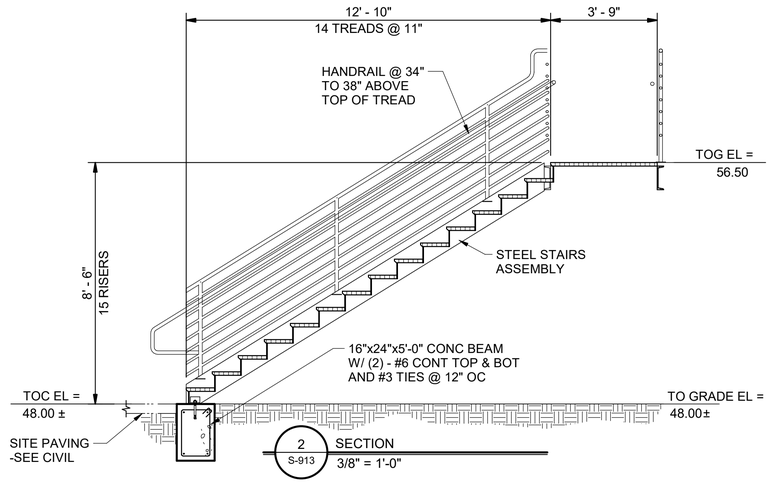


1 S-913 SECTION
3/8" = 1'-0"



4 S-913 SECTION
3/4" = 1'-0"





2 S-913 SECTION
3/8" = 1'-0"

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08/10/2023

CITY OF WEST UNIVERSITY PLACE, TX

WASTEWATER TREATMENT PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS AND DETAILS VII

DATE:	MARCH 2023
DESIGN:	JDM
DRAWN:	CG
CHECKED:	MKK
KHA NO.:	067812104

shaping the built environment
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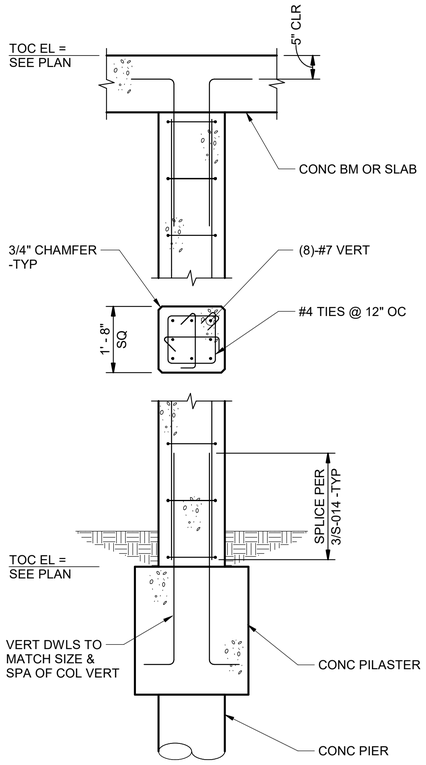
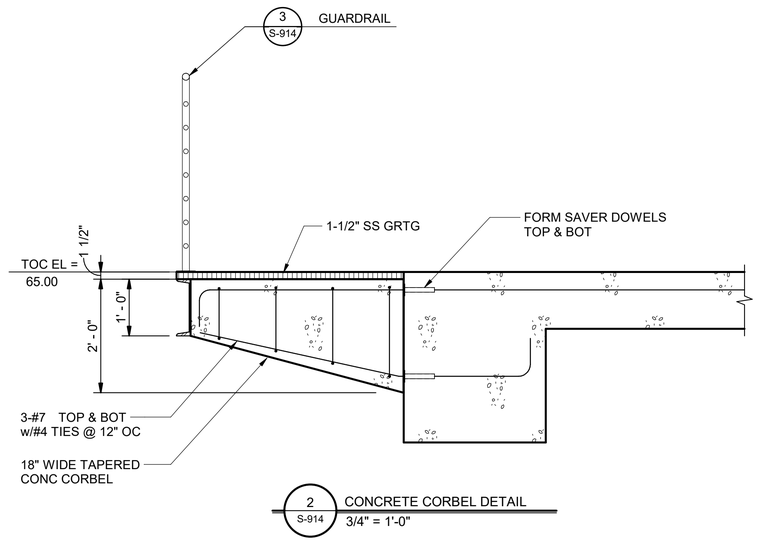
832.941.5233
JQIENG.COM
PROJECT NO: 4220079
TBPE FIRM F-7986

SHEET

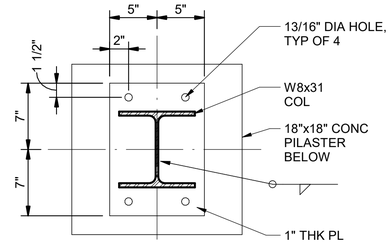
S-913



1 S-914 CONRETE COLUMN REINFORCEMENT
N.T.S.

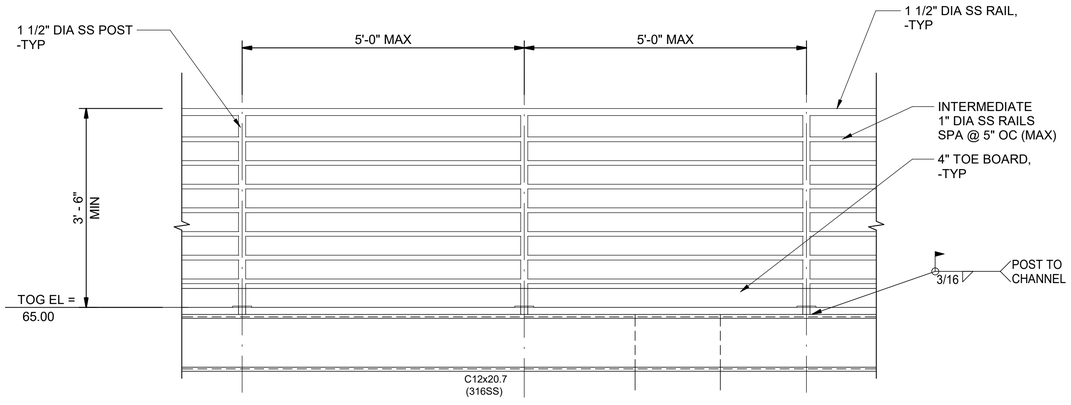


2 S-914 CONCRETE CORBEL DETAIL
3/4" = 1'-0"

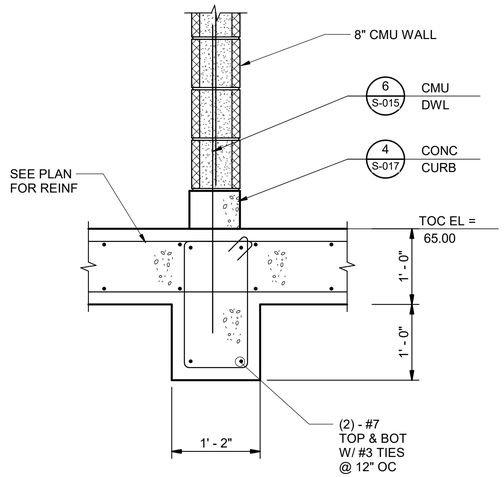


ANCHOR BOLTS:
3/4" DIA W/ 1' - 0" EMBED

4 S-914 BASE PLATE DETAIL
1 1/2" = 1'-0"



3 S-914 GUARDRAIL DETAIL
N.T.S.



5 S-914 SECTION
1" = 1'-0"

Autodesk Docs://067812104 West U WWTP/West U WWTP - Struct_R22.rvt

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CITY OF WEST UNIVERSITY PLACE, TX
WASTEWATER TREATMENT
PLANT IMPROVEMENTS

CONTROL BUILDING SECTIONS
AND DETAILS VIII

DATE:	DESIGN:	DRAWN:	CHECKED:	KHA NO.:
MARCH 2023	JDM	CG	MKK	067812104

SHEET
S-914

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